School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

2023 FACTS AND FIGURES

UNIVERSITY OF COLORADO

Celebrating 140 Years: 1883-2023

Dean's Message

The University of Colorado School of Medicine continued to grow in 2023, as our investments in research, clinical programs, education, and faculty continue to deliver impactful contributions to the health of our patients and our communities.

Today, we have 5,500 faculty members, more than 800 students in our education programs, and another 1,300 resident physicians and fellows who are pursuing their professional training with us.

Our research programs received $600 million in extramural funding support last year. Our school's collective research funding from the National Institutes of Health put us in the top 10 of public medical schools, according to the most recent data compiled by the Blue Ridge Institute for Medical Research.

Our medical education program provides the training our society needs from our graduates. Our students learn clinical skills and the science necessary to provide excellent care while they are mentored by leaders modeling high professional standards and a commitment to lifelong learning. Through longitudinal integrated clerkships, our students learn to provide comprehensive care of patients over time, offering patients personal care, not just treatments for their diseases and ailments.

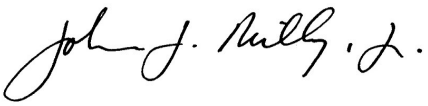
While the impact of our school and campus is profound for the lives we touch, we also make a significant contribution to the health of the state's economy. In the fiscal year 2022-23, the University of Colorado Anschutz Medical Campus had a $5 billion impact on the state's economy. When including our campus partner hospitals, which contributed another $6.5 billion, our total impact accounts for two-thirds of the total impact of $17.2 billion from all CU campuses and hospitals.

These accomplishments are substantial, and they are a precursor of many great achievements to come. In the past year, we had many key investments in our future, including:

- The NIH renewed its grant to the Colorado Clinical and Translational Sciences Institute, providing $54 million over the next seven years for a range of programs that bring care and cures to the community and bolster training of our faculty.
- The NIH's All of Us Research Program awarded $30 million to our campus and our partners to establish the Center for Linkage and Acquisition of Data, a largescale effort to link disparate pieces of information so that researchers can better understand drivers for health and disease.
- The Anschutz Foundation this summer announced it has committed $50 million for the Anschutz Acceleration Initiative, which will support targeted projects that are poised to make direct patient impact within five years.
- Our Gates Institute, a partnership between our campus and private philanthropy, will invest $200 million over five years into stem cell research for cancer and rare diseases.

Continual improvements in technical capacity are also bringing state-of-the-art care to our hospital partners. Significant examples are cases where our surgeons have been using robots in transplant and mitral valve surgeries to improve patient outcomes.

In October 2023, I announced plans to retire when my successor is engaged. The campus is conducting a national search. The University of Colorado School of Medicine had a solid foundation, strong partners, and an impressive trajectory when I joined in 2015. Thanks to that base, and through collaboration, dedication to service, and hard work, we have excelled. I am confident that the next Dean will find our school a welcoming community that continues to thrive and to make important contributions to the world of medicine and human health.



John J. Reilly, Jr., MD
Richard Krugman Endowed Chair
Dean, University of Colorado School of Medicine
Vice Chancellor for Health Affairs

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Mission Statement

Approved by the Executive Committee and Faculty Senate in October 2021.

The mission of the University of Colorado School of Medicine is to provide Colorado, the nation and the world with programs of excellence in:

- **Education -** through the design, implementation and evaluation of educational programs for medical students, allied health students, graduate students, residents and fellows, practicing health professionals and the public-at-large;
- **Research -** through the development of new knowledge in the basic and clinical sciences, as well as in public and community health, health policy and health sciences education;
- **Patient Care -** through state-of-the-art clinical programs which reflect the unique educational and scholarly environment of the University, as well as the needs of the patients and communities it serves; and
- **Community Collaborations -** by forming partnerships with the broader community, learning from the experiences of community members and sharing the School's expertise and knowledge, in order to promote healthier and more resilient communities, address the social, environmental and economic determinants of health, and advocate for health equity.

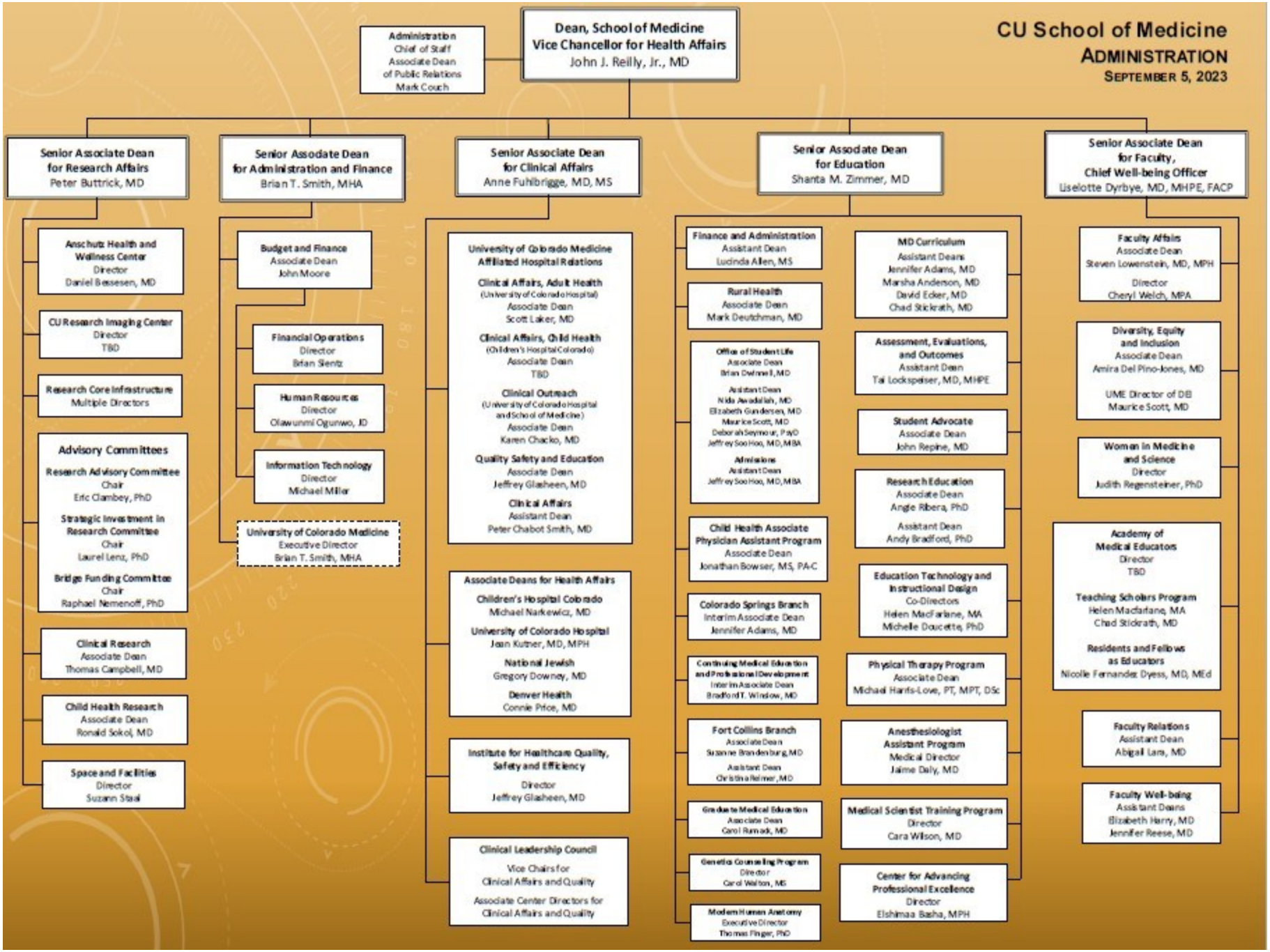
Values Statement

Approved by the Executive Committee (October 2008) and Faculty Senate (November 2008)

The University of Colorado School of Medicine works actively to:

- Advance science through research on the biological mechanisms that underlie illness.
- Improve both the medical care and science of the uniquely human components of health and disease.
- Provide specialized and personalized medical care in an efficient environment.
- Support positive wellness and clinical prevention programs that promote health across the lifespan and lower early mortality.
- Transmit a high level of primary and specialty clinical expertise to the coming generations of health professionals.
- Provide a welcoming, challenging, and diverse atmosphere of growth for those who answer the call to careers in health science and service.
- Develop a diverse funding portfolio that provides the means to develop, attract, and retain nationally competitive research faculty members.
- Advance competitive medical research productivity through increased external support for innovative research ideas.
- Enhance the cooperative relationships with affiliate hospitals toward common goals in education, research, and clinical care.
- Develop a common infrastructure with the affiliate institutions on the new Anschutz Medical Campus to improve the efficient use of joint resources.
- Expand scholarly collaborations across disciplines within the School of Medicine that stimulate research innovation and increase competitive research funding.
- Support productive faculty and institutional collaborations with its sister Schools within the University of Colorado Denver to maximize bioscience research potential.
- Expand productive working relationships with local communities outside the University but within the state and region, whether for clinical, teaching, or research efforts.
- Pursue entrepreneurial development both in education and in research through collaborations with the private business communities in Colorado and the western region.
- Further improve working relationships with State and federal government entities to provide direct investment and support for research and education.
- Build collaborative relationships with medical schools and universities around the globe to enhance mutual growth in medical expertise, scholarship and stature.

How We Are Organized


CU School of Medicine
ADMINISTRATION
SEPTEMBER 5, 2023
Administration
Chief of Staff
Associate Dean
of Public Relations
Mark Couch
Dean, School of Medicine
Vice Chancellor for Health Affairs
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Senior Associate Dean
for Research Affairs
Peter Buttrick, MD
Anschutz Health and
Wellness Center
Director
Daniel Bessesen, MD
CU Research Imaging Center
Director
TBD
Research Core Infrastructure
Multiple Directors
Advisory Committees
Research Advisory Committee
Chair
Eric Clambey, PhD
Strategic Investment in
Research Committee
Chair
Laurel Lenz, PhD
Bridge Funding Committee
Chair
Raphael Nemenoff, PhD
Clinical Research
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Thomas Campbell, MD
Child Health Research
Associate Dean
Ronald Sokol, MD
Space and Facilities
Director
Suzann Staal
Senior Associate Dean
for Administration and Finance
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Budget and Finance
Associate Dean
John Moore
Financial Operations
Director
Brian Slentz
Human Resources
Director
Olawunmi Ogunwo, JD
Information Technology
Director
Michael Miller
University of Colorado Medicine
Executive Director
Brian T. Smith, MHA
Senior Associate Dean
for Clinical Affairs
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University of Colorado Medicine
Affiliated Hospital Relations
Clinical Affairs, Adult Health
(University of Colorado Hospital)
Associate Dean
Scott Laker, MD
Clinical Affairs, Child Health
(Children's Hospital Colorado)
Associate Dean
TBD
Clinical Outreach
(University of Colorado Hospital
and School of Medicine)
Associate Dean
Karen Chacko, MD
Quality Safety and Education
Associate Dean
Jeffrey Glasheen, MD
Clinical Affairs
Assistant Dean
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Associate Deans for Health Affairs
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University of Colorado Hospital
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National Jewish
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Denver Health
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Safety and Efficiency
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Clinical Affairs and Quality
Associate Center Directors for
Clinical Affairs and Quality
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Finance and Administration
Assistant Dean
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Rural Health
Associate Dean
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Office of Student Life
Associate Dean
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Assistant Dean
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Maurice Scott, MD
Deborah Seymour, PsyD
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Assistant Dean
Jeffrey Soo Hoo, MD, MBA
Child Health Associate
Physician Assistant Program
Associate Dean
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Interim Associate Dean
Jennifer Adams, MD
Continuing Medical Education
and Professional Development
Interim Associate Dean
Bradford T. Winslow, MD
Fort Collins Branch
Associate Dean
Suzanne Brandenburg, MD
Assistant Dean
Christina Reimer, MD
Graduate Medical Education
Associate Dean
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Genetics Counseling Program
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Modern Human Anatomy
Executive Director
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Assistant Deans
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Marsha Anderson, MD
David Ecker, MD
Chad Stickrath, MD
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and Outcomes
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Tai Lockspeiser, MD, MHPE
Student Advocate
Associate Dean
John Repine, MD
Research Education
Associate Dean
Angie Ribera, PhD
Assistant Dean
Andy Bradford, PhD
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Instructional Design
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Anesthesiologist
Assistant Program
Medical Director
Jaime Daly, MD
Medical Scientist Training Program
Director
Cara Wilson, MD
Center for Advancing
Professional Excellence
Director
Elshimaa Basha, MPH
Senior Associate Dean
for Faculty,
Chief Well-being Officer
Liselotte Dyrbye, MD, MHPE, FACP
Faculty Affairs
Associate Dean
Steven Lowenstein, MD, MPH
Director
Cheryl Welch, MPA
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and Inclusion
Associate Dean
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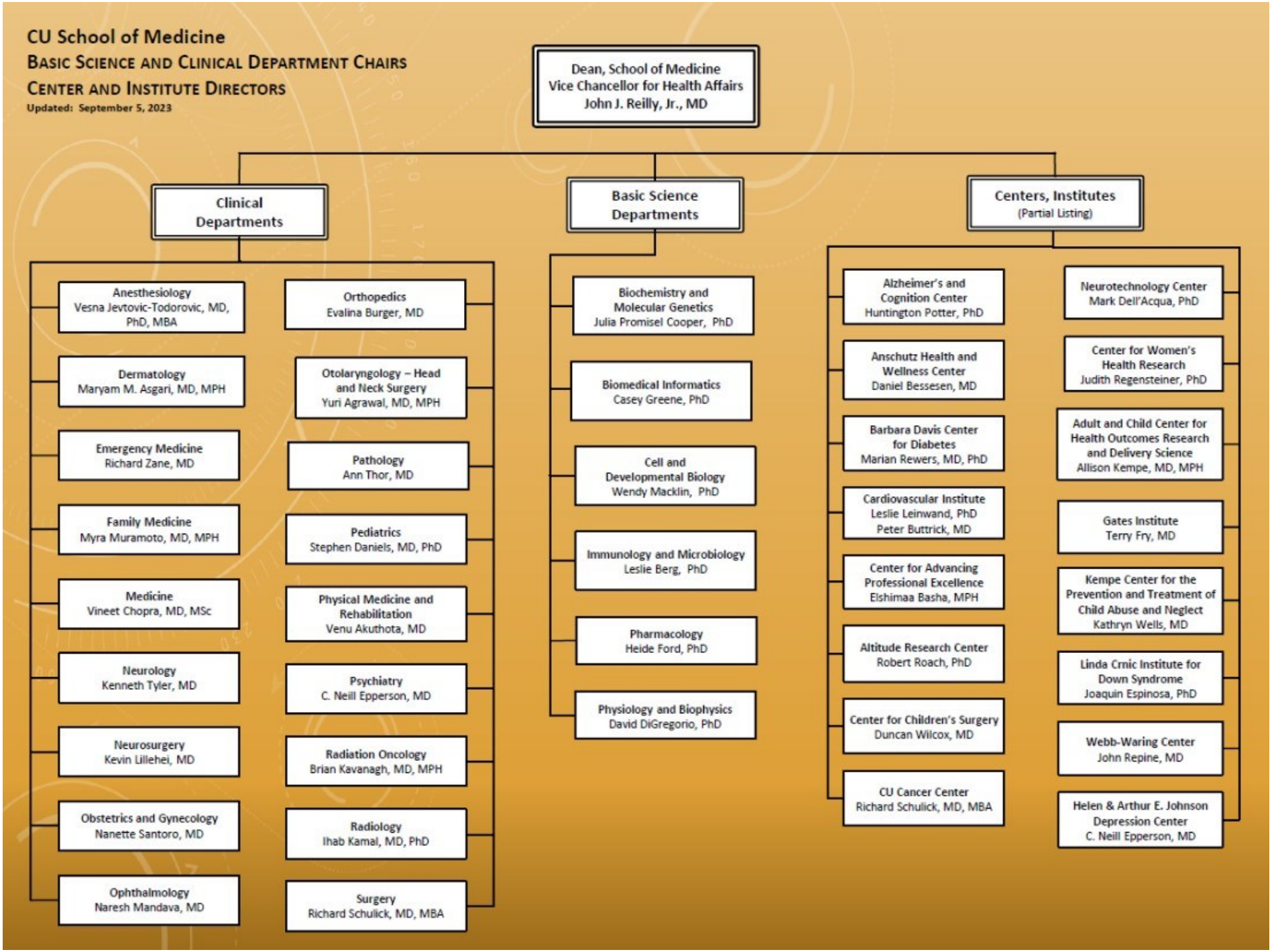
UME Director of DEI
Maurice Scott, MD
Women in Medicine
and Science
Director
Judith Regensteiner, PhD
Academy of
Medical Educators
Director
TBD
Teaching Scholars Program
Helen Macfarlane, MA
Chad Stickrath, MD
Residents and Fellows
as Educators
Nicolle Fernandez Dyess, MD, MEd
Faculty Relations
Assistant Dean
Abigail Lara, MD
Faculty Well-being
Assistant Deans
Elizabeth Harry, MD
Jennifer Reese, MD

CU School of Medicine
Basic Science and Clinical Department Chairs
Center and Institute Directors

Updated: September 5, 2023



University of Colorado School of Medicine Leadership

John J. Reilly, Jr., MD,
Richard Krugman Endowed Chair,
Dean, School of Medicine, and
Vice Chancellor for Health Affairs

Peter Buttrick, MD,
Senior Associate Dean for Research

Mark Couch,
Chief of Staff and Associate Dean of Public Relations

Lotte Dyrbye, MD, MHPE,
Senior Associate Dean of Faculty and Chief Well-being Officer

Anne Fuhlbrigge, MD,
Senior Associate Dean for Clinical Affairs

Brian T. Smith, MHA,
Senior Associate Dean for Administration and Finance, and Executive Director, CU Medicine

Shanta Zimmer, MD,
Senior Associate Dean for Education

School of Medicine Associate Deans

Jennifer Adams, MD,
Colorado Springs Branch (Interim)

Jonathan Bowser, PA, MS,
Child Health Associate/
Physician Assistant Program

Suzanne Brandenburg, MD,
Fort Collins Branch

Thomas Campbell, MD,
Clinical Research

Karen Chacko, MD,
Clinical Outreach

Amira del Pino-Jones, MD
Diversity, Equity, and Inclusion

Mark Deutchman, MD,
Rural Health

Gregory Downey, MD,
Health Affairs, National Jewish Health

Brian Dwinnell, MD,
Student Life

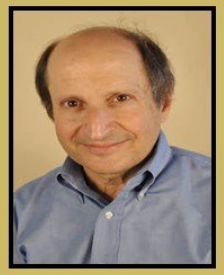
Jeffrey Glasheen, MD,
Clinical Affairs/Quality and
Safety Education

Michael Harris-Love, PT, MPT, DSc,
Physical Therapy Program

Jean Kutner, MD, MPH,
Health Affairs,
UCHealth University of Colorado Hospital

School of Medicine Associate Deans

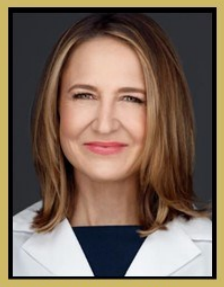
Scott Laker, MD,
Clinical Affairs/Adult Health



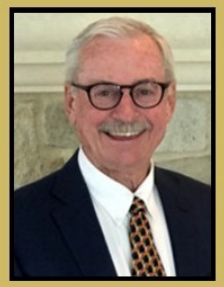
Steven Lowenstein, MD, MPH,
Faculty Affairs

John Moore,
Administration and Finance

Michael Narkewicz, MD,
Health Affairs, Children's Hospital Colorado



Connie Savor Price, MD, MBA
Health Affairs,
Denver Health and Hospital Authority

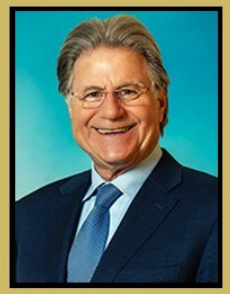


John Repine, MD,
Student Advocacy

Angie Ribera, PhD,
Research Education

Carol Rumack, MD,
Graduate Medical Education

Shilpa Rungta, MD, MBA,
Health Affairs, Veterans Affairs



Ronald Sokol, MD,
Child Health Research

School of Medicine Clinical Department Chairs

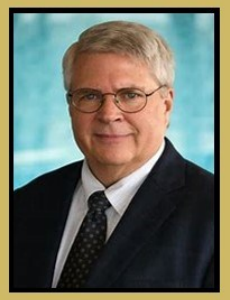
Yuri Agrawal, MD, MPH
Otolaryngology– Head and Neck Surgery

Venu Akuthota, MD,
Physical Medicine and Rehabilitation

Maryam Asgari, MD, MPH
Dermatology

Evalina Burger-Van der Walt, MD,
Orthopedics

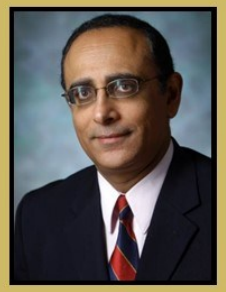
Vineet Chopra, MD, MSc,
Medicine



Stephen R. Daniels, MD, PhD,
Pediatrics

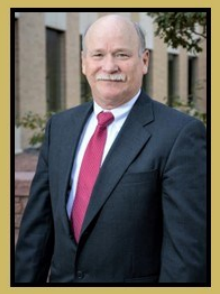
C. Neill Epperson, MD,
Psychiatry

Vesna Jevtovic-Todorovic, MD, PhD, MBA,
Anesthesiology



Ihab Kamel, MD, PhD
Radiology

Brian D. Kavanagh, MD, MPH,
Radiation Oncology



Kevin Lillehei, MD,
Neurosurgery

Naresh Mandava, MD,
Ophthalmology

Myra Muramoto, MD, MPH,
Family Medicine

Nanette Santoro, MD,
Obstetrics and Gynecology

Richard Schulick, MD, MBA,
Surgery

Ann Thor, MD,
Pathology

Kenneth Tyler, MD,
Neurology

Richard Zane, MD,
Emergency Medicine

School of Medicine Basic Science Department Chairs

Leslie Berg, PhD,
Immunology and Microbiology

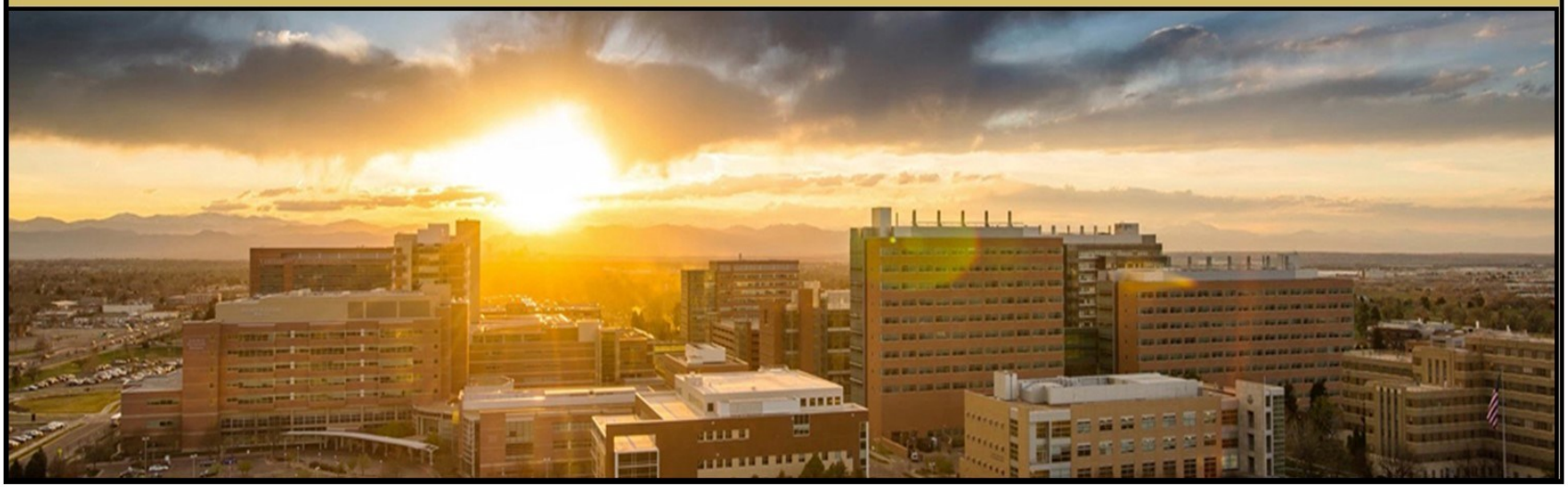
Julia Promisel Cooper, PhD,
Biochemistry and Molecular Genetics

David DiGregorio, PhD,
Physiology and Biophysics

Heide Ford, PhD,
Pharmacology

Casey Greene, PhD,
Biomedical Informatics

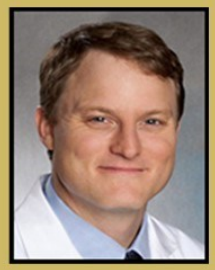
Wendy Macklin, PhD,
Cell and Developmental Biology



School of Medicine Center, Institute, and Program Directors

Elshimaa Basha, MPH, Center for Advancing Professional Excellence

Daniel Bessesen, MD, Anschutz Health and Wellness Center

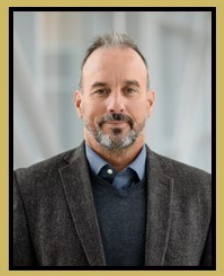


Marc Bonaca, MD, MPH, Colorado Prevention Center

Peter Buttrick, MD, Co-Director, Cardiovascular Institute

Mark Dell'Acqua, PhD, NeuroTechnology Center

C. Neill Epperson, MD, Helen and Arthur E. Johnson Depression Center



Joaquin Espinosa, PhD, Linda Crnic Institute for Down Syndrome

Thomas Finger, PhD, Co-Director, Rocky Mountain Taste and Smell Center

Terry Fry, MD, Gates Institute

Casey Greene, PhD, Center for Health Artificial Intelligence

Kathryn Hassell, MD, Colorado Sickle Cell Treatment and Research Center

James Kelly, MD, Marcus Institute for Brain Health

Allison Kempe, MD, MPH, Adult and Child Center for Health Outcomes Research and Delivery Science

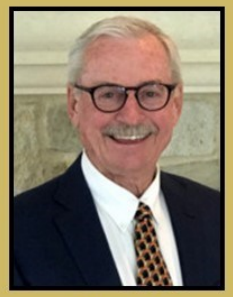
Kristyn Masters, PhD, Center for Bioengineering

School of Medicine Center, Institute, and Program Directors

Leslie Leinwand, PhD, Co-Director, Cardiovascular Institute

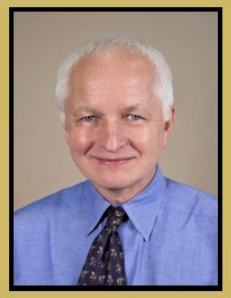
Huntington Potter, PhD, CU Alzheimer's and Cognition Center

Judith Regensteiner, PhD, Ludeman Family Center for Women's Health Research



John Repine, MD, Webb-Waring Center

Diego Restrepo, PhD, Co-Director, Rocky Mountain Taste and Smell Center



Marian Rewers, MD, PhD, Barbara Davis Center for Diabetes

Paul Rozance, MD, Perinatal Research Center

Richard Schulick, MD, MBA, University of Colorado Cancer Center

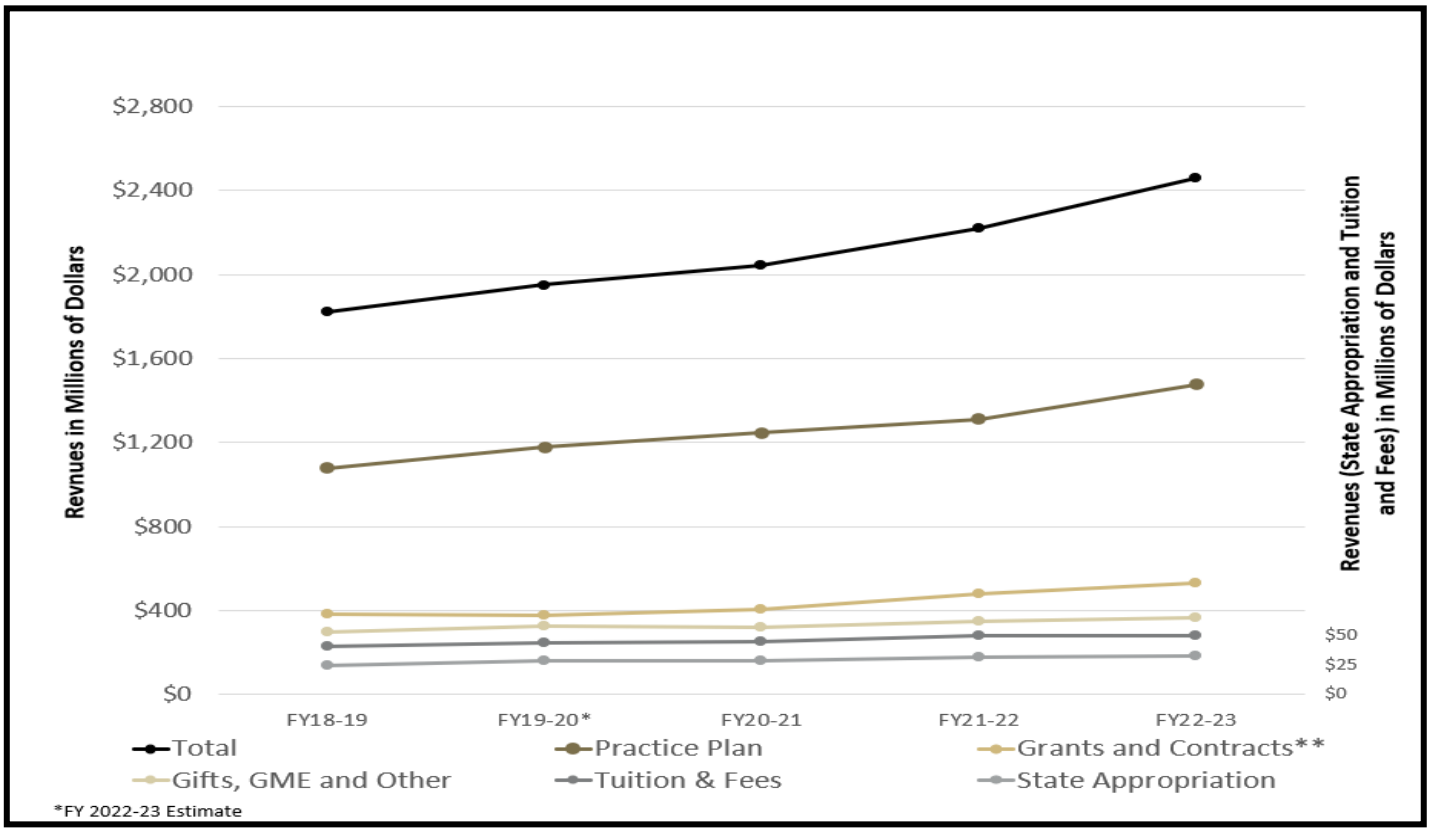
Kathryn Wells, MD, Kempe Center for the Prevention and Treatment of Child Abuse and Neglect

Michael Wang, MD, Hemophilia and Thrombosis Center

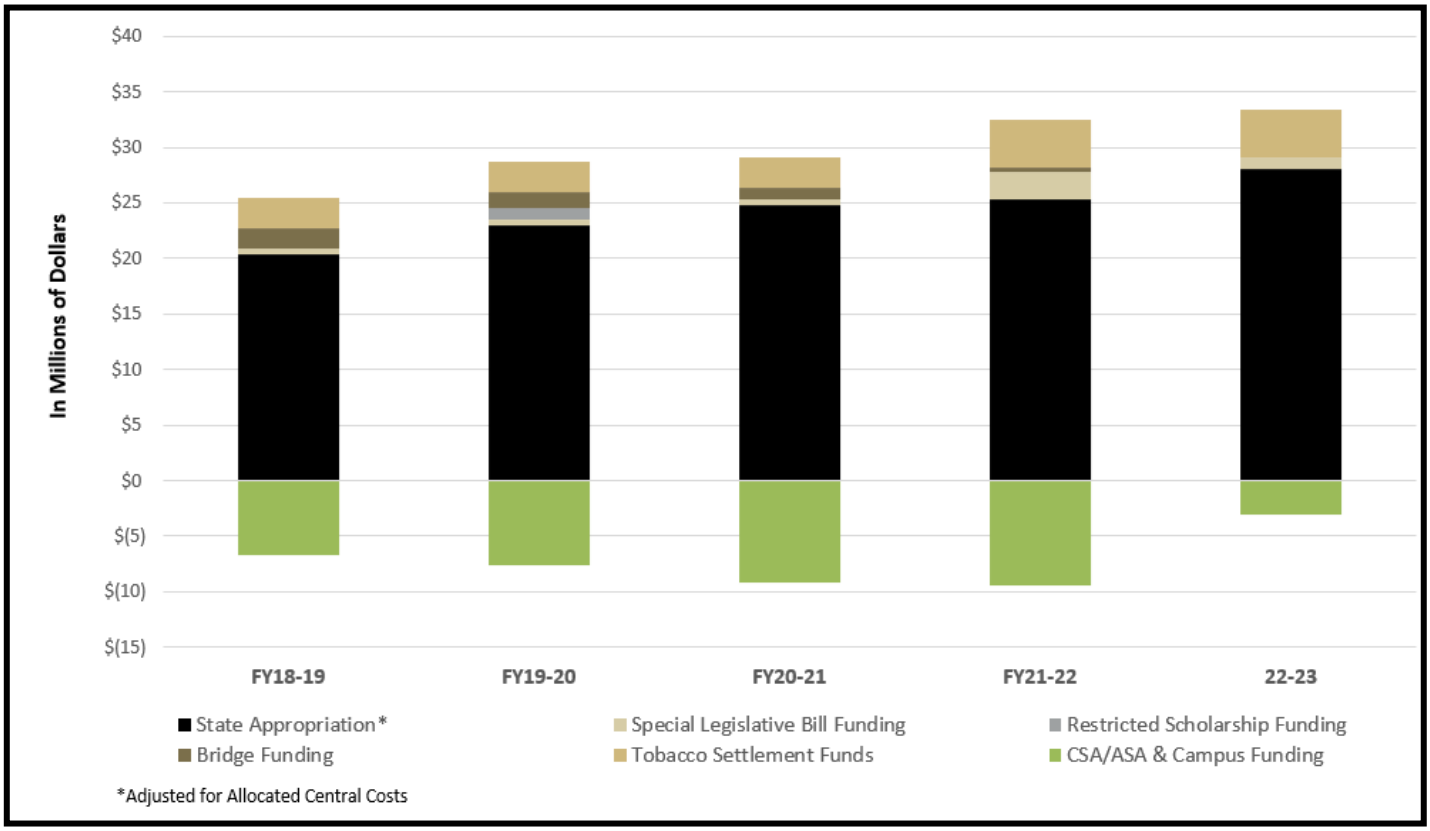
Duncan Wilcox, MD, Center for Children's Surgery

Administration and Business Affairs

CU School of Medicine Trend in Revenue Source
Fiscal Years 2019 - 2023

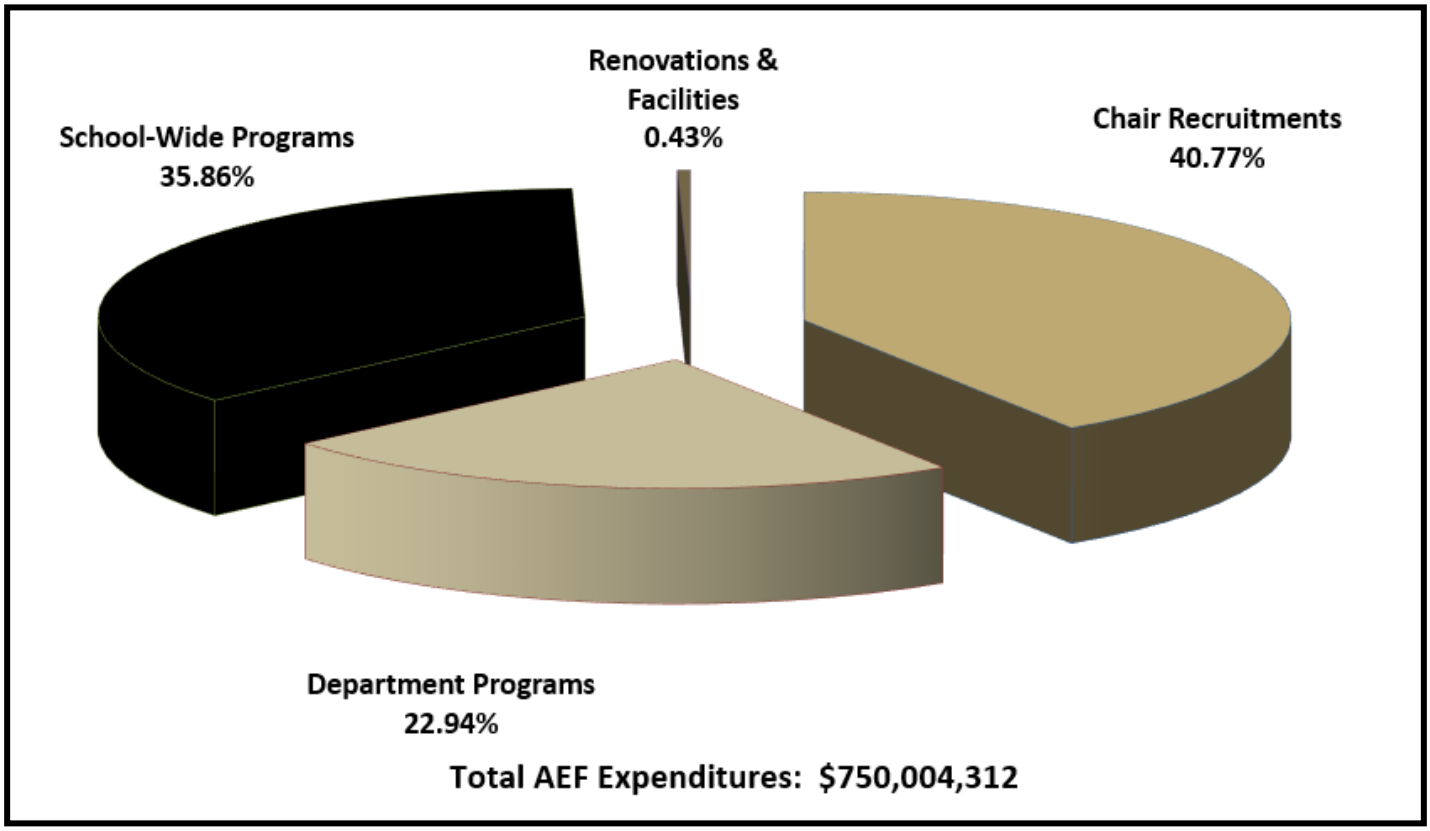


Trend in School of Medicine General Fund
Fiscal Years 2019 - 2023



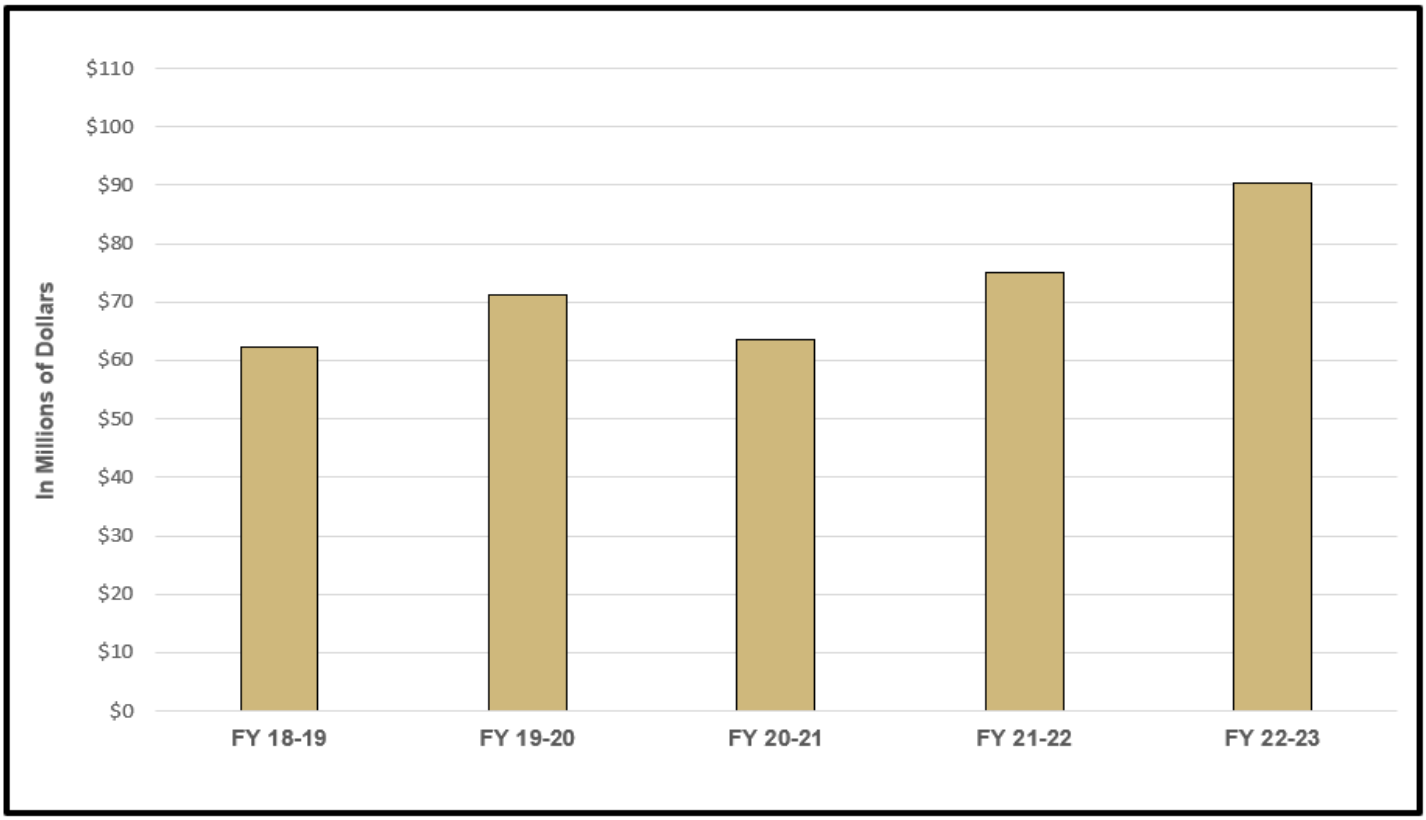
Academic Enrichment Fund Expenditures

Fiscal Years 1983 - 2023

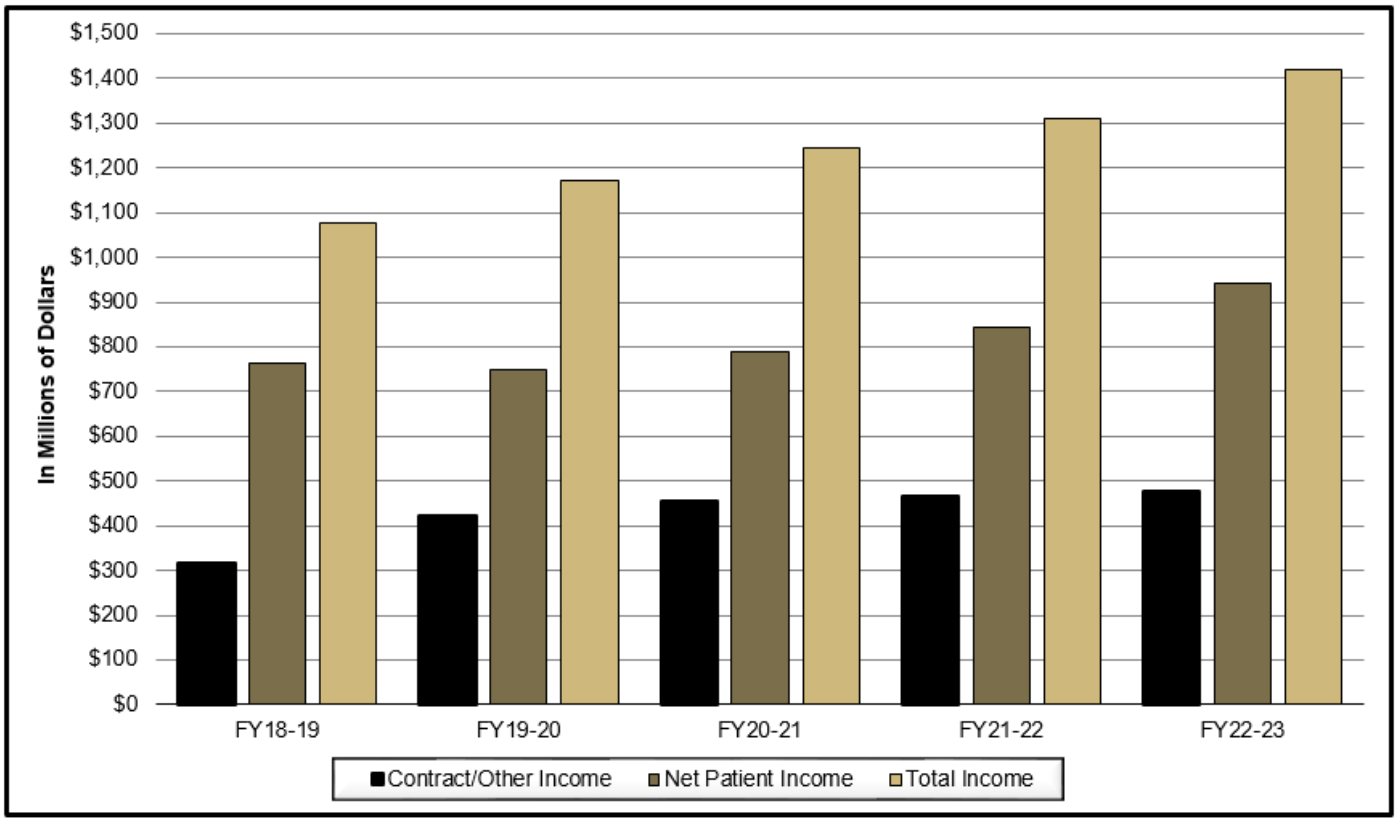


School of Medicine Commitment Expenditures

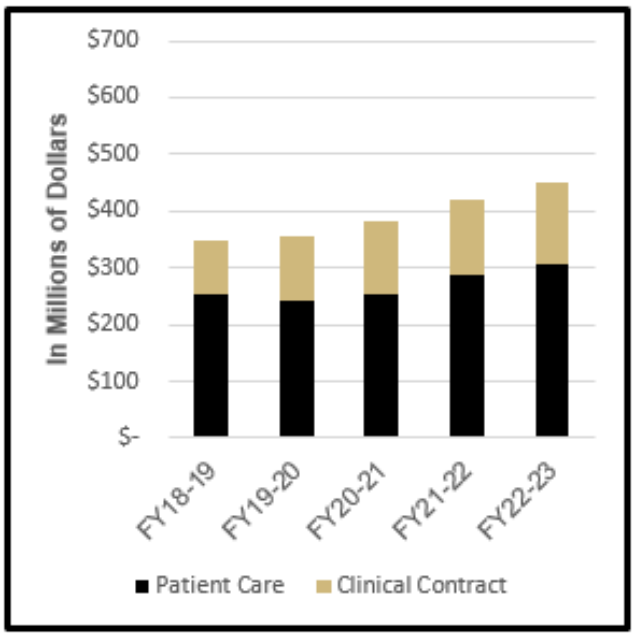
Fiscal Years 2019 - 2023



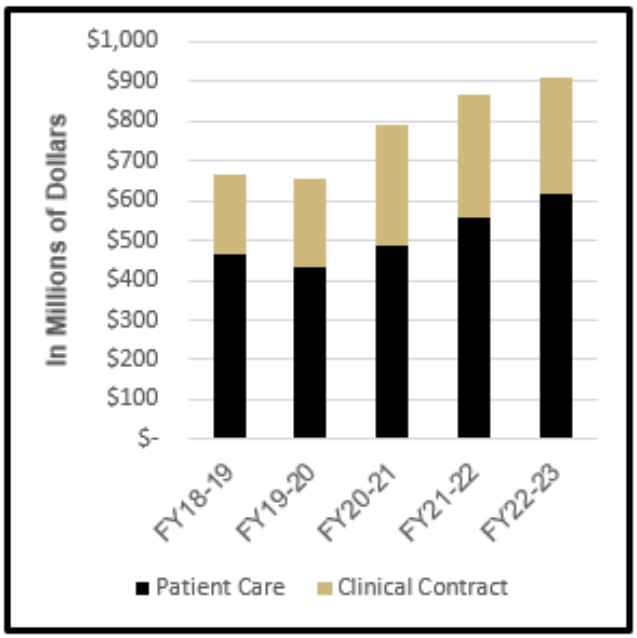
CU Medicine Patient and Contract Income
Fiscal Years 2019– 2023



University of Colorado Medicine
Child Health Clinical and Contract Income
Fiscal Years 2019 — 2023

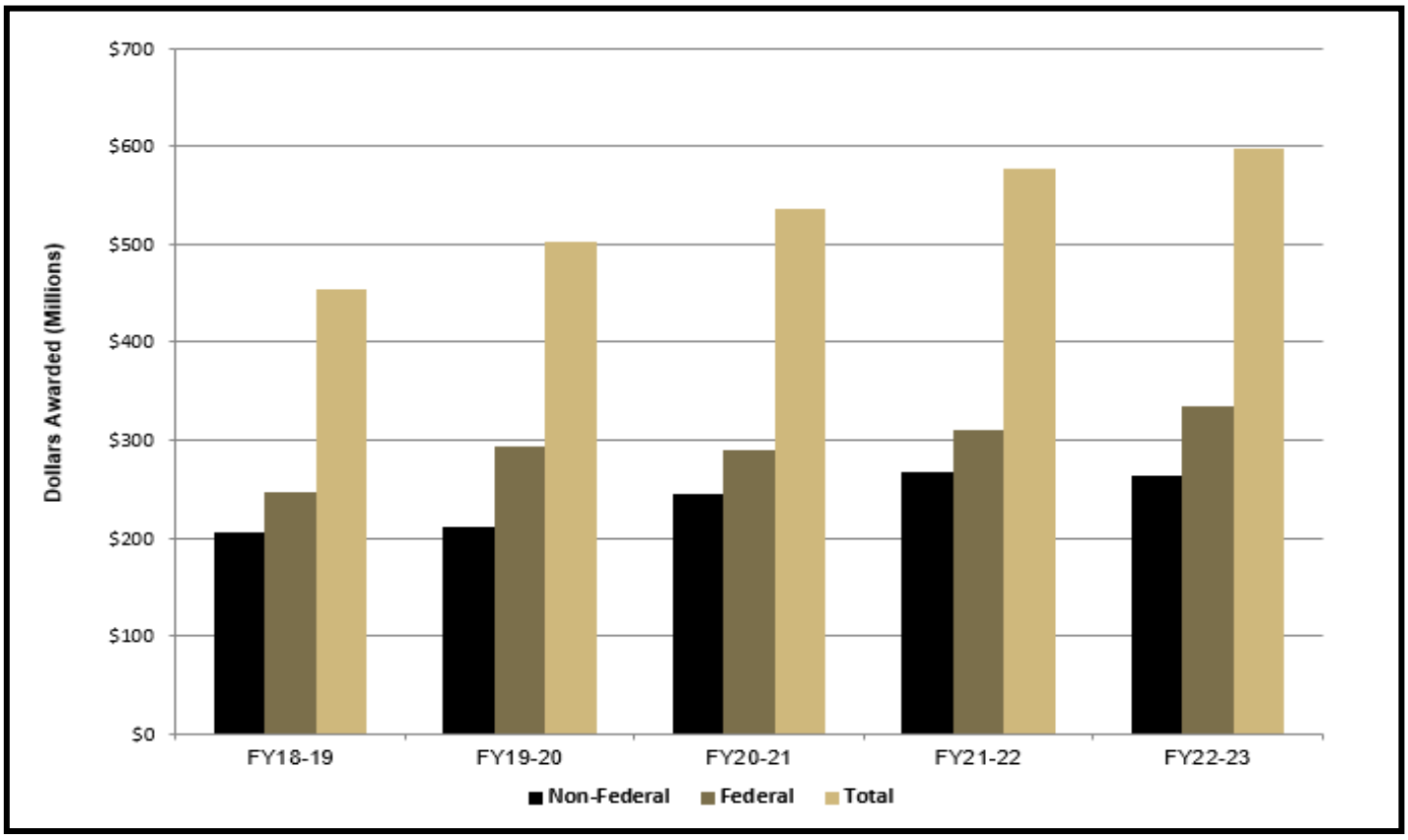


University of Colorado Medicine
Adult Health Clinical and Contract Income
Fiscal Years 2019 — 2023



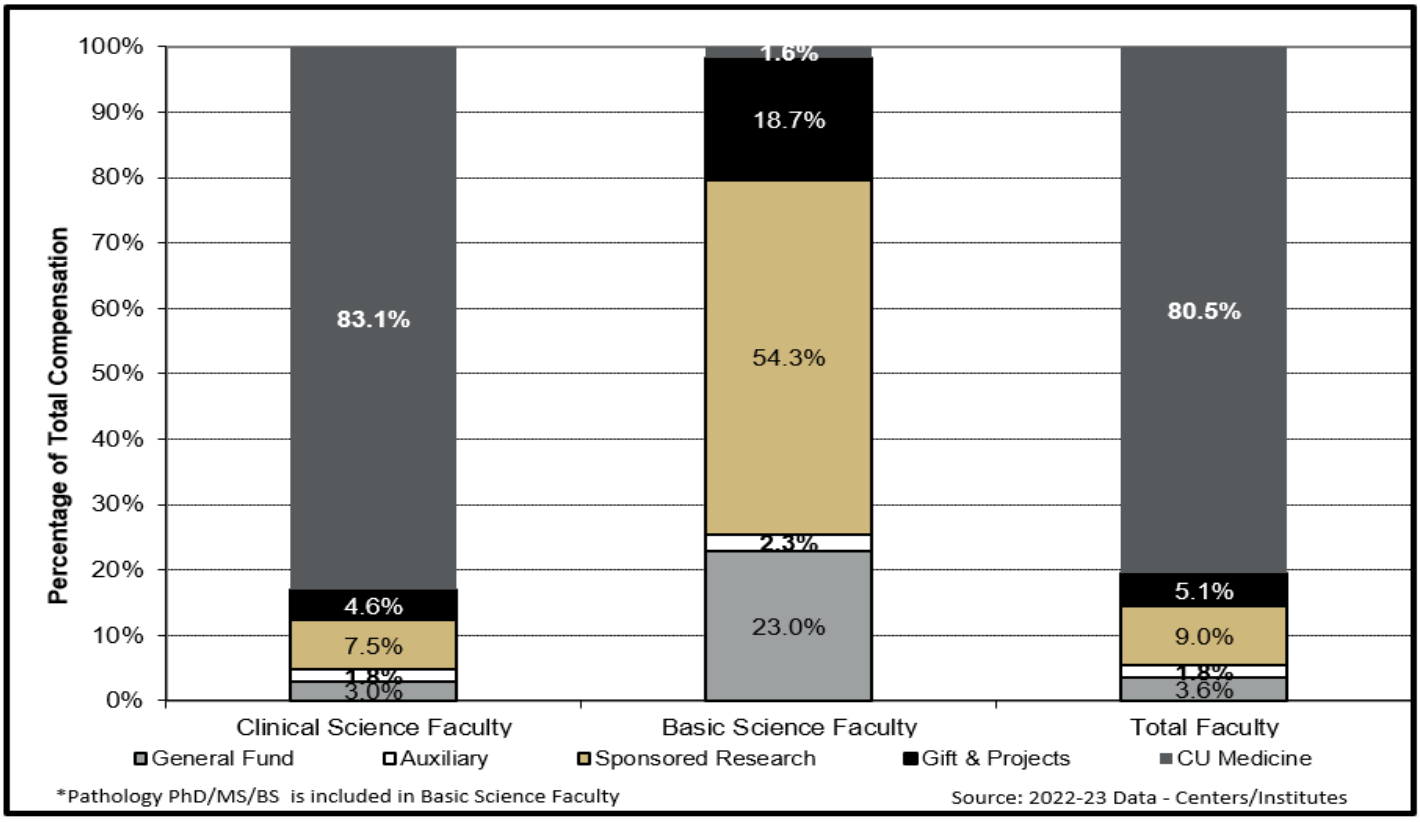
Sponsored Research Award Trend

Fiscal Years 2019 — 2023

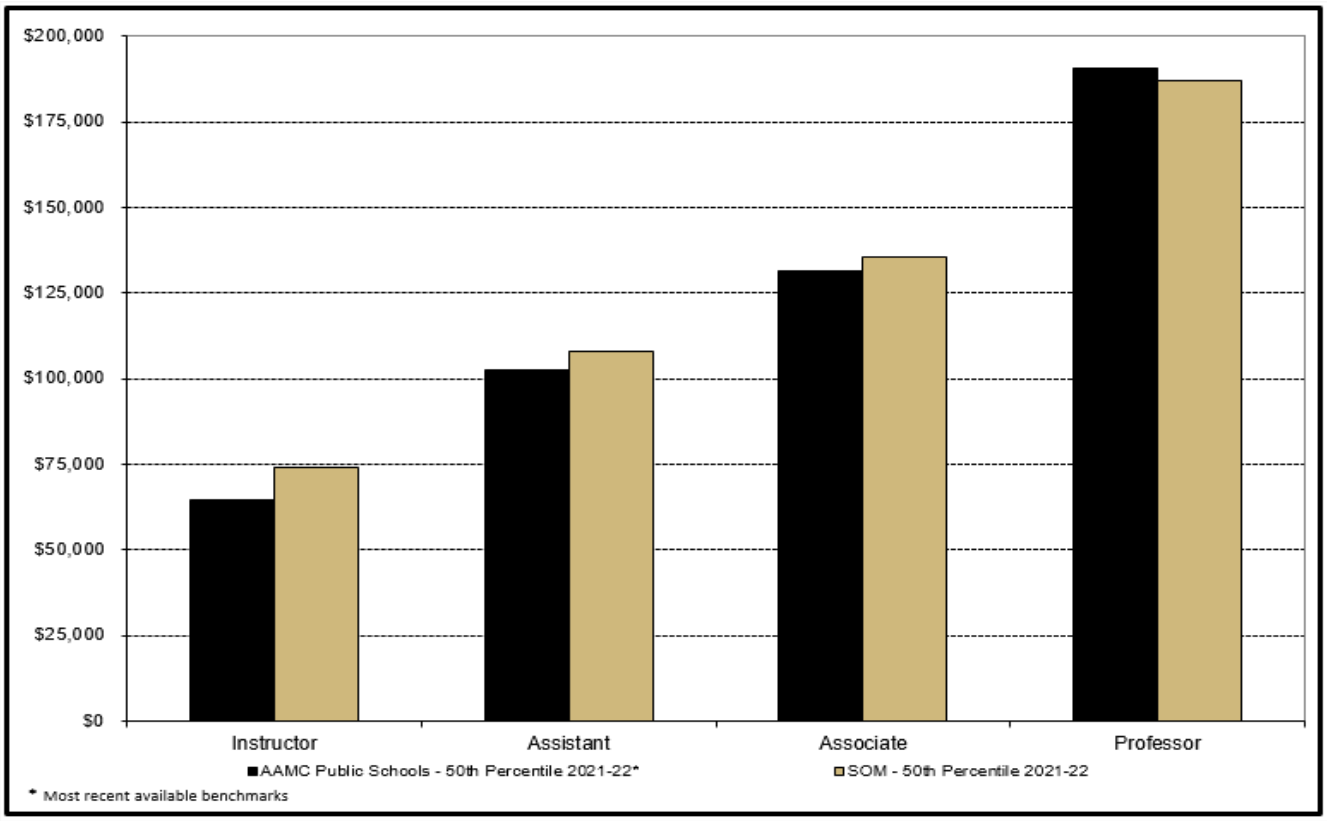


Source of School of Medicine Faculty Compensation

Fiscal Year 2022— 2023

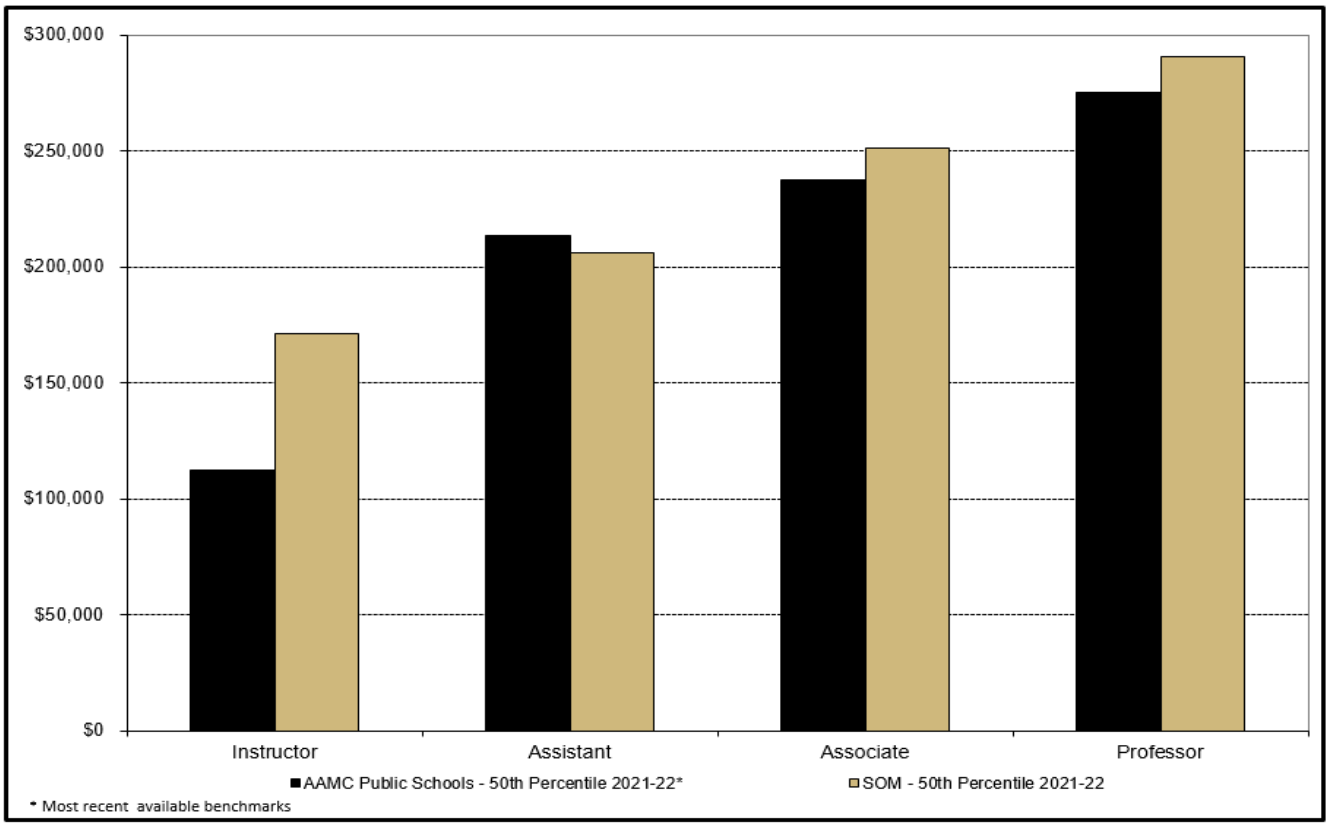


Comparison of Faculty Fixed Salaries to AAMC Benchmarks for Basic Science Departments



Source: AAMC Faculty Salary Survey 2021-22

Comparison of Faculty Salaries to AAMC Benchmarks for Clinical Science Departments



Source: AAMC Faculty Salary Survey 2021-22

CU School of Medicine Endowed Chairs

Department/Program	Total
Anschutz Health and Wellness Center	1
Barbara Davis Center for Diabetes	6
Ludeman Family Center for Women's Health Research	4
Charles C. Gates Center for Regenerative Medicine and Stem Cell	4
Colorado Prevention Center	1
Dean's Office	1
Linda Crnic Institute for Down Syndrome	1
University of Colorado Cancer Center	26
Webb-Waring Center	1
Department of Anesthesiology	3
Department of Biochemistry and Molecular Genetics	2
Department of Biomedical Informatics	2
Department of Dermatology	1
Department of Emergency Medicine	2
Department of Family Medicine	4
Department of Immunology and Microbiology	1
Department of Medicine	43
Department of Neurology	2
Department of Obstetrics and Gynecology	5
Department of Ophthalmology	8
Department of Orthopedics	3
Department of Pathology	1
Department of Pediatrics	3
Department of Pharmacology	1
Department of Physical Medicine and Rehabilitation	2
Department of Physiology and Biophysics	1
Department of Psychiatry	2
Department of Radiation Oncology	1
Department of Radiology	6
Department of Surgery	10
Total	**148**
Pediatrics Children's Hospital Colorado	58
University of Colorado Hospital	1

Source: Anschutz Medical Campus, Office of Advancement and Children's Hospital Colorado Foundation

Clinical Affairs

Clinical Affairs

The Office of Clinical Affairs partners with clinical leaders to strengthen the clinical practice of the faculty in the CU School of Medicine. Program integration with the school's affiliated partners promotes our collective ability to improve access to faculty expertise and provide safer, patient-centered care at the lowest possible cost. Our affiliated partners include: UCHealth University of Colorado Hospital, the UCHealth system, Children's Hospital Colorado, Denver Health, Veterans Affairs Eastern Colorado Health Care System, and National Jewish Health.

- **Anne Fuhlbrigge, MD, MS,** senior associate dean for clinical affairs, partners with associate Deans **Karen Chacko, MD, Christina Finlayson, MD, Jeffrey Glasheen, MD, Scott Laker, MD,** and Assistant Dean **Pete Smith, MD . Laker** and **Smith** serve in joint leadership roles with University of Colorado Medicine, which is the faculty practice plan. Laker is associate dean of adult health, medical director for community practice, and senior medical director for CU Medicine and Smith is assistant dean of adult health and medical director for the hospital-based practice and medical director for primary care.
- Adel Younoszai MD, the former associate dean for child health was recently appointed the chief of pediatric cardiology at Rady Children's Hospital, University of California San Diego, effective October 1, 2023. An active search is in progress for Younoszai's replacement.
- **Glasheen** serves as a leader in quality and safety education for the University of Colorado through his role as director for the Institute for Healthcare Quality, Safety, and Efficiency.
- **Chacko** leads clinical outreach, including the CU Medicine-UCHMG collaborative task force and directs digital health initiatives and expansion across the practice in her role as medical director of digital health.
- **Finlayson** continues as associate dean and CU Medicine senior medical director for population health with oversight of the Office of Value-Based Performance (OVPB) and Medicaid Supplemental Funding Program.
- **Lisa Neal-Graves, JD**, continues as CEO of the Aurora Wellness Community (AWC), a partnership between the CU Anschutz Medical Campus and the Aurora community that aims to improve access to primary care for underserved populations in Aurora.
- The **Clinical Leadership Council**, comprised of the School of Medicine vice chairs and associate center directors for clinical affairs, provides additional clinical leadership.

This year, we welcome John Eddy, associate dean of community practice for the School of Medicine and vice president of community practice for CU Medicine. John has over 20 years of health care leadership experience, including technology initiatives, physician burnout programs, patient satisfaction, and improved quality of care. He looks forward to his new role and the opportunity to contribute the success of the CU Medicine Community Practice Division. In FY23, the Community Practice Division (CPD) saw 330,245 completed appointments, representing over 15% growth in appointment volume.

This year, we also welcomed Paul Rohrer to the Clinical Affairs team to serve in a new role, the director of access for CU School of Medicine. He was recruited from the University of Kansas. As the Health System Director at KU, he led the Office of Access Management. Through his leadership, we are looking at innovative ways to improve practice efficiency and expand access. For

example, in collaboration with UCHealth CAST (Centralized Access Support Team), we expanded a pilot project across the hospital-based outpatient departments. Each quarter, performance across metrics including percentage of new patient visits scheduled within 14 calendar days (new, return, and composite), schedule fill rate, encounters per room hour, online scheduling rate, same-day cancellations rate, no-show rate, and patient experience, are reviewed across cohort groups. Local dyad leadership reviews performance, sets goals for the next quarter and implements action plans to support individualized improvement opportunities. Some highlights from this work over the past year include 296 total daily visit opportunities added. In another advancement, effective in March 2023, School of Medicine faculty now have the ability for providers to convert patient-initiated MyChart medical advice messages into message visits under specific billable categories, including addressing a new issue, symptom requiring medical assessment or referral, adjusting medications, chronic disease check-in, flare-up or change in chronic condition, or a request to complete a form. While we have elected not to bill for the time being, providers are receiving RVU credit to reflect their efforts.

In the adult health practice, the number and variety of community-based practices continue to grow.
We now have six Community Primary Care Practices (Depot Hill, Cherry Creek, Centennial, Landmark, Park Meadows, and Women's Integrated Services in Health (WISH). Additionally, the Landmark practice is moving into an expanded modern facility in fall 2023. Depot Hill will follow suit soon after changing their name to reflect their new location, Louisville. Specialty practice locations are available across Denver metro, including Broomfield, Inverness, Aurora, and the south metro area. The Highlands Ranch Hospital, including a multispecialty medical office building, allows for a variety of services in that community. These community-based practices bring access to care closer to where our patients live and work.

The past year has seen continued collaboration with our UCHealth partners, including the Hospital Discounted Care (HDC) program. Hospital Discounted Care, also known as Health Care Billing Requirements for Indigent Patients, became effective on Sept. 1, 2022, and created discounted medically necessary care for Colorado residents who fall below 250% of the federal poverty level. This law states that Health Care Facilities (hospitals and hospital outpatient departments) and the providers that work in those locations may not deny care based solely on the ability to pay. CU Medicine and UCHealth have partnered to provide equitable access and build efficient pathways to provide financial counselling, administrative support, and access to providers to deliver this much-needed care. Additionally, we make patients aware of any public health benefits they may qualify for. This law has created increased access for low-income and indigent patients across the state, not just in our institution. CU Medicine and UCHealth have a long-standing commitment to providing charity care to the Colorado community. We are proud to be a part of this program and the benefit it provides to our patients. We estimate that our Adult Health divisions have contributed over $40 million to this program and our Child Health divisions have contributed nearly $3 million in discounted care to the HDC program in its first year in operation. Additional high priorities of collaboration include improving patient flow across the continuum of care, expanding team-based care, and enhancing both patient experience and provider well-being through redesign of the patient portal.

Over the past 10 years the number of CU Advanced Practice Providers (APP) has more than doubled and now represents approximately 1/3 of the total faculty. Recognizing the needs of this important and growing part of the clinical faculty, the Clinical Affairs Office, collaboratively with our hospital partners have reorganized and expanded the Office of Advanced Practice (OAP) leadership structure. New directors of adult health and child health positions have been created and will be supported by several associate directors aligned with the CMO offices of each hospital partner. Bodies of work will include professional development, academic advancement, APP scope of practice, and practice optimization. The OAP is excited to advance and lead in APP personal and pro-

gram development across the campus.

The Office of Clinical Affairs works closely with the Office of Value-Based Performance (OVPB), led by Lisa Schilling, MD, Aaron Van Artsen, MLRHR, and Finlayson. The OVPB continues to support the School of Medicine faculty in providing the highest quality medical care while controlling health care spending costs. In CY2022, UCHealth and Intermountain Health entered a joint venture accountable care organization (ACO) named Trinsic. CU Medicine continued its past participation with the UCHealth ACO through this new organization. In January 2023, this included renewed participation in the CMS Medicare Shared Savings Program (MSSP). This collaboration increases alignment with our adult health hospital partners in quality and value activities.

The Medicaid Supplemental Funding Program, also known as UPL, is a University of Colorado School of Medicine initiative designed to expand access to care and improve outcomes for Health First Colorado (Colorado Medicaid) members. This program is funded by the Centers for Medicare & Medicaid Services (CMS) through the Colorado Department of Health Care Policy & Financing with priority areas of access to primary and specialty care for Medicaid patients, medical home care delivery model, behavioral health services, outreach to rural and frontier areas, transitions of care programs, and implementation of evidence-based programs that expand access and improve outcomes. In addition to supporting direct patient access, the more than 90 targeted investments reach broadly across adult and child health from local support of homeless services that identify housing resources to statewide engagement through ECHO peer-mentored education, telemedicine to hospitals, clinics, and patient homes, and childhood asthma, diabetes, and celiac screening and intervention. Highlighted programs include:

- Expanding Access to Mental Health Treatment for Refugees and Traumatized Immigrant Populations: The Immigrant Refugee Mental Health Program has been providing culturally sensitive services in support of refugees from over 25 nations since 1999. Supplemental Support Program funding was obtained in 2020 allowing for the expansion of the clinical care team that now includes a social worker, psychiatrist, therapist, a triage counselor, and an evaluator.
- Rural Track and Diversity Scholarships. Significant investments have been made in state fiscal year 2022-23 for Rural and Diversity Scholarships for medical (MD) students at the University of Colorado School of Medicine. These scholarship dollars are crucial to recruiting the most talented students from diverse backgrounds. Since this program's inception, there have been more than 71 students granted full or partial tuition scholarships in the MD program. The first funding year group graduated three MD candidates in June 2023.
- Collaborative Initiatives. The CU School of Medicine and the Department of Health Care Policy and Financing work together to define, implement, and evaluate collaborative projects that work to increase access to care and improve outcomes for populations with complex health care needs across the state. Specific Collaborative Initiatives undertaken in state fiscal year 2022-23 included Unhoused Transitions of Care Program, Jail Transitions of Care Program, STRIDE Healthcare in the Community, and Ascending to Health Respite Care.

The virtual/digital health explosion continues to push the clinical frontier and offers expanding options to meet our patients where they are in their health journeys. In partnership with UCHealth, Children's Hospital Colorado, and their virtual health teams, this past year has led to advances in providing services to all patients from the comfort and safety of their homes or a location of their choosing, and especially to areas in Colorado that cannot easily access traditional face-to-face specialty care. Areas of work include:

- Evaluating streamlined approaches to DocLine calls.

- Monitoring and adjusting the workflows for messages from patients via MyHealthConnection.
- Defining and expanding the applications for remote patient monitoring technologies.
- Advocating for digital/asynchronous work to count toward access measures and to be billable when meeting criteria.
- Exploring options to move inpatient consult work to asynchronous workflows when it safe and effective.
- Increasing the specialist pool and volume of remote second opinion programs to showcase our faculty expertise and find patients who can benefit from our care.

The Peer Mentored Care Collaborative (PMCC) led by John F. Thomas, PhD, continues to expand a health care delivery model that focuses on the primary-specialty care interface. The PMCC houses ECHO Colorado (Extension for Community Health Outcomes) and the CORE program (Coordinating Optimal Referral Experience), which includes the eConsult program.

eConsults are an asynchronous data-informed exchange initiated by a primary care provider (PCP) to a CU School of Medicine specialist allowing the PCP to seek clinical guidance on a patient's care to maintain care continuity in the primary medical home with collaborative expertise. It allows increased access to specialty care at a lower cost by reducing unnecessary transfers, decreasing care fragmentation and redundancy of testing. This care delivery model allows for care that can more broadly meet the patients where they are and be responsive to potential individual barriers to care. During FY23, a total 7,165 eConsults across 27 Adult Specialties, 22 Child Health Specialties were performed, a 13.8% increase from FY 2022. The external pivot allows several prominent Federally Qualified Health Center partners to place eConsults to Anschutz Medical Campus-based specialists through a bridge from electronic health records. Use of the external pivot by Salud Family Health Centers, Peak Vista Community Health Centers in Colorado Springs, High Plains Community Health Center, Valley Wide Health Systems, and AllHealth Network continues to grow.

Participation in ECHO Colorado increased 56% across Colorado with 54% of participants served coming from medically underserved populations, 20% of participants served from rural or frontier counties, 61% of participants served from the Medicaid population. ECHO allows the Anschutz Medical Campus to engage, train, and support a broad swath of care providers, allied staff, and administrators in many topics to help health care systems continue to incorporate best practices, aid in the adoption of new/innovative care models, and practice top-of-scope diagnostics and treatment approaches. During FY23, 39 unique ECHO series were offered, training thousands of providers promoting professional collaboration, increased access to specialty care and empowering providers through tailored didactic learning and care support to expand care in the primary care medical home. Through these programs, the PMCC supports PCPs across the state to provide better access to care for their members, integrate best practices in the primary-specialty care interface, decrease overall health care expenditures, and prevent disease exacerbation.

The child health practice continues to expand its presence in the Mountain West region. Partnering with Children's Hospital Colorado, the faculty support children who need specialized care in surrounding states and beyond. An area of continued focus is the coordinated transition of patients as they age out of the child health practice. The ImPACT (Improving Pediatric to Adult Care Transition) Program led by co-directors William Anderson, MD, and Jennifer Disabato, DNP. The program was developed to "support and advocate for all young people and their families during the transition process from pediatric to adult healthcare through inclusion, education and collaboration." A core element of successful delivery of quality transition care across settings, the ImPACT Navigation Hub (INH) is comprised of an RN care coordinator, social worker, and family health navigator. The focus of the INH is two-fold: 1) Individual coaching, with identified clinic champions to support and provide structure to transition/transfer processes and tools

aligned with ImPACT objectives, and 2) Direct referrals for the most complex patients, integrating the patient/family goals for individualized transition of primary and specialty care and addressing logistical barriers to achieve successful transfer. Patients referred to the INH have the most complex needs, often seeing 3 or 4 subspecialties.

The Institute for Healthcare Quality, Safety, and Efficiency (IHQSE) resides in the Office of Clinical Affairs and offers multiple distinct training programs in quality, safety, and health system leadership. Since 2012, the IHQSE has trained over 3,000 doctors, nurses, and staff on the Anschutz Medical Campus. In 2022, the IHQSE began to offer training programs across clinical partners' health systems, as well as to a national audience, garnering participants from nearly 100 different hospitals. The Certificate Training Program in Health Quality Transformation is a yearlong, intensive leadership training program in quality and safety, which has trained over 125 clinical teams from UCHealth University of Colorado Hospital and Children's Hospital Colorado. This training and practical project experience has led to significant improvements in outcomes, reductions in length of stay, enhanced clinic flow, and less medical and surgical harm. The Quality and Safety Academy, which offers an introduction to patient safety, case review, just culture, and improvement work, was has served over 800 participants, primarily resident and fellow learners. The Improvement Academy supports individuals and teams working on quality improvement projects. This course offers two days of structured didactic sessions and application to project work along with longitudinal coaching. Facilitative Leadership is a two-day development course for early-phase leaders. Foundations in Healthcare Leadership is a more extensive four-day leadership development program that is supplemented by one year of executive coaching. In 2022, the Clinical Effectiveness and Patient Safety Grant Program (CEPS) was moved under the IHQSE. The CEPS grant program offers grants of up to $25,000 to faculty, trainees, and staff to pursue innovations, improvements, and research in quality and safety. In 2023, IHQSE launched the Quality Improvement Writing Group, which provides a structured, mentored approach to help authors move their quality improvement and patient safety outcomes toward publication.

The Aurora Wellness Community (AWC) continues in its mission to build health, wealth, and well-being for Colorado residents who surround the Anschutz Medical Campus (zip codes 80010, 80011, and 80012). In FY23, through the support of the CU Board of Regents, we received approval to create AWC as a nonprofit 501(c)(3) entity. Additionally, we have engaged expert consultants in our five community-influenced pillars, health care, food access and security, housing, generational care, and community building, leveraging strategic expertise to bolster our impact and ensuring that our initiatives are grounded in evidence-based practices and informed decision-making. These consultants play a vital role in identifying key community-based entities that align with our mission, making them potential partners in our journey toward holistic well-being. In addition, we are recruiting the inaugural medical director for the Aurora Wellness Community Clinic and preparing to launch the health center in early 2024. The health center will expand our reach and provide much-needed care to the community.

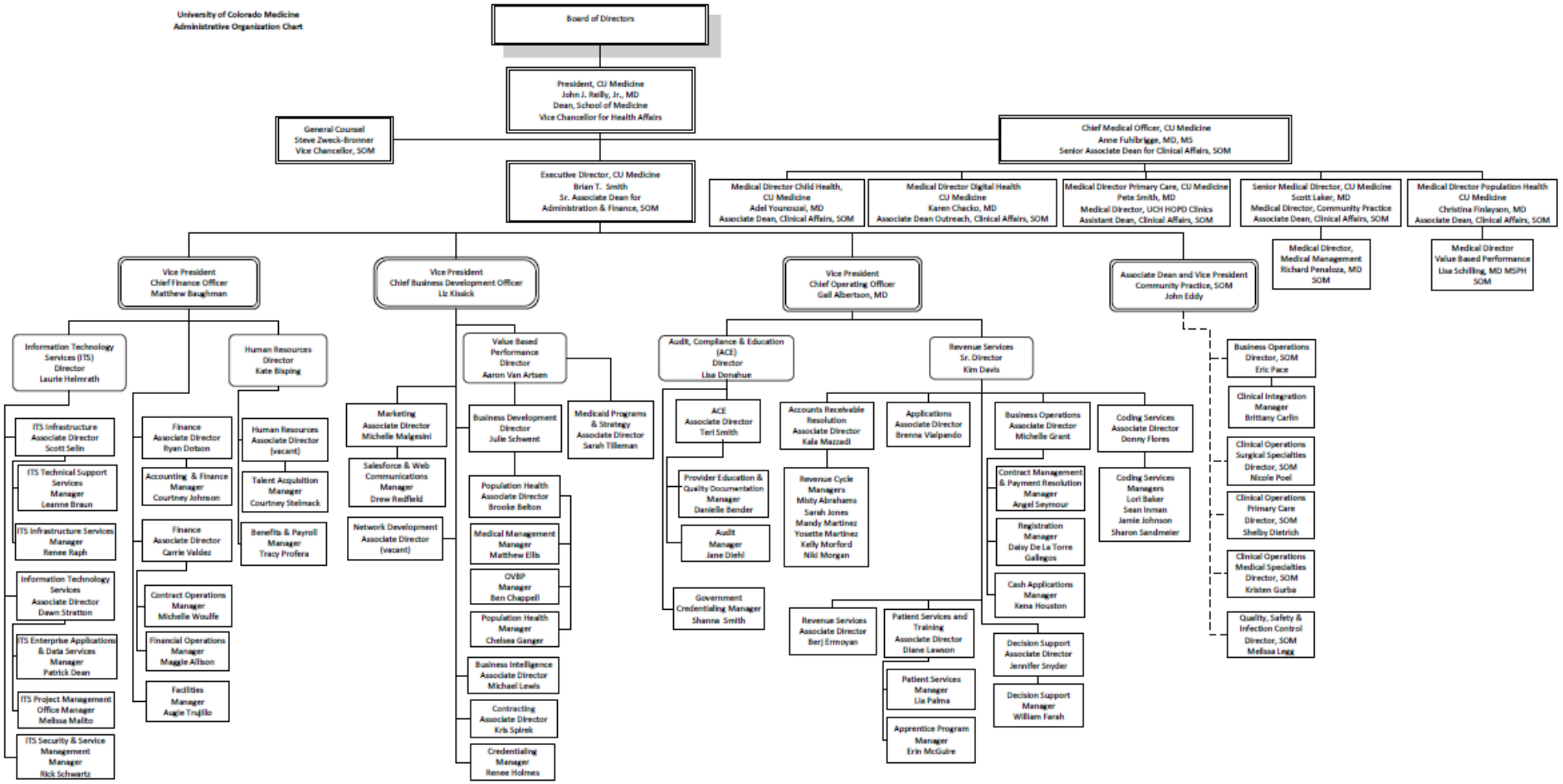
CU Medicine

University of Colorado Medicine (CU Medicine) is a 501(c)(3) practice organization that supports the clinical practice of the CU School of Medicine by providing business infrastructure services. The President of CU Medicine is **John Reilly, Jr., MD,** and the Executive Director is **Brian T. Smith, MHA.**

CU Medicine services include managed care contracting, revenue cycle management, compliance, business development and financial services for physicians and advanced practice professionals, as well as infrastructure for population health and the community practice division. All faculty of the CU School of Medicine are members of CU Medicine. The organization is governed by a board of directors chaired by the Dean of the CU School of Medicine. The board is comprised of the chairs of clinical departments, a basic science chair, elected faculty representatives, and designees of the Children's Hospital Colorado and UCHealth University of Colorado Hospital.

In October 2016, the UPI board approved using University of Colorado Medicine as the name of the practice plan to recognize that the organization represents all faculty of the University of Colorado School of Medicine, including physicians and advanced practice professionals.

On the following page is a current organization chart.



* SOM = Employee of University of Colorado School of Medicine

Updated: July 2023

CU Thrive

Enhancing the Faculty Experience through

CU THRIVE

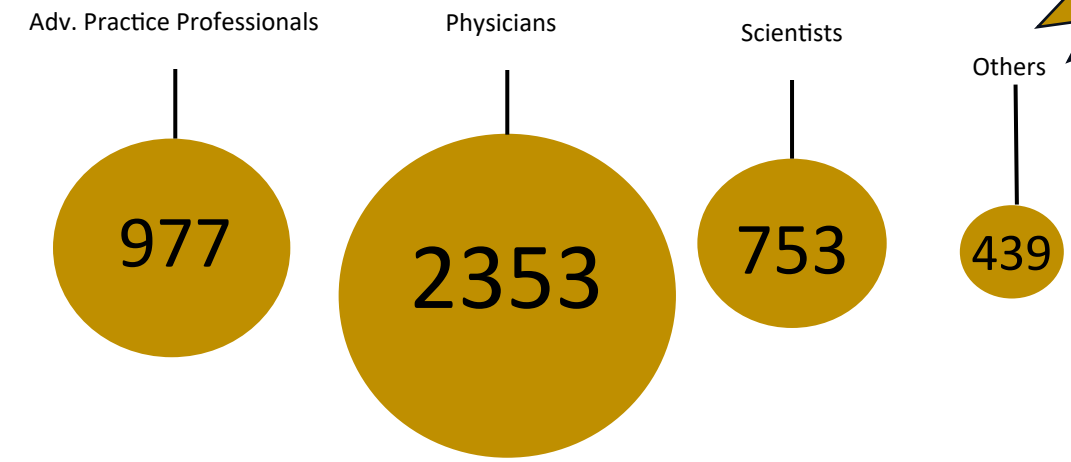
By optimizing meaning and purpose, offering growth and development, building connection and support, and aligning culture, values, and actions, we will become the destination for top diverse talent to discover, care, learn, and serve.

 **Leadership**	• Chief Well-being Officer strategy to improve faculty well-being • 23 funded Departmental Well-being Leaders • CU SOM Well-being Leader Action Collaborative Team (ACT)
 **Measurement**	• Commitment to a data-informed strategy and continuous learning • Regular cadence of surveys with national benchmarks • Transparent sharing of findings
 **Action**	• Commitment to a data-informed strategy and continuous learning • Regular cadence of surveys with national benchmarks • Transparent sharing of findings
 **Faculty Affairs**	• Streamlining faculty appointments and promotion process • New approach to promoting professionalism • 7 distinguished CU SOM clinicians selected & celebrated
 **DEI**	• New strategy with a focus on workforce diversity, talent success, culture, climate and community, and data-driven action • New directors for UME & GME DEI • 16 Departmental DEI leaders
 **Faculty Development**	• New onboarding curriculum for 22 CU SOM leaders • Academy of Medical Educator Symposium with 11 workshops, 17 oral abstracts, and > 50 posters • 5 Rymer medical education innovation awards • 50 faculty enrolled in Women's Leadership Training program

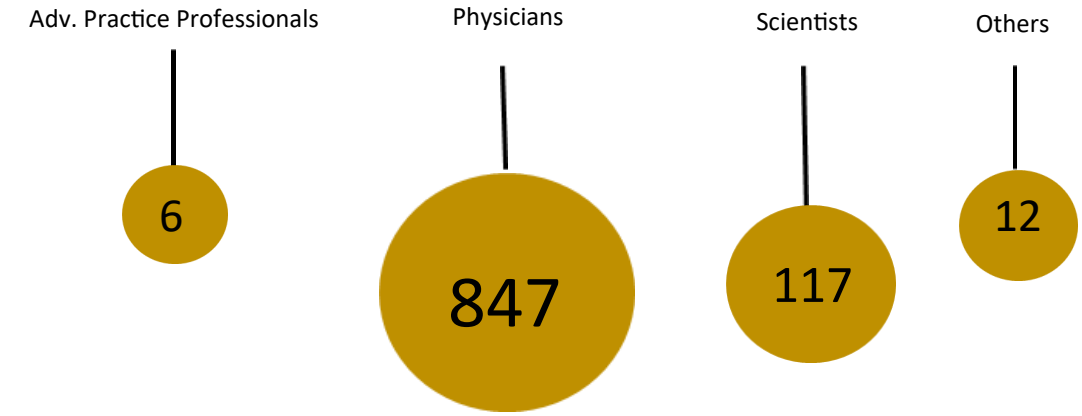
FACULTY BY THE NUMBERS

Paid by the University

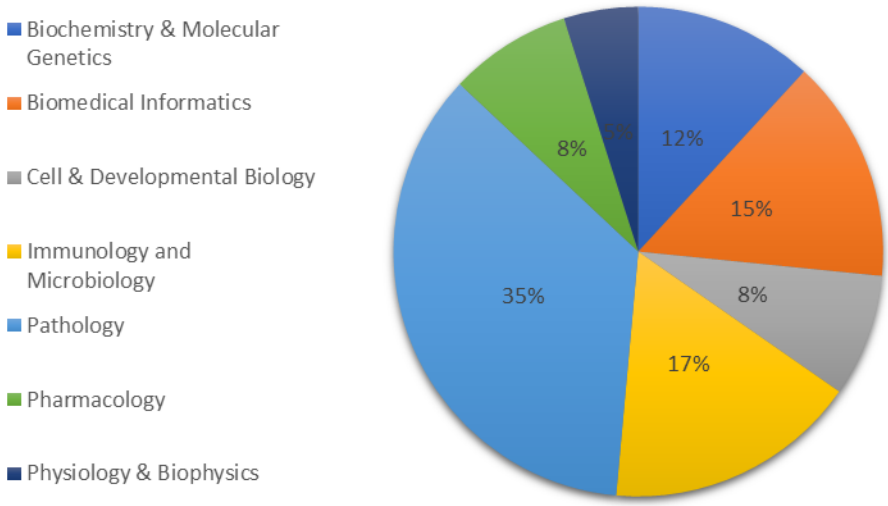
533 new faculty hired, 2023



Paid by clinical affiliates



FACULTY IN BASIC SCIENCE DEPARTMENTS

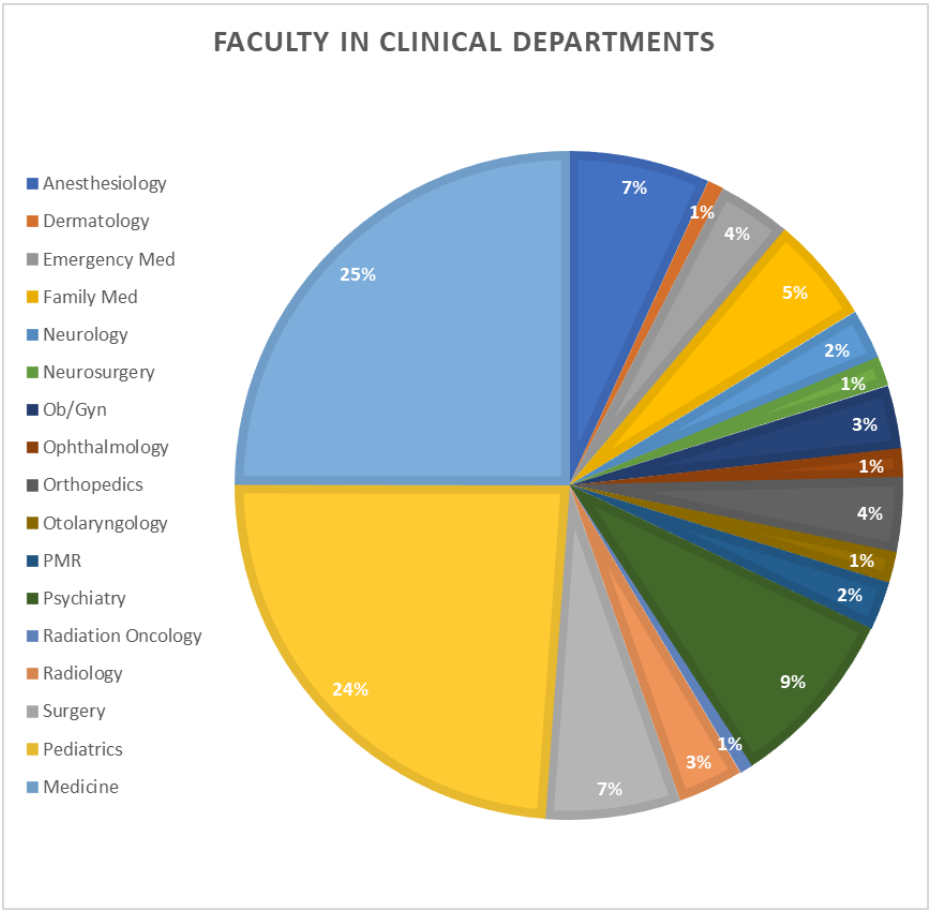


Plus…

2973 Volunteer Clinical Faculty

488 < 50% FTE Paid Clinical Faculty

FACULTY BY THE NUMBERS



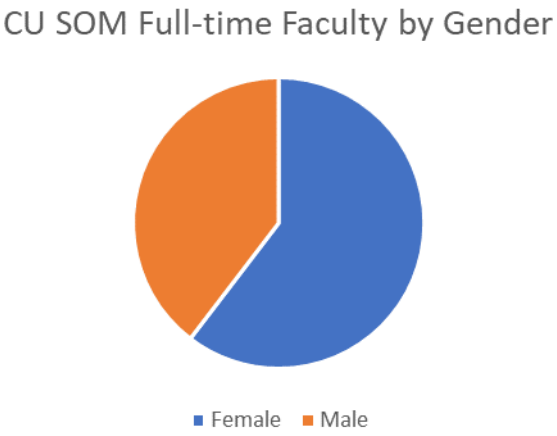
Faculty in Dept. of Medicine

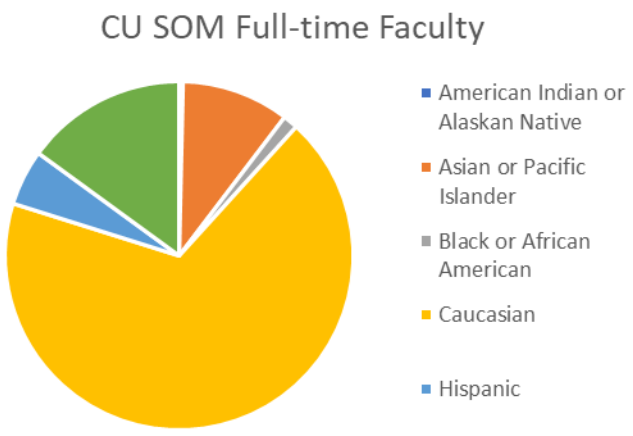
1288

1231

Faculty in Dept. of Pediatrics

Faculty Diversity





FACULTY BY THE NUMBERS
Academic Promotion, 2023

Dossiers reviewed | Associate Professor | Professor

Thanks to all departmental & SOM reviewers!

Faculty Relations

102 referrals for allegations of unprofessional behavior or conduct
16 Professional values & conduct presentations
1 Individual Conduct & Values Consult
11 referrals for SOM Peer Support

"We are committed to promoting, developing, and maintaining positive working relationships."

Faculty Awards

Distinguished Clinician's Awards Honoring physicians and APPs for the care they	Faculty Professionalism Award Honoring faculty who serve as a role model
Denise Abdoo, PhD, CPNP, MSN Keri Halsema, RN, NP, MSN Glen Peterson, RN, DNP, ACNP Rachel Davis, MD Manali Kamdar, MD Michael McDermott, MD David Partrick, MD	Matthew Wynia, MD, MPH

Office of Faculty Affairs Leadership

Steve Lowenstein, MD, Associate Dean of Faculty Affairs
Abbey Lara, MD, Assistant Dean of Faculty Relations
Cheryl Welch, Director of Faculty Affairs

DIVERSITY, EQUITY, AND INCLUSION

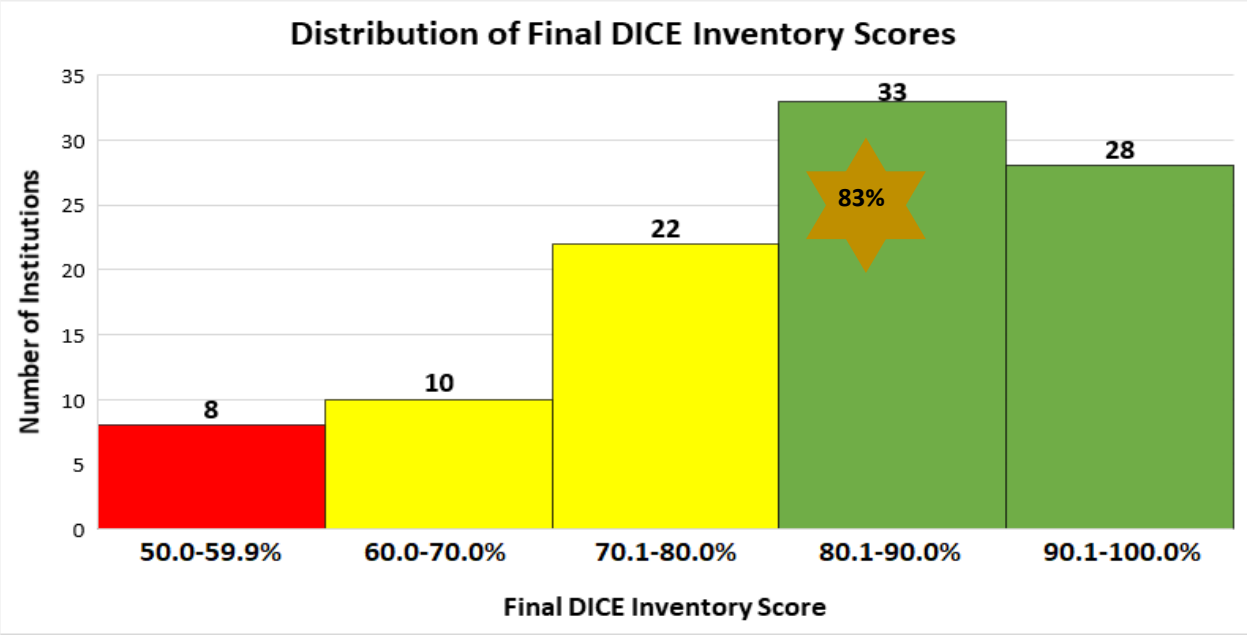
"Our goal is to build and support a diverse student body & faculty who feel their voices are heard, validated for their identities and contributions, and respected."

Amira del Pino-Jones, MD

 **Workforce Diversity**	• 29 completed BA/BS-MD program • Entering class of CUSOM has included 25-30% students from • underrepresented backgrounds for last 8 years • 5% of faculty identify as Hispanic, 12% of faculty identify as American Indian or Alaskan Native, Asian or Pacific Islander, or Black or African American, • 12 women Department Chairs
 **Talent Success**	• Supported ~240 first-generation medical students through FirstUP mentoring • 23 CU SOM Executive Leadership in Academic Medicine (ELAM) graduates to date • Faculty sponsored to attend external leadership development • Multiple local and national DEI award nominations
 **Culture, Climate, & Community**	• 16 departmental diversity leaders, promoting cultures that values and supports DEI, increasing the retention of diverse individuals, engaging in pathway programming and community events, and conducting DEI research • Support 7 student and resident-led affinity groups • Provide consultations and training in holistic review, implicit bias, microaggressions, and allyship • Dean-appointed School of Medicine Diversity Council guides efforts
 **Data-driven Action**	• Building accountability • Collecting data on learner and faculty experience • Building trust through transparency • Evidence-informed DEI strategies • Sharing learnings at ACGME annual meeting

DIVERSITY, EQUITY, AND INCLUSION

AAMC Diversity, Inclusion, Culture, and Equity (DICE) Benchmark Report for CU SOM



The DICE Inventory contains 89 questions, organized into six overall content areas sections and 15 subsection areas. The benchmarking report compares our progress relative to 100 other participating schools in areas such as leadership structure, mission, vision, and values, strategic planning, DEI policies, communication and engagement, culture and climate data collection and reporting, faculty and staff recruitment practices, DEI curricular and cocurricular experiences, and student development.

CU SOM score of 83% indicates substantial DEI efforts have been made.

DEI Leadership

Amira del Pino-Jones, MD, Associate Dean of Diversity, Equity, and Inclusion

Maurice Scott, MD, Director of Undergraduate Medical Education, DEI

Departmental DEI Leaders

ACADEMY OF MEDICAL EDUCATORS

"We are committed to inspiring, developing, recognizing, and supporting our community of faculty educators."

The Academy of Medical Educators provides a home base for teachers and a visible mechanism to support and enhance all educational programs and teachers at the University of Colorado School of Medicine. Our goals include:

- To enable faculty to teach & assess learners, create innovative curricula, be transformative leaders, and conduct medical education science
- To promote mentoring and collaboration
- To build community among educators
- To recognize educators

Teaching Scholars Graduates

Under the leadership of **Chad Stickrath, MD,** and **Helen MacFarlane, MD** participants are trained in curriculum development, program evaluation, and medical education scholarship.

Resident and Fellows as Educators Elective

Under the leadership of **Nicole Dyess, MD** residents and fellows learning how to become better educators.

AME Members

>17 departments
7 faculty in Basic Science
13 faculty in Emergency Med
17 Surgeons & Anesthesiologist
35 faculty in Dept. of Medicine
23 faculty in Dept. of Pediatrics
10 faculty in Family Medicine
4 faculty in PMR & PT
2 faculty in Psychiatry
3 faculty in Pathology
3 faculty in Radiology

Visiting professors –

Tony Artino, PhD, Associate Dean for Evaluation & Educ. Research, George Washington University School of Medicine and Health Sciences
Carrie Chen, MD, PhD, Associate Dean of Assessment and Educational Scholarship, Georgetown University

ACADEMY OF MEDICAL EDUCATORS

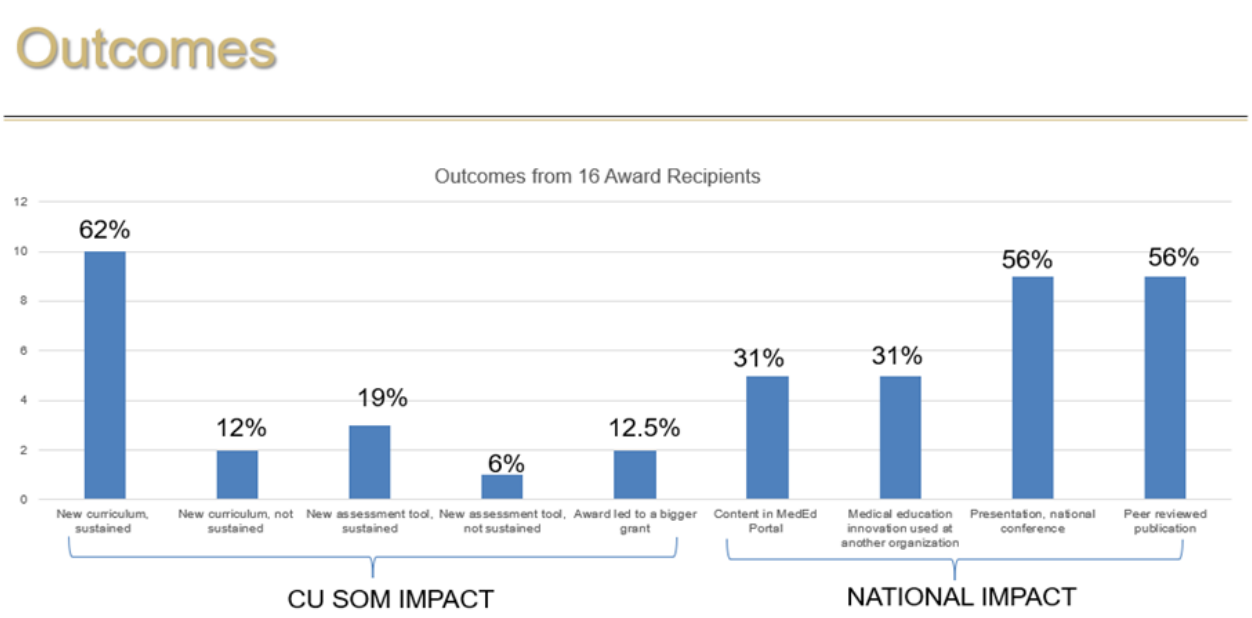
The Academy of Medical Educators supports medical innovation and scholarship in medical education with innovation awards made possible by the **Rymer Family Endowment** at the CU Foundation. We are grateful to Drs. Robert and Marilyn Rymer for their generosity and investment in medical education and innovation at the School of Medicine.

	2009	*2012*	*2015*	*2018*	*2021*	*CURRENT*
AWARDEES	*5*	*10*	*12*	*18*	*14*	*5*
DOLLARS	*$12,830*	*$43,600*	*$40,000*	*$48,000*	*$43,800*	*$14,000*
TOTAL		$56,430	$96,430	$144,430	$188,230	$202,230

Rymer Innovation Project Topics

- Well-being of learners
- Assessment of learning
- Technology
- Attending teaching
- Curriculum
- Learner remediation
- Mentoring of learners
- Culturally competent care
- Career satisfaction

Rymer Innovation Project Outcomes



WORK & CULTURE OPTIMIZATION

"Together, we are innovating to optimize faculty well-being through human-centered redesign of academic life."

Survey of Faculty	Findings shared & discussed	Strategies gener-ated	Action planning & implementation

DEPARTMENTAL WELL-BEING ACTION

Infra structure & strategic planning	Culture & Values	Connection, collegiality, and community	Work optimization	Growth & development
23 Dept. Well-being Leaders	Recognition & appreciation Leadership pipeline Salary Gender Equity Transparent communication Work life integration	Faculty book club DOM@theTable Balint groups Wellness retreat Coffee cup conversations New faculty orientation Peer support	Email reduction In-basket Mini pilot grants OR/clinic scheduling Check out specialist Unanticipated event algorithm Innovation thinktank	Coaching Mentorship

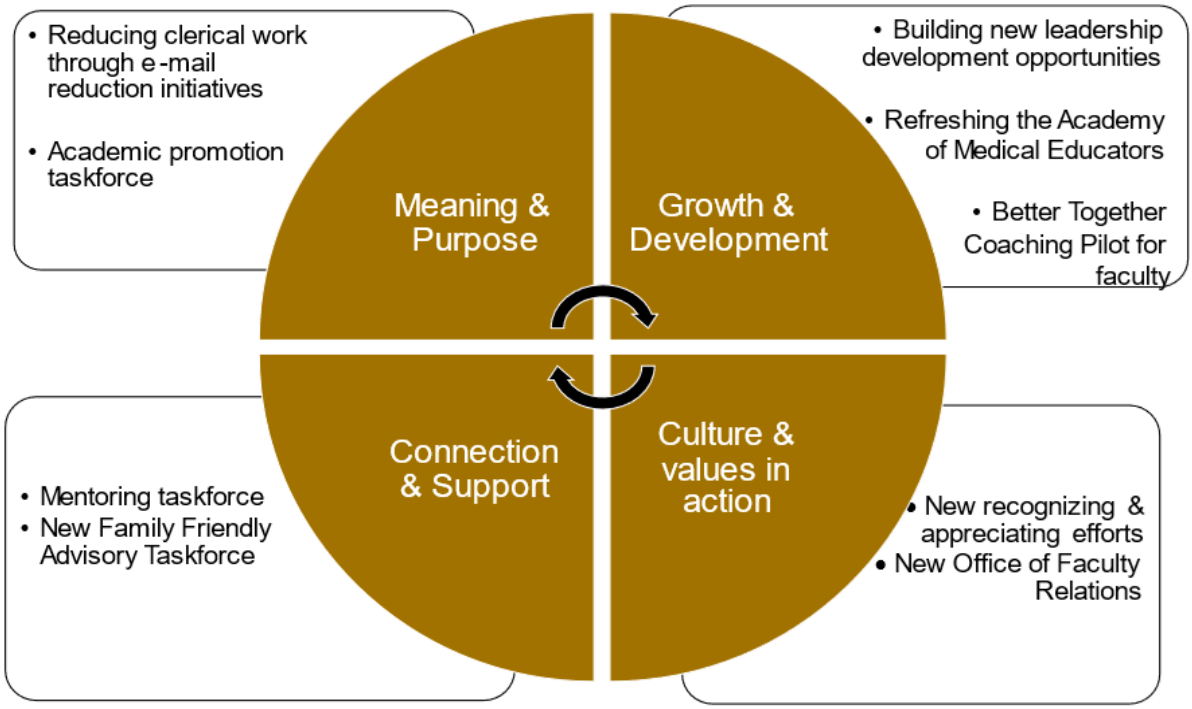
New:

CU SOM Well-being Leader Action Collaborative Team

- A forum to accelerate progress improving the work environment by sharing departmental initiatives, shaping and participating in CU SOM initiatives, and partnering with clinical affiliate well-being leaders and other stakeholders.

WORK & CULTURE OPTIMIZATION

CU SOM WELL-BEING ACTION



Special thanks to…

Family Friendly Advisory Taskforce

Task:

- Describe the challenges faculty face w. respect to parental leave & lactation
- Provide national benchmarks re parental leave & lactation
- Propose and prioritize actions for the SOM

Chairs: Drs. Annie Moore and Nicole Christian

Mentoring Taskforce

Task:

- Determine faculty needs re. mentoring,
- Gather best practices
- Propose a departmental/school of medicine strategy

Chair: Dr. Niranjan Manoharan

Academic Promotion Taskforce

Task:

- Gather national benchmarks for academic promotion to Associate and Full Professor
- Propose and prioritize actions for the SOM with respect to the dossier, tracks/ nomenclature, review processes, and clock

Chair: Dr. Sunita Sharma

Coaching Pilot

Faculty are participating in group coaching used the evidence-based Better Together web-based coaching program. Data collection is on-going, and this will be scaled across the SOM if shown effective.

Leads: Drs. Tyra Fainstad and Adrienne Mann

Work & Culture Optimization Leadership

Lotte Dyrbye, MD MHPE, Senior Associate Dean of Faculty and Chief Well-being Officer
Elizabeth Harry, MD, Assistant Dean for Faculty Well-being, CU SOM & Senior Medical Director of Well-being, UCHealth
Jenny Reese, MD, Assistant Dean for Faculty Well-being, CU SOM, Medical Director of Well-being, CHCO & VC Faculty Well-being, Department of Pediatrics
Departmental, Divisional/Sectional Well-being Leaders

Education

Education

The education programs at the School of Medicine are under the leadership of **Shanta M. Zimmer, MD,** Senior Associate Dean for Education. The University of Colorado School of Medicine is committed to lifelong and interdisciplinary learning for health care professionals. We have many programs to serve the needs of undergraduate, graduate, and post-graduate students, beginning with pathway programs in middle schools to attract and prepare a diverse and talented applicant pool to the health professions. Students graduating from the MD program match into competitive residencies across the country and many are recruited to positions in our Graduate Medical Education programs, which offer outstanding training for residents and fellows. Once graduates complete their training as physicians, physician assistants, physical therapists, and anesthesia assistants, the Office of Continuing Medical Education offers lifelong educational programs designed to improve competence, performance, and health outcomes. The following pages reflect information on the school's educational programs including Anesthesiology Assistant; Center for Advancing Professional Excellence; Child Health Associate/Physician Assistant; Genetic Counseling; Graduate Medical Education; Office of Continuing Medical Education and Professional Development; Physical Therapy; and Undergraduate Medical Education.

Anesthesiologist Assistant Program

The University of Colorado's Master of Science Program in Anesthesiology is a rigorous 28-month graduate-level program housed within the Department of Anesthesiology. When the first class matriculated in the fall of 2013, the program was the ninth of its kind in the United States. There are now 20 Anesthesiologist Assistant programs offering similar degree programs: 15 accredited programs and 5 programs undergoing accreditation.

The program is divided into two phases: A 16-month integrated didactic and clinical curriculum followed by a 12-month, mostly clinical phase. Before transitioning to the clinical phase, students must have completed four semesters of basic science and general and advanced anesthesia curriculum. Upon graduation, students will have over 2,700 clinical training hours, not including simulation. Students sit for the national certifying exam provided by the National Commission for Certification of Anesthesiologist Assistants (NCCAA) before graduation. Students who complete the program requirements are awarded a Master of Science degree in anesthesiology from the University of Colorado School of Medicine.

Mission

The mission of the Master of Science in Anesthesiology Program is to educate and train highly skilled anesthesiologist assistants in the cognitive, psychomotor, and affective learning domains so they can work within the anesthesiologist-led anesthesia care team to provide quality patient care.

Leadership

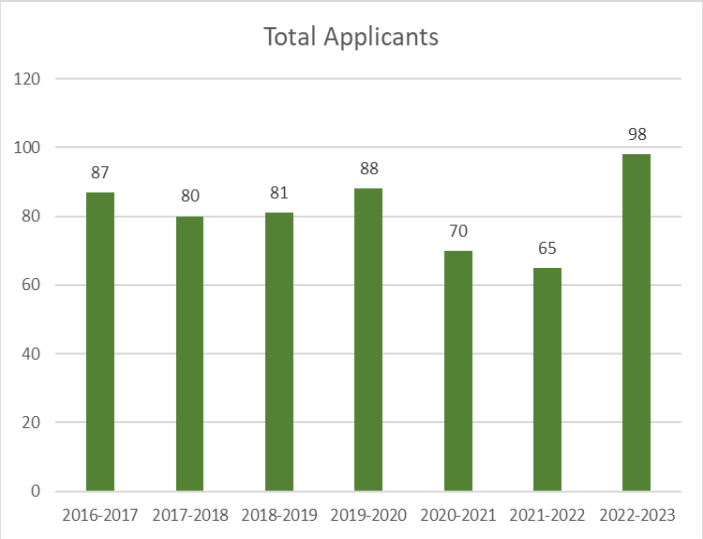
Vesna Jevtovic-Todorovic, MD, PhD	Chair, Department of Anesthesiology
Anthony Oliva, MD, PhD	Interim Vice Chair of Education, Department of Anesthesiology
Jaime Daly, MD	Medical Director
Jillian Vitter, MD	Associate Medical Director
Luke Eaton, CAA, M.H.Sc	Program Director
Serena Younes, CAA, MSA	Associate Didactic Program Director
Rachel Johnson, CAA, MSA	Associate Clinical Program Director
Amy Hebbert	Program Manager
Lauren Pratt	Program Coordinator

Website

The website is updated regularly to reflect the changes in staff, program outcomes and the new class.
https://medschool.cuanschutz.edu/anesthesiology/education/anesthesiologist-assistant-program

Student Overview

When the fall 2023 semester began, the MS-Anesthesiology Program had 42 students enrolled. The MS-Anesthesiology Program has had eight graduating classes and a total 84 graduates. Below is the historical data for total applicants, current student demographics, student demographics at matriculation and the graduation and certification rates.



Graduation & NCCAA Exam			
Class	**Graduated**	**Pass**	**Fail**
2022	**12**	**12**	**0**
2021	**13**	**13**	**0**
2020	**12**	**12**	**0**
2019	**13**	**13**	**0**
2018	**11**	**11**	**0**
2017	**10**	**10**	**0**
2016	**7**	**7**	**0**
2015	**6**	**6**	**0**
Total	**72**	**72**	**0**
Pass Rate	**100%**	**100%**	**100%**

Current Student Demographics			
	Class of 2023	**Class of 2024**	**Class of 2025**
Students	**11**	**15**	**16**
Male : Female	**4:7**	**6:9**	**4:12**
In-State	**8**	**12**	**8**
Out-of-State	**3**	**3**	**8**

Student Demographics ***at Matriculation***								
	Class of 2018	**Class of 2019**	**Class of 2020**	**Class of 2021**	**Class of 2022**	**Class of 2023**	**Class of 2024**	**Class of 2025**
Students	**11**	**13**	**12**	**14**	**13**	**12**	**16**	**16**
Average Age	**27**	**26**	**24**	**25**	**27**	**26**	**27**	**24**
Male: Female	**6:5**	**8:5**	**6:6**	**6:8**	**8:5**	**5:7**	**7:9**	**4:12**
In State	**8**	**7**	**4**	**6**	**7**	**6**	**7**	**8**
Out of State	**3**	**6**	**8**	**8**	**6**	**6**	**9**	**8**
Average GPA	**3.6**	**3.4**	**3.5**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**
Average MCAT	**59th %ile**	**56th %ile**	**57th %ile**	**62nd %ile**	**69th %ile**	**55th %ile**	**63rd %ile**	**48%ile**

Recent Accomplishments

Curriculum and Instruction

The MS-Anesthesiology Program offers a 28-month didactic curriculum designed by expert faculty and complemented by clinical rotations. The program features didactic courses taught by attending anesthesiologists and certified anesthesiologist assistants. This allows students to interact formally with all anesthesia care team members from the beginning of training. Senior-year didactics include a senior project in research or quality improvement to supplement clinical requirements and an interactive senior seminar where students lead problem-based learning discussion sessions covering cases and subject matter. In addition to classroom didactics, the students begin clinical hours within the program's first two months. MS-Anesthesiology students become comfortable with the operating room environment even before completing the didactic portion of the program. This comfort transforms into self-sufficiency as students rotate through various clinical subspecialties, including pediatrics, trauma, cardiothoracic, regional, neuroanesthesia, and obstetrics. While the Anschutz Medical Campus provides excellent learning opportunities, program leaders have also established multiple affiliation agreements with outside clinical sites offering students the opportunity to rotate in clinical settings along the Front Range and nationwide. Students complete the program with a well-rounded base of knowledge and professionalism, and they are comfortable in various environments.

Simulation Lab

The simulation lab is an integral part of the overall curriculum taking place over three semesters during the first year. Students are taught skills and concepts utilizing low-fidelity simulators for task training and a high-fidelity simulator, the SimMan 3G, for scenario-based training. Task-training exercises include basic and advanced airway management, anesthesia machine operation, setup and use of anesthetic agents, invasive monitor placement, and regional anesthesia techniques. Crisis resource management skills are taught using the SimMan 3G with scenario-based training. Crisis management training includes advanced cardiac life support protocols, local anesthetic toxicity management, difficult airway management, treatment of severe bronchospasm, and many other scenarios. The concept of TeamSTEPPS (team performance strategies and tools) is incorporated in all scenarios.

Scholarship

The Department of Anesthesiology has established a scholarship to provide support to students. All students can apply. Scholarship funds will cover the last three semesters of the MS-Anesthesiology Program. Past recipients have been Jonathan London (2018), Fabienne Haas (2019), Mike Dinh (2020), Kira Floge (2021), and Jacob Stanley (2022). The program also offers smaller scholarships to first-year students and senior students.

Community Outreach

Since the program was established, MS-Anesthesiology students have completed community service projects each semester. In past years, students have prepared meals for Ronald McDonald House Charities of Denver using food from area businesses; the students funded gift cards and donated them to Ronald McDonald House; raised money by making and selling scrub caps to benefit Lifebox, an organization that sends pulse oximeters to low-resource and lower-middle income countries at no or reduced cost; helped to collect used or discarded medical supplies for Project Cure, the largest provider of donated medical supplies and equipment to developing countries around the world; participated as a group in a blood drive with Children’s Hospital Colorado; and staffed booths at local fundraising events such as Strides for Epilepsy 5K and university health fairs.

Child Health Associate/Physician Assistant Program

The University of Colorado PA Program has gained national recognition for its curriculum in primary care medicine. The program confers a Professional Master's Degree (MPAS). In accordance with the mission of the program, the CHA/PA Program curriculum provides comprehensive physician assistant education in primary medical care with expanded training in pediatrics and need for service to disadvantaged, at risk, and medically underserved populations. Graduates practice in all areas of medicine and serve patients of all ages.

Mission Statement

The mission of the Child Health Associate/Physician Assistant Program is to provide an innovative learning environment to educate socially conscious physician assistants dedicated to the holistic care of diverse and underserved patient populations across the lifespan with an emphasis on primary care and expanded training in pediatrics.

Program Curriculum

The Colorado Curriculum is a cutting-edge, learner-centered educational platform designed to foster clinical decision-making and lifelong learning skills. The curriculum is based on clinical presentations rather than traditional courses, which mimics how patients present for care and how clinicians practice medicine. For example, during the week of the curriculum focused on the clinical presentation "shortness of breath," all learning in the basic sciences and clinical medicine is delivered in the context of a patient with shortness of breath.

The Colorado Curriculum consists of two didactic years, with clinical experiences integrated across both years. The third year of the program consists of 10 one-month rotations. The program begins in July with a summer immersion course that includes fundamentals of learning strategies, PA professional roles, wellness and resilience, and clinical topics.

The curriculum is organized into seven system-oriented blocks: Hematology, Infection, Inflammation and Malignancy (Heme/IIM); Gastrointestinal, Genitourinary, and Renal (GI/GU/Renal); Cardiovascular and Pulmonary (CVP); Dermatology and Head, Eyes, Ears, Nose, and Throat (Derm/HEENT); Musculoskeletal and Neurology (MSK/Neuro); Endocrinology and Reproduction (Endo/Repro); and Psychiatry. The curriculum is an iterative, spiral approach to learning, such that clinical topics which are introduced in the first year are revisited at a more advanced level in the second year. Each block course integrates the basic sciences and clinical medicine by employing the use of small group experiences, case-based learning, standardized patients (SPs), patient simulators, lectures, and collaborative sessions. Additionally, students participate in thread courses over both years which provide education in clinical skills, role development, patient care, and the clinical environment. The thread courses include Clinical Skills, Clinical Experiences, and Foundations in Prevention, Advocacy, and Professional Practice.

The curriculum includes fully integrated clinical experiences in hospital and community settings. During clinical experiences, students participate in observations, history-taking, physical examination and assessment, development of a differential diagnosis and clinical decision-making and planning of treatments and interventions. Students work closely with preceptors and other members of the health care team and are evaluated on skills and competencies required for patient care.

As a part of the University of Colorado School of Medicine, the faculty of the entire School of Medicine and affiliates contribute greatly to the quality of the learning experiences provided at the CHA/PA Program. Affiliations with the University of Colorado Hospital, Children's Hospital Colorado, and Denver Health and Hospitals in addition to community clinics, provide a network of clinical experiences to enhance the training of students. The faculty within the departments of Pediatrics, Family Medicine, Internal Medicine, Surgery, and others regularly participate in both classroom and clinical training of the CHA/PA Program students.

Program Faculty and Leadership

The education, scholarship, and service roles of the principal faculty of the CHA/PA Program provide students with experienced faculty mentors with clinical practices in general pediatrics, family medicine, and pediatric subspecialties.

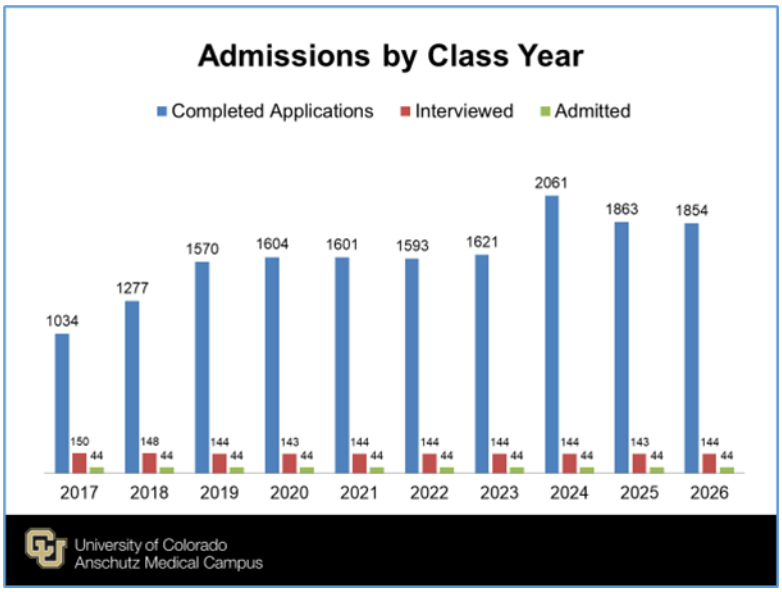
Program faculty serve in state and national leadership roles. Jonathan Bowser is a Past President for Physician Assistant Education Association (PAEA) and serves on the President's Commission. Jacqueline Sivahop facilitates workshops for new faculty and program directors for PAEA and is a feature editor for the Journal of Physician Assistant Education (JPAE). Amy Akerman is the PA representative the Interprofessional Education Collaborative (IPEC) Core Competencies Revision Working Group. Kate LaPorta participates in the PAEA Standard Setting workgroup for the End of Curriculum exam, and Kelsey Dougherty is a member of the Colorado Academy of Physician Assistants CME committee.

International Connections

The University of Colorado Child Health Associate/Physician Assistant Program continues its partnership with the Trifinio Clinic in Guatemala. CHA/PA students engage in clinical experiences in this clinic site in rural northwestern Guatemala. Our global partnerships continue to offer us new perspectives on our educational program and the work we do here, helping us provide better care for our patients in the United States and abroad.

Student Overview

The CHA/PA Program has a very competitive admissions process and continues to attract top students from across the country. During the 2021-22 admission cycle, the program received 1,863 applications, of which 143 were interviewed to admit 44 students. Program graduates are employed in all areas of primary and subspecialty areas of practice including pediatrics, family medicine, surgery, internal medicine, emergency medicine, dermatology, and many more. The program has a 97% five-year average NCCPA board pass rate.



Admissions- Student Demographics				
Graduation Year	2023	2024	2025	2026
Total Students	44	44	44	44
CO Resident	19	25	20	17
Non-Resident	25	19	24	27
Overall GPA	3.73	3.80	3.70	3.76
Science GPA	3.68	3.76	3.63	3.69
Average Age	25	25	23	23
Hispanic	3	8	8	8
Alaskan Native/American Indian	1	1	1	4
Black	1	2	4	3
Asian	7	4	4	8
White	32	29	27	21

Program Information

Program Director: **Jonathan Bowser MS, PA-C**
Medical Director: **Tai Lockspeiser MD, MHPE**
Associate Director: **Tanya Fernandez MS, PA-C**
Program website: http://medschool.ucdenver.edu/paprogram

Genetic Counseling Program

The Master of Science in Genetic Counseling Program prepares students for professional practice and board certification as genetic counselors. The program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC). Upon graduation, alumni are eligible to sit for the national certification exam administered by the American Board of Genetic Counseling (ABGC). Established in 1971, the CU Anschutz Genetic Counseling Program is the third-oldest training program for genetic counselors in North America and one of only five such programs in the Rocky Mountain region.

Mission Statement

The mission of the Genetic Counseling Program is to train competent, compassionate, and innovative graduates who will effectively integrate professional practice and human genomics to deliver quality, client-centered genetic counseling services, promote informed health policy, and engage in scholarship, advocacy, and leadership activities throughout their careers.

Program Curriculum

The intensive 21-month curriculum integrates extensive coursework in human clinical and laboratory genetics and genomics, psychosocial and counseling theory, research, and ethical, legal, social, and professional practice issues with more than 1,000 hours of direct, supervised clinical training in pediatric, metabolic, reproductive, oncology, adult and specialty genetics clinics. During the second year, students complete a scholarly mentored capstone project addressing a current clinical practice, laboratory, educational, policy, or service delivery issue in genetic counseling. Students are encouraged to submit abstracts for presentation of their projects at national meetings and to publish their findings in peer-reviewed journals.

Professional Practice of Program Alumni

Genetic counselors play a critical, expanding role in the healthcare system. They are at the forefront of precision genomic medicine initiatives. As genetic risk assessment and genetic testing become integral components of virtually all medical specialties, genetic counselors help to ensure quality, informed, client-centered delivery of these services. The Bureau of Labor Statistics identifies genetic counseling as one of the fastest-growing healthcare fields.

CU Anschutz Genetic Counseling Program alumni practice throughout Colorado and the nation. Practice settings of alumni include hospitals, academic and private genetics centers, diagnostic laboratories, telehealth genetic counseling services, clinical research programs, biotechnology companies, state public health departments and patient advocacy organizations.

As members of multidisciplinary health care teams, genetic counselors provide scientific expertise, education, risk assessment, non-directive support for decision making and psychosocial needs, and community resources. Genetic counselors are central to the provision of quality, comprehensive care of individuals and families affected with or at risk for specific genetic conditions, or with genetic predispositions to cancer, cardiovascular or other diseases. Genetic counselors in clinical settings use a client-centered approach to ensure that patients and their medical providers can understand and appropriately utilize genetic information and laboratory tests to promote informed health care choices. Laboratory-based genetic counselors serve as professional liaisons to hospital systems, individual health care providers and their patients. They help providers and patients understand new testing modalities and appropriate testing options, conduct utilization management review to promote cost-effective use of genetic testing, and provide individualized results interpretation. Genetic counselors in both clinical and laboratory roles utilize their scientific expertise to research genomic variants and ensure that clinical interpretation of often novel findings of genomic testing reflects current knowledge and is conveyed to clients in an understandable manner. Many program alumni are faculty at their institutions, promoting genomic literacy as educators of trainees, other health care professionals and the public, and conducting clinical and translational research. Alumni facilitate support and advocacy groups for genetic conditions, engage in health care policy development regarding genetic services, and provide consulting to biotechnology and other industries.

Student Profile

Admission to the Genetic Counseling Program is highly competitive and is conducted through a national match program. In the spring 2023 admissions cycle, six students matched from around the U.S. from a pool of almost two hundred applicants. They range in age from 23 to 41. Their mean undergraduate GPA was 3.75. One enters the program with a PhD. Prior professional activities of incoming students include positions as a genetic counseling assistant (GCA), special education paraprofessional, medical laboratory technician, clinical research coordinator, and academic/financial aid counselor for undergraduates. All have client advocacy and counseling experience in settings including crisis counseling lines, community-based programs for individuals with medical conditions or neurodevelopmental disabilities, undergraduate peer support programs and domestic violence shelters. All have undergraduate or professional research experience, and several have volunteer or professional teaching experience.

Notable Accomplishments - 2022-2023 Academic Year

100% of the program's 2022 graduates taking the American Board of Genetic Counseling (ABGC) Certification Exam achieved certification and the CGC credential on their first attempt (nationally, the first attempt pass rate for this period was 82%). The first attempt boards pass rate has been 100% for the programs past seven graduating cohorts.

Seven students graduated in May 2023, entering clinical practice in the specialties of pediatrics, oncology, and fetal care/ reproductive genetics.

Two students in the 2023 graduating class had their Capstone research projects accepted for poster presentation at the American College of Medical Genetics and Genomics Conference held in Salt Lake City in March 2023. Another 2023 graduate was selected for poster presentation of their Capstone research at the Children's Tumor Foundation Neurofibromatosis Conference held in Scottsdale, Ariz., in June 2023.

MS Genetic Counseling Program Information:

Program Director: **Carol Walton, MS, CGC**
Assistant Director, Clinical Training: **Kathleen Brown, MS, CGC**
Website: https://www.cuanschutz.edu/graduate-programs/genetic-counseling

Graduate Medical Education

Carol M. Rumack, MD
Associate Dean for Graduate Medical Education
www.medschool.ucdenver.edu/gme

The Graduate Medical Education (GME) Office is under the leadership & direction of Carol M. Rumack, MD, associate dean for GME at the University of Colorado School of Medicine & Designated Institutional Official (DIO) for the Accreditation Council for Graduate Medical Education (ACGME). Ashley Walter, MBA, is the director of finance and administration.

The GME Office is responsible for the oversight of ACGME accreditation & educational environment as well as payroll, benefits & administrative issues for all residency & fellowship training programs.

The Graduate Medical Education mission of the University of Colorado School of Medicine is to provide Colorado, the nation, the world with programs of excellence:

- **Education** - through the provision of educational programs to program directors, program coordinators, residents, the entire GME community as well as practicing health professionals and the public;
- **Research** - through the development of new knowledge in the basic & clinical sciences, as well as in health policy and health care education;
- **Patient Care** - through state-of-the-art clinical & research education programs which reflect the unique educational environment of University of Colorado School of Medicine, as well as the needs of the patients it serves, and;
- **Community Service** - through sharing the University of Colorado School of Medicine's expertise and knowledge to enhance the broader community, including our affiliated institutions, other health care professionals, alumni, other colleagues, and citizens of the state.

The GME Office implements policies of the Graduate Medical Education Committee (GMEC) of the School of Medicine. The ACGME charges the GMEC with responsibility for monitoring and advising on all aspects of residency education including compliance with ACGME work hours, patient safety and quality improvement requirements, and in maintaining a strong learning environment.

The GMEC is composed of program directors, GME Faculty Liaisons from the major teaching hospitals and officers of the Housestaff Association. GMEC reports to the Dean of the School of Medicine through the associate dean for GME and senior associate dean for education.

2022-23 GME HIGHLIGHTS

Major changes with GMEC and CU School of Medicine GME Affiliated Hospitals

- Recognized by ACGME as a Non-Standard Sponsoring Institution for these NST programs that are not ACGME accredited and accept residents with J1 visas
- 6 New GMEC Subcommittee Chairs & Vice Chairs appointed
- Wellbeing Resources added to GME website
- Resident Wellbeing Council created by Dr. Kshama Jaiswal
- Education Subcommittee: Diversity & Inclusion Task Force created Resident Recruitment Toolkit under the leadership of Dr. Julie Venci, Christy Angerhofer and Dr. Linda Montgomery
- Dr. Lotte Dyrbye appointed as Senior Associate Dean for Faculty Affairs and Wellbeing, and a new national wellbeing survey is planned with Dr. Dyrbye
- Dr. Eric Holmboe, ACGME, national invited speaker at Academy of Medical Educators (AME) Workshop and Department of Medicine Grand Rounds
- CUSOM GME Outstanding Program Coordinator Awards

11th Annual GME Outstanding Program Coordinator Awards

The Graduate Medical Education Committee, in collaboration with the Program Coordinator Council (PCC), awarded Michele Bialkowski as this year's outstanding program coordinator as well as the CUSOM GME Nominee for the ACGME 2024 National Program Coordinator Award. Jennafer Hoyland, Orthopedic Surgery, and Christine Raffaelli, Ob/Gyn, were also awarded as outstanding CUSOM GME Program Coordinators.

Michele Bialkowski
Neonatal-Perinatal Fellowship
National PC Award Candidate

Jennafer Hoyland
Orthopedic Surgery Residency

Christine Raffaelli
Ob-Gyn
Residency

ACGME PROGRAMS RECEIVING INITIAL ACCREDITATION
Pediatric Cardiac Anesthesiology
Pediatric Dermatology
Surgical Critical Care (Burn)

NEW GMEC APPROVED (NON-ACGME) FELLOWSHIP PROGRAMS
GI: Inflammatory Bowel Disease (NST J1 Visa)
OPHTHAL: Uveitis
PED: Pediatric Neuroimmunology
PULM: Transplant Pulmonology
SURG: Extracorporeal Membrane Oxygenation (ECMO)

NEW ACGME PROGRAM DIRECTORS (PDs) & PROGRAM COORDINATORS (PCs)					
	2018-19	**2019/20**	**2020/21**	**2021/22**	**2022/23**
New PDs	18	20	19	13	18
New PCs (and/or transferred to another program)	9	9	14	21	25
2022-23 average turn-over rate: PDs = 16% PCs = 32%					

Figure 1

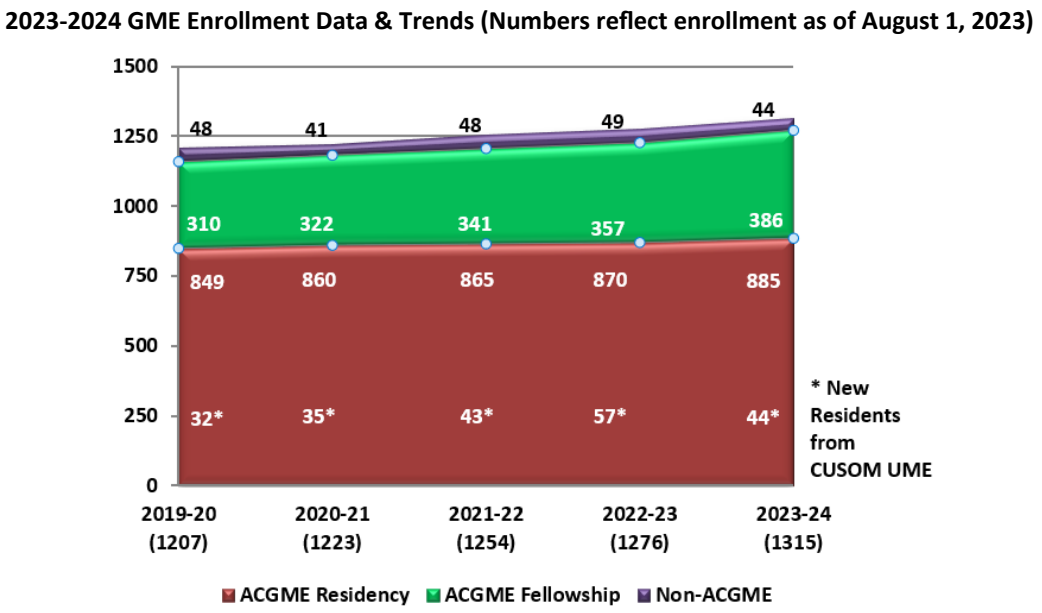
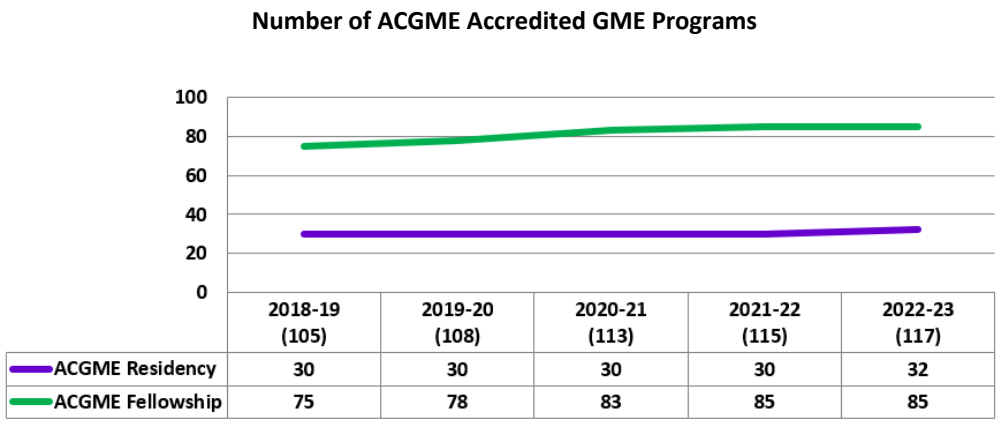


Figure 2



	2018-19 (105)	2019-20 (108)	2020-21 (113)	2021-22 (115)	2022-23 (117)
ACGME Residency	30	30	30	30	32
ACGME Fellowship	75	78	83	85	85

Figure 3

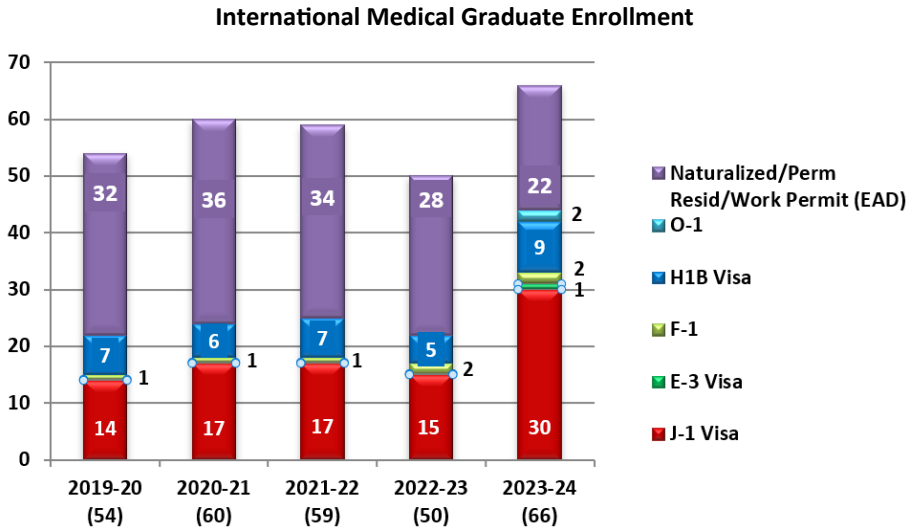


Figure 4

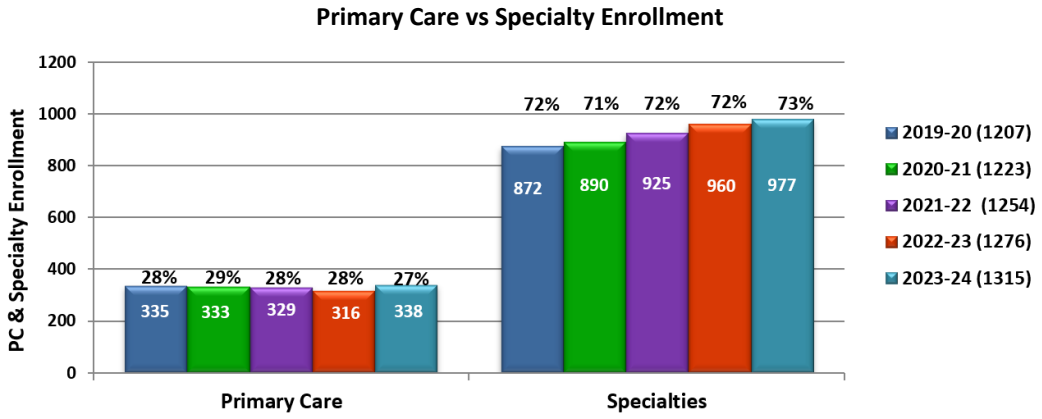


Figure 5

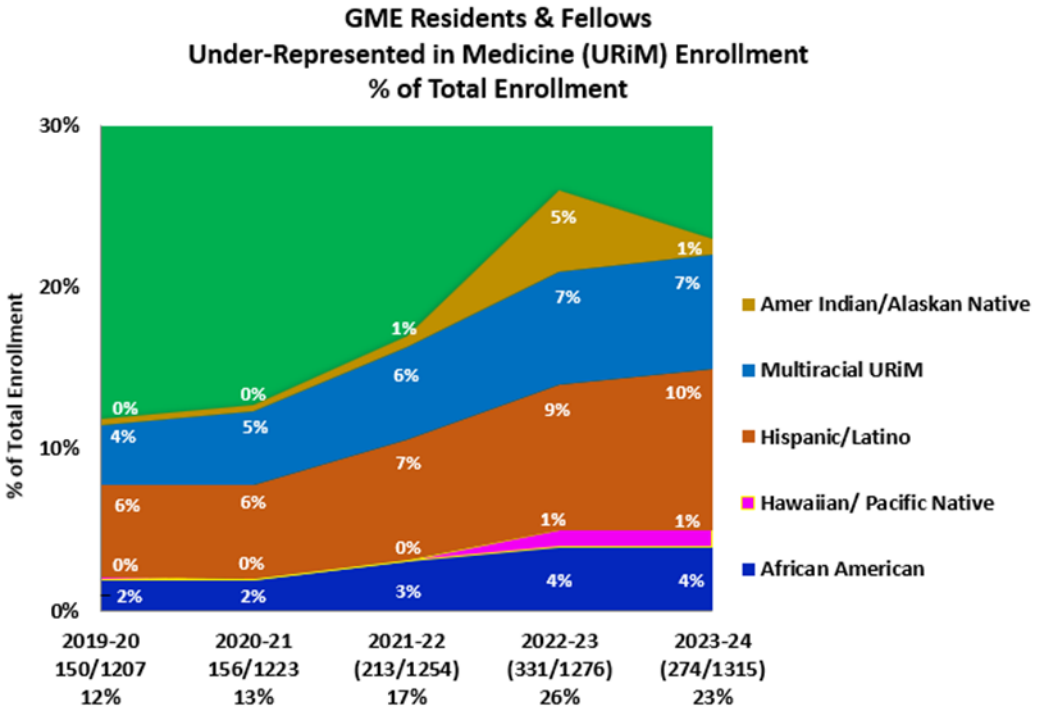
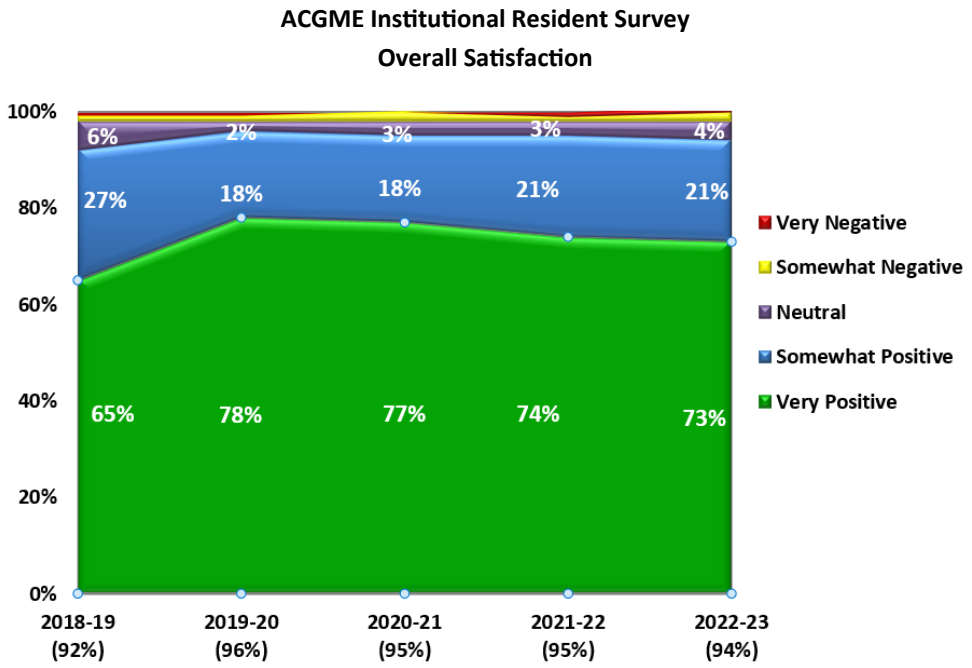


Figure 6



GRADUATE PLANS – GME 2022-23 GRADUATE SURVEY

University of Colorado Psychiatry Residency

For the 2022-23 academic year, 372 residents & fellows graduated from ACGME & Non-ACGME approved programs. All graduates completed the 2022-23 GME Graduate Survey.

Figure 7

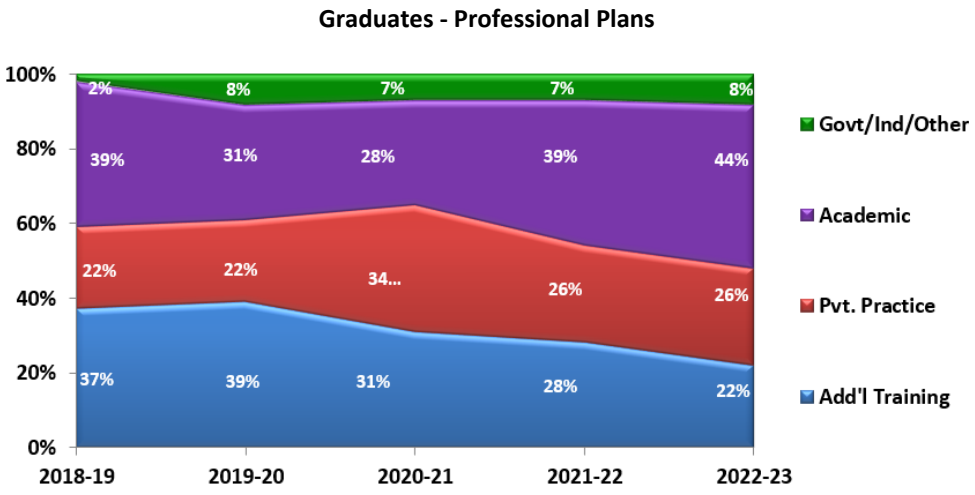
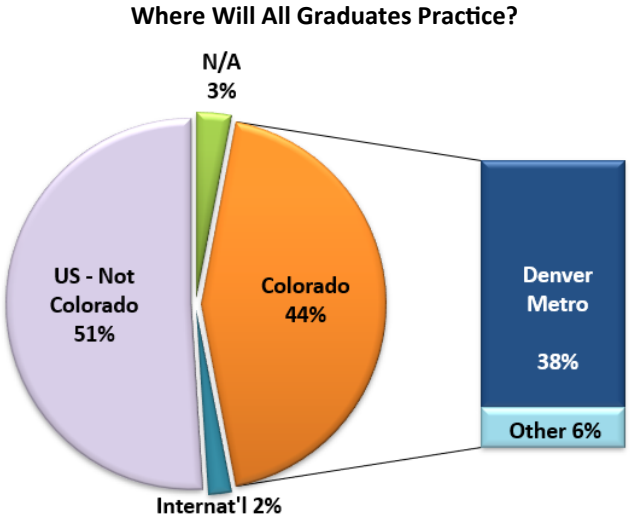


Figure 8



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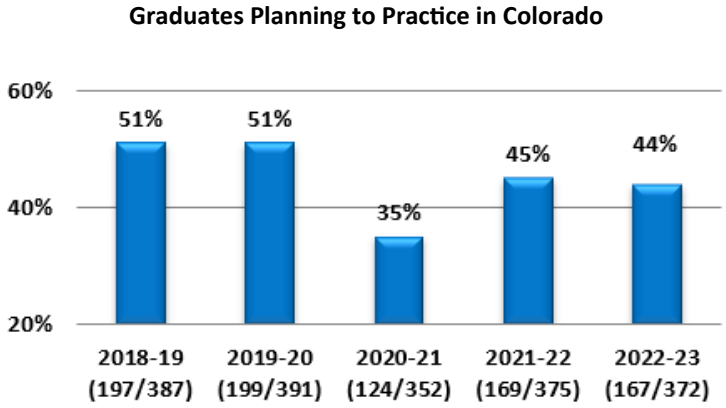


Over the last 5 years, CUSOM GME has graduated 856 residents & fellows who now practice in Colorado

Figure 10

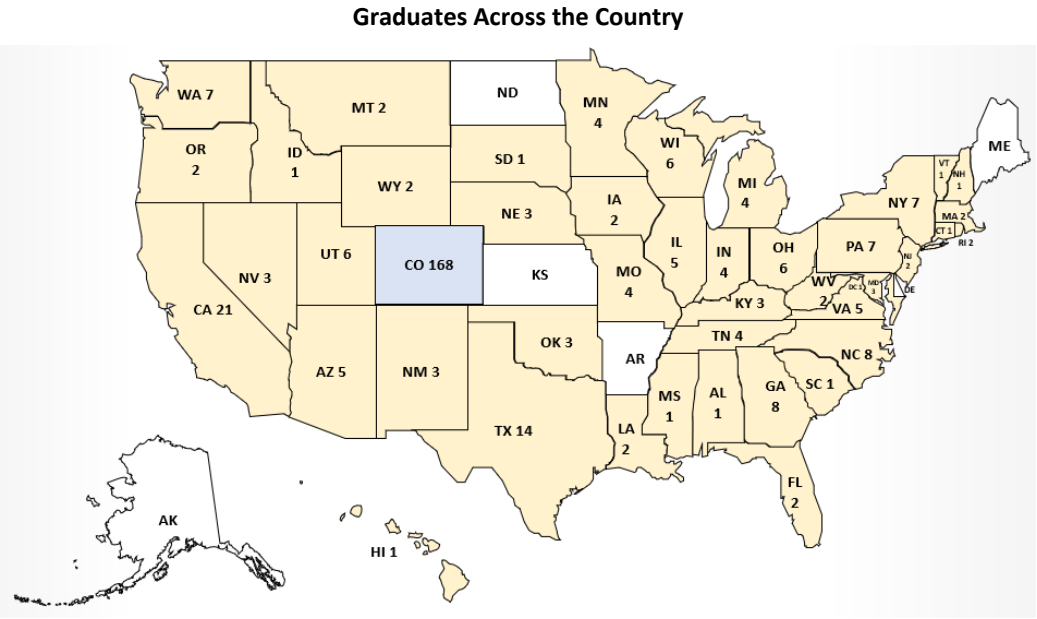
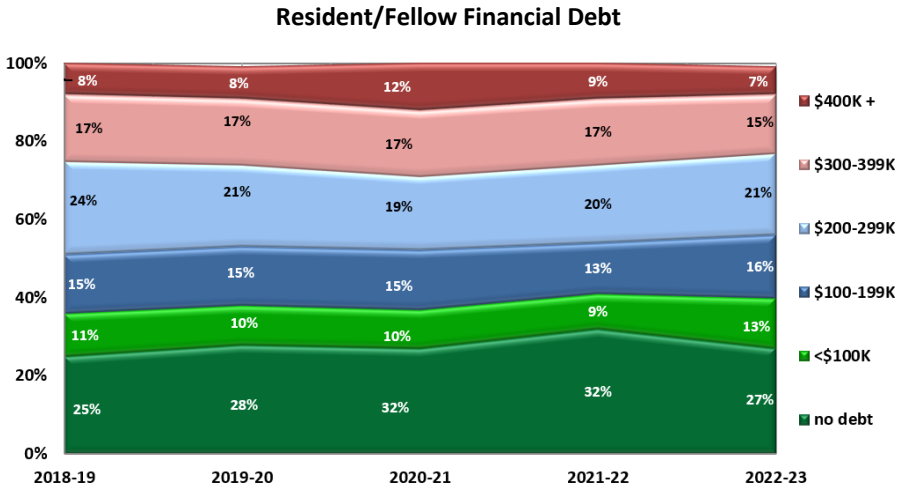


Figure 11



Office of Continuing Medical Education

The Office of Continuing Medical Education (OCME) was led by Brenda Bucklin, MD, MEHP, professor of anesthesiology and associate dean for continuing medical education until her retirement in July 2023. The office is staffed by Pam Welker (administrator), Carolyn Wieber, and Angela Gianficaro (conference managers). The mission of the office is to enhance "learners' knowledge, competence, performance, or patient outcomes through continuing medical education and professional development activities that are linked to practice and focused on health care quality gaps." Learners are expected to "apply new knowledge and skills in order to improve performance and patient outcomes in their practice settings." Additional information can be found at https://medschool.cuanschutz.edu/education/cme.

The greatest challenge for OCME during the past couple of years has been the impact of the COVID-19 pandemic on activities certified by OCME. Many activities were converted to virtual delivery of content during that period. Now, many activities have returned to live or hybrid delivery. This pivot back to live included the Family Medicine Review Course, which was held in Estes Park, June 20-24, 2022, and offered 31.75 hours of AMA PRA Category 1 Credit to ~100 attendees. During the year, OCME reached more than 33,469 physicians and 24,196 non-physician learners. In addition, 2,652 hours of instruction were certified for AMA PRA Category 1 Credit.

The American Board of Medical Specialties (ABMS) Portfolio Program (MOC Part IV: Improvement in Practice) is also managed by OCME. Twenty-four specialty boards, under the guidance of the ABMS have implemented a four-part MOC process to help ensure physicians keep current in their specialties. Each specialty board has developed its own specific requirements, options for meeting them, and timeframes in which they must be met.

Physical Therapy Education Programs

The University of Colorado School of Medicine Physical Therapy Program in the Department of Physical Medicine and Rehabilitation is home to multiple educational programs. Our academic programs in the field of rehabilitation span entry-level professional education, post-professional training, and advanced doctoral education. These educational offerings include the Doctor of Physical Therapy degree, Pediatric Physical Therapy Residency, Orthopaedic Physical Therapy Residency, Faculty Residency, the Doctor of Physical Therapy-Master of Public Health degree track, and the PhD degree in Rehabilitation Science.

Program Leadership

Michael Harris-Love, PT, MPT, DSc, FGSA, FAPTA
Associate Dean for Physical Therapy Education
Joanne Posner-Mayer Endowed Chair in Physical Therapy
Director, Physical Therapy Program

Daniel Malone PT, PhD, CCS
Associate Director, Physical Therapy Program

Jennifer Stevens-Lapsley, PT, PhD, FAPTA
Section Director, Research & Development
Director, PhD Program in Rehabilitation Science

Dana Judd, PT, DPT, PhD
Section Director, Student Affairs

Amy McDevitt, PT, DPT, OCS, FAAOMPT
Section Director, Curriculum

Jenny Rodriguez, PT, DPT, MHS
Section Director, Clinical Education

Website: http://www.cuphysicaltherapy.org

Physical Therapy Program

The Physical Therapy Program prepares each student to become a Doctor of Physical Therapy (DPT). Physical therapists are recognized as experts in movement and function who treat patients of all ages in many different settings. Graduates of the CU Physical Therapy Program are prepared to collaborate with other healthcare providers to meet the musculoskeletal, cardiovascular, and neuromuscular needs of patients through direct access to care.

The CU Physical Therapy Program is ranked 13th out of 217 accredited physical therapy programs in the United States by the U.S. News and World Report (2020) and is one of the first 25 educational programs still in existence in the United States and is currently celebrating its 75th year. This program has been continuously accredited since its inception in 1947, receiving an unconditional ten-year accreditation in 2020.

Mission:

To lead discovery and innovation to improve movement, participation, health and wellness for individuals and society through excellence in education, research, clinical care, and service.

Vision:

To transform health and foster wellness in individuals and society through education, discoveries, engagement and innovation.

Values:

Respect: For all individuals' safety, rights, dignity, and perspectives
Integrity: Because professional behavior reflects who we are
Altruism: In service to the individual, community, and organization
Diversity: For inclusivity in all endeavors
Accountability: To all those seeking care and providing care within our profession and health care systems
Passion: Because we are committed to lifelong learning, service, and community engagement
Collaboration: To leverage collective input from all individuals
Leadership: Within the university, profession and community at large
Quality: To attain excellence in all we do

Applicants to the CU Physical Therapy Program

Applicants to the CU Physical Therapy Program come from a wide range of academic backgrounds. There are minimum prerequisites, like those for the MD Program that emphasize basic sciences, writing ability, and psychology. In addition, many of the applicants have substantial experience in healthcare-related professions. Some have advanced degrees, and all have taken the opportunity to learn about the profession of physical therapy for application to the CU Physical Therapy Program.

Application Data 2022-2023

Completed/Verified Applications: 1326
Interviewed: 184
Enrolled: 71
Cumulative GPA: 3.66
Last 60-Credits GPA: 3.77

Students of the CU Physical Therapy Program

Approximately 70-74 students enter the CU Physical Therapy Program each year. Just under half of the students are from Colorado, while other students are accepted to the program from across the United States and from other countries. Students enter this program with high qualifications and graduates of the program pass a national licensure examination with scores that are competitive with or above the average for the United States.

The entering class of physical therapy students in the summer of 2023 are exceptionally qualified academically and bring life experiences that enhance and enrich the entire student body. Among this cohort, many students have had extraordinary research accomplishments, including multiple national publications and presentations. Valuable volunteer experiences include advocating for social justice within the medical field as a Parkinson's scholar, donating medical equipment to underserved clinics in Mexico, hosting a support group for women in eating disorder recovery, and other fundraising efforts for various charities and organizations. This cohort also has many former college athletes with noteworthy achievements in powerlifting, track and field, cross country, volleyball, soccer, football, swimming, and dance. Three class members have served in the United States military. Some students have transitioned from other professions such as nursing, EMT, personal training, teaching, and business. There are also students who excel in dancing, choreography, and guiding others in health and fitness. All these attributes contribute to the richness of this class.

The program is deeply committed to increasing diversity within the program and the physical therapy profession. The admitted Class of 2025 is comprised of 21% from a rural area, 18% first generation, and 20% who identify as racial or ethnic minorities. Ten students have Hispanic backgrounds, two students identify as Black/African American, one as an American Indian and four students identify as two or more races/ethnicities. Other specific demographic data is included below.

Demographics of Admitted Students

Class:	2022	2023	2024	2025
Female	65%	80%	74%	68%
Male	35%	20%	26%	31%
NonBinary/Other	*	1%	0%	1%
CO Resident	45%	44%	46%	46%
Non-Resident	55%	56%	54%	54%
Minority	26%	23%	29%	20%
Average age	24	24	24	24
Cumulative GPA	3.66	3.6	3.67	3.66
Math/Science GPA	3.61	3.43	3.54	3.55

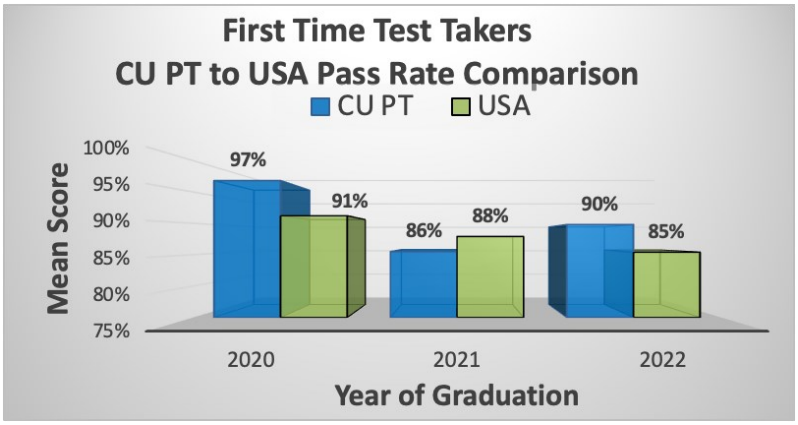
**Not tracked in PTCAS prior to Class of 2023*

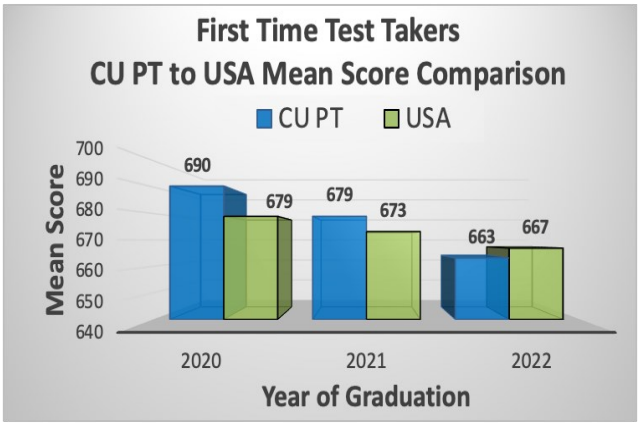
Graduates of the CU Physical Therapy Program

Graduates from the CU Physical Therapy Program perform exceptionally well on the national licensure examination, administered by the Federation of State Boards of Physical Therapy (FSBPT). Nearly 90% of our graduates have passed the exam on their first attempt, with 98% of our last four years of graduates having passed the exam on their first attempt. Graduates are employed in settings that range from outpatient to inpatient facilities and include patient populations from pediatrics to geriatrics.

FEDERATION OF STATE BOARDS OF PHYSICAL THERAPY

Summary of scaled results based on FSBPT criterion-referenced passing score of 600.





Faculty

Faculty of CU Physical Therapy are innovative as leaders in physical therapy education and practice. Faculty are highly committed to the education of the CU PT students. They are experienced educators, many of whom contribute to clinical care. Many faculty members are recognized both nationally and internationally for their scholarship. All are members of the American Physical Therapy Program Association (APTA), where they serve in leadership roles (e.g., on the Board of Directors of APTA; President of the Cardiovascular and Pulmonary Section of APTA). They also serve other professional organizations (e.g., members of NIH grant review sections and committees), as well as service to the community (e.g., President of Colorado State PT Board, DORA; DAWN Clinic; Stout Street Clinic for individuals who are homeless). Since 2008, faculty members have developed a robust and substantial research agenda with a current research portfolio of over $22 million.

Curriculum

The curriculum is two-and-a-half years in length comprised of seven semesters of didactic coursework and 38 weeks of clinical education. Some students continue in their final clinical experience after graduation in a paid internship. The curriculum prepares students to improve movement, participation, health and wellness in individuals and populations. As such, curricular content is divided into foundational and clinical sciences, patient management and clinical skills, professional development, and clinical education. There is intentional integration between all these components through threaded curricular elements. Students learn patient management for individuals across the lifespan with musculoskeletal, cardiovascular, and neurologic disorders, as well as physical therapy for patients with other medical conditions.

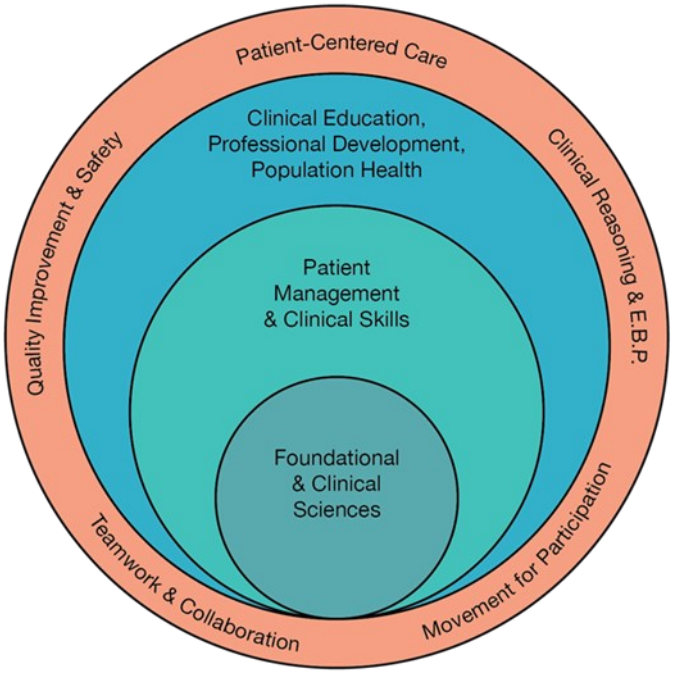
Clinical education experiences occur early and frequently, which allows situational learning and application at several points throughout the two-and-a-half years. The curriculum includes a series of courses focused on developing professional identity, with emphasis on core professional values, effective communication and interpersonal skills, psychosocial aspects of care, clinical reasoning, and evidence-based practice. Students reflect on what it means to be a Doctor of Physical Therapy, leadership and career management, health care delivery systems, and social determinants of health in the context of individual and population health.

Faculty of the CU Physical Therapy Program review and revise the curriculum annually to ensure that content, emphasis, and pedagogy remain current and consistent with changes in the profession and health care.

Curricular Threads

The curriculum is carefully designed to integrate five content areas that are threaded throughout the curriculum:

- Patient-Centered Care
- Clinical Reasoning and Evidence-Based Practice
- Movement for Participation
- Teamwork and Collaboration
- Quality Improvement and Safety



Center for Advancing Professional Excellence

The Center for Advancing Professional Excellence (CAPE) provides an innovative high-fidelity simulation environment for students to practice physical therapy examination, intervention, and communication skills. Two comprehensive examinations/assessments take place during the first and second years of the program. The Doctor of Physical Therapy Program is one of the few physical therapy programs in the United States where students can work with standardized patients and high-fidelity mannequins in conjunction with a full-service Simulation Center of Excellence.

Interprofessional Education

The CU Physical Therapy Program participates in a longitudinal Interprofessional Education (IPE) curriculum, which is designed to prepare students for interprofessional collaborative practice. The curriculum focuses on developing competencies in teamwork/collaboration, values/ethics, and quality/safety. Each student is assigned to an interprofessional student team, which includes students from some or all the following schools/programs: School of Medicine (Physical Therapy, Medicine, Child Health Associate/Physician Assistant), School of Pharmacy, College of Nursing, and School of Dental Medicine. Over the first two years of the curriculum, the interprofessional student team meets to understand and apply fundamental content in teamwork/collaboration, quality/safety, and values/ethics. In years two and three, students spend an afternoon in the Center for Advancing Professional Excellence (CAPE) to participate in collaborative patient care.

Clinical Reasoning Capstone Project

The didactic curriculum culminates in a capstone project. The capstone project includes the writing and presentation of a patient case report that synthesizes the didactic content of the curriculum with the student's clinical experiences, while highlighting the application of evidence-based practice and clinical reasoning.

Research Initiatives

Entry-level DPT students are encouraged to participate in research under the guidance of nationally recognized faculty mentors and present their findings through national scientific conferences and peer reviewed publications. Several research facilities are available that enhance the ability of faculty to conduct rehabilitation research and to mentor students who seek to develop research skills while completing their physical therapy education. One facility, the Interdisciplinary Movement Science Laboratory (IMSL), contains state-of-the-art equipment for motion analysis of gait and other functionally relevant tasks. A sister facility in the Geriatric Research, Education, and Clinical Center (GRECC) contains an instrumented treadmill with a motion analysis system that allows intervention and outcome research for populations with walking dysfunction. These motion analysis facilities are also equipped for studies involving electromyography (EMG) and transcranial magnetic stimulation (TMS). In addition, faculty lead the Muscle Morphology, Mechanics, and Performance Laboratory, which includes equipment used to assess sarcopenia and myosteatosis, and the Spinal Cord Injury Imaging Research Laboratory, which focuses on the prognosis and treatment of individuals with spinal cord injury. The Rehabilitation Science Consortium (RSC) houses graduate students, post-doctoral fellows, research assistants, and physical therapy students who assist with research projects.

Scholarships

The CU Physical Therapy Program is committed to providing sustainable scholarship support to help offset the cost of education to students. Scholarships are available to both prospective and current students and are awarded based on merit, diversity, and commitment to practice in specific areas such as rural communities. The CU Physical Therapy Scholarship and Endowment Board was formed in 2012 and has successfully increased the PT Program's committed funds from less than $300,000 in 2011 to over $5 million. Together, the Board, CU Physical Therapy Program leadership, and the Alumni Association have increased the endowment and current use funds to distribute over $200,000 in scholarships annually, with over $300,000 having been awarded in 2022-23.

Faculty Residency Program

The University of Colorado Anschutz Medical Campus Faculty Residency is a structured, post-professional education program for licensed physical therapists who have graduated from an accredited DPT program and who aspire to an academic faculty position. The program is designed to significantly advance preparation of the physical therapist as a highly qualified educator

and productive scholar. Future leaders in physical therapist education are developed through multiple teaching experiences, structured mentorship opportunities, and mentored educational scholarship throughout the program.

The mission of the University of Colorado PT Program Faculty Residency Program is to develop competent faculty who are prepared to engage in innovative education by providing a curriculum and mentored experience that supports excellence in the preparation of future health care providers and participation in academia. This residency received initial accreditation status from the American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE) in June of 2023.

Orthopedic Physical Therapy Residency Program

The University of Colorado School of Medicine Physical Therapy Orthopedic Residency in partnership with UCHealth is a structured, post-professional education program for licensed physical therapists who have graduated from an accredited DPT program and are seeking specialized training in orthopedic physical therapy. The orthopedic residency will offer experiences in outpatient and classroom settings through the resources of the University of Colorado Physical Therapy Program on the Anschutz Medical Campus and mentorship in clinical patient management in Denver area UCHealth outpatient physical therapy clinics. The mission of the orthopedic physical therapy residency program is to elevate the profession and standard of patient care by developing specialized orthopedic physical therapists who demonstrate integrity, excellence, and leadership through innovative evidence-based patient management, as well as professional and community education.

The residency program is designed to significantly advance preparation of the orthopedic physical therapist as a highly qualified provider of patient care services in multiple, complex clinical practice settings. Future leaders in orthopedic physical therapy are developed through coursework and clinical experiences during the 13-month residency program. The residency program was accredited by the American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE) in September 2022. Graduate residents are eligible to take the clinical specialist board examination to be recognized as Orthopedic Board-Certified Clinical Specialists by the American Board of Physical Therapy Specialists (ABPTS). To date, the residency program has a 100% graduation rate and 100% first time pass rate for the orthopedic specialist board exam.

Pediatric Physical Therapy Residency Program

The University of Colorado Physical Therapy Pediatric Residency Program is an accredited post-professional clinical and didactic education program for licensed physical therapists who have graduated from an accredited DPT program and seek to specialize in pediatric physical therapy. The mission of this residency program is to provide a comprehensive program of didactic, clinical, and professional experiences to develop pediatric physical therapy specialists. Through clinical care experiences, educational excellence, exposure to research and active engagement in scholarship, teaching opportunities, professional and community service, and participation in collaborative teamwork, residents will become future leaders in the profession.

The residency program is designed to significantly advance preparation of the pediatric physical therapist as a highly qualified provider of patient care services in multiple, complex clinical practice settings. Future leaders in pediatric physical therapy are developed through coursework and clinical experiences during the 13-month residency program. In addition to clinical opportunities in multiple settings with structured mentorship, the program also includes participation in the Leadership and Education in Neurodevelopmental Disabilities (LEND) program through JFK Partners (www.jfkpartners.org) and access to the resources of the University of Colorado Physical Therapy Program. The American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE) accredits all residency and fellowship programs, and the University of Colorado Pediatric Residency Program is fully accredited through September 2028.

Graduate residents are eligible to take the clinical specialist board examination to be recognized as Pediatric Board-Certified Clinical Specialists by the American Board of Physical Therapy Specialists (ABPTS) in the year following completion of the residency, and thus far, our pass rate is 100%. Clinical sites during the residency include the ENRICH Early Intervention team through JFK Partners, Main Campus and Highlands Ranch Therapy Care Clinic of Children's Hospital Colorado, Rise School of Denver, Cherry Creek School District, Therapies for Hope, Adam's Camp, and acute inpatient care in Children's Hospital Colorado.

PhD Program in Rehabilitation Science

Rehabilitation Science is an interdisciplinary and translational field of study that integrates knowledge from the basic and clinical sciences to improve our understanding of human movement, physical function, and disability across the lifespan. Students receive individual mentorship from nationally recognized rehabilitation scientists in state-of-the-art research facilities, with a customized curriculum to meet the unique interests of each student. Breadth of knowledge is acquired through foundational coursework in research design, biostatistics, and rehabilitation science, whereas depth of knowledge is gained through elective coursework in one of five areas of focus: clinical trials research, health services research, translational research, mechanistic research, and implementation science. This approach prepares students to become independent research scientists who integrate knowledge from multiple perspectives ranging from the molecular to the systems level to solve complex problems of physical disablement that will advance clinical practice in the field of physical rehabilitation.

Students of the PhD Program in Rehabilitation Science are highly successful. Measures include grants and fellowships awarded to students during their pre-doctoral studies and contributions as co-investigators to investigations that are funded by Foundations and NIH. Students regularly publish peer-reviewed manuscripts, either as first or contributing authors. Since the Rehabilitation Science PhD Program began in 2011, eight students are currently enrolled, nine students have graduated, and 100% of graduates are either completing post-doctoral fellowship training or they have secured faculty positions.

DPT-MPH Dual Degree Track

The University of Colorado Doctor of Physical Therapy (DPT) and Master of Public Health (MPH) Dual Degree Track is a structured, professional education program for learners with a shared interest in physical therapist practice and public health. The mission of the dual degree track is to prepare students as transformative leaders, capable of working alongside diverse partners to promote movement, build healthy communities, and advance health equity. Graduates of the program will promote movement across the lifespan, engage patients and community members as partners to understand and address barriers to health, and work collaboratively to design, implement, and evaluate prevention and health promotion programs. The DPT-MPH Dual Degree Track received final approval from the faculty senate and deans of both the University of Colorado School of Medicine and the Colorado School of Public Health. Current first-year DPT students will be eligible to apply for the MPH program in January 2024.

2022 Program Honors

Lara Canham, PT, DPT, OCS, received the Bob Doctor Service Award.

Cory Christiansen, PT, PhD, was awarded a Veterans Affairs Rehabilitation Research & Development Award to begin a new clinical trial entitled Walking Exercise Sustainability through Telehealth for Veterans with Lower-limb Amputation. He was also given the American Physical Therapy Association Federal Section Researcher Award for 2022.

Lisa Dannemiller, PT, DSC, PCS, Emeritus was the Chair of the Academy of Pediatric Physical Therapy Nominating Committee and received the Alumni of the Year award at Rocky Mountain University of Health Professions and the Cerasoli Educator award from the CU PT Program. She also authored a chapter in the 6th edition of Physical Therapy for Children.

Michael Harris-Love, PT, MPT, DSc, FGSA, FAPTA, was named a Catherine Worthingham Fellow of the American Physical Therapy Association.

Meghan Hernandez, PT, DPT, PCS, was appointed as Director of the Pediatric PT Residency. She also stepped in as the University of Colorado Pediatric Faculty Liaison for the Pediatric Special Interest Group of the CO Chapter of the APTA.

David James, PT, DPT, OCS, SCS, was appointed as Program Coordinator for the CU PT Orthopedic Residency, which received accreditation by the American Board of Physical Therapy Residency and Fellowship Education.

Dana Judd, PT, DPT, PhD, was appointed to Director of Student Affairs and Director of the University of Colorado Anschutz Medical Campus Faculty Residency. She was also accepted into the 2022-2023 cohort of the Colorado-Wyoming Network of Women Leaders' Academic Management Institute.

Toby Kinney, PT, DPT, OCS, FAAOMPT, MBA, PhD(c), was admitted into the Grant Writing and Mentorship in Education Research (GAMER) workshop.

Wendy Kriekels, PT, DPT, NCS, recertified as a Neurologic Clinical Specialist by the American Board of Physical Therapy Specialists.

Dawn Magnusson, PT, PhD, developed a dual-degree Master of Public Health-Doctor of Physical Therapy Track. She was also appointed as Coordinator of Diversity, Equity, Inclusion, and Community Engagement for the CU PT Program.

Daniel Malone, PT, PhD, CCS, was appointed as Associate Director of the CU PT Program.

Mark Mañago, PT, DPT, PhD, NCS, was invited to be a clinical hub team member for ECHO MS, a new NMSS-sponsored initiative sponsored by the NMSS to improve community health outcomes for people affected by MS by increasing the knowledge and capacity of MS healthcare providers. He also received a VA career development award for running RCT using BFR in patients with MS and a Davis Phinney Foundation award to study BFR In people with PD.

Amy McDevitt, PT, DPT, OCS, FAAOMPT, was appointed as Section Director of Curriculum and Musculoskeletal Track Coordinator. She was also elected to the American Academy of Orthopaedic Manual Physical Therapists (AAOMPT) Board as Member at Large. She also received a $100,000 grant from the Foundation for Physical Therapy Research (Paris Patla Manual Therapy Research Grant) for a study titled "Specific and Shared Mechanisms Associated with Treatment for Chronic Neck Pain."

Amy Nordon-Craft, PT, DSc, had 3 manuscripts accepted by the Academy of Cardiovascular & Pulmonary Physical Therapy Simulation Task Force.

Joe Palmer, PT, DPT, was promoted to Assistant Professor. He also received a $10,000 merit-based award to complete his PhD training from UCCS.

Mike Pascoe, PhD, was selected to give the opening address for State Anatomical Board Donor Memorial Ceremony and presented a research poster at the Annual Meeting of the American Association for Anatomy. His research paper titled "An assessment of essential anatomy course content in an entry-level doctor of physical therapy program" was published in Medical Science Educator and attained an Altmetric attention score of 210, ranking it #2 of 961 articles in the journal.

Jennifer Rodriguez, PT, DPT, MHS, received the annual Professionalism Award from the CU Department of Physical Medicine and Rehabilitation.

Eric Sawyer, PT, DPT, OCS, STC, was appointed to the COAHEC NEAR (Networking, Education & Research) Conference Planning Committee. He also graduated from the Teaching Scholars Program through the Academy of Medical Educators.

Andrew Smith, PT, DPT, PhD, was named a Boettcher Foundation Webb-Waring Early Career Investigator Awardee. He also received the APTA Academy of Neurologic Physical Therapy Spinal Cord Injury SIG Research Award, a NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development K01 Award, a 2022 Jayanthi Lectureship Recipient from the Academy of Spinal Cord Injury Professionals, and a 2022 American Spinal Injury Association Translational Research or Human Neuroscience Studies in Spinal Cord Injury (TRoHNS) awardee.

Jennifer Stevens-Lapsley, PT, PhD, FAPTA, was appointed as Section Director of Research & Development. She was also selected to be the Glen E. Gresham Visiting Professor in Rehabilitation Science at the University of Buffalo.

Carissa Wengrovius, **PT, DPT, PhD,** was awarded a UC Health Integrative Medicine Center CAMPUS Small Grants Research Program for her project entitled: *Building a Student-Driven Integrative Health and Wellness Program for Physical Therapy Students.*

Center for Advancing Professional Excellence

CENTER FOR ADVANCING
PROFESSIONAL EXCELLENCE

The **Center for Advancing Professional Excellence (CAPE)** is a state-of-the-art standardized patient and simulation center that provides current and future healthcare professionals with access to the latest teaching and learning innovations. Through simulation experiences, learners can learn, develop, and improve patient-centered care. The 29,000-square-foot CAPE is a unique resource for the Rocky Mountain region. This educational environment allows learners to gain real-world experience working with patients, handling clinical situations, and collaborating with other healthcare professionals.

The CAPE promotes excellence in the health professions through education and assessment of clinical skills, including communication, physical examination, clinical reasoning, and teamwork. The CAPE continues to grow and innovate while accommodating more learners and healthcare professionals. The CAPE's community of supporters fuels its efforts to bring a world-class education within reach for current and future healthcare professionals in the Denver metro area, the region, and beyond.

Annual Achievements Include:

- The ongoing accreditation by the Society for Simulation in Healthcare further establishes CAPE as an international leader within the simulation community in the areas of teaching, assessment, research, and education.

- CAPE successfully transitioned to a new and expanded state-of-the-art simulation center in the new Anschutz Health Sciences Building with access to innovative technology and flexible simulation and hands-on spaces.

- CAPE successfully ran SOM Traverse Assessments for the Class of 2026 in our new space. 172 SOM students completed Traverse 1 -5 at CAPE, and 12 SOM students completed Traverse 3-5 at the satellite Ft. Collins Branch (FCB).

- In May of 2023, CAPE partnered with SOM faculty to run 182 4th year medical students through multiple critical care scenarios where they were able to do hands-on training in resuscitations, including septic shock and cardiac arrest, as well as navigate difficult conversations around health equity in opioid management and breaking serious news.

- CAPE was featured on Roadtrip Nation, a show that presents high school students with different career paths. This episode featured our Simulation Lab and how it is used in conjunction with experiential learning during medical school.

- In June of 2023, CAPE hosted CU Science Discovery for an experiential camp, where we were able to give 60 high school students a taste of medical school, including a session conducted by our Teaching Associates on how to take vitals and auscultate heart and lung sounds. Then the students were able to participate in a high-fidelity simulation and were introduced to team dynamics and communication as they were led through a pre-brief/debrief by our Communications Facilitators.

- CAPE continues to lead the charge on advanced training of standardized patients capable of providing a broad array of portrayals, physical exam teaching, evaluation, and feedback.
    - ◊ The CAPE employs 85 Standardized Patients (SPs), Standardized Teaching Associates (TAs), Communication Coaches & Facilitators, and Simulation Technologists who represent the diverse population of Colorado. In the past year, the SP pool provided 37,244 hours of simulation work. The CAPE provided over 35,000 learner contact hours for AMC schools.

- CAPE's educational technology team has worked endlessly to find innovative ways to use our new learning management system, SimCapture. It allows the CAPE to effectively manage, record, and assess simulation training, both on-site and in-situ. Capture audio, video, annotations, patient monitors, and simulator data in a single web-based interface. Some updates include:
    - ◊ Automated paging/announcements
    - ◊ Improved data reporting, including PDF Question Analysis reports, excluding comments, and title tabs in data export tabs.
    - ◊ Locking In-use sessions when started outside the Exam System
    - ◊ The session timer on the PC in the exam room can be disabled.
    - ◊ Allowing multiple learners in an Exam Flow
    - ◊ Improved load time for data reporting

- We continue to partner with external partners such as Denver Health, Red Rocks Community College, Colorado Mesa University, and Colorado State University to provide training and research in the areas of communication, teamwork, transition of care, and physical exam teaching using simulated professionals and mannequins.

- CAPE continues to collaborate with:
    - ◊ The College of Nursing faculty to integrate simulated patients in the mental health curriculum for undergraduate nursing students.
    - ◊ Children's Hospital Colorado Simulation Lab to integrate simulated patients in additional boot camp trainings for interns, residents, and fellows, and now diversity, equity, and inclusion hands-on trainings.
    - ◊ The Black Health Initiative of Children's Hospital of Colorado as they train community advocates and healthcare providers to:
        - ♦ Identify gaps in their knowledge of culturally responsive communication and care as it relates to African-American women and children.
        - ♦ Determine how to work collaboratively in the care setting to improve the patient experience for African-American women and children
        - ♦ Demonstrate how to use multiple care delivery modalities (e.g., telehealth, telemedicine, home visitation) to increase access for African-American women and children.
    - ◊ The Center for Personalized Education for Physicians (CPEP) and faculty from the Departments of Emergency Medicine, Anesthesiology, Neonatology and Obstetrics & Gynecology to offer competency assessment, re-entry to clinical practice, and education services for healthcare professionals utilizing various simulation modalities. In the last year, CAPE administered 22 assessments from CPEP referrals.

- Kirsten Broadfoot, PhD, continues to lead the effort to implement, evaluate, and disseminate a Communication Toolbox in partnership with all health professions training programs on campus. The goal of the Toolbox is to improve and standardize the assessment of communication skills across all healthcare professions.

- Sustained community involvement through partnerships with campus and local organizations.

- The CAPE team enlisted the Health Equity in Action Lab (HEAL) to train the team on action and leadership for health equity through training, consultation, and deliberate practice. Each team member will hold a Foundations in Equity certificate.

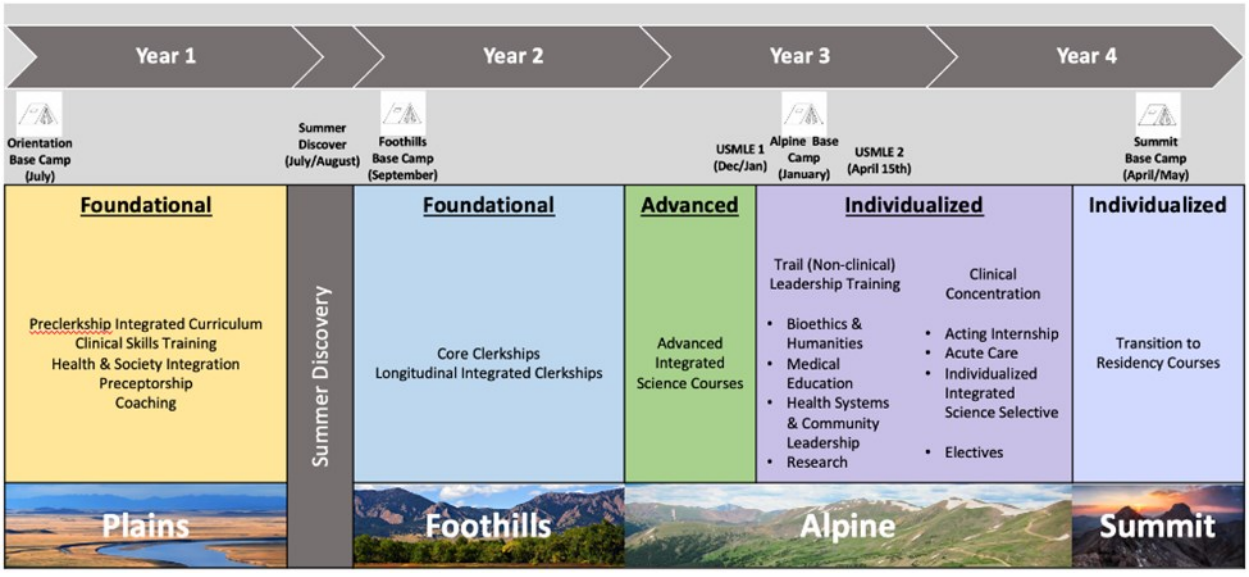
- The CAPE team attended the International Meeting for Simulation in Healthcare (IMSH), which is dedicated to healthcare simulation research and learning. The event provides an opportunity for "Simulation Champions" from all over the world to network with peers, learn from experts, and see the latest medical simulation innovations. The team enjoyed hundreds of industry-leading presentations, which cemented the event's place as the world's premier healthcare simulation education and learning event.

Undergraduate Medical Education

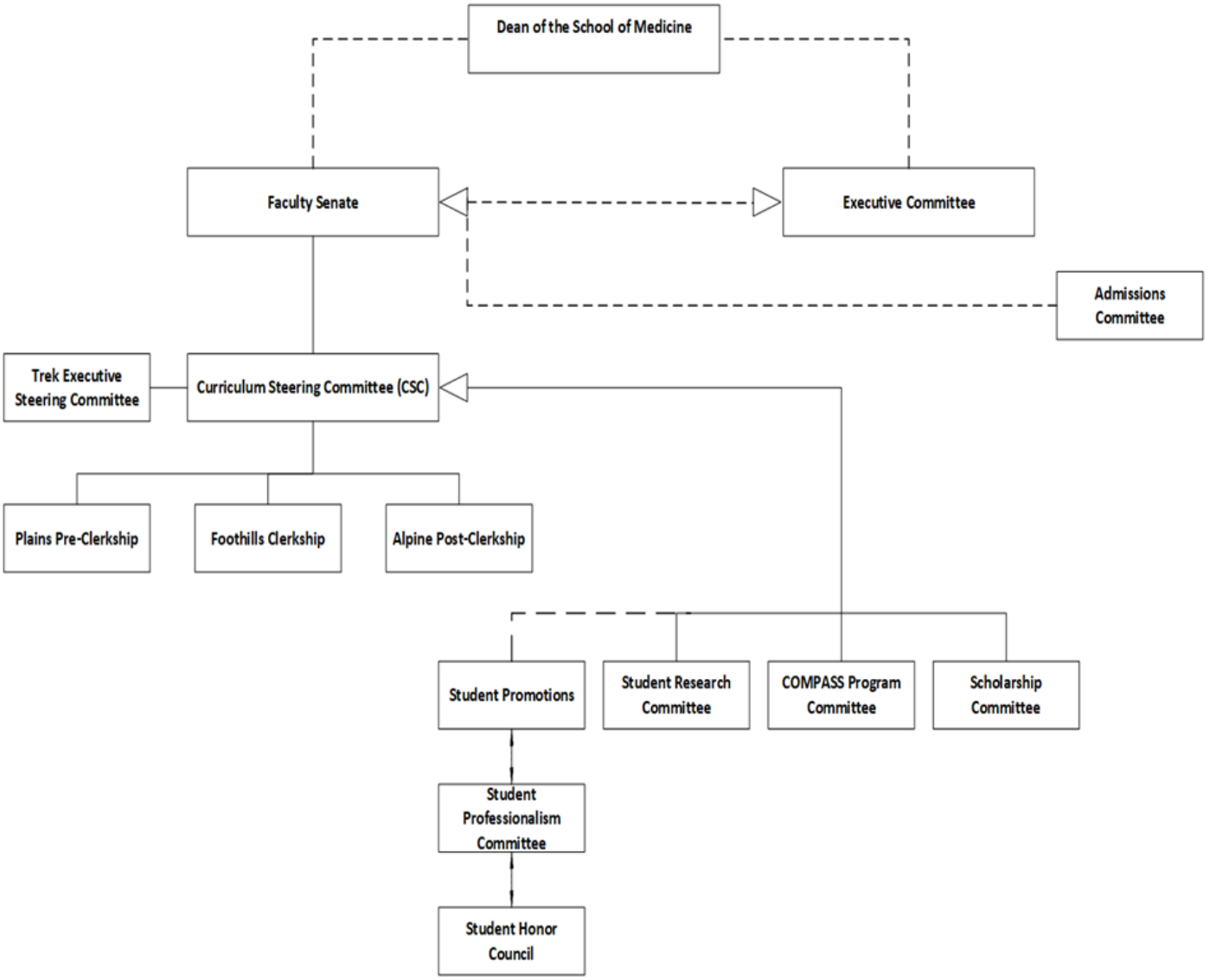
The Undergraduate Medical Education (UME) office oversees students entering medical school with the goal of earning the Doctor of Medicine degree. The students dedicate four or more years to an intensive period of study, clinical rotations, and personal growth. The UME office is responsible for guiding the students throughout their journey to become a doctor of medicine. The process begins with selecting the students who are personally and academically prepared to make the journey. The students receive counseling, financial/career advising, a rigorous curriculum in basic and clinical sciences, state-of-the-art experiences in simulation, rigorous assessments, and technological support throughout their medical school experience. This section of the Facts and Figures book reviews some activities in each of these areas. Website: http://medschool.cuanschutz.edu/education.

Following the successful visitation by the Liaison Committee on Medical Education (LCME) in March 2017 our undergraduate medical education team decided, with encouragement from Dean John J. Reilly, Jr., MD, to embark on a process to revise our curriculum focusing on preparing our graduates for the future of medicine, science, and health systems. On October 30, 2017, Senior Associate Dean for Education Shanta M. Zimmer, MD, led a kickoff retreat for the process. With approximately 150 participants, this introductory event served as a catalyst to share ideas and begin the hard work of deciding how our curriculum can be redesigned. We chose **leadership, curiosity,** and **commitment** as the principles that our future graduates need to practice compassionately and skillfully in the ever-changing health care systems and communities as superb clinicians, innovative educators, and creative investigators. Following the retreat, more than 25 committees planned an innovative new curriculum focusing on the pillars of Leadership, Curiosity, and Commitment. Faculty from the School of Medicine led these committees, with membership of students, staff, clinicians, scientists, and community members who worked diligently to build the Trek curriculum. Trek integrates basic science elements longitudinally throughout the academic careers of our students to prepare them and to enhance their personal and professional development as clinicians. The first phase launched in July 2021.

The Plains is comprised of foundational experiences that take students through pre-clerkship integrated basic science curriculum, clinical skills training, health and society, preceptorship, and coaching. After completing their summer discovery period, students transition to the Foothills where they will participate in Longitudinal Integrated Clerkships (LICs). In the post-clerkship portion of the curriculum, students will work through advanced science courses and USMLE 2 and 1. Students will then find more individualized paths, called trails, which include electives, dedicated research and discovery, acting internships, required critical care experiences, and transition to residency electives. Lastly, our students will reach the Summit of their undergraduate medical education where they transition to graduate medical education and the next phase of their training. Oversight of the curriculum includes multiple committees reporting to the Curriculum Steering Committee and the Faculty Senate.



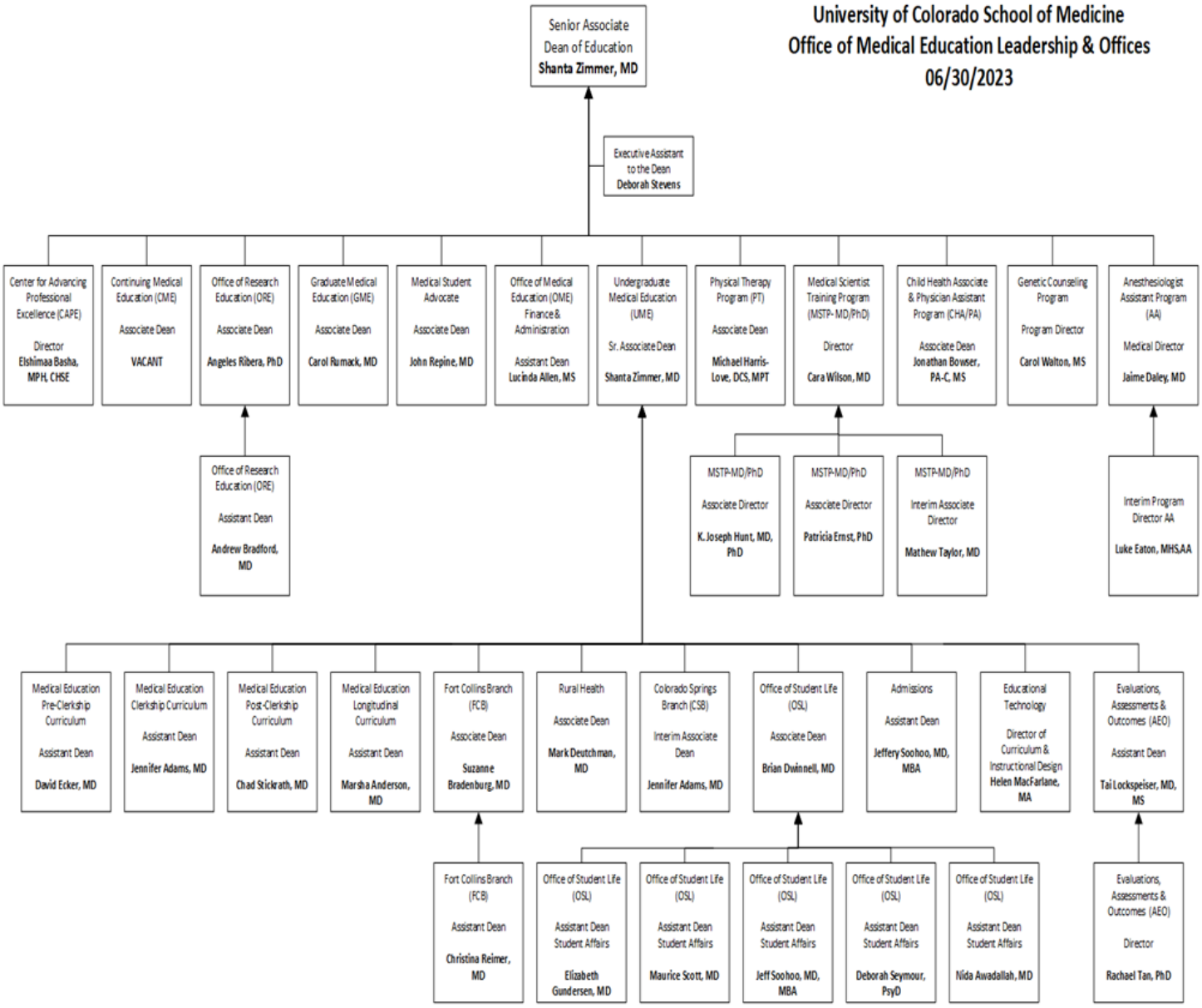
Undergraduate Medical Education Committee Structure
As of 06/30/2023



Represents reporting structure _____

Represents line of communication - - - - - - -

Medical students are elected/appointed/ volunteer on all student committees. For additional information on participation please contact the Office of student Life (OSL)



Medical Education Resources

For more information on the MD curriculum and curriculum reform:

The Trek curriculum reform website provides updates on curriculum planning and pilots:
https://medschool.cuanschutz.edu/education/current-students/curriculum/curriculum-reform
The Trek curriculum website (https://medschool.cuanschutz.edu/education/current-students/curriculum/trek-curriculum) provides an overview and detailed information on the pillars and phases.

The Instructional Design team has a range of tutorials, instructional videos and linked resources for teachers, and information on accessibility and universal design for learning as well as templates for Word documents and PowerPoint slides.
To access this information. email SOM.InstructionalDesign@cuanschutz.edu or set up an appointment through instructional design bookings https://outlook.office365.com/owa/calendar/TrekInstructionalDesign@olucdenver.onmicrosoft.com/bookings/

Curriculum Steering Committee

The Curriculum Steering Committee (CSC) is responsible for the oversight, design, implementation, integration, evaluation, review, and revision of the medical school curriculum. With appropriate faculty input, the CSC will:

- Oversee the medical education program as a whole, including design, integration, evaluation and improvement;
- Guide, review, approve course, block and thread content and educational formats;
- Systematically establish the evaluation procedures for curriculum, student and faculty assessment;
- Focus on helping achieve specific curricular outcomes associated with graduating superior physicians;
- Periodically review and amend educational policies; and
- Recommend, facilitate, and develop procedures to assure that suggested changes to the curriculum are implemented.

The Curriculum Steering Committee posts all its materials on a SharePoint site available to its users.

CSC Accomplishments for FY 2022-2023

New Members	Voting: Aimee Bernard, Chloe Briney, North Foulon, Joe Hurt, Kate Jennings, Zack Throckmorton, Non-Voting: None
Continuous Quality Improvement (CQI) and Phase Reports	• Longitudinal Curriculum o Individual Plains Blocks o Pillars-Health and Society; Medical Science o GQ o Intern Survey o Fort Collins o Colorado Springs o Hybrid Year o Interprofessional Education
Key Change(s) to Curriculum	Prepared for 2023 Bulge LIC COVID-19 Modifications Revised CSC Charter to reflect new Trek curriculum
Oversight	• Internship Match Process Grading Consistency across all campuses and LIC Scheduled Hours Compliance Process • Assignment process for LIC • Branch Campuses: Fort Collins and Colorado Springs • Approved changes to P1, P2 Assessment process • Hybrid Class of 2024 • TREK Class of 2025 forward • Legacy Class of 2021-2023 • Mental Health of all classes during pandemic • Charged new Task Force to report on Mistreatment

The Pre-clerkship Curriculum

The Plains (pre-clerkship) curriculum consists of 10 integrated courses that present the medical sciences, clinical sciences, and health systems sciences to prepare students for their clerkship year and beyond. David Ecker, MD, assistant dean of education, oversees the Plains curriculum. Each course lasts between 3 and 6 weeks, and they consist of didactic, active learning, experiential, laboratory, and small group discussion sections. In addition to learning and applying the medical sciences necessary for a developing physician, each week students engage in stable small groups with a physician-coach to advance their clinical skills as part of the Developing Our Clinical Skills (DOCS) curriculum, which emphasizes a humanistic approach to medical care. During those half-days, students apply, practice, and receive feedback on their foundational communication, physical examination, and clinical reasoning skills though both simulation and actual patient care experiences. Students also spend one half-day each week in small groups led by their physician COMPASS Guide participating in the Health & Society curriculum, which integrates behavioral and social sciences, informatics, evidence-based medicine, health care policy, culturally effective medicine and ethics, interprofessional education, and professionalism to prepare students to care for our diverse population. Students may also choose to participate in electives to personalize their curriculum and explore interests outside the standard curriculum. The overarching goal of the Plains curriculum is to provide the scientific foundation and critical thinking skills for our students' future medical education and to equip them for a lifetime of learning, research, clinical care, and community service.

Developing Our Clinical Skills Curriculum

The Developing Our Clinical Skills (DOCS) Curriculum is comprised of several elements: Communication, Physical Examination, and Clinical Reasoning training, as well as preceptorship experiences. The DOCS Curriculum is a hands-on, experiential curriculum that is integrated with the other pillars of the Trek curriculum. Students will meet weekly in stable small groups with a DOCS coach, who is a physician trained to develop students' clinical skills. The longitudinal relationships between students and their coaches will allow individualization of students' learning and development. Standardized patient encounters and regular clinical exposure in a physician preceptor's practice are key components of this curriculum. Course Director **Brandy Deffenbacher, MD**, and the Associate Course Directors **Deb Seymour, PsyD** (Communication), **Phillip Hitchcock, MD (**Physical Exam), **Todd Guth, MD** (Clinical Reasoning), and **Catherine Callister, MD** (Preceptorship), continue to develop and produce a dynamic, integrated curriculum of foundational clinical and professional skills and experiences that equip students for their clinical years. The curriculum is aligned with material taught in the Plains Curriculum to encourage integration of classroom learning into clinical practice.

If you are interested in volunteering as a preceptor for the Developing Our Clinical Skills (DOCS) curriculum email som.docs-preceptorship@cuanschutz.edu.

Clerkship Phase Curriculum

The Clerkship Phase Curriculum Committee is responsible for the design, implementation, and evaluation of the Clerkship Phase of medical student curriculum. The committee meets regularly to develop and implement the curriculum.

The Trek curriculum enrolled clerkship students in the Class of 2025 from September 2022 – August 2023. Students were enrolled entirely in LICs. This curriculum was governed by the CPCC committee.

The following individuals served as Longitudinal Integrated Clerkship Directors in 2022-23: Kate Adkins, MD, Sharisse Arnold-Rehring, MD, Jaime Baker, MD, Heather Cassidy, MD, Sarah Faubel, MD, Anne Frank, MD, Emily Gottenborg, MD, Vishnu Kulasekaran, MD, Bryan Lublin, MD, Kari Mader, MD, Amy Reppert, MD, Roberto Silva, MD, Meghan Treitz, MD, Eric Young, MD

Assistant LIC directors included: Henry Colangelo, MD, Mark Deutchman, MD, Kaitlin Heisel, MD, Kate Jennings, MD, Amy Johnson, MD, Frank Merritt, MD, Hana Smith, MD, Ben Vipler, MD,

Jennifer Adams, MD is assistant dean of medical education and clinical clerkships and is responsible for planning, management, and leadership of the Clerkship Phase.

For more information visit our website at:

http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx

Clerkship Phase

The Clerkship Phase consists of competency-based longitudinal integrated clerkships that provide opportunities for mastery of the core knowledge, skills, and attitudes required of physicians. The curriculum provides clinical experiences in the hospital, ambulatory clinics, emergency room, labor and delivery suite, and operating rooms. Emphasis in the curriculum is placed on opportunities for students to increase continuity and authenticity of clinical experiences in the format of Longitudinal Integrated Clerkship. Goals and learning objectives have been developed by the clinical content directors to reflect the clinical experiences and are mapped to ACGME competencies. In addition, overarching medical education program objectives have been developed by a consensus-based process. These objectives are defined in outcome-based terms that allow assessment of medical students' progress in developing competencies to be achieved at the time of graduation. These objectives reflect the expectations of physicians by the profession and the public.

Students use learning logs to record conditions observed, diseases, and procedures. Low and high-stakes assessments have been incorporated into each clerkship. Shelf exams, clinical assessments, mid-point feedback sessions, mid- or end-of-block standardized patient exams and clinical practice exams provide additional opportunities for assessment of students' clinical performance and opportunities for feedback on student performance. LIC directors monitor students' clerkship experiences at all clinical sites.

Clinical partnerships are essential for the training experiences of medical students in the clinical core. Core affiliate institutions include University of Colorado Hospital and other University of Colorado Health Hospitals including Poudre Valley Hospital and Memorial Hospital; Denver Health; Veterans Affairs; Children's Hospital Colorado; St. Joseph's Hospital; and community practice sites both affiliated with these organizations and independently operated. The clinical practice environment has been highly impacted by the COVID-19 pandemic, staffing shortages, financial shortfalls, and competing priorities. Yet our clinical partners have maintained a strong commitment to medical education as well as their missions to patient care excellence. The School of Medicine's ability to train medical students in the clinical curriculum would not be possible without the strong partnership of our clinical partners.

Group Accomplishments

During the 2022-23 Academic Year, the CPC committee accomplished the following initiatives:

- Complete transition from the traditional block model of clerkships to an all-LIC model including the overlapping hybrid year with transitioning students from clerkships in the third year of the curriculum to the second year.

- The successful launch of 16 LICs across the state of Colorado and across diverse health care systems.

- Continuous quality improvement with in-depth review and discussion in workshop format of the following areas involving all courses: Clinical Teaching, Sub-Optimal Learning Environment, Mistreatment, Didactics, Orientation, and Unique Curricular Innovations.

- Faculty development aiming to reach the ~1,100 faculty preceptors engaged in teaching LIC students. This has included in person and virtual trainings at the Anschutz Medial Campus, trainings in the community (Denver Health, Ft. Collins, and Colorado Springs), lunchtime sessions offered at Kaiser Permanente, team-based learning teaching workshops, podcasts, and accessed a growing library of asynchronous materials posted on the Office of Community Based Medical Education (OCBME) website. Most offerings have been made available for CME and MOC credit.

- Implementation of a novel team-based learning curriculum to deliver consistent didactic content and objectives across all 16 LIC sites.

- Implementation of a new competency-based assessment program for students in the clerkship phase.

Post-clerkship Curriculum

The mission of the post-clerkship curriculum is to utilize clinical and non-clinical courses to develop well-rounded physicians who are prepared to be excellent house officers and leaders who are curious, lifelong learners with a commitment to serve the profession, our patients, and society.

The curriculum consists of a semester of a required advanced science course curriculum, a required four-week acting internship, six weeks of basecamps, eight weeks of individualized leadership/change agency curriculum, 2-4 weeks of critical care, 28 weeks of elective time and a capstone presentation of students' mentored scholarly activity projects. Working with the Office of Student Life, the post-clerkship curriculum is designed to foster: 1) knowledge base and skill development; 2) career preparation/ development; and 3) professional identity formation all in an individualized manner for each student.

The Post-Clerkship Curriculum is led by:

Chad Stickrath, MD, FACP
Associate Professor of Medicine
Assistant Dean for Medical Education, Post-Clerkship Curriculum
University of Colorado School of Medicine

Jessica Ackels, MEd
Post-Clerkship (Alpine-Summit) Curriculum Manager
University of Colorado School of Medicine

More information about the post-clerkship curriculum can be found at:
https://medschool.cuanschutz.edu/education/current-students/curriculum/clinical-core/phase-iv

Trek Basecamps

The Trek Basecamps Course is an eight-week longitudinal curriculum delivered at three intentional time points of clinical transition: prior to the clerkship year, prior to advanced clinical and acting internships, and prior to graduation. As such, through the cultivation of continuous self-advancement, students solidify and advance relevant knowledge and skills required for success during their next stage in training. Through small-group skills practice and case-based sessions, students advance clinical reasoning, psychomotor, communication, and efficiency skills as well as dedicate time toward reflection and professional identity exploration. As students advance, the content learned spirals in complexity as well as differentiates and maps toward students' individualized specialty of practice culminating in the transition to residency basecamp which is predominantly comprised of a specialty-specific curriculum divided into the following specialties: Anesthesia, Emergency Medicine, Family Medicine, Internal Medicine, OB/GYN, Pediatrics, and Surgery.

The Basecamps course is directed by Anna Neumeier MD, Cason Pierce MD, and Matthew Rustici MD. As most of the course is taught through small groups with student-to-faculty ratios between 1:4 up and 1:16, it appreciates its 700 instructors that donate over 1,600 hours of direct teaching time.

For more information visit the course website: https://medschool.cuanschutz.edu/education/current-students/curriculum/trek-curriculum/basecamps

Mentored Scholarly Activity Program

The Mentored Scholarly Activity program (MSA), is a required longitudinal curriculum across all phases for all School of Medicine students. The goal of the MSA curriculum is to foster self-directed, life-long learning over the course of medical careers, positioning students to be able to address gaps in medical knowledge, quality and safety, and public health practice. The MSA requires students to identify and work with a mentor to complete their projects, which prepares them for working with mentors in their careers, serving as mentors to others, and eventually leading teams in the medical profession. The MSA program has a broad definition of scholarship ranging from traditional research to literature reviews, quality improvement, medical education, and humanities. Students choose projects that represent their interests. We encourage students to participate in projects that address disparities in health outcomes and promote diversity and representation in the health professions. Projects culminate with a scholarly paper and a capstone poster presentation in the spring of the students' graduation year.

The 2021-2022 MSA leadership team and their topic expertise consisted of **Kristen Nadeau, MD**, **MS,** director (Clinical Research), **James Maloney, MD,** associate director (Clinical Research), **Leana May, DO, MPH**, associate director (Global Health), **Daniel Goldberg, JD, PhD**, associate director (Bioethics, Humanities, Arts and Education), **Sarah Rowan, MD,** associate director (Public Health and Epidemiology), and **John Tentler, PhD**, associate director (Laboratory-based Biomedical Science). Over 360 CU faculty members currently serve as mentors. MSA has partnered with the Colorado School of Public Health to work with the Colorado Biostatistics Consortium to assist medical students with their study design and data analysis. Librarian liaisons at the Health Sciences Library provide expert consultations for literature reviews tailored to the student's project topic. 38% of MSA students have either published or had a manuscript accepted or pending publication. For the graduating Class of 2022 Capstone Poster Forum Event, approximately 95 faculty members volunteered to evaluate the posters of 176 student presenters, and each student evaluated posters of their peers.

For more information on becoming a volunteer faculty mentor, please contact the MSA program, at MSA.SOM@cuanschutz.edu.

https://medschool.cuanschutz.edu/education/current-students/curriculum/longitudinal-curriculum/mentored-scholarly-activity

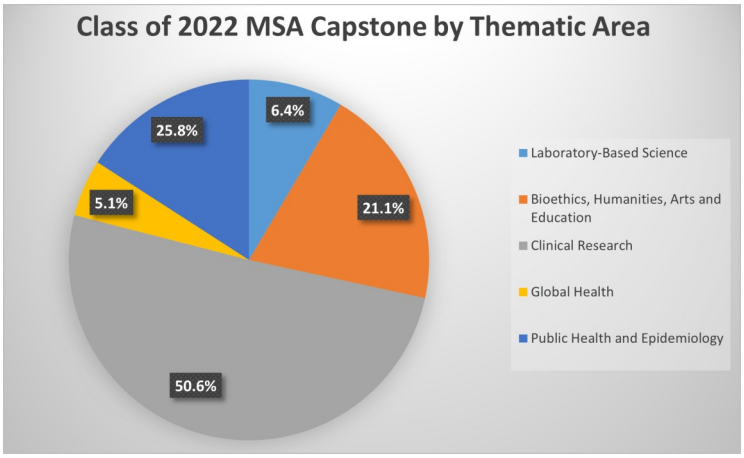


Figure 1: MSA Projects by Thematic Area, Class of 2022 N=176

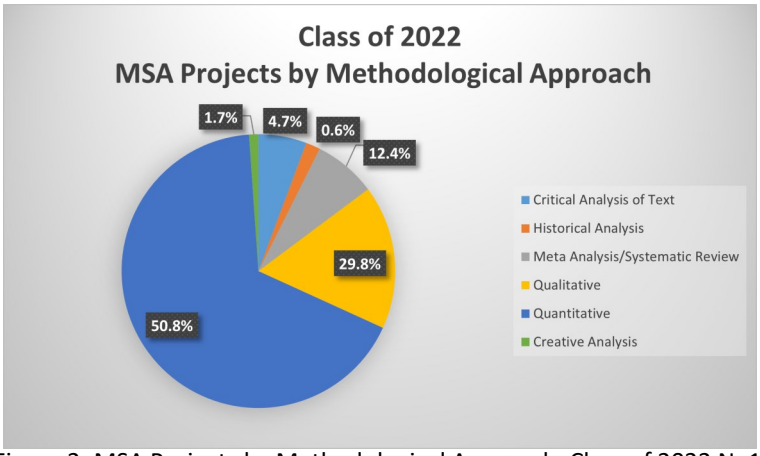


Figure 2: MSA Projects by Methodological Approach, Class of 2022 N=176

Medical Student Research Track

Marsha Anderson, MD
Director, Research Track

The Research Track (MD Program) fosters development of an identity as a physician capable of completing all aspects of a research project from the identification of a health care-related scientific question to the written dissemination of scientific information as a first author on a manuscript developed for submission. Since its inception in 2007, 269 students have completed the track, with 72 currently enrolled in the program (23 in the Class of 2024, 30 in the Class of 2025, and 19 in the Class of 2026). The 84 students participating since 2019 have published 206 papers: 41% are first-authored papers and 25% are second-authored papers. Fifty seven percent of Research Track students who graduated between 2019-2023 published a first-authored paper prior to graduation.

Students work with an experienced faculty mentor through all four years of the School of Medicine curriculum, including one full-time research month in the summer after the first year, and two additional full-time research months during their fourth year. Students present their research locally, regionally, and nationally. In addition, the track provides experiential learning in how to develop polished, professional research presentations and papers. The Research Track prepares students to continue working as researchers during their residencies and future medical careers.

The research track relies on generous funding support of departments, centers, and an endowment. Funding sources commit to support a student through their four years as a research track student, which includes three months of stipends for full time work, as well as travel to present at the Western Student Medical Research Forum and one national meeting in the student's area of specialty.

Funding Department, Center, or Source	Students sponsored in 2022-2023
Anesthesiology	3
Cancer Center	7
Gates Institute	1
Child Psychiatry	2
Dermatology	1
Fort Collins Branch	6
Immunology and Microbiology	3
Medicine	8
Neurology	3
Neurosurgery	2
Ob/Gyn	3
Orthopedics	6
Ophthalmology	6
Pathology	1
Pediatrics	14
Pediatric Urology Research Enterprise	1.5
Radiology	3
Schweppe Endowment	13
Surgery	7.5

Research Track Student Awards and Honors

Twenty-one Research Track students had oral or poster abstracts accepted for presentation at the 2023 Western Medical Research Conference held in January 2023 in Carmel, Calif. Three Research Track students received awards at the meeting:

- Anthony Adduci was honored with the 2023 Edwin E. Osgood Award, given to a student with the highest scoring abstract submitted to the meeting.
- Caitlin Robinson and Jacob Plaisted each received a Student Subspecialty Abstract Award for high scoring abstracts.
- Michal Shafer, a fourth-year Research Track student, was awarded a 2023 Anschutz Campus "Trainee Research Excellence Award."

Schweppe Outstanding Scholars

The Schweppe Scholars Program, funded by the Schweppe Foundation, supports outstanding School of Medicine students from each class cohort in the Research Track. Support continues through all four years.

AY 2022-2023 Schweppe Scholars

Zihan Feng, Emmeline Kim	Class of 2023
Salman Ashraf, Bruck Gezahegn, Joy Huang, Preston Le	Class of 2024
Melissa Carpenter, Eric Fu, Tristan Seawalt, Hillary Ta	Class of 2025
Cameron Bean, Lia Constantine, Ananya Shah	Class of 2026

Anschutz Health Sciences Student Research Forum

The 37th Annual Student Research Forum was held on December 13, 2022. This campuswide forum was organized and funded by the School of Medicine Dean's Office. Sixty-three students presented their research, representing the School of Medicine, Skaggs School of Pharmacy and Pharmaceutical Sciences, Colorado School of Public Health, and the Graduate School. Forty-four faculty members volunteered to judge posters. A total of $11,200 in award money was given to the 32 highest scoring presentations in the form of $350 scholarships.

Education Technology

The Trek and Hybrid curricula are delivered, supported, and evaluated with a collection of technologies. In addition to the maintenance and support of existing technologies, there were a range of new projects this year.

Continued development of a student information database and interface for the Office of Student Life.
Support and maintenance of the Trek learning ecosystem, a collection of systems, which include the functions of learning management, curriculum management, learning resource management, student assessment, course and faculty evaluation, and clinical experience tracking.
Creation and implementation of a system for mapping curriculum, where the curriculum is prepped before uploading.
Maintenance of learning experience loggers.
Development of learning modules in H5P, an online tool used to create and deliver interactive curricular content, which is integrated into the learning management system.
Development and implementation of the longitudinal integrated clerkship placement system for the Trek Foothills.
Development of a clinical schedule app for the Advanced Science Courses that delivers individualized rotation schedule for each student.
Continued improvement and refinement of technology support for students, staff, and faculty.

Education technology support is available to medical students and medical educators and administration through Zendesk.

Also, in support of the MD program, the Instructional Design team has created template documents that encourage good practices for accessibility and universal design. This team has developed training for OASIS, Canvas, other learning systems, and the processes that support the delivery of the curriculum. Additionally, the instructional design team collaborates with course and content directors to use technology tools well and deliver curriculum well. Information on the services of this team are available by emailing SOM.InstructionalDesign@cuanschutz.edu or you can set up an appointment through instructional design bookings at https://outlook.office365.com/owa/calendar/TrekInstructionalDesign@olucdenver.onmicrosoft.com/bookings/

Office of Assessment, Evaluation, and Outcomes

This year, the UME Office of Assessment, Evaluation, and Outcomes (AEO) continued to work towards our mission of creating a data-driven culture that promotes growth and improvement of students, faculty, curricula, and the learning environment. We continued to oversee assessment and evaluation of three different curricula occurring simultaneously during AY 22-23: The re-formed Trek curriculum (CO 2026 & CO 2025), the Hybrid curriculum (CO 2024), and the Legacy curriculum (CO 2023).

Assessment Accomplishments

One of the primary goals of the AEO office is to create a coordinated program of student assessment that promotes best practices and clearly facilitates student growth. During AY 22-23 assessment activities included:

- **Ongoing improvement of the assessment approach in Plains**

  As this was the second year of the new curriculum, we implemented a dual approach to assessment creation: (1) faculty writing new questions to cover any content and curricular changes from the first year, and (2) faculty revising questions based on feedback from psychometric evaluation of question performance from the first year. Throughout the year we continually provided feedback on questions as they were written as well as after they were administered but before final scoring, i.e., key validation. Key validation ensures that scores are an accurate reflection of students' medical knowledge, and assessment results are fair.

- **Cut score equating for Plains assessments**

  End of Course assessments were graded as pass/fail by comparing student performance against a cut score, i.e., passing standard, or the minimum number of questions a student must answer correctly to pass. During the first year, each cut score was determined by a rigorous psychometric process called standard setting which applied multiple methods to determine the cut score for each assessment. During the second year a psychometric process called item response theory (IRT) equating was used to carry forward the passing standard from the first year, even though the assessments were not the same. Equating is critical to ensure that assessment results are fair, valid, and defensible, and enables us to compare student ability levels across cohorts.

- **Implementation of a new approach to assessment in the clinical year**

  Students in the Trek curriculum started their core clinical year (the Foothills) in the fall of 2022. New assessment forms and a criterion-based approach to clinical grading were implemented. To prepare faculty for the new approach, we led six different in-person faculty development sessions attended by over 500 faculty as well as created handouts, videos, and other resources to support faculty in accurately and fairly assessing our learners.

- **Creation of a grading dashboard for clinical assessments**

  Given the large volume of data obtained from clinical assessment in the Foothills (currently over 9,500 completed assessments with 31,00 comments), we needed to create a way to consolidate the data to (1) track student progress and (2) determine a final clinical grade at the end of the year. We successfully created a fully de-identified dashboard that shows student performance data and comments in each of the specialties in the Foothills. This dashboard was then used by all the clinical grading committees to assign grades.

- **Ongoing implementation and improvements to the Trek Progress Committee**

  The Trek Progress Committee (TPC) is a standing committee of the School of Medicine Promotions Committee. The TPC has three main purposes: (1) Provide feedback to all students about their progress and opportunities for growth, (2) provide support for all students according to need, and (3) create plans for students who need higher levels of support to succeed and oversee the implementation of those plans. The TPC is chaired by the assistant dean of assessment, evaluation, and outcomes, and includes representation from each of the three pillars of the curriculum, the chair of the student professionalism committee, and additional individuals to provide diverse perspectives. Representatives from the Office of Student Life and Remediation are present at the meetings but do not vote. TPC allows us to more clearly track student performance across all four years of medical school to ensure that all students are progressing appropriately and meeting our expected milestones and outcomes.

Evaluation Accomplishments

To support the continuous quality improvement of the educational program, the AEO Office collects, synthesizes, and reports de-identified quantitative and qualitative student data to promote faculty growth and curricular improvement. During AY 22-23 students completed 15,070 course evaluations (n=13,060 in AY 20-21 and 14,836 in AY 21-22) and 68,678 teaching evaluations (n=68,336 in AY 20-21 and 64,617 in AY 21-22) administered by the AEO Office. Routine reporting activities included:

- **Generating and distributing faculty and resident teaching reports**
  All faculty and residents receive a teaching report if they are evaluated by at least three students. For University-affiliated faculty who teach students, the AEO Office uploads the summary teaching evaluation directly into PRiSM. The AEO Office distributed approximately 963 attending and 4,404 preceptor evaluation reports, and 939 resident evaluation reports to residents and their program directors at the 65 residency programs at University of Colorado School of Medicine, Denver Health, Exempla St. Joseph's, and HealthOne-PSL.

- **Summarizing evaluation results**
  For each course and content area, the AEO Office provides a summary of all student feedback to the course and content directors for ongoing quality improvement. This includes quantitative data, i.e., ratings to Likert-style questions, and qualitative data, i.e., responses to open-ended questions, collected from course evaluations and a Trek Real Time Feedback survey that students can submit at any time about any part of the curriculum. For the Plains this involved summarizing the feedback from ten courses and ten content areas, e.g., immunology, pharmacology.

- **Creating new evaluation dashboards**
  The AEO Office continues to expand the use of individualized dashboards for evaluation. We have now created dashboards for each phase of the new curriculum that allow for visual representation of data and facilitate comparisons across courses and years. In addition, we have created dashboards to monitor key metrics such as failure of NBME subject exams that are accessible only to certain individuals.

Summary of AY 22-23 Student Ratings of Courses and Faculty with AY 20-21 and 21-22 Comparisons

Pre-clinical curriculum	Mean		
	AY 20-21	AY 21-22	AY 22-23
"Rate the overall quality of the course"	3.78	3.76	3.90
"Overall teaching" rating for lecturers	4.27	4.05	4.20
"Overall teaching" rating for small group facilitators	4.52	4.28	4.43

(5-point scale, e.g., 1=*Unacceptable*; 5=*Excellent*)

Clinical Curriculum	Mean		
	AY 20-21	AY 21-22	AY 22-23
"What was the quality of the clerkship as a whole?"	4.12	4.21	4.13
Advanced Studies (Phase IV)			
"What was the quality of the acting internship as a whole?"	4.48	4.57	4.51
"What was the overall quality of this course? (*ASCs)**			3.43
"Rate the quality of this elective as a whole." (*Clinical Electives*)	4.49	4.57	4.56
"Overall, how effective is this attending's teaching?"	4.67	4.7	4.68
"Overall, how effective is this resident/fellow's teaching?"	4.66	4.7	4.64

(5-point scale, e.g. 1=*Poor*; 5=*Excellent*)
*The advanced science courses (ASCs) were first held in AY 22-23.

Outcomes Accomplishments

The AEO Office supports program development efforts and provides data and analyses by request to assist educational activities and curricular program decision-making. During AY 22-23, other AEO activities included:

- **Dashfolio**
  We continued to expand and improve the student Dashfolio, a dynamic dashboard that provides a visual display of student performance to help students identify areas of strength and areas for improvement, and guide learning over time. Clinical assessment data and data from standardized patient exams were added to the Dashfolio in addition to the existing data from multiple-choice question assessments, NBME exams, and professionalism data.

- **Evaluating the impact of the MD program experience**
  The AEO Office collects outcomes data annually via "End of Phase" surveys that are administered to all students at the end of each year of medical school with baseline data collection in the form of an incoming student survey. The surveys collect valuable feedback about curricular experiences and students' attitudes and beliefs. In addition, the AEO Office analyzes and reports on the results of the AAMC Graduation Questionnaire and AAMC Resident Readiness survey to compare University of Colorado School of Medicine with other medical schools around the country.

- **Student Data Advisory Committee**
  The Student Data Advisory Committee (SDAC), led and managed by the AEO Office, oversees all research using medical students as subjects. The committee reviews all surveys and requests for data. This year SDAC reviewed 40 different projects, approving 36 of them which were then distributed to students.

- **Providing educational research support to students and faculty**
  The AEO Office regularly works with students and faculty to support their educational research projects and collect high-quality data from medical students while protecting confidentiality. This year AEO participated in seven manuscripts that have been published or submitted for publication as well as significantly more oral and poster presentations at local and national meetings.

Assessment, Evaluation, and Outcomes Office faculty and staff
Tai Lockspeiser, MD, MHPE – Assistant Dean of Medical Education – Assessment, Evaluation, and Outcomes
Rachael Tan, PhD – Director of Office of Assessment, Evaluation, and Outcomes
Susan Peth – Evaluation Program Manager
Erin Broening – Evaluator
Sean Marshall, MA – Outcomes Program Manager
Wendy Christensen, PhD – Statistician
Sheilah Jiménez, MA – Professional Research Assistant
Jonathan Menke – Assessment Specialist
Marisha Roberts – Coordinator

https://medschool.cuanschutz.edu/education/current-students/curriculum/assessment-evaluation-and-outcomes

Office of Student Life

The Office of Student Life (OSL) houses both Student Affairs and Admissions. OSL is headed by Brian Dwinnell, MD, who serves as the associate dean for student life, having responsibility for both Admissions and Student Affairs. Several new assistant deans were added to the OSL Team. Jeffrey SooHoo, MD, MBA, now serves as assistant dean of admissions and assistant dean of students affairs. Deborah Seymour, PsyD, serves as an assistant dean of student affairs for student success. Nida Awadallah, MD, who has served as the director of clinical remediation is now an assistant dean of students affairs, still overseeing clinical remediation. Elizabeth Gundersen, MD, and Maurice Scott, MD, both palliative care physicians, serve as assistant deans in student affairs. Scott also has a role working with Amira del Pino-Jones, MD, associate dean of diversity, equity, and inclusion. Melanie Trinkwald is the manager of student affairs, reporting to Haylee Shacklock, MHA, who has consolidated the structure of staffing in her new role as director for the Office of Student Life.

The mission of OSL is to provide support for applicants and students throughout their cycle with the School of Medicine and to provide multiple levels of support to a diverse group of students to help ensure their academic success and to support their personal well-being. OSL provides services for prospective students, current students, and graduates. This starts when a candidate expresses an interest in being considered for the MD program, continues through their matriculation and time as a student, and into their careers as they need support for medical licensing. The office provides guidance, advice, and administrative assistance to applicants and students. The office is responsible for the admissions interview and selection process, monitoring student registration, student progress, and graduation. OSL organizes and manages many events including the preview day, the first-year orientation, the matriculation (white coat/stethoscope) ceremony, Match Day, and the hooding and oath ceremony at graduation. OSL also holds regular live and virtual office hours. Coming out of the pandemic, students experienced mental health and financial issues, which required additional OSL intervention.

Our admissions team is led by Assistant Dean for Admissions Jeffrey SooHoo, MD, MBA, and Admissions Manager Karina Goodwin. There are two admissions professionals, Lamar Cherry and Lindsay Willis. This team manages 10,000 applications yearly, ultimately selecting 184 highly motivated and qualified students from diverse backgrounds. All interviews are conducted virtually as the approach has been successful and less expensive to applicants.

OSL provides organization and support for the Student Promotions Committee, which routinely involves complicated student cases. OSL also supports the Student Life Advisory Committee which is comprised of students from all levels and serves as an advisory group to the deans in OSL, Medical Student Council (MSC), and the Curriculum Steering Committee. The OSL Deans routinely attend MSC to provide the students with important updates as well as address student concerns. In addition, the OSL Deans actively participate in ASAL, the campus-wide committee for student affairs issues for all campus professional schools.

Financial aid and scholarships are also managed and/or tracked by OSL. Thanks to the efforts of our Financial Aid Officer, Deedee Colussy, along with expanded scholarship efforts led by Senior Associate Dean for Education Shanta Zimmer, MD, Assistant Dean of Finance Cindy Allen, and the Office of Advancement, we have been able to reduce our mean student debt.

https://medschool.cuanschutz.edu/education/current-students

Student Affairs

The Student Affairs group is headed by Brian Dwinnell, MD, associate dean for student life, having responsibility for admissions and student affairs in the Office of Student Life (OSL). Several new Assistant Deans were added to the OSL Team. Jeffrey SooHoo, MD, MBA, now serves as assistant dean of admissions and assistant dean of students affairs. Deborah Seymour, PsyD, serves as an assistant dean of student affairs for student success. Nida Awadallah, MD, who has served as the director of clinical remediation is now an assistant dean of students affairs, still overseeing clinical remediation. Elizabeth Gundersen, MD, and Maurice Scott, MD, both palliative care physicians, serve as assistant deans in student affairs. Scott also has a role working with Amira del Pino-Jones, MD, associate dean of diversity, equity, and inclusion. Melanie Trinkwald is the manager of student affairs, reporting to Haylee Shacklock, MHA, who has consolidated the structure of staffing in her new role as director for the Office of Student Life.

Each Assistant Dean shares in particular duties such as MSPEs, student advising, etc., but each has specific responsibilities. SooHoo, for example, oversees Career Exploration and the Master's in Medical Science Program. Gundersen directs our Scholars Year program. Scott is the OSL liaison to our branch campuses in Ft. Collins and Colorado Springs. Awadallah and Seymour lead our academic support efforts.

The COMPASS (COaching, Mindful reflection, Professional identify formation, Assessment, Self-directed learning, & Self-care) Program, is also housed in OSL. Lawrence Haber, MD, enters his 2nd year as director. COMPASS is an individualized mentoring program that pairs students in groups of 10 with a single faculty member, focused on supporting that student throughout all four years of medical school. Student Navigators are also assigned, allowing for longitudinal mentorship. Guides have three main pillars of responsibility: Coaching, teaching, and assessment.

COMPASS was developed due to provide individual student support for academic success. We have two groups of guides working with two cohorts of students, either 1st and 3rd year student groups, or 2nd and 4th year groups.

The Office of Medical Education has a new director of career advising position. Jenny Soep, MD, was appointed to the role. Soep has served as an advisor and a pediatric clerkship director for over 20 years. With the changes in the Electronic Residency Application System (ERAS) and the move to more holistic review with Step 1 becoming pass/fail, Soep provides oversight of the specialty advisors and provides guidance to students as they enter the application process.

The Office of Student Life is responsible for the oversight of most student support services including academic, career and personal advising, financial aid, residency applications, support, and USMLE Step Exam preparation. The office works with campus resources, including ODAI (Office of Disability Access and Inclusion), Student Mental Health, Student Engagement and Outreach, and the Phoenix Center. The remediation team has had a measurable impact, with a reduction in the Step 1 failure rates and an increase in our mean Step 2 score.

Four years ago, the University approved the creation of a Master's in Medical Science. This degree is for students who have at least completed the preclinical curriculum but do not to continue in the MD program. This degree recognizes the significant amount of effort and discrete knowledge our students obtain during these two years and may assist in obtaining employment in a variety of

2023 Residency Match Data

Specialty Choice	Number of Students
Anesthesiology	15
Child Neurology	1
Dermatology	2
Emergency Medicine	15
Family Medicine	16
General Surgery	12
Internal Medicine	36
Interventional Radiology	2
Medicine-Pediatrics	2
Medicine-Preliminary	1
Neurological Surgery	4
Neurology	1
Obstetrics-Gynecology	7
Ophthalmology	3
Orthopaedic Surgery	10
Pathology	1
Pediatrics	12
Phys Medicine & Rehab	5
Plastic Surgery (Integrated)	2
Psychiatry	6
Radiology-Diagnostic	5
Surgery	1
Surgery-Preliminary	4
Thoracic Surgery	1
Transitional	1
Urology	2
Vascular Surgery	1
Total Distinct Students	168

fields going forward. We plan to begin an effort to catalogue career paths taken by our Master's recipients.

On March 17, 2023, Match Day was held in person at the Marcy and Bruce Benson Atrium in the Anschutz Health Sciences Building for 168 students who matched into residency positions. 37% matched in potential Primary Care specialties (Family Medicine, Internal Medicine, Medicine – Primary track, Med-Peds, and Pediatrics). Some of these students may ultimately choose to specialize in a non-primary care field. The top residency choices included Internal Medicine (36 categorical matches), Family Medicine (16 matches), Anesthesiology and Emergency Medicine (each with 15 matches), Pediatrics (12 matches), Orthopedics (10 matches) and OB/GYN (7 matches)

Colorado will retain 29% of the class. California will receive 18% of the class, Texas will receive 5%; Arizona, New Mexico, New York, and Ohio will receive 4% each; Minnesota, Michigan, Pennsylvania, and Washington will each receive 3%. The remaining 20% of the class will be spread throughout 20 other states.

On May 22, 2023, 171 students graduated with MD degrees during at a ceremony on campus.

https://medschool.cuanschutz.edu/education/current-students

Admissions

The Office of Admissions continues to be led by Jeffrey SooHoo, MD, MBA, assistant dean of admissions. Since the beginning of the COVID-19 pandemic, interviews have been conducted virtually. The School of Medicine received 9,852 primary applications for 184 seats in the class of 2027. Of these 184 entering students, 10 students entered the MD/PhD Program, 20 will participate in the Colorado Springs Branch Campus Longitudinal Integrated Clerkship and 12 will enter the CU/CSU branch campus in Fort Collins. Additionally, the Office of Admissions recruited and interviewed applicants for multiple pathway programs, accepting students into the University of Colorado Denver BA/BS-MD Program and the University of Colorado Denver Post-Baccalaureate Program.

The Office of Admissions continues to employ a holistic admission process. Grades and MCAT scores are significant variables in deciding who is invited for interviews, but greater emphasis is placed on the total application, which includes letters of recommendation, primary and supplemental essays, and the applicant's experiences. The admissions process also requires that applicants complete an online situational judgment test to assess non-cognitive competencies expected of entering medical students.

Demographics

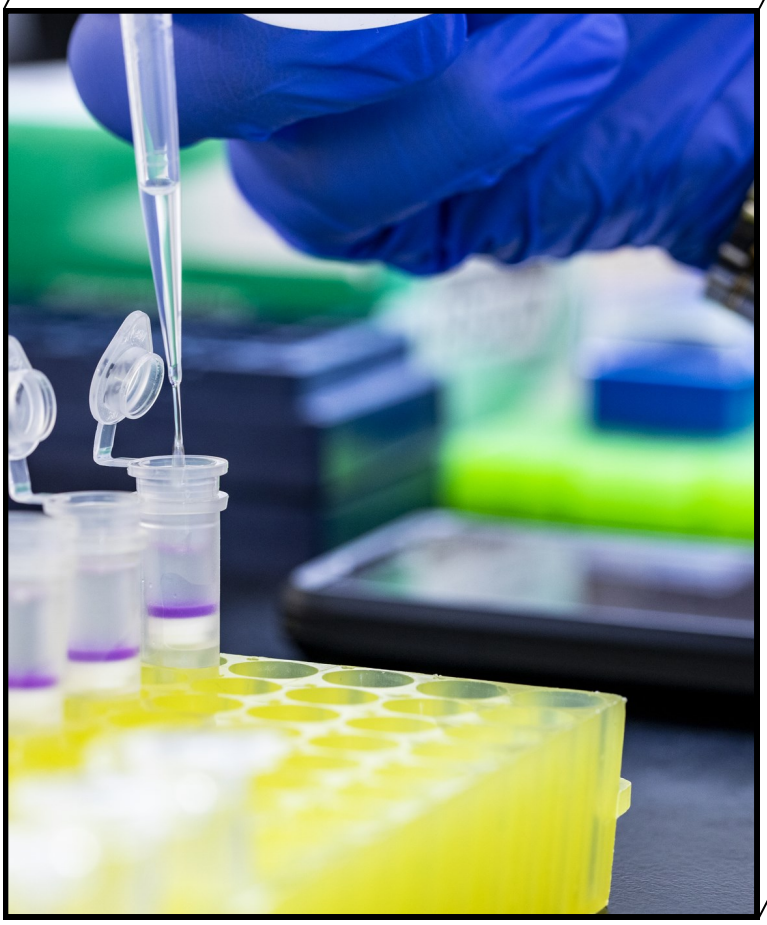
Class of	2025	2026	2027	Applicant Data 2022-2023
Class Size	184	184	184	Primary AMCAS Applications: 9,852 Completed Secondary Applications: 5,385 Interviewed: 718 Offers of Admission: 403
Female	101	99	104	
Male	83	85	80	
CO Resident	86	94	78	
Non-Resident	98	90	106	
URiM*	46	49	48	
Average Age	25	25	25	
Cumulative GPA	3.76	3.73	3.80	
Math/Science GPA	3.65	3.69	3.77	
MCAT (total)	512	514	515	
* Under-represented in Medicine as defined by CUSOM Diversity Plan				

Annual achievements include:

- Successful recruitment of twelve students that matriculated into the CU/CSU Branch Campus in Fort Collins as well as 20 students into the Rural Program.
- Continued partnership with the Office of Advancement and Scholarship Committee, with a record number of Dean's Distinguished Scholarships distributed to incoming students.

The office continues to seek faculty for committee membership. If interested, please contact the Office of Admissions at md-admissions@cuanschutz.edu.

Additional detailed information may be found at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/Admissions/Pages/admissions.aspx



Medical Scientist Training Program

Medical Scientist Training Program

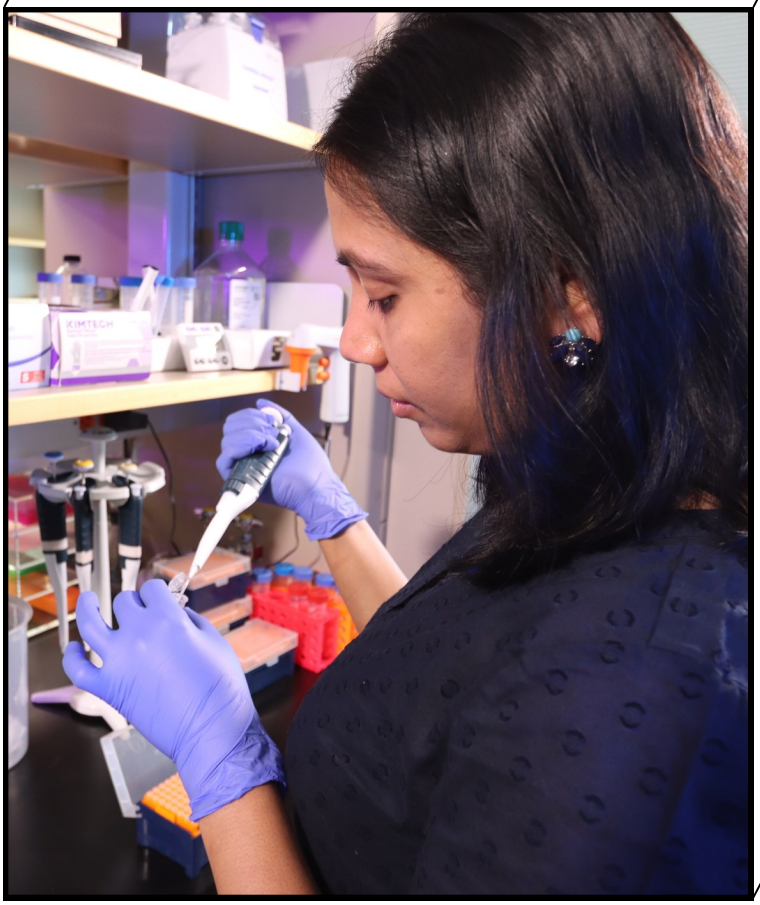
The Medical Scientist Training Program is a multidisciplinary, inter-institutional MD/PhD dual-degree training program, educating students in clinical medicine and biomedical research. Its mission is to provide students with the breadth and depth of training necessary to excel as a physician-scientist. Post-baccalaureate students are recruited from a national pool of ~500 applicants, and those selected have proven exceptional talents in research science, a curiosity to solve mechanisms of disease, a drive for discovery, a well-thought-out motivation to pursue a career in medicine, and exceptional leadership.

The program was formed in 1983, and in 1992 it received MSTP status when it was awarded NIH T32 funding (currently ~$1M/year to support 16 trainees per year). The program has strong leaders and mentors. MSTP is led by **Cara Wilson, MD,** an established physician-scientist with a consistent record of NIH research funding and extensive experience in mentoring and career development of trainees. Joe Hurt, MD, PhD, serves as clinical associate director providing individualized guidance to students as they transition back to medical school for their clinical training and through their residency applications. The program also features an associate director for thesis education. This position helps students in finding suitable training environments for the PhD training and supports until their thesis defense. The program continues to be reviewed and funded by the NIH each year. The program applied for renewed funding in 2022 and was approved for an increase in funding from 16 to 20 trainee slots for the project period starting in 2023 and continuing until 2028. The 2022-23 academic year marked the 30th consecutive year of NIH support.

The MSTP is an intercampus student training program, with over 200 faculty members in 17 PhD programs at the Anschutz Medical Campus, National Jewish, and CU Boulder that can serve as PhD mentors. There are currently 86 students in the program: 10 in the first year (MS-I), 10 in the second year (MS-II), 36 in the PhD research years, and 30 in the Medical School clinical years (MS-III and MS-IV). Since 1983, 284 students have matriculated in the MSTP, with 178 having graduated with both degrees in an average of 8.4 years. Graduates of the MSTP obtain residencies at the nation's elite programs and about 75 percent of those completing training are now employed in academic medicine, government (NIH or CDC), or industry, including starting up their own biotech companies.

Importantly, we have an increasing number of MSTP graduates (16) who are now faculty at the University of Colorado Anschutz Medical Campus and another 17 who are completing their residency and/or fellowship training here. The Colorado MSTP and its leaders have been key in establishing the National Association of MD/PhD Directors and Administrators, the MD/PhD Section of the Association of American Medical Colleges Graduate Research, Education, and Training Group (GREAT), and the Annual National MD/PhD Student Conference. Finally, we have taken the initiative to bring together, via social and academic venues, all MD/PhDs on the Anschutz Medical Campus, across all stages of training, from student to faculty status, to establish an interactive, supportive cadre of physician-scientists.

Additional details of the Medical Scientist Training Program can be found at https://medschool.cuanschutz.edu/mstp



Research

Research Advisory Committee

The Research Advisory Committee (RAC) was established by the Research Strategic Plan of 2003 to advise the Dean of the School of Medicine and the campus Vice Chancellor for Research on matters related to research. The committee meets monthly. RAC deliberations during this year included a comprehensive review the institutional procurement strategy, a review of campus research space guidelines, discussions of catastrophe preparedness and the wellness/ safety of the campus research community. The group also discussed strategies to improve access to shared resources, including the multiple tissue and biobanks that are available on campus. Recommendations on these topics were provided to the Dean's Office and the Office of the Vice Chancellor for Research.

https://medschool.cuanschutz.edu/research/research-development/research-advisory-committee

Research Advisory Committee	
Eric Clambey, PhD – Committee Chair	Melissa Haendel, PhD
Steven Andrews, PhD	Edward Janoff, MD
Emily Bates, PhD	Thomas Jansson, PhD
Peter Buttrick, MD	Kerrie Moreau, PhD
Bryan Bergman, PhD	Roberta Pelanda, PhD
Thomas Campbell, MD	Cody Rester, BS
Jason Christie, PhD	Suzann Ruedeman
James Costello, PhD	Ron Sokol, MD
Thomas Flaig, MD	Lori Sussel, PhD
Casey Greene, PhD	Mary Weiser-Evans, PhD

Bridge Funding

The bridge funding program of the CU School of Medicine was established in 2006 to provide support to principal investigators while they reapply for funding. The Bridge Funding Committee is advisory to the Dean. Applications are reviewed twice a year, typically in April and October. Between 2006 and April 2023, 247 awards have been made to 208 faculty members for a total amount of $12.1 million. From the start through April 2016, 136 of these awardees, who received $8.18 million in bridge awards, have gained $111.0 million in total research dollars, a more than 13.5-fold return on investment on bridge funding grants.

https://medschool.cuanschutz.edu/research/research-development/bridge-funding

Bridge Funding Committee
Raphael Nemenoff, PhD – Committee Chair
Peter Buttrick, MD
John Cambier, PhD, MS
Mair Churchill, PhD
Nancy Hadley-Miller, MD
Wendy Kohrt, PhD
Ed Melanson, PhD
Kurt Stenmark, MD
Darcy Thompson, MD, MPH

Strategic Infrastructure for Research Committee

The Strategic Infrastructure for Research Committee (SIRC), created in 2003, reviews proposals to fund research infrastructure that can be available as a core facility or program to all appropriate users on campus. One of the major benefits of the SIRC process is critical peer review with constructive comments that strengthens the quality and productivity of the School of Medicine's research and has improved the efficiency of the Dean's Academic Enrichment Fund (AEF). Applications for ongoing cores must include a plan for sustainability. This committee is advisory to the Dean.

SIRC applications are solicited quarterly. Through the April 2023 review, the SIRC process has made 117 awards totaling $19.3 million. Six additional 2-to-5-year awards, totaling $7.3 million, were made to projects identified at a 2009 research retreat.

SIRC-approved research infrastructure includes:

Core facilities in high-throughput genomics and metabolomics, biomedical informatics, advanced light microscopy, tissue banking, small-animal imaging, mouse behavior, and the Clinical-Translational Research Imaging Core.

Core programs granting an MS or PhD in medical science for medical and graduate students and faculty, year-long mentorships in outcomes research, biostatistics support, patient databases in pregnancy and developmental disabilities, and a biorepository.

https://medschool.cuanschutz.edu/research/research-development/strategic-infrastructure-for-research-committee

Strategic Infrastructure for Research Committee
Cristin Welle, PhD – Committee Chair Lisa Brenner, PhD Peter Buttrick, MD Chris Gignoux, PhD Huntington Potter, PhD Rebecca Schweppe, PhD Laurel Lenz, PhD Eric Pietras, PhD Olivia Rissland, PhD Natalia Vergara, PhD

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Lisa Abuogi, MD Associate Professor	Colorado Department of Public Health and Environment/COLO	*HIV/STI-CHAPP*
Cheryl Ackert-Bicknell, PhD Associate Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/ NIH/DHHS	*Identification of Novel Genes Impacting Osteoblast Activity*
Cheryl Ackert-Bicknell, PhD Associate Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/ NIH/DHHS	*Identification of Gene Regulating PTH-mediated Skeletal Strength*
Jill Alldredge, MD Assistant Professor	Merck, Sharp and Dohme Corp	*MK-4830-002 Randomized, Ph 2 Study of Pembrolizumab And Chemotherapy With or Without MK-4830 as Neoadjuvant Treatment for High Grade Serous Ovarian Cancer*
Mandy Allison, MD Associate Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Colorado Nurse Family Heart Trial for the ENRICH program*
Mandy Allison, MD Associate Professor	National Institute of Nursing Research NIH/DHHS	*Randomized Clinical Trial of Nurse Family Partnership for Women with Previous Live Births*
Enrique Alvarez, MD, PhD Associate Professor	Genentech, Inc.	*A PHASE III MULTICENTER, RANDOMIZED, DOUBLE-BLIND, DOUBLE-DUMMY, PARALLEL-GROUP STUDY TO EVALUATE THE EFFICACY AND SAFETY OF FENEBRUTINIB COMPARED WITH OCRELIZUMAB IN ADULT PATIENTS WITH PRIMARY PROGRESSIVE MULTIPLE SCLEROSIS*
Enrique Alvarez, MD, PhD Associate Professor	Novartis Pharmaceuticals Corporation	*A randomized, double-blind, double-dummy, parallel-group study, comparing the efficacy and safety of remibrutinib 100 mg b.i.d. versus teriflunomide 14 mg q.d. in participants with relapsing multiple sclerosis, followed by extended treatment with open-label remibrutinib*
Amy Amara, MD, PhD Visiting Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Slow wave sleep as a biomarker of rehabilitation-induced cognitive improvement in Parkinson's disease*
Rachael Anderson, LCSW Clinical Instructor	State of Colorado Department of Health Care Policy	*Community and Public Health HCPF Contract*
Bruce Appel, PhD Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Mechanisms of Developmental Myelination*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Tracy Bale, PhD Visiting Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*Stress modeling of the human sperm sncRNA transcriptome and causal importance of dynamic miRNA in reproductive and developmental outcomes*
Tracy Bale, PhD Visiting Professor	National Institute of Mental Health/NIH/DHHS	*Paternal stress epigenetic programming of offspring neurodevelopment*
Tracy Bale, PhD Visiting Professor	National Institute of Mental Health/NIH/DHHS	*Extracellular vesicles as biomarkers of trauma and PTSD risk.*
Linda Barlow, PhD Professor	National Institute on Deafness and Other Communication Disorders/NIH/DHHS	*Characterization of progenitor populations in adult taste epithelium*
Jaime Belkind-Gerson, MD Associate Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Defining the role of enteric nervous system dysfunction in gastrointestinal motor and sensory abnormalities in Down syndrome*
Timothy Benke, MD, PhD Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Multi-site validation of biomarkers and core clinical outcome measures for clinical trials readiness in CDKL5 Deficiency Disorder*
Tellen Bennett, MD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*Novel Pediatric Sepsis Criteria and Clinical Decision Support Tools*
Richard Benninger, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Emergent Multi-Cellular Properties Regulating Pancreatic Islet Function*
Ann-Charlotte Bentley, DDS, PhD Professor	National Institute on Aging/NIH/DHHS	*Exosome biology in Alzheimer's disease and concussion*
David Bentley, PhD Professor	National Institute of General Medical Sciences/NIH/DHHS	*Coupling of transcription elongation and termination with pre-mRNA processing*
Bryan Bergman, PhD Professor	National Institute on Aging/NIH/DHHS	*Effects of aging and exercise training on intermuscular adipose tissue (IMAT) in MoTrPAC*
Bryan Bergman, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Intermuscular adipose tissue (IMAT): protagonist in sarcopenia and insulin resistance in humans*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Audrey Bergouignan, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Breaking up sedentary behaviors to improve glucose control in a population at risk for developing type 2 diabetes*
Steven Berkowitz, MD Professor	Senseye	*Diagnosis and Monitoring of PTSD via Senseye Diagnostic Tool*
Daniel Bessesen, MD Professor	Novo Nordisk Pharmaceuticals, Inc.	*NN9838-4608: Efficacy and safety of cagrilintide s.c. 2.4 mg in combination with semaglutide s.c. 2.4 mg (CagriSema s.c. 2.4mg/2.4 mg) once-weekly in participants with overweight or obesity*
Brianne Bettcher, PhD Associate Professor	National Institute on Aging/NIH/ DHHS	*Investigating the Contribution of Peripheral versus Central Nervous System Immune Dysfunction to Cognitive Aging*
Marian Betz, MD, MPH Professor	Henry M. Jackson Foundation	*Project Safe Guard: Training & Evaluation*
Marian Betz, MD, MPH Professor	National Institute on Aging/NIH/ DHHS	*Decision Making Among Older Adults: the AUTO study*
Stanca Birlea, MD, PhD Associate Professor	Pfizer, Inc	*Study of efficacy, safety, and tolerability of topical crisaborole and PF-07038124 alone and in combination with active NBUVB in vitiligo: A phase 2A, randomized, double-blind, vehicle-controlled clinical trial*
Petter Bjornstad, MD Associate Professor	Eli Lilly and Company	*Tirzepatide Study of Renal Function in People with Overweight or Obesity and Chronic Kidney Disease with or without Type 2 Diabetes: Focus on Kidney Hypoxia in Relation to Fatty Kidney Disease using Multiparametric Magnetic Resonance Imaging (TREASURE-CKD)*
Petter Bjornstad, MD Associate Professor	Amsterdam University Medical Centers	*DiEtary Sodium Intake effects on ertugliflozin-induced changes in GFR, reNal oxygenation and hemodynamics: the DESIGN study, a randomized, placebo-controlled, cross-over study with ert in people with type 2 diabetes*
Petter Bjornstad, MD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Puberty, diabetes, and the kidneys, when eustress becomes distress*
Angela Bonaguidi, MSW Instructor	Substance Abuse and Mental Health Services Administration/ DHHS	*Project Bridge*
Sarah Borengasser, PhD Associate Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Preconception Maternal Nutrition, Offspring DNA Methylation, and Infant Growth in Low Resource Settings*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Virginia Borges, MD Professor	National Cancer Institute/NIH/ DHHS	*Paul Calabresi Award in Clinical Oncology Research*
Daniel Bowles, MD Associate Professor	Pfizer, Inc	*C4761001 PH 1, OPEN-LABEL, DOSE ESCALATION AND DOSE EXPANSION STUDY TO EVALUATE THE SAFETY, TOLERABILITY, PHARMACOKINETICS, AND ANTI TUMOR ACTIVITY OF PF-07799933 (ARRY-440) AS A SINGLE AGENT AND IN COMBINATION THERAPY IN PARTICIPANTS 16 YEARS AND OLDER WITH ADVANCED SOLID TUMORS WITH BRAF ALTERATIONS*
Cathy Bradley, PhD Professor	National Cancer Institute/NIH/ DHHS	*Cancer Caregivers and Their Struggle(s) between Work and Family*
Laura Brown, MD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Regulation of Fetal Skeletal Muscle Growth in IUGR*
Kimberley Bruce, PhD Associate Professor	National Institute on Aging/NIH/ DHHS	*Targeting Microglial Lipoprotein Lipase in Alzheimer's disease*
Matthew Brush, PhD Assistant Research Professor	National Center for Advancing Translational Sciences/NIH/DHHS	*A Common Dialect for Infrastructure and Services in Translator*
Todd Bull, MD Professor	Merck Sharp & Dohme Corp	*A Phase 2a Randomized, Placebo-Controlled Clinical Study to Evaluate the Efficacy and Safety of MK-5475 in Adults With Pulmonary Hypertension Associated With Chronic Obstructive Pulmonary Disease.*
David Camidge, MD, PhD	Nuvalent, Inc.	*NVL-655-01 Ph 1/2 Study of the Selective Anaplastic Lymphoma Kinase (ALK) Inhibitor NVL-655 in Patients with Advanced NSCLC and Other Solid Tumors*
Thomas Campbell, MD Professor	University of California at San Diego	*Colorado AIDS Clinical Trials Unit*
Valeria Canto-Soler, PhD Associate Professor	National Eye Institute/NIH/DHHS	*3D Human Model of AMD in a dish*
Katherine Casillas, PhD Associate Professor	Colorado Department of Human Services	*SafeCare? Colorado Program Intermediary Services*
Victoria Catenacci, MD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Does When You Exercise Matter? A Randomized Trial Comparing the Effect of Morning versus Evening Aerobic Exercise on Weight Loss and Compensatory Behaviors*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Antonia Chiesa, MD Associate Professor	Colorado Department of Public Health and Environment/COLO	*CARENetwork (Child Abuse Response and Evaluation Network)*
Bennett Chin, MD Professor	ITM Isotopen Technologien Munchen AG	*A Prospective, Randomized, Controlled, Open-label, Multicenter Trial to Evaluate Efficacy, Safety and Patient-reported Outcomes of Peptide Receptor Radionuclide Therapy (PRRT) with Lutetium (177Lu) Edotreotide compared to Best Standard of Care in Patients with Well-differentiated Aggressive Grade 2 and Grade 3, Somatostatin Receptor-positive (SSTR+), Neuroendocrine Tumors of GastroEnteric or Pancreatic Origin (COMPOSE)*
Michel Chonchol, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Nicotinamide riboside supplementation for treating arterial stiffness and elevated systolic blood pressure in patients with moderate to severe CKD.*
Michel Chonchol, MD Professor	National Institute on Aging/NIH/ DHHS	*Clonal hematopoiesis, mild cognitive impairment and kidney function decline*
Michel Chonchol, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Inspiratory muscle strength training for lowering systolic blood pressure in midlife and older adults with chronic kidney disease*
Julia Cooper, PhD Professor	National Institute of General Medical Sciences/NIH/DHHS	*Defining the mechanisms and consequences of noncanonical telomere functions*
John Corboy, MD Professor	National Multiple Sclerosis Society	*Rocky Mountain Multiple Sclerosis Center Tissue Bank*
William Cornwell, MD Associate Professor	Merck Sharp & Dohme Corp	*"Impact of Vericiguat on Vascular Biology, as well as Resting and Exertional Cardiovascular Performance Among Patients with Heart Failure with Reduced Ejection Fraction ", MISP# 61492.*
Bradley Corr, MD Associate Professor	ImmunoGen, Inc.	*A phase II evaluation of maintenance therapy combination Mirvetuximab Soravtansine and Olaparib in Recurrent Platinum Sensitive Ovarian, Peritoneal, and Fallopian Tube Cancer*
Bradley Corr, MD Associate Professor	Tempest Therapeutics Inc.	*TPST 1495-001 Ph 1a/1b Open-label, Dose-Escalation and Expansion Study of TPST-1495 as a Single Agent and Combination with Pembrolizumab in Subjects with Solid Tumors*
James Costello, PhD Associate Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Novel computational strategies to deconvolute co-occurring conditions in Down syndrome*
James Costello, PhD Associate Professor	National Cancer Institute/NIH/ DHHS	*Systems analysis of aggressive prostate cancer pathology*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Dana Dabelea, MD, PhD Professor	Office of the Director/NIH/DHHS	*The Early Life Exposome and Childhood Health - The Colorado Healthy Start 3 Cohort Study*
Angelo D'Alessandro, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Interactions between the ADORA2b/Sphk1axis and the AE1-Hb switch in red blood cell aging in vivo and in vitro*
Angelo D'Alessandro, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*PIMT1 in Red Blood Cell aging in vivo and in vitro*
Howard Davidson, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Multimodal analysis of the "honeymoon period" in autoimmune diabetes*
Jesse Davidson, MD, PhD Associate Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Metabolic profiling and comprehensive metabolic pathway mapping: a systems biology approach to cardiovascular failure and organ injury following infant congenital heart disease surgery*
Sarah Davis, MD Associate Professor	TriSalus Life Sciences	*TS-PERIO-02 Ph 1b/2 Pressure Enabled Regional Immuno-Oncology Study of Hepatic Arterial Infusion of SD-101 with Systemic Checkpoint Blockade for Hepatocellular Carcinoma and Intrahepatic Cholangiocarcinoma*
Kevin Deane, MD, PhD Professor	Gilead Sciences, Inc.	*PAD activity and NETosis in sputum, synovial fluid and peripheral blood in patients with established rheumatoid arthritis, RA-associated interstitial lung disease and individual at-risk for future RA*
Kevin Deane, MD, PhD Professor	University of California at San Diego	*Collaborative Research Agreement- Understand the natural history of Rheumatiod Arthritis (RA) development from the period of preclinical disease to classifiable disease.*
Kevin Deane, MD, PhD Professor	Emory University, Atlanta	*ARA08 - Strategy to Prevent the Onset of Clinically-Apparent Rheumatoid Arthritis (StopRA)*
Lisa DeCamp, MD Associate Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Community Active and Healthy Families: Family -Centered Obesity Treatment for Latino Children*
Matthew DeCamp, MD, PhD Associate Professor	National Institute of Nursing Research NIH/DHHS	*A mixed-methods study of the nature, extent and consequences of artificial intelligence (AI) for individualized treatment planning in end-of-life and palliative care (EOLPC)*
Matthew DeCamp, MD, PhD Associate Professor	National Institute on Minority Health and Health Disparities (NIMHD)/NIH/DHHS	*REACH-OUT (Research, Engagement and Action on COVID-19 Health Outcomes via Testing)*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Mark Dell'Acqua, PhD Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Rescuing neurovascular coupling to protect neuronal plasticity and cognition*
Mark Dell'Acqua, PhD Professor	National Institute of Mental Health/ NIH/DHHS	*L-type Ca2+ Channel Spike Regulation of Spine Structural Plasticity and Excitation-Transcription Coupling*
Jennifer Diamond, MD Associate Professor	Seagen, Inc.	*SGN-B7H4V-001 Ph 1 Study of SGN-B7H4V in Advanced Solid Tumors*
Jennifer Diamond, MD Associate Professor	Merck, Sharp and Dohme Corp	*MK-3475-522 Ph III, Randomized, Double-blind Study to Evaluate Pembrolizumab plus Chemotherapy vs Placebo plus Chemotherapy as Neoadjuvant Therapy and Pembrolizumab vs Placebo as Adjuvant Therapy for Triple Negative Breast Cancer (TNBC)*
Stacy Dixon, MD, PhD Assistant Professor	Genentech, Inc.	*BN43703 "A Phase II, Multicenter, Randomized, Placebo-Controlled, Double-Blind Study to Evaluate the Pharmacodynamics, Safety, Tolerability, Pharmacokinetics, and Efficacy of RO7204239 in Participants with Facioscapulohumeral Muscular Dystrophy*
Kelly Doran, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Host and bacterial mechanisms governing Group B streptococcal persistence in the female genital tract*
Amanda Doria Assistant Professor	Colorado Department of Public Health and Environment/COLO	*Past the Pandemic Peer Support Program 0067*
Dreskin, Stephen, MD, PhD Clinical Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Exploiting and enhancing IgE-binding epitopes of the 2S albumins of peanuts and tree nuts*
Ida Drury, PhD, MSW Assistant Professor	University of Louisville Foundation, Inc	*Kentucky Differential Response*
Stephen Duntley, MD Visiting Professor	Vanda Pharmaceuticals Inc	*VP-VEC-162-3502, A multicenter, double-blind, randomized study to evaluate the effects of tasimelteon vs. placebo in participants with Delayed Sleep-Wake Phase Disorder (DSWPD)*
Benjamin Easter, MD, MBA Associate Professor	Johnson Space Center/NASA	*IPA Agreement - Benjamin Easter*
Anthony Elias, MD Professor	C4 Therapeutics, Inc.	*CFT-8634-1101 Ph 1/2 Open-Label Multicenter Study to Characterize the Safety and Tolerability of CFT8634 in Subjects with Locally Advanced or Metastatic SMARCB1 Perturbed Cancers Including Synovial Sarcoma and SMARCB1-Null Tumors*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Anthony Elias, MD Professor	National Cancer Institute/NIH/ DHHS	*NCI National Clinical Trials Network - Lead Academic Participant Sites*
Anthony Elias, MD Professor	ImmuneOnco Biopharmaceuticals (Shanghai) Co., Ltd.	*IMM2902-101 Ph 1, Open-Label, Multicenter, Dose Escalation Study Evaluating the Safety, Tolerability, and Preliminary Efficacy of IMM2902 in Patients with HER2-Expressing Advanced Solid Tumors*
Kristine Erlandson, MD Associate Professor	National Institute on Aging/NIH/ DHHS	*The High-Intensity Exercise to Attenuate Limitations and Train Habits (HEALTH) in Older Adults with HIV*
Patricia Ernst, PhD Professor	National Cancer Institute/NIH/ DHHS	*Escape from CAR T surveillance through lineage plasticity*
Joaquin Espinosa, PhD Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/ NIH/DHHS	*JAK Inhibition in Down Syndrome*
Joaquin Espinosa, PhD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Mechanistic investigation of therapies for Down Syndrome Regression Disorder*
Joaquin Espinosa, PhD Professor	Health Resources and Services Administration/DHHS	*Request for scientific instrumentation for the Linda Crnic Institute for Down Syndrome.*
Joaquin Espinosa, PhD Professor	Children's Hospital of Philadelphia	*Data Management and Portal for the INCLUDE (DAPI) Project*
Sarah Faubel, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Cardiac dysfunction after ischemic AKI in mice*
Stacy Fischer, MD Professor	National Institute on Aging/NIH/ DHHS	*Decision trajectories of patients at the end of life: An epidemiological exploration of MAID and the impact on caregivers and clinicians*
Thomas Flaig, MD Professor	Merck Sharp & Dohme Corp	*KEYMAKER-U04: Substudy 04A Ph 1/2 Open-Label Rolling-Arm Umbrella Platform Study of Investigational Agents With or Without Pembrolizumab in Participants with PD-1/L1 Refractory Locally Advanced or Metastatic Urothelial Carcinoma*
Flores, Sonia, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*PRIDE Academy: Impact of Ancestry and Gender to omics of lung diseases*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Heide Ford, PhD Professor	National Cancer Institute/NIH/ DHHS	*Reprogramming myogenic regulatory factors in RMS to promote differentiation and halt growth*
Heide Ford, PhD Professor	National Cancer Institute/NIH/ DHHS	*Deciphering Mechanisms by which Tumor Cells Collaborate to Mediate Metastasis*
Gregory Forlenza, MD Associate Professor	Juvenile Diabetes Research Foundation	*Expanding Technology Success into Novel Populations: Safety and Feasibility Testing of a Fully Closed Loop System in Adolescents and Young Adults with High Baseline HbA1c Values*
Laura Foster, MD Assistant Professor	Woolsey Pharmaceuticals, Inc., a Delaware corporation	*A Phase 2a Open-Label Preliminary Safety, Efficacy, and Biomarker Study of WP-0512 in Patients with Amyotrophic Lateral Sclerosis (ALS)*
Santos Franco, PhD Associate Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Temporal and Spatial Control of Oligodendrocyte Fate Specification*
Sandra Friedman, MD, MPH Professor	Administration for Community Living/DHHS	*University Center of Excellence in Developmental Disabilities Education, Research, and Service*
Sandra Friedman, MD, MPH Professor	Maternal and Child Health Bureau/ HRSA/DHHS	*JFK Partners Colorado LEND Program*
Sandra Fritsch, MD Professor	Colorado Department of Higher Education	*CoPPCAP; Colorado Pediatric Psychiatry Consultation & Access Program CDHS Contract*
Mayumi Fujita, MD, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*The role of IL-37 in human regulatory T cells*
Satish Garg, MD Professor	Lilly USA, LLC	*A Phase 3, Multicenter, Randomized, Parallel - Design, Open-Label Study to Evaluate the Efficacy and Safety of LY3209590 as a Weekly Basal Insulin Compared with Insulin Degludec in Participants with Type 1 Diabetes Treated with Multiple Daily Injection Therapy*
Andrea Gerard Gonzalez, MD Associate Professor	Leona M. And Harry B. Helmsley Charitable Trust	*Dissemination of Group Clinic Model for Diabetes Care for Latino Patients*
Mark Gerich, MD Associate Professor	Janssen Research & Development LLC	*A Phase 2b Randomized, Double-blind, Active- and Placebo-controlled, Parallel-group, Multicenter Study to Evaluate the Efficacy and Safety of Induction and Maintenance Combination Therapy with Guselkumab and Golimumab in Participants with Moderately to Severely Active Crohn's Disease*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Mark Gerich, MD Associate Professor	AbbVie, Inc.	*A Randomized, Double-Blind, Placebo-Controlled Study to Evaluate the Safety and Efficacy of ABBV-154 in Subjects with Moderately to Severely Active Crohn's Disease (CD): AIM-CD*
Mark Gerich, MD Associate Professor	Janssen Research & Development LLC	*A Phase 2b Randomized, Double-blind, Active- and Placebo-controlled, Parallel-group, Multicenter Study to Evaluate the Efficacy and Safety of Induction and Maintenance Combination Therapy with Guselkumab and Golimumab in Participants with Moderately to Severely Active Ulcerative Colitis*
Todd Getz, PhD Visiting Associate Professor	ABSS Solutions, Inc. (?ASI?)	*Fluid Warmers for Blood Product - Materiel performance of fluid warmers for blood product administration in an Arctic environment*
Moumita Ghosh, PhD Associate Professor	Department of the Army/DOD	*Epithelial Repair Dysfunction in the Pathogenesis of Deployment-Related Lung Disorders (DLD)*
Emily Gibson, PhD Associate Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Development of 3D-FAST Optical Interface for Rapid Volumetric Neural Sensing and Modulation*
Christopher Gignoux, PhD Professor	Fred Hutchinson Cancer Center	*Polygenic Risk Scores for Diverse Populations - Bridging Research and Clinical Care*
Christopher Gignoux, PhD Professor	National Human Genome Research Institute/NIH/DHHS	*Genomic Approaches to Population Health in Multi-Ethnic Hospital Systems*
Adit Ginde, MD, MPH Professor	Advanced Technology International	*Multicenter Implementation Trial of Targeted Normoxia Strategy to Define Oxygen Requirements for Major Burn Patients: An Approach to Reduce Warfighter Morbidity, Deployed Logistical Burden of Oxygen, and Readiness Costs*
Adit Ginde, MD, MPH Professor	ABSS Solutions, Inc. (?ASI?)	*DirEct versus VIdeo laryngosCopE Trial (DEVICE) multi-center randomized trial*
Adit Ginde, MD, MPH Professor	Vanderbilt University Medical Center	*Subcontract for Strategies and Treatments for Respiratory and Viral Emergencies Study Payments (STRIVE)*
Adit Ginde, MD, MPH Professor	ABSS Solutions, Inc. (?ASI?)	*PRagmatic trial Examining OXygenation prior to Intubation (PREOXI)*
Adit Ginde, MD, MPH Professor	Vanderbilt University Medical Center	*Surveillance of Acutely Ill Adults with Respiratory Viruses, including SARS-CoV-2*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Russell Glasgow, PhD Research Professor	National Cancer Institute/NIH/ DHHS	*Pragmatic implementation Science Approaches to Assess and Enhance Value of Cancer Prevention and Control in Rural Primary Care*
Evelin Gomez, PhD Associate Professor	Colorado Department of Human Services	*COACT 3.0*
Michael Graner, PhD Research Professor	National Institute of Mental Health/ NIH/DHHS	*Development of Validation of Phage-Displayed Random Peptide Libraries Technologies for Rapid Isolation and Characterization of Extracellular Vesicles from Patients with Brain Tumors*
Melanie Green, MD, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Impact of GLP-1 on hepatic fat and energy utilization in obese girls with polycystic ovarian syndrome*
Jenna Guthmiller, PhD Assistant Professor	University of Illinois	*Investigating and engineering the avian and human antibody response to target emerging influenza viruses*
Matthew Haemer, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Family Inclusive Childhood Obesity Treatment designed for Low Income and Hispanic Families*
Melissa Haendel, PhD Professor	National Human Genome Research Institute/NIH/DHHS	*A phenomics-first resource for interpretation of variants*
Melissa Haendel, PhD Professor	Axle Informatics, LLC	*NCATS N3C Contract*
Melissa Haendel, PhD Professor	Office of the Director/NIH/DHHS	*The Monarch Initiative: Linking Diseases to Model Organism Resources*
Kathryn Haskins, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Hybrid Peptides as Autoantigens for Diabetogenic CD4 T Cells*
Bradley Haverkos, MD, MPH Associate Professor	Astex Pharmaceuticals, Inc.	*ASTX660-03, A Phase 1-2, Open-Label Study of the Safety, Pharmacokinetics, Pharmacodynamics, and Preliminary Activity of Tolinapant in Combination with Oral Decitabine/Cedazuridine and Oral Decitabine/Cedazuridine Alone in Subjects with Relapsed/Refractory Peripheral T-cell Lymphoma*
Bradley Haverkos, MD, MPH Associate Professor	Viracta Therapeutics, Inc	*VT3996-202, An Open-Label, Phase 2 Trial of Nanatinostat in Combination with Valganciclovir in Patients with Epstein-Barr Virus-Positive (EBV+) Relapsed/Refractory Lymphomas (NAVAL-1)*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Trevor Hawkins, MD Assistant Professor	Bukwang Pharmaceutical Co., Ltd	*A Randomized, Double-Blind, Placebo-Controlled, Two-Part Study in Parkinson's Disease Patients With Dyskinesia to Assess the Efficacy and Safety/Tolerability of Fixed Dose Combinations of JM-010 and its Individual Components*
Audrey Hendricks, PhD Associate Professor	National Human Genome Research Institute/NIH/DHHS	*Methods to enable robust and efficient use of genetic summary data*
Patricia Henke	Colorado Department of Labor and Employment/COLO	*Colorado Office of Employment First and Colorado Department of Labor and Employment / Division of Vocational Rehabilitation Interagency Agreement*
Jay Hesselberth, PhD Professor	National Institute on Aging/NIH/DHHS	*Biochemistry at single-cell resolution: a new approach to understand functional heterogeneity*
Pei Jai Michael Ho, MD, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Personalized Patient data and behavioral nudges to improve adherence to chronic cardiovascular medications*
Pei Jai Michael Ho, MD, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Using artificially intelligent text messaging technology to improve American Heart Association's Life's Simple 7 Health Behaviors: LS7 Bot + Backup*
Samantha Holden, MD Associate Professor	Athira Pharma, Inc.	*A Randomized, Placebo-Controlled, Double-Blind Study of ATH-1017 Treatment in Subjects with Parkinson's Disease Dementia or Dementia with Lewy Bodies*
Samantha Holden, MD Associate Professor	Cognition Therapeutics	*RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, PHASE 2, 6-MONTH STUDY TO EVALUATE THE SAFETY, TOLERABILITY AND EXPLORATORY EFFICACY OF CT1812 IN SUBJECTS WITH MILD TO MODERATE DEMENTIA WITH LEWY BODIES*
Vernon Holers, MD Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS	*CU Center for the Study of Mucosal Immunobiology in Rheumatic Disease Pathogenesis*
Fernando Holguin, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*LIMA: Lipid anti-inflammatory Mediators in Asthma to reduce airway hyperresponsiveness in obese asthmatics*
Fernando Holguin, MD Professor	Department of the Army/DOD	*Study to improve Deployment related Asthma by using L-citrulline Supplementation (SEALS)*
Fernando Holguin, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*SANDIA: Supplementing L-citrulline to overweight late Asthma oNset phenotypes to increase airway L-arginine/ADMA ratio and Improve Asthma control*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Jodi Holtrop, PhD Professor	Patient-Centered Outcomes Research Institute	*Implementing Obesity Treatment in Primary Care Utilizing Evidence-Based Structures*
Christian Hopfer, MD Professor	National Institute on Drug Abuse/ NIH/DHHS	*Adult Progression of Adolescent Onset Substance Use Disorder in a High Risk Sample*
Christian Hopfer, MD Professor	National Institute on Drug Abuse/ NIH/DHHS	*Effects of High Potency Cannabis Products on Mental Health and Psychosocial Functioning*
Katharina Hopp, PhD Assistant Professor	Us Army Medical Research Acquisition Act/DOD	*IDO1 and dysregulated tryptophan metabolism in Polycystic Kidney Disease*
Jason Hoppe, DO Associate Professor	Colo Dept of Regulatory Agencies	*A prospective evaluation of Colorado's new statutory PDMP mandates: compliance and patient outcomes*
Jason Hoppe, DO Associate Professor	National Institute on Drug Abuse/ NIH/DHHS	*Improving pain management and opioid safety through a systemwide, data driven evaluation of the CDC opioid prescribing guideline best practices and the use of Clinical Decision Support*
Alexander Horswill, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Quorum sensing, diversity and skin inflammation*
David Howell, PhD Associate Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Modulating Exercise Dosage to Improve Concussion Rehabilitation: A Randomized Clinical Trial*
Wen-Yuan Hsieh, MD Associate Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*SARS-CoV-2 Vaccine Responses in children with genetic or acquired B cell deficiencies*
Christene Huang, PhD Professor	Department of the Army/DOD	*Advancement of a tissue oxygenation measurement device and evaluation of galectin-3 as novel non-invasive prognostic biomarkers for monitoring VCA rejection*
Mingxia Huang, PhD Associate Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Neurovascular unit dysfunction in Down syndrome revealed by TBI*
Ethan Hughes, PhD Associate Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*In vivo three-photon microscopy of the cortical gray and white matter*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Lawrence Hunter, PhD Professor	National Center for Advancing Translational Sciences/NIH/DHHS	*State of the Art Text Mining for Translator*
Kent Hutchison, PhD Professor	National Institute on Aging/NIH/DHHS	*Cannabidiol for Individuals at Risk for Alzheimer's Disease: A Randomized Placebo Controlled Trial*
Kent Hutchison, PhD Professor	National Institute on Drug Abuse/NIH/DHHS	*Novel Approaches to Opiate Use Reduction*
Susan Ingram, PhD Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Defining the descending pain modulatory circuit*
David Irwin, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*The paradoxical response to iron in pulmonary hypertension of sickle cell disease*
David Irwin, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Aerosolized therapy for hemoglobin toxicity in the treatment of hemolytic diseases*
Thomas Jansson, MD, PhD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*Development of approaches for inducible trophoblast-specific gene modulation: the role of trophoblast Lat1 in the regulation of placental function and fetal growth*
Antonio Jimeno-Largo, MD, PhD Professor	Genentech, Inc.	*GO43860 PH Ia/Ib, OPEN LABEL, MULTICENTER, DOSE-ESCALATION STUDY TO EVALUATE THE SAFETY, PHARMACOKINETICS, AND ACTIVITY OF RO7502175 AS A SINGLE AGENT AND IN COMBINATION WITH ATEZOLIZUMAB IN PATIENTS WITH LOCALLY ADVANCED OR METASTATIC SOLID TUMORS*
Antonio Jimeno-Largo, MD, PhD Professor	National Cancer Institute/NIH/DHHS	*Colorado Head and Neck Cancer SPORE*
Antonio Jimeno-Largo, MD, PhD Professor	KAHR Medical, Ltd.	*DSP107_001 FIRST-IN-HUMAN, TWO-PART, OPEN-LABEL, PH I/II STUDY OF DSP107 IN SUBJECTS WITH ADVANCED SOLID TUMORS INCLUDING A DOSE-ESCALATION SAFETY STUDY (PART 1) AND PRELIMINARY EFFICACY ASSESSMENT OF DSP107 AS MONOTHERAPY AND IN COMBINATION WITH ATEZOLIZUMAB (PART 2)*
Antonio Jimeno-Largo, MD, PhD Professor	Moderna Therapeutics, Inc	*mRNA-4359-P101 Ph 1/2 Study of mRNA-4359 Administered Alone or in Combination with Immune Checkpoint Blockade in Participants with Advanced Solid Tumors*
Richard Johnson, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Silica Nephropathy and Chronic Kidney Disease of Unknown Etiology*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Richard Johnson, MD Professor	Colorado Research Partners LLC	*Fructokinase Inhibitors for the Treatment of Alcohol Use Disorder*
David Jones, PhD Professor	Office of the Director/NIH/DHHS	*900 MHz NMR console and probes*
Craig Jordan, PhD Professor	National Cancer Institute/NIH/ DHHS	*Therapeutic Targeting of Human AML Stem Cells*
Craig Jordan, PhD Professor	Leukemia and Lymphoma Society	*Therapeutic targeting of AML stem cells*
Manali Kamdar, MD Associate Professor	Celgene Corporation	*A PHASE 2, OPEN-LABEL, SINGLE-ARM, MULTI-COHORT, MULTICENTER TRIAL TO EVALUATE THE EFFICACY AND SAFETY OF JCAR017 IN ADULT SUBJECTS WITH RELAPSED OR RE-FRACTORY INDOLENT B-CELL NON-HODGKIN LYMPHOMA (NHL) (TRANSCEND FL)*
Ross Kedl, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Mechanisms of combined CD40/TLR adjuvant-elicited cellular immunity*
Arina Keestra-Gounder, PhD Assistant Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*The impact of ER stress on Salmonella Typhi-murium infections*
Sayrui Kelly Senior Research Instructor	Insight Policy Research	*Long Term Care (LTC) Survey Process Opera-tional Support and Analysis*
Allison Kempe, MD, MPH Professor	National Cancer Institute/NIH/ DHHS	*The HPV9-10 Trial: Early Initiation of HPV Vac-cination*
Jessica Kendrick, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Effect of Alkali Therapy on Vascular and Graft Function in Kidney Transplant Recipients*
Matthew Kennedy, PhD Associate Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Novel approaches for interrogating and manipu-lating synaptic function, structure and plasticity*
Elizabeth Kessler, MD Associate Professor	Lilly USA, LLC	*I3Y-MC-JPEG CYCLONE 3: Ph 3, Randomized, Double-Blind, Placebo-Controlled Study of Abemaciclib in Combination with Abiraterone plus Prednisone in Men with High-Risk Meta-static Hormone-Sensitive Prostate Cancer*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Rodger Kessler, PhD Visiting Research Professor	DARTNet Institute	*Collaboration on Quality Improvement Initiative for Achieving Excellent in Standards of COPD Care ("CONQUEST") and PRagmatic EVAluation of a quality Improvement programme for people Living with modifiable high-risk COPD (PREVAIL)*
Jeffrey Kieft, PhD Professor	National Institute of General Medical Sciences/NIH/DHHS	*Structure, function, and dynamics of viral RNAs and RNA-containing complexes*
Sunnie Kim, MD Associate Professor	Tallac Therapeutics, Inc.	*INCLINE-101 Ph 1/2, Open Label, Dose Escalation and Expansion Study of TAC-001 in Patients with Select Advanced or Metastatic Solid Tumors*
Sue Kinnamon, PhD Professor	National Institute on Deafness and Other Communication Disorders/ NIH/DHHS	*Illuminating the structure and function of Type I taste cells*
Kyle Knierim, MD Associate Professor	Colorado Department of Human Services	*Maternal and Child Health Pilot Program*
Kelly Knupp, MD Associate Professor	Zogenix Inc	*Assessment of safety of the use of Fenfluramine in children with Dravet Syndrome under the age of 24 months*
Elizabeth Kovacs, PhD Professor	National Institute on Aging/NIH/ DHHS	*Aging, Macrophage Mediators, and Burn Trauma*
Janet Kukreja, MD Associate Professor	CG Oncology, Inc.	*CG3002S Ph 3 Study of CG0070 in Patients with Non-Muscular Invasive Bladder Cancer (NMIBC) Unresponsive to Bacillus-Calmette-Guerin (BCG)*
Tunuguntla Kumar, PhD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*FSH Glycoforms and Ovarian Signaling Pathways*
Mamuka Kvaratskhelia, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Ultra-potent HIV capsid inhibitors*
Mamuka Kvaratskhelia, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Roles of HIV-1 capsid-binding FG-motif containing cellular cofactors in infection*
Bethany Kwan, PhD, MSPH Associate Professor	Yale University	*OPTIMUM: Optimizing engagement in discovery of molecular evolution of low grade glioma*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Julie Lang, PhD Assistant Research Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Characterizing and Improving Humanized Immune System Mouse Models*
Leslie Lange, PhD Professor	University of California, Los Angeles	*PRS Center for Admixed Populations and Health Equity (CAPE)*
Kristina Legget, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Sex-based differences in the neuronal mechanisms of food intake behavior*
John Lemery, MD Professor	Johnson Space Center/NASA	*Johnson Space Center/NASA IPA-Lemery, Jay*
John Lemery, MD Professor	ABSS Solutions, Inc. (?ASI?)	*Assessing performance of chemical exposure management in the Arctic environment (CHEMICAL EXPOSURE-RESTORAL)*
John Lemery, MD Professor	Us Army Medical Research Acquisition Act/DOD	*Evaluation of En Route Care and Trauma Resuscitation in Simulated Arctic Conditions*
Myron Levin, MD Professor	Moderna Therapeutics, Inc	*Moderna mRNA1-1647-P301 (CMVictory) CMV Vaccine Study*
Myron Levin, MD Professor	Health Resources and Services Administration/DHHS	*Ryan White HIV/AIDS Program Part D*
Myron Levin, MD Professor	GlaxoSmithKline	*Safety and Immunogenicity of Shingrix Administered to Recipients of Allogeneic Peripheral and Cord Blood Stem Cell Transplants: Effect of Timing of Vaccination After Transplantation*
Tianjing Li, PhD Associate Professor	National Eye Institute/NIH/DHHS	*Maximizing Use of High-Quality Evidence in Eye Care: Cochrane Eyes and Vision US Project*
Christopher Lieu, MD Associate Professor	Innovative Cellular Therapeutics Inc.	*ICT-GCC19CART-US-001 Ph 1 Multicenter Study Evaluating the Safety and Tolerability of GCC19CART in Subjects with Relapsed or Refractory Metastatic Colorectal Cancer*
Jonathan Lindquist, MD Assistant Professor	Adient Medical, Inc.	*A Prospective, Multicenter, Pivotal Study with Randomized Controlled Prophylactic and Independent Therapeutic Cohorts to Evaluate the Safety and Efficacy of an Absorbable Vena Cava Filter for Pulmonary Embolism Prevention*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Charles Little, DO Professor	Denver Health and Hospital Authority	*Partnership for Disaster Health Response Cooperative Agreement*
Catherine Lozupone, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Gut microbiome effects on intestinal barrier function and metabolic syndrome in HIV positive men who have sex with men*
Catherine Lozupone, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Dietary and synbiotic strategy to limit gut microbiome dysbiosis and protect against Clostridioides difficile infection*
Hillary Lum, MD, PhD Associate Professor	National Institute on Aging/NIH/ DHHS	*Effectiveness of Engaging in Advance Care Planning Talks (ENACT) Group Visits Intervention in Primary Care for Older Adults with and without Alzheimer's Dementia*
Traci Lyons, PhD Associate Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*SEMA7A in postpartum mammary gland development and cellular transformation*
Wendy Macklin, PhD Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*The role of mTOR signaling in oligodendrocyte differentiation and CNS myelination*
Paul MacLean, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Colorado Nutrition Obesity Research Center*
Paul MacLean, PhD Professor	National Cancer Institute/NIH/ DHHS	*Novel dietary interventions for reducing obesity -associated breast cancer*
Chelsea Magin, PhD Assistant Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Hybrid Hydrogel Biomaterials Comprising Clickable Decellularized Extracellular Matrix for Engineering Dynamic 3D Models of Fibrosis*
Elizabeth McFarland, MD Professor	Colorado Department of Public Health and Environment/COLO	*Ryan White Part B HIV Core and Support Services*
Brandon McMahon, MD Associate Professor	Protagonist Therapeutics, Inc.	*PTG-300-11, A Phase 3 Study of the Hepcidin Mimetic Rusfertide (PTG-300) in Patients with Polycythemia Vera.*
Christine McMahon, MD Assistant Professor	Syndax Pharmaceutical, Inc.	*SNDX-5613-0700, A Phase 1/2, Open-label, Dose-Escalation and Dose-Expansion Cohort Study of SNDX-5613 in Patients with Relapsed/ Refractory Leukemias, Including Those Harboring an MLL/KMT2A Gene Rearrangement or Nucleophosmin 1 (NPM1) Mutation*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Theresa Medina, MD Associate Professor	TriSalus Life Sciences	*TS-PERIO-01 Ph I/II Study of the Pressure Enabled Hepatic Artery Infusion of SD-101, a TLR9 Agonist, Alone or in Combination with Intravenous Checkpoint Blockade for Metastatic Uveal Melanoma*
Xianzhong Meng, MD, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Suppression of AVIC inflammosteogenesis for prevention of CAVD progression*
Kevin Messacar, MD, PhD Associate Professor	Leidos Biomedical Research , Inc	*PANDEMIC RESPONSE REPOSITORY - MICROBIAL AND IMMUNE SURVEILLANCE AND EPIDEMIOLOGY (PREMISE): ENTEROVIRUS D68 (EV-D68) PILOT STUDY*
Luisa Mestroni, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Elucidating the Origin of Sudden Cardiac Death in Dilated Cardiomyopathy: from Phenotype Predictors to Therapeutic Targets*
Luisa Mestroni, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Cardiomyocyte phenotype and mechanotransduction in Filamin C gene variants causing arrhythmogenic cardiomyopathy*
Yubin Miao, PhD Professor	National Cancer Institute/NIH/DHHS	*Combinations of Receptor-Targeted Alpha Radionuclide Therapy and Immune Checkpoint Inhibitors for Melanoma Treatment*
James Miller, MD Professor	Department of the Army/DOD	*Epithelial Repair Dysfunction in the Pathogenesis of Deployment-Related Lung Disorders (DLD)*
Shelley Miyamoto, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Targeting Mitochondria in Single Ventricle Heart Disease*
Makoto Miyazaki, PhD Research Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*The transcriptional control of vascular calcification in disease*
Makoto Miyazaki, PhD Research Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*The role of MLKL in the regulation of vascular calcification in CKD*
Linda Montgomery, MD Associate Professor	University of Colorado Hospital	*COFM Expansion Slot 1*
Jeffrey Moore, PhD Associate Professor	National Institute of General Medical Sciences/NIH/DHHS	*Beyond the tubulin code: Understanding how subunit diversity regulates the formation and function of microtubules*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Chad Morris, PhD Professor	Colorado Department of Public Health and Environment/COLO	*Regional Networks for Healthcare Worker Wellness*
Megan Morris, PhD, MPH Associate Professor	National Institute on Deafness and Other Communication Disorders/ NIH/DHHS	*Implementation of Communication Disability Collection and Accommodations in Primary Care Settings*
Thomas Morrison, PhD Professor	Emory University, Atlanta	*Antiviral Countermeasures Development Center (AC/DC)*
Thomas Morrison, PhD Professor	University of North Carolina at Chapel Hill	*Rapidly Emerging Antiviral Drug Discovery Initiative (READDI)*
Thomas Morrison, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Impairment of B cell Responses by Pathogenic Chikungunya Viruses*
Nee-Kofi Mould-Millman, MD, MSCS, PhD Associate Professor	Us Army Medical Research Acquisition Act/DOD	*Epidemiology and Outcomes of Combat-Relevant Prolonged Trauma Care: a Prospective Multicenter Prehospital Study in South Africa*
Nee-Kofi Mould-Millman, MD, MSCS, PhD Associate Professor	Us Army Medical Research Acquisition Act/DOD	*Outcomes from Tranexamic Acid (TXA) in Traumatic Intracranial and Torso Hemorrhage: A Prospective Cohort Study in a High Trauma, Austere, Prolonged Care Setting*
Monica Munoz-Torres, PhD Associate Professor	National Human Genome Research Institute/NIH/DHHS	*Integration, Dissemination and Evaluation (BRIDGE) Center for the NIH Bridge to ArtificialIntelligence(BRIDGE2AI)Program*
Catherine Musselman, PhD Associate Professor	National Institute of General Medical Sciences/NIH/DHHS	*Molecular mechanisms of histone signaling in a chromatin relevant context*
Kristen Nadeau, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Type 1 Diabetes Impacts of Semaglutide on Cardiovascular Outcomes (T1-DISCO)*
Kristen Nadeau, MD Professor	Cincinnati Children's Hospital Medical Center	*Surgical or Medical Treatment for Pediatric Type 2 Diabetes (ST2OMP)*
Maria Nagel, MD Research Professor	National Institute on Aging/NIH/ DHHS	*A major contributor of serious multisystem disease in the elderly: varicella virus-induced inflammation*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Stephanie Nakano, MD Associate Professor	US Army Medical Research Acquisition Act/DOD	*Cardiomyocyte Autonomous Contractility Defects in Hypoplastic Left Heart Syndrome (HLHS)*
Maki Nakayama, MD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*The Antigen Repertoire of CD4 T cells from Pancreatic Islets*
Maki Nakayama, MD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Autoantigens targeted by CD8 T cells in type 1 diabetes: from islets to blood*
Michael Narkewicz, MD Professor	Cystic Fibrosis Foundation	*Longitudinal Study of Cystic Fibrosis Liver Disease (CFLD)*
Keith Neeves, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*A SYSTEMS BIOLOGY APPROACH TO IDENTIFYING THE MECHANISMS OF SEX HORMONE INDUCED THROMBOEMBOLISM IN PREMENOPAUSAL WOMEN*
Paul Norman, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Evolution and Function of Immunogenetic Diversity across the Eastern Hemisphere*
Paul Norman, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Insights Into Immune-Related Diseases Born from Population Genomics*
Paul Norman, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Natural Killer cells and the Immunogenetics of COVID-19*
Kristen Nowak, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Daily Caloric Restriction in Overweight and Obese Adults with ADPKD*
Eva Nozik, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*SOD3 regulation of redox sensitive signaling in pulmonary vascular diseases*
David Olds, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Influence of Prenatal and Early Childhood Home -Visiting by Nurses on Development of Chronic Disease: 29-year Follow-Up of a Randomized Clinical Trial*
Sean O'Leary, MD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Evaluation of the Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing (PIVOT with MI) Intervention*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Sean O'Leary, MD Professor	National Cancer Institute/NIH/ DHHS	*PCOM2 - The Physician Communication Intervention, Version 2.0*
Toan Ong, PhD Associate Professor	Patient-Centered Outcomes Research Institute	*Develop novel methods to identify and characterize family relationships from electronic health data*
Brent Palmer, PhD Associate Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Role of Chemokines in Innate and Adaptive Immunity in the Lung*
Tejas Patil, MD Associate Professor	Genentech, Inc.	*ML41591 MULTICENTER, PH II, NEOADJUVANT AND ADJUVANT STUDY OF MULTIPLE THERAPIES IN BIOMARKER-SELECTED PATIENTS WITH RESECTABLE STAGES IB?III NON-SMALL CELL LUNG CANCER*
Tejas Patil, MD Associate Professor	Janssen Scientific Affairs, L.L.C.	*A Phase 1/2, Open Label, Study of Amivantamab (JNJ-61186372) Among Participants with Advanced NSCLC Harboring ALK, ROS1, and RET Gene Fusions in Combination with Tyrosine Kinase Inhibitors*
Chad Pearson, PhD Professor	National Institute of General Medical Sciences/NIH/DHHS	*Centriole assembly and function for centrosome and cilia biology*
Victoria Pelak, MD Professor	Biogen, Inc.	*A Phase 3b/4 Randomized, D Phase 3b/4 Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Study to Verify the Clinical Benefit of Aducanumab (BIIB037) in Participants with Alzheimer's Diseas*
Leigh Perreault, MD Visiting Associate Clinical Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*PATHWEIGH: pragmatic weight management in primary care*
Eric Pietras, PhD Associate Professor	American Cancer Society	*Targeting the interplay between inflammation and metabolism to suppress mutant stem and progenitor cell expansion*
Eric Pietras, PhD Associate Professor	Edward P. Evans Foundation	*Targeting inflammatory metabolic and epigenetic dysregulation in MDS pathogenesis*
Amanda Piquet, MD Associate Professor	Genentech, Inc.	*A PHASE III, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, MULTICENTER BASKET STUDY TO EVALUATE THE EFFICACY, SAFETY, PHARMACOKINETICS, AND PHARMACODYNAMICS OF SATRALIZUMAB IN PATIENTS WITH ANTI-N METHYL D ASPARTIC ACID RECEPTOR (NMDAR) OR ANTI-LEUCINE RICH GLIOMA INACTIVATED 1 (LGI1) ENCEPHALITIS*
Amber Podoll, MD Associate Professor	Genentech, Inc.	*A PHASE III, RANDOMIZED, OPEN-LABEL ACTIVE COMPARATOR-CONTROLLED MULTICENTER STUDY TO EVALUATE EFFICACY AND SAFETY OF OBINUTUZUMAB IN PATIENTS WITH PRIMARY MEMBRANOUS NEPHROPATHY*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Amber Podoll, MD Associate Professor	Genentech, Inc.	*A PHASE III, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, MULTICENTER STUDY TO EVALUATE THE EFFICACY AND SAFETY OF OBINUTUZUMAB IN PATIENTS WITH ISN/RPS 2003 CLASS III OR IV LUPUS NEPHRITIS*
Huntington Potter, PhD Professor	National Institute on Aging/NIH/ DHHS	*Phase II trial of GM-CSF/sargramostim in Alzheimer's DIsease*
Huntington Potter, PhD Professor	National Institute on Aging/NIH/ DHHS	*GM-CSF/Sargramostim Treatment to Improve Cognition in Down Syndrome*
Theresa Powell, PhD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*Novel Roles for Phospholipids in Regulating Placental Function and in the Delivery of DHA to the Fetal Brain.*
Rytis Prekeris, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Molecular Mechanisms Regulating Epithelial Cell Apical Polarity and Ciliogenesis*
Catherine Proenza, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Regulation of excitability in sinoatrial myocytes*
Dianna Quan, MD Professor	Cytokinetics, Inc.	*A PHASE 3, OPEN-LABEL EXTENSION OF COURAGE-ALS (CY 5031)*
Thomas Ragole, MD Assistant Professor	Edgewise Therapeutics	*A Phase 2 Randomized, Double-blind, Placebo-controlled Study to Evaluate the Effect of EDG-5506 on Safety, Biomarkers, Pharmacokinetics, and Functional Measures in Adults and Adolescents with Becker Muscular Dystrophy*
Neda Rasouli, MD Professor	Lilly USA, LLC	*A Phase 3, Randomized, Double-Blind Study to Investigate the Efficacy and Safety of Once-Daily Oral LY3502970 Compared with Placebo in Adult Participants with Obesity or Overweight with Weight-Related Comorbidities (ATTAIN-1)*
Neda Rasouli, MD Professor	Eli Lilly and Company	*A Phase 3, Randomized, Double-Blind, Placebo-Controlled Study to Investigate the Effects of Tirzepatide on the Reduction of Morbidity and Mortality in Adults with Obesity*
David Raymer, MD Assistant Professor	Cytokinetics, Inc.	*A Phase 3, Multi-Center, Randomized, Double-blind, Placebo-controlled Trial to Evaluate the Efficacy and Safety of CK-3773274 in Adults with Symptomatic Hypertrophic Cardiomyopathy and Left Ventricular Outflow Tract Obstruction*
Judith Reaven, PhD Professor	Patient-Centered Outcomes Research Institute	*A Comparison of Two School-Based Interventions to Manage Anxiety in Autistic Students*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Judith Regensteiner, PhD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*The Colorado Building Interdisciplinary Research Careers in Women's Health Program*
Katherine Rennie, PhD Associate Professor	National Institute on Aging/NIH/DHHS	*Aging and Dysfunction in the Peripheral Vestibular System*
Diego Restrepo, PhD Professor	National Institute on Aging/NIH/DHHS	*Virus and olfactory system interactions accelerate Alzheimer's disease pathology*
Jane Reusch, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Impact of SARS CoV2 on post-hospital recovery of carbohydrate and muscle metabolism: role of endothelial injury*
Jane Reusch, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Role of Microvascular insulin resistance and cardiorespiratory fitness in diabetes*
Marian Rewers, MD, PhD Professor	Juvenile Diabetes Research Foundation	*Autoimmunity Screening for Kids (ASK)Program - Transition Towards a Sustainable Screening for T1D and Celiac Disease In Colorado*
Marian Rewers, MD, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Natural History of Pre-Diabetic Autoimmunity (DAISY)*
William Robinson, MD, PhD Professor	Genentech, Inc.	*GO40558 PH II, OPEN-LABEL, MULTICENTER, RANDOMIZED STUDY OF THE EFFICACY AND SAFETY OF RO7198457 IN COMBINATION WITH PEMBROLIZUMAB VERSUS PEMBROLIZUMAB IN PATIENTS WITH PREVIOUSLY UNTREATED ADVANCED MELANOMA*
Dennis Roop, PhD Professor	Us Army Medical Research Acquisition Act/DOD	*A Stem Cell-based Therapy for Recessive Dystrophic Epidermolysis Bullosa Delivered with a Spray on Skin Device*
Dennis Roop, PhD Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS	*Defining the role of innate immune cells in the early stages of immune surveillance of skin cancer by using a novel model that allows in vivo imaging of the immunoediting process.*
Michael Rosenberg, MD Associate Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Development of End-To-End Clinical Decision Support Tools To Prevent Cardiotoxic Drug Response*
Paul Rozance, MD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*Fetal glucagon links fetal metabolism with uterine blood flow and placental nutrient transfer by inhibiting placental lactogen secretion*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Brian Russo, PhD Assistant Professor	National Institute of General Medical Sciences/NIH/DHHS	*The Role of Intermediate Filaments in Inflammation*
Rachael Rzasa Lynn, MD Associate Professor	Department of the Army/DOD	*A Novel Non-Opioid Topical Therapy for Chronic Musculoskeletal Pain*
Hatim Sabaawy, MD, PhD Visiting Professor	National Cancer Institute/NIH/DHHS	*Mechanisms of targeting cellular self-renewal in glioblastoma*
Katherine Sabourin, PhD Assistant Research Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*The synergistic contributions of EBV and malaria to the etiology of Burkitt lymphoma*
Joseph Sakai, MD Associate Professor	National Institute on Drug Abuse/NIH/DHHS	*Deep Brain Stimulation (DBS) For Severe Treatment Refractory Methamphetamine Use Disorder*
Nanette Santoro, MD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*Colorado Women's Reproductive Health Research Career Development Center*
Regie Lyn Santos-Cortez, MD, PhD Associate Professor	National Institute on Deafness and Other Communication Disorders/NIH/DHHS	*Genetic and epigenomic determinants of hearing loss in Hispanic populations*
Katherine Sauder, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*NDPP-NextGen: A clinical trial to reduce intergenerational obesity and diabetes risks*
Erin Schenk, MD, PhD Assistant Professor	IMMUNOCORE	*IMC-F106C-101 Phase 1/2 First-in-Human Study of the Safety and Efficacy of IMC-F106C as a Single Agent and in Combination with Checkpoint Inhibitors in HLA-A*02:01-Positive Participants with Advanced PRAME-Positive Cancers*
Laura Scherer, PhD Associate Professor	National Cancer Institute/NIH/DHHS	*Understanding affective processing of scientific evidence to promote informed choice for breast cancer screening*
Lisa Schilling, MD Professor	Agency for Healthcare Research and Quality/DHHS	*An Interoperable, Reusable and Scalable Shared Decision Aid Navigator System: Supporting the 5 Rights of Patient Shared Decision-Making*
Richard Schulick, MD, MBA Professor	National Cancer Institute/NIH/DHHS	*University of Colorado Cancer Center*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
David Schwartz, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Mechanisms Regulating Lung Injury and Early Lung Fibrosis*
David Schwartz, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Preclinical Pulmonary Fibrosis, an opportune rare disease cohort*
David Schwartz, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Genes and Transcripts that Interact with MUC5B in Pulmonary Fibrosis*
David Schwartz, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Multi-Disciplinary Research Training in Respiratory Disease*
David Schwartz, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Molecular Determinants of Usual Interstitial Pneumonia (UIP)*
David Schwartz, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Colorado StARR Program in Medicine and Pediatrics (CSPMP)*
Anna Shah, MD Assistant Professor	Novartis Pharmaceuticals Corporation	*AGNOS: An 18-month, Open-label, Multi-Center Study to Assess the Effect of Ofatumumab 20mg SC Monthly in Treatment Naive, Very Early Relapsing Remitting Multiple Sclerosis Patients Benchmarked Against Healthy Controls on Select Outcomes*
Viralkumar Shah, MD Associate Professor	Juvenile Diabetes Research Foundation	*"Efficacy and safety of once weekly semaglutide in adults with obesity and inadequately controlled type 1 diabetes using hybrid closed-loop system"*
Matthew Sikora, PhD Associate Professor	Department of the Army/DOD	*Estrogen-driven breast tumorigenesis in invasive lobular carcinoma*
Bradford Smith, PhD Assistant Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Predicting and Preventing Ventilator-Induced Lung Injury*
Mia Smith, DVM, PhD Assistant Professor	Leona M. And Harry B. Helmsley Charitable Trust	*Mapping the B cell heterogeneity in type 1 diabetes at the single-cell level*
Janet Snell-Bergeon, MPH, PhD Assistant Professor	Leona M. And Harry B. Helmsley Charitable Trust	*Prenatal and Obstetric Maternal Exposures and Islet Autoimmunity in Early Life (PROMISE)*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Ronal Sokol, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Colorado Center of Childhood Liver Disease Research Network*
Kunhua Song, PhD Associate Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Mechanisms for cell signaling in the control of cardiomyogenesis*
Kunhua Song, PhD Associate Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Regulation of gene transcription and alternative splicing by a long non-coding RNA*
Andrea Steck, MD Professor	University of South Florida	*TrialNet: Data Coordinating Center for Type 1 Diabetes*
Kurt Stenmark, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Complement Mediated Remodeling in Pulmonary Vascular Disease*
Jennifer Stevens Lapsley, PT, PhD Professor	National Institute on Aging/NIH/ DHHS	*Advancing Rehabilitation Paradigms for Older Adults in Skilled Nursing Facilities*
Christopher Stille, MD, MPH Professor	Maternal and Child Health Bureau/ HRSA/DHHS	*Health System Research Network for Children and Youth with Special Health Care Needs (CYSHCNet)*
Laura Strom, MD Associate Professor	Epitel, Inc.	*Automated Seizure Detection for Home Seizure Monitoring with Epilog Sensors*
Jamie Studts, PhD Professor	National Cancer Institute/NIH/ DHHS	*Precision Lung Cancer Survivorship Care Intervention: A Randomized Controlled Trial Serving Rural Survivors and Communities*
Emily Su, MD, MSCI Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Mediators of impaired fetoplacental angiogenesis in fetal growth restriction*
Prem Subramanian, MD, PhD Professor	Neurophth Therapeutics, Inc.	*A Phase 1/2, Single-Arm, Open-Label, Dose-Finding Clinical Trial to Evaluate the Safety and Efficacy of Gene Therapy for Leber's Hereditary Optic Neuropathy (LHON) Associated with ND4 Mutation*
Lori Sussel, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*UC Denver Diabetes Research Center*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Lori Sussel, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Alternative RNA splicing events contribute to the onset of islet dysfunction in T1D*
Stanley Szefler, MD Professor	Colorado Department of Public Health and Environment/COLO	*Colorado AsthmaComp Expansion*
Stanley Szefler, MD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Reducing Asthma Attacks in Disadvantaged School Children with Asthma*
Jefferson Taliaferro, PhD Assistant Professor	National Institute of General Medical Sciences/NIH/DHHS	*Understanding the regulatory language of RNA localization*
Beth Tamburini, PhD Associate Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Cooperation between lymphatic stroma and hematopoietic cells shapes protective immunity*
Minghua Tang, PhD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Dietary influence on infant growth and the gut microbiota*
Nicole Tartaglia, MD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/ DHHS	*The eXtraordinarY Babies Study: Natural History of Health and Neurodevelopment in Infants with Sex Chromosome Trisomy*
Elizabeth Thomas, MD Associate Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Effects of early vs. late time restricted eating vs. daily caloric restriction on weight loss and metabolic outcomes in adults with obesity*
Darcy Thompson, MD, MPH Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*Sleep and Obesity in Toddlers from Mexican American Families*
Darcy Thompson, MD, MPH Professor	National Institute of Nursing Research NIH/DHHS	*Factors influencing screen media use in low-income Mexican American toddlers*
Joshua Thurman, MD Professor	Department of the Army/DOD	*The Role of Complement in Liver Cancer*
Joshua Thurman, MD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/ NIH/DHHS	*Spatial Mapping of Proteomic and Transcriptional Signatures in Kidney Disease*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Vesna Todorovic, MD, PhD Professor	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS	*Novel neurosteroid anesthetics and developmental synaptogenesis*
Daniel Tollin, PhD Professor	National Institute on Deafness and Other Communication Disorders/NIH/DHHS	*The contributions of age related changes in the sound localization pathway to central hearing loss*
Raul Torres, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Training Program in Immunology*
Raul Torres, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Lysophosphatidic Acid Regulation of CD8 T cell activation and function*
Jason Tregellas, PhD Professor	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS	*Neuronal and behavioral effects of an implicit priming approach to improve eating behaviors in obesity*
Linda van Dyk, PhD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*Therapeutic targets in gammaherpesvirus infection*
Rajeev Vibhakar, MD, PhD, MPH Professor	Us Army Medical Research Acquisition Act/DOD	*Targeting Bmi1 for ATRT Therapy*
Rajeev Vibhakar, MD, PhD, MPH Professor	American Cancer Society	*Role of BMI1 in ATRT stem cells*
Beat Vogeli, PhD Associate Professor	National Science Foundation/NSF	*Structural characterization of the mechanism leading to recognition of Alu elements by the Z-RNA-binding domain of ADAR1*
Nicholas Walter, MD Associate Professor	Bill and Melinda Gates Foundation	*RS Ratio Pharmacodynamic Biomarker Analysis for Otsuka DBO Ph2 Study*
Adriana Weinberg, MD Professor	National Institute of Allergy and Infectious Diseases/NIH/DHHS	*PERSISTENCE OF PROTECTION CONFERRED BY SHINGRIX AGAINST HERPES ZOSTER IN OLDER ADULTS*
Richard Weir, PhD Associate Research Professor	National Institute of Neurological Disorders and Stroke/NIH/DHHS	*Optimization of a Minimally-Invasive Bidirectional Optogenetic Peripheral Nerve Interface with Single Axon Read-in & Read-out Specificity*

New Research Grants > $500,000

Awarded FY2023

Name	Sponsor Name	Project Title
Mary Weiser-Evans, PhD Professor	National Heart, Lung, and Blood Institute/NIH/DHHS	*PTEN promoter hypermethylation underlies vascular disease progression*
Sarah Wherry, PhD Assistant Clinical Professor	Wake Forest University, School of Medicine	*Exercise and Bisphosphonate Use to Minimize Weight Loss Associated Bone Loss among Older Adults*
Cara Wilson, MD Professor	National Institute of General Medical Sciences/NIH/DHHS	*Medical Scientist Training Program*
Liping Yu, PhD Associate Research Professor	University of South Florida	*Core Clinical Laboratory for Type 1 diabetes Research Trials*
Rui Zhao, PhD Professor	National Institute of General Medical Sciences/NIH/DHHS	*The molecular mechanism of pre-mRNA splicing*
Michael Zuscik, PhD Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/ NIH/DHHS	*Studies on gut microbiome-joint connections in arthritis*
Michael Zuscik, PhD Professor	National Institute of Arthritis & Musculoskeletal and Skin Diseases/ NIH/DHHS	*Interdisciplinary Training in Musculoskeletal Research*

Office of Grants and Contracts
University of Colorado Denver | Anschutz Medical Campus
Award Trends – Fiscal Years 2022 and 2023

		2022			2023			
School/College/Chancellor's Office	Department/Division/Center	Direct Costs	Indirect Costs	Total Costs	Direct Costs	Indirect Costs	Total Costs	% of FY 22 Funding
D0014 -- D-BUS-DEAN OF BUSINESS					110,025	45,429	155,455	
D0015 -- D-SEHD-SCHOOL OF EDUC&HUMANDEV		2,423,912	276,578	2,700,490	7,274,012	579,359	7,853,371	291%
D0016 -- D-CEDC-DEAN OF ENGINEERING		3,549,652	931,430	4,481,082	7,206,433	1,718,920	8,925,353	199%
D0017 -- D-SPA-DEAN OF PUBLIC AFFAIRS		1,436,520	218,125	1,654,645	310,700	7,144	317,844	19%
D0018 -- D-CLAS-DEAN OF LIBERAL ARTS &		4,637,500	1,372,421	6,009,920	6,375,497	1,702,030	8,077,526	134%
D0019 -- D-CAP-DEAN-ARCHITECTURE & PLAN		863,898	39,920	903,818	1,111,801	42,068	1,153,869	128%
D0020 -- D-CAM-DEAN OF ARTS & MEDIA		40,090	20,862	60,952				0%
H0002 -- H-SOM-SCHOOL OF MEDICINE	H0021 -- H-SOM-DEAN'S OFFICE	1,255,384	56,754	1,312,137	249,808	35,051	284,860	22%
	H0028 -- H-SOM-BARBARA DAVIS CENTER	16,543,670	4,785,429	21,329,099	18,939,891	5,028,595	23,968,487	112%
	H0029 -- H-SOM-CC CANCER CENTER	36,916,861	10,937,812	47,854,672	36,565,478	10,500,434	47,065,910	98%
	H0033 -- H-SOM-WEBB-WARING CENTER	283,000	157,065	440,065	480,095	227,359	707,454	161%
	H0035 -- H-SOM-BIOCHEMISTRY	9,797,166	3,919,618	13,716,784	11,100,662	4,914,411	16,015,073	117%
	H0036 -- H-SOM-CELL&DEVELOPMNTL BIOLOGY	7,391,326	2,739,045	10,130,371	6,643,839	2,583,863	9,227,702	91%
	H0041 -- H-SOM-PATHOLOGY	3,561,618	1,304,633	4,866,250	3,418,855	1,308,933	4,727,788	97%
	H0043 -- H-SOM-PHARMACOLOGY	10,187,625	4,502,697	14,690,322	11,453,558	4,365,898	15,819,456	108%
	H0045 -- H-SOM-PHYSIOLOGY	6,224,690	3,225,048	9,449,738	4,426,681	2,135,338	6,562,019	69%
	H0048 -- H-SOM-ANESTHESIOLOGY	4,944,967	1,916,486	6,861,452	4,482,437	2,154,891	6,637,329	97%
	H0049 -- H-SOM-DERMATOLOGY	3,644,423	1,107,436	4,751,859	8,230,797	3,749,013	11,979,809	252%
	H0050 -- H-SOM-FM-FAMILY MEDICINE	8,955,230	1,281,796	10,237,027	6,277,379	803,404	7,080,783	69%
	H0051 -- H-SOM-MEDICINE	106,589,177	31,612,606	138,201,781	99,297,417	32,548,213	131,845,631	95%
	H0070 -- H-SOM-NEUROLOGY	13,959,374	4,560,158	18,519,532	24,594,619	7,550,488	32,145,105	174%
	H0072 -- H-SOM-OPHTHALMOLOGY	3,722,890	1,042,966	4,765,855	4,340,979	1,077,401	5,418,380	114%
	H0073 -- H-SOM-ORTHOPEDICS	5,482,724	1,338,564	6,821,288	5,205,374	1,184,891	6,390,265	94%
	H0074 -- H-SOM-OTOLARYNGOLOGY	3,091,661	1,153,509	4,245,169	2,996,855	1,110,435	4,107,289	97%
	H0075 -- H-SOM-PEDIATRICS	75,189,579	17,356,588	92,546,163	68,293,114	18,177,958	86,471,071	93%
	H0078 -- H-SOM-PSYCHIATRY	11,104,681	3,386,377	14,491,057	25,823,777	6,680,030	32,503,807	224%
	H0080 -- H-SOM-RADIATION ONCOLOGY	1,056,764	482,961	1,539,725	1,118,720	395,554	1,514,274	98%
	H0081 -- H-SOM-RADIOLOGY	3,580,644	1,088,641	4,669,285	2,016,393	726,222	2,742,615	59%
	H0083 -- H-SOM-REHAB MEDICINE	4,885,513	587,545	5,473,057	3,892,231	674,003	4,566,234	83%
	H0084 -- H-SOM-SURGERY	11,125,276	3,848,659	14,973,934	6,768,876	2,489,821	9,258,698	62%
	H0095 -- H-SOM-NS-NEUROSURGERY DEPT.	5,649,410	1,758,724	7,408,134	2,169,563	753,385	2,922,948	39%
	H0103 -- H-SOM-EMERGENCY MED	15,656,848	4,634,214	20,291,063	16,479,617	4,737,978	21,217,596	105%
	H0107 -- H-SOM-GME	75,000	0	75,000	150,000	0	150,000	200%
	H0381 -- H-SOM-COLORADOHLTHOUTCOMESCTR	20,114,962	5,214,735	25,329,697	21,116,712	6,336,550	27,453,262	108%
	H0395 -- H-SOM-CENTER OF BIOENGINEERING	5,128,426	1,511,709	6,640,135	6,805,269	1,897,185	8,702,455	131%
	H0396 -- H-SOM-DEPRESSION CENTER	471,243	131,621	602,864	454,693	108,117	562,810	93%
	H0400 -- H-SOM-HEALTH&WELLNESS CENTER	985,134	511,665	1,496,799	1,831,005	827,854	2,658,859	178%
	H0417 -- H-SOM-LINDA CRNIC INSTITUTE	1,946,728	1,067,777	3,014,505	4,286,867	1,688,675	5,975,542	198%
	H0422 -- H-SOM-CTR FORCHILDREN'SSURGERY	6,528	1,306	7,834	6,672	1,334	8,006	102%
	H0429 -- H-SOM-DEAN EDUCATION OFFICE	1,187,282	79,342	1,266,624	537,593	35,230	572,823	45%
	H0435 -- H-SOM-IMMUNOLOGY MICROBIOLOGY	16,626,483	6,400,499	23,026,982	17,023,781	6,821,491	23,845,272	104%
	H0436 -- H-SOM-OBSTETRICS AND GYNECOLGY	6,049,480	1,823,161	7,872,642	7,843,836	2,574,694	10,418,530	132%
	H0543 -- H-SOM-BIOMEDICAL INFORMATICS	27,350,121	5,545,615	32,895,736	19,669,293	6,865,357	26,534,649	81%
	TOTAL SCHOOL OF MEDICINE	450,741,888	131,072,761	581,814,637	454,992,736	143,070,053	598,062,791	103%
H0115 -- H-SDM-SCHOOL OF DENTAL MEDICIN		3,337,620	1,089,413	4,427,033	3,936,718	1,079,432	5,016,150	113%
H0132 -- H-CON-COLLEGE OF NURSING		7,409,137	1,371,450	8,780,588	6,186,428	976,453	7,162,881	82%
H0155 -- H-SOP-SCHOOL OF PHARMACY		12,424,047	3,981,489	16,405,536	11,994,791	5,281,632	17,276,423	105%
H0176 -- H-GS-GRADUATE SCHOOL		141,000	0	141,000	95,000	0	95,000	67%
H0401 -- H-CSPH-CO SCHOOL OF PUBLIC HLT		39,827,807	10,004,860	49,832,671	49,402,915	11,888,437	61,291,350	123%
U0006 -- U-ADM ADMINISTRATN AND FINANCE	U0009 -- U-ADM AVC FACILITIESMANAGEMENT	250,000	0	250,000	250,000	0	250,000	100%
U0028 -- U-ADM VC FOR RESEARCH	20696 -- ADM AVCRC EH&S ANSCHUTZ				155,243	0	155,243	
	21389 -- ADM VCR CCTSI SPPGM/GIFTS	7,646,917	2,110,381	9,757,298				0%
U0067 -- U-ADM-VC HEALTH AFFAIRS ADMIN	20868 -- ADM VCHA CENTER ON AGING	5,576,048	2,738,473	8,314,521	3,473,673	1,333,682	4,807,355	58%
	H0189 -- H-ADM VCHA-COLORADO AHEC	872,000	16,000	888,000				0%
	H0447 -- H-ADM VCHA COMPASS	239,120	5,880	245,000	139,700	39,026	178,726	73%
U0075 -- U-VCASA/EVC ACAD &STDNT AFFRS	30026 -- VCASA/EVCASA ACADEMIC&STDNT AF	1,402,431	7,796	1,410,227	277,579	8,254	285,833	20%
	30040 -- VCSSLS-STRATENRLL&STDNTSUCCESS	310,691	21,608	332,299	272,699	24,674	297,373	89%
	30054 -- VCASA/EVCASA-INTERNAT'L BUSCTR	291,982	25,390	317,372	296,296	23,704	320,000	101%
	30124 -- LS-LIB LIBRARY	27,620	0	27,620	33,262	0	33,262	120%
	D0036 -- D-VCSSLS-ACADEMIC ACHIEVEMENT				13,502	2,498	16,000	
	U0079 -- U-VCSSLS-AVC STUD&COMMENGAGMNT	487,467	36,310	523,777	248,303	15,335	263,638	50%
	U0100 -- U-VCSSLS-HEALTH&WELLNESSADVSUP	54,600	5,460	60,060	565,369	112,893	678,262	1129%
U0109 -- U-ADM-CHANCELLOR ANSCHUTZ	21693 -- ADM CHAN-CTRFOR BEHHEALTHINNOV	21,383	5,987	27,370				0%
	21706 -- ADM CHAN ANSCHUTZ INNOVATION	2,194,828	597,217	2,792,045	3,930,134	981,878	4,912,011	176%
	H0181 -- H-ADM-EVC CAO STRAUSS LIBRARY	115,657	25,521	141,178	241,265	57,854	299,119	212%
	H0184 -- H-ADM-EVC CAO STUDENT AFFAIRS	27,775	2,225	30,000				0%
	H0531 -- H-ADM-DIVERSITY EQ INC&COM ENG				3,515,412	836,125	4,351,537	
	U0104 -- U-ADM CHAN-MARCUSINSTBRAINHLTH	7,461,566	746,157	8,207,723	749,394	400,464	1,149,858	14%
	TOTAL	553,813,156	156,723,713	710,536,862	563,158,887	170,227,344	733,386,230	103%

	FY 2022			FY 2023		
	Direct Cost	Indirect Cost	Total Cost	Direct Cost	Indirect Cost	Total Cost
Anschutz Medical Campus	538,286,793	153,767,814	692,054,600	538,900,626	165,905,465	704,809,090
Denver Campus	15,526,363	2,955,900	18,482,262	24,258,261	4,318,880	28,577,140
	553,813,156	156,723,714	710,536,862	563,158,887	170,224,345	733,386,230

The Office of the Dean proudly presents the

2023-2024 Dean's Distinguished Seminar Series

All seminars will be held on the Anschutz Medical Campus, (unless otherwise noted),
In the Research 1 North building, Hensel Phelps West Auditorium, 4:00-5:00pm.
Prior to each seminar, lecture topics will be announced.
Please follow the hyperlinks below to learn more about our speakers and their field of exper□se.
For ques□ons about the series, contact Judy Sherman, 303-724-5375, judy.sherman@cuanschutz.edu

Tuesday, September 12, 2023
KRISTIE EBI, PHD, MPH
Professor, Global Health
Professor, Env. And Occ. Health Sciences
University of Washington

Tuesday, October 10, 2023
MICHAEL MINA, MD, PHD
Chief Science Officer, eMed

Tuesday, November 14, 2023
RUSSELL VANCE, PHD
Professor and HHMI Inves□gator
Dept. of Molecular & Cell Biology
University of California, Berkeley

Tuesday, January 9, 2024
POLINA ANIKEEVA, PHD
Professor of Materials Science and Engineering
Professor in Brain and Cognitive Sciences
McGovern Institute for Brain Research
Associate Director,
Research Laboratory of Electronics
Massachusetts Institute of Technology

Tuesday, February 13, 2024
REBECCA CUNNINGHAM, MD
William G. Barsan Collegiate Professor
of Emergency Medicine
Vice President for Research, U-M Office of the Vice President for Research
Principal Investigator, Firearm Safety Among Children and Teens Consortium (FACTS)
University of Michigan Medical School

Tuesday, March 12, 2024
CAROL LANGE, PHD
Professor of Medicine and Pharmacology
(Joint Appointment)
Tickle Family Land Grand Endowed Chair
of Breast Cancer Research
University of Minnesota Medical School

Tuesday, April 9, 2024
RUSTY GAGE, PHD
Professor, Laboratory of Genetics
Vi and John Adler Chair for Research on Age-Related Neurodegenerative Disease
Salk Institute for Biological Studies

Tuesday, May 14, 2024
MATTHEW W. WILSON, MD, FACS
Barret G. Haik Endowed Chair
Department of Ophthalmology
University of Tennessee Health Sciences Center
Director, Hamilton Eye Institute

School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Centers, Institutes, and Programs

Adult and Child Center for Outcomes Research and Delivery Science

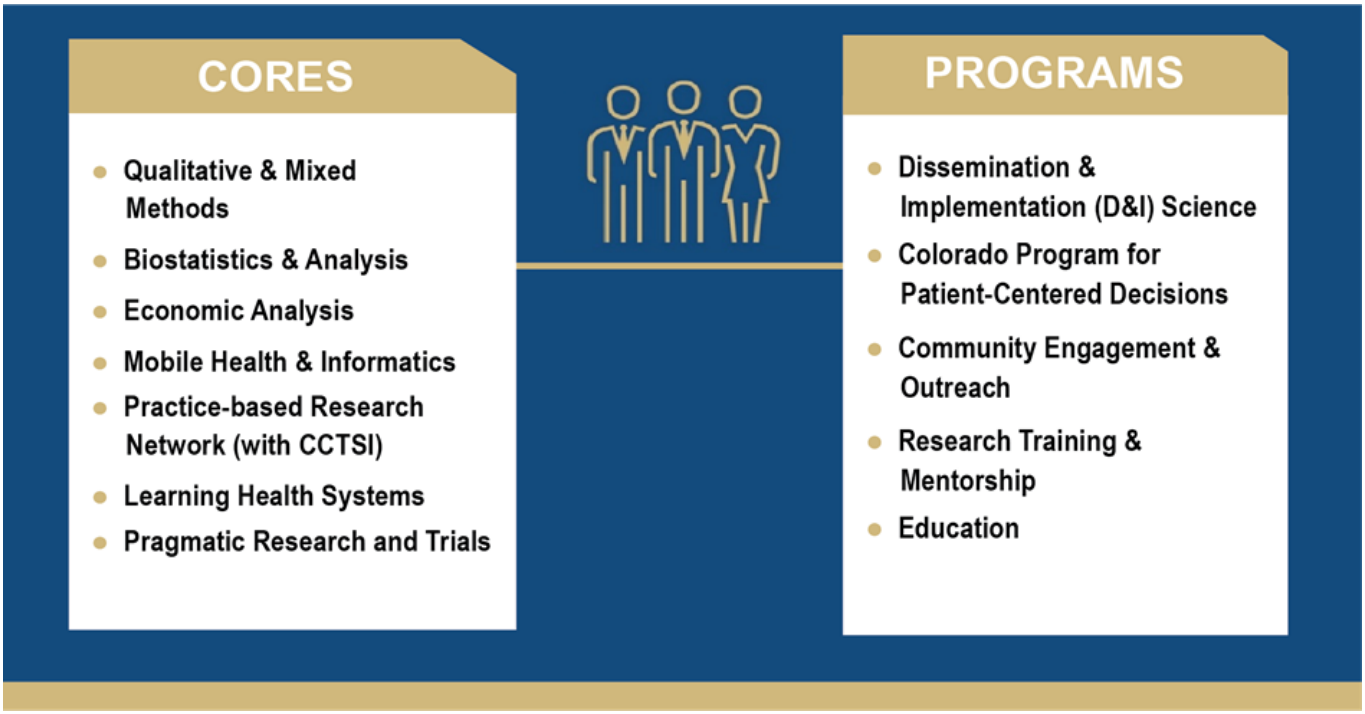
Supported by the University of Colorado School of Medicine and Children's Hospital Colorado (CHCO) through the Child Health Research Enterprise, the Adult and Child Center for Outcomes Research and Delivery Science (ACCORDS) provides a collaborative and multidisciplinary environment that supports outcomes, health services, and implementation research for CU Anschutz faculty. The founding director is **Allison Kempe, MD, MPH**. ACCORDS began as a consortium in 2014 and became a formal campus center in 2022.

ACCORDS is an incubator for research ideas, fosters interdisciplinary collaboration, and develops focused areas of research of national prominence by bringing together T3-T4 researchers from across the CU Anschutz Medical Campus. We provide research consultation, analysis, training/mentorship, and help with grant preparation to all School of Medicine faculty. We also collaborate with the Colorado School of Public Health, Skaggs School of Pharmacy and Pharmaceutical Sciences, and College of Nursing. ACCORDS has strong research affiliations with the Colorado Clinical and Translational Sciences Institute (CCTSI), Denver Health, Kaiser Permanente, U.S. Department of Veterans Affairs, Colorado Department of Public Health and Environment, and the Colorado Department of Health Care Policy and Financing.

Key Accomplishments in the past year:

ACCORDS has launched 2 new Cores – The Learning Health Systems Core and Pragmatic Research and Trials Core.

- The Learning Health Systems Core aims to assist researchers in collaborating with health systems to design and evaluate clinical programs or interventions to expedite knowledge generation that improves patient care and clinical processes within the system of care.
- The Pragmatic Research and Trials Core will assist investigators 1) seeking advice and guidance related to pragmatic research and trials in real-world settings that need to consider context in the design and conduct of their research and/or trial; and 2) help investigators identify and navigate additional consultations they need for a successful pragmatic study. This Core will work in close collaboration with the CCTSI Pragmatic Trials Navigation Service.



Our educational programs reached more people in fiscal year 2023 than ever before, with over 1200 attendees. We are looking toward enhanced virtual educational experiences. The ACCORDS fellowship programs trained an additional 16 health service research leaders with many of our graduates currently serving in key leadership roles on campus. We continue to provide robust support and mentorship to our junior faculty, providing support for 100 researchers working on early career funding opportunities.

We provided support for 61 different investigators to submit grant proposals, 24 of whom were being assisted for the first time. A major focus of the cores and programs is to provide support for the development of new projects and grant proposals. Our success rate over the past year increased from 36% to 41%. Our cores and programs provided a record number of consultations to the campus and our community partners in fiscal year 2023.

The objectives of ACCORDS are to:

- Strengthen outcomes, health services, and implementation research by providing a multidisciplinary home for campus researchers to successfully collaborate.
- Increase competitiveness of the School of Medicine/CHCO for funding from multiple research, education, and training program sponsors, especially Patient-Centered Outcomes Research Institute, the Agency for Healthcare Research and Quality, and the National Institutes of Health.
- Strengthen affiliations with key external partners, to increase access to populations and collaborators necessary for certain grants.
- Improve faculty development for senior and junior faculty interested in outcomes and delivery science research by

providing an interdisciplinary home for developing research, a mentored training ground, and substantial educational activities.

- Improve the ability of the School of Medicine/CHCO to recruit senior and junior faculty interested in health outcomes, health services research, dissemination and implementation science, comparative effectiveness, and patient-centered outcomes research.
- Achieve greater national visibility for the School of Medicine/CHCO in the areas of health outcomes, dissemination and implementation science, comparative effectiveness research, and training.
- Produce local and national educational events and opportunities focused on state-of-the-art outcomes and community translational research methods and applications.

Anschutz Health and Wellness Center

The Anschutz Health and Wellness Center (AHWC), established within the CU School of Medicine, opened in April 2012. Our vision is a campus where wellness is the foundation of everything we do. To foster this vision, the staff of the AHWC collaborate with campus partners to develop and deliver programs and services targeting physical activity, nutrition, and mental wellbeing that enhance the lives of people who come here. The AHWC serves as a campus resource that provides support and a space for innovation and collaboration for researchers, clinicians, patients, students, campus employees, and community members. The center is led by Director **Daniel Bessesen, MD**; Director of Research **Paul MacLean, PhD**; Medical Director **Vicki Catenacci, MD**, and Director of Finance and Administration **Luciana Smith, MSO**, MCPH. More information is available at anschutzwellness.com.

Fitness

The AHWC fitness center offers 50 weekly group exercise classes, personal training services, massage, and motivational support for nearly 3,000 members from the campus and the surrounding community. During the COVID-19 pandemic, fitness membership declined by nearly 50%. We have regained 25% of the memberships lost during the pandemic.

Fitness Supported Research

The fitness center also supports sponsored projects and NIH-funded research studies investigating the basic physiological effects of physical activity and the associated health benefits. NIH and industry-funded research programs utilizing the fitness center in FY23:

- SPARX (NORTHWESTERN UNIVERSITY NU PHIII SPARX.FIXED.CT.FC K12 60054977 UCD FR PRE)
- TACTICS (CSU MRSG.2018-23 G-91237 KO5 SUBCONTRACT)
- ARROW (NIH SE OVRFD OBS INDV R01 DK114272)
- TIMEX (NIH/NIDDK R01 DK126814)
- SYNERGY (IRB 21-3690 Study of Yoga and Energy Balance)

In addition to on-site programs and services, the fitness center has engaged with the Anschutz Medical Campus through outreach. The VA Gerofit program has continued to utilize the center as its exercise site. Personal trainers have supported exercise programming for clinical populations including people with cancer through the BfitBwell program, for people with traumatic brain injury with the Marcus Institute for Brain Health, and people recovering from addiction treated at the CeDAR program.

Clinical Populations

The center has established fitness and wellness programs for clinical populations.

- The **BfitBwell Cancer Exercise Program** has worked with over 900 cancer survivors since being established in 2013, it is a collaboration between the University of Colorado Cancer Center and the AHWC. This program provides a three-month personalized exercise program to cancer survivors from the CU Cancer Center, consisting of individual and small group classes. The clinical program provides research data and infrastructure for cancer exercise research. The program has completed a funded pilot investigation of a telehealth exercise program specifically for rural survivors of cancer and is actively involved in three additional funded pilot research investigations. https://medschool.cuanschutz.edu/health- and-wellness/bfitbwell
- A physical fitness program has been developed and provided to inpatient residents of the **Center for Dependency, Addiction, and Rehabilitation** (CeDAR). Since beginning in 2021, this program has worked with over 600 patients, of which 385 participants were in FY23.

CU Medicine Weight Management and Wellness Clinic

The CU Medicine Weight Management and Wellness Clinic offers multi-disciplinary weight management and wellness services, including provider directed weight management; evidence-based weight management programs; nutrition consultations with registered dietitians; behavioral health services; and body composition, metabolic assessment, and diagnostic testing. The clinic also supports the training of medical students, residents, and fellows in obesity management. Part of CU Medicine and the CU Anschutz Health and Wellness Center, the clinic offers patients and visitors integrated resources within a state-of- the-art facility. Other tenants in the clinic include Occupational Health, CU Plastic Surgery, and the Marcus Institute for Brain Health.

Total clinical revenue in FY23 was $1.65M, up from $1.17M in FY22. The clinic has 11 providers with faculty appointments in endocrinology, internal medicine, family medicine, gastroenterology, and psychiatry.

Weight Loss 4 Life

Bi-monthly ongoing support that gives participants the foundational tools and accountability needed to sustain long-term weight loss. This program is also offered in 3-4 month set cohorts for corporate and campus partners who request this format.

My New Weigh

A medically supervised 20-week group program utilizing behavior change and a highly structured meal plan for significant weight loss utilizing meal replacements and classes taught by a registered dietitian.

Obesity Medicine Fellowship

The Obesity Medicine Fellowship Training Program started in July 2020 with a $100,000 Obesity Medicine Fellowship Program Development Grant from the Obesity Medicine Fellowship Council. Now, fully funded by AHWC, this one-year clinical fellowship prepares graduates for certification by the American Board of Obesity Medicine.

DAWN Clinic

The DAWN Clinic, which provides health services to underserved populations in Aurora, began providing care to patients at the AHWC in March 2023. Specialties include dermatology, rheumatology, diabetes education, ophthalmology, neurology, nephrology, cardiology, gynecology and reproductive health, complex gynecology, and occupational therapy.

RESEARCH
Research funding secured by the center and its investigators totaled $6.275M annually.

Colorado Nutrition Obesity Research Center (NORC)—
$1.16 million annually
Paul MacLean, PhD The Colorado NORC has secured ~$6 million through 2025 to promote interdisciplinary, translational research, and develop young investigators interested in nutrition and obesity research. The Colorado NORC research base includes 132 funded faculty members and 75 affiliated trainees, educators, and researchers, with a research portfolio of ~$50 million of nutrition and obesity related research across five campuses in the Rocky Mountain region. The NORC supports three biomedical research cores (clinical intervention and translation; energy balance assessment; molecular cellular analytic), an enrichment program, and a pilot and feasibility program for early career investigators. The NORC awards ~$150,000 annually in pilot grants to early career investigators to help them develop their independent research programs. The Colorado NORC is funded by NIH/NIDDK grant **P30 DK048520**, $1.16 million annually, http://cunorc.org

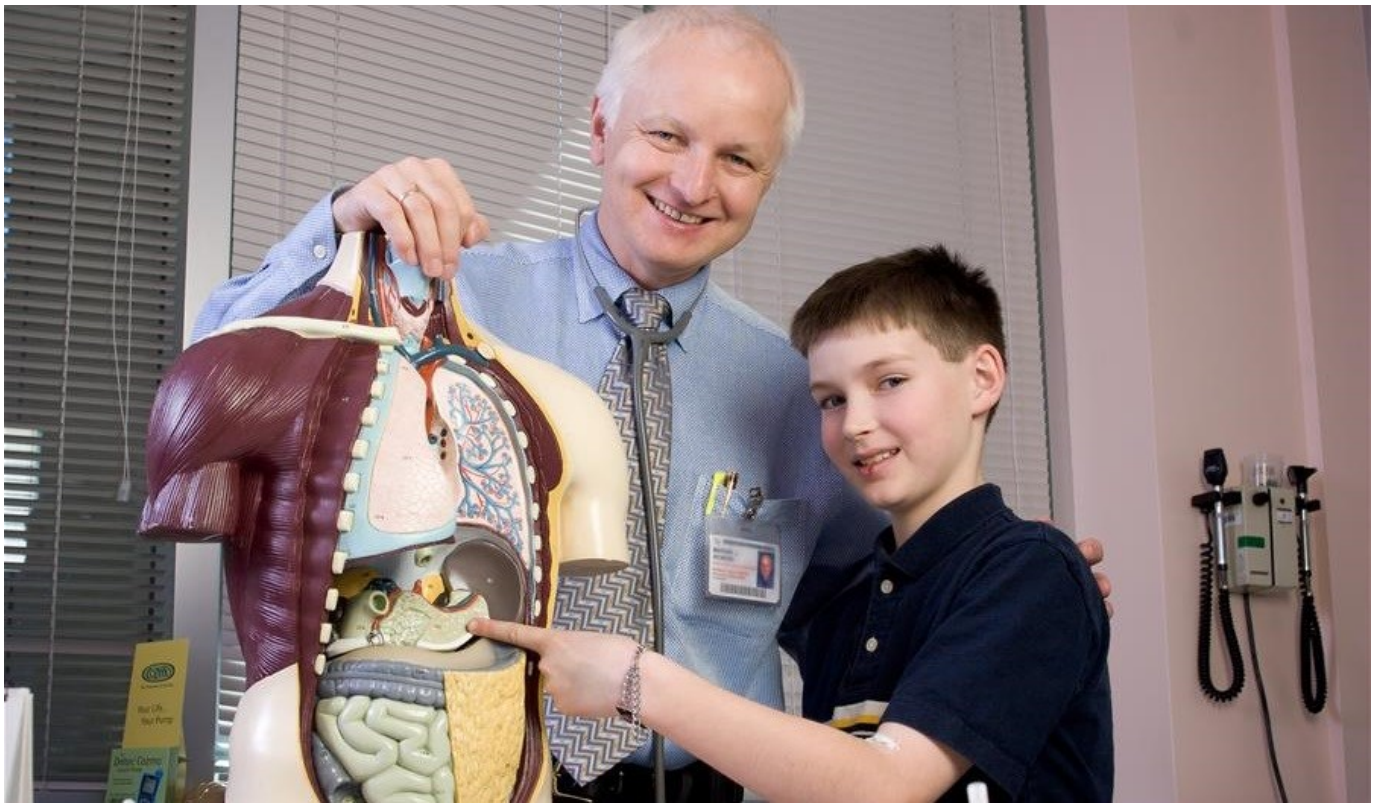
Investigator-Initiated Federally Funded and Foundation Research—
$4.87 million annually
AHWC faculty are engaged in investigator-initiated research studies funded by the NIH and other organizations. Many studies are focused on improved understanding of body weight regulation and the treatment of obesity.

Industry Sponsored Clinical Trials—$245K annually
The AHWC Clinical Trials Division conducts industry-sponsored research with a focus on weight loss, weight maintenance, metabolic syndrome, components of a healthy diet, and diabetes. Trials supported by this group include:

- **Redefine 1: Novo Nordisk, NN9838-4608:** Efficacy and safety of cagrilintide 2.4 mg in combination with semaglutide 2.4 mg (CagriSema 2.4mg/2.4 mg) once weekly in participants with overweight or obesity. ($104,901 annually, PI Daniel Bessesen MD).
- **Novartis Pharmaceuticals Corporation** A randomized double-blind, placebo-controlled, multicenter trial assessing the impact of lipoprotein (a) lowering with TQJ230 on major cardiovascular events in patients with established cardiovascular disease (HORIZON). ($139,918 annually, PI Dave Saxon MD).

Barbara Davis Center for Diabetes

The Barbara Davis Center for Childhood Diabetes (BDC) is one of the largest centers in the world specializing in type 1 diabetes research and care for children and adults. Clinicians, clinical researchers, and basic biomedical scientists work at the BDC to find the most effective treatment, prevention, and cure for type 1 diabetes.



Clinical Care

The center provides state-of-the-art care for over 7,600 children and adults with diabetes. Barbara Davis Center clinics offer extensive education and support for patients and their families, as well as specialized programs such as the Pregnancy and Diabetes Clinic, the Hispanic/Latino Diabetes Care Program, and a model telehealth program. The Barbara Davis Center provides type 1 diabetes care for Children's Hospital Colorado diabetes and endocrine program, currently ranked No. 4 in the country by U.S. News & World Report.

- BDC serves >90% of Colorado children diagnosed with type 1 diabetes.
- Patients from 46 U.S. states receive care at the BDC.
- Patients from over 33 countries receive care at the BDC.
- 96% privately insured & 83% Medicaid patients use continuous glucose monitors.
- 75% privately insured & 69% Medicaid patients use hybrid closed loop pump systems.
- BDC clinics accept >600 new patients annually.

Research

BDC research includes investigation of the causes of type 1 diabetes, the early detection of autoimmunity, prevention, and early introduction of novel technology in treatment of the disease. BDC clinical faculty members are developing new strategies and treatments for improved outcomes of care including prevention of acute and long-term complications of diabetes. BDC investigators receive >$20 million per year in competitive grant funding. They are currently directing >240 active sponsored research projects and publish over 150 peer-reviewed papers in high-profile journals every year.

Clinical Research Highlights

BDC investigators continue to increase the body of knowledge around the identification, cause, treatment, and outcomes of type 1 diabetes. Recent contributions include:

- BDC clinical trials pivotal for FDA approval of therapies and devices including the first hybrid closed-loop system to automate insulin dosing; insulin FiAsp; nasal glucagon (Baqsimi); and Control IQ hybrid closed loop system for patients ≥ 14 yrs and for patients 6-13 yrs.
- SGLT adjunctive therapy improves outcomes in type 1 diabetes patients.
- Autoimmunity Screening for Kids (ASK) study finds 1% of children in Denver have early type 1 diabetes and 2% have undiagnosed celiac disease. Screening and monitoring of high-risk children prevents 90% of diabetic ketoacidosis at diagnosis of diabetes.
- Clinical trial results have been translated into the first FDA approved treatment of early type 1 diabetes that delays insulin dependency by 3 years.

Basic Science Research Highlights

In the Basic Research Division, the recruitment of new faculty will contribute to a period of rapid growth and increased sponsored project productivity. The Diabetes Research Center award has accelerated collaboration across campus providing resources for diabetes researchers including the AMC Diabetes Registry, a living biobank, laboratory service cores, disease modeling, and pilot and feasibility funding. Additional investments in research infrastructure will enable us to establish or accelerate studies of:

- the role of the immune system in the destruction of pancreatic beta cells and as a pathway to assessing risk and developing preventive vaccines.
- the potential of stem cells or artificially grown insulin cells to replace lost pancreatic cells and restore functionality.
- understanding the role of the pancreatic beta cells in contributing to the disease process and developing methods to protect the beta cells from autoimmune attack.
- new drugs to improve glycemic control, together with new and more reliable means of insulin delivery and monitoring.
- earlier identification and counteractive therapies for vascular damage leading to eye, kidney, and heart complications.

Leadership: BDC investigators sit on planning and leadership committees for organizations including the American Diabetes Association, the American Heart Association, International Society for Pediatric and Adolescent Diabetes, Keystone Research Symposia, nPOD and the T1D Exchange Clinic Registry.

Service Centers

The BDC Research Division provides cytometry and islet preparation services for diabetes researchers across CU. The molecular biology service center provides basic molecular biology support, DNA sequencing, cell line authentication, and mycoplasma testing. In 2019, BDC established the microscopy program providing access to equipment and expertise for better visualizing the tissues affected in type 1 diabetes. In 2021, BDC also participated in the establishment of a new human organoid core to facilitate the study of how human tissues are affected in type 1 diabetes. The CAP- and CLIA-certified autoantibody/HLA service center performs studies which include assays for islet autoantibodies and markers of other autoimmune disorders, including celiac and Addison's disease. This laboratory serves as the core laboratory for numerous national and international trials for the prevention of type 1 diabetes.

Education

The BDC provides an outstanding training environment for developing physician-scientists, clinicians, and basic science researchers. Faculty members provide laboratory and clinical research training opportunities for young investigators from around the world including participants in the highly successful T32 Pediatric Endocrinology Fellowship Training Program, K12 Pediatric Endocrinologist Career Development Program, and a newly established T32 Interdisciplinary Bioengineering Research Training in Diabetes. The annual Keystone Conference remains the center's flagship in continuing medical education in management of diabetes, regularly selling out with over 600 participants.

The Barbara Davis Center is led by **Marian Rewers, MD, PhD**, executive director; **Paul Wadwa, MD**, director of pediatric diabetes division; **Satish Garg, MD**, director of adult diabetes division; **Lori Sussel, PhD**, director of basic and translational research division; and **Janet Snell-Bergeon, PhD**, director of clinical epidemiology division. Website: www.barbaradaviscenter.org

Cardiovascular Institute

The University of Colorado Cardiovascular Institute is co-directed by **Peter M. Buttrick, MD,** and **Leslie Leinwand, PhD,** with a focus on the integration of cardiovascular research, treatment, and discovery through a collaboration of the University of Colorado Anschutz Medical Campus and the University of Colorado Boulder. **Michael R. Bristow MD, PhD,** is the director of the pharmacogenomics section and **Matthew R.G. Taylor MD, PhD**, and **Luisa Mestroni, MD,** are co-directors of the molecular genetics section. **Timothy A. McKinsey, PhD,** provides leadership in both sections.

The scientific goals of the institute are to understand the genetic basis and specific molecular mechanisms responsible for heart muscle disease and heart failure, and to produce new diagnostic techniques and treatments for patients. By integrating the effort of those committed to curing heart muscle disease and heart failure, the collaborative nature of the institute encourages sharing findings and data across both the Boulder and the Anschutz campuses, which translates into improved diagnosis and therapies for patients.

In molecular genetics, our mission is to investigate and identify causes of heart muscle disease and heart failure and in pharmacogenomics, our mission is to identify and develop therapies that favorably affect pathologic myocardial gene expression or the clinically important consequences of variant gene products. The institute has always placed high value of the development of novel intellectual property that leads to partnerships with biotech and industry that links to advances in clinical care.

Cardiovascular Institute members have published over 50 peer-reviewed papers, have secured numerous funding awards, and have launched several clinical trials. CVI members hold leadership positions or committee memberships in the National Institutes of Health, American Heart Association, Heart Failure Society of America, and the International Society for Heart Research.

https://medschool.cuanschutz.edu/cardiovascularinstitute

Center for Bioengineering

Leadership

Kristyn Masters, PhD, Professor and Chair, Department of Bioengineering
University of Colorado Denver | Anschutz Medical Campus
Director, Center for Bioengineering, University of Colorado School of Medicine

Mission
The Center for Bioengineering aims to support, catalyze, and grow research, training, and entrepreneurship at the intersection of clinical medicine and engineering on the Anschutz Medical Campus.

Website address
https://medschool.cuanschutz.edu/bioengineering

Accomplishments

New Faculty
Kristyn Masters, PhD, was hired as chair of bioengineering and director of the Center for Bioengineering, taking the helm from the Founding Chair and Director Robin Shandas, PhD. Masters was previously at the University of Wisconsin-Madison, where she was a professor for 19 years and vice chair for the last seven years, in addition to holding other leadership positions. Masters' research focuses on using tissue engineering techniques to build platforms that mimic different pathologies, with a particular interest in cardiovascular disease and gynecological cancers.

Selected New Awards

Brisa Peña Castellanos, PhD, received an American Heart Association Career Development Award entitled "Stress Matters: Mechanobiological Mechanisms in Sex-specific Cardiac Fibroblasts". The major goals of this award are to study how mechanical stresses affect cardiac fibroblasts in a sex-specific manner and utilize these findings to engineer novel sex-specific therapeutics for heart failure.

Brecca Gaffney, PhD, was awarded an NIH K01 entitled "Effect of Osseointegrated Prostheses on the Pathogenesis of Hip Osteoarthritis in Patients with Lower Limb Loss." This project will quantify the effect of osseointegrated prostheses on muscle composition, cartilage loading mechanics, and cartilage health, to determine if prosthesis osseointegration plays a positive role of osteoarthritis progression in comparison to the traditional socket approach.

Emily Gibson, PhD, in collaboration with Diego Restrepo, PhD, was awarded an NSF grant entitled "Modified two-photon microscope with high-speed electrowetting array for imaging voltage transients in cerebellar molecular layer interneurons." This research project aims to develop a revolutionary microscope for studying the brain's neural activity.

Cathy Bodine, PhD, is the PI of one of five projects awarded in Round 2 of the CU Denver Grand Challenges initiative. The project, entitled "Advancing Research and Innovation for Aging and Disability (ARIAD)," will develop a collaborative network of academic experts, community stakeholders, and local, national, and international industry advisors to explore, develop, and deploy safe, productive, and efficient technologies that support the needs of those living or aging with disabilities.

Chelsea Magin, PhD, and **Brad Smith, PhD,** received a NSF RECODE (Reproducible Cells and Organoids via Directed-Differentiation Encoding) award, entitled "Defining Environmental Design Criteria for Directed Differentiation of Type 1 from Type 2 Lung Alveolar Epithelial Cells," for $1.5M over 3 years. They are joined by co-PI's Daniel Weiss, MD, PhD, at University of Vermont and Amy Ryan, PhD, at University of Iowa. The goal of this proposal is to design and validate a robust system for delineating the mechanisms by which extracellular matrix composition and stiffness regulate a key step in lung repair and regeneration: differentiation of alveolar type 2 epithelial cells (AT2) to alveolar type 1 epithelial cells (AT1).

In addition to several other faculty awards, bioengineering students were the recipients of multiple fellowships, such as NSF Graduate Research Fellowships and NIH F31s, as well as supplements, such as R01 Diversity supplements and NSF Research Experience for Undergraduates (REU). Overall, across faculty and students, there was >$6.5M in new awards this fiscal year.

Description
The Center for Bioengineering and the Department of Bioengineering represent the research and academic components of the bioengineering program at the University of Colorado Denver | Anschutz Medical Campus. Built to improve patient care by fully integrating engineering principles of design with biological systems and biomedical technologies, the program continues to expand and has annual expenditures nearing $8M. More than 100 CU Anschutz, Denver, and Boulder faculty have affiliations with the Center for Bioengineering.

The Department of Bioengineering in the College of Engineering, Design and Computing employs 11 tenure-track and 25 non-tenure track bioengineering teaching and research faculty who deliver graduate and undergraduate degree programs. The majority of this instruction occurs on the Anschutz Medical Campus, also home of the Bioengineering Opportunities and Leadership Training (B.O.L.T.), focused on introducing high school and middle school students to bioengineering, and the BioEngineering Empowerment Program (B.E.E.P.), focused on expanding opportunities for underrepresented students in bioengineering and related STEM disciplines.

Bioscience 2, in the Fitzsimons Innovation Community adjacent to the Anschutz Medical Campus, is the primary location for the academic programs, where bioengineering students learn how to apply engineering skills and knowledge to solve clinical problems. Opportunities for research and innovation in medical technology were enhanced through the opening of Bioscience 3 in 2020, which houses research labs, the Center for Inclusive Design and Engineering (CIDE), and design innovation studios to incubate new medical technologies.

Funded research projects include studies that use cardiac cells to repair congenital heart defects; studies in ventilator-induced lung injury in pediatric patients; projects in disability and aging; projects in neuro-optics and prosthetics; and research in thrombosis and hemostasis. Research in the Center for Bioengineering is carried out in research space in Bioscience 2 and Bioscience 3. Additional research space is utilized on the downtown campus by the CIDE as well as in the Barbara Davis Center, Research 1 North, Research 2, and the Research Institute at the Children's Hospital Colorado.

Kristyn Masters, PhD, is the director of the Center for Bioengineering and Chair of the Department of Bioengineering. Faculty membership is representative of the diverse and translational research projects that bridge engineering and medicine, and our program collaborates with more than 100 faculty in the CU School of Medicine. The Center for Bioengineering has active research collaborations with the Colorado Translational Research Imaging Center, the neuroscience program, the Barbara Davis Center for Diabetes, Data Science to Patient Value, the Division of Pulmonary Sciences and Critical Care Medicine, the Ludeman Family Center for Women's Health Research, Gates Institute, Hemophilia and Thrombosis Center, Center for Cancer and Blood Disorders, Developmental and Behavioral Biology, Orthopedics, Geriatrics, Physical Medicine and Rehabilitation, the Linda Crnic Institute, the Clinical Translational Research Center, Organoid and Tissue Modeling program and the iPSC Core at the CU School of Medicine.

Within the university, faculty in bioengineering have active collaborations with the Heart Institute, the Breathing Institute, the Gait Lab, the Cardiovascular Pulmonary Research Lab, the Pediatric Heart-Lung Center, the Colorado Fetal Care Center, and the Single Ventricle Care Program at Children's Hospital Colorado. Local extramural collaborations include the VA medical center, National Jewish Health, CU Boulder, Colorado State University, and Colorado School of Mines. The Department of Bioengineering and the Center for Bioengineering also collaborate with the Colorado Bioscience Institute as well as with many local industry partners, including Medtronic, Securisyn, EndoShape, Inc., EnteroTrack, LLC, Stryker, AlloSource, Inc., Couragion Corporation, mindSpark Learning and Aurora Public Schools, Sharklet Technologies, Inc., Point Designs, National Seating and Mobility, NuMotion, BenchMark Advanced Manufacturing, and Google.

The center features strong and successful programs in medical device innovation and entrepreneurship. Faculty and students have started 12 companies, several in collaboration with CU School of Medicine faculty. Several technologies have been invented at the center, and over 110 patents or patent applications have been generated.

Center for Children's Surgery

The Center for Children's Surgery (CCS), a multi-disciplinary center housed within the School of Medicine, was established in 2011 to represent faculty who specialize in providing surgical care to children. The CCS promotes the continued growth and development of CCS members to fulfill the multiple missions of the School of Medicine and Children's Hospital Colorado (CHCO). The center's focus on strengthening and deepening the partnership and synergies between the school and hospital supports the advancement of the Anschutz Medical Campus.

CCS faculty leadership includes **Duncan Wilcox, MBBS, MD,** director and surgeon-in-chief at Children's Hospital Colorado; **Michael Handler, MD, FACS, FAAP,** associate surgeon-in-chief; **Jill Kaar, PhD,** director of outcomes research; **Cindy Barrett, MD, MPH**, medical director for surgical quality and safety; and **Jay Albright, MD,** Director of Surgical Operations for the Network of Care. Staff leadership includes **Sandra Talley, MPH,** director of finance and administration, and CHCO partners, **Garrett Risley, MBA,** director of operations, and **Sarah Riggs, MBA** service line executive director. The CCS is comprised of the following pediatric divisions/sections: adolescent and pediatric gynecology, pediatric cardiothoracic surgery, pediatric neurosurgery, pediatric ophthalmology, pediatric orthopedics, pediatric otolaryngology, pediatric surgery, pediatric plastic surgery, pediatric urology, pediatric transplant surgery, pediatric dentistry, and pediatric dermatology.

During the past year, CCS made significant progress on its goals, including submitting and receiving approval of a new five-year strategic plan, appointing a new pediatric section head in Plastic and Reconstructive Surgery, Phuong Nguyen, MD; a new Pediatric Surgery Division Chief, Ankush Gosain, MD, PhD; and a new Chief of Pediatric Orthopedics, Klane White, MD, MSc.

In the coming year, the CCS will continue to execute its five-year strategic plan, including expanding our quality and patient safety infrastructure and efforts, welcoming our first cohort of surgical APP fellows, establishing a surgical psychology program, and enhancing our philanthropic efforts to support research and AI initiatives.

https://medschool.cuanschutz.edu/ccs

https://www.childrenscolorado.org/doctors-and-departments/departments/surgery/

Center for Health Artificial Intelligence

The Center for Health Artificial Intelligence (CHAI) fosters a thriving community of researchers on the Anschutz Medical Campus who are inventing and deploying advanced analytical approaches. The center's mission is to make the Anschutz Medical Campus a leader in translating data and artificial intelligence (AI) methods into advances in research practice, health care delivery, and population health and scaling these to provide nationwide benefits through innovative technologies. In its launch phase, the center laid the groundwork for inclusive, supportive, and collaborative communities of practice and center membership, leading faculty recruitment with research programs in advanced analytical methods, and addressing gaps in computational infrastructure in partnership with the Office of Information Technology (OIT).

Founded in 2020, CHAI is led by Director **Casey Greene, PhD**; Director of Finance and Administration **Audrey Wen, MS**; and Deputy Director **Sean Davis, MD, PhD**. Last year, the CHAI team was joined by Chief Research Informatics Officer (CRIO) **Melissa Haendel, PhD**, Director of the Computational Biosciences PhD Program **Lawrence Hunter, PhD**, Section Head of Informatics and Data Science in the Department of Pediatrics **Tellen Bennett, MD, MS**, and Division Head of Biomedical Informatics and Personalized Medicine in the Department of Medicine **Ivana Yang, PhD,** in creating a new Department of Biomedical Informatics (DBMI). DBMI launched on July 1, 2022. With the creation of DBMI, CHAI now sits administratively within the department.

Building Community

The center moved into the new Anschutz Health Sciences Building, which will put the center in proximity to teams from the Colorado Center for Personalized Medicine, the Colorado Clinical and Translational Sciences Institute, and the Adult and Child

Center for Health Outcomes Research and Delivery Science, and other data-intensive research programs. The center, which has 9,700 square feet of space in the building, currently houses faculty from the Departments of Biomedical Informatics, Medicine, and Obstetrics and Gynecology. CHAI leadership is conscious about using space, break rooms, and other elements to enhance communication and collaboration with other units located in the building. CHAI has begun hosting times for students from data-intensive graduate programs to gather with the goal of building community within these programs and between these programs and associated faculty.

Enhancing Extramural Support

The center and associated faculty submitted a Bridge2AI coordinating center application. The CHAI team, led by Monica Munoz-Torres, PhD, and Anne Thessen, PhD, received an award for the teaming and standards cores of the Bridge2AI program, a $10 million four-year award. CHAI also recruited two grant and scientific writers to enhance applications for support for data-intensive programs. In the past year, this support transitioned from CHAI to DBMI to benefit more investigators to enhance further our ability to bring NIH funding to the campus by establishing the processes, expertise, and infrastructure required for highly competitive data-intensive research programs.

Advancing Education

In the past year, CHAI has supported multiple education initiatives. In partnership with the University of Colorado Cancer Center, CHAI has supported a research experience for Native American trainees held at Fort Lewis College. CHAI has also supported the growth of the computational biosciences program and the recruitment of students interested in inventing the future of clinical informatics methods by supporting the recruitment of additional students.

Recruiting Data-intensive Faculty

The center has supported the recruitment of faculty members, including Gregory Way, PhD; Arjun Krishnan, PhD; Janani Ravi, PhD; and Joanne Cole, PhD. These faculty, now housed in DBMI, are building collaborations with the Skaggs School of Pharmacy and Pharmaceutical Sciences, Colorado Center for Personalized Medicine, the Department of Medicine, the Department of Microbiology and Immunology, and more.

Looking Ahead

Over the next year, the center will shift its focus to enhancing and integrating analytics-focused communities on campus across the translational spectrum from bioinformatics to clinical implementation. This effort will include the continued recruitment of faculty in partnership with departments and centers, an increased emphasis on didactic elements, and the development of an annual symposium with an external keynote speaker.

Center Website: https://medschool.cuanschutz.edu/ai

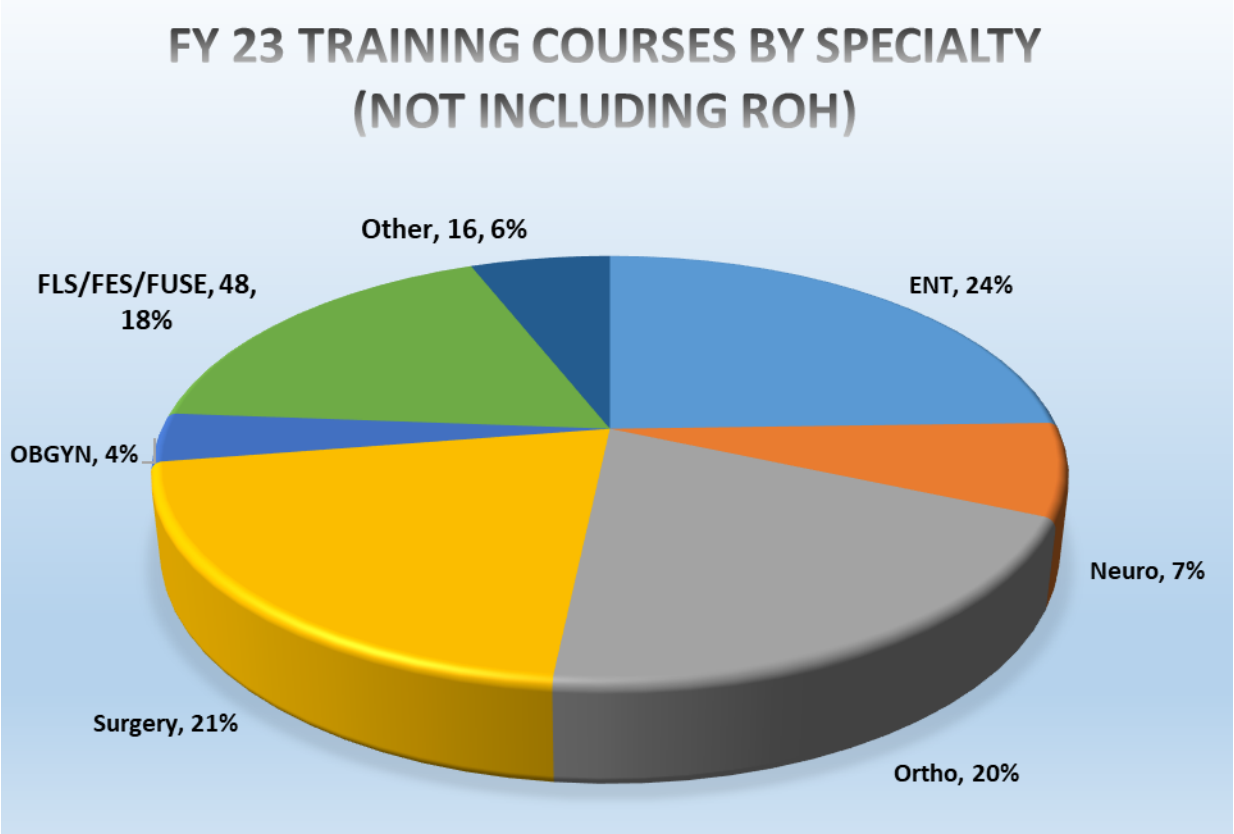
Center for Surgical Innovation

The Center for Surgical Innovation's (CSI) mission is to provide cutting-edge surgical training courses aimed to train medical affiliates in the latest surgical techniques and technology locally, regionally, nationally, and globally, and to study surgical and procedural educational methods to advance how surgical procedures are learned and taught.

CSI was created in 2007 and is supported and overseen by five surgical departments on the University of Colorado Anschutz Medical Campus. The participating departments are surgery, neurosurgery, orthopedics, obstetrics and gynecology, and oto-laryngology.

The CSI leadership team is **Thomas Robinson, MD,** medical director, **Sarah Massena, MBA,** business director, **Alexandra Hay, BS,** lab manager, two lab coordinators, and two lab techs.

CSI moved into their new lab in Bioscience 3, 2115 N. Scranton St., Suite 1035, Aurora. The state-of-the-art facility has multiple conference rooms and a lab with over 8,000 square feet of space.



Colorado Sickle Cell Treatment and Research Center

In 2023, the Colorado Sickle Cell Treatment and Research Center celebrated 50 years as the region's primary source of specialty expertise and facilitation of comprehensive specialty care for children and adults living with hemoglobinopathies. A symposium and reception in May brought together over 150 current and former partners, community members, and other stakeholders to honor past accomplishments and energize future work.

Basic, clinical, and health services research conducted by the center and its collaborators serves to elucidate the pathophysiology of sickle cell disease, and to develop and implement treatments and systems of care that prevent or minimize complications and that prolong and improve the quality of life. The center's work is supported by funding from the National Institutes of Health and other federal agencies, industry, and foundations. Ongoing multi-investigator studies engaging University of Colorado basic science labs at the Anschutz Medical Campus and CU Boulder, and the maintenance of the region's only sickle cell mouse colonies, has yielded R01 funding and important translational discovery. Participation in two multicenter Phase I-II clinical trials will advance the development of new interventions. Potentially curative stem cell (bone marrow) transplantation and gene therapy research protocols are offered to children and young adults at Children's Hospital Colorado (CHCO) on the Anschutz Medical Campus.

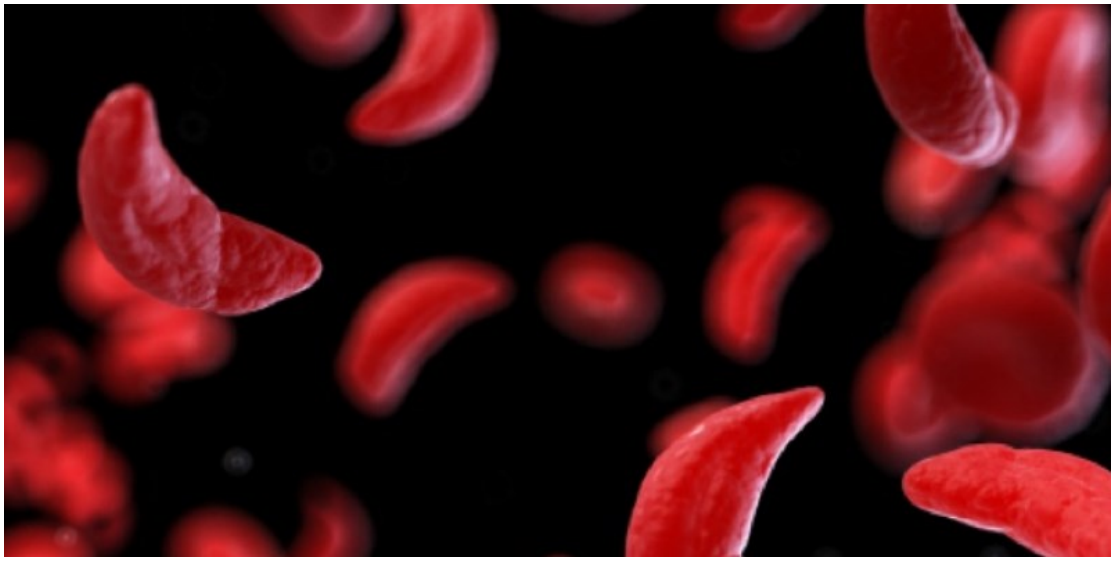
Our Director **Kathryn Hassell, MD,** and Associate Director **Rachelle Nuss, MD,** have provided specialty care for over 30 years to patients with sickle cell disease across the lifespan, and are actively mentoring junior faculty who are assuming increasing responsibility for clinical care and research. The center faculty actively educate and provide technical assistance to hematology, primary care and other providers to develop sustained evidence-based sickle cell care in healthcare systems across Colorado.

The center renewed a longstanding contract with the Colorado Department of Public Health and Environment to coordinate short-term follow-up of newborn screening for sickle cell disease.

A center-based transition program, directed by a full-time transition coordinator, serves 12- to 26-year-olds to facilitate self-advocacy and health system navigation skills as youth move from pediatric to adult health care throughout Colorado, regardless of where care is sought. Greater than 90% of youth in the program successfully transfer from pediatric to adult-oriented care. Leveraging this expertise, center staff contribute to the development of institutional transition programs at CHCO, UCHealth, Kaiser Permanente Colorado, and other health care systems across the state.

Funding from state Medicaid surplus funds was renewed for FY23 and FY24 to support senior center sickle cell experts as they promote health systems changes to improve the quality of care for this underserved population. This program administered by CU Medicine also supports ongoing development of the transition program.

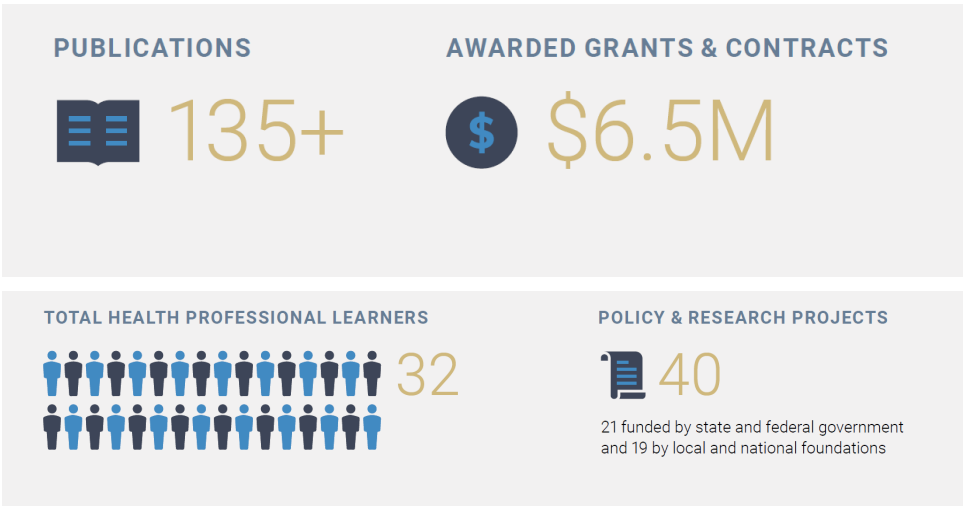
The Sickle Cell Center also organizes a state plan for sickle cell disease and convenes an annual virtual statewide "Sickle Cell Summit," which this year was attended by 65 people from a variety of stakeholder groups, providing education and promoting networking and synergy across Colorado. Center members are actively involved in the development of a statewide surveillance system for sickle cell disease, a project supported by CDC funding. A strong collaboration with community-based organizations enhances the center's community outreach. Work continues on the center's website to serve as a statewide resource and point of contact. For more information about the center: https://medschool.cuanschutz.edu/sickle-cell-center.



Eugene S. Farley, Jr. Health Policy Center

The Farley Health Policy Center is a team of interprofessional policy experts, clinicians, educators, and learners at the University of Colorado Anschutz Medical Campus. Our work focuses on health policy issues and systems reform to promote whole health for all.

The Farley Center by the numbers. Totals since center was founded in 2014.



Mission: Develop and translate evidence to advance policies and integrate systems that improve health, equity, and well-being.
Purpose: Focus on local, state, and federal policies that promote more equitable health and combat fragmentation, systemic barriers, and structural racism.
Learn more at farleyhealthpolicycenter.org.

Select accomplishments and projects over the last year:

-Connecting the campus and the Capitol: During Colorado's legislative sessions, the Farley Center provides training and educational programming to inform legislators about health and health care practice, and those on campus about relevant health policy activity at the legislature.

Activities include:

- **Designing Health Policy for Coloradans:** The Farley Center's introduction of a health policy "boot camp" for bipartisan freshman legislators and those active in health-related committees ahead of the opening of the 2023 General Assembly. Our first informational session offered baseline health data on Colorado populations with focused demographics as well as explanations of health systems and insights on payment and structural barriers that impact equity in access to care. Special focus on behavioral health, disabilities, Medicaid, and child health enriched the discussion.
- **Legislative Updates:** Monitoring legislative activity and providing regular updates to interested campus participants. These monthly presentations offer education on procedure and movement of introduced bills that influence health policies and practices.
- **Strengthening Connections:** We continue building and strengthening relationships with policymakers at the state level in both the legislative and executive branches by providing analytics and population-based studies, as well as introducing medical residents to the legislative process of policy making.

-Economic Burden of Mental Health Inequities Report: In September 2022, the Farley Center partnered with the Satcher Health Leadership Institute and the Robert Graham Center to release a first-of-its-kind investigation to examine the economic and health burden of mental health inequities in the United States.

Researchers conducted a comprehensive literature review, analysis of public data sets, and analysis of state and national policies to demonstrate the relationship between economic, mental health, and racial/ethnicity status. During the five-year study period between 2016 and 2020, they found:

At least 116,722 premature deaths occurred due to mental and behavioral health-related racial inequities.
Racial inequities generated at least $278 billion in excess cost burden.

Farley Center researchers provided specific policy proposals, using health equity principles to develop a comprehensive menu of policies that would address the existing mental health inequities. These included many proposals and related case studies across three categories:

Sustainable and long-term investment in mental and behavioral health infrastructure.
Adoption of culturally centered mental and behavioral health care.
Addressing both the political and social determinants of health.

After the report release, co-author Shale Wong presented select results to the tenth annual Colorado Clinical and Translational Sciences Institute academic summit, arguing the national data collection systems that health equity investigators rely on for their work are incomplete and hardwired for structural racism. The Farley Center is actively engaged in improving data equity and centering behavioral health policies in equity.

-Building Blocks of Behavioral Health Integration Framework: With funding from Well Being Trust, the Farley Center and the CU Practice Innovation Program built upon practice milestones developed as part of the Colorado State Innovation Model to create a framework that is flexible and feasible for both practices and payers. The Building Blocks of Behavioral Health Integration Framework establishes a standard minimum set of care delivery expectations for integrated behavioral health in primary care. Practices implement these foundational care delivery changes in addition to one or more components of behavioral health integration that fit their resources and patient population needs.

Integrated behavioral health in primary care requires adequate investment through alternative payment models. For payers to invest more in integrated behavioral health, there needs to be a shared understanding of what changes in care will occur. The framework articulates an opportunity for payers to operationalize integrated behavioral health, making these steps actionable and, in turn, integrated behavioral health more widely available to patients.

This framework is currently being piloted by the Farley Center in rural health clinics in Kansas to integrate behavioral health. Additionally, the Colorado Department of Health Care Policy and Financing (HCPF) is using the framework to guide implementation of HB 22-1302 Health-care Practice Transformation. This act creates the primary care and behavioral health statewide integration grant program in HCPF to provide grants to primary care clinics for implementation of evidence-based clinical integration care models.

Leadership Team
Shale Wong, MD, MSPH, Executive Director, Professor of Pediatrics, and Vice Chair for Policy and Advocacy
Emma Gilchrist, MPH, Deputy Director, Senior Instructor of Family Medicine
Larry Green, MD, Senior Advisor, Distinguished Professor of Family Medicine
Mark Gritz, PhD, Director of Operations, Associate Professor and Head, Division of Health Care Policy and Research
Lauren Hughes, MD, MPH, MSc, MHCDS, FAAFP, State Policy Director, Associate Professor of Family Medicine
Susan Mathieu, MPP, Medicaid Policy Director, Senior Instructor of Family Medicine

Helen and Arthur E. Johnson Depression Center

The mission of the Helen and Arthur E. Johnson Depression Center (JDC) is to improve the lives of people with depression, bipolar disorder, anxiety, and related disorders through clinical excellence, innovative care models, community engagement, research, and workforce development. The three primary goals of the JDC are to 1) Promote mental health as key to healthy living for all Coloradans; 2) Develop, research, provide, and disseminate effective and new treatments for people with depression and bipolar disorder; and 3) Eliminate barriers to quality care and healthy communities.

https://medschool.cuanschutz.edu/psychiatry/programs-centers/johnson-depression-center

www.coloradodepressioncenter.org

Clinical Excellence and Innovative Care Models. The JDC clinicians form a multi-disciplinary team of therapists and psychiatric providers delivering care to patients across the lifespan and family system. The center has deep expertise in providing services to individuals with mood and related disorders, developing and implementing integrated care models both in-person and virtually, and integrating other technology-based solutions with traditional care models. The JDC completed over 12,000 patient visits during the past year, and over 80,000 since 2009.

The JDC has continued to build a neuromodulation treatment program that now includes transcranial magnetic stimulation (TMS) and the soon-to-launch esketamine clinic. Both programs are for patients suffering from treatment-resistant depression (TRD). The TMS program began in May 2022 and has expanded clinical services rapidly. The JDC Esketamine Clinic is due to launch in late summer 2023, using the recently approved medication esketamine (Spravato) to help patients suffering from TRD. In addition, the JDC is starting a psilocybin research study in the fall 2023 for patients suffering from TRD.

The JDC recently launched the CU STEADY Program (**ST**abilizing **E**merging **A**ffective **D**isorders for **Y**outh to Adults), an integrated program providing expert treatments for individuals with recently diagnosed bipolar disorder, and those at elevated risk for developing bipolar disorder. The STEADY team is composed of psychiatrists, psychologists, licensed therapists, and researchers collaborating to offer standardized diagnostic evaluation and early intervention for individuals on the bipolar spectrum.

Innovative Research. The center conducts research for the purpose of improving the identification and treatment of depression, bipolar, anxiety, and related disorders, preventing suicide, and developing sustainable integrated care models. Center faculty are committed to developing best practice solutions for care delivery. The clinic is uniquely positioned to evaluate implementation of these solutions. JDC research activities focus on the interactions between basic science, innovated care models, and standard of care practices.

As a charter member of the National Network of Depression Centers (NNDC), a consortium of 21 major academic centers from around the country, the JDC partners with world-renowned academics and clinicians to better understand and treat mood disorders. Programs and task groups that the JDC actively participates in includes the Mood Outcomes Program (a national patient registry of mood, anxiety, and suicidality ratings), the Bipolar Task Group, the Ketamine/Esketamine Task Group, and the Pediatric Mood Disorders Task Group. In addition, the JDC continues to evaluate the benefits of integrated care delivery systems and provides nationwide leadership by disseminating integrative care best practices.

The STEADY program is also part of the Child Bipolar Network (CBN), a consortium of five universities across the country (CU, UCLA, University of Pittsburgh, University of Cincinnati and Virginia Commonwealth University) investigating the best ways to treat children or adolescents who are showing the first signs of bipolar disorder, whether the illness can be prevented or minimized in severity, and what combinations of psychosocial treatments, medications and lifestyle interventions lead to optimal outcomes.

Community Engagement. The JDC's community and education programs are designed to extend the reach of the center to communities across the state and nationally through diverse educational offerings to increase understanding of depression, bipolar, anxiety, and related disorders, reduce stigma, prevent suicide, and increase access to quality mental health care. Educational offerings are delivered to communities, in schools, businesses, and to professional groups including first responders, health care professionals, and university faculty, staff, and students.

The JDC community and education programs director has trained, often at no cost, more than 35,000 individuals since September 2016. Over the past year, the JDC has further developed its two-hour suicide prevention gatekeeper training known as VitalCog. The original VitalCog was developed to be implemented in general work settings and has been adapted for the construction industry and athletics. The VitalCog program expanded this past year to include 225 trainers across the nation, and over 1,500 people trained. The JDC also received an NCAA grant to pilot a peer navigation program for collegiate athletics.

In addition, due to the generosity of several donors, the JDC launched the Colorado Bipolar Education Program (CoBE) in May 2022. CoBE is dedicated to educating patients, families, and providers about bipolar disorder to improve the lives of those affected by the illness. The CoBE mission includes disseminating knowledge and providing education on the fundamentals and complexities of the disease based on the most effective and evidence-based treatments for bipolar disorder. CoBE includes a community lecture series given in the spring and fall of each year, educational outreach programs for providers, website resources and use of innovative technologies, such as interactive avatar scenarios, to educate medical professionals.

Workforce Development. The JDC has provided supervision for social work and psychology graduate students and psychiatry residents interested in delivering outpatient mental health services, integrated care, and community programs.

Much of our work is made possible through generous funders including matching donations from the Anschutz Foundation and University of Colorado Health.

LEADERSHIP TEAM:
Neill Epperson, MD, Executive Director
Matt Mishkind, PhD, Deputy Director
Christopher Schneck, MD, Medical Director
Dana Steidtmann, PhD, Assistant Clinical Director
Alex Yannacone, MA, Director of Education and Community Programs
Lisa Jones, Clinic Manager
Anthony Pfaff, Business Services Program Director
Elizabeth Peros, Board of Directors Chair

Hemophilia and Thrombosis Center

The University of Colorado Hemophilia and Thrombosis Center (HTC) is one of 142 centers for the comprehensive treatment of bleeding and clotting disorders recognized by the U.S. Department of Health and Human Services, Maternal Child Health Bureau. Serving more than 2,000 pediatric and adult patients in Colorado, Wyoming, Montana, and surrounding states, the HTC operates a freestanding School of Medicine/CU Medicine outpatient clinic specializing in inherited bleeding and clotting disorders, pediatric stroke, and women's bleeding disorders. We are a unique clinical and research resource for Colorado and the western and midwestern regions of the United States.

Patient Care

Led by **Michael Wang, MD,** the HTC's multidisciplinary team, in partnership with patients, are establishing improvements and innovation to clinical care, and novel treatments through participation in clinical trials for new therapies, investigator-initiated research, and quality improvement. As a result of these efforts, patients have experienced improved outcomes, more convenient access to care, and lower cost.

With the HTC Pharmacy providing therapeutic medications to its patients, the HTC is financially self-sustaining. The HTC Pharmacy is a dual-accredited specialty pharmacy, licensed in seven states and providing bleeding disorder medications to over 300 patients in the mountain states region. The HTC operates the pharmacy and its multi-disciplinary clinics on the University of Colorado Anschutz Medical Campus as part of the CU Medicine Community Practice in collaboration with Children's Hospital Colorado and UCHealth University of Colorado Hospital. In addition, the HTC conducts remote clinics in Colorado Springs and Grand Junction, and in Billings and Missoula, Montana.

The aftermath of the COVID-19 pandemic continues to present many challenges to the multi-disciplinary comprehensive care model and its mission to conduct research of novel treatments and advance our understanding of congenital bleeding and clotting disorders. Despite these challenges, the HTC has year after year increased the number of patients seen at its clinics through a combination of telehealth and in-person visits. Access to care for bleeding and clotting disorder patients is our primary mission, and we see clear evidence of our growing impact to our community that we serve.

HTC patient care is delivered by multidisciplinary, physician-led teams, including hematologists (doctors who specialize in blood), neurologists, neurosurgeons, gynecologists, cardiologists, orthopedic surgeons, advanced practice providers, physical therapists, pharmacists, psychologists, genetic counselors, nurses, social workers, lab medical technologists and pathologists, and other specialists, such as dentists and nutritionists by referral.

Over the last decade the therapeutic landscape is rapidly changing and innovative therapies such as gene therapy, non-factor replacement, re-balancing agents, and innovative work in biomechanics all have a potential place in the life of a hemophilia patient. As a result, we have strategically developed a multifunctional space over the past two years within the HTC: to deliver innovative therapies clinically (infusion capacity) and to study them in human phase 1-4 research trials (clinical research center); expand PT services to include a therapy space that also has motion analysis capacity for research with the hope of clinical translation; and laboratory space to fill unmet needs in platelet testing and other specialized coagulation testing.

In 2022, a smaller group of HTC leaders participated in the Leadership for Innovative Team Science (LITeS) program to prepare for clinical hemophilia gene therapy. Gene therapy is now an FDA-approved therapy for hemophilia A and B in 2023. The HTC had enrolled many subjects in both clinical trials that led to licensure. To be a unique resource for our patients, the campus, and the region, the HTC has plans to be a federally recognized hemophilia center to infuse eligible patients with hemophilia A or B gene therapy.
Platelet biology and testing is less developed, and poorly accessible to patients across the United States. We are in the final stages of completing the laboratory space necessary to perform clinical platelet function phenotyping and functional analysis at the HTC. This will be a major change for the region and may serve as a model for other HTCs nationwide on how to use the federal grant to develop accessible clinical resources for patients and the larger communities they serve.

The first cohort of international pediatric hematology/oncology fellows came to CU in the spring in collaboration with St. Jude's research hospital. The fellowship program will bring fellows from Central America to the Anschutz Medical Campus for two months of intensive training every year.

Research

With a staff of more than 60 full- and part-time professionals, including both clinical and lab research physicians, the HTC actively pursues both industry-sponsored and investigator-initiated research in bleeding and clotting disorders. Current research is centered on rare genetic causes of bleeding and clotting, the physiology of Von Willebrand Factor (particularly the regulated release of VWF from the endothelium), platelet mitochondrial function, pain management, and joint biomechanics and its relationship with bleeding. HTC researchers conduct clinical trials employing new treatment options in collaboration with international pharmaceutical companies. HTC clinical researchers collaborate with bleeding disorder centers around the globe, producing research and results that impact patients worldwide.

The Hemophilia and Thrombosis Center's legacy of research was recognized by the World Federation of Hemophilia at the 2022 World Congress which featured a video of CU HTC researchers discussing their areas of expertise. Current research includes:

Beth Warren, MD, studies joint biomechanics to understand the asymmetries of joint forces and their relationship with joint bleeds in hemophilia patients. Supported by NIH K23.

Pavel Davizon-Castillo, MD, investigates the mitochondrial function of platelets and the relationship between platelets and inflammation. Supported by NIH K99.

Tyler Buckner, MD, continues research into the study of pain in hemophilia. Supported by NIH K23.

Christopher Ng, MD, continues his research into the relationship of Von Willebrand Factor to the endothelium as it impacts bleeding patients. Supported by NIH P01.

Genevieve Moyer, MD, is looking at novel methods of diagnosis and treatment of women and girls with bleeding disorders.

Keith Neeves, PhD, explores factor V levels as a modifier of bleeding in Hemophilia A, and whether low factor V levels enhance thrombin generations and thrombus formation in Hemophilia. Supported by NIH R01.

Emily Wheat, PhD, looks at the effects of anxiety and depression on patient medical outcomes in the bleeding disorder population.

Marilyn Manco-Johnson, MD, is principal investigator of two prospective inceptional cohort studies- Hemo-PICS and Thrombo-PICS. These serve as HTC resources of data and biobanking.

Michael Wang, MD, is principal investigator of numerous sponsored studies including three phase 3 gene therapy studies, next generation non-factor replacement, re-balancing agents, and factor replacement trials that encompass the broad range of patients with various bleeding disorders seen at the HTC. HTC Network-MCHB HRSA Principal Investigator.

The CU Hemophilia and Thrombosis Center is looking to lead several areas of research and treatment of congenital bleeding and clotting disorders. The HTC is developing its joint and motion analysis capability through construction of a research/therapy facility expected to open in fall 2023. Similarly, we are investing the mental health of our patients through behavioral health therapies by clinical psychologists. These and many other initiatives hold the promise of better care for patients who can, in turn, participate more fully in our community.

HTC Director: **Michael Wang, MD**
Director of Clinical Services: **Kathryn Hoeft, MSHSA BSN RN NE-BC**
Pharmacy Manager: **Desiree Hill, RPh, PharmD**
medschool.cuanschutz.edu/hemophilia-thrombosis

JFK Partners

Since 1965, JFK Partners' mission has been to promote the independence, inclusion, contribution, health, and well-being of people with developmental disabilities and their families through consumer, community, and university partnerships. Central to the mission is a commitment to the lived experience through family and person-centered, community-based, culturally responsive programs and services. This mission if JFK Partners is to lead the way in evidence-based interdisciplinary clinical care, education, research, and community partnerships to enrich the lives of children, youth, and adults with Intellectual/Developmental Disabilities and special health care needs. JFK Partners includes faculty and trainees in the disciplines of audiology, developmental behavioral pediatrics, education/special education, family, nutrition, occupational therapy, physical therapy, psychology, public health, rehabilitation counseling, social work, speech-language pathology, self-advocacy, and family of individuals with intellectual/developmental disabilities. **Sandra Friedman, MD, MPH,** assumed leadership of the interdisciplinary program in July 2015, directing the merger of JFK Partners with Section of Developmental Pediatrics. The merger included the integration of diagnostic assessment and treatment services with those of Developmental Pediatrics at Children's Hospital Colorado. As a lifespan program, JFK Partners continues to serve adults at the Anschutz Medical Campus. **Judy Reaven, PhD,** serves as associate director of JFK Partners, as well as director of research.

JFK Partners' programs are supported by federal training and research grants, clinical income, and various contracts. In 2022-23, project funding totaled $5,048,204, with 68% from federal sources, 28% state sources, and 3% contracts, fee for service or foundations. Two core grants, consisting of 29% of funding in 2022-23, include the competitively awarded Administration on Intellectual and Developmental Disabilities, University Center for Excellence in Developmental Disabilities (UCEDD) and the Maternal and Child Health Bureau, Leadership Education in Neurodevelopmental Disabilities (LEND) programs. JFK Partners is a part of a national network (www.AUCD.org) of 67 UCEDD's university-based centers and 60 LEND programs in all U.S. states and territories. The 60 university-based LEND programs have collectively made significant strides toward improved screening and diagnosis of autism among younger children and helped train health care professionals who treat many different developmental and intellectual disabilities. By continuing to meet the growing demand for these services, LENDs are reducing wait times for diagnostic evaluation and entry into intervention services. LENDs target underserved populations and their efforts are also helping to address disparities in early identification of autism and other developmental disabilities. Across the network, expertise is provided in almost every topic that might impact the lives of people with disabilities such as healthcare, education, disaster preparedness and response, and more. As disability is a natural part of the human condition at any age, our work supports families and neighbors in all our communities.

JFK Partners' accomplishments for 2022-23 include: Preservice training for 19 long-term trainees/fellows were trained in a comprehensive curriculum of coursework, clinical, and other practicum experiences in the disciplines of audiology, developmental behavioral pediatrics, family, genetic counseling, nutrition, occupational therapy, physical therapy, psychology, public health, rehabilitation counseling, speech language pathology, self-advocacy, and social work.

In addition, 29 medium-term trainees/fellows participated in coursework, clinical practica, and other supervised projects. There were 188 students in various Anschutz Medical Campus schools and programs (dentistry, medicine, nursing, physician assistant, genetic counseling, and physical therapy) who were exposed to I/DD content in interactive Disabilities Dialogues sessions. In addition, there were 567 trainees in 16 different university courses, lectures, and short-term clinical experiences delivered by JFK Partners faculty, for a total of 755 short-term trainees (Disability Dialogues and other courses).

Continuing Education and Community Training included 61 events or webinars for 2,574 total participants. Clinical Services - JFK Partners' clinical services for individuals and/or their families included: a) 77-multi-disciplinary team evaluations and single discipline evaluations; b) 124 young children, each of whom received multiple home visits; and, c) 51 individuals (children and parents) received school consultations and various other interventions. Community Collaboration - Faculty reported a total of 29 consultation and technical assistance activities, with 717 participants. JFK Partners also serves as a resource for policymakers representing Colorado. Research included 12 active projects that have research (or demonstration) as the primary purpose, as well as additional exploratory investigations for which funding is being sought. Faculty successfully applied for 4 new research grants in 2022-23. Dissemination - JFK Partners' faculty and staff authored 92 products, consisting of 38 conference posters and presentations, 20 refereed journal articles, 15 electronic products, 5 fact sheets, pamphlets, or brochures, 4 academic courses, 3 web-based products, 2 book chapters, 1 newsletter, 1 report or monograph, and other products (3 study abstracts for future publications). For information about these and other JFK Partners projects please visit www.jfkpartners.org.

Kempe Center for the Prevention and Treatment of Child Abuse and Neglect

For the past 51 years, the Kempe Center for the Prevention and Treatment of Child Abuse and Neglect has worked to improve the well-being of children and families and strengthen the communities that serve them worldwide. Founded in 1972 by C. Henry Kempe, MD, the Kempe Center was the first academic center in the world focused specifically on the prevention and treatment of child abuse and neglect. The center continues to lead the field in providing evidence-informed services, transformative research, learner-centered education, and effective advocacy, all through an equity lens. With over 80 Kempe faculty and staff working to improve the lives of children, families, and the systems that serve them, the team is committed to honoring and recognizing the Kempe vision: A world without child maltreatment.

The leadership team continues their work in implementing the five-year strategic plan by making strides in reframing the Kempe Center organizational structure to meet its vision and mission. Led by the Executive Director **Kathryn Wells, MD,** the core executive team serves as thought leaders offering a strategic plan intended to expand Kempe's reach and ensure that its work aligns with mission and vision. The Kempe Center Core leadership team includes **Ron Mitchell, MSW,** Center Deputy Director, **Warren Binford, JD, EdM,** Advocacy Director and W.H. Lea for Justice Endowed Chair for Pediatric Law, Policy, and Ethics, **Michelle Davis, MS, LPC,** Director of Equity, Diversity, Inclusion and Justice, **Antonia Chiesa, MD**, Director of Integrated Healthcare Operations and Services, **Suzanne Kerns, PhD,** Director of Transformative Research, **Gwyn E. Barley, PhD,** Director of Educational Innovation and Advancement **Rob Murchison, MEPM,** Business Manager, and **Maya Bajayo**, Administrative Assistant and Outreach Coordinator.

The Kempe Healthcare Core includes the integration of clinical services across the spectrum of Kempe programs and in response to other community needs. The team strives to bring a child and family health and wellbeing perspective to all work at the center. They participate in the planning, administration, and implementation of health and behavioral health programs, including collaboration with university psychiatry leadership for behavioral health services. Their work involves outreach to community groups to address healthcare needs, while they collaborate with colleagues on policy, legislative, and advocacy issues relevant to healthcare services.

Some specific programs delivered by the Kempe Center are:

- The Child Abuse Response and Evaluation (CARE) Network is a program Kempe delivers through legislative funding to the Colorado Department of Public Health and Environment which is designed to recruit, train, and provide technical assistance to designated health and behavioral health care providers throughout the state. The providers are required to complete medical and behavioral health assessments for children under 6 years of age who are suspected of having physical abuse or neglect concerns, and children under 13 years of age for sexual abuse concerns. The program also conveys community stakeholders to establish collaborative multidisciplinary practices for child maltreatment cases. For the last four years, an Annual CARE Network Conference has been held for new and returning CARE Network providers. The conference helps build resources and provider connections, along with networking and relationship building among other providers.
    - ◊ The program has one or more trained providers in 39% (25) of Colorado's 64 counties.
    - ◊ 66 trained CARE Network providers going into the fiscal year 2024.
    - ◊ The CARE Network has served over 281 children.
- The Colorado Child Welfare Training System (CWTS) is a $4.2 million per year project sponsored by the Colorado Department of Human Services, Division of Child Welfare. The project team consists of over 30+ faculty and staff working toward its mission to meet the learning and professional development needs of Colorado's caseworkers, supervisors, case aides, resource caregivers, and other child-and-family-serving professionals. Through an array of dynamic learning experiences, coaching, resource sharing, and community building, CWTS is supporting a diverse and ever-changing workforce. Together, CDHS and the Kempe CWTS team serve all human services caseworkers and supervisors in Colorado child welfare, as well as foster, kin, and adoptive parents and community partners through leadership coaching and learning experiences.
    - ◊ CWTS serves more than 2,600 caseworkers and supervisors annually.
    - ◊ 3,000 resource caregivers every year with both pre-service and in-service learning requirements.
    - ◊ From July 2021 through June 2022, CWTS provided 125,825 training credit hours to 6,780 unique learners.
- The Kentucky Alternative Response project is a two-year, $1 million project sponsored by the Kentucky Cabinet for Children and Families to assist the state in program design, initial implementation, and process evaluation of a child welfare reform called Differential Response. As a result of the national reputation on this reform development and delivery, the project team at Kempe was awarded a sole source contract. They partnered with the University of Kentucky at Louisville and have been working on the design, full implementation, outcome evaluation, and sustainability of Alternative Response since July 2022. The first two regions will begin implementation in fall 2023.
- Kempe has been designated and funded as the state intermediary by the Colorado Department of Human Services to support providers across the state in connecting at-risk families to a parent support program called SafeCare Colorado. This evidence-based program offers proactive, in-home, voluntary services that support at-risk families in gaining skills to provide a safe home, address child health needs, and engage in positive interactions with their children ages 0 to 5 years old. The services are delivered to the family's home by trained professionals on a weekly basis. Families typically engage with SafeCare Colorado for an average of four to six months.
- Trauma-informed care is crucial to Colorado's children and families. The Trauma-Responsive Implementation and Practice (TRIP) Program has made strides in training and implementing this care. TRIP integrates, enhances, and implements trauma-responsive and culturally appropriate practices for parents, educators, and others to help mitigate the impact of trauma. The program provides direct evidence-based clinical services to children and families, facilitates training for professionals across the human services fields and offers implementation guidance for child, youth, and family-serving agencies across the state of Colorado. TRIP has trained 192 professionals from child welfare, school, infant mental health and early education providers, the juvenile justice system, and health care system, in topics such as trauma-responsive practices, diversity-informed practices, reflective practices, and cultural responsiveness.
    - ◊ The Trauma-Responsive Schools Theory of Change Toolkit has been downloaded by more than 700 users.
    - ◊ 222 downloads are in Colorado and representing at least 25 other states and 7 countries.
- The Rocky Mountain MST Network (formerly the Center for Effective Interventions) collaborates with agencies, communities, tribes, and governmental entities to support the development, implementation, and evaluation of multisystemic therapy. The team promotes emotional and behavioral health and helps keep children and youth with their families and in their communities. Their work reduces juvenile justice and child welfare involvement and costs by increasing the availability of effective psychosocial interventions. MST is an intensive, home-based treatment model for families with children ages 12-17 who have serious delinquency and substance use problems and are at high risk for juvenile justice and child welfare involvement. The RM MST team is currently developing and evaluating an adaptation of MST that includes hybrid telehealth delivery to support program reach into rural areas of Colorado.
- In July 2023, Fostering Healthy Futures (FHF) celebrated the positive impact that FHF has had on the lives of hundreds of young

people through its innovative and contextually sensitive mentoring and skills training programs. FHF is a positive youth development program, supporting young people in exploring their interests, goals, and visions for the future. The program's impact has been independently and favorably reviewed by several registries of evidence-based programs and Kempe is now implementing the program more widely through community-based organizations. The first group of Fostering Healthy Futures graduates received their diplomas and medals at the Kempe Center (in the Marion building) in June of 2003.

- ◊ Over 75 publications and nearly 200 presentations have emanated from this team and FHF's work has been included in policy briefs and cited in congressional testimony.
- ◊ Over $4 million in federally funded research.
- ◊ Over $2 million from state, university, and hospital funding.
- ◊ Over $2 million in foundation funding (largely through the Kempe Foundation).
- ◊ 85 unique co-authors on FHF publications (25% student authors).
- ◊ Listed on 8 registries and program compendia.
- ◊ FHF has benefitted from the contributions of over 150 research assistants.
- ◊ Over 400 graduate students have been trained through FHF.
- ◊ Over 800 children and youth have been served.
- ◊ FHF partnered with over 10 agencies to expand the reach of FHF's evidence-based programming. In addition to core staff, their program of research has benefited immensely from the 20 talented pre-doctoral, doctoral, and postdoctoral students.

In 2022, the Kempe Center reached a milestone and celebrated its 50th anniversary with an event in May, hosted by the Kempe Foundation to honor and showcase the work of Kempe faculty and staff. In June 2022, Laura Schwab Reese, PhD, the Kempe Center's Berger Postdoctoral Fellow from 2015 to 2017, was honored with the 50th Anniversary Kempe Lecture Award from the International Society for the Prevention of Child Abuse and Neglect (ISPCAN) at a ceremony in Tallinn, Estonia. ISPCAN was originally founded at Kempe and has continued to create and disseminate knowledge about child maltreatment throughout the world for 45 years.

To launch the Kempe Center into another 50 years of innovation and dedicated service, a special issue dedicated to the research activities of the Kempe Center was published in the *International Journal of Child Maltreatment: Research, Policy, and Practice.* Associated with the completion of the special issue, the Kempe Center and Kempe Foundation hosted an Ignite Presentation event in January 2023. Over 75 participants learned about the innovative research conducted by Kempe faculty who discussed the most important aspects of their work and how Kempe aims to support children, youth, and families through rigorous and transformation research.

The Kempe Center continues to host an annual Kempe Interdisciplinary Research Institute. The team has increased participation from across the country and expanded the pool of scholars trained to conduct child maltreatment research, increasing knowledge and the evidence base. In August 2022, two one-week, in-person intensive courses were offered that featured in-depth teaching and dedicated mentoring by national and international experts. The goal was to support the 40 students who attended to draft a complete research proposal suitable for completion as a scholarly project for child abuse fellows, early faculty, or as a master's or

Linda Crnic Institute for Down Syndrome

We are on a mission to improve the lives of people with Down syndrome. We use state-of-the-art, transformational research platforms to decipher the unique biology and clinical profile of people with Down syndrome. Our goal is to enable precision medicine approaches to improve health outcomes in Down syndrome, including the development of new diagnostic and therapeutic tools.

Founded in 2008, the Crnic Institute is led by **Joaquin Espinosa, PhD,** executive director, and **Huntington Potter, PhD,** director of the Alzheimer's Disease Program. The intramural faculty include professors Kelly Sullivan, PhD, Michael Yeager, PhD, Matthew Galbraith, PhD, Lina Patel, PsyD and Angela Rachubinski, PhD, all of whom are supported by an expert administrative team. The Crnic Institute is a collaborative, joint venture between the University of Colorado School of Medicine, the University of Colorado Boulder, Children's Hospital Colorado, the Global Down Syndrome Foundation, and the Anna and John J. Sie Foundation funded by a synergistic mix of donor gifts and sponsored awards, such as from the National Institutes of Health.

$98M
Funding received from sponsored projects

1
Unifying Goal

$29M
Gifts received from external donors

Each year, the Crnic Institute awards grants to qualified University of Colorado investigators from a wide variety of fields who want to apply their expertise to advance our understanding of Down syndrome.

These Grand Challenge Grants are intended to support investigators across the CU system until they can obtain independent funding for their Down syndrome research. Since this program's inception in 2013, the Crnic Institute has granted CU researchers 128 awards totaling over $7 million. The Crnic Institute also supports training in Down syndrome research through the Blumenthal Fellowship program, which funds pre-doctoral and post-doctoral trainees throughout the CU system.

The Crnic Institute is also home to the most comprehensive cohort study of people with Down syndrome, called the Human Trisome Project (www.trisome.org). Launched in 2016, this project fuels a multi-dimensional biobank serving Crnic Institute investigators and enabling large pan-omics studies of Down syndrome. In 2020, the Crnic Institute team leveraged the Human Trisome Project platform in collaboration with the School of Medicine and the Office of the Vice Chancellor for Research to create a sister project studying COVID-19, called the COVIDome Project (www.covidome.org). To date, the Human Trisome Project has recruited 1,000+ research participants, administered 35,000+ biospecimens, and supported 50+ research projects, having led to 20+ publications since 2016.

The Crnic Institute's intramural and extramural faculty and programs comprise the largest academic home for Down syndrome research in the world. Crnic Institute investigators hold more NIH awards for Down syndrome research than any other organization in the United States. By mid-2023, this group of investigators secured just under $100 million in NIH funding for the study of Down syndrome.

Furthermore, in close collaboration with NIH, our investigators and administrative staff are co-leading the INCLUDE Project Data Coordinating Center—the only centralized platform for data sharing and analysis designed to accelerate Down syndrome research.

130+ principal investigators

30+ departments/divisions

20+ active NIH awards

The Crnic Institute prides itself on being a key member of a network of affiliate organizations working together to serve people with Down syndrome, including the Anna and John J. Sie Center for Down Syndrome at Children's Hospital Colorado and the Global Down Syndrome Foundation.

To learn more, visit us online at www.crnicinstitute.org • www.trisome.org • Facebook and Twitter @CrnicInstitute

Ludeman Family Center for Women's Health Research

2023 marked the 30th anniversary of the NIH reauthorization act that required women be included in clinical studies. Since 1993, the field of women's health and sex differences research has made great strides in closing the knowledge gap and improving care for women.

The Ludeman Family Center for Women's Health Research was founded to address this knowledge gap through research, mentorship, and community outreach. We envision a future in which research includes women and accounts for sex and gender differences, thus shaping better healthcare for all.

The Ludeman Center was founded in 2004 by **Judy Regensteiner, PhD,** JoAnn Lindenfeld, MD, and Lorna Moore, PhD. Today, the center is directed by Regensteiner and Associate Directors **Wendy Kohrt, PhD, Jane Reusch, MD, Laura Brown, MD, C. Neill Epperson, MD, Anne Libby, PhD, Amy Huebschmann, MD,** and **Tracy Bale, PhD.**

The Ludeman Center mission has three components.

Research: To perform cutting-edge research in women's health and sex/gender differences across the lifespan, with a focus on cardiovascular disease, diabetes, and the intersection of mental and physical health.

Researchers are foundational to our vision of transforming women's health. The Ludeman Center has developed a strong reputation for success in assisting young researchers build their careers and acquire external funding.

Since 2006, the Ludeman Center has awarded over $2.3 million in seed grants through internal peer review processes to 104 researchers. These same researchers have in turn been awarded over $156 million in external funding from the NIH, American Heart Association, American Diabetes Association, and other major organizations. For every $1 in seed grants, Ludeman Center scientists have been awarded $67 from external sources.

Our researchers work on projects across the lifespan and represent 35 departments, divisions, and centers on campus. Our scientists are contributing to their fields by furthering research, extensive mentoring, and in the case of clinicians, providing clinical care.

In addition to the extensive funding record, Ludeman Center researchers have produced over 3,500 peer-reviewed publications. Over 24,000 patients are seen every year by Ludeman Center physician-scientists at adult and children's hospitals and clinics in metro Denver. These scientists bring their evidence-based findings to the clinic to improve health for patients and many have developed new clinics based on their research. Many of these patients are seen in clinics founded by Ludeman Center scientists. In total, 20 clinics have been created by our faculty covering medical conditions such as polycystic ovarian syndrome, migraines, adolescent obesity, geriatric cardiovascular issues, and more.

The Ludeman Center is also the home of the Building Interdisciplinary Research Career in Women's Health (BIRCWH) NIH K12 program focused on building careers in women's health and sex differences research.

In 2022, we launched the Women's Health Innovation Scholars (WHINS) Program, which is a partner program for the BIRCWH. WHINS, funded by philanthropic supporters of the Ludeman Center, fosters mentored career development of early-career MD and PhD faculty who wish to develop independent careers focused on women's health or sex/gender differences research and translate their ideas to patient care. Current WHINS Scholars are Christina Metcalf, PhD, and Suet Nee Chen, PhD. WHINS Scholars receive salary and project support and are trained with the BIRCWH Scholars. An additional WHINS award will be selected via peer review in 2023.

Mentoring: To mentor, fund, train, and retain the next generation of researchers to build careers in women's health and sex/gender differences research.

We believe that researchers must also have strong leadership and management skills to succeed in science. During formal training, most PhD and MD scientists do not learn how to manage and fund a lab or lead a team. Our growing mentorship and educational opportunities for researchers teach them how to be successful in academic medicine and include academic and career

development skills, as well as content expertise in women's health and sex differences research.

Education: To educate the public and health care providers, so that our research findings are translated into improved care.

The Ludeman Center partners with a variety of groups on campus and in the community to provide educational outreach. Each year, we hold more than 30 educational events reaching a total of more than 3,400 participants. Some of our program offerings include:

- **Let's Talk:** In partnership with UCHealth, the Ludeman Center organizes this community education series that bridges research to care. By providing evidence-based information to the community, through talks given by faculty members, attendees can make more informed health care decisions for themselves and their families. We host four programs every year on topics ranging from cardiovascular health to exercise and mental health.
- **Girls Career Day:** To encourage girls to pursue careers in science, we offer a one-day hands-on experience at the CU Anschutz Medical Campus for high school-aged girls. The May 2023 event featured CU Anschutz faculty in orthopedics and ophthalmology and hands-on experiences at UCHealth University of Colorado Hospital, the Center for Surgical Innovation, and the Gates Institute.
- **Women's Health Research Day:** This annual event typically features a nationally recognized keynote speaker and a poster session for campus researchers. This year featured a panel discussion on *Increasing Diversity in Research: A Focus on Women's Health and Sex Differences* with Jennifer Mieres, MD, senior vice president, Center for Equity of Care, chief diversity and inclusion officer, associate dean, faculty affairs at Northwell Health; Sharonne Hayes, MD, vice chair, academic affairs and faculty development, founder, Women's Heart Clinic, director of Mayo Clinic SCAD Clinic at Mayo Clinic; and faculty at University of Colorado School of Medicine. The panel focused on why diversity, equity, and inclusion are important to each panelist, the challenges they have faced during their careers, and what we should be doing at an institutional level to promote and support diversity, equity, and inclusion in our research workforce.
- **Women's Health Symposium:** This annual half-day CME-accredited training is an opportunity for health professionals to learn the most recent evidence-based guidelines and treatments relevant to women's health and sex differences. This past year, we included topics such as counseling patients on cardiovascular disease prevention, chronic pain, long COVID, sleep apnea in women, and more.
- **National Conference on Women's Health and Sex Differences Research:** The Ludeman Center hosts a biennial national conference focusing on cardiometabolic health across the lifespan. We feature leading scientific experts and offer a program for community members to hear from prominent researchers about cutting-edge topics in women's health including sex differences in heart failure and the impact of timing of food and physical activity regarding insulin sensitivity. The 2022 national conference was held in October at the Broadmoor Hotel in Colorado Springs. The conference hosted attendees from six countries and 28 institutions. Keynote speakers included Sarah Temkin, MD, associate director for clinical research, NIH Office of Research on Women's Health, and Juleen Zierath, PhD, member of the Nobel Committee at Karolinska Insti-

tute, Sweden.

- **Annual Community Event:** As the Ludeman Center's signature outreach event, the Annual Community Event focuses on educating the community about important health issues, providing evidence-based information, and highlighting women's health and sex differences research. The 2022 keynote speaker was Lisa Genova, PhD, the New York Times-bestselling author of *Still Alice, Left Neglected, Love Anthony, Inside the O'Briens,* and *Every Note Played*.
- **Community & Business Partnerships:** The Ludeman Center partners with several community organizations and companies to regularly provide education and health care programs including the Center for African American Health, Vuela for Health, Arrow Electronics, and more.

Additionally, we are proud to partner with groups on campus, in the community, and around the country and to help bring large, institutional site grants to campus.

- On campus, the Ludeman Center participates in educational programs for faculty including Women in Medicine and Science, directed by Regensteiner.
- Our Community Advisory Board has been integral to our success, helping us raise over $30 million in philanthropic giving since 2004. These community leaders provide advice, expertise, and connection to our community.
- Nationally, the Ludeman Center works closely with leaders in women's health who are part of the Ludeman Center's Scientific Council. In addition to the Ludeman Center director and associate directors, current members include Nanette Wenger, MD (Emory); Yoel Sadovsky, MD, (Magee-Womens Research Institute); Jill Goldstein, PhD (Harvard); Noel Bairey Merz, MD (Cedars-Sinai); Anne Peters, MD (USC); Ginger Graham, MBA; Erin Michos, MD (Johns Hopkins); and Liisa Galea, PhD, (Toronto).
- Nationally, Regensteiner is on the advisory board of the Office of Research in Women's Health at NIH. She is also the principal investigator of the Building Interdisciplinary Research Careers in Women's Heath NIH K-12 grant and the Doris Duke Fund to Retain Clinical Scientists. Kohrt is principal investigator of the NIH Specialized Center of Research Excellence in Sex Differences (SCORE) grant; Regensteiner is the director of the Career Enhancement Core for this program. These programs are all national and benefit early-career scientists on campus.

Other major accomplishments of 2022-2023 include:

- Tracy Bale, PhD, joined the Ludeman Center as senior faculty and the inaugural holder of the Anschutz Foundation Endowed Chair in Women's Integrated Mental and Physical Health Research
- Awarded nine Early-Career Faculty Research Development Awards, including three interdisciplinary awards in cardiovascular disease and the intersection of mental and physical health.
- Awarded two new grants to support health equity to Carey Candrian, PhD, and Maigen Bethea, PhD.

The Ludeman Center is a leading voice increasing awareness and change in women's health and sex and gender differences on campus, in the community, and nationally. To learn more about our work or join our mailing list, visit www.ludemancenter.org.

NeuroTechnology Center

The University of Colorado School of Medicine Neurotechnology Center (NTC), directed by **Mark Dell'Acqua, PhD,** celebrated it fourth anniversary on July 1, 2023. The NTC missions are: 1) To support core facilities that provide School of Medicine investigators access to key, cutting-edge technologies that are essential for neuroscience research at CU Anschutz; and 2) To work with School of Medicine departments to jointly recruit additional neuroscience-focused faculty to CU Anschutz who emphasize development and application of novel technologies, with a goal of building strong collaborative, cross-disciplinary research teams. Nine School of Medicine departments have joined the NTC as members, representing basic science (Cell & Developmental Biology, Pharmacology, Physiology & Biophysics) and clinical programs (Anesthesiology, Neurology, Neurosurgery, Ophthalmology, Pediatrics, Psychiatry).

The NTC also engages in educational and outreach activities by hosting/co-hosting and administering research seminars, retreats, and symposia in partnership with the Neuroscience Graduate Program and the Rocky Mountain Neuroscience Group. In October 2023, the NTC will host its first inaugural symposium: *"Neurotechnology: New advances in recording, imaging and manipulating nervous system function."* In addition, the NTC is a sponsor and supporter of the NIH R25-funded NCORE summer research program that provides neuroscience research internships on the campus for Colorado undergraduate students from groups historically underrepresented in science.

NTC website: https://medschool.cuanschutz.edu/neurotechnologycenter

NTC Director: **Mark Dell'Acqua, PhD**.

NTC Administrator: Paula Robinson

NTC IT Specialist/Web Support: Matthew Witt

NTC accomplishments 2022-23:

***Faculty Recruiting**:*

Working with the Department of Pharmacology, the NTC recently completed a joint faculty recruitment of Justin O'Hare, PhD, a postdoctoral fellow and K99/R00 awardee from Columbia University. O'Hare is a neuroscientist whose research program employs a cutting-edge combination of electrophysiological recording, fluorescence imaging, and behavioral monitoring to study neuronal dendritic calcium signaling dynamics during behavior time-scale synaptic plasticity that underlies hippocampal place cell formation during spatial learning and memory. O'Hare is currently a visiting postdoctoral scholar at Stanford University and will join the Department of Pharmacology as an Assistant Professor in summer 2024 when his K99 fellowship ends.

NTC Cores:

The NTC manages six cores operating as three service-oriented core clusters that provide investigators with powerful transformative tools to incorporate cutting-edge approaches. In 2022-23 the NTC consolidated operations for two of these cores, Optogenetics and Neural Engineering (ONE) Core and the Advanced Light Microscopy Core (ALMC), in newly renovated space located on the northern 1st floor interior corridor of building RC1 North.

Core Cluster 1-Advanced Light Microscopy Core (ALMC): Richard Benninger, PhD (Director); Radu Moldovan, PhD (ALMC Manager); Dominik Stich, PhD; Carol Mirita

ALMC FY22-23 Highlights:

-Total usage of the core: 5394 hours

-Total number of laboratories that have used the core: 114

-Number of new users of the core: 137

-Number of papers published that used the core instruments: 12

-New microscope purchased: Infinity STED microscope by Abberior, arriving next fiscal year

-Submitted NIH S10 grant for new Zeiss LSM980 2P/confocal FLIM to replace Zeiss LSM780

Core Cluster 2-Optogenetics and Neural Engineering (ONE) Core, (IDEA) Core, and the Neuroscience Machine Shop: Gidon Felsen, PhD (Director); Andrew Scallon, MS (ONE Core manager); Ryan Williamson, PhD (IDEA Core manager); Ryan Mettetal, PhD (Neuroscience Machine Shop manager)

ONE Core 22-23 Highlights:

- Worked with 30 different research laboratories on 32 projects.
Project highlights:
-Developed a novel system for precise control of behavior experiments, including delivery of light, sound, and foot shock while simultaneously acquiring time-stamped videos.
-Designed system for detecting the force of a mouse licking a water droplet.
-Engineered and fabricated novel experimental equipment, including well plate bifurcation chambers and a rotational anesthesia delivery system for rodents.
-Obtained new equipment to expand capabilities for user projects, including high-performance computers for data analysis and a dual extruder, high volume 3D printer.

IDEA Core 22-232 Highlights:

- Worked with 12 users in 8 research laboratories.

Project highlights:
-Food Pellet Delivery System - Capable of 3-axis positioning with a mechanically stable, compact design, Home Cage Trainer - Automated training of autonomously head-fixed mice

-Head-fixed Wheel - A head-fixed mouse runs on a transparent wheel for 3D video recording
-Animal Behavior Core: Fear Conditioning - One computer manages four behavior chambers for fear conditioning in mice
-Deep Brain Stimulation (DBS) OCD Monitor - A touchscreen-based GUI and apparatus for imaging patients in an out-patient clinic with chronic DBS implants
-DBS OR Monitor - A GUI and apparatus for imaging patients undergoing acute DBS in the operating room
-Organ Perfusion Chamber - Platform for culturing and perfusing explanted murine blood vessels
-Pup Clamp - Platform for positioning young mouse pups in preparation for brain stem injections

Neuroscience Machine Shop 22-23 Highlights:

- Worked on over 120 projects from 43 research laboratories.

- Overall, these projects included featured novel fabrication of research equipment from large scale acoustic isolation

chambers and olfactometers to very small GRIN Lens/Mini-scope Adapters. Additionally, the shop offered maintenance of existing equipment, and repair projects for damaged equipment and animal enclosures.
Project highlights:
-Prototyped a mouse treadmill compatible with microscopy.
-Worked to patent a novel needle bending device designed and created in the shop for gastrointestinal surgery.

-Expanded our capabilities by adding updated equipment (Laser cutter, Advanced 3-axis CNC Control, and 5-axis Micro-Mill) to complete more sophisticated parts and difficult geometries.

Core Cluster 3-Animal Behavior Core (ABC) and In Vivo Neurophysiology Core (IVNC): Michael Mesches, PhD (Director); Nicolas Busquet, PhD (ABC manager); Connie Brindly, BS; Jessica Carlsen, MS

Animal Behavior Core (ABC) 22-23 Highlights:

-Helped research teams design, plan, and perform long-term and short-term behavioral studies.

-Coordinated the move to the new AHSB vivarium space, increasing the number of testing rooms from 5 to 11 (6 mouse rooms, 4 rat rooms, 1 zebrafish).

-Worked with IDEA and Machine Shop cores to implement duplicates of tasks in the new space (Fear conditioning, Open Field…)

-Instituted new behavioral testing paradigms (Optomotor Visual Response, Porsolt Forced Swim Test)

-Total number of laboratories that used the ABC: 28

-Departments/divisions served: 13

-6 published papers plus 3 papers submitted

In Vivo Neurophysiology Core (IVNC) 22-23 Highlights:

-Coordinated the move to the new AHSB vivarium space and set up EEG recordings for mice and rats in 2 new rooms.

-Total number of laboratories that used the IVNC: 5

-Departments/divisions served: 7

Colorado Nutrition Obesity Research Center

The Colorado Nutrition Obesity Research Center (NORC) is funded by NIH/NIDDK grant P30 DK048520 with $1.4 million annually and has secured ~$6 million through 2025 to promote interdisciplinary, translational research, and develop young investigators interested in nutrition and obesity research. Senior leadership includes **Paul MacLean, PhD,** director, and **Daniel Bessesen, MD,** associate director.

The NORC research base includes over 130 funded faculty members and 60 affiliated trainees, educators, and researchers, with a research portfolio of $50 million of nutrition- and obesity-related research across five campuses in the Rocky Mountain region. Our members are supported with events and workshops that enhance the research and training environment through our Enrichment Program, directed by Ed Melanson, PhD.

The NORC's research base utilizes three biomedical research cores that facilitate the advancement of science of nutrition and obesity at basic, preclinical, and clinical levels: Clinical Intervention and Translation Core directed by Janine Higgins, PhD; Energy Balance Assessment Core directed by Wendy Kohrt, PhD; Molecular Cellular Analytic Core directed by Bryan Bergman, PhD.

Highlights from the past year include a renewal of a NIH U54 team science grant, a visit from the French Ambassador to the United States, and a successful Cancer Metabolism Workshop cohosted by the Colorado NORC and University of Colorado Cancer Center.

More information about the Colorado NORC can be found at www.cunorc.org.

Perinatal Research Center

The Perinatal Research Center (PRC) at the University of Colorado Anschutz Medical Campus is one of the leading national and international centers for research in perinatal biology and medicine, including studies of maternal, placental, and fetal physiology.

The PRC was built with funds from National Institutes of Health National Center for Research Resources with matching funds from the University of Colorado. Research at the PRC is funded by NIH grants and the Section of Neonatology in the Department of Pediatrics. The PRC houses twelve faculty members who collectively hold multiple NIH R01 or equivalent awards, NIH K and other career development awards, several pilot awards, and the University of Colorado T32 Training Program in Perinatal Biology and Medicine.

Research at the PRC involves reproductive and developmental physiology, biochemistry, and molecular biology. Primary aims of the research are to better understand processes involved in fetal growth and development and the response to adverse perinatal conditions.

Paul Rozance, MD, is the scientific director of the PRC. Dr. Rozance is the principal investigator of NIH R01 research project grants from both the National Institute of Diabetes and Digestive and Kidney Diseases and the Eunice Kennedy Shriver National Institute of Child Health and Human Development. Rozance is also the principal investigator and program director of the NIH-NICHD T32 Training Program in Perinatal Medicine and Biology, which has been funding neonatology, maternal fetal medicine, and non-clinician post-doctoral fellows at the university since 1979.

https://medschool.cuanschutz.edu/pediatrics/research/programs/perinatal-research-center

Rocky Mountain Taste and Smell Center

The Rocky Mountain Taste and Smell Center includes scientists who work on studies of the chemical senses including taste, smell, and chemical irritation of the oral and respiratory passageways. The goal of the center is to facilitate research by providing communal resources and by bringing together productive investigators in the chemical senses and allied senses of hearing and balance. The center, under the leadership of **Diego Restrepo, PhD,** and **Thomas Finger, PhD,** embraces work from 16 laboratories in five departments of the School of Medicine, including the Departments of Cell and Developmental Biology, Physiology & Biophysics, Otolaryngology – Head & Neck Surgery, with affiliates at the University of Pennsylvania and Wake Forest University. While the center provides a focus for interactions and journal club, the underlying research is supported by more than 25 research and training grants from the National Institutes of Health totaling over $5 million. Investigation of disorders of the senses of taste and smell is enhanced by cooperation and collaboration with the sinus clinic of UCHealth University of Colorado Hospital.

University of Colorado Alzheimer's and Cognition Center

The University of Colorado Alzheimer's and Cognition Center (CUACC) is designated by the Colorado Legislature as the "University of Colorado School of Medicine's Dementia Diseases and Related Disabilities Treatment and Research Center." Our tagline is: "Healthy Brain Aging Starts Here®."

At the CUACC, we are providing standard and innovative clinical care to our patients while advancing research into effective early diagnostics, preventions, treatments, and, ultimately, cures for Alzheimer's disease and other neurodegenerative diseases and conditions. In the Memory Disorders Clinic of the CUACC, we assess and care for aging patients with late-onset Alzheimer's disease, younger patients with early-onset Alzheimer's disease, patients with non-memory/atypical Alzheimer's disease, patients with related dementias, and patients with developmental disorders such as Down syndrome, thus serving as a premier, comprehensive Alzheimer's disease center. We also support clinical, translational, preclinical, and basic science research aimed at improving the diagnosis, treatment, and prevention of Alzheimer's disease and related dementias, including Down syndrome-associated Alzheimer's disease.

CUACC Director **Huntington Potter, PhD,** is Kurt N. and Edith von Kaulla Memorial professor of neurology, vice chair for basic research in neurology, and director of the Alzheimer's Disease Program for the Linda Crnic Institute for Down Syndrome. On July 1, 2023, **Delia Bakeman, DO,** took over as director of the CUACC Neurobehavior and Memory Disorders Clinic. Samantha Holden, MD, associate professor of neurology and former director of the clinic, will stay on as associate director to support Bakeman in her new role. Holden has taken a new role as vice chair of outpatient neurology services for the Department of Neurology and clinical director of outpatient neurology for UCHealth. She is also associate director of the behavioral neurology section and the director of the CU Behavioral Neurology & Neuropsychiatry fellowship. Brianne Bettcher, PhD, associate professor of neurology, is director of neuropsychology research. Victoria Pelak, MD, professor of neurology and ophthalmology, serves as vice chair of faculty affairs for the Department of Neurology. Christopher M. Filley, MD, professor of neurology and psychiatry, is director of the behavioral neurology section and senior scientific advisor at the Marcus Institute for Brain Health. Brice McConnell, MD, PhD, assistant professor of neurology, is director of the sleep research program. Integral to both the CUACC clinical care and research are associate professor Peter Pressman, MD, and assistant professors Zachary Macchi, MD, Jessica Solomon Sanders, MD, and Tara Carlisle, MD, PhD. They are all aided by a team of clinical staff including two advanced practice providers, two clinical nurses, and clinical coordinators.

The CUACC Neurobehavior and Memory Disorders Clinic interacted with 3,935 unique patients from July 1, 2022- to June 30, 2023, and had 6,275 total visits, a 35% increase from the previous year. The clinic hired an embedded health psychologist, Courtney Legge, PsyD, to work in the neurology clinics starting in July 2023, and this also includes the Neuropsychology Clinic. This year, we have also established a new Brain Health Clinic. The Brain Health Clinic is a special annual clinic visit for existing patients to check overall brain health using measures of cognition, lifestyle, mood, sleep, walking, and balance. Currently, the Brain Health Clinic is only available to patients already working with our providers for cognitive and memory changes, with plans to expand its reach in the future. Also new this year is an expansion of the CUACC Neurobehavior and Memory Disorders Clinic to the UCHealth Boulder Health Clinic location, where they will be open on Thursdays to new and returning patients.

The CUACC Neurobehavior and Memory Disorders Clinic includes neuro-ophthalmologist/behavioral neurologist Victoria Pelak, MD, whose office is on the Anschutz Medical Campus. Pelak oversees the Biogen-sponsored clinical trials EMBARK and ENVISION, which are studying the FDA-approved Alzheimer's drug aducanumab in people with mild cognitive impairment or mild dementia, and she also oversees multiple research studies related to visual processing and posterior cortical atrophy (PCA), including the Colorado PCA Bioregistry study.

Jessica Solomon Sanders, MD, established a Developmental Disorders Clinic in fall 2020. She is involved in a clinical trial along with Peter Pressman, MD, and Huntington Potter, PhD, to investigate the impact of granulocyte-macrophage colony-stimulating factor (GM-CSF/sargramostim) treatment on cognition in adults with Down syndrome. Sanders is also involved in a clinical trial testing treatments for Down syndrome regression disorder (DSRD) in partnership with researchers from the Linda Crnic Center for Down Syndrome.

The CUACC has built on the results of its clinical trial to assess the safety and efficacy of GM-CSF/sargramostim as a treatment for mild-to-moderate Alzheimer's disease, showing that it was safe and also showing improvement in memory and in blood biomarkers of brain damage (i.e., amyloid, Tau, and neurodegeneration). Specifically, a revised protocol for a longer six-month efficacy trial for GM-CSF/sargramostim led by Potter and Pressman was approved and funded by a $7.5 million NIH grant. The study has enrolled and randomized five participants and has had three participants complete the nine-month-long trial.

A published study led by Md. Mahiuddin Ahmed, PhD, who heads the Animal Models Core of the CUACC Laboratory shows that treatment with GM-CSF improves memory/learning in animal models of Down syndrome and normal aging. This led to the ongoing clinical trial of GM-CSF/sargramostim in young adults with Down syndrome, funded by a $4.5 million NIH grant. Ahmed's other ongoing studies are focused on determining the effects of GM-CSF on amyloidopathy, tauopathy, and neuroinflammation in an aged rat model of Alzheimer's disease. Recent findings indicate that GM-CSF treatment reduces the amyloid plaque deposition, a trend towards reducing phosphorylated tau (two major pathological hallmarks of AD), reduces neuroinflammation (astrogliosis) and apoptosis in the AD rats. Ahmed is also investigating whether GM-CSF treatment reduces SARS-CoV-2 infection and associated mortality in a mouse model of COVID-19.

Work in collaboration with the laboratory of Kenneth Tyler, MD, showed that GM-CSF treatment reduces mortality in a mouse model of West Nile virus infection. Collaboration with Lon Kendall, PhD, and Angela Bosco-Lauth, PhD, at Colorado State University showed that GM-CSF treatment increases the immune response, decreases viral load, and reduces mortality in a mouse model of COVID-19. Investigations into other potential applications of GM-CSF are ongoing, including a study led by Athena Wang, PhD, which is focused on GM-CSF as a possible treatment for type-2 diabetes.

Brianne Bettcher, PhD, specializes in observational studies designed to investigate the underlying causes of Alzheimer's disease and cognitive decline. Bettcher is currently leading two healthy older adult observational studies,

termed LIIA and ImTAB, along with the Bio-AD study described below. The Longitudinal Innate Immunity and Aging (LIIA) study, designed to learn more about how immune system markers, measured in blood and spinal fluid, relate to clinical features of aging over time, finished its recruitment of healthy older adults with no memory concerns this year and is continuing to see participants for follow-up visits. This study is also incorporating COVID-19 antibody testing to investigate how COVID-19 affects neurological outcomes, as a part of an administrative supplement to her NIH R01 grant. The Immunity and Alzheimer's Biomarkers (ImTAB) study is learning how a mild traumatic brain injury (mTBI) in late life relates to inflammation, markers of Alzheimer's disease-related proteins, and clinical features of aging over time. The ImTAB study is sponsored through a U.S. Department of Defense (DoD) grant and finished its recruitment this year of healthy older adults, including some who have had a mTBI in the past five years, but no significant memory or cognition concerns. This study will continue to see enrolled participants for follow-up visits. She also oversees a study to compare tele-neuropsychology testing to traditional in-person testing, which began recruitment in 2022. Bettcher and her multidisciplinary team were awarded a CU ASPIRE award for a project to use neuroimaging to understand the role of immunity in Alzheimer's disease. This team includes Brice McConnell, MD, PhD, and Huntington Potter, PhD, Nichole Carlson, PhD, and Ashesh Thaker, MD.

In the past six and a half years, we have had 182 individuals complete a baseline visit for our ongoing, prospective longitudinal study, Bio-AD, which follows aging- and Alzheimer's disease-related changes in a planned cohort of up to 400 aging adults and will offer new insights into the causes and progression of Alzheimer's disease and related dementias while also informing the development of novel therapies. Many other CUACC investigators are also using the Bio-AD cohort for their clinical research studies. For example, Brice McConnell, MD, PhD, is leading efforts to understand the neuroprotective aspects of sleep that protect the brain from developing age-related neurodegenerative diseases, including Alzheimer's disease, and he is conducting diagnostic research on sleep and memory. McConnell has made progress in developing a digital biomarker that can be used to monitor brain health and risk of Alzheimer's disease from simple wearable headband devices that record brain activity during sleep. He was also awarded an R03 grant for a new study examining the relationship between sleep and Alzheimer's disease using surface electroencephalography.

Peter Pressman, MD, continues work funded by an NIH National Institute on Aging Mentored Patient-Oriented Research Career Development Award (K23) to study computational speech analysis (CSA) as a potential screening tool for patients with neurocognitive disorders. With this grant, he is investigating the utility of using CSA measures in people with Alzheimer's disease, mild cognitive impairment, other neurocognitive disorders, and healthy controls to correlate spontaneous speech measures with standardized linguistic, neuropsychological, and biological measures. He also plays key roles in community outreach to the African American and Hispanic/LatinX communities described below. Pressman is site-PI for ALLFTD, a network of 18 North American research and care centers dedicated to advancing our understanding of frontotemporal lobar degeneration (FTLD) and advancing research to develop treatments for this disorder.

Research conducted by Zachary Macchi, MD, aims to develop approaches for integrating palliative medicine into the care of patients with Alzheimer's disease, Parkinson's disease, and other forms of neurodegeneration. His current projects include exploring the perspectives of individuals with early-onset dementia, advance care planning for early-stage Alzheimer's disease and related dementias, ways to improve caregiver support, and ways to improve current practices among movement disorders specialists in recognizing aggression in patients with Lewy Body disease.

Tara Carlisle, MD, PhD, has a specific interest in predicting cognitive decline as well as in cognitive reserve. She is finishing a project funded through the Movement Disorders Center pilot program and the Neurology Department intradepartmental grant with the goal of developing a clinical tool focusing on reversible risk factors to predict those at high risk of developing cognitive decline in Parkinson's disease. Regarding her interests in cognitive reserve, she will be investigating sex differences and contributions of sex hormone exposure to cognitive reserve.

The University of Colorado Department of Neurology Lewy Body Dementia Association Research Center of Excellence (RCOE) is directed by Victoria Pelak, MD, and Samantha Holden, MD. Holden was appointed the chair of the community engagement work group for the Centers of Excellence network, which recently published a web-based survey on research priorities of people living with LBD and LBD caregivers.

Noah Johnson, PhD, is a research assistant professor in the CUACC where he leads the Translational Therapeutics Core and the apolipoprotein E and human stem cell research programs focused on developing novel therapies to treat Alzheimer's and other neurodegenerative diseases. Recently, Johnson and colleagues at the CUACC have discovered several drugs that inhibit the essential function of apolipoprotein E in catalyzing the formation of neurotoxic amyloid filaments in the Alzheimer's brain. Two of the effective, non-toxic drugs are long-time FDA approved for other indications, and their retrospective study shows them to increase the likelihood that human Alzheimer's disease patients will improve in cognitive ability and change their diagnosis to mild cognitive impairment or even normal cognition. The most promising drug, imipramine, is being tested in animal models of Alzheimer's disease, and we plan to submit a grant to fund a clinical trial in 2024. Promising drugs are also being tested by Johnson's team in cerebral organoids (minibrains grown in culture) using induced pluripotent stem cells derived from skin cells from Alzheimer's, Down syndrome, and healthy control participants. In 2023, Johnson was PI on two grants awarded by the National Institute of Aging: an R01 to study the role of apoE in Down syndrome-associated Alzheimer's disease and an R21 to determine whether tissue stiffness influences Alzheimer's disease pathology in cerebral organoids.

Christina Coughlan, PhD, is a research assistant professor and director of the CUACC Biomarker Core and its associated biorepository that stores tens of thousands of individual samples from patient biofluids and tissues of animal models. These samples are made available by request to researchers, both within the CUACC and to collaborators, with careful consideration of their goals, to expedite the development of biomarkers to predict the onset and severity of Alzheimer's disease and other forms of neurodegenerative disease, including Down syndrome, Parkinson's disease, Huntington's disease, and frontotemporal dementia. She also founded and co-directs the CUACC exosome core laboratory and has identified promising surface markers that may be used to identify brain-derived exosomes in the blood. In addition, Coughlan collaborates with many exosome teams with interests in cancer, viruses, fibrotic lung disease, heart defects, cerebral palsy, diabetes, stroke, Alzheimer's disease, and Down syndrome. The goal is to understand the role of exosomes in health and pathology, and to test new drugs to inhibit pathological pathways facilitated by exosomes.

Stefan Sillau, PhD, is a research assistant professor who serves as the statistician for the CUACC. He has contributed to numerous projects, publications, and grants ranging from clinical trials, clinical observational studies, clinical intervention studies, and laboratory science studies. He has played a key role in the analyses of data for all the GM-CSF/sargramostim studies in clinical trials with research participants and in studies of animal models.

Heidi Chial, PhD, research assistant professor, serves as the director of grant strategy and development for the CUACC. Her research program is focused on how defects in the cell cycle and mitotic spindle assembly that lead to aneuploidy (abnormal chromosome number) and genetic instability contribute to neurodegenerative diseases, including Alzheimer's disease, frontotemporal dementia, and most recently Huntington's disease in collaboration with Huntington Potter, PhD, and Mihret Elos, MS. She also served as a co-mentor to Esteban Lucero, PhD, who identified the microtubule motor protein KIF11/Kinesin-5/Eg5 as a major target of the Abeta peptide and showed that the detrimental effects of Abeta can be reversed by overexpressing this enzyme. Based on this work, she has collaborated with Potter and members of the CUACC Laboratory to identify several promising candidate drugs that prevent Abeta-mediated inhibition of KIF11 ATPase activity as an entirely new therapeutic approach to the treatment of Alzheimer's disease. Chial was recently selected to participate in the highly competitive Butler-Williams Scholars program. This program is sponsored by the National Institute on Aging (NIA) and provides unique opportunities for faculty and researchers to gain insights about research on aging from many perspectives.

Traumatic brain injury is a strong risk factor for developing neurodegenerative disorders including Alzheimer's disease. Mingxia Huang, PhD, and Athena Wang, PhD, are carrying out studies to use animal models to discover and test new treatments for reducing the cognitive and pathological effects of traumatic brain injury and its enhancing effects on Alzheimer's disease.

Natalia Vergara, PhD, is leading research evaluating the retinal and visual manifestations of Alzheimer's disease and their modulation by conditions like Down syndrome and mild traumatic brain injury. She is using a combination of novel animal models to investigate pathophysiological mechanisms and state-of-the-art retinal organoid technologies to contribute to the validation of drug candidates with therapeutic potential. These studies are in collaboration with Huntington Potter, PhD, Noah Johnson, PhD, Md. Mahiuddin Ahmed, PhD, and Athena Wang, PhD.

The CUACC continues to provide dozens of presentations and lab tours per year to the lay public with a special focus on outreach to underrepresented populations, including African American and Hispanic/LatinX community members. Potter and Holden were invited to join the State of Colorado Alzheimer's Disease and Related Disorders Advisory Committee, which has a special mandate to focus on underserved populations. Established in 2018 by former CUACC Fellow Luis Medina, PhD, and Peter Pressman, MD, using Boot Camp Translation (BCT), the African American Alzheimer's Advisory Committee includes 16 members who are actively engaged in community outreach activities. The CUACC is also a part of a grant, secured by Medina, who is now a faculty member at the University of Houston (UH), in partnership with UH and the University of Nevada, Las Vegas, and completed BCT with 16 members of the Hispanic/LatinX community in Denver, Houston, and Las Vegas called the Engaging Communities of Hispanics for Aging Research (ECHAR) network. This training also included a translator, allowing them to provide information in both Spanish and English. The BCT process wrapped up last fall, and members were invited to form an established Community Advisory Board.

Publications – https://medschool.cuanschutz.edu/alzheimer/home-page/recent-publications

Website – http://medschool.cuanschutz.edu/alzheimers

University of Colorado Cancer Center

MedSchool.CUAnschutz.edu/Colorado-Cancer-Center

The University of Colorado (CU) Cancer Center is the only National Cancer Institute (NCI)-designated comprehensive cancer center in Colorado. CU Cancer Center members make up the majority of researchers who participate in cancer-related basic, translational, clinical, population, and behavioral research in Colorado. This statewide inclusiveness of cancer researchers and academic institutions provides a scientific breadth and depth that strengthens the center's comprehensive cancer research and clinical care activities. The CU Cancer Center stands as a unique organization and resource in Colorado and the surrounding region in cancer research, prevention, clinical care, and outreach.

Vision: Prevent and conquer cancer. **Together.**

Mission: Uniting our community to overcome cancer through innovation, discovery, prevention, early detection, multidisciplinary care, and education.

The CU Cancer Center's history began with the award of an NCI Cancer Center Support Grant in 1988, resulting in a clinical cancer center designation. In 1997 the center was designated as an NCI Comprehensive Cancer Center, indicating that it met stringent research-focused metrics in basic, clinical, translational, and population science research. In 2013, the center was elected as a member of the National Comprehensive Cancer Network (NCCN), an alliance of the nation's leading cancer centers working to establish and deliver the gold standard in cancer clinical guidelines. In February 2015, the CU Cancer Center joined the Oncology Research Information Exchange Network (ORIEN), a research partnership among top U.S. cancer centers that is designed to facilitate discoveries in precision medicine. Every five years the CU Cancer Center submits a competitive renewal (2P30CA046934-34) to keep its NCI Comprehensive designation, and in February 2022 the seventh renewal was funded for the 2022-2027 period.

Strategic Goals for this next era are:

- Ensure a robust infrastructure to foster research across the spectrum, including basic discovery, translation, and prevention and control.
- Invest in targeted areas of research where the CU Cancer Center can best accelerate its impact.
- Perform highly innovative and accessible clinical trials.
- Provide unparalleled, comprehensive patient-centered cancer care.
- Become the premier cancer center and destination of choice, regionally in five years and nationally in 10.
- Advance health equity and reduce disparities across the continuum from prevention to survivorship.
- Train the next generation of cancer researchers, providers, and administrators.
  Cultivate a cohesive, effective, accountable organization that attracts and retains outstanding talent.
- Secure sustainable funding.

Cancer Center Leaders

The senior leaders of the CU Cancer Center represent the four research areas of a comprehensive cancer center, as well as key priority areas including community outreach and engagement, cancer research education and training, and cancer informatics and data sciences.

Senior Leaders	
Director	Richard Schulick, MD, MBA
Deputy Directors	Cathy Bradley, PhD, and James DeGregori, PhD
Associate Directors:	
Basic Research	Heide Ford, PhD
Clinical Research	Christopher Lieu, MD
Population Science Research	Linda Cook, PhD
Translational Research	Hatim Sabaawy, MD, PhD
Shared Resources	Natalie Serkova, PhD (Interim)
Community Outreach & Engagement	Evelinn Borrayo, PhD
Diversity, Equity, Inclusion & Access^	Miria Kano, PhD
Cancer Research Education & Training	Eduardo Davila, PhD
Data Science and Cancer Informatics	Sean Davis, MD, PhD
Clinical Services / CMO Oncology Services	Wells Messersmith, MD
Administration & Finance	Stephanie Farmer, MHA

*New leader

^New AD role

Richard Schulick, MD, MBA
Director, CU Cancer Center
Chair, Department of Surgery

The center fosters cancer-focused research through the creation of formal scientific research programs. A program comprises the activities of a group of investigators who share common scientific interests and goals and participate in competitively funded research. Programs are highly interactive and lead to the exchange of information, experimental techniques, and ideas that enhance the individual productivity of scientists and often result in collaborations and joint publications. Ultimately, the success of a program is measured by scientific excellence, the emergence of productive collaborations, and impact toward reducing the burden of cancer.

Currently, the center is comprised of four research programs, all of which are organized around mechanistic themes in cancer research.

Cancer Center Programs and Program Leaders	
Basic Sciences	
Molecular & Cellular Oncology (MCO)	Tin Tin Su, PhD; Patricia Ernst, PhD
Translational and Clinical Sciences	
Tumor-Host Interactions (THI)	Diana Cittelly, PhD; Michael Verneris, MD; Jill Slansky, PhD
Developmental Therapeutics (DT)	Lia Gore, MD; Dan Gustafson, PhD; Antonio Jimeno, MD, PhD
Population Health	
Cancer Prevention and Control (CPC)	Rajesh Agarwal, PhD; Jamie Studts, PhD; Stacy Fischer, MD

Affiliated Organizations

Academic Institutions	*Affiliated Hospitals*
University of Colorado Denver (CU Denver).	UCHealth University of Colorado Hospital (UCH).
and Anschutz Medical Campus (CU AMC).	Children's Hospital Colorado (CHCO).
University of Colorado Boulder (CU Boulder).	VA Eastern Colorado Health Care (VA).
Colorado State University (CSU).	
National Jewish Health (NJHealth).	

Facts

Membership

- 217 Full members.
- 56 Mentored members.
- 73% of members are in the CU School of Medicine (SOM).

Research Portfolio

- 599 cancer related publications in FY22.
- $76M (direct costs) annual cancer-focused sponsored research funding, an increase of 11% from the prior year.
- $61M (79%) held by members in the SOM, a 10% increase from the prior year.

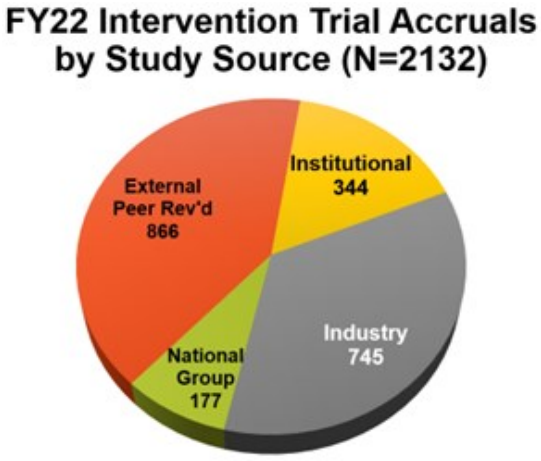
Center Members' Cancer-Relevant Research $s by Sponsor Type*

Sponsor	Direct Cost $s
Cancer Center Support Grant	2,754,686
NCI	18,523,043
Other NIH	17,843,741
Other Peer-Reviewed	10,169,069
Industry	17,549,127
Other Non-Peer Reviewed	9,136,036
Grand Total	75,975,702

*As reported to the NCI December 2022

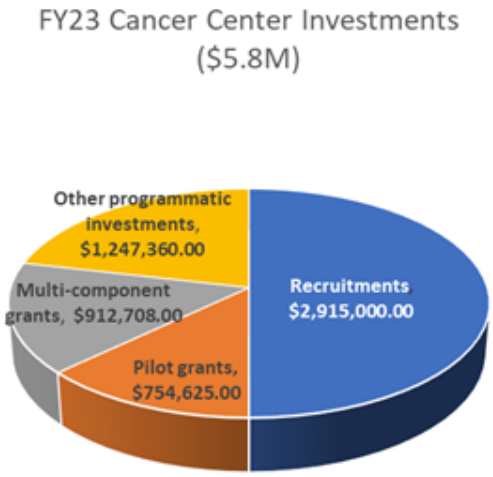
Clinical Trial Portfolio

- 3,158 accruals to all types of human subject protocols in FY22.
  - ◊ 2,132 Intervention trial accruals.
  - ◊ 857 Observational trial accruals.
  - ◊ 169 Ancillary/correlative trial accruals.



Investments

- $5.8M invested in FY23:
  - ◊ $2.9M in recruitments.
  - ◊ $755k in pilot grants.
  - ◊ $913k committed to multi-component grants.
  - ◊ $1.2M in other programmatic investments.



- **Recruitment and promotions of new leaders:**
  - ◊ Miria Kano, PhD, as Associate Director for Diversity, Equity, Inclusion and Access.
  - ◊ Curtis Henry, PhD, as Deputy Associate Director for Diversity, Equity, Inclusion and Access.
  - ◊ Diana Cittelly, PhD, as Program Co-Leader for the Tumor Host Interactions Program.
  - ◊ Cindy O'Bryant, PharmD, as Chair of Protocol Review and Monitoring System.
  - ◊ Jessica McDermott, MD, as Deputy Associate Director for Diversity and Inclusion in Clinical Research.
  - ◊ Richard Duke, MD, PhD, as Deputy Associate Director of Commercialization.
  - ◊ Jan Lowery, PhD, as Assistant Director for Dissemination Implementation in Community Outreach and Engagement.

- **Celebrating new appointments:**
  - ◊ Cathy Bradley, PhD, has been appointed Dean of the School of Public Health.
  - ◊ Jennifer Richer, PhD, has been appointed Dean of the Graduate School.
  - ◊ Heide Ford, PhD, has been appointed Chair of the Department of Pharmacology.

- **Establishment of new endowed chairs:**
  - ◊ Miria Kano, PhD, as the Morton Cohen Cancer Center Endowed Chair.
  - ◊ Sachin Wani, MD, as the Katy O. and Paul M. Rady Endowed Chair in Esophageal Cancer Research.
  - ◊ Natalie Serkova, PhD, as the Charles L. Adams Endowed Chair.

- **Selected Research Accomplishments:**

Cancer Prevention and Control (CPC) program members **S O'Leary, MD,** and **A Kempe, MD,** conducted survey research to learn attitudes and beliefs of rural and urban primary care and public health nursing providers and published these findings in *J Pediatrics* (PMID:33689710) and *J American Board Family Medicine* (PMID: 34535519). They then used these findings to inform NIH-funded pragmatic intervention trials across the states of Colorado and California (R01CA240649 and recently completed R21CA230878). Complementary to this body of work is the role of Associate Director for COE and CPC member **E Borrayo, PhD,** as co-investigator on a Four Corners Collaborative study using social media-delivered messages to improve cancer prevention behaviors in young rural adults, including HPV vaccination (R01CA268037). **C Bradley, PhD (Deputy Director/CPC),** and **M Perraillon, PhD (CPC),** are conducting high-impact research on rural versus urban health care utilization and access to novel therapies, as well as examining the impact of financial toxicity and payment models on cancer outcomes (R01CA229551). Analysts in the **Population Health Shared Resources (PHSR)** merged cancer registry data with All Payer Claims Database to enable this research. Findings have been published in high-impact journals including multiple articles published in *Journal of the National Cancer Institute* (impact factor 13, PMID:34981116) and *Health Services Research* (PMID:34743320). Their findings have led to local community nonprofit foundations offering financial relief to persons with cancer, directly impacting rural and urban patients facing poverty and cancer in Colorado.

CPC members **P MacLean, PhD,** and **R Marker, PhD, PT** (mentored member), engaged in groundbreaking work with **P Kabos, MD (DT),** to develop novel interventions to reduce obesity-associated breast cancer. The team combined clinical and basic science to understand the impact of nutrition and exercise on breast cancer risk and survivorship exemplifying the CU Cancer Center's cross-cutting theme of metabolism and cancer. They have funding from NCI

(R01CA257866) and have published their findings in high-impact journals including *JCI Insight* (PMID:30046001) and *Cancers* (PMID:35406548). They continue to expand and evolve their research program, most recently with receipt of pilot funding through the Colorado Implementation Science Center for Cancer Control (CoISC3, P50CA244688). Additionally, Marker was named a Paul Calabresi K12 Scholar under the CU Cancer Center grant (K12CA086913) and will use this career development funding to test his virtual exercise intervention to reduce fatigue for rural patients with cancer.

Diffuse Intrinsic Pontine Glioma (DIPG) remains the cancer with the worst prognosis for any patient, since there are no survivors. **Developmental Therapeutics (DT)** members **S Venkataraman, PhD,** and **R Vibhakar, MD, PhD,** identified high expression of CD99 in DIPG tumors compared to normal brain cells and developed a monoclonal antibody and more recently, a chimeric antigen T cell (CAR-T) using their newly identified single chain variable fragment (scFv) targeting CD99 (under patent), incorporating a 4-1BB co-stimulatory domain. This CD99 CAR-T product dramatically shrinks established orthotopic DIPG tumor in mice. However, tumor recurrence remains a major obstacle to cure, due to a loss of the CAR-T cells, as they also express the target antigen, CD99 (fratricide). To overcome this, **Venkataraman** and **E Kohler, MD, PhD (THI),** utilized CRISPR-cas9-mediated deletion of CD99 from T cells prior to CAR-transduction. **Animal Imaging (AISR)**, **Genomics (GSR)**, **Flow Cytometry (FCSR)**, and **Pathology (PSR)** shared resources supported this work. **LaBarbera, PhD (DT),** and **Gustafson, PhD (DT),** developed a new robotic drug-screening effort and identified novel compounds targeting TCF/LEF-transcription as inhibitors of the chromatin-remodeling enzyme CHD1L (Chromodomain helicase DNA-binding protein 1), which is a required component of TCF/LEF-transcription. Based on the structure of their first identified CHD1L inhibitor, a series of analogues have been synthesized and described (PMC8981980). **Dow, DVM, PhD (DT)**, **Gustafson (DT)**, **Thamm, VMD (DT),** and **Regan, DMV, PhD (THI),** reported on the dual utilization of losartan to block osteosarcoma-elicited monocyte recruitment with toceranib, demonstrating clinical benefit in canine metastatic osteosarcoma (PMC8866227). Finally, **M Macy, MD (DT),** was part of an international group of investigators that used the genetic makeup of pediatric tumors to identify therapeutic opportunities, as recently reported in *Nature Medicine* (PMID35739269).

Leading a highly collaborative group for a study with immediate clinical implications, **Molecular and Cellular Oncology (MCO)** program member **A Green, MD,** performed the first broad molecular characterization of pediatric radiation-induced gliomas (RIGs), which are an unfortunate outcome of cranial radiation for other malignancies that transit the blood-brain barrier (PMC8452624). Leveraging expertise from **Venkataraman, J Mulcahy Levy, MD (MCO)**, **T Hankinson, MD (CPC)**, **N Foreman, MD (DT)**, and **Vibhakar**, **Green** *et al* demonstrated that this subtype of glioma is unique and has a distinct transcriptome/methylome from other *de novo* gliomas. Two transcriptional subgroups were defined that predicted distinct drug vulnerabilities, which were then tested with FDA-approved drugs. Novel cell lines derived in this study, as well as the genomic data, have been disseminated to the research community. The **Genomics Shared Resource (GSR)** prepared RNAseq libraries and generated sequencing data that was pivotal to the study, and **Pathology Shared Resource (PSR)** prepared tumor samples for imaging. **Green** was funded by a St. Baldrick's Foundation Scholarship and then received ACS-IRG Seed Grant funding offered through the CU Cancer Center to continue the studies. In addition, the MCO Program provided **Green's** research matching funds to enable single cell RNAseq studies to be completed on patient samples.

Another research program with immediate translational impact was led by **M Caino, PhD (MCO),** in collaboration with **S Cramer, PhD (MCO),** to study mitochondria that play pivotal roles in cancer through metabolic cell death, and signal-coordination. The group found that mitochondrial GTPase Miro2 binds to the GCN1/2 complex and is critical for pausing global mRNA translation while inducing transcription factor ATF4 expression upon amino acid starvation and hypoxia in prostate cancer (PMC8983529). Prostate cancer is the second most diagnosed and deadly cancer in

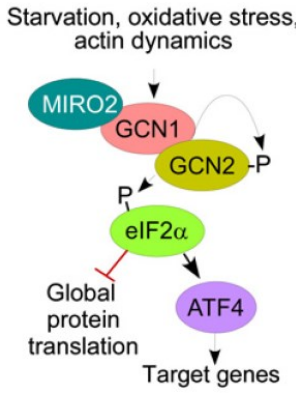


Figure 1. Miro2 is a mitochondrial GTPase that binds GCN1/2 complex, which transmits amino acid starvation to the translation apparatus and the transcription factor ATF4.

Colorado men. Upregulation of Miro2 and GCN1 in prostate cancer that has progressed while on therapy is proposed to enable autophagy and tumor progression despite lack of blood supply and oxygen that would be required for normal cells, providing rationale for pharmacologically targeting the Miro2/GCN1 axis, particularly in the late stages of prostate cancer. **Caino**, formerly a mentored member, received an ACS-IRG and a Boettcher Foundation awards to support this work, and subsequently an R35 MIRA award (R35GM142774). The **Pathology Shared Resource (PSR)** enabled this work by performing key analyses of Miro2-depleted tumors and the effect of hypoxia on pathway components shown in **Figure 1** (last page) *in vivo*. Finally, structural biology remains a key strength of **MCO** as seen in the example of elegant and ground-breaking studies by **K Luger, PhD (MCO),** that provide insights into three aspects of chromosome maintenance: by revealing the mechanism by which CENP-N compacts centromeric chromatin, namely by promoting nucleosome stacking (PMC9010303); how the BRCT domain of PARP1, not known previously to interact with DNA, does so to mediate DNA strand transfer during repair (PMC8769213); and how SMARCAD1, a poorly understood epigenetic regulator, can, remarkably, transfer whole nucleosome octamers from one DNA strand to another or even assemble whole nucleosomes de novo by binding all eight subunits at the same time (PMC8519567).

The work of **Tumor-Host Interactions (THI)** program member **Y Zhu, PhD,** and **R Schulick, MD (Director/DT),** *et al* showed that blockade of the CD93/IGFBP7 interaction by monoclonal antibodies promoted reduced vascular leakage, leading to reduced tumor hypoxia, increased tumor perfusion, and an increase in intratumoral T cells. Using the CU Cancer Center's **Flow Cytometry**, **Genomics**, and **Functional Genomics Shared Resources**, this research, published in *Sci Trans Med* (PMID 34321321), led to an NCI R01 grant (R01CA258302). The findings were used to file a patent that has been exclusively licensed for a first-in-class trial (NCT05496595) in September 2022. In another notable development, **M Sikora, PhD (THI),** *et al* identified a novel function of the DNA repair protein MDC1, acting as a transcriptional co-regulator of estrogen receptor α (ER) to drive endocrine therapy resistance in lobular breast cancer (*Mol Can Res* PMID:33947745) and utilized the expertise of the **Biostatistics and Bioinformatics** and **Genomics Shared Resources**. The project was launched with ACS IRG pilot funding, continued through an ACS Research Scholar Grant (RSG-20-042-01-DMC), and has led to a newly awarded NCI R01 (R01CA251621) with which **Sikora** will investigate the functional consequences of MDC1:ER interaction. A timely study by **M Verneris, MD (THI),** *et al* compared two different CD19 directed therapies recently approved for children with refractory B cell acute lymphoblastic leukemia (B-ALL). The two drugs, tisagenlecleucel and blinatumomab, differ in their mechanism of action (CAR T vs BiTE), timing of availability, and cost, and while both are effective, it is unclear whether one agent performs better than the other. **Verneris'** study compared the outcomes of children with B-ALL treated on the two studies that led to licensing of tisagenlecleucel (ELIANA) and blinatumomab (MT103-205) and found that tisagenlecleucel was associated with a higher rate of complete response (OR=6-9) and a lower chance of death (HR=0.26-0.32), suggesting that CAR T cells result in better outcomes in children with chemotherapy refractory ALL (**Figure 2**, *Blood Advances* PMID 34597381).

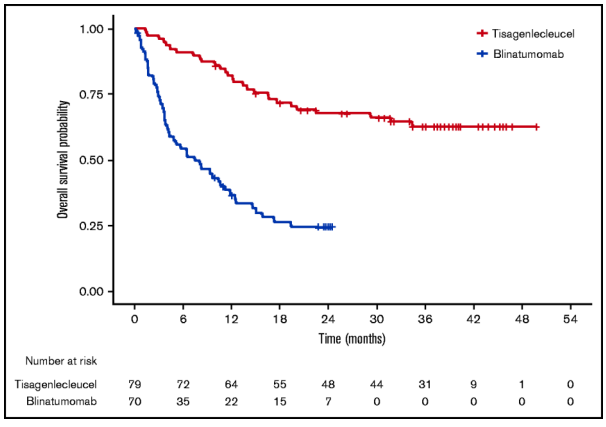


Figure 2. Indirect comparison of tisagenlecleucel and blinatumomab in pediatric relapsed/refractory acute lymphoblastic leukemia

•Additional Notable Accomplishments:

In response to the underrepresentation of Hispanic patients in clinical trial accruals, CU Cancer Center leadership initiated several activities in 2020 and 2021 to identify barriers and recommend strategies to address the deficiencies. Leadership identified three key objectives: 1) Accrue Hispanic patients to intervention trials in number commensurate with UCH Hispanic cancer population; 2) Increase access of Hispanic patients to UCH to levels on par with state cancer demographics; and 3) Increase community engagement and partnerships to build awareness of

	State Population (1)	State Cancer Cases (2)	UCH New Oncology Patient Pop (3)	ADULT ONLY Intervention Trial Accruals			
				2019	2020	2021	2022
Total Population	5,773,714	119,488	41,550	1189	927	998	1538
Gender	%	%	%	%	%	%	%
Female	49.6%	50.6%	52.6%	55.5%	60.8%	61.8%	59.2%
Male	50.4%	49.4%	47.4%	44.4%	39.2%	38.2%	40.6%
Unknown	---	---	---	0.1%	0.0%	0.0%	0.3%
Race/Ethnicity*	%	%	%	%	%	%	%
Hispanic (All Races)	21.9%	10.9%	8.6%	8.6%	6.0%	8.4%	13.1%
Non-Hispanic							
Amer Ind/Alaskan Nat	1.3%	0.7%	0.3%	0.5%	0.3%	0.5%	0.5%
Asian	3.5%	1.8%	2.1%	1.7%	1.3%	1.2%	2.5%
Black (Non-Hispanic)	3.8%	3.3%	4.5%	3.3%	4.0%	3.9%	5.9%
Nat Haw/Pac Islander	0.2%	0.2%	0.1%	0.4%	0.1%	0.3%	0.3%
White (Non-Hispanic)	65.1%	81.9%	79.2%	82.3%	86.2%	82.8%	75.3%
>1 | Unkwn | NR	5.0%	2.1%	5.2%	3.3%	2.0%	2.9%	2.5%

(1) US Census Bureau, 2020 Decennial Census Redistricting Data, Tables P1 and P2

(2) Colorado Central Cancer Registry, 2014-2018 Incidence Data

(3) UCH New Oncology Patients FY18-21: University of Colorado Health Data COMPASS; NewCancerCenterPatients_2021.11.30; S. Das

Table 1. Population Demographics and Demographics of Adult Intervention Trial Accruals FY19-FY

and knowledge about clinical trial availability and cancer research. These efforts have shown early progress in the objective of increasing Hispanic patient accruals on intervention trials to levels commensurate with the state's Hispanic cancer population. In FY22, enrollment of Hispanic patients to intervention trials increased to 13.1%, surpassing the state's cancer population (10.9%) (**Table 1**). Moving forward, the focus will be on maintaining the progress with Hispanic accruals and expanding initiatives to address in a routine manner access for other disparity populations, particularly those from the rural parts of the state. While the COE team is taking the lead with various outreach initiatives to connect with rural patients and health care professionals, CPDM will work closely with UCH to identify rural patients in need of transportation and/or short- and long-term housing. In January 2022, UCH secured a local ACS grant to cover transportation costs for patients coming from rural areas. As well, UCH has negotiated contracts with Brent's Place and several local hotels to provide short- and long-term housing for patients from rural areas needing to stay in town for standard of care treatment and/or clinical trial interventions.

With support from *Building Rural Cancer Control and Prevention Research Collaborative in Colorado* (3P30CA046934-31S5 | **Borrayo**) the Community Outreach and Engagement team used Colorado Cancer Registry (CCR) data to identify 24 counties with high cancer disparity index scores. Key informants in each county were identified and interviewed. The results of the interviews suggest that counties with high disparities lack sustained efforts, leadership, knowledge, and resources to tackle cancer disparities. Understanding gained from this supple-

ment has been used to inform the *Colorado Partnership to Implement Evidence-Based Interventions to Reduce the Cancer Burden [*Colorado Cancer Coalition (*CCC) Partnership]* (3P30CA046934-33S3 | Borrayo). This supplement seeks to build infrastructure to address cancer disparities on a regional basis. This project brings together a wide array of participants at the state and local level. The participants have formed five Regional Cancer Networks to identify regional needs, local expertise, resources, and service gaps. To date, two Regional Cancer Networks (Southwest and Eastern) have identified evidence-based interventions – cancer genetic risk education and fecal occult blood tests – that they will implement with the CCC, one of the partnering stakeholders, and COE to improve the early detection of breast cancer and colorectal cancer in their regions. The long-term goal is to create a five-year action plan in alignment with the Colorado Cancer Plan that includes collaboration with CU Cancer Center investigators. Similar to the Southwest and Eastern Regional Cancer Networks, the other Regional Cancer Networks will collaborate with CU Cancer Center investigators who have expertise in cancer control evidence-based interventions, and community-based participatory research to address the cancer priorities for their regions. CU Cancer Center and CCC will assist the Regional Cancer Networks and CU Cancer Center investigator research teams to strengthen their capacity to conduct research studies in their state regions.

The objective of the project *Building Capacity to Engage Underrepresented Coloradans in Development Therapeutics Research* (3P30CA046934-32S5 | **Borrayo** and **A Jimeno, MD, PhD**) is to leverage existing data banks to increase the representation of underrepresented populations in developmental therapeutic research by enriching the early translational research with specimens linked to clinical data from patients representing diverse backgrounds and demonstrating how the data resources available to CU Cancer Center members can be leveraged to shape human subject research questions. Two pilot projects were funded to test the feasibility of performing research on genomic differences among underrepresented minority groups with a focus on cancer prevention and biomarkers of treatment response in Colorado. The *Clinical and Genomic Characteristics of Black and Hispanic Patients with Renal Cell Carcinoma (RCC) and Advanced Kidney Diseases* pilot project led by **E Lam, MD (DT),** uses ORIEN data to gain a better understanding of the biology and genomics of RCC in Black and Hispanic populations to inform decisions on the optimal treatment approach. The *Assessing Genetic Cancer Risk Across the Diverse Populations of the Colorado Center for Personalized Medicine Biobank* pilot project led by **N Pozdeyev, MD (DT),** tests the feasibility of using the CCPM's biobank, linked to clinical information extracted from the UCHealth system's electronic health records, to identify genetic risk factors for cancers identified among diverse populations in Colorado. Both pilot grants are in progress.

Enhancing the Cancer Center's Community Outreach in Rural and Underserved Populations (3P30CA046934-31S4 through -34S1) is part of the Strengthen NCI-supported Community Outreach Capacity through Community Health Educators of the National Outreach Network [NON-CHE] program. Our project has focused on interventions to increase HPV vaccination as a primary method to prevent HPV-related cancers. To date the COE team has used social media outreach with content related to clinical trials in general, HPV vaccination, and other cancer prevention and control messaging, reaching over 60,000 people across the state and region. As well, we have successfully engaged with a Latino radio station to provide education about cancer, risk factors, and clinical trials, emphasizing the importance of Latinos' participation in cancer clinical trials as well as HPV vaccination. Formal community education efforts were originally derailed by COVID-19 but have gotten back on track with 153 participants completing the clinical trials education program as of November 2022. Similarly, an HPV-vaccination education program was developed, and to date 244 young adults and parents of adolescents have completed the program. Since inception of the program, over 380 vaccines have been delivered to adolescents and young adults that were part of the HPV education and patient navigation intervention.

D Sherbenou, MD, PhD (DT), and E Kessler, MD (CPC), developed an innovative proposal to foster an interdisciplinary, multi-campus collaboration on cancer and aging research and develop partnerships with community and rural practices across Colorado to support the aging population of cancer survivors (3P30CA046934-32S4). The aims of their project were to 1) cultivate scientific exchange among basic, clinical, dissemination, and implementation scientists investigating the relationships between aging and cancer by collaborating with existing programs, such as the Colorado Implementation Science Center in Cancer Control (CoISC3 / P50CA244588) and the CU Cancer Center's COE program to

drive research to address cancer and aging issues for Coloradans; 2) identify geriatric assessment tools that support personalized care delivery based on physiological age rather than chronological age, and that are implemented in local, rural oncology, and primary care clinics; and 3) pilot a CU Cancer Center resource for patient-centered data collection to facilitate bench-to-bedside-to-community research on cancer and aging. A standard assessment tool has been piloted in primary care and geriatric clinics in both rural and academic clinics leading to a modified version that better correlates with patient experiences. The plan is to use the modified tool for outreach to other non-EPIC EMR based clinics. Within the EPIC EMR environment, a different version of the tool has been piloted and the assessment has been shown to be highly correlative with the patient experience. There has been increased uptake of the use of the tool, and the investigators will continue to work with clinicians and clinic staff on how best to implement the measure. The project culminated in the submission of an R21/R33 infrastructure grant in October 2022 to support expansion of the use of the assessment in additional clinics. The team works closely with and helped establish a multi-disciplinary Cancer and Aging Working Group that is pursuing broader research in the areas of clinical care and outcomes, genomes and telomeres, leveraging companion animals, and tissue microenvironments at the interface of aging and cancer.

S Kim, MD (DT), is the project leader for the supplement *Development of Standardized Electronic Treatment Plan Builds for NCI Cancer Centers* (3P30CA046934-32S6 & -33S1). The CU Cancer Center partnered with MD Anderson, Dana-Farber, University of Wisconsin, and City of Hope to form the Clinical Trials Rapid Activation Consortium with the overarching objective to create a standardized approach to building clinical trial treatment plans in EPIC by developing methods to standardize workflows, drug formularies, drug administration procedures, and laboratory requirements, leading to the creation of the components for a standardized electronic clinical trial build system (eCTBS). The effort is focused on establishing standardized treatment plans for NCTN trials to reduce the costly and redundant effort of each participating site having to build the same treatment plan for every trial. This initiative made significant progress as a proof-of-principle effort to demonstrate that despite institutional differences in processes and electronic health record (EHR) setup, it is possible to create standardized treatment plans that can be plugged into compatible EHR systems. NCI, through Leidos Biomedical, issued an RFP over the summer. The CU Cancer Center submitted a proposal and was selected to continue as a participating site in this ongoing project.

New Cancer Center Members

The Cancer Center was privileged to welcome the following individuals as new members in the past year:

Member	Academic Rank	Cancer Center Program	Member Type	Affiliation
Ahrendt, Gretchen	Professor	Cancer Prevention & Control	Clinical	Surgery | Surgical Oncology | School of Medicine | University of Colorado Denver
Alberti, Michael	Assistant Professor	Molecular & Cellular Oncology	Mentored	Pathology | School of Medicine | University of Colorado Denver
Amaya, Maria	Assistant Professor	Molecular & Cellular Oncology	Mentored	Medicine | Hematology | School of Medicine | Denver VA Medical Center
Andrysik, Zdenek	Associate Research Professor	Molecular & Cellular Oncology	Affiliate	Pharmacology | School of Medicine | University of Colorado Denver
Babcock, Matthew	Assistant Professor	Cancer Prevention & Control	Affiliate	Medicine | Geriatric Medicine | School of Medicine | University of Colorado Denver

Member	Academic Rank	Cancer Center Program	Member Type	Affiliation
Bang, Tami	Assistant Professor	Developmental Therapeutics	Affiliate	Radiology | School of Medicine | University of Colorado Denver
Bonetto, Andrea	Associate Professor	Tumor-Host Interactions	Full	Pathology | School of Medicine | University of Colorado Denver
Breuss, Martin	Assistant Professor	Molecular & Cellular Oncology	Affiliate	Pediatrics | (no division) | School of Medicine | University of Colorado Denver
Casadaban, Leigh	Assistant Professor	Developmental Therapeutics	Affiliate	Radiology||School of Medicine | University of Colorado Denver
Cohen, Justin	Assistant Professor	Cancer Prevention & Control	Affiliate	Surgery | (no division) | School of Medicine | University of Colorado Denver
Dowell, Robin	Professor	Cancer Prevention & Control	Affiliate	Molecular, Cellular & Developmental Biology | College of Arts and Sciences | University of Colorado Boulder
Heasley, Lydia	Assistant Professor	Molecular & Cellular Oncology	Mentored	Biochemistry & Molecular Genetics | School of Medicine | University of Colorado Denver
Huebschmann, Amy	Associate Professor	Cancer Prevention & Control	Affiliate	Medicine | General Internal Medicine | School of Medicine | University of Colorado Denver
Lentz, Robert	Assistant Professor	Developmental Therapeutics	Mentored	Medicine | Medical Oncology | School of Medicine | University of Colorado Denver
Li, Suzhao	Assistant Research Professor	Tumor-Host Interactions	Affiliate	Medicine | Infectious Diseases | School of Medicine | University of Colorado Denver
Luna-Fineman, Sandra	Associate Professor	Developmental Therapeutics	Clinical	Pediatrics | Hematology / Oncology / BMT | School of Medicine | University of Colorado Denver
Major, Ajay	Assistant Professor	Cancer Prevention & Control	Mentored	Medicine | Hematology | School of Medicine | University of Colorado Denver
Marjon, Nicole	Assistant Professor	Tumor-Host Interactions	Mentored	Obstetrics / Gynecology | Gynecologic Oncology | School of Medicine | University of Colorado Denver
Minhajuddin, Mohd	Associate Research Professor	Cancer Prevention & Control	Affiliate	Medicine | Hematology | School of Medicine | University of Colorado Denver
Muramoto, Myra	Professor	Cancer Prevention & Control	Full	Family Medicine | School of Medicine | University of Colorado Denver

Member	Academic Rank	Cancer Center Program	Member Type	Affiliation
Nemkov, Travis	Assistant Research Professor	Cancer Prevention & Control	Affiliate	Biochemistry & Molecular Genetics | School of Medicine | University of Colorado Denver
Pine, Sharon	Professor	Developmental Therapeutics	Full	Medicine | Medical Oncology | School of Medicine | University of Colorado Denver
Roach, Jonathan	Associate Professor	Cancer Prevention & Control	Affiliate	Pediatrics | Surgery | School of Medicine | Children's Hospital Colorado
Sabaawy, Hatim	Professor	Developmental Therapeutics	Full	Medicine | Medical Oncology | School of Medicine | University of Colorado Denver
Santoso, Andrew	Assistant Professor	Developmental Therapeutics	Clinical	Radiation Oncology | (no division) | School of Medicine | University of Colorado Denver
Saviola, Anthony	Research Instructor	Developmental Therapeutics	Affiliate	Biochemistry & Molecular Genetics | School of Medicine | University of Colorado Denver
Taylor, Sarah	Assistant Professor	Tumor-Host Interactions	Affiliate	Pediatrics | Gastroenterology, Hepatology & Nutrition | School of Medicine | Children's Hospital Colorado
Veo, Bethany	Research Instructor	Molecular & Cellular Oncology	Affiliate	Pediatrics | Hematology / Oncology / BMT | School of Medicine | University of Colorado Denver
Wang, Shu-Yi	Professor	Cancer Prevention & Control	Affiliate	Adult and Senior Health | School of Nursing | University of Colorado Denver
Young, Christian	Assistant Professor	Tumor-Host Interactions	Mentored	Pathology | School of Medicine | University of Colorado Denver
Zhao, Ning	Assistant Professor	Molecular & Cellular Oncology	Mentored	Biochemistry & Molecular Genetics | School of Medicine | University of Colorado Denver
Zimmaro, Lauren	Assistant Professor	Cancer Prevention & Control	Mentored	Medicine | Medical Oncology | School of Medicine | University of Colorado Denver

Webb-Waring Center

Webb-Waring Center (WW) conducts basic and translational investigations focusing on inflammation and immunologic mechanisms that contribute to health and disease. This unifying focus fits well the stated mission of the WW which is "…to conduct and teach innovative biomedical research that improves understanding, treatment and prevention of diseases worldwide."

Led by **John E. Repine, MD,** the Waring Professor of Medicine, Pediatrics, and Surgery, WW's integrated research projects are gaining a better understanding of the causes, diagnosis, treatment, and prevention of significant disorders like the acute respiratory distress syndrome (ARDS), diabetes, multiple sclerosis, atherosclerosis, traumatic brain injury, fatty liver disease, the metabolic syndrome, macular degeneration, and the metabolic syndrome. Many of these efforts are also directed to learning about the importance and finding ways to combat the effect of aging on health and disease progression.

WW's research endeavors are concentrating on developing translational discoveries that have more immediate application to human health care. This orientation has led to patenting and developing several innovations by Repine that are being supported by the Knoebel and Bonfils-Stanton Foundations. David Wagner, PhD, has secured competitive grants from the NIH SBIR and the Gates Grubstake programs to advance new technologies that deal with treating and preventing diabetes, multiple sclerosis, and other autoimmune disorders.

WW has highly competitive training programs for undergraduate and medical students who are interested and want to gain training and experience in biomedical research. The WW Colorado Undergraduate Summer Program (CUSP), founded and directed by Repine, has become nationally prominent. Usually, more than 100 exceptional undergraduate students from universities nationwide apply to the annual CUSP summer program. Following a highly competitive selection process, about 20 interns—half of them meeting diversity designations—are selected from Princeton University, University of Notre Dame, University of California San Diego, Stanford University, Williams College, Baylor University, University of Denver, University of Colorado, University of Oregon, Colorado State University, and other colleges. CUSP is supported by Repine's five-year undergraduate diversity training grant from the NIH, the North Foundation, endowments established by Brian Fitzgerald, some of the colleges, and generous donors. In addition, about 10 emerging second-year Colorado medical students from diverse backgrounds are supported by the Department of Medicine DREAM Program, led by Repine. They also participate in a WW summer research training program. At the end of the summer, all students present research in a formal poster session.

https://medschool.cuanschutz.edu/webb-waring-center

Vice Chancellor for Health Affairs

Center for Bioethics and Humanities

The University of Colorado's Center for Bioethics and Humanities (CBH) offers ethics, humanities, arts, and health law programs that are integral to academic life and work across CU Anschutz and that enrich university and community-based programs across all four CU campuses and around the state.

Education and training: CBH faculty are involved in teaching learners in all professional schools and allied health programs at CU Anschutz and in undergraduate and graduate programs on the Denver, Boulder, and Colorado Springs campuses.

Clinical service: the clinical ethics consultation programs of the two campus hospitals are integral aspects of care for patients seen on our campus and provide critical support to affiliated hospitals and clinics across the state.

Research: CBH researchers focus on conducting world-class empirical research on topics at the intersection of health policy and bioethics including but not limited to medical aid in dying, disability, AI ethics, stakeholder engagement in research, real-world evidence generation, mass drug administration, college sports medicine, and conflicts of interest in medicine and research.

Outreach: CBH creates bioethics and health humanities programming that extends well beyond the university to engage health care professionals and citizens locally, regionally, and nationwide, including lectures, seminars, case studies, and discussions.

Matthew Wynia, MD, MPH, FACP, has been director of the center since July 2015. Wynia is a national leader in health care ethics, having served as the head of the Institute for Ethics at the American Medical Association, president of the American Society for Bioethics and Humanities, Chair of the Ethics Section of the American Public Health Association and chair of the Ethics Committee at the Society for General Internal Medicine, among other elected and appointed positions. He is an elected Fellow of the Hastings Center and serves on the organization's Fellows Council. He is also recognized for his work in patient safety and quality after developing the AMA's Center for Patient Safety and he has served on National Academy of Sciences, Engineering and Medicine groups addressing team-based care, transdisciplinary professionalism, catastrophic disaster response, the use of public health methods in countering violent extremism, evidence-based practices in public health emergency response, improving medical supply chain resiliency, and best practices for assessing morbidity and mortality in disasters. In 2021, he was appointed to the NASEM Board on Health Sciences Policy. Wynia's training is in internal medicine, infectious diseases, public health, and health services research. He is a professor in the Department of Medicine at the CU School of Medicine with a secondary appointment in the Department of Health Systems Management and Policy in the Colorado School of Public Health.

The Center's Arts and Humanities in Healthcare Program supported and launched three art exhibits and a series of events in the Fulginiti Pavilion and its Art Gallery in 2022-2023: *One, One Thousand: Photographs by Debe Arlook*; *Every One is Unique: Photographs by Jason Persoff, MD*, and we began the *Testimony* series, highlighting the use of arts, music, and the humanities in advocating for children and families in migration through partnerships with attorneys, healthcare professionals, artists, and other professionals. This series includes an exhibit, *Art as Advocacy*, and a mural, *Fly to Heal*. In the next year, it will feature a major symposium and the world-premiere of *Soul Echoes*, a vocal drama choreographed for dance and scored for string quartet and two voices.

The program published the 16th edition of *The Human Touch*, our annual anthology of poetry, prose, visual arts, photography, music, and videos showcasing the extraordinary talents of students, staff, faculty, alumni, and friends of CU Anschutz. This publication is supported by a generous gift from Jeff Hill, MD, a School of Medicine alumnus, and his spouse, Molly Hill. Editors-in-Chief: Allison Dubner, PhD candidate, Integrated Physiology Program, and Caroline Smith, Class of 2025, School of Medicine led the 16th edition.

The program's Music and Medicine Initiative had a productive year, with several live performances by the CU Anschutz Orchestra and the Anschutz Campus Choir.

The program hosted three author talks hosted by Mark Kissler, MD, MS, in partnership with CU Department of Hospital Medicine. On April 3, 2023, Cindy Weinstein, PhD, the Eli and Edythe Broad Professor of English at the California Institute of Technology discussed her book, *Finding the Right Words*, which reflects upon Weinstein's father's experience with early-onset Alzheimer's. On May 4, 2023, Ricardo Nuila, MD, associate professor of medicine, medical ethics and health policy at Baylor discussed his debut book, *The People's Hospital*, which follows the lives of five uninsured Houstonians as their struggle for survival leads them to Ben Taub Hospital where insurance comes second to genuine care. On May 23, 2023, award-winning author Patrice Gopo shared her journey toward belonging in a conversation about the ways writing can contribute to advocacy, reflection, and care, through her book, *All the Colors We Will See*.

In addition, the Center co-hosted a lecture series with the Colorado Resiliency Arts Lab (CORAL) featuring Heather Stuckey, DEd, from Penn State who presented, *Here Comes the Sun: How Research Can Illuminate the Patient Experience of Art and Well-Being*, Brittany Harker Martin, PhD, associate professor at University of Calgary, who presented, *Learning to Let Go: How Art Can Help Regulate Healthy Mental States*, and Gayla Elliott, MA, ATR, CBIS, art therapy program manager at the Marcus Institute for Brain Health, who presented, *Art Therapy for Brain-Injured Military Veterans and First Responders: An Essential Component of Interdisciplinary Care*.

The center's education and training team has been led by Therese Jones, PhD, since its inception in 2009. Jones left the university to pursue a career in the visual arts in 2022, and Daniel Goldberg, JD, PhD, was named the director for education and training for the center in 2023. He is now leading our graduate certificate program and is a co-lead for ethics content for the new Trek Curriculum for the School of Medicine. He is also the associate director for Mentored Scholarly Activity (MSA) in the Bioethics, Arts, Humanities and Education domain. He maintains an active research agenda in public health ethics, law/policy, and the history of medicine, and was the 2015-2016 Helfand Fellow at the New York Academy of Medicine.

The center's clinical team is led by Jackie Glover, PhD, HEC-C, who is a professor in the Department of Pediatrics and the center's director of clinical ethics. She serves as a lead ethics consultant for both the University of Colorado Hospital (UCH) and Children's Hospital Colorado and helps create shared educational, outreach, and research programs across the two hospitals and throughout their respective hospital networks. Other leaders of the center's clinical ethics work include Karen Jones, MS, RN, HEC-C, who is the clinical ethics program manager at Children's Hospital Colorado, co-chair of the Ethics Committee, and director of the hospital's Ethics Liaisons. Brian Jackson, MD, MA, HEC-C, is a critical care physician, co-chair of the Children's Hospital Colorado ethics committee, and medical director for the ethics consultation service. Jackson was also a member of the question bank writing committee for the newly developed ethics consultation certification test of the American Society for Bioethics and Humanities. Curtis R. Coughlin II, PhD, MS, MBE, HEC-C, is a trained genetic counselor and basic science and ethics researcher who serves as a lead ethics consultant at Children's Hospital Colorado. Kristin Furfari, MD, is a hospitalist physician and a clinical ethics lead consultant at UCH and she and Glover serve as interim co-medical directors of the ethics consultation service. Furfari also is the co-lead for the Health and Society Pillar in the new Trek Curriculum for the School of Medicine. Anne Dondapati-Allen, MDiv, PhD, HEC-C, is a lead consultant in the ethics consultation service at UCH. She is staff chaplain and does extensive work with staff resiliency. She is leading the moral resiliency ambassador program for the ethics program. Jeffrey Horowitz, LCSW, is a social worker serving the entire hospital and an ethics consult lead. Horowitz developed a process and training program for proxy appointments for the social work department. He also is developing ethics training materials for the ethics ambassadors and the ethics consult team trainees. Gianna Morales is the IBD project manager and supervisor and the 5th ethics lead at UCH. She is completing her Masters Degree at CU Denver in Health Humanities after finishing the center's Graduate Certificate in Health Humanities and Ethics.

Highlights for the clinical team in 2022-23 include Brian Jackson being named medical director of the CHCO ethics program and Karen Jones being named the ethics program manager. The CHCO ethics program started Pediatric Ethics Grand Rounds both in person and virtually. It is well-attended and a good resource for the pediatric residents, covering topics such as non-beneficial interventions, moral distress, taking care of adults in a pediatric hospital, taking care of patients with anorexia, open notes, and ableism in health care. Meanwhile, Ethics Grand Rounds at UCH are co-sponsored by UCHealth and the Center. The 2022-2023 series addressed topics such as medical aid in dying, open notes, assessing capacity for discharge and ethical issues in Alzheimer's research and treatment. The center has the distinction of having five out of our eight ethics consultant leads achieve the Healthcare

Ethics Consultant Certification (HEC-C) from the American Society for Bioethics and Humanities. Two other clinical ethics faculty have also achieved HEC-C for a total of seven HEC-C certified faculty.

The CBH Research Team is led by Eric G. Campbell, PhD, who is a professor of medicine and director of research at CBH. He joined the faculty of CU in April 2018. As director of research, he is responsible for building the research mission of CBH. This includes hiring new faculty and research staff, fostering collaborations to facilitate research, creating a postdoctoral program for empirical researchers in bioethics, launching pilot grant programs, and creating a culture of research excellence in CBH. He maintains an active research program focused on empirical bioethics research at the intersection of health policy and bioethics. Matthew DeCamp, MD, PhD, is a practicing general internist, health services researcher, and philosopher. He employs both empirical and con-

ceptual methods to identify and solve cutting-edge problems. Special emphases of his research include engaging patients in health care organizational decision-making, ethical issues in the use of social media, big data, artificial intelligence, and global health with a focus on short-term global health ethics. He is an award-winning teacher and mentor and has more than a decade of service on Institutional Review Boards. Christine Baugh, PhD, MPH, conducts interdisciplinary research at the intersection of health policy, sport, and ethics. Much of her work has focused on the acute and chronic health implications of repetitive brain injury from sport, and the resultant individual, institutional, policy, and ethical considerations. She is the author of more than 50 peer-reviewed articles and her work has been featured by leading media outlets including the New York Times, Washington Post, ESPN, and Sports Illustrated. She has won numerous awards for her teaching and research. In 2022, she was chosen to deliver the Early Stage Investigator Lecture by the Office of Disease Prevention at the National Institutes of Health. This award recognizes early-career scientists who are poised to become future national leaders in prevention research. Lisa Bero, PhD, is internationally recognized for her work on evidence synthesis, bias, conflicts of interest, and use of evidence in decisions. She joined our research team as chief scientist in July 2020. She has developed and validated qualitative and quantitative methods for assessing bias in the design, conduct, and dissemination of research on pharmaceuticals, as well as tobacco, food, and chemicals. She has pioneered the utilization of internal industry documents and transparency databases to understand corporate tactics and motives for influencing research

evidence. Megan Morris, PhD, MPH, CCC-SLP, is an associate professor in the Division of General Internal Medicine in the Department of Medicine. She is a leading expert on the documentation of patients' disability status in the electronic health record and health care disparities experienced by patients with communication disabilities. Morris is the founder and director of the Disability Equity Collaborative (DEC) which supports individuals, health care organizations, policy makers, advocates, researchers, and professional organizations working to address health disparities experienced by patients with all types of disabilities. In 2022-23, Lauren H. Nicholas, PhD, MPP, joined the research faculty of the center. She is a health economist whose research focuses on the role of public policy in improving health and healthcare quality for the elderly. Her current research combines survey, administrative, and clinical data to study the interaction between health care utilization and economic outcomes. Her work uses clinical and econometric approaches to answer questions in medical and health economics, particularly for dementia, surgery, and end-of-life care. Her research has been recognized with prestigious awards including the National Academy of Social Insurance John Heinz Dissertation Award, the Academy Health Article-of-the-Year Award, and the Healthcare Cost and Utilization Project (HCUP) Most Outstanding Article Award. She is an associate professor in the Division of Geriatrics, and she has a secondary appointment in the CU Denver Department of Economics.

Highlights for the 2022-23 academic year for the research team include:

- Wrote and submitted 7 research proposals with 4 awarded, 2 of which were applied for in FY 2022.
- The total research portfolio at CBH from 2018 to current is $29,648,116.
- Authored more than 70 articles based on original empirical research.
- Continued to build an extensive network of research collaborations at CU and around the country.
- Hired the first CBH post-doctoral fellow (Mika Hamer, PhD, MPH) and two additional professional research assistants.
- Launched Research Rounds series to highlight groundbreaking empirical research in bioethics. 2022-2023 speakers included Mildred Cho, PhD, on healthcare software developer bias in AI, Sunita Sah, MD, PhD, on conflicts of interest, and Holly Fernandez Lynch, JD, on investigational oncology drugs.

The CBH maintains an Academic Leadership Council, with one representative from each of the health professional schools and college on the CU Anschutz Medical Campus appointed at 0.2 FTE to help lead CBH programs. These individuals serve a liaison role for their respective programs, ensuring the relevance and reach of CBH activities across all campus programs, and they lead CBH initiatives in their areas of interest and expertise. 2022-23 members of the CBH Academic Leadership Council were Catherine Campisi, MSN, RN, PMHNP-BC (College of Nursing), Inge Wefes, PhD (Graduate School), Catherine Flaitz, DDS, MS (School of Dental Medicine), Lisa Bero, PhD (Colorado School of Public Health), Brett McQueen, PhD (Skaggs School Pharmacy and Pharmaceutical Sciences), and Mark Kissler, MD, MS (School of Medicine).

The Center's Outreach and Engagement Team, led by Meleah Himber, MEd, produces programs to serve and engage key local, state, and national communities. In early 2023, Lisa Culhane, MLS, joined the Center's outreach team as a senior external relations professional. Examples of outreach and engagement programs include the following:

- 2023 marked year two of the *Helen Morris American Jewish Experience in Medicine Program*, funded by University of Colorado School of Medicine alumna Helen Morris, MD '56. The program creates awareness of the history of Jewish people in the health sciences, illuminates contemporary challenges, and encourages mutual understanding in a multicultural society. The 2022-2023 season brought two new programs on Jewish bioethics and kicked off *Unexpected Insights: A Conversation Series with Jewish Women in Medicine* with *Resilience & Reflections: A Conversation with Lilly Marks*, in June 2023. The Unexpected Insights series will continue in AY 23-34. The combined events received over 500 RSVPs.
- Each year from 2016-2023, the center collaborated with The Aspen Center for Social Values, the American Association for Physician Leadership, the Colorado Health Institute, and other organizations to produce the Aspen Ethical Leadership Program. This executive retreat brings together leaders from hospitals, health plans, and other health care organizations for three days of discussions on critical ethical and moral dilemmas confronting health care leaders. In 2022-2023, the program implemented an advanced leadership program for leaders from the American Society of Clinical Oncology (ASCO) with two-

day intensive workshops in December 2022 and April 2023.

- In 2022-2023, center faculty addressed over a dozen media inquiries regarding topics such as abortion laws, the Sackler family, conflicts of interest, fake news, transgender children, force feeding, environmental pollution and public health, and youth sports for the *New York Times, Washington Post, The Nation*, and others.
- The center continued its decade-long partnership with the Colorado Healthcare Ethics Forum (CHEF) to sponsor an annual two-day clinical ethics education program for area clinicians and ethics committee members. The 2023 program explored the theme *Healthcare Professionals: Moral Distress, Burnout, and Solutions.*
- In spring of 2023, CBH held the annual Holocaust Genocide and Contemporary Bioethics program exploring the involvement of health professionals in the Holocaust and other genocides. The program takes place annually in April during the Days of Remembrance and is supported by the William S. Silvers endowment in collaboration with many local philanthropic and educational organizations, an expansion of a program originally created in 2008 and hosted by the center since 2016. The 2023 program explored the theme of *The Legacy of the Holocaust for Medicine and War Crimes Today* with keynote Philippe Sands. Professor Sands is a prominent international lawyer, Queen's Counsel, and author of award-winning author of book, *East West Street: On the Origins of Genocide and Crimes against Humanity* (2016). It reached over 200 attendees virtually and in person at CU Anschutz and CU Boulder. In addition, the center continued its tradition of an annual International Holocaust Remembrance Day lecture and panel discussion on January 27, 2023, which attracted 250 viewers locally and nationally.
- In partnership with the Colorado School of Public Health's Center for Health, Work & Environment (CHWE), in 2022-2023, the center continued the *Ethics and the Future of Work* webinar series discussing issues at the intersection of bioethics and occupational health, attracting over 250 online attendees. Topics included hybrid work and artificial intelligence.

Center for Interprofessional Practice and Education

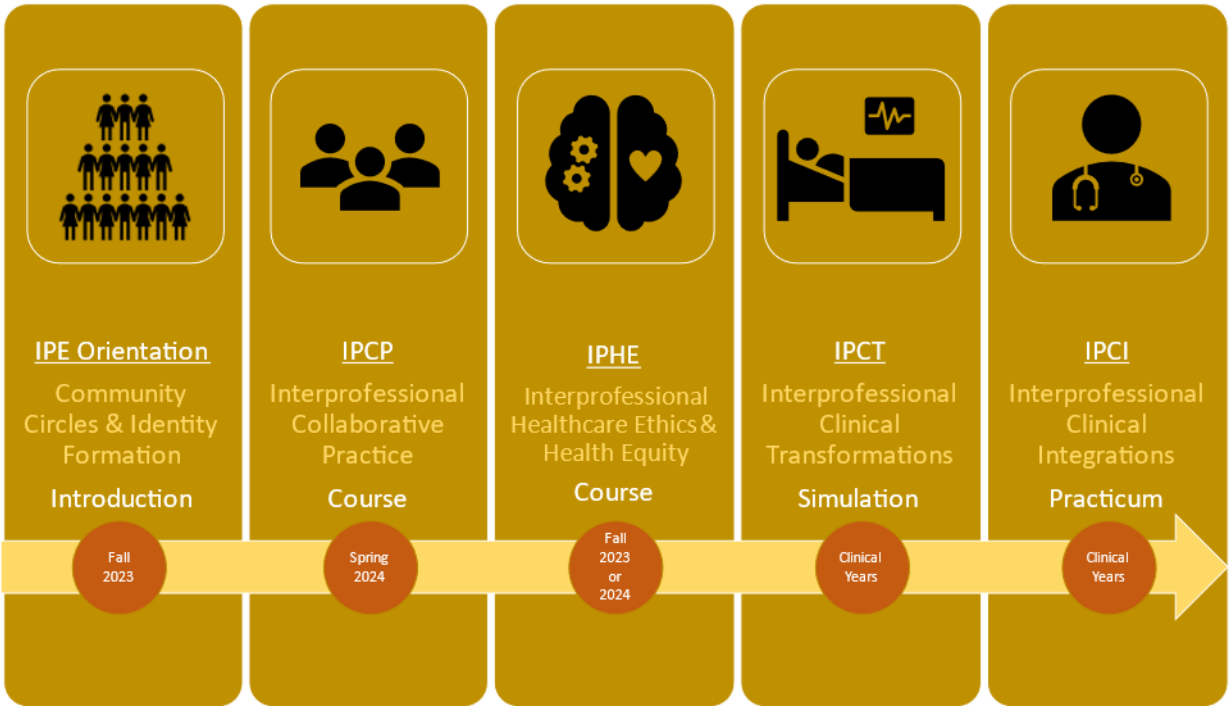
As the complexity of health care has grown, the demand for new, crosscutting interprofessional competencies from health care professionals has become increasingly recognized. The University of Colorado Anschutz Medical Campus is distinguished nationally for its investment, commitment, and innovation in interprofessional education.

Vision: Transform health professionals and health care through nationally and internationally recognized interprofessional education and practice.
Mission: Prepare health professionals for interprofessional, collaborative practice through innovative education and scholarship.

Overview: The CU Center for Interprofessional Practice and Education (CU CIPE) develops, administers, and evaluates the longitudinal interprofessional education curriculum for all health professions students on the Anschutz Medical Campus. The program brings students from health professions programs on our campus together to learn and practice skills during their preclinical and clinical training. Our curriculum consists of several components: early community building and exploratory opportunities, interactive team learning in classroom settings, simulation experiences, and advanced practicum experiences at clinical sites. After participating in our program as part of their health professions training, our graduates will be competent to participate as members of a collaborative interprofessional workforce.

Background: From 1995 to 2013, the Anschutz Medical Campus ran an interprofessional ethics course, bringing together students from all the health professions. This effort was expanded to include competencies in teamwork and collaboration from 2010 to 2013 through Josiah Macy Jr. Foundation and Colorado Health Foundation funding. At the termination of the grant, the program was reorganized and led by founding Interprofessional Education Director Mark Earnest, MD, PhD, and a council with designees from each degree-granting school or program on campus. Members of the inaugural council in 2014 included: Wendy Madigosky MD, MSPH (School of Medicine), Kari Franson PharmD, PhD (Skaggs School of Pharmacy and Pharmaceutical Sciences), Diane Brunson RDH, MPH (School of Dental Medicine), Amy Nordon-Craft PT, DSc (Physical Therapy Program), Amy Barton PhD, RN, FAAN (College of Nursing), Darcy Solanyk MS, PA-C (Physician Assistant Program), and Jackie Glover, PhD (Center for Bioethics and Humanities).

Interprofessional Education Program Components



Leadership

Director Suzanne Brandenburg, MD, School of Medicine

IPE Assistant Directors
Amy Akerman, MS, PA-C, Physician Assistant Program
Tina Brock, EdD, Skaggs School of Pharmacy and Pharmaceutical Sciences
Krista Estes, DNP, FNP-BC, College of Nursing
Kimberly Indovina, MD School of Medicine
Amy Nordon-Craft, PT, DSc, Physical Therapy Program
Lindsey Yates, DDS, MPH, School of Dental Medicine

IPE Program Representatives from Bioethics and Humanities
Cate Campisi, MSN, RN, PMHNP-BC
Interprofessional Collaborative Practice (IPCP) Course Director
Amy Nordon-Craft, PT, DSc, Physical Therapy Program

Interprofessional Healthcare Ethics and Health Equity (IPHE) Course Director
Cate Campisi, MSN, RN, PMHNP-BC, College of Nursing

Interprofessional Clinical Transformations (IPCT) – IPE Simulation Director
Elshimaa Basha, MPH, CHSE, Center for Advancing Professional Excellence

Interprofessional Assessment, Outcomes, and Evaluation Lead
Elshimaa Basha, MPH, CHSE, Center for Advancing Professional Excellence

Interprofessional Instructional Designer
Michelle Colarelli, MA, School of Medicine

Program Administrator
Reesie Roland

The CU CIPE Education Program consists of curricular components as pictured for the upcoming academic year in the graphic above.

The 2022 orientation focused on community building and campus partnerships. Students were divided into over 100 small groups, their "IPE Teams," and participated in a community circles activity. Community circles are a tool for building an inclusive environment where all are given the opportunity to thrive. The history of circles is traced to ancient Indigenous practice and many First Nation peoples continue with this practice today. Circles have been used in schools, academic institutions, and the justice system to mitigate harm and create a sense of inclusion and belonging. In alignment with IPE orientation, a theme is chosen annually, and co-curricular activities including the One Book One Campus Program are highlighted as voluntary opportunities for students to participate in shared interests across health professions. The 2022-23 theme emphasized community, allyship and being an upstander.

Interprofessional Collaborative Practice (IPCP) and Interprofessional Healthcare Ethics & Health Equity (IPHE) are two introductory courses which were launched in 2021-22 and refined in 2022-23 as part of an ongoing CU CIPE curriculum reform initiative.

As part of their Interprofessional Clinical Transformations (CT) experience, students spend a half day in the Center for Advancing Professional Excellence (CAPE) simulation center. Students practice teamwork and collaboration skills, identify, and discuss ethical and patient safety issues, and engage patients and family members to deliver patient-centered care during 4 hours of video-monitored interprofessional team simulations. Scenarios include acute care, outpatient, and home visit settings. Due to the COVID-19 pandemic, an online option was developed and continues to provide increased flexibility for our busy and often geographically dispersed learners.

The overall goal of Interprofessional Clinical Integrations (IPCI) is to provide relevant immersion experiences in partnership with our health professions programs' existing clinical practicums focused on learning and caring for patients in interprofessional teams. These experiences occur in multiple settings including community-based organizations, hospitals, medical clinics, dental clinics,

home visits, transitions in care, palliative care, and others. CU CIPE supports learner assessment, faculty development, and site enhancement during advanced clinical practicums where students interact with patients and interprofessional colleagues in authentic health care settings later in their training. The aim for this portion of the curriculum is to provide a mechanism by which health profession students may demonstrate their collaborative interprofessional team skills in a clinical environment. CU CIPE is working to achieve campus-wide engagement through standardized student assessment and self-assessment tools aligned with the Interprofessional Education Collaborate (IPEC) competencies. IPEC is informed and endorsed by a Health Professions Collaborative that includes the Accreditation Council for Pharmacy Education (ACPE), Commission on Collegiate Nursing Education (CCNE), Commission on Dental Accreditation (CODA), Commission on Osteopathic College Accreditation (COCA), Council on Education for Public Health (CEPH), and Liaison Committee for Medical Education (LCME).

Faculty Involvement
Dozens of full-time and numerous volunteer faculty members contribute to building and implementing these innovative programs, demonstrating the deep commitment of Anschutz Medical Campus to prepare a health care workforce ready to collaborate, practice, and lead in an increasingly complex health care environment.

Key Program Accomplishments 2022-2023
The CU Center for Interprofessional Practice and Education reached over 2,000 students in 2022-23 and focused on sustaining engagement while maintaining flexibility.

One Book One Campus is entering its seventh year. The program is organized CU CIPE and partners with several entities on the Anschutz Campus, ranging from the Strauss Health Sciences Library to the Center for Bioethics and Humanities to the Office of Diversity, Equity, Inclusion and Community Engagement. One Book One Campus is designed to bring students and campus community members together across professions around health care related topics of broad interest. The 2022-23 book was *Tell Me Who You Are: Sharing Our Stories of Race, Culture, & Identity* by Winona Guo and Priya Vulchi. This selection connected well with the IPE theme emphasizing community, allyship, and being an upstander. The theme from 2021-22 was inclusivity, understanding, and acceptance of LGBTQ+ patients and people. The book was *Redefining Realness: My Path to Womanhood, Identity, Love and So Much More* by Janet Mock.

CU CIPE Curricular Redesign is progressing. The two new introductory courses - IPCP and IPHE were successfully launched during the 2021-22 academic year and refined in 2022-23 to fit a majority in-person educational environment while retaining many elements of a HyFlex model. This is a student-centered model of class delivery that integrates in-class instruction, online synchronous sessions, or asynchronous content delivery. This approach provided more flexibility for students and instructors, and has allowed us to reach distance learners and students with conflicting educational demands.

For additional information on the CU Center for Interprofessional Practice and Education (CU CIPE), see our website: https://www.cuanschutz.edu/centers/IPE

Colorado Area Health Education Center Program

Mission: We work towards ensuring health equity in Colorado. We increase the diversity and distribution of the healthcare workforce to address healthcare disparities in this state. We support practice transformation throughout Colorado to ensure high-quality healthcare delivery for everyone. We serve as the link between Coloradans, state resources, and the resources of Anschutz Medical Campus to help healthy people thrive in healthy communities.

Vision: We envision every person in Colorado having the opportunity to attain their full and best health potential.
Colorado AHEC (COAHEC) is jointly funded by a federal grant from the Health Resources and Services Administration (HRSA) and by the Vice Chancellor for Health Affairs with the University of Colorado, Anschutz Medical Campus. COAHEC is currently celebrating its 46th year of continuous operation.

COAHEC received new five-year funding from HRSA in 2022. The current HRSA 5-year cycle (2022-2027) requires COAHEC to address the following triple aim goals:

- ***Diversity*****:** Increase the potential for secondary, college, and health profession students from underrepresented populations, educationally disadvantaged, and rural backgrounds to successfully pursue a health profession career with an emphasis in public health;

- ***Distribution****:* Increase the potential for health profession students in Medicine, dentistry, nursing, pharmacy, public health, and allied health to practice in a rural or urban underserved community by immersing them in rural or underserved community experiences through Community-Based Education Training Programs, Field Placements, and Interprofessional Education and Training; provide access to evidence-based health information, accredited high quality continuing education programs and support for health professionals serving in rural and medically underserved areas in Colorado; and

- ***Practice Transformation****:* Facilitate and support practice transformation of Colorado's healthcare system by promoting a patient-centered approach, addressing social determinants of health through a team-based, data-centered approach with a focus on improving quality and community health outcomes in rural and medically underserved areas.

The AHEC system in Colorado is organized into six separate regional centers overseen by the COAHEC Program office on the Anschutz Medical Campus (AMC). Our six regions are: Centennial, Front Range, San Luis Valley, Southeastern Colorado, Southwestern Colorado, and Western Colorado. The six regional AHEC offices work under the grant directives in collaboration with the COAHEC Program Office, which provides governance and guidance in meeting all the grant and program deliverables. As well, the COAHEC Program Office partners with the School of Medicine, including the Physical Therapy and Child Health Associate/Physician Assistant program, the School of Dental Medicine, the College of Nursing, and Skaggs School of Pharmacy and Pharmaceutical Sciences, to meet the program's goals under the auspices of the HRSA grant.

Colorado AHEC Program Office Leadership:

Colorado Area Health Education Center (COAHEC) Program Office
https://www.cuanschutz.edu/centers/coahec/about-us

Josina Romero O'Connell, MD
Director, Colorado Area Health Education Center
Family Medicine Department Faculty/CU SOM Rural Program Faculty
Assistant Professor AMC
Practicing Clinician Denver Health Montbello Clinic
Office of the Vice-Chancellor of Health Affairs

Ken Tadikonda, MBA
Business Services Program Manager

Samantha Hanson
Information Technology Coordinator

MariaFrancisca Zabalaga-Haberman, MHA
Program Manager and Education Specialist

Elizabeth Jungkindman, MHA
Grants and Programs Evaluator

Patti Jo Wagner
Senior Administrative and Program Specialist

Joseph Martinez
Administrative Assistant

Marcos Maldonado
Business Services Coordinator

AHEC Accomplishment

This year, we transitioned to a hybrid model of in-person work, with the option of working from home two days a week, while keeping our office fully staffed. We have resumed our programs in-person, online and hybrid. In-person programs include HOPE Institute, the National Western Stock Show Health Screenings, and the CADAVERS high school program. Online programs include The Advisor's Day, and the HOPE program while the MiniMed is being conducted in a hybrid format.

COAHEC Highlights

- Provided funding for the six regional AHEC offices across Colorado to run programming. This programming reached participants across Colorado with over 6,813 contact hours and nearly 138,000 Coloradans in medically underserved and rural communities, which is 200% of pre-pandemic numbers.
- Provided 15,350 nights of housing for health professions students serving clinical rotations away from the Anschutz Medical Campus.
- Advisor's Day was held virtually on June 15, 2023. We had 92 registrants attend the one-day event.
- Participated in National AHEC Organization (NAO) committees, including the Program Office Constituency Group, Committee on Outcomes and Evaluation, Pipeline Committee, and AHEC Scholars Committee.
- Attended the 2023 NAO Biennial Conference in Salt lake city, Utah
- Continued to offer virtual sessions through our 2021 Networking, Education, And Research (NEAR) Conference "Unmasked in a Masked World" and "Research What's New in Colorado?" Across all regions, COAHEC offered 27 continuing education credits and 375 health professionals attended one or more of our continuing education sessions.
- We enrolled our largest cohort of AHEC Scholars, an interdisciplinary education and training program with a curriculum that trains individuals seeking terminal health care certifications to use those certifications in service to rural and/or underserved populations, reaching 299 students across many disciplines and from each of the 6 AHEC regions. Specifically, AHEC Scholars came from these disciplines: 6 MD/DO, 16 PharmD, 3 PA, 10 CHW, 74 RN/BSN, 209 CNA/ MA, 9 MPH/BPH, and three other allied health professions.
- Provided training related to the Opioid Abuse Disorder (OUD) epidemic in Colorado by enrolling 530 individuals to participate in our curriculum modules this year alone. The free modules train individuals working on the front lines of the opioid crisis by offering free, online, self-paced learning modules. Family members and friends of trainees who are struggling with an OUD are also encouraged to participate in the training. Trainees gain knowledge in treatment, recovery, harm reduction, and how to conduct opioid abuse educational outreach programs in their communities. In August of 2023, we took down the course to review the modules and update the data and make sure the modules provide evidence based medical education.
- Our Medicina y Urban-Rural Art Lessons en Salud (MURALS) program celebrated the opening of the new Library Innovation Center (LINK) building in Greely, Colorado, by the unveiling and ribbon ceremony of the mural completed by Frank Garza, and also by holding a community health screening at the LINK building where we completed 29 health screens during this event.
- Completed the second year of our Health Occupations Promoting Equity (HOPE) Program. HOPE is Colorado Area Health Education Center's (COAHEC) year-long high school pipeline program culminating in the weeklong HOPE Institute. This program is designed for high school sophomores and juniors from underrepresented in Medicine (URM) and rural backgrounds and who are interested in pursuing health care careers. The program attracted 202 students who participated in at least one of six sessions hosted by each of Colorado's six regional AHECs. Each of the regional Centers presents one ses-

sion with content especially relevant to their work in their region. Students will gather at each of the six regional Centers or other locations identified by these Centers to attend the sessions which will be conducted synchronously via Zoom. These sessions will prepare students for a week-long camp called HOPE Institute. Students who complete these sessions will receive preferential acceptance into HOPE Institute. HOPE Institute, was held from July 9th to 15th, 2023, ath the University of Colorado, Colorado Springs and the AMC. We are still consolidating and interpreting evaluation data but are pleased to report that of the 48 students who attended the institute %100 of the participants indicated that they would recommend the camp to a friend.

- Hosted 4 MiniMed sessions
- Had our Spring session of our new CADAVERS (COAHEC Anatomy and Discourse on Arts, Values, Ethics, and Respect in Science), providing an opportunity for high school students from all Colorado regions, specially URM students to explore Science in a lesson and hands-on lab experience that explores Anatomy, Arts, Medicine, Values, Ethics, and Respect in Science.

Colorado AHEC MURALS
Medicina y Urban-Rural Art Lessons en Salud

Our first mural on the San Luis Valley AHEC office building in Alamosa, CO by Bianca Maestas.

Colorado Center for Personalized Medicine

The Colorado Center for Personalized Medicine (CCPM) is a multi-institutional collaboration that links extensive electronic medical record data to “omics” information to promote the development of tools and knowledge in biomedical informatics to expand prognostic and diagnostic capacity using molecular diagnostics. The primary objective is to apply personalized medicine research, education, and clinical care across diseases to accelerate the development and application of individualized prevention, diagnosis, and treatment. These efforts serve the center’s overarching goal to integrate personalized medicine into routine health care to improve the lives of our patients. CCPM’s focus over the past year has been on continuing to advance research and education while delivering meaningful genetic results to more participants.

Improving Care

A key focus of this year was increasing the number and types of results that are used to guide the care that our participants receive at UCHealth. We’ve particularly focused on pharmacogenetic results this year. We have increased the number of participants with pharmacogenetic results available in the electronic health record by almost threefold, reaching over 18,000 participants with results available. More than 55,000 unique results are present in the UCHealth electronic health record, covering seven distinct genes.

These results are paired with clinical decision support tools for 30 medications, helping providers make the right decisions at the right time. Clinical decision support is provided by automated alerts, and over 3100 drug-gene interaction alerts have occurred in clinical practice, an almost sixfold increase from last year. UCHealth Today profiled one alert and described how it impacted the care of a UCHealth patient with cancer.

This year CCPM collected 28,000 specimens from new biobank participants, laying the groundwork for more results that will guide care in the years ahead. Collection processes expanded to include on-premises and at-home saliva collection. The CCPM biobank provides clinical genetic results to participants with ‘high impact pathogenic variants,’ i.e., genetic results that confer an increased risk for conditions such as cancer or cardiac disease for which there are actionable medical guidelines for care. More than 320 high impact pathogenic variants were reported to biobank participants in the 2022-2023 academic year. These results enabled these individuals to pursue related evaluations and potential medical intervention to reduce risk. Also, knowledge of these results enables biobank participants to inform their biological relatives of familial genetic risks so that whole families can consider genetic testing and health management options.

The impact of our programs on the care provided at UCHealth has continued to grow. We developed a clinical-first pilot for patients with GI cancers, with the goal of making pharmacogenomic testing prior to administration of high-risk chemotherapy standard of care at UCHealth.

Research

One of the core aims of the CCPM biobank is to develop, maintain, and make biospecimen and genetic data repositories available for research use. Currently, we have genome-wide data and associated health record data available for more than 70,000 Biobank participants and DNA for more than 100,000 individuals. In the past year, we have also improved the resources available to help researchers on campus utilize these resources. We have contributed to national pharmacogenomic clinical guidelines [1], studied the impact of our work on patients and providers [2, 3], and were invited to present our implementation work at national meetings [4] and NIH-funded consortia [5]. Further CCPM has contributed to large global consortium efforts including the Global Biobank Meta-Analysis and Covid-19 Host Genetics Initiatives and burgeoning efforts with the Biobank-Rare Variants (BRAVA) consortium where CCPM investigators sit on the steering committee and chair multiple initiatives. As the biobank transitions from a new study to a mature one, we have become a highly sought-out partner for global consortium efforts, including large awards from multiple institutes in the NIH.

Lee CR, Luzum JA, Sangkuhl K, et al. Clinical Pharmacogenetics Implementation Consortium Guideline for CYP2C19 Genotype and Clopidogrel Therapy: 2022 Update. Clin Pharmacol Ther. 2022 Nov;112(5):959-967. PMID: 35034351

Anderson HD, Thant TM, Kao DP, Crooks KR, Mendola ND, Aquilante CL. Pharmacogenetic testing among patients with depression in a US managed care population. Clin Transl Sci. 2022 Jul;15(7):1644-1653. PMID: 35385214

Kudron EL, Deininger KM, Aquilante CL. Are Graduate Medical Trainees Prepared for the Personalized Genomic Medicine Revolution? Trainee Perspectives at One Institution. J Pers Med. 2023 Jun 21;13(7):1025. PMID: 37511638

Martin JL, Swartz C, Trinkley KE, Kao DP, Aquilante CL. Designing Clinical Decision Support for a Preemptive Pharmacogenomics Program. Platform presentation at the Epic XGM Annual Conference, Verona, Wisconsin, May 2023.

Aquilante CL, Crooks KR, Kao DP. Preemptive Return of Clinical Pharmacogenomic Results from a Population Biobank. Implementing Genomics in Practice (IGNITE) Pragmatic Trials Network Steering Committee Meeting. Washington, D.C, May 2023.

Education

We have developed and launched a certificate program in personalized and genomic medicine. This online program is designed for current and future healthcare professionals, research professionals, and recent graduates who are interested in pursuing further studies in personalized medicine and genomics.

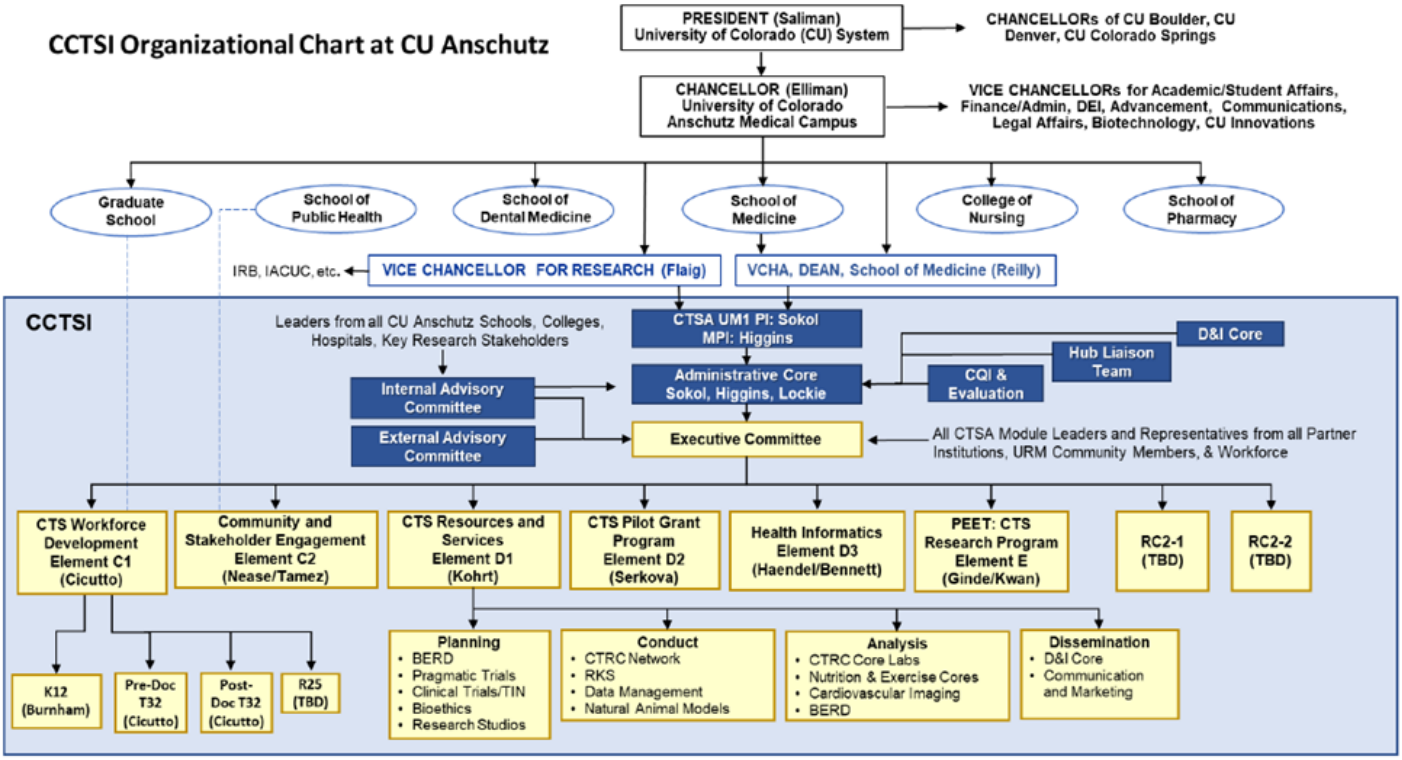
Center Website: https://medschool.cuanschutz.edu/ccpm

Colorado Clinical and Translational Sciences Institute

The Colorado Clinical and Translational Sciences Institute (CCTSI) is a partnership among University of Colorado Anschutz Medical Campus, University of Colorado Denver, University of Colorado Boulder, Colorado State University, five hospitals and multiple community organizations committed to translating discoveries into better, equitable public health and patient care for all. The CCTSI partner health care institutions include UCHealth University of Colorado Hospital, Children's Hospital Colorado, National Jewish Health, Denver Health and Hospitals, Rocky Mountain Regional Veterans Affairs Medical Center, and the private sector.

The CCTSI is a National Institutes of Health National Center for Advancing Translational Sciences (NIH/NCATS)-funded research institute located at CU Anschutz. It is part of the national consortium of more than 60 Clinical and Translational Science Awards (CTSA) institutional hubs throughout the United States, and is funded by one of the largest federal research grants awarded to the state of Colorado. Significant institutional support helps fund CCTSI programs that are not supported by the NCATS CTSA grant award.

The CCTSI was launched from its inaugural CTSA grant in 2008; NIH support was renewed in 2013 and 2018. The newest grant, funded in 2023, will extend the NCATS funding for seven years through 2030. This sustained funding has enabled the institute to transform clinical and translational research and its training enterprise across Colorado.



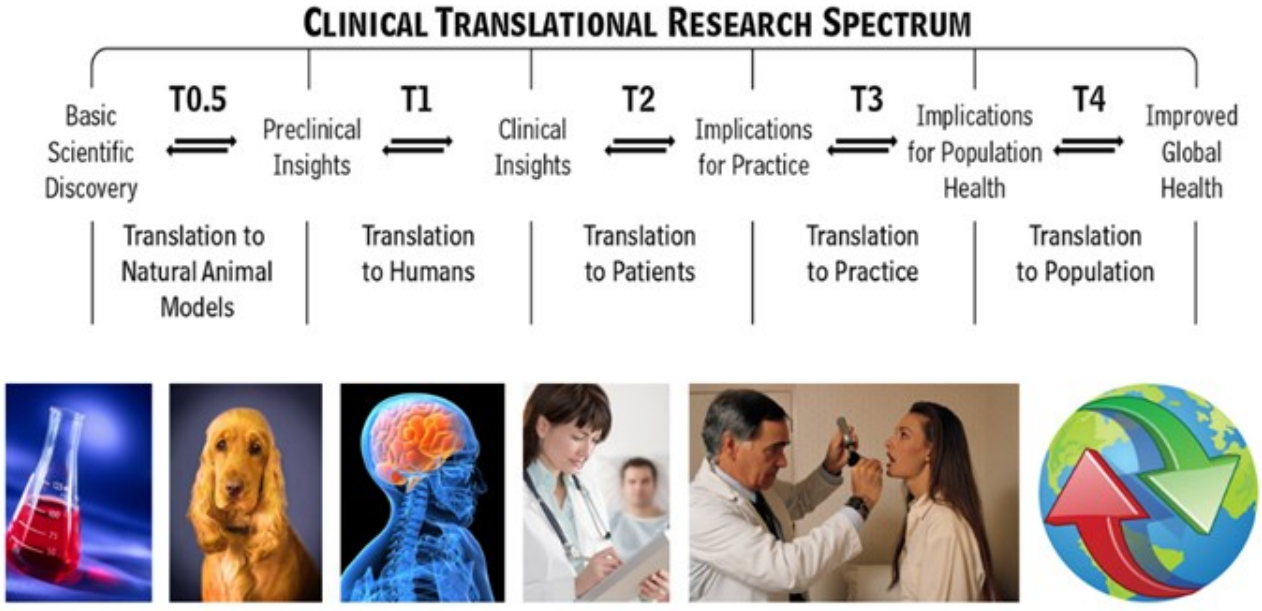
Through innovative programs and collaborations to advance clinical and translational science, the CCTSI facilitates the performance and dissemination of high impact research and the training of the next generation of clinical-translational researchers. We emphasize team science, reducing health disparities and being poised to respond to public health emergencies.
The Vision of the CCTSI is to accelerate and catalyze the translation of innovative science into improved, equitable health and patient care for all. We aspire to do this through six strategic goals.

The Vision of the CCTSI is to accelerate and catalyze the translation of innovative science into improved, equitable health and patient care for all. We aspire to do this through six strategic goals.

1: Advance clinical and translational science by developing, demonstrating, and disseminating innovative programs to improve the efficiency and impact of translation across the entire T0.5 to T4 spectrum.
2: Promote collaboration, team and data science and partnerships to accelerate clinical and translational research locally, regionally, and nationally.
3: Partner locally, regionally, and nationally with institutions, stakeholders, and communities to develop innovative research programs that address health inequities and disparities.
4: Develop operational efficiencies to increase the quality, safety, efficiency, effectiveness, and informativeness of clinical research.
5: Promote a safe and nimble research environment that can rapidly respond to urgent public health needs.
6: Develop and disseminate clinical and translational science training programs that educate and sustain a resilient, diverse team of clinical research professionals.

The CCTSI also receives considerable institutional support from CU Anschutz, CU Boulder, CSU, and its affiliated hospitals. The CCTSI has more than 7,500 individual members who benefit from its services, funding sources, training programs, and other resources. The CCTSI functions through 16 core programs, including: 1) Health Informatics, 2) Community Engagement and Health Equity, 3) Workforce Development, 4) Pre- and Post Doctoral T32 Training Programs, 5) K12 Institutional Career Development program, 6) Pilot Grants, 7) Regulatory Knowledge and Support, 8) Biostatistics, Epidemiology and Research Design, 9) Research Bioethics, 10) Natural Animal Models Core, 11) CTS Resources and Services, including the four Clinical Translational Research Centers (CTRCs), 12) Pragmatic EHR-embedded Trials resources, 13) Trial Innovation Network Hub Liaison Team, 14) Dissemination and Implementation Science resources, 15) Continuous Quality Improvement and Evaluation, and 16) Administrative resources.

Spectrum of Translational Research



Gates Institute

Gates Institute officially launched in 2023, the result of a partnership between the Gates Frontiers Fund and University of Colorado Anschutz Medical Campus, which together made a $200 million commitment to transform the Gates Center for Regenerative Medicine and the Gates Biomanufacturing Facility into a hub of investigation, discovery, and patient impact. The institute focuses on cellular and gene therapies (CGTs) and regenerative medicine, with the goal of more swiftly moving scientific discoveries from the lab to the clinic.

Terry Fry, MD, a pioneer of chimeric antigen receptor (CAR) T-cell research, stepped into the role of inaugural executive director of the institute, and Gates Center Director Dennis Roop, PhD, became the Institute's associate director.

Gates Institute brings together and supports researchers and clinicians to accelerate discoveries from the lab through clinical trials to novel therapies and cures. The institute works across the Anschutz Medical Campus and with many research collaborators, fostering research and clinical talent, regulatory and intellectual property expertise, commercial partners, and diverse funding. Our membership includes leading researchers from the Anschutz Medical Campus, CU Boulder, CU Denver, Colorado State University, Colorado School of Mines, National Jewish Health, and private industry.

MEMBERSHIP BENEFITS

Membership benefits include access to core labs, patent-pending cell-production platforms, the Gates Biomanufacturing Facility, regulatory and clinical trial support, business development and commercial guidance, and affiliation with undergraduate and graduate education programs.

Gates Institute subsidizes and provides discount access to six core facilities on the Anschutz Medical Campus to provide Gates members with cutting-edge equipment and technology. The core facilities are:

- Flow Cytometry Core
- Genomics Core
- Human Immune Monitoring Shared Resource
- Histology (Morphology and Phenotyping) Core
- Organoid Core
- Stem Cell Biobank and Disease Modeling Core

BIOMANUFACTURING

A pillar of Gates Institute, the state-of-the-art Gates Biomanufacturing Facility (GBF) is an FDA-compliant Good Manufacturing Practice (GMP) facility that translates innovative research discoveries into safe and effective cell therapy and biologics products for human clinical trials. Its 50-plus employees serve on- and off-campus researchers and external clients to deliver potentially lifesaving new therapies to patients. With teams dedicated to analytical development, quality control, and quality assurance, the GBF is continuously looking for new technologies and expanding onsite quality control capabilities. Most quality control tests are identified, designed, and phased appropriately onsite at the GBF.

The hybrid model of serving both internal and external clients has allowed the GBF to help more patients, expand its technical capabilities, and build its national reputation.

Milestones reached in collaboration with CU Anschutz Medical Campus:

- Manufactured cancer-fighting CAR T cells developed by CU School of Medicine faculty. Two molecules have been developed: a CAR T cell that targets CD19 and a true first-in-human CAR T that targets both CD19 and CD22 (CD19x22).
- The GBF provides the CAR T-cell product for four trials underway at CU Anschutz. The first three studies enrolled patients who had no other viable therapeutic options. The most recent study at UCHealth University of Colorado Hospital is enrolling patients with B-cell acute lymphoblastic leukemia earlier in the course of the disease.

The GBF has partnered with leading-edge pharmaceutical companies on the following projects:

- Manufactured the anti-Tau vaccine, AV-1980R, in collaboration with California-based Institute for Molecular Medicine (IMM) for phase 1 and phase 2 human clinical trials. This preventive vaccine could induce antibodies targeting aggregation of Tau in people who are at risk of Alzheimer's disease (AD) and slow the disease onset. The GBF also completed an engi-

neering run for Good Laboratory Practice (GLP) product for an animal toxicology study of the anti-beta-Amyloid recombinant vaccine, AV-1959R.

- Produced GLP material for a pharmacokinetic-pharmacodynamic (PK/PD) study for Ceria Therapeutics, Inc., a Colorado-based preclinical biotechnology company founded by Ken Liechty, MD, a pediatric surgeon at Children's Hospital Colorado. Ceria is working on a novel solution to target damaging forms of tissue inflammation that can impair recovery and even survival of patients suffering from common conditions, including acute lung infections, ulcerative colitis, and diabetic wounds.
- Produced GLP material for an animal toxicology study for Allander Biotechnologies, a Colorado-based start-up company founded by Xiao-Jing Wang, MD, professor adjoint in the Department of Pathology at CU Anschutz School of Medicine. Allander's mission is to fill the gap in "unmet medical need" in tissue regeneration using its proprietary biologics with regeneration and anti-inflammation activities with topical application.
- Manufactured clinical stage investigational "Natural Killer" cells for Nkarta Inc. for a phase 1 clinical trial in patients with acute myeloid leukemia or higher-risk myelodyspastic syndrome.

CLINICAL TRIALS

- Opened 2020 at UCHealth: Phase 1 study of feasibility and safety of UCD19 CAR T cells in adult patients with relapsed and/or refractory B-cell non-Hodgkin lymphoma (B-NHL); 10 patients enrolled.
- Opened 2021 at Children's Hospital Colorado: Phase 1/2 dose escalation and preliminary efficacy study of UCD19 CAR T cells in pediatric patients with relapsed and/or refractory B-cell acute lymphoblastic leukemia (B-ALL) and B-NHL; 7 patients enrolled.
- Opened 2022 at UCHealth: Phase 1/1b study of bispecific CD19x22 CAR T cells in adolescent and adult patients with relapsed and/or refractory B-NHL; 6 patients enrolled.
- Opened 2023 at UCHealth: Phase 1 safety and tolerability trial of CD19 CAR T cells in adult patients with B-cell acute lymphoblastic leukemia (B-ALL) with minimal residual disease positive at first complete remission; enrollment opened July 2023.

BUSINESS DEVELOPMENT AND COMMERCIALIZATION

The Gates Grubstake Fund is a joint program of Gates Institute and CU Innovations. Since its inception in 2014, the program has awarded nearly $10 million to scientists. The program, funded by private philanthropy, seeks to support translational development of promising CGT and regenerative medical research into patented, clinic-ready products for patients in need.

In 2022, Gates Grubstake Fund announced four awards of $350,000 to these researchers:

- Ganna Bilousova, PhD: Somatic Cell Rejuvenation for Skin Transplantation and Wound Healing
- Mi-Hyun Nam, PhD: Restoration of Vision in Glaucoma Through Cell Therapy
- Eric Kohler, MD, PhD: Adjunctive LAT-Activating Chimeric Antigen Receptor T cells (ALA-CART) Strengths
- Daniel Sherbenou, MD, PhD: Response Prediction for T Cell Engaging Bispecific Antibodies in Multiple Myeloma

The program awarded second-tranche awards to two previous recipients:

- Michael Verneris, MD: Multiomic Approach to Establish Mechanisms of Efficacy of Stem Cell-Derived Innate Lymphoid Cells in Gastrointestinal Tract Repair ($100,000)
- Eduardo Davila, PhD: Manufacturing of Genetically Engineered Tumor Infiltrating Lymphocyte (TIL) Therapy ($50,000)

Another commercialization program on which Gates Institute collaborates with CU Innovations is the Startup Toolbox, which provides microgrants to pay for regulatory support, market analysis, public relations management, and business development. Since its creation in 2018, it has guided the incorporation of three start-ups of Grubstake awardees: Ceria Therapeutics (Kenneth Liechty, MD); Validus Cellular Therapeutics (Steven Dow, DVM); and Perla Therapeutics (Traci Lyons, PhD).

In 2021, CU Innovations launched the Startup Toolbox campuswide, and has supported eight startups in 2023 alone.

Between the Gates Grubstake Fund and Startup Toolbox, 18 Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) and Colorado Advanced Industry Accelerator (AIA) Grants have been received with

subawards to the University, 10 pre-IND/IND/IDEs are in prep or filed, four clinical trials have started, and over $60 million has been received in follow-on funding.

EDUCATION AND OUTREACH

- **Undergraduate:** Twenty-five students participated in the Gates Summer Internship Program (GSIP) in 2023, the largest cohort in GSIP's nine-year history. The program places highly qualified undergraduate students in Gates members' labs to promote careers in cell and gene therapy and regenerative medicine. Since 2014, 185 student interns from 85 colleges and universities have been beneficiaries of the GSIP program, which combines lab work, seminars focused on science and medicine, workshops focused on ethics, communications and professional development, and extracurricular activities. Actuarial data shows most program participants going on to pursue academic or professional paths in science and medicine with at least 18 GSIP alumni working on the Anschutz Medical Campus as students or employees. Philanthropic funding enables Gates Institute to place interns in members' labs at no charge, providing a valuable boost to their research portfolios.

- **Graduate:** The institute continued to support the Graduate Program in Cell Biology, Stem Cells and Development (CSD) to help attract and train candidates in the regenerative medicine field.

Outreach

Gates Institute has participated in numerous events to broaden its reach, including these listed below:

- Presentations at the Transforming Healthcare Seminar event by Fry and Translational Science Lead Michael Verneris, MD.
- Guest appearance by Fry on the Anschutz 360 podcast.
- "From Concepts to Cures" webinar headlined by Fry and Gates COO Laura Borgelt, PharmD, MBA.

GRANTS AND PHILANTHROPY

- At year-end 2022, Gates Institute and its members had received over $21 million in reported peer-reviewed grant funding from the National Institutes of Health, the U.S. Department of Defense, and other foundations.
- The $200 million commitment announced by the Gates Frontiers Fund and CU Anschutz in 2022 is being utilized over five years.
- Private philanthropy is an increasingly vital driver of innovative research and education initiatives at the Gates Institute. In FY 2023, generous gifts were directed toward the Director's Innovation Fund in support of research and other projects, the Gates Summer Internship Program for college undergraduates, the Gates Grubstake Fund, and the Startup Toolbox Fund to provide center members with business resources to move discoveries to cures. In addition, private donors supported disease-specific research in areas ranging from macular degeneration to cancer, Ehlers-Danlos syndrome to Alzheimer's disease.

SENIOR PROGRAM LEADERSHIP

- **Terry Fry, MD,** Executive Director
- **Dennis R. Roop, PhD,** Associate Director
- **Laura Borgelt, PharmD, MBA,** Chief Operating Officer
- **Matthew Seefeldt, PhD,** Executive Director**,** Gates Biomanufacturing Facility
- **Mike Verneris, MD,** Translational Research Lead

Gates.CUAnschutz.edu
GatesBiomanufacturing.com

Multidisciplinary Center on Aging

Mission

- Promote the multidisciplinary work of University of Colorado faculty and researchers focused on education/training, clinical care, research, and outreach/engagement related to aging.
- Serve as a centralized resource for academic, industry, foundation, community and government, stakeholders interested in improving the health and wellbeing of older adults.

Research

- Fund junior researchers: pilot grants and salary support.
- Presently $6.3 million total funding (incl: F, T, K, U01, U54, R24, U13 and Foundation Grants).
- >$85 million in research grant funding from faculty supported by the MCOA since 1999.
- 50 Faculty & Researchers.
- NIH/NIA T32 Physiology of Aging Program.
- 5 pre- and 5 post-doctoral research fellows (MD and PhD).

Grants

- R24 Grant: *"Workforce Development Engages Diverse Older Adults to Catalyze Innovative Approaches to Enhanced Recruitment and Retention,"* PI: Kathryn Nearing, PhD, three-year grant, began winter 2022. MCoA provides community engagement and coordination for the research roadshows across Colorado.

- R01 Grant: *"Dementia and Firearms in Older Adults-Safe at Home,"* PI: Emmy Betz, MD, two-year grant began fall 2021. MCoA chairs the National Executive Advisory Panel.

- NextFifty Grant: *"Connecting Older Adults to Students Through Intergenerational Telecare"* PI: Sarah Tietz, MD – MCoA provides administration, coordination, promotion, and evaluation of older adults being paired with CU Anschutz Health Profession Students.

Clinical Care

- MCoA houses "Vulnerable Elder Services, Protection and Advocacy Multidisciplinary Clinical Team," 2019-present.
    - ◊ Collaboration including University of Colorado Anschutz Medical Campus, Division of Geriatrics, Kempe Center, UCHealth University of Colorado Hospital, Rocky Mountain Regional VA Medical Center, Denver Health, Colorado State University, and county agencies to perform work in research, clinical care, education, and legal/policy to help combat elder abuse in Colorado.
    - ◊ Awarded $831,000 Department of Criminal Justice Grant to create first multidisciplinary clinical team in elder abuse in Colorado to establish the first state-wide multidisciplinary clinical team consulting to UCHealth University of Colorado Hospital and Denver Health for elder abuse cases.

- MCoA initiated Loan forgiveness for geriatric-trained clinicians site approval so Anschutz Medical Campus clinicians in the Division of Geriatrics would be eligible to apply.

Education

- NIH/NIA supported T32, 2001-present; five pre- and five post-doctoral slots.
- T32 team training program supports physiology in aging trainees.
- Five Geriatric Research Education and Clinical Center advanced research fellows; five to six applicants pending.
- Four clinical fellows.
- Advanced practice providers geriatric training program for nurse practitioners and physician assistants.

Policy and Advocacy:

- Lobbied successfully for passage of Senate Bill 21-58 "Loan Forgiveness for Geriatric-Trained Clinicians" and Senate Bill 23-31 "Improving Provider Access for Older Coloradans."

Programs

- Co-Founder CoCare (Colorado Coalition for Aging Research and Education)
    - ◊ Coalition of Colorado Higher-Education Programs hosting aging programs/centers and interested in aging research, clinical-care, education, and outreach/engagement, 2018-Present.

- MCoA COAST-IT (Connecting Older Adults and Students Through Inter-Professional Telecare) Program, March 2020-Present.
    - ◊ To establish regular ongoing tele-relationships between Anschutz Medical Campus students and older adults to improve communication and understanding.

- Host Bi-annual conferences: Rocky Mountain Geriatrics Conference CU Anschutz Geriatrics & Aging Symposium October 26, 2023.

Outreach/Engagement

- Age-Friendly University – Initiated process to become an age-friendly university by the Age-Friendly University Global Network, December 2021. CU Anschutz Medical Campus is #1 university in CU System, # 2 in State of Colorado, # 87 university in the world, and # 4 academic medical campus in the world.

Student and Resident Mental Health

Julie Wolfe, MD, Medical Director
Stephanie Lehto, PsyD, Clinical Director
Rachel Davis, MD, Vice Chair for Clinical Affairs, Department of Psychiatry
Juan DeJesus, MD, Associate Medical Director

Mission

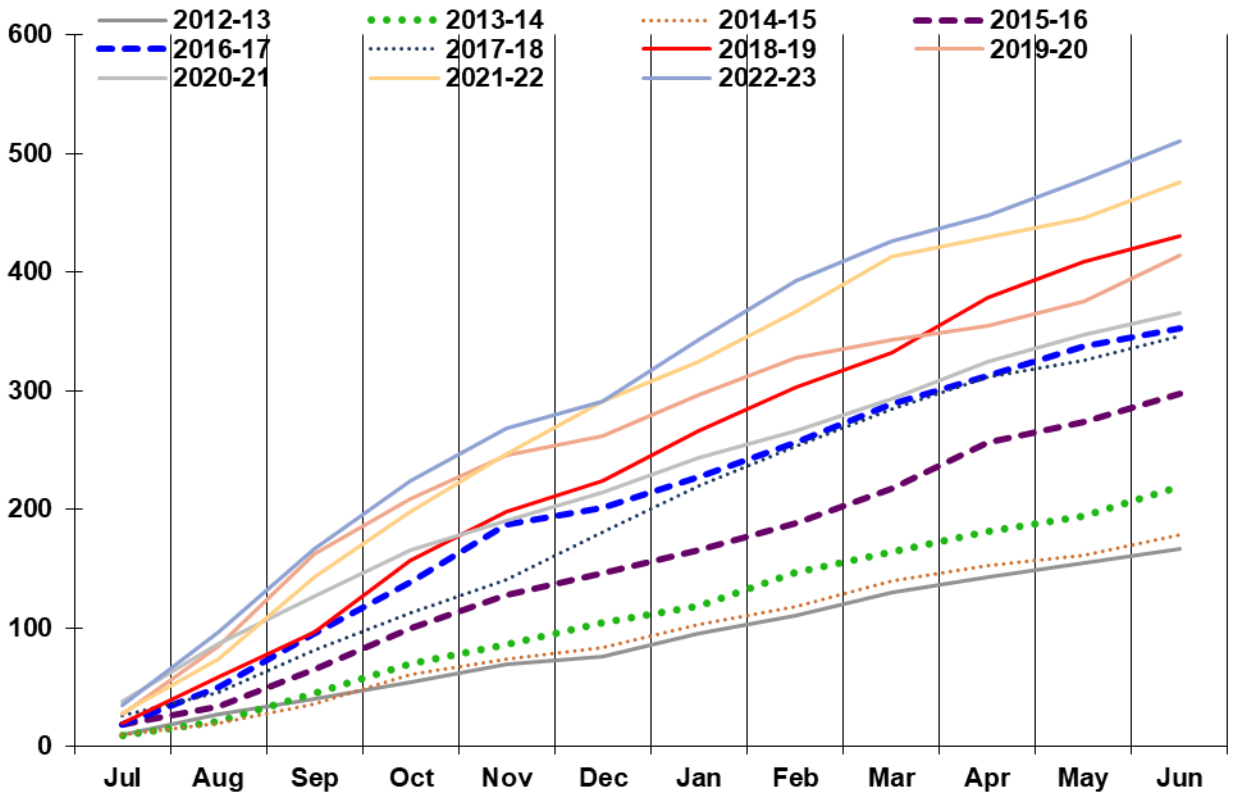
Student and Resident Mental Health (SRMH) on the Anschutz Medical Campus exists to facilitate evaluation and treatment of mental health issues in students and residents/fellows of the Anschutz Medical Campus. By minimizing barriers to care, the center aims to reach as many students and residents as possible. Faculty members at SRMH specialize in treating the issues students encounter and providing optimal mental health treatment.

Student Mental Health (SMH) was established in 2009 in the Department of Psychiatry and has expanded over the past 14 years to meet the needs of the students on campus. In 2015, a second SMH clinic site was opened. In 2019, SMH started offering services to residents and fellows at both CU Graduate Medical Education and Denver Health and Hospital Authority, thereby becoming Student and Resident Mental Health (SRMH). These expansions have allowed Student and Resident Mental Health to increase provider availability and ease of access by offering walk-in appointments, after-hours appointments, and same-day appointments as well as 24/7 on-call coverage by psychiatry faculty.

SRMH accepts many insurance plans through CU Medicine. When utilizing on-campus care, students with student-sponsored insurance have access to an unlimited number of visits with zero copay for covered diagnoses. Services offered at SRMH include:

- Diagnostic evaluation
- Medication management
- Psychotherapy
- Psychoeducational testing
- Group therapy

AMC Student and Resident Mental Health New Evaluations



SRMH collaborates with a network of community providers and refers to this network if preferred by the student, if covered by certain insurance plans, and as needed due to provider expertise.

Students and residents/fellows present with various concerns including but not limited to:

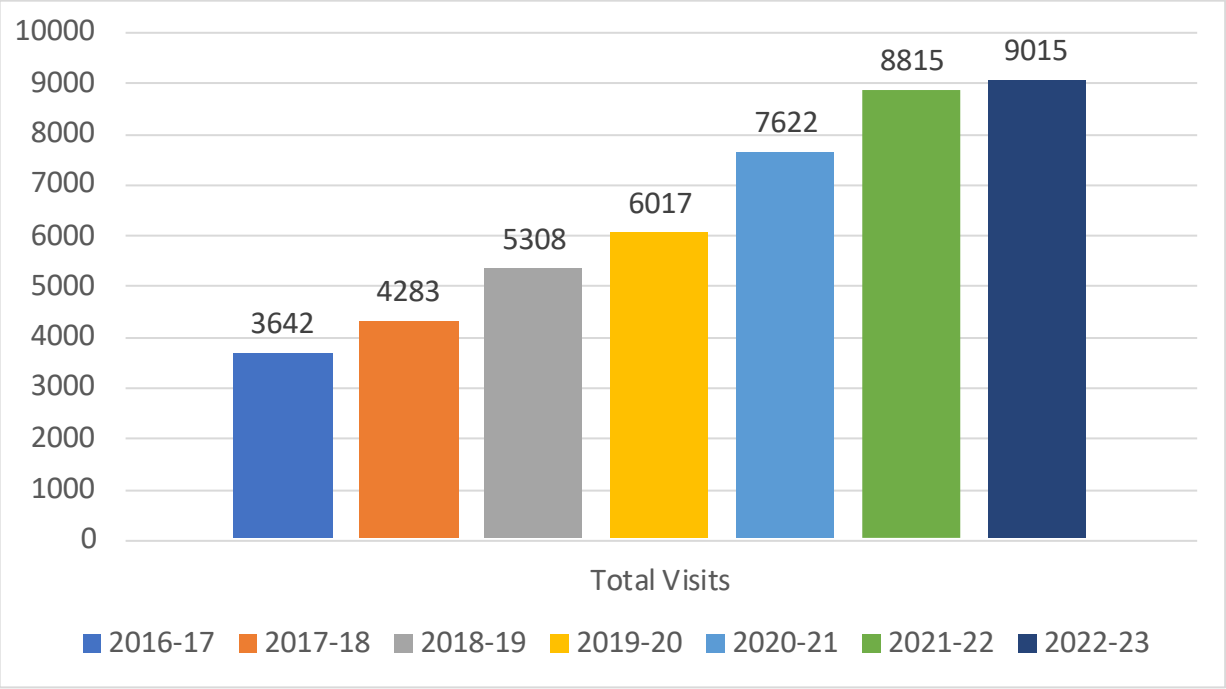
- acute stress management, test and performance anxiety, LGBTQIA+ issues, relationship difficulties, time management, ADHD, anxiety, depression, bipolar disorder, psychotic illnesses, substance use disorders, eating disorders, obsessive-compulsive disorder (OCD), post-traumatic stress disorder, personality disorders, grief, and domestic violence.

SRMH offers several ongoing and brief groups including a skills-based ADHD group, a dialectical behavior therapy group, a support group for children of immigrants/international students, and a children of narcissistic parents support group.

SRMH faculty collaborate with other faculty and departments on campus to provide education, outreach, and other events aimed at reducing stigma and providing education about mental health issues.

In March 2020, SRMH began providing telehealth visits to patients due to the COVID-19 pandemic and continues to operate using a hybrid model that offers both in-person and telehealth appointments.

AMC Student and Resident Mental Health – Total Visits



Student and Resident Mental Health, Anschutz Health Sciences Building

Services: Behavioral/mental health care, on-site phlebotomy

Hours: Mental health providers are available Monday - Wednesday 8 a.m.-8 p.m. and Thursday through Friday 8 a.m.-5 p.m.
Walk-in appointments available Monday – Friday 8 a.m.-4 p.m.

Appts.: Schedule appointments at 303-724-4716 or smhservice@ucdenver.edu

Location: Anschutz Health Sciences Building, 1890 N. Revere Court, 5th floor, suite 5040

Website: https://medschool.cuanschutz.edu/psychiatry/programs/student-resident-mental-health

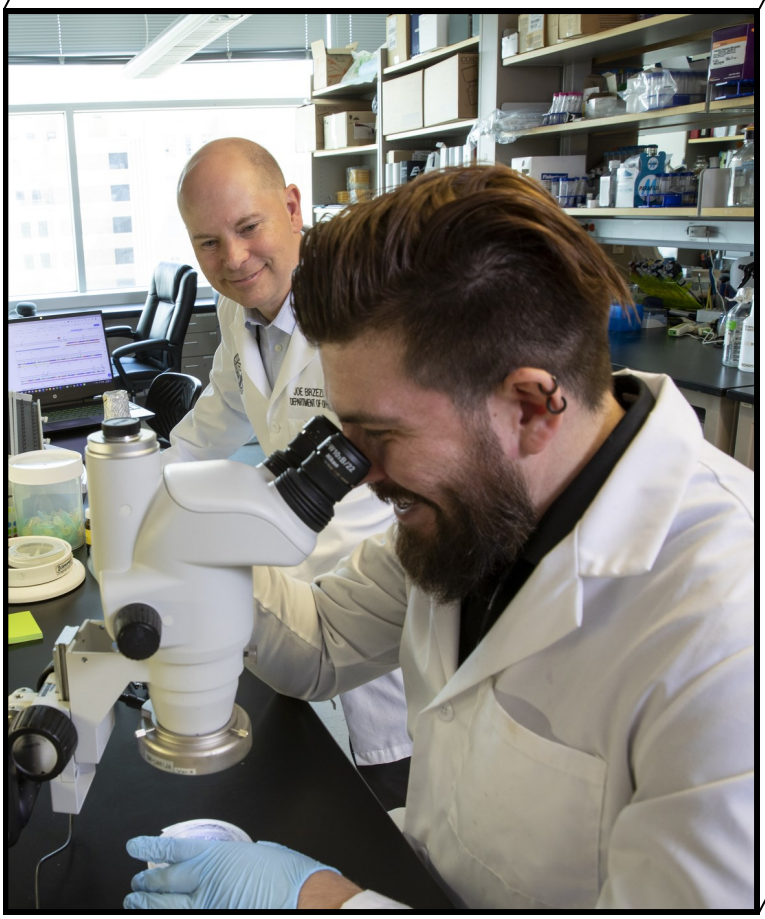
Current Providers

Julie Wolfe, MD, Medical Director
Stephanie Lehto, PsyD, Clinical Director
Rachel Davis, MD, Vice Chair of Clinical Affairs, Department of Psychiatry
Juan DeJesus, MD, Associate Medical Director
David Brown, MD
Debbie Carter, MD
Christian Hopfer, MD (Addictions)
Matthew Pesko, MD
Jenn Quigley, PA
Noa Heiman, PhD
Laura Hockman, PsyD
Robert Rosenthal, PsyD
Charles Carter, LPC
Christina Garza, MA, LPC
Lexie Persinger, LCSW
Danielle Sukenik, LMFT
Rachel Winkler, LPC
Isabelle Page, MSPH, RDN
Wanda Jackson, Medical Assistant, Heath Care Tech III
Carol Saxinger, Medical Assistant

24/7 crisis coverage is provided by the Department of Psychiatry faculty, fellows, and resident call system. If emergent treatment is needed, students can be seen in the UCHealth Emergency Department via the Student and Resident Mental Health track.

Recent Projects and Accomplishments:

- Continued outreach project with the medical school.
- Medical student mental health research: measuring mental health rating scales at matriculation and at the end of each academic year.
- Presented medical student mental health matriculation data at national conference.
- Provided mentorship and collaborated with Advocates for Mental Health to develop programming, outreach, and events related to mental health advocacy on campus including an anti-stigma panel, educational session around helping with navigating the mental health system and finding a therapist.
- Continued to serve as a rotation site for the University of Colorado general psychiatry residency program.
- Offered Monday-Friday walk-in availability to all students and residents.
- Provided specialty services in addictions, OCD and eating disorders.
- Supported several residency programs on the Anschutz Campus by providing opt-out appointments for incoming interns to establish mental health care and monthly support groups.
- Provided consultation to leadership of a residency program around how to increase wellness.
- Continued to provide campus-wide support during times of crisis.
- Added medication management support for walk-in services.
- Continued to build on the clinic relationship with CPHP to improve continuity of care and streamline the referral process.



PhD Programs

Office of Research Education

The School of Medicine's Office of Research Education is the administrative home of 13 Biomedical PhD programs (1 umbrella-admitting and 12 PhD-granting programs) and partners with the dual-degree MD/PhD program, also known as Medical Scientist Training Program (MSTP). The Office of Research Education also works closely with the undergraduate MD program.

Students in the Office of Research Education PhD programs receive the education and support to conduct innovative biomedical research. The PhD programs provide training in a wide range of essential skills, including oral and written communication, leadership, and personal and professional integrity. The diverse, inclusive, and safe environment, fostered by the School of Medicine and Anschutz Medical Campus, supports the holistic training provided by our programs that prepares students for a wide range of career opportunities.

https://medschool.cuanschutz.edu/ore

Office of Research Education PhD Programs

Biomedical Sciences Umbrella

The Biomedical Sciences Program was formed at the University of Colorado Anschutz Medical Campus in 1997. The Biomedical Sciences Program serves as an umbrella program, providing incoming students with the ability to rotate with faculty across numerous disciplines and graduate programs. This provides significant flexibility for students to choose from different research areas in which to pursue their graduate degrees. Aaron Johnson, PhD, directs the Biomedical Sciences program and works with an established executive committee of the directors of all Office of Research Education PhD-granting programs to advise on faculty membership, student mentorship, and admissions. Students who matriculate in the Biomedical Sciences Program will perform coursework and laboratory rotations in their first year. For rotations, students can choose to rotate in the labs of any of the more than 200 faculty in the program. Upon successful completion of the first year of graduate school, the students will then join their laboratory of choice, as well as one of 11 different graduate programs at the University of Colorado Anschutz Medical Campus. It is our goal in the Biomedical Sciences program to expose incoming graduate students to a variety of biomedical science-related disciplines, train students to evaluate scientific literature, think critically, develop testable hypotheses, and guide them in identifying a biomedical discipline in which to perform thesis research.

https://www.cuanschutz.edu/graduate-programs/biomedical-sciences-program/home

Cancer Biology

The Cancer Biology Program is an interdepartmental program that was created in 2006. The program is under the direction of Rebecca Schweppe, PhD, and combines training in the basic biomedical sciences with opportunities to apply clinical and translational research to studies on human cancer. The Cancer Biology Program is committed to educating PhD students in the fundamentals of modern biomedical research, and differs from traditional programs by providing opportunities to learn about clinical and translational aspects of cancer biology. We believe that understanding cancer from multiple perspectives will better prepare students to compete in a biomedical research environment increasingly focused on translational applications of basic research. The goal of the Cancer Biology Program is to attract outstanding students with the highest potential and to stimulate in them the independent and creative scientific thinking necessary to develop future leaders in the multifaceted field of cancer research. The program's highly accomplished training faculty includes over 60 basic and clinical scientists drawn from biomedical and clinical sciences. Areas of emphasis include lung, breast, head and neck, thyroid, prostate, bladder, and blood cancer. Our curriculum is rigorous, yet flexible, and provides opportunities for advanced study in cellular and molecular oncology, as well as the translational medical sciences. The University of Colorado Anschutz Medical Campus is home to an NCI-designated Comprehensive Cancer Center, an acknowledgment of its role as a leader in both clinical cancer treatment and basic cancer research. Our research community brings together scientists with diverse research approaches to focus on the problem of cancer. Graduate students are a vital part of this community and as a program we strive to build a vibrant and supportive learning environment. The program facilitates multiple events to build this community including journal clubs, a seminar series, poster sessions and an annual retreat in the Rocky Mountains.

https://www.cuanschutz.edu/graduate-programs/cancer-biology

Cell Biology, Stem Cells and Development

The graduate program in Cell Biology, Stem Cells and Development was created in 2007 as an interdepartmental and interdisciplinary training program*, engaging students and faculty from more than 10 basic science and clinical departments and numerous members of the Gates Center for Regenerative Medicine.* The Cell Biology, Stem Cells and Development program provides graduate training for doctoral students in hypothesis-driven experimental approaches and cutting-edge technology to allow students to pursue important questions at the juncture between the fields of cell, developmental, and stem cell biology. Cell Biology, Stem Cells and Development students and faculty have common interests in understanding how cells function and signal in development, and how cellular-level functions contribute to human disease and regenerative therapies. This common curiosity promotes extensive collaboration and interaction among labs and a vibrant intellectual environment. In addition, the Cell Biology, Stem Cells and Development program provides structured training in mentoring, teaching, and science communication to equip students for leadership positions in academia, industry, and other careers. The program currently comprises an interactive group of 38 students and 60 training faculty, which is sufficiently small to provide a close-knit, supportive yet rigorous, training environment, while large enough to provide a scientifically varied set of labs and mentors with which to interact*. In the past year,* Cell Biology, Stem Cells and Development *students published 20 scientific publications, were awarded two NIH F31 fellowships, received 2 NSF GRFP fellowships, and* mentored eight undergraduate students in the developing scholars *research training pipeline program.* In July 2021, the Cell Biology, Stem Cells and Development program was awarded a new T32 training grant from the National Institute of General Medical Sciences to strengthen training opportunities in the genetics of development, disease, and regeneration*.*

https://www.cuanschutz.edu/graduate-programs/cell-biology-stem-cells-and-development

Computational Bioscience

The Computational Bioscience Program trains students to develop novel computational methods for advancing biology and medicine. The program creates professionals prepared to conduct interdisciplinary research in the fields of translational bioinformatics, clinical research informatics, and computational molecular biology. Our curriculum integrates training with computation and biomedical sciences with student research and teaching activities that grow increasingly independent through the course of the program. The Computational Bioscience program provides graduates with the foundation for a lifetime of continual learning. Our students begin supervised research immediately, collaborating with top scientists, working with the latest high-throughput instruments on critical biomedical problems. Research training spans computational aspects of basic translational and clinical sciences in a variety of disciplines and disease areas. Graduates have the expertise to join faculty programs in bioinformatics, medicine, or computer science, or to assume high-level research positions in government or industry. We seek students who aspire to achieve excellence in research, education, and service, and who will apply the skills they learn toward improving human health and deepening our understanding of the living world.

https://www.cuanschutz.edu/graduate-programs/computational-bioscience/home

Human Medical Genetics and Genomics

The Human Medical Genetics and Genomics Graduate Program provides training to graduate students interested in a field of research that has seen an explosion of data, knowledge, and innovative technologies. DNA sequencing of genomes of humans and other species, discovery of genes and variations that underlie development and disease, and rapid application of these discoveries to medical practice is revolutionizing medicine by precise diagnostic tests, targeted treatments, and even disease prevention. It is anticipated that “personalized” or “precision” medicine will thereby dramatically improve human health, longevity, and quality of life. Founded in 1997, the Human Medical Genetics and Genomics PhD program teaches our students modern genetics and genomics theory and methodology, critical reading and assessment of the literature, formulation and testing of research hypotheses, advanced experimental techniques, bioinformatic and statistical analysis of genomic and other “omics” data and interpretation of results to answer key scientific questions. Our faculty includes over 50 laboratory scientists and clinicians, providing an exceptionally interactive and collaborative environment that enables quick translation of the latest genetic and genomic discoveries from the bench to the bedside. Our goal is to provide a nurturing yet rigorous training environment in which our students can thrive intellectually and be scientifically productive under the guidance of a supportive and highly collaborative faculty. As a result, our students have presented their research at national and international scientific conferences, published

their research in highly respected scientific journals, and have received awards and grants from both institutional and external funding agencies. Our PhD students have also been highly successful in their subsequent careers, in academia, industry, teaching, as well as non-traditional settings like forensics and regulatory affairs.

https://www.cuanschutz.edu/graduate-programs/human-medical-genetics-and-genomics

Immunology

Immunological research in Colorado has a rich history punctuated by numerous seminal discoveries related to allergy, immune recognition, immune signaling, immune tolerance, and inflammation. A primary mission of internationally recognized Immunology program is to educate and train the next generation of immunologists for careers heading competitive and productive research programs. Numerous graduates hold leadership roles in academic or industry research settings. The immunological expertise we provide to our graduates also has fostered success in areas of public health, science policy, and education. We offer rigorous didactic courses in immunology, inflammation biology, and related fields. Our faculty evaluate, instruct, and mentor students in the program through these courses and through experiential studies that foster experimental competence, intellectual development, inquisitiveness, and communication skills. Further, a collaborative and supportive educational and research environment supports the ability of our students to achieve scientific excellence and demonstrate their productivity as authors and speakers. The immune system plays a central role in current national and global health issues. By exposing our graduate students to basic and translational science approaches, our graduate training program enriches the experience in a practical and meaningful manner. Our graduates are prepared to make seminal advances in basic understanding of the immune system and its functions and to manipulate the immune system for improving human health in clinical contexts. The graduate program in Immunology is supported by NIH T32 training grants and includes faculty mentors from more than a dozen Departments and divisions at the University of Colorado Anschutz Medical Campus, National Jewish Health, or the Barbara Davis Center for Childhood Diabetes. Beth Tamburini, PhD, and Ross Kedl, PhD, are the program co-directors.

https://www.cuanschutz.edu/graduate-programs/immunology

Integrated Physiology

The Integrated Physiology Program is a highly diverse graduate program on the Anschutz Medical Campus that consists of exceptional basic and clinician scientist training faculty from at least 19 basic and clinical departments and divisions in the School of Medicine, the Skaggs School of Pharmacy and Pharmaceutical Sciences, and the School of Dental Medicine. The program is structured to leverage the long, outstanding, and rich research expertise on the Anschutz Medical Campus in areas such as reproductive sciences, obesity and nutrition, cardiovascular and pulmonary diseases, metabolism and endocrinology, and perinatal biology. Many of these disciplines are supported by centers on the campus that are directed by integrated physiology training faculty. Thus, the Integrated Physiology Program offers a training opportunity for students who have an interest in all aspects of physiology, from system/organ physiology to cell/molecular physiology, and provides an opportunity for students to interact with NIH R01-funded basic science and clinician faculty. The study of physiology is at the core of modern biomedical research, which relies on integrating fundamental concepts of whole animal and organ physiology with sophisticated molecular and cellular approaches to investigate important questions related to human health and disease. Our program objective is to train graduate students to understand mechanisms underlying the function of various systems in the body that contribute to both normal and pathological physiology, to become proficient and successful investigators who learn how to target basic research to clinically relevant problems, and to develop translational research projects. Our students have presented their research at national and international scientific conferences, published in highly respected scientific journals, and have received awards and grants from institutional and external funding agencies. Integrated Physiology students are overrepresented in the competitive NIH CCTSI TL1 program, with many leading to successful NIH pre-doctoral awards. Our PhD students have also been highly successful in their careers, with >95% of our graduates remaining in academia or industry. The Integrated Physiology Program director is Mary Weiser-Evans, PhD.

https://www.cuanschutz.edu/graduate-programs/integrated-physiology

Medical Scientist Training

The Medical Scientist Training Program (MSTP) is a multidisciplinary, inter-institutional MD/PhD dual-degree training program educating students in clinical medicine and biomedical research. Its mission is to provide students with the breadth and depth of training necessary to excel as a physician-scientist. Post-baccalaureate students are recruited from a national pool of ~500 applicants, and those selected have proven exceptional talents in research science, a curiosity to solve mechanisms of disease, a drive for discovery, a well-thought-out motivation to pursue a career in medicine, and exceptional leadership. The program was formed in 1983, and in 1992 it received MSTP status by successfully competing for NIH T32 funding, which currently provides about $1 million per year to support 20 trainees. The program has strong leaders and mentors, with Director Cara Wilson, MD, who is a physician-scientist with a consistent record of NIH research funding as well as extensive experience in mentoring and career development of trainees. Joe Hurt, MD, PhD, is clinical associate director. The program has been competitively reviewed and funded by NIH for each of the past six cycles. The program has been a campus and national leader in recruiting students from diverse backgrounds and has received diversity awards from CU and commendations from the National Institute of General Medical Sciences. There are about 230 faculty mentors for students to choose from in 17 PhD Programs at the University of Colorado Anschutz Medical Campus, National Jewish Health, and the University of Colorado Boulder. There are currently 86 students in the program spanning all years of training. Since 1983, 283 trainees have graduated with both degrees in an average time of 8.4 years. Graduates of the MSTP obtain residencies at the nation's elite programs, with ~75% of those completing all training now in academic medicine, government (NIH or CDC), or industry, including starting up their own biotech companies. Importantly, we have an increasing number of MSTP graduates (16) who are now faculty at the University of Colorado Anschutz Medical Campus. The Colorado MSTP and its leaders have been key in establishing the National Association of MD/PhD Directors and Administrators, the MD/PhD Section of the AAMC GREAT Group, and the Annual National MD/PhD Student Conference.

https://medschool.cuanschutz.edu/mstp

Microbiology

The Graduate Program in Microbiology at the University of Colorado Anschutz Medical Campus is a PhD granting education and training program designed to prepare students for outstanding careers in science. Through rigorous didactic courses and mentored experimental studies, the program trains students in diverse areas of microbiology including molecular pathogenesis of viral, bacterial, and parasitic diseases and the role of the microbiome in human health and disease. Our program strives to provide students with the scientific expertise to become leaders in competitive independent research programs, science education, science policy, and industry. Although based within the Department of Immunology and Microbiology, the program faculty includes members of the Departments of Medicine, Neurology, Pediatrics, and Biochemistry and Molecular Genetics. Breck Duerkop, PhD, serves as the program director and is supported by committees comprised of faculty and student representatives to facilitate advising, admissions and recruitment, evaluations and promotion, and student enrichment and governance. The research interests of the faculty that participate in the Graduate Program in Microbiology are diverse and include molecular mechanisms of infectious disease pathogenesis, effects of the microbiome on human health and disease, innate and adaptive immune responses to infection, pathogen immune invasion strategies, products and metabolites associated with infectious disease outcomes, regulation of gene expression of both host and pathogen, and development of novel vaccines and therapeutics to prevent or mitigate infectious diseases. With recent appreciation for emerging infections, human risk factors for infectious diseases, and the complexity of the microbiome, the topics of microbiology and pathogenesis of infectious disease are important fields in biomedical research. Finally, our program has a competitive National Institutes of Allergy and Infectious Diseases Molecular Pathogenesis of Infectious Disease (MPID) T32 training grant, currently in its 20th year of funding. The MPID annually supports four outstanding graduate students working on projects relevant to the molecular pathogenesis of infectious diseases.

https://www.cuanschutz.edu/graduate-programs/microbiology/home

Molecular Biology

The Molecular Biology Program at the University of Colorado Anschutz Medical Campus provides rigorous training in a sup-

portive environment. The molecular biology faculty are members of 11 departments who are applying the techniques of molecular biology to answer questions in diverse areas at the forefront of modern biology and medicine. The program offers an opportunity to study in a student-centered environment. Molecular biology, the science of how living organisms function at the molecular and cellular level, has spearheaded the recent revolution in understanding human disease and led to the birth of the biotechnology industry. The goal of the Molecular Biology Program is to equip students for careers at the cutting-edge of biological research. The faculty is committed to providing students with the training they need to carry out the highest quality research using state-of-the-art techniques. The teaching philosophy here is to instill the theoretical knowledge and practical experience that enables our students to identify important questions in science, to design experiments that address those questions and to critically evaluate results. Special emphasis is placed on learning to communicate research results to others effectively by participating as featured speakers in the program's seminar series. Training students to become scientists prepares them for careers in many areas. Previous graduates are working in academic, government, and industrial biotechnology research, teaching, and public policy positions. Molecular Biology Program faculty include members of the Departments of Biochemistry and Molecular Genetics, Cell and Developmental Biology, Medicine, Immunology and Microbiology, Pathology, Pharmacology, Pharmacy, Pediatrics, Craniofacial Biology, Rheumatology, and Obstetrics and Gynecology, and include internationally recognized experts in bioinformatics, cancer, cell biology, development, gene expression, genomics, microbiology, molecular structure, and virology. Their diverse interests provide students with an enormous choice of areas in which to pursue their thesis research. The Molecular Biology Program has been recognized as a Center of Excellence at the CU Anschutz Medical Campus, and was honored to receive a $2 million private endowment, the Victor and Earleen Bolie Scholarship Fund, to support student education, research, and training. Along with this funding opportunity, the program continues to be funded by a highly competitive NIH pre-doctoral T32 training grant, currently in year 1 after previous completion of a 20-year NIH pre-doctoral T32. Our students have recently been awarded Howard Hughes Medical Institute pre-doctoral fellowships, along with National Science Foundation Graduate Research Fellowships. The program and the university continue efforts to increase the number of students from backgrounds underrepresented in science, with the goal of training them to become important contributors to the biomedical research field and their communities.

https://www.cuanschutz.edu/graduate-programs/molecular-biology/home

Neuroscience

The Neuroscience Program was formed in the late 1980s as an interdepartmental PhD graduate training program drawing faculty members from many departments in the School of Medicine

and the Anschutz Medical Campus. The current program directors are Abigail Person, PhD, and Nathan Schoppa, PhD. The goal of the Neuroscience Program is to provide students a foundation of understanding in neuroscience, and to train critical thinkers who identify important problems, generate experimentally testable hypotheses, and draw significant conclusions from the results of their ongoing research. Students receive multidisciplinary training covering the breadth of neurobiology, including cellular and molecular neurobiology, neural development, systems neuroscience, and neuropharmacology, as well as hands-on training in state-of-the-art laboratory techniques. An additional focus is on training in modern quantitative methods to analyze datasets. This aspect begins with a computer programming bootcamp and continues with programming exercises that are integrated throughout the coursework. The training in neuroscience is also augmented by a variety of program-supported enrichment activities, including a robust weekly seminar series, a two-day annual retreat in the mountains, a student-run journal club, and monthly lunches that regularly feature guest speakers representing a variety of neuroscience-related careers. The Neuroscience Program includes more than 70 training faculty from 17 different basic science and clinical departments, providing students a breadth of choices for potential thesis labs. Moreover, the establishment of the NeuroTechnology Center in 2019 has infused new School of Medicine resources ($9.9 million over 5 years) into the neuroscience community. This has helped expand both the research cores on campus as well as the number of new faculty hires in neuroscience. In 2023, the Neuroscience Program renewed its long-standing T32 that funds first- and second-year student slots, helping the program to maintain a large student class size. The program strives to grow and sustain a diverse and inclusive student community through active recruitment of students from underrepresented and marginalized backgrounds in science, and to provide training in bias awareness and diversity best practices.

https://www.cuanschutz.edu/graduate-programs/neuroscience/home

Pharmacology and Molecular Medicine

The Pharmacology and Molecular Medicine Program offers students the opportunity to study mechanisms of basic biology and disease, while using pharmacological interventions as a means to disentangle these mechanisms and/or to develop novel treatments. The Pharmacology and Molecular Medicine Program is interdepartmental, with faculty from a range of departments and divisions across the School of Medicine and School of Pharmacy. Training faculty are renowned in neuroscience, cancer biology, cardiovascular biology, signal transduction, structural biology, and systems biology. Research laboratories are highly collaborative and interdisciplinary, frequently using multiple parallel approaches, including molecular biology, structural biology, genomics, and informatics paired with cutting-edge methodologies employing high powered imaging techniques, such as optogenetics. A defining feature of the program is the focus on personalized medicine and translating fundamental benchtop discoveries to clinical practice. The NIH-funded pharmacology pre-doctoral training grant (T32) is one of the longest-standing grants of its type. Students enter the training program directly or via the Biomedical Sciences program or the Medical Scientist Training Program (MSTP). The program has a long and well-established history of training biomedical science PhD students.

https://www.cuanschutz.edu/graduate-programs/pharmacology

Rehabilitation Science

Rehabilitation Science is the translational field of study that integrates knowledge from the basic and clinical sciences to improve our understanding of human movement, physical function, and disability across the lifespan. Students receive individual mentorship from nationally recognized rehabilitation scientists in state-of-the-art research facilities, with a customized curriculum to meet the interests of each student. Breadth of knowledge is acquired through foundational coursework in research design, biostatistics, and rehabilitation science, whereas depth of knowledge is gained through elective coursework in one of five areas of specialization: clinical trials research, health services research, biomechanics, mechanistic research, and implementation science. This approach prepares students to become independent research scientists who integrate knowledge from multiple perspectives ranging from the molecular to the systems level to solve complex problems of physical disablement that will advance clinical practice in the field of physical rehabilitation.

https://www.cuanschutz.edu/graduate-programs/rehabilitation-science

Structural Biology, Biochemistry and Biophysics

The Structural Biology, Biochemistry and Biophysics Program is an interdisciplinary program focused on the study of mechanisms underlying biomolecular interactions and function, drug action, and diagnostics. It aims to provide students with foundational training in structural biology, biochemistry, and biophysics; critical thinking skills; the ability to carry out independent rigorous research following the scientific method; and the ability to communicate their science effectively. Our training faculty are scientifically diverse, studying mechanism broadly using several approaches, including structural, biophysical, biochemical, and omics. To support our students' research needs, the program uses well-developed core facilities, including nuclear magnetic resonance spectroscopy, X-ray crystallography, mass spectrometry/proteomics, mass spectrometry/metabolomics, biophysics, and cryo-electron microscopy. Our program prepares students to be independent researchers in the study and application of structural biology, biophysics, or biochemistry in the academic, industrial, biotech, or consulting spaces.

https://www.cuanschutz.edu/graduate-programs/structural-biology-and-biochemistry

2022-2023 Deceased Faculty

Frederick C. Battaglia, MD
Professor Emeritus and former Chair
Pediatrics

Frank Marsh, Jr., JD, PhD
Professor
Medical Ethics and Law

Stephen Berman, MD
Professor
Pediatrics

Julian Ramsey Mellette, Jr., MD
Clinical Professor
Dermatology

K. Michael Hambidge, MD, ScD
Professor Emeritus
Pediatrics

Ida Nakashima Schneck, MD
Associate Professor Emerita
Pediatrics

Michael Iseman, MD
Professor
Medicine

William Weston, MD
Professor Emeritus and former Chair
Dermatology

Michael S. Kappy, MD, PhD
Professor
Pediatrics

Michael Yourshaw, JD, PhD
Instructor
Pathology

Our condolences to the families and friends of our former colleagues.

School of Medicine

UNIVERSITY OF COLORADO
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