



Thursday, November 8, 2018, 12:30 pm
Seaver Science Auditorium, Room 150

SSC Auditorium next to the library

Professor Bryan Dickinson

Department of Chemistry

University of Chicago

Harnessing Evolution to Tackle Challenges in Synthetic Biology and Molecular Recognition

Diverse areas of biotechnology, including directed evolution, synthetic biology, and bioengineering are impeded by a lack of general methods to link chemical and biochemical processes to defined genetic outputs. To tackle this challenge, we are developing new classes of biosensors that “encode” specific chemical and biochemical events in defined RNAs for subsequent storage, analysis, or cellular control. This approach is powerful for several reasons: 1) nucleic acids can store large amounts of information, permitting the collection of highly multiplexed datasets, 2) nucleic acid analysis technologies are robust, cost-effective, and sensitive, permitting the detection of low levels of activities and providing a path toward clinical deployment, and 3) nucleic acid signals can be used to manipulate cell behavior, leading to a new approach to cell engineering.

We have developed engineered RNA polymerases as a new family of easily-programmable biosensors. Our vision is that this technology will serve as the “GFP” for synthetic biology – a protein biosensor scaffold that is easy to engineer. We anticipate that our biosensors will provide a simplified and robust strategy for engineering gene circuits for applications in screening, directed evolution, and synthetic biology.

Hosted by Professor Matthew Pratt

The scientific community is invited

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