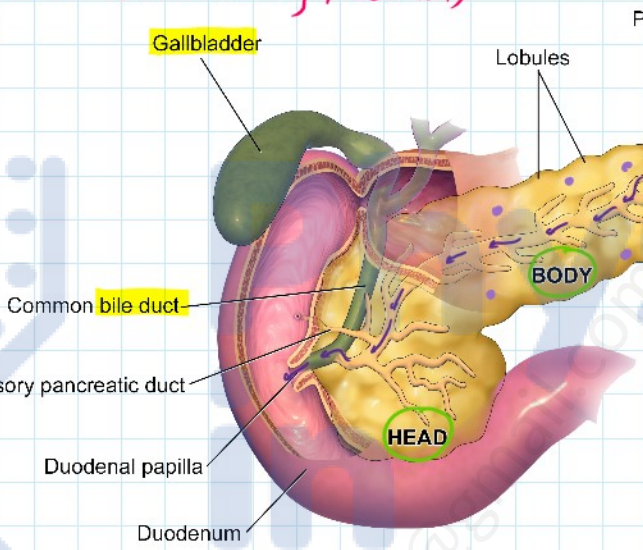
2.7 Pancreas

HETERO-CRINE → **PANCREASE** → DOUBLE GLAND

- ENDOCRINE → 1%
- EXOCRINE → 99% (Pancreatic Juice)

ISLETS OF LANGERHANS (cell → 1–2 million)

→ STIMULUS TO SECRETE
- Blood Glucose (90 – 120 mg / 100 ml)
- STH / GH
- ACTH



ACINAR CELLS → Pancreatic Juice

ISLETS OF LANGERHANS
- 25% → α - cell → Glucagon
- 60% → β - cell → Insulin
- δ - cell → Somatostatin
- PP - cell → Pancreatic Polypeptides
- ε - cell → Ghrelin (Hunger Hormone)

29 A-Acid ← GLUCAGON (Hyper-glycemic Hormone) → ↑↑ BLOOD GLUCOSE LEVEL ↓↓ ← INSULIN → 51 A-Acid (Hypo-glycemic Hormone)

CELLULAR UPTAKE → Liver cell, Muscle cell, Adipose cell

↓↓ Glucose → GLUT-4 ← ↑↑

↓↓ GLYCOGENESIS Glucose → Glycogen ↑↑

↓↓ GLUCOSE → FATS / PROTEIN ↑↑

GLUCO-GENESIS

↑↑ Glycogen → Glucose ↓↓

↑↑ GLUCO-NEO-GENESIS Fats / Proteins → Glucose ↓↓

LESS INSULIN
- → Diabetes Mellitus
- → Hyperglycemia
- → Glycosuria
- → Polyuria
- → Polydipsia
- → Polyphagia

HIGH INSULIN
- → Hypoglycemia

Gland	Secretion	Control of production	Function	Over-secretion	Under-secretion
Pancreas (Islets of Langerhans)	Insulin (by β-cells, which are more in number))	STH, ACTH & blood glucose level	Decreases blood glucose level by converting into glycogen, lipid & proteins, increasing utilization & decreasing hydrolysis of glycogen	Hypoglycemia, upset of nerve and muscle function	Diabetes Mellitus (high blood & urine glucose, disturbance in body Equilibrium & nervous system, toxication, dehydration)
	Glucagons (by α-cells, which are smaller in number)	STH, ACTH & blood glucose level	Increases breakdown of glycogen and fats into glucose	Rare, tumors causing over-secretion, which leads to high blood glucose level & damage of alpha and beta cells	