## ΒΙΟ1404: Κυτταρική Οργάνωση Ζωής "Cellular organization of life" Νοέμβριος-Δεκέμβριος/Διάρκεια: 3 εβδομάδες A) CANCER BIOLOGY -CELL CYCLE & DIVISION G. Zachos Cell cycle checkpoints in vertebrate cells The cell cycle control system: cell cycle checkpoints The DNA damage and DNA replication checkpoints The mitotic spindle checkpoint DNA bridges and the abscission checkpoint I. Keklikoglou Targeting the hallmarks of cancer - Introduction to cancer biology and complexity Introduction to the hallmarks of cancer Combinatorial targeting approaches to overcome therapy resistance B) CELL ORGANIZATION AND TRANSPORT C. Delidakis Mechanisms of endocytosis and endosome trafficking mechanisms of endocytosis at the plasma membrane endosome sorting and cargo trafficking examples of regulated cargo trafficking (signalling molecules and nutrient transporters) P. Theodoropoulos Nuclear envelope. Nuclear pore structure and nucleo-cytoplasmic transport Nuclear envelope composition, organization and dynamics Nuclear pore composition and structure Nucleo-cytoplasmic transport P. Moschou Animal vs Plant cells Differences in cell organization Cytoskeleton dynamics Membrane dynamics C1) THE NERVE CELL: PROPERTIES AND MODELS - NEURODEGENERATION K. Sidiropoulou Nerve cells: Types, properties, function a) Membrane potential, Action potential initiation and propagation b) Ion channels c) K. Sidiropoulou a) Electrical/chemical synapses b) Transmitter receptors with a focus on ionotropic receptors Signal integration c) M. Monastirioti

Transmitters and Transmitter release (presynaptic release machinery)

Chemical synapse ( Pre- and Post-synaptic sites)

M. Monastirioti					
Metabotropic transmitter receptors					
Second messenger systems					
C2) THE NERVE CELL: PROPERTIES AND MODELS – NEURODEGENERATION					
D. Karagogeos					
Myelin and proteins involved in the function and architecture of myelinated fibers.					
D) IMMUNOLOGY IN HEALTH & DISEASE					
Panos Verginis					
Immune Regulation in Health and Disease a) immune tolerance mechanisms					
b) disturbed immune tolerance in pathological conditions (autoimmunity and cancer)					
b) disturbed infinitine tolerance in pathological conditions (autominitumity and cancer)					
I. Athanassakis					
a) Extracellular and intracellular antigens - Antigen processing					
b) Recognition of class I/antigen and class II/antigen complexes by T cells					
b) disturbed immune tolerance in pathological conditions (autoimmunity and cancer)					
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George Diallinas, University of Athens					
Fungi as emerging model systems for protein trafficking					
Membrane cargo trafficking, endocytosis and turnover					
The unconventional Golgi-bypass of plasma membrane transporters					
PART II - ORAL EXAMS (PAPER PRESENTATIONS)					
Zachos 2 papers					
Keklikoglou 2 papers					
Theodoropoulos 2 papers					
Delidakis 2 papers					
Delidakis 2 papers  Moschou 2 papers					
Sidiropoulou 2 papers					
Sidil opodiod 2 papers					
Round table					
Karagogeos 1 paper					
Athanassaki 2 papers					
Monastirioti 2 papers					
Verginis 1 paper					
PART III - WRITTEN EXAM (open books)					
Exams					