

CHEMICAL ENGINEERING  
UNIVERSITY of WASHINGTON

# GRADUATE SEMINAR SERIES

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## Programming transcription using engineered systems of gene regulators and genetic architectures

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**Monday, October 21, 2019**

Reception 3:30-4:00 p.m. | NANOENGINEERING 181

Lecture 4:00-5:00 p.m. | NANOENGINEERING 181

### Abstract

The control of gene expression is an important tool for metabolic engineering, the design of synthetic gene networks, and protein manufacturing. The most successful approaches to date are based on modulating mRNA synthesis via an inducible coupling to transcriptional effectors. We have developed a biological programming structure that leverages a system of engineered transcription factors and complementary genetic architectures. The basic logical operations and corresponding genetic architectures represent the building blocks for subsequent combinatorial programs, which can display both digital and analog performance.

## Bio



Dr. Corey J. Wilson is an Associate Professor in the School of Chemical & Biomolecular Engineering at the Georgia Institute of Technology. Dr. Wilson's research program seeks to engineer novel, non-natural biological systems of bespoke function for high-impact applications. Dr. Wilson's lab leverages a unique blend of iterative protein engineering and genetic engineering to design novel synthetic biological systems. Current efforts are focused on the area of engineering cooperative systems of functional proteins and cognate genetic elements to create intelligent microorganisms. These studies represent the most rigorous test of our understanding of structure-function and phylogenetic relationships; in addition to, promoting the development of novel biological tools that will benefit society and advance the field of professional engineers.