

STEINER LECTURE
=====**JUSTIN GALLIVAN**

EMORY UNIVERSITY

WEDNESDAY**11/14/07****4:45 P.M.****SCIENCE CENTER A255****Reprogramming Bacteria with
Small Molecules and RNA**

Simple organisms, such as the bacterium *E. coli*., carry out a wide variety of complex chemical tasks. *E. coli* cells synthesize complex molecules, communicate with one another, move in response to changing conditions, and replicate themselves every 20 minutes. The programs that control these behaviors are encoded in a genome so small that its entire information content can be stored on a 3.5-inch floppy disk with room to spare.

In this talk, I will present our recent efforts to reprogram *E. coli* to sense new small molecules and to respond to them with predictable behaviors. Specifically, I will describe our efforts to create synthetic riboswitches, which are designer RNA sequences that control gene expression in a ligand-dependent fashion without the need for proteins. I will present a new high throughput screening method that makes it straightforward to create synthetic riboswitches that display extremely low levels of background expression in the absence of a ligand, and robust increases in gene expression in the presence of a desired ligand. I will also share how our high throughput screening method led us to important new mechanistic insights into riboswitch function. Finally, I will show how synthetic riboswitches can be used to engineer bacteria to have a variety of functions, including the ability to follow new small molecules.

THERE WILL BE A RECEPTION FOR THE SPEAKER AT 4:30 P.M.
WEDNESDAY IN LOVE LOUNGE, REFRESHMENTS WILL BE PROVIDED

SPONSORED BY THE STEINER FUND

