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Expression, Purification and Crystallization Methods Developed at the MCSG Adoptable to a Structural Biology Laboratory. M. Zhou, Y. Kim, P. Quartey, H. Li, C. Hatzos, Ry. Wu, L. Volkart, G. Joachimiak, M. Donnelly, A. Joachimiak, Midwest Center for Structural Genomics, Argonne National Laboratory, 9700 S. Cass Ave., Bldg 202, Argonne IL 60439, USA.

The MCSG has developed an effective, low cost protein structure determination pipeline. New vectors and media allow protein expression using inexpensive laboratory incubators and vessels. Proteins are purified using semi-automated procedure and robot-assisted crystallization trials are inspected with the imager. One person can readily complete purification and crystallization of 16 different proteins over two week period. Typically 3-5 proteins will crystallize resulting in 1-2 new crystal structures. To increase the success rate we implemented savage pathways: 1) improve the protein expression by adding MBP fusion that can be removed *in vivo*, 2) increase crystallization success rate using semi-automated chemical modification, 3) screen for additives during crystallization. The pipeline is capable producing ~150 new structures/year. All the instruments are commercially available and procedures can be easily adapted to the medium-size crystallography laboratory.

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