Greetings Alumni, Faculty and Friends,

There are many exciting pieces of good news and new discoveries in this newsletter. The department under its new name has continued to be highly successful. Several of our faculty have won prestigious awards, and many have successfully acquired new grants and renewals. Our department has published breakthrough papers in top-tier journals, such as *Nucleic Acids Research*, *Nature*, *Cell Biology*, and the *Journal of Neuroscience*.

Our successes would not be possible without our talented graduate and undergraduate students and our fabulous administrative staff. Our undergraduate students continue to flourish in the laboratory. Our graduate students continue to make seminal contributions to the field and to be recognized within and outside the university for their accomplishments. They are a highly sought-after group for employment in the private sector and many have plans to attend professional school next fall. Finally, we would not be where we are without our talented administrative team. Ms. Rosemary Stratton, our departmental administrator continues to navigate the department through challenging economic times. Ms. Judy Means remains an invaluable mainstay for the Biochemistry and Molecular Biology office and is celebrating her 10th anniversary in the department this June. Our newest hire, Ms. Sonya Housholder, is a long-time employee of the university who brings great expertise to the department—we are fortunate to have such a talented and dedicated group to support us!

The department has had many exciting developments over the past year, such as the awarding of Iowa Medical Advances, Discoveries, and Explorations. This generous grant from the Walder Foundation funds innovative research ideas being pursued by faculty in the Department that are not quite at the level of federal funding. Through this initiative, four faculty were provided with seed grant monies to help them establish new projects for federal funding.

In addition to these achievements, our future is very bright. In February, the Carver College of Medicine Dean's Office launched a search for a new chair of Biochemistry and Molecular Biology. We have hired a new instructor, Dr. Will Hacker, and are amid a search for a new, tenure-track Assistant Professor.

Finally, in August of this year, the Department will celebrate its 75th anniversary! Former students, postdocs, faculty, technicians, and friends are invited to join us on August 25, 2023, to reminisce about the old times, engage in scientific discussion, and enjoy one another’s company. We look forward to seeing you at the celebration.

Kris DeMali, PhD
Professor and Interim Chair and
Departmental Executive Officer,
Department of Biochemistry
and Molecular Biology

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Gift Announcements
The Department of Biochemistry and Molecular Biology sincerely thanks our supporters for their generous donations supporting faculty, staff, and students.

WALDER FOUNDATION
The department has been awarded a grant entitled, Iowa Medical Advances, Discoveries, and Explorations (Iowa MADE) from the Walder Foundation. Iowa MADE is designed to support seed grant proposals that catalyze innovative scientific research of nature that Professor Emeritus Joseph Walder pursued when he was a faculty member in the Department of Biochemistry and Molecular Biology. Research targeting the potential to initiate new lines of investigation that contribute major scientific breakthroughs, significant improvements to human health, and/or to foster technological advancements will be funded by this grant mechanism.

YUAN C LEE AND REIKO T LEE AWARD
The Yuan C. Lee and Reiko T. Lee Award will support one or more annual awards to deserving international students in the Department of Biochemistry and Molecular Biology.

Annual Retreat
The 2022 Biochemistry and Molecular Biology 13th Annual Scientific Retreat took place on September 8, 2022, at the Terry Trueblood Recreation Area. Keynote lectures were given by Jeffrey Hardin, PhD of the University of Wisconsin-Madison, and Eric Weiss, PhD of Northwestern University. A social followed at Big Grove Brewery.

SAVE THE DATE!!
The 2023 Biochemistry and Molecular Biology 75th Anniversary and 14th Annual Scientific Retreat are scheduled for Friday, August 25 at the Levitt Center for University Advancement. This year’s event features our alumni with talks, a panel discussion, posters, and more. Updates and a registration link to attend are available via the QR code or online with the link below.

https://medicine.uiowa.edu/biochemistry-molecular-biology/75thAnniversaryRetreat
Faculty Recognition

Michael Schnieders received an inaugural Iowa Mid-Career Faculty Scholar Award in 2022. The award provides funding to assist top, mid-career tenured associate professors who have an established national or international reputation in their discipline and are exceptional teachers in and outside the classroom.

Marc Wold received a 2023 Carver College of Medicine Impact Scholar award for achieving a Hirsch index (h-index) score of 50 or higher. The h-index score represents the number of research articles a faculty member has published and the articles’ impact as determined by how many times they have been cited by other scientists and scholars in subsequent research articles.

Kris DeMali received the 2022 Carver College of Medicine John P. Long Award in the Basic Sciences. This award recognizes outstanding career-level teaching contributions by a basic science faculty member.

John Donelson, professor emeritus, received an inaugural 2023 University of Iowa Highly Prestigious Faculty Award during an investiture event honoring University of Iowa faculty who have been recognized with a highly prestigious award, as designated by the National Research Council (NRC).

An investigation into how HCN1 channels in rods and cones regulate the temporal properties of vision that was carried out by Colten Lankford as part of his thesis work under the mentorship of Sheila Baker was featured on the cover of the May 2022 issue of the Journal of Neuroscience.

Todd Washington's work was featured on the cover of the April 15, 2023 issue of the Journal of Molecular Biology. Drawn by Maria Spies, the cover refers to the article in Volume 435, Issue 4, 28 February 2023, 167946 by Ling et al. titled "Fork-remodeling helicase Rad5 preferentially reverses replication forms with gaps in the leading strand." The illustration highlights the work carried out by Justin Ling on the mechanism by which a DNA motor Rad5 recognizes, and processes stalled DNA replication forks.
Celebrating Service

The Department of Biochemistry and Molecular Biology would like to recognize some of our professors for their service to this department, the Carver College of Medicine, and the University of Iowa. For the longevity and depth of their tenure, in 2022 we recognized Peter Rubenstein for his 45 years of service, Daniel Weeks for 35 years, Brandon Davies for 10 years, Maria Spies for 10 years, M. Ashley Spies for 10 years, and Michael Schnieders for 10 years of service to the university. In 2023 we recognize M. Todd Washington for his 20 years of service to the university. Our students, alumni, and department are grateful for their hard work and commitment.

Newly Awarded Grants

Sheila Baker, PhD
- In Vivo Metabolic Labeling of Photoreceptor Proteins, National Institutes of Health, R21, 2022-2024
- The Impact of Mitochondrial Positioning on Vision, Walder Charitable Fund, Iowa Medical Advances, Discoveries, and Explorations (Iowa MADE), 2022-2023

Brandon Davies, PhD
- Regulation of Endothelial Lipase and HDL Metabolism by ANGPTL3, National Institutes of Health, R01, 2023-2027
- A Novel CREBH-derived Hepatokine Regulates Triglyceride Metabolism, Subaward with Wayne State University, National Institutes of Health, R01, 2023-2027
- Regulation of Fat Absorption by ANGPTL4, Walder Charitable Fund, Iowa Medical Advances, Discoveries, and Explorations (Iowa MADE), 2022-2023

Kris DeMali, PhD
- Therapies for Ventilator-Induced Lunch Injury, Walder Charitable Fund, Iowa Medical Advances, Discoveries, and Explorations (Iowa MADE), 2022-2023

Adrian Elcock, PhD
- Molecular Modeling and Simulation of the SARS-CoV-2 Genome, Carver Trust COVID-19 Pilot Award, University of Iowa, 2023-2024

Ernesto Fuentes, PhD
- Molecular Mechanisms Regulating Bacterial Two-component Signaling Systems, National Institutes of Health, R01, 2023-2028
- Design of PDZ Domain Molecular Recognition, Walder Charitable Fund, Iowa Medical Advances, Discoveries, and Explorations (Iowa MADE), 2022-2023
Miles Pufall, PhD
- Treating Advanced Uterine Endometrial Cancer by Reactivating p53, Subaward with the University of New Mexico, U.S. Department of Defense, Army Medical Research and Material Command, 2022-2026
- Molecular Underpinnings of Photoreceptor Transcriptional Regulation by CRX and NRL, Collaboration with Nilolai O. Artemyev, University of Iowa, National Institutes of Health, R01, 2023-2026

Maria Spies, PhD, and M. Ashley Spies, PhD
- Natural Products Inhibitors Targeting Homology-directed DNA Repair for Cancer Therapy, Multi-PI with Maria Spies, University of Iowa, National Institutes of Health, R21, 2023-2025

Maria Spies, PhD
- Assembly and Dynamics of Molecular Machines in Genome Maintenance, National Institutes of Health, R35 Equipment Supplement, 2019-2024
- EAGER: G4-TIRFM, a Platform for Massively Parallel Analysis of Non-canonical DNA Structures, National Science Foundation, Administrative Supplement, 2018-2022

M. Todd Washington, PhD
- Structural and Mechanistic Studies of DNA Bypass Pathways in Eukaryotes, National Institutes of Health, R35, 2023-2027

Highlighted Publications


Recent PhD Graduates

**FALL 2021**
Kellie Davie, PhD  
(Davies Laboratory)  
Postdoctoral Research Scholar in  
Dr. Brandon Davies’ laboratory at the University of Iowa

**SPRING 2022**
Fletcher Bain, PhD  
(M. Spies Laboratory)  
Postdoctoral Research Scholar in  
Dr. Maria Spies’ laboratory at the University of Iowa

**SUMMER 2022**
Zachary Wehrspan, PhD  
(Elcock Laboratory)  
Postdoctoral Research Scholar in  
Dr. Adrian Elcock’s laboratory at the University of Iowa

**SPRING 2022**
Christopher Ball, PhD  
(Price Laboratory)  
Postdoctoral Research Scholar in  
Dr. Jeannie T. Lee’s laboratory at Massachusetts General Hospital/Harvard Medical School

**SUMMER 2022**
Venkata Sanoboyana, PhD  
(Elcock Laboratory)  
Postdoctoral Research Scholar in  
Dr. Adrian Elcock’s laboratory at the University of Iowa

**SPRING 2022**
Divya Bhat, PhD  
(Cancer Biology Program)  
(M. Spies Laboratory)  
Postdoctoral Research Scholar in  
Dr. Aliasgar Salem’s laboratory at the University of Iowa

**SPRING 2023**
Kathryn Hobbs, PhD  
(A. Spies Laboratory)  
Postdoctoral Research Scholar in  
Dr. Ashley Spies’ laboratory at the University of Iowa

**SPRING 2023**
Mallory Tollefson, PhD  
(Biomedical Engineering Program)  
(Schnieders Laboratory)  
Postdoctoral Research Scholar in  
Dr. Michael Schnieder’s laboratory at the University of Iowa

**SPRING 2023**
Rae Corrigan, PhD  
(Biomedical Engineering Program)  
(Schnieders Laboratory)  
Postdoctoral Research Scholar in  
Dr. Michael Schnieders’ laboratory at the University of Iowa.

**SUMMER 2023**
Justin Ling, PhD  
(Washington Laboratory)  
Postdoctoral Research Scholar in  
Dr. Bret Freudenthal’s laboratory at the University of Kansas

**SUMMER 2023**
Emily Lavering, PhD  
(Weeks Laboratory)  
Assistant Professor of  
Biochemistry and Chemistry at the University of Michigan-Flint
Christopher Ball was selected for the 2022 Marion Dave Francis Innovator Award for the graduate student whose research has demonstrated their singular personal initiative, creativity, and resulting discontinuous discovery. In 2022, he was awarded the 2022 Subramanian Award for the best PhD thesis in the department. Dr. Ball’s thesis was entitled, “Mechanisms of transcriptional control during HCMV infection.” He completed his PhD with Dr. David Price in Spring 2022 and is currently a Postdoctoral Research Scholar in Dr. Jeannie T. Lee’s laboratory at the Massachusetts General Hospital/Harvard Medical School.

Zachary Wehrspan, who completed his PhD with Dr. Adrian Elcock, was awarded the 2023 Subramanian Award for the best PhD thesis in the department. Dr. Wehrspan’s thesis was entitled, “Whole cell models of Escherichia coli peptidoglycan”. He received his PhD in Summer 2022 and is currently a Postdoctoral Research Scholar in Dr. Adrian Elcock’s laboratory.

William Hacker, a Fall 2020 PhD graduate from Dr. Adrian Elcock’s laboratory, received the 2020-2022 Clarence P. Berg award for a graduate student who displays qualities of scholarship, integrity, cooperativeness and a willingness to help others. Following graduation, Dr. Hacker worked as a Postdoctoral Research Scholar in Dr. Adrian Elcock’s laboratory before being appointed as a Clinical Instructor in the Department of Biochemistry and Molecular Biology as of May 2023.

Cheryl Bailey, a PhD graduate from Dr. Daniel Weeks’ laboratory, was recognized as a Notable Leader in Higher Education by the Milwaukee BizTimes. Dr. Bailey is currently the Dean of the School of Natural and Health Sciences and Education at Mount Mary University in Milwaukee.

Sarah Hengel, a PhD graduate from Dr. Maria Spies’ laboratory, will begin their first faculty position at Tufts University in September 2023. Dr. Hengel’s research program focuses on uncovering the underlying mechanisms of how DNA damage caused by environmental toxicants at replication forks is recognized by the human Shu complex and repaired by either RAD51-dependent or RAD52-dependent damage repair mechanisms.
Student Accomplishments

The 2021 Dr. Lois Gehring Graduate Student Scholarships were awarded to Nicholas Hammons (Ernesto Fuentes laboratory), Rebecca Splitt (Kris DeMali laboratory), and Grace Ciampa (Long-Sheng Song laboratory). The 2022 scholarships were awarded to Logan Dawson (Kris DeMali laboratory), Nicholas Cronin (Kris DeMali laboratory), and Emily Lavering (Daniel Weeks laboratory). These scholarships are given to the most meritorious second-year graduate students based on academic and research achievements.

Nathan Mohar, a Genetics Program PhD Candidate in the laboratory of Lori Wallrath, was appointed to the NIH T32 Pharmacology Training Grant. Nathan also was awarded a 2nd place poster award at the 2022 Annual Interdisciplinary Graduate Program in Genetics Retreat.

A 2023 UI Graduate Summer Fellowship was awarded to Sara Mayer, a Genetics Program PhD Candidate in the laboratory of Lori Wallrath. Sara will use the award to support her continued research on the role of oxidative stress in Retinitis Pigmentosa, a vision disorder. Additionally, Sara won first place in the Science Art competition at the 2022 Midwest Drosophila Conference. Her artwork shows a developing fruit fly eye disc arranged in a flower pattern. The disc was fixed and stained for DNA (blue), photoreceptors (magenta), and apoptotic cells (green).

At the 2022 Annual Biochemistry and Molecular Biology Scientific Retreat, Julianna Hernandez (Pamela Geyer laboratory), Rebecca Splitt (Kris DeMali laboratory), and Isa Perales (Pamela Geyer laboratory) were selected to receive Best Poster Awards.

Rebecca Splitt, a graduate student in the laboratory of Kris DeMali, received the Mani V. Subramanian Award at the 29th Annual Center for Biocatalysis and Bioprocessing Conference in 2022.

Emily Lavering, a graduate student in the laboratory of Daniel Weeks, provided the cover art for the August 2022 issue of Development, Growth & Differentiation by the Japanese Society of Development Biologists. Emily also was selected to receive the Best Oral Presentation Award at the 2022 Annual Biochemistry and Molecular Biology Scientific Retreat.

Alex Dou, a second-year medical student, was awarded the Arthur A. Spector Award in Basic Biomedical Research at the 2022 Iowa Medical Research Program Conference for his presentation, "Dissociating the Structural Determinants of ANGPTPL3-Mediated Inhibition of El and Lpl." Alex was mentored by Dr. Brandon Davies as an M1 summer research student.
REX MONTGOMERY SCHOLARSHIP PRIZE

Cade Rahlf (Madeline Shea laboratory) was awarded the 2022 Montgomery Biochemistry Scholar’s Prize. Cade was recognized for his outstanding research accomplishments and excellent presentations at the Lata Symposium.

This prize was established to commemorate the late Dr. Rex Montgomery, Professor Emeritus of the Department of Biochemistry and Molecular Biology, who was admired for his impact as a researcher, teacher, and mentor. Dr. Montgomery was an internationally recognized carbohydrate biochemist and textbook author. While on the faculty, he served as Associate Dean for Academic Affairs in the College of Medicine, the Vice President of Research for the University and was the founding director of The University of Iowa Physician Assistant Program. Dr. Montgomery retired in 2005 after more than 50 years on the faculty.

REX MONTGOMERY SCHOLARSHIP AWARD

Emily Herum (Madeline Shea laboratory), Grace Johnson (Stefan Strack laboratory), and Lucy Siwicki (James Shepherd laboratory) were awarded the 2022 Rex Montgomery Scholarship Award.

Rex Montgomery Scholarships recognize sophomore or junior undergraduate students for their outstanding academic record and commitment to research. The purpose of this scholarship is to ease the recipient’s financial load at the University of Iowa during their undergraduate education and research training.

WITTMANN & KHORANA SCHOLAR AWARD

Spenser Johnson (Douglas Spitz laboratory) won the 2022 Professor H.G. Wittmann Scholar Award. He is studying the use of SOD mimetics as an adjuvant therapy to standard-of-care radio-and chemotherapies in head and neck squamous cell cancer. After graduation, Spenser will be attending Yale to do brain cancer research for two years and applying to MD/PhD programs during that time. Lanchi Nguyen (Donna Hammond laboratory) won the 2022 Professor H.G. Khorana Scholar Award. She is studying the effects of nicotinamide riboside on chemotherapy-induced peripheral neuropathy. After graduation, Lanchi will be taking a gap year and applying to med school in the summer of 2023.

The Wittmann and Khorana Scholar awards are given to graduating Biochemistry and Molecular Biology majors in recognition of their exceptional understanding of biochemistry and molecular biology.
2023 Gene F. Lata Undergraduate Research Symposium

Emily Herum, Madeline Shea laboratory
Target-Specific Dysfunctions of Mutants of Calmodulin

Nikhil Patel, Adrian Elcock laboratory
Towards Molecular Dynamics Simulation of Escherichia coli Inner Membrane

Alexandria Jimenez, Rainbo Hultman laboratory
Biophysical Characterization of Mouse-Model Calcitonin Gene-Related Peptide

Caridad Naanep, Kris DeMali laboratory
Investigation of FMNL2 and its Role in Junctional Actin Assembly in Response to Force

Delaney Catania, Ernesto Fuentes laboratory
Characterizing the Cache Sensor Domain of SrrB Histidine Kinase in S. aureus

Abigail Morrison, Miles Pufall laboratory
Functional Interactions of the Glucocorticoid Receptor in Leukemia Cell Death

Maunika Gandhamaneni, Daniel Weeks laboratory
Protein Features that Direct Nucleolar Compartmentalization

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Abigail Morrison (Miles Pufall laboratory) was awarded the 2023 Montgomery Biochemistry Scholar’s Prize.

This prize was established to commemorate the late Dr. Rex Montgomery, Professor Emeritus of the Department of Biochemistry and Molecular Biology, who was admired for his impact as a researcher, teacher, and mentor. Dr. Montgomery was an internationally recognized carbohydrate biochemist and textbook author. While on the faculty, he served as Associate Dean for Academic Affairs in the College of Medicine, the Vice President of Research for the University and was the founding director of The University of Iowa Physician Assistant Program. Dr. Montgomery retired in 2005 after more than 50 years on the faculty.

REX MONTGOMERY SCHOLARSHIP AWARD

Samantha Thompson (Rory Fisher laboratory) and Grace Johnson (Stefan Strack laboratory) were awarded the 2023 Rex Montgomery Scholarship Award.

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WITTLMANN & KHORANA SCHOLAR AWARD

Alexandria Jimenez (Rainbo Hultman laboratory) won the 2023 Professor H.G. Wittmann Scholar Award. She is studying the biophysical properties of mouse-model calcitonin gene-related peptide. After graduation, Alli will be attending graduate school at the University of North Carolina, Chapel Hill. Caridad Naanep (Kris DeMali laboratory) won the 2023 Professor H.G. Khorana Scholar Award. She is studying the investigation of FMNL2 and its role in junctional actin assembly in response to force. After graduation, Cari will be conducting research with Dr. Alex Claussen in the Department of Otolaryngology - Head and Neck Surgery at the University of Iowa Carver College of Medicine.

The Wittmann and Khorana Scholar awards are given to graduating Biochemistry and Molecular Biology majors in recognition of their exceptional understanding of biochemistry and molecular biology.
Ben Hinz, a Biomedical Engineering major, was awarded the Iowa Center for Research by Undergraduates’ 2022-23 Excellence in Undergraduate Research Award (EURA) for his research in the laboratory of Lori Wallrath. The award provides Ben with a travel scholarship to attend a scientific conference and a 2022-23 Academic Year ICRU Fellowship to continue his research in Lori Wallrath’s laboratory.

Brenna Powers, an undergraduate student in the laboratory of Lori Wallrath, was awarded a 2023 Ishan and Idil Jain Travel Award. Brenna will use the award to travel to a scientific conference of her choice.

Julianna Hernadez, a Research Assistant from Pamela Geyer’s laboratory, won an award for the 2022 Midwest Drosophila Conference Best Online Poster of an advanced trainee.

Mallory Tollefson, a PhD candidate for Biomedical Engineering in the laboratory of Michael Schnieders, received a 2021-22 American Fellowship from the American Association of University Women.

Jose Rios-Monterrosa, a Research Distinction Track Medical Student in the laboratory of Lori Wallrath, was awarded a Society for Redox Biology and Medicine (SfRBM) Young Investigator Award for his presentation “Modeling LMNA-associated muscular dystrophy in Drosophila and iPS cell derived cardiomyocytes revealed loss of redox homeostasis” at the 2021 SfRBM Annual Conference. Also, during medical student Match Day, Jose matched with Stanford University, California, for his residency in Anesthesiology.

President’s Visit
President Wilson and Provost Kregel enjoyed a session of DNA spooling and making bacterial artwork with students of the Biochemistry and Molecular Biology Club (BMBC) and the Microbiology Undergraduate Student Association (MUSA) in Spring 2022. They were excited to learn about our undergraduate majors at the Carver College of Medicine.
The department would love to spotlight your news and accomplishments in next year’s newsletter. Please send us your updates and successes either by email to biochem@uiowa.edu or use the QR code for the online submission form. Include your name, current position, address, degree, graduation year, and your UI mentor.