

Biology 3B
Exam 3 Stuff

Here's a quick list of items for the next exam.

Chapter 11 – Cell Communication

- Stages of cell signaling (reception, transduction and response)
- Local vs long distance signaling
- Mobile vs fixed receptor model
- G-protein, tyrosine kinase and ion channel receptors
- First & secondary messengers – what are they and how they work
- Apoptosis?

Chapter 40 – animal form and function

- 4 types of tissues and subcategories (types of cells found and functions)
- Homeostasis – positive & negative feedback mechanisms (sensors, processor, effectors)
- Thermoregulation – T_b vs T_a for endo/ectotherm, conformer vs regulator, TNZ, lower/upper critical, lower/upper lethal, endotherm vs ectotherm, homeotherm vs poikilotherm, avenues of heat loss and gain (convection, radiation, conduction, evaporation), piloerection, insulation, counter-current heat exchange, behavioral vs physiological responses, BMR vs SMR vs RMR, calories vs kilocalories vs Calorie, how does size affect MR, why mass specific MR?, types of torpor – why? Daily vs seasonal, hibernation vs estivation

Chapter 41 – animal nutrition

- Herbivore vs carnivore vs omnivore
- Stages of food processing (ingestion, digestion, absorption and elimination)
- Types of feeding mechanisms, intracellular vs extracellular digestion
- Know the accessory and digestive organs discussed along with their functions
- Know the GI hormones and enzymes discussed (where found and function), target site(s), stimulus for release
- Where and how nutrients are absorbed and enter general circulation

Chapter 48 – neurons, synapses and signaling

- Understand information processing (sensors, integrators and effectors)
- Know the components for a myelinated and unmyelinated axon, pre & post-synaptic cells
- Chemical vs electrical synapses
- Membrane potential (how is it generated & maintained), AP, EPSP & IPSP, Nernst equation (calculation), ions involved, summation
- What happens at the synaptic terminals? Neurotransmitters discussed (ACh, Epi, Nor, dopamine, serotonin, substance P, endorphins/enkephalin, NO)

Chapter 49

- Understand the reflex arc, general divisions of the PNS, CNS, parasympathetic vs sympathetic NS (preganglionic vs postganglionic locations) → know the particular response discussed in class

Chapter 50 – sensory and motor mechanism

- Muscle contraction – motor end plate, muscle components, types of muscle fibers, sliding filament model, Be able to discuss the excitation to contraction coupling associated with the sliding filament model
- Know the components of actin, myosin, troponin (C & I), tropomyosin, ATP, ACh, T-tubule, Ca^{++} , SR, what's recruitment, tetanus, tetanus

Chapter 42 – Cardiovascular systems (Cardio only)

- Know open vs closed circulatory systems, heart structure (2 – 4 chambers, concentrate on 4), circulatory pattern for the mammalian heart, location of the specialized pacemaker cells (SA node, AV node, bundle of His, Purkinje fibers)
- Pacemaker vs myocardial potentials, tachycardia, bradycardia, ions involved, actual contraction
- Know the cardiac cycle, understand the figure given in class regarding EKG, BP, heart sound & left ventricular volumes
- Know be able to determine: MAP, HR, SV, EDV, ESV, PP, DP, SP

More to come...