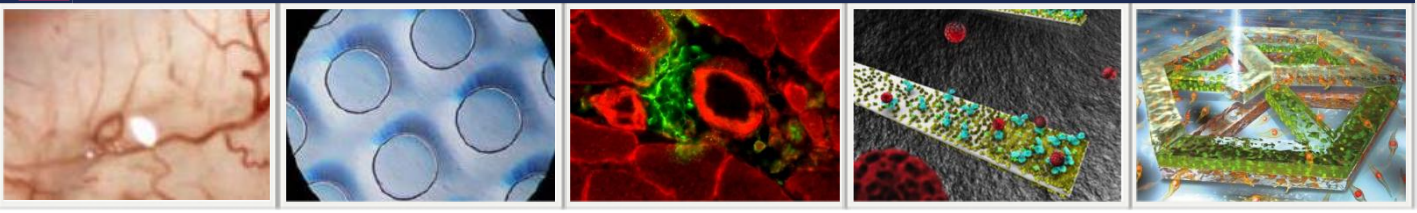
BioNanotechnology Seminar Series

Spring 2012



Cationic, Helical Polypeptide Based Gene Delivery for IMR90 Fibroblasts and Human Embryonic Stem Cells

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Date: **Wednesday, March 28, 2012**

Time: **12:00 – 12:30 p.m. CST (10:00 – 10:30 a.m. PST)**

Location: **1000 MNTL at Illinois (SSM 150 at UC Merced)**

Abstract:

New diblock copolymers consisting of poly(ethyleneglycol)-block-poly(γ-(4-(piperidin-1-yl)ethanaminomethylbenzyl)-L-glutamate), PEG-b-PVBLG-8 were synthesized for the effective transfection of hard to transfect cells like IMR90, human fetal lung fibroblasts and human embryonic stem cells (hESC). The diblock copolymers maintain a water soluble cationic helical polypeptides block, with the PEG reducing toxicity of the PVBLG-8. It also allows the copolymer to maintain its high helical content, without dramatically compromising its ability to condense the DNA. Polymers with varying degrees of polymerization of PVBLG-8 were synthesized to identify the most effective vehicle for gene delivery.

The diblock polymer with a polymerization degree of 287 demonstrates greater transfection efficiency and lower toxicity in IMR90 cells when compared with the commercial Lipofectamine 2000, giving a transfection efficiency of 21.4% and about 80% cell viability. We also demonstrate the potential for the polymer to be used in hESC. In summary, this polymer demonstrates the effective use of peptide based delivery vehicles for gene delivery.

Seminar Presented by:

Center for Cellular Mechanics
University of Illinois at Urbana-Champaign

IGERT Integrative Graduate Education and Research Traineeship
Cellular and Molecular Mechanics and BioNanotechnology

M-CNTC NCI Alliance for Nanotechnology in Cancer
Midwest Cancer Nanotechnology Training Center

CNST University of Illinois Center for Nanoscale Science and Technology