School of Medicine

UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS





University of Colorado School of Medicine
Facts and Figures
CELEBRATING 137 YEARS: 1883-2020





Photos from cover page courtesy of:

Top left: Mario Herhandez, MD, CU School of Medicine class of 2020
(@cuanschutz Instagram)

Top right: White Coats for Black Lives Kneel for Justice –Friday, June 5, 2020 (@cumedicine, University of Colorado School of Medicine Facebook)

Bottom left: Team of CU Anschutz researchers, including Ross Kedl, PhD, Professor, and Thomas "Tem" Morrison, PhD, Associate Professor, Department of Immunology and Microbiology, discovered "liquid chalk" proven to kill Coronavirus, potentially helping climbing gyms to safely reopen (@cuanschutz Instagram)
https://news.cuanschutz.edu/news-stories/liquid-chalk-proven-in-cu-lab-to-kill-coronavirus-potentially-helping-gyms-to-safely-reopen

Bottom right: Child Health Associate/Physician Assistant (CHAPA) program
Danielle Mashburn, PA-C @ CHCO PICU
Jamie McIntyre, PA-C c/o 2003 training as a hospitalist PA to help with the surge
Heather Heizer, PA-C c/o 2003 @ CHCO Infectious Disease
Bryan Ng, PA-C c/o 2010 @ an ED in New Hampshire
Liann Weiner, PA-C @ CHCO PICU
Christine Paprocki, PA-C c/o 2002 currently @ Billy Jean King Hospital in the Bronx on a Covid Response relief team
Zach Van Rheen, PA-C c/o 2013 @ Seattle Childrens PICU
Laura Erdman, PA-C c/o 2015
Mark Lowe, PA-C c/o 2002 hospitalist @ Denver Health



Dean's Message

The Lessons of 2020

This year has been extraordinary in its impact on our lives, with multiple coinciding crises: The pandemic's relentless spread and deadly toll, strife in our communities because we have failed to address and eradicate racism, economic volatility that eliminated millions of jobs and endangered the livelihoods of millions more, and the harsh recriminations of a divisive political season.

The well-being of our friends and neighbors, our communities, and our country have been under assault in ways that were unthinkable a year ago. As of mid-November, more than 248,000 people have died in the United States due to SARS-CoV-2, and more than 1.3 million worldwide have died. In October, the U.S. Labor Department reported that the economy had nearly 11 million fewer jobs than it did before the pandemic.

These have been painful times for all. Yet it is times like these that we as members of the academic medicine community fulfill our highest callings. We have dedicated our lives to the pursuit of improving human health and relieving suffering. We have collected vast reservoirs of knowledge, we have mastered the discipline necessary for rigorous inquiry, we have trained to be skillful in the procedures we perform, and we are committed to excellence in our pursuits.

We have fulfilled those promises in significant ways this year. At our affiliated hospital partners, where our faculty practice, our physicians and advanced practice providers, working alongside dedicated nurses, respiratory therapists, and other allied professionals, have provided care to thousands of patients hospitalized with COVID-19. Our faculty and staff cared for thousands more in clinics.

Our faculty have enrolled more than 3,000 participants into COVID-19 clinical trials for diagnostics, therapeutics, and vaccines. Our laboratories hustled to provide more accessible and reliable testing.

When in-person patient visits were curtailed as part of the country's efforts to mitigate the spread of SARS-CoV-2, School of Medicine faculty led the way in telehealth delivery. For Medicaid members, we provided more than 18,000 telemedicine consultations in fiscal year 2020, compared with fewer than 800 such visits the previous year.

While our research laboratory activities were closed in the spring, our investigators continued to work on grant proposals with remarkable success. According to the CU System office, the Anschutz Medical Campus attracted more than $762 million in sponsored research funding for the year ending June 30, 2020, compared with $553.5 million the previous year.

When lecture halls closed and small-group class sessions were cancelled, our medical educators developed new online courses. The elective course about the COVID-19 pandemic response, with modules on virology, epidemiology, and clinical management, was included in a resource collection provided by the Association of American Medical Colleges.

When clinical sites limited access for medical students in order to conserve personal protective equipment that was in short supply, campus administrators scrambled to gather supplies, and shuttered labs donated their extra gear to create a stockpile. Our colleagues in the School of Dental Medicine donated seven pallets of masks, gloves, and other useful gear. They and others on campus donated surplus personal protective equipment during a drive to help our clinical partners. More than 36,600 masks, 47,500 disposable lab gowns, 245,000 pairs of gloves, and 50 cases of disinfectant wipes were collected.

When the surge of patients filled hospital beds to capacity, our physician residents and fellows focused exclusively on patient care. These young physicians were called to sacrifice to their educational and other work activities to provide critical clinical support in a time of great need. Donors rallied in support by giving to a Resident Emergency Relief Fund. Similarly, donors supported a Health Care Worker Emergency Relief Fund. Together, these funds collected $1.5 million from generous supporters.

These collective achievements are the result of work by many, many productive individuals, a constellation of multiple stars at the CU School of Medicine and the Anschutz Medical Campus. While the hardships caused by pandemic will be an unforgettable experience for all of us, the courage and compassion of the members of the School of Medicine community will be the shining examples we choose to remember.

When the pandemic interrupted their fourth year of studies, Jacob Fox, MD, Halea Meese, MD, and Loree Thornton, MD, helped organize volunteer efforts that included collecting community donations of personal protective equipment.

Tyler Anstett, DO, assistant professor of medicine in the Division of Hospital Medicine, and Kasey Bowden, MSN, FNP, assistant professor of medicine and associate clinical director of hospital medicine, helped prepare providers who mostly work in outpatient clinics for shifts in the hospital. More than 100 physicians and advanced practice providers from outpatient clinics signed up for hospital shifts.

In the early days of the pandemic, Mao Li, PhD, a former trainee in the lab of Richard Spritz, MD, professor and director of the Human Medical Genetics and Genomics Program, purchased and shipped a case of 500 sterile surgical masks from China, where she now works at a hospital as an associate professor of dermatology.

In late March, Kyle Annen, DO, assistant professor of pathology and medical director of the blood collection center at Children's Hospital Colorado, collected the first plasma donation from a recovering COVID-19 patient in the state. She worked quickly to get it to a patient at UCHealth University of Colorado Hospital.

Through it all, we have continued to invest in the future of our School.

We are establishing a new Center for Health Artificial Intelligence to use data better. The scientific community collects vast amounts of data and we must use it more effectively. This center will help us apply what we learn in new and useful ways. This year, we recruited Casey Greene, PhD, from the University of Pennsylvania Perelman School of Medicine to lead the effort.

Our new Anschutz Health Sciences Building, the first new University building constructed in more than a decade, will be opening in 2021. It will house an expanded training center for our learners, the headquarters of our clinical and translational sciences institute for our community, and our behavioral health specialists.

Our partnership with Colorado State University to teach medical students on the CSU campus in Fort Collins will come to fruition in the coming year. The initial cohort of students will enroll in August 2021. Under the leadership of Suzanne Brandenburg, MD, professor of medicine, we already have established the community connections in Northern Colorado that we need to have a successful clinical training program.

Our School's plans to update medical education curriculum will be implemented. It integrates science and clinical activities more closely. It also provides clinical training based on longitudinal integrated clerkships.

We cut the ribbon on a new federally qualified health center in Aurora that the School of Medicine is operating jointly with Salud Family Health Centers. The current clinic, temporarily housed in a building about three miles from campus, will be the centerpiece of the 27-acre Aurora Community Health Commons to be developed by Salud on the southeast corner of Airport Boulevard and East Colfax Avenue.

For the community, this clinic will improve access to primary care for the some 48,000 people who do not currently have a primary care provider. The School plans to expand its family medicine training and its team-based training programs at the site. Salud is developing a comprehensive program that will incorporate other resources to help residents lead healthier lives, such as subsidized low-income housing, early childhood education, para-professional education, and job training.

We also celebrated significant accomplishments among faculty. Some notable achievements include:

Charles Dinarello, MD, professor of medicine and immunology, was awarded the 2020 Tang Prize in Biopharmaceutical Science for the development of cytokine-targeting biological therapies for treatment of inflammatory diseases.

Paul MacLean, PhD, professor of medicine in the Division of Endocrinology, Metabolism, and Diabetes, and his colleagues at the Colorado Nutrition Obesity Research Center, received a National Institutes of Health grant that provides renewed funding for the next five years for nutrition and obesity-related research.

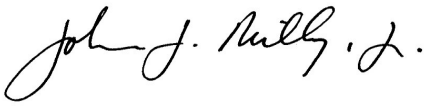
Jay Hesselberth, PhD, associate professor of biochemistry and molecular genetics, was named one of the recipients of the NIH Director's Transformative Research Awards. Jay's group developed a new breakthrough method to directly measure enzymatic activities in thousands to millions of single cells.

Craig Jordan, PhD, chief of the Division of Hematology in the Department of Medicine, received a 2020 National Cancer Institute Outstanding Investigator Award.

Lori Sussel, PhD, professor of pediatrics and cell and developmental biology, and colleagues were awarded a grant from the National Institute of Diabetes and Digestive and Kidney Diseases to establish a Diabetes Research Center.

Nee-Kofi Mould-Millman, MD, associate professor of emergency medicine and principal investigator of the C3 Global Trauma Network, and his team were awarded funding by the U.S. Department of Defense to study prehospital trauma care and military-relevant clinical outcomes.

Our faculty, trainees, and staff have demonstrated courage and compassion during the pandemic and we will not retreat from the continuing challenges. We will resist distractions, we will bring comfort to our communities, and we will lead by example.



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 January 1993

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 provision of educational programs to medical students, allied health students, graduate students and housestaff, 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 health policy and health care education;
- **Patient Care -** through state-of-the-art clinical programs which reflect the unique educational environment of the University, as well as the needs of the patients it serves; and,
- **Community Service -** through sharing the School's expertise and knowledge to enhance the broader community, including our affiliated institutions, other healthcare professionals, alumni and other colleagues, and citizens of the state.

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.

Diversity Values Statement

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

The University of Colorado School of Medicine believes that diversity is a value that is central to its educational, research, service and health care missions. Therefore, the SOM is committed to recruiting and supporting a diverse student body, faculty and administrative staff. The SOM adopts a definition of diversity that embraces race, ethnicity, gender, religion, socioeconomic status, sexual orientation and disability. The definition of diversity also includes life experiences, record of service and employment and other talents and personal attributes that can enhance the scholarly and learning environment.

The SOM shall strive to admit qualified students and appoint qualified residents, fellows, faculty, staff and administrators who represent diversity.

The SOM also shall develop programs that are designed to: Promote the academic advancement and success of minority students, house officers and faculty; enhance cultural and diversity instruction throughout the curriculum; break down racial and ethnic stereotypes and promote cross-cultural understanding; and promote unexplored research agendas and new areas of scholarship.

The SOM's diversity programs also seek to enhance diversity and cultural competency in the health care workforce, improve access to health care for poor, minority and underserved populations and, ultimately, eliminate racial, ethnic and socioeconomic disparities in health and health services.

The SOM will work with all departments and programs within the SOM, and with other University of Colorado campuses and their leaders, to achieve the goals outlined above and to promote a culture of inclusiveness, respect, communication and understanding.

The SOM will support the goals of the University's Vision 2020, which seek to develop a University culture in which diversity and academic excellence are seen as interdependent.

July 2019

The Anschutz Medical Campus announced its first-ever brand-identity and advertising campaign, "This is Breakthrough". The campaign showcases the outstanding work of faculty and hospital partners.



August 2019



The School of Medicine Matriculation Ceremony was held on Friday, August 9. 184 students joined the School of Medicine.

September 2019

Congresswoman Diana DeGette visited the Anschutz Medical Campus on November 5, 2019, to hear about research and innovations of CU faculty, including the Gates Biomanufacturing Facility.



October 2019



The Child Health Associate/Physician Assistant (CHA/PA) Program celebrated its 50th anniversary on October 4. The event raised money for student scholarships and featured the successes of graduates from the program, which ranks among the nation's best and attracts high-quality applicants and educators. *Photo courtesy of University of CO Physician Assistant Program Facebook page.*

November 2019

Students volunteered at the University of Colorado Anschutz Medical Campus and Colorado Area Health Education Center (AHEC) booth at the National Western Stock Show, which ran from January 11-January 26.



December 2019



Commencement ceremonies were held for December graduates of campus programs, including students from the School of Medicine's Physical Therapy and Anesthesiologist Assistant programs.

January 2020

As the novel coronavirus that causes COVID-19 spread around the world and in the United States at an increasing pace, the University and the School of Medicine implemented measures to help mitigate the potential impact on faculty, students, and staff. On March 13, 2020, Colorado Governor Jared Polis issued stay at home orders for the state. School of Medicine and most university course work went online for students, research buildings shut down, and non-critical employees began working remotely.



February 2020



On February 28, the School of Medicine and Salud Family Health Centers held a ribbon cutting ceremony for the new Aurora Community Health Center, a federal qualified health center that will provide the Aurora community with greater access to medical care.

March 2020

April 2020

Seventeen medical students and seven members of the School of Medicine education leadership team met the challenge of teaching during the pandemic by creating a new elective course that was listed in the resource collection posted at the iCollaborative website of the Association of American Medical Colleges (AAMC).

May 2020



School of Medicine commencement ceremonies were held virtually on Friday, May 22, to celebrate the hard work and achievements of the class of 2020.

July 2020

June 2020



White Coats for Black Lives organized a Kneel for Justice event on Friday, June 5, in a call for racial justice and health equity. *Photo courtesy of University of CO Physician Assistant Program Facebook page.*


WEIGHT LOSS STARTS HERE.
WELLNESS CHANGES EVERYTHING
Anschutz Health and Wellness Center
University of Colorado Anschutz Medical Campus



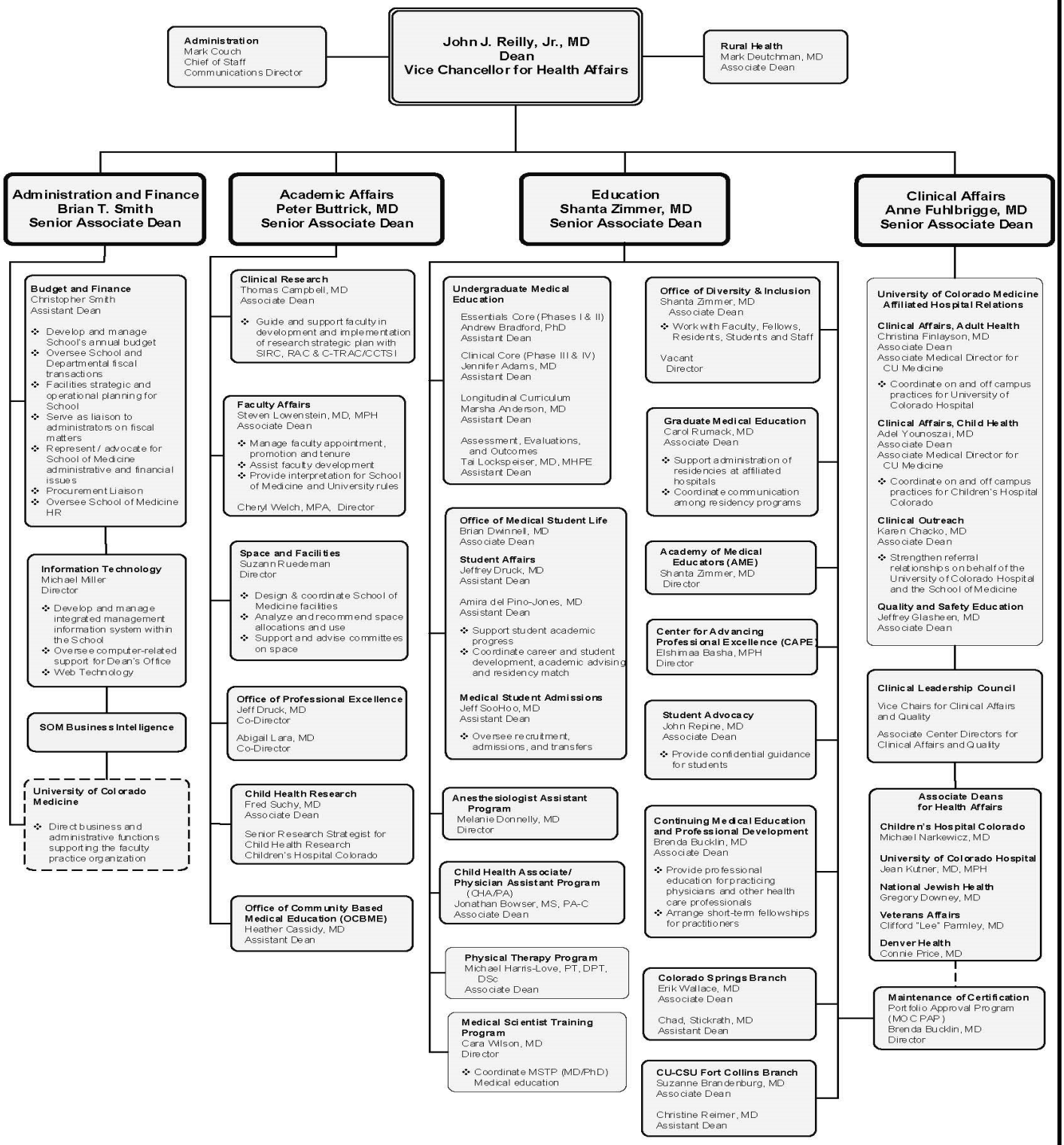




How we are organized

School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

ADMINISTRATION ORGANIZATIONAL CHART

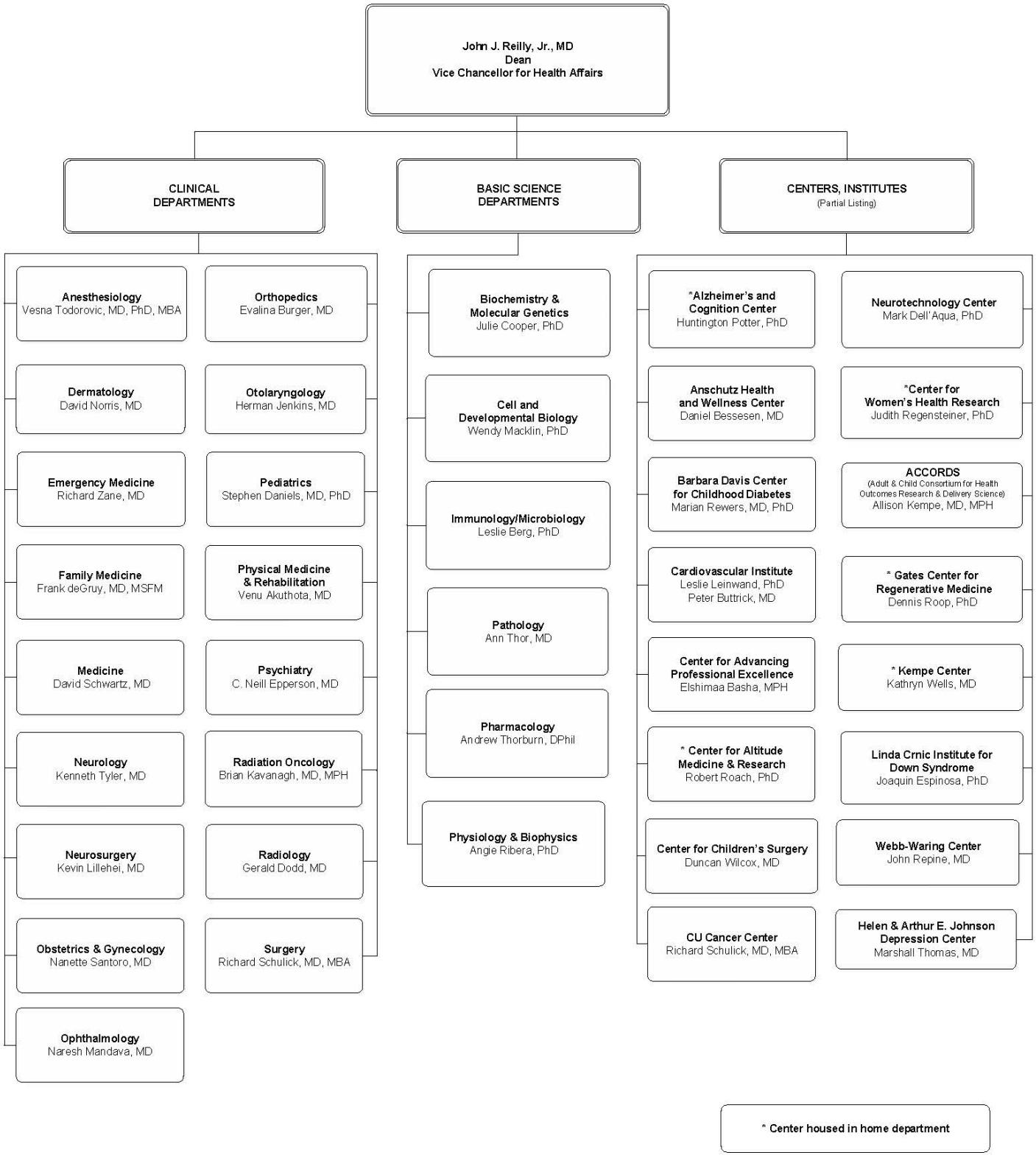


As of October 23, 2020

School of Medicine

UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

BASIC SCIENCE AND CLINICAL DEPARTMENT CHAIRS
CENTER AND INSTITUTE DIRECTORS



As of October 5, 2020

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
Academic Affairs,
S. Gilbert Blount Endowed Chair,
Division of Cardiology



Mark Couch,
Chief of Staff and
Director of Communications



Anne Fuhlbrigge, MD,
Senior Associate Dean
for Clinical Affairs



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



Shanta Zimmer, MD,
Senior Associate Dean
for Education, and
Associate Dean for Diversity
and Inclusion

School of Medicine Associate Deans



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



Suzanne Brandenburg, MD, CU/CSU Fort Collins Branch



Brenda Bucklin, MD, Continuing Medical Education and Professional Development



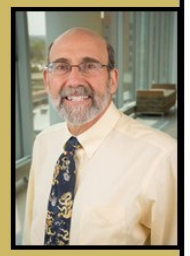
Thomas Campbell, MD, Clinical Research



Karen Chacko, MD, Clinical Outreach



Gregory Downey, MD, Health Affairs, National Jewish Health



Mark Deutchman, MD, Rural Health



Brian Dwinnell, MD, Office of Medical Student Life



Christina Finlayson, MD, Clinical Affairs/Adult Health



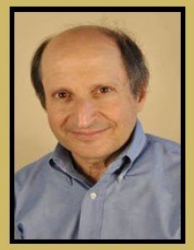
Jeffrey Glasheen, MD, Quality and Safety Education



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



Jean Kutner, MD, MPH/MSPH, Health Affairs, University of Colorado Hospital



Steven Lowenstein, MD, MPH/ MSPH, Faculty Affairs



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



Clifford "Lee" Parmley, MD, JD, Health Affairs, Veterans Affairs



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



John Repine, MD, Student Advocacy



Carol Rumack, MD, Graduate Medical Education



Frederick Suchy, MD, Child Health Research



Erik Wallace, MD, FACP, Colorado Springs Branch



Adel Younoszai, MD, Clinical Affairs/Child Health

School of Medicine Clinical Department Chairs



Venu Akuthota, MD,
Physical Medicine and Rehabilitation



Evalina Burger-Van der Walt, MD,
Orthopedics



Stephen R. Daniels, MD,
PhD, Pediatrics



Frank deGruy, III, MD,
Family Medicine



Gerald "Chip" Dodd, MD,
Radiology



C. Neill Epperson, MD,
Psychiatry



Herman Jenkins, MD,
FACS, Otolaryngology–
Head and Neck Surgery



Brian D. Kavanagh, MD,
MPH/MSPH,
Radiation Oncology



Kevin Lillehei, MD,
Neurosurgery



Naresh Mandava, MD,
Ophthalmology



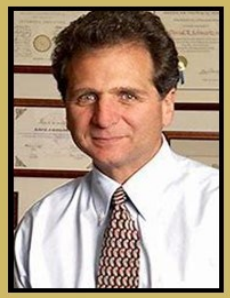
David Norris, MD,
Dermatology



Nanette Santoro, MD,
Obstetrics and Gynecology



Richard Schulick, MD, MBA,
Surgery



David Schwartz, MD,
Medicine



Ann Thor, MD,
Pathology



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



Kenneth Tyler, MD,
Neurology



Richard Zane, MD,
Emergency Medicine

School of Medicine Basic Science Department Chairs



Leslie Berg, PhD,
Immunology and Microbiology



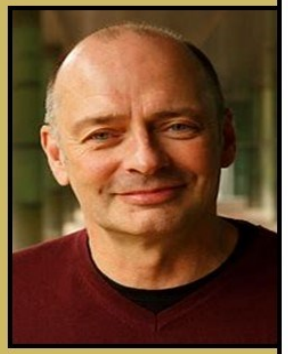
Julia Promisel Cooper, PhD,
Biochemistry and Molecular Genetics



Wendy Macklin, PhD,
Cell and Developmental Biology



Angeles Ribera, PhD,
Physiology and Biophysics



Andrew Thorburn,
D Phil, Pharmacology



School of Medicine Center, Institute, and Program Directors



Elshimaa Basha, MPH, CHSE, 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



Joaquin Espinosa, PhD, Linda Crnic Institute for Down Syndrome



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



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



Herman Jenkins, MD, University of Colorado Hearing and Balance Center



James Kelly, MD, Marcus Institute for Brain Health



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



Leslie Leinwand, PhD, Co-Director, Cardiovascular Institute



Marilyn Manco-Johnson, MD, Hemophilia and Thrombosis Center

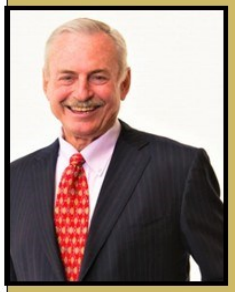


Huntington Potter, PhD, CU Alzheimer's and Cognition Center



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

School of Medicine Center, Institute, and Program Directors



John Repine, MD,
Webb-Waring Center for
Cancer, Aging, and
Antioxidant Research



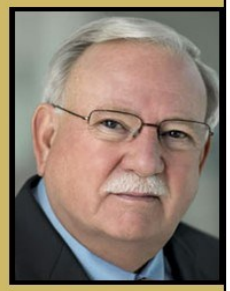
Diego Restrepo, PhD,
Co-Director, Rocky Mountain
Taste and Smell Center



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



Robert Roach, PhD,
Center for Altitude Medicine
and Research



Dennis Roop, PhD,
Gates Center for
Regenerative Medicine



Paul Rozance, MD,
Co-Director, Perinatal
Research Center



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



Robert Schwartz, MD,
Multidisciplinary Center on Aging



Robin Shandas, PhD,
Center for Bioengineering



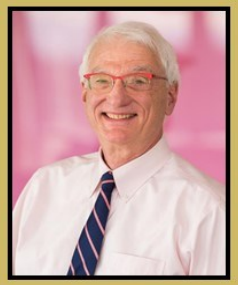
Marshall Thomas, MD,
Helen and Arthur E. Johnson
Depression Center



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



Duncan Wilcox, MD,
Center for Children's Surgery



Randall Wilkening, MD,
Co-Director, Perinatal Research
Center


Anschutz Medical Campus
University of Colorado

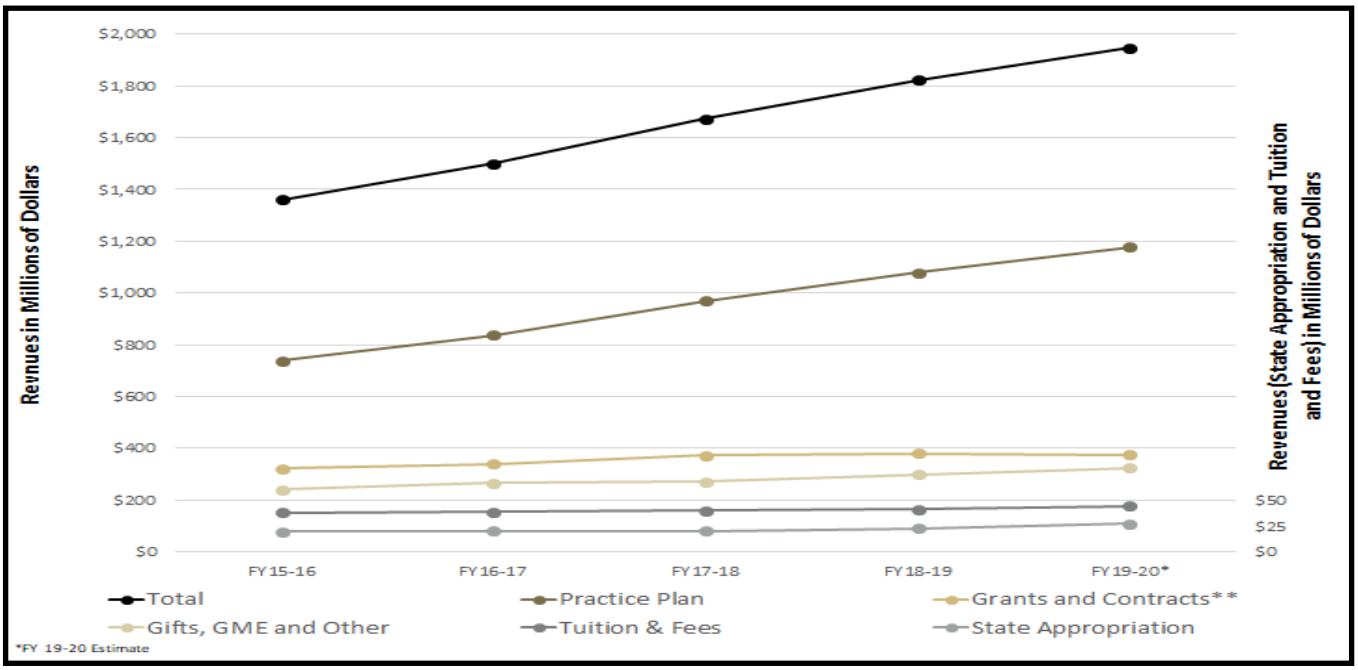




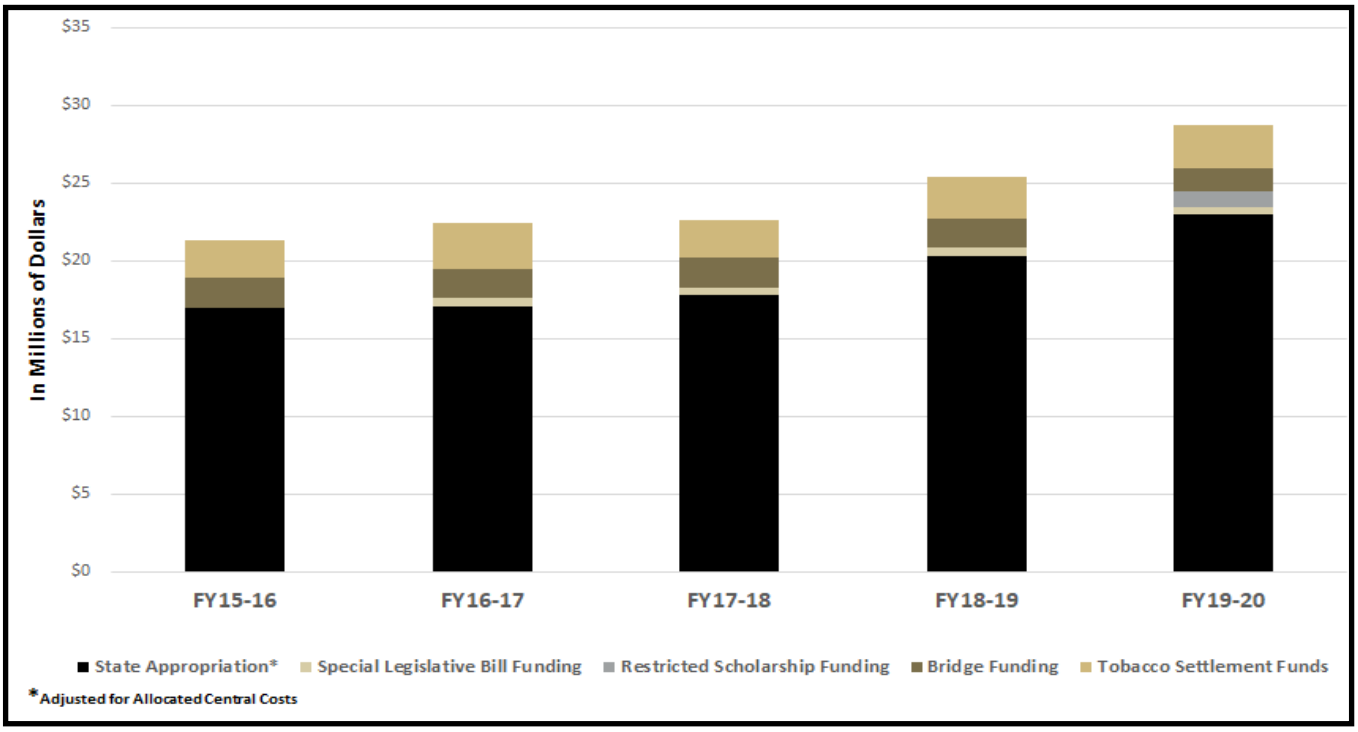


Administration and Business Affairs

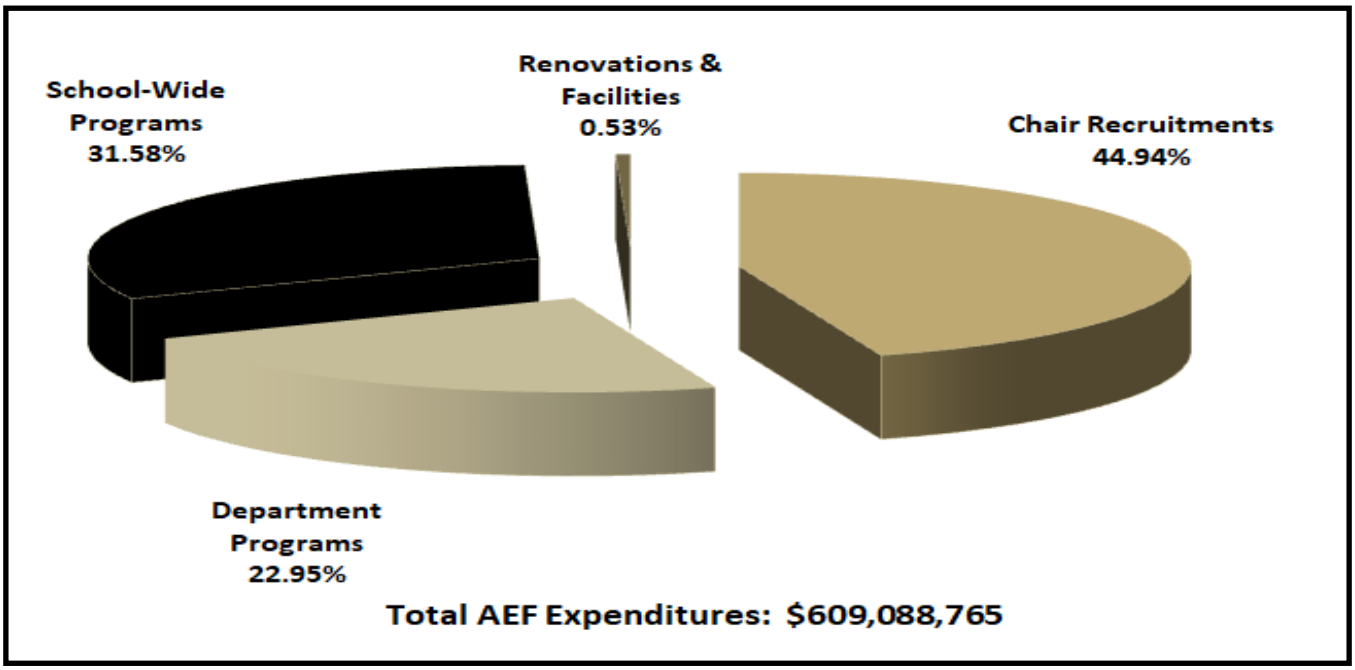
CU School of Medicine Trend in Revenue Source
Fiscal Years 2016 - 2020



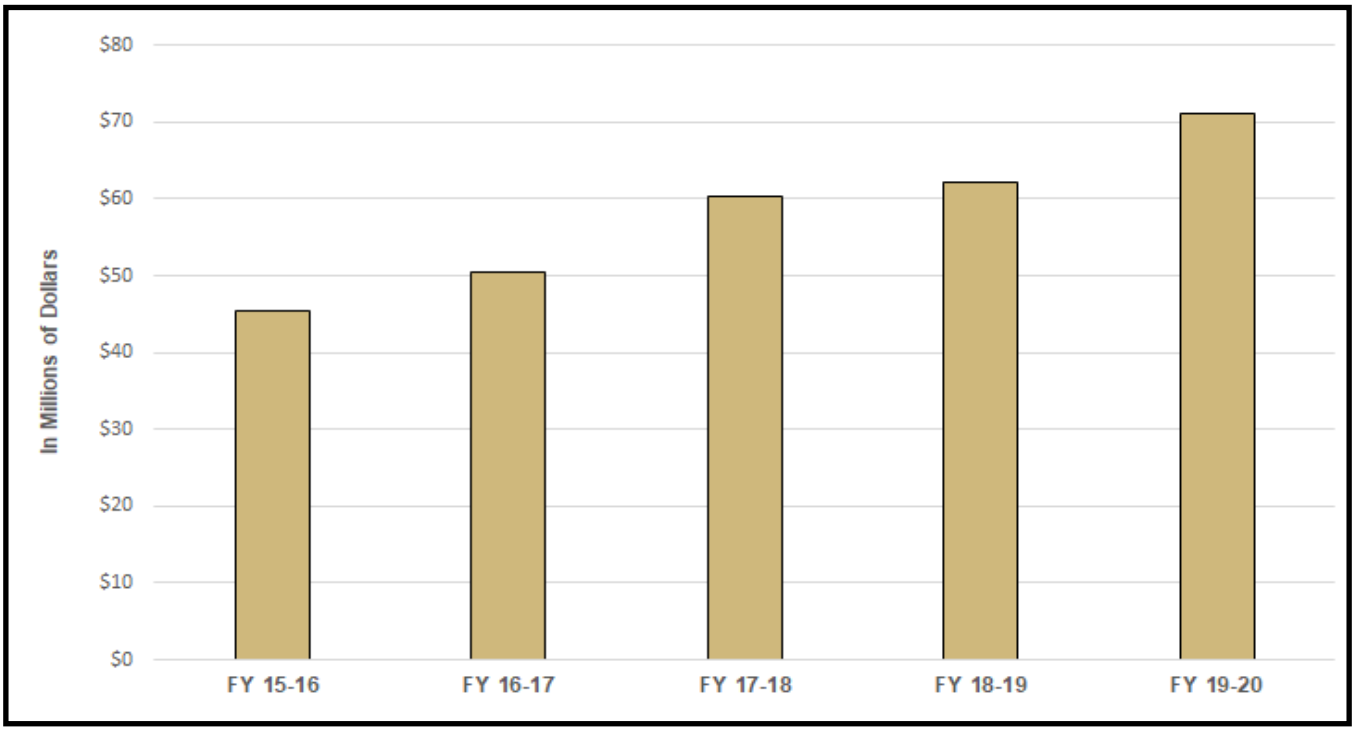
Trend in School of Medicine General Fund
Fiscal Years 2016 - 2020



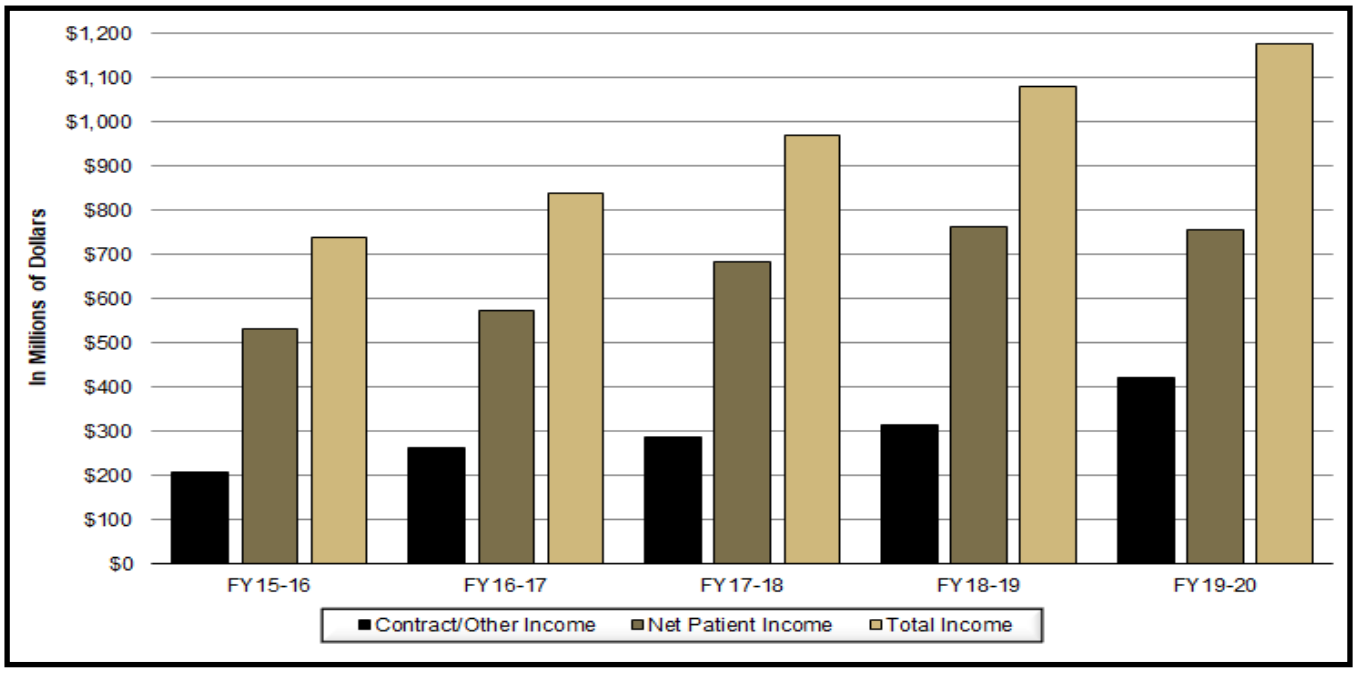
Academic Enrichment Fund Expenditures
Fiscal Years 1983 - 2020



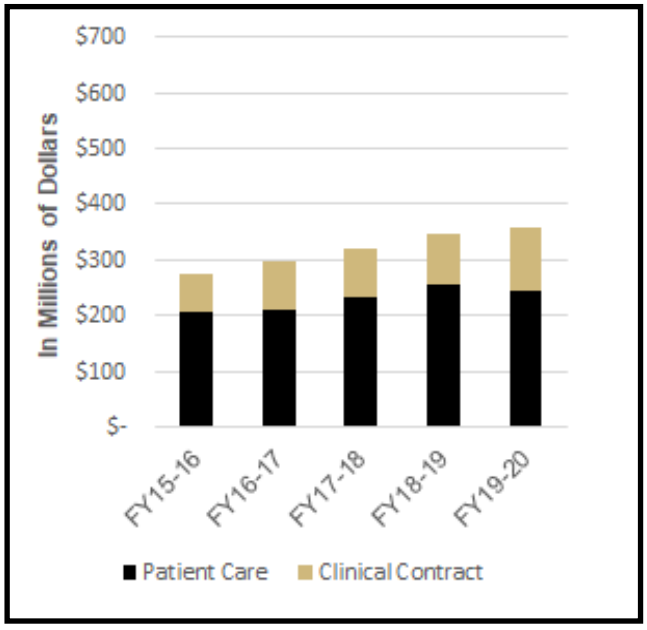
School of Medicine Commitment Expenditures
Fiscal Years 2016 - 2020



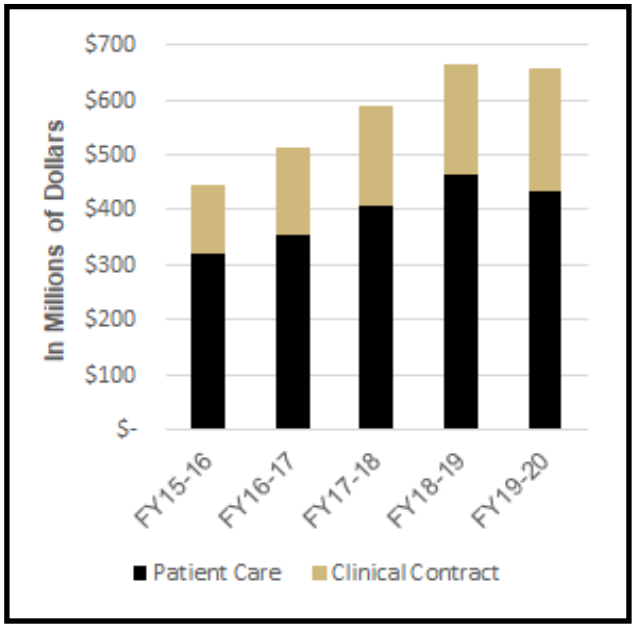
CU Medicine Patient and Contract Income
Fiscal Years 2016 – 2020



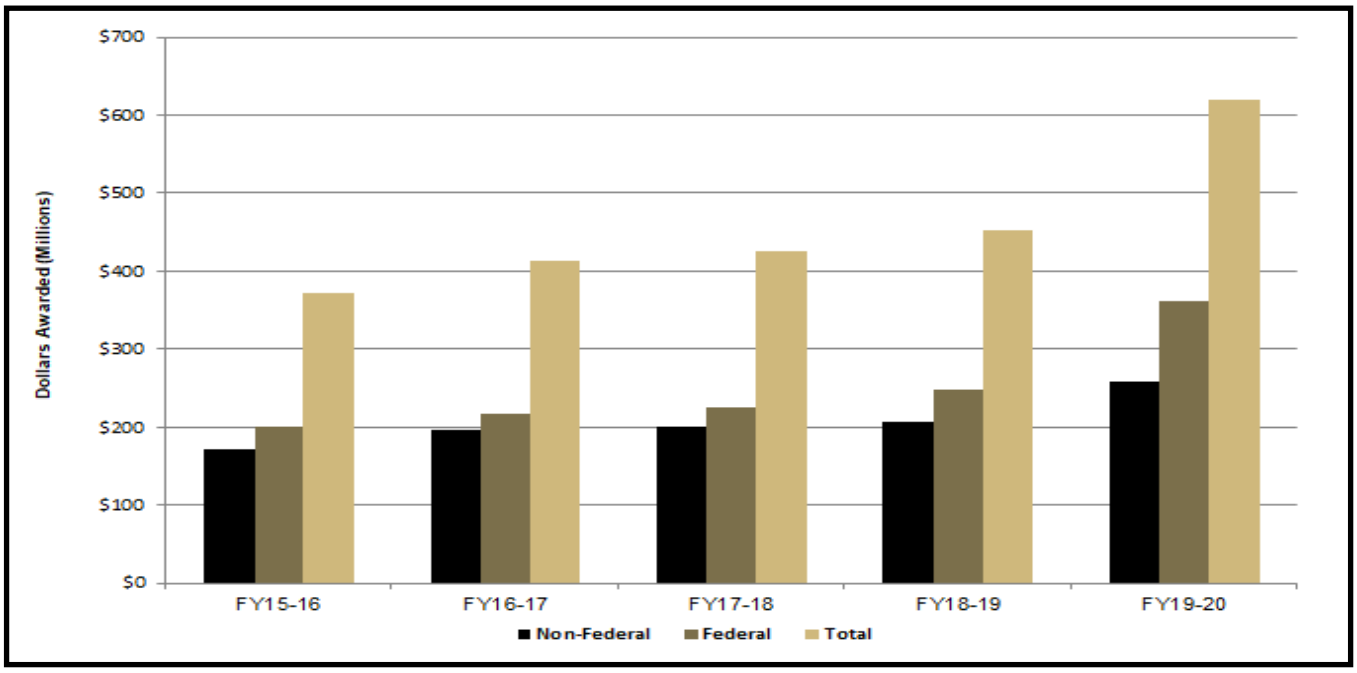
University of Colorado Medicine
Child Health Clinical and Contract Income
Fiscal Years 2016 — 2020



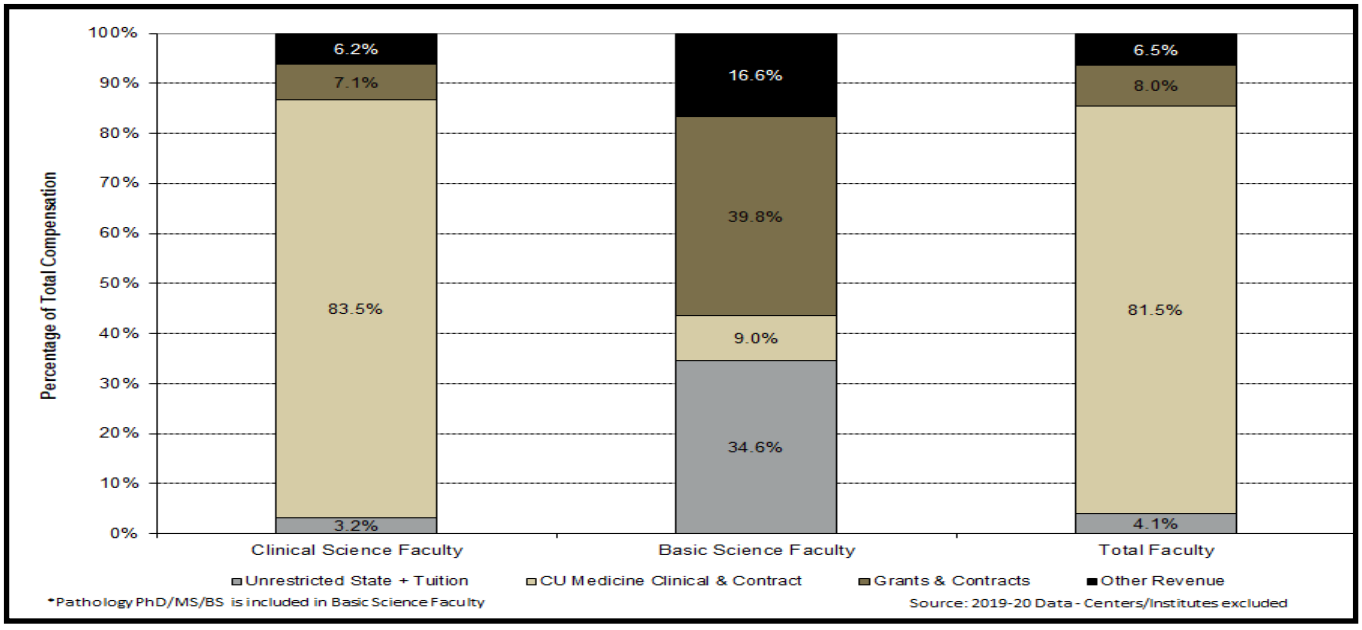
University of Colorado Medicine
Adult Health Clinical and Contract Income
Fiscal Years 2016 — 2020



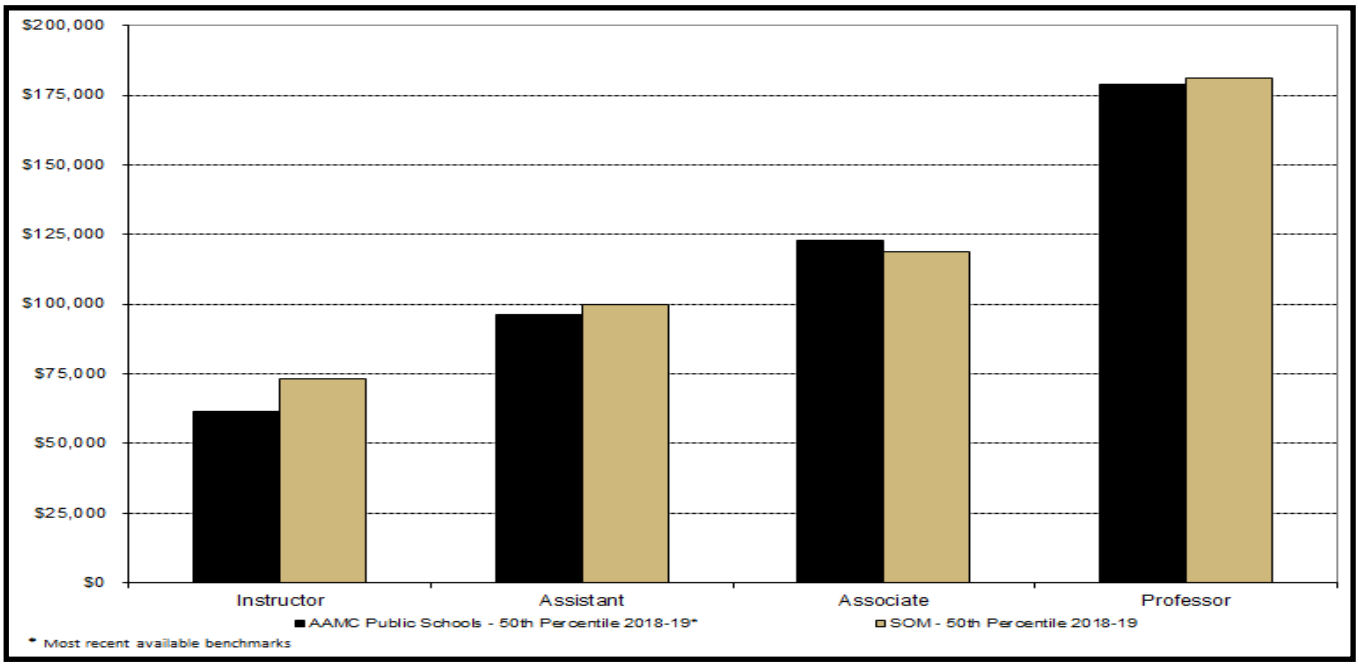
Sponsored Research Award Trend
Fiscal Years 2016 — 2020



Source of School of Medicine Faculty Compensation
Fiscal Year 2019 — 2020

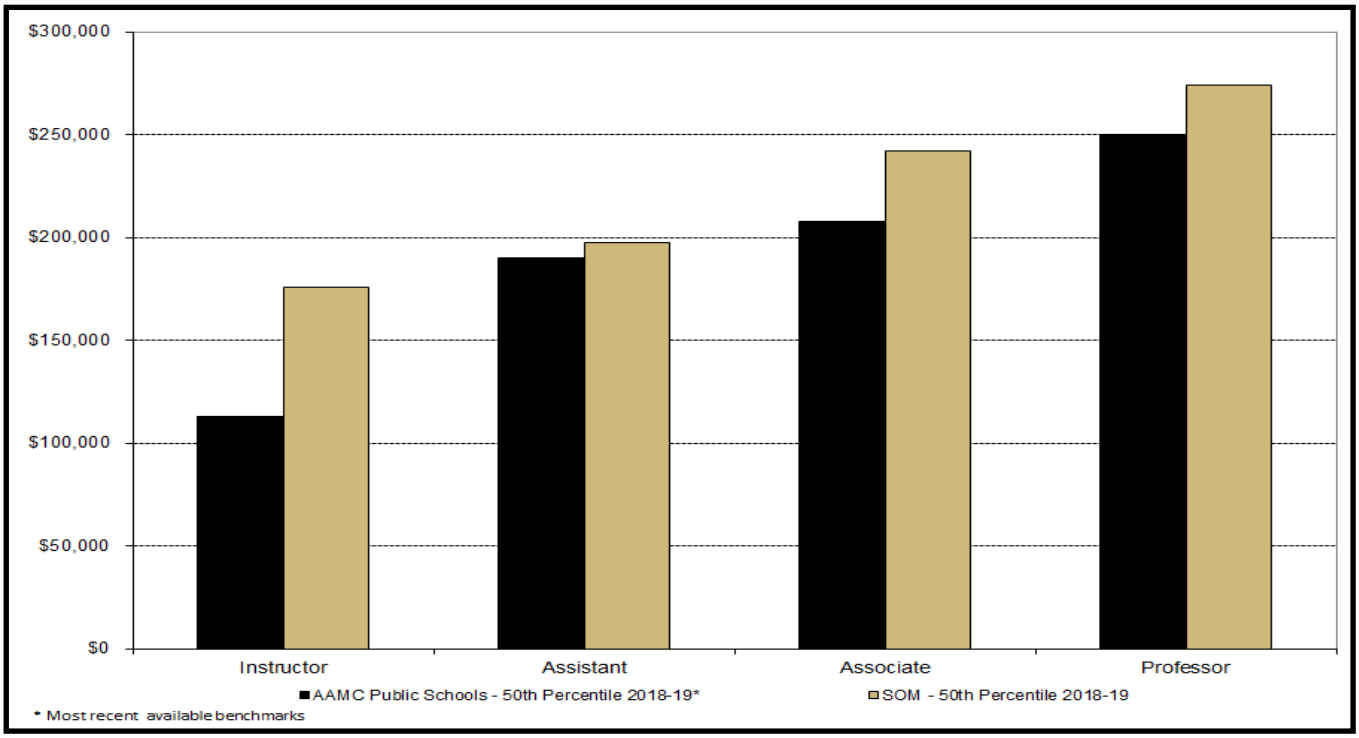


Comparison of Faculty Fixed Salaries to AACM Benchmarks for Basic Science Departments



Source: AAMC Faculty Salary Survey 2018-2019

Comparison of Faculty Salaries to AAMC Benchmarks for Clinical Science Departments



Source: AAMC Faculty Salary Survey 2018-2019

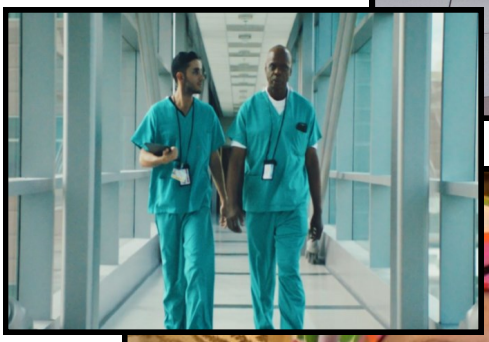
CU School of Medicine Endowed Chairs

Department/Program	Total
Anschutz Health and Wellness Center	1
Barbara Davis Center for Diabetes	7
Center for Women's Health Research	3
Charles C. Gates Center for Regenerative Medicine and Stem Cell	4
Colorado Prevention Center	1
Dean's Office	3
Linda Crnic Institute for Down Syndrome	1
University of Colorado Cancer Center	18
Webb-Waring Center	1
Department of Anesthesiology	1
Department of Biochemistry and Molecular Genetics	2
Department of Dermatology	1
Department of Emergency Medicine	1
Department of Family Medicine	3
Department of Immunology and Microbiology	1
Department of Medicine	34
Department of Neurology	1
Department of Neurosurgery	1
Department of Obstetrics and Gynecology	4
Department of Ophthalmology	5
Department of Orthopedics	3
Department of Pathology	1
Department of Pediatrics	1
Department of Physical Medicine and Rehabilitation	2
Department of Psychiatry	2
Department of Radiation Oncology	1
Department of Radiology	2
Department of Surgery	8
Total	**113**
Pediatrics Children's Hospital Colorado	51
University of Colorado Hospital	1

Source: The University of Colorado Foundation and Children's Hospital Colorado Foundation









Clinical Affairs

Top photo courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.

Bottom photo courtesy of @ucfmr (Department of Family Medicine residency) Instagram.



Photo courtesy of @ucfmr (Department of Family Medicine residency) Instagram.

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, serves as senior associate dean for clinical affairs. Fuhlbrigge partners with Associate Deans **Karen Chacko MD, Christina Finlayson MD**, **Jeffrey Glasheen MD**, and **Adel Younoszai MD**.

- **Finlayson and Younoszai** serve in joint leadership roles with University of Colorado Medicine, which is the faculty practice plan. Finlayson is associate dean adult health and associate medical director of the adult health practice, and Younoszai is associate dean of child health and associate medical director of the child health practice.
- **Glasheen** serves as a leader in quality and safety education for the University of Colorado through his role as the Director for the Institute for Healthcare Quality, Safety and Efficiency.
- **Chacko** leads clinical outreach, including the CU Medicine-UCHMG collaborative task force and directs the digital health expansion across the practice.
- The **Clinical Leadership Council**, comprised of the School of Medicine vice chairs and associate center directors for clinical affairs, provides additional clinical leadership.

With the CU Medicine Office of Value Based Performance, Community Practice, and Business Development and Planning, these physicians identify opportunities for clinical, quality, and patient-safety improvements, and help unify and drive projects across the Anschutz Medical Campus, Community Practice and outreach to benefit patient outcomes.

Practice improvement initiatives focus on crucial areas, such as team-based care and development of dashboards measuring quality of ambulatory care. With affiliated partners, UCHealth and Children's Hospital Colorado (CHCO), we continue to partner to develop clinically integrated networks, committed to the quadruple aim of improving health outcomes for the patient, provider, and staff experience, while reducing the total cost of care. Through the Coordinating Optimal Referral Experience (CORE) program, we strive to increase access to specialty care, decrease overall cost of care, and improve patient and provider experience. This program, which includes both asynchronous provider-to-provider consults (e-consults) and enhanced referrals, has exceeded expectations in adoption and impact. Continued expansion across adult and child health specialties was realized in 2019-20. We have partnered with AristaMD to create an innovative telehealth platform to expand eConsults to a network of community providers. A pilot went live in September 2020 with Salud Family Health Center, creating a user-friendly experience for answering eConsults with minimal provider burden and workflow changes. This is a first-in-class eConsult platform connecting two independent EHRs. Recognizing the synergistic relationship between eConsults and the ECHO (Extension for Community Health Outcomes) program, we combined these programs into one operational unit to decrease redundancy, provide centralized resources, and position ourselves as a national leader in peer mentored care delivery. This joint program, the Peer Mentored Care Collaborative, provides primary care providers support in the care for their patients by access to specialty input via eConsults and ECHO programs. In response to the COVID pandemic, the PMCC rapidly stood up an interdisciplinary panel of public health, clinical, and pharmacotherapy experts, to provide primary care providers a one-stop location for up-to-the-minute information and answering questions about COVID-19. The "COVID-19 Just-in-Time" ECHO series continues to be widely accessed with over 1,000 individual participants, many attending multiple sessions.

In the adult health practice, the number and variety of community-based practices continue to grow. We added two Family Medicine practices in 2018 and a third Family Medicine practice in 2019, bringing the total number of Community Primary Care Practices to four (Broomfield, Cherry Creek, Centennial, Greenwood Village). Specialty practice locations were also added, including Orthopedics in Broomfield and Inverness, Dermatology in Aurora, and Urology and OB/GYN in the south metro area. These community-based practices bring access to care closer to where our patients live and work. The FY2019 opening of Highlands Ranch Hospital, including a multispecialty medical office building, allows for a variety of services in that community.

We have engaged the community and state of Colorado in several clinical areas over the past year. Virtual health has been an active clinical frontier for our faculty as we partner with UCHealth, CHCO, and their virtual health teams to help provide services in areas in Colorado that cannot easily access traditional face-to-face specialty care. Spurred by the COVID pandemic, telehealth took on immediate and primary importance over the past year. Our faculty, with the assistance of our partners at UCHealth, were able to quickly and effectively transition from a nearly 100% in person clinical practice to a largely telehealth practice in less than two weeks at the height of the pandemic. We will use the lessons learned from this high level of telehealth engagement to identify those visits that would be best utilized in the telehealth arena moving forward. Similarly, in collaboration with Children's Hospital Colorado, our child health faculty rapidly expanded the virtual platform to provide specialty care to children in Colorado and beyond. Providers across the child health spectrum are now providing up to 1,000 virtual visits per day compared to 100 per week prior to the pandemic.

The School of Medicine is partnering with Salud Family Health Centers to open the Aurora Community Health Center (ACHC). On the ACHC campus, the partners will open a new Federally Qualified Health Center (FQHC), where interdisciplinary trainees will work together to provide full-spectrum medical, dental, and behavioral care. Faculty and residents from multi-field primary care disciplines will develop a primary health care model integrating community, social, and clinical services addressing influencers of health to increase health equity and improve health at lower cost. An FQHC was successfully opened this past year and is now serving the clinical needs of the Aurora community in three ZIP codes that have had the least access to care in that community. Working with our colleagues in the UCHMG practices, we continue to find alignment and ways to provide the best care possible to all patients in the UCHealth system through improved communication, safety, and sharing of best practices.

The child health practice has grown significantly with the successful opening of the new Children's Hospital Colorado in Colorado Springs and the Children's Colorado Health Pavilion in Aurora. In addition, there has been significant expansion of the Children's Colorado North Campus in Broomfield, which opened this spring. The pediatric specialty faculty increasingly partner with health systems in Colorado and the surrounding states to provide subspecialty care to the patients throughout the Mountain West region closer to their home when possible and at the Anschutz Medical Campus when necessary.

The Institute for Healthcare Quality, Safety, and Efficiency (IHQSE) resides in the Office of Clinical Affairs and offers multiple distinct training programs. The Certificate Training Program (CTP) is a yearlong, intensive leadership training program in quality and safety, which has trained over 100 clinical teams from both University and Children's Hospitals since 2013. 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. Since 2014, both a one-day Introductory Training Program and a two-day Clinical Leadership Development (CLD) course have brought organizational leadership skills and process-improvement knowledge to over 900 participants. In 2018, the Institute added four programs in patient safety, process improvement, and leadership training. The Quality and Safety Academy (introduction to case review, just culture, and safety-based improvement work) was developed for, and has served over 300 resident and fellow learners**.** The Lean Training Program (process improvement skills course focused on workflow) and 6S Training Program (process improvement skills course focused on physical workspace optimization) have been widely adopted by faculty, staff, and trainees. IHQSE also added a more rigorous leadership training program that builds on principles taught in both CTP and CLD. This two-day leadership course, called Facilitative Leadership, which helps leaders lead sustainable change and generate greater engagement, is now offered in place of CLD.

CU Medicine

University of Colorado Medicine (CU Medicine) is a 501(c)(3) practice organization that supports the clinical practice of the 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**.

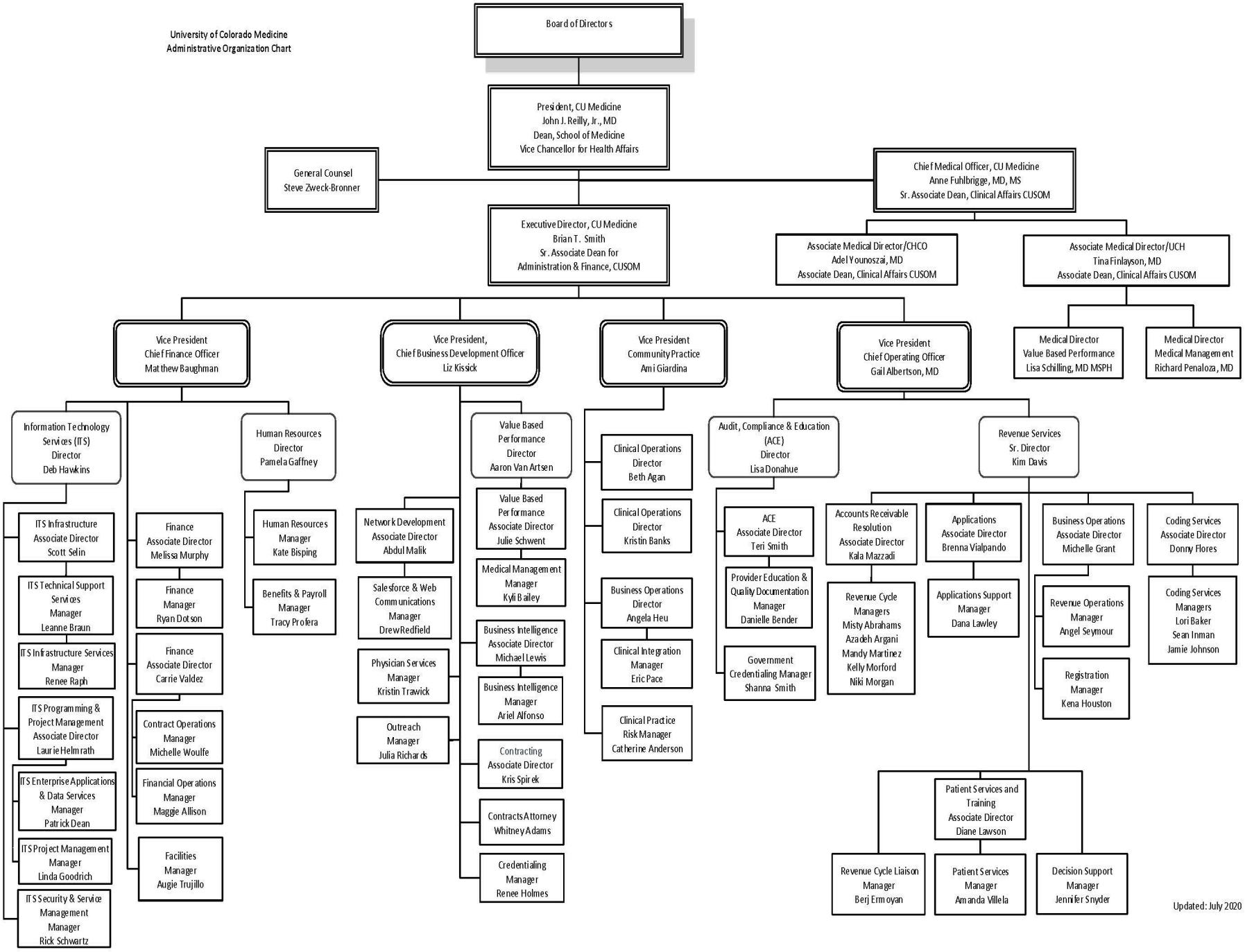
CU Medicine services include managed care contracting, revenue cycle management, compliance, business development and financial services for physicians and advanced practice professionals, and infrastructure for population health. All faculty of the CU School of Medicine are members of CU Medicine. The 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 providers.

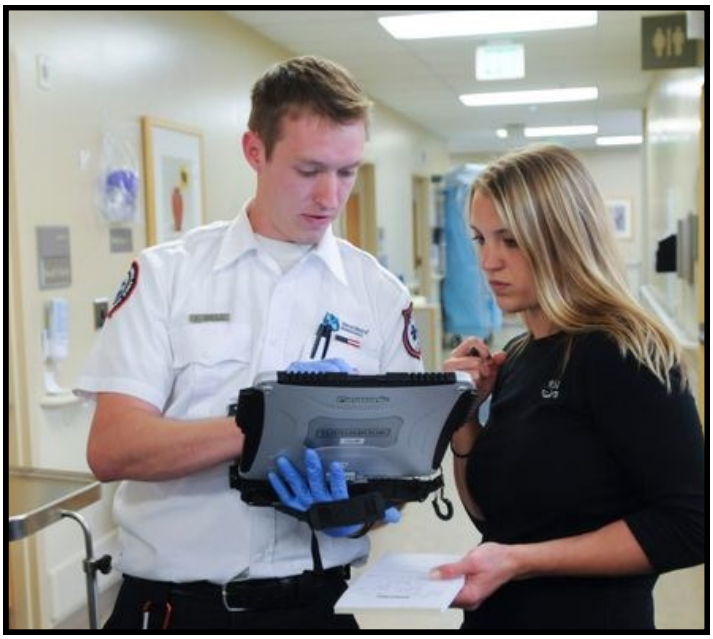
On the following page is a current organization chart.



University of Colorado Medicine
Administrative Organization Chart












BEST
PEDIATRIC
DOC





Photo courtesy of @cuanschutzalumni Instagram, June 9, 2020, Medical Alumni Association Board of Directors member Sarah Milliken-Glabe, MD, University of Colorado School of Medicine class of '08.







Diversity and Inclusion

Top photo courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.

Bottom photo courtesy of @Colorado_pa_program Instagram, taken at White Coats for Black Lives Kneel for Justice event, Thursday, June 6, 2020.



Photo courtesy of @colorado_pa_program Instagram, from June 29, 2020: "Special thank you to our faculty and student body for contributing in a unified effort for solidarity and promotion of justice, Diversity & Outreach chairs for their work on this project & @maaatthew_72 for the inspiration".

Office of Diversity and Inclusion

The School of Medicine's Office of Diversity and Inclusion (SOMODI) is led by Associate Dean of Diversity and Inclusion and Senior Associate Dean of Medical Education **Shanta M. Zimmer, MD,** and Director **Regina Richards, PhD, MSW**. **Christy Angerhofer** joined the team last fall providing administrative and program support as the Office of Diversity and Inclusion Business Professional, and Program Coordinator for the BA/BS-MD Program. **Janet Meredith**, Director of Community Programs, continues to strengthen SOMODI's opportunities for student community engagement efforts in partnership with 2040 Partners in Health and CSTAHR (Community-Students Together Against Healthcare Racism).

At CU School of Medicine, diversity continues to be a value central to the School's educational, research, community service, and health care missions. Therefore, the School of Medicine (SOM) is committed to recruiting and supporting a diverse student body, house staff, faculty, and senior administration. The SOM has adopted a definition of diversity that embraces race, ethnicity, sexual orientation, gender identity, disability, religion, political beliefs, rural upbringing and socioeconomic status. The SOMODI continues to serve as the central point of responsibility for coordinating, developing, and evaluating the School's diversity initiatives and programs spanning pipelines to practice and community engagement.

The Dean-appointed School of Medicine Diversity Council serves as the guiding committee for the work of the office and includes members from throughout the Anschutz Medical Campus and external community members. The council meets monthly supporting the diversity and inclusion initiatives of the December 2015 Diversity Plan. An analysis of this plan revealed measurable outcomes of 94 of the 104 recommendations. The plan is currently being updated and rewritten.

Diversity Council initiatives in 2019-2020 included monitoring strategies to continually measure and enhance the diversity, inclusiveness, and climate of the SOM, enhancing recruitment and retention efforts of students, residents, faculty, staff, administrative leadership, and fundraising. Accomplishments of topics addressed by the council are:

- The continued membership of the Physician Assistant and Physical Therapy Programs.
- Strengthening and restructuring the Lesbian Gay Bi-Sexual Transgendered Queer (LGBTQ) curriculum from the student perspective.
- The implementation of the Equity Toolbox which provides best practices for faculty, researchers, curriculum developers, and other stakeholders in medical education to promote the use of self-reflection when designing or developing education materials that perpetuate bias or stereotypes.
- Community engagement – over 70 specific CSTAHR community-based participatory research projects have been completed.
- Faculty search guidelines implemented.
- Cultural Accommodations Policy written and implemented.
- Strengthening partnership with the University of Colorado's Office of Equity.
- Women in Medicine – hosting the Women Leaders at AMC Networking Event.
- Continuous review of campus pipeline programs, including Post Baccalaureate and BA/BS-MD programs.
- Ongoing efforts to foster diversity in higher education.

Pipeline Programs
Pipeline development and local, regional, and national recruitment continues through partnerships with the SOM Office of Admissions, the Anschutz Medical Campus Office of Inclusion and Outreach, and other CU System networks to recruit under-represented in medicine (URiM) students.

The SOMODI in partnership with the SOM Office of Admissions continues to participate and co-sponsor the Annual Pre-Admissions Workshop (PAW) in partnership with and the Four Corners Alliance (University of New Mexico, University of Arizona, University of Utah, University of Colorado, and the Association of American Indian Physicians). Twenty-five American Indian and Alaskan Native pre-med students attend the three-day workshop that, based on evidence from pre- and post-session evaluation data, has a positive impact on the students' decisions to pursue a career as a physician or other health care professional.

The BA/BS-MD Program housed in the University of Colorado Denver and the SOMODI is a diversity pipeline program recruiting highly qualified Colorado high school students from broadly diverse backgrounds to participate in a combined eight-year program that assists students in developing a commitment to serve the healthcare needs of Colorado in the future. Directed on the SOM campus by Matthew Taylor, MD, PhD, and Christy Angerhofer as Program Coordinator. The program admits 10 Colorado high school students each year. https://clas.ucdenver.edu/health-professions-programs/babs-md-program-information. The first students who successfully matriculated into and graduated from CU School of Medicine are now engaged in medical education training across the country.

Students

The Office of Diversity and Inclusion continues to collaborate closely with the holistic admissions process to help matriculate a diverse and inclusive student body within the School of Medicine. Our medical students are representative and inclusive of all the various components of diversity, such as race, ethnicity, first-generation students, and students from rural communities. Consistently for the past five years, the entering class of the SOM has included 25 percent to 30 percent URiM students. Zimmer and Richards continue to host informal meet-and-greets throughout the academic year for all URiM MS-Is, and also engaging with and hosting opportunities for Physician Assistant and Physical Therapy students as a way to increase SOMODI's visibility and share information about resources available to students.

In addition to national minority recruitment fairs (AAMC and AMEC), a representative from the SOMODI continues to attend the Atlanta Clark University Minority Recruitment Fair. This recruitment fair brings together health professions students from Spellman College, Morehouse College, and Clark Atlanta allowing SOM to have presence and begin recruitment from these prestigious Historically Black Colleges and Universities.

The CU Chapter of the Student National Medical Association (SNMA) is co-advised by Richards and Brandi Freeman, MD, Department of Pediatrics. SNMA's national impact areas are: community outreach, engaging in pipeline programs, and medical education. The Colorado chapter of SNMA provides an inclusive community of support for medical students from diverse backgrounds, in addition to volunteer community service opportunities throughout Colorado.

This year at the CU SNMA Graduation Celebration, student awards were presented to Anastasia Hunt and Taylor Davis, MS-IVs, for their leadership as diversity champions. The faculty recognition award for leadership was presented to Richards and Heather Cassidy, MD. Nationally, Stephanie Nwagwu, MS-III (and past CU Chapter President) was elected as Region III Director. The CU SNMA Chapter continues to be recognized for supporting the mission and vision of SNMA.

SOMODI continues to be engaged in the 2040 Partners in Health Community Advisory Network. The highlight of this collaboration continues to be the multi-year mentored scholarly activity project of CU-UNITE Track medical students exploring intervention strategies to help providers understand and reduce occurrences of discrimination in healthcare. Another highlight is the expansion of the Mentored Scholarly Activity project reviewing SOM curriculum in response to Unconscious Bias Concerns, which has resulted in several student-led initiatives to address topics such as Race and Racism in Medicine.

The CU SOM Chapter of White Coats for Black Lives Matter (WC4BL) held an 18-minute die-in event to express opposition to police violence and the killings of Blacks and Latinos in the United States. Participants included students, faculty, staff and residents from SOM, School of Pharmacy, and the Physician Assistant and Physical Therapy Programs. This year, visiting professor, Kimberly Manning, MD, from Emory University School of Medicine, also joined the group.

CU SOM WC4BL also led the efforts for CU SOM's participation (1 of 17 medical schools) in the 2019 National Racial Justice Report Card (RJRC). The RJRC evaluates medical schools and academic medical centers on 14 metrics encompassing curriculum and climate, student and faculty diversity, police behavior, racial integration of clinical care sites, treatment of workers, and research protocols. Ultimately, WC4BL hopes that the RJRC will highlight best practices, increase transparency, and urge medical schools to meet the needs of our patients and colleagues of color. Ranking ranged from A (highest possible) to C – conservatively representing failure to provide. CU SOM's overall grade was a B. The 2019 full report can be found at https://whitecoats4blacklives.org/wp-content/uploads/2019/08/RJRC-2019-Full-Report-Final-8.28.19.pdf. The SOMODI in partnership with CU SOM Chapter of WC4BL continues to monitor and update the activities and programs for the RJRC.

The Inaugural CU Chapter of the Latinx National Medical Society (LMSA) was formed in 2019 and continues to be active in providing support for the Hispanic and Latinx students on our campus. This student interest group supports the mission, vision, and values of the National LMSA organization, which include:

- Recruitment and admission of Latinx-American scholars.
- Retaining members in health professions programs.
- Educating themselves and other in areas of concern to the Latinx communities in curricula and politics of health care systems.
- Writing and circulating ideas and fostering the refinement and development of research skills among members.
- Improving health care delivery to Latinx communities.
- Advocating for the rights of Latinx patients.

The CU SOM FirstUP mentoring program designed to support first-generation medical students continues to grow. This year, 19 mentor/mentee partnerships were matched, providing support for our first-generation students. This support also included some community-building opportunities through joint social events and opportunities for students and mentors to share best practices. Mentors are current faculty members and CU alumni practicing physicians. Thank you to CU Office of Alumni for their ongoing partnership on this project.

Graduate Medical Education

A successful Graduate Medical Education (GME) Second Look Day, led by collaborations between the Departments of Emergency Medicine, OB/GYN, Physical Medicine &Rehabilitation, Interventional Radiology, Radiology, Pediatrics, Family Medicine, Surgery, and Internal Medicine, was held at the Denver Museum of Nature and Science in February 2020. This event increased visibility of all our GME programs and participating programs successfully recruited URiM residents to their entering intern classes in 2020. Fifty prospective URiM residents attended Resident Second Look Day 2020 from 15 programs. The SOMODI continues to work with GME Programs to train programs on review of holistic GME recruitment processes.

The Minority and Ally Resident Council (MARC) was started to support minority residents through mentoring, professional development, and opportunities for social gatherings to address the needs of minority residents. One of the primary goals for this council is community building among residents of any underrepresented status. This group has over 60 residents as part of its membership base. Faculty members are Zimmer and Richards, with Christy Angerhofer providing ongoing leadership, mentoring, and support for the group. The inaugural co-presidents were Jana Bhuiyan, Chief Resident, Department of Psychiatry, and Jeremy Collado, PGY-3 Emergency Medicine.

SOMODI continues to provide guidance and support for multiple NIH T32 training grants within departments and programs to enhance efforts to increase diversity in the grantee pool, as well as to support efforts around mentorship and retention of scientists from URiM background.

Faculty and Staff

Recruitment and retention of a highly skilled diverse faculty continues to be a priority within the School of Medicine. The Dean continues to support a hiring initiative for underrepresented faculty in all departments and provides salary support (0.2FTE*3 years) for highly qualified URiM recruits to the School.

Development of a community for faculty and staff continues with the University of Colorado Organization for Racial and Ethnic Support (UCOLORES) which hosts a series of faculty development activities for members, designed to help build bridges and develop relationships for informal mentoring partnerships and supportive relationships among diverse faculty and staff.

The Department Diversity Leadership Group consisting of leaders in Medicine, Surgery, Radiology, OB/GYN, Otolaryngology, Family Medicine, and Pediatrics continues to meet monthly to discuss issues both in the SOM and nationally. Departments provide protected time to these faculty members holding the role and responsibility of Department Diversity Leader as a commitment to diversity and inclusion initiatives and strategies. Zimmer and Richards provide mentorship for these positions.

SOMODI continues to host meet-and-greets for newly hired African-American and Hispanic Latino faculty and their families to introduce them to the Denver community-at-large. The Women of Color group was created to host monthly social gatherings for CU SOM Black/African American Faculty.

Community
Support of the growing community on and around the Anschutz Campus is an important priority to the SOMODI. Students from campus, including the schools of medicine, pharmacy, nursing, dentistry, and the Physical Therapy Program work side by side in Aurora's DAWN clinic where they provide multidisciplinary care and serve as health care navigators to uninsured patients and learn the importance of team work and advocacy on the health of communities.

The Fourth Annual Toast to Diversity and Call to Action was held Sept. 17, 2019, for approximately 200 people who attended a celebratory event to build community among underrepresented faculty, residents, and students while highlighting the importance of diversity on the Anschutz Medical Campus. This event continues to catalyze efforts for continued engagement, mentorship, and retention of our talented faculty, students and trainees.

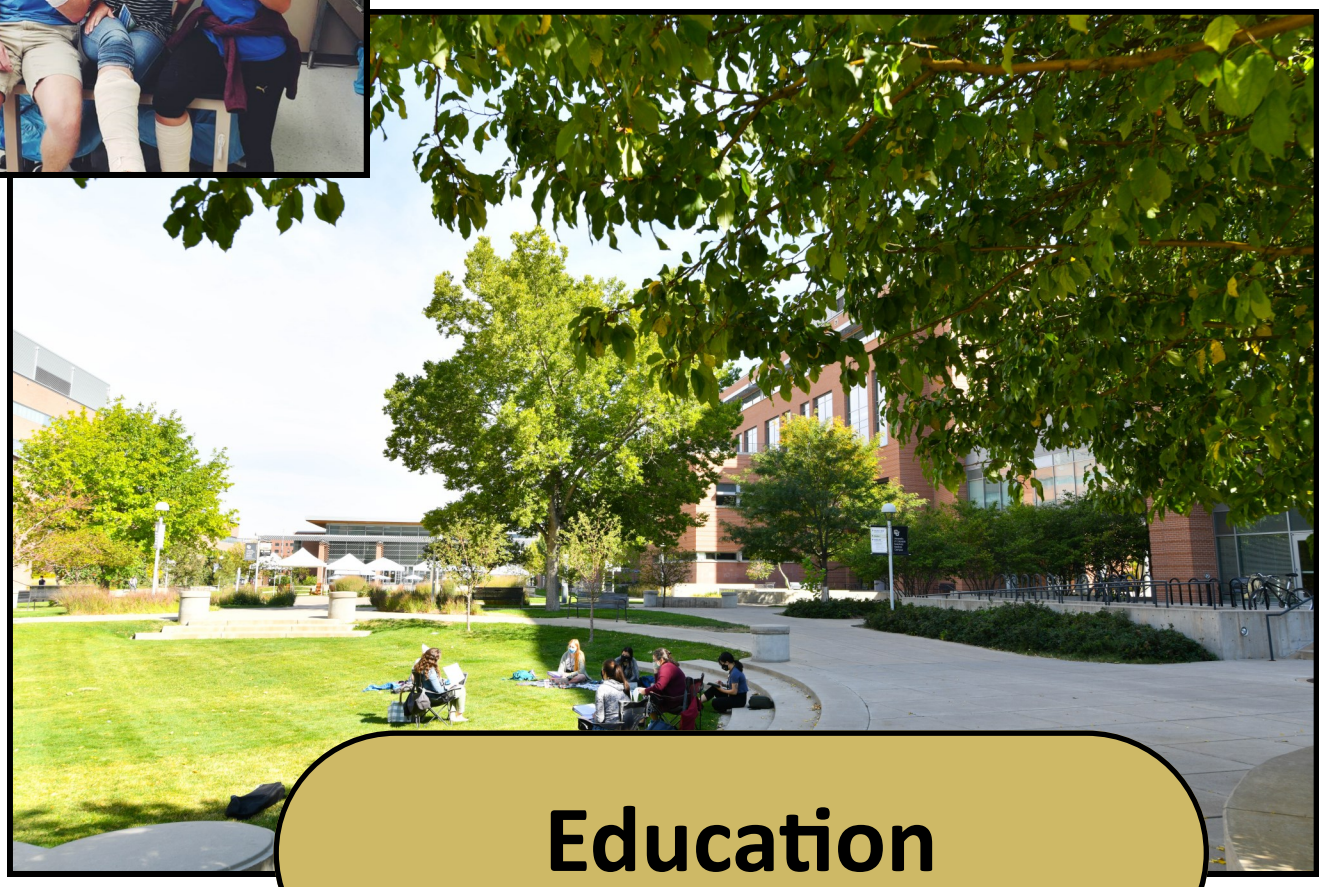
The Community Engagement Curriculum Advisory Board (CECAB) established (2019) under the SOMODI and is chaired by Janet Meredith and Heather Cassidy, MD, continues to provide oversight specifically over the development of the CU SOM Service Learning Curriculum.
The goal of the group is to hear from the community training physicians to address structural racism and the health of communities. This committee meets bi-monthly and is comprised of faculty, staff, medical students, external community stakeholders, and faculty from interdisciplinary schools and departments.

The Office of Diversity and Inclusion continues to focus on service, coordination, and collaboration with colleagues on the Anschutz Medical Campus and the University of Colorado Denver campus as we work toward an institutional climate of diversity and inclusiveness that appreciates what our talented students, trainees, faculty and staff bring to the University of Colorado School of Medicine.

https://medschool.cuanschutz.edu/deans-office/diversity-inclusion







Education

Top photo courtesy of @cuanschutz Instagram, from July 11, 2020: "Cheer Up the Lonely Day... This #CUAnschutz outreach program connects our students with COVID-19's most vulnerable population. Older adults are the most at-risk of dying from the virus and are thus the most isolated group during this crisis."

Center photo courtesy of @colorado_pa_program Instagram, October 1, 2020



"Let the white coat of yours get worn, stained with tears and woven with stories of your patients' lives"

Kathryn Kala, MD, Class of 2020



"During this year you will have the absolute privilege to witness humanity in times of profound joy and deep sorrow"

Jessica Smith, MD, Class of 2020



"…Know that you are shaping each patient's story and, in turn, their stories will carry you through the long shifts"

Abigail Barnes, MD, Class of 2020



"Stay late because you want to learn the life story of your patient getting emergency dialysis upstairs"

Graham Custar, MD, Class of 2020



The previous page highlights essays from "Letters to a third year student" by the Class of 2020 School of Medicine. A complete listing of essays is posted at https://www.cuanschutz.edu/docs/librariesprovider139/letters-to-a-third-year/letters-to-third-year-2020-web-version.pdf?sfvrsn=62b407b9_2

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 pipeline programs in middle schools to attract and prepare a diverse and talented applicant pool to the health professions. Students graduating from the MD program will be able to compete for positions in our Graduate Medical Education programs that 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. Included in this section is information on the Academy of Medical Educators, which was created to support and enhance all educational programs and teachers at the University of Colorado School of Medicine. The following pages reflect information on all of the school's programs including Anesthesiology; 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.



Academy of Medical Educators

The Academy of Medical Educators (AME), under the leadership of **Shanta M. Zimmer, MD,** seeks to create a community of dedicated educators who work together to promote excellence in teaching and curriculum throughout the health sciences community. To support this goal, AME inducted six new members in 2020 for a total of 103 members who serve the campus through a series of programs that provide faculty development, coaching, recognition, small grant and other scholarship opportunities, and advocacy in medical education.

In 2019-20, the AME continued to provide regular faculty development opportunities through workshops, online education, and a growing number of individual sessions to departments and programs. The longstanding and highly successful Teaching Scholars Program, under the leadership of **Janet Corral, PhD,** and **Chad Stickrath, MD,** graduated 12 interprofessional participants who are now trained in curriculum development, program evaluation, and medical education scholarship. For faculty development, the AME continues to run the biannual Residents and Fellows as Teachers Elective, led by **Eric Young, MD**.

In addition to faculty development and career advancement for educators, the AME promotes education and educators on campus. The AME has increased its role in supporting the scholarship of education, and it serves as a Best Evidence Medical Education Review Site. In addition, we provide a core research infrastructure to provide advice, research assistant support, and mentorship for medical education research projects. In 2019, the AME launched a new monthly Medical Education Grand Rounds Series featuring local and national speakers on topics of pedagogy, mentorship, assessment, and educational innovation across the spectrum of learners in undergraduate and graduate medical education.

In April 2020, AME welcomed new AME Coordinator, Erin McKay, to the team. Erin's career is in higher education, previously working at CU Anschutz as a PRA and Program Coordinator in the Cancer Center (2006-2014) before moving to the University of Denver (DU). At DU she was a Program Manager at the Josef Korbel School of International Studies, managing a team of students, coordinating education programs, national conferences, and editing an academic journal. While at DU, Erin also earned her MA in Communication Management – Learning and Development. Erin is delighted to be back at CU Anschutz and is excited to be working with the AME faculty.

Funding for the AME is provided through the School of Medicine Dean's Office and Graduate Medical Education, with additional support for the small grants programs from the Rymer Family and the Office of Faculty Affairs. Please visit the website for detailed information on each of the above:
https://medschool.cuanschutz.edu/education/academy-of-med-educators

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 located at the Anschutz Medical Campus. When the first class matriculated in the fall 2013, it became only the ninth program of its kind in the United States. While there are currently 12 accredited Anesthesiologist Assistant programs offering similar education, the University of Colorado is the only school located in the western half of the country.

The program is divided into two phases: a 16-month integrated didactic and clinical curriculum followed by a 12-month primarily clinical phase. Prior to transitioning into the clinical portion, students must have successfully completed four semesters of basic science as well as 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) prior to graduation. Students who successfully complete the program requirements are awarded a Master of Science Degree in Anesthesiology from the University of Colorado School of Medicine.

Mission

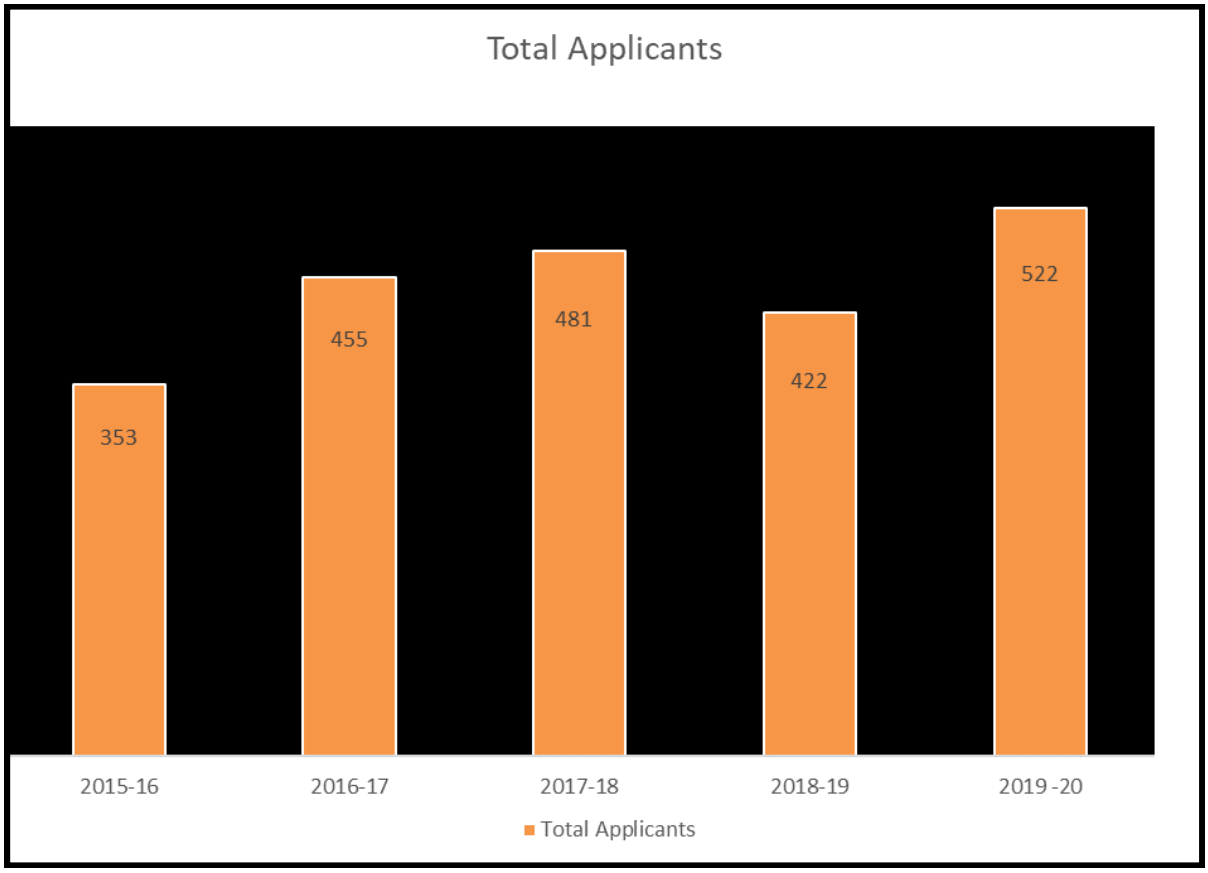
The mission of the Master of Science in Anesthesiology Program is to educate and train highly skilled Anesthesiologist Assistants in the cognitive, psychomotor, and affective learning domains in order to work within the anesthesiologist-led Anesthesia Care Team to provide quality patient care.

Leadership

Vesna Jevtovic-Todorovic, MD, PhD, MBA	Chair, Department of Anesthesiology
Brenda Bucklin, MD	Vice Chair of Education, Department of Anesthesiology
Melanie Donnelly, MD, MPH, MBA	Medical Director
TBD	Associate Medical Director
Ann-Michael Holland, CAA, MMSc	Program Director
David Dunipace, CAA, MS	Associate Program Director
Steven Winterbach	Lead Program Coordinator
Amy Hebbert	Program Coordinator

Website
Our website has been revamped to reflect the changes in staff and the new class.
www.medschool.ucdenver.edu/aaprogram

Student Overview
When the fall 2020 semester begins, the MS-Anesthesiology Program will have a total of 40 students enrolled. The program admissions process is extremely competitive with the last application cycle producing 522 applicants. Of those applicants, only 14 were admitted and 13 will matriculate. The MS-Anesthesiology Program has now had five graduating classes and a total number of 46 graduates.



Current Student Demographics					
	Class of 2018	Class of 2019	Class of 2020	Class of 2021	Class of 2022
Students	11	13	12	14	13
Average Age	27	26	24	25	27
Male : Female	6 : 5	8 : 5	6 : 6	6 : 8	8 : 5
In State	8	7	4	6	7
Out of State	3	6	8	8	6
Average GPA	3.6	3.4	3.5	3.6	3.6
Average MCAT	59th Percentile	56th Percentile	57th Percentile	62nd Percentile	69th Percentile

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 curriculum features didactic courses taught primarily by attending anesthesiologists, which gives students an opportunity to interact with all members of the anesthesia care team 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 in which students lead Problem-Based Learning Discussion sessions covering cases and subject matter. In addition to classroom didactics, the students begin clinical hours within the first month of the program. MS-Anesthesiology students become familiar with the operating room environment even before completing the didactic portion of the program. This comfort transforms into self-sufficiency as the students rotate through 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 an opportunity to rotate in clinical settings along the Front Range and nationwide.

Simulation Lab

The Simulation Lab is an integral part of the overall curriculum during the first year and is comprised of 3 semesters. The students are taught skills and concepts utilizing both 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 ACLS protocols, local anesthetic toxicity management, difficult airway management, treatment of severe bronchospasm and many other scenarios. The concepts of TeamSTEPPS (team performance strategies and tools) are incorporated in all the scenarios.

Diversity Scholarship

To increase diversity in the Anesthesiologist Assistant Program, the Department of Anesthesiology has established its first Diversity Scholarship to provide support to students who are traditionally underrepresented in health science graduate programs. Scholarship funds will cover $39,475 of tuition over the last four semesters of the MS-Anesthesiology Program. Jonathan London was our inaugural recipient in 2018. Our second recipient was Fabienne Haas in 2019. Our third scholarship recipient, Mike Dinh, was announced in June 2020.

Community Outreach

The MS-Anesthesiology students have completed community service projects every semester of the program's existence. Students have prepared meals for Ronald McDonald House Charities of Denver using sponsored food items from area businesses; raised money by hand 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 medical supplies for Project Cure (the largest provider of donated medical supplies and equipment to developing countries around the world); and staffed booths at local fundraising events such as Strides for Epilepsy 5K and University health fairs. The students recently participated in the Tuberous Sclerosis Alliance walk as a team to raise money for that organization and donated blood for the Children's Hospital Colorado.

Center for Advancing Professional Excellence

The Center for Advancing Professional Excellence (CAPE) is a state-of-the-art standardized patient and simulation center. Working alongside faculty, current and future health care professionals gain access to the latest innovations in teaching and learning. Through simulation experiences, learners have the opportunity to learn, develop, and improve patient-centered care. With 18,000 square feet, the CAPE is a unique resource to the Rocky Mountain region. This education environment allows learners to gain real-world experience working with patients, handling clinical situations, and collaborating with fellow health care professionals. The CAPE promotes excellence in the health professions through education and assessment of clinical skills including communication, physical examination, clinical reasoning, and teamwork. We continue to grow and innovate while accommodating more learners and health care professionals. Our community of supporters fuel our efforts to bring a world-class education within reach for current and future health professionals in the Denver metro area, the region and beyond.

Annual Achievements Include:

- Ongoing **accreditation by the Society for Simulation in Healthcare**. The accreditation further establishes CAPE as an international leader within the simulation community in the areas of Teaching, Assessment, Research and Education.
- Successfully transitioning a number of education and assessment sessions to **virtual offerings and exploring telehealth and Virtual Reality training opportunities** for health professions learners, residents, and practitioners.
- Attracting **new external partners** like National Jewish Health, Denver Health, Colorado Mesa University and ACCORDS by offering trainings and research in the areas of communication, teamwork, transition of care, and physical exam teaching utilizing simulation professionals and mannequins.
- Continued advanced training of standardized patients capable of providing a broad array of portrayals, physical exam teaching, evaluation, and feedback.
    - The CAPE employs 65 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 27,600 hours of simulation work**. The **CAPE provided over 42,000 learner contact hours for AMC schools**.
- Continued partnership with the **Colorado Department of Public Health and Environment** to administer a competency-based skills assessment for health navigators who serve a diverse population across the state of Colorado. In the last year, **45 health navigators have successfully completed the assessment** and were added to the CDPHE registry for current and potential employers to access. Additionally, CAPE collaborated with AHEC and administered the assessment in Durango to be accessible by health navigators practicing in and around the southwest region.
- Continued partnership with **College of Nursing faculty to integrate simulated patients in mental health curriculum** for undergraduate nursing students.
- Continued partnership with **Children's Hospital Colorado** Simulation Lab to integrate simulated patients in additional **boot camp trainings** for interns, residents, and fellows.
- Partnership with 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 30 assessments from CPEP referrals**.
- Under the leadership of **Kirsten Broadfoot, PhD,** and in partnership with all health professions on campus, ongoing implementation, evaluation, and dissemination of a **Communication Toolbox** for the purpose of improving and standardizing assessment of communication skills across all health care professions.
- Ongoing **community engagement** through connections with campus partners and local organizations.

Program Information

Elshimaa Basha, MPH, CHSE Director	**Kirsten Broadfoot, PhD** Communication Skills Development, Research & Remediation Specialist
Melissa Giardina, BA Business Specialist **Brena Jones, BA** Simulation Services Specialist	**Brian Kelly, MS** Simulation Education & Technology Specialist **Jedidiah Jensen, BA** Simulation Specialist
Jocelyn Blake, BA, Monica Dionysiou, MFA, Tanya Russell, PhD, and Devra Keyes, MS Simulation Education Specialists	

Program website: https://medschool.cuanschutz.edu/cape

Graduates are well prepared to perform in primary care practice with patients across the lifespan.

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 Child Health Association/Physician Assistant (CHA/PA) Program curriculum provides comprehensive physician assistant education in primary care medicine with expanded training in pediatrics and care of disadvantaged, at-risk and medically underserved populations.

Mission Statement

The mission of the Child Health Associate/Physician Assistant Program is to provide comprehensive physician assistant education in primary care across the lifespan, with expanded training in pediatrics and care of the medically underserved.

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. This approach mimics how patients present for care and how clinicians practice medicine. The Colorado Curriculum utilizes an iterative approach to learning, such that clinical presentations that are introduced in the first year are revisited at a more advanced level during second year. The program curriculum aims to provide a strong foundation to equip students for a lifetime of learning, clinical care, and service. Students are expected to be self-directed, motivated, and responsible for their own learning using critical thinking and reasoning. Courses emphasize the integration of basic sciences and clinical medicine through the presentation of information in clinical context, employing the use of small group experiences, case-based learning, patient "actors," patient simulators, lectures, and collaborative sessions to build knowledge, skills, and attitudes important for physician assistants. Interdisciplinary training is woven throughout to facilitate the development of a collaborative approach to patient care. The University of Colorado PA Program is a nationally recognized leader in physician assistant education.

Educational content is enhanced through the applications of family-centered care, behavioral and psychosocial perspectives as well as social and community initiatives for health and wellness. The program has integrated content in public health, oral health, professionalism, and interprofessional education. Students with a personal area of interest may also have the opportunity to participate in specialized tracks to enhance learning in Rural, Global Health, and Pediatric Critical and Acute Care.
The curriculum includes a fully integrated clinical curriculum across all three years with clinical rotations in the hospital and community settings. During clinical experiences, students participate in 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 by the CHA/PA Program. Affiliations with the UCHealth University of Colorado Hospital, Children's Hospital Colorado, and Denver Health, in addition to community centers and clinics provide a network of clinical rotations 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 national leadership roles in the Physician Assistant Education Association (PAEA).

PAEA is the only national organization representing PA educational programs in the United States. The CHA/PA Program is highly respected nationally as a leader among PA programs. At present, our faculty serve their colleagues around the country in various roles within PAEA: Amy Akerman is on the Government Relations Committee. Jonathan Bowser is the Past President of the association.

Our faculty are also involved in teaching national workshops for PAEA. These are attended by faculty from programs around the country. Jackie Sivahop has led training for new PA faculty and Joyce Nieman have led several workshops for clinical educators.

International Connections

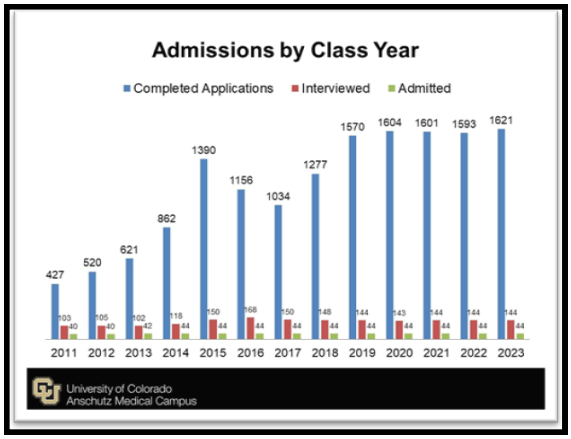


The CHA/PA Program continues its partnership with the Trifinio Clinic in Guatemala. CHA/PA students engage in clinical experiences in this clinic site in rural northwestern Guatemala. Our global partnerships continue to offer us new perspectives on our educational program and the work we do here, helping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

Student Overview

The CHA/PA Program has a competitive admissions process and attracts top students from across the country. During the 2019-20 admission cycle, the program received 1,621 applications, of which 144 were interviewed to admit 44 students.

Program graduates are employed in all areas of primary and subspecialty practice including pediatrics, family medicine, surgery, internal medicine, emergency medicine, dermatology. The program has a 98 percent five-year average NCCPA board pass rate.



Admissions- Student Demographics			
	Class of 2021	Class of 2022	Class of 2023
Total Students	44	44	44
CO Resident	24	21	19
Non-Resident	20	23	25
Overall GPA	3.75	3.67	3.73
Science GPA	3.71	3.62	3.68
Diversity including rural students, students who are first in college and those from traditionally underrepresented racial and ethnic groups	23%	36%	30%
Rural Track	2	5	Pending
Global Health Track	2	2	Pending
Pediatric Critical Care	4	4	Pending
Average Age	26	26	25

Program Information

Program Director: **Jonathan Bowser MS, PA-C**
Medical Director: **Tai Lockspeiser MD, MHPE**
Associate Director: **Jacqueline Sivahop EdD, PA-C**
Program website: https://medschool.cuanschutz.edu/physician-assistant-program

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 three 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 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. Sixty percent of the genetic counselors currently in Colorado trained in the CU program. Practice settings of alumni include hospitals, academic and private genetics centers, diagnostic laboratories, 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 healthcare 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. 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. Many 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 conducted through a national match program. In the spring 2020 admissions cycle, nearly 170 individuals applied for the six available positions in the incoming Class of 2022. The mean GPA of the incoming students is 3.80. The mean GRE scores of this group are: Verbal – 85th percentile, Quantitative – 69th percentile and Analytical – 77th percentile. Students in the Class of 2022 come from four states, including Colorado. They include six females ranging in age from 22 to 44 years.

Two have previous master's degrees. Prior professional experiences include an ABA behavioral technician for individuals with autism spectrum disorder, a microbiologist and infectious disease researcher, a secondary science and math teacher more recently working as a genetic counseling assistant, and a medical scribe. All come with client advocacy and counseling experience in settings including crisis counseling centers, hospice, domestic violence shelters, STEM student mentorship projects, English as a second language (ESL) programs, and community-based programs for individuals with physical or developmental disabilities.

Notable Accomplishments - 2019-2020 Academic Year
One hundred percent of the program's 2019 graduates taking the American Board of Genetic Counseling Certification Exam achieved certification and the CGC credential on their first attempt. Nationally, 78 percent to 84 percent of examinees achieved passing scores during the most recent two exam cycles.

Capstone research projects of several students in the 2019 and 2020 graduating classes were selected for poster or platform presentations at national and state meetings, including the 2019 National Society of Genetic Counselors Annual Education Conference, the 2019 Cure SMA Conference, the 2019 Colorado Genetic Counselors Symposium, and the 2020 American College of Medical Genetics & Genomics Clinical Genetics Meeting.

Students in the 2020 graduating class entered clinical practice soon after graduation in the specialties of pediatrics, ophthalmic genetics, reproductive genetics, oncology and genomic medicine.

M.S. Genetic Counseling Program Information
Program Director: **Carol Walton, MS, CGC**
Assistant Director, **Clinical Training: Kathleen Brown, MS, CGC**
Medical Director: **Peter Baker II, MD**

Website: https://www.cuanschutz.edu/graduate-programs/genetic-counseling

Graduate Medical Education

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 (CUSOM) & Designated Institutional Official (DIO) for the Accreditation Council for Graduate Medical Education (ACGME). **Ashley Walter, MBA,** is the Director of Finance & Administration.

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

Mission: CUSOM GME will achieve the highest level of accreditation for the CUSOM institution and residency and fellowship programs, and provide leadership, education, and support to its residency and fellowship programs to educate residents and fellows to be outstanding physicians.

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. The website is: https://medschool.cuanschutz.edu/graduate-medical-education.

2019-20 GME Highlights

The following are highlights of the impact of COVID-19 to the GME community:

- April 3 – May 2, 2020: ACGME Stage 3 Pandemic Emergency Status – GMEC Actions
  - ⇒Reassigned residents and fellows where necessary for optimal patient care
  - ⇒Suspended internal moonlighting
  - ⇒Arranged disaster credentialing of fellows as attendings in their core specialty

- ACGME accelerated new telemedicine requirements to meet patient care needs

- CU SOM GME Resident Relief Fund ($176,000) was established through the CU Foundation to respond to unanticipated financial hardship experienced by some residents and fellows, such as increased expenses or unexpected decrease in family household income. Thirty-five applications were approved for a total of $75,500.

- All elective visits and procedures were cancelled beginning March 16, 2020, resuming April 27, 2020, and returned to pre-pandemic levels by June 20, 2020.

- GME Employment Survey - Impact of COVID-19 upon graduating residents & fellows
  - ⇒86 percent of trainees who completed the employment survey were able to complete their job search.
  - ⇒67.5 percent of residents indicated their job offers were on time. 18.5 percent indicated delayed, 4 percent with
  - ⇒drawn, and 10 percent otherwise modified.

8th Annual GME Outstanding Program Coordinator Awards

The Graduate Medical Education Committee, in collaboration with the Program Coordinator Council (PCC), awarded Adam Finney and Mallory Pridy as outstanding program coordinators. Adam was also the CUSOM GME Nominee for the ACGME 2021 National Program Coordinator Award.



GMEC – Oversight and Education

NEW ACGME ACCREDITED PROGRAMS		
Programs	**Positions**	**Length of Training (Years)**
Female Pelvic Medicine & Reconstructive Surgery	3	3
Pediatric Hospital Medicine	4	2

NEW NON-ACGME FELLOWSHIP PROGRAMS	
IM - Diabetes	PATH - Transplant Pathology
IM - Obesity Medicine	PED - Bone Marrow Transplant & Cellular Therapeutics Clinical
IM - Transplant Infectious Diseases	PED - NeuroGenetics Research
NEU - Child Neurology Critical Care & Neurohospitalist	SURG - Minimally Invasive Surgery
PATH - GI & Liver Pathology	SURG - Hepatopancreatobiliary (HPB) International

NEW PROGRAM DIRECTORS (PDs) & PROGRAM COORDINATORS (PCs)					
ACGME Programs	**2015/16**	**2016/17**	**2017-18**	**2018-19**	**2019/20**
New PDs	12	10	11	11	18
New PCs (and/or transferred to another pro-	14	20	15	11	9
2019-20 average turn-over rate: PDs = 15% PCs = 13%					

Figure 1: 2020-2021 GME Enrollment Data & Trends (Numbers reflect enrollment as of August 1, 2020)

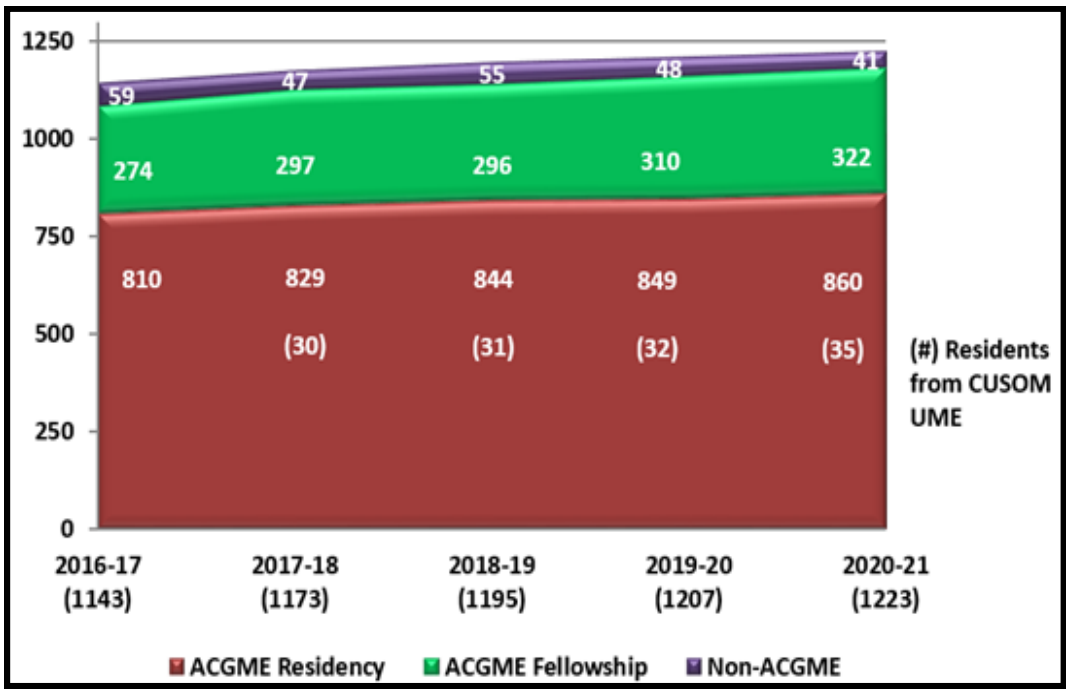
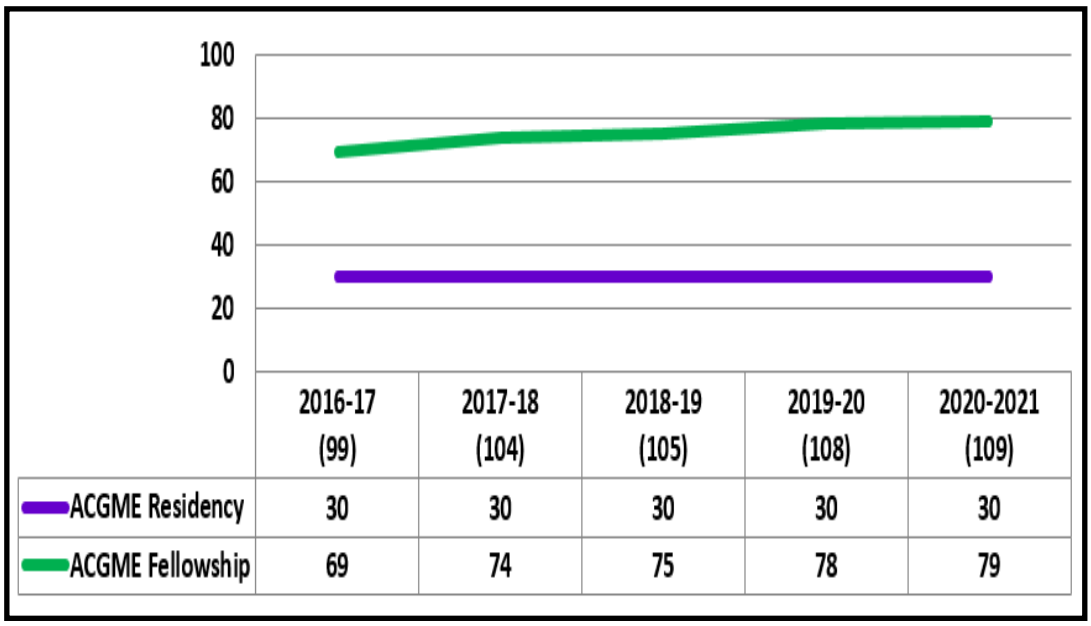


Figure 2: Number of ACGME Accredited GME Programs



	2016-17 (99)	2017-18 (104)	2018-19 (105)	2019-20 (108)	2020-2021 (109)
ACGME Residency	30	30	30	30	30
ACGME Fellowship	69	74	75	78	79

Figure 3: International Medical Graduate Enrollment

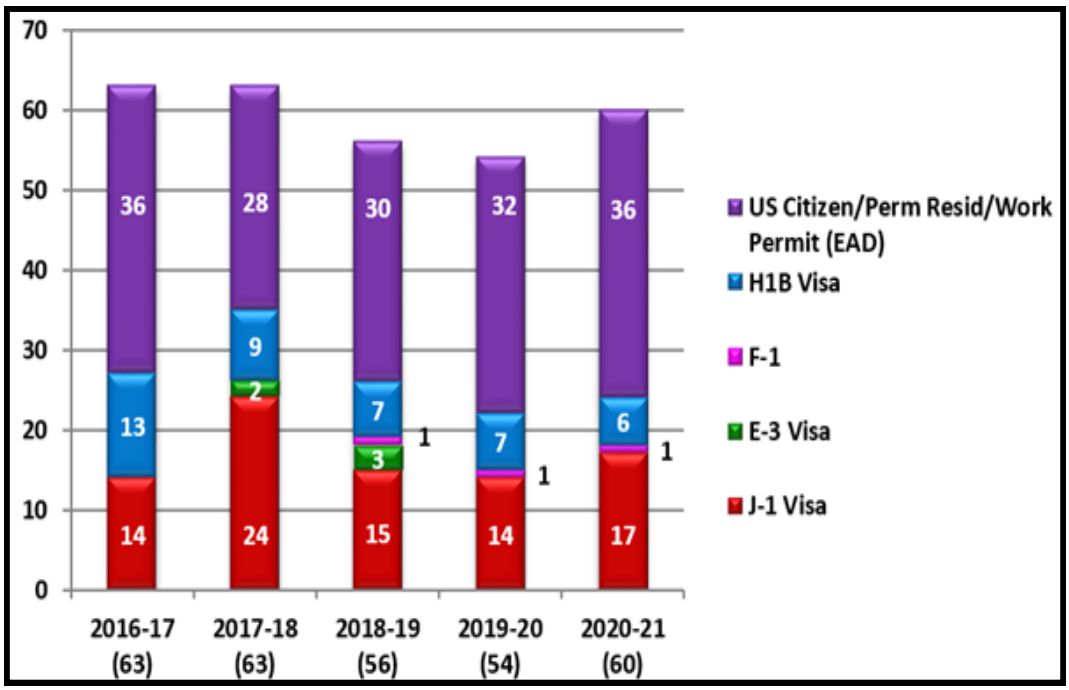


Figure 4: Primary Care vs Specialty Enrollment

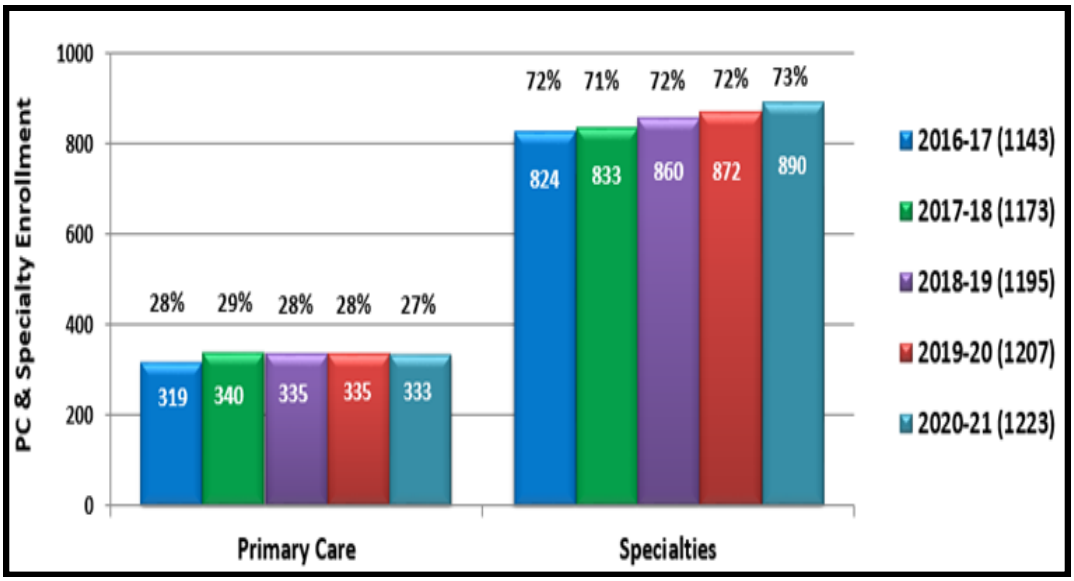
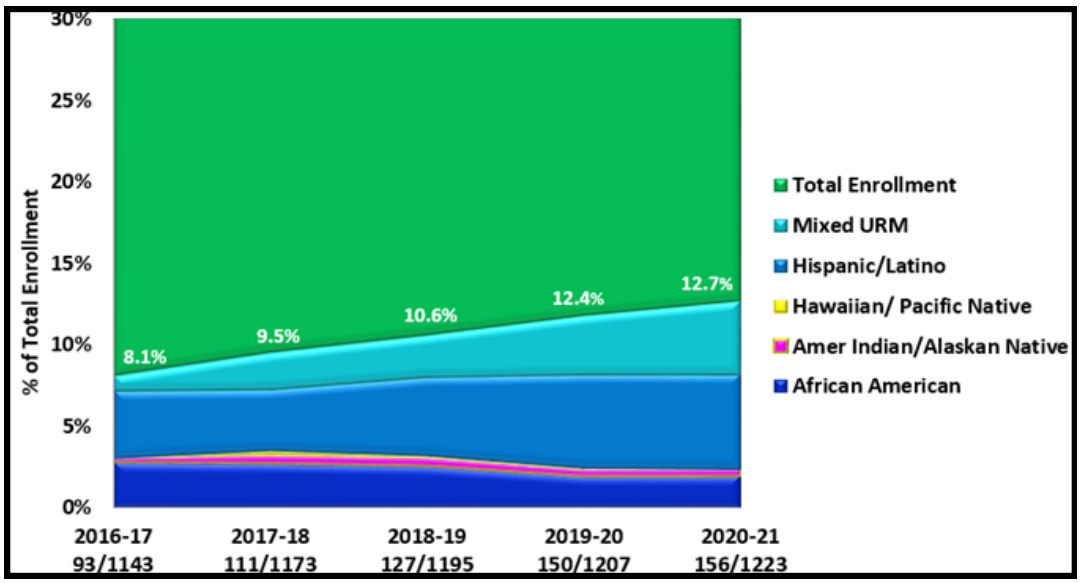


Figure 5: Under-Represented Minority Enrollment% of Total Enrollment (N=1223)



Graduate Satisfaction – GME 2019-20 Graduate Survey



University of Colorado Neurosurgery Residency

For the 2019-20 academic year, 416 residents and fellows graduated from ACGME and Non-ACGME approved programs. Three hundred ninety-one graduates completed the 2019-20 GME Graduate Survey.

Figure 6: Graduates - Overall Satisfaction with Training Program

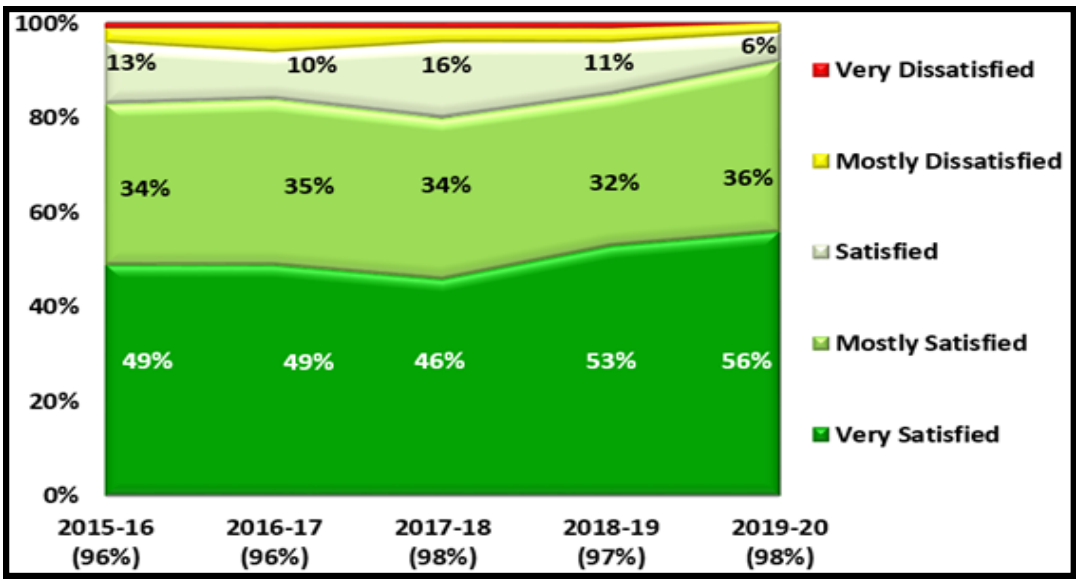


Figure 7: Graduates Who Would Recommend Program

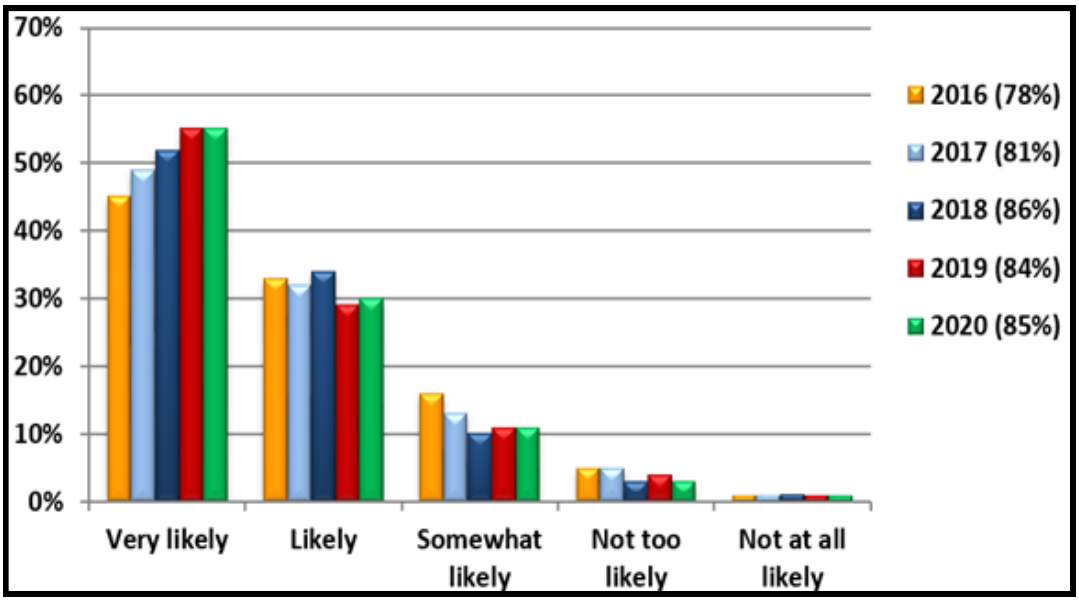


Figure 8: Graduates - Professional Plans

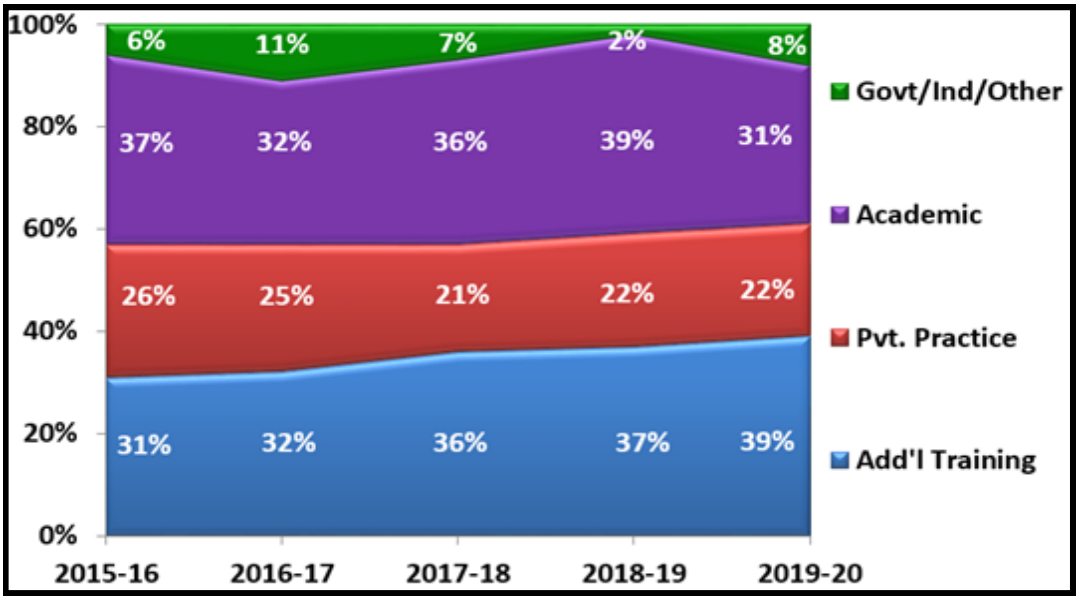


Figure 9: Where Will All Graduates Practice?

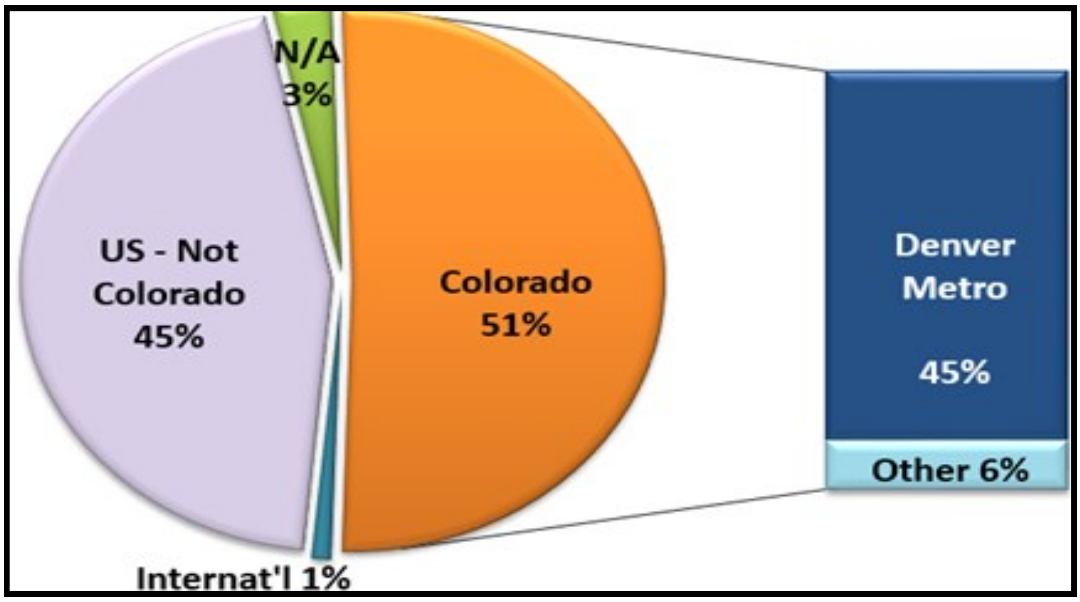


Figure 10: Graduates Planning to Practice in Colorado

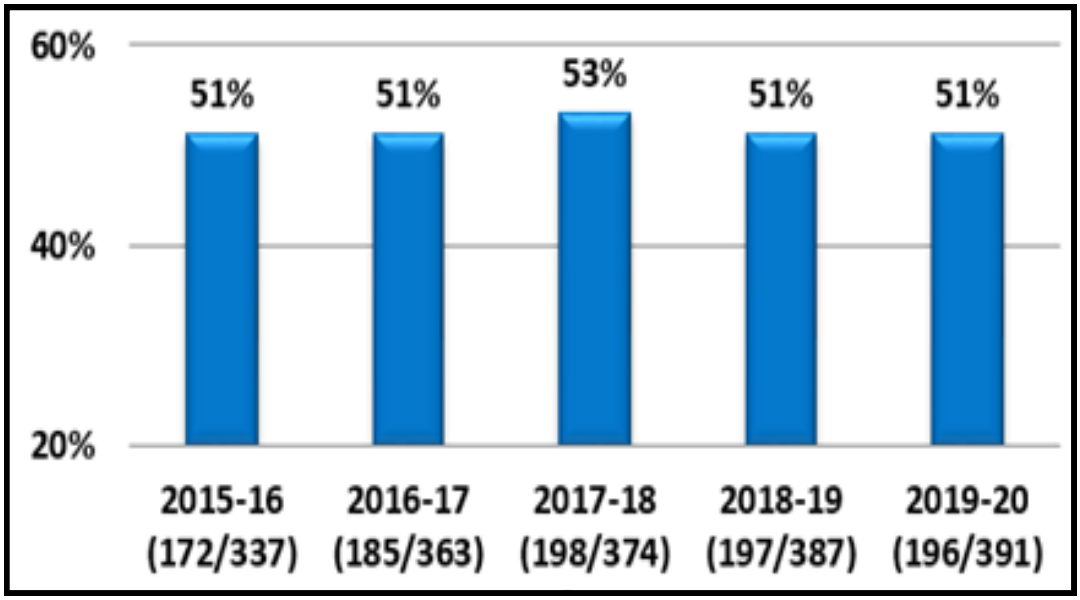


Figure 11: Graduates Across the Country

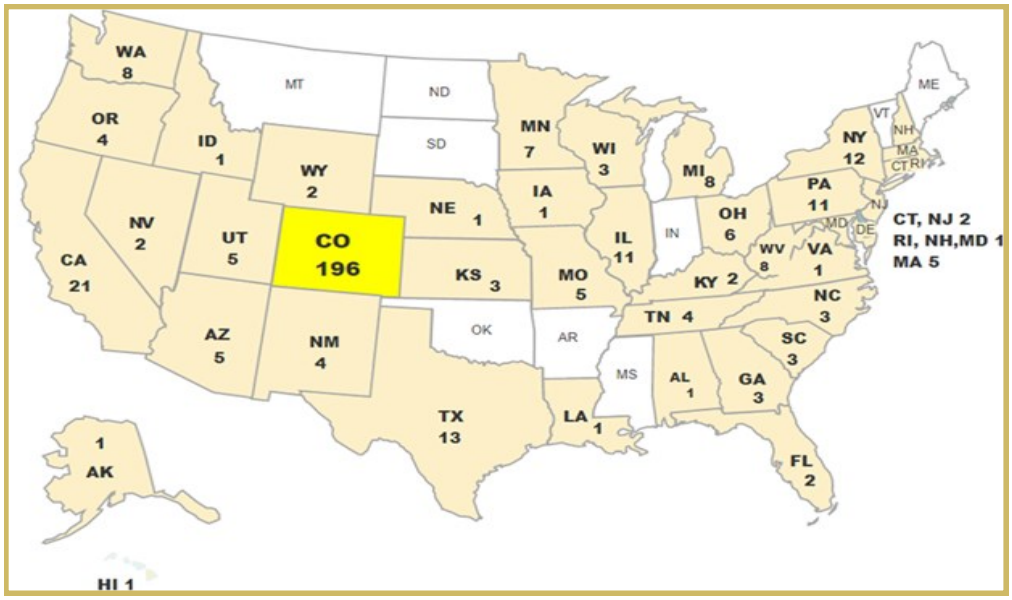
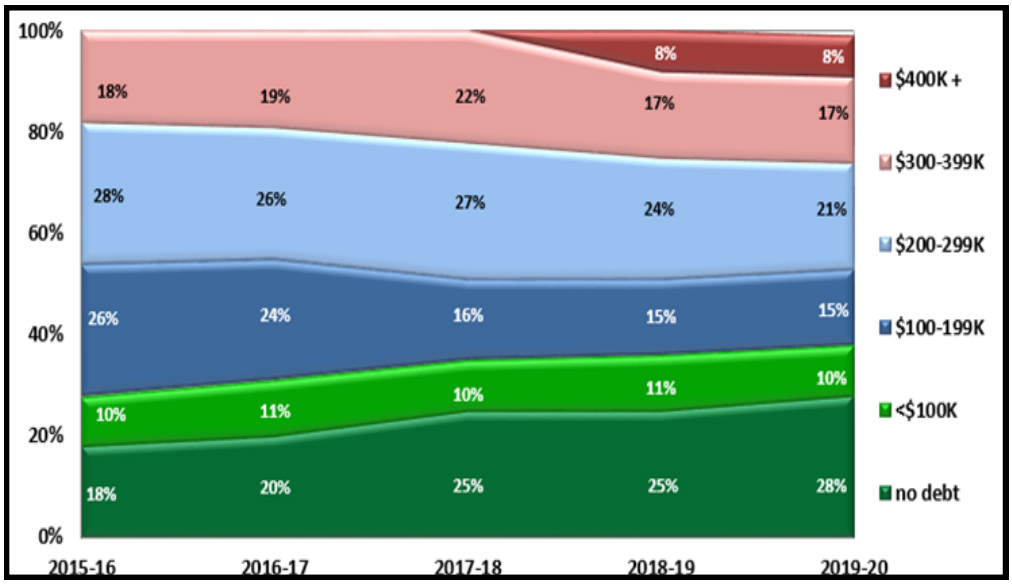


Figure 12: Resident/Fellow Financial Debt



Office of Continuing Medical Education

The Office of Continuing Medical Education (OCME) is led by **Brenda Bucklin, MD, MEHP,** Professor of Anesthesiology and Associate Dean for Continuing Medical Education. The office is staffed by Pam Welker (Administrator), Carolyn Wieber, and Ellen Ricker (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. OCME reached more than 28,360 MD/DO and 22,155 non-MD learners during the academic year. In addition, 2,532 hours of instruction were certified for AMA PRA Category 1 Credit ™. Seven activities were certified for American Board of Internal Medicine MOC Medical Knowledge Points and one activity was certified for American Board of Anesthesiology MOCA 2.0 credit.

Physical Therapy Education Program

The University of Colorado School of Medicine Physical Therapy Program in the Department of Physical Medicine and Rehabilitation is home to three educational programs: Physical Therapy Program, Pediatric Physical Therapy Residency Program, and PhD Program in Rehabilitation Science.

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

Mary Jane Rapport, PT, DPT, PhD, FAPTA
Director, Pediatric PT Residency Program

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

Joe Palmer, III, PT, DPT
Assistant Director, Clinical Education

Jennifer Stevens-Lapsley, PT, PhD
Director, PhD Program in Rehabilitation Science

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 most recently ranked 13th out of 217 accredited physical therapy programs in the United States by the *U.S. News and World Report* (2020). This program has been continuously accredited since its inception in 1947, receiving an unconditional ten-year accreditation in 2010. The program celebrated its 70th Anniversary in 2017 with a highly successful series of events attended by alumni, colleagues, and business leaders.

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, similar to those for the MD Program that emphasize basic sciences, quantitative ability, and humanities. In addition, many of the applicants have substantial experience in health care-related professions. Some have advanced degrees and all have volunteered or worked in paid health care-related positions in physical therapy settings in preparation for application to the CU Physical Therapy Program.

Application Data 2019-2020
Completed Applications: 927
Interviewed: 154
Enrolled: 69
GPA: 3.66
GRE Verbal: 154 (64%)
GRE Quantitative: 153 (50%)
GRE Written: 4.2 (66%)

Students of the CU Physical Therapy Program

Approximately 65-70 students enter the CU Physical Therapy Program each year. Just under half of the students are from Colorado. Students enter this program with high qualifications and graduates of the program pass a national licensure examination with scores well above the average for the United States.

The 2020 entering class of physical therapy students brings life experiences that enhance and enrich the body of students who are exceptionally qualified academically. Among this cohort, many students have had extraordinary research accomplishments and valuable volunteer experiences with individuals around the world. Some of these experiences include working with individuals, from children to older adults, with physical or behavioral challenges. This cohort also has noteworthy physical endeavors such as ski racing, long distance running, cycling, and college soccer, as well as honorable service to their communities, including service in the United States military. Some students have come from other professions, such as business, teaching, and the arts. More specifically, there are students who excel in singing, dancing, music, and guiding others in fitness.

The program is deeply committed to increasing diversity within the program and ultimately, the physical therapy profession. The admitted Class of 2022 is comprised of 38 percent from rural areas, 20 percent first generation, and 26 percent who identify as an underrepresented minority. Eleven students have Hispanic backgrounds, two students identify as Black/African American, two as American Indian/Alaskan Native, one student is Vietnamese, and two students identify as two or more races/ethnicities. Other specific demographic data is included below.

Demographics of Admitted Students

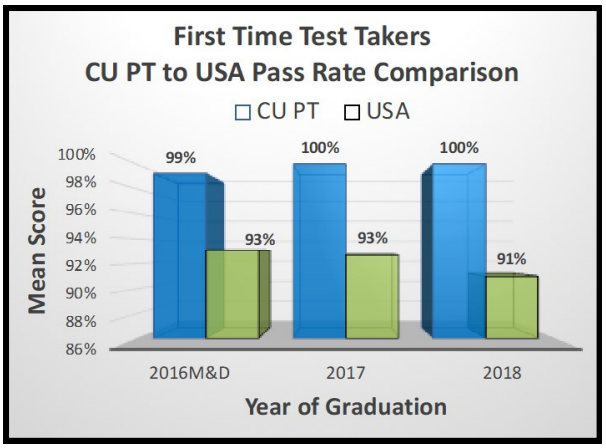
Class:	**2020**	**2021**	**2022**	**2022**		
Female	69%	62%	65%	65%		
Male	31%	38%	35%	35%		
CO Resident		52%	48%	45%	45%	
Non-Resident		48%	52%	55%	55%	
Minority	21%	25%	26%	26%		
Average Age		24	25	24	24	
Cumulative GPA	3.7	3.64	3.66	3.66		
Math/Science GPA		3.73	3.65	3.65	3.61	3.61

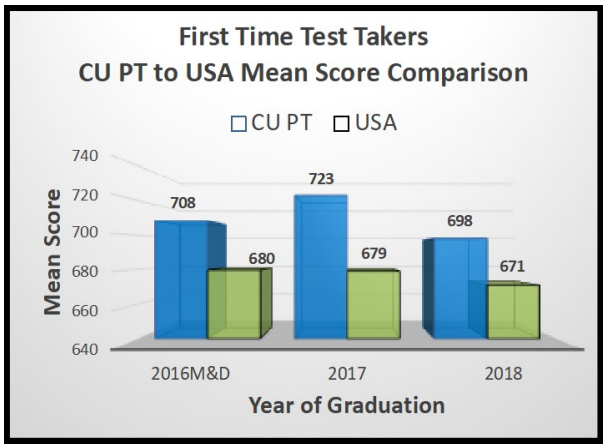
Graduates of the CU Physical Therapy Program

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). Since 2014, 98.4 percent of our graduates have passed the exam on their first attempt, with 100 percent 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 that span pediatrics to geriatrics.

FEDERATION OF STATE BOARDS OF PHYSICAL THERAPY

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





**Note: Due to curricular changes, there were two graduating classes in 2016: May and December.*

Faculty

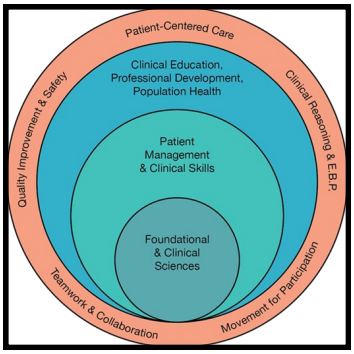
Faculty of CU Physical Therapy are innovative as leaders in physical therapy education and practice. Faculty are highly committed to the education of the CU PT students. They are experienced educators, many of whom contribute to clinical care. Some faculty members are recognized nationally and internationally 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, the faculty have developed a robust and substantial research agenda with a current research portfolio of over $12.8 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 of these components through threaded curricular elements (see figure below). Students learn patient management for individuals across the lifespan with musculoskeletal, cardiovascular, and neurologic disorders, as well as physical therapy for patients with a variety of 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 healthcare.

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 outstanding environment for our students to practice physical therapy examination, intervention, and communication skills. One experience focuses on learning in an ICU environment and 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 mannequin simulation in conjunction with a full-service Center of Excellence.

Interprofessional Education
The CU Physical Therapy Program participates in the longitudinal Interprofessional Education and Development (IPED) 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 of 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 team work/collaboration, quality/safety, and values/ethics. In years two and three, students spend an afternoon in the Center for Advancing Professional Excellence (CAPE) in two team simulations/standardized patient encounters. Finally, DPT students are evaluated on collaborative practice competencies during their final clinical experience.

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). 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 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 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.

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 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 received its most recent reaccreditation in 2018 for the maximum of period of ten years.

The tenth Pediatric PT Resident Graduate successfully completed the Residency in July 2020. The applicant pool continues to be exceptionally strong with applicants from across the United States vying for a single position in this residency during the recent application cycle. Accomplishments of the residency graduates include leadership positions in specialized clinical care, local and national PT professional organizations and multiple publications in *Pediatric Physical Therapy*.

Graduate residents 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 our pass rate is 100 percent. Clinical sites during the residency include the ENRICH Early Intervention team through JFK Partners, Highlands Ranch Therapy Care Clinic of Children's Hospital Colorado, Rise School of Denver, Cherry Creek School District, Adam's Camp, and other 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 specific 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, as measured by grants and fellowships awarded to students during their pre-doctoral studies and contributions as co-investigators to investigations funded by foundations and the NIH. Students regularly publish peer-reviewed manuscripts, either as first or contributing authors. Since the Rehabilitation Science PhD Program began in 2011, eight students have completed their doctoral work, and 100 percent of graduates are completing post-doctoral fellowship training or have secured faculty positions.

2019 Program Accomplishments
Cory Christiansen, PT, PhD was awarded three research grants, including principal investigator on two newly awarded research grants: 1) a five-year, $1.9 million R01 grant from the National Institute of Nursing Research/NIH/DHHS, 2) a four-year, $0.6 million Merit Award from VA RR&D and 3) a five-year, $3.2 million U01 grant (NIH/NINDS).

Lisa Dannemiller, PT, DSc, PCS and Sharon Jordan, MA, PT, were awarded the Bob Doctor Service Award at the APTA Colorado Chapter meeting.

Robyn Gisbert, PT, DPT received the 2019 Professor Bernie Karshmer Award from the Center for Bioethics and Humanities.

Michael Harris-Love, PT, MPT, DSc, FGSA was awarded the Eugene Michaels New Investigator Award by the APTA. Additionally, the Gerontological Society of America (GSA) recognized him as a 2019 Health Sciences Fellow.

Dana Judd, PT, DPT, PhD was awarded the University of Colorado School of Medicine Academy's Medical Educator Award for Curriculum Development or Educational Innovation.

Paul Mintken was awarded the James A. Gould Excellence in Teaching Orthopaedic Physical Therapy Award at the 2019 APTA CSM in Washington, D.C. He was also the keynote speaker for the Middle East Manual Therapy Conference.

Margaret Schenkman, PT, PhD, FAPTA delivered the prestigious Anne Shumway-Cook Lectureship at APTA CSM.

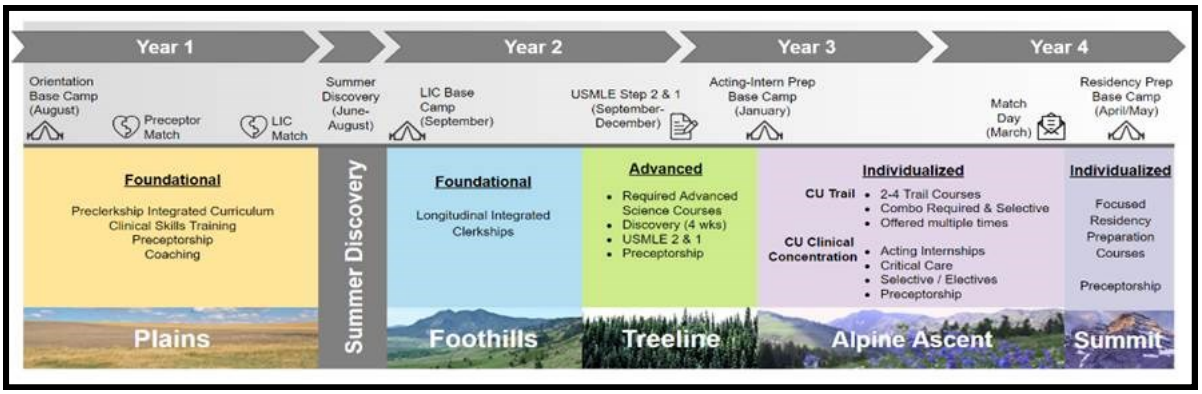
Jennifer Stevens-Lapsley, PT, PhD was awarded the Marion Williams Research Award and the Dorothy Briggs Memorial Scientific Inquiry Award by the APTA.

Undergraduate Medical Education

The Undergraduate Medical Education (UME) office oversees students working toward the Doctor of Medicine degree. Students dedicate four or more years to an intensive period of study, clinical rotations, and personal growth. The Undergraduate Medical Education office is responsible for guiding the students through their journey to become a doctor of medicine. The process begins with selecting students who are personally and academically prepared. 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 will review some activities in each of these areas for the 2019-2020 academic year. https://medschool.cuanschutz.edu/education

Following the successful visit by the Liaison Committee on Medical Education (LCME) in March 2017, the undergraduate medical education team, with encouragement from Dean John J. Reilly, Jr., MD, embarked on a process to revise our curriculum, focusing on preparing graduates for the future of medicine, science, and health systems.

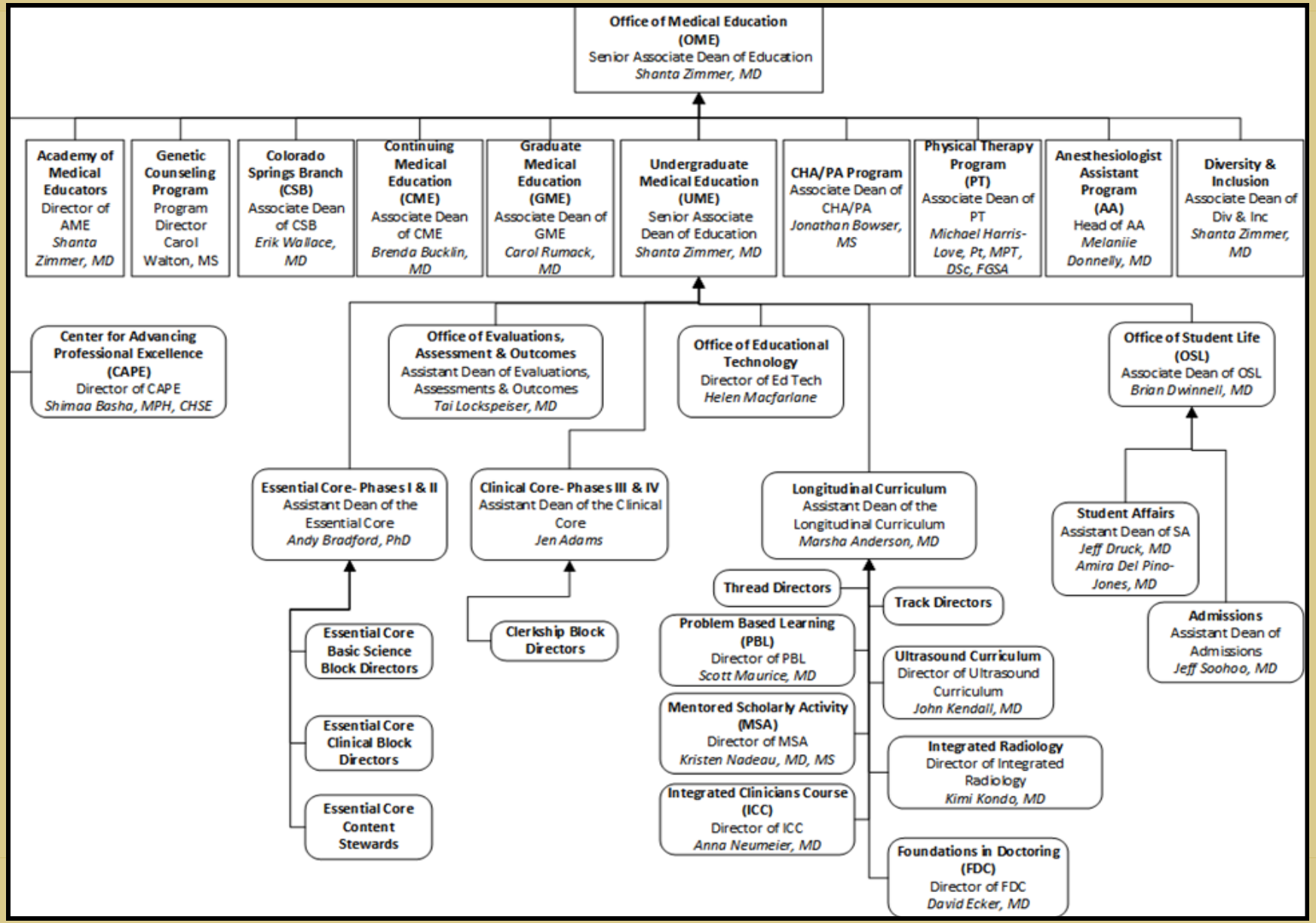
On Oct. 30, 2017, Senior Associate Dean for Education **Shanta M. Zimmer, MD,** led a kickoff retreat for the process. With about 150 participants, this introductory event served as a catalyst to share ideas and begin the work of deciding how the curriculum can be redesigned. We chose the principles of **leadership, curiosity, and commitment,** which are required for our future graduates to compassionately and skillfully practice as superb clinicians, innovative educators, and creative investigators in ever-changing health care systems and communities. Following the retreat, more than 25 committees began planning an innovative new curriculum focusing on the pillars of Leadership, Curiosity, and Commitment. Faculty throughout 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.

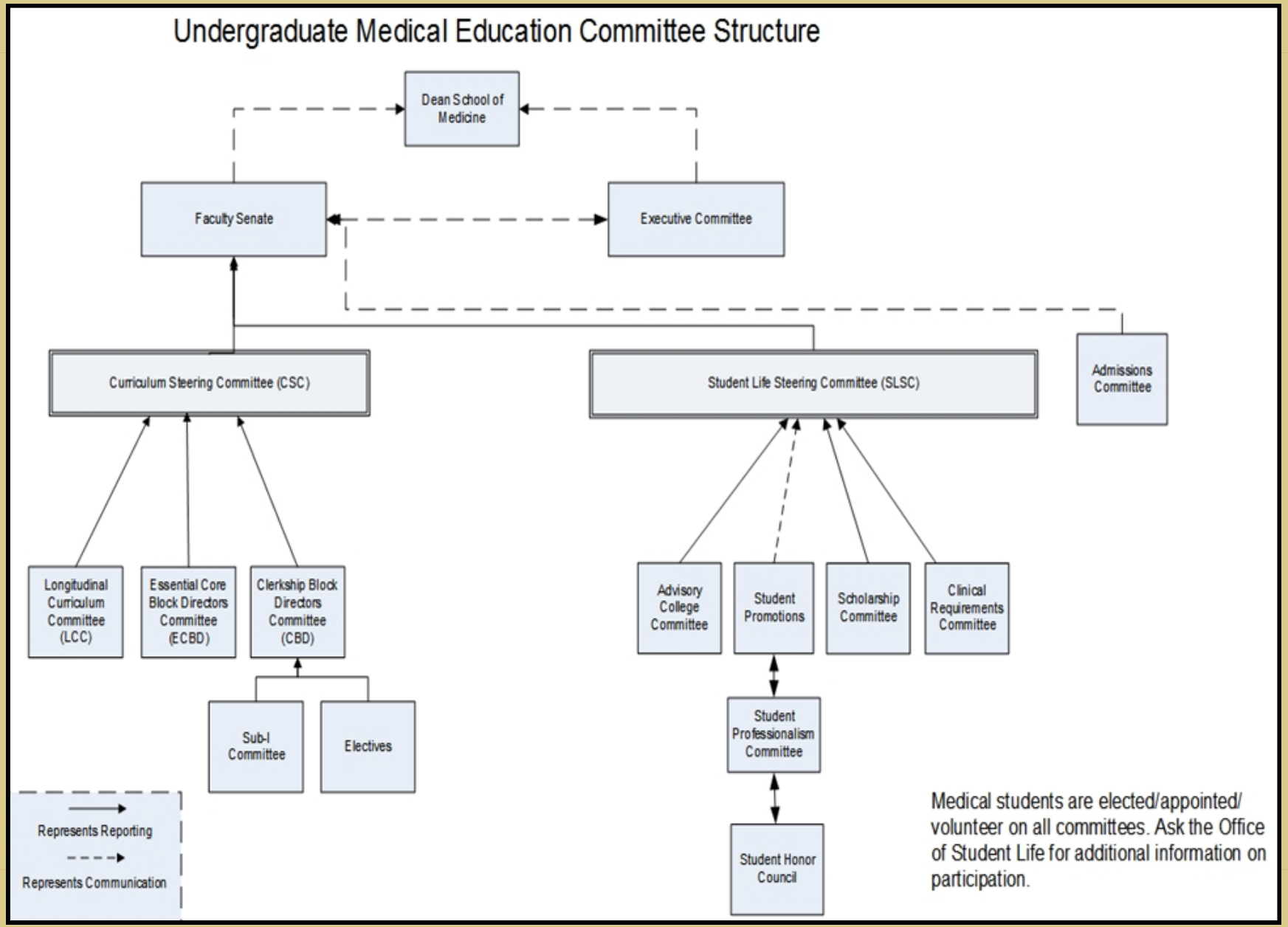


The Plains comprises foundational experiences that take students through pre-clerkship integrated basic science curriculum, clinical skills training, preceptorship, and coaching. After completing their summer discovery period, students transition to the Foothills, where they will participate in Longitudinal Integrated Clerkships (LICs). Students will then find more individualized paths, called trails, which include electives, dedicated research and discovery, internships, critical care experiences and preceptorship in the Alpine Ascent. Lastly, our students will reach the Summit of their undergraduate medical education, where they transition to residency preparation and the match process.

This year, the Trek Curriculum Reform Captains have designed the final blueprint for the curriculum which will begin with the class of 2025 entering next fall. The faculty and students of curriculum reform have moved to the building phase in earnest. Several new faculty positions in the basic science curriculum and the clinical environment have been hired and are working to build new courses, assessments, and mentorship activities for the students who will join the revised curriculum next year.

One important aspect of the new curriculum will include the launch of Longitudinally Integrated Clerkships (LICs) for all CUSOM students. Building on the success of LICs at Denver Health and the Colorado Springs, a new LIC for 12 students started in May 2020 in Ft. Collins. This first cohort of students will be joined next year by a new group of students who will spend all four years of their medical education in Ft. Collins.


Office of Medical Education (OME)
Senior Associate Dean of Education
Shanta Zimmer, MD
Academy of Medical Educators
Director of AME
Shanta Zimmer, MD
Genetic Counseling Program
Program Director
Carol Walton, MS
Colorado Springs Branch (CSB)
Associate Dean of CSB
Erik Wallace, MD
Continuing Medical Education (CME)
Associate Dean of CME
Brenda Bucklin, MD
Graduate Medical Education (GME)
Associate Dean of GME
Carol Rumack, MD
Undergraduate Medical Education (UME)
Senior Associate Dean of Education
Shanta Zimmer, MD
CHA/PA Program
Associate Dean of CHA/PA
Jonathan Bowser, MS
Physical Therapy Program (PT)
Associate Dean of PT
Michael Harris-Love, Pt, MPT, DSc, FGSA
Anesthesiologist Assistant Program (AA)
Head of AA
Melaniie Donnelly, MD
Diversity & Inclusion
Associate Dean of Div & Inc
Shanta Zimmer, MD
Center for Advancing Professional Excellence (CAPE)
Director of CAPE
Shimaa Basha, MPH, CHSE
Office of Evaluations, Assessment & Outcomes
Assistant Dean of Evaluations, Assessments & Outcomes
Tai Lockspeiser, MD
Office of Educational Technology
Director of Ed Tech
Helen Macfarlane
Office of Student Life (OSL)
Associate Dean of OSL
Brian Dwinnell, MD
Essential Core- Phases I & II
Assistant Dean of the Essential Core
Andy Bradford, PhD
Clinical Core- Phases III & IV
Assistant Dean of the Clinical Core
Jen Adams
Longitudinal Curriculum
Assistant Dean of the Longitudinal Curriculum
Marsha Anderson, MD
Student Affairs
Assistant Dean of SA
Jeff Druck, MD
Amira Del Pino-Jones, MD
Admissions
Assistant Dean of Admissions
Jeff Soohoo, MD
Essential Core Basic Science Block Directors
Essential Core Clinical Block Directors
Essential Core Content Stewards
Clerkship Block Directors
Thread Directors
Track Directors
Problem Based Learning (PBL)
Director of PBL
Scott Maurice, MD
Ultrasound Curriculum
Director of Ultrasound Curriculum
John Kendall, MD
Mentored Scholarly Activity (MSA)
Director of MSA
Kristen Nadeau, MD, MS
Integrated Radiology
Director of Integrated Radiology
Kimi Kondo, MD
Integrated Clinicians Course (ICC)
Director of ICC
Anna Neumeier, MD
Foundations in Doctoring (FDC)
Director of FDC
David Ecker, MD


Undergraduate Medical Education Committee Structure
Dean School of Medicine
Faculty Senate
Executive Committee
Curriculum Steering Committee (CSC)
Student Life Steering Committee (SLSC)
Admissions Committee
Longitudinal Curriculum Committee (LCC)
Essential Core Block Directors Committee (ECBD)
Clerkship Block Directors Committee (CBD)
Sub-I Committee
Electives
Advisory College Committee
Student Promotions
Scholarship Committee
Clinical Requirements Committee
Student Professionalism Committee
Student Honor Council
Represents Reporting
Represents Communication
Medical students are elected/appointed/ volunteer on all committees. Ask the Office of Student Life for additional information on participation.

Medical Education Resources

For more information on the MD curriculum and curriculum reform:

The Teaching RUME (Resources for Undergraduate Medical Education) has materials and reports for faculty and administrative staff: https://olucdenver.sharepoint.com/sites/TeachingRUME.

The Trek curriculum reform website provides updates on curriculum planning and pilots: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/Curriculum%20Reform/Pages/curriculum%20reform.aspx

If you do not have access to the Teaching RUME and would like to, please contact the Office of Educational Technology at SOM.EdTech@ucdenver.edu.

Curriculum Steering Committee
Chair: **Stu Linas, MD**

a. 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.

b. The Curriculum Steering Committee posts all of its materials on a SharePoint site available to its users. Specific accomplishments are outlined in the table below:

CSC Accomplishments for FY 2019-2020

New Members	Class of 2023 representatives: Daniel Owens, Eugene Ng Clinical Faculty: Kshama Jaiswal Voting Members: Suzanne Brandenburg, William Sather, Sharisse Arnold, Cara Wilson Ex-Officio Member: Christina Reimer
Continuous Quality Improvement (CQI) and Phase Reports	• Presented to CSC every 2/3 years o Phases 1 and 2 Report o Phase 3 Report o Longitudinal Curriculum Report o CQI reports from several Individual Blocks
Key Change(s) to Curriculum	• Renamed Sub-Internship Curriculum to Acting Internships to better reflect goals and objectives of rotation • Reviewed and approved final schedules for Hybrid Curriculum in 2020 • Approved changes to Phase I/II grading policies • COVID-19 Related Updates: o Transition to remote learning for Phase I and Phase II Curriculum in March of 2020 o Adjustments to clinical rotation timelines to address temporary suspension of clinical learning activities in March 2020 o Approved changes to grading process for Clinical Rotations

Task Forces/Oversight	• Changes to admissions policy to increase emphasis on holistic candidate assessment • 2019 Internship Match Process • Scheduled Hours Compliance Process • Assignment process for Foundations of Doctoring Preceptorships • Student documentation in medical records • MSTP Re-Entry process for Clinical Curriculum

Student Life Steering Committee
Chair: **Jenny Soep, MD**

Overview
The medical school faculty has responsibility for overseeing the medical school curriculum and for contributing significant input and oversight into noncurricular aspects of medical student life. Constructive and systematic evaluation by faculty can be expected to result in thoughtful, consistent, and constructive oversight of selected student life issues such as selection, promotion, advising including financial counseling, mentoring, professionalism, health and well-being, record-keeping, and visiting students. Such oversight may also result in creativity and innovation in adapting to changing aspects of medical student life which will enhance medical student professional development.

In view of a central role of the faculty and the dynamic nature of student life issues, the Student Life Steering Committee (SLSC) is charged with oversight of noncurricular student professional life policies and procedures. The SLSC will work closely with the Senior Associate Dean for Education (SADE), the Associate Dean for Student Life (ADSL), and the Committees of Undergraduate Medical Education to develop, guide, revise, adjudicate, and implement policies and procedures relevant to medical student professional life. Actions of the SLSC will be reviewed by the SADE and the ADSL and reported annually to the Faculty Senate.

Charge
To oversee, review, guide, evaluate, recommend changes, review new policies and procedures when appropriate, and assure consistent implementation of established policies and procedures regarding noncurricular aspects of medical student professional life.

- Recommend to the Faculty Senate and Senior Associate Dean for Education changes in policies and procedures relevant to noncurricular aspects of medical student professional life.
- Assist with the development and implementation of policies and procedures that stimulate evolutionary change that optimize medical student professional life and professional development.
- Monitor and constructively respond to data obtained from evaluation and outcome instruments regarding medical student noncurricular professional life.
- Apply relevant Liaison Committee for Medical Education Standards and Elements to ensure that medical student noncurricular issues are monitored, addressed, and updated to ensure standard compliance and to enhance medical student professional development and well-being.
- Address special student life- and policy/procedure-related issues that arise that are relevant to medical students and are outside the purview of established UME and School of Medicine oversight committees.

Reporting Procedures

- SLSC will receive timely reports and updates from the Student Promotions Committee (including the Sub-committee on Student Professionalism), the Scholarship Committee, the ADSL, the Clinical Requirements Committee, and the Admissions Committee.
- SLSC will inform the SADE of ongoing issues and activities and report to the Faculty Senate.

Voting Membership

- A clinical and a basic science faculty member involved with medical student activities
- President, Medical Student Council
- An MSTP student
- One Medical student representing Phases I or II
- Faculty Senate representative (recommended by the President of the Faculty Senate)
- Director of Evaluation for Undergraduate Medical Education
- A community-based physician-educator faculty member
- A Faculty Advisor from one of the School of Medicine's Advisory Colleges
- Associate Dean for Diversity & Inclusion

Nonvoting Membership

- Senior Associate Dean for Education
- Associate Dean for Student Life
- Associate Dean for Curriculum
- Assistant Dean for Student Affairs
- Assistant Dean for Admissions
- Director of Student Life
- Director of Finance & Administration, UME
- Director of Educational Technology
- Associate Dean for Colorado Springs Branch
- Other faculty, students or administrators with expertise as needed.

Leadership
The SLSC will be chaired by a senior faculty member with experience in student life activities and appointed by the Senior Associate Dean for Education.

Terms of Appointment
Faculty members to this committee are appointed for three-year terms. Terms are renewable for one additional cycle (three additional years). Medical and MSTP students are appointed by Medical Student Council to a term of up to one to four years.

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

Clinical Block Directors Committee
The Clinical Block Directors Committee is responsible for the design, implementation, and assessment of the Phase III and IV medical student curriculum. The committee meets regularly to develop and implement the curriculum.

The following individuals served as Clinical Block Directors in 2019-20: Jennifer Adams, MD, Brandy Deffenbacher, MD, Christopher King, MD, Pearce Korb, MD, Jill Liss, MD, Paul Montero, MD, Jason Papazian, MD, Todd Guth, MD, Joe Sakai, MD, Frank Scott, MD, Jason Friedrich, MD, Roberto Silva, MD, Jennifer Soep, MD, and Chad Stickrath, MD, Eric Young, MD.

Assistant block directors included: Austin Butterfield, MD, Mark Deutchman, MD, Vera Fridman, MD, Janna Hardland, MD, Teresa Jones, MD, Vishnu Kulasekaran, MD, Juan Lessing, MD, Amy Markese, MD, Kelley Roswell, MD, Mike Overbeck, MD, Meghan Treitz, MD, Scott Vogel, MD.

Jennifer Adams, MD is Assistant Dean of the Clinical Curriculum and is responsible for planning, management, and leadership of Phases III and IV. Chad Stickrath, MD is the Director for Phase IV. Jennifer Soep, MD is Director of Acting-Internships and the Chair of the Phase IV Task Force.

For more information visit our website at:
http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx

Group Accomplishments

During the 2019-20 Academic Year, the CBD committee accomplished the following initiatives:

1. Continuous quality improvement within depth review and discussion in workshop format of the following areas involving all courses: Clinical Teaching, Sub-Optimal Learning Environment, Mistreatment.

2. Revision and update of the Dress Code Policy for Students in Clinical Environments that contains information from all major hospital systems that include student learners.

3. A successful CBD retreat with priority setting for the academic year and training on micro-aggressions and diversity by Associate Dean of Diversity and Inclusion Shanta Zimmer, MD. Priority initiatives are outlined below with notes about which were accomplished. Unfortunately, mid-year the COVID-19 pandemic interfered with our ability to accomplish all goals laid out early in the year.

   a. Grading
      i. Increase transparency by improving Oasis formatting (completed)
      ii. Standardize grading committees (completed)
   b. Learning Environment
      i. Addition of GQ questions to course evaluations (completed)
   c. Recognition and incentives for exemplary teaching (deferred)
   d. Shelf Preparation
      i. Identify best practices (completed)
   e. Policy Development
      i. Family members of preceptors/supervisors (completed)
      ii. Scope of practice for medical students (deferred)

4. Development of an LIC grade appeals policy to addend the standard grade appeals policy which applies to all SOM courses.

5. Proposed an update to the timeline of the appeals policy for the SOM to allow clerkship grading committees time to meet to discuss and fully consider appeals. These changes to the appeals policy were fully adopted by the SLSC.

6. Development of standardized process to notify students of shelf exam failures, provide students with information about retakes, and connect the students to services within OSL.

7. Development of a Family Member as Preceptor Policy that outlines the parameters for students and their relationships or connections with their clinical supervisors in the education setting.

8. A successful Phase III orientation for the Class of 2022 to introduce students to clerkships and expectations in Phase III.

9. Discussed at length over the course of the year the increased number of shelf exam failures in the clinical clerkships. Analyzed these data in conjunction with the OAE and OSL. In order to better prepare students for their shelf exams, a collaborative discussion and review of study materials was conducted with input from each block and LIC along with members of the remediation team and students to ensure that the materials were productive and helpful study aids. This work is ongoing.

10. Task Force on learning environment developed course evaluation questions mirroring concepts in the GQ which were integrated in the course evaluations and Phase evaluation.

11. Revision of student assessment tools used in Phase III with the goal to collect more detailed information about student performance in narratives and with defined criteria for grade levels (move towards criterion-based grading). Clerkship directors were encouraged to individualize forms to meet the needs of their faculty and learning environments. Ongoing evaluation of these differing tools will help to inform decisions around assessment in the curriculum reform process.

12. The Covid-19 pandemic required tremendous flexibility and changes to the clinical curriculum. These accomplishments are summarized:

a. Moved all meetings online.

b. Ceased all clinical training in March except for ICAC (pediatrics), which completed its course for two additional weeks by moving content all online. Clinical training resumed at the end of May.

c. Made plans to delay the start of Phase III for the Class of 2022 which included shortened the clinical year by one month; to accommodate this, the Musculoskeletal block was eliminated with core objectives and content absorbed into OPC, CPC, and EC. The Neurologic Care block was shorted from four to two weeks and content was moved to HAC, CPC and EC. All schedules were completely recreated to accommodate the new timeline.

d. Block directors, coordinators and a student task force came together to develop online resources and transfer content into online modules to allow for students to continue their medical education while not being directly allowed into clinical settings due to the Coronavirus pandemic. The response was incredibly fast and the transition to the online content went smoothly with feedback from students being overall positive. Course evaluations were reviewed in an effort to make changes to support improvements for ongoing use of virtual curricula in the coming academic year.

e. Make up clinical time was created for the class of 2021 when they were allowed to return to the clinical environment, which included abbreviated clinical clerkships and virtual learning. Every course devoted significant time and resources to developing online content for teaching clinical medicine. A grading plan was implemented to grade all make-up clerkships as Pass/Fail with significant ramifications on the MSPE requiring close collaboration and communication with students and OSL.

f. Accommodated a huge number of students returning to the clinical environment in June as there were students overlapping from two classes. This was exacerbated by low patient volumes, a lack of PPE limiting patient exposure, and limited hospitals that were willing to accept students at all. The virtual clerkship materials continued to be used to offload clinical sites and make this implementation possible.

g. The development of a Telehealth Task Force in response to the Coronavirus Pandemic whose members were comprised of individuals from a variety of hospital systems. The task force created materials to support the logistics of engaging students in telehealth including remotely for all systems, created a new orientation course for students to prepare them to participate in telehealth as a new clinical skill, and a faculty development toolkit to prepare faculty to teach students successfully while providing care via telehealth.

13. Reviewed NBME shelf exam outcomes and correlations, voted to remove the requirement for a shelf exam in CPC, replacing with a graded community engagement/population health project.

14. Developed a best practices guideline/expectation of grading committees aimed at increasing standardization and transparency in grading. Made professionalism a required and standard component of grading across all courses.

15. Managed the ongoing and ever-changing PPE needs of students in all of our hospital environments. This required complex tracking and distributing of PPE, communication and negotiation with hospital executives and infection control personnel, and communication with students. Increasingly, students gained access to more patient care and learning opportunities despite limitations due to the pandemic and infection risk. Additionally, students received training in the donning and doffing of PPE.

16. Collaboration with the student professionalism committee to create a Phase III student professionalism award.

Essentials Core Block Directors Committee

The Essentials Core Block Directors (ECBD) committee (comprised of 20 Block Directors, student representatives from each year and the MSTP, and *ex officio* members) meets on a monthly basis to review Block challenges, performance, innovations, evaluations, and student feedback, along with Essential Core policies. Each Block undergoes continuing quality improvement review on an annual basis. This past year, the ECBD continued to work on improving assessments and providing NBME Board style practice questions for students, integrating an online content resource and question bank into the Essentials Core Blocks. ECBD also developed a transitional 'hybrid' curriculum, modifying the existing interdisciplinary blocks, to facilitate the switch to the new Trek curriculum in 2021 and optimize the learning environment and experience for the incoming Class of 2024.

The Covid-19 pandemic required Block Directors to adapt quickly to on online format for both content and assessment. Operational review and planning are continuing to prepare for a combination of virtual and in-person classes in the fall semester. ECBD works with the Office of Student Life to identify and support struggling students and improve the learning environment. ECBD is well represented on curriculum reform and implementation committees and members are piloting new educational and assessment strategies in preparation for implementation of the next generation, integrated CUSOM Trek curriculum. The ECBD committee provides a venue for communication between Block Directors, faculty, staff and students and coordination with the Clinical Core, Longitudinal Curriculum and Electives, across all four phases of the MD program. ECBD is chaired by the Assistant Dean for the Essentials Core (Andrew Bradford, PhD) and reports to the SOM Curriculum Steering Committee. More information is available on our website at:

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

Essentials Core: Phase I and Phase II

The Essentials Core curriculum consists of nine integrated, interdisciplinary blocks that present basic science in a clinical context and are each directed by a basic scientist and a clinician. **Andrew Bradford, PhD,** Assistant Dean, oversees the Essentials Core. Each block lasts approximately eight to 10 weeks and consists of lectures, team-centered learning, problem-based learning sessions, laboratory exercises, and small group discussion sections to prepare students for entry in the clinical blocks in their third year. Students also begin working on their Mentored Scholarly Activity (MSA) during Phases I and II, and are able to choose from a variety of electives to personalize their curriculum, and explore interests outside the standard curriculum. The students begin to learn basic communication and physical exam skills during the Foundations of Doctoring course that provides early exposure to clinical practice and emphasizes a humanistic approach to medical care. Woven through the Essentials Core blocks, and the clinical blocks that follow them, are longitudinal elements or threads that integrate behavioral and social sciences, informatics, evidence-based medicine, health care policy, culturally effective medicine and ethics, and professionalism into the curriculum. **Marsha Anderson, MD,** Assistant Dean of Longitudinal Curriculum, oversees the longitudinal Curriculum. The overarching goal of the Essentials Core 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.

(Website: http://medschool.ucdenver.edu/essentialscore)

Clinical Core: Phase III

The Clinical Core Curriculum consists of competency-based clerkships that provide opportunities for mastery of the core knowledge, skills, and attitudes required of physicians. The curriculum provides intensive clinical experiences in the hospital, ambulatory clinics, emergency room, labor and delivery suite, and operating rooms. Several opportunities are available for third year students to increase continuity and authenticity of clinical experiences. These include: the Longitudinal Integrated Clerkship at Denver Health (DHLIC), the Colorado Springs Branch Longitudinal Integrated Clerkship (COSMIC), the Colorado Community Longitudinal Integrated Clerkship (CCLIC) in rural Colorado, the VA Sequential Training (VAST) Program, and the new Fort Collins Longitudinal Integrated Clerkship in connection with Colorado State University which will enroll students for the first time in the academic year 2020-21. For each clerkship (both block and longitudinal), goals and learning objectives have been developed by the CBDs 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 or block. Shelf exams or block-developed medical knowledge exams, clinical evaluations, midpoint 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. Clinical block directors monitor students' clerkship experiences at all clinical sites.

More information about Phase III can be found at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/clinicalcore/Pages/default.aspx

Clinical Core: Phase IV
The Phase IV curriculum consists of 32 weeks of educational requirements, including a required four-week Acting Internship, two 2 week Integrated Clinician Courses, 24 weeks of elective time (*for class of 2021, only 20 weeks of electives are required due to COVID-19 pandemic), and a capstone presentation of students' Mentored Scholarly Activity projects. Phase IV is designed to foster the development of graduates who are knowledgeable, skillful, and ethical, as well as broaden and balance the overall education of each student. It serves the purpose of career exploration and focuses students in preparation for graduate medical education. Working with the Office of Student Life, Phase IV is designed to foster: 1) knowledge base development; 2) career preparation/development; and 3) vocational mentorship all while meeting the needs of students. More information about Phase IV can be at: https://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/clinicalcore/Pages/Phase-IV-Requirements.aspx

Foundations of Doctoring
The Foundations of Doctoring Curriculum (FDC) is a three-year longitudinal experience beginning in Phase I of medical school that teaches communication, physical examination, clinical reasoning, and professional development skills. The vision of FDC is to prepare medical students to be outstanding physicians who will care for our diverse society. Standardized patient encounters and regular clinical exposure in a physician preceptor's practice are key components of this curriculum. The Course Director, **David Ecker, MD**, and the Associate Course Directors, **Deb Seymour, PsyD** (Communication), **Brandy Deffenbacher, MD (**Physical Exam), **Todd Guth, MD** (Clinical Skills), and **Kristin Furfari, 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 Essential Core Curriculum to encourage integration of classroom learning into clinical practice. For more information, visit our website at: http://medschool.ucdenver.edu/FDC.
If you are interested in volunteering as a preceptor for the Foundations of Doctoring Curriculum, please email Foundations.Doctoring@ucdenver.edu.

Integrated Clinicians Course
First implemented in 2008, the Integrated Clinicians Course (ICC) is an eight-week longitudinal curriculum that takes place during one or two-week blocks of time throughout Phases III and IV. The course is designed to integrate multiple concepts into students' growing clinical experiences, such as advanced clinical and communication skills, translational basic science, medical-legal topics, medical errors and quality improvement, ethics and professionalism, scholarly activities, and career development and exploration. Led by **Amira del Pino-Jones, MD,** and **Anna Neumeier, MD,** the ICC curriculum continues to undergo revisions to ensure content remains timely, valuable, and aligned with other curricular elements. Changes in 2019-2020 academic year included introduction of the pilot transition to residency base camp, which was comprised of specialty-specific, small-group simulation activities. Additionally, to achieve distance learning necessary during the COVID-19 pandemic, the spring ICC courses were converted to deliver 100 percent of the content in a virtual format, combining asynchronous and synchronous learning activities. The course appreciates its 400 instructors who donate over 1,200 hours of direct teaching time. Hidden Curriculum sessions also occur within the clinical blocks and ICC in Phase III and Phase IV.

For more information visit the ICC website at http://medschool.ucdenver.edu/icc.

Medical Student Research Track
Leadership: **Allan Prochazka, MD, MSc**--Director of Medical Student Research Track, Professor of Medicine
The Research Track aims to foster development of an identity as a physician capable of being involved with and 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, there are 237 students who have completed the track with 72 (2019-2020) currently enrolled in the program: 2020 with 22 students, 2021 with 15, and 2022 with 19 and 2023 with 18. The 167 students participating since 2014 have published 153 papers; 70 percent of Research Track graduates have published at least one paper. The 60 students who graduated in the last three years have published 71 papers so far.

Students work with an experienced faculty mentor through all four phases of the SOM curriculum, including two full-time research months in the summer after the first year, and two additional full-time research months during their fourth year. Preliminary and final results are presented locally, regionally and nationally. In addition, the track provides seminars related to research ethics, and teaches students how develop polished, professional research presentations and papers. Research Track students will be prepared to continue to work as researchers during their residencies and future medical careers.
student's area of specialty.

The Research Track relies on the generous funding support of the following departments and endowments. Funding sources commit to support a student through their four years as a Research Track student, which includes four 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 or Source	Students sponsored in 2019-2020
Anesthesiology	4
Biochemistry and Molecular Genetics	2
Cancer Center	6
Center for Regenerative Medicine and Stem Cell Biology	1
Child Psychiatry	3
Data Science to Patient Value (D2V)	1
Immunology and Microbiology	1
Medicine	8
Neurology	3
Ob/Gyn	3
Orthopedic	7
Ophthalmology	6
Pathology	1
Pediatrics	7
Physical Medicine and Rehabilitation	1
Schweppe Endowment	11
Surgery	9

Health Sciences Student Research Forum

The 34th Annual Student Research Forum was held on December 10, 2019. The forum was organized and funded by the School of Medicine Dean's Office and overseen by Allan Prochazka, MD, MSc, Director of the Colorado Research Track. Over 50 students presented their research from across the Anschutz Medical Campus, representing the Schools of Medicine, Nursing, Public Health and the Graduate School. Over 20 faculty members volunteered their expertise to judge posters. Approximately 180 first year medical students also evaluated posters as student judges. A total of $4,160 in award money was given to the 13 highest scoring presentations in the form of $320 monetary prizes.

Research Track Student Awards and Honors

Western Student Medical Research Forum

Nineteen Research Track students from the Class of 2022 presented at WSRMF in late January 2020 in Carmel, CA along with 460 other medical students and residents from western US states. Two Research Track students were honored with the awards below:

Alyssa Shepherd	WAFMR/WAP/WSCI Student Subspecialty Award
Kumar Thurimella	AFMR Henry Christian Award (WAFMR)

Schweppe Outstanding Scholars
The Schweppe Scholars Program, funded by the Schweppe Foundation, is designed to support outstanding CU School of Medicine students from each class cohort in the Research Track. Support continues through all four years at SOM.
AY 2019-2020 Schweppe Scholars were:

Diana Clabots, Tiffany Cung, Derek George, and Pierce Lewien	Class of 2020
Alexis Sunshine	Class of 2021
Christian Curran, Alyssa Shepherd, Sophia Wolfe	Class of 2022
Salman Ashraf, Zihan Feng, Emmeline Kim	Class of 2023

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 the medical student career. The MSA requires students to identify and work with a mentor to complete their projects, which also prepares them for working with mentors in their careers and serving as mentors to others in the medical profession. The MSA program has a broad definition of scholarship, and students can choose a project that represents their interests. Projects culminate with a scholarly paper and a Capstone poster presentation in the spring of the students' graduation year.

The 2019-2020 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), Rita Lee, MD, Associate Director (Public Health and Epidemiology), and John Tentler, PhD, Associate Director (Basic Biomedical Science). Over 380 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. Twenty-six percent of MSA students have either published or had a manuscript accepted or pending publication. For the graduating Class of 2020 Capstone Poster Forum Event, approximately 57 faculty members volunteered to evaluate the posters of 158 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@ucdenver.edu. (Website: http://medschool.ucdenver.edu/msa)

Figure 1: MSA Projects by Thematic Area, Class of 2020 N=158

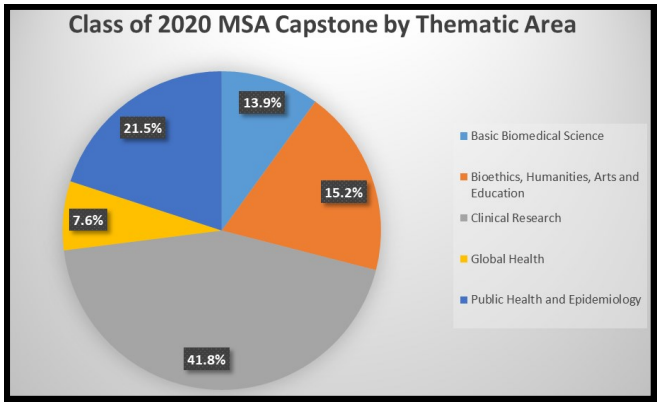
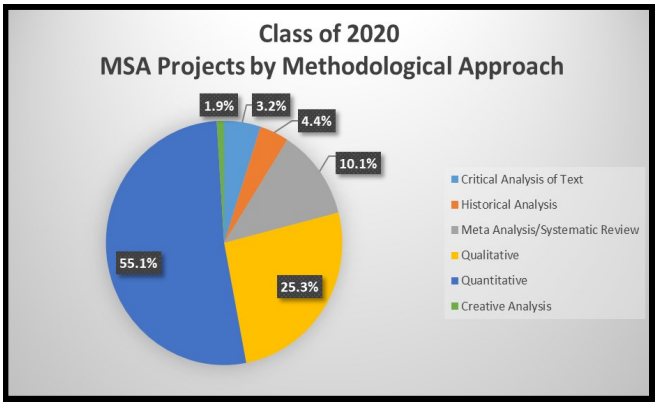


Figure 2: MSA Projects by Methodological Approach, Class of 2020 N=158



Problem-Based Learning

Maurice C. Scott, Jr., MD, is the director for Problem-Based Learning (PBL). The PBL curriculum runs over the first two years of medical school. Each class is divided into groups of eight students who meet with one facilitator for 30 sessions. Each session lasts two hours. The PBL cases are designed to improve skills in clinical reasoning, communication of medical information, self-directed learning, and research strategies to answer clinical questions. Groups also discuss how ethics, professionalism, cultural differences, and medical systems affect the care delivered to patients. PBL helps students develop skills in a safe and constructive environment where they are able to learn how to "walk and talk like a doctor" before they start their clerkships. Faculty and volunteer community clinicians facilitate the PBL group discussions and are recruited prior to the start of a new academic year. PBL is consistently one of the highest-rated courses in undergraduate medical education. For further questions, please contact the PBL director Maurice Scott at maurice.scott@cuanschutz.edu or visit our website at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/pbl/Pages/default.aspx.

Educational Technology

Educational Technology for Undergraduate Medical Education is supported by an interoffice team. Within the Office of Medical Education, the team includes **Helen Macfarlane,** Director of Educational Technology and Michele Doucette, Director of Curriculum Innovation, and Instructional Design. The School of Medicine Information Technology Support Services unit, led by **Michael Miller,** includes desktop support, project management, business analysis, application development, and database management.

Outside the School of Medicine education technology services are supplied by colleagues in the Office of Information Technology, CU Online, Technology Support Services and University Information Services. Together these groups provide the technologies of the MD program and the Offices of Medical Education, including Curriculum, Evaluation, Assessment and Outcomes, and Student Life.

The Education Technology supported includes: the admissions process; the electronic curriculum; the applications and data infrastructure of UME; integrations between University, school and vendor systems; student technology use, including developing laptop requirements; implementation and ongoing support of electronic assessment system in Essentials Core; support and development of the UME website; systems of student registration management and evaluation and assessment; and guidance on best practices, mobile device support and laptop troubleshooting and repair.

Major accomplishments of the office this year include:

- Continued development of the student database, process implementation to support the data integrity, data governance, maturation of the data dictionary and data model.
- Systems integration between a vendor system and CU SIS to transfer student course grades.
- Implementation of processes for data extraction, transformation and loading (ETL) of student data.
- Data visualization if student performance for students, coaches and administration.
- Learning Management System support for Essentials Core, Clinical Core and Sub-Internship courses and development and maintenance of standardization for optimized student experience.
- Support of a clinical site scheduling system for Phase III.
- Support of evaluation and assessment using a vendor system in collaboration with the Office of Evaluation, Assessment and Outcomes.
- Support of student Apple and Windows laptops and mobile devices, and the development of good digital practices.
- Maintenance and continued development of ExamSoft electronic assessment system and continued support of medical student use of system on personal devices.
- Management of a vendor system for student clinical experience logging.
- Management of a vendor system for student clinical experience logging.
- Curriculum Inventory and curriculum roadmap system development for program use and curriculum upload to the AAMC Curriculum Inventory.
- Continued development of a scheduling system to provide personal calendar subscriptions for students in the Essentials Core and Integrated Clinician Courses, including student and administrative interfaces.

- Assessment of existing systems for learning management and curriculum management for medical curricula, review of possible integrated systems to meet the needs of new curriculum, A3 process with OIT, gap analysis, procurement and implementation planning.
- Online and remote curriculum delivery innovation and support.

For more information on education technology go to medschool.ucdenver.edu/meta.

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 have continued to hire additional faculty and staff to help with the mission of the office, prepare for curriculum reform, and continue to support our current curriculum.

Assessment Accomplishments
The primary assessment goal of the AEO office is to create a coordinated program of student assessment that promotes best practice and clearly facilitates student growth. During 2019-2020, Assessment activities included:

- Improving the approach to exam validation for the Essentials Core: Building off the work of improving exam questions over the past several years, a new approach to exam validation was introduced for the Essentials Core. After exam administration, all questions undergo a statistical review to ensure adherence to psychometric guidelines. Any questions not meeting these guidelines are reviewed by experts to determine whether they have content flaws. All flawed questions are removed before final scoring, which increases the validity of exam results.

- Dashfolio Pilot: With curriculum reform in mind, the AEO Office created a pilot of a student Dashfolio that displays a student's Essentials Core exam performance across the various disciplines and specialties as a way to guide student learning and preparation for USMLE Step 1. Students and faculty advisors received access to the pilot Dashfolio, and we obtained initial feedback for a second pilot prior to a full roll-out of the student Dashfolio in 2021.

- Lecturio introduction and integration: The AEO Office managed the introduction and integration of Lecturio, a third-party item bank and Step 1 preparation resource for students in the Essentials Core. The AEO Office produces weekly required and optional Lecturio quizzes that integrate with the material being covered in the Essentials Core.

- Changing the approach to grading and the use of grading committees in Phase III: To continue improving the transparency and fairness of grading in the clinical rotations, members of the AEO Office observed all grading committees and collated a list of best practices that were used to create a new standardized approach to calculating grades and using grading committees introduced this academic year.

- Introduced virtual proctoring for NBME shelf exams due to COVID-19: With the COVID-19 pandemic, in-person testing for the required NBME shelf exams for clinical rotations was not possible. The AEO Office created a plan for virtual proctoring that allowed our students to continue taking these important exams.

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 2019-2020, students completed 9,942 course and 62,652 teaching evaluations administered by the AEO. Routine reporting activities included:

- Producing Continuous Quality Improvement (CQI) reports and Clinical Core Dashboards: The AEO Office generated 35 CQI reports, one for each required course, block, clerkship, and thread, for annual presentation at one of the three curriculum sub-committees and biannual presentation at the Curriculum Steering Committee (CSC). This year we created individualized Dashboards for each clinical course to provide visual representation of the data and facilitate comparisons across courses and years. In the clinical core, members of the AEO Office meet individually with each course director to review their feedback and help in creating a plan for improvement for the next year.

- Generating and Distributing Faculty and Resident Teaching Reports: All faculty and residents receive a teaching report if they have been 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 764 attending evaluation reports and 795 resident evaluation reports to residents and their program directors at the 49 residency programs at CUSOM, Denver Health, Exempla St. Joseph's, and HealthOne-PSL.

The AEO Office supports program development efforts and provides special analyses to assist educational activities and curricular program decision-making. During 2019-2020, other AEO activities included:

- Evaluating the Impact of the MD Program Experience: The AEO Office collects outcome data annually from Program Directors of PGY-1s and PGY-1 CUSOM graduates on critical areas of competence. In addition, "end of phase" evaluations of students are completed gathering information on a diverse array of desired outcomes.

- Student Data Advisory Committee: In 2020, oversight of surveys and research using medical students as subjects was reorganized into the Student Data Advisory Committee (SDAC) that is led and managed by the AEO office. This committee is composed of representatives from Office of Assessment, Evaluation, and Outcomes, the Office of Student Life, and the Office of Medical Education as well as an appointed student representative. The committee reviews all surveys and requests for data and then sends the requests to the students from a newly created email address.

- Providing educational research support to students and faculty: The AEO Office regularly works with students and faculty to support their research projects and collect high-quality data from medical students while protecting anonymity. The AEO Office support in this arena is broad-ranging and many of the studies that are ultimately approved by SDAC receive considerable input and advice from a member of the AEO Office.

- Evaluating impact of moving to virtual curriculums and introduction of novel COVID-19 elective courses: With the COVID-19 pandemic, numerous educational changes were required in a short period of time during the spring of 2020. The AEO Office worked with numerous faculty and students to evaluate these changes and provide more real-time feedback to the faculty as they adjusted to new ways of teaching. Several new surveys, evaluations, and focus groups were created and reported out to support this work.

Summary of AY 2019 - 2020 Student Ratings of Courses and Faculty by Phase

Essentials Core Curriculum (Phases I & II)	Mean	
	Phase I	Phase II
"Rate the overall quality of the block"	3.90	3.91
"Overall teaching" rating for lecturers	4.00	3.48
"Overall teaching" rating for small group facilitators	4.45	4.39

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

Clinical Curriculum (Phases III & IV)	Mean
Core Curriculum (Phase III)	
"What was the quality of the clerkship as a whole?"	4.07
Advanced Studies (Phase IV)	
"What was the quality of the acting internship as a whole?"	4.45
"Rate the quality of this elective as a whole." (*Clinical Electives*)	4.49
Clinical Teaching Evaluations (combined Phase III and IV)	
"Overall, how effective is this attending's teaching?"	4.49
"Overall, how effective is this resident/fellow's teaching?"	4.49

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

Assessment, Evaluation, and Outcomes Office staff include:

Tai Lockspeiser, MD, MHPE – Assistant Dean of Medical Education – Assessment, Evaluation, and Outcomes
Rachael Tan, PhD – Director of Office of Assessment, Evaluation, and Outcomes
Kevin Kidder, PhD – Assistant Director of Evaluation
Brooke Parsons, MPA – Evaluator
Susan Peth – Senior Evaluation Specialist
Traci Yamashita, MS – Outcomes Analyst
Federico Romano – Assessment Specialist

The AEO Office website can be found here: www.medschool.ucdenver.edu/evaluation

Office of Student Life

The Office of Student Life (OSL), which includes both Admissions and Student Affairs, experienced a transition this year as Nichole Zehnder, MD, an Assistant Dean and both Admissions and Student Affairs, left the University of Colorado for an Associate Dean Position at Washington University in St. Louis. After a national search for the new Assistant Dean of Admissions, **Jeffrey Soohoo, MD,** Associate Professor of Ophthalmology, was hired. He is an accomplished academic ophthalmologist, serving as the Ophthalmology Residency Program Director at CUSOM, the Ophthalmology Division Chief at Denver health, and has won numerous awards including the Academic Faculty Teaching Award for the Department of Ophthalmology. He previously served as the Chair of the Admissions Committee at the CUSOM. He is exploring a new rubric for holistic review of applicants along with continued efforts to improve the diversity of our incoming class. He is also working with the admissions team to convert to an entirely virtual interview season.

After an internal search, **Amira del Pino-Jones, MD,** Associate Professor of Medicine, joined **Jeff Druck, MD,** as the other Assistant Dean of Student Affairs. Del Pino-Jones is an experienced hospitalist clinician-educator who was the recipient of a Department of Medicine Star Award, has served as the Course Director for ICC, and was a Faculty Advisor in our Advisory College Program. She has also served as the Assistant Program Director for Diversity and Inclusion for Internal Medicine Residency at the CUSOM. She immediately assumed an integral role in mentoring individual students, as well as participating in strategic planning for Student Affairs. Druck also continues to serve as the co-Director of the Office of Professional Excellence, and he has taken an active role in addressing student mistreatment and improving the culture of wellness. There has been a significant improvement in our mistreatment scores in the annual AAMC Graduation Questionnaire (GQ). Haylee Shacklock was appointed as Program Director of the Office of Medical Education and OSL in May 2019. Since her arrival there has been a significant improvement in staff morale and efficiency. As the spring approached, the COVID-19 pandemic began and we also had the departure of key staff members, which has led to additional challenges 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 specifically provide multiple levels of support to a diverse group of students in order to help ensure their academic success and to support their personal well-being. OSL provides services for prospective students, current students, and graduates over the entire spectrum of their time with the School of Medicine and beyond. 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 is responsible for co-managing the Scholarship Process through the School's Scholarship Committees. OSL organizes and manages many events including the Second Look Day, the first-year orientation, the white coat/stethoscope ceremony, Match Day, and the hooding and oath ceremony at graduation. With the onset of the pandemic, all of the large events were converted to a virtual format which represented unique challenges. OSL also instituted regular virtual office hours along with class specific office hours which were well-received by the students and faculty. The isolation that students experienced created unique mental health and financial issues for some students, which required additional OSL intervention.

OSL provides organization and support for the Student Promotions Committee and the Data Warehouse Governance Committee. The Student Life Steering Committee (SLSC-formed in 2014) provides faculty input and oversight of many of the functions related to the office. There is a separate Student Life Advisory Committee which is comprised of students from all levels and serves as an advisory group to the Associate Dean of Student Life and the SLSC.

For more information visit our website at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx

Scholarship Committees

- During the 2019-2020 academic year, the office continued to manage the SOM Scholarship Committees, the Adler Scholarship Committee, as well as the ARCS scholarship process and several other scholarships. In this year, the School of Medicine provided scholarships to over 160 medical students, 54 of whom were entering students and 105 continuing. The total amount of scholarship money awarded was $3,609,448.68.
- The Dean's Distinguished Medical Scholarship program, a four-year half and full-tuition recruitment scholarship, was awarded to 19 incoming medical students who matriculated in 2020 as members of the class of 2024. Named Dean's Distinguished scholarships included the following: McGlone, Laurie Odom, Mile High Medical Society, Barbara Smith Reilly, Nancy Nelson, Cogen Family, and CUSOM Classes of 1969, 1982, and 1987. In the 2019-20 academic year, this program provided $2,208,937.00 of scholarship funding, with the goal of increasing the educational benefit derived from a diverse student body.
- Six seniors from the class of 2020 received a total of $74,234 in Adler MSA Scholarship in recognition of excellence for their completed MSA projects.
- Eleven students received ARCS Scholarships based on research excellence of $6,500 each, totaling $71,500.

Student Affairs

There was a leadership transition in Student Affairs this year when in March 2020, Nichole Zehnder, MD, accepted a position as an Associate Dean at Washington University in St. Louis. After an extensive internal search, **Amira del Pino-Jones, MD,** was appointed as the new Assistant Dean of Student Affairs, joining **Jeff Druck, MD**. Del Pino-Jones brings a wealth of experience as an Advisory College advisor, Associate Program Director for Diversity and Inclusion for the Internal Medicine Residency, and the Course Director of the Integrated Clinicians Curriculum (ICC) course. Druck also serves in the role of co-Director of the Office of Professional Excellence, which allows for considerable synergy in our efforts to improve the learning environment, particularly as it relates to wellness and student mistreatment. We monitor our mistreatment index on the AAMC Graduation Questionnaire, and this past year was our best performance since this score has been measured. We will continue to work with Druck and OPE to improve this further. In June 2019 we also welcomed an outstanding new Director of the Office of Student Life (OSL) as well as the staff in the Office of Medical Education, Haylee Shacklock. Haylee is supervising the staff in both OSL and the Office of Medical Education. Despite the onset of the pandemic and the loss of some positions, staff efficiency and morale have improved significantly.

The Office of Student Life (OSL) is responsible for the oversight of the majority of student support services including academic, career and personal advising, financial aid, residency applications, support and referrals for struggling students, and USMLE Step Exam preparation. Our long-standing Learning Resource Specialist, Carol Lay, retired at the end of this academic year. In addition, our clinical remediation specialist, Jeannette Guerrasio, left the academic center to join a private practice. We developed a new remediation team with Deb Seymour, PsyD, as the Director of Academic Success and Nida Awadallah, MD, as the Director of Clinical Remediation. Their impact has been felt immediately with a reduction in the Step 1 failure rate thus far, despite the added stress on our students of the pandemic and resulting disruption of testing access. We continue to discuss expanding our remediation efforts, including a more proactive approach to identifying struggling learners. OSL is also responsible for the coordination of major student activities including the Advisory College program, student interest groups, orientation, the match process, Match Day, graduation, visiting externs, student scheduling, and the Student Promotions Committee. All of our large events were converted to virtual events due to the pandemic. This was largely successful thanks to the efforts of staff member Hailey Herman, who plans our events. We anticipate a similar approach this year, including a virtual orientation.

In 2012, Student Affairs kicked off a student-led initiative to establish Advisory Colleges in the School of Medicine. Eight colleges were established and were named after Colorado Fourteeners. The colleges were designed to develop and foster mentoring and advising relationships with peers and faculty throughout phases. In the current academic year, leadership in the colleges included 16 faculty mentors with 0.1 FTE support, over 70 resident advisors, two student directors and 32 fourth-year student advisors. The program focuses on student wellness, mentoring, and career and academic advising. Moving forward we will be planning the expansion of this program in the new curriculum to 0.3 positions and it will include teaching, assessment, and coaching. We anticipate this expansion to address a greater need for individual student support as it relates to academic success and the stressors of medical school. Our Assessment Team has worked with us in creating a Dashfolio that provides valuable performance information for each student.

Three years ago, the University approved the creation of a Master's in Medical Science, a project spearheaded by Jeff Druck, MD. This degree is for students who complete the first two years of medical school but are otherwise unable to continue. This degree recognizes the significant amount of effort and discrete knowledge our students obtain during this time period and may assist in obtaining employment in a variety of fields going forward. We plan to begin an effort to catalogue career paths taken by our Master's recipients.

Areas of responsibilities and service include:

- Working with students having academic or personal struggles; connecting them with our learning resource experts and/or making appropriate referrals.
- Career advising and creation of the Medical Student Performance Evaluation (MSPE).
- Overseeing major events, including Orientation, Match Day, and Graduation.
- Overseeing USMLE Step 1 preparation.
- Providing programming and support for students in the areas of personal and professional development, career exploration and planning, stress and burn-out, student wellness and study/time management skills, and preparation for the Match.
- Providing programming and support for Advisory Colleges, and other faculty who are mentoring or advising students.
- Providing a part-time learning specialist to assist students with academic preparation.
- Working with specialists in the financial aid office to support student debt management.
- Working with donors and departments to provide and administer scholarships and awards.
  Scheduling Phase III and Phase IV students; confirming grades for all four phases.
- Manage the visiting student (extern) process, both from the home school and the host school.
- Tracking student data including grades, evaluations, absences, clinical requirements.
- Advocating for students by sitting on the various curriculum committees at the School of Medicine.
- Overseeing and providing support for Medical Student Council, OSR, student interest groups, AOA, and GHHS.
- Working with the Student Promotions Committee for successful transitions and remediation. When necessary work with the struggling students to facilitate the decisions of the Student Promotions Committee.
  Interfacing with national organizations as it relates to medical student experiences (e.g. AAMC, NBME, etc.).

On March 20, 2020, Match Day was held virtually from the home of Associate Dean for Student Life Brian Dwinnell, MD. One hundred sixty-nine students matched into residency positions. The table below shows a full list of specialty matches where 37.9 percent matched in Primary Care specialties (Family Medicine, Internal Medicine, Medicine – Primary track, Med-Peds and Pediatrics). Some of these students may ultimately choose to specialize. The top residency choices included Internal Medicine (27 categorical matches), Emergency Medicine (17 matches), and Family Medicine (22 matches), Pediatrics (11 matches), Anesthesiology (12 matches), Obstetrics-Gynecology (7 matches) and Medicine-preliminary, Transitional Year, Surgery Prelim (combined 13 matches.)

Colorado will retain 33 percent of the class. California will receive 15.38 percent of the class. Texas will receive 4.14 percent of the class, Washington will receive 3.5 percent and New York, Missouri, Pennsylvania will each receive 2.95 percent of the class. The remaining 35.13 percent of the class will be located throughout 25 other states.

2020 Residency Match Data	
Number of Students	Specialty Choice
12	Anesthesiology
1	Dermatology
17	Emergency Medicine
22	Family Medicine
27	Internal Medicine
4	Med-Peds
3	Neurology & Child Neuro
1	Neurosurgery
7	Obstetrics/Gynecology
4	Ophthalmology
8	Orthopaedics
0	Otolaryngology
6	Pathology
11	Pediatrics
3	Phys Medicine & Rehab
12	Psychiatry
3	Radiology, Diagnostic
11	Surgery-Categorical/Prelim
2	Urology



Photo courtesy of @cuanschutz Instagram.

On May 22, 2020, 169 students graduated with MD degrees.

For more information visit our website at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx

Admissions

The Office of Admissions team experienced a transition this year as Nichole Zehnder, MD, an Assistant Dean of both Admissions and Student Affairs, left the University of Colorado for an Associate Dean position at Washington University in St. Louis. After a national search for the new Assistant Dean of Admissions, Jeffrey SooHoo, MD, Associate Professor of Ophthalmology, was hired. SooHoo is an accomplished academic ophthalmologist, serving as the Ophthalmology Residency Program Director at CUSOM, the Ophthalmology Division Chief at Denver Health, and has won numerous awards including the Academic Faculty Teaching Award for the Department of Ophthalmology. SooHoo previously served as the Chair of the Admissions Committee at the CUSOM. SooHoo is exploring a new rubric for holistic review of applicants along with continued efforts to improve the diversity of our incoming class.

SooHoo is also working with the admissions team to convert to an entirely virtual interview season for 2020-2021 due to the COVID-19 pandemic. The School of Medicine received 10,431 primary applications for a class size of 160. Of these 160 entering students, ten students entered the MD/PhD Program and 23 will participate in the Colorado Springs Branch Campus Longitudinal Integrated Clerkship during their third year of medical school. Additionally, the Office of Admissions recruited and interviewed applicants for multiple pipeline 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, both the primary and supplemental essays, and the applicant's experiences and attributes.

Demographics

Class of	2022	2023	2024
Class Size	184	184	160
Female	97	104	90
Male	87	79	70
CO Resident	90	90	71
Non-Resident	94	94	89
URiM*	52	50	32
Average Age	25	25	25
Cumulative GPA	3.76	3.73	3.75
Math/Science GPA	3.72	3.67	3.68
MCAT (total)	511	512	512
* Under-represented in Medicine as defined by CUSOM Diversity Plan			

Applicant Data 2019-2020

Primary AMCAS Applications: 10,431
Completed Secondary Applications: 6,972
Interviewed: 706

Offered Admission: 323
Cumulative GPA: 3.75
Math/Science GPA: 3.68
MCAT (total): 512
`

Annual achievements include:

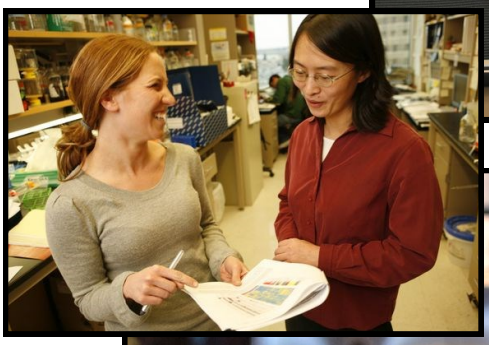
- Continued refinement of our interview process with integration of a standardized situational judgement test as part of our holistic review process.
- A record number of applications, including a substantial increase in first-generation students.
- Expanded partnership with the Office of Advancement 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 (303-724-6407) for an appointment.
Additional detailed information may be found at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/Admissions/Pages/admissions.aspx

Senior Program Leadership
Jeffrey R. SooHoo, MD
Assistant Dean for Admissions

Brian Dwinnell, MD
Associate Dean for Student Life







Faculty Affairs

Bottom photo courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.

Office of Faculty Affairs

Mission: The mission of the Office of Faculty Affairs is to provide services and support to faculty members, departments, and programs, in order to advance the teaching, research, patient care, and service missions of the School of Medicine.
Specific Objectives: The Office of Faculty Affairs will work collaboratively with School of Medicine, campus, and university leaders to promote faculty and organizational success. Specifically, the Office of Faculty Affairs will:
• Assist departments and divisions to recruit, develop, promote, and retain outstanding teachers, clinicians, and scholars;
• Assist faculty, department chairs, and administrators to understand and comply with the rules of the university and the School of Medicine;
• Develop and implement policies and practices that promote diversity, equity and inclusiveness, professionalism, collaboration, and academic integrity across the School of Medicine;
• Develop and implement policies and practices that ensure fair and consistent treatment of faculty, according to the rules of the university and the School of Medicine;
• Develop and implement policies and practices to build and sustain faculty vitality and success, through faculty development, mentorship, coaching, leadership training, and resiliency;
• Develop and maintain a comprehensive faculty evaluation and post-tenure review system that uses valid and relevant measures of faculty performance, ensures faculty accountability, is linked to faculty self-improvement, provides reliable data for promotion and tenure decisions, and reflects the missions and values of the School of Medicine;
• Assist faculty members to participate effectively in the shared governance of the School of Medicine;
• Conduct periodic faculty surveys to measure faculty satisfaction, vitality, and career success, and develop and implement policies to address challenges and guide change; and
• Provide administrative support for faculty appointments, promotions, tenure awards, post-tenure and annual performance reviews, and other activities.

Office of Faculty Affairs Leadership
Steven R. Lowenstein, MD, MPH, Associate Dean for Faculty Affairs
Heather Cassidy, MD, FACP, Assistant Dean for Community Based Medical Education
Cheryl Welch, MPA, Director, Office of Faulty Affairs

Website: http://medschool.ucdenver.edu/faculty

Full-Time (≥50% FTE) Faculty, Listed by Department (Instructor and Above) July 1, 2020			
	University Paid	**Affiliate Paid**	**Total**
Total Full-Time Faculty Count	**3,935**	**915**	**4,850**
Basic Science Departments			
Biochemistry & Molecular Genetics	37	1	38
Cell & Developmental Biology	30	1	31
Immunology and Microbiology	39	15	54
Pathology	92	21	113
Pharmacology	29	0	29
Physiology & Biophysics	15	0	15
Subtotal	**242**	**38**	**280**
Clinical Science Departments			
Anesthesiology	319	25	344
Dermatology	40	5	45
Emergency Medicine	123	41	164
Family Medicine	155	75	230
Medicine	783	370	1,153
Neurology	97	7	104
Neurosurgery	60	6	66
Ob/Gyn	130	21	151
Ophthalmology	51	7	58
Orthopedics	145	19	164
Otolaryngology	70	6	76
Pediatrics	1,029	78	1,107
Physical Medicine & Rehabilitation	72	28	100
Psychiatry	243	118	361
Radiation Oncology	28	0	28
Radiology	101	37	138
Surgery	247	34	281
Subtotal	**3,693**	**877**	**4,570**

Full-Time (≥50% FTE) Faculty, Listed by Rank			
(Instructor and Above)			
July 1, 2020			
	University Paid Faculty	**Affiliate Paid Faculty**	**Total**
Instructor	1,618	230	**1,848**
Assistant Professor	1,004	313	**1,317**
Associate Professor	766	231	**997**
Professor	547	141	**688**
Total Full-Time Faculty Count	**3,935**	**915**	**4,850**

Clinical Faculty July 1, 2020	
Volunteer	2,893
Paid (<.50 FTE)	390
Total Clinical Faculty Count	**3,283**

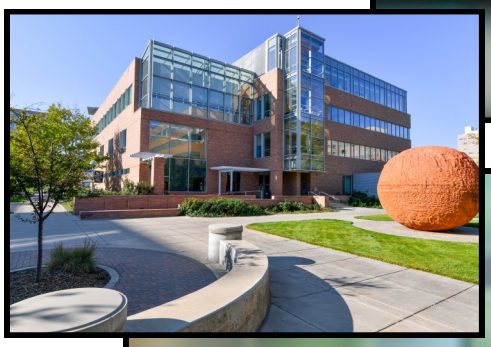


Photo courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.











Medical Scientist Training Program

Top photo courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.

Bottom photo courtesy of @cuanschutz Instagram.

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 by successfully competing for NIH T32 funding (currently ~$1M/year to support 19 trainees per year). The program has strong leaders and mentors. **Arthur Gutierrez-Hartmann, MD,** who has directed the MSTP since 1994, has been selected for numerous local and national mentor awards, and for national leadership roles in MD/PhD and graduate education. He stepped down as director June 30, 2020, and a search committee comprised of members of the MST Program, Graduate School, and School of Medicine selected **Cara Wilson, MD,** to be his successor. Wilson is an established physician-scientist with a consistent record of NIH research funding as well as extensive experience in mentoring and career development of trainees. **Patricia Ernst, PhD,** serves as the clinical associate director and provides individualized guidance to each student via regular meetings and interactions. The program has been competitively reviewed and funded by the NIH for each of the past five cycles.

The MSTP 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 (NIGMS), which highlighted the MSTP on the NIGMS diversity website.

The MSTP is the only truly intercampus student training program, with 200 faculty mentors in 17 PhD Programs at the Anschutz Medical Campus, National Jewish, and CU Boulder that can serve as PhD mentors. There are currently 85 students in the program: 11 in the first year (MS-I), 11 in the second year (MS-II), 48 in the PhD research years, and 15 in the Medical School Clinical years (MS-III and MS-IV). Since 1983, 264 students have matriculated in the MSTP. 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 (14) who are now faculty at the University of Colorado Anschutz Medical Campus and another 12 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, 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




LAB-TEK
LAB-TEK
BECKMAN
COULTER







Research

Top and Center photos courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.

Bottom photo courtesy of @cuanschutz Instagram, July 2, 2020: "A one-of-a-kind antibody test targeting the novel coronavirus has joined the arsenal of tools needed in understanding and eradicating COVID-19. The test, described as "among the best of the best," emerges from a unique partnership between #UCHealth and #CUAnschutz, a joint venture researchers hope will serve as a catalyst for future projects."

Bridge Funding

The bridge funding program of the School of Medicine was established in 2006 when reductions in the National Institutes of Health (NIH) budget threatened the viability of faculty research projects. The program's purpose is to provide support to principal investigators while they re-apply for funding. The Bridge Funding Committee is advisory to the Dean. Applications are reviewed in April and November.

From the first review in 2006 through April 2020, 224 awards have been made to 183 faculty members in a total amount of $10.1 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, FACSM
Kurt Stenmark, MD

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 and the return of constructive comments that have strengthened the quality and productivity of the School of Medicine's research and have improved the cost-effectiveness 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 2020 review, the SIRC process has made 102 awards totaling $17 million in Dean's funds, and six additional two-to-five-year awards to projects from the 2009 research retreat totaling $7.3 million.

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 mentorship in outcomes research, biostatistics support, patient databases in pregnancy & developmental disabilities, and a biorepository.

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

SIRC Committee
Lori Sussel, PhD – Chair
Lisa Brenner, PhD
Peter Buttrick, MD
Andrew Fontenot, MD
Chris Gignoux, PhD
Sue Kinnamon, PhD
Laurel Lenz, PhD
J. Mark Petrash, PhD
Rebecca Schweppe, PhD

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 on matters related to research, and it now also advises the Vice Chancellor for Research. The committee meets monthly. RAC has previously recommended that a center for stem-cell biology and regenerative medicine be established. RAC deliberations this year included a comprehensive review of the current core facilities on campus. The RAC updated the core list and created a proposed definition of a core facility. A recommendation regarding core support was provided to the Dean. In addition, the RAC reviewed the campus needs around data science and proposed a structure that would acknowledge the needs for scholarship, service, and education in this broad domain. The RAC also conducted a campus-wide survey to collect projected animal space needs in order to help with space development plans. A recommendation to reevaluate the master plan for campus development to address expanding animal space needs was provided to the Dean.

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

Research Advisory Committee	
Mary Weiser-Evans, PhD – Committee Chair	Edward Janoff, MD
Steve Abman, MD	Craig Jordan, PhD
Peter Buttrick, MD	Robert Keith, MD
James Costello, PhD	Jeff Kieft, PhD
Thomas Flaig, MD	Doug Novins, MD
Eva Grayck, MD	Suzann Ruedeman
Jay Hesselberth, PhD	Jill Slansky, PhD
	Fred Suchy, MD

Clinical-Translational Research Advisory Committee

Clinical-Translational Research Advisory Committee (CTRAC) membership represents the research leadership of the entities that make up the Colorado Clinical and Translational Sciences Institute (CCTSI): School of Medicine, College of Nursing, Skaggs School of Pharmacy and Pharmaceutical Sciences, School of Dental Medicine, University of Colorado Denver (UCD), National Jewish Health, UCHealth University of Colorado Hospital, and Children's Hospital Colorado, and the Regulatory Compliance/Clinical Research Support Center. CTRAC meets quarterly and advises the Dean and the Vice Chancellor for Research on matters related to the conduct of patient-related and community-based research. Its other major mission is to educate members and their constituencies about activities, opportunities, and needs across the programs of the CCTSI and the Anschutz Medical Campus and to promote collaboration and exchange of ideas. This academic year, CTRAC efforts have included framing possible responses to changes in National Institutes of Health funding of the CCTSI, priorities for strengthening campus infrastructure for patient- and population-directed research, and improved collaborations across all components of the Anschutz Medical Campus and UCD.

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

Clinical-Translational Research Advisory Committee / Colorado Clinical and Translational Sciences Institute Internal Advisory Committee	
William Hiatt, MD – Committee Chair	
Thomas Flaig, MD – Committee Co-Chair	Alison Lakin, RN, PhD
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John Heldens	Ron Sokol, MD
Michael Kahn, MD, PhD	Fred Suchy, MD
Wendy Kohrt, PhD	Steve VanNurden



Photo courtesy of Karsh Hagan, University of Colorado Anschutz Medical Campus.

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Steven Abman, MD, Professor	*Role of VEGF in Perinatal Hypertension*	National Heart, Lung, and Blood Institute/NIH/DHHS
Cheryl Ackert-Bicknell, PhD, Visiting Associate Professor	*Identification of Gene Regulating PTH-mediated Skeletal Strength*	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS
David Albers, PhD, Associate Professor	*Mechanistic Machine Learning*	National Library of Medicine/NIH/DHHS
Richard K. Albert, MD, Professor	*Sigh Ventilation to Reduce the Incidence and/or the Severity of the Acute Respiratory Distress Syndrome*	Department of Defense
Enrique Alvarez, III, MD, PhD, Assistant Professor	*MA30143 Ensemble-an open-label, single-arm study to evaluate the effectiveness and safety of Ocrelizumab in patients with early stage relapsing remitting multiple sclerosis*	Genentech, Inc.
Enrique Alvarez, III, MD, PhD, Assistant Professor	*An open-label, single arm, multicenter extension study evaluating long-term safety, tolerability and effectiveness of ofatumumab in subjects with relapsing multiple sclerosis*	Novartis Pharmaceuticals Corporation
Melinda C. Anderson, PhD, Assistant Professor	*The contributions of age related changes in the sound localization pathway to central hearing loss*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Russel V. Anthony, PhD, Professor	*Physiological Ramifications of Chorionic Somatomammotropin Deficiency*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Anirban Banerjee, PhD, Assistant Professor	*Mechanisms of Trauma Induced Coagulopathy*	National Institute of General Medical Sciences/NIH/DHHS
Alexander J. Barker, PhD, Associate Professor	*Role of Valve-Mediated Hemodynamics on Bicuspid Aortopathy*	National Heart, Lung, and Blood Institute/NIH/DHHS
Linda Barlow, PhD, Professor	*Characterization of progenitor populations in adult taste epithelium*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS
Kathleen Barnes, PhD, Professor	*Multi-omic studies of asthma severity in an African ancestry population*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Kambez Benam, DPhil, Associate Professor	*Toxicity and Carcinogenicity Profiling of Tobacco Products via Organ Microengineering and Systems Biology*	Food and Drug Administration
Jeffrey Lawrence Bennett, MD, Professor	*A Phase 3, External Placebo-Controlled, Open-Label, Multicenter Study to Evaluate the Efficacy and Safety of Ravulizumab in Adult Patients with Neuromyelitis Optica Spectrum Disorder (NMOSD)*	Alexion Pharmaceuticals, Inc.
David Bentley, PhD, Professor	*Trisomy 21 and RNA polymerase II function*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Bryan Bergman, PhD, Professor	*Skeletal muscle diacylglycerol and sphingolipids: Impact of localization and species on insulin resistance in humans*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Bryan Bergman, PhD, Professor	*Intermuscular adipose tissue (IMAT): protagonist in sarcopenia and insulin resistance in humans*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Daniel Bessesen, MD, Professor	*Adaptive responses to overfeeding and weight regain in reduced obese individuals*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	*Title*	Funding Agency
Brianne Bettcher, PhD, Assistant Professor	*Investigating the Contribution of Peripheral versus Central Nervous System Immune Dysfunction to Cognitive Aging*	National Institute on Aging/NIH/DHHS
Brianne Bettcher, PhD, Assistant Professor	*An investigation of immune biology and Alzheimers Disease-related biomarkers in asymptomatic, late life mild TBI*	Department of the Army
Marian Betz, MD, MPH, Associate Professor	*Decision Making Among Older Adults: the AUTO study*	National Institute on Aging/NIH/DHHS
Ganna Bilousova, PhD, Associate Professor	*Development of a 'Spray-on' cell suspension delivery system amenable to clinical use, for treatment using genetically-corrected iPSC-derived cells*	Avita Medical
Benjamin Bitler, PhD, Assistant Professor	*Elucidating the role of Chromobox 2 in promoting ovarian cancer progression*	American Cancer Society
Virginia Borges, MD, Professor	*Paul Calabresi Award in Clinical Oncology Research*	National Cancer Institute/NIH/DHHS
Lisa Brenner, PhD, Professor	*Integrating signals of suicide risk from DoD and VHA data to improve upon suicide risk prevention strategies for combat Veterans*	National Institute of Mental Health/NIH/DHHS
Michael Bristow, MD, PhD, Professor	*A Comprehensive Approach to the Treatment of Heart Failure with Reduced Ejection Fraction (HFrEF)*	American Heart Association
Joseph Brzezinski, PhD, Associate Professor	*Mechanisms of cell fate specification and competence regulation in photoreceptors*	National Eye Institute/NIH/DHHS
Sheana Salyers Bull, PhD, MPH, Professor	*Personalized Patient data and behavioral nudges to improve adherence to chronic cardiovascular medications*	National Heart, Lung, and Blood Institute/NIH/DHHS
Ellen Burnham, MD, Professor	*CoPARC: Colorado Pulmonary Alcohol Research Collaborative*	National Institute on Alcohol Abuse and Alcoholism/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Peter Buttrick, MD, Professor	*A Comprehensive Approach to the Treatment of Heart Failure with Reduced Ejection Fraction (HFrEF)*	American Heart Association
Thomas Campbell, MD, Professor	*A multi-center, randomized, double-blinded, placebo-controlled multi-center study to evaluate the safety and efficacy of hydroxychloroquine monotherapy and in combination with azithromycin in patients with moderate and severe COVID-19 disease*	University of California, Los Angeles
Thomas Campbell, MD, Professor	*Phase 3 randomized, double-blind, placebo-controlled, multi-center study to assess the efficacy and safety of ruxolitinib in patients with COVID-19 associated cytokine storm (RUXCOVID)*	Novartis Pharmaceuticals Corporation
Jose Ramon Castillo-Mancilla, MD	*New Pharmacologic Measures of ART Adherence and Exposure: Pathway to Clinical Implementation*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Victoria Catenacci, MD, Associate Professor	*Comparison of Weight Loss Induced by Intermittent Fasting Versus Daily Caloric Restriction in Individuals with Obesity: A 1-Year Randomized Trial*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Antonia Elisabetta Chiesa, MD, Associate Professor	*CARENetwork (Child Abuse Response and Evaluation Network)*	Colorado Department of Public Health and Environment/COLO
David Clouthier, PhD, Professor	*Genes and Transcripts that Interact with MUC5B in Pulmonary Fibrosis*	National Heart, Lung, and Blood Institute/NIH/DHHS
Mitchell Cohen, MD, Professor	*Systematic Analysis and Assay Testing Trauma-Induced Coagulopathy*	University of California, San Francisco

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Bradley Corr, MD, Assistant Professor	*CA030-001-0005 Ph 1/2a First-In-Human Study of BMS-986249 Alone and in Combination with Nivolumab in Advanced Solid Tumors*	Bristol Myers Squibb Pharmaceutical
James Costello, PhD, Assistant Professor	*Systems analysis of aggressive prostate cancer pathology*	National Cancer Institute/NIH/DHHS
Scott Cramer PhD, Professor	*Systems analysis of aggressive prostate cancer pathology*	National Cancer Institute/NIH/DHHS
Dana Dabelea, MD, PhD, Professor	*The Early Life Exposome and Childhood Health - The Colorado Healthy Start 3 Cohort Study*	Office of the Director, National Institutes of Health/NIH/DHHS
Dana Dabelea, MD, PhD, Professor	*Influence of Prenatal and Early Childhood Home-Visiting by Nurses on Development of Chronic Disease: 29-year Follow-Up of a Randomized Clinical Trial*	National Heart, Lung, and Blood Institute/NIH/DHHS
Angelo D'Alessandro, PhD, Assistant Professor	*PIMT1 in Red Blood Cell aging in vivo and in vitro*	National Heart, Lung, and Blood Institute/NIH/DHHS
Angelo D'Alessandro, PhD, Assistant Professor	*Interactions between the ADORA2b/Sphk1axis and the AE1-Hb switch in red blood cell aging in vivo and in vitro*	National Heart, Lung, and Blood Institute/NIH/DHHS
Stephen R. Daniels, MD, PhD, Professor	*Influence of Prenatal and Early Childhood Home-Visiting by Nurses on Development of Chronic Disease: 29-year Follow-Up of a Randomized Clinical Trial*	National Heart, Lung, and Blood Institute/NIH/DHHS
Rachel Davis, MD, Associate Professor	*Leveraging ethical dissension among capacity, beneficence and justice in clinical trials of neuro-therapeutics in the severely disabled: lessons from schizophrenia*	National Institute of Mental Health/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
S. Lindsey Davis, MD, Associate Professor	*MK-3475-966-0011 Ph 3 Randomized, Double Blind Study of Pembrolizumab Plus Gemcitabine/Cisplatin versus Placebo Plus Gemcitabine/Cisplatin as First-Line Therapy in Participants with Advanced and/or Unresectable Biliary Tract Carcinom*	Merck Sharp & Dohme Corp
Kevin Deane, MD, Associate Professor	*Collaborative Research Agreement- Understand the natural history of Rheumatoid Arthritis (RA) development from the period of preclinical disease to classifiable disease*	University of California at San Diego
Kevin Deane, MD, Associate Professor	*Identifying Key Autoantibody and inflammatory Factors in the Initiation, Propagation and Transition to Clinically-Apparent Rheumatoid Arthritis*	Department of Defense
Mary Kristen Demoruelle, MD, Assistant Professor	*Neutrophil Extracellular Traps in the Lung and Development of Rheumatoid Arthritis-Related Autoimmunity and Arthritis*	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS
W. Perry Dickinson, MD, Professor	*Facilitating Alcohol Screening and Treatment (FAST), Colorado*	Agency for Healthcare Research and Quality/DHHS
Jorge Diapola, MD, Professor	*Medical Scientist Training Program*	National Institute of General Medical Sciences/NIH/DHHS
Jorge Diapola, MD, Professor	*A systems biology approach to identifying the mechanisms of sex hormone induced thromboembolism in pre-menopausal women*	National Heart, Lung, and Blood Institute/NIH/DHHS
Robert Doebele, MD, PhD, Professor	*Rapid TKI-Induced Inflammatory Signaling as a Modulator of Initial Therapeutic Response*	Department of the Army

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Hillary Ann Dunlevy, MD, Assistant Professor	*Prospective pilot study of the efficacy, safety and tolerability of BICTEGRAVIR-based HIV art same-day treatment evaluation (B-Haste)*	Gilead Sciences, Inc.
Cory Adeline Dunnick, MD, Associate Professor	*JAK Inhibition in Down Syndrome*	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS
Oliver Eickelberg, MD, Professor	*Extracellular matrix composition and crosslinking patterns determine resident cell function in lung fibrosis*	National Heart, Lung, and Blood Institute/NIH/DHHS
Anthony Elias, MD, Professor	*NCI National Clinical Trials Network - Lead Academic Participant Sites*	National Cancer Institute/NIH/DHHS
Kristine Erlandson, MD, Associate Professor	*Pitavastatin to Reduce Physical Function Impairment and Frailty in HIV (PREPARE)*	National Institute on Aging/NIH/DHHS
Kristine Erlandson, MD, Associate Professor	*The High-Intensity Exercise to Attenuate Limitations and Train Habits (HEALTH) in Older Adults with HIV*	National Institute on Aging/NIH/DHHS
Kristine Erlandson, MD, Associate Professor	*Explorations into the mechanism for INSTI-associated weight gain: a focus on energy balance*	Gilead Sciences, Inc.
Joaquin Espinosa, PhD, Professor	*JAK Inhibition in Down Syndrome*	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS
Joaquin Espinosa, PhD, Professor	*Understanding Down Syndrome as an Interferonopathy*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Christopher Evans, PhD, Professor	*Role of Mucin in Lung Homeostasis and Pathophysiology*	National Heart, Lung, and Blood Institute/NIH/DHHS
Stacy Marie Fischer, MD, Associate Professor	*Apoyo Con Carino: Patient Navigation to Improve Palliative Care for Seriously Ill Latinos*	National Institute of Nursing Research NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Andrew Fontenot, MD, Professor	*T cell epitopes in sarcoidosis*	National Heart, Lung, and Blood Institute/NIH/DHHS
Andrew Fontenot, MD, Professor	*Role of Chemokines in Innate and Adaptive Immunity in the Lung*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Heide Ford, PhD, Professor	*Role of Eya3 in regulating the immune microenvironment to promote breast tumor progression*	National Cancer Institute/NIH/DHHS
Heide Ford, PhD, Professor	*Deciphering Mechanisms by which Tumor Cells Collaborate to Mediate Metastasis*	National Cancer Institute/NIH/DHHS
Brian Freed, PhD, MA, MS, Professor	*Cell Research*	Cell Research Corporation Pte Ltd.
Sandra Lee Friedman, MD, MPH, MSPH, Professor	*JFK Partners Colorado LEND Program*	Maternal and Child Health Bureau/HRSA/DHHS
Brigitte Frohnert, MD, PhD, Associate Professor	*A Phase 2, Randomized Trial to Determine the Safety, Acceptability and Efficacy of Early Initiation of CGM-Guided Insulin Therapy in Stage 2 Type 1 Diabetes*	Leona M. And Harry B. Helmsley Charitable Trust
Terry Fry, MD, Professor	*Precision Combinatorial Immunotherapeutic Targeting of Cytokine Receptor Kinase Signaling in CRLF2-Rearranged ALL*	Department of the Army
Terry Fry, MD, Professor	*Rational development of multi-targeted CAR-T cell constructs in pediatric acute myeloid leukemia*	Leukemia and Lymphoma Society
Robin Gabriels, PsyD, Professor	*Physiological mechanisms of action relating to immediate and long-term therapeutic horseback riding intervention effects in a psychiatric population of youth with autism spectrum disorder*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Judith Gault, PhD, Associate Research Professor	*Leveraging ethical dissension among capacity, beneficence and justice in clinical trials of neurotherapeutics in the severely disabled: lessons from schizophrenia*	National Institute of Mental Health/NIH/DHHS
Emily Gibson, PhD, Assistant Professor	*Controlled neuronal firing in vivo using two photon spatially shaped optogenetics*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Emily Gibson, PhD, Assistant Professor	*Shedding light on brain circuits mediating navigation of the odor plume in a natural environment*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Donald Gilden, MD, Professor	*A major contributor of serious multisystem disease in the elderly: varicella virus-induced inflammation*	National Institute on Aging/NIH/DHHS
Adit Ginde, MD, MPH, Professor	*Multicenter Implementation Trial of Targeted Normoxia Strategy to Define Oxygen Requirements for Combat Casualty Care*	Department of the Army
Adit Ginde, MD, MPH, Professor	*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*	Advanced Technology International
Russel Glasgow, PhD, Professor	*Implementation to Achieve Clinical Transformation (IMPACT): The Colorado Training Program*	National Heart, Lung, and Blood Institute/NIH/DHHS
Russel Glasgow, PhD, Professor	*Pragmatic implementation science approaches to assess and enhance value of cancer prevention and control in rural primary care*	National Cancer Institute/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Eva Grayck, MD, Professor	*Modulation of Inflammation and Oxidative Stress in Diabetic Wound Healing*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Melanie Cree Green, MD, PhD, Associate Professor	*Impact of GLP-1 on hepatic fat and energy utilization in obese girls with polycystic ovarian syndrome*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Arthur Gutierrez-Hartmann, MD, Professor	*Medical Scientist Training Program*	National Institute of General Medical Sciences/NIH/DHHS
Kathryn Haskins, PhD, Professor	*Hybrid Peptides as Autoantigens for Diabetogenic CD4 T Cells*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Bradley Haverkos, MD, Assistant Professor	*An Open label, Phase I/II study to evaluate the safety and efficacy of Tenalisib (RP6530), a novel PI3K δ/γ dual inhibitor given in combination with a histone deacetylase (HDAC) inhibitor, Romidepsin in adult patients with relapsed/refractory T-cell Lymphoma*	Rhizen Pharmaceuticals S.A.
Trevor Henry Hawkins, MD, Assistant Professor	*A Phase 3, 22-week, Multicenter, Randomized Withdrawal Study of TD-9855 in Treating Symptomatic Neurogenic Orthostatic Hypotension in Subjects with Primary Autonomic Failure*	Theravance Biopharma US, Inc
Lynn E. Heasley, PhD, Professor	*Rapid TKI-Induced Inflammatory Signaling as a Modulator of Initial Therapeutic Response*	Department of the Army
Peter Henson, MD, PhD, Professor	*Multi-Disciplinary Research Training in Respiratory Disease*	National Heart, Lung, and Blood Institute/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
James O. Hill, PhD, Professor	*Colorado Nutrition Obesity Research Center*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Pei Jei Michael Ho, MD, Professor	*Personalized Patient data and behavioral nudges to improve adherence to chronic cardiovascular medications*	National Heart, Lung, and Blood Institute/NIH/DHHS
Vernon Holers, MD, Professor	*Prevention center UO1: Early targets for antigen-specific tolerance induction in preclinical rheumatoid arthritis*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Christian Hopfer, MD, Professor	*Impact of Marijuana Legalization: Comparison of Two Longitudinal Twin Cohorts*	National Institute on Drug Abuse/NIH/DHHS
Jason Hoppe, DO, Associate Professor	*A Health System Wide Evaluation of Mandated Use and Clinical Decision Support Tools to Improve PDMP Utilization and Patient Outcomes*	Colorado Department of Regulatory Agencies
Alexander Horswill, PhD, Professor	*Quorum sensing, diversity and skin inflammation*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Lawrence Hunter, PhD, Professor	*Colorado Biomedical Informatics Training Program*	National Library of Medicine/NIH/DHHS
Lawrence Hunter, PhD, Professor	*Knowledge-Based Biomedical Data Science*	National Library of Medicine/NIH/DHHS
Lawrence Hunter, PhD, Professor	*State of the Art Text Mining for Translator*	National Center for Advancing Translational Sciences/NIH
Thomas Harris Inge, MD, Professor	*Teen Longitudinal Assessment of Bariatric Surgery (Teen LABS) Research Project*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
David Ivy, MD, Professor	*A Prospective Study to Investigate the Combination of Physical Activity and Heart Rate with the Use of Actigraphy as a Novel, Well-defined, Reliable, Sensitive, Easy-to-use, and Non-invasive Study Endpoint to Facilitate Pediatric Pulmonary Arterial Hypertension Trials and Drug Development for Children Ages 0-6 Years*	Food and Drug Administration
Thomas Jansson, MD, PhD, Professor	*Placental adiponectin signaling and fetal programming in maternal obesity*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Antonio Jimeno, MD, Professor	*Development of an autologous humanized model of melanoma exploring human thymic education capacity*	National Cancer Institute/NIH/DHHS
Antonio Jimeno, MD, Professor	*Characterizing the regulation of PD-1 ligands in head and neck cancer stem cells using an autologous humanized model with T cell education capability*	National Cancer Institute/NIH/DHHS
Antonio Jimeno, MD, Professor	*MK-7902-010-00 Ph 3, randomized, placebo-controlled, double-blind clinical study of pembrolizumab (MK3475) with or without lenvatinib (E7080/MK-7902) to evaluate the safety and efficacy of pembrolizumab and lenvatinib as 1L intervention in a PD-L1 selected population of participants with recurrent or metastatic head and neck squamous cell carcinoma*	Merck Sharp & Dohme Corp
Aaron Johnson, PhD, Associate Professor	*Molecular mechanisms of heterochromatin spreading at the leading edge*	National Science Foundation
Craig Jordan, PhD, Professor	*Therapeutic targeting of AML stem cells*	Leukemia and Lymphoma Society

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Peter Kabos, MD, Associate Professor	*RAD1901-308 elacestrant monotherapy vs. standard of care for the treatment of patients with ER+/HEr2-advanced breast cancer following CDK4/6 inhibitor therapy: PH 3 randomized, open-label, active-controlled multicenter trial*	Radius Health, Inc.
Manali Kamdar, MD, Associate Professor	*An open-label, randomized, multi-center, phase IB/II trial evaluating the safety, tolerability, pharmacokinetics, and efficacy of mosunetuzumab (BTCT4465A) in combination with polatuzumab in patients with B-cell non-Hodgkin's lymphoma*	Genentech, Inc.
Madeleine Kane, MD, PhD, Professor	*Paul Calabresi Award in Clinical Oncology Research*	National Cancer Institute/NIH/DHHS
Allison Kempe, MD, MPH, Professor	*The HPV9-10 Trial: Early Initiation of HPV Vaccination*	National Cancer Institute/NIH/DHHS
Matthew James Kennedy, PhD, Assistant Professor	*Novel approaches for interrogating and manipulating synaptic function, structure and plasticity*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Drew Scott Kern, MD, MSis, Assistant Professor	*A Randomized, Double-Blind, Double-Dummy, Active-Controlled Study Comparing the Efficacy, Safety and Tolerability of ABBV-951 to Oral Carbidopa/Levodopa in Advanced Parkinson's Disease Patients*	AbbVie, Inc.
Jeffrey Scott Kieft, PhD, Professor	*Structure, function, and dynamics of viral RNAs and RNA-containing complexes*	National Institute of General Medical Sciences/NIH/DHHS
Sue Kinnamon, PhD, Professor	*Illuminating the structure and function of Type I taste cells*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Georgeanna Klingensmith, MD, Professor Emerita	*Developing Pediatric Diabetes Investigators for the Future*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Achim Klug, PhD, Associate Professor	*The contributions of age related changes in the sound localization pathway to central hearing loss*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS
Benzi Kluger, MD, Professor Adjoint	*More than a Movement Disorder: Applying Palliative Care to Parkinson's Disease*	National Institute of Nursing Research NIH/DHHS
Kyle Knierim, MD, Associate Professor	*Colorado State Opioid Response Grant*	Colorado Department of Human Services
Kyle Knierim, MD, Associate Professor	*Maternal and Child Health Pilot Program*	State of Colorado
Melanie Koenigshoff, MD, PhD, Professor	*Non-canonical WNT signaling in emphysema and lung regeneration*	National Heart, Lung, and Blood Institute/NIH/DHHS
Nancy Krebs, MD, Professor	*Predicting Health Outcomes of Mediterranean Diet via Metabolomics of Foods and Biospecimens*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Nancy Krebs, MD, Professor	*Nutrition-specific interventions to improve long-term maternal-child health outcomes*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Jean Kutner, MD, Professor	*Palliative Care Research Cooperative Group (PCRC): Refinement and Expansion*	National Institute of Nursing Research NIH/DHHS
Mamuka Kvaratskhelia, PhD, Professor	*Multimeric HIV-1 Integrase Inhibitors*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Elaine Lam, MD, Associate Professor	*MK 6482-005-00 Open-label, Randomized Ph 3 Study of MK-6482 Versus Everolimus in Participants With Advanced Renal Cell Carcinoma That has Progressed After Prior PD-1/L1 and VEGF-Targeted Therapies*	Merck Sharp & Dohme Corp

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Elaine Lam, MD, Associate Professor	*AROHIF21001 Ph 1b Dose-Finding Study of ARO-HIF2 in Patients with Advanced Clear Cell Renal Cell Carcinoma*	Arrowhead Pharmaceuticals, Inc.
Joyce Sujin Lee, MD, Associate Professor	*A Phase 3, randomized, double-blind, parallel-group, placebo-controlled multicenter study to evaluate the efficacy and safety of two doses of GLPG1690 in addition to local standard of care for minimum 52 weeks in subjects with idiopathic pulmonary fibrosis*	Galapagos NV
Kristina T. Legget, Assistant Professor	*Sex-based differences in the neuronal mechanisms of food intake behavior*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Stephen Leong, MD, Associate Professor	*CA043-001-005 PH I/II First-in-human Study of BMS-986288 Alone and in Combination with Nivolumab in Advanced Malignant Tumors*	Bristol Myers Squibb Pharmaceutical
Myron Levin, MD, Professor	*Persistence of protection conferred by Shingrix against herpes zoster in older adults*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Karl Douglas Lewis, MD, Professor	*MK-3475-716 Adjuvant Therapy with Pembrolizumab versus Placebo in Resected High risk Stage II Melanoma: A Randomized, Double-blind Phase 3 Study*	Merck Sharp & Dohme Corp
Karl Douglas Lewis, MD, Professor	*GO40558 PH II, open-label, multi-center, randomized study of the efficacy and safety of RO7198457 in combination with Pembrolilzumab vs. pembrolizumab in patients with previously untreated advanced melanoma*	Genentech, Inc.

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Karl Douglas Lewis, MD, Professor	*CTMX-M-072-002 Ph 2, Open-Label, Multi-cohort Study of PD-L1 Probody™ Therapeutic CX-072 in Combination With Other Anti-cancer Therapy in Adults With Solid Tumors (PROCLAIM-CX-072)*	CytomX Therapeutics
Tianjing Li, PhD, Associate Professor	*Comparative Effectiveness Research & Cochrane Eyes and Vision (CEV)*	National Eye Institute/NIH/DHHS
Ken Liechty, MD, Professor	*Modulation of Inflammation and Oxidative Stress in Diabetic Wound Healing*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Christopher Lieu, MD, Associate Professor	*Utilizing MEK Inhibition to Sensitize Microsatellite Stable Colorectal Cancer to Immune Checkpoint Therapy*	National Cancer Institute/NIH/DHHS
Cecilia Chiacheh Low Wang, MD, Professor	*PHASE I, open-label safety study of umbilical cord lining mesenchymal stem cells (CORLICYTE®) to heal chronic diabetic foot ulcers*	Cell Research Corporation Pte Ltd
Wendy Macklin, PhD, Distinguished Professor	*The role of mTOR signaling in oligodendrocyte differentiation and CNS myelination*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Paul Maclean, PhD, Professor	*Colorado Nutrition Obesity Research Center*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Daniel Matlock, MD, MPH, Associate Professor	*A Multicenter Trial of a Shared Decision Support Intervention for patients offered implantable Cardioverter-Defibrillators: DECIDE – ICD Trial*	National Heart, Lung, and Blood Institute/NIH/DHHS
Kathleen E. Matz, Instructor	*Child Welfare Training System Central Management Organization*	Colorado Department of Human Services

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Robert McIntyre, Jr., MD, Professor	*STARS ('Study of Alteplase for Respiratory failure in SARS-Cov2 (COVID-19)', a Phase IIa Clinical Trial*	Denver Health and Hospital Authority
Timothy McKinsey, PhD, Professor	*Screening and Development of Small Molecule HDAC11 Inhibitors to Treat Obesity and Diabetes*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Timothy McKinsey, PhD, Professor	*Deacetylase-Dependent Control of Diastolic Dysfunction and HFpEF*	National Heart, Lung, and Blood Institute/NIH/DHHS
Timothy McKinsey, PhD, Professor	*Regulation of Chromatin Signaling in Heart Failure by the BRD4 Bromodomain Protein*	National Heart, Lung, and Blood Institute/NIH/DHHS
Brandon J. McMahon, MD, Associate Professor	*A phase 3B, multi-center, single-arm, open label efficacy and safety study of Fedratinib in subjects with intermediate or high risk primary myelofibrosis, post-polycythemia vera myelofibrosis, or post-essential thrombocythemia myelofibrosis and previously*	Celgene Corporation
Brandon J. McMahon, MD, Associate Professor	*A Randomized, Double-Blind, Phase 3 Study to Evaluate the Activity of Momelotinib (MMB) versus Danazol (DAN) in Symptomatic, Anemic Subjects with Primary Myelofibrosis (PMF), Post-Polycythemia Vera (PV) Myelofibrosis, or Post Essential Thrombocythemia (ET) Myelofibrosis who were Previously Treated with JAK Inhibitor Therapy*	Sierra Oncology, Inc.
Michael Andres McMurray, PhD, Associate Professor	*Molecular and cellular mechanisms of germination in Saccharomyces*	National Science Foundation

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Wells Messersmith, MD, Professor	*GB1275-1101 Ph 1/2, First-in-Human, Open-label, Dose Escalation Study of GB1275 Monotherapy and in Combination with an Anti-PD-1 Antibody in Patients with Specified Advanced Solid Tumors or in Combination with Standard of Care in Patients with Metastatic Pancreatic Adenocarcinoma, Followed by Basket Expansion of GB1275 with Standard of Care or in Combination with an Anti-PD-1 Antibody in Patients with Specified Metastatic Solid Tumors*	Gossamer Bio, Inc.
Luisa Mestroni, PhD, Professor	*Cardiomyocyte phenotype and mechanotransduction in Filamin C gene variants causing arrhythmogenic cardiomyopathy*	National Heart, Lung, and Blood Institute/NIH/DHHS
Aaron Michels, MD, Associate Professor	*Sponsored Research Agreement with IM Therapeutics*	ImmunoMolecular Therapeutics
Linda Montgomery, MD, Professor	*COFM Expansion Slot 1*	University of Colorado Hospital
Megan Ann Morris, PhD, Associate Professor	*Improving Communication and Healthcare Outcomes for Patients With Communication Disabilities: the INTERACT Trial*	Patient-Centered Outcomes Research Institute
Thomas Edward Morrison, PhD, Associate Professor	*Impairment of B cell Responses by Pathogenic Chikungunya Viruses*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Nee-Kofi Mould-Millman, MD, Associate Professor	*Establishing the Epidemiology and Outcomes of Combat-Relevant Prolonged Trauma Care: a Prospective Multicenter Prehospital Pilot Study in South Africa*	Department of the Army

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Maria Acena Nagel, MD, Research Professor	*A major contributor of serious multisystem disease in the elderly: varicella virus-induced inflammation*	National Institute on Aging/NIH/DHHS
Michael Narkewicz, MD, Professor	*Longitudinal Study of Cystic Fibrosis Liver Disease (CFLD)*	Cystic Fibrosis Foundation
Keith Benjamin Neeves, PhD, Professor	*A systems biology approach to identifying the mechanisms of sex hormone in induced thromboembolism in pre-menopausal women*	National Heart, Lung, and Blood Institute/NIH/DHHS
Robert Neumann, MD, Associate Professor	*Lungpacer CTA RESCUE 3 -A Protocol Comparing Temporary Transvenous Diaphragm Pacing to Standard of Care for Weaning from Mechanical Ventilation in ICU Patients (RESCUE 3)*	Lungpacer Medical, Inc.
David Norris, MD, Professor	*JAK Inhibition in Down Syndrome*	National Institute of Arthritis & Musculoskeletal and Skin Diseases/NIH/DHHS
David Olds, PhD, Professor	*Influence of Prenatal and Early Childhood Home-Visiting by Nurses on Development of Chronic Disease: 29-year Follow-Up of a Randomized Clinical Trial*	National Heart, Lung, and Blood Institute/NIH/DHHS
Sean T. O'Leary, MD, MPH, Professor	*Evaluation of the Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing (PIVOT with MI) Intervention*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Toan Ong, PhD, Assistant Professor	*Biologics Effectiveness and Safety (BEST) Initiative: Data, Tools and Infrastructure for Surveillance of Biologics*	IQVIA, Inc.
Douglas Opal, MD, MPH, Assistant Professor	*Evaluation of the Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing (PIVOT with MI) Intervention*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Ryan Ormond, MD, Assistant Professor	*AG881-C-004 Ph 3, Multicenter, Randomized, Double-blind, Placebo-Controlled Study of AG-881 in Subjects With Residual or Recurrent Grade 2 Glioma With an IDH1 or IDH2 Mutation*	Agios Pharmaceuticals
Jose Pacheco, MD, Assistant Professor	*RMC-4630-02 Ph 1b/2, Open-Label, Multicenter Dose Escalation and Expansion Study of the Combination of RMC-4630 and Cobimetinib in Adult Participants with Relapsed/refractory Solid Tumors with Specific Genomic Aberration*	Revolution Medicines, Inc.
Brent Elliott Palmer, PhD, Associate Professor	*Diet/gut Microbiome Interaction Influence Inflammatory Disease in HIV Patients*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Irina Petrache, MD, Professor	*Multi-Disciplinary Research Training in Respiratory Disease*	National Heart, Lung, and Blood Institute/NIH/DHHS
Amanda Lee Piquet, MD, Assistant Professor	*A Randomized, Double Blind, Placebo-Controlled, Multiple Dose Study to Assess the Safety and Efficacy of Elezanumab when Added to Standard of Care in Progressive Forms of Multiple Sclerosis*	AbbVie, Inc.
Amanda Lee Piquet, MD, Assistant Professor	*Safety and Efficacy Study of Elezanumab (ABT-555) in Relapsing Forms of Multiple Sclerosis*	AbbVie, Inc.
Amanda Lee Piquet, MD, Assistant Professor	*A phase IB, open label, multicenter study to investigate the pharmacokinetics, safety, and tolerability of subcutaneous ocrelizumab administration in patients with multiple sclerosis*	F. Hoffman-La Roche, Ltd.
Eric Poeschla, MD, Professor	*Novel Approaches to Innate Immunity Against HIV-1 and Other Co-infection Viruses*	National Institute on Drug Abuse/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Martha C. Powell, PhD, Associate Professor of Research	*Long Term Care Survey Process Operational Support and Analysis*	Insight Policy Research
Theresa Powell, PhD, Professor	*Placental adiponectin signaling and fetal programming in maternal obesity*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Stefan Pukatzki, PhD, Professor	*The Role of Type VI Secretion in Cholera Pathogenesis*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Neda Rasouli, MD, Professor	*Glycemia Reduction Approaches in Diabetes: A comparative effectiveness study (GRADE)*	George Washington University
Judith Regensteiner, PhD, Professor	*The Colorado Building Interdisciplinary Research Careers in Women's Health Program*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Nichole Ann-Marie Reisdorph, PhD, Associate Professor	*Predicting Health Outcomes of Mediterranean Diet via Metabolomics of Foods and Biospecimens*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Diego Restrepo, PhD, Professor	*Controlled neuronal firing in vivo using two photon spatially shaped optogenetics*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Diego Restrepo, PhD, Professor	*Collaborative Research: NCS-FR: Shedding light on brain circuits mediating navigation of the odor plume in a natural environment*	National Science Foundation
Diego Restrepo, PhD, Professor	*Shedding light on brain circuits mediating navigation of the odor plume in a natural environment*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Marian Rewers, MD, PhD, Professor	*Developing Pediatric Diabetes Investigators for the Future*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Marian Rewers, MD, PhD, Professor	*Autoimmunity Screening for Kids (ASK)*	Juvenile Diabetes Research Foundation
Marian Rewers, MD, PhD, Professor	*The Teddy Study– Colorado Clinical Center*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Robert Roach, Jr., PhD, Associate Professor	*DOD Inhibiting Prolyl Hydroxylase to Mimic Natural Acclimatization to High Altitude to Improve Warfighter Performance at High Altitude*	Research Logistics, LLC
Rosemary Rochford, PhD, Professor	*The synergistic contributions of EBV and malaria to the etiology of Burkitt lymphoma*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Cordelia Rosenberg, PhD, Professor	*Component A: CADDRE: Study to Explore Early Development (SEED) 3*	Centers for Disease Control and Prevention/DHHS
Cordelia Rosenberg, PhD, Professor	*Creation of a Colorado Office of Employment First to coordinate cross-departmental efforts to implement Employment First policies, regulations, and practices. Employment First benefits people with disabilities by providing critical support related to achieving increased successful employment outcomes*	Colorado Department of Labor and Employment/COLO
Michael Aaron Rosenberg, MD, Assistant Professor	*Development of End-To-End Clinical Decision Support Tools To Prevent Cardiotoxic Drug Response*	National Heart, Lung, and Blood Institute/NIH/DHHS
Paul Rozance, MD, Professor	*Nutrient coordination of pancreatic vasculature and B-cells*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Paul Rozance, MD, Professor	*Physiological Ramifications of Chorionic Somatomammotropin Deficiency*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Holder Andreas Russ, PhD, Assistant Professor	*Improving human pluripotent stem cell derived beta cell transplantation using genetic lineage tracing*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Mario Santiago, PhD, Associate Professor	*Role of Type I IFNs in Mucosal HIV-1 Immunity and Pathogenesis*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Nanette Santoro, MD, Professor	*The Colorado Building Interdisciplinary Research Careers in Women's Health Program*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Laura Danielle Scherer, PhD, Assistant Professor	*Evaluation of the SHARE Approach Model*	Agency for Healthcare Research and Quality/DHHS
Lisa Schilling, MD, Professor	*Biologics Effectiveness and Safety (BEST) Initiative: Data, Tools and Infrastructure for Surveillance of Biologics*	IQVIA, Inc.
Richard Schulick, MD, MPH, Professor	*Cancer Center Support Grant*	National Cancer Institute/NIH/DHHS
David Schwartz, MD, Professor	*Mechanisms of Familial Pulmonary Fibrosis*	Vanderbilt University
David Schwartz, MD, Professor	*Multidisciplinary Research Training in Respiratory Disease*	National Heart, Lung, and Blood Institute/NIH/DHHS
David Schwartz, MD, Professor	*Genes and Transcripts that Interact with MUC5B in Pulmonary Fibrosis*	National Heart, Lung, and Blood Institute/NIH/DHHS
Marvin Schwarz, MD, Professor	*Multidisciplinary Research Training in Respiratory Disease*	National Heart, Lung, and Blood Institute/NIH/DHHS
Rebecca Schweppe, PhD, Associate Professor	*Targeting FAK and Src in thyroid cancer*	National Cancer Institute/NIH/DHHS
Sudipta Seal, PhD, Professor	*Modulation of Inflammation and Oxidative Stress in Diabetic Wound Healing*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Natalie Serkova, PhD, Professor	*Multi-Modal Optical/ microCT system for Colorado Animal Imaging Resource*	Office of the Director, National Institutes of Health/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Sunita Sharma, MD, MPH, Associate Professor	*MicroRNAs and Early Life Exposures in the Developmental Origin of Asthma*	National Heart, Lung, and Blood Institute/NIH/DHHS
Douglas Sheperd, PhD, Assistant Professor	*Role of VEGF in Perinatal Hypertension*	National Heart, Lung, and Blood Institute/NIH/DHHS
Christopher Silliman, MD, Professor	*Mechanisms of Trauma Induced Coagulopathy*	National Institute of General Medical Sciences/NIH/DHHS
Kimberly Marie Simmons, MD, MPH, MSPH, Assistant Professor	*A Phase 3, Randomized, Double-Blind, Multinational, Placebo-Controlled Study to Evaluate Efficacy and Safety of Teplizumab (PRV-031), a Humanized, FcR Non-Binding, anti-CD3 Monoclonal Antibody, in Children and Adolescents with Newly Diagnosed Type 1 Diabetes (T1D)*	Provention Bio, Inc.
Eric Simoes, MD, Clinical Professor	*18-1012 Merck MK-1654*	Merck Sharp & Dohme Corp
Ronald Sokol, MD, Professor	*Colorado Center of Childhood Liver Disease Research Network*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Andrea Steck, MD, Associate Professor	*Developing Pediatric Diabetes Investigators for the Future*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Kurt Stenmark, MD, Professor	*Role of Mitochondrial/Metabolic Reprogramming in Controlling Aberrant Gene Expression in Pulmonary Hypertension*	Us Army Medical Research Acquisition Act
Jennifer Stevens-Lapsley, PHD, Professor	*Progressing Home Health Rehabilitation Paradigms for Older Adults*	National Institute of Nursing Research NIH/DHHS
Jennifer Stevens-Lapsley, PHD, Professor	*Movement pattern biofeedback training after total knee arthroplasty*	National Institute on Aging/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Christina Studts, PhD, Visiting Associate Professor	*Behavioral Parent Training for Families With Deaf and Hard of Hearing Preschoolers*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS
Lori Sussel, PhD, Professor	*UC Denver Diabetes Research Center*	National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS
Stanley Szefler, MD, Professor	*Colorado Comprehensive School-Centered Asthma Programs (AsthmaCOMP)*	Colorado Department of Public Health and Environment/COLO
Peter Szilagyi, MD, Professor	*The HPV9-10 Trial: Early Initiation of HPV Vaccination*	National Cancer Institute/NIH/DHHS
Nicole Renee Tartaglia, MD, Associate Professor	*The eXtraordinarY Babies Study: Natural History of Health and Neurodevelopment in Infants and Young Children with Sex Chromosome Trisomy*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Matthew Taylor, MD, Professor	*Cardiomyocyte phenotype and mechanotransduction in Filamin C gene variants causing arrhythmogenic cardiomyopathy*	National Heart, Lung, and Blood Institute/NIH/DHHS
Stephanie Teal, MD, Professor	*Reproductive health of young women initiating contraception in an adolescent-focused contraceptive clinic: longitudinal outcomes*	Merck Sharp & Dohme Corp
Darcy Thompson, MD, Associate Professor	*Factors influencing screen media use in low-income Mexican American toddlers*	National Institute of Nursing Research NIH/DHHS
Joshua Thurman, MD, Professor	*A Novel Imaging Agent for Detecting and Monitoring Lupus Nephritis*	Department of the Army
Vesna Todorovic, MD, PhD, Professor	*Novel neurosteroid anesthetics and developmental synaptogenesis*	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS
Daniel Tollin, PhD, Professor	*Developmental effects of early hearing loss on auditory information processing*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Daniel Tollin, PhD, Professor	*The contributions of age related changes in the sound localization pathway to central hearing loss*	National Institute on Deafness and Other Communication Disorders/NIH/DHHS
Raul Torres, PhD, Professor	*Humoral Immunity by Anergic B cells*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Raul Torres, PhD, Professor	*Lysophosphatidic Acid Regulation of CD8 T cell activation and function*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Scott Vrieze, PhD, Assistant Professor	*Impact of Marijuana Legalization: Comparison of Two Longitudinal Twin Cohorts*	National Institute on Drug Abuse/NIH/DHHS
Jing Hong Wang, MD, PhD, Associate Professor	*Elucidating Mechanism of Immune Evasion in Head and Neck Cancers*	National Institute of Dental and Craniofacial Research/NIH/DHHS
Jing Hong Wang, MD, PhD, Associate Professor	*Mechanisms of dual inhibition of TGFbeta/PD-L1 in HNSCC*	National Institute of Dental and Craniofacial Research/NIH/DHHS
Xiao-Jing Wang, PhD, Professor	*Elucidating Mechanism of Immune Evasion in Head and Neck Cancers*	National Institute of Dental and Craniofacial Research/NIH/DHHS
Xiao-Jing Wang, PhD, Professor	*Mechanisms of dual inhibition of TGFbeta/PD-L1 in HNSCC*	National Institute of Dental and Craniofacial Research/NIH/DHHS
Adriana Weinberg, MD, Professor	*Persistence of protection conferred by Shingrix against herpes zoster in older adults*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Mary Weiser-Evans, PhD, Professor	*Reprogramming of mature smooth muscle cells to vascular progenitor cells*	National Heart, Lung, and Blood Institute/NIH/DHHS

New Research Grants > $500,000
Awarded 2019-2020

Name	Title	Funding Agency
Carl White, MD, Professor	*New Developments in Chemical Countermeasures: CounterACT 2018*	National Institute of Environmental Health Sciences/NIH/DHHS
Matthew Wicklund, MD, Professor	*A Phase 3, Double-Blind, Randomized, Placebo-Controlled, Parallel Group, Multicenter Study With an Open-Label Extension to Evaluate the Efficacy and Safety of Ravulizumab in Patients With Amyotrophic Lateral Sclerosis (ALS)*	Alexion Pharmaceuticals, Inc.
Cara Wilson, MD, Professor	*Role of Type I IFNs in Mucosal HIV-1 Immunity and Pathogenesis*	National Institute of Allergy and Infectious Diseases/NIH/DHHS
Cara Wilson, MD, Professor	*Medical Scientist Training Program*	National Institute of General Medical Sciences/NIH/DHHS
Teresa Wood, PhD, Professor	*The role of mTOR signaling in oligodendrocyte differentiation and CNS myelination*	National Institute of Neurological Disorders and Stroke/NIH/DHHS
Ivana Yang, PhD, Professor	*Genes and Transcripts that Interact with MUC5B in Pulmonary Fibrosis*	National Heart, Lung, and Blood Institute/NIH/DHHS
Rui Zhao, PhD, Associate Professor	*Role of Eya3 in regulating the immune microenvironment to promote breast tumor progression*	National Cancer Institute/NIH/DHHS
Linda Kay Zittleman, MPH, MSPH, Sr. Instructor	*Comparing Office and Home Induction for Medication Assisted Treatment for Opioid Use Disorder*	Patient-Centered Outcomes Research Institute
Michael Zuscik, PhD, Professor	*Targeting the gut microbiome to treat posttraumatic osteoarthritis*	Department of the Army

Office of Grants and Contracts
University of Colorado Denver Awards by School
Award Trends - Fiscal Year to Date 2019 and 2020

Office of Grants and Contracts
University of Colorado Denver | Anschutz Medical Campus
Award Trends - Fiscal Year 2019 and 2020
Awards by School/Department

		FY 2019			FY 2020				
School/College/Chancellor's Office	Department/Division/Center	Direct Cost	Indirect Cost	Total Cost	Direct Cost	Indirect Cost	Total Cost	% of FY 19 Funding	Note
Academic and Student Affairs (Denver)		1,117,978	169,414	1,287,392	684,401	81,571	745,972	58%	
Library (Anschutz)		226,305	67,871	294,176	5,000	0	5,000	2%	
Library (Denver)		27,788	-	27,788	15,037	0	15,037	54%	
Central Services Administration (Anschutz)		200,000	0	200,000	1,068,951	410,708	1,479,659	740%	
CSA Centers and Institutes (Anschutz)	Center for Behavioral Health Initiatives	184,829	18,483	203,312	21,176	5,506	26,682	13%	
	Center on Aging	3,186,723	1,276,796	4,463,519	3,430,290	1,521,706	4,951,996	111%	
	Health Affairs Health Care Ethics (AHEC)	747,756	19,058	766,814	799,348	16,292	815,640	106%	
	Colorado Clinical Translational Sciences Institute	8,117,262	2,526,488	10,643,750	7,810,051	2,379,740	10,189,791	96%	
	Marcus Brain Institute	11,016,118	1,101,612	12,117,730	9,124,946	319,845	9,444,791	78%	
	Colorado Center for Personalized Medicine	1,542,918	361,208	1,904,126	1,559,067	383,002	1,942,069	102%	
	Total CSA Centers and Institutes (Anschutz)	24,795,606	5,303,645	30,099,251	22,744,878	4,626,091	27,370,969	120%	
Central Services Administration (Denver)		294,168	25,832	320,000	0	0	0	0%	
College of Architecture and Planning		1,266,515	278,784	1,545,299	914,215	65,275	979,490	63%	
College of Arts and Media		471,335	261,591	732,926	60,000	0	60,000	8%	
College of Engineering and Applied Sciences		4,955,796	1,200,580	6,156,376	4,094,919	1,252,487	5,347,406	87%	
College of Liberal Arts and Sciences		5,572,462	1,754,882	7,327,344	4,568,612	1,532,154	6,100,765	83%	
College of Nursing		4,616,564	623,188	5,239,752	4,948,717	1,270,902	6,219,620	119%	
The Business School		-	-	-	62,498	26,249	88,747	100%	
The Graduate School		346,135	32,782	378,917	795,092	44,721	839,813	222%	
School of Dentistry		3,427,070	1,338,704	4,765,774	3,788,675	1,124,898	4,913,573	103%	
School of Education and Human Development		4,533,283	577,200	5,110,483	2,218,265	412,887	2,631,152	51%	
School of Medicine	Anesthesiology	4,369,212	1,781,046	6,150,258	5,313,233	2,420,190	7,733,423	126%	
	Biochem/Biophy/Molecular Genetics	5,833,300	2,501,030	8,334,330	12,559,611	5,347,254	17,906,865	215%	
	Cell and Developmental Bio	6,340,191	2,280,086	8,620,277	10,277,526	4,078,072	14,355,598	167%	
	Dean's Office	-	-	-	40,000	0	40,000	100%	
	Dermatology	6,756,129	1,731,574	8,487,704	3,521,805	1,217,612	4,739,417	56%	
	Emergency Medicine	4,426,680	1,263,916	5,690,596	10,957,864	3,432,816	14,390,680	253%	
	Family Medicine	984,889	144,612	1,129,500	8,588,175	1,583,465	10,171,640	901%	
	Immunology Microbiology	14,039,036	5,404,822	19,443,858	15,353,799	5,758,842	21,112,641	109%	
	Medicine	77,332,587	26,043,010	103,375,597	87,760,272	28,298,100	116,058,371	112%	
	Neurology	12,863,749	3,750,810	16,614,557	16,302,174	4,891,023	21,193,196	128%	
	Neurosurgery	8,582,239	2,669,755	11,251,994	3,804,650	1,158,063	4,962,713	44%	
	Obstetrics and Gynecology	5,929,345	1,929,223	7,858,568	5,432,481	1,649,095	7,081,576	90%	
	Ophthalmology	2,824,443	1,057,651	3,882,094	3,952,974	1,277,989	5,230,963	135%	
	Orthopedics	2,449,356	601,371	3,050,727	3,271,572	1,086,449	4,358,021	143%	
	Otolaryngology	2,069,708	635,249	2,704,957	2,813,721	1,005,748	3,819,469	141%	
	Pathology	3,616,154	1,534,613	5,150,768	2,934,924	1,281,474	4,216,398	82%	
	Pediatrics	73,033,294	16,016,585	89,049,880	55,420,557	12,530,044	67,950,602	76%	
	Pharmacology	10,960,384	4,706,222	15,666,606	10,133,067	4,078,676	14,211,743	91%	
	Physiology/Biophysics	3,725,196	1,673,945	5,399,140	4,518,254	1,839,841	6,358,094	118%	
	Psychiatry	7,493,794	1,824,962	9,318,756	10,219,947	2,695,035	12,914,981	139%	
	Radiation Oncology	618,333	326,525	944,858	974,250	385,714	1,359,964	144%	
	Radiology	3,221,172	686,103	3,907,274	2,178,525	427,790	2,606,315	67%	
	Rehabilitation Medicine	6,384,128	1,135,119	7,519,246	4,912,632	1,149,940	6,062,572	81%	
	Surgery	6,966,429	2,478,737	9,445,165	8,464,986	3,109,441	11,574,428	123%	
	Total School of Medicine	270,819,748	82,176,965	352,996,710	289,706,999	90,702,671	380,409,670	108%	
SOM Institutes and Centers	Barbara Davis Center	14,660,649	3,781,378	18,442,026	19,602,823	5,800,767	25,403,589	138%	
	Cancer Center	37,883,541	10,370,099	48,253,640	31,261,123	9,224,914	40,486,037	84%	
	Center of Bioengineering	4,078,446	922,996	5,001,442	3,796,573	1,147,494	4,944,067	99%	
	Colorado Health Outcomes	20,574,262	4,125,152	24,699,413	24,948,183	6,640,525	31,588,708	128%	
	Depression Center	1,000	-	1,000	17,795	4,643	22,438	2244%	
	Health and Wellness Center	1,774,936	609,904	2,384,840	1,890,878	929,939	2,820,817	118%	
	Linda Crnic Institute	550,000	300,588	850,588	2,931,305	1,508,766	4,440,071	522%	
	Webb-Waring Center	383,654	184,334	567,987	450,550	222,648	673,198	119%	
	Total SOM Institutes and Centers	79,906,488	20,294,450	100,200,936	84,899,230	25,479,694	110,378,925	110%	
	Total SOM Department/Centers	350,726,236	102,471,415	453,197,646	374,606,229	116,182,365	490,788,595	108%	
School of Pharmacy		12,025,735	5,440,177	17,465,911	11,916,483	5,084,451	17,000,933	97%	
School of Public Affairs		745,084	185,433	930,517	1,077,080	112,861	1,189,941	128%	
School of Public Health		34,266,355	7,615,975	41,882,327	29,887,844	6,897,566	36,785,411	88%	
	Total	**449,614,415**	**127,347,473**	**576,961,879**	**463,456,896**	**139,105,186**	**602,562,083**	**104%**	

	FY 2019			FY 2020		
	Direct Cost	Indirect Cost	Total Cost	Direct Cost	Indirect Cost	Total Cost
Anschutz Medical Campus	430,316,941	122,875,641	553,192,573	449,363,822	135,607,629	584,971,454
Denver Campus	19,297,474	4,471,832	23,769,306	14,093,074	3,497,556	17,590,629
	449,614,415	127,347,473	576,961,879	463,456,896	139,105,186	602,562,083

The Office of the Dean proudly presents the 2020-2021 Dean's Distinguished Seminar Series

All seminars will be held via Zoom from 4:00-5:00 p.m. (unless otherwise noted). Prior to each seminar, lecture topics will be announced and zoom links will be provided.

For questions about the series, contact Judy Sherman, 303-724-5375, judy.sherman@cuanschutz.edu

Tuesday, October 13, 2020
PAOLA ARLOTTA, PHD
Chair, Harvard Department of Stem Cell and Regenerative Biology
Golub Family Professor of Stem Cell and Regenerative Biology
Harvard University
Associate Member, Stanley Center for Psychiatric Research Broad Institute

Tuesday, November 10, 2020
ERIKA von MUTIUS, MD
Professor and Head
Asthma and Allergy Department
Dr. von Hauner Children's Hospital
University of Munich

Tuesday, February 9, 2021
VALENTINA EMILIANI, PHD
Research Director
Photonics Department
Paris Descartes University

Tuesday, March 9, 2021
YASMAINE BELKAID, PHD
Senior Investigator
Mucosal Immunology Section
Chief, Metaorganism Immunity Section
NIAID/NIH (National Institute of Allergy and Infectious Diseases)

Tuesday, April 13, 2021
LUCIANO MARRAFFINI, PHD
Professor and Head
Laboratory of Bacteriology
The Rockefeller University
Investigator, Howard Hughes Medical Institute

Tuesday, May 11, 2021
GREGORY R. STEINBERG, PHD
Professor and Canada Research Chair in Metabolism and Obesity
J. Bruce Duncan Chair in Metabolic diseases
Co-Chair, Metabolism and Childhood (MAC) Obesity Research Program
McMaster University, Ontario, Canada

School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS









Centers, Institutes and Programs

Top photo courtesy of the Center for Surgical Innovation. Bottom photo courtesy of @cuanschutzwell Instagram.

The University of Colorado School of Medicine is home to numerous centers, institutes, and programs. They range in categories from diabetes to cancer to surgical innovation. Also covered are women's health research and health outcomes. On the following pages, you can read a more detailed description of many of the centers and institutes. A complete list can be found at medschool.cuanschutz.edu/departments-centers-institutes.

Adult and Child Consortium for Health Outcomes Research and Delivery Science

The Adult and Child Consortium for Health Outcomes Research and Delivery Science (ACCORDS) encompasses T3-T4 research across the life spectrum for the Anschutz Medical Campus, with infrastructure support provided jointly from the Dean's Office of the School of Medicine and Children's Hospital Colorado (CHCO). The program was created in 2014, when two programs, the Colorado Health Outcomes program (COHO) and the Children's Outcomes Research (COR) program were merged. The founding Director is Allison Kempe, MD, MPH. The name highlights the focus on the entire life spectrum as well as on "delivery science," encompassing comparative effectiveness, patient-centered outcomes, and dissemination and implementation research.

ACCORDS is a group of investigators from multiple disciplines. Some have primary offices on campus, while a much larger group maintain off-site research homes. Currently, over 50 investigators, 15 biostatisticians/analysts, 39 research assistants, four instructors, and 11 administrative personnel have office space with ACCORDS. In FY2020, 39 grants were awarded totaling $22.9 million, reflecting a 35 percent success rate for submitted proposals and a 35 percent increase in total dollars funded over FY19. ACCORDS provided 490 consultations to 28 departments/divisions in the School of Medicine and assisted with 63 faculty recruitments. ACCORDS houses two fellowship programs focusing on primary and subspecialty clinician scientists, and currently has a K12 training grant focused on dissemination and implementation science. During FY2019, ACCORDS hosted four seminar series, two distinguished lecturers, and four educational workshops. We have just completed our first national 2-day workshop attended by almost 400 people nationally.

ACCORDS brings together T3-T4 researchers from across the CU Anschutz Medical Campus. Collaborating investigators represent all School of Medicine departments, as well as the Colorado School of Public Health, the Skaggs School of Pharmacy and Pharmaceutical Sciences, and the College of Nursing. ACCORDS also 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. ACCORDS is as an incubator for research ideas, fosters interdisciplinary collaboration, and develops focused areas of research of national prominence.

The mission of ACCORDS is to improve health, locally and nationally, by supporting state-of-the-art outcomes and community translational research to guide clinical practice and health policy.

The objectives of ACCORDS are to

- Increase competitiveness of the School of Medicine/CHCO for funding from multiple research, education, and training program sponsors, especially Patient-Centered Outcomes Research Institute, Agency for Healthcare Research and Quality, and the National Institutes of Health;

- Strengthen affiliations with key external partners, including Denver Health, U.S. Department of Veterans Affairs, Kaiser Permanente, and the Colorado Department of Public Health and Environment, to increase access to populations and collaborators necessary for certain grants;

- Improve faculty development for both senior and junior faculty interested in outcomes and delivery 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; and

- Achieve greater national visibility for the School of Medicine/CHCO as leaders in the areas of health outcomes, dissemination and implementation science, comparative effectiveness research, and training.

ACCORDS is organized into programmatic areas: (1) Dissemination and Implementation Science; (2) Education; (3) Research Training and Mentorship; (4) Patient-Centered Decisions; (5) Data Science; and (6) Community Engagement and Outreach.

ACCORDS also has methodological cores in qualitative and mixed methods, practice-based research networks, biostatistics and analysis, economic analysis, and health informatics/mobile health. These cores provide support to the programmatic areas and consultative support to investigators. A major focus of these cores is to provide support for the development of new projects and grant proposals. https://medschool.cuanschutz.edu/accords

Alzheimer's and Cognition Center

The University of Colorado Alzheimer's and Cognition Center (CUACC) is the new name for the Rocky Mountain Alzheimer's Disease Center, which is designated by the state legislature as the "University of Colorado School of Medicine's Dementia Diseases and Related Disabilities Treatment and Research Center." Our new tagline is "Healthy Brain Aging Starts Here."

At the CUACC, we are providing both 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, and patients with related dementias, 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.

Although the COVID-19 pandemic has been challenging for CUACC patients, clinicians, and researchers, we have adapted, and our clinical care and laboratory research have now returned to almost pre-COVID levels. We are taking new precautions, including social distancing, personal protective equipment (PPE), plexiglass shields, and portable HEPA filter units. Even non-time-critical clinical research will be initiated/resumed.

The Director of the CUACC, **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. **Samantha Holden, MD,** is the Director of the Memory Disorders Clinic and Associate Director of the Behavioral Neurology & Neuropsychiatry Fellowship Program. **Brianne Bettcher, PhD,** is the Director of Neuropsychology Research for the CUACC and has spearheaded a large observational study, called "Bio-AD," which is focused on aging, both typical and non-memory predominant Alzheimer's disease, and Alzheimer's disease in people with Down syndrome. **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. **Al Anderson, MD,** is Director of the Behavioral Neurology & Neuropsychiatry Fellowship Program. Integral to both the CUACC clinical care and research are Professor of Neurology and Opthalmology **Victoria Pelak, MD,** Assistant Professors of Neurology **Brice McConnell, MD, PhD, Peter Pressman, MD, Zachary Macchi, MD,** a recent graduate of our Behavioral Neurology fellowship program, and our current Fellow, **Tara Carlisle, MD, PhD.** They are aided by a team of CUACC clinical staff including a nurse practitioner, an RN, five neuropsychologists, and clinical coordinators.

The CUACC Memory Disorders Clinic directed by Samantha Holden, MD, which saw 2,430 patients last year, is part of the Behavioral Neurology Clinics at University Health Center Central Park Clinic (formerly Stapleton Medical Center), which also includes the Neurobehavior Clinic and the Neuropsychology Clinic. Closely allied with the Memory Disorders Clinic is CUACC neuro-ophthalmologist/behavioral neurologist Victoria Pelak, MD, whose office is located on the Anschutz Medical Campus.

The CUACC completed its clinical trial to assess the safety and efficacy of Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF/Leukine®) as a treatment for mild-to-moderate Alzheimer's disease, showing that it was safe and also showing potential improvement in memory using one measure and a reduction in certain blood biomarkers of neurodegeneration. The FDA is in the process of reviewing our revised protocol for the longer six-month efficacy trial for Leukine®, and we anticipate beginning recruitment in October 2020. A recent study from the CUACC Laboratory shows that GM-CSF improves memory/learning in animal models of Down syndrome and normal aging and reduces mortality in a mouse model of West Nile Virus Infection, with further implications for its potential use as a treatment for COVID-19, both of which affect the brain.

The CUACC is also participating in the multi-site Biogen-sponsored phase III open label EMBARK trial to evaluate the safety and efficacy of the drug aducanumab in subjects with mild cognitive impairment or mild Alzheimer's disease. Pressman is site director for this trial, and the Memory Disorders Clinic will become one of the treatment sites if aducanumab receives FDA approval. Holden is site director of several clinical trials in Parkinson's disease, and Pressman is the site director for a clinical trial in Frontotemporal Dementia sponsored by Alector.

Brianne Bettcher's research specializes in observational studies designed to investigate the underlying causes of Alzheimer's disease and cognitive decline. Bettcher is currently running two healthy older adult observational studies, called LIIA and ImTAB, along with the previously mentioned Bio-AD study. The Longitudinal Innate Immunity and Aging (LIIA) study is recruiting 200 healthy older adults with no memory concerns to learn more about how immune system markers, measured in blood and spinal fluid, relate to clinical features of aging over time. This study will also be 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, mTBI, and Alzheimer's Biomarkers (ImTAB) is studying 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 Department of Defense (DoD) grant, and will be recruiting 125 healthy older adults over the next three years, including some who have had a mTBI in the past five years, but no significant memory or cognition concerns.

In the past four and a half years, we have enrolled 152 individuals in 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 is Director of the newly-established Sleep Research Program at CUACC. He 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 is conducting diagnostic research on sleep and memory and a pilot-scale randomized, controlled clinical trial to test whether non-invasive brain stimulation can restore these protective qualities of sleep in aging adults.

Peter Pressman received 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 will investigate 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.

Research conducted by Zachary Macchi aims to enhance palliative care for patients with Alzheimer's disease, Parkinson's disease, and other forms of neurodegeneration. In particular, his current projects explore the perspectives of individuals with early-onset dementia, methods to enhance advance care planning for early stage Alzheimer's disease and related dementias, and ways to improve caregiver support.

The University of Colorado Department of Neurology Lewy Body Dementia Association Research Center of Excellence (RCOE) is directed by CUACC members Victoria Pelak, MD, and Samantha Holden, MD, and hosted the 2019 Michael K. Cooper Neuropsychiatry Conference on Lewy Body Dementia, providing a half-day education event for community members. Two clinical trials of novel cognitive enhancing drugs for Lewy Body Dementia were completed this year, and we have completed a feasibility survey to serve as a site for the phase III trial.

Peter Pressman is leading the effort for University of Colorado Department of Neurology to join 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. Pressman will host the 2020 Cooper Conference on FTLD in Denver.

Noah Johnson and members of the CUACC Laboratory are continuing to screen for drugs that inhibit critical steps in the Alzheimer's disease pathogenic pathway. Two of the effective, non-toxic drugs are long-time FDA approved for other indications, and our retrospective study shows them to increase the likelihood that human Alzheimer's disease patients will improve. The next step is to test the drugs in animal models of Alzheimer's disease and plan a clinical trial to test one of these drugs in human Alzheimer's disease patients.

Other CUACC research includes gaining an in-depth understanding of normal aging and neurodegeneration with a special focus on the role of inflammation, working to develop better diagnostic and predictive tests, both clinical and biochemical, and replicating Alzheimer's disease pathology in cerebral organoids (minibrains).

Over the last year, members of the CUACC continue to be supported by funding from the NIH, the DoD, the Alzheimer's Association, the CCTSI (Colorado Clinical and Translational Sciences Institute), the Foundation for Women's Wellness, the Benign Essential Blepharospasm Research Society, Fight for Sight, NASA, the State of Colorado, and generous philanthropists. CUACC members have published extensively and presented their latest research findings at many scientific meetings. A list of recent publications can be found on our website.

The CUACC continues to provide >60 presentations/year to the public with a special focus on outreach to underrepresented populations, including African American and Latinx community members. A study group established in 2018 using Boot Camp Translation (BCT) has been renamed the African American Alzheimer's Advisory Committee and includes 18 members. The CUACC is also a part of a new grant, secured by former CUACC Fellow Luis Medina, PhD, from the University of Houston (UH), in partnership with UH and the University of Nevada – Las Vegas to do a BCT with people from the LatinX community in Denver, Houston, and Las Vegas called the Engaging Communities of Hispanics for Aging Research (ECHAR) network. Planning for the LatinX BCT began last spring, and facilitator training will begin in the fall.

http://medschool.cuanschutz.edu/alzheimers

Anschutz Health and Wellness Center

The **CU 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 a 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**; Associate Director **Marc Cornier, MD**; Director of Wellness and Innovation **John Peters, PhD**; Director of Finance and Administration **Luciana Smith, MSO, MCPH**; and Director of Research and Education Integration **Paul MacLean, PhD**. More information can be found at anschutzwellness.com.

Some of the center's functional areas and programs include:

- The 30,000-square-foot **Fitness Center** features advanced exercise equipment technology, over 75 weekly group exercise classes, personal training services, massage, and motivational support for nearly 4,000 members from the campus and the surrounding community. The fitness center hosts a physician-referred supervised exercise programs designed to assist with chronic disease management. The fitness center also supports NIH-funded research studies investigating the basic physiological effects of physical activity as well as the associated health benefits. Our exercise offerings quickly shifted to virtual platforms (https://anschutzwellness.com/covid-19-update/) in the midst of the COVID pandemic and are currently offered both virtually and in person. The fitness center staff also supported the staff at University Hospital during the height of the pandemic by providing a place to shower before going home and supporting the campus initiative for housing for students, residents, and staff.

- The **CU Wellness Clinic** offers weight loss and wellness services, including physician-supervised wellness assessments and weight loss management, expert nutritional advising, psychological consultations, body composition testing and measures of resting metabolic rate. To provide the safest and most effective care for our patients, we currently offer both in person visits and virtual health appointment options. We are excited to announce the addition of two new providers to our team within the past year, Anthony Millard, MD, and Aimee Herbert, NP. These clinicians provide support for lifestyle change along with weight loss medications if indicated. Shelby Sullivan, MD, from the Division of Gastroenterology provides advanced endoscopic treatments for obesity. Our registered dietitian nutritionists (RDNs) provide excellent nutrition therapy consults and will be able to accept most insurances starting in October 2020.

Several other campus clinics housed within the Wellness Clinic complete a full range of care and services available to the public. While COVID has had a significant impact on our clinical services, CU Wellness Clinic volume has remained stable compared to the prior year. During this time, we have increased delivery of virtual health care services over 4,000 percent. More information about our services can be found on our website at https://anschutzwellness.com/wellness-clinic or by calling 303-724-9030.

Clinic Visit Volumes	FY19	FY20	Percent variance due to COVID
CU Wellness Clinic	5,378	5,267	-2%
CU Wellness Clinic + Partners	19,877	17,139	-14%

- The center offers a full spectrum of **Weight Loss Programs** (https://anschutzwellness.com/weight-loss-2/) **Over the past year, we have had over 1,100 participants in our programs.** As of March 2020, all programs are offered virtually. These include**:**

  ⇒ **Weight Loss 4 Life**, (173 participants) bi-monthly ongoing support that gives participants the foundational tools and accountability needed to sustain weight loss long term.
  ⇒ **State of Slim**, (582 participants) a 16-week program focused on mindset transformation and improving metabolic health by following a structured diet and increasing activity.
  ⇒ **My New Weigh**, (363 participants) is an RDN-led program utilizing behavior change and a highly structured meal plan for more significant weight loss for those who have not reached their weight loss goal with more traditional approaches.

- **Metabolic and Demonstration Kitchens** serve as the hub for our culinary medicine team of RDNs, who blend the art of food and cooking with the science of nutrition and health. A mission of these kitchens is to give participants the tools to make good decisions about choosing and eating high-quality meals through an array of campus and community programs, including weekly cooking classes.

This year we expanded our use of the kitchen spaces with new offerings for employees, patients, students, and the community. Our teaching kitchens are unique on campus, and their incorporation into programs allows for program differentiation and opportunities for growth. **Utilization of the spaces has increased 71 percent over the past three years**. Examples of the nutrition/wellness programs provided by AHWC staff includes:

⇒ **Caring for the Frontline**: (new program, 270 participants in the past year) This half-day program incorporates our three pillars of nutrition, mental well-being, and physical activity. With curriculum specifically designed for front-line workers, especially nurses, this program provides an opportunity for renewal and wellness for teams working on campus.

⇒ **Brain. Food. Recovery**: (new program, 31 participants in the past year) Together with the **Marcus Institute for Brain Health,** we developed a hands-on cooking program for veterans with traumatic brain injury to learn about the role of nutrition in healing.

⇒ **CU Eat Well:** (208 participants – an increase from 72 participants in the prior year) This is a hands-on program, which is currently offered virtually and has grown adding new audiences including pediatric residents, graduate students, physical therapy students, and international educators. With a focus on global vegetarian cuisine, education on nutrition, sustainability, and tradition, classes promote cross-cultural understanding and tolerance.

⇒ **Culinary Medicine:** (829 participants – an increase from 560 participants in the prior year) This is a weekly demonstration class conducted in collaboration with UCHealth, Integrative Medicine, and community volunteers.

The program was also presented in conjunction with the Prostate Conditions Council and 9News Research Fair to provide learning experiences and high quality ingredients for enhanced health outcomes through cooking (https://anschutzwellness.com/wellness-services/cooking-classes/)

⇒**Dimensions of Wellness:** This is a new pilot developed for the medical student wellness elective through Department of Family Medicine. The Food as Medicine curriculum is for various resident programs and student groups.

- The center is home to the following **Research** groups: ($10M in annual funding secured. Numbers below represent direct and indirect funds)

  ⇒ The **Colorado Nutrition Obesity Research Center (NORC)** (funded by NIH/NIDDK grant P30 DK048520) (http://cunorc.org/) has secured ~$6M over the next five years to promote interdisciplinary, translational research and develop young investigators interested in nutrition and obesity research. The NORC research base includes 118 funded faculty members and 60 affiliated trainees, educators, and interested researchers, with a research portfolio of $50M of nutrition- and obesity-related research across five campuses in the Rocky Mountain Region.
  This portfolio includes over $6M in investigator-initiated research carried out in the AHWC (see below). The NORC supports three biomedical research cores (Clinical Intervention and Translation; Energy Balance Assessment; Molecular Cellular Analytic), and enrichment program, and a pilot/feasibility program for young investigators. This past year, the NORC leveraged an additional $150,000 from NIH for pilot funding directed to researchers from underrepresented populations, disabilities, and disadvantaged backgrounds.

  ⇒ The **Clinical Trials Division** ($1.8M) conducts industry-sponsored research with a focus on nutrition. Areas of study include weight loss, weight maintenance, metabolic syndrome, and diabetes. The division specializes in behavioral approaches to weight loss, delivered through group classes and/or one-on-one counseling.

  ⇒ **Look AHEAD** ($500K) (Action for Health in Diabetes; funded by NIH/NIDDK grant U01 DK057151) was recently re-funded through 2021. Look AHEAD is a multicenter, randomized clinical trial to examine the effects of a lifestyle intervention designed to achieve and maintain long-term weight loss.

  ⇒ **Investigator-Initiated Research** ($6.1M) Our center faculty are engaged in investigator-initiated research studies funded by the NIH and other organizations. Many studies are focused on better understanding of body weight regulation and the treatment of obesity.

  ⇒ **Enhanced Lifestyles for Metabolic Syndrome (ELM)** ($420K) Funded by the William G. McGowan Charitable Fund, this multisite randomized controlled trial spans 6 years and examines two comparative lifestyle interventions for the long-term, sustained, remission of metabolic syndrome.

  ⇒ Over the last year, the center collaborated with the Departments of Pediatrics and Internal Medicine to recruit **Darleen Sandoval, PhD**. Sandoval came from the University of Michigan where she was Associate Professor in the Departments of Surgery, Internal Medicine and Nutritional Sciences, and Director of the Animal Studies Core of the Michigan Diabetes Research Center. She has 2R01 grants and a large American Diabetes Association grant examining the role of the gut hormone GLP-1 in glucose homeostasis.

  ⇒ Two resource guides were developed to assist interventionists and researchers as they develop and implement behavioral change programs. One guide focuses on commonly accepted and empirically supported theories of behavior change that can be used as the foundation for program development. The other guide focuses on commonly accepted and empirically supported techniques of behavior change and how they are related to theoretical foundations.

- The center is also working to establish a variety of **Disease Specific** fitness and wellness programs.

  ⇒ The **BfitBwell Cancer Exercise Program** (https://anschutzwellness.com/bfitbwell/) is the flagship of these programs. Having worked with over 600 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 Cancer Center, consisting of individual and small group classes. The clinical program provides research data and infrastructure for cancer exercise research collaborations and has recently received a pilot grant from the Cancer League of Colorado to investigate a novel exercise program for rural cancer survivors. The program has rapidly adapted to virtual programming during the COVID-19 pandemic and is currently working on continued virtual and hybrid in-person/virtual programming for participants.

⇒ Other disease specific programs include a program for patients deferred from **kidney transplant** due to physical deconditioning or obesity. This program has also adapted to an all virtual format and will soon recruit its first participants. Other programs that are in varying stages of development include exercise programs for patients with **Parkinson's Disease**, **Multiple Sclerosis**, and individuals who have undergone **bariatric surgery**.

⇒ A physical activity program has also been developed for patients going through the Center for Dependency, Addiction and Rehabilitation (CeDAR) program.

- The AHWC is also home to a number of **Educational Programs** that support both clinical and research activities of the center.

  ⇒ Our **Obesity Medicine Fellowship Training Program** (http://cunorc.org/obesity-medicine-fellowship/) officially started on 7/1/2020 with support from a $100,000 Obesity Medicine Fellowship Program Development Grant. This one-year clinical fellowship will lead to eligibility for the American Board of Obesity Medicine. We are happy to have Lisa Kisling, DO, who just completed a preventive medicine residency at the University of Colorado, as our first fellow.

  ⇒ The center and affiliated researchers received a new **T32 training grant** from the National Institutes of Diabetes and Digestive and Kidney Diseases, (T32DK120521, 7/1/2020-6/30/2025) entitled: Training Program in Metabolism, Obesity and Type 2 Diabetes. AHWC director Daniel Bessesen, MD, is the PI on this grant, which will support two post-doctoral fellows for two years of research training. We welcome our first 2 fellows: Maigen Bethea PhD, from the University of Alabama at Birmingham who will be working with Darleen Sandoval, PhD, on role of the vagus nerve and the NTS in the effects of weight loss surgery, and Rebecca Keogh, PhD, from Ohio University who will be working with Kelly Doran, PhD, and Alexander Horswill, PhD, on the microbial pathogenesis of wounds in type 2 diabetes.

AHWC Mental Well-being Projects and Initiatives:

- **Programming for Campus**

  ⇒ Practical Mindfulness for Caregiver Stress: Finding Self-Compassion Every Day
  ⇒ One-hour experiential workshop adapted for Caring for the Frontline program, delivered to 20 groups in 2019/early 2020

  ⇒ One-hour workshop (three groups) to support Neurology Department Human Subjects Research PRA group (pre-post assessment results attached)

  ⇒ Four-hour experiential/presentation format adapted to Children's Hospital ED Dakota Solomon Foundation Retreat (four-hour workshop offered 4 times in November – December 2019). (compiling pre-post data)

  ⇒ One-hour virtual format created for CU Alumni Happy Healthy Hour (June 2020)

  ⇒ 20-minute virtual format created for CU Advancement Foundation Virtual Retreat (August 2020)

  ⇒Stress Eating Workshop – Four-week program adapted to virtual sessions and offered in July/August 2020.

    ◊ Currently evaluating feedback from sold-out workshop, planning for future sessions

  ⇒ New Weight Loss Program. Members of the Mental Wellbeing Task Force were (are) involved in development and pilot testing a new weight loss intervention for the AHWC.

⇒ COVID Programming:

◊"Mindful Mondays" weekly five-minute stress reduction/self-compassion for stress posted on AHWC website

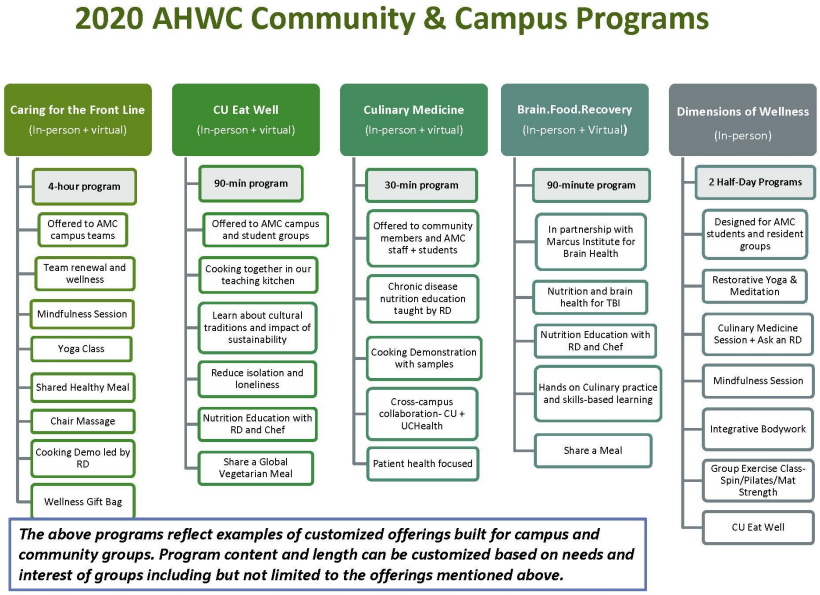
◊ Informal standing Zoom meeting support 2x/week for AHWC Center Staff ("Around the Campfire" and "Zoom Happy Hour") hosted by K. Masters and E. Chamberlain

◊ M&M's Meaning Moment – regular contribution to the AHWC newsletter highlighting the importance of meaning in life for well-being, particularly adapted for use during COVID. Includes important quotations and meaningful practices for staff to engage in.

- **Campus Wellbeing initiatives**

⇒ President Mark Kennedy outlined a strategic plan for the University of Colorado, which specifically called out health and wellness. The campus under the leadership of Chancellor Don Elliman undertook a campus review and planning process last fall and earlier this year. The AHWC was an active participant in this process. While the initiative is currently on hold due to the COVID pandemic, we believe that recent events have only highlighted the importance of wellbeing as a strategic focus for the campus. We believe that the campus can look to institutions such as the Mayo Clinic in Rochester, Minn., for an example of how a vibrant health and wellness center can serve as a foundational resource for campus wellness activities. The AHWC hopes to continue to be involved in this area over the coming year.

⇒ The AHWC has an Advisory Board whose membership includes Peter Buttrick, MD, Jean Kutner, MD, MPH, Steve Daniels, MD, PhD, Richard Schulick, MD, MBA, Neill Epperson, MD, Ron Sokol, MD, Venu Akuthota, MD, Wendy Kohrt, PhD, Tom Purcell, MD, MBA, and Matt Vogl. This group has met three times over the last year to advise the director of the AHWC on the performance of the center, opportunities to be a more effective resource to the campus and what role to play in the overall wellness activities of the campus.



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 7,500 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.

- BDC serves >90 percent of Colorado children diagnosed with Type 1 Diabetes
- Patients from 46 out of 50 US states receive care at the BDC
- Patients from over 33 countries receive care at the BDC
- >60 percent of pediatric patients use insulin pumps and >70 percent use continuous glucose monitors
- >55 percent of adult patients use insulin pumps and >65 percent use continuous glucose monitors
- BDC clinics accept >700 new patients annually
- In response to the COVID-19 pandemic, BDC telehealth visits grew by 975 percent in the first half of 2020 (from 318 visits in 2019 to 3,400 visits Jan-July, 2020)
- BDC / Children's Diabetes Foundation published the 50th anniversary edition of *Understanding Diabetes*, authored by Drs. Chase and Frohnert (2020)

Research

BDC research goals include investigation of the causes of type 1 diabetes (T1D), the early detection of autoimmunity, prevention, and early intervention. BDC clinical faculty members are developing new strategies and treatments for improved outcomes of care, including prevention strategies for complications of both type 1 and type 2 diabetes. Investigators of the BDC were awarded >$16 million in direct cost competitive funding in 2019 and published over 180 peer-reviewed papers in high-profile journals.

Clinical Research Highlights

BDC investigators continue to increase the body of knowledge around the identification, cause, treatment, and outcomes of T1D. 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); & Control IQ hybrid closed loop system for patients ≥ 14 yrs and for patients 6-13 yrs.
- Diabetic ketoacidosis (DKA) at diagnosis of diabetes in children has increased to 59 percent (2017) and 68 percent during COVID-19 pandemic; it predicts poor diabetes control
- SGLT adjunctive therapy improves outcomes in T1D patients
- Enteroviral infections predict islet autoimmunity

- Autoimmunity Screening for Kids (ASK) study finds 1 percent of children in Denver have early T1D and 2 percent have undiagnosed celiac disease

Basic Science Highlights

BDC was awarded the highly competitive NIH P30 Diabetes Research Center (2020), providing core resources to integrate and foster interdisciplinary cooperation of investigators conducting research in diabetes and related areas of endocrinology and metabolism.

BDC contributions to several high profile studies that focused on the pancreatic islet in T1D include:

- Determination that Methyldopa blocks the diabetes-specific activation of HLA-DQ8 molecules
- The contribution of novel non-coding RNAs in regulating islet function
- The modification of insulin B-chain fragments create superagonists for T cells in T1D
- Higher order cellular aggregation promotes maturation and functionality of human stem cell-derived beta cells
- CAR T cells targeting a pathogenic MHC Class II peptide complex modulate progression of T1D
- In vitro generation of thymic epithelial cells to begin to model T1D in a dish

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

Service Centers

The BDC Research Division provides cytometry and islet preparation services for diabetes researchers across CU campus. 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 T1D. The 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 and K12 Pediatric Endocrinologist Career Development Program. The annual Keystone Conference remains the Center's flagship in the area of continuing medical education (CME) in Management of Diabetes, regularly selling out with over 600 participants.

The Barbara Davis Center is led by **Marian Rewers, MD, PhD**, Executive Director; **Robert Slover, 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,** also provides leadership in both of these 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 the sharing of findings and data, which ultimately 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. In pharmacogenomics, our mission is to 1) investigate and identify pathologic gene expression responsible for heart muscle disease and heart failure, and 2) identify and develop therapies that favorably affect pathologic myocardial gene expression or the clinically important consequences of variant gene products.

In the past year Cardiovascular Institute sections and members have published over 50-peer reviewed papers, submitted three patents, secured over 15 funding awards, not including over 20 funding awards in process and garnered several academic honors.

http://www.ucdenver.edu/academics/colleges/medicalschool/institutes/CardiovascularInstitute/Pages/CardiovascularInstitute.aspx

Center for Bioengineering

Leadership
Robin Shandas, PhD, Distinguished Professor and Founding Chair, Department of Bioengineering
University of Colorado Denver | Anschutz Medical Campus
Professor of Pediatrics (cardiology) and Surgery
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
Chelsea Magin, PhD has been appointed as assistant professor in the Department of Bioengineering. Magin holds joint appointments in Pediatrics and Medicine. She received the 2019 Colorado Bioscience Association Educator of the Year Award recognizing her excellence in teaching, mentorship, and outreach. This year, Magin has been awarded an NSF Faculty Early Career Development (CAREER) Program Award and an R01 from the NIH/NHLBI for her work in *in vitro* models of pulmonary fibrosis. Magin runs the Bioinspired Pulmonary Engineering Lab and her team hopes to use their models to identify new life-saving treatments for future use in patients.

Brisa Peña-Castellanos, PhD has been appointed as assistant research professor in the Department of Bioengineering with a joint appointment in the Department of Medicine, Division of Cardiology. Peña has been involved as an instructor and mentor with the Department of Bioengineering since 2017 teaching graduate and undergraduate curriculum. Peña was recently awarded a K25 grant and will move into Bioscience 3 where her research will focus on testing to find the most efficient method to deliver regenerative miRNAs for cardiac tissue engineering.

Brecca Gaffney, PhD, and Dr. Mazen Al Borno, PhD, have recently taken faculty positions in the Mechanical Engineering and Computer Science and Engineering departments, respectively, in the College of Engineering, Design and Computing and are members of the Center for Bioengineering with research space in Bioscience 3. Gaffney's research focuses on biomechanics, and how movement compensations impact the musculoskeletal system, specifically regarding the development of pain conditions. Al Borno's research focuses on using computer simulations to understand how the brain generates movement and in developing wearable technology to help people with movement disorders achieve a better quality of life.

Awards

Robin Shandas, PhD – In recognition of his influence on the CU system, Robin Shandas was selected as one of seven CU Distinguished Professors, the highest accolade bestowed on faculty members. He's one of only 106 professors among CU's four campuses to have earned the distinction since its inception in 1977. The Board of Regents votes on the finalists, who are selected based on outstanding performances in scholarly or creative work, student learning, and service at CU.

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 from the ground up to fully integrate engineering principles of design with biological systems and biomedical technologies to improve patient care, in 2020 the bioengineering program celebrates 10 years since inception as the program continues to expand at both the Anschutz Medical Campus and downtown Denver. 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 10 tenure-track and 25 non-tenure track bioengineering teaching and research faculty that deliver both graduate and undergraduate degree programs. The graduate program in bioengineering is home to 107 students this fall and 155 undergraduates are enrolled for fall 2020. The majority of this instruction occurs on the Anschutz Medical Campus, also home of the B.O.L.T. and B.E.E.P. programs for high school students in STEM.

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. Opening soon, Bioscience 3 will house a professional design and technology development studio for medical device innovation, a clean room to support bio-fluidics research, new bioengineering research labs, and state-of-the-art space programming for the Center for Inclusive Design Engineering (CIDE) and Inworks.

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 homeostasis. Research in the Center for Bioengineering is carried out in research space in Bioscience 2 and will be expanding to Bioscience 3 in September 2020. 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.

Robin Shandas, PhD, is the Director of the Center for Bioengineering and also the Department of Bioengineering Chair. 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, the Center for Women's Health Research, Gates Center for Regenerative Medicine, 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.

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. Faculty have active collaborations with 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 up 12 companies over the last 10 years, several in collaboration with School of Medicine faculty. Several technologies have been invented at the center and over 100 patents or patent applications have been generated over the last 10 years.

Center for Children's Surgery

The Center for Children's Surgery (CCS), a multi-disciplinary center housed within the School of Medicine (SOM), was established in 2011 with the purpose of representing faculty that specialize in providing surgical care to children. The CCS is charged with promoting the continued growth and development of CCS members towards fulfilling the multiple missions of the SOM and the Children's Hospital Colorado (CHCO). The Center's continued focus on strengthening and deepening the partnership and synergies between these two entities will remain an important factor in supporting the advancement of Anschutz Medical Campus as an academic medical center of national and international preeminence.

CCS administrative 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, **Thomas Inge, MD, PhD,** Associate Surgeon-in-Chief for Research, and **Sandra Talley, MPH,** Director of Finance and Administration. 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, and Pediatric Dermatology.

The past year saw significant progress on CCS goals including the appointment of a **Cindy Barrett, MD, MPH,** as the first Medical Director for Surgical Quality and Safety, formalization of Surgical Oncology Program, as well as successfully piloting a new Innovation seed grant funding mechanism. Another notable highlight is that each of our new research faculty members successfully secured internal or external funding within their first year of hire.

Looking forward to the coming year, the CCS will focus on continuing to develop our Quality and Safety program and applying for ACS verification, investing in and supporting new pediatric section leaders, as well as kicking off a new mentorship program for junior faculty members.

Center for Surgical Innovation

The Center for Surgical Innovation (CSI)'s 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/gynecology, and otolaryngology.

The CSI leadership team is **Thomas Robinson, MD,** Medical Director; **Sarah Massena, MBA,** Business Director; **Peter Mouser, MS,** Lab Manager; **Sharon Durlak,** Lab Coordinator, **Alexandra Hay,** Lab Coordinator, **Jesse Durlak,** Lab Support Tech and **Bryce Jones,** Lab Support Tech.

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



At the Center for Women's Health Research (CWHR), we envision a future in which research includes women and accounts for sex and gender differences, thus shaping better health care for all. Relatively little research on women's health was conducted until the 1990s and such research has historically been underfunded. Given this research gap, the CWHR was founded in 2004 by Judy Regensteiner, PhD, JoAnn Lindenfeld, MD, and Lorna Moore, PhD. Today, the Center is directed by **Judy Regensteiner, PhD,** Deputy Director **Jennifer Engleby** and Associate Directors Wendy Kohrt, PhD, and Jane Reusch, MD. Laura Brown, MD, Neill Epperson, MD, and Anne Libby, PhD, are also senior faculty members, and Amy Huebschmann, MD, is lead scientist for community outreach and education.

The CWHR 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. Our female and male researchers encompass all types of science and our science is across the lifespan. The CWHR has developed a strong reputation for success in assisting early career researchers to build their careers. Since 2006, the CWHR has awarded nearly $1.8 million in seed grants through internal peer review processes to 68 researchers. These same researchers have in turn been awarded over $92 million in external funding from the NIH, American Heart Association, the American Diabetes Association, and other major organizations. For every $1 in seed grants given by the CWHR, CWHR scientists have been awarded $52 from external sources. CWHR researchers have produced over 900 peer-reviewed publications since 2006. Our MD and PhD researchers perform research across the lifespan and represent 34 different departments, divisions and centers on campus. Our MD and clinical PhD scientists are also contributing to their fields by providing clinical care; 65 percent of them see patients at UCHealth, Denver Health, the VA, and Children's Hospital Colorado. They are also co-founders and directors of 13 clinics, most of which are multidisciplinary.

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

A successful researcher requires a specialized skill set. In addition to a strong understanding of scientific thinking and methods, there must also be training in academic skills and career development skills. By being awarded a CWHR seed grant, our scientists receive not only critical funding, but also intensive mentoring, academic and career development trainings, and a community of support. Over the past year, we increased the number of researcher trainings by 57 percent, hosting 11 training sessions for our junior faculty.

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

We also work 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 2,500 attendees. Highlighted below are some of our program offerings.

- **Let's Talk:** In partnership with UCHealth, the CWHR organizes this lecture-based community education series that bridges research to care. By providing evidence-based information, attendees are able to make more informed health care decisions for themselves and their families. In 2019-2020, we hosted four programs on topics ranging from heart health to life transitions, dermatology and the spine. In response to the COVID-19 pandemic, we also hosted a virtual Let's Talk on taking care of your mind and body during times of uncertainty. In addition, every year we host 50 high school-age girls to explore careers in healthcare and research at the CU Anschutz Medical Campus.

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- **Women's Health Research Day:** This annual event features a nationally recognized keynote speaker and a poster session for campus researchers. In 2019, our keynote speaker was Carolyn Mazure, PhD, a faculty member from Yale University and a leader in sex and gender differences in the field of depression.
- **Women's Health Symposium:** 2020 marked the 18th year of this annual half-day CME-accredited training. Medical professionals learned the most recent evidence-based guidelines and treatments relevant to women's health and sex differences. Topics included: treating patients with diabetes and cardiovascular disease; when to use and when to stop the use of statins; sleep and mood in menopausal women; personalized medicine and the implications for women's health; and cardiovascular disease in transgender adults.
- **National Conference on Women's Health and Sex Differences Research:** The CWHR hosts a biennial national conference focusing on cardiometabolic health across the lifespan. The CWHR National Conference features leading scientific experts from around the world and offers a program for community members to hear from prominent researchers. The next National Conference is scheduled for August 2021.
- **Annual Community Luncheon:** As the CWHR's signature outreach event, typically with 800 attendees, the luncheon focuses on educating the community about important health issues, providing evidence-based information, and highlighting women's health and sex differences research. The 2019 keynote speaker was Siddhartha Mukherjee, MD, a pioneering physician, oncologist and Pulitzer Prize-winning author.
- **Outreach:** Educating our community and building awareness are critical to ensuring that women's health and sex differences are studied and considered during the development and utilization of medical treatments. We established a quarterly newsletter and have developed a robust presence on two social media platforms — Twitter and Facebook. Collectively, they reach thousands of people in our community and around the country.
- **Community & Business Partnerships:** The CWHR is proud to partner with a variety of community organizations and companies to provide education and health care resources. From offering women's health screenings at the Center for African American Health Fair to presenting to employees and clients of Denver-based companies, we serve a wide spectrum of the community. We also have an ongoing partnership with the Denver FACES for the Future Program, a multi-year healthcare internship and leadership development program for high school students.

Additionally, we are proud to partner with groups on campus, in the community, around the country.

- On campus, the CWHR leads and/or participates in educational and research funding programs including Women in Medicine and Science (Director Judith G. Regensteiner, PhD), the NIH Building Interdisciplinary Research Careers in Women's Health (BIRCWH) program (PIs Judith G. Regensteiner, PhD, and Nanette Santoro, MD), the Specialized Center of Research Excellence in Sex Differences (SCORE) grant (PI Wendy Kohrt, PhD) and the Doris Duke Foundation's Fund to Retain Clinical Scientists (PI Judith G. Regensteiner, PhD, and co-PI Anne Libby, PhD).
- We are actively engaged with the community, raising awareness of and support for women's health and sex and gender differences research. Our Community Advisory Board has been integral to our success, helping us raise over $20 million in philanthropic giving since 2004. Additionally, community leaders who serve on our Medicine Cabinet provide invaluable advice, expertise and connection to our community.
- Nationally, the CWHR works closely with leaders in women's health who are part of the CWHR's Scientific Council. In addition to the CWHR Director & Associate Directors, current members include Nanette Wenger, MD (Emory); Yoel Sadovsky, MD, (Magee-Womens Research Institute); Bill Haskell, PhD (Stanford); Jill Goldstein, PhD (Harvard); Noel Bairey Merz, MD (Cedars-Sinai); Anne Peters, MD (USC); and Ginger Graham, MBA.

Other major accomplishments of 2019-2020 include:

- Awarded eight $25,000 seed grants and two $50,000 seed grants. Seed grant applications increased by 76 percent, and we awarded 43 percent more dollars to talented young MD and PhD scientists.
- With support from the Doris Duke Charitable Foundation, Anne Libby and Judy Regensteiner launched "Researcher Management and Leadership Training" on Coursera. This free online course is designed to help early career researchers navigate the complexities of building a research program, including fiscal responsibility, hiring and managing personnel and mentoring.
- Judy Regensteiner received the Bernadine Healy Award for Visionary Leadership in Women's Health and delivered the Ruth L. Kirschstein Memorial Lectureship at the Building Interdisciplinary Research Careers in Women's Health (BIRCWH) annual meeting

- Hosted the 7th Annual summit of the Leaders Empowering the Advancement of Diversity in Education, Research and Science (LEADERS) in women's health. This group of female leaders in academia is committed to advancements in women's health through the establishment of endowed chairs.
- Added two new senior faculty, Laura Brown, MD, and Neill Epperson, MD, to expand our capacity to mentor junior researchers.

The CWHR is working to be a leading voice increasing awareness and change in women's health and sex and gender differences on campus, in the community, and on a national scale. To learn more about our work or join our mailing list, visit www.cwhr.org.

Colorado Sickle Cell Treatment and Research Center

The Colorado Sickle Cell Treatment and Research Center, established over 45 years ago, is the region's primary source of specialty expertise and facilitation of comprehensive specialty care for both children and adults living with hemoglobinopathies. Basic, clinical and health services research conducted by the center and its collaborators serves to elucidate the pathophysiology of sickle cell disease, develop and implement treatments and systems of care that prevent or minimize complications, and that prolong and improve the quality of life. The work is supported by funding from the National Institutes of Health and other federal agencies, industry, and foundations.

The Center holds a long-standing contract with the Colorado Department of Health to coordinate short-term follow-up of newborn screening (NBS) for sickle cell disease and center staff continue to assist the Department of Health Laboratory as it expands its NBS testing services.

Direct patient care is also provided by our Director Kathryn Hassell, MD, for adults at UCHealth University of Colorado Hospital and by Associate Director Rachelle Nuss, MD, for pediatric patients at Children's Hospital Colorado (CHCO).

New funding awarded to the Center for FY 2019, FY 2020 and renewed for FY 2021 from state Medicaid surplus funds has allowed increased support for our sickle cell providers as they continue their dedicated work with this underserved population.

Implementation of a transition program, directed by a full-time transition coordinator, targets 12- to 26-year-olds to facilitate self-advocacy and health system navigation skills as youth move from pediatric- to adult-oriented healthcare throughout Colorado. Leveraging this expertise, center staff contribute to the development of an institutional transition program for all patients at CHCO. A major ongoing activity is the organization of a "state plan" for sickle cell disease, with support and funding from the Pacific Sickle Cell Regional Collaborative, part of a national HRSA program. This entails enhancing communication between and education for providers across Colorado, facilitating collaboration between healthcare systems and insurers, and disseminating care guidelines, major research advances and awareness of available resources to all stakeholders including patients and their families. An expanded website will encompass this information and serve as a statewide resource and point of contact. For more information about the Center, please visit: www.coloradosicklecell.org.

Gates Center for Regenerative Medicine

The Gates Center was established in 2006 on the University of Colorado Anschutz Medical Campus with a generous gift in the memory of business entrepreneur and philanthropist Charles C. Gates. Under the direction of Dennis Roop, PhD, the Gates Center's mission is to bring together and support researchers and clinicians in stem cell biology in order to accelerate discoveries from the lab through clinical trials to therapies and cures.

The Gates Center works across campus and with other research partners, bringing together and fostering research and clinical talent, regulatory and intellectual property expertise, commercial partners and diverse funding. Facilities and benefits for our 118 medical research and clinician members (from the Anschutz Medical Campus, CU Boulder, CU Denver, Colorado State University, Colorado School of Mines, and National Jewish, as well as private industry) include core labs, patented cell production platforms, the best-in-class Good Manufacturing Practice (GMP) production center at the Gates Biomanufacturing Facility, business development and commercial guidance, affiliation with undergraduate and graduate education programs and more.

FY 2020 highlights

Collaboration and Research

- The Gates Center proudly featured the research and accomplishments of our Gates Center members by highlighting 32 grants, 21 select publications and 10 honors in our *2019 Gates Center Annual Report*.

- The Gates Center announced support for the new Organoid and Tissue Modeling Core Facility established by Bruce Appel, PhD, and Peter Dempsey, PhD. This will provide Gates Center members with opportunities to develop and utilize powerful human organoid and tissue models to enhance their research capabilities and improve competitiveness for external grant funding.

- The Gates Center's Stem Cell Biobank and Disease Modeling Core worked with numerous campus investigators along with teams at Stanford and Columbia Universities and in France, among others, on cures for a number of diseases. Established in 2017, this core facility uses Gates Center members Ganna Bilousova, PhD, and Igor Kogut, PhD's safe and efficient reprogramming technology (reported in *Nature Communications* in February 2017) to generate banks of pluripotent stem cells (iPSCs) as a platform. It then employs the iPSCs as tools to understand the underlying basis of diseases that affect tissues that cannot be easily biopsied, such as the brain. The core's focus includes the ongoing research program for the Ehlers-Danlos Syndrome (EDS) Center of Excellence to determine the genetic basis of EDS and develop a cell-based therapy.

- National leaders in research to cure debilitating skin diseases based at the Gates Center won a second NIH grant to further investigations of innovative treatments. The Epidermolysis Bullosa (EB) iPS Cell Consortium, a unique collaboration of research teams from the Gates Center, Stanford and Columbia universities, received an $800,000 grant from the National Institutes of Health 21st Century Cures Act in November 2019. The award was immediately doubled by a required match from a group of private foundations united to back research into EB—a disease that affects their founders' children. The consortium was the only hopeful in a group of eight research applicants funded in 2017 to be awarded a second round of funding by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), one of 12 institutes within the NIH participating in the 21st Century Cures Act Regenerative Medicine Innovation Project. The growing endorsement of the consortium's research, evidenced by additional grant funding from a variety of sources, has already resulted in a 24-fold "return on investment," with the initial $500,000 NIAMS grant in 2017 sparking more than $12 million in total research funding, even before the newest award. The EB Research Partnership in New York and the California-based EB Medical Research Foundation co-founded the Consortium in 2016 to create this multi-institutional partnership, and they along with the London-based Cure EB Charity generously matched both NIAMS awards. The funds will advance innovative Consortium research and expansion of treatment in areas including a potential "Spray-On Skin™" application of regenerative cells, and a promising treatment of internal diseased tissue with systemically targeted-delivery cells.

- In November 2019, the Gates Center team entered a preclinical research collaboration with AVITA Medical, to explore a spray-on treatment of genetically modified cells. The collaboration will build upon AVITA Medical's patented and proprietary Spray-On Skin™ Cells technology. AVITA's RECELL® System was approved by the FDA in September 2018 for the treatment of severe thermal burns and is already used in approximately half of burn centers across the U.S.

Good Manufacturing Practice Facility

- The Gates Center's state-of-the-art, affiliated Gates Biomanufacturing Facility (GBF) remains key to the center's mission of translating innovative research discoveries into safe and effective cell therapy and protein biologic products for human clinical trials. During the year, it served on and off-campus researchers and remained GMP-compliant and busy working with outside companies during the campus shutdown. In June, the facility was working toward an imminent milestone of manufacturing modified CAR-T cells for injection into clinical trial patients at University of Colorado Hospital and Children's Hospital Colorado—work led by initiating investigator and Gates Center member Terry Fry, MD, Director- of Cancer Immunotherapy on the Anschutz Medical Campus.

Business Development and Commercialization

- In fall 2019, the Gates Center and CU Innovations worked with its Gate Grubstake Fund's Scientific Investment Advisory Committee to make four awards of up to $350,000 toward the translational development of promising regenerative medicine projects into patented, clinic-ready products for patients in need. Awardees included Terry Fry, MD, Holger Russ, PhD, Ram Nagaraj, PhD, and Raj Kumar, PhD.

- Investment of approximately $5M from 2014-2019 in combination with another Gates Center program—"Startup Toolbox Fund" that helps fund business resources—have funded 17 projects out of which five startups have been created, seven pre-IND/INDs are in prep or filed, and there has been at least $29.6M in follow-on funding—a six-fold return on investment by the Grubstake program alone.

Education and Outreach

- In the summer of 2019, the Gates Center sponsored the fifth year of the Gates Summer Internship Program (GSIP) that places highly qualified undergraduate students from across the country in center members' labs to encourage them to incorporate regenerative medicine into their career plans. In 2020, the center appointed Joseph Brzezinski, PhD, and Jill Cowperthwaite as program co-directors to succeed founding directors Neil Box, PhD, Tamara Terzian, PhD, and Enrique Torchia, PhD. The program accepted 22 students out of 376 applications and pivoted to host a virtual program due to COVID. Recent data from a sample of past interns shows that 83 percent are pursuing advanced degrees or are in the application process, including 12 on the Anschutz Medical Campus: CU School of Medicine – 8, CU Graduate Programs – 2, and CO School of Public Health – 1. Additionally, the center 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.

- The Gates Center continued to host on-and-off campus researchers and clinicians who might benefit from the Gates Center as well as tours for the public, elected officials and students until the campus shutdown. To better reach out to and serve our audiences, the Gates Center also collaborated with University of Colorado School of Medicine IT colleagues to launch a new website in fall 2019.

Grants and Fundraising

- As of the end of 2019, the center and its members had received over $187 million in peer-reviewed funding from the National Institutes of Health, the U.S. Department of Defense, and various foundations.

- Significantly, private philanthropy is an increasingly vital driver of innovative research and leading-edge education initiatives at the Gates Center. In 2019, 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 iPSC Discovery Platform Fund to employ induced pluripotent stem cells to study a variety of diseases and the Startup Toolbox Fund to provide center members with business resources to move discoveries to cures.

https://medschool.cuanschutz.edu/gates-center-for-regenerative-medicine

Hemophilia and Thrombosis Center

The University of Colorado Hemophilia & Thrombosis Center (HTC) is one of 142 centers for the comprehensive treatment of bleeding and clotting disorders established by Congress and recognized by the U.S. Health and Human Services, Maternal Child Health Bureau. Serving nearly 2,000 pediatric and adult patients in Colorado, Wyoming, Montana, and surrounding states, the HTC operates a freestanding School of Medicine outpatient clinic specializing in congenital bleeding and clotting disorders, hemorrhagic stroke, ischemic stroke, or fetal brain injury, and women's bleeding disorders. The self-sustaining center operates its multi-disciplinary clinics on the University of Colorado Anschutz Medical Campus 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, Colorado, and Billings, and Missoula, Montana.

The center offers clinics for bleeding and clotting disorders, operates an in-house URAC accredited specialty pharmacy, a clinical research group, and laboratory research facilities in its mission to diagnose, treat, and improve outcomes in children and adults.

Led by Co-directors **Marilyn Manco-Johnson, MD,** and **Michael Wang, MD,** the center has been on the forefront of development and adoption of a "comprehensive care" model for patients and the prophylactic use of factor replacement products for the treatment of hemophilia, transforming bleeding disorders patients' lives around the world. HTC physician/scientists proactively seek new treatments and therapies through research and clinical trials.

HTC hematologists and pharmacists, in partnership with patients, are in the vanguard of novel treatments through participation in clinical trials for new therapies. This commitment to the future, directly impacts the health and well-being of targeted patient populations. As a result, patients have experienced improved outcomes more convenient administration and lower total cost of care in a rare trifecta win for patients, insurers, and healthcare providers.

HTC patient care is delivered by multi-disciplinary, physician-led teams, including hematologists (doctors who specialize in blood), neurologists, neuro-surgeons, gynecologists, orthopedists (doctors who specialize in bones, joints, and muscles), physiatrists (doctors who specialize in rehabilitation and a return to function), physical therapists, pharmacists, nurses, social workers and other mental health professionals, lab medical technologists and pathologists, and other specialists by referral, (e.g., dentist, nutritionist, genetic counselor). With a staff of 68 full and part time professionals, including both clinical and lab research physicians, the HTC actively pursues both industry-sponsored and investigator-initiated research into bleeding and clotting disorders. Current research is centered on rare genetic causes of bleeding and clotting, the physiology of Von Willebrand Factor, platelets, pain management, and joint biomechanics. Center researchers conduct clinical trials research on 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.

HTC Academic Accomplishments

- Grants

HTC investigators were successful in securing external research funding during the 2019-2020 academic year.

⇒ Keith Neeves, PhD, is Director of Basic Research and Mentoring for the HTC. Neeves was awarded two NIH grants this year:

♦NIH/NHLBI 1P01HL144457-01 (Montgomery R) Lead on Project 4: Epigenetic Mechanisms Modulating VWF

♦NIH/NHLBI R21HL152250 (Neeves, Keith B) April 1, 2020-March 31, 2022 "Encapsulated platelets in cast hydrogels (EPIC) to measure single platelet structure-function relationships in old age" Role: PI

♦NIH/NHLBI R01HL151984 (Leiderman, Karin) Aril 10, 2020-March 31, 2024 "An integrated computational and experimental approach to understanding the hemostatic response during treatment of bleeding. Role: Co-PI

⇒ Brian Branchford, MD, was awarded an NIH K08 award to study inflammation and thrombosis.

⇒ Tyler Buckner, MD, continues in his NIH K23 award to study pain in hemophilia

- Service to the Academic Community

⇒ Tyler Buckner, MD, serves on the Medical and Scientific Advisory Council of the National Hemophilia Foundation.

⇒ Timothy Bernard, MD, serves as Vice Chair of the International Pediatric Stroke Study Group.

⇒ Sharon Funk DPT, serves as co-Chair of the Musculoskeletal Health Expert Working Group

⇒ Steven Powell, MBA, serves on the Board of Directors of the Hemophilia Alliance.

⇒ Paul Limberis, PharmD, serves on the Pharmacy Board of Directors of The Alliance Pharmacy.

CU ANSCHUTZ Hemophilia & Thrombosis Center Information

Program Co-Director/Principal Investigator: **Marilyn Manco-Johnson, MD**
Program Co-Director/Clinic Medical Director: **Michael Wang, MD**
Pharmacy Director: **Paul Limberis RPh**
Program website: https://medschool.cuanschutz.edu/hemophilia-thrombosis.

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

Founded in 1972 by C. Henry Kempe, MD, the Kempe Center for the Prevention and Treatment of Child Abuse and Neglect is one of the longest-running and leading agencies in the field of child maltreatment. Kempe professionals work to improve the lives of children and families and the systems that serve them. The faculty and staff number over 70 professionals each committed to realizing the Kempe vision, a world without abuse and neglect.

Forty-eight years after Kempe opened the doors of the center, the current Kempe center team honors his legacy while looking ahead to the future leading the way in innovative strategies that transform the field. This unique organization, comprised of multi-disciplinary professionals, covers several core areas of work compromised of integrated healthcare, expert consultation, professional training, institutional education, transformative research, and pediatric law, bioethics, and policy. The integration of these disciplines serves as a catalyst connecting child and family serving professionals with information and best practices to translate knowledge into action.

Lead by the new executive director **Kathryn Wells, MD,** the past year has been one of introspection, connection, and growth for the Kempe Center. The team launched into the new year with an All Kempe Retreat initiating a yearlong strategic planning process to identify areas of opportunity for growth and expansion to strengthen the position of the center to better serve our community. The leadership team recently released the finalized strategic plan informed by the work of the larger faculty and staff laying out the course for the next five years with a priority on expanding diversity, equity and inclusion, the Kempe Center structure, marketing, financial infrastructure, and training for leadership members.

While completing the rigorous work of planning for the future, the professionals working within the Kempe Center have continued to provide exceptional service to the communities they serve while navigating the trying circumstances faced by a global pandemic. Instead of hindering work, COVID forced Kempe professionals to do what they do best, to think innovatively and to focus on modernizing connection with child and family serving professionals locally, nationally, and internationally.

Kempe's robust training and educational programs stepped up to meet new learning needs this past year flourishing in the face of challenge. The Child Welfare Training System continued all statewide pre-service training deliveries for caseworkers, supervisors, and foster families, transitioning to a new virtual format without disruption and created new relevant virtual learning experiences to meet child welfare needs during this difficult time. Center faculty embraced their responsibility for educating CU medical students, graduate students, pediatric residents, and post-doctoral fellows by shifting to remote onboarding for fellows and transitioning the Interdisciplinary Research Institute to a new virtual format using the opportunity to expand by offering a spring and summer session and broadening the range of experts involved. Colleagues participated from across the country with the goal to expand the pool of scholars trained to conduct child maltreatment research, increasing knowledge and the evidence base.

Kempe's faculty continue to contract with multiple states to provide independent evaluation for their child welfare systems. This past year, in collaboration with the Quality Improvement Center for Workforce Development (QICW-D), the Kempe evaluation team worked with the Washington Department of Children, Youth and Families to implement telework practices with the intention of strengthening their child welfare workforce. The project had to be rapidly rolled out and expanded to all child welfare workers because Washington state was one of the first locations drastically affected by the pandemic.

Kempe's Child Protection team has also continued to play a critical role in our community, providing evaluation, diagnosis, and treatment to suspected victims of child abuse and neglect during this time of extreme stress and uncertainty. They have continued to see patients in person while developing new telehealth processes to meet current needs including transitioning the new Child Abuse Response and Evaluation (CARE) Network into a virtual collaborative. With increased stress among families, this network is more important than ever. Kempe serves as the resource center for this statewide community of healthcare providers virtually training them to conduct medical examinations and behavioral health screenings for any child under six with a concern of physical abuse or neglect and any child under 13 with a concern for sexual abuse. Through collaboration with community partners anyone who wants to refer a child will now know where that child can receive a local comprehensive and quality evaluation.

Kempe's Trauma-Responsive Implementation and Practice Program through a contract with Colorado's Trauma Informed System of Care (COACT Colorado), transitioned to new virtual platforms to provide training and education on trauma responsive services to providers from 17 counties throughout the state. Their team also developed and disseminated valuable resources to help parents and caregivers address long term mental health impacts of coronavirus on their children and they released a toolkit to aid in the implementation of trauma responsive practices in schools as our community returns to a variation of the classroom, a transition that can cause fear and difficult emotions for all including teachers, administrators, families, and students.

The Fostering Healthy Futures® Pre-Teen program (FHF) also adapted and expanded the services provided through their 30-week prevention program that works with families and youth between the ages of 9-11 years old who are living in out-of-home care. This team recognized their involvement with this group as being critical during this difficult time and quickly transitioned to online programming conducting mentoring visits by Zoom and providing resources so that children could also attend skills group via Zoom.

The SafeCare Colorado® team, an evidence-based, in-home parent support program also transitioned to a new virtual platform and moderated a national webinar early during COVID for the Rapid Response-Virtual Home Visiting Collaborative with 4,005 attendees. They have continued to work with this national group to provide local states guidance on how to support professionals from providers to leadership using Zoom.

As the Kempe team energetically embraced the challenge of amplifying and modernizing the work of current programs in the face of COVID the faculty and staff also realized the need to expand the reach of the center and provide relevant resources to a broader audience consisting of all disciplines within the field. In response, the Kempe team took this opportunity to launch Kempe's Virtual Village early in the spring. Kempe's Virtual Village is a well-organized hub of diverse digital resources, relevant for all disciplines that serve children and families in our community. Through the village, the center regularly delivers a variety of virtual resources including Kempe's Café, a bi-monthly virtual one-hour learning experience for a multi-disciplinary, international audience for up to 500 attendees. Kempe's Cafés have become a catalyst for relationship, resourcing and connection across disciplines during this difficult year.

As the center adapted to meet the needs of the child- and family-serving community during the pandemic, we started to see global protests erupt in May that awakened our collective and universal consciousness of systemic racism. These events have caused unbearable suffering, disproportionately impacting the poor and communities of color—an outcome that oftentimes child welfare systems mimic. In response, Kempe turned an inward focus towards expanding diversity, equity, and inclusion within the center and shifted the focus of the annual conference to create an international community of practice to re-envision and rethink child welfare by mobilizing child, family, and community partnerships and leadership. We are proud to launch the first Kempe International Virtual Conference this coming October: *A Call to Action to Change Child Welfare*.

The experts that represent these various programs share unmatched talent and dedication to their work seen through the acknowledgments they continue to receive as leading experts in their field. Heather Taussig, PhD, program director of Fostering Healthy Futures (FHF) recently received a Fulbright U.S. Scholar Award to Wales, United Kingdom, to conduct research to develop more innovative and contextually sensitive prevention programming for youth with adverse life experiences. Denise C. Abdoo, PhD, cPNP, was elected to a two-year term to the Children's Hospital Colorado Medical Board. Andrew Sirotnak, MD, was selected to be a faculty member in the Young Physicians Leadership Alliance Program (YPLA) of the American Academy of Pediatrics (AAP). Antonia Chiesa, MD was named one of Denver's Top Doctors by 5280 magazine. Ida Drury, PhD and Heather Allan, MSW received the Article of the Year Award from the Journal of Public Child Welfare for their article "I'm from the government and I'm here to help: How can public health perspectives improve outreach in child maltreatment prevention programs."

www.kempecenter.org

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 disease spectrum of people with Down syndrome. Our ultimate 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, Executive Director**, and **Huntington Potter, Director of the Alzheimer's Disease Program**. The intramural faculty also include professors Kelly Sullivan and Michael Yeager and are supported by an administrative team led by Monica Lintz, Director of Finance and Administration. The Crnic Institute is a collaborative, joint venture between the University of Colorado (CU) School of Medicine, CU 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 (NIH).



$14.0M
Funding awarded From sponsored projects

1
UNIFYING GOAL

$26.2M
Gifts received From external donors



Each year, we award 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 renewable $50,000-per-milestone awards meant to support extramural investigators until they can obtain independent funding for their Down syndrome research. **Since this program's inception in 2013, we have awarded CU researchers with 71 grants, which have funded $6.4M of Down syndrome research**.

Altogether, the Crnic Institute's intramural and extramural faculty and programs constitute the "Crnic Supergroup," the largest geographical cluster of Down syndrome researchers in the world. **In late 2019, thanks to the remarkable work of the Crnic Supergroup, CU Denver | Anschutz Medical Campus became the single largest holder of NIH dollars and awards for Down syndrome research in the country.**



50+ faculty labs



25+ departments/divisions



200+ scientists involved



65+ unique active projects

The Crnic Institute is also home to **the most comprehensive cohort study of people with Down syndrome, called the Human Trisome Project.** Launched in 2016, this project fuels a multi-dimensional biobank, enabling large pan-omics studies of Down syndrome in a way that has never before been possible. The end goal of the Human Trisome Project is to enable personalized diagnostic and therapeutic tools to improve medical care and quality of life for people with Down syndrome. To-date, the Human Trisome Project involves:



700+ Participants



24,000+ Samples in biobank



30+ Projects supported



11 Publications

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

Marcus Institute for Brain Health

The Marcus Institute for Brain Health (MIBH) was created in 2017 with a transformational gift from The Marcus Foundation. The institute provides specialty care for military veterans and retired elite athletes struggling with mild to moderate traumatic brain injuries, including concussion, and associated changes in psychological health.

MIBH provides innovative, interdisciplinary care through a three-day diagnostic evaluation involving neurology, imaging, physical therapy, speech and language pathology, neuropsychology, and other disciplines. This is usually followed by a three-week intensive outpatient program where these disciplines work with alternative therapies such as creative arts, canine, yoga, mindfulness, and others to create a personalized, holistic healing experience.

MIBH is led by **James P. Kelly, MD,** Executive Director, **Wendi Pevler,** Director of Finance and Administration, **Daniel Wilkerson,** Director of Special Projects, and **Spencer Milo,** Director of Veteran Relations. MIBH has its own staff of clinicians and therapists and is augmented by faculty from multiple schools on the Anschutz Medical Campus.

The MIBH team is honored to be serving America's Veterans by building a TBI Center of Excellence where we are working hard to

- Provide state-of-the-art therapies and assist in the transition to civilian life;
- Investigate new and better ways to identify and treat TBI and its associated psychological health conditions;
- Advocate for better reimbursement for the care Veterans deserve; and
- Teach a new generation how to be world-class TBI care providers.

Additional information regarding the Marcus Institute for Brain Health can be found online at http://www.ucdenver.edu/anschutz/patientcare/marcusinstitute/Pages/marcusinstitute.aspx.



Neurotechnology Center

The Neurotechnology Center (NTC), directed by Mark Dell'Acqua, PhD, celebrated it first anniversary on July 1, 2020.

The NTC mission is to

- Support core facilities that provide School of Medicine (SOM) investigators access to key, cutting-edge technologies that are essential for neuroscience research at University of Colroado Anschutz Medical Campus; and
- Work with SOM Departments to jointly recruit additional neuroscience-focused faculty to CU-Anschutz who emphasize development and/or application of novel technologies, with a goal of building strong collaborative, cross-disciplinary research teams.

Eight Anschutz Medical Campus departments have joined the NTC as members, representing both basic science and clinical programs. During 2020, the NTC successfully partnered with the Department of Physiology and Biophysics to recruit Jason Christie, PhD, to CU Anschutz Medical Campus from the Max Planck Florida Institute for Neuroscience. Christie uses cutting-edge optical imaging and manipulation approaches and electrophysiological recording both *in vitro* and *in vivo* to study circuit function and plasticity in the mammalian cerebellum that underlies control of movement and motor learning. Christie will join the SOM faculty in late 2020.

The NTC will also continue to coordinate several campus cores that provide investigators with powerful transformative tools that allow them to incorporate cutting-edge approaches into their neuroscience research programs. These cores include Advanced Light Microscopy, Optogenetics and Neural Engineering, Animal Behavior, In Vivo Neurophysiology, and the Neuroscience Machine Shop.

https://medschool.cuanschutz.edu/neurotechnologycenter

Perinatal Research Center

The Perinatal Research Center (PRC) at the University of Colorado Anschutz Medical Center has been for many years one of the leading centers, nationally and internationally, 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 and 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.

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 mechanisms that regulate such growth and development under normal and pathological conditions.

Paul Rozance, MD, is the scientific director of the PRC. Dr. Rozance is the PI of a R01 Research Project Grant from the National Institute of Diabetes and Digestive and Kidney Diseases, currently in its 10th year, and is CO-PI of a R01 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, in its third year. Rozance is also the PI and Program Director of the NIH-NICHD T32 Training Program in Perinatal Medicine and Biology, which has been funding neonatology fellows at the University since 1979. Collectively, PRC scientists hold five NIH R01 research project grants, 1 NIH K08 Career Development Award, and the NIH T32 Training Grant.

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 from multiple disciplines who work together on studies of the chemical senses including taste and smell, and on chemical irritation of the oral and respiratory passageways. The overall 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 17 laboratories spread across five departments of the School of Medicine along with investigators from the School of Dental Medicine and the University of Denver.

While the center provides direct support for infrastructure and multi-user research facilities, the underlying research is supported by more than 25 research and training grants from the National Institutes of Health totaling more than $5 million. Investigation of disorders of the senses of taste and smell is enhanced by cooperation and collaboration with the Sinus Clinic of University of Colorado Hospital and the Department of Otolaryngology.

University of Colorado Cancer Center

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

The **Vision** of UCCC is: Prevent and conquer cancer. **Together.**

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

UCCC's history begins with the award of an NCI Cancer Center Support Grant in 1988, resulting in a clinical cancer center designation. In 2013, UCCC was elected as a member of the National Comprehensive Cancer Network (NCCN) and went from unranked to a top 50 cancer center over the past six years according to *U.S. News and World Report*. In February 2015, UCCC 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 by CU scientists.

Richard Schulick, MD, MBA, was appointed Director of UCCC on July 1, 2018. He is the third director to lead the center in its 30-year history. Schulick is a nationally recognized surgeon specializing in hepatopancreatobiliary and gastrointestinal malignancies and the use of immunotherapy to eliminate tumor burden. He earned his MD and MBA from Johns Hopkins University and was recruited to the CU School of Medicine in 2012 to serve as the chair of the Department of Surgery. He is the author of more than 300 articles, book chapters, and other publications and the principal investigator on multiple studies and clinical trials, including a study targeting CD112, a protein involved in the body's ability to fight cancer. With Barish Edil, MD, Schulick pioneered the use of the laparoscopic Whipple at CU, one of the most advanced minimally invasive techniques in surgery of the pancreas.

In 2019, UCCC leadership convened a cross-section of key stakeholders to develop a new strategic vision for the center. The outcome of those efforts was a dynamic vision that will propel UCCC to the next level.

Strategic Goals for this next era are to

- Ensure a robust infrastructure to foster research across the spectrum from basic discovery to translation to prevention and control.
- Invest in targeted areas of research where UCCC can best accelerate its impact.
- Perform highly innovative and accessible clinical trials.
- Provide unparalleled comprehensive patient-centered cancer care.
- Be the premier Cancer Center and destination of choice, regionally in five years and nationally in ten.
- Advance health equity and reduce disparities across our clinical partners 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 Senior Leadership	
Director	Richard Schulick, MD, MBA
Deputy Directors	James DeGregori, PhD
	Cathy Bradley, PhD
Associate Directors:	
Basic Research	Heide Ford, PhD
Clinical Research	Christopher Lieu, MD
Population Science Research	Cathy Bradley, PhD
Translational Research	Wells Messersmith, MD
Community Outreach & Engagement	Evelinn Borrayo, PhD
Cancer Research Education & Training	Eduardo Davila, PhD
Administration & Finance	Stephanie Farmer, MHA
Clinical Services	W. Thomas Purcell, MD, MBA

The center fosters cancer-focused research, in part 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 and the emergence of productive collaborations.

Over the past funding period and with the encouragement of the NCI, the UCCC revised its programs to better reflect the direction of cancer research and foster greater synergies across investigators in different disciplines. The new structure consists of four programs, all of which are organized around mechanistic themes in cancer research. With the implementation of the revised structure, the UCCC introduced several new Program Leaders to foster continued excellence and cross-fertilization among UCCC members.

Cancer Center Program Leadership	
Basic Sciences	
Molecular & Cellular Oncology (MCO)	Tin Tin Su, PhD, Craig Jordan, PhD,* Patricia Ernst, PhD*
Translational and Clinical Sciences	
Tumor-Host Interactions (THI)	Jennifer Richer, PhD, Michael Verneris, MD, Jill Slansky,
Developmental Therapeutics (DT)	Lia Gore, MD, Dan Gustafson, PhD, Antonio Jimeno, MD,
Population Health	
Cancer Prevention and Control (CPC)	Rajesh Agarwal, PhD, Jamie Studts, PhD*
*New leader	

Cancer Center Affiliated Organizations

Academic Institutions

- University of Colorado Denver (CU Denver)
- University of Colorado Boulder (CU Boulder)
- Colorado State University (CSU)

Affiliated Hospitals

- UCHealth University of Colorado Hospital (UCH)
- Children's Hospital Colorado (CHCO)
- Veterans Affairs medical center (VAMC)

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

Sponsor	Direct Cost $s
Cancer Center Support Grant	3,071,691
NCI	17,665,714
Other NIH	17,806,771
Other Peer-Reviewed	7,879,611
Industry	16,934,700
Other Non-Peer Reviewed	10,836,050
Grand Total	74,194,537

*As reported to the NCI Dec. 2019

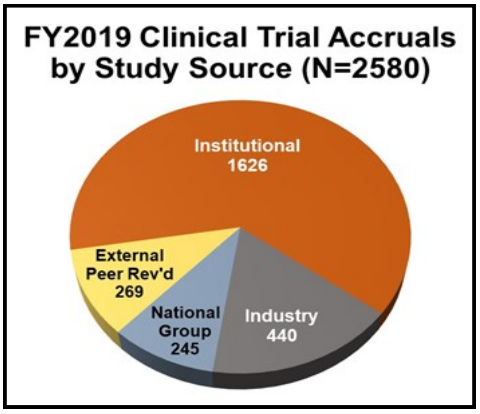
Facts

Membership

- 218 CCSG members
- 53 Mentored members
- 71 percent of members are in the School of Medicine (SOM)

Research Portfolio

- 668 cancer related publications in FY2019
- $74.2M direct costs in annual cancer-relevant sponsored research funding
- $53.7M held by members in the SOM



Clinical Portfolio

- 2,599 accruals to all types of human subject protocols
- 771 accruals to intervention treatment protocols

Distinguishing Characteristics

- Only NCI-designated Cancer Center in Colorado
- NCCN member, one of 30 elite cancer centers
- ORIEN Personalized Medicine Network member
- Includes nearly all academic NCI-funded cancer researchers in the State of Colorado
- Includes UCHealth University of Colorado Hospital, which is ranked among the top 50 hospitals in the US for cancer
- Includes the 9th ranked pediatric cancer program in the U.S. (Children's Hospital Colorado 2019-2020 *U.S. News and World Report* rankings)
- Includes the third-ranked veterinary school with the top animal cancer center in the nation (CSU Flint Animal Cancer Center)

Major Accomplishments 2019-2020

- Recruitment of Evelinn Borrayo, PhD, as Associate Director for Community Outreach and Engagement
- Appointment of Eduardo Davila, PhD, as Associate Director for Cancer Research Training and Education Coordination
- Appointment of Chris Lieu, MD, as Associate Director for Clinical Research
- New Full Members:

  School of Medicine

  ⇒Francisco Asturias, PhD, associate professor, Department of Biochemistry and Molecular Genetics

  ⇒Leslie Berg, PhD, professor and chair, Department of Immunology and Microbiology

  ⇒Julia Cooper, PhD, professor and chair, Department of Biochemistry and Molecular Genetics

  ⇒Allison Kempe, MD, MPH, professor, Department of Pediatrics

  ⇒Jeffrey Moore, PhD, associate professor, Department of Cell and Developmental Biology

  ⇒Catherine Musselman, PhD, associate professor, Department of Biochemistry and Molecular Genetics

  ⇒Mercedes Rincon, PhD, professor, Department of Immunology and Microbiology

  ⇒Jamie Studts, PhD, professor, Department of Medicine, Division of Medical Oncology

  ⇒Arianne Theiss, PhD, associate professor, Department of Medicine, Division of Gastroenterology

  ⇒Sachin Wani, MD, professor, Department of Medicine, Division of Gastroenterology

  School of Public Health

  ⇒John Adgate, PhD, MSPH, professor, Department of Environmental and Occupational Health

  ⇒Marcelo Perraillon, PhD, assistant professor, Department of Health Systems, Management and Policy

- New Mentored Members:

  School of Medicine

  ⇒Jessica McDermott, MD MSc, assistant professor, Department of Medicine, Division of Hematology

  ⇒Jose Pacheco, MD, assistant professor, Department of Medicine, Division of Medical Oncology

  ⇒Laura Scherer, PhD, assistant professor, Department of Medicine, Division of Cardiology

  ⇒Elena Shagisultanova, MD PhD, assistant professor, Department of Medicine, Division of Medical Oncology

  ⇒Yiqun Shellman, PhD, associate professor, Department of Dermatology

  ⇒Kelly Sullivan, PhD, assistant professor, Department of Pediatrics

  ⇒Amanda Winters, MD PhD, assistant professor, Department of Pediatrics

  ⇒David Woods, PhD, assistant professor, Department of Medicine, Division of Medical Oncology

  ⇒Tuoqi Wu, PhD, assistant professor, Department of Immunology and Microbiology

  School of Public Health

  ⇒Fuyong Xing, PhD, assistant professor, Department of Biostatistics and Informatics

  CU-Boulder

  ⇒Nausica Arnoult, PhD, assistant professor, Department of Molecular, Cellular and Developmental Biology

  ⇒Justin Brumbaugh, PhD, assistant professor, Department of Molecular, Cellular and Developmental Biology

  ⇒Maureen Lynch, PhD, assistant professor, Department of Mechanical Engineering

National Jewish Health

⇒James Scott-Browne, PhD, assistant professor, Department of Medicine, Division of Medical Oncology

- Three new supplements to the Cancer Center Support Grant:

  ⇒Enhancing the Cancer Center's Community Outreach in Rural and Underserved Populations (3P30CA046934-31S4 / E Borrayo).

  ⇒Building Rural Cancer Control and Prevention Research Collaborative in Colorado (3P30CA046934-31S5 / E Borrayo).

  ⇒Interferon Signaling and the Differential Malignancy Spectrum of Down Syndrome (3P30CA046934-31S6 / J Espinosa, J DeGregori and E Pietras).

- 42 new and renewal NCI and other cancer-focused sponsored awards since January 2019 including:

  ⇒ A new NCI P50 in implementation science approaches to enhance value of cancer prevention and control in rural primary care (1P50CA244688-01 / R. Glasgow).

  ⇒ Renewal of the award supporting UCCC participation in the NCI's National Clinical Trials Network (NCTN) clinical trials (1UG1CA233324-01 / A. Elias).

  ⇒ A new NCI U01 in systems analysis of aggressive prostate cancer pathology (1U01CA231978-01A1 / J. Costello and S. Cramer).

  ⇒ A new NIA U01 in understanding and circumventing aging-dependent changes in the bone marrow microenvironment that promote leukemogenesis (1U01AG066099-01 / J DeGregori).

  ⇒ A new NCI U2C consortium grant award with Johns Hopkins on the lung PCA: a multi-dimensional atlas of pulmonary premalignancy (1U2CCA233238-01 / D Merrick).

  ⇒ Four new VA Merit awards:

    ◊Dissecting the role of inflammation in smoking and aging associated lung cancers (1I01BX004495-01 / J DeGregori).

    ◊Regulation of targeted therapeutic response by the immune microenvironment in HNSCC (1I01BX004751-01 / L Heasley).

    ◊Therapeutic targeting of MDS stem cells (1I01BX004768-01 / C Jordan).

    ◊Targeting kinases in novel preclinical models of adrenocortical carcinoma (1I01BX004665-01 / M Wierman).

  ⇒ A DOD Lung Cancer Research Program Translational Research Partnership Award in Rapid TKI-induced inflammatory signaling as a modulator of initial therapeutic response (W81XWH1910220 and W81XWH1910221 / R Doebele and L Heasley).

  ⇒ A new NCI T32 in Cancer Immunotherapy and Experimental Therapeutics (1T32CA236734-01 / A Jimeno and C Jordan).

  ⇒ A new NCI R25 to support cancer research experiences for undergraduates (1R25CA240122-01 / M Reyland).

  ⇒An NCI K08 awarded to E. Shagisultanova titled Discovering mechanisms of sensitivity and resistance to triple combination targeted therapy in HR+/HER2+ breast cancer (1K08CA241071-01).

  ⇒An NCI K99 awarded to Yi Zhang in the Kutateladze lab titled p62 in cancer: mechanism and regulation (1K99CA241301-01).

  ⇒16 new cancer-focused R01's and 8 new other R-type awards.

  ⇒Two new Leukemia and Lymphoma Society awards in Safer and more effective T cells for immunotherapy of viral-associated hematological malignancies (E Davila) and Targeting leukemia stem cells in the clinical setting: the development of a comprehensive program (D Pollyea).

  ⇒A new award from Alex's Lemonade Stand titled Live-cell surface proteomic characterization of atypical teratoid rhabdoid tumors using high throughout multi-color flow cytometry (S Mitra).

- Numerous impactful publications out of 668 total cancer-focused publications since July 2018, including:

  ⇒S. Spencer and colleagues at CU Boulder used sophisticated microscopy and cell tracking computational methods to change our current understanding for how a cell's entry into the cell cycle is controlled – instead of a single "restriction point" as previously believed, they show distinct pathways controlling different subsets of cells (*Proc Natl Acad Sci U S A* 115:E8219-e8227, 2018. PMID:30111539).

  ⇒D. Pollyea, C. Jordan, and multiple other collaborating Cancer Center investigators uncovered the mechanism underlying a highly successful (and now FDA approved) new therapy for acute myeloid leukemia (AML), showing that this therapy exploits the "addiction" of AML stem cells to metabolic processes in the mitochondria, the cellular powerhouses (*Nat Med* 24:1859-1866, 2018. PMID:30420752).

  ⇒Key studies from T. Fry and colleagues have developed methods to enhance the efficacy of CAR-T cells, an immune therapy that engineers a patient's own T-cells into cancer cell killers (*Clin Cancer Res*, 2019. PMID:31110075; *Mol Ther Oncolytics* 11:127-137, 2018. PMID:30581986).

  ⇒R. Camidge and collaborators tested a next-generation inhibitor of ALK, frequently deregulated in lung cancers, showing that this inhibitor (brigatinib) was substantially more effective than the then standard of care inhibitor (crizotinib), leading to adoption of brigatinib as the first line option (*N Engl J Med* 379(21):2027-2039, 2018. PMID:30280657).

  ⇒K. Kiseljak-Vassiliades, M. Wierman and colleagues used computational analyses and follow up studies at the bench to identify a potential new target for the treatment of Adrenocortical carcinoma (ACC), a rare but highly lethal malignancy (*Endocrinology* 159(7):2532-2544, 2018. PMID:29790920).

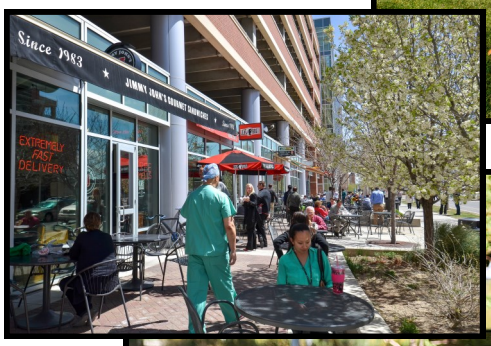
  ⇒By analyzing data from more than 1000 cigarette purchase attempts at Colorado stores, an impactful study by A. Levinson and colleagues showed how illegal tobacco sales to minors reduces the effectiveness of local tobacco policy, highlighting how simply making it illegal to sell tobacco products to minors is not enough to control youth consumption (*JAMA Pediatr* 172(10):966-972, 2018. PMID:30128544).

  ⇒In studies from a large number of Cancer Center investigators, led by D. Merrick and R. Nemenoff, the team discovered differences between lung biopsies that indicate whether or not a pre-malignant lesion will progress to malignancy, including for the types of immune cells infiltrating these lesions (*Cancer Res* 78(17):4971-4983, 2018. PMID:29997230).











Vice Chancellor for Health Affairs

Colorado AHEC Program

Mission: We work towards ensuring health equity in Colorado. We increase the diversity and distribution of the health care workforce to address health care disparities in this state. We support practice transformation throughout Colorado to ensure high quality health care 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 of the University of Colorado Anschutz Medical Campus. COAHEC is currently celebrating its 43rd year of continuous operation.

COAHEC received new five-year funding from HRSA in 2017. The current HRSA five-year cycle (2017-2022) 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 evidenced-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 health care 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 COAHEC Program office on the Anschutz Medical Campus (AMC). These regions are titled geographically based on the areas of the state in which they serve: Centennial, Central, 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 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, and the School of Dental Medicine, 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:

Josina Romero O'Connell, MD, is an assistant professor in the Department of Family Medicine in the School of Medicine. She is a clinician for Denver Health's Montbello Clinic and the Faculty Instructional Professor of the Healthcare Interest Program (HIP), an undergraduate pipeline program through Denver Health and partnering with University of Colorado Denver, Metropolitan State University of Denver, and Regis University. She is on faculty at each of these universities. She serves as PI on the HRSA grant and Co-PI for the Discover Health/Descubre La Salud NIH SEPA grant. She is pending acceptance of a new NIH grant, Discover Health/Descubre La Salud 2.0 to work with StarNet in continuation and improvement of the original grant. She is working with the School of Medicine Longitudinal Integrated Curriculum (LIC) program to develop rural LIC sites for the future curriculum change and is on faculty supporting the Rural Track Program. As a former 17-year veteran public secondary school teacher, her work's emphasis is on educating and delivering care in underserved health care throughout Colorado with an emphasis on the Spanish speaking community, a main mission for the Colorado AHEC program.

Udai (Ken) Tadikonda joined the team in November, 2019 as the Administrator for COAHEC (succeeding the now-retired Willa Buswell) and has more than 15 years of experience in accounting, finance, budget development, office administration and management, grant administration, and community programs.

Matthew Hess who joined AHEC in February 2017 as the Grant Development and Marketing Coordinator now continues as Academic Services Program Manager for COAHEC.

Samantha Hanson has over 25 years of experience in Information Technology development and oversight, primarily in healthcare and medical education.

Patti Jo Wagner has over 20 years of experience in customer service, project management, event management, and administration for many public, private and nonprofit entities. Her work has ranged from initiation and coordination of educational programs, special events, and volunteer outreach, to administration and support of executive level staff. She is currently a Program Assistant.

AHEC Accomplishments during 2019-2020:

- Provided funding for the six regional AHEC offices across Colorado to run programming. This programming reached participants from at least 45 counties, over 4,000 contact hours and reached over 65,000 Coloradans in medically underserved and rural communities.
- Provided 20,641 nights of housing for health professions students serving clinical rotations away from the Anschutz Medical Campus. This reduction of about 4,000 nights compared to the previous year is due to COVID-19 pandemic.
- Wrote and disseminated a new housing policy to address long-term housing for extended rotations.
- Conducted a virtual training event for 84 Colorado faculty and pre-health advisors who advise over 17,000 high school, two-year and four-year college students.
- Conducted interprofessional community engagement events including free health screenings, and flu shots at the National Western Stock Show, for nearly 1000 adults and children in January of 2020. Completed The AHEC Career Exploration Program (ACEP) which provided a free camp for 52 Colorado high-school students with representation from all six AHEC regions in the summer of 2019.
- Continued The Cadaver Experience/Obesity project that provided an informative educational experience for high school and community college students. This experience also provided teaching experience for students in the Master of Modern Human Anatomy program as they serve as the cadaver instructors.
- Completed the Discover Health/Descubre la Salud program grant with the NCC in its final, seventh year on April 30, 2020 at the Penrose Public Library in Colorado Springs.
- Completed and submitted a new grant proposal for NIH funding for the Discover Health/Descubre La Salud 2.0 which will capitalize on the results of the previous grant to improve statewide education and support to underserved Colorado communities suffering from a range of chronic diseases and addressing their social determinants of health. All programming will be provided in Spanish and English.
- Continued to provide support and grant management for the Urban Underserved (longitudinal) Track (UTT). The track provided students with the skills and support needed to become healthcare providers who are committed to work in urban underserved communities.
- Continued the development and oversight of The AHEC Scholars Program, an interdisciplinary education and training program with curriculum that trains individuals seeking terminal health care certifications to use those certifications in service to rural and/or underserved populations. We have enrolled over 200 students in our first two cohorts, 14 students have completed the didactic and experiential portions of the program and are in a one-year follow-up period. HRSA mandates most AHEC Scholars should complete this program in the last two years before graduation from their undergraduate education or post-high school training programs. Students in programs lasting less than two years complete a modified one-year curriculum. For each AHEC Scholar, the curriculum provides:
    - ⇒40 hours of training in interprofessional, community-based practice in a rural and/or an underserved area.
    - ⇒40 hours didactic education focused on five national core topic areas including: Interprofessional Education, Behavioral Health Integration, Social Determinants of Health, Cultural Competency, and Practice Transformation and HRSA defined health issues uniquely important to Colorado. These include: The Opioid Epidemic, Cannabis, Oral Health, Access to Mental Healthcare, Suicide, and Oil and Gas Development.

- Continued our work in the Opioid Abuse Disorder epidemic in Colorado by enrolling 566 individuals to participate in our curriculum modules since May, 2019. 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 opioid use disorder are also encouraged to participate in the training. Trainees gain knowledge in treatment, recovery, harm reduction, as well as on how to conduct opioid abuse educational outreach programs in their communities. The program has graduated 25 individuals who have completed all the modules.
- Maintaining collaborative relationships with other organizations and programs whose goals complement the AHEC mission. These include:
  - ⇒Colorado Health Extension System (CHES) coordinates and facilitates practice transformation activities across Colorado.
  - ⇒Colorado Consortium for Prescription Drug Abuse Prevention
  - ⇒Rocky Mountain Public Health Training Center
  - ⇒Patient Navigator Training Center
  - ⇒Anschutz Marketing and Recruiting Collaborative
  - ⇒National Institute of Medical Assistant Advancement
  - ⇒SNOCAP
  - ⇒CCTSI
  - ⇒Colorado Rural Health Center
  - ⇒Colorado Community Health Network
  - ⇒Colorado Department of Public Health and Environment
  - ⇒Colorado and National Health Service Corps
  - ⇒Denver Health and Hospital Authority
  - ⇒Colorado Center for Nursing Excellence
  - ⇒OCBME of CU

Looking ahead to 2020-2021

COVID-19 has caused many revisions to COAHEC programming. Changes have included canceling our AHEC Career Exploration Camp, transitioning Advisor's Day to an online format, and after attempts to change the Southern Ute Camp Experience to something virtual, canceling the event. The Cadaver Lab will be rolled out as the COAHEC High School Cadaver, Arts, and Medicine Event when we are satisfied that the new curriculum meets our current mission and goals and can take us into the future of working with cadavers as educational tools. The AHEC biennial Conference, Networking, Education, and Research (NEAR) due to roll out in September of 2020 has been postponed due to COVID-19. We will be providing some virtual learning CE opportunities in the fall and winter of 2020-2021 marketed as COAHEC "NEAR-Lite."

COAHEC is exploring ways to conduct additional pipeline programming for under-represented individuals in the time of COVID-19 and beyond. We look forward to partnering with the new Diversity, Equity, Inclusion and Community Engagement in this work. We hope to collaborate with undergraduate colleges and universities to bring mentorship opportunities to youth in rural and underserved areas. The eventual goal of pipelines supported through AHEC will be K-16 with an emphasis on statewide reach and pipeline integrity.

COAHEC will continue to work collaboratively to enhance the HRSA-mandated AHEC Scholars program and promote further success here. COVID-19 has caused some challenges as in-person meetings and seminars with potential scholars were key for recruiting and retaining students. At the start of COVID-19 restrictions in the spring of 2020, we saw an increase in students completing online modules, but we have yet to see the full impact of social distancing on the program, whether positive or negative. AHEC scholars may also suffer in numbers given the lack of technology in some areas of Colorado. We hope to enhance our current curriculum for AHEC Scholars with additional learning that is specific to COVID-19.

We have received HRSA grant funding from the CARES Act not only to enhance COVID-19 education to AHEC scholars, but to work in unique COVID-19 spaces throughout Colorado to answer to the needs of communities in this pandemic. We will partner with other groups working on COVID-19 response issues including our colleagues on campus and statewide to respond to COVID-19 pandemic concerns. We will also incorporate material that emerges from our relationships with community groups and practice transformation efforts in Colorado.

Per the HRSA mandate, CARES Act funding must include work in:

- training in mask making and wearing masks,
- mask distribution,
- production of training materials,
- translation of training materials,
- providing clinics/medical centers with PPE,
- training healthcare workers in the use of PPE,
- training on communication while wearing PPE,
- training focused on transitioning from in-person to telehealth,
- distributing or facilitating the use of community resources as telehealth devices,
- training patients on telehealth, and
- facilitating provider burnout interventions.

We await notice of further funding to deliver a new NIH program in partnership with SEPA, StarNet, OMSI, and the university, Discover Salud/Descubre la Salud 2.0 to continue our work providing healthcare outreach and education through public libraries. We are in talks with StarNet to propose and find funding for a grant that would address education and outreach on the COVID-19 vaccine, should one become available.

For additional information, please visit the AHEC website:
https://www.ucdenver.edu/life/services/ahec/Pages/index.aspx

Center for Bioethics and Humanities

The University of Colorado's Center for Bioethics and Humanities (CBH) offers an array of 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, stakeholder engagement in research, mass drug administration, college sports medicine, and conflicts of interest in medicine and research.
- **Community outreach:** CBH creates bioethics and health humanities programming that extends 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 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 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, and best practices for assessing morbidity and mortality in disasters. Wynia's research uses health services research methods to explore ethical issues in health care and public health policy. His training is in internal medicine, infectious diseases, public health, and health services research.

He also serves as a co-lead of the Stakeholder Engagement and Governance Core for the School of Medicine's Data Science to Patient Value (D2V) initiative, which is a $20 million program to bring CU to the forefront of using big data to improve the value of care delivered to patients with complex medical problems. 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.

Therese Jones, PhD, is the Associate Director of the CBH and leads our educational and training programs. She is an associate professor in the Department of Medicine, Director of the Center's Arts and Humanities in Healthcare Program, Editor of the *Journal of Medical Humanities* and, in 2015, she published a landmark textbook for those who teach health humanities, *Health Humanities Reader* (Rutgers University Press). She is currently under contract with Routledge to publish an international volume, *Handbook of Media and Health.* She teaches required and elective humanities courses for health professions students; for undergraduate students who are enrolled in the Health Humanities Minor, a collaborative curriculum between the CU Anschutz Medical Campus and the CU Denver campus; and graduate students. She also serves as the lead on the development of our 15-credit hour Graduate Certificate in Health Humanities and Ethics (HEHE), which started in 2017 and now has enrolled over 50 students.

Other leaders in the center's education and training work include **Daniel Goldberg, JD, PhD**, who is the co-leader of the Certificate program and leads the Values & Ethics domain in the campus-wide Interprofessional Education & Development Course. He is also the Associate Director for Mentored Scholarly Activity in the Bioethics, Arts, Humanities & Education domain for the School of Medicine. He also 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. In 2019, Goldberg received a highly competitive $300,000 grant from the Well Being Trust to study the effects of laws and regulations on structural stigma.

Jackie Glover, PhD, is a professor in the Department of Pediatrics and leads the center's work on clinical ethics case consultation. She serves as a lead ethics consultant for both the UCHealth 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. She is also director of the Humanities, Ethics and Professionalism Thread in the School of Medicine, which integrates bioethics and humanities content throughout the four years of the medical school curriculum. Other leaders of the center's clinical ethics work include **Karen Jones, MS, RN,** who is a Clinical Nurse Ethicist, co-chair of the Children's Hospital Colorado Ethics Committee, and Director of the hospital's Ethics Liaisons. **Brian Jackson, MD, MA,** is a critical care physician and co-chair of the Children's Hospital Colorado Ethics Committee. Brian 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. He and Glover taught the first Clinical Ethics elective as part of the HEHE certificate in the fall of 2018, again in 2019, and will teach this popular class in 2020. **Curtis Coughlin, MS,** is a genetic counselor and researcher who serves as a lead ethics consultant at Children's Hospital Colorado. **Dan Reirden, MD,** is an adolescent physician who is the Medical Director of the CHIP Youth Clinic and the TRUE Center for Gender Diversity at Children's Hospital Colorado. **Heather Fitzgerald, MS, RN,** is former nurse ethicist and the new Director of Resilience, Ethics and Wellness at the Children's Hospital Colorado. Heather is again co-chairing the National Nursing Ethics Conference at UCLA and she has been appointed to the Advisory Board for ANA's Center for Ethics and Human Rights. **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. Kristin also is an associate director for medical student preceptorships as part of the Foundations in Doctoring course and the co-lead for the Health and Society Pillar in the new curriculum for the School of Medicine. **Megan Prescott, LCSW,** is a social worker with palliative care and also a lead consultant at University Hospital. **Anne Dondapati-Allen, MDiv, PhD,** is the fourth lead consultant in the ethics consultation service at UCH. She is staff chaplain who does extensive work with staff resiliency. The center has the distinction of having seven out of our nine ethics consultants achieve the Healthcare Ethics Consultant Certification (HEC-C) from the American Society for Bioethics and Humanities, which was introduced in 2018.

Eric Campbell, PhD, 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 infrastructure of CBH. This includes hiring new faculty and research staff, fostering collaborations to facilitate research, creating a post-doctoral program for empirical researchers in bioethics and the health humanities, 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 internist, health services researcher and philosopher. He employs both empirical and conceptual methods to identify and solve cutting-edge problems at the interface of health care, policy, and bioethics.

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; e.g., http://ethicsandglobalhealth.org). 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 research 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, including being named to *Forbes* 30-under-30 list in sports.

In the last year we

- Hired Lisa Bero, PhD, who is internationally recognized for her work on evidence synthesis, bias, conflicts of interest, and use of evidence in decisions, as Chief Scientist in July 2020
- Hired two Professional Research Assistants
- Wrote 23 new research proposals: 13 to the NIH and 10 to other funders
- Grew our total research portfolio to $1,081,745
- Authored 18 articles based on original empirical research
- Built a network of collaborators across CU

The CBH maintains an Academic Leadership Council, with one representative from each of the health professional schools on the CU Anschutz 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 particular areas of interest and expertise. Members of the CBH Academic Leadership Council in 2019-2020 were Catherine Campisi, MSN, RN, PMHNP-BC (College of Nursing), Inge Wefes, PhD (Graduate School), Catherine Flaitz, DDS, MS (School of Dental Medicine), Morgan Unruh, DO (School of Medicine), Carol Runyon, MPH, PhD (Colorado School of Public Health), and Jonathan Campbell, PhD (Skaggs School Pharmacy and Pharmaceutical Sciences).

Finally, the center produces a number of programs to serve and engage key local, state, and national communities.

- The CBH Art Gallery hosted three major exhibitions in academic year 2019-2020, which were curated by Simon Zalkind. Our fall 2019 exhibit was *Mind Matters* by Todd Siler, whose work aims to inspire searching the limits of human knowledge while serving to expand our sense of aesthetics by stimulating wonderment. Over the winter and holiday season of 2020, we displayed *Small Worlds: Children's Book Illustrations* by acclaimed Russian-American illustrator Eugene Yelchin. The works in this exhibition were chosen from the enormous variety of children's books that Eugene Yelchin has illustrated. Some were created for very young audiences – children just beginning to read. We are grateful to Wayne F. Yakes, MD, for his continued and unstinting support of the Fulginiti Gallery's exhibitions program by sharing his collection of Yelchin's work and to David Thickman, MD, for lending three important works to this exhibition in addition to Rebecca Benes, whose knowledge of and love for children's book illustrations and illustrators are palpably evident in the historical overview of the field that she contributed to the exhibit publication. Our spring 2020 exhibit, *Put Me Back Like They Found Me* by artist Daisy Patton opened on March 5 and was on display for only 6 days before the Art Gallery had to close due to the COVID-19 pandemic. The exhibit, now online on our website, features embroidered portraits of victims of eugenic thinking, which continued to influence some health care practices even later in the 20th century. Patton's work centers the stories of female survivors of horrific, regular practices of forced sterilization in the United States. As of summer 2020, the Art Gallery at the Fulginiti is considered closed until further notice. The approximate number of visitors to the Art Gallery since its opening in August 2012 is 66,295.

- In 2019-2020, the CBH compiled the 13th volume of *The Human Touch*, an annual edited volume of literature and visual arts on the human aspects of health and health care, with powerful works contributed by members of the Anschutz Medical Campus community, which are being published online. This publication is supported by a generous gift from a School of Medicine alumnus and spouse. In addition, *The Curve*, a new special online edition of *The Human Touch* was launched in March of 2020 in response to COVID-19. *The Curve* publishes national and local submissions of creative/reflective writing and visual art online on a weekly basis.
- CBH faculty collaborated with the CU Law School, The Aspen Center for Social Values, and the American Association for Physician Leadership to produce the fourth annual *Aspen Ethical Leadership Program* in September 2019. The Aspen program is an executive retreat that brings together leaders from hospitals, health plans, and other health care-focused companies and institutions. Participants spent three days in intimate discussions regarding the 2019 themes: Payment System Controversies: Dollars and Dilemmas, Politics in Health Care: Health Professionals as Agents of Government, and Technological Disruptors: The Ethics of Integrating Artificial Intelligence in Clinical Care.
- In October 2019, the center partnered with the Second Chance Center to present *Returning from Incarceration: Community Health and the Journey to Reenter Society*, a presentation by Hassan A. Latif, Executive Director of Second Chance Center in Aurora. Latif serves on Governor Polis's Community Corrections Advisory Council and the Colorado Criminal Justice Reform Coalition. He is the author of the book, *Never Going Back: 7 Steps to Staying Out of Prison*. This event was sponsored with funding from the Society for Humanism in Medicine.
- The center's Music and Medicine Initiative (MAMI) hosted a fall music series featuring Julliard-trained pianist and psychiatrist Richard Kogan, MD, who presented *Schumann: Music, Mood Swings, and Madness*. In November, the series continued with a live presentation by the renowned opera soprano Renée Fleming on *Music and the Mind*, co-sponsored by the Colorado Symphony. Fleming talked about how music impacts our health and well-being. She was joined by Christopher Filley, MD, professor of neurology and behavioral science at the Marcus Institute for Brain Health. The combined MAMI fall series had an attendance of 800 including students, faculty, staff and community members and raised nearly $4,000 for the Music and Medicine Initiative.
- The 2019-2020 Arts and Medicine and Ethics Bites Lecture Series hosted five in-person noon events featuring topics such as opioids and pain, grief and healing, and Darwin and neuroscience. Check our past events page for the full list.
- Under the leadership of Jackie Glover, PhD, and Jean Abbott, MD, MPH, our faculty offer education and training programs to individuals and ethics committees at hospitals and other care delivery organizations around the state.
- The center is in partnership with CU Boulder Radio 1190 to begin production of Season Two of the *Hard Call*® podcast series. This new partnership is planning two series, *COVID Quandaries* will explore ethical issues raised by the pandemic and another on opioids, which is in development for the future. In its two years, the *Hard Call*® podcasts have received nearly 10,000 listens nationally as well as internationally and are available in iTunes, Google Play, and other major podcast hosting platforms. Selective *Hard Call*® episodes have also been adapted into educational modules for use in CU ethics curricula across the CU campuses.
- Center faculty including center director Matt Wynia, MD have been busy answering questions from the press about COVID, triage, reopening, medical marijuana, stigma, conflicts of interest, and the role of Nazi doctors in the Holocaust. See our faculty's 60+ media appearances in our newsroom.
- With support by Heather Fitzgerald, MS, RN, Jean Abbott, MD, MH, the center teams with the Colorado Healthcare Ethics Forum (CHEF) to offer an annual two-day clinical ethics education program for area clinicians and ethics committee members. The 2020 program was canceled due to COVID and a series of webinars is planned for the fall in its place. The center's outreach pillar lead, Meleah Himber, MEd, joined the CHEF board in 2019 and serves as the board's secretary and liaison to the Center for Bioethics and Humanities.
- In spring of 2020, CBH had to postpone the 5th annual *Holocaust Genocide and Contemporary Bioethics* program commemorating the involvement of health professionals in the Holocaust and other genocides due to COVID-19. 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; the program expands upon a program started by Dr. Silvers and other physicians in 2008.

In lieu of a weeklong in-person program, CBH is instead holding a series of virtual events with partner organizations. The first was a webinar on ***Crisis Triage and People with Disabilities: Historical Lessons for a Time of Covid,***presented on April 23, 2020. Panelists included Matthew Wynia, MD, MPH Director, Center for Bioethics and Humanities, Julie Reiskin, LCSW, Executive Director, Colorado Cross-Disability Coalition, and Govind Persad, JD, PhD, University of Denver, Sturm College of Law. The session explored lessons learned from eugenics and the Holocaust are informing advocacy and ethics for people with disabilities today, especially as triage protocols are designed for the pandemic. The session was moderated by Daniel Goldberg, JD, PhD, faculty at the Center for Bioethics and Humanities. Three additional virtual events are planned on *Lessons Learned from the Holocaust*, including a collaborative program with the Denver Museum of Nature and Science. Silver Sponsors for the extended 2020-2021 sponsor season include JEWISHcolorado and the Rose Community Foundation.

- In April 2020, the center created a COVID Resources and Recommendations webpage to highlight articles and resources that address ethics and health humanities issues that are salient to health care workers, policy makers, and public health professionals. This page is updated on a rolling basis per the recommendations of CBH faculty, staff, and affiliates.
- The center has organized, partnered with or participated in 8 virtual events since the pandemic shutdown began. Topics include COVID and triage, COVID and Advance Directives, Ethics and Transgender Patients, Crisis Standards of Care, and COVID and Research Ethics. To see a full list, check out our past events page.

www.coloradobioethics.org

Center for Interprofessonal Practice & 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 (IPE).

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 exploratory opportunities, classroom team-based learning, 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 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 IPE Director Mark Earnest, MD, PhD, and an IPE 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).

Leadership:
Director
Suzanne Brandenburg, MD, School of Medicine
IPE Assistant Directors
Amy Akerman, MS, PA-C, Physician Assistant Program
Doug Fish, PharmD, FCCP, Skaggs School of Pharmacy and Pharmaceutical Sciences
Scott Harpin, PhD, MPH, RN, College of Nursing
Wendy Madigosky, MD, MSPH, School of Medicine
Amy Nordon-Craft, PT, DSc, Physical Therapy Program
Lindsey Yates, DDS, MPH, School of Dental Medicine

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Interprofessional Education Program Components



The CU CIPE Education Program consists of four curricular components:

- The overall goal of Interprofessional Clinical Integrations (CI) is to provide relevant immersion experiences 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. There are two types of CI experiences (CI-1 and CI-2) which bookend our students' interprofessional education. Students' first exposure (CI-1) is through the Interprofessional Open Campus Program (IOCP) offering early exploratory interprofessional opportunities. IOCP is a co-curricular platform hosting a menu of professional development opportunities for students, faculty, and staff across our campus. First year health profession students are expected to participate in at least one IOCP offering during their first semester on campus. As a co-curricular structure, IOCP offerings compliment the professional education each student will receive in their home program. IOCP offerings are designed and administered by a various organizations and individuals within the CU Anschutz community. Each year, IOCP identifies a central theme and purposely develops several relevant activities.
- Interprofessional Education and Development (IPED), an introductory course developed by the IPE Council, involves first- and second-year students (over 1,500 students) from six health professions in a 16-week, team-based learning experience. **Students work together in a classroom setting or via on-line teams using Team Based Learning (TBL) over two semesters (eight sessions in the spring of year 1 and eight sessions in the fall of year 2).**

Three competency domains are addressed meeting national accreditation standards and participating school requirements: Teamwork & Collaboration, Ethics & Values, and Quality & Safety.

- 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 four hours of video-monitored interprofessional team simulations. Scenarios include acute care, outpatient, and home visit settings.
- 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 Interprofessional Clinical Integrations Program (CI-2) 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 campuswide engagement through a standardized student assessment tool aligned with the Interprofessional Education Collaborate (IPEC) 2016 competencies, which are endorsed by the Liaison Committee for Medical Education (LCME), Commission on Osteopathic College Accreditation (COCA), and more than 60 other health professional organizations.

Faculty Involvement

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

Key Program Accomplishments 2019-2020

The CU Center for Interprofessional Practice and Education reached over 2,000 students in 2019-20 and focused on expanding impact and increasing engagement. Initiatives in support of these efforts include:

Topical theme for the Interprofessional Open Campus Program (IOCP) The theme for 2019 -20 IOCP was Responding to the Opioid Crisis. This co-curricular requirement for students during their first semester on campus provides an early opportunity to network across professions, and complements professional training and development. CU CIPE hosted robust programing centered on the theme. This was achieved by intentionally collaborating with numerous campus units who offered several theme-focused activities. Examples include an 'escape room' exercise, a film series, and a book club featuring the One Book One Campus 2019 selection, *Dreamland: The True Tale of America's Opiate Epidemic* by Sam Quinones.

Expansion of Clinical Transformations (CT) content and relevancy by integrating new cases that address important common public health issues, the opioid and mental health crises, using an interprofessional team approach.

Interprofessional Education focused Federally Qualified Health Center in Aurora, Colorado

CU CIPE is a key stakeholder and participant in the development of The Aurora Community Health Commons. The anchor of the project is an Interprofessional Education focused Federally Qualified Health Center via a partnership between the University of Colorado Anschutz Medical Campus and Salud Family Health Centers.

Partnership in Education, Training, and Research Advancement (PETRA) is an NIH-funded grant awarded to the University of Zimbabwe College of Health Sciences. The CU CIPE Director is participating in grant activities focusing on two of the project aims. These pertain to the development new interprofessional education and collaborative practice curricula, and to advances in the quality and numbers of health professionals retained in areas where they are most needed in Zimbabwe by developing, implementing, evaluating, and disseminating innovative interprofessional health education initiatives.

CU CIPE Curricular Redesign is underway as part of a strategic planning process. Curricular efforts reinforce the shared responsibility of all health professions to address the complex health care problems of society as they strive to improve the health of patients and populations.

Adaptation to the Coronavirus Pandemic with new and modified curricular elements for both current students and for students starting in the fall 2020.

For additional information on the CU Center for Interprofessional Practice and Education (CU CIPE), please see our website: http://www.ucdenver.edu/anschutz/education/IPE/Pages/Default.aspx

Multidisciplinary Center on Aging

The CU Anschutz Multidisciplinary Center on Aging includes the following focus areas: Research, Clinical, Education, Outreach/ Engagement

The center is guided by a multidisciplinary CU Anschutz Medical Campus Executive Committee that includes clinicians, researchers, and faculty representatives from each CU Anschutz Medical Campus school. In 2019, the center added two faculty to its executive committee: Jen Lapsley-Stevens, PhD, professor of physical medicine and rehabilitation, and Jean Kutner, MD, professor of medicine and Chief Medical Officer, UCH.

Research

Research now includes more than $6 million annually in funded grant projects.

- **MoTrPAC (Molecular Transducers of Physical Activity in Humans):** Wendy Kohrt, PhD, directs one of the six clinical centers for this $180M initiative sponsored by the NIH Common Fund and she chairs its executive committee
- **SCORE (Specialized Center of Research on Sex Differences):** This innovative interdisciplinary NIH research program focuses on sex differences and major medical conditions affecting women.
- **T32 Integrative Physiology of Aging Training Grant:** Since 2001, this NIH grant has supported five pre-doctoral and five post-doctoral trainees doing aging research with University faculty mentors.
- **Eastern Colorado GRECC (Geriatric Research Education and Clinical Center):** The most recent of the 20 national GRECCs, our program supports research, education, and clinical demonstrations projects. It also supports four Advanced Geriatric Fellows (MD and PhD).
- **CU Anschutz Advance Practice Provider (APP) Geriatric Training Program:** The first of its kind, our APP Geriatric Training Program attracts, and trains APPs interested in providing geriatric care in Colorado.
- **Conversations that Change Culture:** Through a grant funded by NextFifty Foundation, we trained 180 new Advanced Care Planning Guides Care Planning Certification Volunteers.
- **Multidisciplinary Elder Protection Clinical Team:** This is a two-year award from Colorado Department of Criminal Justice ($831,972) to help reduce elder abuse.

Clinical

- Clinical sites at UCH and Lone Tree, and a new Senior Clinic at Kavod opened 8/2020.
- A multidisciplinary falls prevention clinic was created at UCH; a similar falls prevention clinic has been initiated at the Rocky Mountain Regional VA.
- In response to COVID-19, a CU Anschutz Multidisciplinary Student Outreach Team (medicine, pharmacy, and nursing) was formed to make calls to check up on the health of isolated older adults' patients.

Education

- **Geriatric Fellowships Training:** We again filled all our Geriatric Medicine fellowship positions, receiving over 40 application for our four clinical spots for FY20-21. We also have 10 T32 training slots (pre/post-doc), 4 GRECC Advanced Geriatrics slots (MD/PhD) and have begun recruiting for our 2 Geriatric APP positions.
- **Other Trainings:** Over 50 Internal Medicine Residents receive outpatient and subacute care training each year; geriatrics faculty attend on the acute care of the elderly inpatient service at UCH; 200+ medical students annually are taught principles of geriatric care in classrooms/clinics
- **Research Team Training:** The center helped create T32 Team Science Training program on the Anschutz Medical Campus. Initially developed as part of the Applied Physiology of Aging T32, it has now expanded to encompass all the T32 trainees in the Department of Medicine. The program assists junior researchers to build and maintain in research teams and to individually enhance their leadership skills

Outreach/Engagement

Colorado State Government

- SB20-022: Loan Forgiveness for Geriatric Trained Advance Practice Providers in Rural and Underserved Colorado. Initiated by the center and sponsored by Sen. Jessie Danielson. The bill passed Appropriations Committee, but the further consideration was cancelled due to COVID shutdown at State Capitol. The lesgislation will be resubmitted in 2021.
- Colorado Senior Lobby (CSL) –Jodi Waterhouse, center program manager, was elected to a two-year term on CSL Board of Directors (2020-2022)
- The center actively participates in 1) Colorado Strategic Action Planning Group on Aging (SAPGA); 2) Bell Policy Institute; 3) Colorado Financial Security Coalition
- Robert Schwartz, MD, was appointed to the Governor's Residential Care Task Force
- Dan Matlock, MD, was appointed to the Expert Emergency Epidemic Response Advisory Committee

Community

- Robert Schwartz, MD, was nominated to the **NextFifty Initiative** Board of Directors
- The center is a founding member of the **Colorado Consortium on Aging Research and Education** (CoCare); Schwartz was elected president for 2019-21
- The center created the **Movers & Shakers in Aging Group** to bring together thought leaders in government, industry, nonprofits, and community to help solve complex aging issues for Colorado
- In collaboration with AARP, MCoA created the following Town Hall educational opportunities:
  - ⇒Advanced Care Planning Webinar (Hillary Lum, MD)
  - ⇒A Community and Clinical Look into COVID-19 (Hillary Lum, MD, and Rep. Jason Crow)
  - ⇒Advanced Care Planning & Emotional Health Webinar (Hillary Lum, MD, and Samantha Farro, PhD)
  - ⇒AARP Colorado Health & Wellness Series (4-week series)
  - ⇒AARP National Town Hall Navigating the Global Coronavirus Pandemic (Steve Johnson, MD
- The center and the AMC Center for Bioethics created and co-hosted two Webinar Town Halls:
  - ⇒Colorado Crisis Standards of Care
  - ⇒Advanced Care Directives During COVID-19: Myths, Facts, and Ethical Challenges
- The center created an ongoing collaboration with Denver Public Library (DPL) to offer a **Summer 2020 Health and Wellness in Aging** educational series that is delivered virtually throughout Metro Area.
- The center helped create the first **CU Anschutz Elder Abuse All-Campus Task Force**; led to the submission of the recently funded Elder Abuse grant from the State of Colorado.
- The center created the first all-campus **CU Anschutz Alzheimer's Models of Care Task Force** to develop systematic frameworks for patients, caregivers, and family members following a dementia diagnosis.

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 in order 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 personally tailored prevention, diagnosis, and treatment techniques. These efforts serve the center's overarching goal to integrate personalized medicine into our routine health care to improve the lives of our patients.

Center accomplishments this past year

- Held the 3rd annual CCPM retreat
- Launched a 'unified' consent in MyHealthConnection that eliminates the two-stage process of consenting to participate in the biobank followed by a consent to receive clinically actionable results, resulting in an increase in the consent rate (currently 151,462 participants)
- Established the CCPM Access to Biobank Resources Committee (ABC) to work with researchers to allow access to genetic data (32,000 samples genotyped to date) and biospecimens from biobank participants

- PICColo built and turned on PGx clinical decision support (CDS) tools across the UCHealth system for 10 medications affected by variation in the *CYP2C19* gene
- Compass approaches their 1,000th data delivery milestone
- The CCPM Biobank Laboratory launched a clinical diagnostic test for SARS-CoV-2 / COVID-19 in March, 2020, and has provided nearly 50,000 results to date
- Compass has supported 54 COVID data analytics projects since March 2020
- Launched a COVID-19 survey to over 125,000 biobank participants through the CCPM Newsletter followed by a 10 percent response rate
- Established a formal partnership with CU Innovations through a dedicated director of strategy and innovation to lead business development, strategic planning, alliance management, and provide support in pursuing opportunities to partner with industry organizations, with a goal of CCPM financial sustainability by 2025
- Appointed a CCPM Medical Director to develop innovative and scalable processes for large-scale return of clinically actionable genetic test results
- Recruited new Associate Director of Compass
- Executed an agreement with Regeneron Genetics Center (RGC) to whole exome sequence 450,000 patients over five years
- Established a formal agreement with UCHealth to scale up clinical operations to meet the RGC goal of 100,000 patients per year, including a dedicated Program Manager and Project Coordinator
- Faculty in the Division of Biomedical Informatics & Personalized Medicine have received >$33M in grant funds to date, of which >$6M was awarded in FY20

Plans for the coming year

- Expand program reach and enrollment with a goal of 100,000 UCHealth participants with biospecimens per year
- Expand CCPM's data science infrastructure, leadership, and deliverables by creating a new unit: Translational Informatics Services
- Retire the high-performance computing infrastructure (Rosalind) in February 2021, and expand our contract with Google Cloud through Compass to reduce the dependency of on premises computing
- Continue the development of novel methods for estimating polygenic risk scores (PRS) in ethnically diverse patient populations with the ultimate goal of performing a PRS clinical trial
- Establish a new agreement with RGC that provides resources and enables an innovative platform for return of secondary findings
- Expand PGx implementation by releasing results for three additional PGx genes (*SLCO1B1, CYP2C9, DPYD*), impacting 7 additional drugs
- Execute 1-3 strategic commercial partnerships focused on R&D, innovation, and alternative revenue streams that leverage CCPM capabilities and expertise, biobank services and data, and Health Data Compass
- Update and revise the CCPM Strategic Plan to reflect a renewed focus on long-term sustainability

Key Components of the Center:

Biobank

Overview: Generate genetic data to advance research, discovery, and clinical implementation

Accomplishments over the past year

- Biobank sample processing to date:
- 47,087 samples received
- 32,489 accessioned
- 32,189 DNA extracted
- 30,537 genotyped
- Established high-throughput clinical diagnostic assay for SARS-CoV-2 virus. Responsible for the majority of clinical testing at UCHealth since July 2020

- Invited oral presentation at Association for Molecular Pathology annual meeting. "Perspective on Establishing a Biorepository for Clinical and Research Use," Baltimore, MD. November 7-9, 2019
- Successful compliance with all CAP proficiency testing
- Validated version 2 of the genotyping array
- Designed version 3 of the genotyping array
- Validated Factor V Leiden, prothrombin, and hemochromatosis "Blood Disorders Panel" for return of clinical testing to participants
- Expanded staffing to include a laboratory manager and two additional laboratory technologists
- Implemented core features of the Laboratory Information System

Plans for the coming year

- Hire Assistant / Associate Biobank Director and up to four additional laboratory technologists
- Validate version three of the genotyping array; stand up/validate Illumina's new Global Diversity Array (DGA) pending funding
- Begin distribution of DNA for research use as requested
- CAP accreditation for Biorepository and Molecular Pathology / Molecular Microbiology
- Collect and store serum for research use
- Implement additional features of the Laboratory Information System
- Extract and ship DNA samples for Regeneron according to existing agreement

Clinical Operations

Overview: Biobanking clinical operations refers to all operational aspects of patient recruitment, sample collection, patient and provider education and engagement (i.e., marketing), and coordination of activities between the clinical environment (hospital, clinics) and the CCPM Biobank to support the return of results to patients.

Accomplishments over the past year

- Consented an additional 50,000 participants, collected 17,000 samples. Total consented= 151,462 and total samples collected=63,200
- Launched unified consent (for research and clinical return of results) in October 2019
- Sent quarterly newsletters to all biobank participants via email
- Developed and administered COVID-19 survey to 125K biobank participants (June 2020); 12K responses to date
- Worked with Health Data Compass to develop Biobank Participant Database to track participants and facilitate/ monitor outreach activities over time
- Engaged with UC Health-affiliated marketing firm to enhance participant engagement (via newsletters, onboarding, website)
- Engaged members of ACCORDs to begin development of new enrollment video
- Met with UCH PFAC groups to discuss options for more effectively engaging these groups in biobank activities
- Administered clinical consent to 10,000 participants for return of results
- **PGx**
    - ⇒Returned *CYP2C19* PGx results to 900 participants
    - ⇒Built and turned on PGx clinical decision support (CDS) tools across the UCHealth system for 10 medications (clopidogrel, voriconazole, citalopram, escitalopram, clobazam, brivaracetam, omeprazole, pantoprazole, lansoprazole, dexlansoprazole)
        - These tools have alerted in the clinical setting for 38 unique biobank participants
    - ⇒Conducted over 100 stakeholder meetings to socialize the PGx initiative and obtain feedback on the PGx CDS tools
    - ⇒Created the Pharmacogenomics & Clinical Integration Program (PGx-CLIPr), with the goals of 1) developing innovative clinical integration solutions and 2) fostering PGx implementation and outcomes research locally and nationally
    - ⇒Developed a detailed implementation science-based evaluation plan in collaboration with ACCORDs
    - ⇒Contributed data to the national IGNITE PGx network – two manuscripts under review, *JAMA Netw Open*

⇒Contributed data to the national IGNITE PGx network – two manuscripts under review, *JAMA Netw Open*

- **Non-PGx**

⇒Developed model for return of non-PGx results via telephone (vs. in person)

⇒Established telemedicine/telehealth/virtual visit consultation as next major initiative for results return

- Hired Clinician Educator, Elizabeth Kudron, MD

⇒Developed curriculum for engaging providers in person, virtually, asynchronous on-line learning.

Plans for the coming year

- PGx

⇒Return PGx results for additional genes (*SLCO1B1, CYP2C9, DPYD*)

⇒Continue to build and turn on PGx CDS tools for clinically-actionable medications via our user-centered CDS design process, thus expanding the clinical reach of our initiative into new therapeutic areas (e.g., oncology)

⇒Submit a manuscript describing the scalable framework we have used to implement and evaluate our PGx CDS applications

⇒Submit a manuscript describing the implementation science-based approach we used to develop our comprehensive PGx evaluation plan

⇒Develop non-automated CDS services to support and enhance the PGx implementation initiative

⇒Through industry partnerships, expand the scope of our PGx genotyping and clinical informatics capabilities

⇒Through industry and payer partnerships, begin to evaluate the health economics and outcomes of preemptive genotyping at scale in a large healthcare system

⇒Participate in national PGx networks to foster research and implementation advancements in the field

- Enrollment

⇒Goal = 100,000 samples per year for next four years

⇒Targeted enrollment in specialty clinics (transplant, psychiatry, behavioral health, acute medicine, primary care, cancer center)

⇒Increase diversity of participant population

- Education: provide biobank updates and education around return of results to providers and clinical staff at primary care and specialty care forums across UC Health; update patient and provider education materials on website; continue dissemination of brochures, patient information sheets; develop new patient video to support enrollment
- Patient advisory committees: optimize contribution/involvement of UCHealth Patient Family Advisory Council (PFAC); establish new advisory group with diverse representation of biobank participants
- Marketing: continue to work with marketing firm to enhance participant; success of these efforts will be measured in terms of open rates for on-boarding messages, visits to website (number of visitors and content uptake), open rates for eNewsletters, number of followers on social media platforms
- Patient engagement/outreach: newsletters 4x/year, develop social media platform, update website; re-administer COVID-19 survey; develop/administer additional health-related surveys
- Establish process for re-contact of biobank participants for new research studies
- Return of results

⇒Return genotyping results (PGx) to first 30,000 participants

⇒Test new process for return of secondary findings (via telephone)

- Establish clinical workflow for virtual visits with patients and consultation for providers
  - ♦ Pharmacists, genetic counselors, medical geneticists
- Expand web-available content linked from electronic health record
- Explore return of results to Virtual Health Center for disease prevention

⇒Return secondary findings to first ~300 participants (~1% of genotyped)

- Program Evaluation: complete and begin implementation of evaluation plan for return of results (PGx and non-PGx)

Health Data Compass

Overview: Health Data Compass is a shared, multi-institutional resource of integrated data and analytic services designed to transform data-driven processes in clinical research, operational excellence, molecular discovery, and precision medicine. We achieve this by maintaining a comprehensive, scalable, data integration and management system, implementing priority use cases, providing analytic infrastructures, and fostering forward-thinking approaches to technological solutions.

Accomplishments over the past year

- Deployed Eureka V3.0 with expanded analytics capabilities and internet access (#1 Wish List)
- Supported first-in-class deployed AI-based predictive model for ventilator allocation during peak COVID pandemic
- Expanded data frequency to meet more timely data requirements for COVID activities
- Provided nearly 1,000 high-quality data sets across wide range of investigators, students and staff, including 54 rapid turnaround COVID data requests for local and national studies, and participated in multiple successful (funded) grant awards and CCPM industry partnerships
- Participated in multiple national data sharing initiatives including NCATS N3C (COVID), FDA BEST (blood products surveillance), CDC VISION (immunization safety surveillance), and specialty-specific longitudinal registries
- Lead reference site for Google Cloud Platform EDU/Health Data enterprise data warehouse; negotiated significant price discounts and additional credits over next 3 years
- Expanded self-service access via TriNetX with 450 current users (largest user base across all TriNetX deployments)
- Internal deployment of new self-service tool (ATLAS)
- Integrated cancer center registry; CCPM biobank participant registry

Plans for the coming year

- Roll out a fully statistically de-identified UCHealth research dataset
- Free-text clinical note deidentification and targeted term extraction on targeted clinical notes (radiology, pathology)
- HIPAA-compliant lat/long geocoding of patient addresses
- Add social determinants of health third-party data, images, physiological signals
- Add CDPHE state immunization registry, Colorado state cancer registry
- Incorporate cloud-based high-performance computing platform to replace CCPM Rosalind
- Migrate on-premise bioinformatics tools (BC Platform) to HDC cloud
- Expand existing HDC educational workshops into cloud-based analytics
- Continue expanding capabilities in Eureka Release 4.0, focus on expanding AI/Machine Learning infrastructure to support novel AI-based modeling
- Expand self-service tools, including pre-approved deidentified self-service data extraction – deploy ATLAS and Leaf
- Expand technical relationship with Google Cloud Platform healthcare and life sciences teams via joint technology projects and presentations

Translational Informatics and Computational Resource (TICR)/Translational Informatics Service (TIS)

Overview: The TICR/TIS pursues 3 objectives: 1) to support CCPM clinical and research operations; 2) to disseminate knowledge generated by CCPM and provide education; 3) to perform translational research.

Operations: Multi-omics Data Operations (MODO) is an operational unit run by Nick Rafaels. MODO is maintaining a pipeline for return of genetic results for clinical decision support, performs quality control and analysis of genotyping data from the biobank, runs analyses and distributes data to the university researchers, and handles operational requests from CCPM industry partners.

Dissemination of knowledge: The Colorado Biobank Engine (CBE) is a flagship application currently being developed by TIS, which will provide access to the results of association studies generated by CCPM/BIPM faculty in collaboration with MODO for > 60 million genetic variants, ~600 phenotypes and >25,000 biobank participants. The CBE uses graphics user interface and will not require knowledge of informatics from the user. Tzu Phang leads education of researchers and scientists in genomics and electronic health records data analysis methods, biobank, and personalized and genomic medicine.

Innovation: The TIS will work in close collaboration with Compass to identify and explore clinically relevant questions that can be answered using biobank genetic data and clinical data in Compass. The TIS will implement methods and tools for genetic and clinical data analysis including next generation sequencing data pipelines, text mining, natural language processing, and others. The long-term goal of the innovation arm of the TIS is to transform CCPM expertise and data into translational and clinical research within the university as well as partnerships with biomedical industry.

Accomplishments over the past year

- Processed, performed quality control, and imputed genotyping data generated by CCPM biobank. The imputed dataset contains data for ~66 million variants for 25,362 biobank participants. This data freeze has been delivered to Health Data Compass (HDC) and is being used for research projects including COVID-19 genetic association studies
- Delivered data for research projects for university faculty in collaboration with ABC and Colorado Anschutz Research Genetics Organization (CARGO)
- Implemented state-of-the-art SAIGE pipeline for genome-wide association studies and LDPred2 pipeline to calculate polygenic risk scores for translation research
- Developed Google Cloud HPC solution to service current Rosalind users in expectation of Rosalind Retirement
- The Multi-Omics Data Organization (MODO) unit has been formed to focus on managing clinical and research analytical pipelines for biobank data
- Created CCPM Education Working Group to develop a web portal to provide comprehensive education to the wide range of groups that may interact with personalized medicine, genomics and/or the biobank materials and datasets

Plans for the coming year

- Finalize TIS research protocol and receive COMIRB approval, which will facilitate clinical and genetic data integration together with HDC
- Migrate Rosalind users, clinical and research pipelines to Google Cloud infrastructure before Rosalind retirement in February 2021
- In collaboration with BC Platforms and HDC launch BC|RQuest service, which will provide access to aggregated CCPM clinical and genetic data to pharmaceutical industry
- Perform SAIGE GWAS analysis for hundreds of phenotypes designed by BIPM faculty. Jointly with HDC explore novel methods to define clinically relevant cohorts such as text mining and natural language processing
- Develop and launch Colorado Biobank Engine, a graphics-user interface portal to explore biobank data and results of genetic association studies
- Provide genetic data delivery services to university researchers and CCPM industry partners
- Develop and operationalize new data analysis pipelines for whole genome, exome, transcriptome, copy number changes analysis, HLA genotyping, and others
- Develop genetic and genomic data analysis workshop to teach researchers how to analyze data generated at CCPM

The Colorado Anschutz Research Genetics Organization (CARGO)

Overview: CARGO was established to be a versatile service core that assist researchers performing studies in molecular biology, biotechnology, and genotyping. We provide high-quality, reproducible, economical research services to the internal and external scientific community in the Anschutz Medical Campus.

Accomplishments over the past year

- Optimization of the strategic plan and training of all staff to ensure the CARGO facility is both scientifically and technologically competitive, cost efficient, and sustainable
- Continued to expand on our expert advisory committee to provide well informed input on strategic decision making and customized project planning
- Utilized funds to hire new staff, new equipment, proper tools, and technology to enhance and optimize core services in alignment with our strategic mission
- Improved on the marketing and accessibility of the core facility by the creation of a new live website with information regarding the core facility, points of contact, and services
- Expanded services to include and collaborate with both internal and external investigators, other core facilities and outside organizations
- Continued to serve as a demo site for companies including TECAN and Autogen to educate internal and external investigators in the mid-west (*e.g.* Fluid handling and normalization, nucleic acid extractions)
- Processed over 3,000 samples with 30 percent of our total customers have returning for additional service
- Continued research efforts with the CU COVID-19 epigenetics research projects (DNA extraction, bisulfite conversion, methylation, and genotyping)
- Partnerships and mentorships with Aurora Public High School (junior and senior level underrepesented students)

Plans for the coming year

- Offer training opportunities for faculty, staff, and students
- Partner with CCPM, Aurora Public Schools and Community College of Aurora to offer training for disadvantaged and undergraduate students
- Optimize a strategy to address challenges and solutions to enhancing efficiency, sharing, and collaborative efforts
- Continue to serve as a demo site, partnering with other companies in the field to improve on professional development and increase knowledge of technological innovation
- Collaborate with additional experts to further optimize decision making and project planning
- Offer a wider range of customizable nucleic acid extractions and genotyping arrays
- Offer additional fluid handling services for sequencing cores (automated library prep)
- Continue to partner with the internal and external CU community in the design and execution of their projects
- Develop a core strategic plan that can help CARGO facilitate coordination with other core facilities
- Create an optimized model for financial management
- Development and validation of COVID-19-associated epigenetic signatures

BIPM Division

Overview: Recruit faculty and staff to develop personalized medicine research and care across our campuses and health systems.

Accomplishments over the past year

- Recruitment of 1 new primary faculty (for a total of 16 primary faculty and 21 secondary faculty)
- NIH Grant Submissions = $67,203,295 **(n=64)**
- Other Federal Grant Submissions = $1,335,822 (**n=1**)
- Foundation Grant Submissions = $5,704,054 **(n=9)**
- Grant funding received FY20 = $7,356,023
- Industry funding received FY20 = $11,700,000

Plans for the coming year

Continued campus outreach through weekly research seminars and journal club activities

Strategy and Innovation

Overview: CCPM has emphasized the importance of strategic partnering and innovation, with a focus on reaching financial sustainability within CCPM. CCPM is now partnering with CU Innovations and has a dedicated director of strategy and innovation to drive alternative revenue streams through strategic partnerships and collaborations.

Accomplishments over the past year

- Closed 2 strategic partnerships aimed at bringing significant revenue to the center: an $11.7M, 5-year collaboration with Regeneron Genetics Center with the aim of building biobank participants to over
- 450,000, and an additional partnership with BC Platforms and its newly launched BC|RQUEST platform whereby CCPM can connect seamlessly with industry research collaborators to participate as a data partner in research projects by utilizing pre-established BC Platforms tools
- Developed a pipeline of over 15 industry partnering opportunities ranging from product development and validation with large multinational corporations to novel technology co-development collaborations with start-up companies

Goals for the coming year

- Pursue the establishment of a Center of Excellence for Personalized Medicine—a collaboration with Illumina and a payer partner that will focus on bringing genomics to the point of care
- Execute one to three partnerships with co-development partners to develop and validate novel technologies in the personalized medicine space
- Execute at least one multinational partnership which leverages Health Data Compass as a data asset

Personalized Ancestry Information Resource (PAIR)

Overview: PAIR serves as a resource to CCPM and the wider Anschutz community to leverage ancestry (from global to fine-scale to relatedness) in biobank discoveries. PAIR will additionally provide an ancestry product for the biobank.

Accomplishments over the past year

- Began analyses on the first official freeze of CCPM biobank genotype data (~25,000 participants). PAIR serves as alpha testers and first-line users for data QC and rollout pipelines developed by TICR. PAIR Instructor Jonathan Shortt, PhD, contributed relevant metadata to TICR necessary for biobank use both within and outside CCPM. Working closely with TICR on research data availability and access.
- PAIR Director Christopher Gignoux, PhD, led development of a research plan (with TICR and Laura Wiley, PhD) to perform primary analyses for initial CCPM-wide manuscript and from COMPASS billing code data as a resource for investigators in CCPM and campus-wide
- Five new grants funded, including one R01 as contact PI, 1 R01 ($1.5M/yr total) as MPI, and two as PI of subcontract. Currently building a consortium linking health systems with research cohorts and DTC companies to predict genetic risk in globally diverse populations across >20 studies
- Hosted meeting on epidemiological studies in diverse and underrepresented populations, sponsored by the Chan Zuckerberg Initiative, which included ~50 participants and invited speakers from NIH, 23andMe, Genentech, National Marrow Donor Program/BeTheMatch, others
- Presented a poster showing preliminary ancestry data and genome-wide association studies for common conditions in 25K CCPM biobank participants at the *American Society of Human Genetics* annual meeting in 2019 (Shortt) and the Keystone Conference on Personalized Medicine in 2020 (Gignoux)
- PAIR lab members presented at major meetings, including the *American Society of Human Genetics* and *Society for Molecular Biology and Evolution*
- Developed a reproducible pipeline for global ancestry analysis based on broad global populations from publicly available high quality genetic datasets, and calibrated with extensive simulations. Global ancestry, along with maternal/paternal haplogroups and Neanderthal ancestry, is expected to be one of the core features in the first version of the CCPM ancestry product

- Hosted a focus group consisting of about a dozen biobank participants to assess their knowledge of genetic ancestry, gauge their interest in different ancestry product features, and evaluate educational needs for such a product
- Began collaboration with other CCPM researchers to gain access to electronic health records (EHR) and genotypes (where possible) of CCPM biobank participants and UCHealth patients to study COVID-19 severity risk factors. In this research, Gignoux serves as a primary investigator, co-leading the COVID-19 working group along with Kathleen Barnes, PhD
- Hired Meng Lin, PhD, as postdoctoral researcher in the group, who led imputation of CCPM biobank data and is a critical member of multiple CCPM operations teams
- Katie Marker, HMGGP student, joined the group full time. Had rotations from both her and Jack Gugel (IQBio, CU-Boulder). Began joint lab meetings with Matthew Keller and Luke Evans at the Institute for Behavioral Genetics in Boulder
- Gignoux served as sponsor and mentor for several CCPM members: F32 application for Dr. Harrison (Norman Lab), K08 application for Dr. Lazorwitz (Ob-Gyn, CCPM)
- Collaborated on PAIR-focused manuscripts in prep with faculty in Dermatology & OB-GYN
- Developed collaboration and partnership along with the Cancer Center to focus on disparities and identify shared initiatives. Gignoux is a co-I on a current supplement and Gignoux and Shortt will assist the CC in their core grant renewal, fall 2020
- PAIR analyst Cole Williams developed PONDEROSA, an algorithm for identifying relatives in large datasets. Manuscript available as preprint, code available on Github and submitted to the American Journal of Human Genetics (August 2020). Shortt applied PONDEROSA to the CCPM biobank data, identifying a number of family structures
- Gignoux is continuing to serve on NHGRI Ancestry and Diversity Working Group, Complex Disease Working Group, NIH F Study Section. Numerous committees on campus including SIRC, Global Health Program; HMGGP admissions, retreat, and seminar committees; CCPM Executive Committee, CCPM Biobank Access Committee, CCPM Biobank Operations, CCPM Seminar Organizer in FY20. Course Instructor for Evolutionary Genomics and HMGGP survey course, spring semester

Plans for the coming year

- Preliminary PAIR product rollout across first ~34,000 participants (comprising first two official freezes of genotype data) in the biobank
- Release two flagship CCPM-focused papers: our initial report, as well as genome-wide association studies across major disease and trait billing codes for the first ~34,000 participants in the biobank in collaboration with TICR, Compass, other operational units in CCPM
- Lead COVID-19 severity and susceptibility investigations using data CCPM biobank data and UCHealth EHR data obtained through Compass
- Continue to work with other groups (regulatory & operations) to develop appropriate access to ancestry results outside of the clinical/medical domain
- Continue to develop algorithms and contribute to publications, including novel algorithms to harness relatedness information relevant to clinicians and researchers alike. Submit our paternal ancestry algorithm, SNAPPY, for publication
- Present results as posters and talks within the Anschutz community, and at major international meetings as travel to and participation in such meetings resumes
- Work with education team in CCPM to develop genetic ancestry materials relevant to CCPM participants
- Outreach: continue to contribute to the CCPM newsletter (Discover), provide slides and materials, contribute to additional focus groups
- Continue to serve on same national and local committees/working groups

Education

Overview: A core mission of the CCPM is to provide personalized medicine education to current and next-generation health care professionals, scientific researchers, and the community.

Accomplishments over the past year

- Presentations at faculty meetings and/or Grand Rounds to nine different departments & large regional audience
- Provided educational sessions to all second and third year Internal Medicine residents
- Completed local needs assessment of graduate medical trainees affiliated with University of Colorado (CU) for Personalized Medicine educational efforts
- Created and revised educational materials for pharmacogenetic results related to two genes and eleven distinct medications
- Created a four-hour online course in personalized medicine for graduate medical trainees and practicing providers
- Awarded competitive renewal of Program for Academic Clinician Educators (PACE) grant to complete development of Graduate Certificate Program in Personalized Medicine
- Started development of Graduate Certificate Program in Personalized Medicine with all primary instructors identified and program approved by CU Graduate School
- Improved teaching skills of faculty teaching in the Graduate Certificate Program in Personalized Medicine through completion of Online Skills Mastery (OSM) course offered by the Office of Digital Education (ODE)
- Reviewed and updated biobank website to include additional biobank participant and provider educational resources
- Created easily accessible links to biobank provider education on UCHealth Provider Portal
- Active participation of BIPM primary faculty in the HMGGP PhD program (course co-directorship, teaching, committee membership/chairing, student mentorship)
- Developed and delivered omics curriculum for the University of Colorado Programs to Increase Diversity Among Individuals Engaged in Health-Related Research (PRIDE)

Plans for the coming year

- Complete development of Graduate Certificate Program in Personalized Medicine with planned first enrollment date fall 2021
- Marketing and recruitment of students for Personalized Medicine certificate program
- Continue development of educational resources as needed for return of results
- Obtain Continuing Medical Education (CME) credit for Personalized Medicine educational course and offer course in a variety of online formats for busy clinicians
- Continue provider engagement through presentations to divisions and departments, with focus on ambulatory primary care
- Expand graduate medical trainee educational efforts and offer Personalized Medicine course to all graduate medical trainees affiliated with CU in an online platform
- Continue website development to optimize ease of access to educational resources
- Evaluation: Assess frequency of use of educational materials & change in knowledge gaps

Center Leadership
Kathleen C. Barnes, PhD, Director, Colorado Center for Personalized Medicine and Division Head, Division of Biomedical Informatics and Personalized Medicine
David Kao, MD, Medical Director
Michael Kahn, MD, PhD, Interim Director, Compass (through October, 2020)
Ian Brooks, PhD, Associate Director, Compass
Rasika A. Mathias, ScD, Director, Research
Kristy Crooks, PhD, Director, CCPM Biobank
Brett Peterson, MBA, Director, Strategy & Innovation
Emily Hearst, MHSA, Program Manager, Clinical Operations
Sandra Logue, MA, CRA Division Administrator/Interim Director, Finance & Administration
Christine Aquilante, PharmD, Director, PGx-CLIPr
Monica Campbell, MS, Associate Director, CARGO
Chris Gignoux, PhD, Director, PAIR program
Jan Lowery, PhD, Associate Director, Participant Engagement

Colorado Clinical and Translational Sciences Institute

The Colorado Clinical and Translational Sciences Institute (CCTSI) is a collaboration between the University of Colorado Anschutz Medical Campus, University of Colorado Denver, University of Colorado Boulder, Colorado State University, six affiliated hospitals and health care organizations, as well as multiple community organizations with a goal of accelerating the translation of research discoveries into improved patient care and public health. 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, Kaiser Permanente Colorado, and the private sector.

The CCTSI is a National Institutes of Health (NIH/NCATS)-funded research institute at CU Anschutz. It is part of the national consortium of more than 60 CTSA institutional hubs throughout the United States and is funded by one of the largest federal research grants awarded to the state of Colorado. The CCTSI also receives considerable institutional support from CU Anschutz, CU Boulder, CSU and its affiliated hospitals. The CCTSI has more than 6,000 individual members who benefit from its services, funding sources, training programs, and other resources. The CCTSI functions through 15 major programs, each with multiple cores, including: 1) Informatics, 2) Community Engagement and Research, 3) Collaboration and Team Science, 4) Workforce Development, 5) TL1 Training Core, 6) KL2 Institutional Career Development program, 7) Pilot Translational Studies, 8) Regulatory Knowledge and Support, 9) Biostatistics, Epidemiology and Research Design, 10) Participant and Clinical Interactions, 11) Integrating Special Populations, 12) Trial Innovation Network Hub Liaison Team, 13) Innovation Ecosystem, 14) Early Life Exposures Program and 15) Dissemination and Implementation Science. The **vision** of the CCTSI is to accelerate and catalyze the translation of innovative science into improved health and patient care. To reach this vision, the **mission** of the CCTSI is to

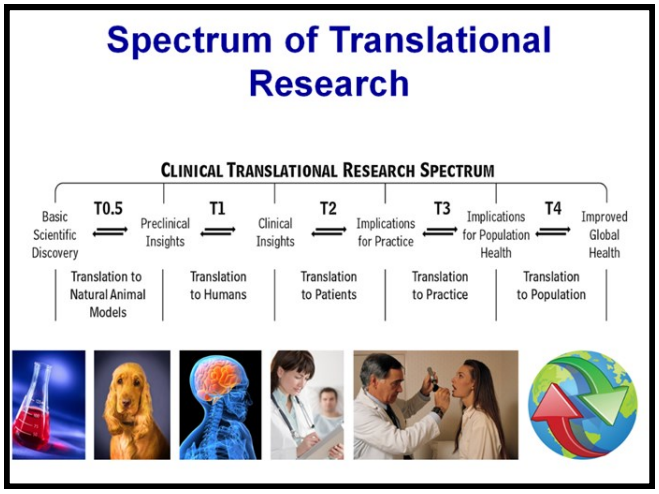
- Catalyze and enhance scientific discovery, innovation, dissemination, and translation across the lifespan;
- Educate and sustain a resilient, innovative and diverse translational science workforce;
- Promote and ensure an efficient, safe, collaborative and integrated research environment; and
- Engage stakeholders and communities across the entire translational spectrum.

Some of the goals of the CCTSI are to

- Develop, educate, and sustain a diverse translational science workforce to ensure the highest research innovation, quality and safety;
- Create a translational research environment in which team science and collaboration both locally and nationally are facilitated, supported, and valued;
- Engage local and national communities and stakeholders in all phases of the translational research process; and
- Create novel methodologies and resources to support and integrate research in special populations, including children, the elderly, the underserved, and those with rare diseases.

A rigorous tracking, assessment, and evaluation program with a formal quality and process improvement component ensures the best use of resources while protecting the safety of research study participants. These programs are centralized at the CU Anschutz Medical Campus.

The CCTSI was originally funded in 2008, and has been refunded by NIH several times, most recently for the period 2018-2023 to support the full range of T0.5 through T4 translational research in a disease-agnostic manner across the breadth of the life cycle. Through the partnership with CSU, which is recognized for its world-class school of veterinary medicine and other programs, the CCTSI has expanded the spectrum of translational research to include T0.5 research, translating promising pre-clinical discoveries into naturally occurring animal models (companion to domestic animals) of human disease.



The CCTSI has implemented two information systems for the institution's research community: 1) "Colorado Profiles," a search engine and networking tool for biomedical researchers at CU and affiliates, which receives over 25,000 monthly pageviews; and 2) REDCap (Research Electronic Data Capture) which is a secure, HIPAA-compliant web-based application designed for research data collection, storage and transfer. Over the past year, REDCap has supported more than 5,200 active users with more than 12,000 projects.

The CCTSI provides resources and services including five Clinical and Translational Research Centers (CTRCs; clinical research units). Before the COVID-19 pandemic, CTRCs facilitated and supported more than 400 clinical research projects led by over 200 principal investigators. After all non-essential research was ceased during Colorado's initial stay-at-home order in March, the CTRC eventually started to allow investigators to engage in a phased reintroduction to research from the summer through the fall of 2020.

The CCTSI supports additional resources for clinical research, including two Clinical Trials Offices; Biostatistics, Epidemiology and Research Design (BERD); Research Bioethics Consultation services and assistance; Research Studios; informatics and database support; pilot grant funding opportunities; and an array of educational and career development programs for clinical and translational investigators and their staff at all affiliated institutions.

CTRCs (at UCH, Children's Hospital, National Jewish Health and CU Boulder) offer incomparable clinical research facilities, research nursing support, specimen and biopsy processing, bionutrition expertise, specialized laboratory assays, vascular ultrasound testing, exercise testing facilities, and other services to facilitate the conduct of patient-oriented research. Education programs include the Clinical Sciences PhD and Master's graduate programs, KL2 research scholar program and TL1 pre-doctoral and post-doctoral training program, Clinical Faculty Scholars Program, CO-Mentor training program, K-to-R transition program (mock study section), Pre-K assistance program, the Leadership for Innovative Team Science (LITeS) program, Research Studios and the Innovation-Corps (I-Corps) training program. A robust pilot grants program and new methods development funding program are popular CCTSI programs that have assisted numerous investigators in obtaining follow-on funding.

The Partnership for Academicians and Communities in Translation (PACT) was created by the CCTSI to transform the way communities and researchers work together to design and conduct research by building bridges and trust between health research, clinical practice, and community health initiatives to improve the health of the people of Colorado and the Rocky Mountain region. The PACT encompasses more than 20 Colorado communities, 940 physician practices and 28 hospitals throughout the region. The Early Life Exposures Research Program (ELEP) facilitates research during pregnancy, infancy, and childhood, and emphasizes life-cycle research involving fetal and childhood precursors of adult disease. The Innovation Ecosystem program provides early training in market evaluation (I-Corps@CCTSI) and support for commercialization for promising ideas and products. Our Research Studio Program organizes a customized team of experts to provide feedback and new ideas in a 90-minute focused session to investigators on a variety of topics chosen by the investigator.

Responding to the Pandemic
Once the COVID-19 pandemic hit Colorado, the CCTSI adjusted its many programs and activities to respond to the greatest needs of researchers and our community. We launched a new pilot grant program focused on urgent actionable research needs addressing COVID-19. Our annual academic conference in August 2020, the CU-CSU Summit, focused on "COVID-19 and the Colorado Research Environment." We have helped CU researchers develop key findings as COVID-19 clinical trials progressed. Our CTRCs were very involved in the multiple COVID-19 clinical trials underway at CU Anschutz. The CCTSI is involved in vaccine development and in phase 3 vaccine trials. In terms of educating our community about COVID-19, the CCTSI's Community Engagement program has been working with Colorado's family medicine provider community, producing and sharing essential information. Community Engagement has also focused on ensuring underserved and vulnerable communities have access to information and research. Led by Donald Nease, MD, through ongoing surveys, they have been gathering information about how equipped medical practices are state-wide to address and respond to COVID-19. As a result, they have provided essential support via email newsletters, webinars, community forum events, videos and informational flyers and more—in English and Spanish. In addition, community research liaisons have been serving as trusted sources of information for their communities—in order to keep communities healthy.

The CCTSI is led by **Ronald J. Sokol, MD**, principal investigator and director of the CCTSI, and a team of dedicated associate directors and administrative staff, including Wendy Kohrt PhD, Janine Higgins, PhD, Tim Lockie, MS, MBA, Thomas Campbell, MD, Tell Bennett, MD, Nichole Carlson, PhD, Donald Nease, MD, MPH, Lisa Cicutto, PhD, Alison Lakin, JD, Thomas Flaig MD, Cathy Bodine, PhD, Bethany Kwan, PhD, Terri Hernandez, PhD, among others.

Check out the CCTSI website for further information and opportunities:

https://cctsi.cuanschutz.edu/

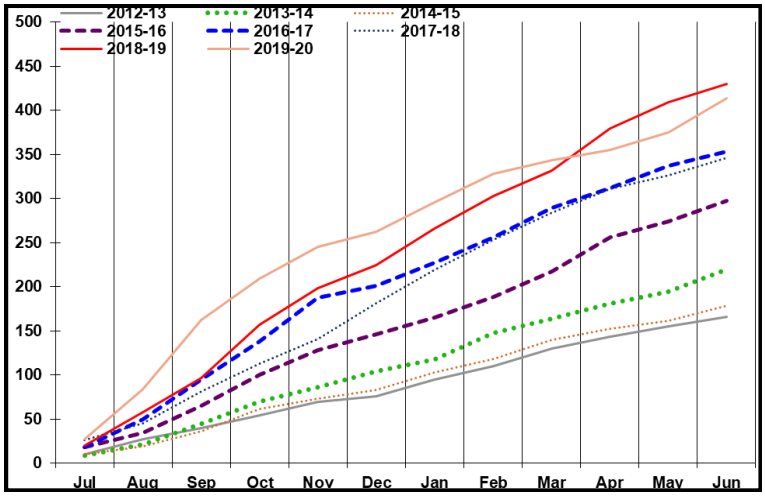
Student and Resident Mental Health

Rachel Davis, MD, Medical Director
Juan DeJesus, MD, Associate Medical Director
Julie Wolfe, MD, Associate Medical Director

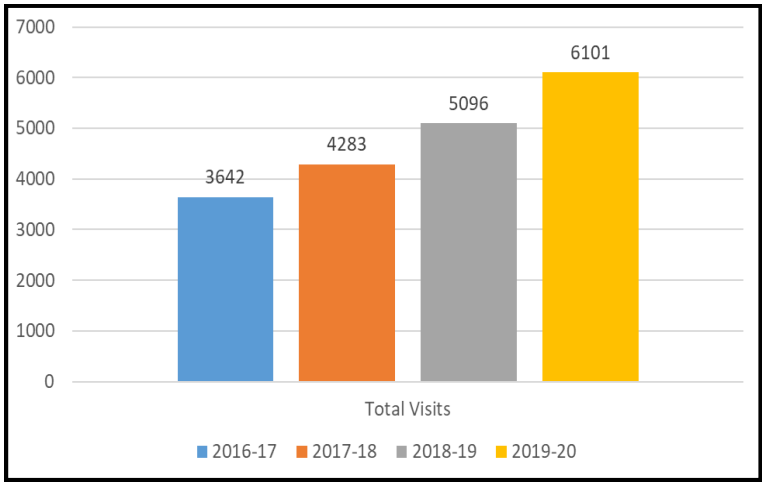
Mission
Student and Resident Mental Health (SRMH) on the Anschutz Medical Campus exists to facilitate evaluation and treatment of mental health issues in students and residents/fellows of the Anschutz Medical Campus. By minimizing barriers to care, the center aims to reach as many students and residents as possible. The faculty at SRMH specialize in treating the issues students encounter and strive to provide them with optimal mental health treatment.

Student Medical Health (SMH) was established in 2009 in the Department of Psychiatry and has expanded over the past 10 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 GME 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.

AMC Student and Resident Mental Health New Evaluations



AMC Student and Resident Mental Health – Total Visits



SRMH accepts many insurance plans through CU Medicine. When utilizing on-campus care, students with the 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

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, and domestic violence.

SRMH offers several ongoing and brief groups including a cognitive behavioral therapy group for students with OCD, a skills-based ADHD group, a psychodynamic psychotherapy group, dialectical behavior therapy group, and a change of plans group. Future groups will include an ADHD medication management group, trauma-informed yoga group, and a mindfulness meditation 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.

Since March 2020, SRMH has been providing telehealth visits to patient as a result of COVID-19.

Student and Resident Mental Health Fitzsimons 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: Fitzsimons Building, 17th Avenue and Aurora Court, 2nd floor, #E2343
Website: www.medschool.ucdenver.edu/amcstudentmentalhealth

Current Providers and Staff

Rachel Davis, MD, Medical Director
Juan DeJesus, MD, Associate Medical Director
Julie Wolfe, MD, Associate Medical Director
Tamara Saunders, MBA, Clinic Manager
Matthew Pesko, MD
Debbie Carter, MD
Christian Hopfer, MD (Addictions)
Elizabeth Erikson, MD (Eating Disorders)
Noa Heiman, PhD
Robert Rosenthal, PsyD
Stephanie Lehto, PsyD
Janice Shire, APRN, CNS
Amanda Doria, LPC, Mental Health Triage Counselor, Wellness and Outreach Coordinator
Mallory Crouch, LCSW (Addictions)
Rachel Zavala, RD (dietitian)
Laura Estrada, Program Assistant, Team Lead
Perla Rodriguez, Patient Access Representative, Health Care Tech III
Wanda Jackson, Medical Assistant, Heath Care Tech III
Quinton Johnson Patient Access Representative, Health Care Tech III

Student and Resident Mental Health at Campus Health Center

Services: Behavioral/mental health care and physical health care
Hours: Mental health providers are available Monday-Friday 8 a.m.-5 p.m.
Appts.: Schedule appointments at 303-724-4716 or smhservice@ucdenver.edu
Location: Anschutz Health and Wellness Center, Montview and Racine, 2nd floor
Website: www.ucdenver.edu/anschutz/campushealth

Current Mental Health Providers
Ashley Perl, LCSW
Danielle Sukenik, LMFT

*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

- Beginning March 16, 2020, the SRMH clinic moved to virtual patient appointments in response to the COVID-19 pandemic. As a result of making the transition so quickly, the clinic saw a 12% increase in patient appointments when comparing number of appointments during the four months prior to March 16 (1,480) to the number of appointments during the four months after March 16 (1,652).
- Led campus-wide support group for students affected by the COVID-19 pandemic.
- Continued outreach project with the medical school, which has resulted in increased utilization of SRMH services by 30 percent year over year.
- Medical Student Mental Health Research: measuring mental health rating scales at matriculation and at the end of each academic year.
- 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 as well as a biweekly program providing support around coping in the time of COVID-19.
- Collaborated with the Denver Health Longitudinal Curriculum to offer prescheduled (optional) appointments for each student who will be granted a “required” mental health day.
- Established as a rotation site for the University of Colorado general psychiatry residency program.
- Began offering Monday-Friday walk-in availability to all students and residents.
- Began providing specialty services in addictions and eating disorders.
- Collaborated with all Anschutz schools on a centralized medical leave of absence process.







Graduate School Programs Affiliated with the School of Medicine

Biomedical Science and Biotechnology (BSBT)

The Master's Program in Biomedical Sciences and Biotechnology is composed of four program plans: The General Plan (BSBT-GEN) is an interdisciplinary, dual-campus program that is recognized as a Professional Sciences Master's Program. It provides strong training in the biomedical sciences, plus requires students to acquire knowledge and skills in the translational aspects of science, such as biomedical entrepreneurship and regulatory affairs. All students finish their studies with an internship (including internship report and defense), and the internship is selected according to the student's aspirations. Internships can be pursued in diverse research disciplines in academic or industrial laboratories, as well as in offices serving technology transfer or regulatory affairs.The other three BSBT program plans are primarily research-focused training opportunities that concentrate on Microbiology & Immunology (BSBT-MIM), Structural Biology & Biochemistry (BSBT-SBB), and Bioinformatics in Microbiology & Immunology (BSBT-BIM). Early in their studies, students of these program plans engage in research in an academic laboratory on the Anschutz Medical Campus and complete their training with a traditional research thesis. Upon completion of their studies, graduates of all program plans can move into the workforce or continue their training in a PhD Program, medical school, or other professional training programs.
https://gs.ucdenver.edu/biotech

Biomedical Sciences Umbrella (BMSC)

The Biomedical Sciences Program (BSP) was formed at the University of Colorado Anschutz Medical Campus in 1997. The BSP 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. Since 2017, Kristin Artinger, PhD, has been the director of BSP, and has an established Executive Committee of faculty members representing multiple programs to help advise students through their first year. Students who matriculate in the BSP will perform coursework and laboratory rotations in their first year. For rotations, students can choose to rotate in the labs of any of the over 160 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 the 11 graduate programs housed at the University of Colorado Anschutz Medical Campus. It is our goal in the BSP 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 their search for a biomedical discipline in which to perform thesis research.
http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Biomedical/Pages/Welcome.aspx

Cancer Biology (CANB)

The interdepartmental program leading to the PhD in Cancer Biology emerged in 2006 as a result of reorganization the Department of Pathology's graduate program in Experimental Pathology. The Program has been under the direction of Mary E. Reyland, PhD, since 2010 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, but differs from more traditional programs in that we also provide opportunities for students to learn about clinical and translational aspects of cancer biology. We believe that understanding cancer from multiple perspectives will better prepare our 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 40 basic and clinical scientists drawn from various fields of biomedical and clinical sciences. Areas of emphasis include lung, breast, head and neck, 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 NIH-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.
http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/cancerbiology/Pages/home.aspx

Cell Biology, Stem Cells and Development (CSDV)

The Graduate Program in Cell Biology, Stem Cells and Development (CSD) 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 CSD 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. CSD 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 creates a rich intellectual environment. Our students consistently say that the prime reason for selecting the CSD program is the collaborative and open nature of interactions among members of the program. The program currently comprises an interactive group of 36 students and over 58 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, CSD students published 16 scientific publications, presented their work at numerous national and international scientific conferences, organized several scientific outreach activities for middle and high school students, and were awarded three new NIH F31 fellowships.*
https://www.ucdenver.edu/academics/colleges/medicalschool/programs/CSD/Pages/home.aspx

Computational Bioscience (CPBS)

The Computational Bioscience Program of the University of Colorado Denver, located on the Anschutz Medical Campus, is dedicated to training computational biologists 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. The Computational Bioscience program provides graduates with the foundation for a lifetime of continual learning.

CPBS creates professionals prepared to conduct novel interdisciplinary research in the fields of translational bioinformatics, clinical research informatics, and computational molecular biology. 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. 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. 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 wide variety of disciplines and disease areas.
https://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/computational-bioscience/Pages/home.aspx

Genetic Counseling (GENC)

The Master of Science Program in Genetic Counseling 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 over 1,000 hours of direct, supervised clinical training with patients in pediatric, reproductive, oncology, metabolic, 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. The program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC) and its graduates are eligible to sit for the national certification exam administered by the American Board of Genetic Counseling (ABGC). Program alumni play a critical, expanding role in the health care system and are at the forefront of precision genomic medicine initiatives. The Bureau of Labor Statistics identifies genetic counseling as one of the fastest-growing health care fields. Alumni practice in hospitals, academic and private genetics centers, clinical research programs, diagnostic laboratories, biotechnology companies, 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 for individuals and families so that they can understand and appropriately utilize genetic information and testing 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. 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.

Others 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. It is an exciting time for the program's graduates to be entering the genetic counseling field, as professional roles and opportunities continue to expand and evolve in the context of precision genomics-based healthcare.
https://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/genetic-counseling/Pages/default.aspx

Human Medical Genetics and Genomics (HMGG)

The Human Medical Genetics and Genomics Graduate Program at the University of Colorado School of Medicine provides training to graduate students interested in a field of research that has seen an unprecedented 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 institutional and external funding agencies. Our PhD students have also been highly successful in their subsequent careers, including in academia, industry, teaching as well as non-traditional settings like forensics and regulatory affairs.
http://medschool.ucdenver.edu/genetics

Immunology (IMMU)

The Graduate Program in Immunology at the University of Colorado Denver was formed in 1989 as an interdepartmental immunology training program. The majority of the Immunology training faculty are members of the Department of Immunology and Microbiology within the School of Medicine at the University of Colorado Anschutz Medical Campus. However, faculty trainers from an additional 12 departments and divisions within the School of Medicine, as well as National Jewish Health and the Barbara Davis Center for Childhood Diabetes, make important contributions to the training program. Laurel L. Lenz, PhD, assumed directorship of the Graduate Program in Immunology in 2019 with R. Lee Reinhardt, PhD, serving as associate director. 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 our internationally recognized Graduate Program in Immunology is to educate and train the next generation of immunologists to direct competitive and productive independent research programs. Many of our graduates develop skills that enable them to successfully pursue leadership roles in academic or industry research settings. The immunological expertise we provide to our graduates has also fostered success of our graduates 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 through authorships and speakerships. The immune system plays a central role in many current national and global health issues. By exposing our graduate students to both basic and translational science approaches, our graduate training program enriches the student experience in a practical and meaningful manner and prepares graduates to make advances with high relevance to clinical settings.
https://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Immunology-Microbiology/Immunology-Program1/Pages/Home.aspx

Integrated Physiology (IPHY)

The Integrated Physiology graduate program offers multidisciplinary PhD training in biomedical systems biology. Students have opportunities to study how cells, organ systems, and organisms regulate complex physiological functions, with emphasis on cardiac and vascular biology, molecular nutrition and metabolism, reproductive biology, and single cell systems. James McManaman, PhD, and Mary Weiser-Evans, PhD, are the program directors.
http://ucdenver.edu/integratedphysiology

Medical Scientist Training (MSTP)

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 ~450 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 (currently ~$1M/year to support 19 trainees per year). The program has strong leaders and mentors, with Arthur Gutierrez-Hartmann, MD, directing the MSTP since 1994 and selected for numerous local and national mentor awards, and national leadership roles in MD/PhD and graduate education, and Patricia Ernst, PhD, serving as the pre-clinical associate director, and providing individualized guidance to each student via regular meetings and interactions. The program has been competitively reviewed and funded by NIH for each of the past five cycles. The MST Program has been a campus and national leader in recruiting diversity students, and has received Diversity Awards from CU and commendations from National Institute of General Medical Sciences, highlighting the Colorado MSTP on its diversity website. There are approximately 200 faculty mentors for students to choose from in 17 different PhD Programs at the Anschutz Medical Campus, National Jewish, and CU Boulder. There are currently 85 students in the program: 10 in the first year (MSI), 11 in the second year (MSII), 53 in the PhD research years, and 11 in the medical school clinical years (MSIII and MSIV). Since 1983, 256 students have matriculated in the MST Program. 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 who are now faculty at CU Anschutz Medical Campus, with hopes of recruiting more alums. 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 (GREAT) Group, 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, in order to optimize career success for this group.
http://medschool.ucdenver.edu/mstp

Microbiology (MICB)

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. Kelly Doran, PhD, and Breck Duerkop, PhD, serve as the program co-directors and are 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.
https://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Immunology-Microbiology/microbiology/Pages/Home.aspx

Modern Human Anatomy (ANAT)

The Master of Science in Modern Human Anatomy (MSMHA) at the University of Colorado Anschutz Medical Campus is a two-year Master's degree program introduced by the Department of Cell and Developmental Biology in spring 2012. Under the leadership of Executive Director Thomas Finger, PhD, the program hosted a total of 48 students in fall 2019. The Master of Science in Modern Human Anatomy (MSMHA) Program at the University of Colorado Anschutz Medical Campus is innovative and unique, bridging an established anatomy/developmental biology curriculum with the foundations of digital imaging technologies now in use in medical care, biomedical research, medical illustration, and teaching. This program blends modern and classical approaches to anatomical study, with a goal of producing a new generation of anatomical professionals prepared for diverse careers. The program emphasizes an individualized, flexible approach to professional growth and career development through a student-designed capstone project. Extensions of the virtual 3-D human body are at the forefront of diagnostic imaging and surgical interventions that are increasingly commonplace in the medical setting. Virtual human anatomy and advanced imaging technology have also become a platform for the development of new instructional venues as well as the design of simulators and protocols for advanced procedural training. This two year program will prepare graduates to work in a broad spectrum of educational and biomedical sub-specialties where creativity and innovation abound and knowledge of human anatomy is highly valued. The Master of Science in Modern Human Anatomy provides this graduate level training and teaching experience in the physical and virtual anatomical sciences through human cadaver dissection, neuroanatomy, histology and embryology; all addressed from a modern perspective stressing quantitative imaging, modeling, informatics, and clinical applications. The curriculum is translational in integrating computer and engineering technologies into the domains of anatomy and developmental biology through a project-oriented curriculum.
https://medschool.cuanschutz.edu/msmha

Molecular Biology (MOLB)

The Molecular Biology Program at the University of Colorado Anschutz Medical Campus is dedicated to providing rigorous training to its students in a supportive environment. The Molecular Biology faculty are members of eleven different 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 a wide variety of research areas in a student-centered environment. Molecular biology, the science of how living organisms function at the molecular and cellular level, has led the recent revolution in our understanding of human disease and the birth of the biotechnology industry. The goal of the Molecular Biology Program at CU Anschutz Medical Campus is to equip students for careers at the cutting edge of biological research. The faculty members are 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 excellent seminar series. We believe that training students to become scientists prepares them for careers in many areas. Previous graduates of the program are now 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/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. An annual retreat to the Rocky Mountains encourages interaction between students and faculty and also familiarizes the students with the research goals and progress of each faculty member. The Molecular Biology Program has been recognized as a Center of Excellence at the CU Anschutz Medical Campus, and was honored to receive a ~$2M 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 one 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, along with the university, continues in its efforts to increase the number of underserved, disabled, and disadvantaged students, with the goal of training them to become important contributors to the biomedical research field and their communities.
http://www.ucdenver.edu/academics/colleges/medicalschool/programs/Molbio/Pages/Home.aspx

Neuroscience (NRSC)

The Neuroscience Program (NSP) was formed in the late 1980s as a PhD graduate training program within the Graduate School, based at that time in the University of Colorado School of Medicine. The CU Board of Regents awarded the NSP PhD granting status in 1992. The current NSP directors are Abigail Person, PhD, and Nathan Schoppa, PhD. The Neuroscience PhD Training Program at the University of Colorado Anschutz Medical Campus provides multidisciplinary training covering the breadth of neurobiology, from neuronal gene regulation to the development, structure, and function of the nervous system. Students receive training in cellular and molecular neurobiology, neural development, neuropharmacology, and biochemistry, as well as hands-on training in state-of-the-art laboratory techniques. Since 2001, the program has been the recipient of the prestigious Jointly Sponsored Predoctoral Training Program in Neuroscience. This is sponsored by nine NIH institutes and there are only 28 such awards across the nation. The program's goal is to provide a broad and solid foundation of understanding in neuroscience, and to train critical thinkers who identify important problems, generate experimentally testable hypotheses, and who draw significant conclusions from the results of their ongoing research in a specific area of neuroscience. Students completing the requirements for the Neuroscience PhD will be independent investigators prepared to make important contributions to research and to the education of future generations of neuroscientists. The program is closely allied with other departments at the Anschutz Medical Campus, giving students the opportunity to interact and learn from researchers and teachers of many backgrounds.
http://www.ucdenver.edu/academics/colleges/medicalschool/programs/Neuroscience/Pages/Neuroscience.aspx

Palliative Care (PALC)

The Interprofessional Graduate Certificate (12 credits over 9 months) program and Master of Science in Palliative Care (MSPC) degree (36 credits over 2 years) aim to ease suffering worldwide through exemplary palliative care education. These programs develop Palliative Care Community Specialists (www.cuanschutz.edu/palliative-care) through innovative educational pedagogies designed to facilitate learning for health care providers and allied health professionals in an evidence-based, interdisciplinary learning environment that mirrors the palliative care work setting. Courses are online. Students and faculty include nurses (BSN and Advanced Practice RNs), physicians, physician assistants, pharmacists, social workers, spiritual care providers, counselors, psychologists, and other professionals.

New this year, the University of Colorado Anschutz Medical Campus offers an alternative pathway for mid-career physicians seeking a hospice and palliative medicine (HPM) fellowship. The University of Colorado School of Medicine is now offering a first-in-the-nation non-residential HPM fellowship. This means that our mid-career palliative medicine candidates do not have to move away from home, nor abandon their work and family responsibilities, in order to receive training that prepares them to sit for HPM board certification. In August 2020, six physicians started the fellowship program.
www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Palliative%20Care/Pages/default.aspx

Pharmacology (PHCL)

The Department of Pharmacology and the Pharmacology PhD Training Program each have a long and well-established history of training biomedical sciences PhD students, medical students, and post-doctoral fellows in the School of Medicine. The NIH-funded Pharmacology Predoctoral Training Grant (T32) is one of the longest-standing grants of its type in existence. Students enter the Training Program either directly, or alternatively, via the Biomedical Sciences (umbrella) program, or the Medical Scientist Training Program (MSTP). The Pharmacology Training Program is truly interdisciplinary and interdepartmental with faculty members having primary appointments in a number of Departments including: Pharmacology, Medicine, Psychiatry, Physiology, Pediatrics, and Biochemistry & Molecular Genetics. Training Program faculty are nationally and internationally renowned in the areas of neuroscience, cancer biology, cardiovascular biology, signal transduction, structural biology, and bioinformatics. One of the key defining features of the Pharmacology Program training faculty is the highly collaborative and interdisciplinary approach to their work. Laboratories, singularly or in collaboration, frequently use multiple parallel approaches including molecular biology, structural biology, genomics, and informatics and cutting-edge methodologies employing high-powered imaging techniques including optogenetics. Another defining feature of the program is the focus on personalized medicine and translating fundamental benchtop discoveries to clinical practice.
https://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/pharmacology/Pages/home.aspx

Rehabilitation Science (RHSC)

Rehabilitation Science is 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 specialization: applied cellular physiology, exercise and cardiopulmonary physiology, motor control, biomechanics, and lifespan studies. 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 and Biochemistry (STBB)

The Structural Biology and Biochemistry Program is interdisciplinary, involving all aspects of biomedical research, particularly in the area of macromolecular structure/function, biophysics, lipidomics, and proteomics. It aims to provide students with specialized skills and a solid foundation in biomedical, biophysical, and structural sciences through course work and research training. To support the research needs of faculty and students of the Structural Biology and Biochemistry Program, the Program makes use of six well-developed core facilities, each specializing in an important facet of biomedical research and essential for the advancement of research and training in Structural Biology and Biochemistry. These five core facilities consist of nuclear magnetic resonance spectroscopy (NMR), X-ray crystallography, mass spectrometry/proteomics, biophysics, and peptide/protein chemistry, and the new CryoEM. These facilities are readily accessible to faculty, graduate students, postdoctoral fellows, and other research staff, and are supported independently of the Graduate Program. The focus and interdisciplinary nature of the Program in Structural Biology and Biochemistry positively influences many other instructional and research programs at the University of Colorado School of Medicine. The program's educational components support the research in many of the laboratories that require knowledge of the highly technical and specialized structural biology research tools, and this enhances the overall effectiveness and quality of the research and overall research productivity of the campus.
http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/biomol/Pages/PrograminStructuralBiologyandBiophysics.aspx

2019-2020 Deceased Faculty

James Arthur, MD
Clinical Professor Emeritus
Pediatrics

Donald Bennallack, MD
Associate Clinical Professor
Obstetrics and Gynecology

Brian Brauer, MD
Associate Professor
Medicine

Jeffrey Brown, MD, MPH/MSPH
Clinical Professor
Pediatrics

William Buchanan, MD
Associate Clinical Professor
Ophthalmology

Stanley Cohen, PhD
Professor Emeritus
Biochemistry

Jason French, MD
Senior Instructor
Pediatrics

Robert Gibbons, MD
Clinical Professor
Medicine

Loren Golitz, MD
Clinical Professor Emeritus
Pathology

Jennifer Gong, PhD
Assistant Professor
Family Medicine

Gilbert Hermann, MD
Clinical Professor
Surgery

Kathryn Howell, PhD
Professor
Cell and Developmental Biology

William Jackson, MD
Associate Professor Emeritus
Ophthalmology

Jan Kraus, PhD
Professor
Pediatrics

Edward Lewin, MD
Professor Emeritus
Neurology

Edgar Makowski, MD
Professor Emeritus
Obstetrics and Gynecology

Mickey Mandel, MD
Associate Clinical Professor
Dermatology

Patrick O'Meara, DO
Assistant Clinical Professor
Family Medicine

Bruce Paton, MD
Professor Emeritus
Surgery

Steven Perry, MD
Assistant Clinical Professor
Pediatrics

Paul Polak, MD
Assistant Clinical Professor
Pediatrics

Stuart Schneck, MD
Professor Emeritus
Neurology

Peter Shaughnessy, PhD
Professor Emeritus
Medicine

Jeffrey Shiffrin, MD
Associate Professor
Anesthesiology

Leonard Silverman, MD
Assistant Clinical Professor
Pediatrics

John Singleton, MD
Professor Emeritus
Medicine

James Strain, MD
Distinguished Clinical Professor
Pediatrics

Dominik Wiktor, MD
Assistant Professor
Medicine

William Ziegler, MD
Associate Clinical Professor
Pediatrics

Sara Zimet, EdD
Professor Emerita
Psychiatry

Our condolences to the families and friends of our former colleagues.