Advanced Undergraduate Seminars
2011-2012

Fall 2011

diverse as yeast and primates, and the implications for successfully intervening in age-related diseases. We will also discuss the first tests of drugs such as resveratrol (a small

structures. We will then cover many of the basic molecular interaction networks studied in biology, including those of protein-protein interactions, transcriptional regulation, metabolic reactions, genetic interactions, drug-target interactions and others. We will see how high-throughput experiments provide data that can be conceptualized as networks. We will present models and algorithms used to study networks at different resolutions, and what insights can be derived from this analysis. Furthermore, we will discuss specific questions that can be answered by understanding networks: how can we use networks to predict which genes are responsible for a specific disease? what is the best way to perturb a network to escape from a disease state? how can we identify drugs that share a mode of action using networks? This course will not require any expert knowledge in biology, computer science or statistics.

7.345 Making a Nervous System: Processes, Problems, and Human Disorders

Instructors: Alicia Blaker-Lee (blaker@wi.mit.edu, 8-5200; laboratory of Hazel Sive)

arise when the ability of cells to deal with the burden of misfolded proteins is compromised. In this course, we will explore how the ER quality control machinery ensures that only properly assembled proteins exit the ER while distinguishing between nascent proteins *en route* to their biologically active folded state from those that are termina

7.342 Regenerative Medicine: from Bench to Bedside and Bedside to Bench
Instructors: Petra Simic (psimic@mit.edu, 3-0809; laboratory oc 0 0 0.2 bo