

-Digestive organs: Be familiar with the basic processes carried out by the GI system & know the general laminar structure of the wall of the GI tract and the tissues

- Structures of the GI tract
- Mouth, pharynx, and esophagus:
- Mouth



- Kidneys:form urine
 - Gross Anatomy

 - Microscopic anatomy
 - Blood supply
 - Function is to filter bloom



Physiology of Kidneys

Fibrous capsule

- Three processes are involved in urine formation and adjustment of blood composition:
 - Glomerular filtration: produces cell- and protein-free filtrate
 - Outward pressures
 - Forces that promote filtrate formation
 - Hydrostatic pressure in glomerular capillaries (HPgc) is essentially glomerular blood pressure



Regulation of Glomerular Filtration

- Intrinsic controls: Renal autoregulation
- Invogenic regulation
 Increased mean arterial pressure increases GFR myogenic regulatore could be contracts in response to stretch
 Increased resistance

 - Increased resistance lowers glomerul capil ary press
 - Counteracts effects of inces Se 1
 - Tubuloglomerular feacha
 - Response to that Solood flow past
 - Ameriple contracts
 - Increased resistance lowers glomerular capillary pressure
 - · Counteracts effects of increased MAP
- Extrinsic controls: Neural and hormonal mechanisms
 - Sympathetic nervous system
 - When BP is low
 - Norepinephrine (Sympathetic NS) and Epinephrine (adrenal medulla) cause
 - Systemic vasoconstriction, which increases blood pressure
 - Constriction of afferent arterioles, which decreases GFR
 - · Blood volume and pressure increases
 - Renin-angiotensin-aldosterone mechanism
 - Main mechanism for increasing blood pressure
- Tubular reabsorption: selectively returns 99% of substances from filtrate to blood in renal tubules and collecting ducts
 - Tubular reabsorption quickly reclaims most of tubular contents and returns them to blood
 - Water and solutes move from renal tubules into peritubular capillaries (returned to blood)
 - Renal tubules to interstitial fluid
 - Most occurs in proximal tubule
 - Selective transport
 - Mostly not regulated



- Transcellular route
 - Solute enters apical membrane of tubule cells
 - Travels through cytosol of tubule cells
 - Exits basolateral membrane of tubule cells
 - Enters blood through endothelium of peritubular capillaries
- Paracellular route
 - Between tubule cells
 - Limited by tight junctions, but leaky in proximal nephron
 - Water, Ca2+, Mg2+, K+, and some Na+ in the PCT move via this route



- Primary active transport of Sodium
 - Na-K ATPase pumps
- Secondary active transport
 - Electro chemical gradient creates 'push' for other solutes