

General Pathology and Veterinary Physiopathology (C.I.)
Immunopathology and general oncology
(2 CFU; 44 hours: 20 lectures and 6(x4) practical training)

Course Objectives: At the end of the course students know the differences between benign and malignant tumors, genes involved in neoplastic transformation, reactions of the immune system against cancer and the effects of the tumor on the host. Students are also able to understand the mechanisms of tissue damage caused by immunological disorders of the immune system. The theoretical learning is supported on a practical training by the observation of histological lesions and the student must attain knowledge.

Lesson

Topics and skills acquired	Topics	specific content	hours
	<i>Informations</i>	Presentation of the course learning objectives and expected results. Study material examination	0.5
1. GENERAL ONCOLOGY (TOT. 11,5 HOURS)	<i>Benign and malignant neoplasms</i>	Nomenclature, tumor classification, benign and malignant tumors, differentiation and anaplasia, rates of growth, cancer stem cells and cancer cell lineages, local invasion, metastasis and pathways of spread	2
	<i>Molecular basis of cancer</i>	Molecular basis of cancer, essential alterations for malignant transformation, normal cell cycle, self-sufficiency in growth signals, oncogenes, proto-oncogenes, and oncoproteins	1
	<i>Proto-oncogenes alterations</i>	Growth factors, signal-transducing proteins, Ras oncogene, alterations in nonreceptor tyrosine kinases, MYC oncogene, cyclins and cyclin-dependent kinases	1
	<i>Tumor suppressor genes alterations and DNA repair</i>	Insensitivity to growth inhibition and escape from senescence: tumor suppressor genes: RB, p53, , E-cadherin, Defective DNA repair (NER), BRCA1, BRCA2. Telomerase, angiogenesis	1.5
	<i>Invasion and metastasis</i>	Invasion and metastasis, dysregulation of cancer-associated genes: chromosomal changes	1
	<i>Microbial carcinogenesis</i>	Oncogenic RNA and DNA viruses, bacterial and parasites	1
	<i>Carcinogenic agents and radiation carcinogenesis</i>	Direct-acting and indirect-acting carcinogens, initiator and promotion, radiation carcinogenesis	1.5
	<i>Host defense against tumors – tumor immunity</i>	Tumor antigens, antitumor effector mechanisms, immune surveillance and escape	1

	<i>Clinical aspects of neoplasia, grading and staging of tumors and laboratory diagnosis</i>	Local and hormonal effects, cancer cachexia, paraneoplastic syndrome; grading and staging of tumors, laboratory diagnosis of cancer	1
2. IMMUNOPATHOLOGY (TOT. 8 HOURS)	<i>Immune system</i>	Component of the immune system, innate immunity and adaptive immunity, cells of the immune system	1
	<i>Hypersensitivity: Type I hypersensitivity</i>	Immediate (Type I) hypersensitivity	1
	<i>Type II hypersensitivity</i>	Transfusion of incompatible blood and diseases C.D. from maternal-fetal isoimmunization (type II)	1
	<i>Type III and IV hypersensitivity</i>	Immune complex-mediated (type III) hypersensitivity and T cell-mediated (type IV) hypersensitivity	2
	<i>Autoimmune diseases</i>	Immunological tolerance, principal diseases of domestic animals	1
	<i>Immunodeficiency syndrome</i>	Primary immunodeficiencies	1
	<i>Rejection of tissue transplants</i>	Mechanisms of recognition and rejection of allografts	1
tutorials			
Topics and skills acquired	Topics	specific content	hours
ABILITY TO OBSERVE DEDUCTED AND ASSESSING (TOT. 6X40RE)	TOPICS ARE THE SAME COURSE THEORETICAL	Vision of histological preparations for all of the pathological processes related to the topics covered during the course	24