Diabetes

• Diabetes affects an estimated 7% of the total US population with almost half that number being undiagnosed cases.

•Type I: Is juvenile onset, accounts for about 5-10% of total cases, and is caused by immune system-mediated destruction of beta-pancreatic cells that release insulin leading to inefficient glucose metabolism. There is no known cause for Type I diabetes and patients need to inject themselves with insulin as treatment.

•Type II: Is usually adult onset though is increasing being observed in younger people, accounts for 90-95% of all diabetes cases and is characterized by **insulin resistance**. Loss of sensitivity to insulin signaling is also observed as people get older.

Insulin Resistance

• Metabolic defect whereby normal levels of insulin released by beta cells do not trigger uptake of glucose, causing excess release of insulin and initially steep drops in blood sugar and hypoglycemia. Eventually the beta cells cannot produce enough insulin for adequate glucose metabolism leading to hyperglycemia and full-blown Type II diabetes.

• Partially genetic in cause, aggravated by obesity and sedentary lifestyle since excess fat interferes with the ability of muscle tissue to adequately use glucose as an energy source.

Pharmaceutically Mediated Insulin Sensitization

Thiazolidinediones (TZDs) - class of drugs used to sensitize the body to insulin levels by activating PPAR transcription