

Tel Aviv University , Biological and Soft Matter Seminar

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A Quantitative Look at Gene Regulation

Gene activity is the prime mover in the living cell, driving a cell's function at any given time. In my lab, we strive to obtain a quantitative, experimentally-based description of gene regulation at the level of individual cells and the discrete, stochastic time series of transcription events. This mesoscopic description provides a bridge between two existing levels of description: the molecular (microscopic) level, at which a wealth of information is available through classical biochemistry and biophysics; and the "macroscopic" level of gene-network topologies, obtained through genetic and genomic approaches. Our findings so far suggest that the kinetics of gene activity, and how it is modulated to vary expression level, display surprising universality across genes and organisms.

Reference: A. Sanchez and I. Golding, "Genetic Determinants and Cellular Constraints in Noisy Gene Expression", Science (2013).