

Tamir Gonen

MicroED: Conception, Practice and Future Opportunities

In 2013, we unveiled the method MicroED, electron diffraction of microscopic crystals, and demonstrated that it is feasible to determine high-resolution protein structures by electron crystallography of three-dimensional crystals in an electron cryo-microscope (CryoEM). The CryoEM is used in diffraction mode for structural analysis of proteins of interest using crystals that are a billion times smaller in volume than what is used for x-ray crystallography. In this seminar I will describe the basics of this method, from concept to data collection, analysis, and structure determination, and illustrate how samples that were previously unattainable can now be studied by MicroED. I will conclude by highlighting how this new method is helping us understand major brain diseases like Parkinson's disease; helping us discover and design new drugs; shedding new light on chemical synthesis; and showing us unprecedented level of details with sub-atomic resolutions.

Tamir Gonen is an expert in electron crystallography and cryoEM. Gonen is a professor of Biological Chemistry and Physiology at the David Geffen School of Medicine of the University of California, Los Angeles, an Investigator of the Howard Hughes Medical Institute, and a Member of the Royal Society of New Zealand. In 2011, while leading a lab at the HHMI Janelia Research Campus, he began developing MicroED as a new method for structural biology. With this method Dr. Gonen has pushed the boundaries of cryoEM and determined several previously unknown structures at resolutions better than 1 Å. Gonen has authored more than 100 publications and several of his past trainees are now faculty around the world at top universities.

Wednesday, November 14, 2018 | 11:00 a.m.

Bldg. 402 | APS Auditorium
Argonne National Laboratory

CAPS
COLLOQUIUM