1P-139 張力のかかったアクチンフィラメント上でのミオシンV分子運動
Single-molecule myosin V movement on a tense actin filament

Hiroaki Kubota (1), Yusuke Oguchi (2), Takashi Ohki (2), Shin'ichi Ishiwata (2) ((1) *Major in Pure and Applied Physics, Graduate School of Science and Engineering, Waseda Univ.*; (2) *Dept. of Physics, Faculty of Advanced Science and Engineering, Waseda Univ.*)

see 1TA4-07

1P-140 リバースジャイレースの反応速度の温度依存性
Temperature Dependence of Positive Supercoiling by Reverse Gyrase

Taisaku Ogawa (1), Katsunori Yogo (2), Shou Furuike (3), Akihiko Kikuchi (4), Kazuhiko Kinoshita (1) ((1) *Dept. of Phys., Grad. School of Science and Engineering, Waseda Univ.*; (2) *Dept. of Phys., Gakushuin Univ.*; (3) *Dept. of Phys., Osaka Med. Coll.*; (4) *Nagoya Univ.*)

see 1TA4-08

1P-141 *Mycoplasma mobile* の滑走運動を阻害するモノクローナル抗体の標的部位
Target sites of monoclonal antibody inhibiting *Mycoplasma mobile* gliding

Chie Kawaguchi (1), Shuhei Yoshii (1), Makoto Miyata (1) ((1) *Osaka City University*)

see 1TA4-04

1P-142 滑走するバクテリア、*Mycoplasma mobile* のステップ検出
Step detection of gliding bacterium, *Mycoplasma mobile*

Daisuke Nakane (1), Takayuki Nishizaka (2), Makoto Miyata (1) ((1) *Graduate School of Science, Osaka City University*; (2) *Faculty of Science, Gakushuin University*)

see 1TA4-03

1P-143 F1-ATPase の温度高感受性待ち時間の分子速度論解析
Single molecule kinetic analysis of the temperature sensitive dwell of F1-ATPase

Tetsuaki Okamoto (1), Shouich Toyabe (1), Eiro Muneyuki (1) ((1) *Department of Physics, Faculty of Science and Engineering, Chuo University*)

see 1TA4-10

1P-144 クラミドモナスを動力源としたマイクロ構造体の駆動
Micro-objects driven by *Chlamydomonas*

Taishi Tonooka (1), Kaori Kuribayashi (1), Hiroaki Onoe (1), Masahiro Takinoue (1), Shoji Takeuchi (1) ((1) *Institute of Industrial Science, The University of Tokyo*)

see 1TP4-01

1P-145 ネックリンカーによるキネシンのATP加水分解反応制御
Role of the neck linker in controlling the ATP hydrolysis reaction of kinesin

Xiao Ling (1), Teppei Mori (1), Michiko Nakajima (1), Michio Tomishige (1) ((1) *Department of Applied Physics, school of engineering, the University of Tokyo*)

see 1TP4-05

1P-146 キネシン1モータードメインのヌクレオチドフリー状態での結晶構造解析
Crystal Structure of Nucleotide-free Kinesin-1 Motor Domain Explains Coordinated Walking Mechanism

Tsukasa Makino (1), Teppei Mori (1), Ken-ichi Miyazono (2), Masaru Tanokura (2), Michio Tomishige (1) ((1) *Department of Applied Physics, University of Tokyo*; (2) *Department of Applied Biological Chemistry, University of Tokyo*)

see 1TP4-06

1P-147 キネシンと細胞質ダイニンが混在する微小管上における各分子モーターの分子運動解析
Motility of single molecules of kinesin and cytoplasmic dynein in the presence of many molecules of motor proteins on microtubules

Keitaro Shibata (1), Ken'ya Furuta (1), Masaki Edamatsu (1), Yoko Toyoshima (1) ((1) *Dept Life Sciences, Graduate School of Arts and Sciences, Univ. of Tokyo*)

see 1TP4-03

1P-148 多分子ミオシンの協調的運動の解析
Model analysis of cooperative behavior in multiple myosin system

Takeshi Nakagawa (1), Hiroto Tanaka (2), Kazuo Sasaki (1) ((1) *Dept. of Applied Physics, Tohoku Univ.*; (2) *KARC, NICT; PRESTO, JST*)

see 1TP4-04

1P-149 シナプスのNMDA受容体のリサイクル：エンドサイトシス／エクソサイトシスと膜内並進拡散との協調機構
Synaptic NMDA receptor recycling by the concerted actions of endocytosis/exocytosis and lateral diffusion in the plasma membrane

Chieko Nakada (1), Yuri Nemoto (2), Hiroko Hijikata (1), Hiroto Yoshida (2), Shigeo Okabe (3), Takahiro Fujiwara (1), Akihiro Kusumi (1) ((1) *ICORP-JST; Institute for Frontier Medical Sciences, Kyoto University-iCeMS*; (2) *Institute for Frontier Medical Sciences, Kyoto University-Institute for Integrated Cell-Material Sciences (iCeMS)*; (3) *Graduate School of Medicine, University of Tokyo*)

N-methyl-D-aspartate receptors (NMDARs) located in the postsynaptic membrane in the synapse exchange with those located outside the synapse, providing important means for regulating the efficacy of synaptic transmission. However, the mechanisms for the exchange and the outside pool of NMDARs have not been understood. NMDARs in the synapse might exchange with those in the plasma membrane within a second by lateral diffusion (Groc et al., 2006), or with the unknown cytoplasmic pool in minutes (Sharma et al., 2006). Here, we examined the dynamics of YFP-NMDAR expressed in hippocampal neurons. (1) Single-molecule tracking of NMDAR showed its diffusion outside the synapse, with intermittent temporary trapping at the receptor clusters. (2) In point-TIRF-FRAP experiments using a diffraction limited spot of ~1 microns in diameter, bleaching a single individual NMDAR cluster at a time, the mobile fraction represented ~40% and ~20% with a half-recovery time of ~2 min and ~3min in younger (7-day old) and older (21-day old) neurons, showing that exchanges occur more slowly as neurons mature. (3) Areal TIRF-FRAP experiments, where an area of ~20 microns in diameter was bleached, practically gave the same result as the point-Epi-FRAP examinations. These results indicate that extensive exchanges occur with the cytoplasmic pool via endocytosis-exocytosis that occurs near or at the synapse, and suggest that lateral diffusion of NMDAR facilitates the traffic between the synapse and the membrane insertion/internalization sites.

1P-150 細胞の化学固定後も残存するラフト分子の拡散運動：細胞膜上での拡散運動の分子追跡による研究
Persisting diffusion of raft-associated molecules even after chemical fixation of the cell: a single-molecule tracking study

Kenji Tanaka (1), Manami Miyahara (2), Kenichi Suzuki (3), Miyako Yahara (1), Hisae Tsuboi (1), Koichiro Hirose (1), Takahiro Fujiwara (1), Akihiro Kusumi (1) ((1) *Membrane Mechanisms Project, ICORP-JST, Institute for Integrated Cell-Material Science (iCeMS), Institute for Frontier Medical Sciences, Kyoto University*; (2) *Tottori University Medical School*; (3) *PRESTO-JST, Institute for Integrated Cell-Material Science (iCeMS), Kyoto University*)

Immuno-fluorescence and electron microscopic observations are widely used in biological research, including the studies of distributions of raft-associated molecules in the plasma membrane. The first step for these observations is the