Pancreas:
- Islets of Langerhans
- β and α cells
- What causes the release of insulin from pancreas?
- Voltage-sensitive Ca^{2+} channels
- K^{+}_{ATP} channel

Signaling Molecules:
- Paracrines & Autocrines: Nitric Oxide
- Cytokines
- Neurotransmitters
- Hormones

What is a hormone? Types? How do hormones differ from the aforementioned signaling molecules?
Please be familiar with the three classes of hormones.
- Know their characteristics
- Solubility & transport
- Examples: names & from what gland/tissue & functions
- Be able to draw the cholesterol molecule
- Why is it difficult to store steroid molecules?

What is the significance of hormone receptors? Where are these receptors found (3x)?

Why do protein hormones utilize the signal transduction pathway? Please be able to elaborate on this cascade of events and give an example.

Know transcription & translation and where these two processes occur. It would be useful to have an understanding of mRNA, DNA, and ribosomes.
✓ Action Potentials
✓ Steroid Hormone Mechanism of Action

ieving hormone(s) into their effects. 

- Voltage, Resting Membrane Potential, Channel Proteins,
  Depolarization, Threshold, Na⁺ influx, K⁺ efflux, Repolarization,
  Na⁺-K⁺ ATPase.

- Steroid MoA:
  - Slips via PM
  - Cytoplasmic or nuclear Rc
  - Activates protein synthesis
  - Cellular response

Example: Facilitation of Na⁺ reabsorption at renal tubules by aldosterone activity → aldosterone is a steroid hormone
✓ Endocrine Reflex
✓ Hypophysis
✓ Hypothalamus
✓ Growth Hormone
✓ Anti-diuretic Hormone

❖ Parathyroid Hormone
  o Monitor blood plasma \([Ca^{2+}]\)
  o PTH inhibited when?
  o Release of PTH facilitates what processes?
  o How would negative feedback take affect?

❖ Pituitary Gland
  o Adenohypophysis
  o Neurohypophysis
  o What type of tissues?
  o What type of signaling molecules?
  o Tropic hormones?
  o 8 signaling molecules—what are their functions

❖ Growth Hormone Functions

❖ Three functions of vasopressin

❖ Hypothalamus—where & what hormones
✓ Endocrine Feedback Loops
✓ Terms
✓ Endocrine Pathologies
✓ Neurons

❖ Long, short and ultra-short feedback loops. How are these different than feedback elsewhere in the body?

❖ 1° and 2° Endocrine Disorders. How does a 2° endocrine disorder of the adrenal cortex impact the feedback loop associated with the hypothalamus or the pituitary? Would it make sense that an injury to the head might cause an imbalance or disruption of the adrenal gland? Would the opposite hold true—that is, a pathology of the adrenal cortex impacting the brain directly?

❖ Synergism, Permissiveness and Competitive Inhibition

❖ Please understand the four broad reasons given in lecture for endocrine pathologies.

❖ Neuron
  • Structure
  • Synapse
  • Myelin Sheath
  • Node of Ranvier
  • Graded Potential
  • Action Potential

❖ Equilibrium Potential of Na⁺ and K⁺
- Nervous System—know the different divisions
- Autonomic Nervous System—divisions and characteristics
- Neurotransmitters, receptor classes and relationship to the CNS
- Neuromuscular Junction—action potentials, ligand & voltage-gated channels, and Ca²⁺.
v Reuptake of neurotransmitters
   Ex. Acetylcholine & Serotonin

v Neuron pathways—sympathetic, parasympathetic and somatic motor
   1) Neurotransmitters released
   2) Types of receptors
   3) Pre & post ganglionic lengths

v Muscle contraction: release of calcium and the “sliding filament theory”