

Colloquium Announcement

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Biomimetic Self-assembled Nanofibers for Nanostructured Tissue Engineering

Natural tissues are constructed by self-assembled hierarchical order. An ideal strategy to regenerate tissues is to mimic biological, chemical, and physical characteristics of tissues at the nanoscale and to build up to higher levels of organization. We have demonstrated a novel strategy for nanostructured tissue engineering using a cell responsive self-assembled nanofiber which mimics several key properties of natural extracellular matrix (ECM): self-assembly of nanofiber, presentation of cell adhesive ligands, and cell mediated degradation. This elastic nanofiber network is able to encapsulate dental and neuron cells by self-assembly at physiological conditions and interacts with these cells via biological moieties. The self-assembly and growth of nanofibers, and viscoelastic properties of the nanofiber networks can be tailored by modification of the chemical structure and addition of divalent ions. Altering the sequences and length of the nanofiber was found to dramatically affect the properties of the nanofiber networks so that the bioactivity, cell-mediated degradation, and mechanical properties could be controlled. The combination of functional peptide sequences with bottom-up self-assembly brings them one step closer to a true ECM mimic.

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12:30 p.m. – 1:45 p.m.

Campbell Hall 274

Refreshments served at 12:00 p.m. in CH 361

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