lbio1335

2019

Immunology : basis and applications in biology

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

3 credits	25.0 h + 15.0 h	Q1

Teacher(s)	Dehoux Jean-Paul ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	Module A (30 hours) : biology students and veterinary students. The objective of this module is to describe the basic notions of immunology: immune system organs, immunocompetent cells, immunoglobulins, major histocompatibility complex, T receptor, complement system and inflammation, tolerance, regulation of the immune response, immunity in the fetus and newborne, mucosal immunity. Resistance to viruses and bacteria, immunity to parasites as well as vaccines and vaccination, hypersensitivity (types I to IV) and their treatment, immunity to transplant and different diagnostic applications and immunological tests will be covered . Module B (15 hours) : Agronomy students. The objective of this module is to give the essential notions of the immune system: natural immunity and acquired immunity, antigens, structure of antibodies and the classes of immunoglobulin, main interactions between humoral and cellular responses. Besides, the module shows the technological applications of fundamental immune knowledge : monoclonal antibodies, immunological techniques of detection and dosage and vaccinology. Practical work (15 hours) The practical work realizes the main tests in immunology : isolation of mononuclear blood cells, determination of different immuno-competent cells after coloration on blood smears, immunodetections by enzymatic technique (ELISA) and realization of numerous hemato-immunologicat tests (ABO group and rhesus).
Aims	1 The immunology course aims to give a fundamental formation carrying on the main mechanisms used in immune response. They cover the necessary knowledge to the immuno-pathological comprehension as well as their treatment. Besides, the main applications of immunology in the field of biotechnology are seen. The course is divided in two modules adapted for students in veterinary and biology (A) and, on the other side, for agronomy students (B). - - - - *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Written examination
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Lectures
Content	To give a global view of the mechanisms involved in the innate and adaptative immune response.
Inline resources	Power point and PDF files
Bibliography	• cours Moodle • **Optionnelle : Immunologie Ivan M. Roitt, Jonathan Brostoff, David Male (2007 - la plus récente en français) et Veterinary Immunology: An Introduction by Ian R. Tizard (2017).**
Other infos	Practical work (15 hours). The practical work realizes the main tests in immunology : isolation of mononuclear blood cells, determination of different immuno-competent cells after coloration on blood smears, immunodetections by enzymatic technique (ELISA) and realization of numerous hemato-immunologicat tests (ABO group and rhesus). Prerequisites : Knowledge in biology, in physiology, in anatomy and in biochemistry Organization : the course is given during the first semester (2 hours per week). Written notes : syllabus and books: Immunology Ivan M. Roitt, Jonathan Brostoff, David Male (in French or in English) et Veterinary Immunology: An Introduction by Ian R. Tizard (2005). Assessment : Oral evaluation on the theory and the practical course.

Faculty or entity in charge	BIOL

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Additionnal module in Biology	LBIOL100P	3		
Minor in Biology	LBIOL100I	3		
Master [120] in Chemistry and Bioindustries	BIRC2M	3		
Master [120] in Biomedical Engineering	GBIO2M	3		
Master [120] in Agricultural Bioengineering	BIRA2M	3		
Master [120] in Chemical and Materials Engineering	KIMA2M	3		
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	3		
Bachelor in Veterinary Medicine	VETE1BA	4	LBIO1111	