**SI Session 16**
**11/03**

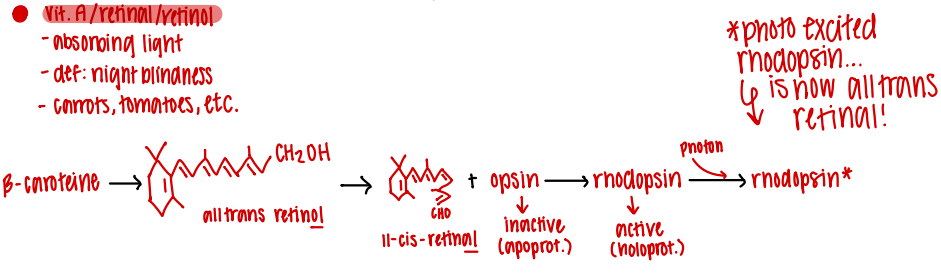
- Can the body make heme groups?
  Yes! As long as there is iron available!

- Differentiate between osteomalacia and osteoporosis.
  Osteomalacia: softening of bones
  Osteoporosis: Bones become brittle and weak

- What is the origin of the name "vitamins"?
  Vital amines

- Draw the fat vitamins you are supposed to know! Include their function, and deficiency!

- Vit. A / retinal / retinol
  - absorbing light
  - def: night blindness
  - carrots, tomatoes, etc.



## vit. D

dietary vitamin D → (photon) → calcitrol

- deficiency = osteomalacia / rickets ← not enough vit. D or sunlight

calcitrol binds to the receptor

receptor + $Ca^{2+}$ … cell

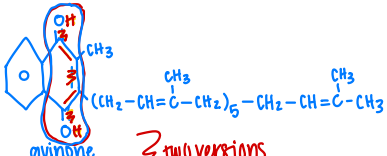
*receptor tells cell to create $Ca^{2+}$ channel so more calcium enters the cell

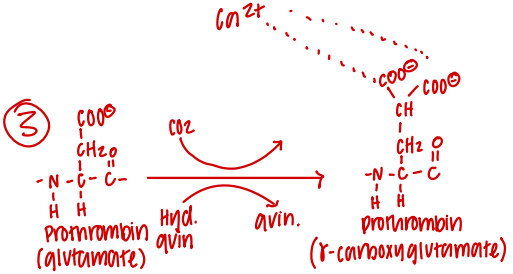
→ needed for muscle contraction

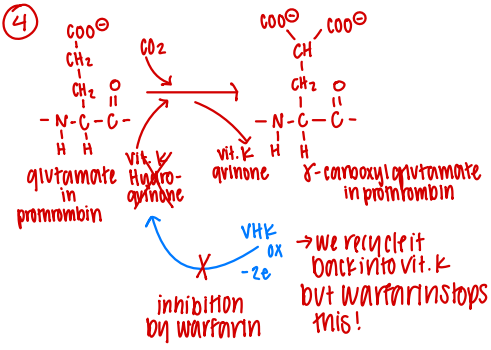
## vit. K

- clot formation
- bacteria in our gut
- unable to clot if deficient

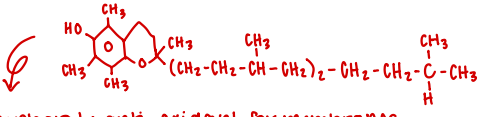
1. prothrombin —(carboxylase enzyme)→ thrombin (enzyme)
   - prothrombin: enzyme
   - fibrinogen: inactive → fibrin: active

2. 
   
   quinone / hydroquinone ← 3 two versions of vitamin K

3. 
   

4. 
   
   → we recycle it back into vit. K but warfarin stops this!

## vit. E




α-tocopherol: anti-oxidant for membranes

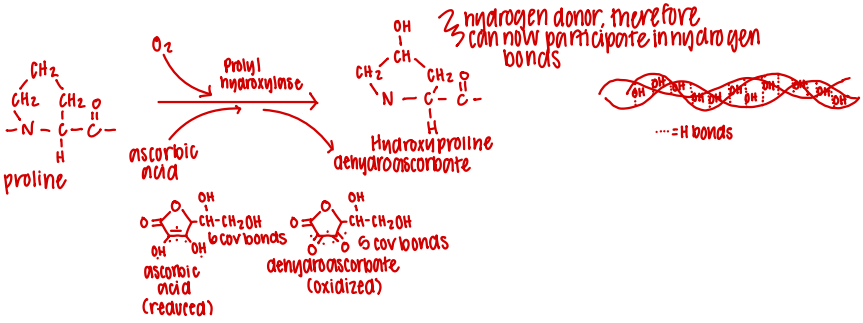
- Draw vitamin C, include its function and its deficiency

- ascorbic acid/ascorbate
  - CT formation + collagen
  - scurvy: CT loses its function

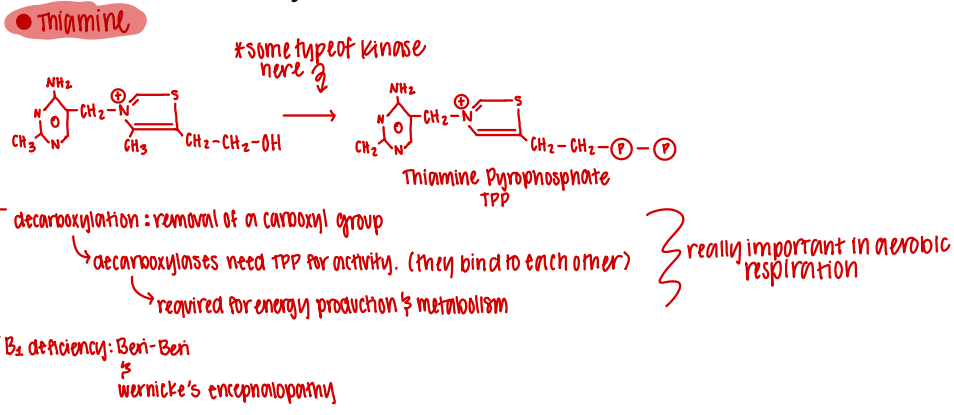

: = hydrogen bonds

↓

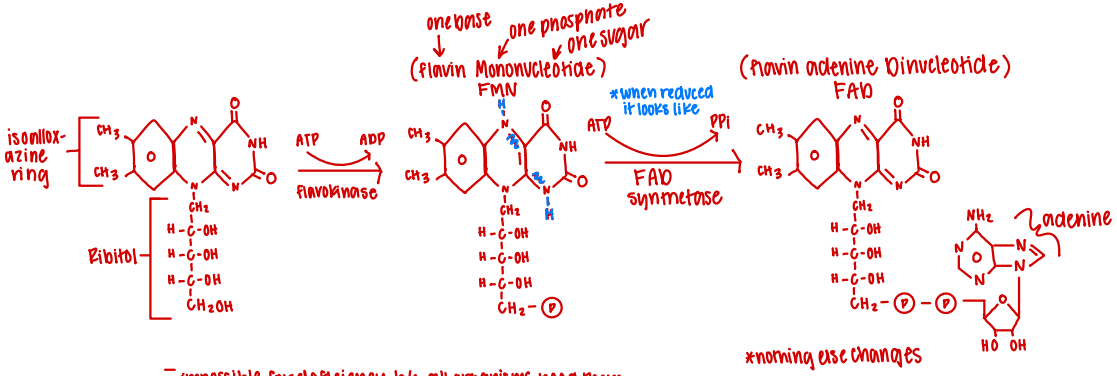
must perform post-translational modification to proline!



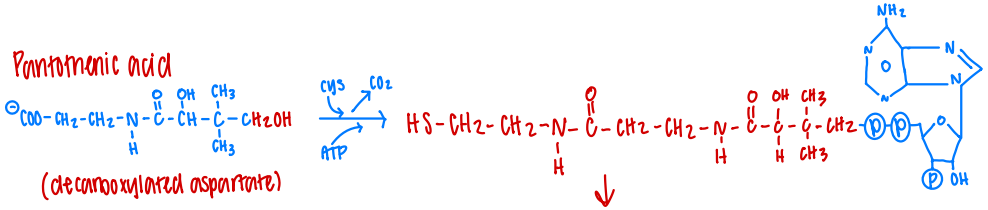

- Draw vitamin B1, include its additional name, its function, and its deficiency.




- Draw vitamin B2, include its additional name, its function, and its deficiency.




- impossible for deficiency b/c all organisms need them




add this there

decarboxylated cysteine becomes