PhD program in Pharmaceutical Sciences

- Advanced courses -

Faculdade de Farmácia
Universidade de Coimbra

Coordinators

Gabriela Jorge da Silva,
FFUC/CIBB

Email: gisilva@ci.uc.pt /
silva.gj@gmail.com

ADVANCED COURSE

"Molecular Approaches in Infectious Diseases Research"

May 9-13, 2022

OBJECTIVES AND SIGNIFICANCE

Infectious diseases are one the most striking causes of morbidity and mortality worldwide. Emergent new virus, like SARS-COV-2, re-emergence of "old" diseases and the increase of antimicrobial resistance are huge threats for human health.

The development of molecular tools has been crucial to understand infections in diverse strands. This course aims to give an overview of the molecular-based methods to study infections caused by virus, bacteria and parasites, namely in the identification of the etiological agent (e.g., RT-PCR), strain genotypes epidemiology, genetics of antimicrobial resistance and its dissemination, whole genomic sequencing (WGS) and microbiome. New therapeutic strategies to fight infections are urgently needed and this course will illustrate some novel approaches that will fuel future research on the treatment and prevention of infectious diseases.

Eight lecturers of the University of Coimbra, University of Lisbon and Center for Neurosciences and Cell Biology will address these topics, referring their research and scientific experience. At the end of the course, a seminar will be held by an international invited speaker from the University of Calgary, Canada.

Molecular studies are transversal to the study of diverse diseases, infectious or not, and the course should be considered a way of fuel and exchange ideas, with a multidisciplinary approach. Students are strongly encouraged to participate interactively during classes, and will complete a final test on the topics exposed. The course will be presential and online, in Portuguese and English language.

REGISTRATION

The course is free but attendants must register by sending an email to the Coordinator of the course. The registration deadline is May 4th.

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PROGRAM

Monday, May 9

15.45h- Introduction

Gabriela Jorge da Silva, Faculdade de Farmácia e CNC, Universidade de Coimbra

16.00h- COVID-19, what we learnt: the use of molecular tools for the pandemic control

Ana Miguel Matos, Faculdade de Farmácia e Laboratório de Análises Clínicas da Universidade de Coimbra

17.00h- Using Genomics to Understand the History and Epidemiology of Multidrug Resistant Tuberculosis in Portugal

João Perdigão, iMED e Faculdade de Farmácia da Universidade de Lisboa

Tuesday, May 10

16.00h- Therapeutic potential of *Giardia lamblia* extracellular vesicles (EVS)

Maria de Céu Sousa, Faculdade de Farmácia e CNC, Universidade de Coimbra

17.00h- The design of a therapeutic hepatitis B vaccine: lessons learned in our laboratory

Olga Borges, Faculdade de Farmácia e CNC, Universidade de Coimbra

Wednesday, May 11

16.00h- Microbiome weapons and shields in metabolic, neurodegenerative and infectious diseases

Nuno Empadinhas, Centro de Neurociências e Biologia Celular (CNC, CIBB)

17.00h- Inorganic nitrate prevents the loss of tight junction proteins and modulates inflammatory events induced by broad-spectrum antibiotics: a role for gut microbiota?

Bárbara Rocha, Faculdade de Farmácia e CNC, Universidade de Coimbra

Thursday, May 12

16.00h- Antimicrobial resistance: the silent pandemic

Gabriela Jorge da Silva, Faculdade de Farmácia e CNC, Universidade de Coimbra

17.00h- Antimicrobial resistance and associated mobile elements

Sara Domingues, Faculdade de Farmácia e CNC, Universidade de Coimbra

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Friday, May 13

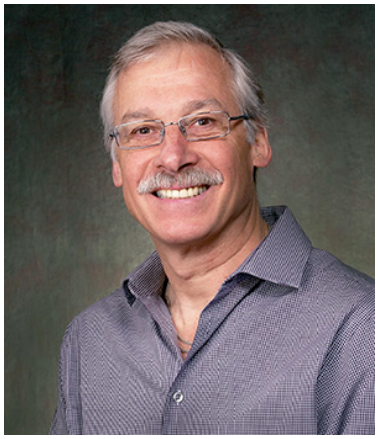
16.00h- Seminar: How to give a presentation

André Buret (see bioskecth below)

University of Calgary, Canada

17.00h- Evaluation (online test)

Professor André G. Buret – Biosketch



Associate Vice-President (Research), University of Calgary, Professor (with tenure), Biological sciences (Science)
Adjunct Professor, Physiology and Pharmacology (Medicine)
Vice-President (research), co-founder, Antibe Therapeutics
Director, NSERC CREATE Host Parasite Interactions

Diseases of the gastrointestinal tract and the lungs represent the most common causes of death in humans and other animal species worldwide. Using viral, bacterial and parasitic models, the overall aim of Dr. Buret's research is to characterize microbial-host interactions in these systems, and how such interactions may affect gastrointestinal and pulmonary physiology, health, inflammation, and chronic disease, in an attempt to develop novel therapeutic strategies. Current emphasis is given to the role of microbiota in chronic gut inflammatory diseases, and immunomodulation by antibiotics particularly in cattle and swine.

Dr. Buret established his research program at the University of Calgary in 1995. Dr. Buret has published over 170 peer-reviewed articles, 18 book chapters, and has been invited to deliver more than 300 presentations worldwide. Dr. Buret holds over 20 issued patents, and contributed to the creation of three biotech spin-off companies. He has mentored, as principal supervisor, more than 60 undergraduate research projects, and trained 36 Ph.D and M.Sc. students (all Research-based), as well as 13 post-doctoral fellows (and more than 80 other PhD/MSc students as co-supervisor), who have obtained positions in industry, academia, and government. He serves on many National, and International grant and government committees, and acts as advisor and/or board member for several institutes and private companies.