

# Welcome to the Department of Biochemistry and Molecular Biophysics



Washington University in St. Louis  
School of Medicine

# February Publication



**Galburt E.A.** and **Tomko E.J.**

Conformational selection and induced fit as a useful framework for molecular motor mechanisms.

Biophys Chem. 223:11-16 (2017)

**Department of Biochemistry and Molecular Biophysics**



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# FARMSTEAD CAFÉ



Share with your department!

**FARMSTEAD CAFÉ**  
**OPENING**  
**APRIL 3, 2017**

**FARMSTEAD**

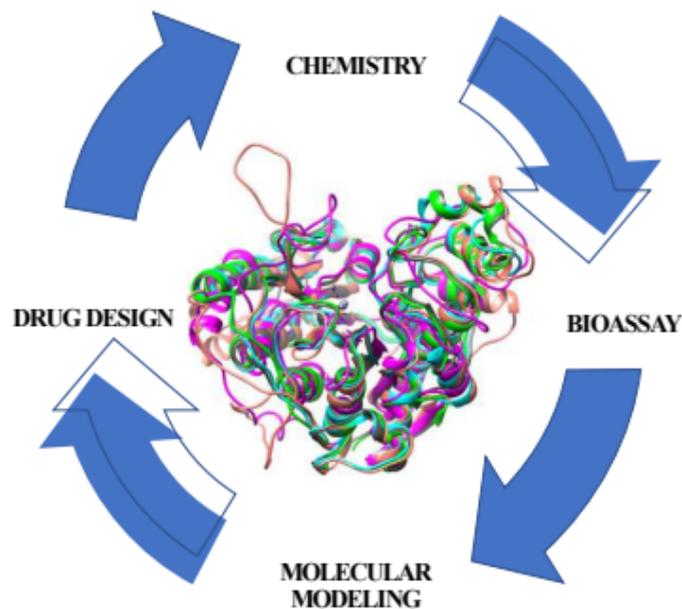
**MONDAY**  
*through*  
**FRIDAY**  
*7 A.M. to 5 P.M.*

Located on the first floor of the  
McDonnell Pediatric Research Building (PEDS)

**LOCAL • SEASONAL • FROM SCRATCH**  
[farmstead.cafebonappetit.com](http://farmstead.cafebonappetit.com)

# OPENING APRIL 3, 2017

# Spotlight on Research



The [Marshall Lab](#) performs a synergistic application of organic synthesis (solution- and solid-phase chemistry), enzymatic assays (electrophoretic mobility shift assays (EMSA) and surface plasmon resonance (SPR)), and computational chemistry techniques (homology modeling, molecular docking, molecular dynamics simulations, QSAR and 3D QSAR models) to rationally develop novel isoform-selective Lysine Deacetylases Inhibitors (KDACIs) as new therapeutics for the treatment of cancer, HIV-1, schistosomiasis and malaria.

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# April Publication



Benjamin Yaw Owusu, Robert Galemno, **James Janetka**, and Lidija Klampfer

Hepatocyte Growth Factor, a Key Tumor-Promoting Factor in the Tumor Microenvironment

Cancers 2017, 9(4), 35 (2017)

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# 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 YOUR RESEARCH DATA?**

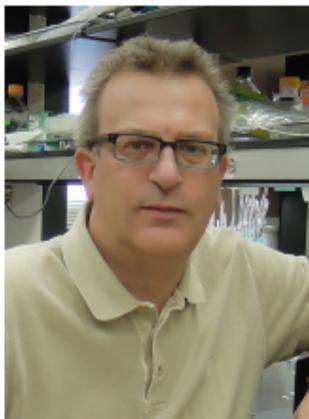
Make sure that your computer is running a backup program!

Want to make sure your computer is backed up?

We provide several backup solutions.

Just send an email: [support@biochem.wustl.edu](mailto:support@biochem.wustl.edu)

# Congratulations to Dr. Galletto!



Congratulations to **Roberto Galletto**, whose promotion with tenure was officially approved by the Board of Trustees on March 3, 2017.

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## Cryo-EM Symposium: Macromolecular Structure to Cellular Function

Center for Cellular Imaging

*Celebrating the installation of the new 300kV  
Titan Krios Microscope in the WUCCI and the  
start of the School of Medicine Cryo-EM  
initiative*

**Tuesday, May 2, 2017**

**8:00 am – 5:30 pm • Reception to follow**

HOSTED BY:

**WUCCI**  
Washington University Center for Cellular Imaging

SPONSORED BY:

**ThermoFisher**  
SCIENTIFIC

WITH GENEROUS SUPPORT FROM

THE DEPARTMENTS OF:

*Medicine*

*Pediatrics*

*Cell Biology & Physiology*

*Biochemistry & Molecular Biophysics*

*Pathology & Immunology*

*Molecular Microbiology*

### INVITED SPEAKERS

**Jeffery Lengyel, PhD** *Thermo Fisher Scientific*

**Gabriel Lander, PhD** *Scripps Research Institute*

**Carolyn Moores, PhD** *Birkbeck College*

**Rui Zhang, PhD** *Washington University School of Medicine*

**Radostin Danev, PhD** *Max-Planck Institute for Biochemistry*

**Eduardo Perozo, PhD** *University of Chicago*

**Daved Fremont, PhD** *Washington University School of Medicine*

**Yuan Gao** *University of California - San Francisco*

Eric P. Newman Education Center

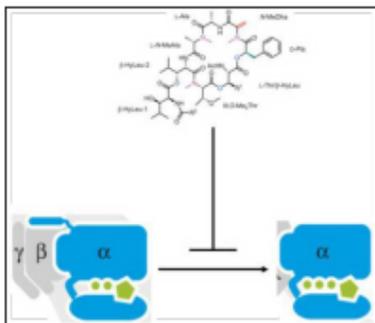
320 S. Euclid Ave. • St. Louis, MO 63110

**To RSVP, please visit [wucci.wustl.edu/news/cryo-EM](http://wucci.wustl.edu/news/cryo-EM)**

# BMB SCIENCE FRIDAYS

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

## Probing the Mechanism of Action of the $G\alpha_{q/11}$ GDI FR900359



**Tyson Todd**

(Cooper lab)

Friday, April 28<sup>th</sup>, 2017

4:00 pm – 264 McDonnell Sciences

Host: Galletto lab

# Thermodynamics Can Get You Anywhere!



Peggy Whitson now holds the record for cumulative time in space by a U.S. astronaut!

#CongratsPeggy

Read more about this and her research paper, "***Thermodynamic analysis of the lactose repressor-operator DNA interaction***", at [biochem.wustl.edu/links](https://biochem.wustl.edu/links)

SHOES + WATER



**Do you have unneeded pairs of gently used shoes? If so, please consider donating them to a great cause!**

The Office of Sustainability is collecting shoes in partnership with [Shoeman Water Projects](#), a locally owned nonprofit institution that exports shoes to street vendors in developing communities around the world. Funds generated provide well drilling rigs, water purification systems, hand pump repairs, and training programs to bring clean, fresh water to community members. Please have the shoes matched and laced together or in a small bag. You can drop shoes off now through the end of May at the following locations:

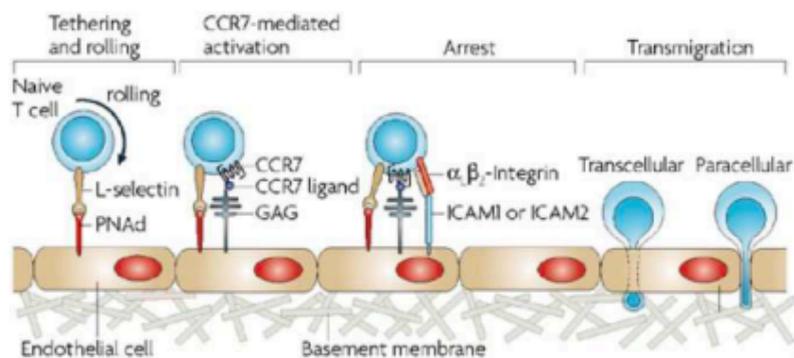
**Medical School Campus** – CSRB/BJCIH Link, FLTC Atrium, 4444 Forest Park Lobby, Clayton Taylor Garage, TAB Lobby, McDonnell Science Lobby, MCC Link, 4515 Lobby



**Questions? Email Melanie Strowmatt  
at [mstrowmatt@wustl.edu](mailto:mstrowmatt@wustl.edu)**

# Spotlight on Research

The [Cooper Lab](#) is interested in how cells migrate, in particular how cells cross the endothelium as they move into or out of the blood stream. Immune cell migration is important for fighting infection, and cancer cell migration is important for combatting cancer metastasis. These cells use their actin cytoskeletons to accomplish this movement.



# January Publication



Chang Y.K., Srivastava Y., Hu C., **Joyce A.**, Yang X., Zuo Z., **Havranek J.J.**, Stormo G.D., and Jauch R.

Quantitative profiling of selective Sox/POU pairing on hundreds of sequences in parallel by Coop-seq.

Nucleic Acids Res. (2017)

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Special Seminar/Presentation

**Presenting the 2017 Ceil M. DeGutis Prize In  
Chemical Biology/Medicinal Chemistry Award to:**



***Whitney Grither***  
***Graduate Student***  
***Biochemistry***

*"Selective Small Molecule Inhibition of Discoidin Domain  
Receptor 2"*

**Friday, May 5<sup>th</sup>, 2017**

4:00 pm

Biochemistry Seminar Room, 264 McDonnell Sciences

*The DeGutis award is presented to a senior graduate student, in their fifth or sixth year of graduate study, who has made a significant contribution to the field of Chemical Biology or Medicinal Chemistry disciplines broadly defined.*

# April Publication



**Sun X.**, Laroche G., Wang X., Ågren H., **Bowman G.R.**, Giguère P.M., and Tu Y.

Propagation of the Allosteric Modulation Induced by Sodium in the  $\delta$ -Opioid Receptor.

Chemistry 23(19):4615-4624 (2017)

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*Happening Now!*

## WashU Phones Are Being Upgraded to VoIP



\* Current handsets will be replaced with Voice over IP (VoIP) phones.

(The new phones will have all the same features as the old phones but will be connected through the data network.)

\* This project is expected to be finished by July 2017.

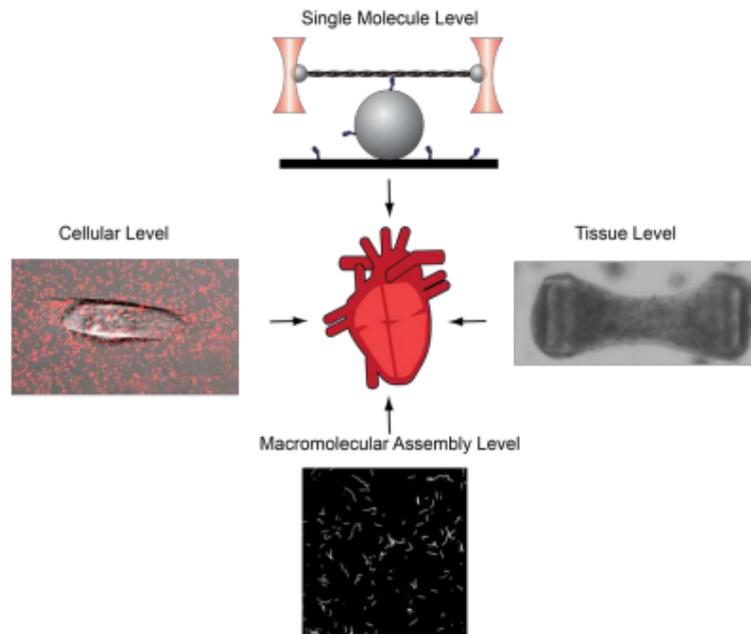
(More info will be provided as the project moves forward.)

\* This project does not affect faxes, emergency lines or elevator phones, and you will keep your current phone number.

For more info: <https://voip.med.wustl.edu>

# 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.



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# February Publication



Vasilios Kalas, Jerome S. Pinkner, Thomas J. Hannan, Michael E. Hibbing, Karen W. Dodson, Alex S. Holehouse, Hao Zhang, Niraj H. Tolia, Michael L. Gross, Rohit V. Pappu, **James Janetka** and Scott J. Hultgren

Evolutionary fine-tuning of conformational ensembles in FimH during host-pathogen interactions

Science Advances Vol. 3, no. 2 (2017)

**Department of Biochemistry and Molecular Biophysics**



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# *Farmer's Market*

**Inside the McDonnell Pediatric  
Research Building**

**OR**

**Outside on the Plaza  
(weather permitting)**

**Every Thursday!**

**10:00 am - 2:00 pm**



# Congratulations to Joseph Stodola!



Congratulations to **Joseph Stodola**. Joe received the Olin Biomedical Science Fellowship. These Fellowships were created by a generous gift from the Olin Foundation. The Olin Fellowships are presented to Ph.D. and M.D./Ph.D. students conducting research in the biomedical sciences in any Washington University graduate program who have made significant contributions, and demonstrated the potential to become outstanding research scientists. Joe obtained his PhD degree last summer in Peter Burgers' lab. Next month, he will join Sigma-Aldrich.

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### **New COI Module Now Available!**

The new COI Module launched this morning, February 27<sup>th</sup>, and is available at [rms.wustl.edu](http://rms.wustl.edu)

### **Improvements to COI Disclosure Processes**

- Single annual financial disclosure form to be used by the Research, Institutional, and Clinical COI Programs (*CME coming soon*), resulting in coordinated reviews and communications
- Responsive form with fewer questions and expanded branching logic that limits questions based on the discloser's role and answers
- Financial Disclosure Statement (FDS) is now used only to disclose financial interests; research data will be addressed separately, as needed (see below)
- New COI umbrella website [coi.wustl.edu](http://coi.wustl.edu) provides one-stop-shopping for all things COI, including tutorials, system and policy FAQs, contact information, and other support resources for all 4 COI Program Offices
- Single point of contact for all COI form and policy questions:

**askCOI** [coi@wustl.edu](mailto:coi@wustl.edu)  
314.747.4181  
(Business hours: M-F 8:30am - 5:00pm)

### **What Disclosers Need to Know Now**

#### ***Annual Notifications***

You will continue to receive notification emails with a link to the FDS when it is time for you to complete your annual disclosure. The FDS is also designed to be used throughout the year for financial interest updates.

#### ***Converted Data from Your Last Disclosure***

To help reduce initial data entry, your FDS has been prepopulated with as many data elements as possible from your most recent disclosure. All future disclosures will retain data from the previous submission.

#### ***New Research Disclosure Form (RDF)***

The annual FDS no longer contains research data and you will not be asked to provide such information in that form. If research details are needed, COI Program staff will request this information from you via a separate Research Disclosure Form (RDF).

#### ***Travel***

A new travel disclosure form included in the COI Module replaces the Excel spreadsheet you have been using. Based on your research funding sources (i.e. those using PHS regulations), you will continue to receive email reminders to disclose travel occurrences paid for by outside entities. See the COI website for updated travel guidance.

#### **Questions**

For general PAAMCO Project/RMS information, contact Becky Evans or email [ovcrinfo@wustl.edu](mailto:ovcrinfo@wustl.edu)

# Don't Forget!



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

And take your keys with you!

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



# March Publication



**Burgers P.M.** and Kunkel T.A.

Eukaryotic DNA Replication Fork.

Annu Rev Biochem. (2017)

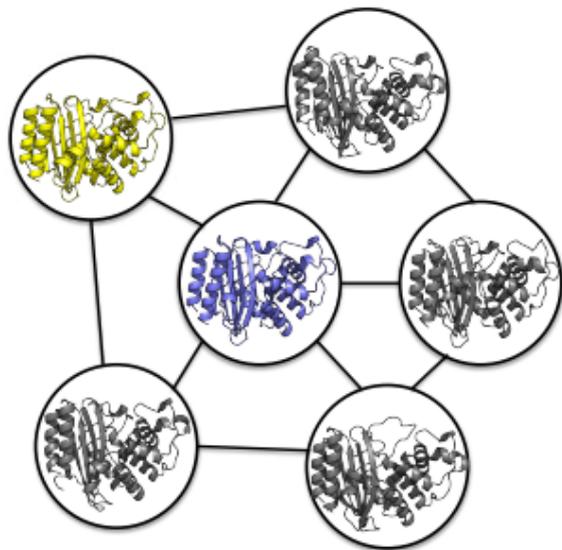
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# Spotlight on Research

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.



# NEW WASTE SORTING GUIDELINES

ALWAYS EMPTY FOODS AND LIQUIDS BEFORE RECYCLING CONTAINERS



# RECYCLE

WASTE SORTING GUIDE : 2-STREAM



◀ METAL & GLASS



◀ PLASTICS  
NO #6 OR BAGS



◀ PAPER, CARTONS  
& CARDBOARD



◀ NO  
FOOD/LIQUIDS  
TO-GO BOXES  
PAPER CUPS

FOOD CONTAMINATES RECYCLING

# LANDFILL



FOOD/LIQUIDS  
TO-GO BOXES



PLASTIC UTENSILS



PLASTIC #6  
PAPER CUPS  
STYROFOAM



SNACK WRAPPERS  
SOFT PLASTICS & BAGS

QUESTIONS? [SUSTAINABILITY.WUSTL.EDU](http://SUSTAINABILITY.WUSTL.EDU)

 Sustainability  
WASHINGTON UNIVERSITY IN ST. LOUIS

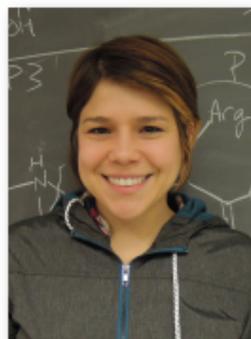


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# April Publication



Melissa M Budelier, Wayland WL Cheng, Lucie Bergdoll, Zi-Wei Chen, **James W Janetka**, Jeff Abramson, Kathiresan Krishnan, **Laurel Mydock-McGrane**, Douglas F Covey, Julian P Whitelegge, and Alex S Evers

Photoaffinity labeling with cholesterol analogues precisely maps a cholesterol-binding site in voltage-dependent anion channel-1

Journal of Biological Chemistry (2017)

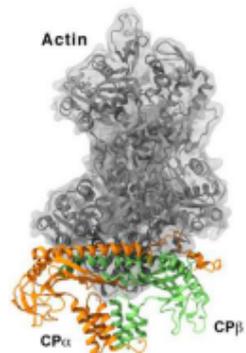
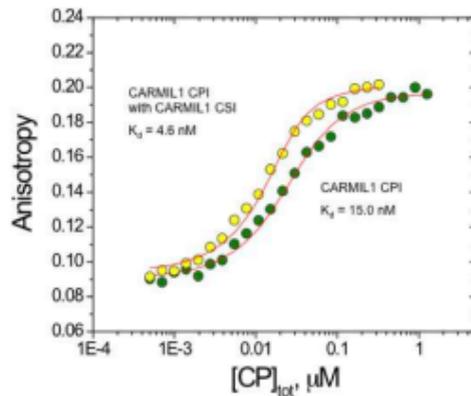
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# Spotlight on Research

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.



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# Congratulations to Dr. Galletto!

**Roberto Galletto**, PhD, Associate Professor of Biochemistry and Molecular Biophysics, received a four year grant award renewal from the National Institute of General Medical Sciences for his research entitled "*Helicase Activity and its Role in Telomere and Telomerase Regulation*".



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# Congratulations to Linda Pike



The Journal of Biological Chemistry included one of her publications among their collection "Highlights of 2016." The paper is: Ronan et al. Different Epidermal Growth Factor Receptor (EGFR) Agonists Produce Unique Signatures for the Recruitment of Downstream Signaling Proteins. *J. Biol. Chem.* 291 (11): 5528-5540.

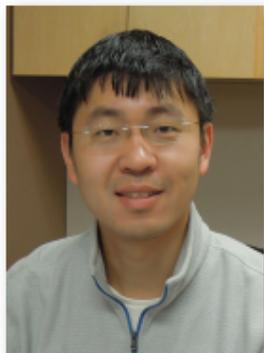


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# March Publication



Tianyang Liu, Anbang Dai, Yong Cao, **Rui Zhang**, Meng-Qiu Dong, and Hong-Wei Wang

Structural insights of WHAMM's interaction with microtubules by cryo-EM

Journal of Molecular Biology (2017)

**Department of Biochemistry and Molecular Biophysics**



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Saurab Singh's daughter Vasudha (Vasu)  
was born on December 28<sup>th</sup>, 2016.





## TEA TIME

for Faculty, Staff, Postdocs & Students

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Tuesdays & Thursdays  
3:00-4:00 pm

Biochemistry Break Room  
201 McDonnell Sciences Building

Coffee, tea and cookies are served.

# January Publication



Melissa M. Budelier, Wayland W. L. Cheng, Lucie Bergdoll, Zi-Wei Chen, Jeff Abramson, Kathiresan Krishnan, Mingxing Qian, Douglas F. Covey, **James W. Janetka**, and Alex S. Evers

Click Chemistry Reagent for Identification of Sites of Covalent Ligand Incorporation in Integral Membrane Proteins

Analytical Chem. (2017)

**Department of Biochemistry and Molecular Biophysics**



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# February Publication



**Ballante F.**, Reddy D.R., Zhou N.J., and **Marshall G.R.**

Structural insights of SmKDAC8 inhibitors: Targeting Schistosoma epigenetics through a combined structure-based 3D QSAR, in vitro and synthesis strategy.

Bioorg Med Chem. (2017)

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# 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](mailto:support@biochem.wustl.edu)

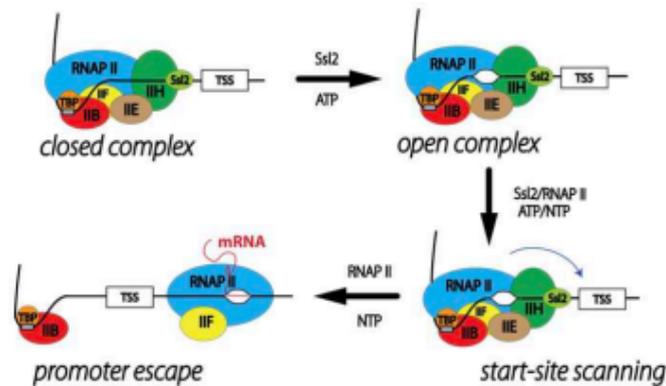
Support website: [BiochemSupport.wustl.edu](http://BiochemSupport.wustl.edu)

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



# 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*.



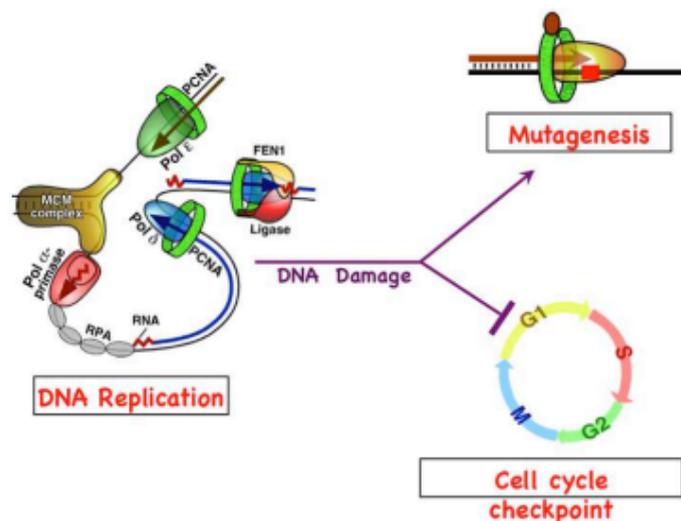
# WUSM Holiday Schedule

Holiday	Day	Date Observed at WU
Memorial Day	Monday	May 29 <sup>th</sup> , 2017
Independence Day	Tuesday	July 4 <sup>th</sup> , 2017
Labor Day	Monday	September 4 <sup>th</sup> , 2017

# 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



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# March Publication



**Sukrit Singh** and **Gregory R. Bowman**

Quantifying allosteric communication via both concerted structural changes and conformational disorder with CARDS

J. Chem. Theory Comput. (2017)

**Department of Biochemistry and Molecular Biophysics**

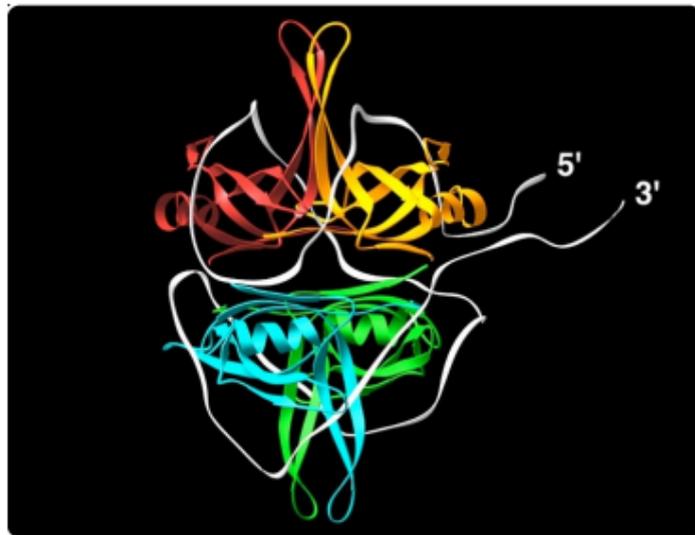


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# Spotlight on Research

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.



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Are you paid **monthly**?

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

# BMB SCIENCE FRIDAYS

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

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