



ON-LINE MASTER IN MOLECULAR ONCOLOGY EDITION 2018 - 2019

FIRST MODULE: CELLULAR AND MOLECULAR BIOLOGY OF CANCER

Available from September to December 2018

Theme	Topic	Professor
Cell, genes and regulation of gene expression	Keynote Session: From molecular oncology to personalized therapies: Changes in the clinical practice	Mariano Barbacid
	Eukaryotic cell	Miguel Lafarga
	The carcinogenesis process. Normal cells vs tumor cells	José Fernández Piqueras
	The human genome: genes and genetic code	José Fernández Piqueras
	Epigenetics and Cancer	Miguel Fernandez
	Regulation of gene expression	Miguel Fernandez
	Gene regulation of hormone expression	José Manuel Cuezva
	Metabolism, mitochondria and Cancer	José María Rojas
	Mitogen signal transduction. RET and the multiple endocrine neoplasia	Alberto Muñoz
	Genes and Cancer I. Proto-oncogenes and oncogenes: discovering viral and human oncogenes	José Fernández Piqueras
Genes and Cancer II. Suppressor genes and genetic predisposition to cancer		
Proto-oncogenes and oncogenes	Gene suppressor APC and the Wnt/beta-catenin pathway	Alberto Muñoz
	The BRCA genes in breast cancer	Javier Benítez
	Oncogene RAS family, its adaptors and effectors	Marcos Malumbres
	Cell Cycle: retinoblastoma, cyclins, CDKs and cancer	Marcos Malumbres
	The PI3K-PTEN-AK-mTOR pathway: survival and cell growth	Federico Mayor
	Fusion gene BCR-ABL and other fusion oncogenes in myeloid leukemia	Juan Cruz Cigudosa
	The MYC gene family	Javier León
	Oncogenes that code for growth factors and tyrosine-kinase receptors	Joaquín Arribas
	Mutations and DNA repair mechanism	Luis Blanco
	DNA repair genes. Mutator phenotype and epigenetics	Manuel Perucho
Tumor suppressors genes	TGF-beta: carcinogenesis effects	Isabel Fabregat
	Hedgehog pathway and cancerogenesis	Miguel Quintanilla
	Tumor suppressor and senescence	Manuel Serrano
	The gene TP53: structure and biological activity. The TP53-MDM2-1RF pathway	Ignacio Palmero
	TP53: mutations and their effects	Ignacio Palmero
	The Notch pathway in cancerogenesis	Isabel Fariñas
	Apoptosis, necrosis, autophagy and cancer	Joan Gil
	Telomerase and cancer	María Blasco
	Hypoxia and Cancer. Suppressor gene VHL	Manuel Ortiz de Landázuri
	Stem cells and Cancer stem cells (CSC). Cell reprogramming: iPS	Mónica López Barahona
Stem cells, development and cancer	Pablo Menéndez	
Cellular Processes involved in Carcinogenesis	Molecular basis of metastasis	Carlos López Otín
	TGF-beta and gliomas	Joan Seoane
	Cancer Immunology	Vikas Sukhatme
	How the tumors evade the immune response	Manuel Fresno
	Inflammation and Cancer	Manuel Fresno
	Chemokines and cancer	Santos Mañes
	Cell adhesion and cancer: E-cadherina. Epithelium-mesenchyme transition	María Jesús Larriba
	Cell migration: Integrins, c-MET	Alberto Muñoz
	Cannabinoids and cancer	Manuel Guzmán
	Angiogenesis and tumoral lymphangiogenesis	Benilde Jimenez
Mechanism of action of the antiangiogenic agents	Benilde Jimenez	

Note: The academic content is preliminary and can be subject to changes

SECOND MODULE: MOLECULAR PATHOLOGY

Available from January to March 2019

Theme	Topic	Professor
Introduction		
Diagnostic Technique and Research	Molecular Pathology on Cancer Diagnostics	Andrew Beck
	Introduction to special histopathology techniques	Marta Cañamero
	Monoclonal Antibody production for use in research and lymphoproliferative diagnostic processes	Giovanna Roncador
Molecular Pathology in the clinic: Lymphoid Neoplasias		
Lymphomas	Clinical and Molecular facts in the Hodgkin lymphoma prognosis	Carlos Montalbán Sanz
	Lymphoma Molecular diagnose	Juan Fernando Garcia
	Diffuse large B cell Lymphoma	Santiago Montes
Theme		
Topic		
Professor		
Molecular Pathology in the clinic: Uncommon Tumors		
Uncommon Tumors	Chronic leukemia	Francesc Bosch
	Mesotelioma	Fernando López-Ríos
	Pancreas cancer	Francisco X. Real
DNA	Introduction : Techniques based on DNA analysis	Mercedes Robledo
	Sequencing cancer genomes	Orlando Domínguez
Molecular Pathology in the clinic: Breast and Gynecological cancers		
Breast Cancer	Molecular Pathology of ovarian cancer	José Palacios
	Molecular Pathology of breast cancer	David Hardisson
	Molecular Pathology of endometrium cancer	Xavier Matías Guu
Theme		
Topic		
Professor		
Molecular Pathology in the clinic: Cancer cytogenetics		
Cancer Genetics	Cytogenetic, molecular and epigenetic Biomarkers in myeloide leukemias	Juan Cruz Cigudosa
	Biobanks: old activity and young discipline	Manuel Morente
	Fusion genes in epithelial tumors and sarcomas: FISH, CGHarrays and Sequencing	Juan Cruz Cigudosa
	Pediatric Gliomas: Genetic and Biology of the disease	Teresa Ribalta
Molecular Pathology in the clinic: Solid Tumors		
Gastric Tumors	Sarcoma	Enrique de Álava
	Colorectal Cancer: towards a molecular classification	Gabriel Capellá
	Molecular Pathology of kidney tumors. Diagnostic and Therapeutic Implications	Antonio López-Beltrán
	Advanced cancer: therapy selection based on mutations	José Pedro Vaqué
Theme		
Topic		
Professor		
Molecular Pathology in the clinic		
Further Hematological Neoplasias	Bladder cancer: molecular pathology	Francisco X. Real
	Molecular Pathology of Endocrine Tumors	Mercedes Robledo
RNA	The Silent Revolution: An introduction to microRNAs in cancer	Frank Slack
	Introduction. Techniques based on RNA analysis	Margarita Sánchez-Beato
	MicroRNAs as molecular markers	Nerea Martínez
Molecular Pathology in the clinic: Bronchopulmonary Tumor		
Lung Cancer	Molecular Pathology of Lung Cancer	Montserrat Sánchez-Céspedes
	Current state of lung cancer treatment: Conventional chemothepeaies vs new targeted therapies	Pilar Garrido
	Molecular Diagnose of lung cancer	Ignacio Wistuba
Theme		
Topic		
Professor		
Molecular Pathology in the clinic: CNS		
Molecular Diagnosis and prognosis	CNS: Glial Tumors	Aurelio Ariza
	Stratified Medicine (Biomarkers) or Personalized Medicine (Model-omics)?	Nuria Malats
	Introduction to massive sequencing techniques. Translational applications.	Gonzalo Gómez López
	Discovering genetic biomarkers for personalized cancer therapy	Fatima Al-Shahrouh
	Evaluation of the prognostic value of a marker. Survival Analysis. Modeling Disease Progression	M ³ Luz Calle Rosingana
Molecular Pathology in the clinic: Melanoma		
Melanoma	Advances in the biology of melanoma	Marisol Soengas
	Melanoma, molecular diagnosis	José L. Rodríguez-Peralto
	Dermatology in the context of new therapies for melanoma	Pablo Ortiz Romero
	Advances in the treatment of melanoma	José Antonio López Martín
Theme		
Topic		
Professor		
Molecular Pathology in the clinic		
Molecular Pathology Applications	Myeloma	Norma Gutiérrez
Molecular Pathology in the clinic: Towards Personalized Therapy?		
Proteins	Introduction to Proteomics	Javier Muñoz
	Flow Cytometry	Lola Martínez
Molecular Pathology in the clinic		
Epigenetics	Acute Leukemia: example of a therapy lead by the diagnosis	Miguel Ángel Sanz Alonso
	Epigenetics	Manel Esteller Badosa



MOLECULAR ONCOLOGY MASTER 2018-2019

THIRD MODULE: MOLECULAR ONCOLOGY

Available from April to June 2019	Theme	Topic	Professor
	Agents related to cancer risk	Carcinogenic risk factors. Diet and Tobacco.	Carlos A. González
		Alcohol and carcinogenesis. Molecular Mechanisms	Fernando Granado
		Ionizing Radiation. Effect of Low Doses. Modifying factors.	Jesús Romero
		Virus and other infectious agents, and Cancer	Silvia de Sanjosé
		Challenges and opportunities in the integration of omics data in epidemiological studies	Nuria Malats
		Human exposition to endocrine disruptors and cancer	Nicolás Olea
		Mechanism of estrogen action	Angel Nadal
	Familial Cancer	Carcinogens, genetic profiling	Francisco Real
		Introduction to familial cancer. Entities with demonstrated mendelian inheritance	Javier Benítez
Molecular Diagnosis. Diagnostic strategies.		Mercedes Robledo	
	Genetic counseling in familial cancer. Diagnostic problems	Miguel Urioste	
Theme	Topic	Professor	
Pharmacology and antitumoral agents	Introduction to drug discovery and development	Fernando Peláez	
	Pharmacogenetic and Pharmacogenomic in lung carcinoma model	Miguel Tarón	
	Histopathology and pharmacodynamic in the treatment with molecular design drugs	Federico Rojo	
	Engineering antibodies for therapeutic use	Luis Ángel Fernández Herrero	
	Treatment with immunostimulatory antibodies	Ignacio Melero	
	Genetic Therapy: antitumoral virotherapy in the clinic	Javier García Castro	
	Genotoxic nanoconjugates against metastasis initiating cells in colorectal cancer	Ramón Mangues	
	TeraBiological therapies in the pre-op treatment breast cancer	José Manuel López Vega	
	Potential of the cell cycle regulators in the design of therapeutic drugs	Marcos Malumbres	
	Vitamin D and Cancer: Mechanism and Possibility of clinical use	Alberto Muñoz	
	Discover, validate and transfer to the clinic therapeutic targets in sarcomas	Enrique de Álava	
	Role of the antiangiogenic therapy in tumoral progression and metastasis	Oriol Casanovas	
Theme	Topic	Professor	
More treatment strategies	Molecular development and clinical implications of prostate cancer	David Olmos	
	Apoptosis regulation in chronic lymphatic leukemia. New therapeutic targets.	Joan Gil	
	Embryonic reprogramming and Cancer	Manuel Serrano	
	Molecular biology behind the modulation of cellular radiosensibility	Jesús Romero	
	Drugs blocking oncogenic stimulation	Pere Gascón	
	New concepts for the design of antitumoral inhibitors of the Ras-ERK pathway	Piero Crespo	
	Extracellular matrix, tumoral stroma and chaperones as drug targets	Luis Paz Ares	
	New molecular therapies in pancreatic cancer	Manuel Hidalgo	
Methodology in clinical research	Energy protein metabolism: Rising targets in antitumoral therapy	José Cuezva	
	Methodology and clinical research application	José Javier García	
	Use of biological material in clinical protocols. Design of diagnostic tools.	Gabriel Capellá	

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July, 16th 2019	Module III Exam
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July, 23rd 2019	Module III Exam (Retake)
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