PROJECT PROPOSITION - Lab1- 2023

(M1, second semester)

Supervisor(s): Alessandro Barducci

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Hosting lab: CBS

Period of proposed project (put **x** instead of □) :

□ Only 1st slot X Only 2nd slot

□ One slot, but I have no preference on which □ Both slots (with different groups)

1st slot: 12 days to be selected later between 1/16/2023 to 2/24/2023- see next page for info
2nd slot: 12 days to be selected later between 3/6/2023 to 5/12/2023- see next page for info

QUANTITATIVE STUDY OF COACERVATION IN A MODEL RNA / CATIONIC PEPTIDE MODEL

Subject (5 lines max for the description)

We propose a paired lab1: the first period, supervised by Christine Doucet, will be experimental. The second, supervised by Alessandro Barducci, will be theoretical. Recently, membrane-less assemblies of proteins have emerged as a novel layer of spatial organization. These assemblies are triggered by weak multivalent interactions and result from liquid-liquid phase separation. We use a model coacervation system composed of unstructured RNAs (polyU) and a cationic peptide. Phosphorylation of the peptide leads to dissociation of the coacervates, and we use this dynamic system to study liquid-liquid phase separation out of equilibrium.

Technical tools to be used:

Molecular simulations

Theoretical models in polymer physics

Objectives:

We will explore theoretical/computational approaches to model the assembly and the properties of RNA/peptide coacervates taking advantage of the experimental results obtained in the first part of the project.

		Lundi	Mardi	Mercredi	Jeudi	Vendredi
Periode 1	16 au 20/01					
	23 au 27/01					
	30/01 au 03/02					
	06 au 10/02					
	13 au 17/02					
	20 au 24/02					

		Lundi	Mardi	Mercredi	Jeudi	Vendredi
Periode 2	06 au 10/03					
	13 au 17/03					
	20 au 24/03					
	27 au 31/ 03					
	03 au 07/04					
	10 au 14/04					
	17 au 21/04					
	24 au 28/04					
	02 au 05/05					
	08 au 12/05					