

Volume 3

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Washington University in St. Louis

SCHOOL OF MEDICINE

## Department of Cell Biology & Physiology Newsletter

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### **A Message from the Chair**

Our 23-24 year is already in full swing, and many of us are still wondering where the summer went! The Department of Cell Biology & Physiology has a tremendous amount of forward momentum. We continue to grow our missions in research and training the next generation of scientific leaders, with special emphasis on making research careers open and inclusive for everyone. We just welcomed our newest faculty member, Dr. Xue-Yan He, who joins us from the Cold Spring Harbor

Laboratory to build a new research program investigating the interplay between neutrophils and cancer. Our new post-baccalaureate research program, designed to provide research experience for recent graduates interested in pursuing the PhD, was recognized by the NIH for a prestigious R25 PREP Award, co-led by Drs. Heather True and David Kast from our department. Finally, we have launched our new RISE Scholars program, which provides a fast-track to the faculty for outstanding new PhD and early postdoctoral scholars. All these opportunities are exciting, and we look forward to watching them come to fruition.

While we have been enjoying our success, however, it remains bittersweet given the on-going tragedies in Israel, Ukraine, as well as many other places around the world that our new media rarely cover. Members of our community are rightfully distressed over these situations, including many who have family and personal connections directly in harm's way. The department and I want to express our deep sorrow and offer our support to all who are hurting. We cannot turn a blind eye to the tragic events around us, and I continue to hope that peace will overcome the on-going evil and injustice we are witnessing daily.

As I mentioned in the last newsletter, we are looking forward to welcoming Jonathan Weissman for the Erlanger-Gasser Lecture in December, and Richard Hynes for the inaugural Mecham Distinguished Lecture next April. We are raising funds to establish a permanent endowment for the Mecham Lectureship and welcome all contributions for his friends and colleagues!

Best wishes to all of you for the fall, and for 2024.





## Announcements

- Sheila Stewart was installed as the Gerty. T. Cori Professor of Cell Biology & Physiology.
- Ghazal Ashrafi was awarded the CZI Ben Barres Early Career Acceleration Award.
- Xue-Yan He, Ph.D. joined the department as an Assistant Professor in October.
- Lei Tang was promoted to Manager of Financial Planning of WUCCI in July.
- Amber Stratman was awarded the NAVBO 2023 Springer Junior Investigator Award.
- The 2023 CBP/MCB joint retreat was held November 9-10 at YMCA Trout Lodge.
- Sarah Colijn (Stratman Lab), Rachel Guerra (Pagliarini Lab), Dhaval Bhatt (Major Lab), Xiaoyu Yuan (Stewart Lab), and Taylor Malachowski (Stewart Lab) won best talk and poster awards at the 2023 CBP/MCB retreat.
- Dymonn Johnson and Sarah Colijn of the Stratman Lab received poster awards at the 11<sup>th</sup> Annual Cardiovascular Research Day.
- The Postbaccalaureate Program in Developmental Biology, Cell Biology, and Regenerative Medicine received PREP grant.
- Jeongmin Lee of the Piston Lab was awarded the David and Deborah Winston Fellowship in Diabetes Research.
- Victoria Ismail of the Kast Lab successfully defended her thesis on August 25<sup>th</sup>.
- Lingzhen Kong of the You Lab successfully defended her thesis on June 26<sup>th</sup>.



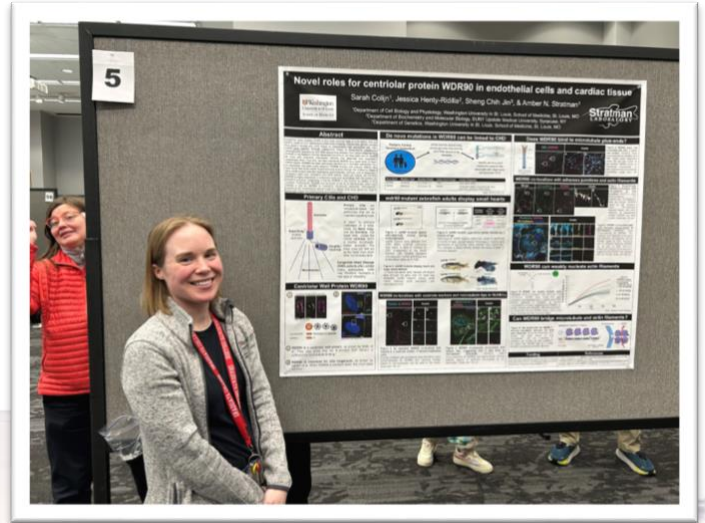
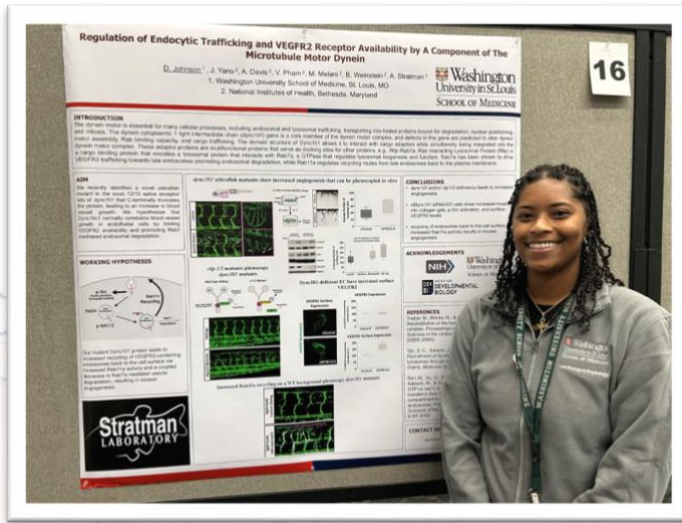
## Upcoming Events

- The 2023 State of the Department presentation will be held November 30<sup>th</sup>.
- The 2023 Cell Biology Holiday party will be held December 7<sup>th</sup> at Pin-Up Bowl on the Delmar Loop.
- The 2023 Erlanger-Gasser Lecture will be held at WUSM December 5, 2023 and will feature Jonathan Weissman, PhD of MIT as the keynote lecturer.
- The first annual Robert P. Mecham Distinguished Lectureship will be held in April 2024 and will feature Richard Hynes, PhD of MIT as the keynote lecturer.
- The faculty seminar series is held every Tuesday at 1:00 PM in McDonnell Sciences, room 423.
- The CBP/MCB Work-in-Progress (WIP) Seminar is held every Friday at 4:00 PM in McDonnell Sciences, room 423.
- Lab-hosted Social Hour is held every Friday at 4:30 PM in McDonnell Sciences, room 423.



2023 CBP/MCB Joint Retreat





*Dymonn Johnson and Sarah Colijn (Stratman Lab) with their winning posters*



## Recent Additions

- The Cell Biology-affiliated Postbaccalaureate Scholars Class of 2025 joined the department (June 2023).
- Anh Nguyen joined the Goldfarb Lab as a Bioinformaticist (June 2023).
- Jessica Milano-Foster joined the Lishko Lab as a Postdoctoral Researcher (July 2023).
- Alex Jacoby joined the Pavlovic-Djuranovic Lab as a Research Technician I (July 2023).
- Marjori Russo joined the Crewe Lab as a Research Technician II (July 2023).
- Elisa Kachaj joined the Administrative Team as a Financial Analyst III (July 2023).
- Hong Bok Lee joined the Klyachko Lab as a Postdoctoral Researcher (August 2023).
- Merima Forny joined the Pagliarini Lab as a Staff Scientist (August 2023).
- Jasmin Sponagel joined the Ashrafi Lab as a Postdoctoral Researcher (August 2023).
- Ellen Thompson joined the Nichols Lab as a Research Technician I (September 2023).
- Xue-Yan He joined the department as an Assistant Professor (October 2023).
- Mujeeb Pirzada joined the Djuranovic Lab as a Postdoctoral Researcher (October 2023).
- Radhika Mishra joined the Stewart Lab as a Postdoctoral Researcher (October 2023).
- Julia Castro Arnau joined the Lishko Lab as a Postdoctoral Researcher (November 2023).



## Publications

- Polino AJ, [...], and Hughes JW: Scanning electron microscopy of human islet cilia (*PNAS*; May 2023).
- Mason DE, [...], and Boerckel JD: Mechanotransductive feedback control of endothelial cell motility and vascular morphogenesis (*eLife*; June 2023).
- Skinner WM, [...], Lishko PV: Mitochondrial uncouplers impair human sperm motility without altering ATP content (*Biology of Reproduction*; June 2023).
- Crewe C: Energetic Stress-Induced Metabolic Regulation by Extracellular Vesicles (*Comprehensive Physiology*; June 2023).
- Tan K, [...], and You Z: Clinical evidence for a role of E2F1-induced replication stress in modulating tumor mutational burden and immune microenvironment (*DNA Repair*; June 2023).
- Maksaev G, [...], and Nichols CG: Subunit gating resulting from individual protonation events in Kir2 channels (*Nature Communications*; July 2023).
- Gao J, [...], and Nichols CG: Rapid Characterization of the Functional and Pharmacological Consequences of Cantú Syndrome  $K_{ATP}$  Channel Mutations in Intact Cells (*Journal of Pharmacology and Experimental Therapeutics*; August 2023).
- Quinta HR, [...], and Maschi D: Molecular and cellular mechanisms of synaptopathies: emerging synaptic aging-related molecular pathways in neurological disorders (*Frontiers in Aging Neuroscience*; August 2023).
- Wamsley NT, [...], and Major MB: Targeted Proteomic Quantitation of NRF2 Signaling and Predictive Biomarkers in HNSCC (*Molecular & Cellular Proteomics*; September 2023).



- Baker ZN, [...], and Pagliarini DJ: Mitochondrial proteome research: the road ahead (*Nature Reviews Molecular Cell Biology*; September 2023).
- Polino AJ, [...], and Piston DW: Disrupting actin filaments enhances glucose-stimulated insulin secretion independent of the cortical actin cytoskeleton (*Journal of Biological Chemistry*; October 2023).
- Tai J, [...], and Pagliarini DJ: Hem25p is required for mitochondrial IPP transport in fungi (*Nature Cell Biology*; October 2023).
- Niemi NM, [...], and Pagliarini DJ: PPTC7 maintains mitochondrial protein content by suppressing receptor-mediated mitophagy (*Nature Communications*; October 2023).
- Crewe C, and Brestoff JR: Burning Fat to Fuel EVs (*Diabetes*; October 2023).
- Tiash S, [...], and Crewe C: A guide to studying mitochondria transfer (*Nature Cell Biology*; October 2023).
- Guerra RM, and Pagliarini DJ: Reducing mitochondrial mysteries (*Nature Chemical Biology*; October 2023).
- Onken MD, [...], and Blumer KJ: Protein Kinase Signaling Networks Driven by Oncogenic Gq/11 in Uveal Melanoma Identified by Phosphoproteomic and Bioinformatic Analyses (*Molecular & Cellular Proteomics*; November 2023).
- Clippinger AK, [...], and Hanson PI: IST1 regulates select recycling pathways (*Traffic*; November 2023).
- Kast DJ, and Jansen S: Purification of modified mammalian actin isoforms for in vitro reconstitution assays (*European Journal of Cell Biology*; November 2023).

- Sergej Djuranovic: Dissecting mRNA-ribosome interaction in AU-rich transcriptome of *Plasmodium falciparum*; NIH/NIGMS; April 2023-March 2024.
- David Kast: Regulation of Lipid Droplet Biogenesis and Lipophagy; NIH/NIGMS; April 2023-March 2024.
- Silvia Jansen: Regulation of membrane trafficking by Coronins; NIH/NIGMS; May 2023-April 2024.
- Zhongsheng You: Molecular mechanisms of DNA damage signaling and repair; NIH/NIGMS; May 2023-April 2024.
- Chun-Kan Chen: Identify TNBC-Associated Somatic Mutations That Influence CircRNA Translation; ICTS; June 2023-June 2024.
- Colin Nichols: KATP deficiency in hyperinsulinism and diabetes; NIH/NIDDK; July 2023-March 2028.
- Colin Nichols: TriMED: Measuring, Modeling and Manipulating Excitability and Disease; NIH/NINDS; July 2023-June 2028.
- Colin Nichols: Development of tools and knowledge to facilitate the investigation of chloride channel regulator CLCA2 in rare human diseases; NIH/NCATS; August 2023-July 2024.
- Ben Major/Dennis Goldfarb: Washington University (WU) ROBIN Center: MicroEnvironment and Tumor Effects Of Radiotherapy (METEOR); NIH/NCI; September 2023-August 2028.
- Vitaly Klyachko: Unraveling the role of satellite glial cells in sensory hypersensitivity in Fragile X syndrome; NIH/NICHHD; September 2023-August 2025.
- Ben Major: Integrating multi-omics, imaging, and longitudinal data to predict radiation response in cervical cancer; NIH/NCI; September 2023-August 2028.
- David Piston: Washington University Rheumatic Diseases Research Resource-based Center; NIH/NIAMS; September 2023-August 2028.
- Heather True/David Kast: Washington University Postbaccalaureate Research Education Program; NIH/NIGMS; September 2023-August 2028.
- Heather True: Innovations in Graduate Education; NSF; October 2023-September 2026.
- Ghazal Ashrafi: Investigating Neuro-astrocytic Crosstalk In Ketone Metabolism; ICTS; October 2023-October 2024.
- Xue-Yan He: Pedal the Cause Researcher at SCC; BJHF; November 2023-October 2026.
- Ghazal Ashrafi: Metabolic Crosstalk between Neurons and Astrocytes in Neurodegeneration; Chan Zuckerberg Initiative; December 2023-November 2027.



## Grants & Awards





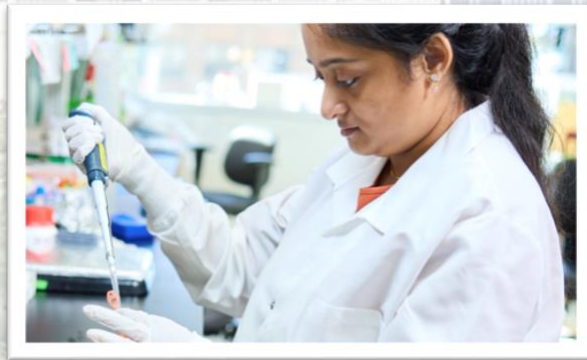
## Professor Installation



On October 19<sup>th</sup>, Dr. Sheila Stewart was installed as the Gerty T. Cori Professor in the Department of Cell Biology & Physiology. Dr. Stewart presented her research “Understanding How Age-Related Stromal Changes Drive Tumorigenesis.” Members of the Cell Biology Department, along with colleagues from across the School of Medicine and Dr. Stewart’s family gathered to celebrate this incredible achievement. Dr. Stewart’s presentation is available to [watch here](#). Congratulations, Sheila!



## RISE Fellows



The RISE Fellows Program is a new initiative to hire outstanding new faculty members into the Department of Cell Biology & Physiology. In particular, the program seeks to identify individuals at earlier career stages (e.g., recent Ph.D. graduates or early-stage postdoctoral fellows) than typical faculty candidate applicants. The program begins with

a three-year mentored Fellow position followed by a transition into a traditional tenure-track Assistant Professor position. Any candidate that is in the final year of PhD training in a field related to biomedical sciences or that has held a PhD for fewer than three years is eligible. Individuals that meet the [NIH requirements](#) for populations underrepresented in the extramural scientific workforce are strongly urged to apply. To learn more, please visit the program [website](#).





## Student Highlight



For this edition's student highlight, we are excited to present Courtney Jungers! Courtney is a fourth-year graduate student in the lab of Sergej Djuranovic studying post-transcriptional gene regulation of RNA by microRNAs and RNA-binding proteins. Specifically, how AU-rich elements and AU-rich element binding proteins can impact gene expression regulation through RNA stability, translation efficiency, and splicing. Courtney was born and raised in a tiny town in Wisconsin, called Waupaca ("Go Pack Go!") and attended Marquette University in Milwaukee, WI. She remained on as a laboratory technician for one year after graduating. Her undergraduate research mentor (Sofia Origanti) completed her post-doctoral training at Wash U in the CB&P department and her positive memories of the experience inspired Courtney to pursue her Ph.D. at the same institution. An early interaction with her future PI at a conference at Cold Spring Harbor

further solidified Courtney's interest in Wash U CB&P. "I love the range of research that takes place in this department and even though there are very different topics it is still a very collaborative department!" Though not fully committed to her post-graduation plans, Courtney is interested in going into industry in a postdoctoral position, ideally in the Midwest. "I have really enjoyed my time here in St. Louis and at Wash U. St. Louis is a great city to live in, especially when you live on a graduate stipend! There are always fun (and usually free) events happening and there are great camping and hiking places nearby. Wash U and CB&P have been instrumental for my doctoral training. The facilities are second to none and it is such a collaborative and supportive environment!" In addition to her important research, Courtney also teaches at Pure Barre studio in the Central West End where she enjoys spending time with the Wash U community off campus!



We are pleased to present a fellow cheese head for our faculty highlight! Dr. Heather True grew up in The Frozen Tundra (aka Green Bay, WI) where she attended the University of Wisconsin - Parkside. Lab courses with weekend modules allowed Heather to discover how much she liked research. She continued on to the University of Illinois - Urbana for a PhD in microbiology and thesis work that was focused on catalytic RNA in *Tetrahymena*. After completing a postdoc at MIT, Heather longed to return to the Midwest. Thankfully the CB&P Department at Wash U brought a supportive and welcoming environment where Heather felt comfortable launching her research program.

The True Lab is interested in proteostasis (proteome regulation and protein folding), and misfolded proteins that can cause many human diseases. Much of her focus the last several years has been on an inherited form of muscular dystrophy that is caused by mutations in a chaperone. Her lab

uses genetic screens in yeast as a discovery platform and a lot of biochemical assays to tease out what is happening in cells to translate what they find into therapeutic approaches. In addition to her research responsibilities, Heather recently received NSF and PREP grants for the Interdisciplinary Scientific Immersion Program (ISIP). This program was designed, in part, to improve the student's transition from undergrad to grad school. "I wanted to capitalize on the breadth of DBBS and promote more cross-talk among students and do it in a way that is mindful of pedagogy and key core competencies. We will refine the program, evaluate it, and disseminate it to other institutions with this funding. I think our trainees can have a huge impact on interdisciplinary science, collaborations, and important discoveries if we provide more avenues to do so!" As a Midwest native, it was easy for Heather to feel at home in St. Louis. Access to sporting events, concerts, festivals, parks, great restaurants, and many mountain bike trails keep Heather and her family busy. She is pleased that CB&P and WashU have been every bit as collaborative and welcoming as she had hoped and that she has been pulled into new areas by colleagues motivated to understand proteostasis problems. And she would be remiss if she didn't include: "Go PACKERS!"



## Faculty Highlight





Make an Impact

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.

Please consider giving today