

Scuola Superiore di Catania

*Corso Interdisciplinare*  
a.a. 2017-2018

## **Systems and Synthetic Biology**

Introduction to Synthetic Biology

Computational Synthetic Biology

Biological design automation tools

Minimal Microbial cell

Metabolic engineering

Synthetic biology of gene expression regulatory circuits.

Synthetic immunology, immune system in vitro, antibody libraries. Intracellular antibodies for protein interference.

Optogenetics: light as an orthogonal signal. Optogenetic control of transcription.

Neuroptogenetics: optogenetic control of neuronal electrical activity.

Neurodegeneration and ageing

Metabolic markers of high productivity cells

Biosensing

The Practice of Mammalian Synthetic Biology

Mammalian Cell Classifiers

Synthetic biology in innovative therapeutics

Eukaryotic unicellular organism biology – systems and synthetic biology of cell growth and proliferation