8th Annual CU MSTP Retreat

Thursday February 5th, 2026
Krugman Conference Hall



Retreat Schedule

Time	Session
8:30-9:00 AM	**Registration, Breakfast, & Welcome**
9:00-10:00 AM	**Keynote Address** *Dean John H Sampson, MD, PhD, MHSc, MBA*
10:00-10:15 AM	**Break**
10:15-11:15 AM	**Oral Presentations** Bruce Kirkpatrick Scott Lin Grant Lo
11:15-12:00 PM	**Poster Session A**
12:00-1:00 PM	**Lunch & Excellence in Service Award**
1:00-1:30 PM	**Program Address (Director's Welcome)** Patrick Hu, MD, PhD
1:30-2:15 PM	**Poster Session B**
2:15-3:15 PM	**PSTP Panel** Carissa M. Thomas, MD, PhD, FACS Jacob Basak, MD, PhD Jon Kibbie, MD, PhD Chris Derderian MD, FACS, FAAP Richard Wang, MD, PhD
3:15-3:30 PM	**Student Lightning Talks** Grace Akatsu Yvonne Cui Elena Esch Douglas Fritz Haya Jarad
3:30-3:45 PM	**Break & Student Voting**
3:45-4:15 PM	**Final Remarks & Awards**
4:15-5:45 PM	**T-Street Happy Hour**

Keynote Speaker



John H. Sampson, MD, PhD, MHSc, MBA, is the Richard D. Krugman Endowed Chair, Vice Chancellor for Health Affairs, and the Dean of the University of Colorado School of Medicine. He was previously the Robert H. and Gloria Wilkins Distinguished Professor of Neurosurgery and Senior Vice President of Duke University Health System and the Duke Health Integrated Practice (DHIP), leading thousands of School of Medicine faculty, community physicians, psychologists, and advanced practice providers who are the clinical talent force for Duke University. He is a physician-scientist and member of the National Academy of Medicine. With a career spanning over 25 years, his journey is underscored by a relentless pursuit of excellence across clinical practice, research, education, and leadership domains. Throughout his tenure, he has inspired and mentored diverse teams and fostered a culture of innovation. As a transformational leader, Dr. Sampson has orchestrated collaborative change initiatives and successfully converted visionary ideas into actionable plans.

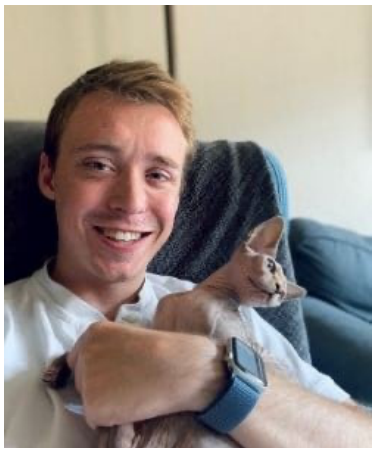
As a surgeon-scientist, he holds a deep commitment to advancing new therapies into the clinic and compassionately treating patients with brain tumors and other diseases of the nervous system. He has authored nearly 300 peer-reviewed publications in prestigious journals and the held the distinction of being the highest NIH-funded investigator in his field for several consecutive years. Educating and nurturing the next generation of healthcare leaders is a cornerstone of Dr. Sampson's career. His dedication to training surgeons, physicians, scientists, and students is evident in the numerous alumni who now occupy leadership positions across the nation's top academic programs.

As the Inaugural Chair of the Department of Neurosurgery at Duke, he championed faculty and student led innovative educational programs such as the Surgical Autonomy Program; the Learner Mentorship, Leadership, and Coaching program; and the Global Neurosurgery Program. These initiatives not only advanced patient care and education but also extended the impact of these trainees to underprivileged regions globally. He also pioneered the Neuro-innovations Program, which provided training for students at all levels on entrepreneurial activities; and executed on a strategic initiative to develop the *WellSpentMD* App, which effectively reduced burnout by rewarding clinicians and learners with congratulations and encouragement. Dr. Sampson's commitment to innovation extends beyond education and clinical practice, as evidenced by his leadership in several entrepreneurial ventures and board positions in health systems, foundations, and private and publicly traded companies outside of Duke.

Dr. Sampson's academic journey began with a medical degree in Canada, followed by a PhD in neuroimmunology and MHSc in clinical research at Duke University. He did his research training under the internationally renowned neuro-oncologist, Darell D. Bigner, and Nobel Laureate, Gertrude Elion. Recognizing the importance of health sector management, he further honed his skills with an MBA from Duke University’s Fuqua School of Business, earning the distinction of Fuqua Scholar as a top tier graduate.

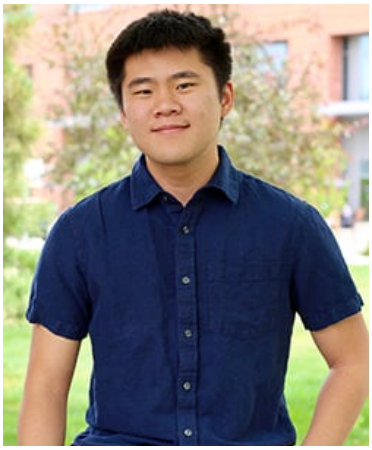
Beyond his professional pursuits, Dr. Sampson finds joy in family time, a passion for racing cars and critiquing Hi-Fi music with his sons, and a commitment to physical well-being through Peloton cycling and trail running, complemented by the practice of meditation.

Student Oral Presentations



Design and analysis of next-generation active polymeric medical devices
Bruce E. Kirkpatrick*, Nathaniel P. Skillin, Tayler S. Hebner, Joselle M. McCracken, Grant E. Bauman, Benjamin R. Nelson, Amy R. Perry, Christopher N. Bowman, Kristi S. Anseth, Timothy J. White

Liquid crystal elastomers (LCEs) are anisotropic polymer networks that convert external stimuli, such as heat or light, into programmable mechanical deformation. Their ability to generate force, undergo reversible shape change, and be fabricated as compliant structures makes them compelling candidates for next-generation medical devices that must interface dynamically with living tissues. More broadly, LCEs exemplify an emerging family of active polymeric materials that exploit structure-function relationships to enable devices that respond to applied cues in situ. In this work, we describe the design, characterization, and biological evaluation of reprogrammable LCE-based medical devices. We first developed strategies for spatiotemporally controlled reprogramming of LCE alignment and actuation behavior, offering a route to patient- or application-specific device tuning without refabrication. To support rational materials design, we established purely optical methods to quantify strain and deformation during actuation, eliminating the need for embedded sensors or complex mechanical testing. This approach was scaled to a high-throughput pipeline that revealed key structure-processing-property relationships governing force output and actuation efficiency. Next, we engineered a strategy for dispersing gold nanoparticles within LCE matrices, affording volumetric photothermal actuation and fabrication of thick, 3D-printed active devices. Finally, we performed in vivo implantation studies in mice to assess long-term mechanical performance and foreign body response, demonstrating stable actuation over months and biocompatibility comparable to established soft polymer implants. Together, this work establishes a framework for engineering, measuring, and validating active polymeric medical devices, highlighting how LCEs and related materials can be translated from programmable soft matter into clinically relevant technologies.



Stimulating Anti-Viral Signaling in High-Grade Serous Ovarian Carcinoma via Inhibition of EHMT1/2

Scott Lin*, Elizabeth Woodruff, Lily Nguyen, Benjamin Bitler

High-grade serious carcinoma of tubo-ovarian origin (HGSC) is the most common and deadliest subtype of ovarian cancer. With the 5-year overall survival of advanced disease at ~30%, the current standard of care (surgical debulking, chemotherapy, and PARP inhibitors) is not sufficient. While HGSC is an immunogenic disease, clinical trials attempting to deploy existing immunotherapies have had underwhelming outcomes. Therefore, novel strategies to sensitize HGSC to the immune system are of significant interest to the field.

A promising mechanism for inducing immune activation against tumors is “viral mimicry”. By reorganizing chromatin and upregulating normally repressed genetic elements, epigenetic drugs, such as DNMT and HDAC inhibitors, generate cytosolic double-stranded RNA (dsRNA) within tumor cells. These nucleic acids bind intracellular viral sensors, activating Type I Interferon and driving cytokine release. The result is immune cell recruitment and tumor killing.

EHMT1/2 is a histone 3 lysine 9 (H3K9me2) methyltransferase that has been found to be elevated in multiple models of treatment-resistant HGSC, and its expression is correlated to worsened patient outcomes. Additionally, our lab has shown that inhibiting EHMT1/2 in HGSC murine models leads to tumor regression and improved survival in a CD8+ T-Cell-dependent manner.

In this project, we demonstrate that EHMT1/2 inhibitors mediate their anti-tumor effect via activation of Mitochondrial Antiviral Signaling Protein (MAVS), a central adaptor protein for dsRNA sensors. We show that MAVS KO prevents EHMTi-induced upregulation of interferon stimulated genes in vitro and MAVS anti-tumor effect in vivo. Furthermore, we demonstrate that MAVS KO models of HGSC have increased tumor weight and metastasis. This work characterizes the mechanisms of action of a novel promising epigenetic therapy and sets the groundwork for future projects aimed at combining MAVS activation with immunotherapy.



TO BE OR NOT TO BE A PI: ADVICE FOR TRAINEES IN THE BIOMEDICAL/BASIC SCIENCES

Hei-Yong G. Lo*, Lily L. Nguyen, Kristine M. Sikora, Bruce Mandt, Angeles B. Ribera

When a biomedical or basic science doctoral (PhD) student considers whether or not to become a Principal Investigator (PI), they typically base their decisions on anecdotal data from a limited number of faculty mentors. Alternatively, they may look online for guidance and be met with biased opinions rather than unbiased, comprehensive data. We sought to address this gap by anonymously surveying active faculty at the University of Colorado Anschutz Medical Campus (CU Anschutz) to gain more clarity on the daily life of a PI, the decisions they made as they navigated their career path, and which skills were valuable for securing a faculty position. We also identified important factors in choosing a postdoctoral lab. We found that the majority of PIs would recommend becoming a PI and thought positively of the career path, with most feeling content. But attitudes differed between faculty of different ranks. Further, in addition to scientific vision, hard work, and publications, luck was also deemed as an important factor in becoming and succeeding as a PI. We present our findings so that they may serve as a resource for graduate trainees who are considering a PI/academic research career path. In addition, the information may guide future training plans to optimize achievement of their dream career.

Poster Session A

Enhancing CAR-Macrophage therapy by Phagocytosis Checkpoint Blockade in Pediatric Brain Tumors
David Beltran-Cardona*, Maria Rueda, Eric Prince, Stephen Medlin, Aaron Knox, Yan Zhou, Susan Staulcup, Vincent Chen, Selena Martinez, Pavan Guttipatti, Callista Tran, Siddhartha Mitra, Todd C. Hankinson

Targeting Lymphatic GPR182 to Overcome Immune Exclusion in Melanoma
Dustin Fykstra*, Robert Torphy, Yujie Guo, Zhiwei Sun, Junyi Hu, Shunsuke Doi, Yi Sun, Yuya Hirasawa, Yuwen Zhu

RELB confers resistance to proteostatic stress in myelodysplastic syndromes (MDS)
Moskop DR*, Moreira SF, Patel SB, Stevens BM, Gillen AE, Pollyea DA, Jordan CT, Pietras EM

Granzyme H upregulation identifies educated NK cells
Sofia I. Celli*, Ana C. Codo, Cameron Manes, Christopher Collora, Katherine M. Kichula, Noah Cline, Neus Font-Porterias, Tonya Brunetti, Laurent Gapin, Karl-Johan Malmberg, Paul J. Norman, Liyen Loh

Hypoxia and HIF regulate MHC II through suppression of IFNγ induced CIITA in Intestinal Epithelial Cells
Rachel H. Cohen*, Liheng Zhou, Kiranmayee Yenugudhati Vijaya Sai, Ji Yeon Kim, Rane Neuhart, Ciara Schaepe, Geetha Bhagavatula, Caroline Hall, Louise Glover, Ian Cartwright, Sean P. Colgan

Estrogen signaling via estrogen receptor beta regulates the differential response to treatment in HNSCC
Jessica I. Beynor*, Michael W. Knitz, Alexander T. Nguyen, Laurel B. Darragh, Sana D. Karam

Exploring the Role of BMI1 in Cardiac Fibroblast Activation
Jacob G. Cox*, Marcello Rubino, Keith A. Koch, Marion Delaunay, Timothy A. McKinsey

Monitoring plasticity-associated dendritic calcium dynamics during learning
Hua, Isabelle*, O'Hare, Justin

Antipsychotic modulation of dopamine signaling in medium spiny neurons
Selin Ekici*, Christopher Ford

Poster Session B

Fellow Eye Behavior using Gompertz Modeling in Geographic Atrophy
Cordaro, Nicholas*; Beckwith, Aaron; Veturi, Yoga A.; de Carlo Forest, Talisa; Mandava, Naresh; McNamara, Steve; Singh, Praveer; Manoharan, Niranjan; Nebbia, Giacomo; Kalpathy-Cramer, Jayashree

How does the endoplasmic reticulum protein Lyric promote cancer?
North Foulon*, Gia Voeltz

Kupffer cell-mediated clearance of dengue virus from the blood circulation is impaired during metabolic dysfunction-associated steatotic liver disease
Erin R. Fish, Katie S. Carpentier, Megan M. Stumpf, David J. Orlicky, Sofia C. Christensen, Bennett J. Davenport, Matt A. Burchill, Thomas E. Morrison

Synergistic Targeting of Epigenetic and Transcriptional Co-activators Collapses the Rhabdomyosarcoma (RMS) Core Regulatory Circuit and Inhibits RMS Progression
Gustafson AL*, Nance S, Gryder BE, Shendy NAM, Wick L, McKay-Corkum G, Ritter KE, Purdy SC, Wolin AR, Rosenbaum SR, Mathavarajah S, Demelfi NA, Wang Y, Zhang Y, Zimmerman MW, Kavariyani AM, Hardin JW, LaVeck A, Wang X, Dharia NV, Hong AL, Kugener G, Boehm JS, Roth JA, Khan J, Vazquez F, Artinger KB, Zhao R, Langenau DM, Qi J, Stegmaier K, Abraham BJ, Ford HL, Durbin AD

Could immune complement proteins hijack astrocyte autophagy in neurodegenerative disease?
Anna Hasche-Kluender, MHS;* Alberto Cruz Martín, PhD

Cranial Nerve VIII Efferent Innervation Decreases Mammalian Outer Hair Cell Mechanical Sensitivity
Nicholas M. Senofsky*, Anthony W. Peng

Neuroinflammation and synaptic pruning in the hippocampus following neonatal global cerebral ischemia
Kaylin M. Langer, Erika Tiemeier, Elisabeth Harmon, Isobella Veitch, Andra Dingman, Nidia Quillinan

The impact of Purkinje cell degeneration on reach coordination
Jackson Stocking*, Abigail Person

Flash Talks

Post-release outcomes of a novel Medication for Opioid Use Disorder program in Colorado prisons
Grace Akatsu

Cholesterol Switch: Rewiring Tumor–Macrophage Crosstalk in High-Grade Serous Ovarian Cancer (HGSC)
Yvonne Cui

Examination of Ischemia Reperfusion Injury on Retinal Function and Its Relationship to Galectin-3
Elena Esch

Uncovering the long term ecology of dengue virus in a highly endemic setting: Thailand 1965-2021
Douglas Fritz

Multi-Target Local Immunomodulation to Preserve the Neural Implant–Tissue Interface
Haya Jarad

PSTP Panelists

Carissa M. Thomas, MD, PhD, FACS
Associate Professor, Department of Otolaryngology - Head & Neck Surgery

Jacob Basak MD, PhD
Assistant Professor, Department of Anesthesiology

Jon Kibbie MD, PhD
Assistant Professor, Department of Dermatology

Chris Derderian MD, FACS, FAAP
Sandy Wolf Chair in Maternal Fetal Surgery
Assistant Professor of Surgery

Richard Wang MD, PhD
Visiting Professor, Department of Dermatology

Thank you to the 2026 Retreat Planning Committee!

Rachel Cohen - *Co-chair*
Erin Fish - *Co-chair*

Brandon Hillard - *Oral/Poster Presentation Coordinator*
Nickole Moon - *Oral/Poster Presentation Coordinator*
Bruce Kirkpatrick - *Website Design and Tech Support*
Michael Chen - *Website Design and Tech Support*
David Beltran-Cardona - *Registration Coordinator*
Dustin Fykstra - *Registration Coordinator*
Matthew Mardo - *Faculty and Alumni Coordinator*
Elena Esch - *Faculty and Alumni Coordinator*
Kelsey Kines - *Administrative Coordinator*
Morgan Mackenzie - *Catering Coordinator*
Jamie Henry - *Catering Coordinator*
Jacob Cox - *Program Design*

Thank you to our faculty poster judges!

Lauren Fishbein MD, PhD
Angie Ribera PhD
Brian Russo PhD
Carissa Thomas MD, PhD, FACS
Danielle Barber MD, PhD
Michael Oliphant PhD
Jacob Basak MD, PhD
Bejan Saeedi, MD, PhD
Kika Sucharov, PhD