

PROJECT PROPOSITION - Lab1- 2023

(M1, second semester)

Supervisor(s): Christine DOUCET

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Hosting lab: CBS

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

☒ Only 1st slot

☐ Only 2nd slot

☐ One slot, but I have no preference on which groups)

☐ Both slots (with different

We propose a paired lab1: the first period, supervised by CD, will be experimental. The second, supervised by Alessandro Barducci, will be theoretical.

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 CD, 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:

- Fluorescence polarization anisotropy
- Fluorescence Correlation Spectroscopy

Objectives:

The aim is to produce quantitative data to feed theoretical models of polyU / peptide coacervation. Anisotropy will be used to measure polyU / peptide affinity in different conditions. The peptide concentration will be measured by FCS in the soluble and condensed phases to build experimental phase diagrams.

		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					
Periode 2		Lundi	Mardi	Mercredi	Jeudi	Vendredi
	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					