

New Atomic Imaging Technology Development at the UCLA-DOE Institute

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Project Goals: Short statement of goals. (Limit to 1000 characters)

Research in the UCLA-DOE Institute for Genomics and Proteomics includes major efforts in the area of imaging technologies where we are advancing new methods that exploit electron microscopy. Our team is pioneering the new method of micro-electron diffraction (microED) using electron microscopes for diffraction. We are coupling this with scanning mode experiments that reveal microscale substructure within protein crystals at unprecedented levels of detail. The emerging microED technique presents challenges in phasing diffraction data that our team is tackling while pushing the boundaries of protein size and resolution. Our team has also made critical advances on one of the most outstanding problems in cryo-EM. Owing to low signal-to-noise, modern EM methods cannot resolve protein structures smaller than about 50 kDa in size. We have developed the first example of a working molecular scaffold that can image such small proteins.

References

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