

Structural Genomics: Beyond the Human Genome Project

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Abstract No. burl9999

Beamline(s): **X9B**

With access to whole genome sequences for various organisms and imminent completion of the Human Genome Project, the entire process of discovery in molecular and cellular biology is poised to change. Massively parallel measurement strategies promise to revolutionize how we study and ultimately understand the complex biochemical circuitry responsible for controlling normal development, physiologic homeostasis and disease processes. This information explosion is also providing the foundation for an important new initiative in structural biology. We are about to embark on a program of high-throughput X-ray crystallography aimed at developing a comprehensive mechanistic understanding of normal and abnormal human and microbial physiology at the molecular level. We present the rationale for creation of a structural genomics initiative, recount the efforts of ongoing structural genomics pilot studies, and detail the lofty goals, technical challenges and pitfalls facing structural biologists.