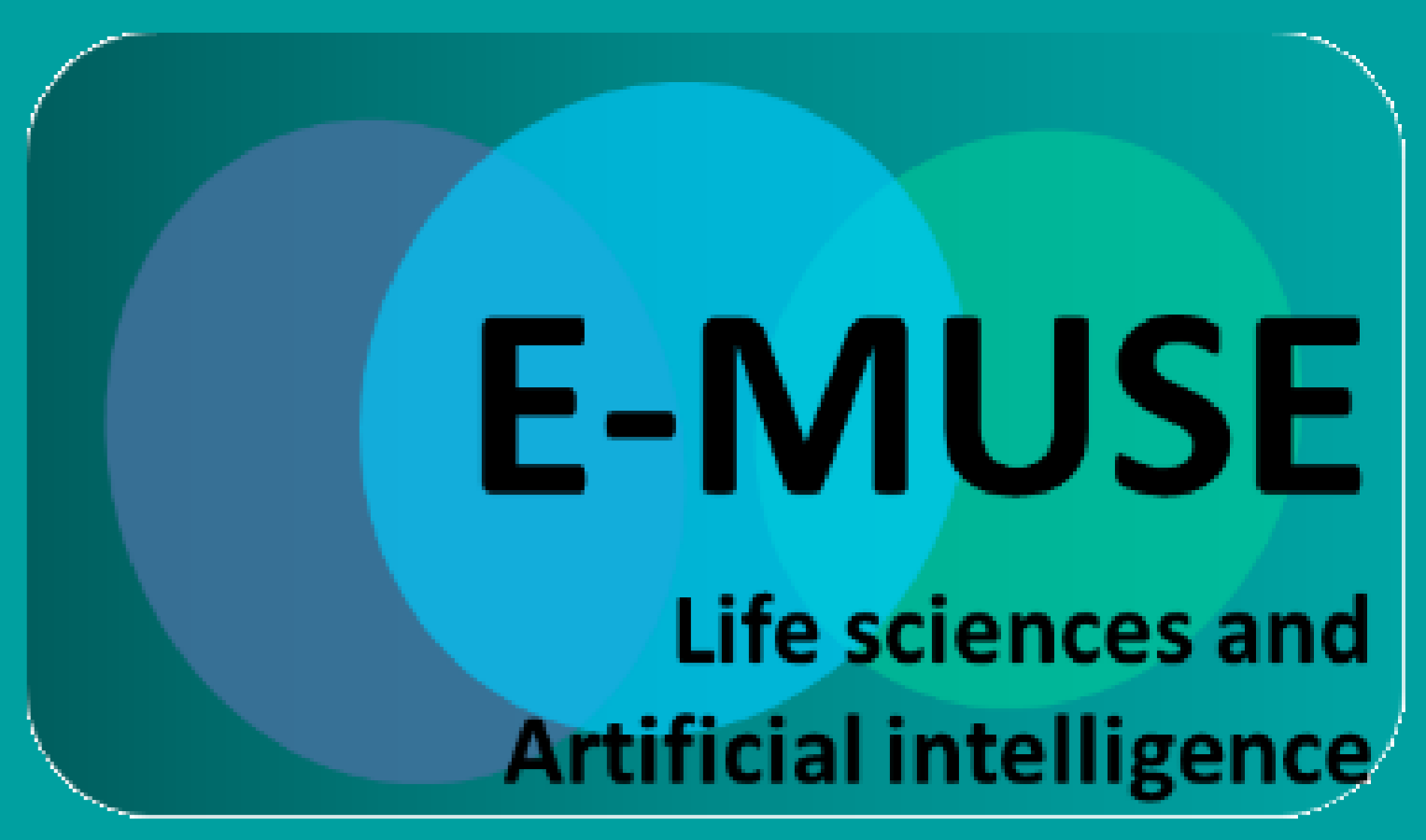




E-MUSE

Complex microbial Ecosystems MultiScale modelling: mechanistic and data driven approaches integration

Eva Balsa-Canto, Irene Otero-Muras



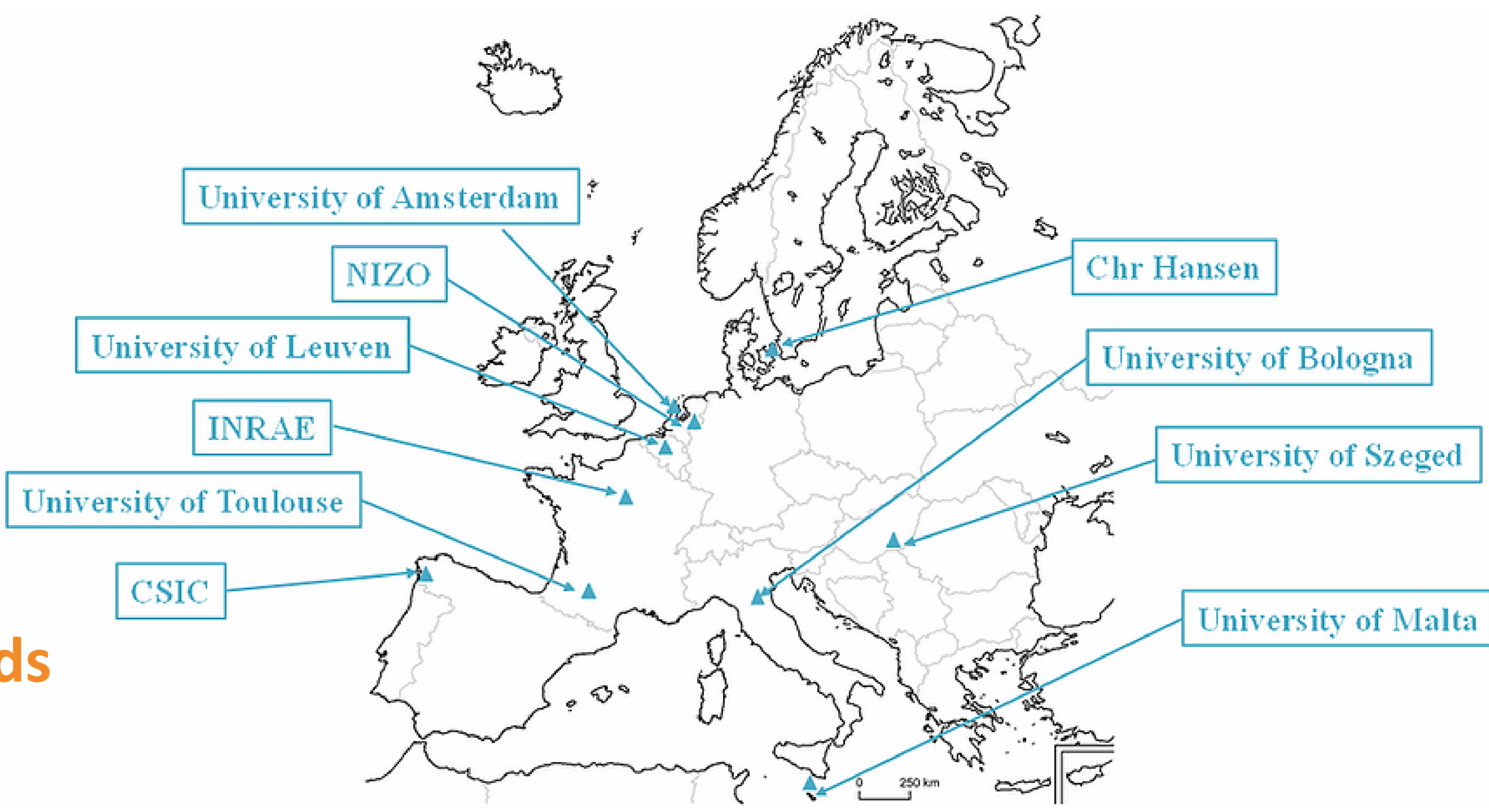
PROJECT OBJECTIVES

E-MUSE aims to develop **innovative modelling methodologies** to improve knowledge about **complex biological systems** and to control and/or predict their evolution by **combining artificial intelligence and systems biology**.

- genome-scale metabolic models
- dynamic modelling
- statistical and machine learning tools
- multi-omics data

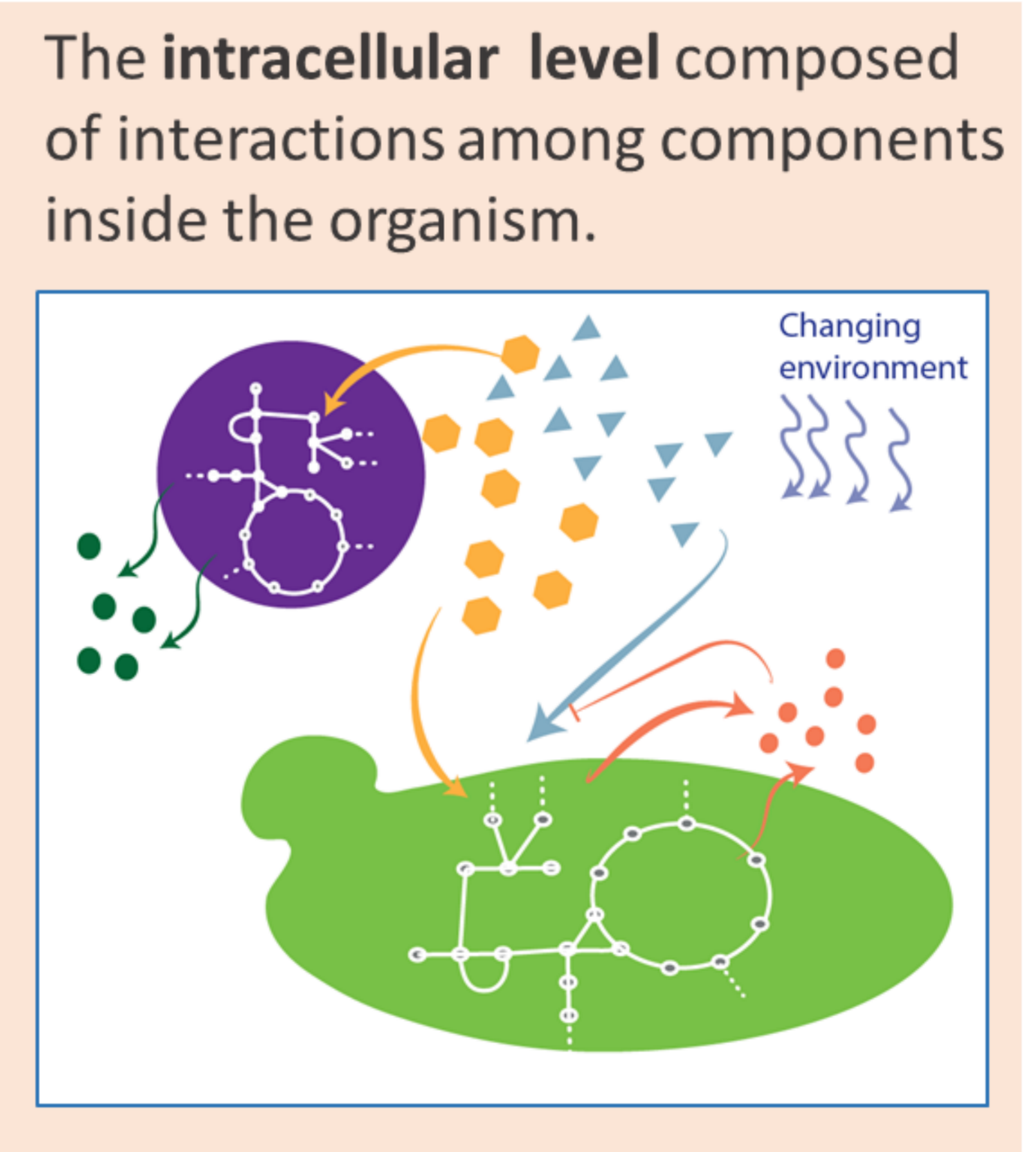
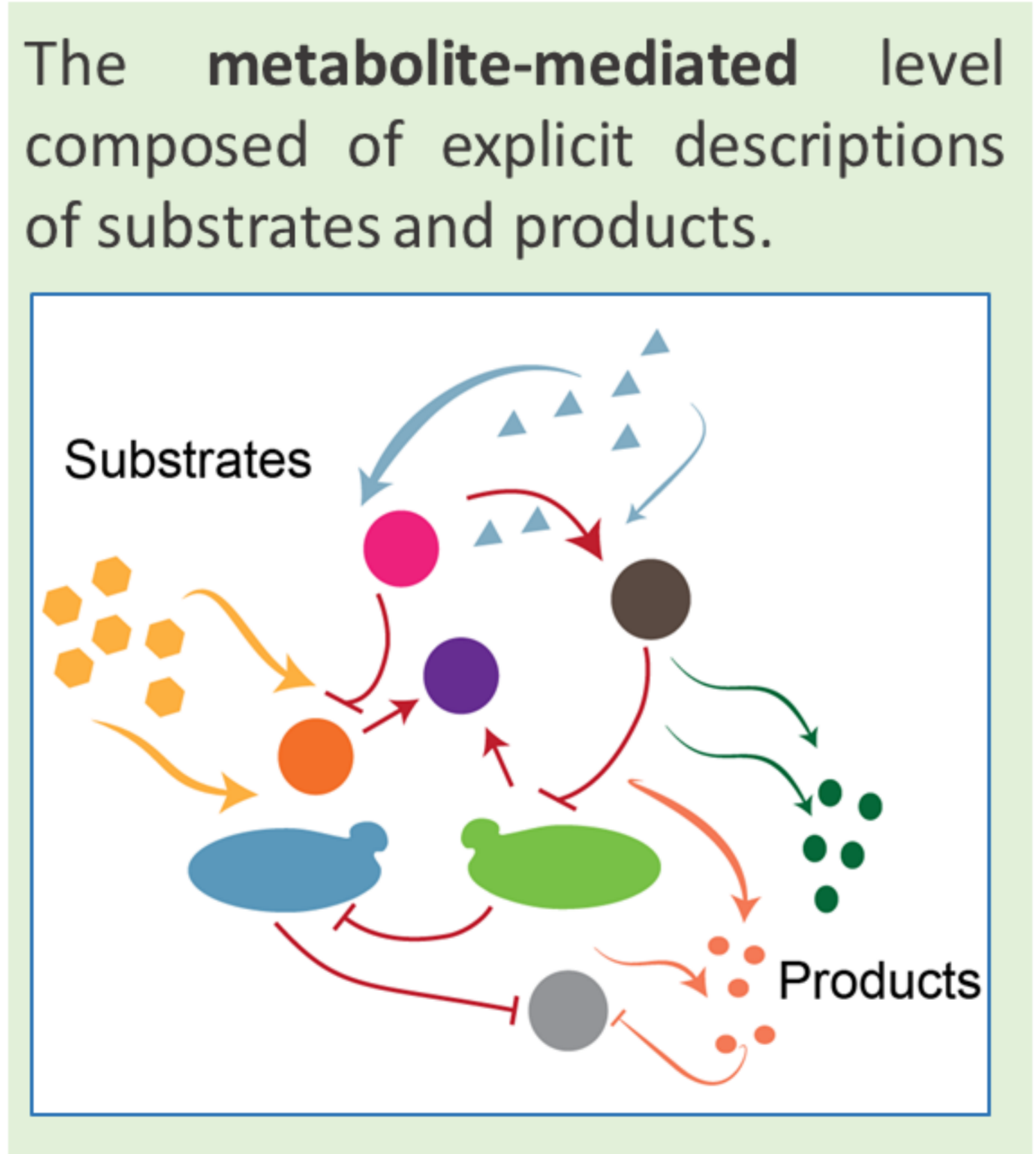
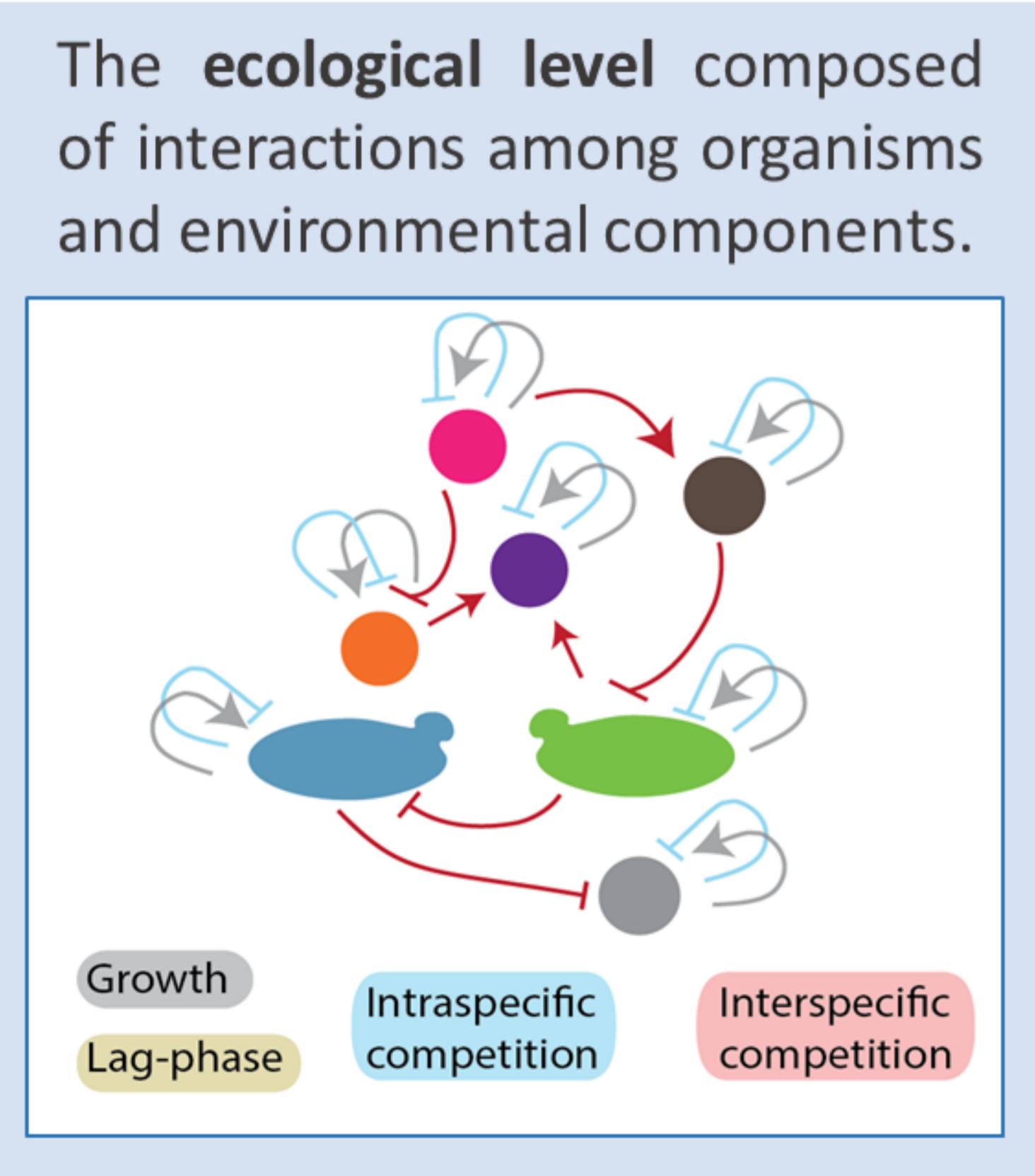


- macro-scale properties fermented foods & consumer preference

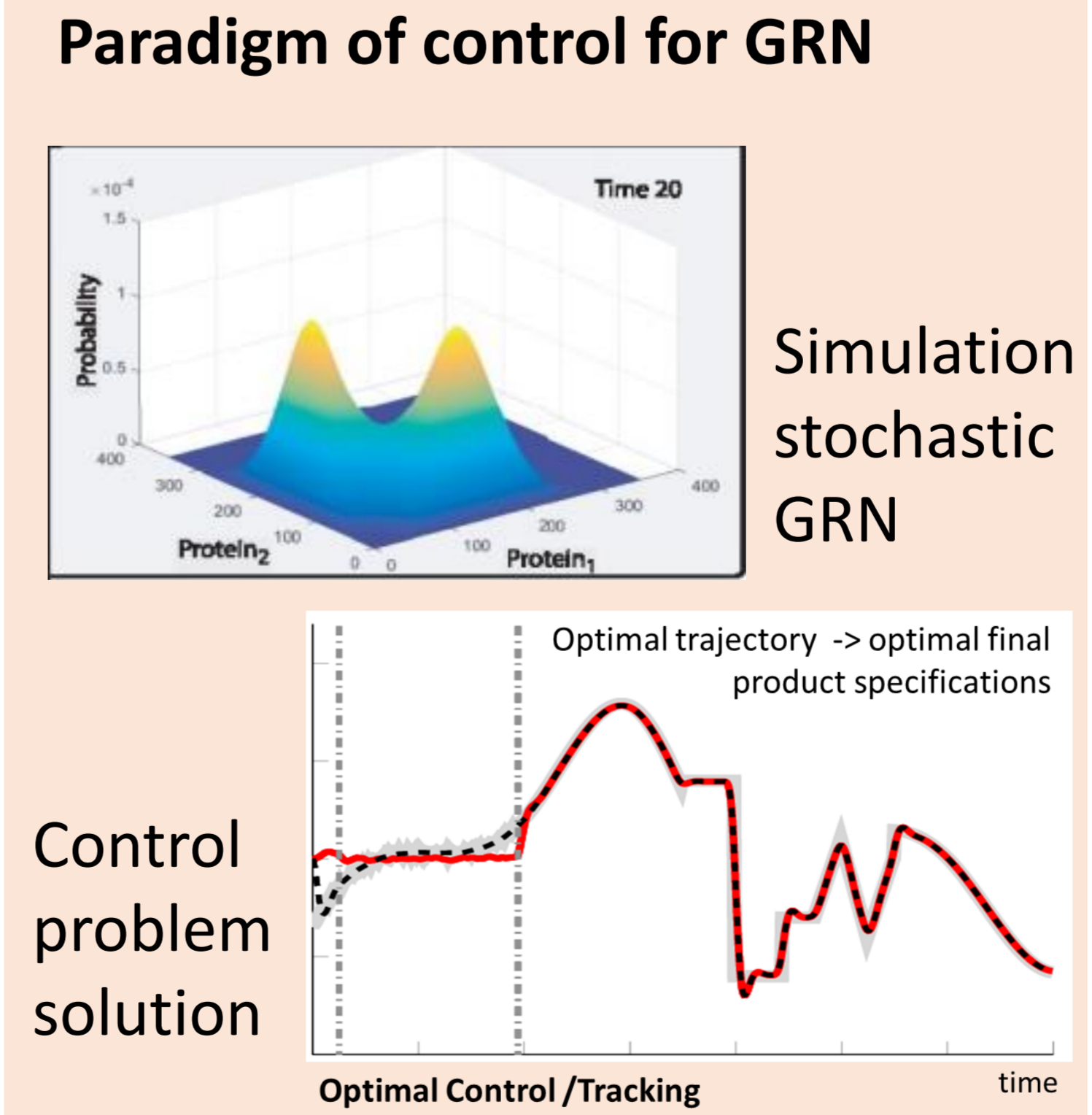
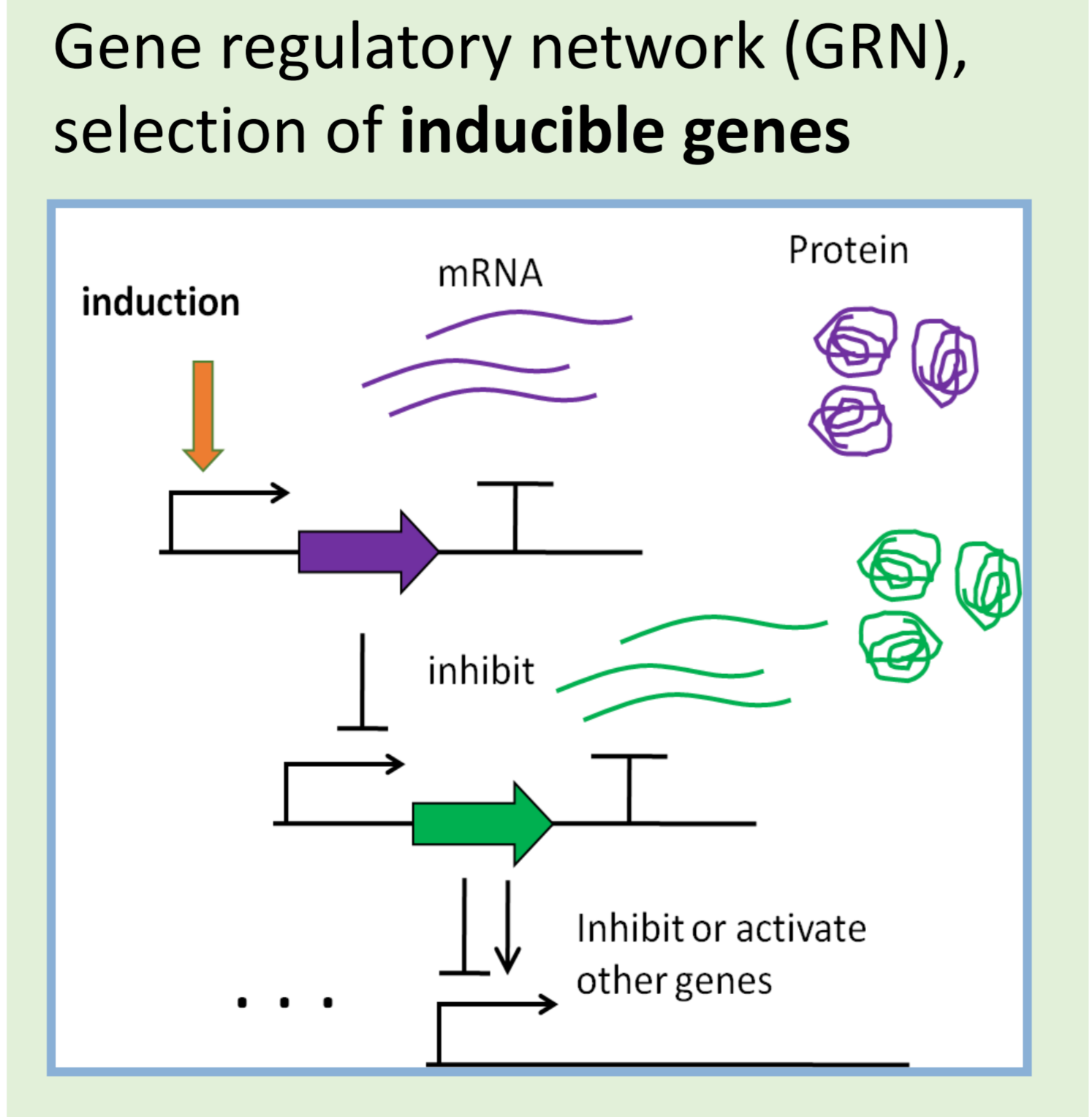
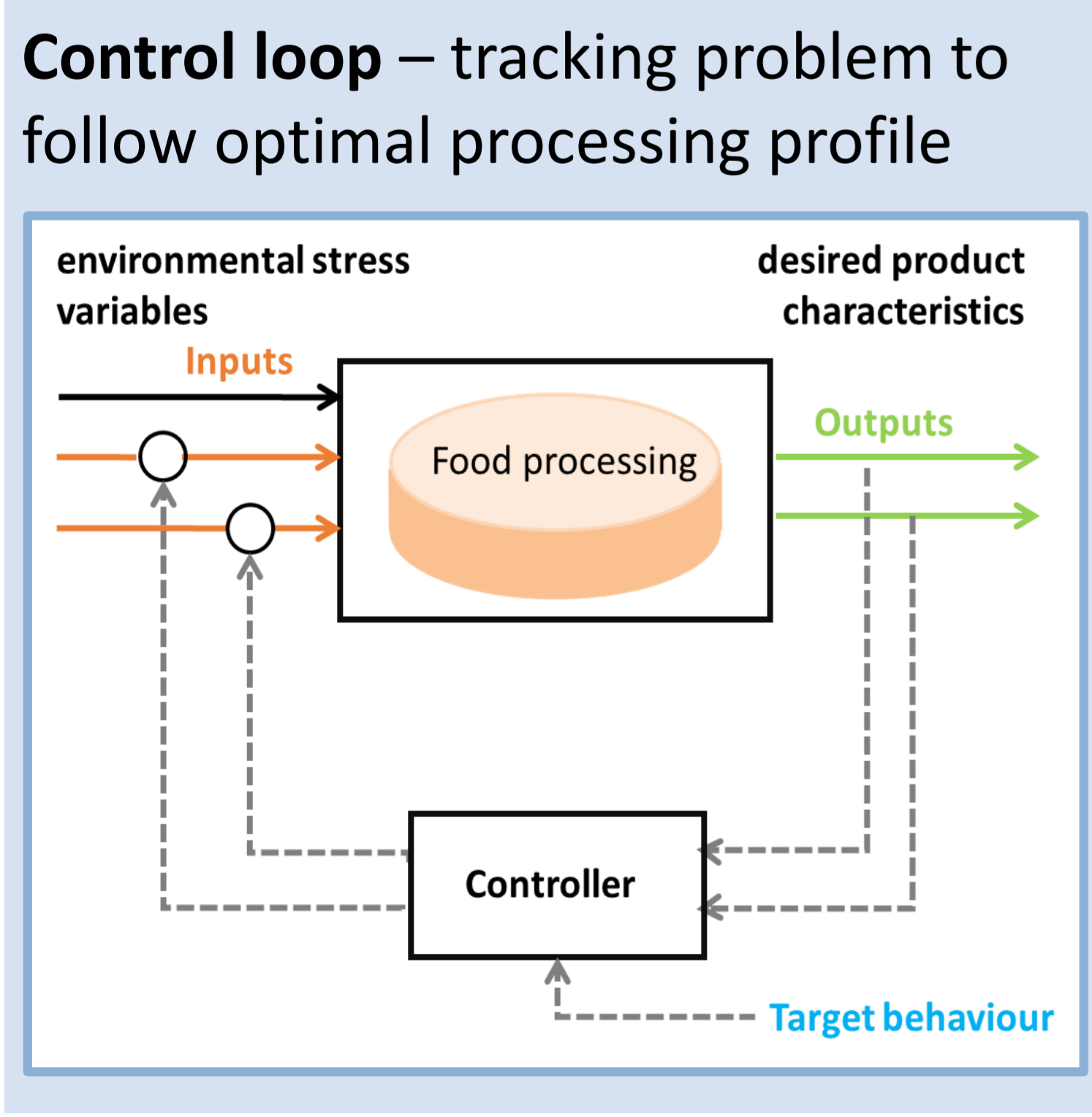


OUR ROLE

ESR on multi-scale modelling of the microbial population dynamics



ESR on On-line Control



Project Information

E-MUSE	
Grant agreement ID: 956126	
Status Ongoing project	
Start date 1 January 2021	End date 31 December 2024
Funded under H2020-EU.1.3.1.	
Overall budget € 3 901 305,60	
EU contribution € 3 901 305,60	
Coordinated by INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT France	



METHODS

- Multi-omics data provided by partners
- Multi-scale metabolic models formulated and fitted to data.
- Best model selected using goodness-of-fit and cross-validation.
- Computations run with AMIGO2 and FBA software.



METHODS

- Inducible genes and expression data provided by partners
- PIDE models formulated and fitted to data.
- Control paradigm definition
- Control application
- Computations run with SELANSI & SYNDADm



@BalsaCanto
@Otero_Muras
@EMUSE16



ebalsa@iim.csic.es
ireneotero@iim.csic.es