UNIVERSITÉ CÔTE D'AZUR

ÉCOLE UNIVERSITAIRE DE RECHERCHE
SCIENCES DU VIVANT ET DE LA SANTÉ

University Degree

AINSI

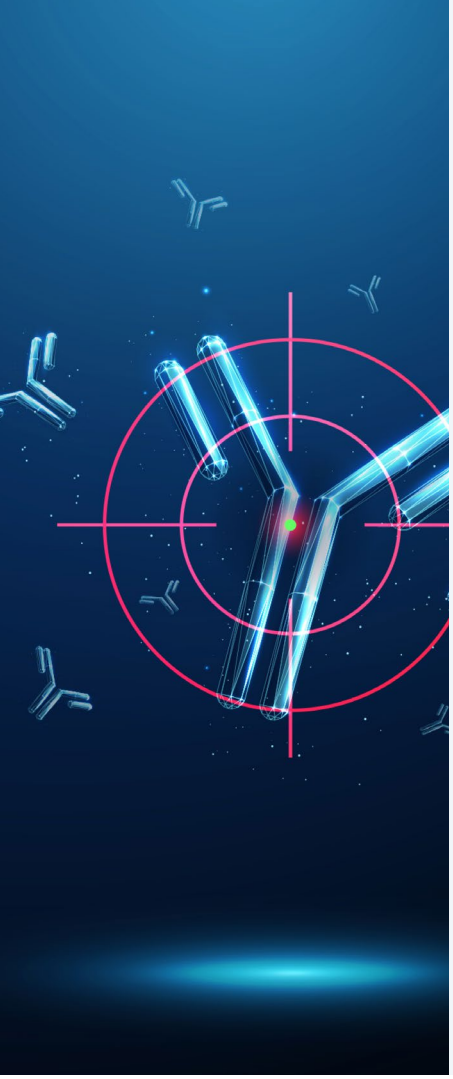
ARTIFICIAL INTELLIGENCE AND SYSTEMS IMMUNOLOGY



Info & application:

mabdesign
THE BIOTHERAPY EXPERT
French association of the industrial sector of biomedicine

univ-cotedazur.fr



PRESENTATION

Artificial intelligence (AI) has become essential in immunology, enabling, for example, the prediction of antigens and neoantigens, the spatial and temporal dynamics of immune cells, and improvements in immunotherapeutic engineering.

To meet this need, the University Diploma in Artificial Intelligence and Systems Immunology (DU AINSI) offers a course, delivered entirely in English, spread over 10 days in two modules combining theoretical lectures and practical workshops, totalling 70 hours.

Through an exploration of AI tools and their applications in immunology, the programme aims to provide an understanding of AI methods applied to computational immunology (epitope design, immunological diagnostics, immunotoxicology and personalised immunotherapy approaches) and to equip participants with proficiency in simple bioinformatics tools and the use of databases for omics analyses in computational immunology.

Learn how to use bioinformatics tools, omics databases and AI approaches dedicated to computational immunology. Develop a unique skill set at the intersection of biology, data science and innovation in healthcare.

Duration of the course: 70 hours, spread over two separate weeks

Capacity: 16 participants **Language:** English

COURSE BENEFITS

International expertise at the intersection of AI and immunology

Discover how artificial intelligence is revolutionising modern immunology. This course provides you with the essential knowledge to understand and apply AI methods in research, diagnosis and the development of next-generation immunotherapies.

Development of skills needed for the future of medicine

Delivered entirely in English, the AINSI University Diploma is an intensive, career-focused course combining 70 hours of lectures and practical workshops spread across two intensive modules. The programme is designed to enable students to rapidly acquire skills that are directly applicable in the laboratory, in academic research or in industry.

PART OF THE «IMMUNOSKILLS» PROJECT

ImmunoSkills | Campus Innovation en Santé et Action Sociale Provence-Alpes-Côte d'Azur | France 2030 | Caisse des Dépôts Groupe

This AINSI University Diploma was created as part of the ImmunoSkills project led by the Campus des Métiers et Qualification (CMQ) for Innovation in Health and Social Services and supported by the government under the "Skills and Professions of the Future" call for proposals of the France 2030 Program, administered by the Caisse des Dépôts.

TARGETED SKILLS

1. To detect immunological biomarkers and improve diagnosis, image analysis and flow cytometry through the application of AI
2. To model molecular interactions, personalise immunotherapy strategies and stratify patients (immuno-oncology and autoimmunity) through the use of integrated AI techniques
3. Predict and analyse the immunotoxic risks of drugs, vaccines and innovative therapies; identify transcriptomic signatures of immunotoxicity; and predict interactions between drugs and the immune system through the expert application of AI
4. Predict and select epitopes in vaccinology and immunotherapy, optimise immunogenicity and reduce immune evasion by pathogens and cells using AI principles
5. Master the analysis of large-scale immunological data to model the dynamics of the immune system and develop digital immune maps that predict the progression of inflammatory and infectious diseases

PROGRAM

Module 1: **INTRODUCTION TO ARTIFICAL INTELLIGENCE**

- General introduction to AI EFELIA
- AI biology and medicine
- AI in immunology

Module 2: **PREDICTIVE IMMUNOMICS**

- Big data analysis in immunology
- Identify transcriptomic signatures of immune cell behaviour
- Large scale single-cell data integration

Module 3: **AI-ENHANCED IMMUNODIAGNOSTICS**

- Machine learning algorithms to predict B- and T-cell repertoires
- Development of models for patient stratification

Module 4: **AI AND IMMUNOTOXICOLOGY**

- Developing AI model to predict immunosuppressor levels
- IA for drug screaning in immunotherapy

Module 5: **PERSONALIZED IMMUNOTHERAPY**

- Computer-based and data-driven technologies for the next generation of precision in immunotherapies
- Model molecular interactions
- Personalize immunotherapy strategies

Module 6: **MACHINE LEARNING–BASED EPITOPE DESIGN**

- Integrated approaches to engineer Non-Immunogenic Therapeutic Proteins
- Machine Learning for Immunogenic Epitope Design

REGISTRATION

General fee: €6,000*
Reduced fee for researchers in the public sector: €1,400
Reduced fee for PhD students: €1,000

**Funding via the Professional Training Account (CPF) and OPCO schemes may be available*

If you have any questions regarding funding, please contact **clara.esnault@mabdesign.fr** Tel: **+33 (0)4 78 02 39 93**

Target audience : This program is designed for professionals from biotech, pharma, and medtech companies (scientific project managers ; clinicians ; design engineers ; research engineers ; CSOs, CEOs, etc.) as well as researchers, lecturers and researchers and PhD students

Prerequesites: A solid background in immunology, with a minimum of a Master's degree (or equivalent), and a good command of writtenand spoken scientific English are required. No prior expertise in AI is required.

Application: Applications must be submitted via the form provided on the webpage (CV required).
Use the QR Code on the front page to connect, or visit the link below:

https://univ-cotedazur.fr/formation/offre-de-formation/university-degree-in-artificial-intelligence-and-systems-immunology-ainsi

COORDINATION



Claudine BLIN
Director, Laboratory of Molecular Physiomedicine LP2M, CNRS-UniCA
Head of the *'Osteoimmunology, Niche Cells and Inflammation'* team



Philippe BLANCOU
Professor IPMC-INSERM
Head of the '*Immunity Regulation by the Nervous System*' team

SCIENTIFIC STEERING COMITTEE

Claudine BLIN Researcher - Director of the Laboratory of Molecular Physiomedicine (LP2M, Nice, France) Head of the team «Osteoimmunology, Niche Cells and Inflammation».

Philippe BLANCOU Teacher-researcher - Professor - Head of the team «Immunity Regulation by the Nervous System» (IPMC-INSERM, Sophia-Antipolis, France)

Maxim ARTYOMOV Researcher - WUSTL (Saint Louis, USA) and LP2M (Nice, France)

Stoyan IVANOV Researcher - Head of the team «Myeloid cells and metabolism» (LP2M, Nice, France)

Antoine SICARD Researcher - Researcher - Head of the team «Innovative molecular and cellular therapies in nephrology and transplantation» (LP2M, Nice, France)

Abdelilah WAKKACH Researcher - Co-head of the team «Osteoimmunology, niches cells and Inflammation» (LP2M, Nice, France)

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CONTACT

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Cette offre de formation est éligible à MON COMPTE FORMATION

éligible financement OPCO opérateurs de compétences

Accessibilité handicap

IMPRIM'VERT