

RNA-based sensors for assaying in vivo enzyme activity

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Naturally evolved RNA structures called riboswitches have been discovered in bacteria that bind specific small molecules and regulate gene expression downstream of that recognition event. We have found that these RNAs serve as privileged scaffolds that are readily adapted for novel sensing functions in living cells. In particular, my lab is focused on applying riboswitches to develop fluorescent biosensors for key signaling molecules and cofactors in bacteria. Here I will describe the strategies we have developed to generate biosensors with enhanced fluorescence activation, faster kinetics, and broad range of ligand sensitivity. I will also demonstrate the application of riboswitch-based fluorescent biosensors to *in vitro* and *in vivo* enzymatic screening.