Chez Pierre

Presents ...

Wednesday, February 27, 2013
10:00am
MIT Room 4-331

SPECIAL CHEZ PIERRE SEMINAR

Ibrahim I. Cisse
Institut de Biologie Ecole Normale Superieure, Paris

"Phenomenological Rules of Cooperativity in Weak and Transient Biological Interactions"

The cell, the elementary unit of life, is a self-organized physical system of biological macromolecules. The organization and dynamics within are often regulated through complex rules involving low affinity, highly dynamic biomolecular interactions said to be "weak and transient." Detecting and quantifying these weak and transient interactions remains, however, a fantastic challenge. Here we present novel experimental approaches, based on single-molecule fluorescence techniques, used to uncover the physical principles behind these hidden rules of cooperativity in isolated molecules (in vitro) as well as directly in live human cells (in vivo). Our findings have fundamental implications in Watson-Crick sequence recognition processes such as RNA interference, as well as the real time nuclear organization and dynamics of genome expression in vivo.