

## S30-1 **Technology advancements of X-ray crystallography in the Targeted Proteins Research Program**

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The Targeted Proteins Research Program (TPRP) focuses on structure-function relationships of target proteins and their complexes of critical importance chosen from fundamental biology, medical and pharmaceutical importance, and food and environmental applications. Synchrotron radiation X-rays have become an indispensable tool for structural analyses of small to extremely large macromolecular complexes owing to their beam intensity, highly parallel beam, and wavelength tunability. It has also been widely used for structure- and fragment-based drug discovery. I will describe the overall scope of the TPRP, several target examples and interdisciplinary collaborations of the protein production, structural analysis and control cores, as well as the information platform. The analysis core focuses on developments of two beam lines, a high brilliance micro-beam beamline at the SPring-8 and low energy SAD microfocus beam line at the Photon Factory (PF) which will become operational in April 2010. In addition, a range of technology development projects are being pursued for high throughput data collection/analysis. These projects will be reviewed in comparison with the relevant development projects elsewhere in the world. As an example, concerted efforts at the PF to develop beamline technologies and to pursue research on vesicle transport and post-translational modifications of proteins (oligosaccharides and ubiquitin) will be described.