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An Ultra-High-Capacity Storage and Inspection System for Protein Crystallization. J Silberman, C Marsh, M Cummer, B Laubert, Structural GenomiX, USA.

Automated storage, retrieval, schedule-based inspection, and remote “scoring” of crystallization plates are becoming basic requirements for true high-throughput crystallization. A high-throughput crystallization facility may have more than a dozen staff in the lab working with the system at the same time. Plates may be kept in the system for months and number in the thousands. While manually managing small numbers of plates is feasible, human-based management of thousands of plates is logistically impractical and prone to error. In this talk, we will describe a hardware, software, and information management system capable of handling and tracking thousands of crystallization plates simultaneously. We will share our experience in co-developing a system capable of storing up to twenty thousand crystallization plates at two temperatures. We believe that this is the only system in use today that can manage this number of plates. This system is being used 24 x 7 in a real production environment. We will show how supplier management techniques and reliability engineering methods successfully used in the semiconductor industry were transferred to the development of biotech equipment. Moreover, we will share how we interfaced between our internal customers (the crystallizers) and the vendor to make the project a success.