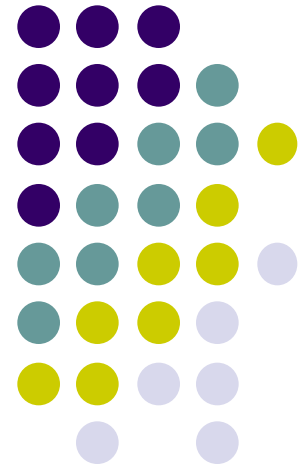
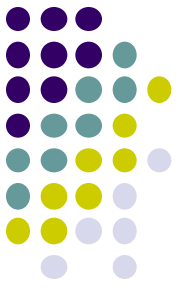


Feedback Mechanism

Mr. Yeung



Objectives



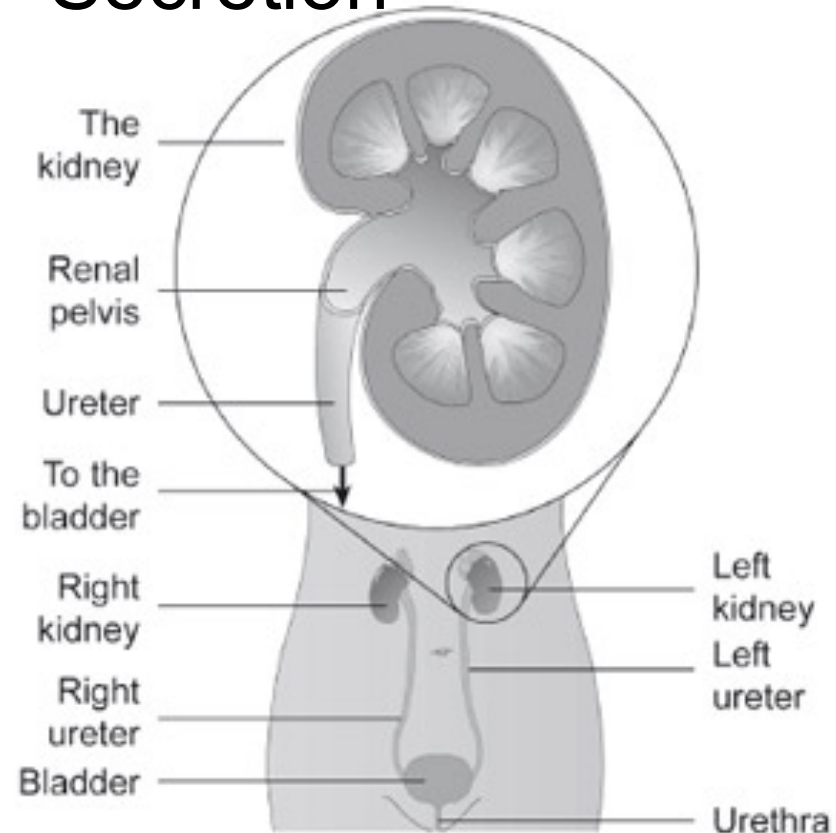
- Review
 - Filtration, reabsorption, secretion
- What is homeostasis?
- Negative feedback system
- Hormones
 - Aldosterone, Antidiuretic hormone (ADH)
 - Function of hormones
- Absorption rates in body
- Urinalysis and sports enhancing drugs

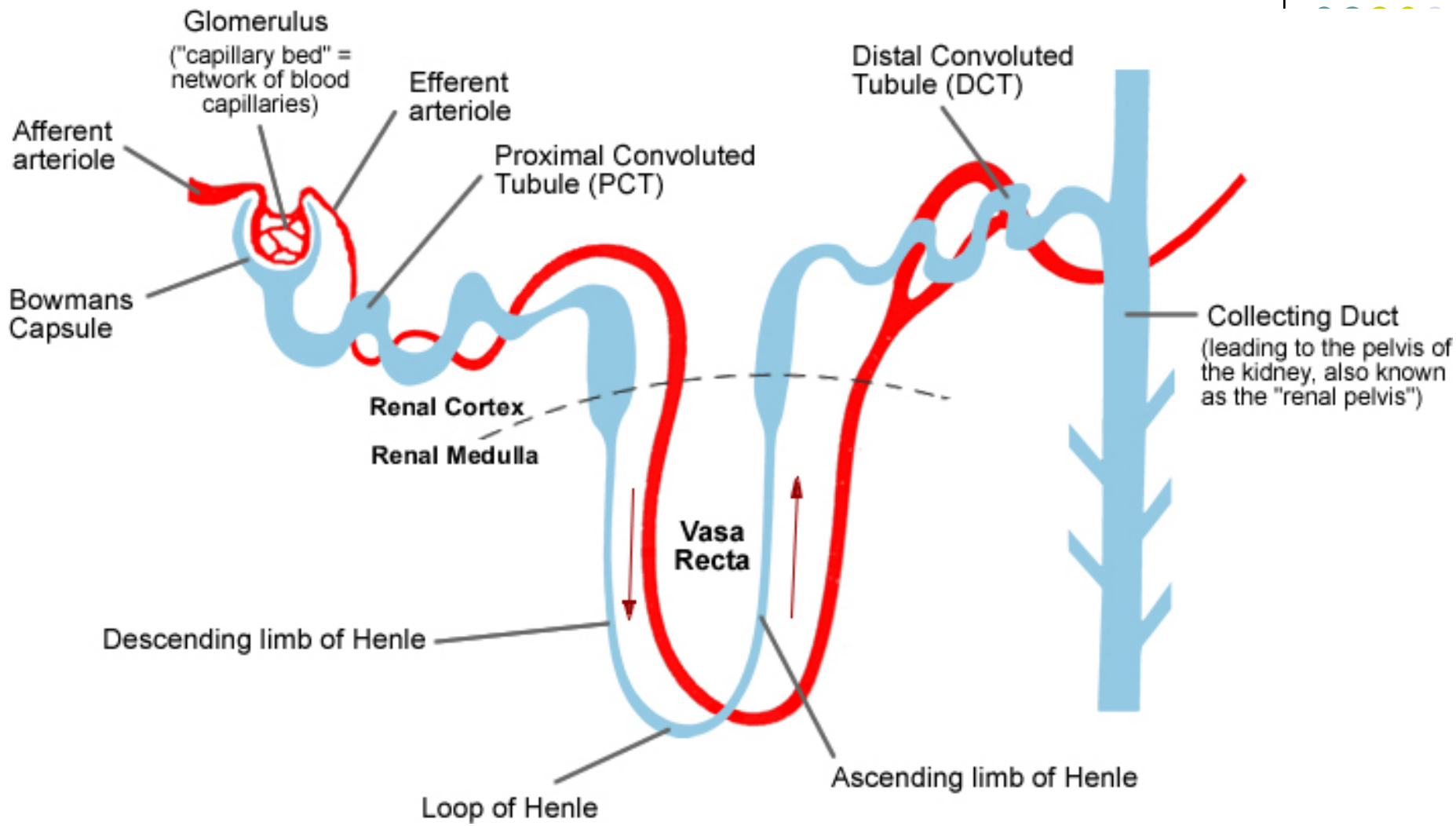
Review

- Filtration → Reabsorption → Secretion

- Flow chart

- Afferent arterioles
- Kidneys
 - Renal Cortex
 - Bowman's Capsule
 - Glomerulus
 - Renal Medulla
 - Proximal tubule
 - Loop of Henle
 - Distal tubule
 - Renal Pelvis
 - → Collecting duct







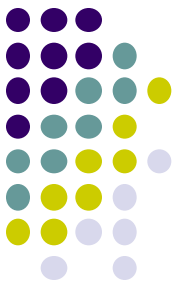
Homeostasis

- What is...?
 - Maintaining balance in body's internal environment
- Body completes this by...
 - Negative feedback system
 - Example: If my house is cold, I turn up the heat, if it gets too warm, I turn down the heat or turn up the A/C
 - Our body including our kidneys is a great example of negative feedback system

Kidneys



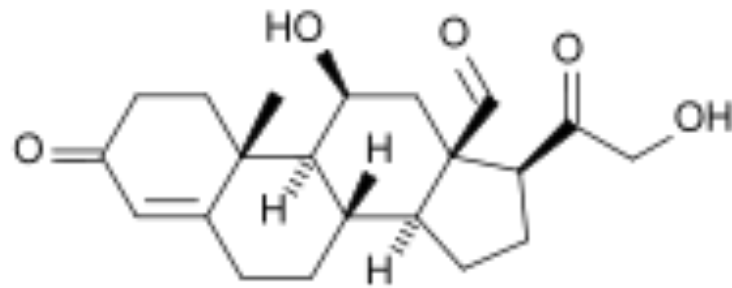
- In our bodies, one way to regulate ourselves is by hormones
 - Hormones are proteins that are secreted by glands in our body



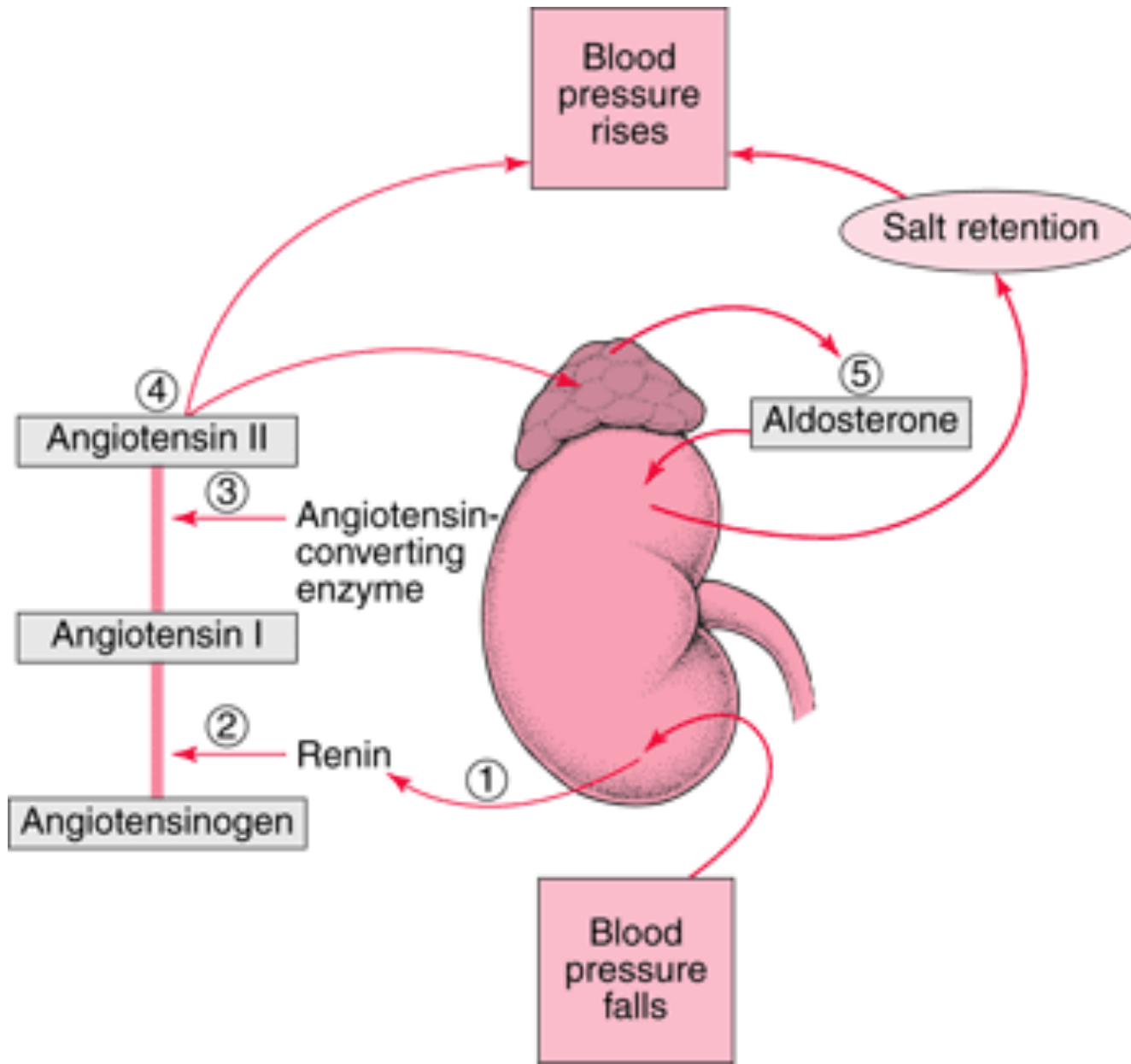
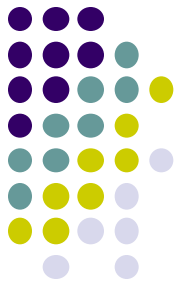
What do we regulate?

- What do you think the body regulates?
- If our blood pressure is low... what does the body want to do?
 - Increase the blood pressure
- What about the amount of water that we drink?

Aldosterone



- Hormone that helps increase blood pressure, increase water retention, and conserve sodium
- Acts on distal tubules and collecting duct
- Responsible for excretion of potassium ions (K^+) and reabsorption of sodium ions (Na^+)
- When the body has low blood pressure,
 - Filtration in the glomerulus is weak
 - Aldosterone is released
 - Increases Na^+ reabsorption back into blood stream
- Increase of Na^+ in the blood stream increases osmosis of water back into the blood. → INCREASE in BLOOD Volume = Increase in Blood Pressure





Anti-uretic hormone

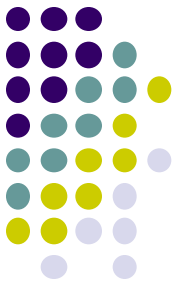
- Hormone produced by hypothalamus (in brain)
- Anti = no uretic = urine
 - NO URINE HORMONE
- ADH promotes more water reabsorption back into the blood stream (blood volume and blood pressure rises) leading to less urine
- Too much water (edema) in your blood → need to get rid of water so less ADH are released → leading more urination (urine is dilute)
- Secreted at night to compensate water loss through sweating
- Alcohol inhibits ADH (no urine hormone!) so you urinate more!

Alcohol



- Both are chemicals that increase flow of urine.
- So if you drink alcohol, you suppresses (stop) ADH (Anti-diuretic Hormone), leading to more urination
- How is your body affected?
 - Dehydration → Hangover

Know who this is?

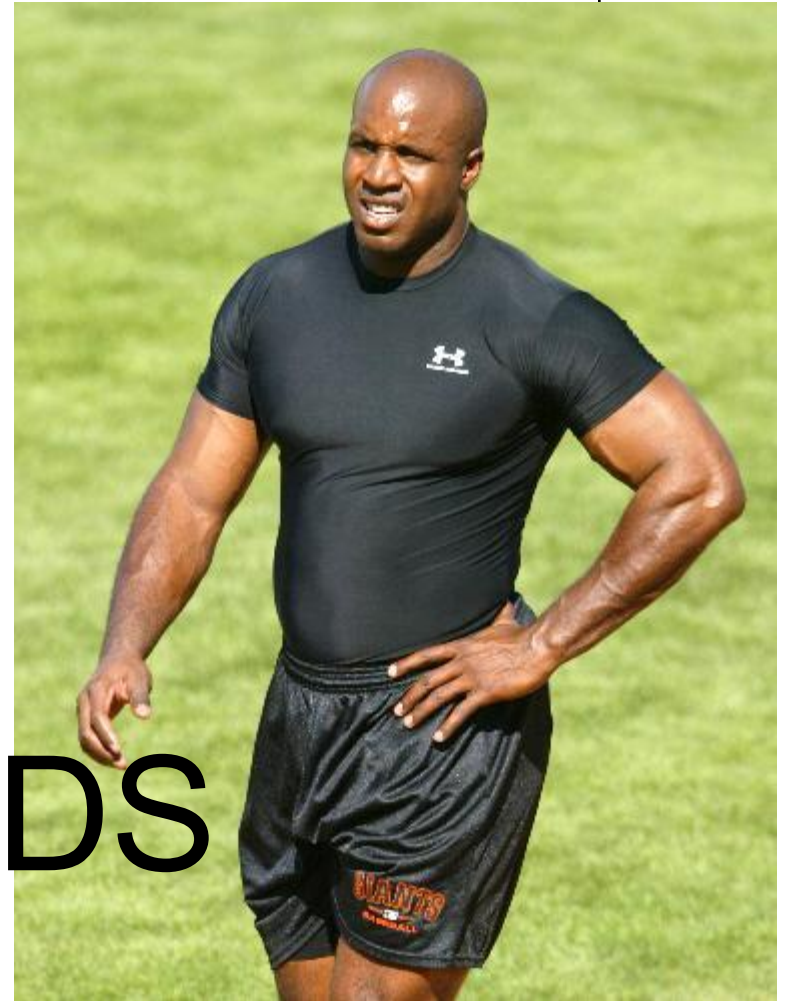


- Marion Jones – 2000 Olympics 5 Medals
- Steroid user! BUSTED

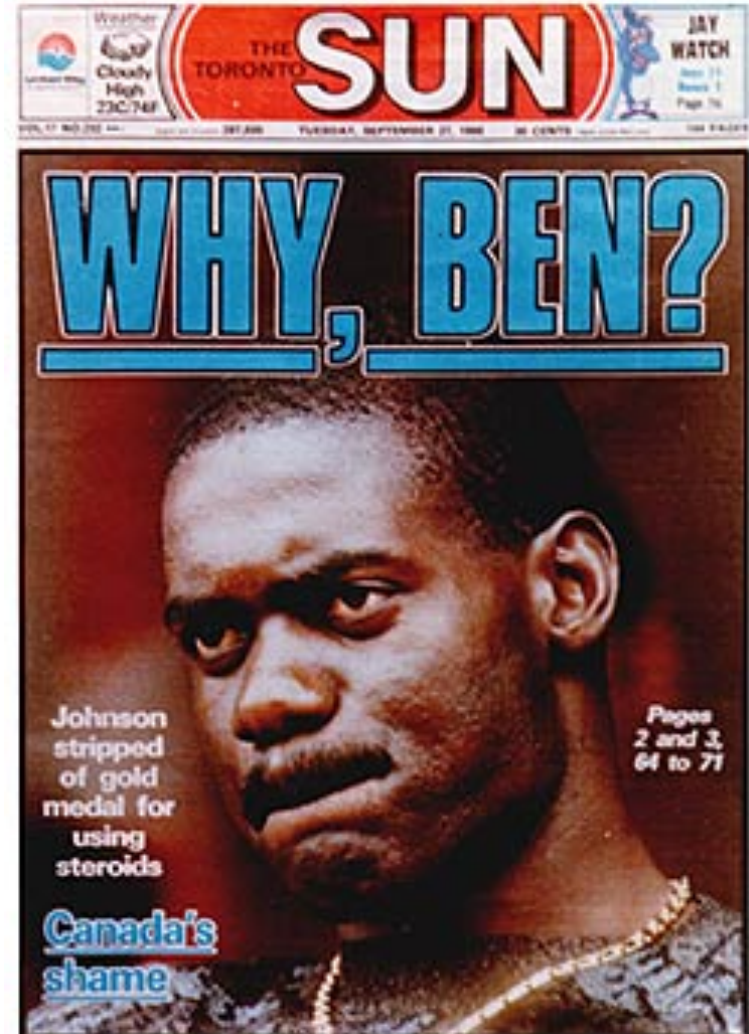
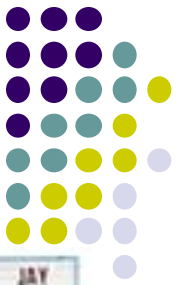
Before and After



Mr. BONDS



Proudly Canadian?



- 1988 Olympics – 100m Gold Medal?

Testing urine



- Urinalysis
 - Tests urines for too much or too little hormones, sugars, drugs etc
 - Athletes' urine are tested for drugs, steroids and hormones in their system
 - Will find H₂O, uric acid, ammonia, salts
 - Will not find glucose, proteins and blood (unless there is an infection)

Performance Enhancing Drugs



- Steroids
 - Increase protein synthesis building up more muscles
 - Increases appetite, and stimulation of bone marrow
- HGH
 - Human Growth Hormone
 - Stimulates growth and cell production
 - Natural hormone produced by body to increase height
 - Still under heavy controversy

Summary



- Review
- Hormones in regulation
 - Aldosterone
 - Increases reabsorption of Na⁺
 - Increases blood pressure
 - Anti-diuretic Hormone
 - ADH
 - Promotes more water absorption
 - Decrease urination
 - Absorption rates
 - Screening for illegal substances