



Department of Cell Biology & Physiology Newsletter

VOLUME 5 | DECEMBER 2025

A Message from the Chair

Every once in a while, writing something down causes me to stop and think. Today, that phrase was, “As I start my 12th year as chair of the Department of Cell Biology & Physiology. . .”. I can still remember clear as day when I received the initial contact from the search committee, yet in between, we have lived through three presidential elections, a pandemic, and recent funding chaos. Through it all, we have continued to focus on what’s important: scientific discovery and training the next generation.

Our scientific impact has been significant with high profile publications in Nature, Cell, and Cell Metabolism among many others. Many of our faculty were recognized with honors including Dave Pagliarini’s appointment as an HHMI Investigator, David Kast receiving the 2025 Dean’s Impact Award, and the promotions of Amber Stratman and Ghazal Ashrafi to Associate Professor with tenure. Our training mission now has the largest number of PhD students in department history. The postbaccalaureate program received continuing funds from the NIH despite the uncertainty. Finally, we welcomed our initial RISE Fellow, Alex Francette. You can learn more about Alex and the RISE Fellows program in a recent [Record article](#).

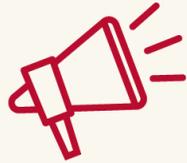
Each academic year, we host our two named lectureships. This year, the Erlanger-Gasser Lecture was held in November featuring Jue Chen from Rockefeller University, and in March, Tim Springer from Boston Children’s Hospital and Harvard University will give the Mecham Distinguished Lecture (I would be remiss if I didn’t remind everyone that we are still raising funds to complete the permanent endowment for the Mecham Lectureship).

Best wishes to all of you and a happy 2026!

David W. Piston, Ph.D.

Edward J. Mallinckrodt, Jr. Professor and Head of Cell Biology & Physiology





Announcements

- Congratulations to Kelly Wichmann on receiving the Mercer Travel Award
- David Kast was awarded the Dean's Impact Award
- Chun-Kan Chen received a 2024 Mathers Foundation Research Award
- Louise Medina Bengtsson won best poster at the 2025 annual CBP/MCB Retreat
- Taylor Malachowski won best talk at the 2025 annual CBP/MCB Retreat
- Sarah Colijn won best talk at the 2025 annual CBP/MCB Retreat



2025 CBP/MCB Retreat YMCA Trout Lodge



Kelly Wichmann Accepting Mercer Travel Award

Upcoming Events

- Celebrate the holiday season with us at the CBP Annual Holiday Party on December 10th at Pin-Up Bowl from 6pm-9pm.
- The annual [Robert P. Mecham Distinguished Lectureship](#), scheduled for March 31st, will feature Timothy A. Springer, PhD of Harvard Medical School and Boston Children's hospital as the keynote lecturer.
- The 2026 CBP/MCB joint retreat will be September 10-11, 2026, at Cedar Creek.
- The [faculty seminar series](#) is held every Tuesday at 1:00 PM in McDonnell Sciences, room 423.
- Attend [CBP/MCB Work-in-Progress \(WIP\) Seminar](#) each Friday at 4:00 PM in McDonnell Sciences, room 423.
- Lab-hosted [Social Hour](#) happens every Friday at 4:00PM in McDonnell Sciences, room 423.

Stay up to date on all CB&P events by visiting the [department calendar!](#)



CB&P HOLIDAY PARTY

DECEMBER 10TH • 6 PM - 9 PM
PIN-UP BOWL

6191 Delmar Blvd. St. Louis, MO 63112



Personnel

- Dave Pagliarini named [HHMI Investigator](#) September 3, 2024
- Terese Hall retired April 1, 2025
- Amber Stratman promoted to Associate Professor July 1, 2025
- Ghazal Ashrafi promoted to Associate Professor July 1, 2025
- Alex Francette, Cell Biology & Physiology's first [RISE Fellow](#)



Celebrating Terese!
Retirement Party, 03/31/2025



Publications

- ACAD10 and ACAD11 enable mammalian 4-hydroxy acid lipid catabolism [...] Bartlett, A. [...] Smith, A. J., Baker, Z. [...], Forny, P., [...] & Pagliarini, D. J Sep 2025, In: Nature Structural and Molecular Biology. 32, 9, p. 1622-1632 11 p.
- ACSS2: Tumor-promoting lactyl-CoA synthetase that drives histone lactylation [...] & You, Z., Mar 2025, In: hLife. 3, 3, p. 118-120 3 p.
- Activating NRF2E79Q mutation alters the differentiation of human non-small cell lung cancer [...] Major, M. B. [...]2025, (Accepted/In press) In: Cancer gene therapy.
- Age-related mesenchymal stromal cell senescence is associated with progression from MGUS to multiple myeloma [...] Stewart, S. A., [...], Jun 2025, In: Leukemia. 39, 6, p. 1464-1475 12 p., 606.
- Decellularized Extracellular Matrix Scaffolds to Engineer the Dormant Landscape of Microscopic Colorectal Cancer Liver Metastasis [...], Stratman, [...], 2025, (Accepted/In press) In: Advanced Healthcare Materials. Deng
- Bayliss–Starling Prize Lecture: KATP channel pathophysiology – a whole-body odyssey Nichols, C. G., Jun 1, 2025, In: Journal of Physiology. 603, 11, p. 3293-3305 13 p.



Grants & Awards

- Ziao Fu (Co-PI) with Yuriy Kirichok: *In situ architecture of mammalian respirasome*; CIMED Pilot & Feasibility Grant Program; 05/01/2025-04/30/2026
- Marion Stunault (Co-PI) with Anjali Yadav: *Metabolic Reprogramming of the Hippocampus by the Ketogenic Diet in Alzheimer's Disease*; McDonnell Center for Systems Neuroscience; 07/01/2025-06/30/2027
- Zhongsheng You: *Dual Role of TRPV2 in the STING-mediated innate immune response*; NIH/NIAID; 07/25/2025-06/30/2029
- Sheila Stewart: *Senescent CAFs in Breast Cancer Progression*; NIH/NIA; 08/05/2025-04/30/2030
- Ghazaleh Ashrafi: Supplement Support for *Cellular mechanisms of bioenergetic plasticity*; NIH/NIGMS; 07/01/2025-06/30/2026
- Jin Park (Graduate Student in the lab of Dr. Chun-Kan Chen): *2025 RNome Disruptive Research Grant*; Zymo Research Corporation; 08/01/2025-07/31/2026



Jue Chen, PhD



Timothy Springer, PhD

CB&P is excited to host two distinguished lectureships each academic year. The Robert P. Meacham Distinguished Lectureship will be held each spring, and the Erlanger-Gasser Lecture happens in the fall. In November, we were pleased to host Dr. Jue Chen, William E. Ford Professor, Head of Laboratory of Membrane Biology and Biophysics, and Investigator with the Howard Hughes Medical Institute. Her presentation, “How small molecules rescue a folding disease: principles learned from the ion channel CFTR” was a fascinating look at her team’s advancements in cystic fibrosis. We are in the process of selecting the speaker for next year’s Erlanger Gasser Lecture. Stay tuned!

This spring (March 31st), we look forward to welcoming Dr. Timothy A. Springer, Latham Family Professor of Biological Chemistry and Molecular Pharmacology, as the 2026 Robert P. Meacham Distinguished Lecturer. We will announce additional details about Dr. Springer’s presentation in the coming weeks.



Lectureships

The RISE Fellows Program is a new initiative to hire outstanding new faculty members into the Department of Cell Biology & Physiology. As the department’s fellowship program, RISE (Retention and Inclusion of Scholars for Excellence) is designed to match talented early-career scientists with WashU Medicine’s unparalleled research infrastructure, dedicated faculty mentors, and culture of scientific audacity — where researchers are encouraged to take on the toughest problems and the most complex questions. Unlike traditional postdoctoral roles, during which researchers work in a senior faculty member’s lab before eventually leaving to start their own lab elsewhere, RISE fellows start developing a fully independent research program from day one. If successful, they transition directly into tenure-track faculty positions at WashU Medicine in three years, with uninterrupted momentum.

Alex Francette is a first-generation doctoral graduate who earned his PhD in molecular biology at the University of Pittsburgh in 2024. At WashU Medicine, his mentorship team spans departments and specialties, giving him access to expertise in messenger RNA (mRNA), imaging, and mammalian tissue culture, all essential to his research. His new lab is a short walk from both the McDonnell Genome Institute, where he can call on specialized assistance to analyze his large data sets of transcription elongation molecules, and the world-class microscopy facilities of the Washington University Center for Cellular Imaging, where he can observe the effects of transcription variation in his cell cultures.

All told, it is a veritable candy store for an early-career molecular biologist with Francette’s aspirations.



RISE Fellows





We're thrilled to feature Christopher Archer of the Kast Lab in this edition's student highlight! He is originally from New Jersey and earned his BS in Biological Sciences from the University of Notre Dame in South Bend, Indiana. As an undergraduate, he worked in a cell biology lab, and although he knew he wanted to pursue graduate training in cell biology, he wasn't yet sure which direction he wanted to take. WashU drew his attention because of its diverse research environment, top-tier faculty, abundant resources/equipment, and collaborative culture. He is now an MCB student, and, after speaking to Dr. Kast and later rotating in his lab, Christopher decided to officially join the Kast Lab due to his enthusiasm for their research. The lab also offered him the opportunity to take on a relatively new project and to grow into a more resilient scientist. He particularly appreciates Dr. Kast's emphasis on engaging with the CB&P, MCB, and WashU communities, and on thinking beyond the bench.

Christopher's research focuses on the function of lipid droplets and the roles of lipid droplet metabolism in the innate immune response to viral RNA. He is also working on a project aimed at characterizing how the protein ArfGAP2 regulates STING's proton channel function and STING-induced cytokine trafficking. Looking ahead, he hopes to pursue a career in science policy, where he can help promote informed scientific legislation and decision-making at the state or local level. To support this goal, he has been involved in a WashU graduate student club called ProSPER (Promoting Science Policy, Education, and Research).

He has truly enjoyed being engaged with both the CB&P department and the MCB program-attending events such as the CB&P seminar series, Friday WIPs, and the joint CB&P/MCB retreat. He is even serving as one of the MCB student representatives. These communities bring together people with diverse scientific backgrounds, research interests, and personal experiences, and Christopher has stated that interacting with them has greatly enriched his growth as both a scientist and a person. The presentations he attends and the conversations he participates in have continually challenged him to think differently about his work and motivated him to keep improving as a learner.





It is our pleasure to recognize postdoctoral researcher Dr. Marion Stunault of the Ashrafi Lab. She grew up in a small Provençal village in the south of France called Valbonne, where she also completed most of her undergraduate studies. From an early age, she was deeply intrigued by science, a curiosity that led her to pursue her education at the Université Côte d'Azur in Nice with the firm intention of becoming a researcher. Her fascination with how cells communicate—both with each other and with their surrounding environment—was shaped in part by a childhood experience when her sister suffered a fever-induced seizure, sparking her interest in how neuronal firing spreads throughout the brain. This early curiosity ultimately guided her toward specializing in neurobiology and cellular physiology.

During her PhD, Marion investigated metabolic crosstalk between brown adipose tissue and immune cells. Because metabolism is a key environmental factor influencing cell behavior, her work revealed a new role for immune cells by showing that metabolic changes recruit monocytes to brown adipose tissue, where they support its architecture and help it adapt to environmental demands—an elegant example of cellular communication and cooperation.



She first learned about Washington University's excellence and multicultural environment from her PhD advisor, who had completed a postdoctoral fellowship in the Department of Immunology in the Gwendolyn Randolph Lab. Motivated by a desire to explore the connection between metabolism and neuronal physiology, Marion was excited to join the Ashrafi Lab as a postdoctoral research associate. Her current research focuses on how the ketogenic diet and ketone bodies influence synaptic physiology and function. The ketogenic diet—high in fat and low in carbohydrates—is known for its anti-epileptic effects, and emerging evidence suggests it may also provide neuroprotection in a range of neurological disorders, including Alzheimer's and Parkinson's disease. In the Ashrafi Lab, she combines functional imaging of individual synapses with proteomic

and genomic approaches to uncover how neurons adapt to ketone utilization and to identify new therapeutic targets that could improve the lives of patients and their families.

Marion's long-term goal is to become an independent academic researcher dedicated to unraveling the complex mechanisms that regulate brain function in both health and disease, while mentoring the next generation of scientists. She is also an active member of the Early Career Executive Council of the Center of Regenerative Medicine (CRM), where she contributes to bringing together researchers from across the university, fostering collaborations and innovative scientific projects—an effort she believes is central to WashU's research excellence.

Within the Cell Biology & Physiology departments, she has found not only long-lasting collaborators but also close friends, along with access to top-tier facilities and opportunities to engage with world-class scientists, including Nobel laureates. These experiences are rare to find elsewhere. Additionally, she is supported by the McDonnell Systems Neuroscience Small Grants Program as a co-principal investigator with Anjali Yadav, working to examine how the ketogenic diet may induce metabolic reprogramming in the hippocampus in the context of Alzheimer's disease.



For the faculty highlight, we are excited to introduce CB&P's newest PI, Dr. Edward Marti! From an early age, Ed was drawn to science and math, encouraged by academically minded parents and by a lively community of fellow high school "science nerds" he met through Science Bowl. Although he began college intending to study chemistry and math, he quickly gravitated toward physics and stayed on that path through graduate school. During his Hertz Fellowship, the constant exposure to research in various fields and a crash course in communicating with people who had very different scientific vocabularies (including a couple of Hertz friends) gave him the nudge toward biology.

His upbringing wasn't rooted in the sciences—his father is a philosopher and his mother an anthropologist—but both always encouraged science and math. Today, his four-year-old son is a budding scientist; sharing space stories and scientific adventures with him is one of Ed's great joys.

He grew up in Los Angeles before heading north to the Bay Area, where he remained for many years. He completed both his BA and PhD in physics at UC Berkeley—becoming a "Double Bear" with 10 months spent in between doing research at Laboratoire Kastler Brossel/École normale supérieure in Paris. Later, after his first postdoc, he attended the renowned Physiology course at the Marine Biological Laboratory in Woods Hole, a transformational experience that absolutely deserves a line on anyone's CV.



Ed's postdoctoral path took him first to JILA, a joint institute of CU Boulder and NIST, where he helped develop the world's most accurate atomic clock at the time, cooling atoms to billionths of a degree above absolute zero and studying their behavior as the team-controlled interactions among just a few atoms. Although he loved this work, he found himself wanting a more direct connection to human lives. That desire led him to a second postdoc at Stanford with Steves Chu and Quake, who supported his transition into biophysics and bioengineering despite his unconventional background. There, he contributed to super-resolution optical microscopy, single-cell RNA statistical analysis, and a multimolecular ultrasound technique that ultimately shaped his present research.

Now as an Assistant Professor of Cell Biology and Physiology, he leads a lab developing next-generation 3D super-resolution ultrasound to map microvascular architecture at roughly ten-fold finer resolution than current clinical systems. His team aims to visualize how microvascular networks remodel over time in organs such as the brain, heart, and kidney, and to pair these advances with modern AI methods for extracting subtle vascular patterns from massive imaging datasets. He is also building clinical collaborations in areas including metastatic lymph-node imaging and improved visualization of primary tumors.

Faculty Highlight (continued)



Throughout his career, the greatest challenge has been navigating uncertainty—not the scientific kind which he accepts as part of the process, but the life logistics that accompany academic paths. Despite these hurdles, Ed describes Washington University as an extraordinarily welcoming and collaborative environment and is grateful to colleagues who have helped him integrate into new model systems and translational research.

Ed finds the freedom to pursue whatever he discovers genuinely interesting. With ultrasound technology in the middle of a renaissance, he enjoys the variety of working at the field's leading edge—one week developing computational tools, another building custom hardware, another partnering with clinicians. At the same time, the scale of the data presents significant challenges: the system generates a gigabyte per second, requiring sophisticated data handling and substantial computing power to produce massive 3D vascular maps.

Looking ahead, his research is poised to advance along two major directions: pushing the limits of imaging in small-animal models to observe microvascular remodeling in real time and creating human-focused imaging pipelines that can detect early vascular changes and guide precision diagnostics. Ultimately, he hopes to develop bedside tools that provide rapid, quantitative assessments of microvascular health.

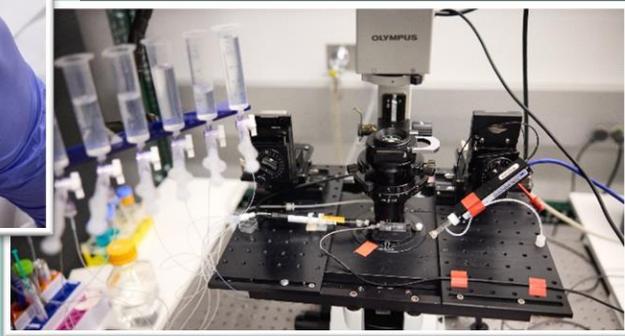
He credits scientific role models and reading biographies of Barbara McClintock and Katalin Karikó with shaping his approach to research and perseverance. Outside the lab, Ed enjoys hands-on creative work at Arch Reactor, a local makerspace, where he is learning woodworking and building toys for his son. His advice to young scientists is simple: don't blindly follow your passion, but work with good, kind people. In a supportive environment, both science and scientists thrive.





Make an Impact

Please consider giving today



For over a century, the Department of Cell Biology & Physiology has led basic science research that has been the foundation of one of the premier medical schools in the country. In these times, when federal funding for discovery research is being questioned and cut, it is critical to have donors like you to help us sustain our research and education ventures. These activities are not only a part of our mission as an academic medical center but are essential for the translation of science into improved patient care. This year, we are especially welcoming funds to endow the new Robert P. Mecham Distinguished Lectureship.



WashU Medicine