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Début du projet : 2024

ABOUT ME

- Bachelor of Engineering Honours (Dalyell Scholar), University of Sydney
- Master of Science in Biomechanics and Biomedical Engineering, Institut Polytechnique de Paris



TEAM ModIC

Modélisation et Ingénierie par le Calcul

Supervisors: Ioan-Cristian Trelea, Emmanuel Bernuau

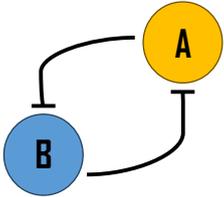
KEYWORDS

Systems biology, control systems, computational modelling

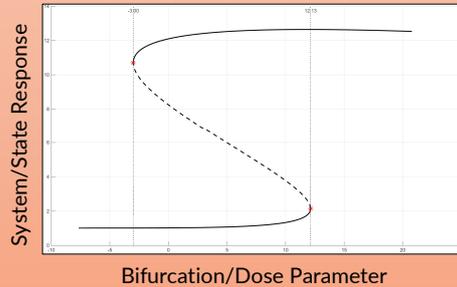
Identification and control of key regulatory mechanisms for differential responses and metabolic shifts in microorganism populations

Graphical abstract

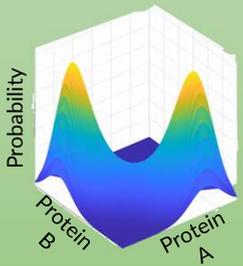
Bistable Switch



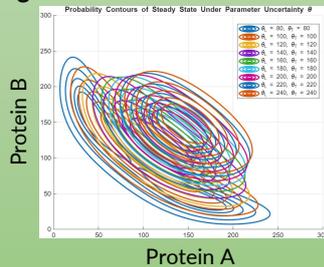
Bifurcation Analysis Toolbox



Stochastic Modelling



Uncertainty in Gene Regulation



Scientific Questions

Are switches central to metabolic shifts and differential responses?

Can we control a gene circuit with uncertainty in gene regulation?

What strategies may be required to preserve reachability?

Objectives

- Develop a robust framework to control a system under uncertainty
- Build a toolbox to identify key regulators to control bistability
- Search for bistability in *L. lactis*

Techniques Used

- Stochastic Modelling
- Bifurcation Analysis
- Control Systems
- Numerical Optimisation
- Programming with MATLAB

Funders & Collaborators