

## Seminar 2016

### Systems level analysis of gene network activity for a dosage-compensating network



**Murat Acar**

Assistant Professor

**Yale University**

Department of Molecular Cellular and Developmental Biology

Department of Physics

Yale Systems Biology Institute

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**2:30 PM**

**Laufer Center Lecture Hall 101**

**Host: Jin Wang**

Refreshments following seminar

The number of copies of a gene network in a cell, or network dosage, has a direct effect on cellular phenotypes and coping with variations in network dosage is crucial for maintaining optimal function in gene networks. We explored how network structure facilitates network-dosage compensation. By using the canonical galactose utilization network of yeast as a model, we combinatorially deleted one of the two copies of its four regulatory genes and found that network activity was robust to the change in network dosage. Mathematical and computational analyses revealed the necessary and sufficient conditions for setting network-dosage invariance into a gene network, including the need for specific network topologies. The property of network-dosage invariance could represent a general design principle for gene network assembly in cells.

