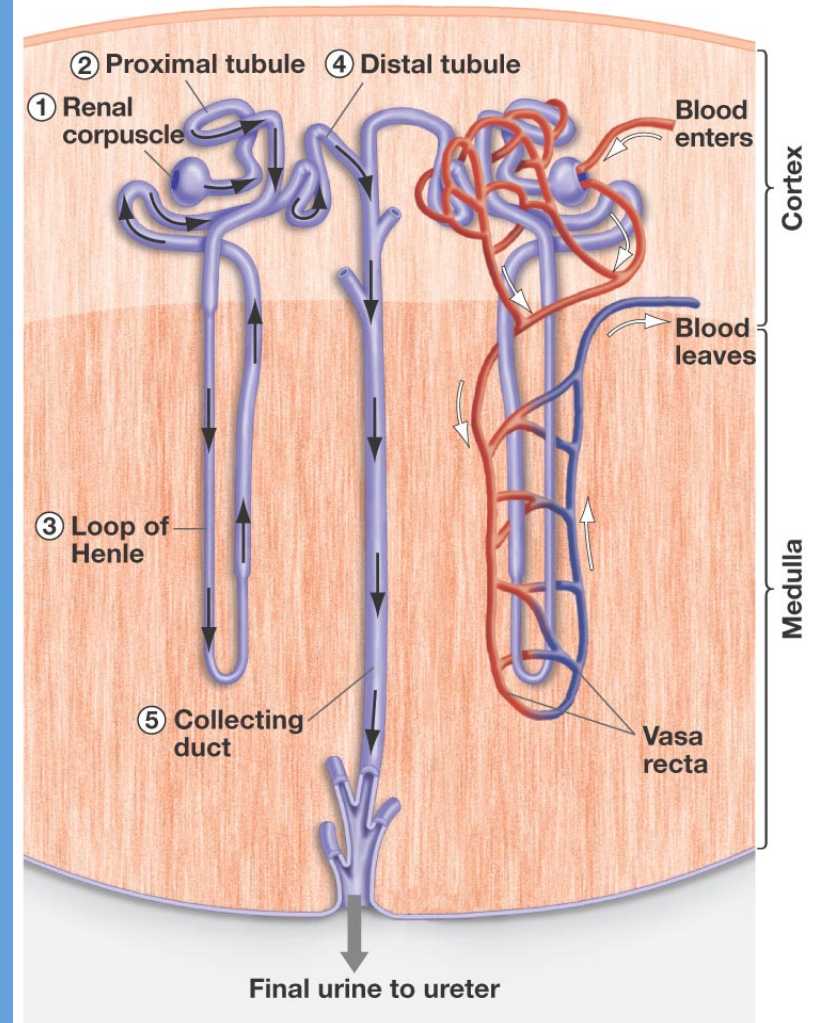


Review

1. Renal Corpuscle
 - Filtration
2. Proximal Tubule
 - Reabsorption
3. Loop of Henle
 - Establishing an osmotic gradient

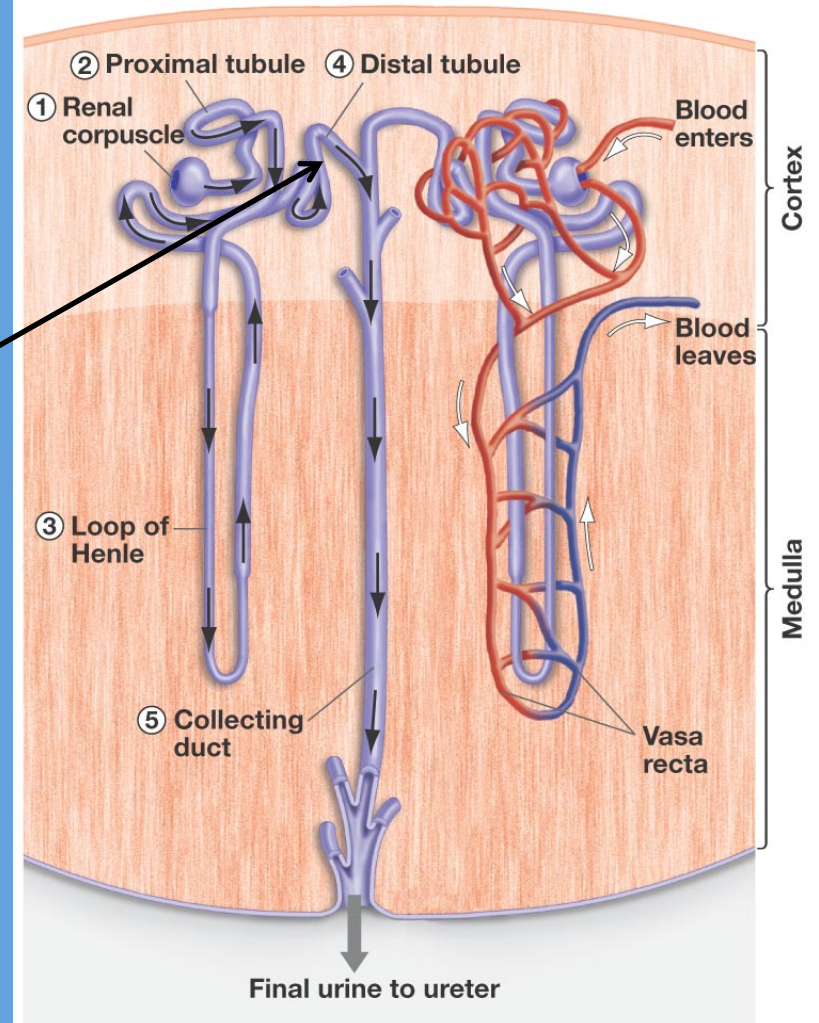
(a) The structure of the nephron and collecting duct (b) Blood vessels serve each nephron.



Review

- What solutes are left?
 - Urea, other wastes
- Fluid entering the distal tubule is slightly hypotonic to blood.
- Fluid osmolarity is always consistent

(a) The structure of the nephron and collecting duct (b) Blood vessels serve each nephron.



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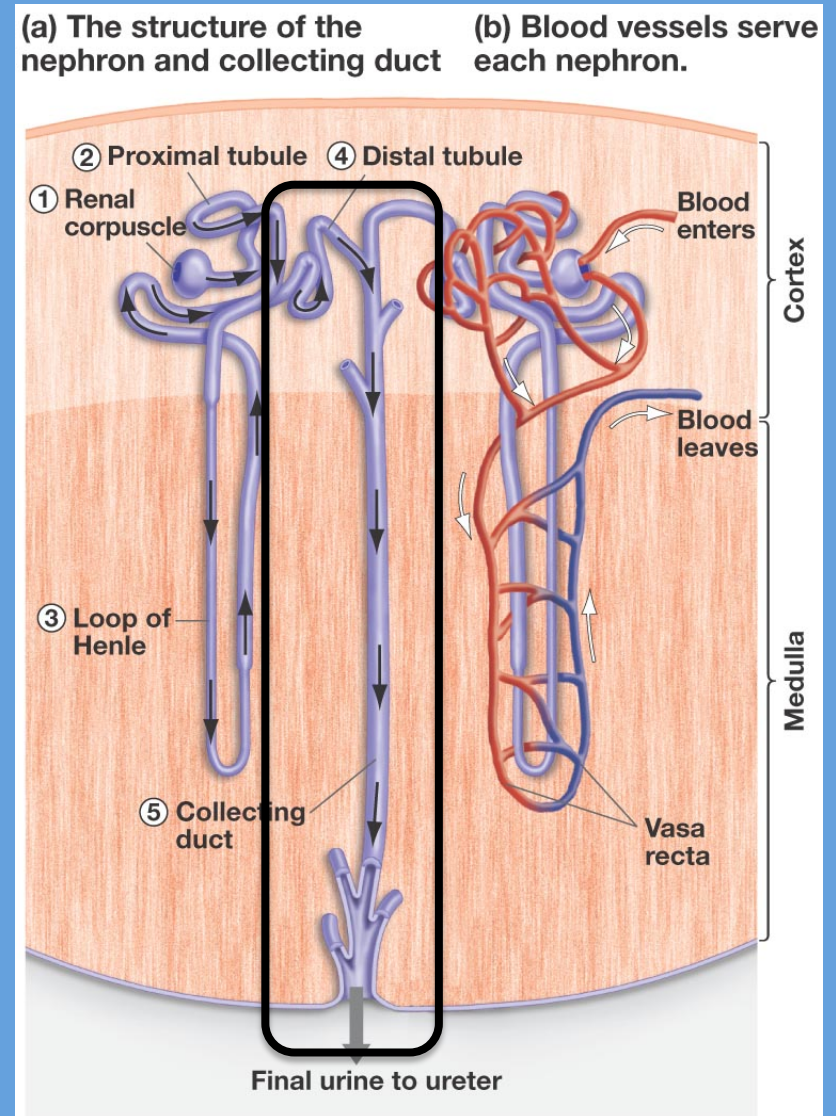
The Distal Tubule and Collecting Duct

4. Distal tubule

5. Collecting duct

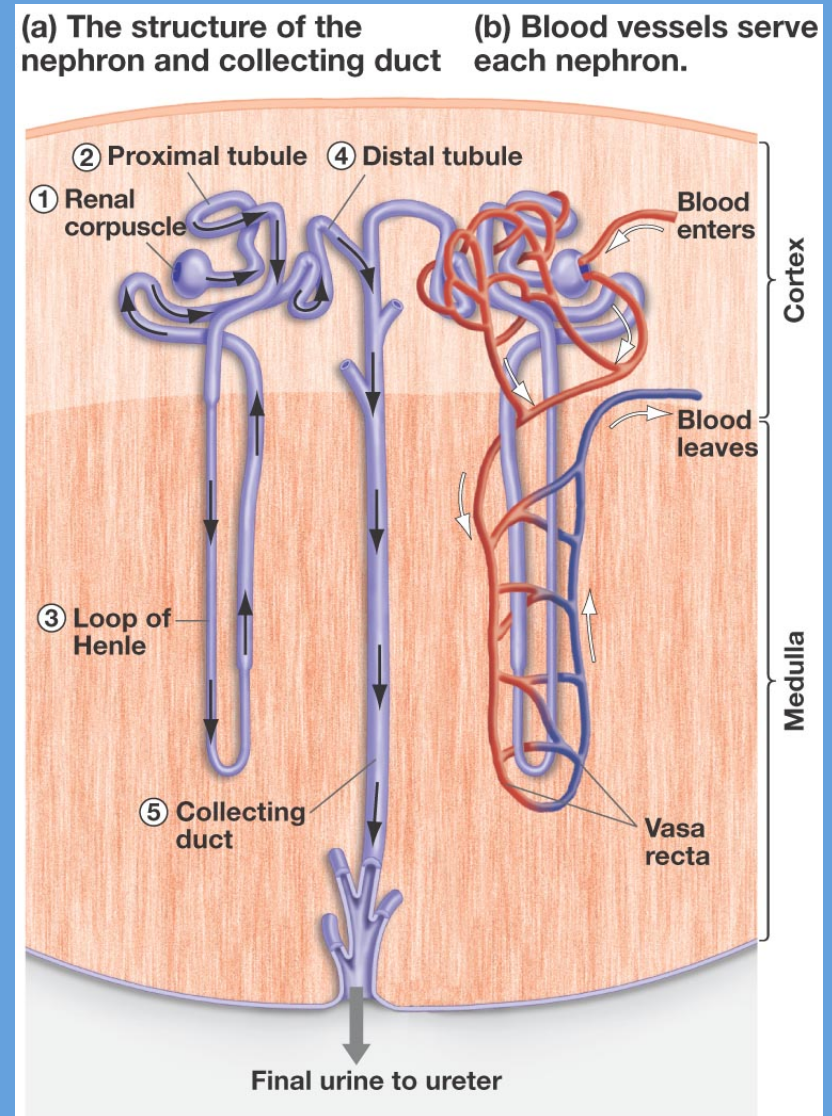
Activity changes in response to osmotic stress

Both respond to hormones



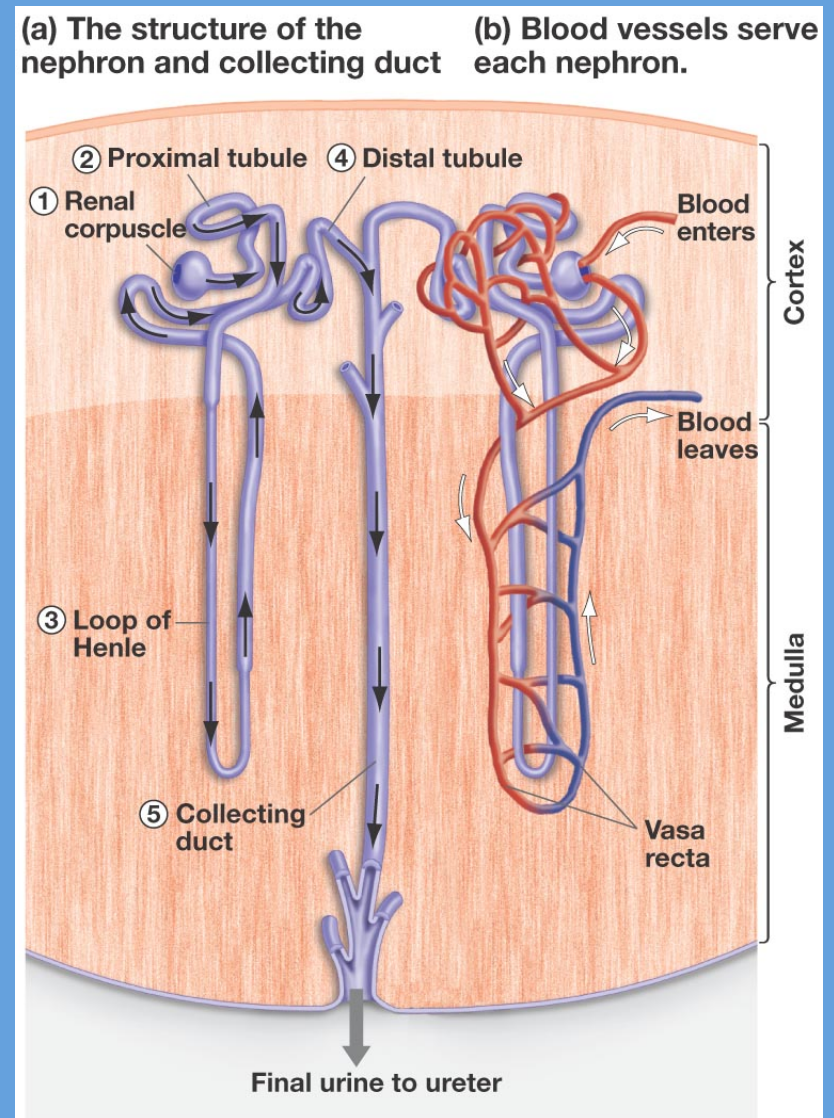
The Distal Tubule and Collecting Duct

- Normal functions
- Distal Tubule:
 - Reabsorb Na^+ , Cl^- , H_2O
- Collecting Duct
 - Normally impermeable



The Distal Tubule and Collecting Duct

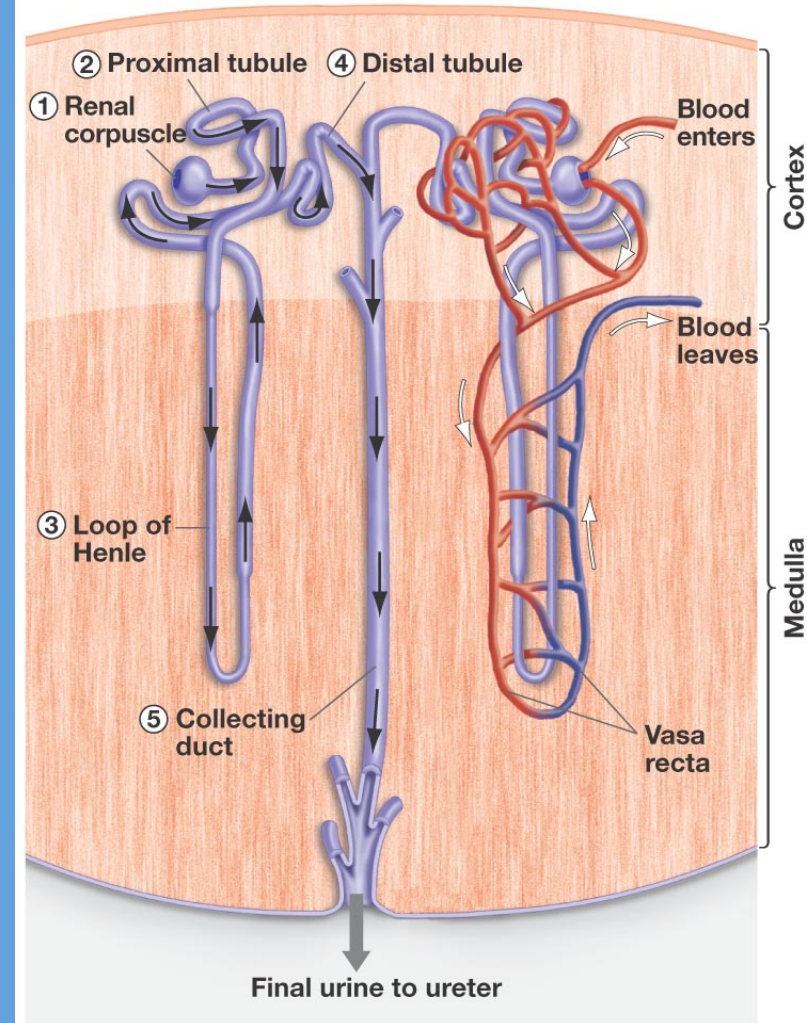
- Regulated by hormones when...
- Low blood Na^+
 - Too much water
- Dehydration
 - Too little water



The Distal Tubule and Collecting Duct

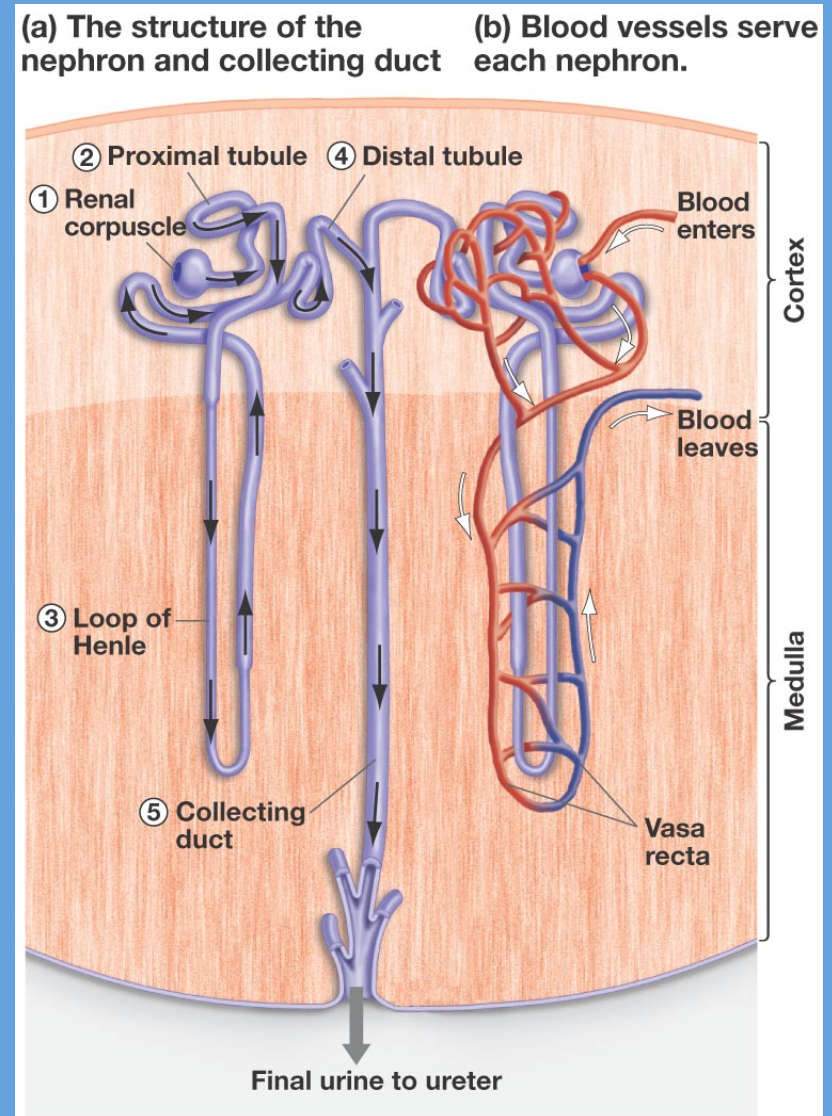
- Low blood Na^+
 - Too much water
 - **aldosterone**
 - More Na^+ pumps activated, more Na^+ reabsorbed

(a) The structure of the nephron and collecting duct (b) Blood vessels serve each nephron.



The Distal Tubule and Collecting Duct

- Dehydration
 - Too little water
 - **ADH** (antidiuretic hormone)
 - Aquaporins inserted in plasma membrane
 - Membrane more permeable to urea (?)

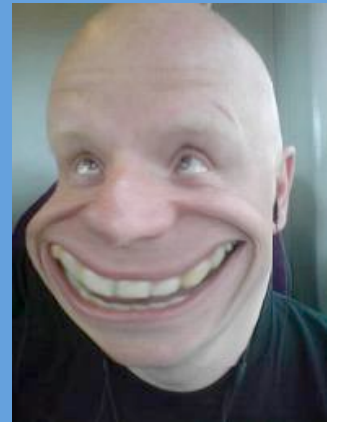


Questions

- What is the major difference between the first 3 segments of the nephron and the last 2 segments?
- Which segment of the nephron is inactive under normal conditions?

Write this down.

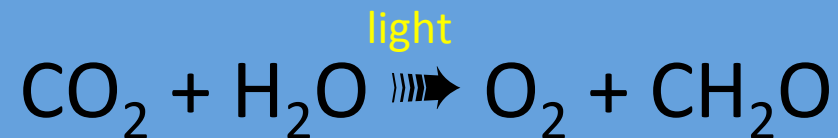
- Describe what will happen in the nephron in response to a person drinking too much alcohol. Keep in mind that alcohol is a diuretic.
- Describe what will happen in the nephron in response to someone who was just given ecstasy and a case of bottled water.





Photosynthesis

- Properties of light and pigments
- Photosystem II
- Photosystem I
- Calvin Cycle
- Adaptive variations



Light Spectrum

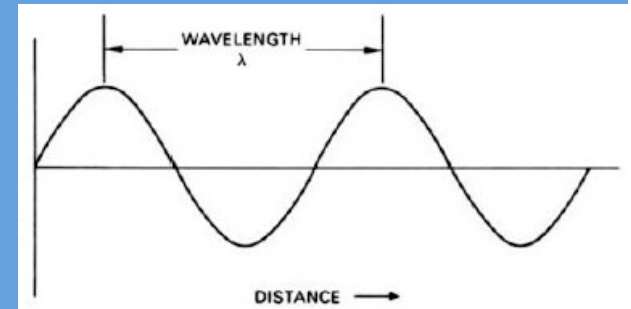
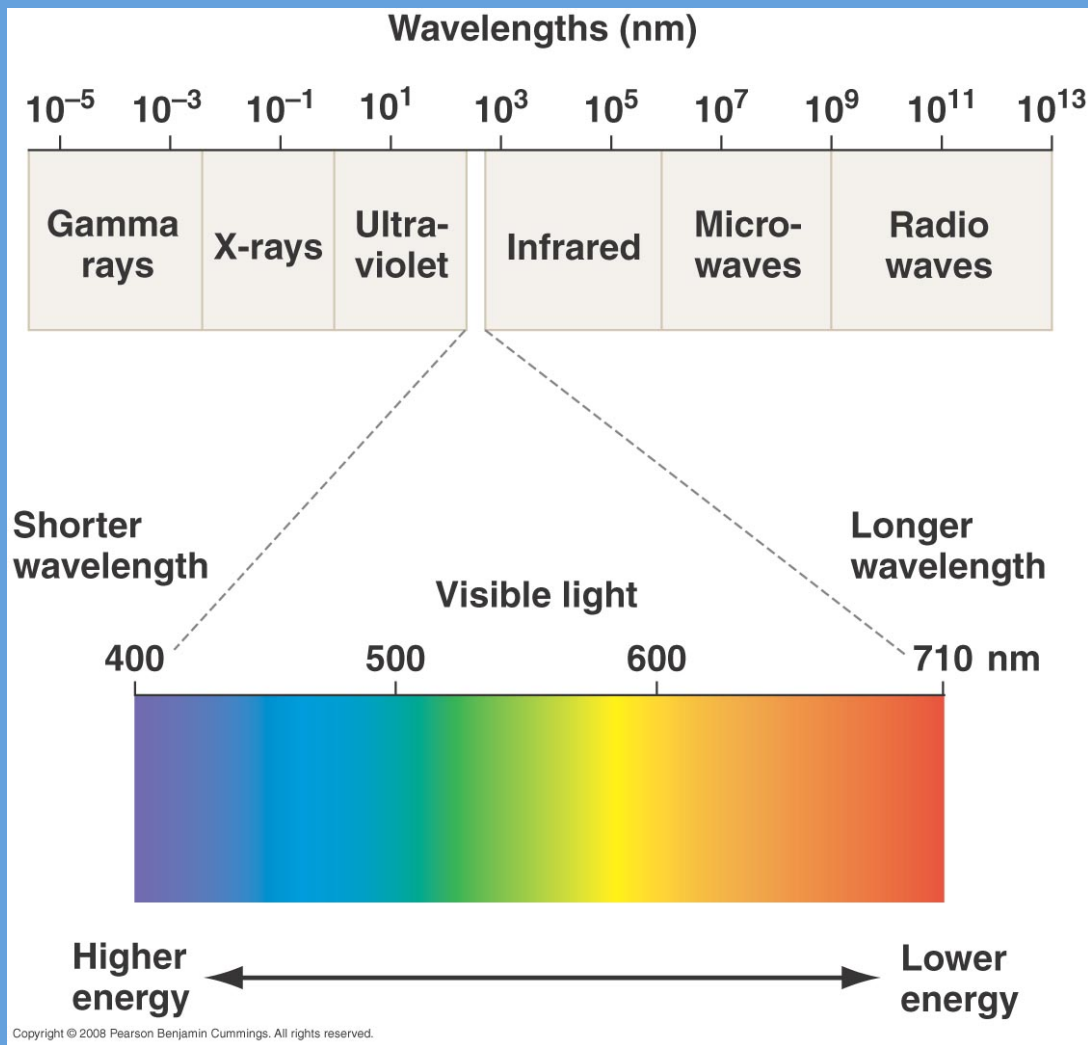


Fig 10.4 pg 202

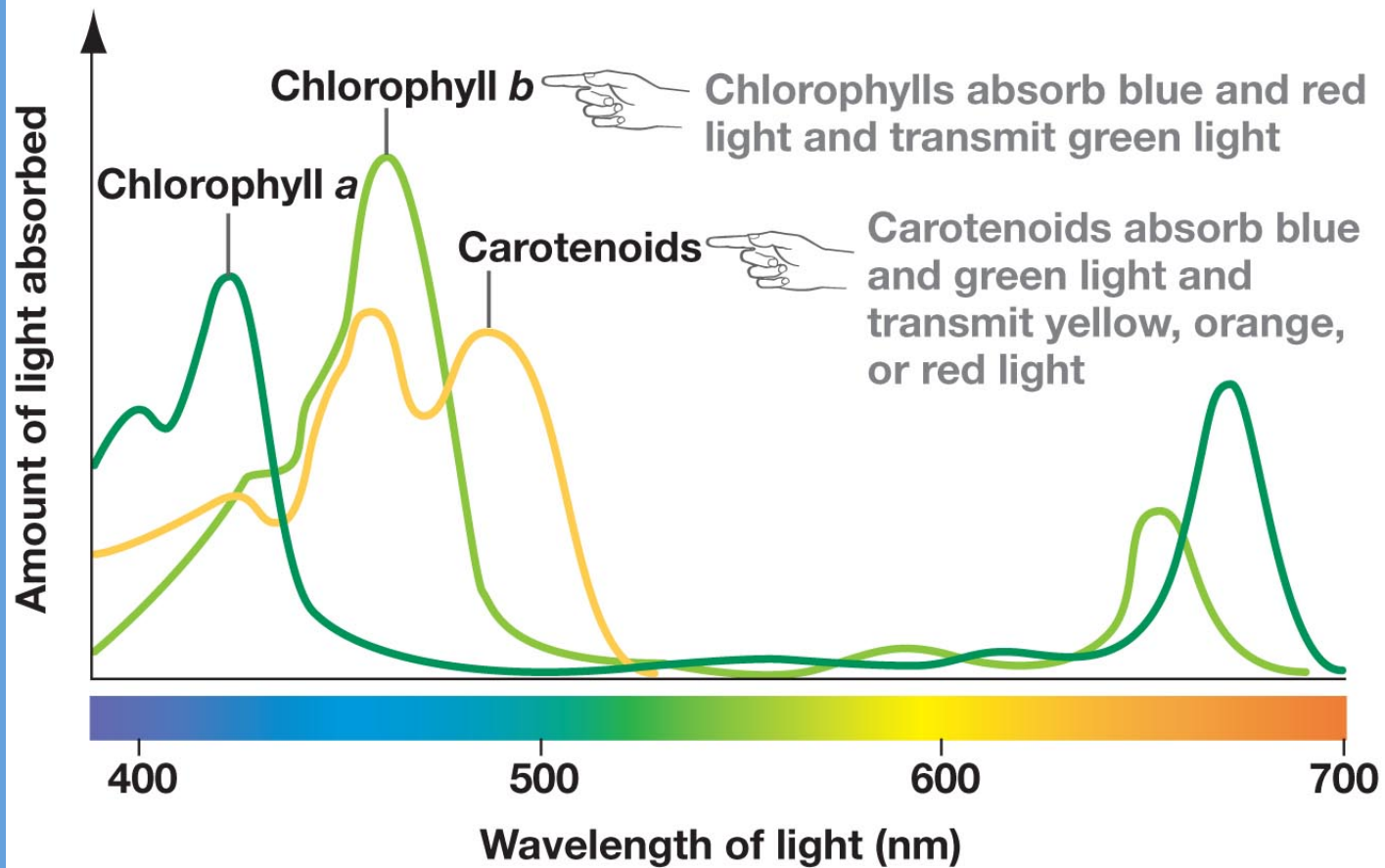
Pigments involved in photosynthesis

Pigments

Wavelengths

Chlorophyll a	Absorbs blue and red
Chlorophyll b	Absorbs blue and red
Carotenoids (e.g. β -carotene)	Absorbs UV, stabilizes unpaired electrons and free radicals (Sunscreen)
	Absorbs blue and green

(a) Different pigments absorb different wavelengths of light.



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How exciting!

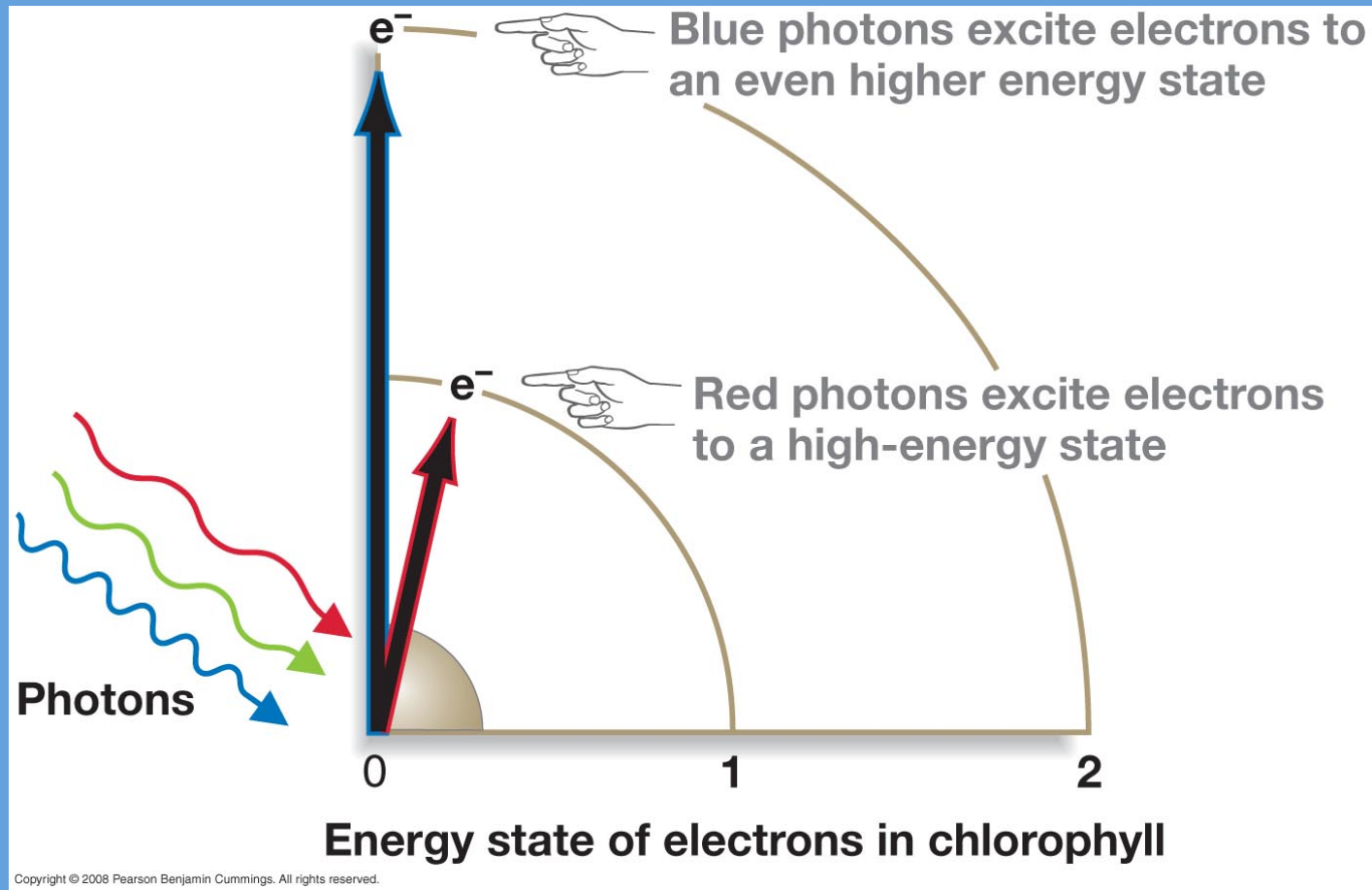


Fig 10.9 pg. 205

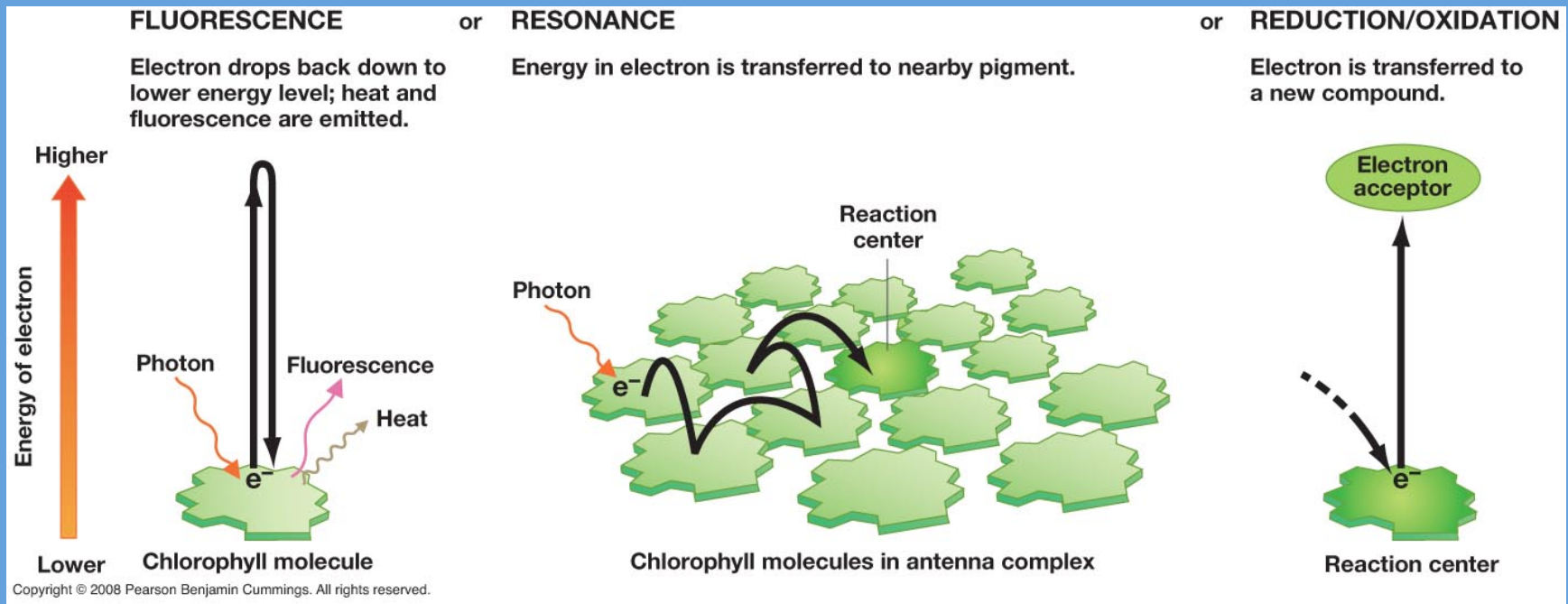
Exciting Consequences!

- When an electron in a chlorophyll molecule is excited, it can cause:
 - Fluorescence
 - Resonance
 - Redox Reaction
- Depends on location of chlorophyll molecule

Exciting Consequences!

- Solitary chlorophyll molecule
 - Fluorescence (release of light and heat)
- Antenna Complex
 - Resonance (vibration)
 - Transfer of energy (not the electron) until it reaches...
 - Redox reaction
 - Reaction center

Exciting Consequences!



Energy Lost

Energy Transferred

Energy Captured