

## RNA synthetic biology for cellular reprogramming

신종식\*

연세대학교 생명공학과

(enzymo@yonsei.ac.kr\*)

Synthetic biology has emerged as a promising research area that enables researchers to simplify complicated biological systems into manageable pieces and to redesign brandnew biological circuits by assembling the simplified biological modules recruited from different living organisms. Several approaches have been investigated to provide logical connectivity between well-defined binding events among relevant biomolecules and the way how the biomolecular interactions lead to programmable circuit behaviors. These include engineering of biological circuits like gene regulatory systems, metabolic fluxes and signal transduction pathways. Riboregulatory genetic control has been attracting increasing attention as recent research reveals that noncoding RNA elements and ligand-binding regulatory mRNAs play pivotal roles in control over cellular gene expression through several mechanisms including RNA interference and riboswitching. We are interested in constructing synthetic biological circuits by exploiting the riboregulatory elements, because it promises great potential to biomedical applications and research tools for simplifying biological systems into reconstitutive modules. Here we present a novel synthetic riboregulatory system that is switchable by small chemicals.