BioMed Research International

Special Issue on
Cell and Molecular Mechanics in Health and Disease

CALL FOR PAPERS

A growing body of research has revealed that not only chemical stimuli, but also the mechanical microenvironment surrounding cells have a significant impact on cell behavior. Mechanical stimuli from the environment are detected by various mechanosensing biomolecules including mechanosensitive ion channels and non-channel type mechanosensors, which lead to modulation of intracellular signaling. Notably, while subcellular structures—including the cytoskeleton, membranous organelles, and the nucleus—influence cell mechanics, the mechanical properties of both cells and their microenvironment are altered in cancer or other diseases such as chronic inflammation and muscle dystrophies. The abnormal expression and activation of mechanosensing biomolecules or components of these subcellular structures, which are sometimes accompanied by gene mutations, have been observed in many disease states. Such alterations potentially tune the chemical and physical interactions between cells and their environment and thereby contribute to disease progression. Therefore, the mechanical properties of individual subcellular structures (e.g., the actin cytoskeleton, cell adhesion complexes, and chromosomes) and signaling molecules regulating these structures are emerging as targets in the research.

The purpose of this special issue is to publish original research papers as well as review articles addressing how the mechanical properties of subcellular structures are altered in the diseases and how these alterations relate to the cell behaviors. A particular interest will be given to papers discussing the molecular mechanisms that regulate subcellular structures at the onset of and/or in the progression phases of diseases. Furthermore, papers reporting significant responses of cells against various mechanical environments are also appropriate.

Potential topics include, but are not limited to:

- Mechanosensing and mechanotransduction in healthy and diseased cells
- Functions and mechanisms of mechanosensitive ion channels and nonchannel type mechanosensors
- Mechanical properties of extracellular microenvironment
- Signal transduction regulating cellular/subcellular structures and mechanics
- Cytoskeleton and cell adhesion in healthy and diseased cells
- Dynamics and mechanics of nucleus and chromosome
- Gene mutation affecting mechanics and behaviors of cells
- Mechanobiology in gene and drug delivery
- Tumorigenesis and tumor progression
- Invasion and metastasis of cancer cells
- Mechanotherapy of diseases

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/bmri/biophysics/cmmc/.

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