Structural Biology Research Center of Institute of Materials Structure Science operates five macromolecular crystallography beamlines at Photon Factory. We have developed sample exchange robots to achieve high-throughput, remote-controlled and/or fully-automated experiments. We developed and installed double tongs system that can grasp two cryo-pins simultaneously for rapid sample exchange on the robot PAM at beamlines BL-5A, BL-17A, AR-NW12A and AR-NE3A. A beamline BL-1A was built for low energy SAD experiments and PAM was also installed. Because we covered a diffractometer with a helium chamber for effective low energy experiments, we developed another sample exchange robot PAM-HC. Only the Uni-Puck can be used for PAM-HC. We are developing a lid of PAM and PAM-HC. The lid consists of several doughnut shape plates and moves according to the movement of the robot arm. PAM can exchange cryo-pins for 10 seconds, but it takes 80 seconds for taking cryo-pin in and out a cassette under liquid nitrogen. This behavior is carried out in parallel with sample centering and diffraction experiment. Because fast detectors were installed in our all beamlines, a faster sample exchange robot is desired. Then with a cooperation of RIKEN and JASRI, we are developing a new sample exchange robot PAM3 having both features of double tongs of PAM and simple movement of PAM-HC.