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Generation of Expression Clones Using High-Throughput Technologies for Protein Structure Determination and Drug Discovery. S. Moy, Yc. Kim, Cs. Chang, J. Osipiuk, Rg. Zhang, H. Li, Ry. Wu, F. Collart, A. Joachimiak, Midwest Center for Structural Genomics and Structural Biology Center, Biosciences, Argonne National Laboratory, 9700 South Cass Ave., Bldg 202, Argonne, IL 60439, USA.

With the development of high-throughput (HTP) technologies, elucidation of protein structures is at fast-pace and lower cost. At MCSG, adaptation of HTP cloning in 96-well plate format utilizing the Beckman-Coulter system accelerated the generation of expression clones for protein purification and determination of new structures. This technology can also aid in drug discovery. The structure of a penicillin-binding protein from *B. steraothermophilus* may offer opportunities in the optimization of the penicillin-like antibiotics. Structures of transcriptional regulators might aid discovery of new drugs – TetR from *B. cereus*, TetR and MarR from *E. faecalis*, MarR from *P. gingivalis*, and ROK from *V. cholerae*. These transcriptional factors are up- or down-regulated by small co-regulators. Identification of these ligands combined with structure determination of complexes can aid drug design.

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