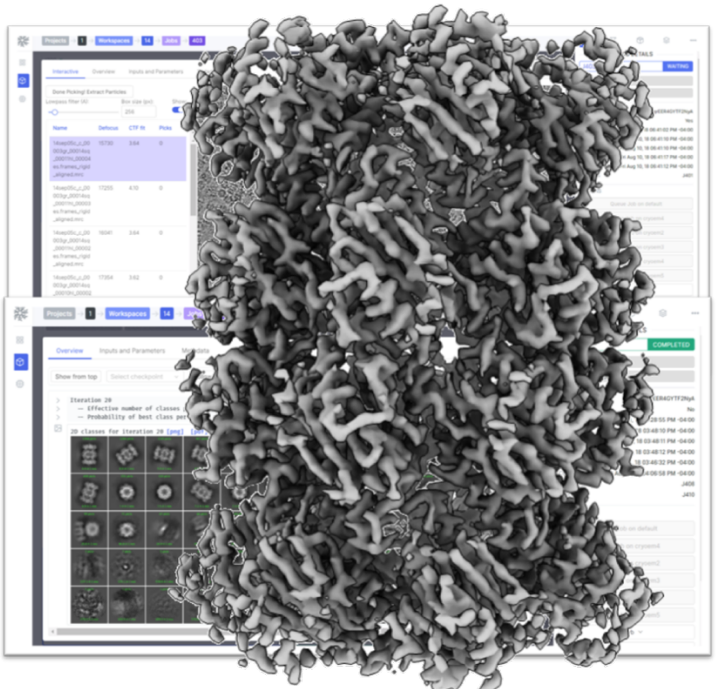
Cryo-EM Workshop

American Crystallographic Meeting
Covington KY/Cincinnati OH
22-23 July 2019 (2 afternoon sessions)

Purpose: introduce scientists with crystallography backgrounds to the procedures used cryo electron microscopy (cryo-EM). Lectures will focus on the steps involved in producing a cryo-EM map, from specimen preparation and data collection through to image processing and reconstruction. In hands-on demos/tutorials, students will use state-the-art programs to process an example dataset.

Co-Chairs: Cathy Lawson (Rutgers), Wen Jiang (Purdue), Michael Cianfrocco (U Michigan)

Lectures/Demos: Ed Eng (NYSBC), Wen Jiang and Leifu Chang (Purdue), Michael Cianfrocco (U Michigan)



Agenda

Part I: Specimen Preparation & Data Collection
Monday Afternoon, 22 July

Lectures:

What to expect from Cryo-EM

CryoEM Image Formation

Sample Grid Preparation & Data Collection

***Demos/Tutorials**:*

Virtual Reality Freeze Plunging

Single Particle Reconstruction: Getting Started

Part II: Image Processing and Reconstruction
Tuesday Afternoon, 23 July

Lectures:

CryoEM 3D Reconstruction Theory

Strategies for Difficult Specimens

***Demos/Tutorials**:*

Particle Picking

Reconstruction

Evaluation of Results and Wrap Up

Details

Preregistration is required to participate; register at www.aca2019mtg.com. For particle picking and reconstruction, each student will be given access to their own GPU computing node on the AWS cloud, as well as a temporary CryoSparc license (cryosparc.com). Personal computers will be required. Participants will need to have UCSF Chimera (www.cgl.ucsf.edu/chimera) installed in advance of the workshop.

Additional Cryo-EM related Workshops and Sessions at the July 2019 ACA Meeting:

WK3 Introduction to PHENIX for Electron Cryo-Microscopists

T1 & T2 Transactions—Data Best Practices: Current State and Future Needs

1.1.2 Cutting Edge Studies using Cryo Electron Microscopes

2.1.2 Micro-Electron Diffraction

3.1.3 Structural Biology Combining Solution SAS and High Resolution Methods (cryoEM, MX, NMR)

4.1.2 Radiation Damage in X-ray Crystallography and Cryo-EM

4.2.1 What is the Meaning of Resolution?