



BIOLOGY COLLOQUIUM

Friday, 7 April 2017 | 4pm | DBS Conference Room 1

Hosted by Professor Paul Matsudaira

Mechanisms of adaptive evolution of eukaryotic cells

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Evolvability, the remarkable capacity to adapt to a variety of hostile conditions, is one of the most fascinating hallmarks of all forms of life. While we marvel at unicellular organisms evolving complex traits to survive in the most extreme places on earth, we struggle with the incredible ability of cancer cells to escape growth inhibitory signals or develop resistance to treatments. This fundamental ability of cells to adapt to genetic, environmental and chemical perturbations is best understood as adaptive evolutionary processes, in which cells tinker with existing cellular networks in order to achieve adaptive innovation. In my talk I will discuss recent evidence from our lab that highlight the remarkable plasticity of yeast and mammalian cells to adapt and acquire mutations in response to genetic or environmental perturbations.