Pancreas

* The *pancreas* is between the kidneys and the duodenum and provides digestive juices and endocrine functions.
* *Pancreatic Islets of Langerhans* secrete:
* - *insulin*, from the beta cells, which lowers the blood glucose level
* - insulin makes cells more permeable to glucose
* - *glucagon*, from the alpha cells, which increases the blood glucose level
* - glucagon causes the conversion of glycogen to glucose

[Regulation of blood glucose level](http://www.nelson.com/ABbio20-30/teacher/protect/media/pancreatic_hormones_v2.html)

**Diabetes Mellitus:**

* Lack of insulin due to the failure of the pancreas to produce insulin or the inability of the body cells to take it up.
* *Hyperglycemia* symptoms develop, and glucose appears in the urine.
* Produce urine with sugar (kidneys are unable to reabsorb all the sugar)
* High glucose concentration draws water from nephron by osmosis
	+ - Large volumes of urine, often thirsty
1. **Juvenile onset:** (by about age 6) ~10% of diabetes cases
	* + - Often called **type I** (insulin dependent) caused by **lack of insulin** **production in pancreas**
			- Genetic: hereditary but may skip generations
			- Treatment: insulin injections/pump
2. **Maturity onset**: diagnosed in adulthood ~90% of diabetes cases
	* + - Often called *Type II* where the pancreas produces insulin but the body cells do not respond.
			- Beta cells slow down production of insulin
			- Or, ineffective use of insulin by the body
			- More common
			- Treatment: Diet & Exercise primarily

3) **Gestational:** Pregnant woman (2-4% of pregnancies)

* + - * Controlled by diet mostly
			* Increases the risk of both mother and child ending up with type II diabetes later in life
* must monitor both hypoglycemia (need glucagon or glucose) and hyperglycemia (need insulin)

**Diabetes Incipidus** – lack of ADH

* Nothing to do with the pancreas!
* Relationship is blood glucose levels because….
	+ Lack of ADH causes you to lose lots of water
		- Therefore, your blood glucose concentration is higher
	+ Constant thirst
	+ Blood becomes hypertonic
	+ Treatment: Take an antidiuretic drug
* To Do : Lab 15.A pg. 483 # 1- 8 (textbook)