

To the audience of NanoNet09:

(by Jian-Qin Liu 2009/08/24)

The most important goal of this tutorial is to provide a textbook-like content that is expected to be helpful to understanding the field of *Nano-Net* (Cf. Figure 1). The tutorial is designed to present the basis knowledge, method and tools of *Nano-Net* and its potential applications *on the following major points*:

How nano-circuits, devices and systems are formulated/ modeled by computer science towards efficient designs based on nanotechnology?

How network is constructed and what is the reconfiguration operation in networking (how to adaptively modify the structure of a network) by discussing an instance of self-assembled porphyrin complexes – a kind of molecular network in nano-world?

How about the information representation and coding in nano-nets and the corresponding communication processes that could be carried out?

How to integrate the nanotechnology with ICT (Information and Communication Technology) together into nanoICT towards the innovation of future networks?

To analyze a molecular motor – a kind of biological nano-machines in nature and to discuss the related signaling processes and dynamics mechanism behind them (Cf. Figure 2).

How the bio-molecular networks in the cell – signaling pathway networks – act to sustain the life in the eyes of network informatics, where the examples from fission yeast *S. pombe* and *E. coli* are discussed?

How to use the methods of information theory to study the cellular communication processes in the cell from the aspects of encoding/decoding, channel capacity and network dynamics?

By integrating Nano, Bio and ICT, the picture of *Nano-Net* will be sketched vividly in terms of nanobioscience.

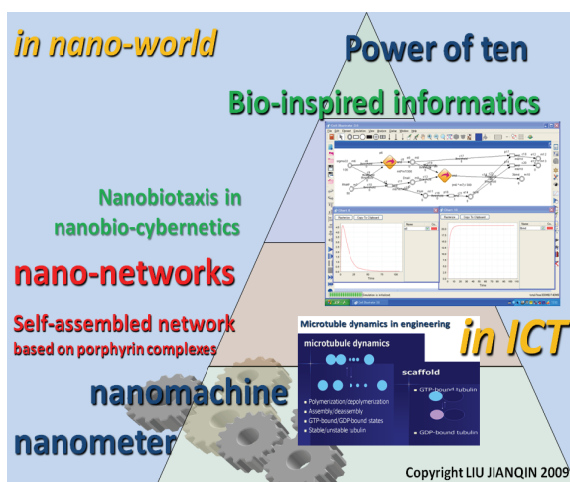


Fig. 1 Several major points in *Nano-net*

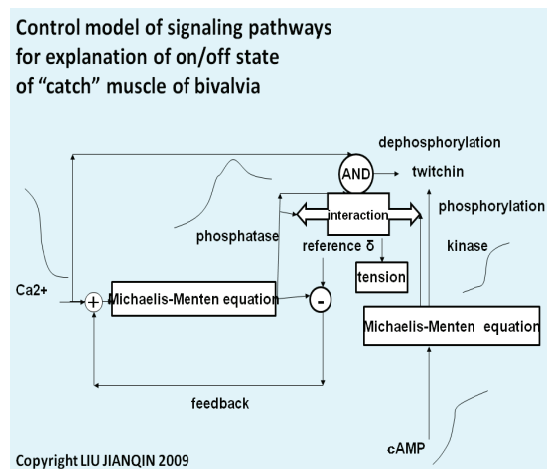


Fig. 2 Outline of an example of the signaling pathway network