

# SYSTEMS AND SYNTETIC BIO WEEK GABBA Feb 2016

## Monday 01.02.2016

9:00-9:30	Introduction to Systems and Synthetic Biology Week (PB, SS)
9:30-10:30	Public speaking part 1 (SS)
10:30-10:45	Break
10:45-11:30	Introduction to Systems Biology (PB)
11:30-12:30	Introduction to bioinformatics and machine learning 1 (PB)
12:30-13:30	Lunch break
13:30-14:30	Introduction to bioinformatics and machine learning 2 (PB)
14:30-17:30	Hands on: Programming part 1 (PA)

## Tuesday 02.02.2016

9:30-12:30	Omics. High Throughput methods and their applications (PB)
12:30-13:30	Lunch break
13:30-17:00	Hands on: Programming part 2 (PA)

## Wednesday 03.02.2016

9:30-12:30	Design principles in biological systems (SS)
12:30-13:30	Lunch break
13:30-17:00	Hands on: Image Analysis (SS, PB)

## Thursday 04.02.2016

9:00-10:30	Synthetic Biology - engineering biological circuits (PB)
10:30-11:00	Break
11:00-12:00	Public speaking part 2 (SS)
12:30-13:30	Lunch break
13:30-17:00	Hands on: Write a paper (SS)

## Friday 05.02.2016

09:30-10:30	Introduction to Systems Biology, an editor's perspective (MP)
10:30-11:00	Omics - An atlas of human phospho-regulation (PB)

11:00-11:30	In silico neuroscience - building and simulating neurons in a computer (PA)
11:30-12:00	Break
12:00-13:00	Noon seminar: Cell morphogenesis across scales: from molecular processes to cell surface mechanics (Ewa Paluch)
13:00-14:00	Lunch break
14:00-14:30	Design Principles - Spatio-temporal control of cell division (SS)
14:30-15:00	Synthetic Biology - Building multicellular life (HY)
15:00-16:00	Meet an editor: Publishing (MP)
16:00-16:15	Break
16:15-17:00	The academic track (PB, SS, HY, PA, MP)

## Lecturers

**Pedro Beltrao** (PB) EMBL-EBI - [www.ebi.ac.uk/beltrao](http://www.ebi.ac.uk/beltrao)

**Silvia Santos** (SS) MRC-Imperial College London - <http://csc.mrc.ac.uk/research-group/quantitative-cell-biology/>

**Paulo Aguiar** (PA) University of Porto

**Hyun Youk** (HY) TU Delft - <http://www.youklab.org/>

**Maria Polychronidou** (MP) - Editor Molecular Systems Biology  
[msb.embopress.org](http://msb.embopress.org)

## Reading Material

References for the different sub-sections will be given during the week. Please read the following short commentary papers before Monday:

1. Can a biologist fix a radio?--Or, what I learned while studying apoptosis. Lazebnik Y. Cancer Cell. 2002 Sep;2(3):179-82.
2. Q&A: Systems biology. James E. F. Jr. Journal of Biology. 2009.
3. The meaning of Systems Biology. Marc Kirschner. Cell 2005

## **Bioinformatics and Image Analysis**

For the "Hands on: Programming" please bring your laptop to the classes. We will focus on an introduction to scientific programming with MATLAB - said that, if you don't have MATLAB already installed on your laptop, please download a "Free Product Trial" (30 days) from here:

[https://www.mathworks.com/programs/trials/trial\\_request.html](https://www.mathworks.com/programs/trials/trial_request.html)

Fill in the small register form and after pressing the button "Get packaged trial", select to download and install (at least) the "Computational Biology" package. Bring your laptop to the course with MATLAB already installed.

For the Image Analysis please bring at least 1 laptop per 2 people and Install CellProfiler

<http://www.cellprofiler.org/download.shtml>