

Pushing the Boundaries in Crystallization Screening: Making Automated, User-accessible Crystallization Work

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The Crystallization Center at Hauptman-Woodward Medical Research Institute has been in operation as a high-throughput crystallization screening facility for over 20 years. We operate in a fee-for-service capacity and have a user base that includes academic institutions, non-profit research institutes, government agencies, and industry. For non-commercial services, we are subsidized by federal funding from the National Institutes of Health and the National Science Foundation, to enable broad access to our facility. The facility offers an efficient and economical means for initial crystallization screening that has proven successful in many cases. The centralized approach with standardized methodology and controls provides a robust, rigorous, and reproducible means to target crystallization with resources not typically available to individual laboratories. Multiple imaging modes coupled with rapid automated image analysis empower identification of crystallization lead conditions for single crystal and serial crystallography experiments. We will discuss current operations and describe developments that are planned within the next five years, aiming to extend the Center's capabilities from screening to optimization. We will discuss challenges and successes of providing crystallization resources to the user community and will detail optimal strategies for success.