CENTER *for* APPLIED MOLECULAR MEDICINE

University of Southern California Physical Sciences in Oncology Center
Monthly Seminar Series

MINA BISSELL, PH.D.

Distinguished Scientist, Life Sciences Division
Lawrence Berkeley National Laboratory, Berkeley, CA

*"Designing 3-Dimensional Models to Study Tissue Specificity,
Dormancy and Metastasis in Breast Cancer"*

FRIDAY, JULY 26, 2013

NOON - 1:00 P.M.

Q & A to follow

(Pizza and beverages will be served for attendees at 11:45 a.m.)

HARKNESS AUDITORIUM

HSC - Clinical Sciences Building, **2nd Floor**
2250 Alcazar Street, Los Angeles, CA

ABSTRACT:

The work from our laboratory in the last three decades has provided much impetus for the current recognition and acceptance of the importance of context/microenvironment and extracellular matrix (ECM) in regulation of gene expression, and has underscored the plasticity of both the differentiated state and tumors. I will discuss why and how we developed, and use, 3-dimensional models of normal mammary gland and mammary tumors from both mice and humans to understand breast cancer, and will present recent work, shedding light on why tissue and organ architecture should become also a parameter in cancer research, and how architecture can regulate tissue-specificity as well as the plasticity of tumors. I will also discuss newer and more complex models we have developed to understand metastasis and dormancy and a screen that has allowed us to discover a new class of 'oncogenes' in the EGFR/PI3 Kinase. We have shown a mechanism to underscore the model of dynamic reciprocity and how the ECM and basement membrane signal to nucleus, via intricate interactions with nuclear actin to provide cell and tissue quiescence, our new discoveries of unique functions for MMPs which may explain why anti-MMP therapies failed, and discovery of a novel movement through kinetic imaging of how a unit of tissue function in the mammary gland (an acinus) is formed in the normal breast, lost in malignancy and reformed by controlling the microenvironment and restoring tissue context and architecture. We suggest these concepts and models have profound implications for diagnosis, prognosis, drug resistance, dormancy and therapy of cancer.

Hosted by USC PSOC. For additional information contact: Kristina Gerber at kgerber@usc.edu