The National Center for CryoEm Access and Training - Establishing A Cross-Facility Accepted Training Curriculum

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Advances in cryo-electron microscopy (cryoEM) imaging technology and data processing have resulted in the recent growth of single particle structures, which extend to near-atomic resolution. To enable biomedical researchers access to cryoEM workflows, the NIH Common Fund's Transformative High-Resolution Cryo-Electron Microscopy program has created three national service centers to provide access to the technology, a tomography network to broaden the services to the community, and the development of training curricula to build a skilled workforce. The mission of the NCCAT (National Center for CryoEM Access and Training) service center is to provide nationwide access to advanced cryoEM technical capabilities and to assist users in the development of cryo-EM skills needed for independent research.

An important component of NCCAT's mission is to increase hands-on training and the availability of instructional material on cryoEM methodology. NCCAT has been working with partner service centers to develop open-access instructional material called "cryoEM merit badges" to expand standards and training efforts. CryoEM merit badges are proficiency badges awarded to users of any of the centers in three main skill areas: 1) sample preparation, 2) microscope operations, and 3) data processing. A merit badge certifies a researcher as independent on a particular instrument or in a skill area. Merit badges are cross-honored at other service centers, minimizing duplication of training efforts and ensuring a minimal level of core competency is attained by practitioners. Our objective is to enable biomedical researchers from all fields to make use of these cryoEM techniques and methodologies in their research programs.