



# Lessons from non-formal learning and teaching



*European Life Sciences Infrastructure for Biological Information*

[www.elixir-europe.org](http://www.elixir-europe.org)

# (Vinc)enza Colonna

2007-2010 Lecturer Universita' di Ferrara  
Biological Databases, Genetics



2016- Collaboration with Elixir-ITA training activities

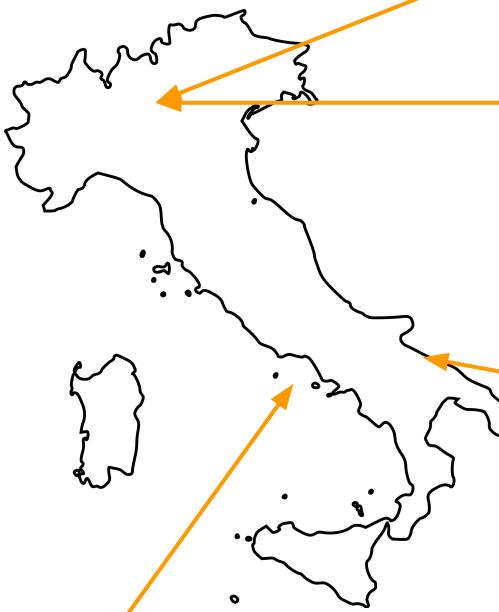
2016- Certified instructor for Software Carpentry/Data Carpentry



2014- Coordinator of Obilab: local project for training in bioinformatics



# Courses 2015

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- NGS for evolutionary biologists: from basic scripting to variant calling – CINECA Rome - 23-27 November 2015
  - Gene Expression profiling with HTS: RNA-Seq data analysis – CINECA Rome - 19-22 October 2015
  - Protein Networks and Systems Biology, Università di Bologna, 14-18 December 2015
  - High Throughput Sequencing (HTS) data analysis – Sapienza Università - 5-7 October 2015
- <http://bioinformaticstraining.pythonanywhere.com>  
[elixir.ita.training@gmail.com](mailto:elixir.ita.training@gmail.com)

# Courses 2016



**High Performance Molecular Dynamics@CINECA - PRACE Edition**  
CINECA, Bologna - **20-30 September 2016**

- **High Performance Molecular Dynamics**

CINECA, via dei Tizii 6, Rome - **5-7 April 2016**

- **NGS for evolutionary biologists: from basic scripting to variant calling**
- Consiglio Nazionale delle Ricerche, Naples  
- **May 2-6, 2016**

- **Effective academic teaching**
- University of Salerno, Fisciano (SA), Italy - **June 15th, 2016**

- **RNA-seq data analysis**
- University of Naples Federico II, Naples - **June 6-10, 2016**

# Disclaim

The following examples are from the practical  
courses of ELIXIR-ITA in 2015-2016

Application to university courses  
might require adjustments !!!



# *Active Learning in practice:*

Before the class

During the class

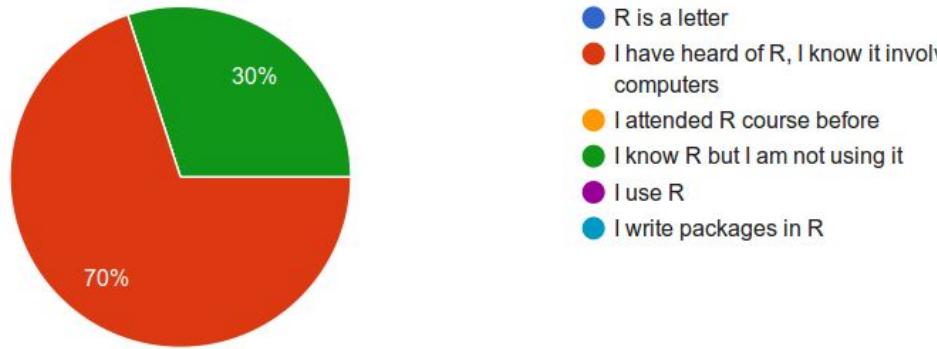
After the class

# Teacher (coach) motivation

- Ask yourself why do you want to teach:
  - Obvious if your main appointment is teaching (e.g. professors at university)
  - Less obvious otherwise (e.g. volunteer teaching)

# Know your students before you meet them

Rate your current knowledge of R (10 responses)



Select carefully, use pre- assessment [forms](#)

# The more (instructors) the merrier

- Aim for small size courses (max 25 students)
- Instructor / students → 1 / 4-5
- Expert students as helpers

# Course Material

- Establish and announce goals for the course and for single lessons
- Make course material complete and available before the course starts
  - Example material

# *Active Learning in practice:*

Before the class

During the class

After the class

# Introduction and motivations

- Let students and instructors introduce themselves and explain motivations
- Set an informal atmosphere, use names, tricks to remember names

# Sticky notes



# Peer -learning



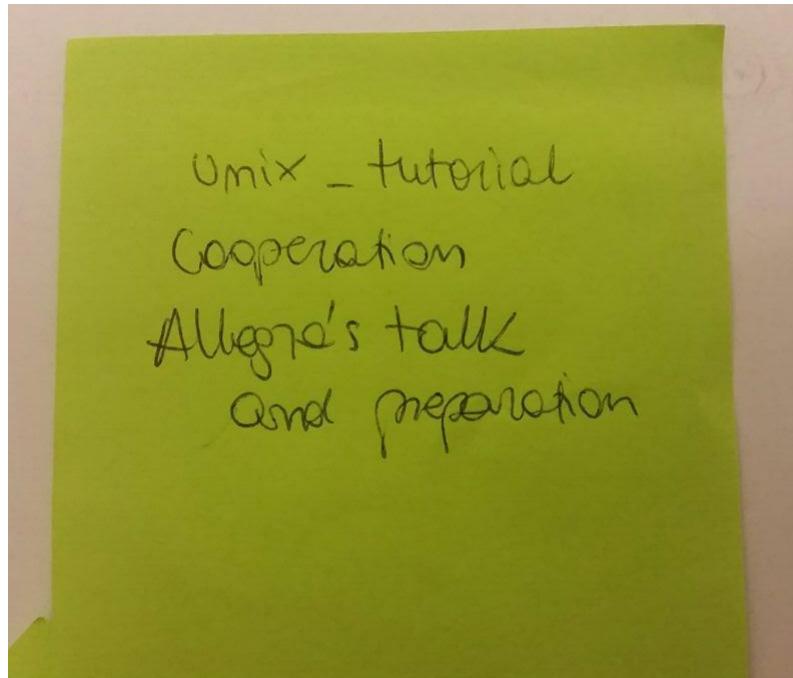
Pair students  
according to  
expertise:

1 expert  
1 non-expert

# Recap ball



# Daily feedbacks



1 positive thing

1 negative thing

Daily!!

# Practical projects to be done in groups

- Group participants in groups of 3-4
- Assign practical project similar to practicals learned alone
- At the end of the course students present the results of the projects

# Projects: group discussion



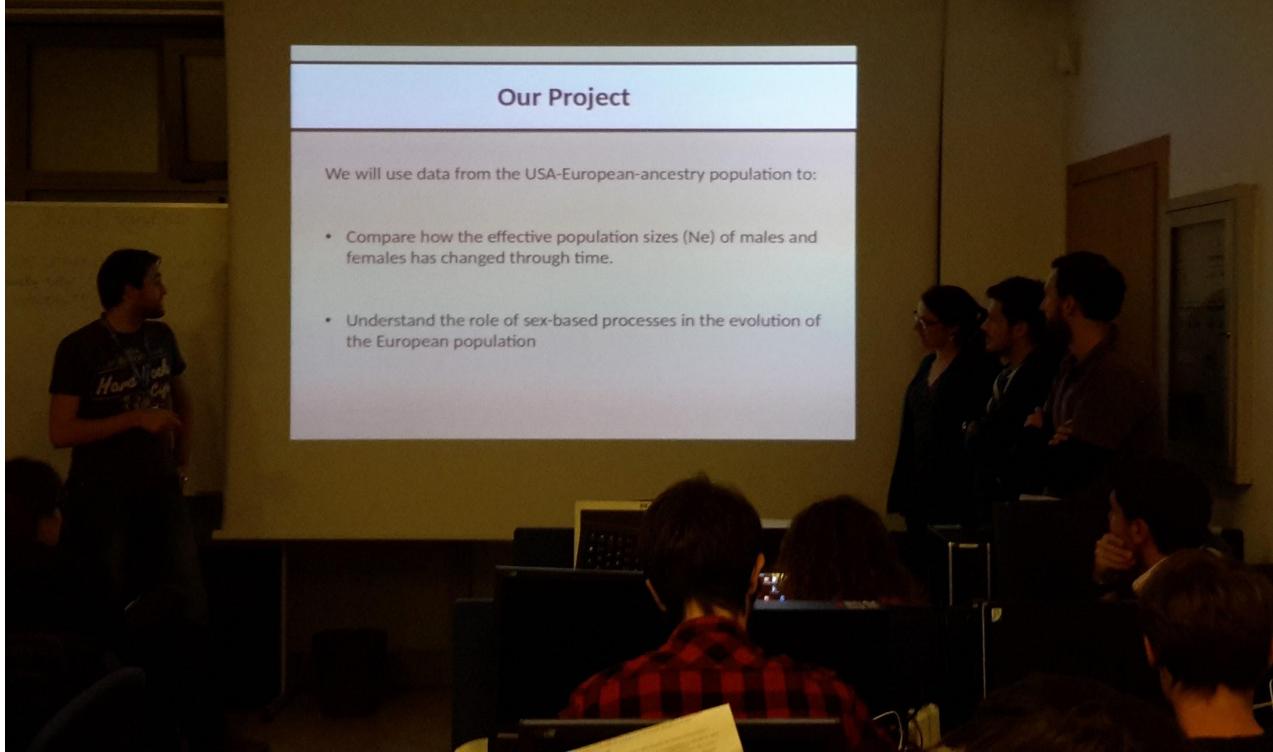
Challenges with  
problems to be  
solved in groups

# Projects: group work



Make  
complementary  
tasks

# Projects: results presentation



# Social Activities



# Occasionally lecturing...



# *Active Learning in practice:*

Before the class

During the class

After the class

# Feedbacks from students



Before students leave

Discuss the outcome  
in the class

Example form

# Instructors recap meeting

- Right after the end of the course
- Instructors will be exhausted at the end...  
.... but it is the most effective time for recap!!

# Thank you



# ELIXIR-ITA

## Train the Trainer @BITS 2016



# What you have to be aware of

- 1. It takes more time than you think**
- 2. Use other people's stuff!**
- 3. Expect push-back from students** – Sitting through a lecture is easy. Learning is hard.
- 4. Keep your options open!** You don't have to flip every lesson.  
Pick a few lessons each year.
- 5. Have a plan for your extra class time!** Make sure you plan out how you will use your class time.

# Your commitment

## 1. Actively help TtT:

- a. Choose one (or more than one) approach discussed today
- b. Apply it to your courses next year
- c. Discuss the outcome with ELIXIR-ITA: we will appreciate your thoughts

# Your commitment

## 2. Spread the news!!

- Tell your colleagues to attend next TtT events
- Invite colleagues to use active learning
- Discuss introducing active learning in academic curricula

# Thank you

