Wound healing
- diabetes causes neuropathy
  - neuropathy- patients can’t feel discomfort in their extremities, mainly in the feet
    - patient with diabetes might not be able to feel the discomfort possibly leading to amputation
- Normal healing
  - Inflammatory response
    - Neutrophils
      - First to come; phagocytose bacteria, apoptosis in roughly 2 days
    - Macrophages
      - Replace neutrophils; phagocytose pathogens and dead neutrophils
      - Secondary response
- Diabetic healing
  - When macrophages take out in normal mice, decreased wound healing
    - When done in mice with diabetes, it increased wound inflammation
  - Takes longer to heal
    - Delay of inflammation→delay of neutrophils→delay of macrophages
  - Seen in mice via skin damage

*S. xylosus* produces a biofilm
- Biofilm- A thin film produced by a colony of bacteria to protect itself from antibodies

Pancreas
- Both exocrine- (has ducts) and
- Endocrine glands- islets of Langerhans
  - Alpha cells- release glucagon
    - Released when low blood sugar is detected
  - Beta cells- release insulin
    - Released when high blood sugar is detected
• Exocrine: Many precursors of digestive enzymes are made in pancreas and sent to duodenum

After meal
• Blood is filled with high glucose concentration
• Insulin is released
  o Insulin moves glucose into muscle and fat ➔ stored as glycogen
  o Too much insulin - brain doesn’t get enough glucose ➔ could result in comma

Fasting
• Blood glucose concentration is low
• Glucagon is released
  o Glycogen is lysed and glucose is made
• Gluconeogenesis
  o Make glucose via other pathways with amino acids
• Ketogenesis
  o Involved in breakdown of fats

GLUT4
• Working in muscle and fat
• Glucose transporter to transport insulin into cell
• Insulin signals cell to insert GLUT-4 into cell membrane to allow glucose to enter cell
  o GLUT-4 already made in cell; just has to fuse with membrane to allow glucose through
• Insulin binds to receptor Tyrosine kinase (RTK) to initiate a signal transduction to result in a cascade
  o Kinase- phosphorylates the molecule

GLUT-2
• Glucose transporter used by liver to uptake glucose