

Δ Gibbs₃₈



Fall for Thermo

Organizers – Lauren L. Porter & Janice L. Robertson

38th Annual Gibbs Conference on Biothermodynamics

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

September 28 – October 1, 2024

Sponsors - Applied Photophysics, Bruker, Daedalus Innovations, Genentech, Horiba Scientific, ISS, JASCO, LUMICKS, Malvern Panalytical, New England Biolabs, Nicoya, National Science Foundation, OLIS, Protein Society, Refeyn, University of Iowa, Washington University in St. Louis, Waters

This file contains *Introductory Information and the Schedule of Sessions*.

△Gibbs₃₈ Table of Contents

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Image Credits Front - Gibbs Maple Leaf with Campfires by Madeline Shea (porin (3jty) fire and nucleosome DNA (6c0w) logs). Montage based on images from Susan Marqusee was made by Greg DeKoster, and from Patricia Clark was made by Madeline Shea. Other artwork throughout the book was made by Madeline Shea unless indicated otherwise. Photos courtesy of Touch of Nature SIUC.

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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.

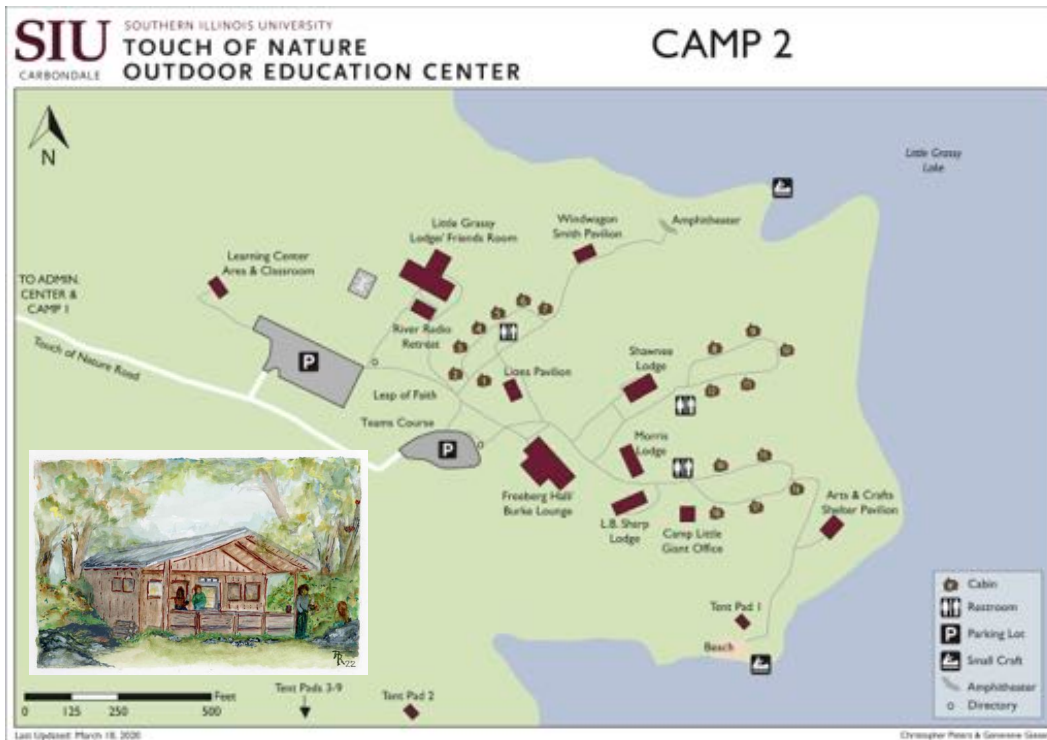
From the west: Head east on I-64 approximately 50 miles from St. Louis. Take the Route 127 (Nashville) exit south. Continue south for approximately 50 miles to Murphysboro. At Murphysboro, go left (east) for approximately 10 miles. You will pass through the town of Carbondale. Watch for the mall on your 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

Δ Gibbs₃₈



Fall for Thermo
2024

Introduction
History & Governance

History of the Gibbs Conference on Biothermodynamics

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.



J. Willard Gibbs

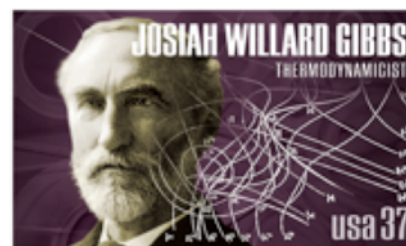
1997

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 OrganizersKeynote Speaker(s)

1987	Jim Lee and Wayne Bolen	<i>Philosophical Talks by Gary K. Ackers and Ken Dill</i>
1988	Gary Ackers and Michael Johnson	<i>All talks by trainees.</i>
1989	Susan G. Frasier and Michael Johnson	<i>All talks by trainees.</i>
1990	Michael Johnson and Marty Straume	<i>All talks by trainees.</i>
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	James C. 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 L. 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
2024	Lauren L. Porter and Janice L. Robertson	Susan Marqusee

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	Doug Barrick
13	2021	David Bain
14	2022	Tobin Sosnick
15	2023	Karen Fleming
16	2024	Patricia L. Clark

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	Sarah E. Bondos, 2023 – 2024
Past-President	James R. Horn, 2022 – 2023
President-Elect	Nick Fitzkee, 2023 – 2024
Vice President	Aron Fenton, 2022 – 2028
Secretary	Andrew Herr, 2019 – 2025
Treasurer	Karen A. Lewis, 2022 – 2027

Current Board Members-at-Large

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

2023 – 24 Board of Directors (listed alphabetically by last name)

Sarah E. Bondos, Nick Fitzkee, Andrew Herr, James R. Horn,
Karen A. Lewis, Vince J. LiCata, 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 García-Moreno E.
2010 – 2011	Karen G. Fleming
2011 – 2012	Doug Barrick
2012 – 2013	David L. Bain
2013 – 2014	George I. Makhataдзе
2014 – 2015	Patricia L. 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
2022 – 2023	James R. Horn

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

Gibbs Society Mission and Policies

Mission Statement

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.

All participants accepted the following policies during the application process.

Code of Conduct

The Gibbs Society of Biological Thermodynamics is committed to providing a safe and inclusive 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, age, 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.

The Gibbs Society condemns harassment, inappropriate behavior, or comments demeaning another person by reason of their ethnicity, age, gender, religion, age, body size, disability, veteran status, marital status, sexual orientation, gender identity, or any other reason.

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 the Code should report this conduct immediately to the conference organizers or any member of the Gibbs Society Board (<https://www.gibbssociety.org/>).

Confidentiality Statement

Abstracts: Please remember that the abstracts, talks and posters for this meeting are confidential material and may contain unpublished results. Full abstracts will be available only in the printed program book and will not be posted online; only the titles and authors will be shared publically online.

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

Talks: Please do not record or take pictures of the talks or talk material unless a speaker has given you explicit permission to do so.

**Bylaws to Articles of Incorporation for
Gibbs Society of Biological Thermodynamics
March 21, 2024**

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.

Gibbs Policies (Revised and Adopted March 21, 2024):

Gibbs Society Code of Conduct

The Gibbs Society of Biological Thermodynamics is committed to providing a safe and inclusive 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, age, 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.

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

Talks: Please do not record or take pictures of the talks or talk material unless a speaker has given you explicit permission to do so.

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

Sarah Bondos, President
Nick Fitzkee, President-Elect
Jim Horn, Past-President
Andrew Herr, Secretary
Karen Lewis, Treasurer
Madeline Shea, Member-at-Large
Vince LiCata, Member-at-Large

These bylaws replace those established January 20, 2023.

30 years ago - Flashback to 1994 - Gibbs8
First Gibbs with PI Speakers & Posters in the Evening

8th Annual Gibbs Conference on Biothermodynamics

Organizers: *Enrico DiCera & Madeline A. Shea*

October 1 - 4, 1994

Schedule of Events

Unless noted otherwise, all events will be held in Little Grassy Lodge Friends Room
Touch of Nature Conference Center, Carbondale, IL

Saturday, October 1

4:00 p.m. *Registration at Main Desk, Little Grassy Lodge*

Posters for Session I may be set up in Indian Bldg.
No dinner will be served this evening.

7:00 p.m. *Wine and Cheese Reception*

Sunday, October 2

7:00 a.m. ¶ *Breakfast, Freeberg Hall*

8:15 a.m. *Opening Remarks by Conference Organizers*

Keynote Address

8:30 a.m. **Gary K. Ackers**, Washington Univ. School of Medicine

*Thermodynamics as a Logic Tool:
Deciphering the Molecular Mechanism of Hemoglobin's Cooperativity*

9:30 a.m. *Refreshments*

Allosteric Regulation

Moderator: *Vince LiCata*

9:45 a.m. **Cathy Royer**, Univ. of Wisconsin

Energetics and Structural Dynamics of the Glucocorticoid Receptor

10:25 a.m. **Isaac Wong**, Washington Univ. School of Medicine

*Mutation of Conserved Lysine in the ATP-Binding Site of E. coli Rep helicase
Disrupts Allosteric Regulation*

10:45 a.m. *Refreshments*

11:00 a.m. **Quoc Dang**, Washington Univ. School of Medicine

Allosteric Transitions of Thrombin

11:20 a.m. **Tom Gluick**, The Johns Hopkins University

*An mRNA Conformational Switch Mediating Translational Regulation: Is There
Allostery?*

12:30 p.m. ¶ *Lunch, Freeberg Hall*

☀ Free Time - Posters will be available in the Indian Bldg. ☀

Molecular Recognition

Moderator: *Bertrand García-Moreno E.*

- 3:00 p.m. **Wayne Bolen**, U. of Texas Medical Branch at Galveston
Energy Management by an Enzyme During Catalysis
- 3:40 p.m. **Susan Green**, The Johns Hopkins School of Medicine
A dimeric form of staphylococcal nuclease resulting from deletion of six amino acids
- 4:00 p.m. *Refreshments*
- 4:15 p.m. **Clare Woodward**, Univ. of Minnesota
Partially Folded and Compact Denatured States of BPTI
- 4:55 p.m. **Ross Reedstrom**, Univ. of Wisconsin
*In vitro differences between wild-type Trp repressor & super-repressor AV77:
Linkage of protein folding & repressor action*
- 5:15 p.m. **Ed Lattman**, The Johns Hopkins School of Medicine
Unfolding studies of an N-terminal fragment of staphylococcal nuclease
- 6:30 p.m. ¶ Dinner, Freeberg Hall BUFFALO TRO
- 8:00 p.m. *Meeting of the Nominating Committee*

Poster Session I Indian Building
8:00 - 10:00 p.m. Refreshments Served

Monday, October 3

7:00 a.m. ¶ Breakfast, Freeberg Hall

Posters for Session II may be set up in Indian Bldg.

Keynote Address

8:30 a.m. **Kathleen S. Matthews**, Rice University
Allostery & Subunit Assembly in the Lactose Repressor

9:30 a.m. *Refreshments*

Nucleic Acid Interactions

Moderator: *Marilyn Ferrari*

- 9:45 a.m. **Tim Lohman**, Washington Univ. School of Medicine
Thermodynamics of E. coli SSB - ssDNA Interactions
- 10:25 a.m. **Brad Chaires**, Univ. of Mississippi Medical Center
Analysis of drug-DNA binding isotherms: Reconsidering neighbor exclusion models
- 10:55 a.m. *Refreshments*
- 11:10 a.m. **Diane Frank**, Univ. of Wisconsin
Context dependence of interactions in lac repressor-operator complexes
- 11:30 a.m. **Michael D. Brenowitz**, Albert Einstein College of Medicine
Quantitative Footprinting of Protein-DNA Interactions
- 12:30 p.m. ¶ Lunch, Freeberg Hall

☀ Free Time - Posters will be available in the Indian Bldg. ☀

Experimental Design & Analysis

Moderator: Marty Straume

- 3:00 p.m. **Susan Pedigo**, Univ. of Iowa College of Medicine
Energetics of Ca²⁺ Binding to Calmodulin
- 3:20 p.m. **Cing-Yuen Wong**, Univ. of Mississippi
Biosynthetic Incorporation of Tryptophan Analogs into Staphylococcal Nuclease A
- 3:40 p.m. *Refreshments*
- 4:00 p.m. **Martin Straume**, Univ. of Virginia
Estimating Uncertainty in Model Descriptions of Experimental Data
- 4:30 p.m. **Michael L. Johnson**, Univ. of Virginia
Analysis of Experimental Data That DO NOT Meet Least-Squares Criteria
- 5:00 p.m. **Group Discussion of Nonlinear Least Squares Analysis**
- 6:00 p.m. ¶ Dinner, Freeburg Hall
- 7:30 p.m. Business Meeting

Poster Session II Indian Building
8:00 - 10:00 p.m. Refreshments Served

Tuesday, October 4

- 7:00 a.m. ¶ Breakfast, Freeberg Hall

Protein Folding

Moderator: Mike Hodsdon

- 9:00 a.m. **Ken Dill**, Univ. of Calif. San Francisco
Conformational Searching and the Kinetics of Protein Folding
- 9:40 a.m. **Liskin Swint**, Univ. of Iowa College of Medicine
Hydrogen Bonds and the pH Dependence of Ovomuroid Third Domain Stability
- 10:00 a.m. *Refreshments*
- 10:20 a.m. **Neville Kallenbach**, New York University
 α -Helix Stabilizing and Capping Interactions Studies in Synthetic Model Peptides
- 11:00 a.m. **Hue Sun Chan**, Univ. of California - San Francisco
Solvation: Effects of Molecular Size and Shape
- 11:20 a.m. **George Rose**, The Johns Hopkins School of Medicine
Helix Capping Motifs and Their Role in Helix Formation
- 12:00 p.m. *Closing Remarks*
- 12:30 p.m. Check out at Little Grassy Lodge by this time. Baggage may be stored in Indian Building.
- 12:30 p.m. ¶ Lunch, Freeberg Hall

8th Annual Gibbs Conference on Biothermodynamics

October 1 - 4, 1994
Little Grassy Lake Conference Center

INFORMATION FOR PARTICIPANTS

- **Abstracts due August 12, 1994**

All participants are expected to present research results. Abstracts for platform and poster sessions will be selected from those submitted; indicate preference for session on Registration Form. For the sake of illustrations and equations, *single page* abstracts will be photocopied and distributed in original form.

Authors Include full names and institutional affiliation.
Margins Use one inch margins on all edges (i.e., text should not exceed 6.5" x 9").
Text Size There are no restrictions on font/size; please be considerate.

- **Registration**

All participants are asked to fill out a registration form (enclosed) indicating the title of their presentation and a preference for platform or poster session. A small fee will be assessed at the conference center. Please do not send this fee in advance.

Faculty, Senior Investigators: **\$30** Students and Fellows: **\$15**

- **Accommodations**

The number of rooms at the Little Grassy Lake Conference Center is limited and requests will be filled on a first-come-first-served basis. (Other accommodations are available in Carbondale.) In recent years it has not been possible to honor requests for single rooms. Spouses will be accommodated as space permits. Approximate costs include tax and are based on double-occupancy. You may indicate preferences for accommodations on the Courtesy Reply form. Please do not contact the Conference Center directly.

Little Grassy Lodge (the most modern accommodations)	\$23.00/night/person
Morris and Shawnee Dormitories	\$17.50/night/person
L. B. Sharp (the most rustic)	\$11.00/night/person

- **Meal Package**

The conference will provide a wine and cheese reception on Saturday, October 1, but dinner will *not* be served. (There are many restaurants in Carbondale.) The meal package will cover breakfast on Sunday, Oct. 2, through lunch on Tuesday, Oct. 4, as well as coffee breaks and refreshments for poster sessions on Sunday and Monday. The cost will be **\$65.00** per participant, regardless of length of stay.

Fees in 1994

Students and Fellows paid \$15 + \$65 = **\$80**.

If \$1 in 1994 is \$2.12 today, then that would equate the **\$80 of 1994** to be **~\$170 in 2024**.

Fees in 2024

All trainees received a discount of \$55 thanks to

Tonya Zeczycki and Ernesto Fuentes applying for NSF support, and **NSF** for awarding support!

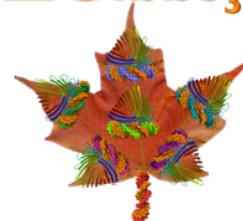
Returning students paid **\$145** and all postdocs paid **\$170**.

First time students paid only **\$70** thanks to **Jim Lee** and **Jack Correia** for donating funds to create Serge N. Timasheff Scholarships

Conclusions

- ❖ *All the students in 2024 paid less than the 1994 rate!*
- ❖ *The postdocs paid a fee "identical" to 1994.*
- ❖ *We've been doing a good job of keeping costs moderate.*

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**Fall for Thermo
2024**

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Organized by

Lauren L. Porter & Janice L. Robertson

Gibbs₃₈ Committees and Contributors to Conference Organization

Ackers Lecturer Selection Committee

Vince J. LiCata (Chair) 2021 – present
and current members of the Gibbs Society Board of Directors

Fundraising Committee

Tonya Zeczycki (Chair) and Ernesto Fuentes

Jotform Account Management

Nick Fitzkee (license) and James R. Horn

Jotform Application Survey (creation) & Registration Survey (revision)

Madeline Shea (Chair), James R. Horn, and Tonya Zeczycki

Local Arrangements Committee

Faculty – Carlos Castañeda (Chair), Tori Dunlap, and Emma Morrison
Treasurer (Ex Officio) – Karen A. Lewis
Trainees – Anastasiia Sivchenko, Andrea Ori, Devin Vides,
Pritam Chakraborty, Priyanka Barman

Poster Committee

Faculty – Clarissa Durie (Chair), Joe Emerson, and Peggy Daugherty
Trainee – Emery Usher

Presentation Logistics Committee

Faculty – Kurt Piepenbrink (Chair) and Elizabeth Duran
Trainee AV assistants – Anna Nguyen, Jonathan Montgomery, Liana Islam,
Mark Petersen, Michael Baxa, Rabab Mahdi, Segun Ogundare
Trainee Moderators – Dagan Marx, Jane Thibeault, Joey Thole,
Lexie Berkowicz, Praise Oguntokun

Program Book Committee

Madeline Shea (Chair), David Bain, and Gregory DeKoster

Registration – PayPal

Nick Fitzkee and Karen A. Lewis

Saturday Night Thermo Co-Organizers

Faculty – Vince J. LiCata and Ana Maria Soto
Trainees – Kacey Mersch and Mishghan Zehra

SharePoint Guru

James R. Horn

Speaker Nominating Committee

Organizers (Ex Officio) – Lauren L. Porter and Janice L. Robertson
Faculty – Doug Barrick and Aaron Lucius

Webmasters for Gibbs Society – <https://www.gibbssociety.org>

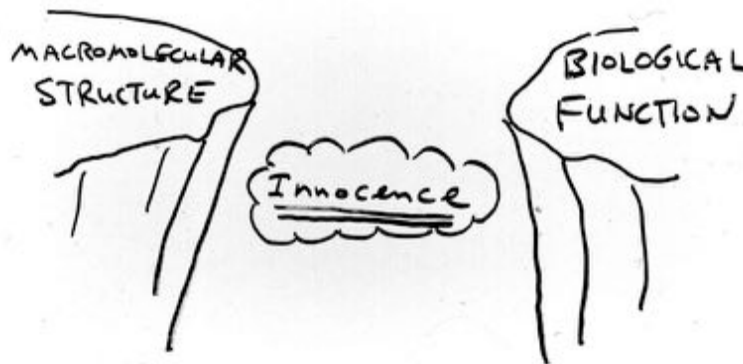
Sarah E. Bondos and Trevor Creamer

16th Annual Gary K. Ackers Lecture in Biothermodynamics

2024 Lecturer – Patricia L. Clark, University of Notre Dame

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.

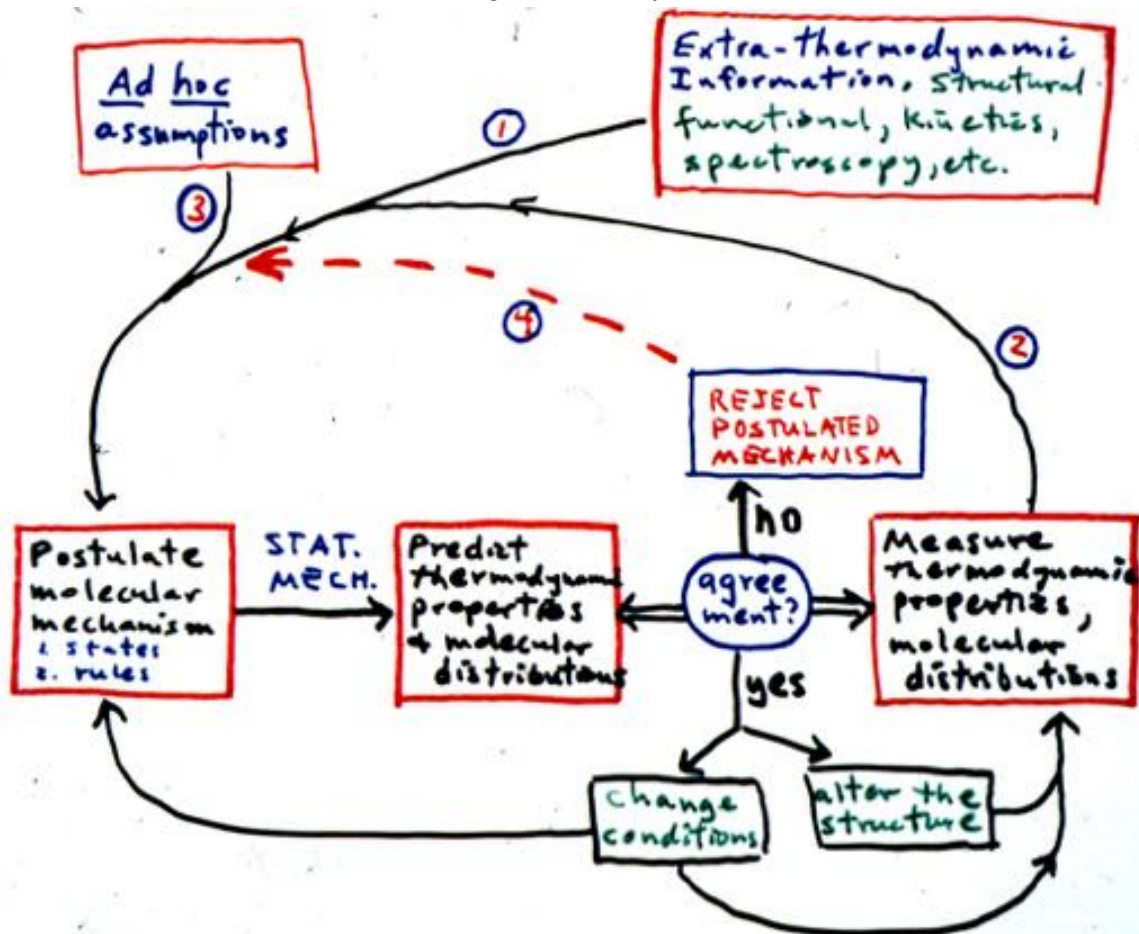
Gary demonstrated a lifelong commitment to the growth and development of an intellectual community of scholars devoted to furthering the field of biothermodynamics. Gary was an active member of the Biophysical Society throughout his career and served as President of the Society, as well as Organizer 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

Δ Gibbs₃₈





Fall for Thermo
2024

Schedule of Events

September 28 – October 1, 2024



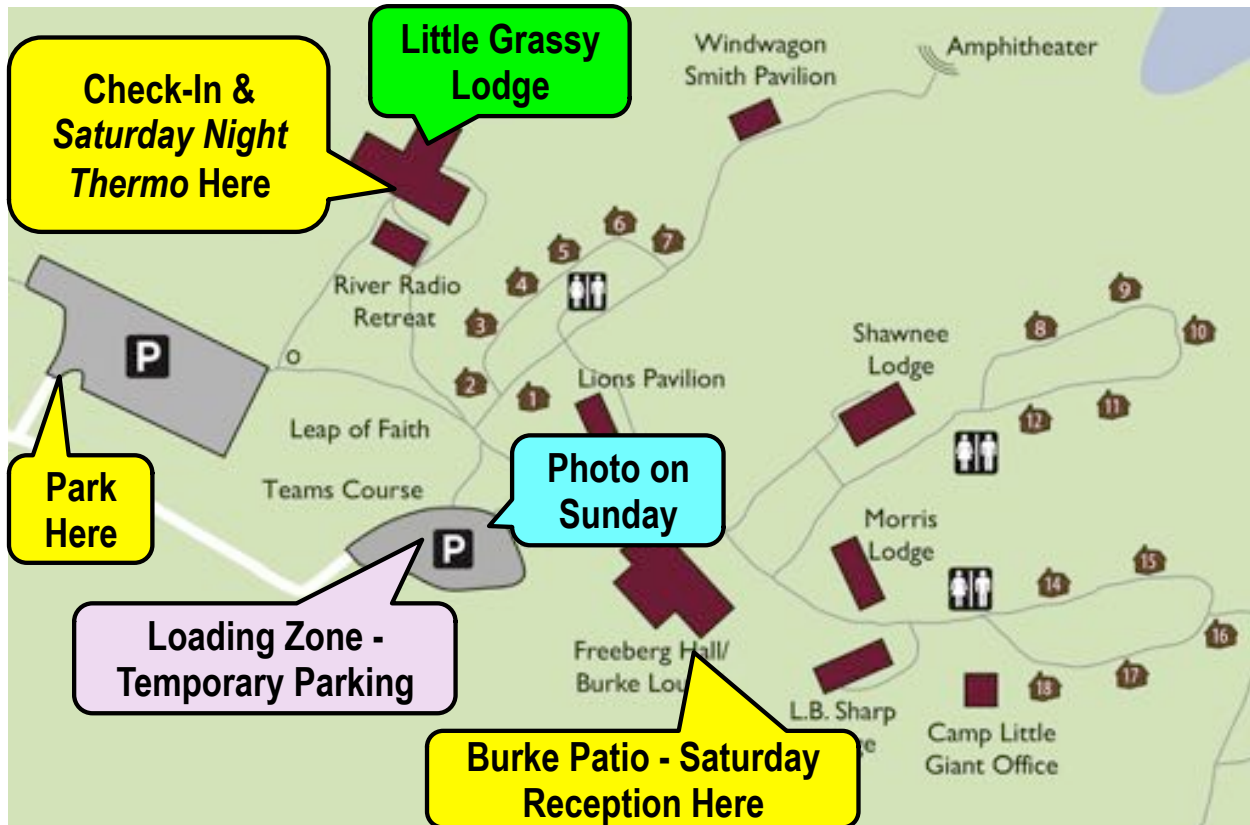
Δ Gibbs₃₈

	9/28/24	9/29/24	9/30/24	10/1/24
Illinois (UTC-6)	Saturday	Sunday	Monday	Tuesday
7:00 AM		Breakfast	Breakfast	Breakfast
7:30 AM		President's Welcome	Organizers's Remarks	Organizers's Remarks
8:00 AM		Keynote Lecture Susan Marqusee	Ackers Lecture Patricia Clark	Platform V Pls & Trainees
8:30 AM		Break	Break	Break
9:00 AM		Platform I Pls & Trainees	Platform III Pls & Trainees	
9:30 AM		Conference Photo	Lunch	Lunch-to-Go Pick up in Freeberg Hall
10:00 AM		Lunch	Business Meeting	Post-Conference Survey Please complete by Friday, 10/4/24 
10:30 AM		<i>Outdoor Activities</i>	<i>Outdoor Activities</i>	
11:00 AM		Platform II Pls & Trainees	Platform IV Pls & Trainees	
11:30 AM		Break	Break	
12:00 PM		Dinner	Dinner	
12:30 PM	Poster Session I 8-9 PM Odd, 9-10 PM Even Presenters Mishra - Z & Sponsor Displays	Poster Session II 8-9 PM Odd, 9-10 PM Even Presenters A - Mills & Sponsor Displays		
1:00 PM	Quiet Time begins @10pm in TON Lodging	Quiet Time begins @10pm in TON Lodging		
1:30 PM	Remove posters by midnight	Remove posters by midnight		
2:00 PM				
2:30 PM				
3:00 PM	Check-in 3 to 8 PM at Touch of Nature Little Grassy Lodge			
3:30 PM	Saturday Night Thermo for Trainees Only			
4:00 PM		Opening Night Reception Snacks & Beverages		
4:30 PM				
5:00 PM				
5:30 PM				
6:00 PM				
6:30 PM				
7:00 PM				
7:30 PM				
8:00 PM				
8:30 PM				
9:00 PM				
9:30 PM				
10:00 PM				
10:30 PM				
11:00 PM				

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

Fall for Thermo 2024

Saturday ♦ September 28, 2024



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**
 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”**
 Meeting of Presentation Logistics Committee and Moderators of Platform Sessions to review AV setup.

Saturday Night Thermo ♦ September 28, 2024

Saturday Night Thermo – Event for trainees only

Trainee Moderators and Co-Organizers

Mishghan Zehra, Durie Lab, University of Missouri

Kacey Mersch, Lohman Lab, Washington University in St. Louis

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 Kacey and Zehra to test your presentation in advance.

- Absolute Free Energy Calculation Utilizing Flexible Ligands and Rigid Receptors of Lead Compounds Targeting Sars-COV-2 Main Protease (Mpro)**
Hong Ha Nguyen, Minh Lab, Illinois Institute of Technology
- Screening Binding Affinities Between RNA and Probe in the Riboglow Platform**
Luke K. Shafik, Braselmann Lab, Georgetown University
- Residue contributions to the alpha-helix <-> beta-sheet transition of a universally conserved transcription factor**
Joey Thole, Porter Lab, National Institutes of Health
- Lipid Membranes Affect Ligand Binding Allostery but Not Affinity in Pacemaker Ion Channels**
Susovan Roy Chowdhury, Chanda Lab, Washington University in St. Louis
- Structural dynamics of the intrinsically disordered linker region of cardiac troponin T**
Ella Mozier, Soranno & Greenberg Labs, Washington University in St. Louis
- Coarse-grained Modeling of RNA Dynamics Allowing for Sugar Puckering and Noncanonical Base Pairing**
Yiheng Wu, Sosnick Lab, University of Chicago
- Genomic Mining and Biophysical Characterization of Soluble Nitrate Sensors from Staphylococcal Bacteria**
Elizabeth K. Pack, Dodani Lab, The University of Texas at Dallas

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 ♦ September 29, 2024

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

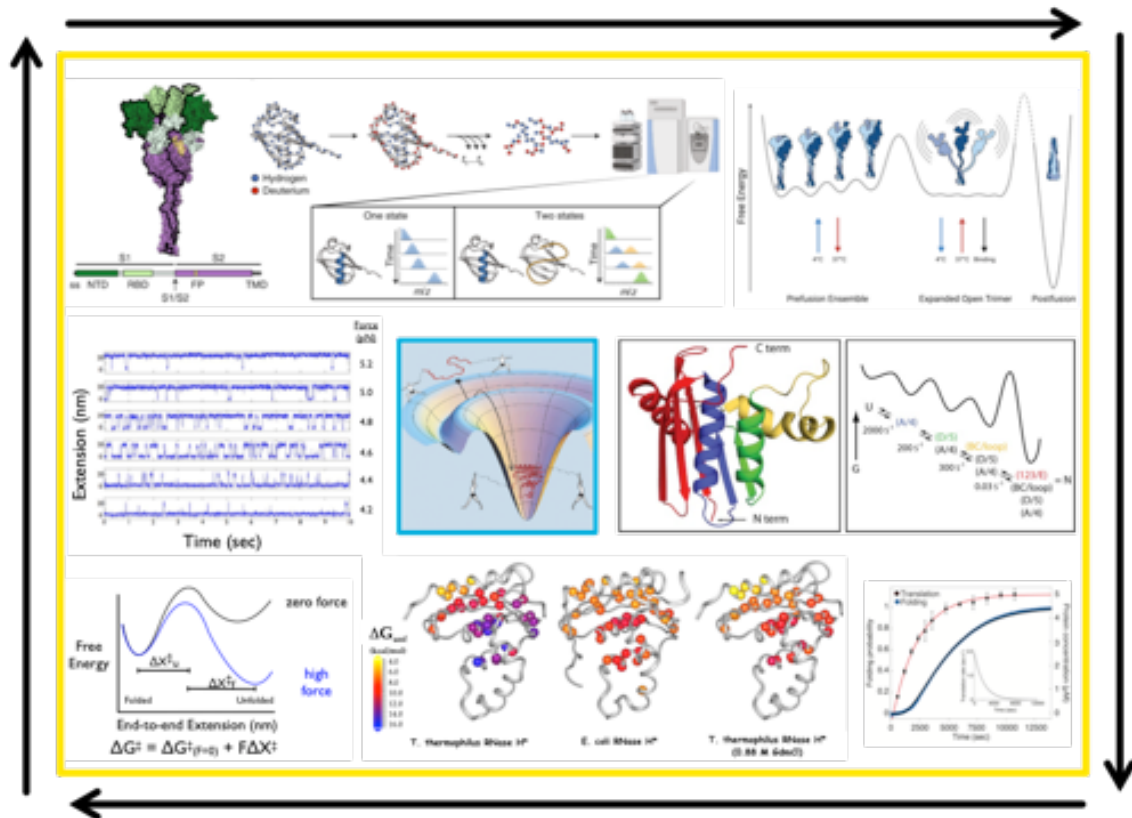
7:00 – 8:20 am Breakfast in Freeberg & Burke & Surrounding Area
 Individuals who requested special meals in advance because of dietary restrictions should follow signage in Freeberg to a separate serving area, & ask staff for assistance.

Platform Session I

- 8:15 am** **Speakers - Please connect your laptop in advance of the session.**
 AV support by **Liana Islam**, Lucius Lab, Univ. Alabama at Birmingham
- 8:30 – 8:40 am** **President's Welcome - Sarah Bondos**, Texas A&M University
- 8:40 – 8:50 am** **Opening Remarks by Organizers**
Lauren L. Porter, NIH
Janice L. Robertson, Washington University in St. Louis
- Moderator** **Jane Thibeault**, Rocklin Lab, Northwestern University

38th Annual Gibbs Conference Keynote Lecture

- 8:50 – 9:00 am** **Speaker Introduction**
Doug Barrick, Johns Hopkins University
- 9:00 – 9:50 am** **Labeling Rare and Transient Conformations on the Landscape**
Susan Marqusee, University of California, Berkeley & NSF
- 9:50 – 10:00 am** **Questions for Keynote Speaker**



Platform Session I - continued

10:00 – 10:30 am Break – Refreshments in River Radio Retreat

Please move cars in parking lot near Freeberg before noon to accommodate setup of the conference photo.

10:30 – 10:45 am Disentangling Folding from Energetic Traps in Simulations of Disordered Proteins

Jeffrey Lotthammer, Holehouse Lab, Washington Univ. in St. Louis

10:45 – 10:50 am Questions for speaker

10:50 – 11:15 am Thermodynamics and Kinetics of RNA Folding Under In Vivo-Like Conditions

Phil Bevilacqua, Pennsylvania State University

11:15 – 11:20 am Questions for speaker

11:20 – 11:35 am Myosin 10 Interacts with Cargo via IDRs as Revealed by HDX/XL-MS & DNA-PAINT

Julia Shangguan, Sosnick and Rock Labs, University of Chicago

11:35 – 11:40 am Questions for speaker

11:40 – 11:50 am **General Discussion for Session**

11:50 am **Session Closing Announcements by Organizers – Lauren L. Porter & Janice L. Robertson**

**12:00 pm Conference Photo near Freeberg Hall
Photographer - Andy Herr**

Gather on hill near parking lot by Freeberg Hall

Please move cars in parking lot before noon to accommodate setup of the conference photo.



12:15 pm Lunch in Freeberg & Burke & Surrounding Tents

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

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 ♦ September 29, 2024

Platform Session II

2:45 pm	Speakers - Please connect your laptop in advance of the session. AV support by Jonathan Montgomery , Foster Lab, Ohio State Univ.
Moderator	Praise Oguntokun , Horn Lab, Northern Illinois University
3:00 – 3:25 pm	Thermodynamic Consequences of the Membrane Phase Transition and its Impacts on Plasma Membrane Structure and Function Sarah Veatch , University of Michigan
3:25 – 3:30 pm	Questions for speaker
3:30 – 3:45 pm	Deconvoluting Monomer/Dimer Mixture Using T1-Edited DEER EPR Spectroscopy Thomas Schmidt , Clore Lab, National Institutes of Health
3:45 – 3:50 pm	Questions for speaker
3:50 – 4:05 pm	Quantitative Insights into the Processivity of Hsp100 Disaggregase on Unfolded Proteins Jaskamaljot Kaur Banwait , Lucius Lab, U. of Alabama at Birmingham
4:05 – 4:10 pm	Questions for speaker
4:10 – 4:40 pm	Break – Refreshments in River Radio Retreat
4:40 – 5:05 pm	Type IV pili from <i>Acinetobacter baumannii</i> International Clone II Strains Show Naturally Occurring Defects in Pilus Retraction Kurt Piepenbrink , University of Nebraska
5:05 – 5:10 pm	Questions for speaker
5:10 – 5:25 pm	ST11 Domain Engages Transient Helices and also Regulates Phase Separation of Yeast Ubiquilin Dsk2 Nirbhik Acharya , Castañeda Lab, Syracuse University
5:25 – 5:30 pm	Questions for speaker
5:30 – 5:55 pm	How Disulfide Bonds Shape the Energy and Evolutionary Landscapes of Class A β-Lactamases Kathryn Hart , Williams College
5:55 – 6:00 pm	Questions for speaker
6:00 – 6:10 pm	General Discussion
6:10 pm	Introduction of Attending Commercial Sponsors Lauren L. Porter & Janice L. Robertson
6:30 pm	Dinner in Freeberg & Burke & Surrounding Area

Sunday Evening ♦ September 29, 2024

Poster Session I - Presenters Last Names - Mishra - Z

8:00 – 10:00 pm	Posters on display in Freeberg Hall and Burke Lounge Instructions & assigned numbers are listed after the schedule of talks. Displays by Sponsors in Freeberg Hall (upper level) Please set up displays near beer, wine, and soft drinks
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Monday Morning ♦ September 30, 2024

- ♦ 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.

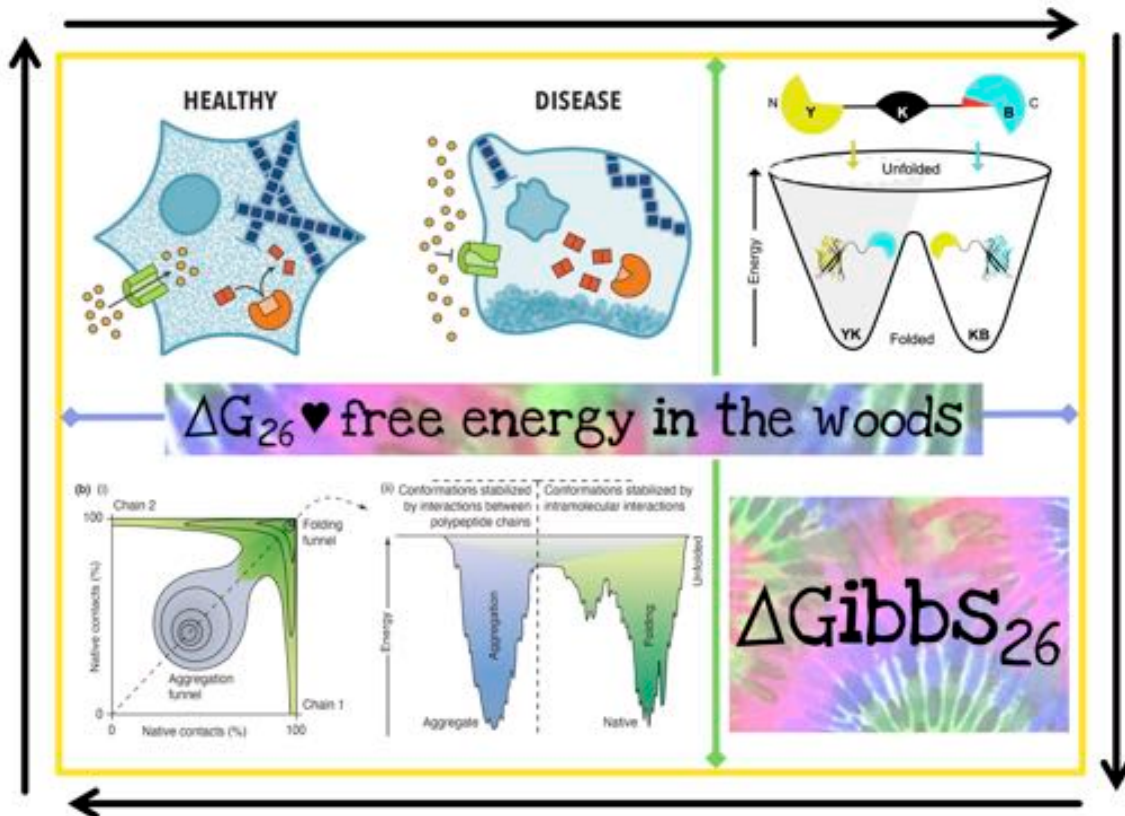
7:00 – 8:20 am **Breakfast in Freeberg & Burke & Surrounding Area**

Platform Session III

- 8:15 am **Speakers - Please connect your laptop in advance of the session.**
AV support by **Mark Petersen**, Marqusee Lab, UC Berkeley
- Moderator** **Joey Thole**, Porter Lab, National Institutes of Health
- 8:30 – 8:40 am **Announcements by Organizers –**
Lauren L. Porter & Janice L. Robertson

16th Annual Gary K. Ackers Lecture in Biothermodynamics

- 8:40 – 8:50 am **Speaker Introduction**
Tobin Sosnick, University of Chicago
- 8:50 – 9:40 am **Off to a Great Start: Contributions of Co-translational Folding to Protein Homeostasis**
Patricia L. Clark, University of Notre Dame
- 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 Self-Crowding and Protein Stability

Jordyn Markle, Pielak Lab, Univ. of North Carolina at Chapel Hill

10:35 – 10:40 am Questions for speaker

10:40 – 11:05 am The Roles of Lipid Environment in Shaping the Denatured States and Folding Energy Landscape of a Helical Membrane Protein

Heedeok Hong, Michigan State University

11:05 – 11:10 am Questions for speaker

11:10 – 11:25 am Determination of Viscoelasticity and Flow Activation Energy in Biomolecular Condensates

Anurag Singh, Banerjee Lab, University at Buffalo, SUNY

11:25 – 11:30 am Questions for speaker

11:30 – 11:40 am General Discussion

**11:55 – Noon Session Closing Announcements by Organizers –
Lauren L. Porter & Janice L. Robertson**

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

Little Grassy Lodge - Friends Room

*Note - Area will be **unavailable** to other attendees during this time.*

Monday Afternoon ♦ September 30, 2024

Platform Session IV

2:45 pm	Speakers - Please connect your laptop in advance of the session. AV support by Anna Nguyen , Minh Lab, Illinois Inst. of Technology
<i>Moderator</i>	Lexie Berkowicz , Halfmann Lab, Stowers Inst. for Medical Research
3:00 – 3:25 pm	Learning the Origins of Protein Energy Landscapes from Large-scale Experiments Gabriel Rocklin , Northwestern University
3:25 – 3:30 pm	Questions for speaker
3:30 – 3:45 pm	Cataract-Prone Variants of γD-crystallin Populate a Conformation with a Partially Unfolded N-terminal Domain under Native Conditions Sara Volz , Marqusee Lab, University of California, Berkeley
3:45 – 3:50 pm	Questions for speaker
3:50 – 4:05 pm	Using Single Molecule Spectroscopy to Probe Nucleocapsid-RNA Interactions Madison Stringer , Soranno Lab, Washington University in St. Louis
4:05 – 4:10 pm	Questions for speaker
4:10 – 4:40 pm	Break – Refreshments in River Radio Retreat
4:40 – 5:05 pm	Mimetics of In-Cell Solvation for Protein and Nucleic Acid Folding Caitlin Davis , Yale University
5:05 – 5:10 pm	Questions for speaker
5:10 – 5:25 pm	Probing the Impact of Allosteric (or Distal) Mutations on Protein Function through Time-Dependent Linear Response Theory Paul Campitelli , Ozkan Lab, Arizona State University
5:25 – 5:30 pm	Questions for speaker
5:30 – 5:55 pm	Cracking the AlkB Homologues' Code: How an α-Ketoglutarate Conformational Equilibrium Controls Iron Accessibility, Activation and Substrate Selection Vincenzo Venditti , Iowa State University
5:55 – 6:00 pm	Questions for speaker
6:00 – 6:10 pm	General Discussion
6:10 pm	Announcements – Officers for 2024-25 & Organizers for Gibbs39 Sarah Bondos , President, Texas A&M University
6:30 pm	Dinner in Freeberg & Burke & Surrounding Area

Monday Evening ♦ September 30, 2024

Poster Session II - Presenters Last Names - A-Mills

8:00 – 10:00 pm	Posters on display in Freeberg Hall and Burke Lounge Instructions & assigned numbers are listed after the schedule of talks. Displays by Sponsors in Freeberg Hall (upper level)
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Tuesday Morning ♦ October 1, 2024



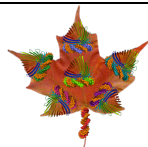
When you leave Touch of Nature, please leave your room key at the counter in Little Grassy Lodge.



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 by **Segun Ogundare**, Horn Lab, Northern Illinois Univ.
- 8:30 – 8:35 am** **Announcements by Organizers**
- 8:35 – 8:45 am** **Introduction of Touch of Nature & Catering Staff**
Lauren L. Porter & Janice L. Robertson
- Moderator* **Dagan Marx**, Levitz Lab, Weill Cornell Medicine
- 8:45 – 9:10 am** **A Model-Free Approach to Measuring the Free Energy of Ion Channel Gating**
Baron Chanda, Washington University in St. Louis
- 9:10 – 9:15 am** Questions for speaker
- 9:15 – 9:30 am** **Hydrogen Bonding Mediates the Thermodynamic Stability of Lipid-Accessible Ser and Thr in Membrane Proteins**
Lucas Shen, Fleming Lab, Johns Hopkins University
- 9:30 – 9:35 am** Questions for speaker
- 9:35 – 9:50 am** **Elastins as Solid-State Refrigerants**
Dharshika Malwane, Koder Lab, The City College of New York
- 9:50 – 9:55 am** Questions for speaker
- 9:55 – 10:10 am Short Break – Refreshments in River Radio Retreat**
- 10:10 – 10:35 am** **Protein Disorder and Multivalency in Regulation of Molecular Machines: From Dynein and DNA Repair to SARS-CoV2 Nucleocapsid**
Elisar Barbar, Oregon State University
- 10:35 – 10:40 am** Questions for speaker
- 10:40 – 10:55 am** **Characterizing the Folding Landscape of PPAR γ Ligand Binding Domain**
Mithun Karadi, Kojetin Lab, Vanderbilt University
- 10:55 – 11:00 am** Questions for speaker
- 11:00 – 11:25 am** **Origins of Fold-switching in the Metamorphic Chemokine XCL1**
Brian Volkman, Medical College of Wisconsin
- 11:25 – 11:30 am** Questions for speaker
- 11:30 – 11:35 am** **Closing Remarks by Incoming President Nick Fitzkee**
- 11:35 am** **Lunch-to-Go - Pickup in Freeberg Hall**



Please complete
the Post-Conference Survey
by Friday, October 4, 2024.
You may reach it using the QR code or this [link](#).



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Fall for Thermo
2024

Poster Information & Assigned Boards



Image Courtesy of Greg DeKoster

Poster Sessions - General Information

Dates and Locations

Posters will be presented during evening sessions (8-10 PM) on Sunday and Monday in both Burke Lounge and Freeberg Dining Hall. Free beverages will be served.

New in 2024

8-9 PM Odd-numbered posters will be presented in the first hour.

9-10 PM Even-numbered posters will be presented in the second hour.

Session I - Sunday evening “Mishra – Z”

Posters with **presenting authors** with last names ranging from Mishra to Zhang

Session II - Monday evening “A – Mills”

Posters with **presenting authors** with last names ranging from Adkins to Mills.

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 presenting author**.

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

Width: Please make posters 36 to 40 inches wide and up to 48" tall.

Mounting: Pushpins will be provided, and most boards will be foam core material. You may bring your own Velcro (hook and loop) buttons for mounting your poster.

Sharing boards - The poster boards come from a variety of sources and are variable in size. Most boards need to hold 2 narrow posters and will be labeled as such.

Times for mounting and removing posters

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 presenter has given you explicit permission.

Poster Session I ♦ Sunday, September 29, 2024

Posters S1- S61 numbered alphabetically by
last name of presenting author (Mishra – Z)

8-9 PM *Odd-numbered posters will be presented in the first hour.*
9-10 PM *Even-numbered posters will be presented in the second hour.*

- S1** **"Open Post" for Announcing Educational Programs & Employment Opportunities**
Bring your own ads, brochures or flyers.
- S2** **A Large-Scale Structural Analysis of the CLC Membrane Protein Family.** **Ayush Mishra**, Gladys Díaz Vázquez, Janice L. Robertson, Washington University in St. Louis
- S3** **Visualizing Endogenous RNAs in Live Mammalian Cells Using Riboglow-FLIM.**
Bindu Modi, Esther Braselmann, Georgetown University
- S4** **Dynamic Conformational Changes Modulate Interactions Between Cre Recombinase and DNA.** **Jonathan S. Montgomery**, Mark P. Foster, Ohio State Univ.
- S5** **Structural Dynamics of the Intrinsically Disordered Linker Region of Cardiac Troponin T.** **Ella Mozier**, Jasmine Cubuk, Lina Greenberg, Akiva E. Greenberg, Ryan J. Emenecker, Melissa D. Stuchell-Brereton, Alex S. Holehouse, Andrea Soranno and Michael J. Greenberg, Washington University in St. Louis
- S6** **Recognition of Recombination Intermediates by the Mismatch Repair Protein Msh2-Msh6.** Zane Lombardo, Tai Lon Tan, Jesse Pellman, Bold Boldbayar, Amy Du, **Ishita Mukerji**, Wesleyan University
- S7** **Effects of Hydrophobic Sequence Patterns on Disordered Protein Conformational Ensembles.** **Cedrick Mukinay**, Michael Baxa, Tobin Sosnick, Patricia Clark, University of Notre Dame
- S8** **Measuring the Effect of p44 on XPD Helicase Activity with Single-Molecule Magnetic Tweezers.** **Connor Nance**, Chunfeng Mao, Maria Mills, University of Missouri
- S9** **Assessing Protein Stability Through Thermal Denaturation.**
Marc Neglia and Martin Textor, Applied Photophysics, Ltd.
- S10** **Absolute Free Energy Calculation Utilizing Flexible Ligands and Rigid Receptors of Lead Compounds Targeting SARS-CoV-2 Main Protease (Mpro).**
Hong Ha Nguyen, James Tufts, David D. L. Minh, Illinois Institute of Technology
- S11** **Polymerization Mechanism of the *Candida albicans* Virulence Factor Candidalysin.**
Sadie L. Nickles, Katherine G. Schaefer, Gavin M. King, University of Missouri

- S12 Construction of IDR Ensembles Directly from Sequence through Multiscale Generative Modeling.** Borna Novak, Jeffrey M. Lotthammer, Alex S. Holehouse, Washington University in St. Louis
- S13 pH-Dependent Anti-Caffeine VHH Antibodies Engineered by Substitutions of Acidic and Basic Ionizable Residues in the Homodimeric Interface.** Segun A. Ogundare, Jacob Bojan, Praise Oguntokun, Tosha Laughlin, Hyeyoung Eom, Aaron Manz, Kevin Beck, Kylie Zawisza, Moly Eilbes & James R. Horn, Northern Illinois Univ.
- S14 ¹⁹F-NMR Studies on the Anthrax Toxin Pre-pore and Pore States – Chemical Exchange and Relaxation Properties that Govern Translocation.** Srinivas Gonti, Korede Lekan Ogunnaike, and James G. Bann, Wichita State University
- S15 Histidine Substitutions within Antibody Interfaces in the Creation of pH-Dependent Fab Interactions.** Praise Oguntokun, Tosha Laughlin, Hyeyoung Eom and James R. Horn, Northern Illinois University
- S16 Understanding the Mechanism of TECPR1-Dependent ATG8 Lipidation.** Ernest Okertchiri, Kelly Rockford, Xin Liu, Adam Yokom, University of Missouri
- S17 The Effects of Intermolecular Multi-Quantum Correlations on NMR Relaxation Measurements.** Yusuke Okuno, Washington University in St. Louis
- S18 What Does an Unfolded Outer Membrane Protein (uOMP) Ensemble Look Like?** Andrea L. Ori, Karen G. Fleming, Johns Hopkins University
- S19 Dynamics-Based Protein Network Features Accurately Discriminate Neutral and Rheostat Positions.** Banu Ozkan, Arizona State University
- S20 Genomic Mining and Biophysical Characterization of Soluble Nitrate Sensors from *Staphylococcal* Bacteria.** Elizabeth K. Pack, Ke Ji, Weicheng Peng, Mariah A. Cook, Jonathan Martin, Shelby M. Phelps, Faruck Morcos, and Sheel C. Dodani, University of Texas at Dallas
- S21 A High-Throughput Assay for Autotransporter Secretion.** Disha Patel and Patricia L. Clark, University of Notre Dame
- S22 Interplay between U1-70K's Flexible and Structured Domains Mediates Liquid-Liquid Phase Separation.** Trenton Paul and Jun Zhang, University of Alabama at Birmingham
- S23 Key Mutations in Green->Red Photoconversion of GFP Probed by HDX-MS.** Mark Petersen, Michael Shavlik, Mike Harms, and Susan Marqusee, University of California Berkeley
- S24 Prediction of Colloidal Stability of Monoclonal Antibodies Using a QCM-D Metric of Loosely Interacting Layer.** Yusra Rahman, Siddhanth Hejmady and Reza Nejadnik, University of Iowa

- S25 A Study on the Allosteric Signaling Mechanism of the cAMP Receptor Protein from *Mycobacterium tuberculosis* (CRP_{MTB}).**
Sanuja Raj, Miray Samuel, Anna Park, Rodrigo Maillard Georgetown University
- S26 Dissecting the Mechanistic Events in Energy-Dependent Degradation of Membrane Proteins Mediated by the AAA+ Protease FtsH.** Manoj Rana, Changwon Kim, Mihiravi Gunasekara, Saba Kanwal, Tae-Young Yoon, Heedeok Hong, Michigan State University
- S27 Studying the Effects of Transcription Factor IIS on Pol II Transcription Elongation.**
Ryan Requijo, David Schneider, Aaron Lucius, University of Alabama at Birmingham
- S28 Single Molecule Study of G-Quadruplex Dynamics of Telomere Sequences from Different Species.** Md Ibnul Rifat Rahman
Kierra Dalrymple, Hui-Ting Lee, University of Alabama at Birmingham
- S29 The Role of the Linker Region in the SARS-CoV-2 Nucleocapsid Protein Interactions with RNA.**
Eun Sil Rollins, Jasmine Cubuk, Ella Mozier, Nicholas Felgentrager, Kathleen B. Hall, Melissa D Stuchell-Brereton, Andrea Soranno, Washington University in St. Louis
- S30 Lipid Membranes Affect Ligand Binding Allostery but Not Affinity in Pacemaker Ion Channels.** Vinay K. Idikuda*, Susovan Roy Chowdhury*, Yongchang Chang, Scott Retterer, Huan Bao, Randall H. Goldsmith, Baron Chanda, Washington Univ. in St. Louis
- S31 Identifying and Characterizing Alternative G•U Wobbles Resulting from Rare Protonation Events in RNA.** Md. Sharear Saon, Catherine A. Douds, Andrew J. Veenis, Neela Yennawar, and Philip C. Bevilacqua, Penn State University
- S32 An Aromatic Cluster and a Noncatalytic Triad of *H. pylori* CPA Regulate Activity through Octamer Formation.** Anirban Molla, Ditsa Sarkar, Ashma Khan, and Apurba Kumar Sau, National Institute of Immunology, India
- S33 Using HDX-MS to Probe the Dynamics of Helix Unfolding and the Denatured State of GlpG.** Abigail L. Schroeter, Saba Kanwal, Heedeok Hong, Tobin R. Sosnick, University of Chicago, Michigan State University
- S34 Challenges in Generating Ensembles Using Hydrogen Exchange Data**
Noah Schwartz, Tobin R. Sosnick, University of Chicago
- S35 Screening Binding Affinities Between RNA and Probe in the Riboglow Platform.**
Luke K. Shafik, Aaron Van Dyke, Esther Braselmann, Georgetown University
- S36 Investigating the Interaction of Complement Component C3dg with Gold Nanoparticles.**
Tanveer Shaikh, Abriana Ferrari, Nicholas Fitzkee, Mississippi State University
- S37 Sterol-Polyene Macrolide Aggregates: Developing a Novel Computational Workflow.** Shashank Shastry, Andres Arango, Taras Pogorelov, University of Illinois Urbana-Champaign

- S38 Analyzing Protein Complexes at Micromolar Concentrations with Mass Photometry: The MassFluidix Microfluidics System.** Kate Shields, Refeyn
- S39 Characterization of the Type IV Secretion System DotO of *Legionella pneumophila*.** Riti Shrestha, Wing-Cheung Lai, Clarissa Durie, University of Missouri
- S40 Leveraging the Power of Cryptic Pocket on FTO to Discover a Subfamily Selective Allosteric Inhibitor.** Aayushi Singh, Francesco Pettini, Vincenzo Venditti, Iowa State University
- S41 Substitutions at Rheostat Position 52 of LacI Have Long-Range Effects on LacI Conformational Landscape.** N. L. Kariyawasam, D. Ross, A. A. Sivchenko, A. R. Triska, L. Swint-Kruse, P. E. Smith, Kansas State University
- S42 Investigating the Interplay of Substrates with the IcmSW Coupling Complex of *L. pneumophila*.** Radha P. Somarathne, Wing C. Lai, Peter J. Mallon, Molly Wells, Clarissa L. Durie, University of Missouri
- S43 Temperature Regulates the Nucleation of Immune Proteins.** Wenhao Song, Shriram Venkatesan, Justin Mehojah, Randal Halfmann, Stowers Institute for Medical Research
- S44 Investigating the Binding of Small Molecules to RNA Riboswitches.** Jamie Sagastume, Victoria Suntich, Swadha Bhatt, Emily Paris, Ana Maria Soto, Towson Univ.
- S45 Evidence of Epistasis among the Substitutions that Occur in an Evolving Viral Protease.** S Sreenivasan, J D Fontes, L Swint-Kruse, Univ. of Kansas Medical Center
- S46 Investigating the Relationship Between Hsp70/CHIP/BAG-1 Complex and the 26S Proteasome for Protein Degradation.** Preston Stephen, Kate Bailey, Stephanie Gates, University of Missouri
- S47 Expanding the Riboglow-FLIM Toolbox Towards Multiplexing RNA Visualization with Different Lifetime-Producing RNA Tags.** Zachary Stickelman, Esther Braselmann, Georgetown University
- S48 Naturally Occurring Mutations in SARS-CoV-2 Nucleocapsid SR-Region Increase Self-Association of a Distant Helix.** Hannah Stuwe, Patrick Reardon, Yu Zhen, Kaitlyn Hughes, Sahana Shah, Elisar Barbar, Oregon State University
- S49 Bayesian Modeling of Hydrogen Deuterium Exchange Mass Spectrometry Exchange Rates.** Jane Thibeault, Állan Ferrari, and Gabriel Rocklin, Northwestern University
- S50 Residue Contributions to the Alpha-Helix <-> Beta-Sheet Transition of a Universally Conserved Transcription Factor.** Joseph F. Thole, Ethan A. Chen, Lauren L. Porter, National Institutes of Health
- S51 Allosteric Regulation of VWF Platelet Function by Calcium.** Alexander Tischer, Laurie Moon-Tasson, & Matthew Auton, Mayo Clinic

- S52 Characterization of Cardiomyopathic Point Mutations of the Ig3 Domain in Myopalladin.**
Julie Tran; Alia Michaelis; Asha R. Arachchige, Moriah R. Beck, Wichita State University
- S53 Highly Accurate Protein-Protein Docking Using Physics-Based FFT Scoring Functions.** Jim Tufts, Hong Ha Nguyen, David D.L. Minh, Illinois Inst. of Technology
- S54 All-Atom Simulations of Phosphorylated Intrinsically Disordered Proteins.**
Emery T. Usher, Martin J. Fossat, Jacqueline F. Pelham, Alex S. Holehouse, Washington University in St. Louis
- S55 Exploring VHH Domains as Modules to Impact Protein Stability and Oligomeric State.** Devin J. Vides, Niyati Patel, and James R. Horn, Northern Illinois University
- S56 Coarse-grained Modeling of RNA Dynamics Allowing for Sugar Puckering and Noncanonical Base Pairing.** Yiheng Wu, Riccardo Alessandri, Aria Coraor, Xiangda Peng, Pablo Zubieta, Tobin Sosnick, Juan de Pablo, University of Chicago
- S57 Analysis of PROTAC Therapeutics via Analytical Ultracentrifugation.**
Alexander E. Yarawsky, Suki Hyman, John W. Burgner, Michael T. DeLion, and Lake N. Paul, BioAnalysis, LLC
- S58 The Structural Basis for DNA-Uptake by *Acinetobacter*.**
Yafan Yu and Kurt Piepenbrink, University of Nebraska – Lincoln
- S59 Structural Insights in Dot/Icm Type IV Secretion System of *Legionella pneumophila*.**
Mishghan Zehra, Wing-Cheung Lai, Clarissa Durie, University of Missouri
- S60 Probing CLC Dimerization Kinetics and Stability with Interfacial Tryptophan.**
Nathan Zelt, Janice L. Robertson, Washington University in St. Louis
- S61 Phase Separation of U2AF35 *in vitro* and in HeLa cell.**
Zihan Zhang, Trent Paul, Jun Zhang, University of Alabama at Birmingham



Poster Session II ♦ Monday, September 30, 2024

Posters M1- M60 numbered alphabetically by
last name of presenting author (A-Mills)

8-9 PM *Odd-numbered posters will be presented in the first hour.*
9-10 PM *Even-numbered posters will be presented in the second hour.*

- M1** *"Open Post" for Announcing Educational Programs & Employment Opportunities*
Bring your own ads, brochures or flyers.
- M2** **Investigating the Interactions of Small Basic Protein and DNA in the Context of *Staphylococcal* Biofilms.** P. Ethan Adkins, Alexander E. Yarawsky, Andrew B. Herr, Cincinnati Children's Hospital Medical Center
- M3** **Nanoparticle Size Analysis in Human Serum Using Dynamic Light Scattering.** Gabriel J. Alcantara, Brooklyn N. Luke, Takayla R. Tallie, Nicholas C. Fitzkee, Mississippi State University
- M4** **Cross-Correlation Super-Resolution Optical Fluctuation Imaging for Studying Biomolecule Conformation and Diffusion Dynamics in Extracellular Matrix.** Jeanpun Antarasen, Benjamin Wellnitz, Albert Kim, Stephanie Kramer, Lydia Kisley, Case Western Reserve University
- M5** **Molecular Mechanism of FX-909, a Preclinical Bladder Cancer Therapeutic Targeting PPAR γ .** Liudmyla Arifova, Zane T. Laughlin, Douglas J. Kojetin, Vanderbilt University
- M6** **Investigating the Effects of Co-chaperones On the Hsp70 Dependent Ubiquitination of Tau.** Kate M. Bailey, Preston Stephen, Xin Liu, Stephanie N. Gates, University of Missouri
- M7** **Understanding the Role of p97/BAG-1 Complex in Chaperone-Mediated Proteasomal Degradation.** Lois Bansah, Xin Liu, Stephanie Gates, University of Missouri
- M8** **Tandem Affinity Purification and Mass-Spectrometric Analysis for the Interactors of a Chromatin Remodeling Factor, FACT, with Regulation by an Intrinsically Disordered Ubiquitin Ligase Involved in Nuclear Protein Quality Control.** Priyanka Barman, Pritam Chakraborty, Shalini Guha, Amala Kaja, Rhea Bhaumik, Sukesh R. Bhaumik, Southern Illinois University School of Medicine
- M9** **Reproducing AFM Dynamics on Experimental Timescales using Upside.** Michael Baxa, Tobin Sosnick, University of Chicago
- M10** **DynaLab: a Notebook to Run and Analyze Coarse-grained Upside Simulations, No Code Required.** Nicholas Bayhi, Vidyoot Senthilvenkatesh, Sarthak Agrawal, Tobin Sosnick, University of Chicago

- M11 Integrated Structural Model Linking Palladin to Actin Dynamics.** Rachel Sargent, David Liu, Rahul Yadav, Moriah R. Beck, Wichita State University
- M12 Biosensor Cells Distinguish Amyloid Variations.** Lexie Berkowicz, Jianzheng Wu, Alex Von Schulze, Justin Mehojah, Xiaoqing Song, Randal Halfmann, Stowers Institute for Medical Research
- M13 Studying Translocation and Unfolding of Proteins by *E. coli* ClpA and ClpB with a Single Molecule, Total Internal Reflection Fluorescence Approach.** Wade Bexley and Aaron Lucius University of Alabama at Birmingham
- M14 An Intrinsically Disordered Region within a Chromatin Remodeling Factor, FACT, Promotes Chromatin Disassembly in Stimulating the Pre-initiation Complex Formation at the Promoter for Transcription Initiation.** Priyanka Barman and Sukesh R. Bhaumik, Southern Illinois University School of Medicine
- M15 SARS-CoV-2 as a Model System of Sequence Dependent Recombination during Nidoviral Transcription.** Tyrese Boddie and Hui-Ting Lee, University of Alabama at Birmingham
- M16 Friends in Chaos: How Disorder Changes TG2 Allostery in Protein:Protein Binding.** Whitney Bond and Tonya Zeczycki, East Carolina University
- M17 Random Proteins Bind Random Ligands.** Undergrad students of US NSF REU Site in Biophysics Nové Hradý, Czech Republic, Summers 2023 and 2024 Program Director Professor Jannette Carey, Princeton University
- M18 Multivalent Polyubiquitin Ligands Differentially Drive Phase Transitions of UBQLN2 and Downstream Protein Quality Control Outcomes.** Carlos A. Castañeda, Thuy P. Dao, Sarasi K.K. Galagedera, Jeremy D. Schmit, Daniel A. Kraut, Syracuse University
- M19 Redundant Functions of Tor1 and Tor2 Kinases in Facilitating Ribosomal Protein Gene Expression for Ribosome Biogenesis via TORC1, but not TORC2.** Amala Kaja, Bhawana Uprety, Pritam Chakraborty, Sukesh R Bhaumik, Southern Illinois University School of Medicine
- M20 Role of T-loops in R-loop Formation and TERRA Expression.** Tanvir Ahmed Chowdhury, Arianna N. Lacen, Hui-Ting Lee, University of Alabama at Birmingham
- M21 Activation and DNA Binding of *S. aureus* SrrA.** Nathan Clack, Delaney Catania, Ernesto J. Fuentes, University of Iowa
- M22 Dynamic and Mechanical Characterization of Soluble Elastin Precursor Proteins.** Giovanni Crump, Richard Wittebort, Ronald Koder, City College of New York
- M23 Structural Basis of Chaperone-Mediated Condensate Dispersal using HDX-MS.** Estefania Cuevas-Zepeda, Kyle Lin, Allan Drummond, Tobin Sosnick, U. of Chicago

- M24 The Complete Characterization of CopR: A Copper and Redox Dependent Transcription Factor.**
Alexander J. Cutright, Sean L. Stokes, Joseph P. Emerson, Mississippi State Univ.
- M25 Phosphorylation Induced Changes in Protein Conformational Dynamics Modulate mRNA Binding in UP1.**
Sayan Das, Vincenzo Venditti, Filippo Prischi, Iowa State Univ. & King's College
- M26 Dependence of KcsA Self-Association on Lipid Composition and Temperature.**
Gladys Díaz Vázquez, Robyn Mahoney-Kruszka, Janice L. Robertson, Washington University School of Medicine
- M27 Dissecting Protein Homeostasis: Isolating the Impact of Mutations on Degradation versus Production.**
Jacob Diehl and Patricia L. Clark, University of Notre Dame
- M28 Estimating Monoclonal Antibodies Secondary Structure using JASCO Spectra Manager™ BeStSel** Satoko Suzuki, Forrest R. Empey-Kohl, Taiji Oyama, Ai Yamane, András Micsonai, József Kardos, and Ken-ichi Akao, JASCO, Inc.
- M29 Single-Molecule Spectroscopy Reveals Residue-Specific Impacts on Domain Folding of Apolipoprotein E.** Klaudio Fatmiri, Melissa D. Stuchell-Brereton, Andrea Soranno, Washington University in St. Louis
- M30 Chemical and Temporal Manipulation of Early Steps in Protein Assembly Tune the Structure and Intermolecular Interactions of Protein-Based Materials.**
Britt Faulk, Valeria Italia, Amanda Jons, Bhavika Kaparathi, Marco Maccarini, Paolo Beroncello, Ken Meissner, Don Martin, and Sarah E. Bondos, Texas A&M University
- M31 A Technique to Study the Dynamics of Proteins in a Condensate.**
Kasun Gamage, Van Thong, Michael Feig, Lisa J. Lapidus, Michigan State University
- M32 Role of Palladin in Actin Dynamics Revealed by Quantitative TIRFM.**
Sanju Ghimire, Wael Yessin, Tariq IZard, Moriah Beck, Wichita State University
- M33 RNA Modifications of Different Stages and Parallel Pathways of Ribosome Maturation.** Luis A. Gracia Mazuca, Jonathon Mohl, Samuel Cho, and Eda Koculi University of Texas at El Paso and Wake Forest University
- M34 Expanding the LacI/GalR Family Chimera Toolkit for Multi-input Transcriptional Regulation.** Carter J. Gray, Pierce T. O'Neil, Carrie Hillebrand, Kristen M. Schwingen, Liskin Swint-Kruse, University of Kansas Medical Center
- M35 The Mechanisms of Signal Perception and Transduction in *S. aureus* SrrB Histidine Kinase.**
Nicholas A. Hammons, M. Ashley Spies, Jeffrey S. Kavanaugh, Alex R. Horswill, and Ernesto J. Fuentes, Univ. of Iowa and Univ. of Colorado Anschutz Medical Campus

- M36 Coiled-coil Domains are Sufficient to Drive Liquid-Liquid Phase Separation in Protein Models.**
Dominique A. Ramirez, Loren E. Hough, Michael R. Shirts, U. of Colorado, Boulder
- M37 Understanding the Mechanism of Hsp90 Mediated Degradation of Tau Protein via the 26S Proteasome Pathway.**
Yu-Shao Hsieh, Xin Liu, Stephanie Gates, University of Missouri
- M38 Effect of Vectorial Appearance on Folding of Diverse Proteins *in vitro*.**
Latifat Ibrahim, Iker Soto Santarriaga, and Patricia L. Clark, University of Notre Dame
- M39 Regulation of Dynein Intermediate Chain by Autoinhibition.**
Mukhtar Idris, Elisar Barbar, Oregon State University
- M40 Contributions of ClpA Nucleotide Binding Domains to Unfoldase Activity Observed Using Stopped-flow Fluorescence.**
Liana Islam and Aaron Lucius, University of Alabama at Birmingham
- M41 Single-molecule Spectroscopy Shows Differences in Conformation and Lipid-binding in Variants of Apolipoprotein E. Anshuman Jaysingh**, Melissa D. Stuchell-Brereton, Andrea Soranno, Washington University in St. Louis
- M42 The Conformationally Dynamic *Mycobacterium tuberculosis* σ^A IDR is Essential for Transcription.**
Drake Jensen, Ana Ruiz Manzano, Ryan Emenecker, Melissa D. Stuchell-Brereton, Alex S. Holehouse, Eric A. Galburt, Andrea Soranno, Washington Univ. in St. Louis
- M43 Lectin-Mediated Mechanisms of *Staphylococcal* Adhesion to Skin.**
Isha Joglekar, Joseph J. Maciag, Andrew B. Herr, Cincinnati Children's Hospital Medical Center
- M44 A High-Throughput Methodology for Assessing the Energetics of Protein-Nanoparticle Interactions.**
Chathuri S. Kariyawasam, Nicholas C. Fitzkee, Mississippi State University
- M45 Visualizing Ribosomal mRNA Unwinding Utilizing DMS Map-Seq.**
Preston Kellenbeger, Peter Cornish, University of Missouri
- M46 Predicted Conformational Properties of the Intrinsically Disordered Regions of Ubx: The Rugged Energy Landscape Guiding DNA Binding Affinity and Specificity.** Britt Faulk, Sarah Bondos, Alexandra Klinger, Texas A&M School of Medicine and Decipher Hydro
- M47 Entropic Modulation of Ligand-Induced Folding in Supercharged Short-Chain Antibody Fragments. Ronald Koder** and Jim McCann, City College of New York
- M48 Insights into SRSF3's RNA and Protein Interaction Landscape.**
Puspa Kunwar, Ivon De Silva, Trenton Paul, Zihan Zhang, Jun Zhang, University of Alabama at Birmingham

- M49 smFRET Investigation of Structural Dynamics During T-Loop Formation.**
Arianna Lacen, Kristen Buettner, Hui-Ting Lee, University of Alabama at Birmingham
- M50 Intrinsic Domain Stability and Coupling Energies of POTRA Domains.**
Olivia Langlois, Katherine Tripp, and Douglas Barrick, Johns Hopkins University
- M51 RNA G-quadruplex Unwinding Triggered by Arginine-Serine Rich Protein Domains of the Pre-spliceosome.**
N.E Lehman, N.I.U. De Silva, J. Zhang, University of Alabama at Birmingham
- M52 Differences in LARP6 RNA Binding Behavior Between Algae and Higher-Order Eukaryotic Homologs.**
Emily Lewis, Olga Becker, Alexis Symons, Cora LaCoss, Jasmine Baclig, Eric C. Baggs, Lisa R. Warner, and Karen A. Lewis, Texas State University
- M53 Development and Optimization of cDNA Pulsed Proteolysis. Theodore J. Litberg,**
Tanu Priya, Adun Obisesan, Gabriel J. Rocklin, Northwestern University
- M54 Investigating the Membrane Tethering Factor EPG5 in Late-stage Autophagy.**
Hunter Madison, Xin Liu, Kelly Rockford, Adam Yokom, University of Missouri
- M55 Structural and Functional Characterization of *Acinetobacter* Type IV Pili from Distinct Subtypes. Rabab Mahdi,**
Kurt Piepenbrink, University of Nebraska - Lincoln
- M56 Biophysical Evolution of the Receptor-binding Domains of SARS-CoVs.**
Vaibhav Upadhyay, Sudipta Panja, Alexandra Lucas, Casey Patrick, and Krishna M.G. Mallela, University of Colorado Anschutz Medical Campus
- M57 Thermodynamics of DNA Three-Way Junctions.**
Irine Khutsishvili and Luis A. Marky, University of Nebraska Medical Center
- M58 Molecular Determinants of Desensitization of mGluRs.**
Dagan Marx, Alexa Strauss, Kevin Huynh, Alberto Gonzalez-Hernandez, Joon Lee, Carlos Rico, Anisul Arefin, Qiuyan Chen, Johannes Broichhagen, George Khelashvili, David Eliezer, Joshua Levitz, Weill Cornell Medicine
- M59 Backbone Conformational Equilibrium Correlates with Enzyme Activity in Mismatched DNA.**
M. N. Westwood, C. Johnson, A. Pilarski, Gary A. Meints, Missouri State University
- M60 Mycobacterial Type IA Topoisomerases Energetically Suffer From C-Terminal Deletion.**
Dillon Balthrop, Deepesh Sigdel, Chunfeng Mao, Maria Mills, University of Missouri

