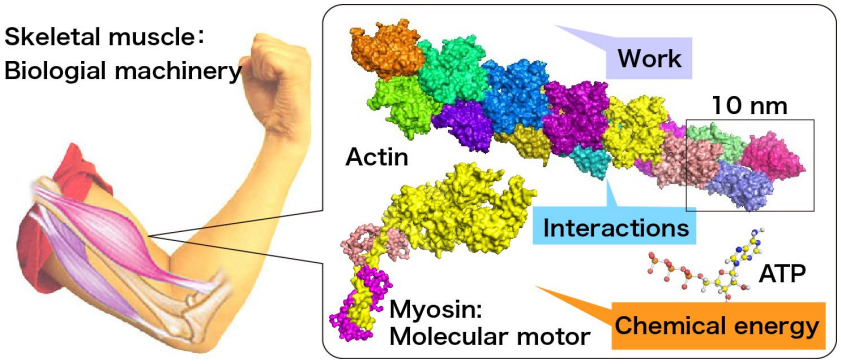
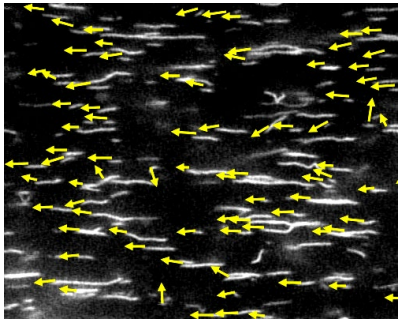
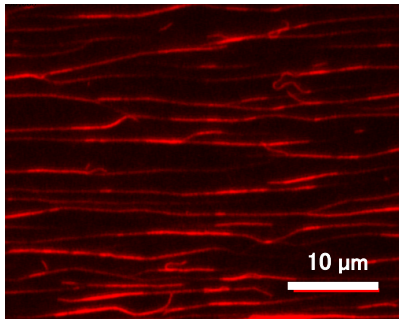
# Functional Analysis of Biological Molecular Motors

Associate Professor　Kuniyuki Hatori

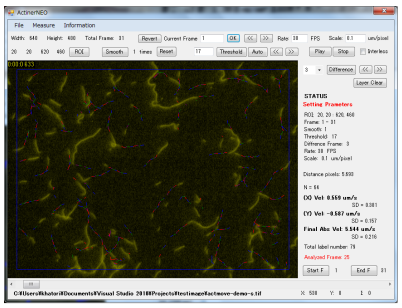


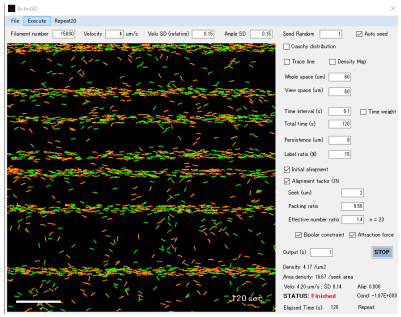
Visualization of corrective motion




Ordered structure via self-organization



Software analysis of molecular motors



Simulation of self-organization behavior

Content:

Actin and myosin proteins, which are fundamental components for muscle contractions, carry out efficient movement with a mechano-chemical energy transduction. These motor proteins can flexibly work on the nanometer scale depending on circumstance. We examine the motile function and mechano-chemical coupling of the motor proteins by the method of reconstituted motility system in vitro. Singe protein filaments conjugated with dyes can be visualized by fluorescence microscopy. For that analysis, the detection accuracy of position of proteins based on fluorescence images was improved up to the nanometer scale. Furthermore, using the functions of motor proteins, we attempt to construct artificial ordered architectures via self-organization and to control a nano-scale transport system.

Appealing point:

Proteins are referred to as “molecular machinery.” I believe that elucidation of mechanism of their structure and function leads to novel nano-technology.

Yamagata University Graduate School of Science and Engineering
Research Interest : Biophysics, Protein Science

E-mail: khatori@yz.yamagata-u.ac.jp
Tel: +81-238-26-3727

HP: http://khatori.yz.yamagata-u.ac.jp/publication