SI Session 15
10/29

- Draw the mechanism of vitamin A synthesis. Include the following

  a. Its initial version when ingested

  B-caroteine

  b. Its function

  Light absorption

  c. Its deficiency

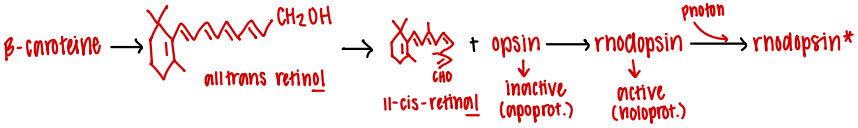
  Night blindness

  d. Its source

  Carrots, tomatoes, etc

  e. Where it is stored

  Retina



- Draw the mechanism of vitamin D synthesis. Include the following

  a. Its initial version when ingested

  Dietary vitamin D

  b. Its function

  Bone growth and essential for muscle contraction

  c. Its deficiency

  Osteomalacia (adults)àsoftening of bones

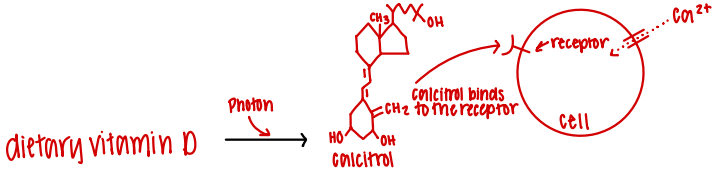
  Rickets (children)

  d. Its source

  Dairy, Milk, yogurt, etc.

  e. Where it is stored

  Teeth and bones



*receptor tells cells to create Ca^{2+} channel for calcium to enter the cell

- Draw the mechanism of vitamin K synthesis. Include the

following

a. Its initial version when ingested

Trick question! We are talking about vitamin K that comes from gut bacteria!

b. Its function

To carboxylate Prothrombin which in turn allows for the production of fibrin (for blood clotting).

c. Its deficiency

Excessive/uncontrolled bleeding. Inability to form blood clots.

d. Its source

Our own gut bacteria!

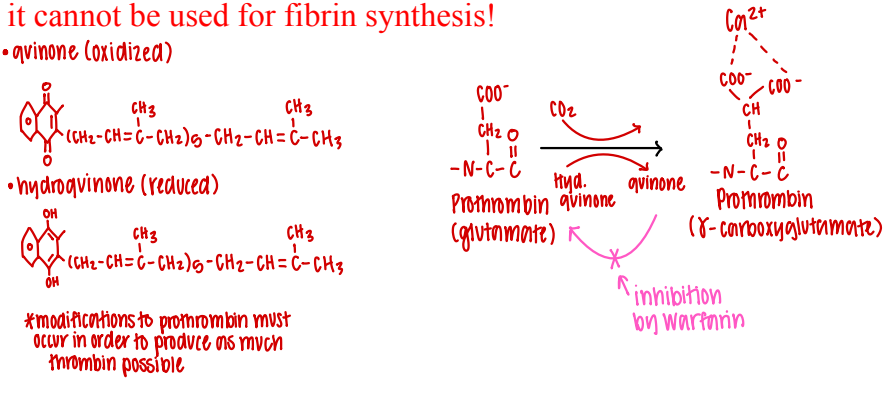
e. Where it is stored

It is mainly stored in the liver, but reserves are small and used up relatively quickly.

f. What medication (discussed in class) acts on vitamin K as an inhibitor?

Blood thinners such as Warfarin.

How does it do this?? → by inhibiting the recycling of vitamin K quinone to vitamin K hydroquinone. Therefore, it cannot be used for fibrin synthesis!



- When a photon is added to vitamin A, what happens?
  Rhodopsin is now bound to 11-cis-retinal, becoming all trans retinal..aka Rhodopsin*.

- What is fibrin?
  Draw the synthesis reaction
  Fibrin is a protein (an enzyme that has been proteolytically cleaved to become active) that sticks to other cells for the creation of blood clots.