

Report of the IUTAM Summer School held in 2004

Report on the third IUTAM Summer School on Biomechanics of Cells and Molecules

Beijing, China, July 12-17, 2004

a) Organization

The IUTAM summer school on “Biomechanics of Cells and Molecules” was held at Peking University in Beijing, from July 12 to July 17, 2004. The summer school was hosted by Department of Mechanics and Engineering Science of Peking University.

b) Lecturers

The summer school was taught by the following principal lectures:
Professor Deborah E. Leckband, University of Illinois at Urbana-Champaign, USA
Professor Zhong-Can Ouyang, Chinese Academy of Science, China
Professor Michael P. Sheetz, Columbia University, USA
Professor Cheng Zhu, Georgia Institute of Technology, USA
Professor Van C. Mow, Columbia University, USA
Professor Mian Long Chinese Academy of Science, China
Professor Cheng Dong, Pennsylvania State University, USA

c) Summer School topics

The topics covered by the main lectures included:
Intermolecular and Inter-surface Forces in Biology (D.E. Leckband)
Molecular Mechanics of Membranes and the Cytoskeleton, Engineering of Cell Motility (M.P. Sheetz)
Kinetics and Mechanics of Single Molecules and Single Molecular Interactions (C. Zhu)
Elastic Theory of Fluid Biomembranes and Single-Molecule DNA/RNA (Z.C. Ouyang)
Influence of Tension-Compression Nonlinearity on the Mechano- Electrochemical Environment of Chondrocytes in Cartilage Explants (V C. Mow)
Molecular Biomechanics of Receptor-Ligand Bonds (M Long)
Hemodynamic Modulation of Tumor Cell Extravasation: Intercellular and Intracellular Interactions (C. Dong)

d) Participants

Over 90 participants from 11 Chinese research institutes and universities attended the summer school.

e) Scientific output

The summer school introduced the attendees to the research fields and current trends of biomechanics of cells and molecules, not only to help researchers to understand quantitatively the structure-function relationship of cells and biologically active molecules, but also to provide methodological and technical supports to the researches of biomechanics and biomedical engineering. The excellent lectures and discussions promoted the academic exchanges among the scholars and students, and were helpful for the fundamental researches and applications in this field.

f) Publication of Proceedings of the Summer School

Abstracts of the lectures were collected and distributed to the attendees during the summer school. Some related references and discussions were presented in a related website for the students.

g) Financial support

The summer school was co-sponsored and supported by IUTAM, The National Natural Science Foundation of China, the Chinese Society of Theoretical and Applied Mechanics and Peking University.

Report composed by Jing Fang