College of Engineering
Summer Research Experience for Undergraduates Program

Request for an Engineering Student for Summer 2011 Research

Faculty Name ____Shelly Peyton_________________________________________________
Phone ________545-1133____________________________________________________
Department ____Chemical Engineering__Email: ___speyton@ecs.umass.edu__________

Brief description of Summer Research Project (please explain the interdisciplinary nature of this project).
We will be using soft biomaterials to mimic the \textit{in vivo} physiologically relevant tissue parameters found at sites of breast cancer metastasis. Using polymer chemistry, we will make these hydrogels encompass the mechanical and chemical signatures of organs with a high probability for breast cancer metastasis, such as the brain, bone, and liver. We will use mechanical, chemical, and optical techniques to characterize these polymer substrates, and we will use advanced optical microscopy to analyze the behavior of breast cancer cell lines on these substrates. This project is highly interdisciplinary due to its position at the interface between materials science and cell biology.

Brief description of what the student will be doing:
The undergraduate who will be working on this project will learn how to make simple biomaterials from poly(acrylamide) and functionalize them for bio-adhesion. He/She will learn cell and tissue culture, and will then allow 1-3 candidate breast cancer cell lines to adhere to these soft substrates. Finally, the student will analyze the motility behavior of these cell lines as a function of the hydrogel stiffness and adhesive protein functionality.

Is this a CASA-related project? Yes ___ No ___

Preferred background of student (major(s), class, GPA, pre-requisites, etc.):
Chemical Engineering
Junior or above
GPA of at least 3.0 within major

Did you mentor a student last summer in the College REU Program?
Yes_____ No _x__

Please return this form to:

Lorraine Robidoux,
REU Program Coordinator
129 Marston Hall

By Friday, February 5, 2011