

## **Abstract of Presentation**

**Presentation Title:**

Mechanobiology and its Clinical Applications

**Abstract:**

Mechanobiology is indispensable to all living creatures ranging from bacteria to human beings because every living thing continually experiences mechanical stimuli, not only exogenous but also endogenous, and responds appropriately to these stimuli. At the cellular level, there are three major mechanical stresses, such as, stretch, shear stress and pressure. We have been intensively investigating systems to apply these mechanical environments to cells, such as a cell stretching system and a microfluidic channel system. Analysis of responses to mechanical stimuli is critical to understand the mechanisms and regulation of diverse physiological processes such as arterial regulation, sensory perception, muscle development, and so on. In this symposium, the activation mechanisms of mechanosensors and following intracellular signaling that leads to proper cell responses using the cell stretching system will be presented. Then we will introduce a microfluidic sperm sorter and a tilting embryo culture system that mimic the mechanical properties of fallopian tube for infertility treatment.