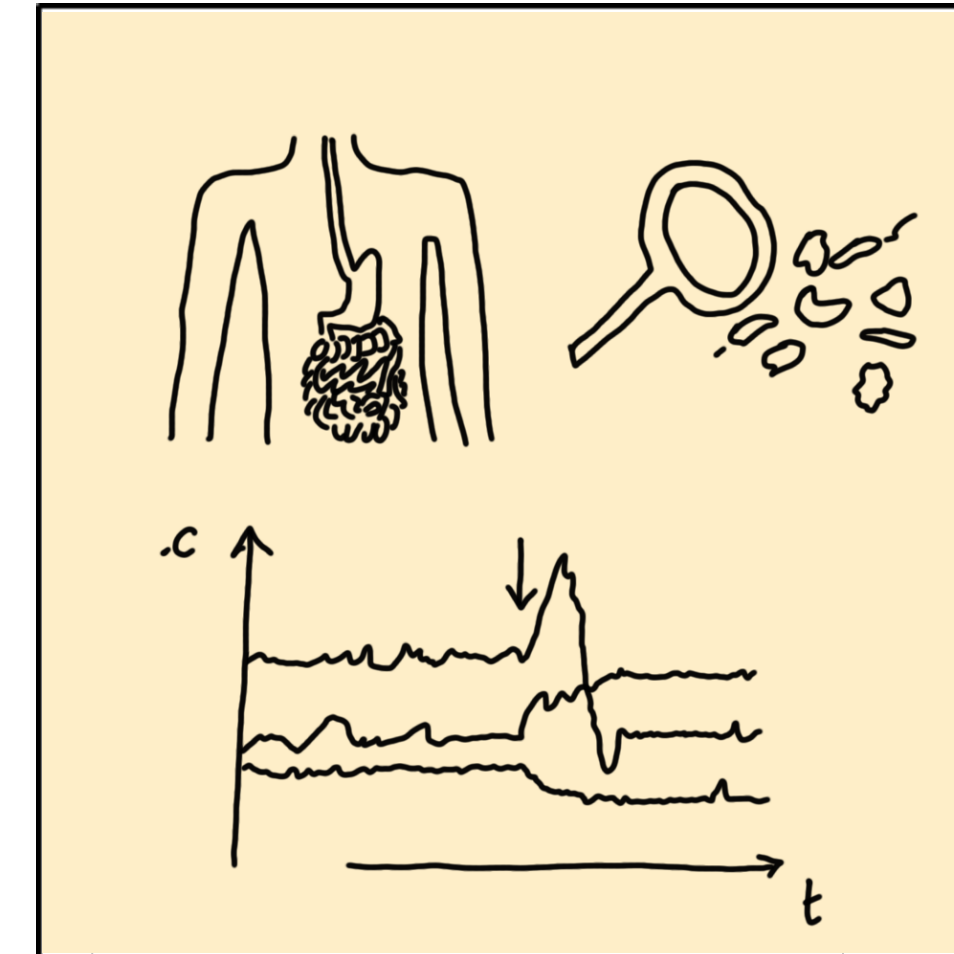
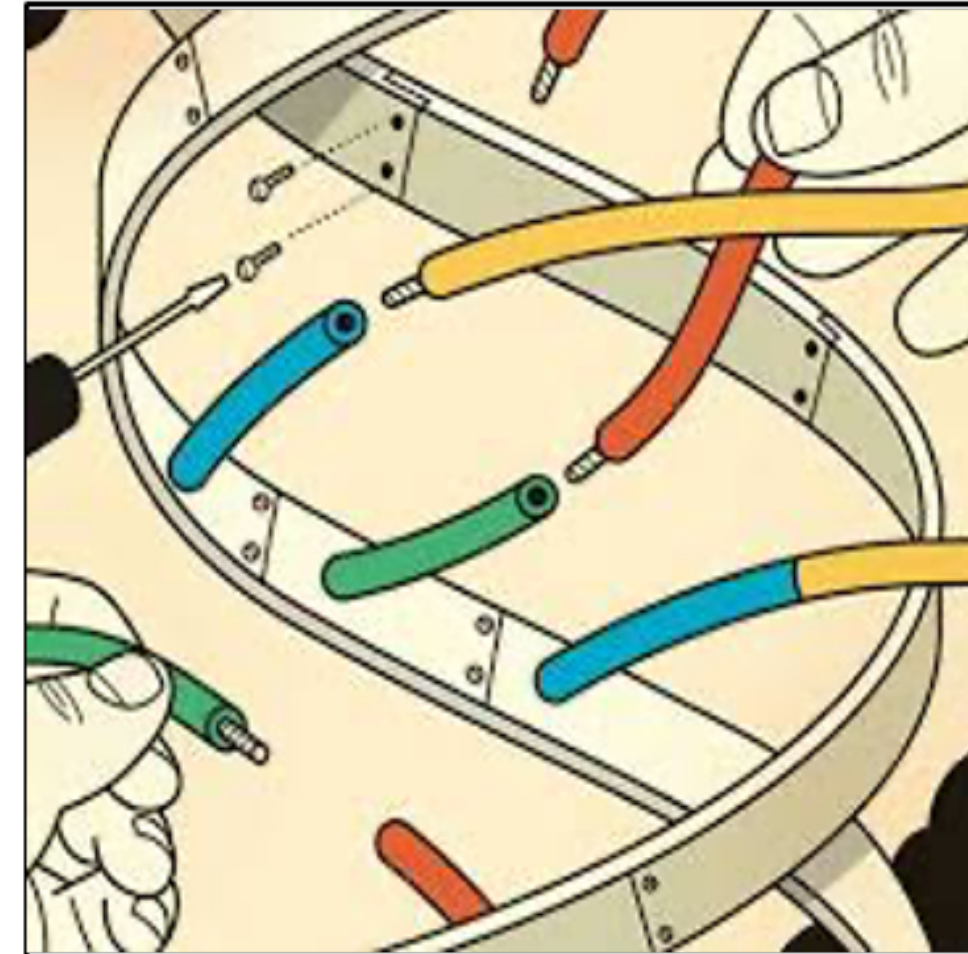
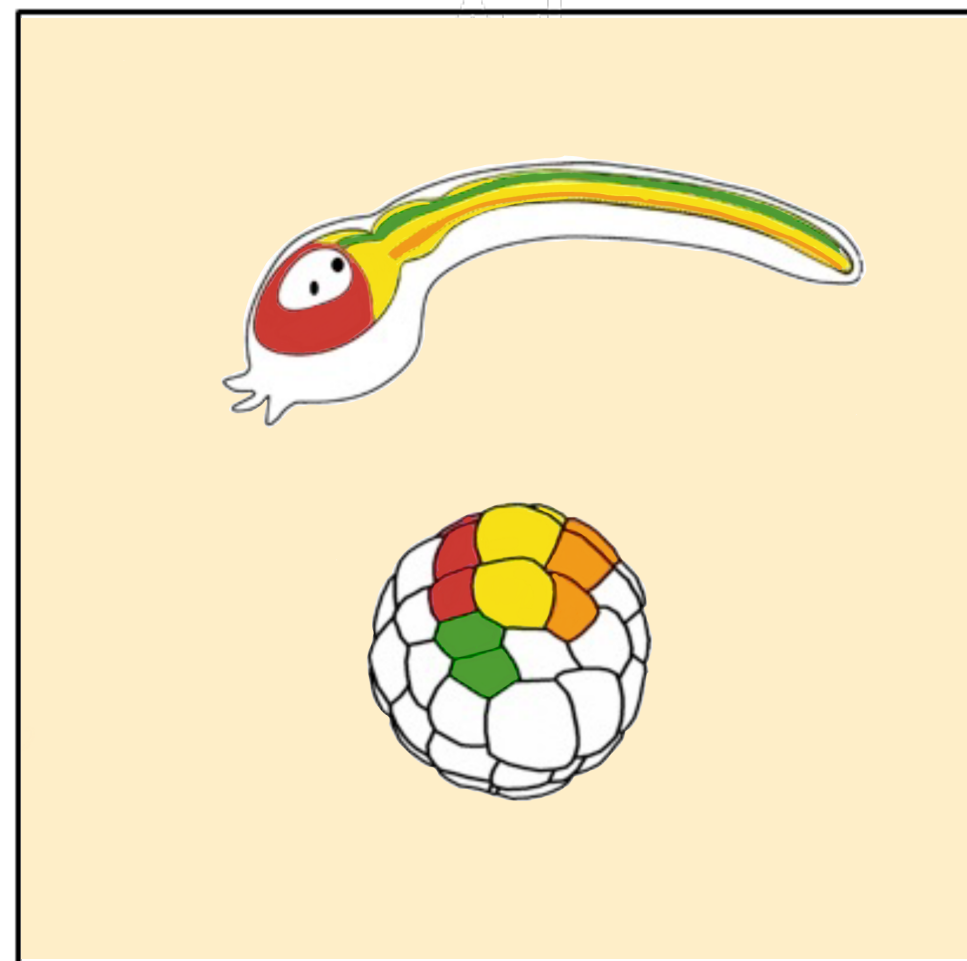


Physics of Living Systems



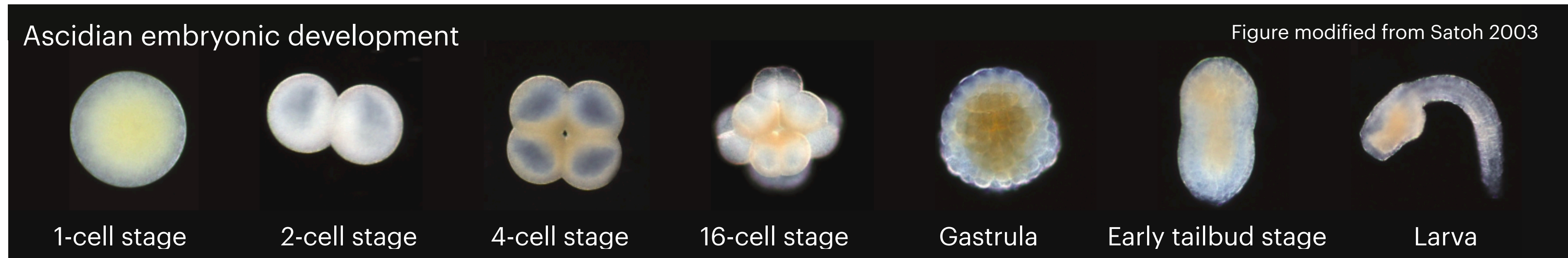
We develop theoretical models to understand quantitatively various biological systems. We rely on the theory of **nonlinear dynamical systems**, **stochastic processes**, **statistical physics**, and **machine learning techniques**. Our work is done in direct collaboration with experimentalists or with publicly available data.

Other topics: predict bile acids in the enterohepatic circulation of humans with Isabelle Leclercq from UCL.

Contact me if you are interested!

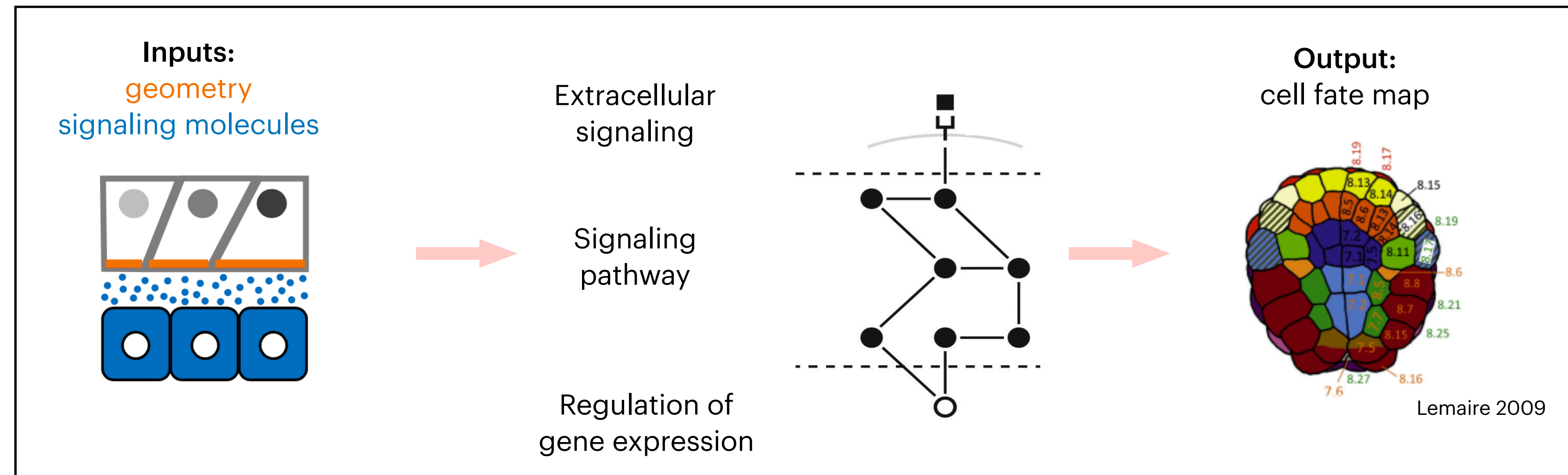
Prof. Sophie de Buyl - sdebuyl@vub.be

Information theory in embryogenesis



How is **information** about the “body plan” encoded in the egg?
Is it maximally transmitted in the process?

What is the role of **geometry** in development?

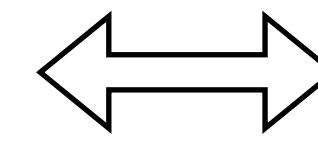
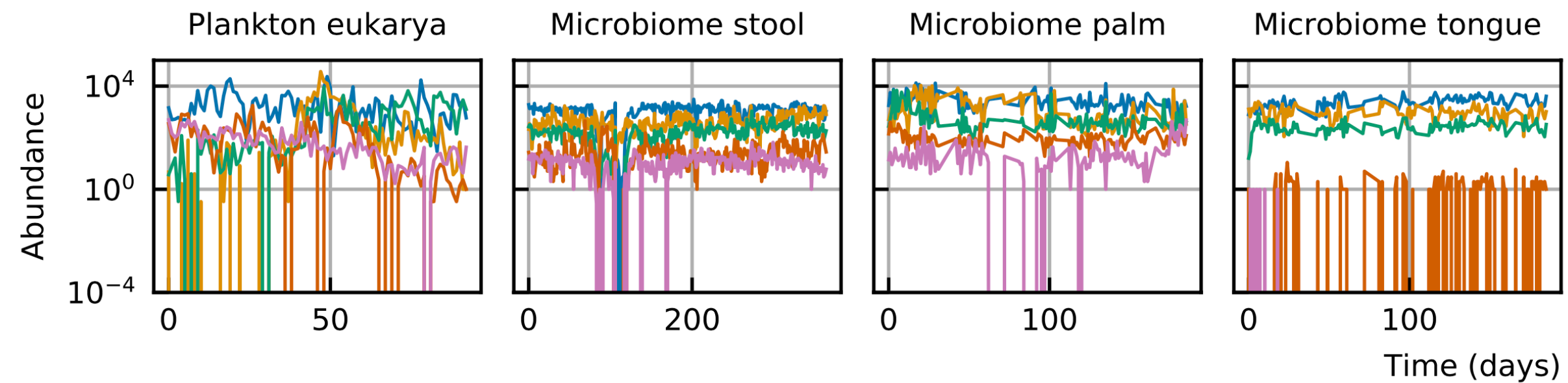


Modeling gut microbial communities

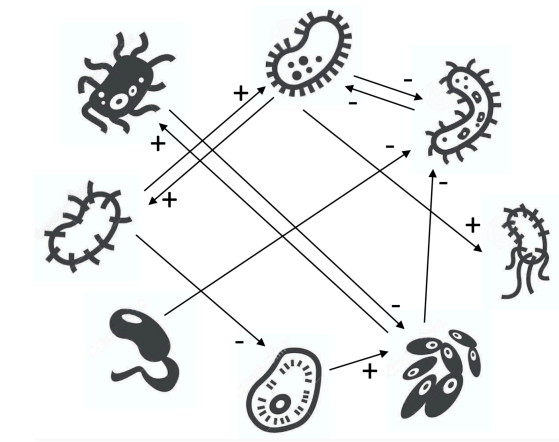
Human-associated microbial colonies are very important for our health.



Image - Anna Kovacs



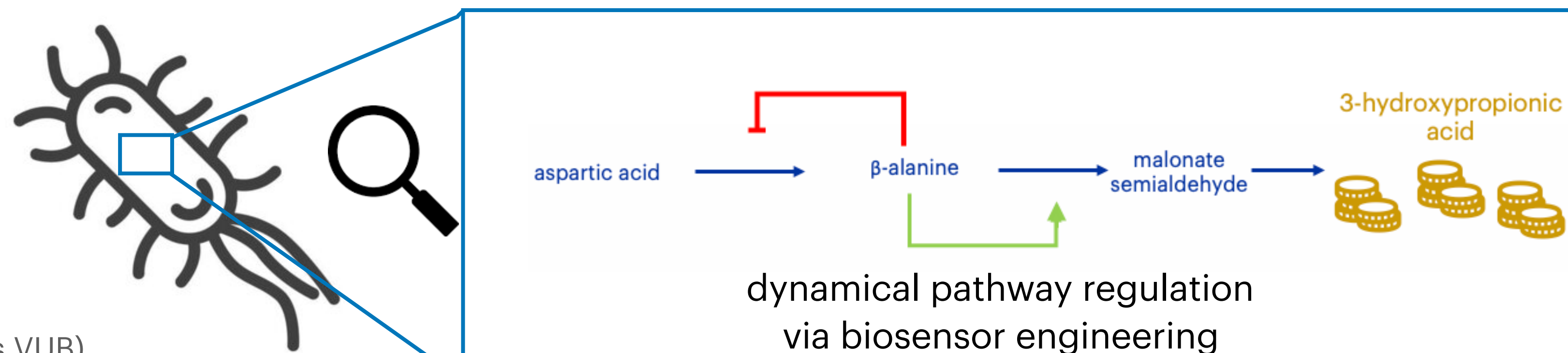
“dynamical model”



Can we understand community structure? Can we predict temporal evolution?
Can we eventually control community composition?

Synthetic biology

Can we engineer microbial cell factories for biofuel production?



Collaborators: Wim Vranken (bioinformatics VUB)
Experimental collaboration: Eveline Peeters (VUB)