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Rapid Optimization of Cryoprotectant Concentration Using a Robotic Sample Mounting System. D. Lee, J. P. Rose, Z.-J. Liu, M. G. Newton, B.C. Wang, Southeast Collaboratory for Structural Genomics, Dept. of Biochemistry and Molecular Biology, Univ. of Georgia, Athens, GA, USA.

Flash cooling techniques are widely used by crystallographers to reduce radiation damage to proteins during X-ray data collection. The flash cooling technique usually involves the use of cryoprotectants, such as glycerol to suppress ice formation during the flash cooling process. Studies [Garman and Doublet, *Methods Enzymol.* 368, 188-216 and others] have shown that the optimization of cryoprotectant concentration and solution osmolarity matching can lead to better data quality in terms of mosaicity and resolution.

The Southeast Collaboratory for Structural Genomics, an NIH PSI-1 Pilot Center, has developed a semi-automated screening procedure for optimizing cryoprotectant concentration using a Rigaku Actor robotic sample mounter, a fast CCD detector and a high-intensity rotating anode X-ray source. A cryoprotectant database has also been developed against the eight commercial crystallization screens currently in use at SECSG. Details of the automated screening procedure and related database will be presented.

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