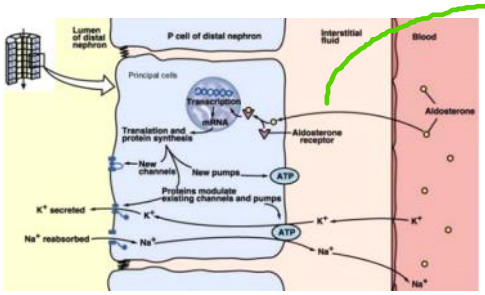
4. ↑ na & k chann in apical mem (synth & opening)
5. ↑synth & conc na/k pumps on basolat memb - ATP pump
6. Reab na , secret k
7. H2o follow na



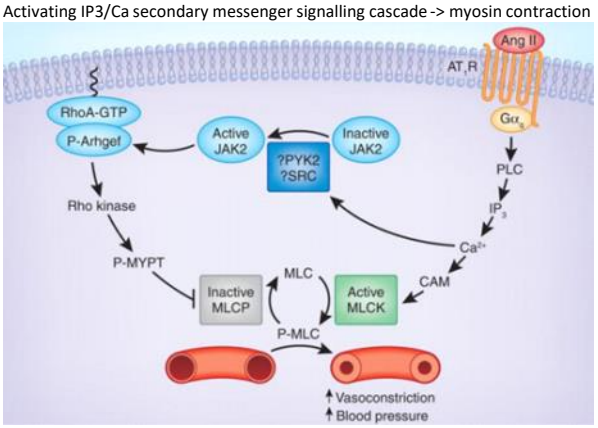
Binds to ligand dependent transcription factor

Mech 2- ↑ na reab in PCT

A. cAMP & IP3 secondary sign cascade
B. ↑ expression na, h transporter on apical memb
C. ↑ expression na, k pump on basal lateral memb
D. ↑nahco3 transporter on basal lateral memb
E. Blocks na leak to tubule fluid
F. H2o follow na

Mech 4- vasoconstriction

1. Angiotensin II binds its receptor
2. Activates GCPR
3. Activating IP3/Ca secondary messenger signalling cascade -> myosin contraction



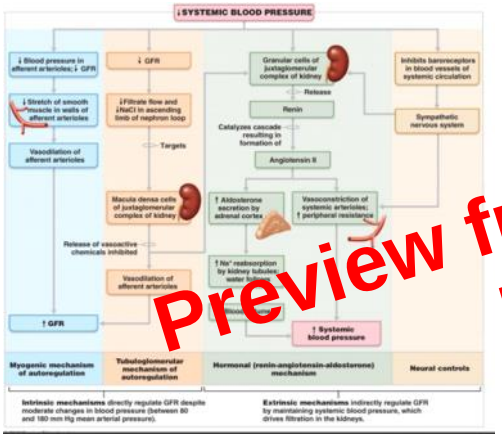
Mech 5- ↑ ADHV secretion from hypothalamus

Angiotensin II indirectly

a) **↑ h20 reab**
   - ↑h2o perm in DCT & collecting duct
   - ↑urea reab in collecting duct
   - ↑ na reab in ascending limb
b) **vasoconstriction**

RENIN-ANGIOTENSINOGEN-ANGIOTENSIN SYSTEM SUMMARY

- Renin released in response to low blood and glomerular pressure (afferent arteriole press, by baroreceptors -> symp response, low tubular press nacl)
- Renin sets off proteolytic cascade -> angiotensin II & aldosterone signalling
- Results in ↑ symp tone, ↑ na reab (and II & aldo), vasocontriction & ADH secretion



High BP & ANP (Atrial Natriuretic Peptide)

High plasma vol -> stretch recep in atrium walls -> ↑ANP secretion

1. Dilates afferent arteriole & constricts efferent arteriole -> ↑ glom press
2. Closes na channels in principle cells -> ↓na absorption

Sodium Balance

- Sensory essential & needs to be regulated because..
  - Primary solute in extracellular fluids
  - Used to transport other solutes (reabsorp in PCT)
  - Critical to function of excitable cells (AP)

- High blood Na = hypernatremia
- Low blood Na = hyponatremia
- Na filtered then reab in nephron- little secreted

Aldosterone regulation Na K levels

1. Aldosterone secreted in response to low serum Na (regulator) & high K
2. Aldosterone passes -> principle cells of DCT & collecting duct
3. Binds & activates mineralocorticoid receptor
4. ↑ na & k channels in apical memb (synth & opening)
5. ↑ synth & concentration na/k pumps on baso memb
6. Reab na , secretion k

Diuretics

Act directly / indirectly on na reab - apart from mannitol rest block na reab

1. **Blocks carbonic anhydrase**
   - ↑ nahco3 excretion
2. **Osmotic diuretic**
   - ↑ h2o excretion
3. **Blocks na-k-cl cotransporter**
   - ↑ na excretion
   - ↑ k excretion
   - ↑ cl excretion
4. **Blocks na-cl transporter**
   - ↑ nacl excretion
5. **Antagonises aldosterone receptor**
   - ↑ na excretion
   - ↑ k rentention