



UNIVERSITY OF SOUTHERN CALIFORNIA

DEPARTMENT OF CHEMISTRY

## Organic / Materials Chemistry Seminar

# “Precision Cellular Delivery and Discovery of Fluorine Containing Abiotic Macromolecules”

**Abstract:** There are a number of methods to deliver bioactive peptides and proteins into mammalian cells for biotechnological purposes. However, most approaches do not allow for routine precision delivery of chemical entities such as peptidomimetics, mirror image peptides, cyclic peptides, and intrabodies. Here, we present a macromolecular delivery platform based on an engineered bacterial transport machine that allows for facile delivery of bioactive variants to the cytosol of cells. We show the delivered cargo can disrupt protein-protein interactions in cancer cells and induce apoptosis. As an additional effort to solve the delivery problem, we have developed a robust method for macrocyclization of unprotected peptides using fluorine linkers thereby generating abiotic macromolecules. We found these non-natural variants displayed enhanced cellular penetration and proteolytic stability. During our studies we serendipitously discovered a mini 4-residue abiotic protein that enables site-specific production of antibody drug conjugates.

**Professor Bradley L. Pentelute**

Department of Chemistry

Massachusetts Institute of Technology

Wednesday, February 1, 2017

12:00 PM

Olah Library

*Hosted by: Prof. Matthew Pratt and Prof. Valery Fokin*

*Scientific Community is Invited*