

# Portland ACA Meeting, 29 July-3 August 2022

## TITLE AND VENUE

### CryoEM sample preparation training using center merit badges

Robertson Life Sciences Building\*  
2730 S. Moody Ave  
Portland, OR 97201-5042

\*Workshop held off-site at PNCC which is a 15 min walk or 10 min Tri-Met trip from the Portland Marriott Downtown Waterfront, 1401 SW Naito Pkwy, Portland, OR 97201



## SCHEDULE

This workshop will be part of the main program of the ACA meeting but held offsite at PNCC where the cryoEM instrumentation and laboratory space will be available.

### Friday, 29 July 2022

Time	Instructor / Topic
8:30am Marriott Lobby	<b>Meet in the ACA meeting venue lobby (Portland Marriott Downtown Waterfront.</b> 1401 SW Naito Parkway, Portland USA Oregon 97201 Look for people holding Workshop 5 signs.
8:35-8:50am RLSB 3A001	<b>Workshop attendees are escorted to PNCC location.</b> Robertson Life Sciences Building 2730 S. Moody Ave Portland, OR 97201-5042
9:00-9:05am RLSB 3A001	<b>Craig Yoshioka, PNCC/OHSU &amp; Ed Eng, NCCAT/NYSBC</b> – Welcome and introduction to NIH Transformative High-Resolution CryoEM Program
9:05-10:00am RLSB 3A001	CryoEM Curriculum Development Part I (Moderated by <b>Michael Schmid, S2C2/Stanford University</b> )
9:05-9:30am	<b>Peter Shen, University of Utah</b> – cryoEM101: How to use media and data visualization to aid the training efforts of newcomers to the field
9:35-10:00am	<b>Wen Jiang &amp; Yingjie Victor Chen, Purdue University</b> – cryoVR: How Virtual Reality can be used to familiarize users with cryoEM equipment
10:00-10:15	Coffee break
10:15-12:30pm	cryoEM Merit badges Part I
10:15-10:30am	<b>Ed Eng, NCCAT/NYSBC</b> – Introduction to cryoEM Merit Badges and practical stations

RLSB 3A001	
<b>10:30-12:00pm</b>  Station 1 10:30-11:15am  Station 2 11:15-12:00pm	<b>cryoEM Merit badges Block 1</b> Students at their 1 <sup>st</sup> and 2 <sup>nd</sup> practical stations. Each station is 40-45 minutes with up to 3 people at a time. <ol style="list-style-type: none"> <li>1) Station A: cryoVR: Virtual Reality augmented cryoEM training (RLSB 3A001)</li> <li>2) Station B: Plunge freezing with the Vitrobot Mark IV (RLSB P2N021)</li> <li>3) Station C: Plunge freezing with the Leica EM GP (RLSB P2N021)</li> <li>4) Station D: Autoloaders: Autogrid clipping and loading (RLSB P2N021)</li> <li>5) Station E: Shipping: cryoEM pucks and dry shipping (RLSB P2N021)</li> <li>6) Station F: Negative stain (RLSB P2N021)</li> <li>7) Station G: Support films and grid treatments (RLSB P2N021)</li> <li>8) Station H: Sample optimization with mass photometry (RLSB P2N021)</li> </ol>
<b>12:00-12:45pm</b>	<b>Lunch and Discussion</b>
<b>12:45-1:30pm</b> RLSB 3A001	<b>CryoEM Curriculum Development Part II</b>
<b>12:45-1:10pm</b>	<b>Michael Cianfrocco, University of Michigan</b> – cryoEDU: How to learn and practice cryoEM processing with limited computational resources
<b>1:10-1:30pm</b>	Roundtable and general Q&A (Moderated by <b>Michael Schmid, S2C2/Stanford University</b> and <b>Craig Yoshioka, PNCC/OHSU</b> )
<b>1:30-4:00pm</b>  Station 3 1:35-2:20pm  Station 4 2:25-3:10pm  Station 5 3:15-4:00pm	<b>cryoEM Merit badges Block 2</b> Students at their 1 <sup>st</sup> and 2 <sup>nd</sup> practical stations. Each station is 40-45 minutes with up to 3 people at a time. <ol style="list-style-type: none"> <li>1) Station A: cryoVR: Virtual Reality augmented cryoEM training (RLSB 3A001)</li> <li>2) Station B: Plunge freezing with the Vitrobot Mark IV (RLSB P2N021)</li> <li>3) Station C: Plunge freezing with the Leica EM GP (RLSB P2N021)</li> <li>4) Station D: Autoloaders: Autogrid clipping and loading (RLSB P2N021)</li> <li>5) Station E: Shipping: cryoEM pucks and dry shipping (RLSB P2N021)</li> <li>6) Station F: Negative stain (RLSB P2N021)</li> <li>7) Station G: Support films and grid treatments (RLSB P2N021)</li> <li>8) Station H: Sample optimization with mass photometry (RLSB P2N021)</li> </ol>
<b>4:10pm</b>	<b>Wrap up and merit badge certification awards</b>

<b>4:10-4:30pm</b>	<b>Return to ACA meeting venue at the Portland Marriott Downtown Waterfront</b> 1401 SW Naito Parkway, Portland USA Oregon 97201
<b>4:30-6:00pm</b>	<b>Joint happy hour with WK4, WK3 and cryoEM SIG at the Portland Marriott Downtown Waterfront, Portland, Oregon in Salons G-I</b>




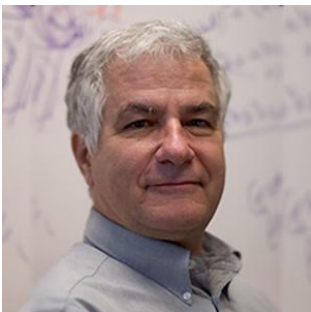




## DESCRIPTION

Cryo-electron microscopy (cryoEM) is a method used to determine high-resolution, three-dimensional structures of samples that could not be used with other techniques in the past, such as samples containing mixtures of different biological structures or intact cells. CryoEM instrumentation is being installed in many research institutions and there is a need to learn the best practices available in the field. This workshop, which will be held on Friday, July 29, 2022, will focus on cryoEM educational resources available to researchers and to provide hands-on training with cryoEM sample preparation instrumentation.

The objective is to learn how to interface with the NIH sponsored Transformative High-Resolution CryoEM Program, which offers a comprehensive online cryoEM curriculum that familiarizes new users with cryoEM equipment and workflow. Lectures and practicals will focus on everything from how to use the national cryoEM service centers, media-rich curriculum to augment users' own hands-on training, and earning cryoEM merit badges. CryoEM proficiency badges are awarded to users in three main skill areas (Sample preparation, Microscope operations and Data processing). This workshop, in particular, will focus on the "Sample preparation" merit badges. After trainees complete a necessary set of requirements, they may apply for a merit badge. Receipt of a merit badge will qualify the user for independence, and be cross-honored at other national service centers for instrumentation use. This workshop will benefit those who want to use cryoEM centers, or who may be new to cryoEM workflows.

This workshop will be held offsite at PNCC/OHSU where staff and students must provide proof of full COVID-19 immunization. Admission into this workshop is considered conditional until proof of full COVID-19 vaccination is provided or a medical or religious exception is approved in accordance to [OHSU's COVID-19 Immunizations and Education policy](#). For those with medical or religious exemption approvals, a letter from their home institutions will be required.

## NAME AND CONTACT INFO OF THE ORGANIZERS\* AND INSTRUCTORS

<p>Ed Eng*  Craig Yoshioka*  Claudia López*  Michael Schmid  Peter Shen  Wen Jiang  Michael Cianfrocco</p>	<p>NCCAT/ NYSBC  PNCC/OHSU  PNCC/OHSU  S2C2/Stanford University  University of Utah  Purdue University  University of Michigan</p>	<p>eeng@nysbc.org  yoshiokc@ohsu.edu  lopezcl@ohsu.edu  m-schmid@slac.stanford.edu  peter.shen@biochem.utah.edu  jiang12@purdue.edu  mcianfro@umich.edu</p>
 <p><i>Ed Eng</i>  NCCAT/NYSBC</p>	 <p><i>Craig Yoshioka</i>  PNCC/OHSU</p>	 <p><i>Claudia López</i>  PNCC/OHSU</p>
 <p><i>Michael Schmid</i>  S2C2/Stanford University</p>	 <p><i>Peter Shen</i>  University of Utah</p>	 <p><i>Michael Cianfrocco</i>  University of Michigan</p>
 <p><i>Wen Jiang</i>  Purdue University</p>	 <p><i>Yingjie Victor Chen</i>  Purdue University</p>	

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