

# Microfluidic study of the PEN DNA toolbox

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## Context

Overall goal: Better understand dynamics of the PEN DNA toolbox

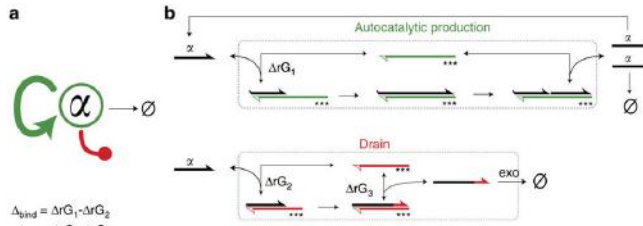


Fig. 1: Bistable system based on PEN DNA toolbox (Montagne et al. 2016)

## Objectives

- Use microfluidics to understand in details the PEN DNA toolbox
- Develop new modules for the PEN DNA toolbox

## Methods

- 1) PEN DNA toolbox (in vitro toy model)
- 2) Droplet Microfluidics

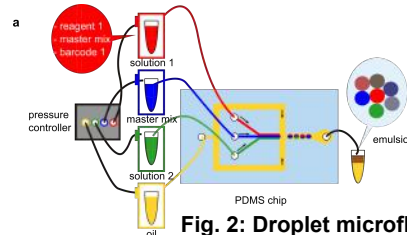


Fig. 2: Droplet microfluidic platform

## Results

Optimized imaging conditions  
Obtained time-resolved bifurcation diagrams

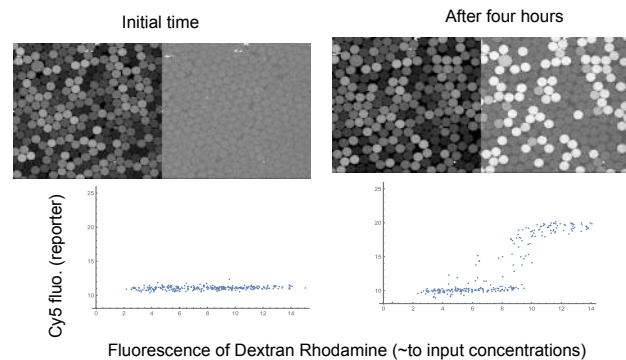


Fig. 3: Bistability and thresholding of a nonlinear circuit

## Perspectives

Point-of-care diagnostics  
Better understanding of bifurcation in a biological context

## Publications

Montagne et al., Nature Communications, 2016

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