

Simplicity in Biology:

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Biological systems seem to be simpler than they could have been. The talk will highlight one of these simplifying features: Biological regulation networks appear to be built of a small set of recurring interaction patterns, called network motifs. Each network motif is able to carry out defined dynamical functions, as demonstrated by high resolution dynamical experiments on living cells. Evolution seems to have converged ("rediscovered") the same motifs again and again in different systems and organisms. We will see how complicated biological networks made of interconnected motifs can be understood in terms of the dynamics of individual network motifs. We will discuss the current theoretical and experimental challenges that face us in the understanding the dynamics of biological networks.