All biological functions of life are determined by molecular forms. These dynamical events are sensed, directed and modulated by small and large molecules, often in clusters, reconfiguring to assume optimized form for targeted function. In this talk I shall explain how we mathematically interpret such lessons from nature, and adaptively train deep generative networks, to stably learn to correct form for optimized function, in a number of dynamical scenarios. We exploit the tight connections between discrete and continuous controllable dynamical systems and reinforcement learning. These characterizations are crucial for deriving feasibility and guaranteed convergence (stability), while accelerating the reinforcement learning process.

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