

Jenny E. Sabin

Title: Between Architecture and Science: Elasticity and Networks

Abstract:

How might architecture respond to issues of ecology and sustainability whereby buildings behave more like organisms in their built environments? This talk will present one subset of ongoing trans-disciplinary research spanning across the fields of cell biology, materials science, physics, electrical and systems engineering, and architecture. A building's envelope must consider a number of important design parameters including degrees of transparency, overall aesthetics and performance against external conditions such as sunlight levels, ventilation and solar heat-gain. In conjunction with these parameters, we are specifically interested in the role of the human in response to changing conditions within the built environment using minimal energy consumption. For example, in one project titled *eSkin*, we aim to explore materiality from nano to macroscales based upon understanding of nonlinear, dynamic human cell behaviors on geometrically defined substrates. Through the *eSkin* project, insights as to how cells can modify their immediate extracellular microenvironment with minimal energy and maximal effect are being investigated and applied to the design and engineering of highly aesthetic, passive materials, and sensors and imagers that will be integrated into responsive building skins at the architectural scale. This talk will elucidate the research methods, prototypes and applications that Sabin and her collaborators have achieved, which aim to radically alter the paradigm of Responsive Architecture through architectural treatments, in the form of adaptive building skins and material assemblies, that ultimately (re)configure their own performance based upon local criteria.