Welcome to the Department of Biochemistry and Molecular Biophysics

Washington University in St. Louis
School of Medicine

BMB Holiday Party

On December 8th, 2018, the BMB Department celebrated its annual Holiday Party at Saratoga Lanes in Maplewood, MO.

Everyone enjoyed bowling, pool, and a visit from Santa.

Visit **biochem.wustl.edu/photos** to see even more pictures!

Back Up Your Stuff!

Don't let your important files and data go up in flames!

If you are not putting your important files on our servers (such as BMBCore), then it is possible that they are NOT getting backed up!

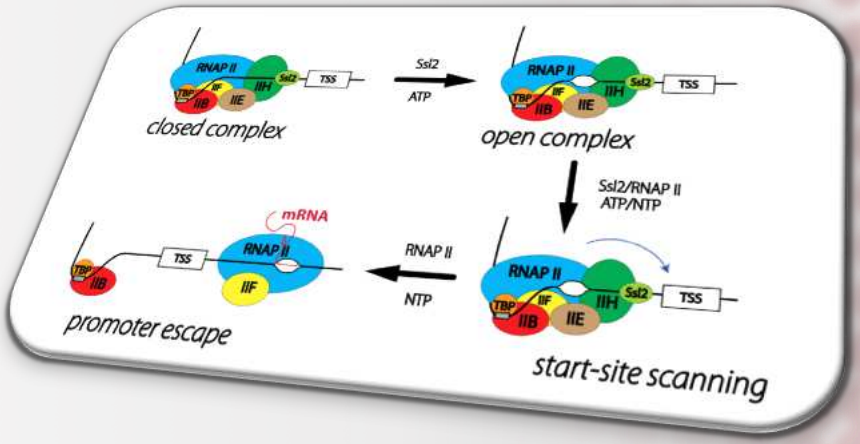
ARE YOU COMFORTABLE WITH LOSING ALL OF YOUR RESEARCH DATA?

Make sure that your computer is running a backup program!

Want to make sure your computer is backed up?
We provide several backup solutions.
Just send an email: support@biochem.wustl.edu

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

Congratulations to Andrea Soranno

January 17th, 2019 - **Andrea Soranno, PhD**, Assistant Professor of Biochemistry and Molecular Biophysics received a new three year Research Grant Award from the Alzheimer's Association (AARG) for his work entitled ***"Conformational analysis of ApoE isoforms and their role in AD mechanism"***.

Holiday Schedule

Holiday	Day	Date Observed at WU
Martin Luther King, Jr. Day	Monday	January 21st, 2019
Memorial Day	**Monday**	**May 27th, 2019**
Independence Day	Thursday	July 4th, 2019
Labor Day	Monday	September 2nd, 2019
Thanksgiving Day	Thursday	November 28th, 2019
Friday after Thanksgiving	Friday	November 29th, 2019

November Publication

Yen M., Qi Z., Chen X., **Cooper J.A.**, Mitra R.D., & **Onken M.D.**

Transposase mapping identifies the genomic targets of BAP1 in uveal melanoma.

BMC Med Genomics. 11(1):97. doi: 10.1186/s12920-018-0424-0. (2018)

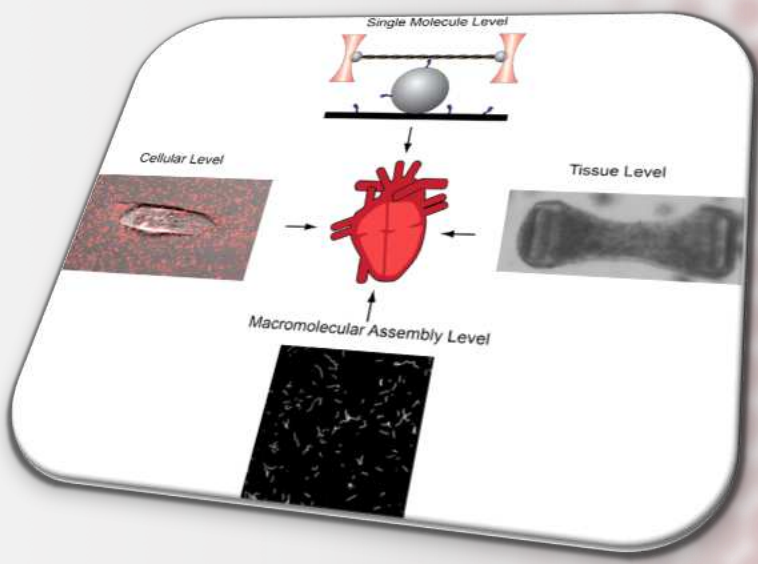
Farmer's Market

Inside the McDonnell Pediatric Research Building
or
Outside on the Plaza
(weather permitting)

Every Thursday!
10:00 am - 2:00 pm

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:
biochem.wustl.edu/spotlight

December Publication

Maddirala A., Klein R.D., Pinkner J., Kalas V., Hultgren S.J., & **Janetka J.W.**

Biphenyl Gal and GalNAc FmlH Lectin Antagonists of Uropathogenic E. coli (UPEC): Optimization through iterative rational drug design.

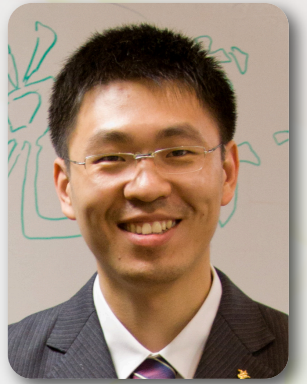
J Med Chem. doi: 10.1021/acs.jmedchem.8b01561. (2018)

Are you paid monthly?

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

Congratulations to Dr. Li and Dr. Zhang

December 27th, 2018 – **Weikai Li, PhD**, assistant professor of biochemistry and molecular biophysics, along with **Rui Zhang, PhD**, assistant professor of biochemistry and molecular biophysics received a new three year, grant award from the W. M. Keck foundation for their research entitled ***"Terminal coupling enabled structure determination of human membrane proteins at atomic resolution"***.



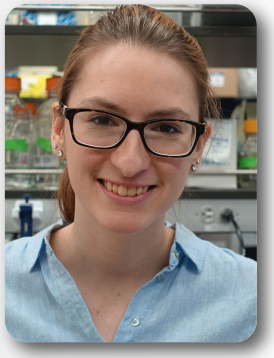
Don't Forget!

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.

December Publication

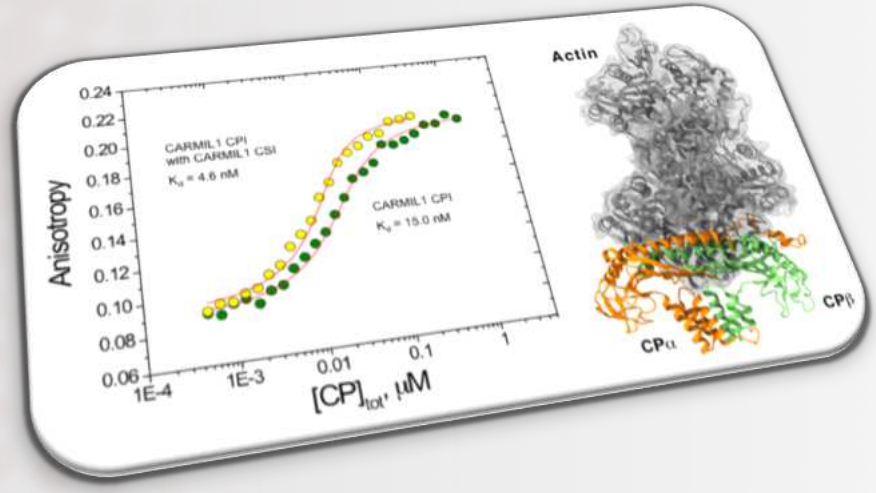


Knoverek C.R., Amarasinghe G.K., & **Bowman G.R.**

Advanced Methods for Accessing Protein Shape-Shifting Present New Therapeutic Opportunities.

Trends Biochem Sci. pii: S0968-0004(18)30248-2. doi: 10.1016/j.tibs.2018.11.007. (2018)

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

November Publication

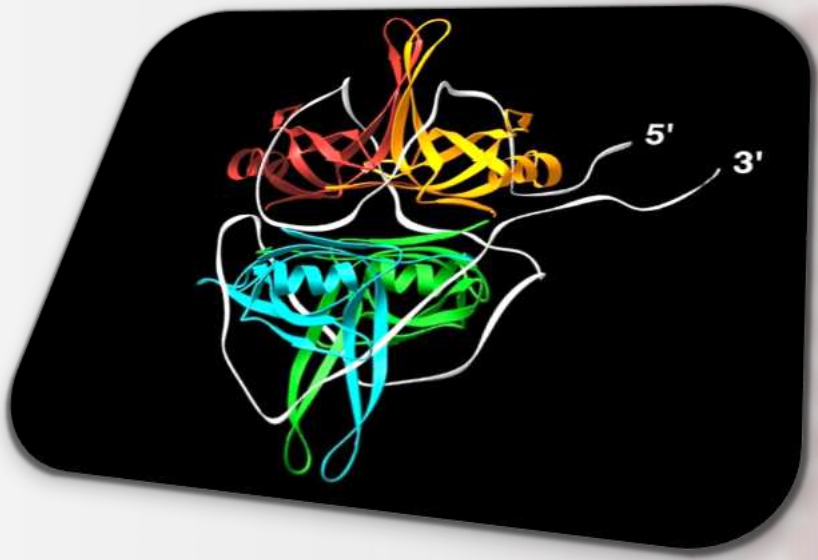
Dubiel K., Myers A.R., **Kozlov A.G.**, Yang O., Zhang J., Ha T., **Lohman T.M.**, & Keck J.L.

Structural Mechanisms of Cooperative DNA Binding by Bacterial Single-Stranded DNA-Binding Proteins.

J Mol Biol. pii: S0022-2836(18)31046-5. doi: 10.1016/j.jmb.2018.11.019. (2018)

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:
biochem.wustl.edu/spotlight

November Publication



Dahan D., Tsirkas I., Dovrat D., **Sparks M.A.**, **Singh S.P.**, **Galletto R.**, & Aharoni A.

Pif1 is essential for efficient replisome progression through lagging strand G-quadruplex DNA secondary structures.

Nucleic Acids Res. doi: 10.1093/nar/gky1065. (2018)

TEA TIME

for Faculty, Staff, Postdocs & Students

Tuesdays & Thursdays
3:00-4:00 pm

Biochemistry Break Room
201 McDonnell Sciences Building

Coffee, tea and cookies are served.

November Publication

Kiehart D.P. & **Cooper J.A.**

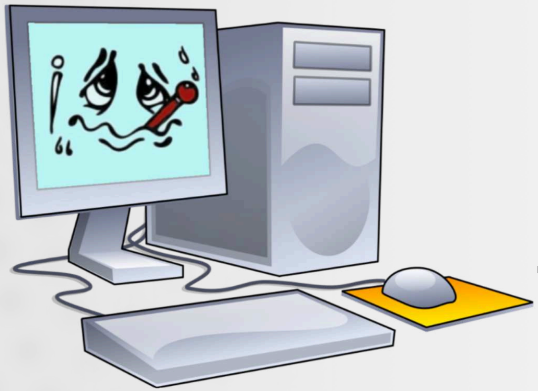
Contractile protein biochemistry in the Pollard Lab in Baltimore.

Biophys Rev. doi: 10.1007/s12551-018-0477-5. (2018)

BMB Support

Computer not working?
Not getting email on your smartphone?

We are here to help with the many computing issues that may pop up in your day-to-day operations.



Support email: support@biochem.wustl.edu

Support website: BiochemSupport.wustl.edu

Just send us an email or visit our website and click on *Request Support* to get help!

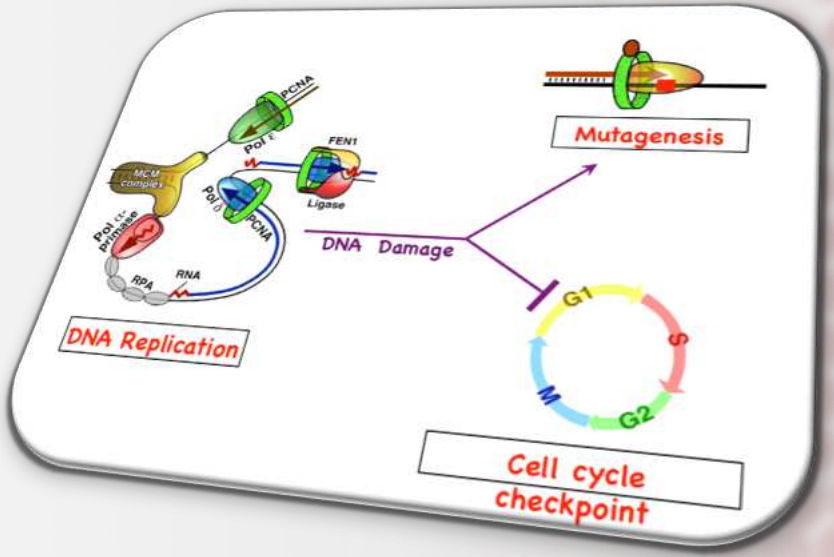
Congratulations to Dr. Li

January 9th, 2019 - **Weikai Li, PhD**, assistant professor of biochemistry and molecular biophysics received a four year renewal from the National Heart, Lung, and Blood Institute for his research entitled ***"Structural and Functional Basis of the Vitamin K Cycle"***.

Spotlight on Research

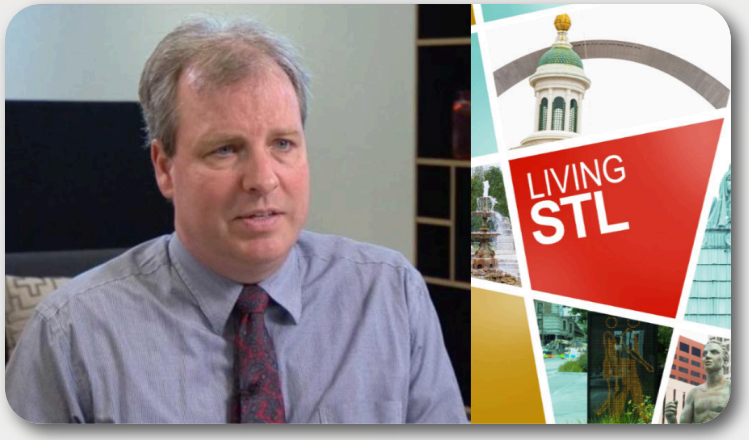
The **Burgers Lab** studies DNA replication and DNA damage response in eukaryotic cells. Using yeast as a model organism, the lab integrates the biochemical analysis of DNA-protein interactions in purified model systems with the genetic analysis of targeted yeast mutants. Specific areas of interest are 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

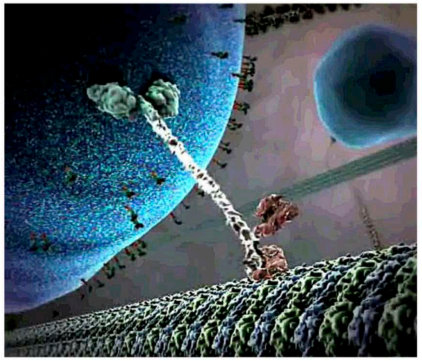
Dr. Kinch on Living St. Louis

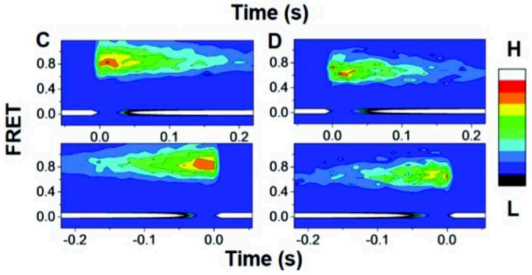


January 14th, 2019 – Washington University's **Dr. Michael Kinch** spoke on PBS *Living St. Louis* about vaccines and the anti-vaccine movement of today.

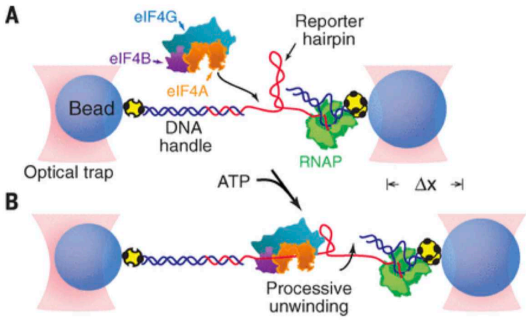
You can visit **biochem.wustl.edu/news** for a link to the video!

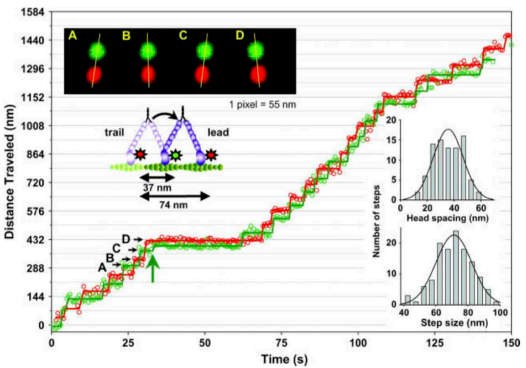
Single Molecule Biophysics Journal Club





Description: Single molecule techniques have revolutionized our understanding of macromolecular interactions, revealing hidden details that are obscured by ensemble measurements. The goal of this journal club is to discuss how these techniques are being applied to the mechanistic study of macromolecular interactions. Special emphasis will be placed on understanding and critically evaluating single molecule data.





When: Thursdays at 12 PM starting January 17th.
Where: McDonnell 264 Conference Room

Everyone is invited. Bring your lunch.

For questions or to be added to the email list, contact **greenberg@wustl.edu**

November Publication

Galburt E.A.

The calculation of transcript flux ratios reveals single regulatory mechanisms capable of activation and repression.

Proc Natl Acad Sci USA. pii: 201809454. doi: 10.1073/pnas.1809454115. (2018)

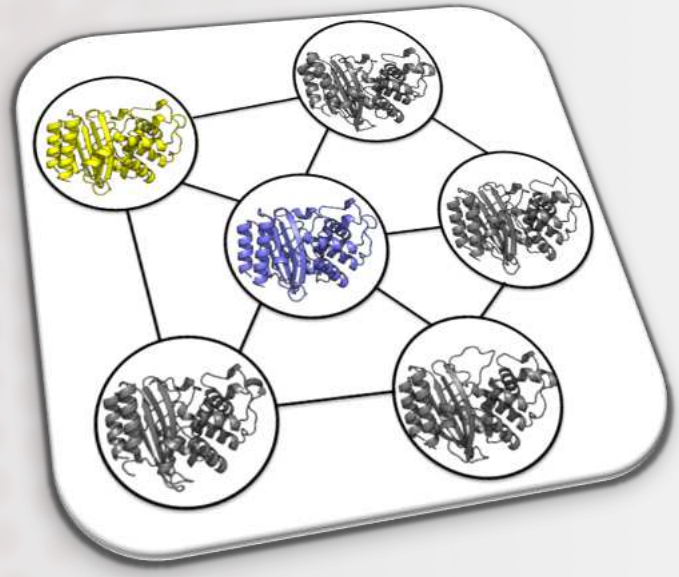
BMB SCIENCE FRIDAYS

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

Science Fridays and Happy Hour:
EVERY FRIDAY, starting at 4PM.

Department of Biochemistry and Molecular Biophysics
Washington University in St. Louis • School of Medicine

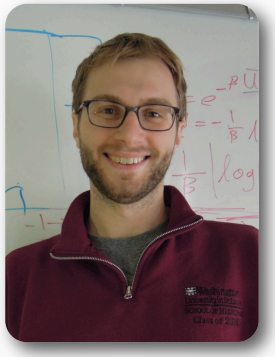
Spotlight on Research



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

November Publication


Zimmerman M.I., **Porter J.R.**, Sun X., Silva R.R., & **Bowman G.R.**

Choice of Adaptive Sampling Strategy Impacts State Discovery, Transition Probabilities, and the Apparent Mechanism of Conformational Changes.

J Chem Theory Comput. 14(11):5459-5475. doi: 10.1021/acs.jctc.8b00500. (2018)

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Washington University in St. Louis • School of Medicine

HAVING ISSUES AT WORK? WE'RE HERE TO HELP.

Contact any of the following for help

Jayma Mikes, Business Manager, jmikes@wustl.edu, 314-362-0262

John Cooper, Department Head, jcooper11@gmail.com, 314-362-3964

Jessica Kennedy – Title IX Director, jwkennedy@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

Congratulations to Dr. Pike and Dr. Hall!

Dr. Linda Pike and **Dr. Kathleen Hall** have been selected as new fellows by the American Association for the Advancement of Science (AAAS), the world's largest general scientific society.

The AAAS selects fellows in recognition of their distinguished efforts to advance science and its applications, and has selected eleven faculty members at Washington University in St. Louis – the most in a decade-and-a-half.

You can read more at
biochem.wustl.edu/news