

**Crystallography Boot Camp at Cold Spring Harbor Laboratory**  
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A theoretical and practical course teaching the fundamentals of macromolecular crystallography has been held at Cold Spring Harbor Laboratory for the last 16 years. This course exposes participants to basic diffraction theory, crystallization (proteins, nucleic acids and complexes), crystal characterization, X-ray sources and optics, synchrotrons, crystal freezing, data collection, data reduction, multiple isomorphous replacement, multiwavelength anomalous diffraction, molecular replacement, solvent flattening, non-crystallographic symmetry averaging, electron density interpretation, molecular graphics, structure refinement, structure validation, coordinate deposition and structure presentation. Participants learn through extensive hands-on experiments in which one or more proteins are crystallized and the structure(s) determined by several methods, in parallel with lectures on the theory and informal discussions behind the techniques.

Several core tenets have served to make this course well-regarded. First, extremely experienced instructors both lecture and run practicals. For example, the mathematical theory of crystallography and the practical side of growing crystals is anchored by the irreplaceable Alex McPherson. Another core feature of the course is a dedicated fully equipped laboratory with bench space, microscopes, and computer workstations which are always available during the long hours of the course. Finally, the extraordinary venue with nearby housing and dining facilities keeps the participants fully focused on the demanding, yet flexible, training schedule.

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