UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

MOLECULAR PATHOLOGY AND IMMUNOGENETICS

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	MED/04 (GENERAL PATHOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	EXPERIMENTAL AND APPLIED BIOLOGY
Curriculum	Scienze biomediche molecolari
Year of study	1°
Period	2nd semester (01/03/2022 - 14/06/2022)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	WRITTEN AND ORAL TEST
Teacher	IAMELE LUISA (titolare) - 6 ECTS
Prerequisites	
Learning outcomes	The first part of the course is the description of molecular alterations involved in cancer and their application in the prevention, diagnosis and prognosis of cancer. In the second part the focus is on the role of HLA and KIR systems and their interaction in adaptive and innate immune response. The immunogenetic aspect of polymorphism will be related to population studies, pregnancy and response to pathogens. Finally, the molecular bases of HLA-associated diseases, the problems related to transplants and the different immunotherapy strategies in cancer will be presented.
Course contents	The aim of the course is to introduce students to the molecular alterations that are used in diagnosis and prognosis of cancer. Considering the biology of cancer, biomarkers of transformation,

	invasion and metastases will be evaluated. Moreover viral, bacterial and tumor microenvironment biomarkers will be also examined. Biomarkers used in molecular epidemiology will be also evaluated. In the second part the knowledge on HLA and KIR genetic systems (genes proteins and functions) will be deepened. In particular we will focus on the HLA and KIR polygenic systems; multiallelic genes; codominance; ancestral haplotypes; linkage disequilibrium. The donor-recipient histocompatibility and transplant will be analyzed: role of major (HLA) and minor antigens, role of KIR genes and the susceptibility/protection genes in immune and autoimmune diseases (study of families and population). Finally the different strategies in cancer immunotherapy will be considered: monoclonal antibodies, vaccines, CAR-T, immunological check-point blockage.
Teaching methods	=Lectures
Reccomended or required readings	1) Pontieri. Patologia Generale e Fisiopatologia Generale. Tomo I. PICCIN. 2) Robbins e Cotran. Le basi patologiche delle malattie. 8°edizione Elsevier 3) Peter Parham, Il sistema immunitario, EDISES 4) Janeway CA, Immunobiologia, Piccin Papers related to each subject will also be suggested.
Assessment methods	Written exam
Further information	Written exam
Sustainable development goals - Agenda 2030	The goals