

## List of Supervisors and Research Fields

Doctoral Course

### Division of Soft Matter, Graduate School of Life Science

Supervisors		Research Topics
Professor	Jian Ping Gong	Our laboratory deals with soft matter "gel". In addition to soft and large deformation, we aim to create polymer gels with superior functions as like living body, especially mechanical function, elucidate the principle of its function expression, and apply gel to biological substitute soft tissues such as cartilage. We also aim to extend the results of these gel studies to other soft matter materials and apply them to industrial materials. Typical research topics are 1) design and creation of high strength · high toughness gels and elastomers, 2) elucidation of dynamics and fracture mechanism of soft matter, 3) creation of low friction gels, clarification of friction and lubrication mechanism of gels, 4) creation of high-toughness soft composite materials and clarification of fracture mechanism, 4) gel mechanochemistry, 5) biomineralization and soft ceramics, 6) biomaterials and artificial cartilages. URL: <a href="http://altair.sci.hokudai.ac.jp/g2/index_e.html">http://altair.sci.hokudai.ac.jp/g2/index_e.html</a>
Professor	Takayuki Kurokawa	
Professor	Makoto Demura	Biodesign of protein function and its structural basis to soft materials. - Innovative approach to biomimicry, biodesign and bio-inspired materials based on fundamental sciences. - Molecular mechanism of light-harvesting proteins and its application to active soft matter. URL: <a href="http://altair.sci.hokudai.ac.jp/infana/">http://altair.sci.hokudai.ac.jp/infana/</a>
Lecturer	Takashi Kikukawa	
Associate Professor	Tomoyasu Aizawa	protein engineering, structural biology, protein, peptide, NMR metabolomics URL: <a href="http://altair.sci.hokudai.ac.jp/g5/">http://altair.sci.hokudai.ac.jp/g5/</a>
Professor	Hisashi Haga	collective cell migration, 3D morphogenesis, cancer invasion, collagen gel, matrigel, anisotropic gel, molecular cell biology, mechanobiology, biomechanics, polymer physics URL: <a href="http://altair.sci.hokudai.ac.jp/g3/">http://altair.sci.hokudai.ac.jp/g3/</a>
Professor	Toshiyuki Nakagaki	soft matter physics, active soft mater, cell movement, biomechanics, ethology, behavioral intelligence, contractile protein, rheology, amoeboid movement, ciliary motion, nematoda, peristaltic locomotion, development, morphogenesis, transport network, model simulation, mathematical modeling, slime mold, ciliate, flagellate
Associate Professor	Katsuhiko Sato	
Professor	Kuniharu Ijiri	development of DNA-based nanodevices, creation of biotemplated nanoarchitecture for bioapplications, controlled self-assembly of metal nanoparticles for photonics applications, dynamic structure control using soft matters such as hydrogel URL: <a href="http://chem.es.hokudai.ac.jp/en/">http://chem.es.hokudai.ac.jp/en/</a>
Associate Professor	Hideyuki Mitomo	
Associate Professor	Masumi Tsuda	biomaterial, artificial cartilage, cancer stem cell, molecular targeted therapy, regenerative medicine, neuroregeneration URL: <a href="http://patho2.med.hokudai.ac.jp">http://patho2.med.hokudai.ac.jp</a>
Lecturer	Tomohiro Onodera	Orthopaedic Surgery, Tissue Engineering, Cartilage Biology, Glycobiology, Clinical application, Arginate Gel, Human Clinical Trial. URL: <a href="http://www.hokudaiseikei.jp/">http://www.hokudaiseikei.jp/</a>