Welcome to the Department of Biochemistry and Molecular Biophysics

Washington University in St. Louis
School of Medicine

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2) Click **Media and Newsletters**
3) Click **Display TV Announcements**
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)
Michael J. Greenberg & Jil C. Tardiff

Complexity in genetic cardiomyopathies and new approaches for mechanism-based precision medicine

Carl and Gerty Cori Lecture

Tuesday, April 20th, 2021
10:30 am
Via Zoom

“The importance of protein dynamics for kinase activation and inhibitor design: The case of ERK2”

Dr. Natalie Ahn
Professor, Department of Biochemistry
Associate Director, BioFrontiers Institute
University of Colorado at Boulder
Rahul Tyagi, Christina A. Bulman, Fidelis Cho-Ngwa, Chelsea Fischer, Chris Marcellino, Michelle R. Arkin, James H. McKerrow, Case W. McNamara, Matthew Mahoney, Nancy Tricoche, Shabnam Jawahar, James W. Janetka, Sara Lustigman, Judy Sakanari, & Makedonka Mitreva

An Integrated Approach to Identify New Anti-Filarial Leads to Treat River Blindness, a Neglected Tropical Disease

For the latest updates on coronavirus (COVID-19), please visit here:

coronavirus.wustl.edu

Don’t forget to self-screen before coming into work!

screening.wustl.edu
February 2nd, 2021 - Samantha Kirstin Barrick, PhD, Postdoctoral Scholar in the department of Biochemistry and Molecular Biophysics, and the laboratory of Dr. Michael J. Greenberg, PhD, received a new three-year fellowship award from the National Institutes of Health, National Heart, Lung, and Blood Institute for her research entitled “Multiscale investigation of cardiomyopathy-associated mutations in metavinculin”.
Spotlight on Research

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 organelar 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
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Support website: BMBSupport.wustl.edu

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Kacey Mersch, Tugba N. Ozturk, Kunwoong Park, Hyun-Ho Lim, & Janice L. Robertson

**Altering CLC stoichiometry by reducing non-polar side-chains at the dimerization interface**

December 15th, 2020 - **Michael S Kinch, Ph.D.**, Associate Vice Chancellor, Director, Centers for Research Innovation in Biotechnology & Drug Discovery, and Professor of Biochemistry and Molecular Biophysics, received a new one-year grant award from Arnold Ventures for his research entitled **“CDEK: Clinical Data Experience Knowledge-base”**.
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](biochem.wustl.edu/spotlight)
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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)
Probing E. coli SSB Protein-DNA topology by reversing DNA backbone polarity
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](http://biochem.wustl.edu/spotlight)
HAVING ISSUES AT WORK?
WE’RE HERE TO HELP.

Contact any of the following for help

John Cooper, Department Head, jcooper11@gmail.com, 314-362-3964
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
March 17th, 2021 – Jim Janetka, PhD, Professor of Biochemistry and Molecular Biophysics, along with Scott Hultgren, Helen L. Stoever Professor of Molecular Microbiology, Michael Caparon, Professor of Molecular Microbiology, Peng Yuan, Associate Professor of Cell Biology and Physiology, and Ali Ellebedy, Associate Professor of Pathology and Immunology received a five-year U19 Research Program–Cooperative Agreement Award from the National Institutes of Health, National Institute of Allergy and Infectious Diseases entitled “Innovative Strategies to Combat Antibiotic-resistant Infections”. Dr. Janetka is leader of the project scientific core named “Rational Design and Synthesis of Small Molecule Inhibitors Targeting Unique Pathogenic Mechanisms in Gram- and Gram+ Bacteria Important in UTI”.
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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)
Ming Cheng, Chunyang Guo, Weikai Li, & Michael L. Gross

Free-Radical Membrane Protein Footprinting by Photolysis of Perfluoroisopropyl Iodide Partitioned to Detergent Micelle by Sonication

Carl and Gerty Cori Lecture

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“The importance of protein dynamics for kinase activation and inhibitor design: The case of ERK2”

Dr. Natalie Ahn
Professor, Department of Biochemistry
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University of Colorado at Boulder
<table>
<thead>
<tr>
<th>Holiday</th>
<th>Day</th>
<th>Date Observed at WU</th>
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<tbody>
<tr>
<td>Martin Luther King, Jr. Day</td>
<td>Monday</td>
<td>January 18&lt;sup&gt;th&lt;/sup&gt;, 2021</td>
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<tr>
<td><strong>Memorial Day</strong></td>
<td>Monday</td>
<td>May 31&lt;sup&gt;st&lt;/sup&gt;, 2021</td>
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<tr>
<td>Independence Day</td>
<td>Monday</td>
<td>July 5&lt;sup&gt;th&lt;/sup&gt;, 2021</td>
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<td>Labor Day</td>
<td>Monday</td>
<td>September 6&lt;sup&gt;th&lt;/sup&gt;, 2021</td>
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<tr>
<td>Thanksgiving</td>
<td>Thursday</td>
<td>November 25&lt;sup&gt;th&lt;/sup&gt;, 2021</td>
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<td>Day after Thanksgiving</td>
<td>Friday</td>
<td>November 26&lt;sup&gt;th&lt;/sup&gt;, 2021</td>
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BMB SCIENCE FRIDAYS

a forum for new data, new ideas and works in progress

Science Fridays and Happy Hour:
EVERY FRIDAY, starting at 4PM.
For the latest updates on coronavirus (COVID-19), please visit here:
coronavirus.wustl.edu

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screening.wustl.edu
February 9th, 2021 – Natalie M. Niemi, PhD, Assistant Professor in the department of Biochemistry and Molecular Biophysics, received a one-year pilot and feasibility grant award from the Washington University Diabetes Research Center (DRC), sponsored by the National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) for her research entitled “The role of the mitochondrial phosphatase Pptc7 in enabling metabolic flexibility”.

Congratulations to Dr. Niemi
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
Don't Forget!

Please keep your lab locked if no one is in there when you leave.

Don’t forget your keys!

Please remember to take OFF your gloves when leaving the lab.

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Targeting primary and metastatic uveal melanoma with a G protein inhibitor

Congratulations to Dr. Li

January 22nd, 2021 - **Weikai Li, PhD**, Associate Professor of Biochemistry and Molecular Biophysics, along with Michael L. Gross, PhD, Professor of Chemistry, Immunology, and Medicine, and Michael J. Greenberg, PhD, Assistant Professor of Biochemistry and Molecular Biophysics, received a new three-year grant award from American Heart Association for their research entitled “**Interdisciplinary structural studies of iron homeostasis in cardiovascular health**”.
February Publication

Min Kyung Shinn, Alexander G. Kozlov, & Timothy M. Lohman

*Allosteric effects of SSB C-terminal tail on assembly of E. coli RecOR proteins*

March 18th, 2021 – **Jim Janetka, PhD**, Professor of Biochemistry and Molecular Biophysics, Makedonka Mitreva, Professor of Medicine and Genetics, and Raffi Aroian, Professor of Molecular Medicine at the University of Massachusetts Medical School have received a new multi-PI R01 award from the National Institutes of Health, National Institute of Allergy and Infectious Diseases entitled “**Development of small molecule inhibitors of metabolic enzymes as broad-spectrum anthelmintic drugs**”. 