



Theory of Plasticity and Robustness in Natural and Artificial Systems LifeHUB-CSIC/ EMBL Barcelona WORKSHOP

July 5th, 2023. 9:30-17:00h

In this one-day workshop we will discuss which are the building principles that endow systems with robustness (stability) or plasticity (adaptive change) following genetic or environmental variation, with a focus on multicellular development. The morning session will consist of talks, some of which will be selected from attendees. In the afternoon, we will have an open debate on, among other things, 1/ Which are good systems to study plasticity and robustness? 2/ Is there a "right balance" between abstract and mechanistic theory? 3/ How shall we actually/really solve complex questions in a collaborative way? How should we productively collaborate in today's scientific ecosystem?

This event is sponsored by **LifeHUB-CSIC** (https://lifehub.csic.es/) and **EMBL-Barcelona** (https://www.embl.org/sites/barcelona/).

LifeHUB will cover the travel and lodging costs of attendees coming from outside Barcelona. Please, to join the workshop, contact Encarni Carrillo (e.carrillo@csic.es) –and, let us know if you are interested in presenting a short, 20 min. talk on your work or plasticity/robustness, and its title.

Venue: Barcelona Collaboratorium for Modelling and Predictive Biology

Pasqual Maragall Foundation Building Wellington, 30, 2nd floor 08005 Barcelona

James Sharpe, Juan F. Poyatos, Fernando Casares.

Program

9.00-9:30h Coffee

9:30-11:00h

Jordi García-Ojalvo (UPF, Barcelona) "Robustness and plasticity of bacterial spores"

Iván Gómez-Mestre (EBD, Sevilla) "Evolutionary loss and gain of adaptive developmental plasticity"

Marta Ibañes (Univ. Barcelona) "Can multifunctional circuits drive robustness and plasticity?"

Inmaculada Yruela (EEAD, Zaragoza) "Dynamic of proteome plasticity in green organisms. A view from multicellularity"





11:00-11:30h Coffee break

11:30-13:30h

Isaac Salazar-Ciudad (UAB/CRM Barcelona) "On the origins of developmental robustness: How cell-level noise leads to morphological-level noise and how is that noise buffered"

Saúl Ares (CNB-Madrid) "Feedback control of organ size precision in the Drosophila eye"

Nuria Flames (IBV, Valencia) "Genetic assimilation underlies the emergence of novel neuron types in the Caenorhabditis genus"

Juan Poyatos (CNB, Madrid) "Tales from a (dedicated) systems biologist"

13:30-15:00 Lunch

15:00-17:00h *Open Discussion, with topics including*

1/ Which are good systems to study plasticity and robustness?

2/ Is there a "right balance" between abstract and mechanistic theory?

3/ How shall we actually/really solve complex questions in a collaborative way? How should we productively collaborate in today's scientific ecosystem?