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Beamline and Infrastructure for High-Throughput Protein Crystallography at the Canadian Light Source.

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The Canadian Light Source (CLS) in collaboration with the Canadian community of macromolecular crystallographers is designing, building and commissioning a beamline dedicated to high-throughput structure determination of biological macromolecules by X-ray crystallography. This facility will combine a third-generation synchrotron beamline with advanced robotics, automation and IT infrastructure. The beamline will be developed to automate every aspect of crystal screening and data collection. It will be capable of screening a large number of crystals without user intervention. The software will be developed to accept input parameters for data collection via user interface, scripted commands or an intelligent database of parameters. The infrastructure will be connected with a 1Gbs fibre optic link via CA4net, Canada's high speed research network, to all major research centres in Canada. This will allow remote observation and control of the experiment. The beamline will be integrated with the currently commissioned first macromolecular crystallography beamline at the CLS. Our goal is an infrastructure that will allow screening and analysis of all protein crystals from Canadian researchers within at most a few weeks.

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