

université
PARIS-SACLAY

INSTITUTE DATAIA
Data Science, Intelligence & Society



D2C
DATAIA CLUB CONNECTION

ML BIOMARKERS

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CentraleSupélec

école
normale
supérieure
paris-saclay

AgroParisTech



INRAE *Inria*



ONERA
THE FRENCH AEROSPACE LAB

FM
JH
FONDATION MATHÉMATIQUE
JACQUES HADAMARD



CentraleSupélec

EXE

GUSTAVE
ROUSSY
CANCER CAMPUS
GRAND PARIS

Institut Mines-Télécom
Business School

INSTITUT
d'OPTIQUE
GRADUATE SCHOOL
ParisTech

IHES
Institut des Hautes Études Scientifiques

DATAIA PARIS-SACLAY INSTITUTE

Located within the **Paris-Saclay University** (12th Shanghai ranking), it is the **first French ecosystem in Data Sciences, AI and their societal impacts.**

MISSION

To bring together **multidisciplinary expertise and boost the collective strength of its partners** in the Paris-Saclay cluster with the aim of combining big data and AI technologies with social sciences and humanities for an AI at the service of humans.

IN FIGURES

14

DATAIA members

47

laboratories
partners

800

full-time
researchers

10

IA chairs out of
40 national

30

IA theses

450

PhD students
per year



The Industrial Affiliation Plan (PAI) aims to boost the collective strength of the Institute's academic ecosystem and its industrial members. The services offered in response to the respective needs expressed include:

- Joint actions to support research;
 - Sharing of experiences and collective needs;
 - Facilitated access to recruitment;
 - Access to training, seminars, workshops, etc.;
 - Implementation of dedicated events (hackathons, challenges, etc.);
 - Access to working places to increase exchanges.
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The D2C system aims **upstream**, to present the priority research issues and to match them with the problems of industry. **Downstream**, to monitor contacts and opportunities for collaboration identified until they are set up and launched. It is part of the ambition to facilitate the establishment of several levels of collaboration and create a constructive dynamic:

1. Expertise / Student projects / Internships
2. Research collaborations / CIFRE theses
3. Joint laboratories / Joint teams
4. Multi-partner chairs

OBJECTIVES & PROGRAM



The main objectives of this D2C are focusing on :

- Identification of biomarker signatures on treatment and disease progression;
- Optimization of biomarker selection by unsupervised analysis on multi-omics data;
- Integration of biomedical database to study gene function.

2PM - 2:10PM

Introduction

2:10PM - 3PM

DATAIA researchers pitches on prospective research topics followed by industrialists on related issues

3PM - 4PM

Individual meetings with a view to setting up new collaborations

4PM - 4:10PM

Conclusion and action plan

DATAIA RESEARCHERS



Identification of genes responsible for phenotypes

Christophe Ambroise (UEVE, LaMME)

Supervised and unsupervised learning based on probabilistic models



Querying and ranking biological and biomedical data

Sarah Cohen-Boulakia (Paris-Saclay University, LISN)

Integration, querying and ranking in the context of biomedical database



Identification of new markers and classification based on molecular profiles

Paul-Henry Cournède (CentraleSupélec, MICS)

Biomathematics, mathematical modelling of biological systems



Specific and dedicated statistical approaches

Bertrand Thirion (Inria, Parietal)

Statistical modeling and machine learning applied to brain imaging data

DATAIA RESEARCHERS

Response to treatment with genomic data



Farida Zerhaoui (UEVE, IBISC)

Interpretation of learning models, multi-source, multi-objective classification, clustering



Blaise Hanczar (UEVE, IBISC)

Deep learning, supervised learning, predictive systems, performance evaluation

New high-dimensional statistical methods for multi-omics data



Julien Chiquet (INRAE, MIA)

Statistical learning applied to the analysis of data from life sciences

Designing ML models to discover brain imaging signatures of mental disorders



Edouard Duchesnay (CEA, Neurospin)

Transfer learning algorithms to bridge the gap between heterogeneous and homogeneous datasets

DATAIA CLUB PAI COMPANIES



GE Healthcare

Imaging data correlated with patient treatment responses

Nicolas Gogin - Senior Manager deep learning and image analytics

sanofi

Integration of biological knowledge: gene function, protein networks Development of ML models for biomarker signature discovery in medical imaging

Caroline Paccard - Biomarker statistics head
Franck Augé - Translational sciences, bioinformatics group head
Elton Rexhepaj - Senior data scientist, bioimaging and deep learning

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Gene linkage modeling to optimize marker selection, mixing of different types of data within the same ML model

Laura Xuereb - Biostatistics Manager, biomarkers
Perrine Soret - Translational analytics and statistics

GUEST COMPANIES



Learning data to challenge algorithms in biopsy sorting

Jean-François Pomerol - CEO
Salma Ben Hadj - IA Director
Rutger Fick - Senior Data Scientist



Optimization of biomedical data in R&D and pharmacovigilance

Romain Clément - CEO



Integration of multi-omics data for the characterization of patients resistant to anti-cancer treatments

Sébastien Vacheric - OncoSNiPE
Program Director

INSTITUTIONAL PARTNERS





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