



UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

MOLECULAR MICROBIOLOGY	
Enrollment year	2020/2021
Academic year	2021/2022
Regulations	DM270
Academic discipline	BIO/19 (GENERAL MICROBIOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	EXPERIMENTAL AND APPLIED BIOLOGY
Curriculum	Scienze biomediche molecolari
Year of study	2°
Period	1st semester (01/10/2021 - 14/01/2022)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	BURONI SILVIA (titolare) - 4 ECTS BURONI SILVIA (titolare) - 2 ECTS
Prerequisites	Basic knowledge of microbiology, in particular cell structure, microorganism classification, and microbiology techniques; genetics, in particular gene regulation and operon structure; biochemistry, protein structure and function, enzymatic assays.
Learning outcomes	Knowledge of the molecular mechanisms through which microorganisms and viruses affect human health. To understand the different types of vaccines and their role in preventing infectious diseases. Knowledge of the scientific language to properly describe microbial pathogenesis.
Course contents	Host-pathogen interaction. Innate and adaptive immunity. Microbial pathogenesis: adhesion/invasion, Secretion Systems, iron acquisition, evasion of host defences, antigenic and phase variation, endotoxins and

	exotoxins. Immunotoxins. Pathogenicity Islands. Tuberculosis as a model of host-pathogen interaction. Multidrug resistance and efflux pumps. New antibacterial drugs. Quorum sensing, biofilm and bacterial persistence. Phage therapy. Animal viruses: HIV, hepatitis viruses, HPV, flu viruses, ebola and zika viruses. Vaccines: old and new approaches.
Teaching methods	Lectures with discussion with students and seminars chosen by students. Power Point presentations are used for lectures, made available to students in the section dedicated to teaching on the KIRO platform.
Reccomended or required readings	Articles and reviews. "Bacterial pathogenesis: a molecular approach". By Wilson et al. ASM Press.
Assessment methods	At the student's choice: - Oral exam with open questions on the entire teaching program; - Preparation of a seminar on a topic of your choice with Power Point presentation and subsequent evaluation of the rest of the program with one / two open questions. Evaluation expressed out of thirty. During the lessons, numerous examples of exam questions are given.
Further information	At the student's choice: - Oral exam with open questions on the entire teaching program; - Preparation of a seminar on a topic of your choice with Power Point presentation and subsequent evaluation of the rest of the program with one / two open questions. Evaluation expressed out of thirty. During the lessons, numerous examples of exam questions are given.
Sustainable development goals - Agenda 2030	\$ibl legenda sviluppo sostenibile