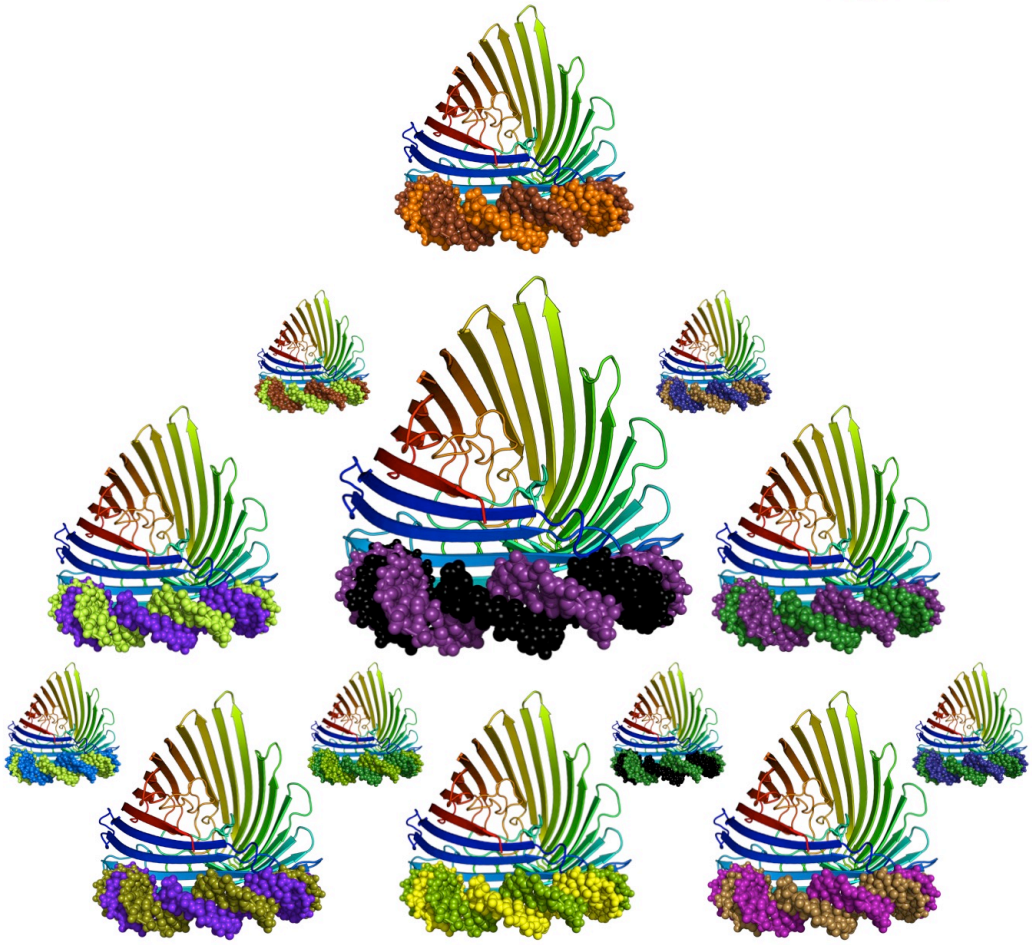
# ΔGibbs$_{37}$



# Prime Time Thermo

## Organizers - Tonya Zeczycki & Krishna Mallela

### 37th Annual Gibbs Conference on Biothermodynamics

**Touch of Nature Outdoor Education Center • Carbondale, IL, USA**

**October 14-17, 2023**

---

**Sponsors -** Applied Photophysics, Biophysical Society, Daedalus Innovations, Genentech, Horiba Scientific, ISS, JASCO, LUMICKS, Malvern Panalytical, New England Biolabs, Nicoya, National Science Foundation, OLIS, Protein Society, Refeyn, Texas State University, University of Iowa

---

# Table of Contents



***Image Credits*** *Front cover - Gibbs Delta Campfire logo & Ring of Fires by Madeline Shea (porin (3jty) fire and nucleosome DNA (6c0w) logs). The book includes images by Greg DeKoster (Gibbs campfires with the "37 cluster" of stars), Dan Herschlag (Keynote Lecture), Karen Fleming (Gary K. Ackers Lecture in Biothermodynamics) & Touch of Nature SIUC.*

# Touch of Nature (ToN) Outdoor Education Center
# Southern Illinois University – Carbondale

*Image courtesy of Touch of Nature*

**Driving Directions** https://ton.siu.edu/about-us/

**GPS Address:** The easiest way to get to Touch of Nature is to use this address in a GPS navigation: **1206 Touch of Nature Road, Makanda, IL 62958**

**From the north:** Take Interstate 57 South to the Route 13 exit (Carbondale - Exit #54B), turn west (right) onto Route 13 toward Carbondale, go approximately 15 miles. Look for Wal-Mart on your right once you enter Carbondale. Turn left (south) at this light, Giant City Road. Continue 8 miles south on Giant City Road. Touch of Nature Road will be on your left (east). Turn left and continue straight on Touch of Nature Road. Administration building is the first left.

**From the south:** Follow I-24 to I-57 North, or stay on I-57, to the Route 148 exit (Exit #45), head northwest on 148 for approximately 2 miles. Turn left on Grassy Road. There is a convenience store on this corner. Follow Grassy Road for about 7 miles. Stay left when you come to a Y. Continue southwest on Grassy Road. Grassy Road will come to a T at Giant City Road. Turn south (left) on Giant City Road. Continue on Giant City Road approximately 1 mile. Touch of Nature Road will be on your left. Turn left and continue straight on Touch of Nature Road. Administration building is the first left.

**From the east:** Head west on I-70 or, if you are further south, take I-64 to I-57 South. Continue approximately 50 miles south from I-64 to the Route 13 exit (Marion - Exit #54B), head west on Route 13 toward Carbondale, go approximately 15 miles. Look for Wal-Mart on your right once you enter Carbondale. Turn left (south) at this light, Giant City Road. Continue 8 miles south on Giant City Road. Touch of Nature Road will be on your left (east). Turn left and continue straight on Touch of Nature Road. Administration building is the first left.

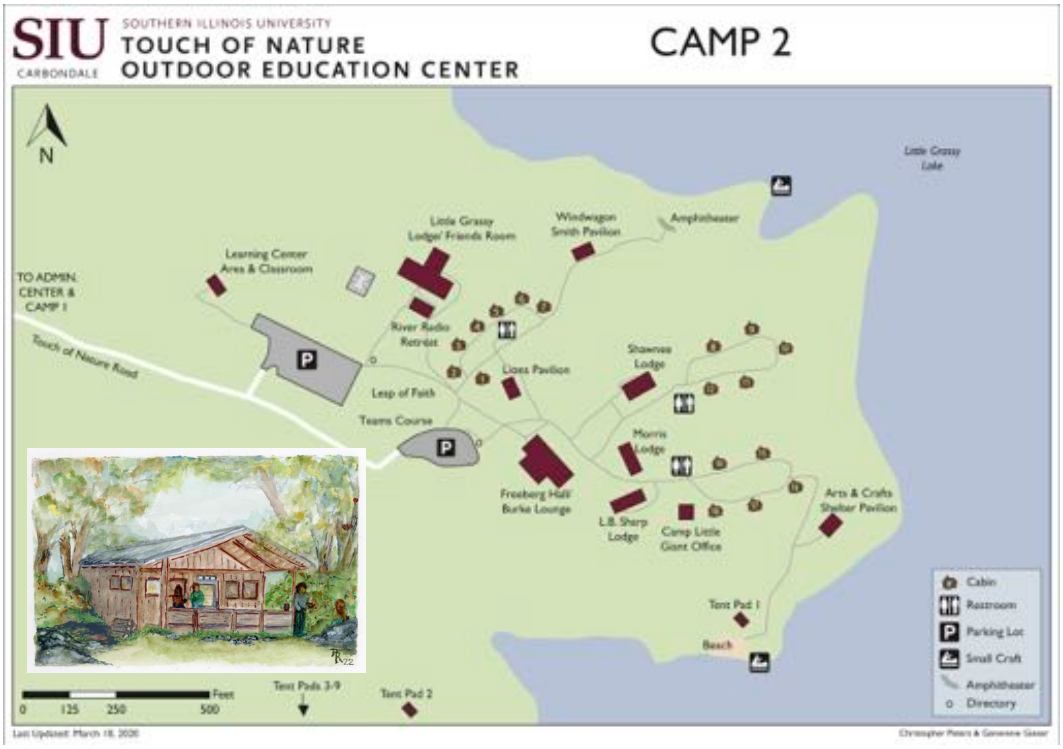
**From the west:** Head east on I-64 approximately 50 miles from St. Louis. Take the Route 127 (Nashville) exit south. Continue south for approximately 50 miles to Murphysboro. At Murphysboro, go left (east) for approximately 10 miles. You will pass through the town of Carbondale. Watch for the mall on your right. When you see Wal-Mart on your left, this is your light. Turn right (south) at this light, Giant City Road. Continue 8 miles south on Giant City Road. Touch of Nature Road will be on your left (east). Turn left and continue straight on Touch of Nature Road. Administration building is the first left.

**History** https://ton.siu.edu/about-us/history.php
https://news.siu.edu/2018/03/032718-special-olympics-history.php
https://hee-journal.uni-koeln.de/sites/hee-journal/user_upload/Ritzel_2018.pdf

## Map of TON Camps 1 & 2 with Carbondale Inset

***Going south on Giant City Road,***
***turn left onto Touch of Nature Rd. and proceed to Camp 2.***


## Camp 2 – Most activities will take place here.



# Selected Touch of Nature Facilities

## River Radio Retreat Building

Session Breaks and Business Meeting will be held here.

*Image courtesy of Touch of Nature*

## Friends Room in Little Grassy Lodge

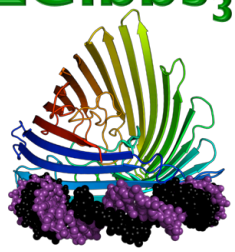
Saturday Night Thermo talks/panel and Platform Sessions will be held here.

*Image courtesy of Touch of Nature*

## Lodging ranges from “dormitory-like” to rustic cabins

*Image courtesy of Touch of Nature*

ΔGibbs$_{37}$



Prime Time Thermo
2023

# *Introduction*
# *History & Governance*

# History of the Gibbs Conference on Biothermodynamics

**J. Willard Gibbs**

**Fall, 1986**

Discussion of the discipline:
Thermodynamics in Biological Systems.
The Gill residence in Vail, Colorado.
Gary Ackers, Wayne Bolen, Ernesto Freire, Stan Gill, Jim Lee

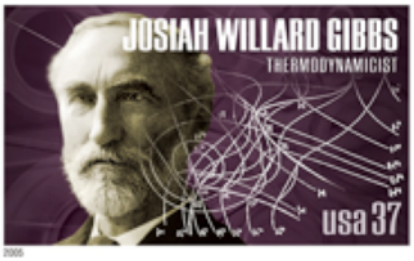
**February, 1987**

Discussion of the discipline: Thermodynamics in Biological Systems.
The Gumbo Shop, New Orleans, LA during the 31st Annual Biophysical Society Meeting.
Gary Ackers, Norma Allewell, Wayne Bolen, Ken Breslauer, Ken Dill, Ernesto Freire, Stan Gill, Jim Lee.

**1997**

A history of the first ten years of the meeting was provided by Gary Ackers and Wayne Bolen in "The Gibbs Conference on Biothermodynamics: Origins and Evolution" published in *Biophysical Chemistry* 64 (1997) 3-5 (doi:10.1016/S0301-4622(96)02246-6).

**2005**




On May 4, 2005, the United States Postal Service issued a stamp in honor of J. Willard Gibbs (1839 – 1903) (see https://news.yale.edu/2005/04/27/u-s-postage-stamp-series-unveiling-yale-celebrate-exceptional-scientists).

More of his history may be found in "The greatest mind in American history" (https://yalealumnimagazine.org/articles/4496-josiah-willard-gibbs) and NAS online biographies (https://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/gibbs-josiah.pdf).

**2011**

An update on the history of the Gibbs conference was provided by Madeline A. Shea, John J. Correia and Michael D. Brenowitz in "Introduction: Twenty five years of the Gibbs Conference on Biothermodynamics" available in *Biophysical Chemistry* 159 (2011) 1-5 (doi:10.1016/j.bpc.2011.07.002).

**Conference Organizers & Keynote Speakers**

All in-person meetings have been held at the Touch of Nature Outdoor Education Center (prior to 2022, it was called the Touch of Nature Environmental Center) associated with Southern Illinois University–Carbondale.

From 1987 through 1993, all speakers in scientific sessions were students or postdoctoral fellows. PI speakers were introduced at the 8th conference held in 1994. In 2020 and 2021, the conference was held virtually (*via* Zoom) because of the COVID-19 pandemic. A list of Conference Organizers and Keynote Speakers follows.

| Year | Conference Organizers | Keynote Speaker(s) |
|---|---|---|
| 1987 | Jim Lee and Wayne Bolen | *Philosophical Talks by* Gary K. Ackers and Ken Dill |
| 1988 | Gary Ackers and Michael Johnson | |
| 1989 | Susan G. Frasier and Michael Johnson | |
| 1990 | Michael Johnson and Marty Straume | |
| 1991 | Gary Ackers and Tim Lohman | Ernesto Freire |
| 1992 | Jim Lee and Tomasz Heyduk | Serge Timasheff and John Schellman |
| 1993 | Maurice Eftink and Glen Ramsay | Peter von Hippel and Julian Sturtevant |
| 1994 | Enrico Di Cera and Madeline Shea | Gary K. Ackers and Kathleen S. Matthews |
| 1995 | Kenneth P. Murphy and Michael D. Brenowitz | Victor Bloomfield and Mario Amzel |
| 1996 | Jonathan B. Chaires and Michael L. Doyle | J. Michael Schurr and Allen Minton |
| 1997 | Dorothy Beckett and Jack Correia | Adrian Parsegian |
| 1998 | Andy Robertson | David Draper |
| 1999 | Bertrand García-Moreno E. and John Shriver | Wayne Bolen and Gary Ackers |
| 2000 | George Turner and Kim Sharp | Steve White |
| 2001 | Margaret A. Daugherty and Luis A. Marky | George Rose |
| 2002 | Michael Mossing and George Makhatadze | Rodney Biltonen |
| 2003 | Vince Hilser and Dick Sheardy | Jim Lee |
| 2004 | Doug Barrick and Kathleen Hall | Nacho Tinoco |
| 2005 | Trevor Creamer and Clay Clark | Carl Frieden |
| 2006 | Karen Fleming and Rohit V. Pappu | Madeline A. Shea and Timothy Lohman |
| 2007 | Brian M. Baker and Michael T. Henzl | Jamie Williamson |
| 2008 | Jannette Carey and David Bain | Dorothy Beckett and Ken Dill |
| 2009 | Nathan Baker and Liskin Swint-Kruse | Linda Jen-Jacobson |
| 2010 | Elisar Barbar and Vince J. LiCata | C. Nick Pace |
| 2011 | Gibbs Society Board of Directors | Bertrand García-Moreno E. |
| 2012 | Aaron L. Lucius and Patricia L. Clark | Terry G. Oas |
| 2013 | James L. Cole and Aron W. Fenton | Doug Barrick |
| 2014 | Andrew B. Herr and Steven T. Whitten | Karen G. Fleming |
| 2015 | Ernesto J. Fuentes and James R. Horn | Rohit V. Pappu |
| 2016 | Sarah Bondos and Nick Fitzkee | Patricia Clark |
| 2017 | Scott Showalter and Ana Maria Soto | Enrique de la Cruz |
| 2018 | Chiwook Park and David Draper | Kevin Plaxco |
| 2019 | Matthew Auton and Carlos Castañeda | Cathy Royer |
| 2020 | Roberto Galletto and Karen A. Lewis | Kathleen Hall |
| 2021 | Gibbs Society Board of Directors | Brian Baker |
| 2022 | Aaron L. Lucius and James R. Horn | Liskin Swint-Kruse |
| 2023 | Tonya Zeczycki and Krishna Mallela | Daniel Herschlag |

## The Annual Gary K. Ackers Lecture in Biothermodynamics

Since 2009, the Gibbs Society Board of Directors sponsors an annual lecture honoring the scientific contributions of founding organizer Gary K. Ackers (1939-2011) to the field of biothermodynamics.

| Lecture | Year | Ackers Lecturer |
|---|---|---|
| 1 | 2009 | Michael Brenowitz |
| 2 | 2010 | Timothy Lohman |
| 3 | 2011 | Madeline Shea |
| 4 | 2012 | Enrico Di Cera |
| 5 | 2013 | Bertrand García-Moreno E. |
| 6 | 2014 | David E. Draper |
| 7 | 2015 | Walter S. Englander |
| 8 | 2016 | Ken Dill |
| 9 | 2017 | Dorothy Beckett |
| 10 | 2018 | James C. Lee |
| 11 | 2019 | Jack Correia |
| 12 | 2020 | Douglas Barrick |
| 13 | 2021 | David Bain |
| 14 | 2022 | Tobin Sosnick |
| 15 | 2023 | Karen Fleming |

# Gibbs Society Governance

## Incorporation

In 2002, the Gibbs Society of Biological Thermodynamics incorporated in the Commonwealth of Virginia, under the guidance of Michael L. Johnson, then Treasurer of the Society. Current bylaws are available online (https://www.gibbssociety.org/) and in this document. Articles of Incorporation may be requested from the Treasurer.

## Current Officers and Terms

President .....James R. Horn, 2022 – 2023
President-Elect .....Sarah E. Bondos, 2022 – 2023
Past-President.....Aaron L. Lucius, 2022 – 2023
Vice President .....Aron Fenton, 2022 –
Secretary .....Andrew Herr, 2019 – 2025
Treasurer.....Karen Lewis, 2022 – 2027

## Current Board Members-at-Large

Vince J. LiCata (2017) current term expires 2027
Madeline A. Shea (2006) current term expires 2024

## 2022 – 23 Board of Directors (listed alphabetically by last name)

Sarah E. Bondos, Andrew Herr, James R. Horn, Karen Lewis, Vince J. LiCata, Aaron L. Lucius, Madeline A. Shea

## Former Presidents

2001 – 2002.....Gary K. Ackers
2002 – 2003.....Jack Correia
2003 – 2004.....D. Wayne Bolen
2004 – 2005.....Madeline A. Shea
2005 – 2006.....Dorothy Beckett
2006 – 2007.....J. Brad Chaires
2007 – 2008.....Timothy M. Lohman
2008 – 2009.....Luis A. Marky
2009 – 2010.....Bertrand Garcia-Moreno E.
2010 – 2011.....Karen G. Fleming
2011 – 2012.....Douglas Barrick
2012 – 2013.....David L. Bain
2013 – 2014.....George I. Makhatadze
2014 – 2015.....Patricia Clark
2015 – 2016.....Vince J. LiCata
2016 – 2017.....James Cole
2017 – 2018.....Clay Clark
2018 – 2019.....Brian Baker
2019 – 2020.....Kathleen Hall
2020 – 2021.....Liskin Swint-Kruse
2021 – 2022.....Aaron L. Lucius

## Former Treasurers

2001 – 2011 ..... Michael L. Johnson
2011 – 2017 ..... Jack Correia
2017 – 2022 ..... Aron Fenton

## Former Secretaries

2004 – 2013 ..... Margaret A. Daugherty
2013 – 2019 ..... Liskin Swint-Kruse

## Former Vice President

2010 – 2022 ..... Michael L. Johnson

## Former Board Members-at-Large

2003 – 2017 ..... Jack Correia

## Committees and Other Contributors to Conference Organization

**Ackers Lecturer Selection Committee**
Vince J. LiCata (Chair) 2021 –
and current members of the Gibbs Society Board of Directors

**Fundraising Committee:**
Faculty - Ernesto Fuentes (Chair), Lisa Warner and Allyn Schoeffler

**Local Arrangements Committee**
Faculty - Carlos Castañeda (Chair), Emma Morrison, Aron Fenton
Trainees – Whitney Bond, Jasmine Cubuk, Taylor Devlin, Jerry Dinan, Emery Usher

**Poster Committee**
Faculty - Steven Whitten (Chair) and Sean Fanning

**Presentation Logistics Committee**
Faculty - Kurt Piepenbrink (Chair), Sukesh Bhaumik, Elizabeth Duran, Stephen Fried
Trainees - Pritam Chakraborty, Alexandra Lucas, Xinzhe Ren, Yingzi Xia, Yafan Yu

**Program Book Committee**
Madeline Shea (Chair), David Bain, Gregory DeKoster

**Registration – JotForm and PayPal**
Nicholas C. Fitzkee and James R. Horn

**Saturday Night Thermo Co-Organizers**
Faculty: Vince J. LiCata and Ana Maria Soto
Trainees: Govinda Hancock, Kacey Mersch, Kristen Young

**SharePoint Guru**
James R. Horn

**Speaker Nominating Committee**
Organizers Tonya Zeczycki and Krishna Mallela, Scott Showalter, Clarissa Durie

**Webmasters for Gibbs Society - https://www.gibbssociety.org**
Sarah E. Bondos and Chiwook Park (2020 – present)

## Gibbs Mission and Policies

### **Mission Statement** (approved January 20, 2023)

The Gibbs Society of Biological Thermodynamics is committed to:

- advancing the development and application of thermodynamic principles to understand biological systems;
- fostering the professional growth of early-career trainees;
- promoting an equitable, accessible, and inclusive biothermodynamics community; and
- hosting an annual conference that includes significant opportunities for trainee oral presentations.

*During registration online, all participants have accepted the following policies of the Gibbs Conference on Biothermodynamics.*

### Confidentiality Statement

Please remember that the content of all presentations (both talks and posters) for this meeting are confidential material and may contain unpublished results. Abstracts will not be posted online.

Please ask permission from the authors before taking photos or screenshots of posters or poster material.

Please do not record or take screenshots of the talks, posters, or any presented material unless a speaker has given you express permission.

### Code of Conduct

The Gibbs Society of Biological Thermodynamics is committed to providing a safe and productive environment that fosters open dialogue and the exchange of scientific ideas, promotes equal opportunities and treatment for all participants, and is free of harassment and discrimination.

Harassment includes speech or behavior that is not welcome or is personally offensive, whether it is based on ethnicity, gender, religion, age, body size, disability, veteran status, marital status, sexual orientation, gender identity, or any other reason. It includes stalking, unnecessary touching, and unwelcome attention.

Behavior that is acceptable to one person may not be acceptable to another, so use discretion to be sure that respect is communicated. Harassment intended in a joking manner still constitutes unacceptable behavior. Anyone experiencing conduct that violates this Code should report this conduct to any member of the Gibbs Society Board.

# Bylaws to Articles of Incorporation for Gibbs Society of Biological Thermodynamics

January 20, 2023

**Mission Statement** (edited **January 20, 2023**)

The Gibbs Society of Biological Thermodynamics is committed to:

- advancing the development and application of thermodynamic principles to understand biological systems;
- fostering the professional growth of early-career trainees;
- promoting an equitable, accessible, and inclusive biothermodynamics community; and
- hosting an annual conference that includes significant opportunities for trainee oral presentations.

**Bylaw 1** (established **December 11, 2020;** edited **January 20, 2023**):

Henceforth, the Board of Directors shall consist of seven (7) rotating members, comprising (1) the Past-President, (2) the current President, (3) the President-Elect, (4) Secretary (3-year renewable term), (5) Treasurer (5-year renewable term), and (6-7) two Members-at-Large (6-year renewable terms each, staggered 3 years apart). All board members will be listed publicly on the Gibbs Society of Biological Thermodynamics website.

The positions of advisory Vice President, Assistant Treasurer, and Webmaster will be appointed by the Board of Directors and publicly posted on the website. Vacancies and renewals on the Board of Directors will be filled by a majority vote of the Board of Directors. As needed, other positions may be created and appointed by the Board of Directors and publicly posted on the website. All members of the Board of Directors must have served as an Organizer of the Gibbs Conference on Biothermodynamics.

**Bylaw 2** (established **February 22, 2017;** edited **May 13, 2022**):

Officers of the Gibbs Society of Biological Thermodynamics shall be elected at the annual meeting of the Board of Directors during the annual conference. A President-Elect shall be chosen at each annual meeting. At the close of the annual meeting, the President-Elect will become the current President and the current President will become the Past-President. The Secretary and Treasurer shall serve renewable 3-5-year terms. The Treasurer is authorized to invest society funds in checking accounts and interest-bearing accounts such as money market accounts, savings accounts and/or certificates of deposit. The Treasurer will inform the Board of Directors prior to transfers of Society funds. The Treasurer shall provide the Board of Directors with a financial report at least twice a year, 1) at the annual meeting of the Board of Directors and 2) after all expenses and income from the meeting have been resolved. Two members of the Board of Directors in addition to the Treasurer will be authorized to have access to the bank account.

**Bylaw 3** (established **February 22, 2017; edited May 16, 2022**):

The Board of Directors shall provide oversight and serve as advisors to the current organizers of the Gibbs Conference on Biothermodynamics. It is the responsibility of the Board of Directors to provide documentation on how to organize a Gibbs Conference to the conference organizers. This includes a summary of financial reports from the treasurer; a list of email addresses from the secretary; and a check list of organizational tasks that will be revised in consultation with the organizers of the immediate past meeting.

**Bylaw 4** (established **May 13, 2022**):

All donations to the Gibbs Society of Biological Thermodynamics, regardless of source, will be unrestricted, will be deposited in the general fund, and will be used at the discretion of the Board of Directors to support and improve the conference and other activities of the Gibbs Society of Biological Thermodynamics. All donors will be informed of this before their gifts are accepted, and donations will be acknowledged in the program book and on the website for the conference.

These Bylaws were discussed by email exchanges and approved by vote during a zoom meeting of the Board of Directors:

Madeline Shea, Long-Term Board Member*
Vince LiCata, Long-Term Board Member*
Aaron Lucius, Past-President
Jim Horn, President
Sarah Bondos, Past-President
Andrew Herr, Secretary
Karen Lewis, Treasurer

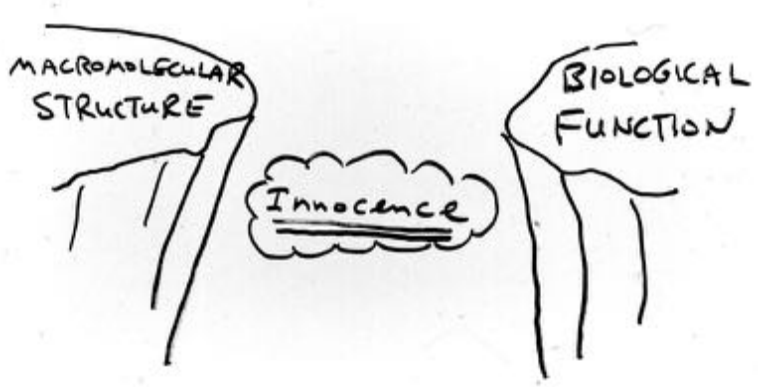
These bylaws replace those established June 3, 2022.

*Following approval of these Bylaws on January 20, 2023,
these "Long-Term Board Members" became "Members-at-Large".

## 15th Annual Gary K. Ackers Lecture in Biothermodynamics
### *2023 Lecturer – Karen Fleming, Johns Hopkins University*

*This lecture honors the scientific contributions of Gary K. Ackers (1939-2011) to the field of Biological Thermodynamics. He served on the faculty at the University of Virginia, Johns Hopkins University and Washington University in St. Louis School of Medicine. He was a Fellow of the Biophysical Society and was one of the founding organizers of the Gibbs Conference.*

*Gary demonstrated a lifelong commitment to the growth and development of an intellectual community of scholars devoted to furthering the field of biothermodynamics. Gary was an active member of the Biophysical Society throughout his career and served as President of the Society, as well as Organizer of the annual meeting. While on the faculty of the University of Virginia, he was a leader in the graduate biophysics training program. When on the faculty in the Department of Biology at the Johns Hopkins University, he conceived and organized the Institute for Biophysical Studies of Macromolecular Assemblies, a university-wide training program in molecular biophysics that has continued for decades. While at Johns Hopkins, he also played a leading role in the establishment of the Gibbs Conference on Biothermodynamics, an annual meeting organized to promote innovative development of biophysical principles applied to current problems in biology and to train the next generation of molecular biophysicists to tackle hard problems rigorously. After moving to St. Louis to chair the Department of Biochemistry and Molecular Biophysics at Washington University, he spearheaded a new graduate program in biophysics and hired many faculty who have joined the community of regular contributors to the Gibbs Conference.*

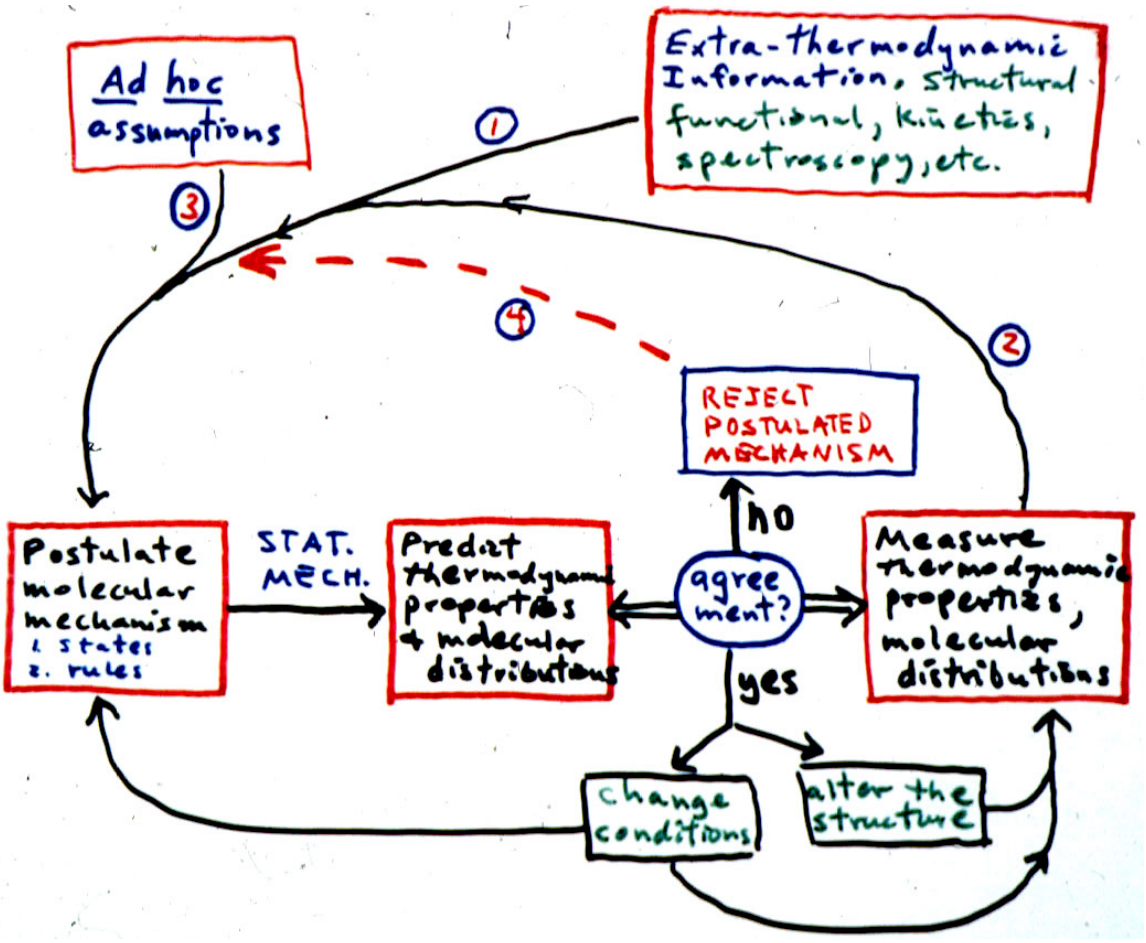



*Gary was a pioneer in the development of methods and application of principles of equilibrium thermodynamics to the study of linkage in complex macromolecular assemblies. Studies from his laboratory on the energetics of self-association and ligand binding in human hemoglobin proved unequivocally that the classic and elegant MWC model of intersubunit allostery was insufficient to explain cooperative oxygen binding: the position, as well as the number, of ligands matters. His contributions in this area greatly enhanced our understanding of the relationship between structure, energy and function in hemoglobin, and in multimeric allosteric systems in general. By probing ever more deeply into the molecular mechanism of cooperativity, he demonstrated a beautiful, useful, and general strategy for dissecting functional energetics in macromolecular assemblies.*

*His quantitative study of the interactions between proteins and nucleic acids in the bacteriophage lambda system included the development of quantitative DNase footprinting*

*methods for measuring free energies of repressor-operator interactions. The footprinting assay remains an effective tool for measuring the extremely tight binding constants that are often encountered in site-specific interactions between proteins and nucleic acids. Those studies paved the way for similar methods to study protein-nucleic acid interactions in more complex systems, including time-resolved studies of the kinetics of RNA folding. Based on his experimental studies of phage lambda, his group developed statistical thermodynamic models to simulate the lysogenic-to-lytic growth switch: the series of macromolecular events that determine the fate of bacteriophage lambda during infection of E. coli. This work demonstrated how a complex biological function could be predicted quantitatively, strictly from the kinetics of transcription and translation, and the Gibbs free energy of interactions between the key macromolecular components in the genetic switch.*

*During Gary's early career, he developed methods to measure association constants in self- associating systems based on analytical gel permeation chromatography. Those methods have since become standard tools in the field. His group was also responsible for modifications of the cryo-gel electrophoresis methods, moving from applying them to hemoglobin to protein-DNA interactions. These contributions focused on developing the capacity to quantify intermediate states that are only transiently populated during the course of a biochemical process. His more than 200 articles and chapters changed our view of the molecular mechanisms that govern complex biochemical reactions.*

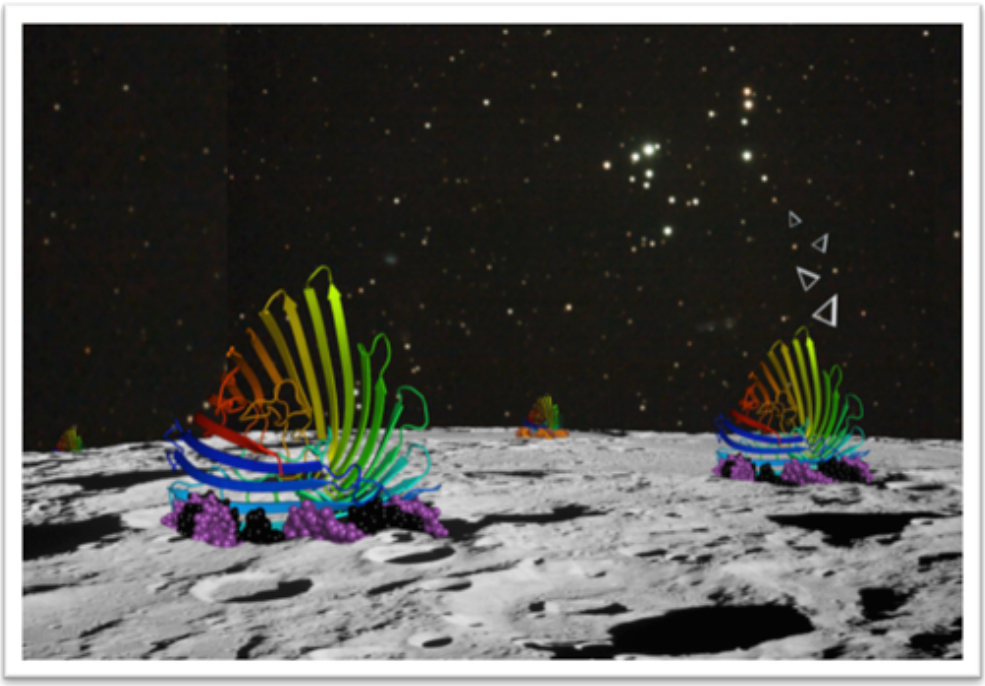



*Images courtesy of Gary K. Ackers*

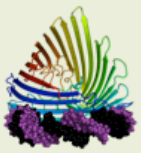
ΔGibbs$_{37}$

Prime Time Thermo
2023

# *Schedule of Events*
## October 14-17, 2023



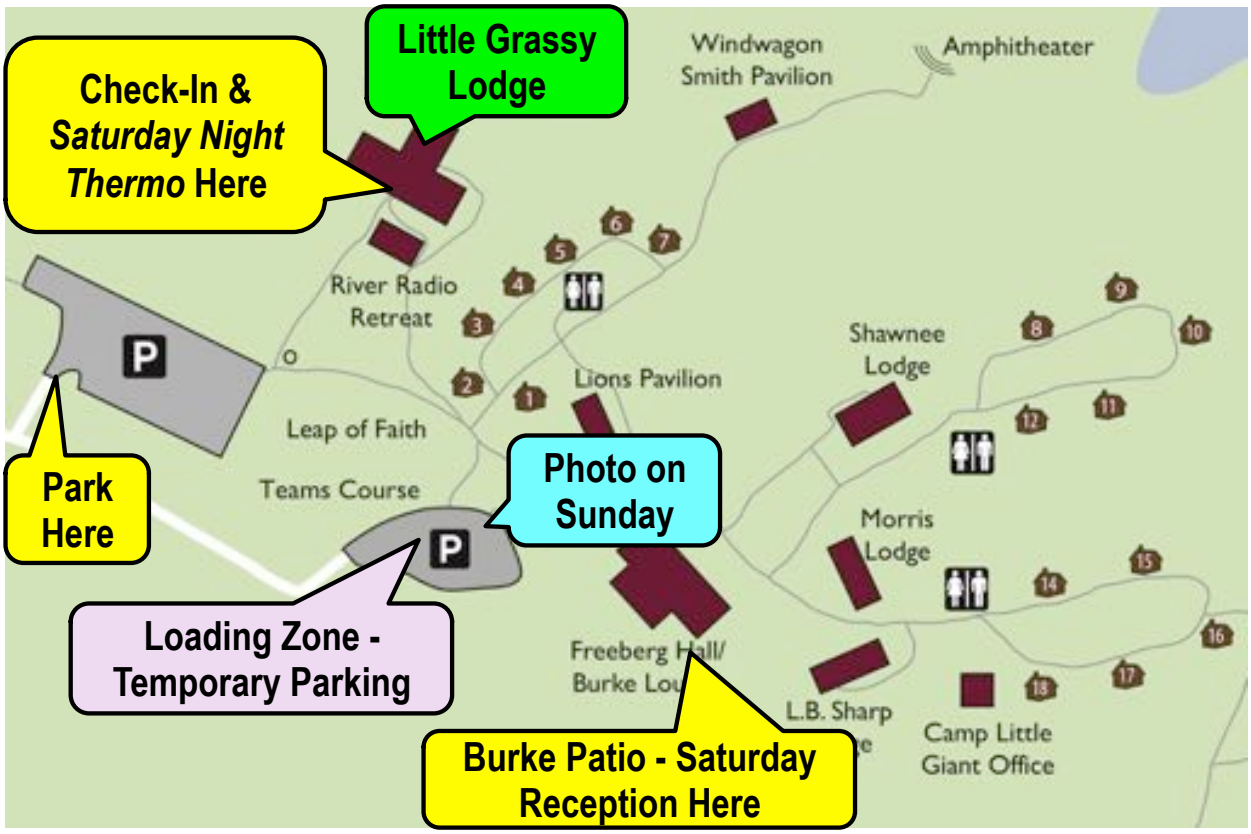
# ΔGibbs37

| Illinois (UTC-6) | 10/14/23 Saturday | 10/15/23 Sunday | 10/16/23 Monday | 10/17/23 Tuesday |
|---|---|---|---|---|
| 7:00 AM |  | Breakfast | Breakfast | Breakfast |
| 7:30 AM | | | | |
| 8:00 AM | | | | |
| 8:30 AM | | President's Welcome | Organizers's Remarks | Organizers's Remarks |
| 9:00 AM | | Keynote Lecture<br>Dan Herschlag | Ackers Lecture<br>Karen Fleming | Platform V<br>PIs & Trainees |
| 9:30 AM | | | | |
| 10:00 AM | | Platform I<br>PIs & Trainees | Platform III<br>PIs & Trainees | |
| 10:30 AM | | Break | Break | Break |
| 11:00 AM | | | | |
| 11:30 AM | | | | Lunch-to-Go |
| 12:00 PM | | Conference Photo | Lunch | Pick up in Freeberg Hall |
| 12:30 PM | | Lunch | | |
| 1:00 PM | | | Business Meeting | Conference<br>Survey<br>Please complete by<br>Friday, 10/20/2023 |
| 1:30 PM | | | | |
| 2:00 PM | | | | |
| 2:30 PM | | | | |
| 3:00 PM | Check-in begins<br>at Touch of Nature<br>Little Grassy Lodge<br>through 8 PM | Platform II<br>PIs & Trainees | Platform IV<br>PIs & Trainees | |
| 3:30 PM | | | | |
| 4:00 PM | | Break | Break | |
| 4:30 PM | | | | |
| 5:00 PM | | | | |
| 5:30 PM | Saturday<br>Night<br>Thermo<br>for<br>Trainees<br>Only | | | |
| 6:00 PM | | | | |
| 6:30 PM | | Dinner | Dinner | |
| 7:00 PM | | | | |
| 7:30 PM | Opening<br>Night<br>Reception<br>Snacks &<br>Beverages | | | |
| 8:00 PM | | Poster Session I<br>(Last names M-Z)<br>& Vendor Displays<br>Beer & Wine | Poster Session II<br>(Last names A-L)<br>& Vendor Displays<br>Beer & Wine | |
| 8:30 PM | | | | |
| 9:00 PM | | | | |
| 9:30 PM | | | | |
| 10:00 PM | | Remove posters by midnight | Remove posters by midnight | |
| 10:30 PM | | | | |
| 11:00 PM | | | | |

Time listed in leftmost column indicates approximate starting time for event in that block.

# Prime Time Thermo

## Saturday ♦ October 14, 2023




**3:00 – 8:00 pm** **Check-in at Little Grassy Lodge for those staying on-site.**
Everyone - Collect name badge & program book in Little Grassy Lodge.

If you need to park in the Loading Zone near Freeberg to unload luggage or displays, please move cars **before noon on Sunday** to accommodate setup of the conference photo that will be held there.

Attractions in Southern Illinois (https://southernillinoistourism.org) include Giant City State Park orchards with apple cider, doughnuts, apple butter & pumpkins (Rendleman Orchards & Market and Flamm Orchards are popular), and plenty of small town charm in Makanda.

**5:30 – 8:15** ***Saturday Night Thermo***
***Event for trainees only – full schedule on next page***

| | |
|---|---|
| **7:30 – 10:00 pm** | **Opening Reception on Burke Patio**<br>Light refreshments, beer, wine, and soft drinks will be served. Participants are expected to make dinner arrangements independently. |

| | |
|---|---|
| **8:30 PM** | **Little Grassy Lodge "Friends Room"**<br>Meeting of Presentation Logistics Committee and Moderators of Platform Sessions to review AV setup. |

# Saturday Night Thermo ♦ October 14, 2023

## *Saturday Night Thermo – Event for trainees only*

**Moderators and Co-Organizers**

**Govinda Hancock,** Fanning Lab, Loyola University Chicago
**Kacey Mersch,** Lohman Lab, Washington University in St. Louis
**Kristen Young,** Fanning Lab, Loyola University Chicago

**Faculty Co-Organizers**

**Ana Maria Soto**, Towson University
**Vince J. LiCata**, Louisiana State University

**5:30 pm** **Dinner for trainees who registered in advance**
**Little Grassy Lodge "Friends Room"**

**6:00 – 7:00 pm** **Flash Talks in Little Grassy Lodge "Friends Room"**
*Open to trainees only. No registration required.*

***Speakers - please work with Moderators to test your presentation in advance.***

1. High-resolution models of conformational dynamics in DNA recognition by the master transcription factor PU.1
**Tyler N. Vernon**, Poon Lab, Georgia State University

2. Disruptions of DNA Base Pair Cooperativity Probed with Time-Resolved Infrared Spectroscopy,
**Brennan Ashwood**, Tokmakoff Lab, The University of Chicago

3. Insights into How Chaperone Net Charge and Sequence Patterning Influence Nucleic Acid Folding,
**Gabrielle M. Perkins**, Holmstrom Lab, University of Kansas

4. Molecular basis of ligand-dependent Nurr1-RXRalpha activation,
**Xiaoyu Yu**, Kojetin Lab, Vanderbilt University

5. The Role of Structural and Dynamic Rearrangements in the Functional Regulation of a Classically Allosteric Protein,
**Darex J. Vera-Rodríguez**, Lee Lab, University of North Carolina at Chapel Hill

6. Engineering a Biomimetic Protein Corona for Predictive Nanoparticle Behavior
**Tanveer Shaikh**, Fitzkee Lab, Mississippi State University

7. Excluded Volume and Weak Interactions in Crowded Solutions Modulate Conformations and RNA Binding of an Intrinsically Disordered Tail
**Madison Stringer**, Soranno Lab, Washington University in St Louis

**7:00 – 7:15 pm** **Refreshment Break**

**7:15 – 8:15 pm** **Career Panel in Little Grassy Lodge "Friends Room"**
Session open to all trainees but not PIs.
*Sponsored by the Serge N. Timasheff Scholarship* Donors

**8:15 pm** **Adjourn to join ongoing reception for all participants.**

# Sunday Morning ♦ October 15, 2023

♦ Posters in Poster Session I may be mounted on Sunday morning. Use assigned number.

7:00 – 8:20 am **Breakfast in Freeberg & Burke & Surrounding Area**
Individuals who requested special meals in advance because of dietary restrictions should follow signage in Freeberg to separate serving area, and ask staff for assistance.

## *Platform Session I*

**8:15 am** ***Speakers - Please connect your laptop in advance of the session.***
AV support provided by **Yafan Yu**, Piepenbrink Lab, Univ. of Nebraska

**8:30 – 8:40 am** **President's Welcome**
**James R. Horn**, Northern Illinois University

**8:40 – 8:50 am** **Organizers' Remarks**
**Tonya Zeczycki**, Brody School of Medicine, East Carolina University
**Krishna Mallela**, Skaggs School of Pharmacy, Univ. of Colorado

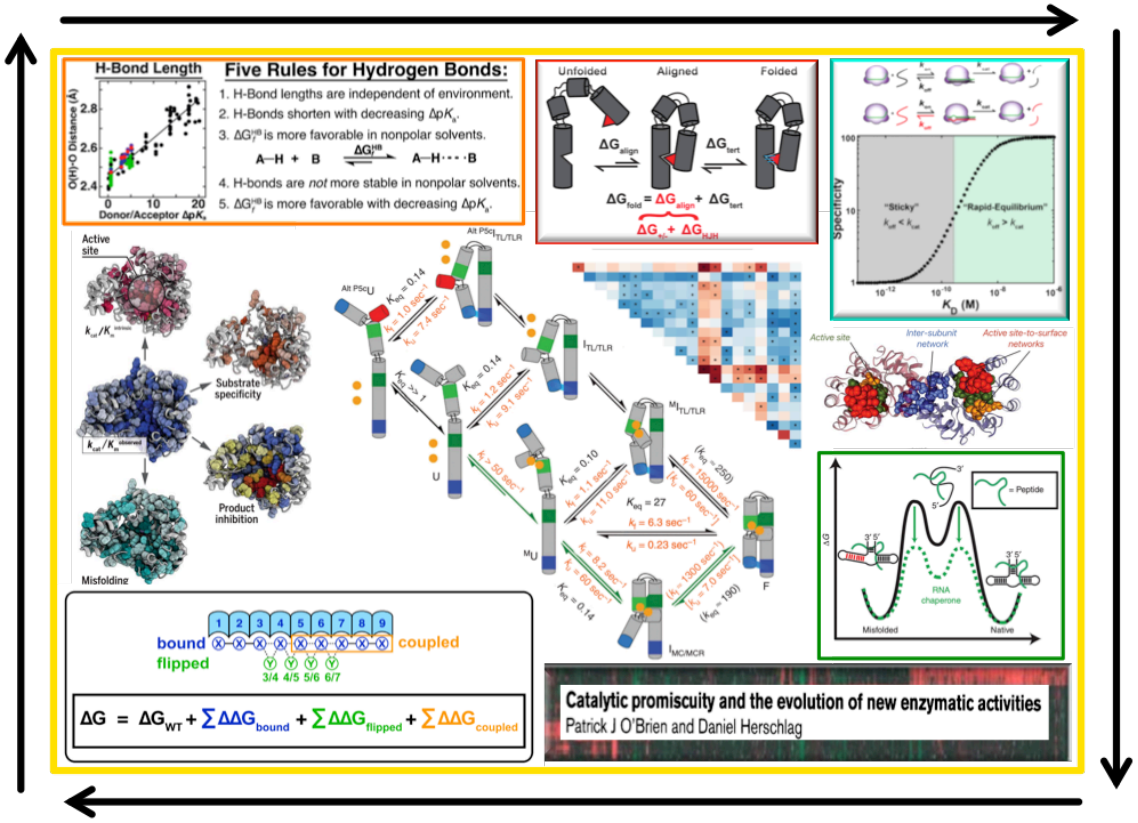
**Moderator** **Pierce O'Neil,** Swint-Kruse Lab, KUMC

## *37th Annual Gibbs Conference Keynote Lecture*

**8:50 – 9:00 am** **Speaker Introduction by Tonya Zeczycki**
Brody School of Medicine, East Carolina University

**9:00 – 9:50 am** **From Structure–Function to Ensemble–Function: A new paradigm for quantitative understanding of protein function**
**Dan Herschlag,** Stanford University

9:50 – 10:00 am Questions for Keynote Speaker



## *Platform Session I - continued*

| | |
|---|---|
| **10:00 – 10:30 am** | **Break – Refreshments in River Radio Retreat**<br><br>Please move cars in parking lot near Freeberg before noon to accommodate setup of the conference photo. |
| **10:30 – 10:45 am** | **Identification of a covert evolutionary pathway between two protein folds**<br>**Devlina Chakravarty,** Porter Lab, NLM NCBI NIH |
| 10:45 – 10:50 am | Questions for speaker |
| **10:50 – 11:15 am** | **The Genetic Landscape of a Metabolic Interaction**<br>**Kimberly Reynolds,** Univ. of Texas Southwestern Medical Center |
| 11:15 – 11:20 am | Questions for speaker |
| **11:20 – 11:35 am** | **Teasing More out of ITC Using System-Specific Bayesian Inference**<br>**Douglas Walker,** Oregon State University |
| 11:35 – 11:40 am | Questions for speaker |
| 11:40 – 11:50 am | **General Discussion for Session** |

| | |
|---|---|
| **12:00 pm** | **Conference Photo near Freeberg Hall**<br>**Photographer Karen Fleming**<br>Gather on hill near parking lot by Freeberg Hall<br>Please move cars in parking lot before noon to accommodate setup of the conference photo. |

| | |
|---|---|
| **12:15 pm** | **Lunch in Freeberg & Burke & Surrounding Tents**<br>Individuals who identified dietary restrictions should follow signage in Freeberg to separate serving area, and ask staff for assistance. |

| | |
|---|---|
| 1:00 – 2:45 pm | **Free Time until Afternoon Session**<br>Look near the check-in counter in Little Grassy Lodge for information about possible organized events. Information about local parks and attractions is also available near the entrance to Little Grassy Lodge. |

Attractions in Southern Illinois (https://southernillinoistourism.org) include Giant City State Park, orchards with apple cider, doughnuts, apple butter & pumpkins (Rendleman Orchards & Market and Flamm Orchards are popular), and plenty of small town charm in Makanda.

## Sunday Afternoon ♦ October 15, 2023

### *Platform Session II*

| | |
|---|---|
| 2:45 pm | ***Speakers - Please connect your laptop in advance of the session.*** AV support provided by **Alexandra Lucas,** Mallela Lab, Univ. of Colorado Anschutz Medical Campus |
| **Moderator** | **Taylor Devlin,** Fleming Lab, Johns Hopkins |
| **3:00 – 3:25 pm** | **Interactions of a riboswitch RNA with fluorogenic probes for multiplexed RNA detection in live cells with the Riboglow-FLIM sensor**<br>**Esther Braselmann,** Georgetown University |
| 3:25 – 3:30 pm | Questions for speaker |
| **3:30 – 3:45 pm** | **Thermodynamics of Selective DNA Binding by Cre Recombinase**<br>**Jonathan Montgomery**, Foster Lab, Ohio State University |
| 3:45 – 3:50 pm | Questions for speaker |
| **3:50 – 4:05 pm** | **Evaluating the role of membrane localization on protein dimerization using MD simulations**<br>**Adip Jhaveri,** Johnson Lab, Johns Hopkins University |
| 4:05 – 4:10 pm | Questions for speaker |
| 4:10 – 4:40 pm | **Break – Refreshments in River Radio Retreat** |
| **4:40 – 5:05 pm** | **Intrinsically Disordered Regions Promote Protein Refoldability, Facilitating Retrieval from Biomolecular Condensates**<br>**Stephen Fried,** Johns Hopkins University |
| 5:05 – 5:10 pm | Questions for speaker |
| **5:10 – 5:25 pm** | **Control of G Protein-Coupled Receptor Function via Membrane Interacting Intrinsically Disordered C-Terminal Domains**<br>**Chiara Mancinelli,** Levitz & Eliezer Lab, Weill Cornell Medicine |
| 5:25 – 5:30 pm | Questions for speaker |
| **5:30 – 5:55 pm** | **Intrinsically disordered regions that drive phase separation form a robustly distinct protein class**<br>**Steven Whitten,** Texas State University |
| 5:55 – 6:00 pm | Questions for speaker |
| **6:00 – 6:10 pm** | **General Discussion** |
| **6:30 pm** | **Dinner in Freeberg & Burke & Surrounding Area** |

## Sunday Evening ♦ October 15, 2023

### *Poster Session I (N-Z)*

| | |
|---|---|
| **8:00 – 10:00 pm** | **Posters on display in Freeberg Hall and Burke Lounge**<br>Instructions & assigned numbers are listed after the schedule of talks. |
| | **Displays by Sponsors in Freeberg Hall (upper level)**<br>Please set up displays near beer, wine, and soft drinks |

# Monday Morning ♦ October 16, 2023

♦ Posters in Poster Session II may be mounted on Monday morning. Use assigned number.

♦ A white board will be available in Little Grassy Lodge, near the check-in window.
*If you can offer someone a ride, please write your name, the time when you are leaving Touch of Nature, number of people you can accommodate and which airport you are using.*

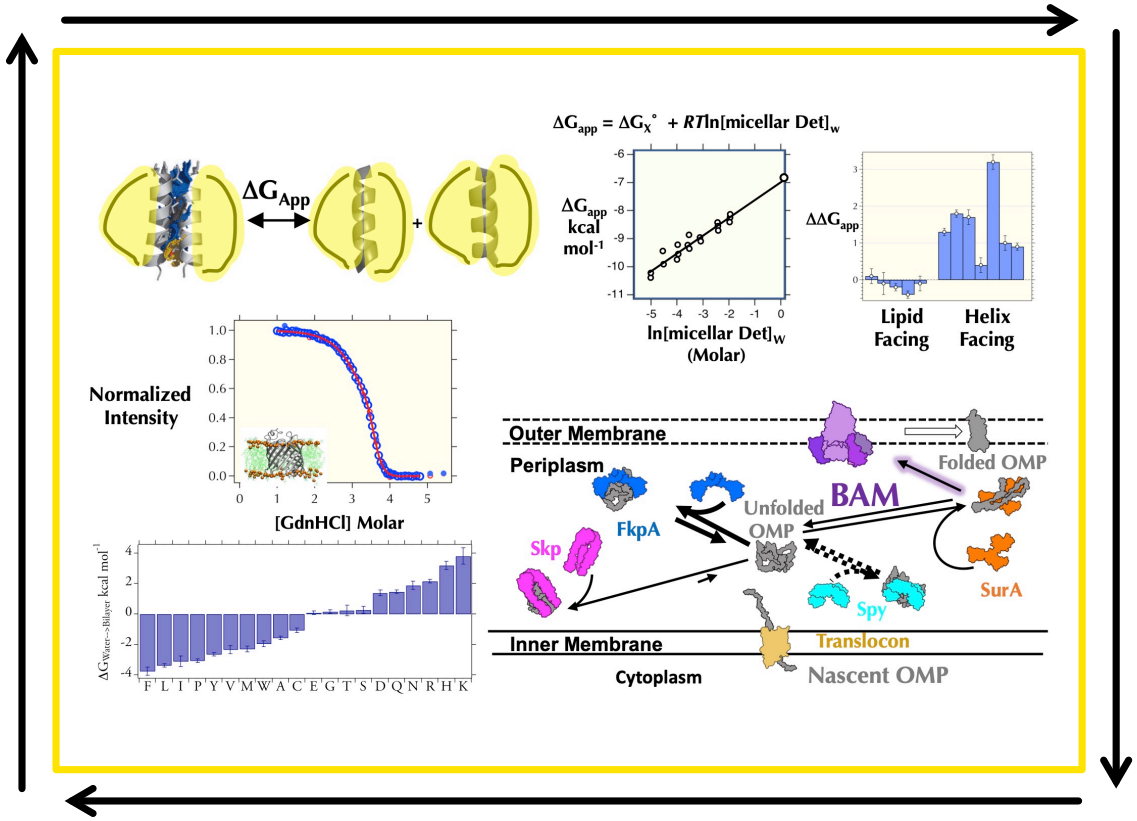
| | |
|---|---|
| 7:00 – 8:20 am | **Breakfast in Freeberg & Burke & Surrounding Area** |

## *Platform Session III*

| | |
|---|---|
| 8:15 am | ***Speakers - Please connect your laptop in advance of the session.*** AV support provided by **Yingzi Xia**, Fried Lab, Johns Hopkins Univ. |
| **Moderator** | **Arianna Lacen,** Lee Lab, Univ Alabama at Birmingham |
| **8:30 – 8:40 am** | **Announcements – Tonya Zeczycki & Krishna Mallela, Organizers** |

### *15th Annual Gary K. Ackers Lecture in Biothermodynamics*

| | |
|---|---|
| **8:40 – 8:50 am** | **Speaker Introduction**<br>**Janice Robertson,** Washington University in St. Louis |
| **8:50 – 9:40 am** | **Visualizing the Periplasmic Chaperone Network Interactions with Unfolded Clients**<br>**Karen Fleming**, Johns Hopkins University |
| 9:40 – 9:50 am | Questions for Ackers Lecturer |



## *Platform Session III - continued*

| | |
|---|---|
| 9:50 – 10:20 am | **Break – Refreshments in River Radio Retreat** |
| **10:20 – 10:35 am** | **An Intrinsically Disordered Region of the FACT Subunit, Spt16, Regulates Chromatin Dynamics in Controlling the Assembly of Transcription Factors at the Promoter for Transcription Initiation**<br>**Priyanka Barman**, Bhaumik Lab, Southern Illinois Univ. School of Medicine |
| 10:35 – 10:40 am | Questions for speaker |
| **10:40 – 11:05 am** | **Probing molecular interactions in liquid condensed phases by solution NMR spectroscopy**<br>**Nicholas Fawzi,** Brown University |
| 11:05 – 11:10 am | Questions for speaker |
| **11:10 – 11:25 am** | **Phase separation by SARS-CoV-2 N-protein is disrupted outside of a narrow range of nucleic acid stoichiometry**<br>**Patrick Laughlin,** Zlotnick Lab, Indiana University |
| 11:25 – 11:30 am | Questions for speaker |
| **11:30 – 11:40 pm** | **General Discussion** |
| **11:40 – 12:00 pm** | **Announcements – Tonya Zeczycki & Krishna Mallela, Organizers**<br>Introduction of Attending Commercial Sponsors<br>Reminder of Meeting of Conference Volunteers & Past Organizers |

| | |
|---|---|
| **12:00 pm** | **Lunch in Freeberg & Burke & Surrounding Area** |

**1:00 – 2:45 pm** **Free Time until Afternoon Session**

Look near the check-in counter in Little Grassy Lodge for information about possible organized events. Information about local parks and attractions is also available near the entrance to Little Grassy Lodge.

Attractions in Southern Illinois (https://southernillinoistourism.org) include Giant City State Park, orchards with apple cider, doughnuts, apple butter & pumpkins (Rendleman Orchards & Market and Flamm Orchards are popular), and plenty of small town charm in Makanda.

| | |
|---|---|
| **1:15 – 2:15 pm** | **Business Meeting of Past Organizers and Committee PIs**<br><br>**Little Grassy Lodge - Friends Room**<br><br>*Note - Area will be **unavailable** to other attendees during this time.* |

## Monday Afternoon ♦ October 16, 2023

### *Platform Session IV*

| | |
|---|---|
| **2:45 pm** | ***Speakers - Please connect your laptop in advance of the session.***<br>AV support provided by **Xinzhe Ren**, Fried Lab, Johns Hopkins Univ. |
| *Moderator* | **Vaibhav Upadhyay**, Mallela Lab, Univ. of Colorado Anschutz Medical Campus |
| **3:00 – 3:25 pm** | **PDZ domains: Model systems for studying allostery, dynamics, and binding specificity**<br>**Ernesto J. Fuentes**, University of Iowa |
| 3:25 – 3:30 pm | Questions for speaker |
| **3:30 – 3:45 pm** | **Protein design enables interrogation of thermodynamic signal transduction mechanisms**<br>**Katherine Hatstat**, DeGrado Lab, Univ. of California San Francisco |
| 3:45 – 3:50 pm | Questions for speaker |
| **3:50 – 4:05 pm** | **Energy-Preserving Variational Auto-Encoding and Decoding of Atomistic Protein Structure**<br>**Joseph DePaolo-Boisvert,** Minh Lab, Illinois Inst. of Technology |
| 4:05 – 4:10 pm | Questions for speaker |
| 4:10 – 4:40 pm | **Break – Refreshments in River Radio Retreat** |
| **4:40 – 5:05 pm** | **The Mechanistic States of ABC Importers**<br>**Heather Pinkett,** Northwestern University |
| 5:05 – 5:10 pm | Questions for speaker |
| **5:10 – 5:25 pm** | **Thermodynamic Stability as a Determinant of the p$K_a$ values of Ionizable Residues in Hydrophobic Environments in Proteins**<br>**Miranda Hurst,** García-Moreno Lab, Johns Hopkins University |
| 5:25 – 5:30 pm | Questions for speaker |
| **5:30 – 5:55 pm** | **Force-based Detection of Transient Topoisomerase IA Dynamics**<br>**Maria Mills,** University of Missouri |
| 5:55 – 6:00 pm | Questions for speaker |
| **6:00 – 6:10 pm** | **General Discussion** |
| **6:10 pm** | **Announcements - Officers for 2023-24 & Organizers for Gibbs38**<br>**James R. Horn**, President |
| **6:30 pm** | **Dinner in Freeberg & Burke & Surrounding Area** |

## Monday Evening ♦ October 16, 2023

### *Poster Session II (A-M)*

| | |
|---|---|
| **8:00 – 10:00 pm** | **Posters on display in Freeberg Hall and Burke Lounge**<br>Instructions & assigned numbers are listed after the schedule of talks.<br>**Displays by Sponsors in Freeberg Hall (upper level)**<br>Please set up displays near beer, wine, and soft drinks |

# Tuesday Morning ♦ October 17, 2023

When you leave Touch of Nature, please leave your room key at the counter in Little Grassy Lodge.

**7:00 – 8:20 am** **Breakfast in Freeberg & Burke & Surrounding Area**

## *Platform Session V*

**8:25 am** ***Speakers - Please connect your laptop in advance of the session.***
AV support provided by **Pritam Chakraborty**, Bhaumik Lab, SIUC

**8:40 – 8:45 am** **Announcements – Tonya Zeczycki & Krishna Mallela, Organizers**

*Moderator* **Mishghan Humayun**, Durie Lab, University of Missouri

**8:45 – 9:10 am** **RNA-mediated ribonucleoprotein assembly controls TDP-43 nuclear retention**
**Yuna Ayala**, St. Louis University School of Medicine

9:10 – 9:15 am Questions for speaker

**9:15 – 9:30 am** **Homomeric Protein Assembly *In Vivo***
**McKenze Moss,** P. Clark Lab, University of Notre Dame

9:30 – 9:35 am Questions for speaker

**9:35 – 10:00 am** **Exploiting structural features and thermodynamics to develop a library of reagents coupling folding status to protein quality control outcomes**
**Rick Page,** Miami University

10:00 – 10:05 am Questions for speaker

**10:05 – 10:20 am** **Short Break – Refreshments in River Radio Retreat**

**10:20 – 10:35 am** **Xeno interactions between MHC-I proteins and molecular chaperones enable ligand exchange on a broad repertoire of HLA allotypes**
**Yi Sun**, Sgourakis Lab, University of Pennsylvania

10:35 – 10:40 am Questions for speaker

**10:40 – 11:05 am** **Some Assembly Required: Multiple Modes of Self-association for a Staphylococcal Biofilm Protein**
**Andrew Herr,** Cincinnati Children's Hospital

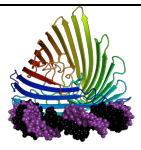
11:05 – 11:10 am Questions for speaker

**11:10 – 11:25 am** **Controlled Disorder: Phosphorylation Alters the Ensemble Structures of the Protein SRSF1**
**Talia Fargason,** Zhang Lab, University of Alabama at Birmingham

11:25 – 11:30 am Questions for speaker

**11:30 – 11:35 am** **Closing Remarks by Incoming President Sarah Bondos**

**11:35 am** **Lunch-to-Go - Pickup in Freeberg Hall**



Please complete the Gibbs$_{37}$ Post-Conference Survey

**by Friday, October 20, 2023.**

You may reach it using the QR code to the right or this link. https://forms.gle/DaWdDpPUX51Y7R3p7

# Equilibrium binding checklist

**Equilibrium Binding Checklist**

**Binding partner 1 (BP1):** _____

**Binding partner 2 (BP2):** _____

**Method:** _____

**CONDITIONS:** **Temperature:** _____ **Buffer & pH:** _____

**Salt(s):** _____

**Other:** _____

| | |
|---|---|
| **A. Required:** | |
| ☐ 1. Vary incubation time to test for equilibration. | |
| Time range: _____ Number of time points: _____ | |
| BP1 concentration(s): _____ BP2 concentration(s): _____ | |
| Time-independence across the entire binding curve? | Y ☐ N ☐ |
| ☐ 1.1. *Alternative approach*: measure $k_{off}$. | |
| $k_{off}$: _____ Calculated equilibration time (5 half-lives): _____ | |
| ☐ 2. Vary the concentration of both binding partners. | |
| Concentration range of 'trace' binding partner: _____ | |
| $K_D^{app}$ independent of trace binder concentration? | Y ☐ N ☐ |
| Concentration range showing invariant $K_D^{app}$: _____ | |
| Binding equation used: ☐ hyperbolic ☐ quadratic | |
| Binding curves shown? | Y ☐ N ☐ |
| Systematic deviations from the binding curve? | Y ☐ N ☐ |
| $K_D^{app}$: _____ *(upper limit if dependent on trace binder concentration)* | |
| **B. Recommended:** | |
| ☐ 1. Test $K_D$ by an independent approach. | |
| Alternative approach: _____ | |
| $K_D^{app}$ from alternative approach: _____ | |
| ☐ 2. Determine the fraction of active protein by titration. | |
| $K_D$ corrected for active protein fraction? | Y ☐ N ☐ |
| Fraction of active protein: _____ | |
| **Comments:** | |

Checklist shared with permission from Keynote Speaker Dan Herschlag

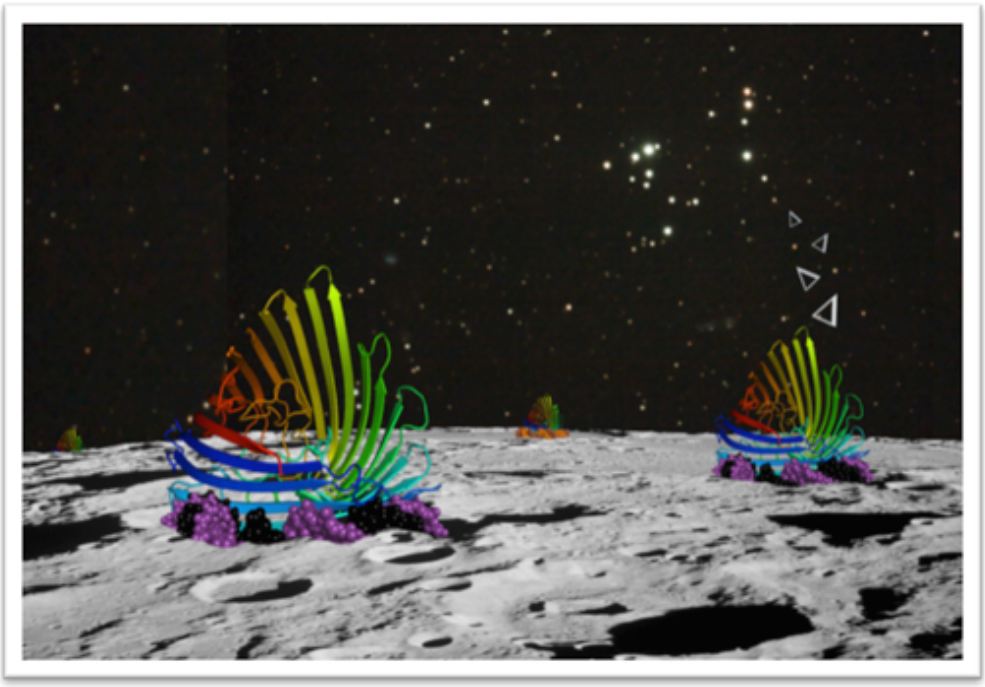
***How to measure and evaluate binding affinities***

Jarmoskaite, AlSadhan, Vaidyanathan & Herschlag (2020) *eLife* **9**:e57264 (https://doi.org/10.7554/eLife.57264)

ΔGibbs$_{37}$

Prime Time Thermo
2023

# *Poster Information*
# *&*
# *Assigned Boards*



# Poster Sessions - General Information

## Dates and Locations

Posters will be presented during evening sessions on Sunday and Monday in both Burke Lounge and Freeberg Dining Hall. Each poster session will start at **8:00 pm**.
Free beverages will be served.

**Session I - Sunday evening "N-Z"**
Posters whose abstracts have first authors with last names starting with N-Z.

**Session II - Monday evening "A-M"**
Posters whose abstracts have first authors with last names starting with A-M.

## Poster Numbers

**Board #1** will be available for posting job openings and training program information.

Boards from #2 on are numbered according to the **last name of the first author**, regardless of who is presenting the poster.

Presenters are asked to place their poster on the board that corresponds to the numeral in their poster listing for Sunday (S2, S3, etc.) or Monday (M2, M3, etc.). That listing follows these instructions.

## Poster Sizes & Boards

The poster boards come from a variety of sources. They are variable in size and made of materials ranging from foamcore boards to repurposed cubicle dividers.

Width: Making posters ≤ 48 inches wide is recommended.

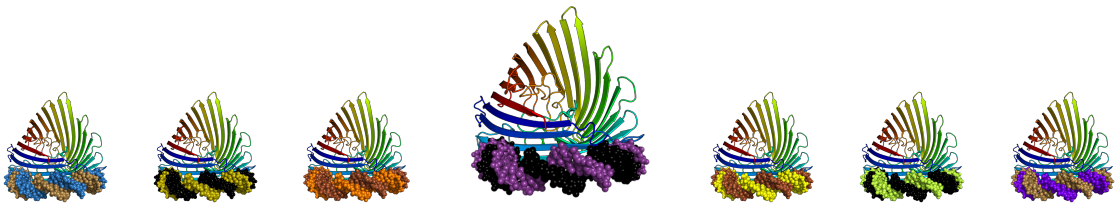
Mounting: Pushpins will be provided, but some boards are very dense. You may wish to bring your own Velcro (hook and loop) buttons for mounting your poster.

## Times

Posters may be mounted in the morning for viewing during the day,
**Posters should be taken down by midnight of the assigned session day.**

## Confidentiality – No photos or recording without permission

Please remember that the content of all presentations (both talks and posters) for this meeting are confidential material and may contain unpublished results. Abstracts will not be posted online. Please **ask permission** from authors before taking photos of posters or poster material. Please do not record talks, posters, or any presented material unless a speaker has given you express permission.



# Poster Session I ♦ Sunday, October 15, 2023

**Posters numbered alphabetically by first author's last name (N-Z)**
**(Posters S1 – S60)**

**S1** ***Open Post for Educational Programs & Employment Opportunities***

**S2** **Poly(ADP-Ribose) has Cation and Length Dependent Structures.** Tong (George) Wang, Kush Coshic, Mohsen Badiee, Aleksei Aksimentiev, Anthony K. L. Leung, and Lois Pollack, Cornell University

**S3** **On the Mechanism of Dimer Activation of SF1 DNA Helicases.** Binh Nguyen, John Hsieh, and Timothy M. Lohman, Washington University

**S4** **Engineering Multidirectional pH-Dependent Antibody Interactions Through the Introduction of Ionizable Residues Within a VHH Homodimer Interface.** Praise Oguntokun, Peter Gungel, Emily Camposeo, Tosha Laughlin, Hyeyoung Eom, Aaron Manz, Kevin Beck, Kylie Zawisza, Moly Eilbes, and James R. Horn, Northern Illinois University

**S5** **Mechanism of Protein Stabilization by Sugars in Crowded Solutions.** Gil I. Olgenblum and Daniel Harries, The Hebrew University

**S6** **Rheostatic Contributions to Protein Stability Can Obscure a Position's Functional Role.** Pierce T. O'Neil, Braelyn M. Page, Liskin Swint-Kruse, and Aron Fenton, University of Kansas Medical Center

**S7** **Unfolded Outer Membrane Protein (uOMP) Modeling gives Insight into Protein Folding.** Andrea L. Ori and Karen G. Fleming, Johns Hopkins University

**S8** **Structural Insights into Binding of Polyglutamylated Tetrahydrofolate by Soybean SHMT8.** Luckio Owuocha and Lesa Beamer, University of Missouri

**S9** **Illumination of the U1 Complex Recruitment to the 5' Splice Site in Alternative Splicing through Characterization of U1-70K SRSF1 Interaction.** Trenton Paul, Jamal Shariq, Ethan Ekpenyong, Talia Fargason, Zihan Zhang, Ivon De Silva, and Jun Zhang, University of Alabama at Birmingham

**S10** **Pioneering the Details: A Multi-Method Collaboration to Gain Insight into Structure and Thermal Stability of Lipid Nanoparticles (LNPs) for mRNA Delivery.** Jérémie Parot, Sven Even Borgos, Alicja Molska, Natalia Markova, and Martin Textor, Applied Photophysics Ltd.

**S11** **Insights into How Chaperone Net Charge and Sequence Pattering Influence Nucleic Acid Folding.** Gabrielle M. Perkins, Parnian Arafi, and Erik D. Holmstrom, University of Kansas

**S12** **Functional Site Distant Mutations of hGMPK Alter Dynamics and Kinetics.** Andrea R. Poole, Mark Vincent C. dela Cerna, and T. Michael Sabo, University of Louisville

**S13** **Thermodynamic Study of Substrate Binding with PrnA from *Burkholderia ambifaria*.** KD Power, AE Rankins, SL Stokes, and JP Emerson, Mississippi State University

**S14** **Cryo-EM of Human Factor Va and Factor Va-APC Complex.** Suhaila Rahman and Enrico Di Cera, Saint Louis University School of Medicine

**S15** **Effect of Myopalladin Ig3 Domain Cardiomyopathy Mutations on Actin-Binding and Bundling.** Asha Rankoth Arachchige, Julie Tran, Alia Michaelis, and Moriah Beck, Wichita State University

**S16** **Effect of N-linked Glycosylation and Disulfide Bonds on Yeast ER Proteome Refoldability.** Xinzhe Ren, Siyuan Zhou, and Stephen D. Fried, Johns Hopkins University

**S17** **Studying the Effects of Transcription Factor IIS on RNA Polymerase II.** Ryan Requijo, David Schneider, and Aaron Lucius, University of Alabama at Birmingham

**S18** **Thermodynamics of DNA Junctions with dU's.** Alex Rohe, Irine Khutsisvili, and Luis A. Marky, University of Nebraska Medical Center

**S19** **Precision Engineering of Biological Function with Large-Scale Measurements and Machine Learning.** David Ross, Drew S. Tack, Peter D. Tonner, Abe Pressman, Nathan D. Olson, Sasha F. Levy, Eugenia F. Romantseva, Nina Alperovich, and Olga Vasilyeva, National Institute of Standards and Technology

**S20** **$^{15}$N Chemical Shift Anisotropy of Proteins: Reassessment through $^{15}$N Relaxation at Ultra-High Magnetic Fields.** T. Michael Sabo, John O. Trent, David A. Case, Christian Griesinger, and Nasrollah Rezaei-Ghaleh, University of Louisville

**S21** **Key Structural role of a Conserved *cis*-Proline Revealed by the P285S Variant of Soybean Serine Hydroxymethyltansferase 8.** Vindya Samarakoon, Luckio F. Owuocha, Jamie Hammond, Melissa G. Mitchum, and Lesa J. Beamer, University of Missouri

**S22** **Mixed, Non-Classical Behavior in a Classic Allosteric Protein.** Paul J. Sapienza, Jeffrey P. Bonin, Dinusha Jinasena, Kelin Li, Henry Dieckhaus, Konstantin Popov, Jeff Aubé, and Andrew L. Lee, University of North Carolina, Chapel Hill

**S23** **Riboglow-FLIM: Unveiling Subcellular RNA Localization through Multiplexing with Fluorescence Lifetime Imaging Microscopy.** Nadia Sarfraz and Esther Braselmann, Georgetown University

**S24** **Structural Characterization of Avian Secretory Antibodies.** Rebecca Schneider and Beth Stadtmueller, University of Illinois Urbana-Champaign

**S25** **Using HDX-MS to Probe the Dynamics of Helix Unfolding and the Denatured State of GlpG.** Abigail L. Schroetera, Saba Kanwalb, Heedeok Hongb, and Tobin R. Sosnick, University of Chicago

**S26** **Ubiquitin-Proteasome System Regulation of a Chromatin Remodeling Factor FACT and its Interactome in Controlling Gene Expression With Link to Cancer.** Rwik Sen, Amala Kaja, Priyanka Barman, Sukesh R. Bhaumik, Southern Illinois University School of Medicine

**S27** **Mapping Conformational Landscapes of Intrinsically Disordered Proteins.** Hossain Shadman, Jesse D. Ziebarth, and Yongmei Wang, The University of Memphis

**S28** ***L. Monocytogenes* Infection Activates PML Antibacterial Response via Interactions with Host Splicing Machinery.** Luke Shafik and Esther Braslemann, Georgetown University

**S29** **Engineering a Biomimetic Protein Corona for Predictive Nanoparticle Behavior.** Tanveer Shaikh, Dhanush Amarasekara, Kenneth Hulugalla, Railey Mayatt, Thomas Werfel, and Nicholas C. Fitzkee, Mississippi State University

**S30** **Reflections of a Half Century of Research on DNA Biothermodynamics.** Richard D. Sheardy, Texas Woman's University

**S31** ***In Vivo* Nearest Neighbor Parameters for RNA.** Jacob P. Sieg, Elizabeth A. Jolley, Melanie J. Huot, Paul Babitzke, and Philip C. Bevilacqua, Dept of Chemistry, Penn State University

**S32** **Optimizing Non-Consensus SPOP Binding Motifs Influences the Cooperativity Observed in Multivalent Binding.** Scott A. Showalter, Nolan Jacob, and Emery T. Usher, Penn State University

**S33** **Investigating the Mechanism of IgA Assembly in Avian Species.** Asta Simonovic, Rebecca Schneider, and Beth Stadtmueller, University of Illinois Urbana-Champaign

**S34** **Prodomain Characterization of ADAM10/17.** Conner E. Slone and Tom C. Seegar, University of Cincinnati College of Medicine

**S35** **Insights into the Isoenergetic Monomeric Structures of the Hepatitis C Virus 3'X RNA.** Parker D. Sperstad and Erik D. Holmstrom, University of Kansas

**S36** **Interrogating Protein Features that Allow Functional Tuneability from Single Amino Acid Substitutions.** Shwetha Sreenivasan, Anastasiia Sivchenko, Aron Fenton, and Liskin Swint-Kruse, University of Kansas Medical Center

**S37** **Assessing Lifetime-Differences of Riboglow-FLIM for Multiplexed RNA Imaging.** Zachary Stickelman, Nadia Sarfraz, and Esther Braselmann, Georgetown University

**S38** **The Impact of Crowding on the SARS-CoV-2 Nucleocapsid Protein.** Madison Stringer, Jasmine Cubuk, J. Jeremias Incicco, Debjit Roy, Melissa D. Stuchell-Brereton, and Andrea Soranno, Washington University in St. Louis

**S39** **Single-Molecule Spectroscopy of Apolipoprotein E Reveals a Complex Conformational Ensemble.** Melissa D. Stuchell-Brereton, Upasana L. Mallimadugula, Justin J. Miller, Jasmine Cubuk, Debjit Roy, Anshuman Jaysingh, Carl Frieden, Greg Bowman, and Andrea Soranno, Washington University in St. Louis

**S40** **Mapping by Oxidation the Binding of Small and Large Ligands on Proteins.** Yan Sun, Damian Houde, Roxana Iacob, Robert Swift, Jason Baird, Michael Holliday, Sergei Khrapunov, Subray Hegde, Simone Sidoli, and Michael Brenowitz, Albert Einstein College of Medicine

**S41** **Comparing the Stability of Riboswitches from Different Organisms.** Victoria E. Suntich and Ana Maria Soto, Towson University

**S42** **G-Quadruplex Stabilization by TMPyP4 Monitored Through Introduction of Complimentary DNA.** Drew Symasek, Alan Gunter, and Hui-Ting Lee, University of Alabama at Birmingham

**S43** **Structure-Based Engineering of Secretory Immunoglobulins that Neutralize Influenza Virus.** Emma Thames, Sonya Kumar Bharathkar, and Beth Stadtmueller, University of Illinois, Urbana-Champaign

**S44** **Dystrophin Interacts Differentially with Dystrobrevin Isoforms.** Vaibhav Upadhyay, Sudipta Panja, Shashikant Ray, and Krishna M. G. Mallela, University of Colorado-Anschutz

**S45** **All-Atom Simulations of Phosphorylated Intrinsically Disordered Proteins.** Emery T. Usher, Martin J. Fossat, and Alex S. Holehouse, Washington University in St. Louis

**S46** **Hepatitis B Virus Capsid Demonstrates Negative Cooperativity When Bound by Capsid Assembly Modulators.** Caleb J. Valkner, Angela Patterson, Balasubramanian Venkatakrishnan, Samson Francis, and Adam Zlotnick, Indiana University

**S47** **The Role of Structural and Dynamic Rearrangements in the Functional Regulation of a Classically Allosteric Protein.** Darex J. Vera-Rodríguez, Paul J. Sapienza, and Andrew L. Lee, University of North Carolina at Chapel Hill

**S48** **High-Resolution Models of Conformational Dynamics in DNA Recognition by the master Transcription Factor PU.1.** Tyler N. Vernon, J. Ross Terrell, Markus W. Germann, W. David Wilson, and Gregory M. K. Poon, Georgia State University

**S49** **Global vs. Local Specialization: An Examination of the Divergence in Overall vs. Clustered Amino Acid Enrichments in Extremophilic DNA Polymerase I Homologs.** Elena Voisin, Larissa Cortes Morales, Alyce Fields, and Allyn Schoeffler, Loyola University New Orleans

**S50** **Coarse-Grained Modelling of RNA: Capturing the Dynamics of Sugar Pucker Conformational Transitions.** Yiheng Wu, Riccardo Alessandri, Aria Coraor, Xiangda Peng, Tobin Sosnick, and Juan de Pablo, University of Chicago

**S51** **Exploring Misfolded Proteins with Crosslinking Mass Spectrometry.** Yingzi Xia and Stephen Fried, Johns Hopkins University

**S52** **Systematic Study on Effects of DnaKJ and Trigger Factor on Co-translational Folding in *E. coli*.** Divya Yadav, Idil Demiralp, Mark Fakler, and Stephen D. Fried, Johns Hopkins University

**S53** **Bringing AUC into the cGMP Space to Meet FDA/EMA Regulations.** Alexander E. Yarawsky, Erik Gough, Valeria Zai-Rose, Natalya Figueroa, Hazel Cunningham, John Burgner, Michael DeLion, and Lake N. Paul, BioAnalysis, LLC

**S54** **A Novel Lasofoxifene/Elacestrant Hybrid Antiestrogen Illuminates Unique Relationship Between Ligand Binding Pose and Anti-Tumoral Action in Y537S ESR1 Breast Cancer Xenografts.** Kristen Young, Govinda Hancock, Steve Kregel, and Sean Fanning, Loyola University Chicago

**S55** **Molecular Basis of Nurr1-RXRα Activation.** Xiaoyu Yu, Jinsai Shang, and Douglas J. Kojetin, Vanderbilt University

**S56** **The Structural Basis for DNA-uptake by *Acinetobacter*.** Yafan Yu and Kurt Piepenbrink, University of Nebraska-Lincoln

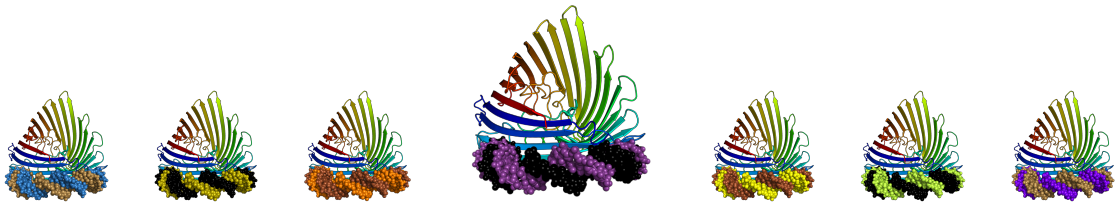
**S57** **Structural Characterization of the Type IV Secretion System of *Legionella pneumophila*.** Mishghan Zehra, Wing-Cheung Lai, and Clarissa Durie, University of Missouri- Columbia

**S58** **The Central Role of RS in Spliceosome Assembly.** Jun Zhang, University of Alabama at Birmingham

**S59** **Charges in Hydrophobic Environments in Proteins: A Study of Arg Ion-Pairs.** Yipeng Zhang, Jasmine A. Forbes, Jaime L. Sorenson, Aaron C. Robinson, Jamie L. Schlessman, and Bertrand Garcia-Moreno E., Johns Hopkins University

**S60** **Characterization of U2AF35 and Interaction between U2AF35 and SRSF1.** Zihan Zhang, Ivon De Silva, Talia Fargason, and Jun Zhang, University of Alabama at Birmingham

**S61** **Elucidating the effect of disease-causing mutations on the structure-function of the CT domain of dystrophin.** Shashikant Ray*, Vaibhav Upadhyay, Sudipta Panja, Jeffrey Kearns, and Krishna M.G. Mallela



# Poster Session II ♦ Monday, October 16, 2023

**Posters numbered alphabetically by first author's last name (A to M)**
**(Posters M1 – M61)**

**M1** ***Open Post for Educational Programs & Employment Opportunities***

**M2** **Investigating the Role of Small Basic Protein in the Formation of Staphylococcal Biofilms.** P. Ethan Adkins, Alexander Yarawsky, and Andrew Herr, Cincinnati Children's Hospital Medical Center

**M3** **The Novel Interaction of a DNA Quadruplex with a Gemini Surfactant.** Derek Aguilar, Helen Nembaware, Alexys Ginegaw, Alaina Jordan, Payton Justice, Rafaela Dominguez, and Richard D. Sheardy, Texas Woman's University

**M4** **Conformational Disorder in Regulation of Enzyme and Nanoparticle Catalysts.** Yeongseo An, Dan Burns, Rochelle Dotas, Timothy Egner, Balabadra Khatiwada, Trang Nguyen, Jeffrey Purslow, Sergey Sedinkin, Aayushi Singh, and Vincenzo Venditti, Iowa State University

**M5** **Negative Cooperativity Creates a Frustrated System in *E. Coli* Adenylate Kinase.** Anna Andrick, Miranda Russo, Sarah Brantley, Ananya Majumdar, and Vincent J Hilser, Johns Hopkins University

**M6** **Disruptions of DNA Base-Pair Cooperativity Probed with Time-Resolved Infrared Spectroscopy.** Brennan Ashwood, Michael S Jones, Andrew L. Ferguson, and Andrei Tokmakoff, University of Chicago

**M7** **Sequential Mixing Stopped Flow Method to Investigate the Kinetic Mechanisms of Protein Translocation Catalyzed by ClpB.** Jaskamaljot Kaur Banwait, and Aaron L. Lucius, University of Alabama at Birmingham

**M8** **Determining Residue Interactions Leading to Variability in Interfacial Free Energy in a Repeat Protein System.** Soumya Behera, Mark Petersen, Sai Harshitha Dakoor, and Doug Barrick, Johns Hopkins University

**M9** **Conformational Entropy and Hydration in Molecular Recognition by Proteins.** Anthony Bishop, Jose A. Caro, Taylor R. Cole, Hayley Hobley, Glorise Montalvo-Torres, Weimin Tan, and Josh Wand, Texas A&M University

**M10** **Characterizing a *Mycobacterium Tuberculosis* Riboswitch Candidate.** Swadha V. Bhatt, Emily Paris, and Ana Maria Soto, Towson University

**M11** **Interactions Between Bacterial Amyloids and α-Synuclein Leads to Prolonged Innate Immune Responses.** Whitney G. Bond and Tonya N. Zeczycki, Brody School of Medicine at East Carolina University

**M12** **Exploring the Druggability of Proteins.** Adrian Calderon and Jannette Carey, Princeton University

**M13** **A Dynamic Protein that is not Allosteric.** Jannette Carey, Princeton University

**M14** **RNAP Fidelity Using High-Throughput Kinetics.** Zachariah I. Carter, William O'Brien, and Andrew F. Gardner, New England Biolabs, Inc.

**M15** **The *Staphylococcus aureus* Srrb Sensor Histidine Kinase Binds Dicarboxylic Acids Through an Extracellular Cache Domain.** Delaney Catania, and Nicholas Hammons, University of Iowa

**M16** **A Thermodynamic Analysis of CLC Transporter Dimerization in Lipid Bilayers.**
Rahul Chadda, Taeho Lee, Robyn Mahoney-Kruszka, Elizabeth G. Kelley, Nathan Bernhardt, Priyanka Sandal, and Janice L. Robertson, Washington University in St. Louis

**M17** **Neural Network Interpretation Suggests Sequence Determinants of a Protein Domain that Interconverts between Alpha Helix and Beta Sheet Folds.** Ethan Chen, Joseph Schafer, Joseph Thole, and Lauren Porter, National Institutes of Health

**M18** **Subtelomeric Sequence of TERRA Regulates the Level of Gene Expression.** Tanvir Ahmed Chowdhury, and Hui-Ting Lee, University of Alabama at Birmingham

**M19** **Assembly Thermodynamics of a Bivalent Heterotrimer in the Notch Signaling Pathway.** Cyril Cook, Kristen Ramsey, and Douglas Barrick, Johns Hopkins University

**M20** **μ-Opioid Receptor Structural Conformations that Lead to Different Signaling Pathways.** David Cooper, Joseph DePaolo-Boisvert, Stanley Nicholson, Barien Gad, and David Minh, Illinois Institute of Technology

**M21** **The Properties of Elastic Protein Materials are Directed by the Properties of their Disordered Monomeric Precursors.** Giovanni M. Crump, Jonathan M. Preston, and Ronald L. Koder, The City College of New York

**M22** **Single-Molecule Spectroscopy of the SARS-CoV-2 Nucleocapsid Protein.** Jasmine Cubuk, J. Jeremias Incicco, Debjit Roy, Melissa D. Stuchell-Brereton, Kathleen B. Hall, and Andrea Soranno, Washington University in St. Louis

**M23** **A Novel Thiol-Dependent Inhibitory Modification of the Zinc Regulatory Transcription Factor ADCR,** AJ. Cutright, EL. Matthews, T. Shaikh, KD. Power, JA. Thornton, NC. Fitzkee, SL. Stokes, and JP. Emerson, Mississippi State University

**M24** **LLPS of Human Glucocorticoid Receptor.** Margaret Daugherty, Will Gerash, Nate Kesti, Devlin Swanson, and David Bain, Colorado College

**M25** **An Exploration of How G-Quadruplex Binding of SRSF1 Expands its RNA-Binding Capability,** N.I.U. De Silva, T. Fargason, N.E Lehman, H-T. Lee, and J. Zhang, University of Alabama at Birmingham

**M26** **FkpA Binds Outer Membrane Proteins as a Heterogeneous Ensemble of Conformations.** Taylor A. Devlin, Dagan C. Marx, Michaela A. Roskopf, and Karen G. Fleming, Johns Hopkins University

**M27** **Demystifying Dynamics: How you can Use Force Spectroscopy to Help Understand the Dynamics and Functions of Proteins, Nucleic Acids, and Phase Separated Droplets.** Matthew Dilsaver, Trey Simpson, and Andrea Candelli, LUMICKS

**M28** **Quantifying What We Can't See: Protein Degradation in the Cell.** Jacob Diehl and Patricia Clark, University of Notre Dame

**M29** **Engineering Allosteric Sites Across the Surface of a Model Enzyme.** Jerry C. Dinan, James W. McCormick, and Kimberly A. Reynolds, University of Texas Southwestern Medical Center

**M30** **The Role of Protein-Protein Interactions in Fluc Dimerization Stability and Function.** Melanie Ernst, Jennifer Chen, and Janice L. Robertson, Washington University in St. Louis

**M31** **Single-Molecule Spectroscopy Reveals Residue-Specific Impacts on Domain Folding Of Apolipoprotein E.** Klaudio Fatmiri, Melissa D. Stuchell-Brereton, and Andrea Soranno, Washington University in St. Louis

**M32** ***E. coli* RecBCD Nuclease Domain Regulates Helicase Activity but not Single Stranded DNA Translocation Activity.** Nicole Fazio, Kacey N. Mersch, Linxuan Hao, and Timothy M. Lohman, Washington University

**M33** **Improving Anti-Breast Cancer Activities by Optimizing Torsion Angle Energies.** Emma Fink, David Zak, Govinda Hancock, Kristen Young, and Sean W. Fanning, Loyola University Chicago

**M34** **Enzyme Kinetic Model for the Coronavirus Main Protease Including Dimerization and Ligand Binding.** Barien Gad, Van Ngoc Thuy La, Lulu Kang, David D. L. Minh, Illinois Institute of Technology in Chicago

**M35** **Exploring Interfaces Linked to Antigen Binding in the Creation of pH-Dependent Fab/Antigen Interactions.** Peter Gungel, Emily Camposeo, Praise Oguntokun, Tosha Laughlin, Hyeyoung Eom, and James R. Horn, Northern Illinois University

**M36** **Identity and Distribution of Histone H3 Tail Basic Residues Determine NCP Phase Separation Propensity**. Erin F. Hammonds and Emma A. Morrison, Medical College of Wisconsin

**M37** **PA0012 is a Cyclic di-GMP Effector that Biases *P. aeruginosa* Type IV Pili Twitching Motility.** Nicholas A. Hammons, Kaitlin D. Yarrington, Christopher Ptak, Devin J. Hendrix, Dominique H. Limoli, and Ernesto J. Fuentes, University of Iowa

**M38** **An Unconventional Estrogen Receptor Conformation Induces SUMO Expression in Breast Cancer Cells.** Govinda Hancock, Kristen Young, and Sean W. Fanning, Loyola University Chicago

**M39** **Parameter Dependence of the Solubility Limit for DiSodium Phosphate.** Caleb Huang and B. Montgomery Pettitt, University of Texas Medical Branch

**M40** **Determining the Mechanism of Translocation of ClpA while Unfolding Polypeptide Substrates.** Liana Islam and Aaron L. Lucius, University of Alabama at Birmingham

**M41** **Can an Intrinsically Disordered Protein Qualify as a Fold Switch or Shape Shifter?** Bhavika T. Kaparthi, Alexandra Klinger, Corie Ralston, Sayan Gupta, Line Kristensen, and Sarah E. Bondos, Texas A&M University

**M42** **Argonaute 2 Binding Affinity to Determine Repression of mi-mRNA Pairs.** Christina Karadiakos and Alan Chen, University at Albany, State University of New York

**M43** **A Host-Guest System for Quantifying Thermodynamic Parameters in the Nanoparticle Protein Corona.** Chathuri S. Kariyawasam, Abdullahi T. Aborode, Thayane Lopes de Sousa, and Nicholas C. Fitzkee, Mississippi State University

**M44** **Computational Protein Design as a Tool for Probing Relative Energetic Contributions of Core Packing and Metal Coordination.** Dylan Klein and Vikas Nanda, Rutgers University

**M45** **Hydroxyl Radical Footprinting Yields Ensemble-averaged Atomic Level Conformational Descriptors of Intrinsically Disordered Proteins.** Alexandra Klinger, Decipher Hydro

**M46** **PAD Specificity to Histone Tail Arginines.** Alex Kowalczyk and Emma Morrison, Medical College of Wisconsin

**M47** **An Allosteric Redox Switch in Domain V of β2-glycoprotein I Controls Membrane Binding and Anti-Domain I Autoantibody Recognition.** Suresh Kumar, Mathivanan Chinnaraj, William Planer, Xiaobing Zuo, Paolo Macor, Francesco Tedesco, John Wulf II, Katherine Basore, Nicola Pozzi, and Edward A. Doisy, Saint Louis University School of Medicine

**M48** **Using smFRET to Investigate Structural Dynamics Between G Quadruplexes and T-Loops in vitro.** Arianna Lacen and Hui-Ting Lee, University of Alabama at Birmingham

**M49** **Integrated Use of Biophysics to Improve Data and Decision Quality in Drug Discovery. Orthogonal use of GCI, DSF, ITC and DLS.** May Poh Lai, Natalia Markova, Edward FitzGerald, and Alastair Davy, Malvern Panalytical

**M50** **Coupled Binding and Folding of Ribonuclease S.** Yumin Lee, Yiheng Wu, Brennan Ashwood, Balamurugan Dhayalan, Isabelle Gagnon, Tobin R. Sosnick, and Andrei Tokmakoff, University of Chicago

**M51** **Folding of Prestin's Anion-Binding Site and the Mechanism of Outer Hair Cell Electromotility.** Xiaoxuan Lin, Patrick Haller, Navid Bavi, Nabil Faruk, Eduardo Perozo, and Tobin R. Sosnick, University of Chicago

**M52** **Recognition of Recombination Intermediates by the Mismatch Repair Protein Msh2-Msh6.** Zane Lombardo, Tai Lon Tan, Jesse Pellman, Bold Boldbayar, Amy Du, and Ishita Mukerji, Wesleyan University

**M53** **Direct Prediction of Intrinsically Disordered Protein Conformational Properties from Sequence.** Jeffrey M. Lotthammer, Garrett M. Ginell, Daniel Griffith, Ryan J. Emenecker, Alex S. Holehouse, Washington University

**M54** **Examining the Impact of NTD Mutations on RBD Conformational Dynamics and ACE2 Receptor Binding Affinity of the SARS-CoV-2 Spike Protein.** Alexandra Lucas, Vaibhav Upadhyay, Casey Patrick, Shashikant Ray, and Krishna M.G. Mallela, University of Colorado-Anschutz

**M55** **Lipid Dependent Thermodynamics of GPCR Function.** Ed Lyman, University of Delaware

**M56** **Establishing the PahZ1 peptidase scaffold.** Justin D. Marsee, Joshua Couch, Brittany Williams, Yordanos Williams, Connor Coughran, Michael Mercante, and Justin M. Miller, Middle Tennessee State University

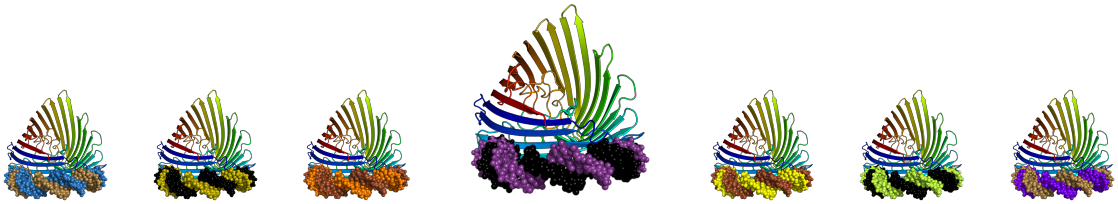
**M57** **Regulation of GPCR Function by its Disordered C-Terminal Domain.** Dagan Marx, Joon Lee, Alexa Strauss, David Eliezer, and Joshua Levitz, Weill Cornell Medicine

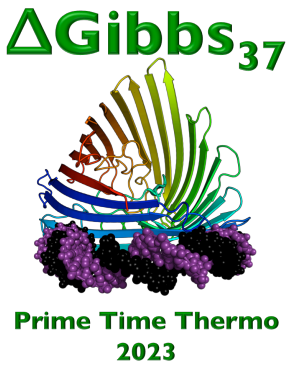
**M58** **Thermodynamically Characterized Conformational Changes of Zinc Dependent SczA.** EL. Matthews, AJ. Cutright, SL. Stokes, and JP. Emerson, Mississippi State University

**M59** **Protein Supercharging-induced Phase Change Enhances Optical Nanosensor Functionality.** James J McCann, Mijin Kim, Ewelina Randall, Chen Chen, Zvi Yaari, Yu Chen, Daniel Heller, and Ronald Koder, City College of New York

**M60** **High-throughput Analysis of Twister Ribozymes.** Lauren N. McKinley, McCauley O. Meyer, and Philip C. Bevilacqua, Penn State University

**M61** **Sequence and Structural Features that Govern Disorder and Secretion of Autotransporter Proteins.** Cedrick D. Mukinay, Michael C. Baxa, Tobin R. Sosnick, and Patricia L. Clark, University of Notre Dame






# *Participants Listed Alphabetically*

# Alphabetical List of Participants

**Ethan Adkins**
Cincinnati Children's Hospital
adkinspe@mail.uc.edu

**Derek Aguilar**
Texas Woman's University
daguilar6@twu.edu

**Barbara Amann**
Johns Hopkins University
bamann1@jh.edu

**Anna Andrick**
Johns Hopkins University
aandric1@jh.edu

**Brennan Ashwood**
University of Chicago
ashwoodb@uchicago.edu

**Yuna Ayala**
Saint Louis University
yuna.ayala@health.slu.edu

**David Bain**
University of Colorado
Anschutz Medical Campus
david.bain@cuanschutz.edu

**Kasie Baker**
Malvern Panalytical
kasie.baker@malvernpanalytical.com

**Jaskamaljot Kaur Banwait**
Univ. of Alabama at Birmingham
jaskamal@uab.edu

**Priyanka Barman**
Southern Illinois University
pbarman@siu.edu

**Doug Barrick**
Johns Hopkins University
barrick@jhu.edu

**Moriah Beck**
Wichita State University
moriah.beck@wichita.edu

**Dorothy Beckett**
National Institutes of Health
dorothy.beckett@nih.gov

**Soumya Behera**
Johns Hopkins University
sbehera3@jhu.edu

**Philip Bevilacqua**
Pennsylvania State University
pcb5@psu.edu

**Swadha Bhatt**
Towson University
sbhatt8@students.towson.edu

**Sukesh Bhaumik**
Southern Illinois University
sbhaumik@siu.edu

**G. Reid Bishop**
U. of Mississippi Medical Center
grbishop@umc.edu

**Whitney Bond**
Brody School of Medicine
East Carolina University
bondw19@ecu.edu

**Sarah Bondos**
Texas A&M University
bondos@tamu.edu

**Esther Braselmann**
Georgetown University
eb1245@georgetown.edu

**Michael Brenowitz**
Albert Einstein Coll. of Medicine
michael.brenowitz@einsteinmed.edu

**Adrian Calderon**
Harry S. Truman Comm. College
adrian210calderon@gmail.com

**Emily Camposeo**
Northern Illinois University
z1886336@students.niu.edu

**Jannette Carey**
Princeton University
jcarey@princeton.edu

**Zach Carter**
New England Biolabs
zcarter@neb.com

**Delaney Catania**
University of Iowa
delaney-catania@uiowa.edu

**Pritam Chakraborty**
Southern Illinois University
pritam.chakraborty@siu.edu

**Devlina Chakravarty**
National Institutes of Health
devlina.chakravarty@nih.gov

**Ethan Chen**
National Institutes of Health
chenea@nih.gov

**Tanvir Ahmed Chowdhury**
Univ. of Alabama at Birmingham
tachowdh@uab.edu

**Patricia Clark**
University of Notre Dame
pclark1@nd.edu

**Cyril Cook**
Johns Hopkins University
Cyril.b.r.cook@gmail.com

**David Cooper**
Illinois Institute of Technology
dcooper6@hawk.iit.edu

**Jack Correia**
U. of Mississippi Medical Center
jcorreia@umc.edu

**Giovanni Crump**
The City College of New York
gcrump@gradcenter.cuny.edu

**Jasmine Cubuk**
Washington Univ. in St. Louis
cubukj@wustl.edu

**Alexander Cutright**
Mississippi State University
ajc876@msstate.edu

**Margaret Daugherty**
Colorado College
mdaugherty@coloradocollege.edu

**Edwin de Feijter**
LUMICKS
e.defeijter@lumicks.com

**Naiduwadura De Silva**
Univ. of Alabama at Birmingham
Upekala2@uab.edu

**Gregory DeKoster**
Washington Univ. in St. Louis
dekoster@wustl.edu

**Joseph DePaolo-Boisvert**
Illinois Institute of Technology
jdepaoloboisvert@hawk.iit.edu

**Taylor Devlin**
Johns Hopkins University
tdevlin4@jhu.edu

**Enrico Di Cera**
St. Louis University
enrico@slu.edu

**Gladys Díaz Vázquez**
Washington Univ. in St. Louis
gladysv@wustl.edu

**Jacob Diehl**
University of Notre Dame
jdiehl2@nd.edu

**John Dignam**
University of Toledo
david.dignam@utoledo.edu

**Matthew Dilsaver**
LUMICKS
m.dilsaver@lumicks.com

**Jerry Dinan**
Univ. of Texas Southwestern
jerry.dinan@utsouthwestern.edu

**Elizabeth Duran**
Univ. of Alabama at Birmingham
eduran@uab.edu

**Clarissa Durie**
University of Missouri
clarissa.durie@missouri.edu

**Joe Emerson**
Mississippi State University
jemerson@chemistry.msstate.edu

**Melanie Ernst**
Washington Univ. in St. Louis
ernst.melanie@wustl.edu

**Sean Fanning**
Loyola University Chicago
sfanning@luc.edu

**Talia Fargason**
Univ. of Alabama at Birmingham
tfarg@uab.edu

**Klaudio Fatmiri**
Washington Univ. in St. Louis
klaudio.f@wustl.edu

**Nicolas Fawzi**
Brown University
nicolas_fawzi@brown.edu

**Aron Fenton**
Univ. of Kansas Medical Center
afenton@kumc.edu

**Emma Fink**
Loyola University Chicago
efink1@luc.edu

**Nicholas Fitzkee**
Mississippi State University
nfitzkee@chemistry.msstate.edu

**Karen Fleming**
Johns Hopkins University
karen.fleming@jhu.edu

**Stephen Fried**
Johns Hopkins University
sdfried@jhu.edu

**Ernesto Fuentes**
University of Iowa
ernesto-fuentes@uiowa.edu

**Barien Gad**
Illinois Institute of Technology
bgad@hawk.iit.edu

**Roberto Galletto**
Washington Univ. in St. Louis
galletto@wustl.edu

**Will Gerash**
Colorado College
w_gerash@coloradocollege.edu

**Alexys Ginegaw**
Texas Woman's University
aginegaw@twu.edu

**Peter Gungel**
Northern Illinois University
z1919554@students.niu.edu

**Erin Hammonds**
Medical College of Wisconsin
ehammonds@mcw.edu

**Nicholas Hammons**
University of Iowa
nicholas-hammons@uiowa.edu

**Govinda Hancock**
Loyola University Chicago
ghancock@luc.edu

**Katie Hatstat**
Univ. of California San Francisco
katie.hatstat@ucsf.edu

**Sherry Hemmingsen**
JASCO
shemmingsen@jascoinc.com

**Andy Herr**
Cincinnati Children's Hospital
andrew.herr@cchmc.org

**Dan Herschlag**
Stanford University
herschla@stanford.edu

**James Horn**
Northern Illinois University
jrhorn@niu.edu

**Loren Hough**
University of Colorado Boulder
hough@colorado.edu

**Caleb Huang**
Univ. of California Los Angeles
caleb.huang@ucla.edu

**Mishghan Zehra Humayun**
University of Missouri
mhpz2@mail.missouri.edu

**Miranda Hurst**
Johns Hopkins University
mhurst6@jhu.edu

**Liana Islam**
Univ. of Alabama at Birmingham
lislam1@uab.edu

**Anshuman Jaysingh**
Washington Univ. in St. Louis
a.jaysingh@wustl.edu

**Adip Jhaveri**
Johns Hopkins University
ajhaver4@jh.edu

**Isha Joglekar**
Cincinnati Children's Hospital
ishauday.joglekar@cchmc.org

**Christina Karadiakos**
The State University of
New York at Albany
ckaradiakos@albany.edu

**Chathuri Kariyawasam**
Mississippi State University
ck1190@msstate.edu

**Preston Kellenberger**
University of Missouri
pakktf@umsystem.edu

**Dylan Klein**
Rutgers University
dsk129@scarletmail.rutgers.edu

**Alexandra Klinger**
Decipher Hydro
klinger@decipherhydro.com

**Eda Koculi**
Univ. of Texas at El Paso
ekoculi@utep.edu

**Ronald Koder**
The City College of New York
rkoder@ccny.cuny.edu

**Wayne Kottkamp**
JASCO
wkottkamp@jascoinc.com

**Alex Kowalczyk**
Medical College of Wisconsin
ajkowalczyk@mcw.edu

**Suresh Kumar**
Saint Louis University
suresh.kumar@health.slu.edu

**Arianna Lacen**
Univ. of Alabama at Birmingham
anlacen@uab.edu

**May Poh Lai**
Malvern Panalytical
may.poh.lai@malvernpanalytical.com

**Wing Cheung Lai**
University of Missouri
laiw@missouri.edu

**Patrick Laughlin**
Indiana University
pmlaughl@iu.edu

**Andrew Lee**
Univ. of North Carolina
drewlee@unc.edu

**Hui-Ting Lee**
Univ. of Alabama at Birmingham
htlee@uab.edu

**Yumin Lee**
Univ. of Chicago
yuminlee@uchicago.edu

**Karen Lewis**
Texas State University
kal137@txstate.edu

**Vince LiCata**
Louisiana State University
licata@lsu.edu

**Xiaoxuan Lin**
University of Chicago
xiaoxuanlin@uchicago.edu

**Julie D. Lorenz**
OLIS, Inc.
julie@olisclarity.com

**Jeff Lotthammer**
Washington Univ. in St. Louis
j.lotthammer@wustl.edu

**Alexandra Lucas**
Univ. of Colorado
Anschutz Medical Campus
alexandra.lucas@cuanschutz.edu

**Aaron L. Lucius**
Univ. of Alabama at Birmingham
allucius@uab.edu

**Edward Lyman**
University of Delaware
elyman@udel.edu

**Robyn Mahoney-Kruszka**
Washington Univ. in St. Louis
r.mahoney@wustl.edu

**Krishna Mallela**
Univ. of Colorado
Anschutz Medical Campus
krishna.mallela@cuanschutz.edu

**Chiara Mancinelli**
Weill Cornell Medicine
cdm4001@med.cornell.edu

**Luis Marky**
U. of Nebraska Medical Center
lmarky@unmc.edu

**Justin Marsee**
Middle Tennessee State Univ.
jdm2am@mtmail.mtsu.edu

**Dagan Marx**
Weill Cornell Medicine
dcm4002@med.cornell.edu

**Erin Matthews**
Mississippi State University
elm457@msstate.edu

**Shelbie McCormick**
Nicoya Lifesciences
shelbie@nicoyalife.com

**Lauren McKinley**
Pennsylvania State University
lzm5354@psu.edu

**Kacey Mersch**
Washington Univ. in St. Louis
kmersch@wustl.edu

**Maria Mills**
University of Missouri
kmm7br@missouri.edu

**David Minh**
Illinois Institute of Technology
dminh@iit.edu

**Jonathan Montgomery**
The Ohio State University
montgomery.1158@osu.edu

**Emma Morrison**
Medical College of Wisconsin
emorrison@mcw.edu

**McKenze Moss**
University of Notre Dame
mmoss6@nd.edu

**Ishita Mukerji**
National Science Foundation
imukerji@nsf.gov
Wesleyan University
imukerji@wesleyan.edu

**Cedrick Mukinay**
University of Notre Dame
cmukinay@nd.edu

**Marc Neglia**
Applied Photophysics
marc.neglia@photophysics.com

**Helen Nembaware**
Texas Woman's University
hnembaware1@twu.edu

**Binh Nguyen**
Washington Univ. in St. Louis
bnguyen@wustl.edu

**Pierce O'Neil**
Univ. of Kansas Medical Center
poneil@kumc.edu

**Praise Oguntokun**
Northern Illinois University
poguntokun1@niu.edu

**Gil Olgenblum**
Hebrew University of Jerusalem
gil.olgenblum@mail.huji.ac.il

**Andrea Ori**
Johns Hopkins University
aori2@jhu.edu

**Luckio Owuocha**
University of Missouri
lfoxcm@umsystem.edu

**Rick Page**
Miami University
pagerc@miamioh.edu

**Trenton Paul**
Univ. of Alabama at Birmingham
zhanguab@uab.edu

**Gabrielle Perkins**
University of Kansas
gperkins@ku.edu

**Mark Petersen**
Univ. of California at Berkeley
mjp1089@berkeley.edu

**Kurt Piepenbrink**
University of Nebraska-Lincoln
kurt.piepenbrink@unl.edu

**Heather Pinkett**
Northwestern University
h-pinkett@northwestern.edu

**Andrea Poole**
University of Louisville
andrea.poole@louisville.edu

**Lauren Porter**
National Institutes of Health
porterll@nih.gov

**Kathryn Power**
Mississippi State University
kdp357@msstate.edu

**Asha Rankoth Arachchige**
Wichita State University
asrankotharachchige@shockers.wichita.edu

**Shashikant Ray**
Univ. of Colorado
Anschutz Medical Campus
shashikant.ray@cuanschutz.edu

**Xinzhe Ren**
Johns Hopkins University
xren24@jh.edu

**Ryan Requijo**
Univ. of Alabama Birmingham
ryreq97@uab.edu

**Kimberly Reynolds**
Univ. of Texas Southwestern Medical Center
kimberly.reynolds@utsouthwestern.edu

**Janice Robertson**
Washington Univ. in St. Louis
janice.robertson@wustl.edu

**Alex Rohe**
U. of Nebraska Medical Center
arohe@unmc.edu

**David Ross**
National Institute of Standards and Technology
david.ross@nist.gov

**Mike Sabo**
University of Louisville
mike.sabo@louisville.edu

**Vindya Samarakoon**
University of Missouri
sssmnb@umsystem.edu

**Nadia Sarfraz**
Georgetown University
ns1232@georgetown.edu

**Rebecca Schneider**
University of Illinois
rms9@illinois.edu

**Allyn Schoeffler**
Loyola Univ. New Orleans
ajschoef@loyno.edu

**Abigail Schroeter**
University of Chicago
abigails@uchicago.edu

**Hossain Shadman**
University of Memphis
hshadman@memphis.edu

**Luke Shafik**
Georgetown University
lks60@georgetown.edu

**Tanveer Shaikh**
Mississippi State University
tks186@msstate.edu

**Madeline Shea**
Carver College of Medicine
Univ. of Iowa
madeline-shea@uiowa.edu

**Richard Sheardy**
Texas Woman's University
rsheardy@twu.edu

**Kate Shields**
Refeyn
kate.shields@refeyn.com

**Scott Showalter**
Pennsylvania State University
sas76@psu.edu

**Asta Simonovic**
University of Illinois
asta3@illinois.edu

**Anastasiia Sivchenko**
Univ. of Kansas Medical Center
asivchenko2@kumc.edu

**Conner Slone**
University of Cincinnati
slonecr@mail.uc.edu

**Andrea Soranno**
Washington Univ. in St. Louis
soranno@wustl.edu

**Tobin Sosnick**
University of Chicago
trsosnic@uchicago.edu

**Ana Maria Soto**
Towson University
asoto@towson.edu

**Parker Sperstad**
University of Kansas
sperstadp@ku.edu

**Shwetha Sreenivasan**
Univ. of Kansas Medical Center
ssreenivasan@kumc.edu

**Zachary Stickelman**
Georgetown University
zs306@georgetown.edu

**Madison Stringer**
Washington Univ. in St. Louis
m.a.stringer@wustl.edu

**Melissa Stuchell-Brereton**
Washington Univ. in St. Louis
breretonm@wustl.edu

**Yan Sun**
Albert Einstein Coll. of Medicine
yan.sun@einsteinmed.edu

**Yi Sun**
University of Pennsylvania
Yi.Sun1@pennmedicine.upenn.edu

**Victoria Suntich**
Towson University
vsunti1@students.towson.edu

**Liskin Swint-Kruse**
Univ. of Kansas Medical Center
lswint-kruse@kumc.edu

**Andrew Symasek**
Univ. of Alabama Birmingham
drewsyma@uab.edu

**Emma Thames**
University of Illinois
ethames2@illinois.edu

**Vaibhav Upadhyay**
Univ. of Colorado
Anschutz Medical Campus
vaibhav.upadhyay@cuanschutz.edu

**Emery Usher**
Washington Univ. in St. Louis
usher@wustl.edu

**Caleb Valkner**
Indiana University
cvalkner@iu.edu

**Vincenzo Venditti**
Iowa State University
venditti@iastate.edu

**Darex Vera-Rodriguez**
University of North Carolina
darex@email.unc.edu

**Tyler Vernon**
Georgia State University
tvernon@gsu.edu

**Elena Voisin**
Loyola Univ. New Orleans
voisinelena@gmail.com

**Randy Wadkins**
University of Mississippi
rwadkins@olemiss.edu

**Douglas Walker**
Oregon State University
walkedou@oregonstate.edu

**Josh Wand**
Texas A&M University
josh.wand@ag.tamu.edu

**Tong (George) Wang**
Cornell University
tw497@cornell.edu

**Stephen White**
Univ. of California Irvine
stephen.white@uci.edu

**Steven Whitten**
Texas State University
steve.whitten@txstate.edu

**Yiheng Wu**
University of Chicago
yihengwu917@uchicago.edu

**Yingzi Xia**
Johns Hopkins University
yxia39@jhu.edu

**Divya Yadav**
Johns Hopkins University
dyadav2@jhu.edu

**Alexander Yarawsky**
BioAnalysis
ayarawsky@bioanalysisllc.com

**Kristen Young**
Loyola University Chicago
kyoung17@luc.edu

**Xiaoyu Yu**
Vanderbilt University
xiaoyu.yu@vanderbilt.edu

**Yafan Yu**
University of Nebraska-Lincoln
yafan.yu@huskers.unl.edu

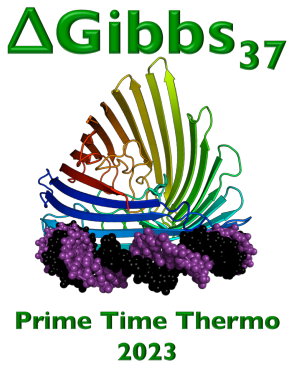
**David Zak**
Loyola University Chicago
dzak2@luc.edu

**Tonya Zeczycki**
Brody School of Medicine
East Carolina University
zeczyckit@ecu.edu

**Jun Zhang**
Univ. of Alabama at Birmingham
zhanguab@uab.edu

**Yipeng Zhang**
Johns Hopkins University
yzhan197@jhu.edu

**Zihan Zhang**
Univ. of Alabama at Birmingham
zzh@uab.edu




# *Participants Listed by Laboratory, Private Sector or Sponsor*

**Ayala Lab**
Yuna Ayala

**Bain Lab**
David Bain

**Barbar Lab**
Douglas Walker

**Barrick Lab**
Doug Barrick
Soumya Behera
Cyril Cook

**Beamer Lab**
Luckio Owuocha
Vindya Samarakoon

**Beck Lab**
Moriah Beck
Asha Rankoth Arachchige

**Beckett Lab**
Dorothy Beckett

**Bevilacqua Lab**
Philip Bevilacqua
Lauren McKinley

**Bhaumik Lab**
Priyanka Barman
Sukesh Bhaumik
Pritam Chakraborty

**Bishop Lab**
G. Reid Bishop

**Bondos Lab**
Sarah Bondos

**Braselmann Lab**
Esther Braselmann
Nadia Sarfraz
Luke Shafik
Zachary Stickelman

**Brenowitz Lab**
Michael Brenowitz
Yan Sun

**Carey Lab**
Adrian Calderon
Jannette Carey

**Chen Lab**
Christina Karadiakos

**Clark Lab**
Patricia Clark
Jacob Diehl
McKenze Moss
Cedrick Mukinay

**Cornish Lab**
Preston Kellenberger

**Correia Lab**
Jack Correia

**Daugherty Lab**
Margaret Daugherty
Will Gerash

**DeGrado Lab**
Katie Hatstat

**Di Cera Lab**
Enrico Di Cera

**Dignam Lab**
John Dignam

**Duran Lab**
Elizabeth Duran

**Durie Lab**
Clarissa Durie
Mishghan Zehra Humayun
Wing Cheung Lai

**Eliezer Lab**
Chiara Mancinelli

**Emerson Lab**
Alexander Cutright
Joseph Emerson
Erin Matthews
Kathryn Power

**Fanning Lab**
Sean Fanning
Emma Fink
Govinda Hancock
Kristen Young
David Zak

**Fawzi Lab**
Nicolas Fawzi

**Fenton Lab**
Aron Fenton

**Fitzkee Lab**
Nicholas Fitzkee
Chathuri Kariyawasam
Tanveer Shaikh

**Fleming Lab**
Barbara Amann
Taylor Devlin
Karen Fleming
Andrea Ori

**Foster Lab**
Jonathan Montgomery

**Fried Lab**
Stephen Fried
Xinzhe Ren
Yingzi Xia
Divya Yadav

**Frieden Lab**
Gregory DeKoster

**Fuentes Lab**
Delaney Catania
Ernesto Fuentes
Nicholas Hammons

**Galletto Lab**
Roberto Galletto

**Garcia-Moreno Lab**
Miranda Hurst
Yipeng Zhang

**Harries Lab**
Gil Olgenblum

**Herr Lab**
Ethan Adkins
Andrew Herr
Isha Joglekar

**Herschlag Lab**
Dan Herschlag

**Hilser Lab**
Anna Andrick

**Holehouse Lab**
Jeff Lotthammer
Emery Usher

**Holmstrom Lab**
Gabrielle Perkins
Parker Sperstad

**Horn Lab**
Emily Camposeo
Peter Gungel
Jim Horn
Praise Oguntokun

**Hough Lab**
Loren Hough

**Johnson Lab**
Adip Jhaveri

**Koculi Lab**
Eda Koculi

**Koder Lab**
Giovanni Crump
Ronald Koder

**Kojetin Lab**
Xiaoyu Yu

**A. Lee Lab**
Andrew Lee
Darex Vera-Rodriguez

**H. Lee Lab**
Tanvir Ahmed Chowdhury
Arianna Lacen
Hui-Ting Lee
Andrew Symasek

**Levitz Lab**
Dagan Marx

**Lewis Lab**
Karen Lewis

**LiCata Lab**
Vince LiCata

**Lohman Lab**
Kacey Mersch
Binh Nguyen

**Lucius Lab**
Jaskamaljot Kaur Banwait
Liana Islam
Aaron Lucius
Ryan Requijo

**Lyman Lab**
Edward Lyman

**Mallela Lab**
Alexandra Lucas
Krishna Mallela
Shashikant Ray
Vaibhav Upadhyay

**Marky Lab**
Luis Marky
Alex Rohe

**Marqusee Lab**
Mark Petersen

**Miller Lab**
Justin Marsee

**Mills Lab**
Maria Mills

**Minh Lab**
David Cooper
Joseph DePaolo-Boisvert
Barien Gad
David Minh

**Morrison Lab**
Erin Hammonds
Alex Kowalczyk
Emma Morrison

**Mukerji Lab**
Ishita Mukerji

**Nanda Lab**
Dylan Klein

**Page Lab**
Rick Page

**Pettitt Lab**
Caleb Huang

**Piepenbrink Lab**
Kurt Piepenbrink
Yafan Yu

**Pinkett Lab**
Heather Pinkett

**Pollack Lab**
Tong (George) Wang

**Poon Lab**
Tyler Vernon

**Porter Lab**
Ethan Chen
Devlina Chakravarty
Lauren Porter

**Pozzi Lab**
Suresh Kumar

**Reynolds Lab**
Jerry Dinan
Kimberly Reynolds

**Robertson Lab**
Gladys Diaz Vazquez
Melanie Ernst
Robyn Mahoney-Kruszka
Janice Robertson

**Ross Lab**
David Ross

**Sabo Lab**
Andrea Poole
Mike Sabo

**Schoeffler Lab**
Allyn Schoeffler
Elena Voisin

**Seeger Lab**
Conner Slone

**Sgourakis Lab**
Yi Sun

**Shea Lab**
Madeline Shea

**Sheardy Lab**
Derek Aguilar
Alexys Ginegaw
Helen Nembaware
Richard Sheardy

**Showalter Lab**
Scott Showalter

**Soranno Lab**
Jasmine Cubuk
Klaudio Fatmiri
Anshuman Jaysingh
Andrea Soranno
Madison Stringer
Melissa Stuchell-Brereton

**Sosnick Lab**
Xiaoxuan Lin
Abigail Schroeter
Tobin Sosnick
Yiheng Wu

**Soto Lab**
Swadha Bhatt
Ana Maria Soto
Victoria Suntich

**Stadtmueller Lab**
Rebecca Schneider
Asta Simonovic
Emma Thames

**Swint-Kruse Lab**
Pierce O'Neil
Anastasiia Sivchenko
Shwetha Sreenivasan
Liskin Swint-Kruse

**Tokmakoff Lab**
Brennan Ashwood
Yumin Lee

**Venditti Lab**
Vincenzo Venditti

**Wadkins Lab**
Randy Wadkins

**Wand Lab**
Josh Wand

**Wang Lab**
Hossain Shadman

**White Lab**
Stephen White

**Whitten Lab**
Steven Whitten

**Zeczycki Lab**
Whitney Bond
Tonya Zeczycki

**Zhang Lab**
Naiduwadura De Silva
Talia Fargason
Trenton Paul
Jun Zhang
Zihan Zhang

**Zlotnick Lab**
Patrick Laughlin
Caleb Valkner

## *Private Sector & Sponsors*

**Applied Photophysics**
Marc Neglia

**BioAnalysis**
Alexander Yarawsky

**Decipher Hydro**
Alexandra Klinger

**JASCO**
Sherry Hemmingsen
Wayne Kottkamp

**LUMICKS**
Edwin de Feijter
Matthew Dilsaver

**Malvern Panalytical**
Kasie Baker
May Poh Lai

**National Science Foundation**
Ishita Mukerji

**New England Biolabs**
Zach Carter

**Nicoya Lifesciences**
Shelbie McCormick

**Refeyn**
Kate Shields

**OLIS**
Julie D. Lorenz