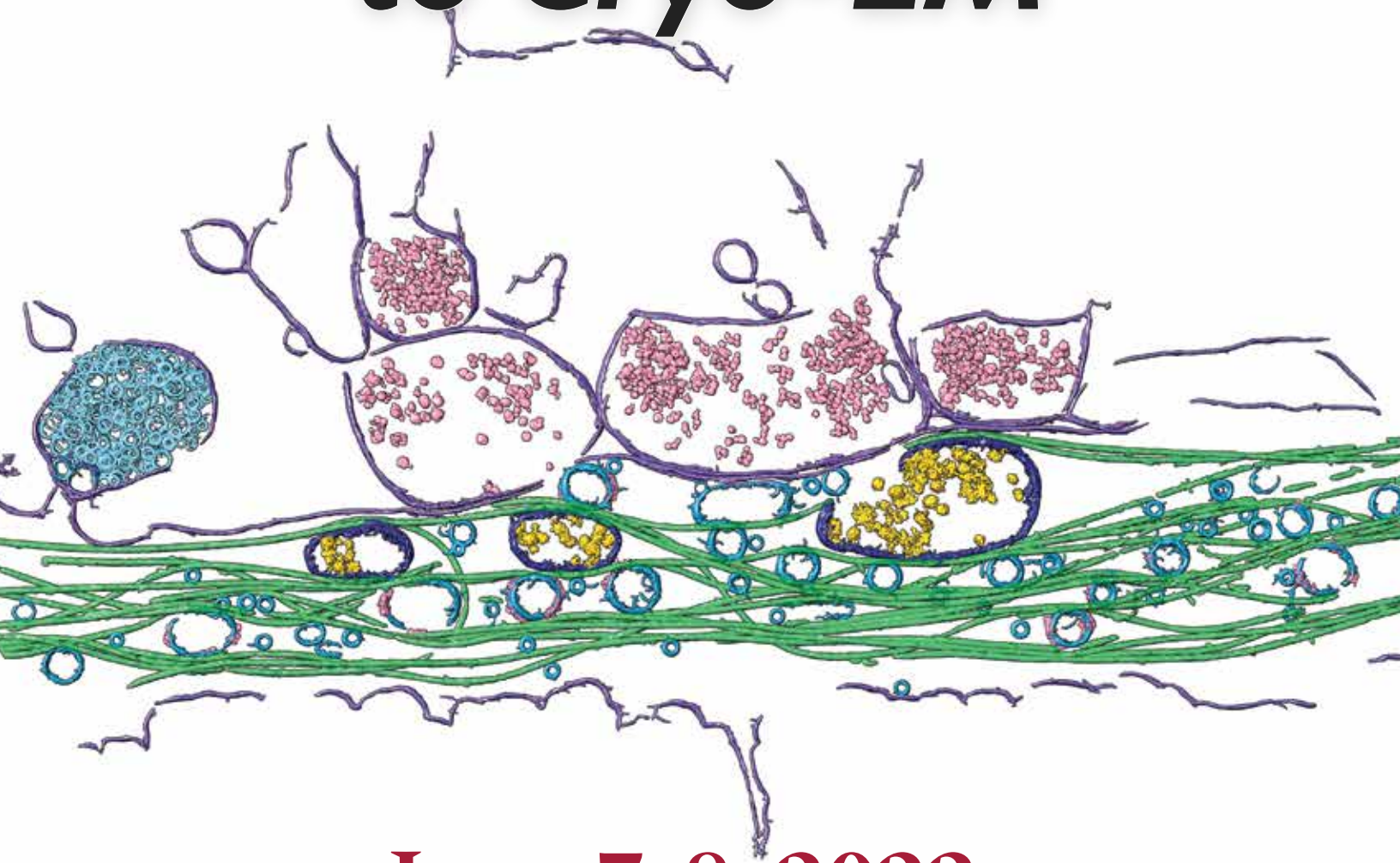




42nd Steenbock Symposium

Opening Doors to Cryo-EM



June 7-8, 2022

Tuesday, June 7
Discovery Building – 330 N Orchard Street

7:45 AM – 8:30 AM **Registration check-in, poster setup, & light breakfast**

Opening Session – H.F. DeLuca Forum

8:30 AM – 8:50 AM **Brian Fox**, UW–Madison & **Brad Schwartz**, Morgridge Institute for Research –
Welcome and Introductory Remarks

8:50 AM – 9:00 AM **Paula Flicker and Mary Ann Wu**, National Institutes of Health
The NIH Common Fund Program for Transformative High-Resolution Cryo-EM

9:00 AM – 9:30 AM **Elizabeth Wright**, UW–Madison–
Building the Cryo-EM Centers at UW–Madison

SESSION 1 – High-Resolution Cryo-EM Structural Studies of Pathogens – H.F. DeLuca Forum

9:30 AM – 9:50 AM **Deb Kelly**, Penn State University – *High-Resolution Imaging of SARS-CoV-2 Sub-Viral Assemblies Derived from COVID-19 Patients*

9:50 AM – 10:10 AM **Susan Lea**, National Cancer Institute – *Using Protons in the Bacterial Cytoplasmic Membrane*

10:10 AM – 10:30 AM **Robert Kirchdoerfer**, UW–Madison – *Co-Factor Interactions in Alpha and Betacoronavirus Core Polymerase Complexes*

10:30 AM – 11:00 AM **Morning Break** – Atrium

SESSION 2 – Many Small Things Considered by Cryo-EM – H.F. DeLuca Forum

11:00 AM – 11:20 AM **Ci Ji Lim**, UW–Madison – *Single-Stranded DNA-Binding Protein CST Sets the Stage for Human DNA Polymerase Alpha/Primase RNA-DNA Primer Synthesis*

11:20 AM – 11:30 AM **Wei Huang**, Case Western Reserve University – *Structural and Mechanistic Basis for Recognition of Alternative tRNA Precursor Substrates by Bacterial Ribonuclease P*

11:30 AM – 11:40 AM **James Letts**, UC Davis – *Structures of Tetrahymena's Respiratory Chain Reveal the Diversity of Eukaryotic Core Metabolism*

11:40 AM – 12:00 PM **Michael Schmid**, Stanford SLAC, S2C2, SCSC – *Tubulin Intra- and Inter-Polymer Interactions in Toxoplasma*

12:00 PM – 12:10 PM **Xinyun Cao**, UW–Madison – *Basis of Narrow-Spectrum Activity of Fidaxomicin on Clostridioides difficile*

12:10 PM – 12:30 PM **Michael Stowell**, CU Boulder – *The Long Pursuit of the Muscle Type nAChR Structure: Using Chemistry to Tackle Biology*

12:30 PM – 1:30 PM **Lunch in and around the Discovery Building**

1:30 PM – 2:30 PM **Poster Session & Exhibits** – Atrium

2:30 PM – 2:45 PM **Afternoon Break** – Atrium

2:45 PM **Meet in the Discovery Building Atrium to travel to workshops and tours**

3:00 PM – 5:00 PM **Workshops & Tours** – Biochemistry Buildings

5:00 PM – 5:30 PM **Break**, Return to Discovery Building

5:30 PM – 6:30 PM **Keynote Presentation** – H.F. DeLuca Forum

David Veessler, University of Washington, HHMI –
Structure-Guided Coronavirus Vaccine Design

6:30 PM – 8:30 PM **Dinner** – Atrium

Wednesday, June 8
Discovery Building – 330 N Orchard Street

7:45 AM – 8:30 AM **Registration check-in & light breakfast**

8:30 AM – 9:30 AM **Boyer Seminar & Award Presentation** – H.F. DeLuca Forum, **Jae Yang** – UW–Madison
In-situ Cryo-Electron Tomography: Exploring Cellular Machinery at the Nanoscale

9:30 AM – 10:00 AM **Morning Break**

SESSION 3 – Tools of the Trade: Developments in Methods and Applications of Cryo-EM – H.F. DeLuca Forum

10:00 AM – 10:20 AM **Wah Chiu**, Stanford SLAC, S2C2, SCSC – *Cryo-EM is a Tool to Answer Long Standing Biochemistry Puzzles*

10:20 AM – 10:30 AM **Beth Stadtmueller**, University of Illinois Urbana-Champaign – *Cryo-Electron Microscopy Structures of Secretory Immunoglobulins from Mammals and Fish Reveal Long Hidden Structure-Function Relationships*

10:30 AM – 10:40 AM **Vicky Pappas**, UW–Madison – *Cryo-EM Structural Studies of the Vibrio cholerae Flagellum*

10:40 AM – 10:50 AM **Daija Bobe**, NYSBC, SEMC, NCITU – *The Waffle Method: An Approach for Cryo-FIB/SEM Thin Lamellae Preparation*
10:50 AM – 11:00 AM **Brandon Malone**, The Rockefeller University – *Structural Insights into Substrate Selection by the SARS-CoV-2 Replicase*

11:00 AM – 11:20 AM **Tim Grant**, Morgridge Institute for Research & UW–Madison – *New Methodologies for Preparing and Imaging Cryo-EM Samples*

11:20 AM – 11:30 AM **Open Discussion**

11:30 AM – 12:30 PM **Lunch in and around the Discovery Building**

SESSION 4 – Explorations In Situ: Cryo-ET is Coming of Age – H.F. DeLuca Forum

12:30 PM – 12:50 PM **Clint Potter**, NYSBC, NRAMM, NCCAT, NCITU – *Challenges of Cellular Cryotomography*

12:50 PM – 1:00 PM **Joseph Kim**, UW–Madison – *Morphological Comparisons of Primary Neurons Cryo-Preserved Under Varied Conditions*

1:00 PM – 1:20 PM **Andreas Hoenger**, CU Boulder – *Cryo-ET at CU Boulder: From Microtubules to Cells and Tissues*

1:20 PM – 1:30 PM **Thomas Laughlin**, UC San Diego – *Architecture and Self-Assembly of the Giant Bacteriophage Nucleus-Like Compartment*

1:30 PM – 1:40 PM **Bryan Sibert**, UW–Madison – *Structure of Respiratory Syncytial Virus Matrix Protein Determined with Sub-Nanometer Resolution using Cryo-Electron Tomography*

1:40 PM – 2:00 PM **Danielle Grotjahn**, Scripps Research Institute – *Structure Among the Chaos: Using Cellular Tomography to Study Mitochondrial Behavior*

2:00 PM – 2:15 PM **Afternoon Break**

2:15 PM **Meet in the Discovery Building Atrium to travel to workshops and tours**

2:30 PM – 4:30 PM **Workshops & Tours** – Biochemistry Buildings

4:30 PM – 5:00 PM **Break, Return to Discovery Building**
– H.F. DeLuca Forum

5:00 PM – 5:30 PM **Elizabeth Wright**, UW–Madison – *Closing Remarks & Poster Awards Presentation*

5:30 PM – 6:30 PM **Refreshments, Posters & Exhibits** – Atrium

6:30 PM **Take posters down**



Keynote Speaker

David Veesler (he/him/his) is an Associate Professor of Biochemistry at the University of Washington and an Investigator at the Howard Hughes Medical Institute. Veesler pioneered studies of coronavirus entry into cells and obtained molecular snapshots of the early stages of infection. Early in 2020, his lab identified the SARS-CoV-2 entry receptor and revealed the architecture of the SARS-CoV-2 spike glycoprotein. These data have been used by thousands of groups worldwide to understand the effect of mutations found in SARS-CoV-2 variants and to design countermeasures throughout the pandemic. He has been studying immunity elicited by SARS-CoV-2 infection or vaccination in real-time and identified a key site of vulnerability in the SARS-CoV-2 spike, which led his group to design a vaccine that focuses antibody responses on this Achilles heel. This highly potent vaccine is currently in late-stage clinical trials and will help meet the global demand for doses due to its exceptional scalability and high shelf-life stability.

Workshops

Workshop 1: Mass is mass! Using the Refeyn mass photometry system for cryo-EM sample optimization

Workshop 2: We must have order! Micropatterning with the Alveole PRIMO system for advanced cryo-CLEM, cryo-FIB, and cryo-ET workflows

Workshop 3: Is that my complex? Advanced cryo-CLEM with the Leica cryo-confocal CLEM or cryo-CLEM systems for accurate correlation in cellular environments

Workshop 4: Can you make it thinner? Cryo-FIB milling cells with the Aquilos 2 cryo-FIB

Workshop 5: Taking my (multi-)shot! Cryo-electron tomography on the Krios G3 and Krios G4

Meeting Organizers:

Elizabeth Wright, PhD

Professor of Biochemistry and Director of the UW–Madison Cryo-Electron Microscopy Research Center and Midwest Center for Cryo-Electron Tomography

Keith Thompson, UW–Madison Cryo-Electron Microscopy Research Center Manager

Matt Larson, UW–Madison Cryo-Electron Microscopy Research Center Systems Administrator

Department of Biochemistry at the University of Wisconsin–Madison

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