



# Introduction to Machine Learning from Biology to Health

**REGISTRATION DEADLINE: September 10, 2021**

**ORGANIZERS:** Benoit BALLESTER (Inserm U1090, Marseille), Christine BRUN (Inserm U1090, Marseille), Cécile CAPPONI (CNRS UMR 7020, Marseille), Raphael MOURAD (Centre de Biologie Intégrative, Toulouse)

**AIMS:** This workshop we will provide the fundamentals of Machine Learning methods and will present applications of machine learning in various aspects of biological research.



## PHASE I – CRITICAL ASSESSMENT

October 11-13, 2021 in videoconference

### INTRODUCTION TO MACHINE LEARNING

Chloé-Agathe AZENCOTT (MINES ParisTech, FRA), Liva RALAIVOLA (LIS, FRA)

### MACHINE LEARNING FOR GENOMICS

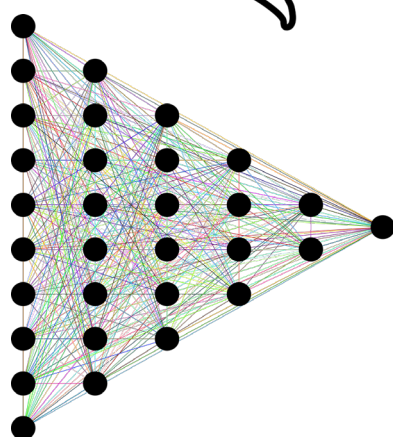
Laurent BRÉHÉLIN (LIRMM, FRA), Oliver STEGLE (DKFZ, DEU), Trey IDEKER (UCSD, USA), Aleksej ZELENIAK (Chambers, SWE)

### MACHINE LEARNING FOR FUNCTION PREDICTION

Burkhard ROST (Technical University of Munich, DEU), Annalisa MARSICO (Max Planck Institute Berlin, DEU), Casey S. GREENE (University Pennsylvania, USA)

### MACHINE LEARNING FOR IMAGING AND LANGUAGE

Christophe ZIMMER (Institut Pasteur, FRA), Paul VILLOUTREIX (LIS, FRA), Etienne THORET (Institute of Language, Communication and the Brain, FRA)



## PHASE II – TECHNICAL WORKSHOP

Date to be defined - Marseille

Phase II will consist of coding sessions using Machine and Deep learning with R (Keras). We will predict regulatory elements with ML using SVM, K-mers, glm, random forest. For Deep Learning we will use CNN, LSTM, model interpretation for the predictions. The last day will see application to human genetics using GWAS SNP effect, eQTL, ChIP-seq allelic imbalance. Bring your laptops, we will use the French Institute of Bioinformatics.

**SELECTION:** 12 trainees will be selected among Phase I participants.

Information and registration  
ateliers@inserm.fr  
<https://tinyurl.com/k7pwr6e>