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Washington University in St. Louis
School of Medicine

https://biochem.wustl.edu

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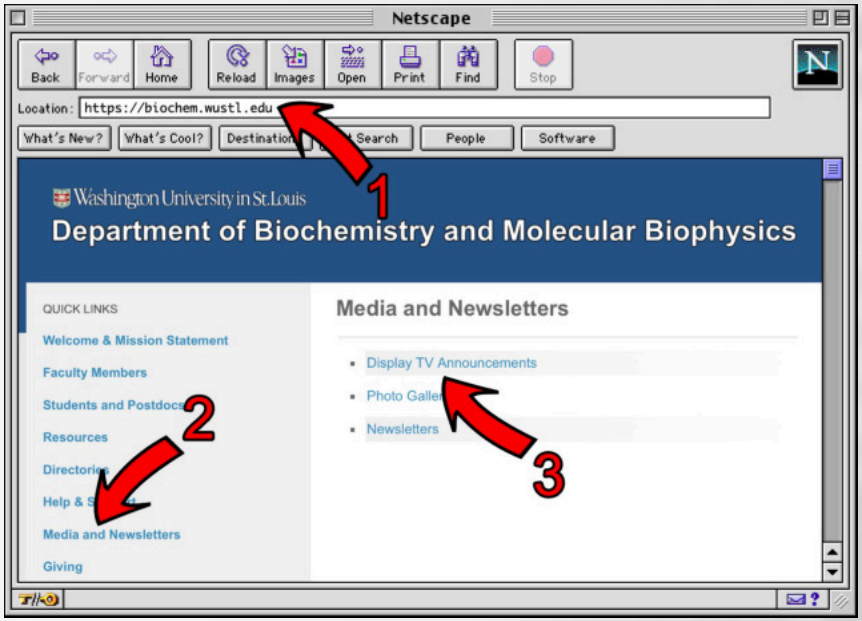

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January Publication



Shixuan Liu, Shuang Li, **Andrzej M. Krezel**, & **Weikai Li**

Stabilization and structure determination of integral membrane proteins by termini restraining

Nat Protoc. 2022 Jan 17. doi: 10.1038/s41596-021-00656-5. (2022)

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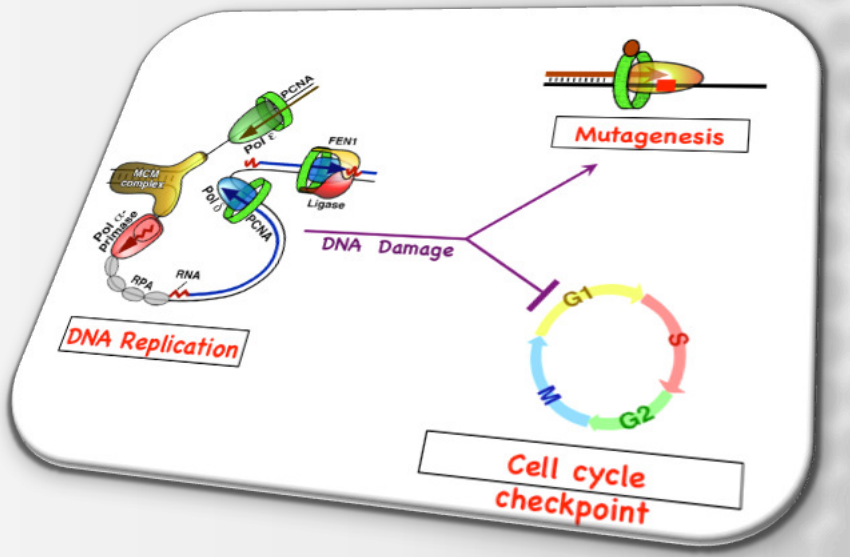
Spotlight on Research

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

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!

COVID-19

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!

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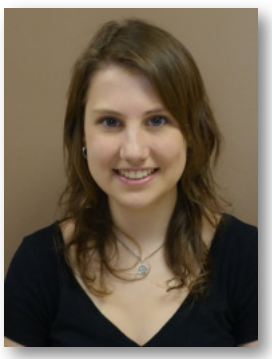
Congratulations to Matthew Cruz and Melanie Ernst for being selected for the 2021 MilliporeSigma Fellowship



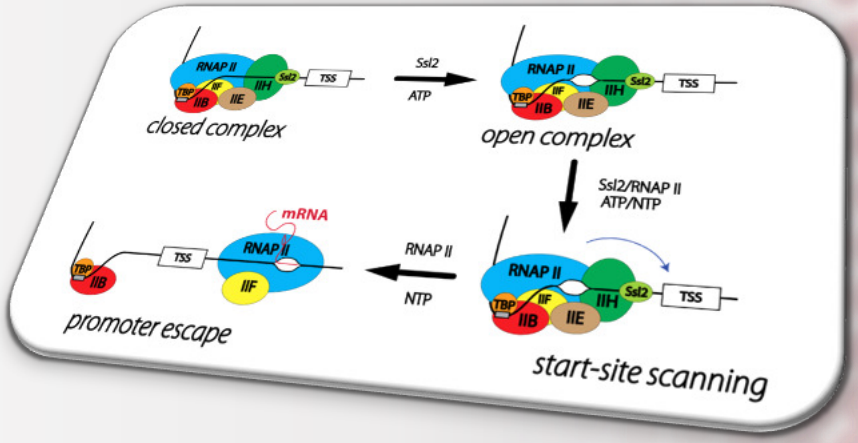
Melanie is a graduate student in the Biochemistry, Biophysics and Structural Biology program. She is completing her Ph.D. thesis work in the laboratory of Dr. Janice Robertson. Melanie uses single-molecule TIRF microscopy and electrophysiology to study the folding of the bacterial fluoride channel Fluc.

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** to read more!

Spotlight on Research

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

December Publication

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

Macrocyclic Inhibitors of HGF-Activating Serine Proteases Overcome Resistance to Receptor Tyrosine Kinase Inhibitors and Block Lung Cancer Progression

J Med Chem. 2021 Dec 13. doi: 10.1021/acs.jmedchem.1c01671. (2021)

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November Publication

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

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

Front Mol Biosci. 2021 Nov 29;8:799406. doi: 10.3389/fmolb.2021.799406. eCollection 2021. (2021)

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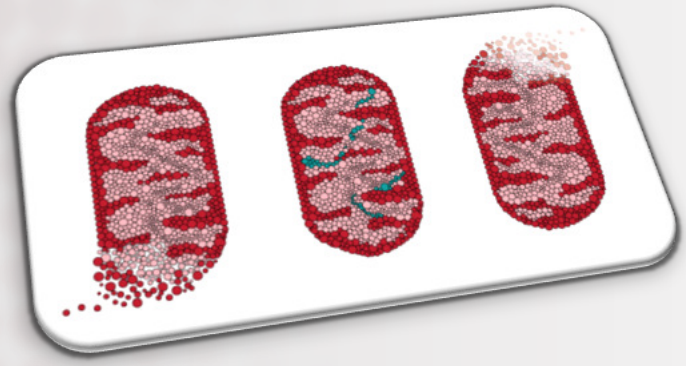
Spotlight on Research



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 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

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September Publication

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

Dev Biol. 2022 Jan;481:148-159. doi: 10.1016/j.ydbio.2021.09.008. (2021)

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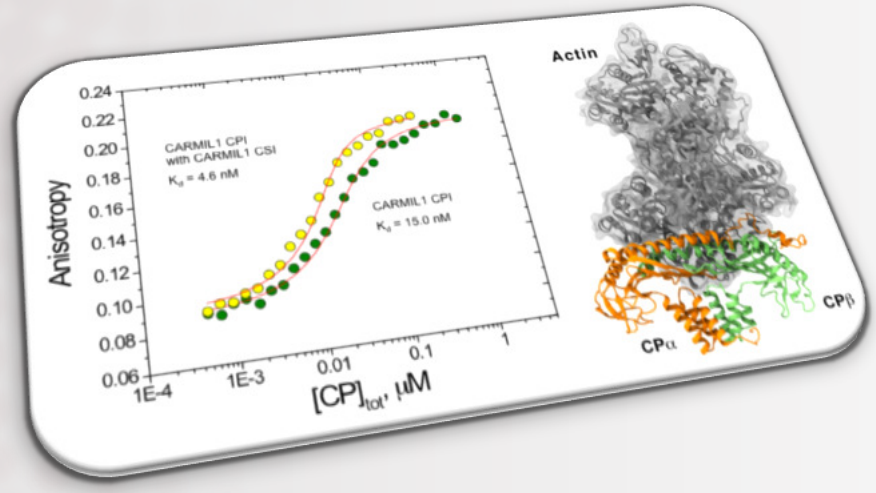
Congratulations to Dr. Galburt

March 2nd, 2022 – **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 ***"Molecular Mechanisms of Transcription Initiation and DNA Repair"***.

Spotlight on Research



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

December Publication

Jie Sun, Xiaoran Roger Liu, Shuang Li, **Peng He**, **Weikai Li**, & Michael L. Gross

Nanoparticles and photochemistry for native-like transmembrane protein footprinting

Nat Commun. 2021 Dec 14;12(1):7270. doi: 10.1038/s41467-021-27588-8. (2021)

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Are you paid monthly?

Please remember that your time report is due by the 5th of each month.

Congratulations to Dr. Janetka

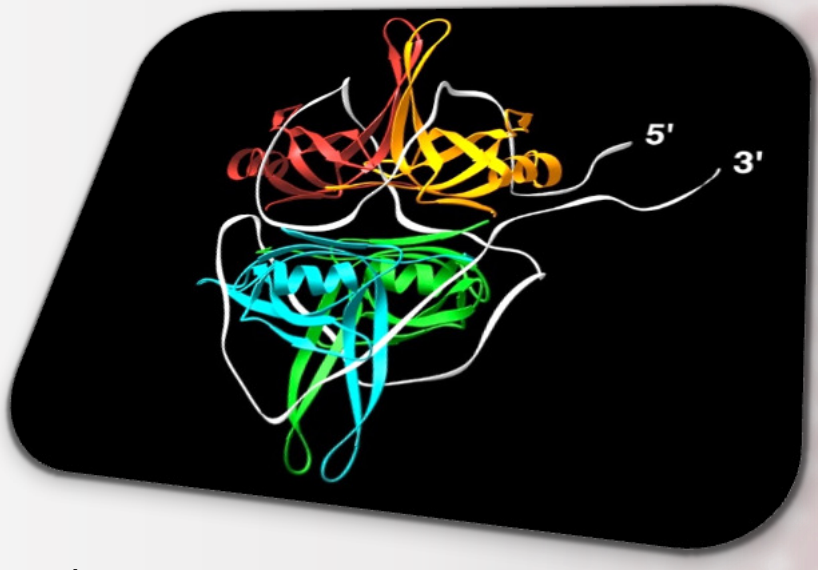
February 11th, 2022 - Congratulations to **Dr. Jim Janetka** who was named a Senior member of the National Academy of Inventors.

Dr. Janetka was named among six researchers from Washington University in St. Louis.

You can visit **biochem.wustl.edu/news** for more information!

Spotlight on Research

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:
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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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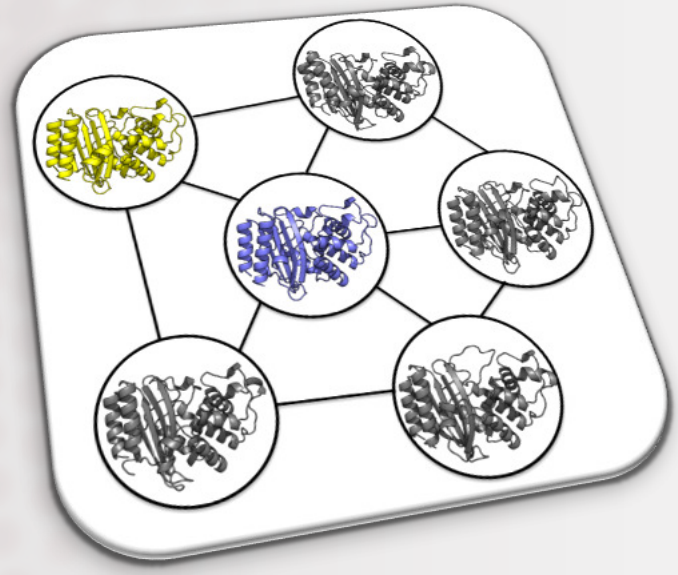
Congratulations to Dr. Holehouse

October 22nd, 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"

Spotlight on Research



The **Bowman Lab** seeks to understand the distribution of different structures a protein adopts and how this ensemble determines a proteins 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

Holiday Schedule

Holiday	Day Observed	Date Observed at WashU
Martin Luther King Jr. Day	Monday	January 17th, 2022
Memorial Day	**Monday**	**May 30th, 2022**
Independence Day	Monday	July 4th, 2022
Labor Day	Monday	September 5th, 2022
Thanksgiving Day	Thursday	November 24th, 2022
Day after Thanksgiving	Friday	November 25th, 2022

COVID-19

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

Department of Biochemistry and Molecular Biophysics

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Congratulations to Dr. Janetka

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"***.

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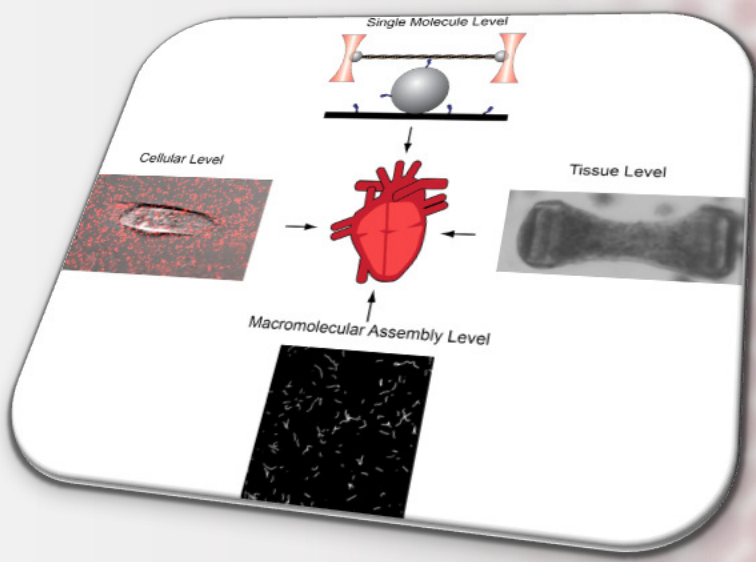
Spotlight on Research

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