Welcome to the Department of Biochemistry and Molecular Biophysics

Washington University in St. Louis
School of Medicine

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1) Go to biochem.wustl.edu
2) Click Media and Newsletters
3) Click Display TV Announcements
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March 16th, 2022 – Alex Holehouse, PhD, Assistant Professor of Biochemistry and Molecular Biophysics along with Dolf Weijer, PhD, Associate Professor in Laboratory of Biochemistry from Wageningen University and Research, and Hyun Lee, PhD, Assistant Professor of Biochemistry from University of Toronto, received a new three-year grant award from Human Frontier Science Program for their research entitled “Molecular determinants of evolutionary conservation in disordered protein regions”.
Stabilization and structure determination of integral membrane proteins by termini restraining

Nat Protoc. 2022 Jan 17. doi: 10.1038/s41596-021-00656-5. (2022)
The **Burgers Lab** studies DNA replication and DNA damage response in eukaryotic cells. Using yeast as a model organism, the lab integrates the biochemical analysis of DNA-protein interactions in purified model systems with the genetic analysis of targeted yeast mutants. Specific areas of interest are lagging strand DNA replication and Okazaki fragment maturation, damage induced mutagenesis, and DNA damage cell cycle checkpoints.

Right: DNA replication fork and Okazaki fragment maturation

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Congratulations to Dr. Niemi

December 15th, 2021 – Dr. Natalie Niemi’s publication in the Journal of Biological Chemistry about mitochondrial phosphorylation function has been chosen by the journal as one of the best of 2021!

You can visit biochem.wustl.edu/news for a link to the article!
For the latest updates on coronavirus (COVID-19), please visit here:
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Congratulations to Dr. Janetka

December 21st, 2021 – Drs. Jim Janetka and Makedonka Mitreva received two grants from the National Institutes of Health (NIH) totaling more than $5.5 million to develop new treatments for two types of devastating parasitic infections common in sub-Saharan Africa and Central and South America: river blindness and intestinal worm infections.

You can visit biochem.wustl.edu/news for a link to the article!
Congratulations to Matthew Cruz and Melanie Ernst for being selected for the 2021 MilliporeSigma Fellowship

**Melanie** is a graduate student in the Biochemistry, Biophysics and Structural Biology program. She is completing her Ph.D. thesis work in the laboratory of Dr. Janice Robertson. Melanie uses single-molecule TIRF microscopy and electrophysiology to study the folding of the bacterial fluoride channel Fluc.

**Matthew** is a graduate student in the Biochemistry, Biophysics and Structural Biology program. He is completing his PhD thesis work in the laboratory of Dr. Greg Bowman. Matthew’s thesis is focused on the relationship between an ebolavirus protein's structural dynamics and its function.

Visit [biochem.wustl.edu/news](http://biochem.wustl.edu/news) to read more!
The **Galburt Lab** strives to understand the physical mechanisms of transcription initiation and other important DNA-protein interactions. More specifically, we use a variety of single-molecule and ensemble biophysical techniques including both optical and magnetic tweezers and fluorescent microscopy to investigate how the assembly of initiation complexes on gene promoters leads to DNA unwinding and transcription. Our work is currently focused on the mechanisms of basal transcription initiation in Eukaryotes and on factor-regulated transcription in Mycobacterium tuberculosis.

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Macrocyclic Inhibitors of HGF-Activating Serine Proteases Overcome Resistance to Receptor Tyrosine Kinase Inhibitors and Block Lung Cancer Progression

Vishnu C. Damalanka, Jorine J. L. P. Voss, Matthew W. Mahoney, Tina Primeau, Shunqiang Li, Lidija Klampfer, & James W. Janetka

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Maya Topf, Edina Rosta, **Gregory R. Bowman**, & Massimiliano Bonomi

**Editorial: Experiments and Simulations: A Pas de Deux to Unravel Biological Function**

The **Niemi Lab** investigates how mitochondria are built, regulated, and maintained across physiological contexts. We blend biochemistry, systems biology, and physiology to understand mechanisms of mitochondrial regulation and how they influence metabolism and organellar function. Using insights gained from our molecular studies, we aim to understand how mitochondrial dysfunction contributes to mammalian pathophysiology, with the long-term goal of translating our discoveries into new therapeutic options to restore mitochondrial function in human disease.

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
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[BMBSupport.wustl.edu/backups](http://BMBSupport.wustl.edu/backups)
Benjamin C. Stark, Yuanyuan Gao, Diane S. Sepich, Lakyn Belk, Matthew A. Culver, Bo Hu, Marlene Mekel, Wyndham Ferris, Jimann Shin, Lilianna Solnica-Krezel, Fang Lin, & John A. Cooper

CARMIL3 is important for cell migration and morphogenesis during early development in zebrafish

The **Cooper Lab** is interested in how the actin filaments in cells assemble and how that assembly controls cell shape and movement. One focus is an actin-binding protein called "capping protein," which caps one end of the actin filament. Capping protein is in turn regulated by intrinsically disordered regions of the CARMIL family of proteins, which exhibit positive linkage in their binding interactions.

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Jie Sun, Xiaoran Roger Liu, Shuang Li, **Peng He**, **Weikai Li**, & Michael L. Gross

**Nanoparticles and photochemistry for native-like transmembrane protein footprinting**

Are you paid monthly?

Please remember that your time report is due by the 5th of each month.
March 2\textsuperscript{nd}, 2022 – \textbf{Eric Galburt, PhD}, Associate Professor in Biochemistry and Molecular Biophysics, received a new five-year MIRA grant award from National Institute of General Medical Sciences for his research entitled \textit{“Molecular Mechanisms of Transcription Initiation and DNA Repair”}. 
Research in the Lohman Lab focuses on obtaining a molecular understanding of the mechanisms of protein-nucleic acid interactions involved in DNA metabolism, in particular, DNA motor proteins (helicases/translocases) and single stranded DNA binding proteins. Thermodynamic, kinetic, structural and single molecule approaches are used to probe these interactions at the molecular level.

See more research: biochem.wustl.edu/spotlight
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Jessica Kennedy – Title IX Director, jw kennedy@wustl.edu, 314-935-3118
Jessica Kuchta-Miller – Staff/Postdoc/Graduate Student Ombuds, 314-379-8110
Karen O’Malley – Medical Student Ombuds, 314-660-2089
Jim Fehr – Faculty Ombuds, 314-660-2089
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**bmbid.wustl.edu**
October 22\textsuperscript{nd}, 2021 – Alex Holehouse, PhD, Assistant Professor of Biochemistry and Molecular Biophysics, received a one year renewal grant award from Longer Life Foundation for his research entitled “Predicting the functional impact of genetic variation within intrinsically disordered protein regions”
The **Bowman Lab** seeks to understand the distribution of different structures a protein adopts and how this ensemble determines a protein’s function. Examples of ongoing research projects include 1) understanding how mutations in the enzyme beta-lactamase change its specificity without changing the protein’s crystal structure, 2) designing allosteric drugs, and 3) developing algorithms for quickly building models of the different structures a protein adopts.

See more research: 
[biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
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<th>Holiday</th>
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<td>January 17&lt;sup&gt;th&lt;/sup&gt;, 2022</td>
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<tr>
<td>Independence Day</td>
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<td>Day after Thanksgiving</td>
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For the latest updates on coronavirus (COVID-19), please visit here:
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screening.wustl.edu
March 1st, 2022 – **Jim Janetka, PhD**, Professor in Biochemistry and Molecular Biophysics and David Sibley, Professor in Molecular Microbiology received a new five-year grant R01 award from the National Institute of Allergy and Infectious Diseases (NIAID) of the NIH totaling 3.9 million dollars for their research entitled *“Optimizing CDPK1 inhibitors for chronic toxoplasmosis”*. 
BMB SCIENCE FRIDAYS

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The Greenberg Lab focuses on how cytoskeletal motors function in both health and disease. Currently, the lab is studying mutations that cause familial cardiomyopathies, the leading cause of sudden cardiac death in people under 30 years old. The lab uses an array of biochemical, biophysical, and cell biological techniques to decipher how these mutations affect heart contraction from the level of single molecules to the level of engineered tissues. Insights into the disease pathogenesis will guide efforts to develop novel therapies.

See more research: biochem.wustl.edu/spotlight
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