1P290  流型乳酸バイオセンサを用いたマウスの脳内乳酸測定
Measurement of lactate level in the mouse brain using a flow-type lactate biosensor

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Lactate biosensors which enable to measure lactate concentration in blood and other body fluids are applicable to some medical fields such as sports medicine. We fabricated a lactate biosensor by a flow-type sensing system, in which the injected sample flows into an immobilized enzyme (lactate oxidase) column. The generated H2O2 or consumed O2 in the column was detected by the H2O2 electrode or O2 electrode. The fabricated biosensor could measure lactate concentration up to 10 mM. By using it, we measured lactate levels of the mouse brain. The samples were prepared by homogenizing the brain slices in ACSF. The results showed the differences of lactate levels among each part of the brain and among each age of the mouse.

1P291  Humidity-controlled preparation of frozen-hydrated biological samples for cryogenic coherent X-ray diffraction imaging using XFEL

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Coherent X-ray diffraction imaging (CXDI) has potential to reveal internal structures of whole cells and organelles with sizes of μm to sub-μm at high spatial resolutions without sectioning of the samples. With X-ray free electron laser (XFEL), we can obtain diffraction patterns from such non-crystalline samples before they are destroyed by single exposure. To make the best use of XFEL pulses coming at a high repetition rate, we have developed a humidity-controlled sample preparation system [1] to produce sample particles at a high number density in thin vitreous ice. Here we report details of the cryogenic CXDI and first results obtained by the Japanese XFEL facility, SACLAC.


1P292  ティップスキャン型高速原子間力顕微鏡による生細胞イメージング
Live cell imaging using a tip-scan type of high-speed atomic force microscopy

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High-speed AFM is a means which can observe the molecular activity on living cell surface. However there is one drawback. It can not identify what is observed, because the acquired images indicate only the shape. We developed a tip-scanning type of high-speed AFM which make it possible to simultaneously observe the shape and fluorescence of living cells surface. Using this device, it can be expected to obtain useful information on the life sciences by direct observation of cell surface molecules with fluorescent Information. We introduce the example observation of living cell surface and the device.