

IMMUNOINFORMATICS

MEXICO CITY 2019

International Union of Immunological Societies (IUIS)

Latin American Association of Immunology (ALAI)

Mexican Society of Immunology (SMI)

Center of Complexity Sciences (C3), UNAM

Immunopaedia

IMMUNOINFORMATICS COURSE

Center of Complexity Sciences (C3)

National Autonomous University of Mexico, Mexico City.

April 8-10, 2019.

AIMS

- To provide the fundamental knowledge on Systems Immunology and Immunoinformatics.
- To discuss the recent advances and emerging research on Immunoinformatics applications to complex biological and biomedical systems.
- To acquire practical experience in mathematical and informatics tools that best answer particular research questions.

AUDIENCE

The target participants will include clinical and basic research fellows, postgraduate students and junior researchers who are involved in immunological systems that may be investigated from the complexity perspective.

<https://iuisimmunoinformat.wixsite.com/course>

iuis.immunoinformatics@gmail.com

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MEXICO CITY 2019

Day 1 (Monday, April 8th, 2019)

8:00-8:30 h Registration and Coffee

8:30-9:00 h Inauguration

IUIS, ALAI, SMI, Immunopaedia and C3 Representatives

9:00-10:00 h Introductory Session

Introduction and fundamental concepts in Systems Biology, Systems Immunology and Bioinformatics
Elena Álvarez-Buylla. Instituto de Ecología, Universidad Nacional Autónoma de México (UNAM), CDMX, México & Centro de Ciencias de la Complejidad, UNAM, CDMX, Mexico.

10:00-11:00 h Application Session

Immune system computational modeling: from the construction of genetic regulatory networks to virtual cultures
Luis Mendoza. Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México, CDMX, México.

11:00-13:00 h Hands-On Practice

Discrete modeling strategies to simulate cell differentiation networks with microenvironment feedback
Jennifer Enciso García. Centro de Ciencias de la Complejidad, Universidad Nacional Autónoma de México, CDMX, México & Mexican Institute for Social Security, Puebla, Mexico.

13:00-14:00 h Lunch. Universum, Museo de las Ciencias de la UNAM.

14:00-15:30 h Poster Presentations and Coffee. Roof Terrace, C3-UNAM.

15:30-17:30 h Application Sessions

Plasticity in the immune system: from models to mechanisms
Mariana Martínez-Sánchez. Instituto de Ecología, Universidad Nacional Autónoma de México, CDMX, Mexico.

Machine-learning in oncoimmunoinformatics
Antonio del Rio Chanona. Department of Chemical Engineering. Imperial College London, U.K.

17:30-19:00 h Discussion session: ASK THE EXPERTS (Imaginario Matemático, Universum UNAM).

19:00- 20:00 h DINNER



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Day 2 (Tuesday, April 9th, 2019)

9:00-10:00 h Introductory Sessions

Reverse engineering for vaccines design

Débora de Oliveira Lópes - Universidade Federal de São João del-Rei, Minas Gerais, Brazil

10:00-11:00 h Application Session

Immunomics of Infectious Diseases: towards a complete atlas of antigens, epitopes and antibodybinding specificities for human pathogens. The case of Chagas Disease (*Trypanosoma cruzi*)

Fernán Agüero. Instituto de Investigaciones Biotecnológicas, Universidad Nacional de San Martín, Buenos Aires, Argentina.

11:00-13:00 h Hands-On Practice

Integrative single-cell transcriptomic analysis with applications to brain immunogenomics and neurodegeneration

José Dávila-Velderrain. Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, Cambridge MA, USA

13:00-14:00 h Lunch. C3, UNAM.

14:00-15:30 h Poster Presentations and Coffee. Foyer, C3-UNAM.

15:30-17:30 h Application Sessions

Lymphocyte repertoire and comparative genomics for the study of immune responses

Jesús Martínez-Barnetche. Centro de Investigación en Enfermedades Infecciosas, Instituto Nacional de Salud Pública, Morelos, México.

Genomics of infectious immunopathology

Luis Fernando Barrera. GICIG, Instituto de Investigaciones Médicas, Facultad de Medicina, Universidad de Antioquia. Medellín, Colombia.

17:30-18:30 h Discussion Session: ASK THE EXPERTS (Museo Universitario de Arte Contemporáneo, UNAM).

18:30-20:00 h DINNER – Gender Equality Session



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Day 3 (Wednesday, April 10th, 2019)

9:00-10:00 h Introductory Session

Structural Immunology applied in drug discovery

Fernando Bazán. Chief Technology Officer at Bio-Techne & Adjunct Faculty in the Department of Pharmacology, University of Minnesota School of Medicine, USA.

10:00-12:00 h Application Sessions

B cell epitopes prediction using docking

Lenin Domínguez Ramírez. Department of Chemical and Biological Sciences, Universidad de las Américas, Puebla, Mexico.

Immune epitopes data base functionality

Alessandro Sette. La Jolla Institute for Allergy and Immunology, USA.

12:00-13:00 h Lunch. C3-UNAM.

13:00-15:00 h Hands-On Practice

Analysis of TLR ligands with pharmacological potential using molecular docking

Ricardo Vázquez-Ramírez. Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México, CDMX, México.

15:00-17:00 h Application Sessions

Integrative strategies for the study of infectious diseases and autoimmunity

Alessandro Sette - La Jolla Institute for Allergy and Immunology, USA.

Immunoinformatics and Modeling tools for antibodies engineering in cancer therapy

Juan Carlos Almagro - GlobalBio, Inc. Cambridge, MA. USA.

17:00-18:00 h Discussion Session: ASK THE EXPERTS.

18:00-18:30 h Immunopaedia Minutes, Photo and Closing Remarks

19:00-21:30 h DINNER



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