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FLORIDA INTERNATIONAL UNIVERSITY



BIOMEDICAL ENGINEERING LECTURE SERIES

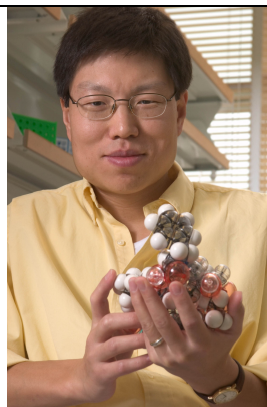
FRIDAY, DECEMBER 1, 2006, 10:30AM

**FIU Engineering Center
10555 West Flagler Street
Room 2300**

GLYCEROL-BASED BIODEGRADABLE POLYMERS FOR REGENERATIVE MEDICINE

Glycerol is a very simple and important biomolecule. Its three hydroxyl groups render glycerol a highly versatile building block for polymeric biomaterials. I will attempt to highlight the promise of this small molecule in biomaterials science and regenerative medicine through the design philosophy and unique properties of two series of biodegradable polymers. The first uses the secondary –OH group of glycerol to crosslink a polymer into three-dimensional network of random coils. The resultant elastomer is very useful in soft tissue engineering, especially bioartificial blood vessels. The second uses glycerol derivatives with epoxy rings to polymerize primary amines into biodegradable polyesters. Many different primary amines can be polymerized in such a fashion including amino acids, peptides, and their derivatives. One example of this series of polymers utilizes dopamine to impart biological activities. This polymer can induce extensive neurite outgrowth in differentiate PC12 cells and rat dorsal root ganglia and is at least as effective as standard nerve culture substrate such as laminin and polylysine. These polymers may offer a fresh approach to nerve regeneration.

**YADONG WANG, PHD
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Yadong Wang has been an assistant professor at the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University since 2003. He obtained a Ph.D. degree in bioinorganic chemistry under the supervision of Daniel Stack at Stanford University in 1999. He then joined the Massachusetts Institute of Technology as a postdoctoral associate to study biomaterials and tissue engineering under the guidance of Robert Langer. His current research in biomaterials design and synthesis focuses on blood vessel tissue engineering, nerve regeneration, and nucleic acid delivery. He received the Veach Fellowship for his thesis research at Stanford, and his biomaterials research earned him a finalist spot in the INDEX: Award in 2005. His research has been published in journals such as Science, Nature Biotechnology, and the Proceedings of the National Academy of Sciences.

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