



qbio
quantitative
biology

QBIO MASTER PROGRAM

quantitative biology in practice

$$\frac{du}{dt} = \frac{\alpha_1}{1 + v^\beta} - u$$

Imaging Biological Systems

Philosophy and organization

Antoine Le Gall
Christine Doucet

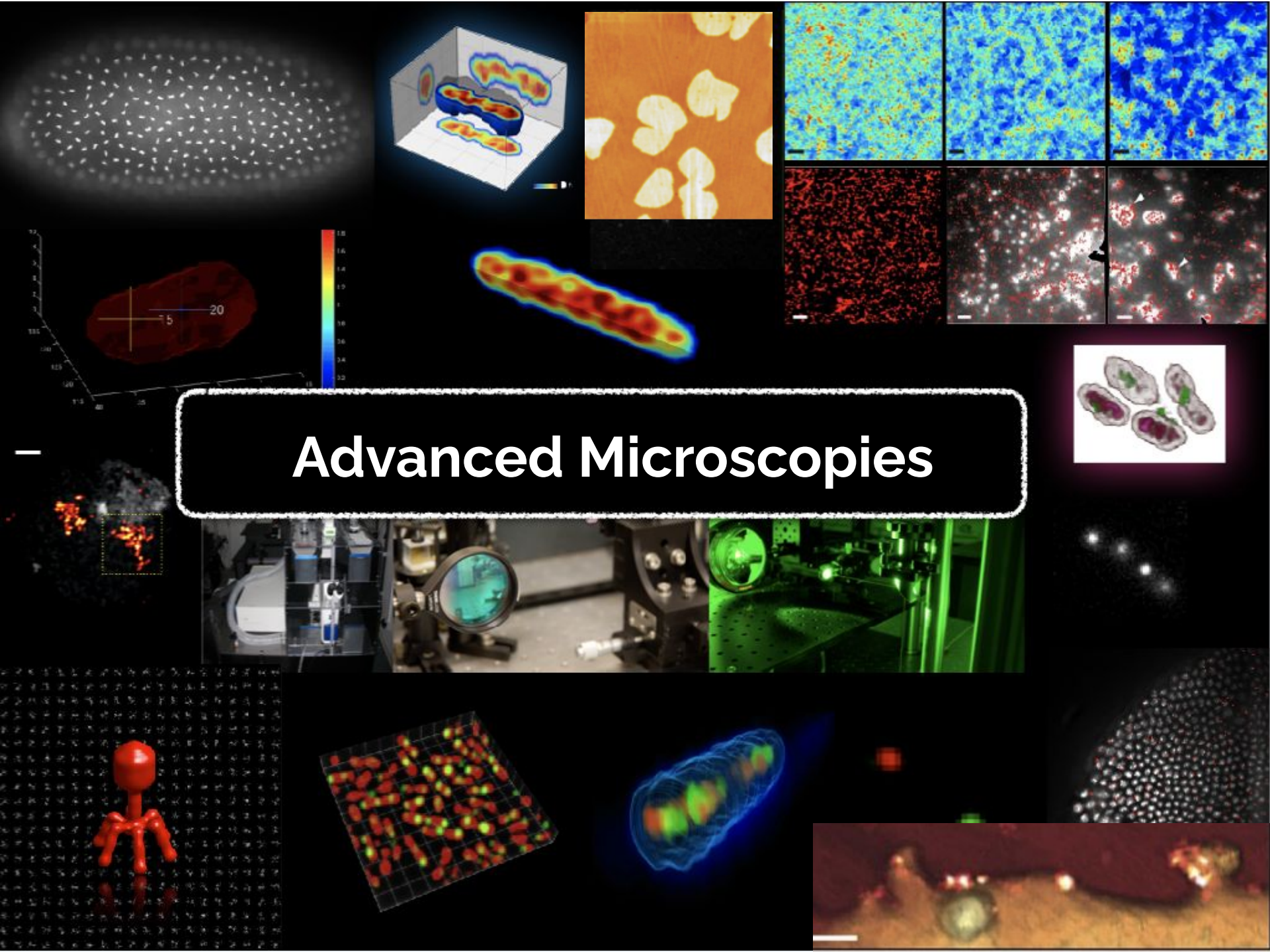
antoine.legall@cbs.cnrs.fr
christine.doucet@cbs.cnrs.fr

What is in the black box ?



=> Build your setup





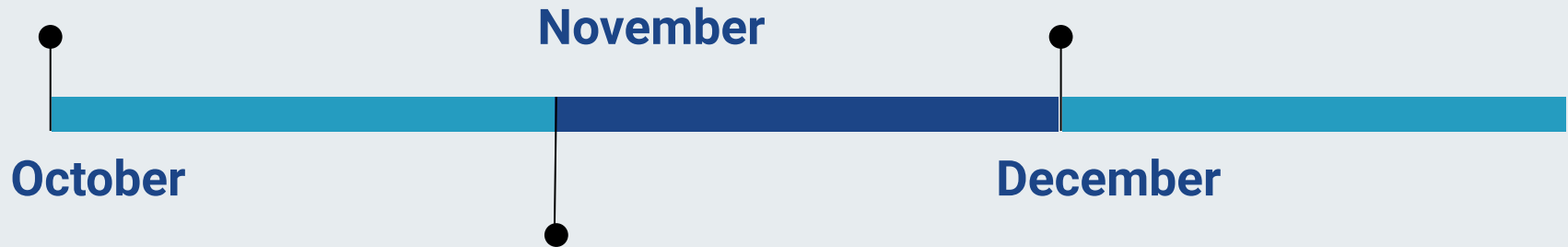
Advanced Microscopies

Introductory module

- laser safety / good practice
- basics practicals
- 4 hours seminar on optical microscopy, smFRET, AFM.

State of the art microscopy on biological samples - 2 groups

- experimental design
- 12 hours sample preparation + imaging + analysis
- **written + oral restitution**



Build your setup - 2 groups

- design + troubleshooting
- 12 hours practicals
- **written + oral restitution**

PLANNING



	October					November				December			
	Week 40 30/09-04/10	Week 41 07/10-11/10	Week 42 14/10-18/10	Week 43 21/10-25/10	Week 44 28/10-01/11	Week 45 04/11-08/11	Week 46 11/11-15/11	Week 47 18/11-22/11	Week 48 25/11-29/11	Week 49 02/12-06/12	Week 50 09/12-13/12	Week 51 16/12-20/12	Week 52 23/12-27/12
Mon													
Tue		9h-11h : TD Optics Basics				8h-12h TP Build Your Setup #1		debriefing written report BYS - 1h30		10h-17h TP Advanced microscopies			
Wed			9h-13h : TP Optics Basics	9h-11h : TD Build your setup - design		8h-12h TP Build Your Setup #2 14h-18h TP Build Your Setup #3	Report BYS deadline 13/11			10h-17h TP Advanced microscopies	Report Adv Mic deadline 11/12	Oral presentation Adv Mic	
Thu						8h-12h TP Build Your Setup Demo			14h-16h: TD Advanced Microscopies - design	14h-17h: oral restitution BYS			
Fri	14h-16h: TD FCS + electronics 16h-17h: Laser safety			14h-16h : TD Build your setup - troubleshooting							debriefing written report Adv Mic - 1h30		

Basics optics



Antoine LE GALL

Build your setup



Luca COSTA



Antoine LE GALL

Advanced microscopies



Emilie
COSTES



Christine
DOUCET



Caroline
CLERTE



Emmanuel
MARGEAT



Jean-Bernard
FICHE



Robert
QUAST



PART 2: BUILD YOUR SETUP

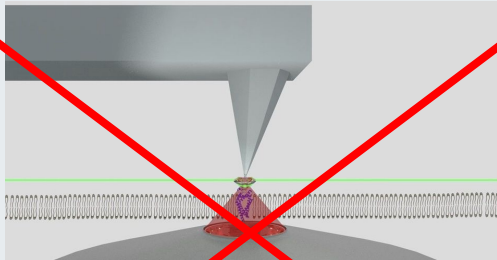


Choose 1 out of 2

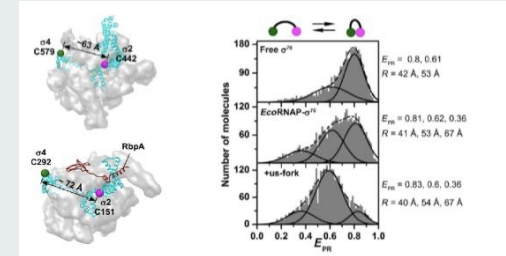
1. Build an epifluorescence / TIRF microscope
- ~~1. Build a confocal microscope~~
2. Build an AFM

PART 3: ADVANCED MICROSCOPY

Choose 1 out of 2



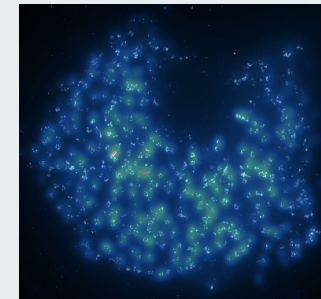
1- Image model lipid membranes by
correlative AFM / confocal / FLIM



2- Structural dynamics of metabotropic
Glutamate receptor by smFRET



3- Characterize promoter strength in
E.coli by N&B



4- Nuclear Pore Complexes imaging
in human cells by confocal, Airyscan
and STORM microscopies

To Do

- ❑ Constitute student pairs for the optics basics practicals (next wednesday)

TP basics Optics

- ❑ Choose 1 out of 2 “build your setup” project + 1 out of 2 “advanced microscopies”