

Biological Innovation: The Evolution and Engineering of New Signaling Systems

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Eukaryotic cells display an extremely diverse set of responses to external and internal stimuli. Remarkably, these diverse responses are, for the most part, regulated by complex networks built from a limited toolkit of molecular components. We are exploring the design logic by which new and diverse behaviors can be built from these simple components. We are studying the mechanism and evolution of natural signaling network, but are also exploring how pathogens and biological engineers can rewire these modular networks to systematically alter cell behavior.