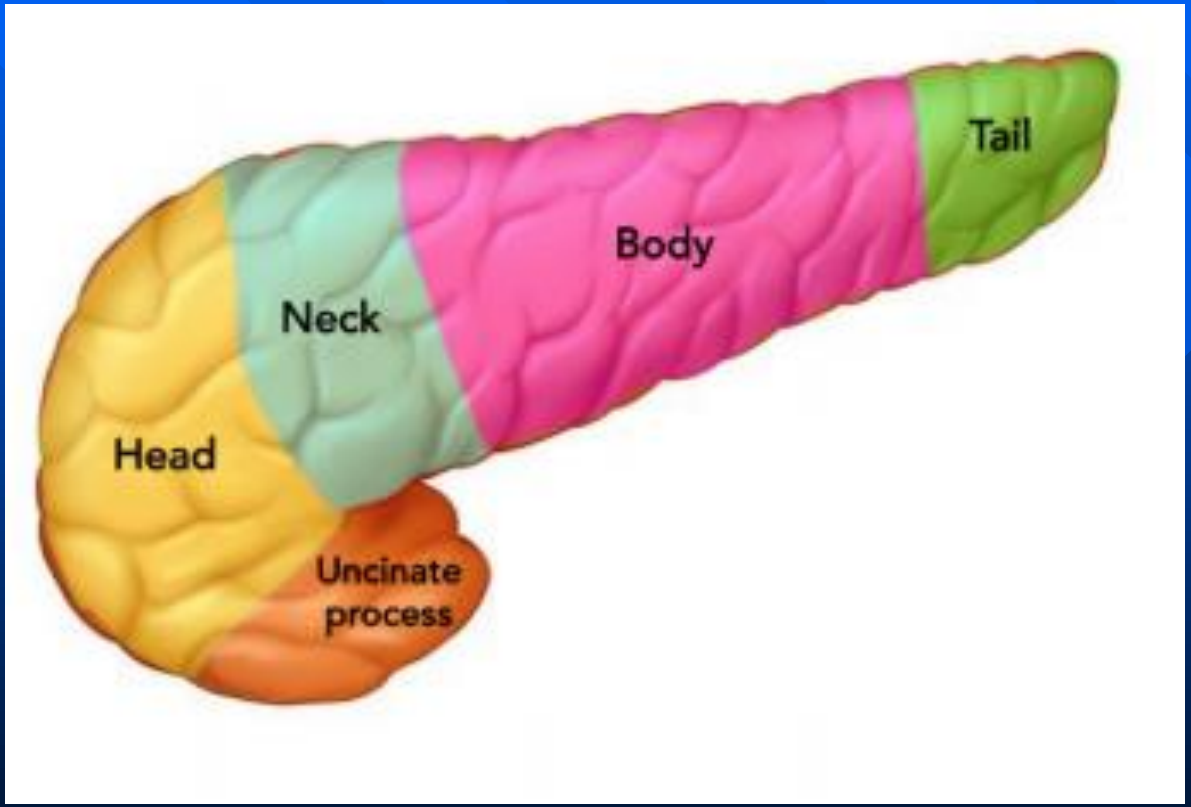
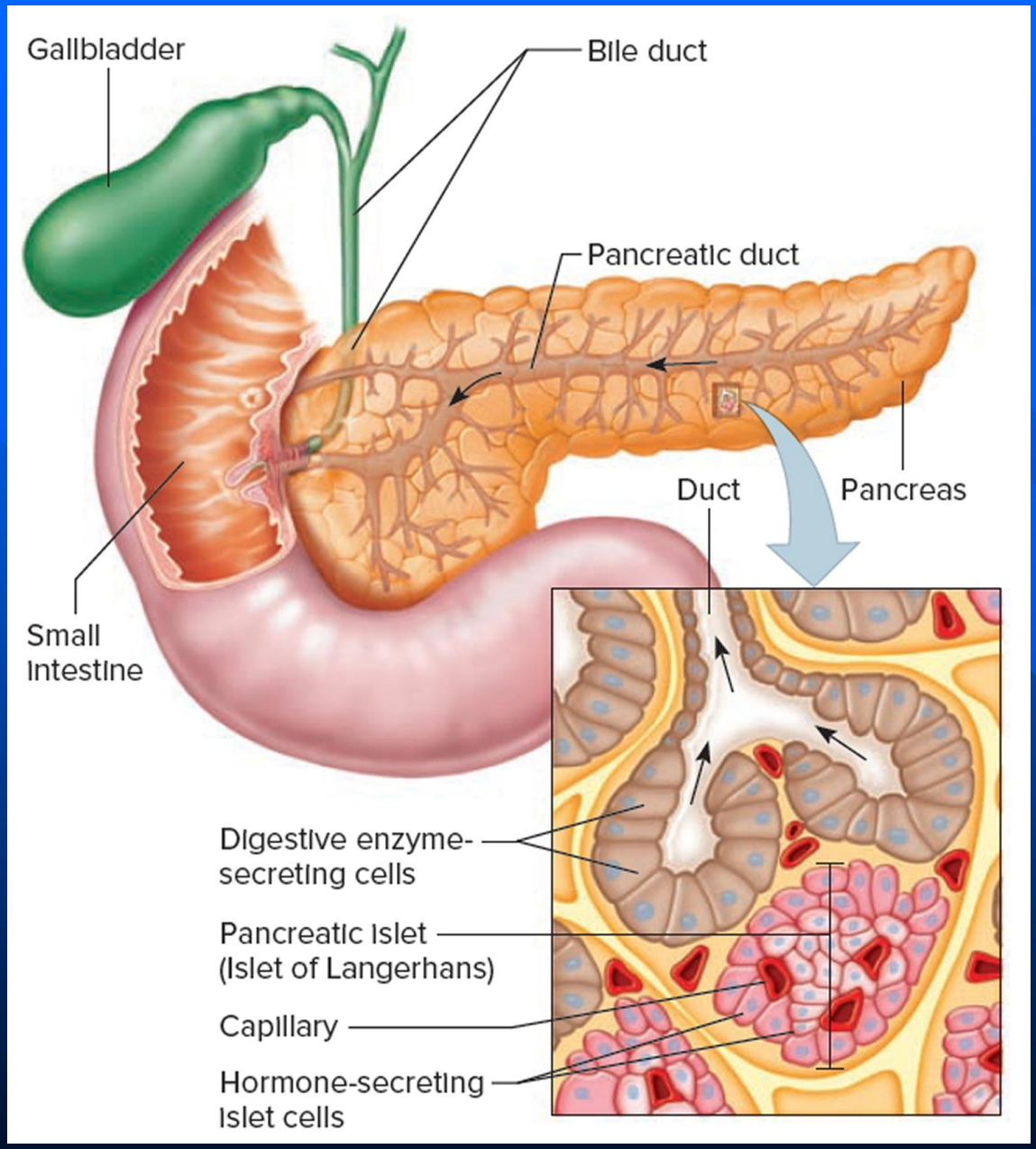
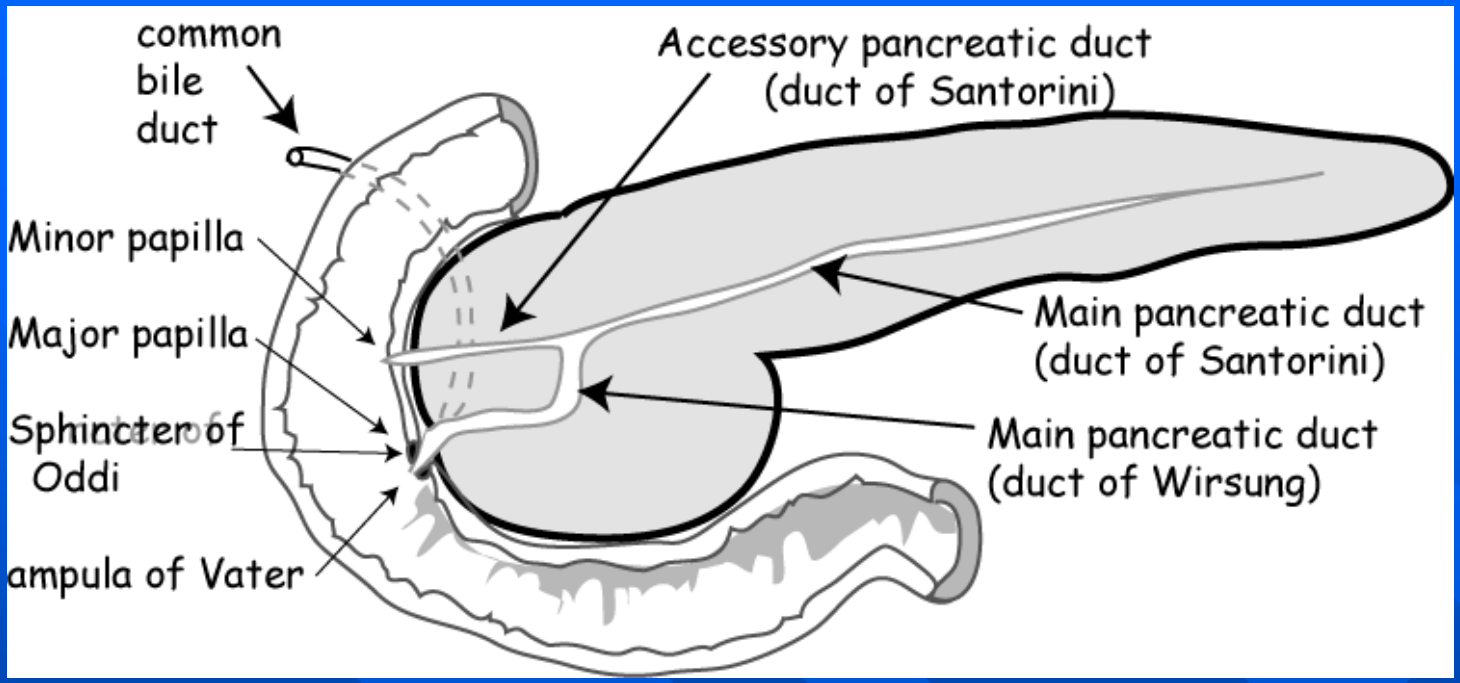
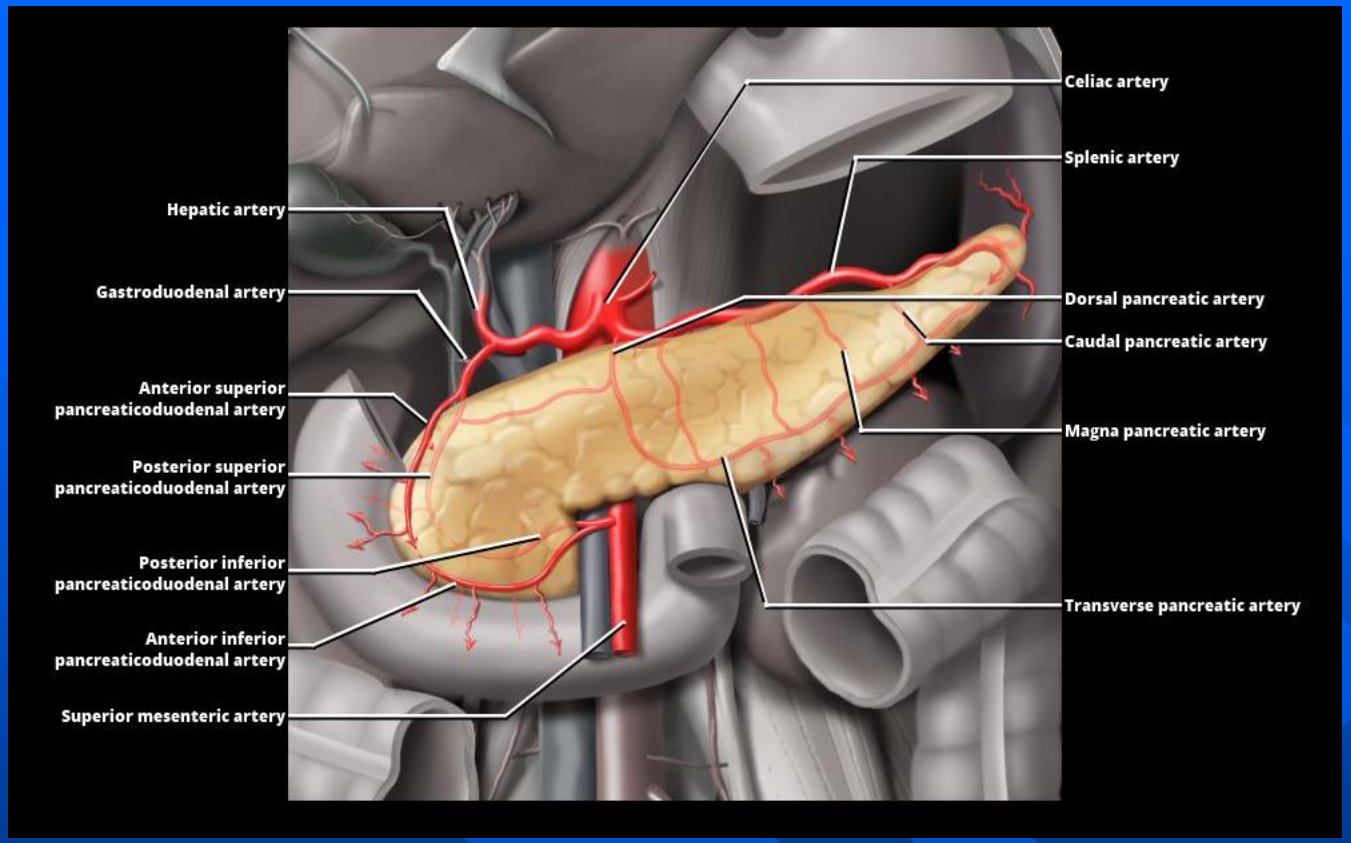
Anatomy




Gallbladder
Bile duct
Pancreatic duct
Duct
Pancreas
Small intestine
Digestive enzyme-secreting cells
Pancreatic islet (Islet of Langerhans)
Capillary
Hormone-secreting islet cells



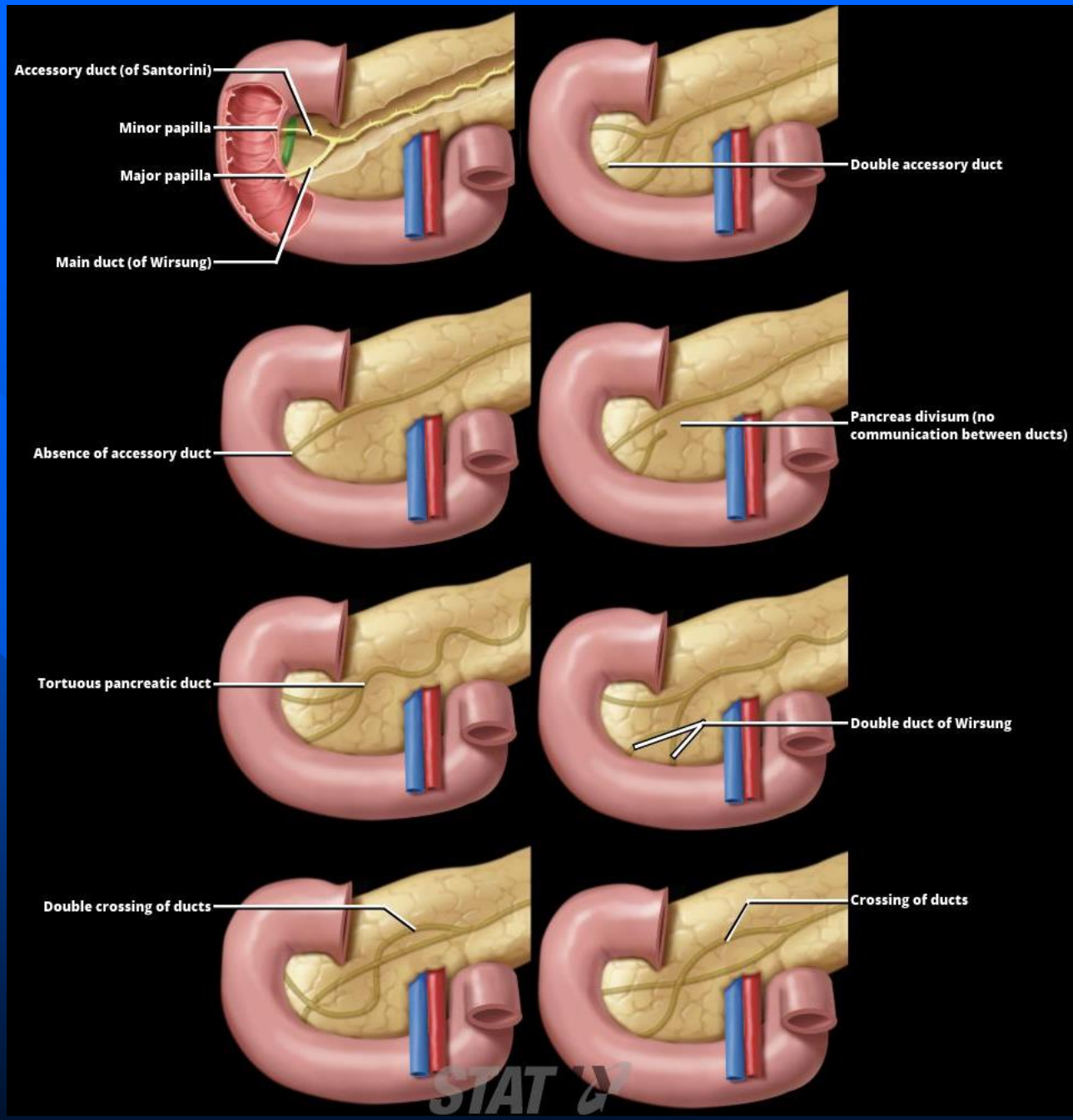
- **Accessory pancreatic duct (of Santorini)**
  - portion of the dorsal duct distal to the dorsal-ventral fusion point
  - drains anterior and superior portion of the head
    - » in 70% of individuals drains to the minor papilla
    - » in 30% of individuals persists as a branch of the main pancreatic duct



The pancreatic head is primarily supplied by the anterior and posterior pancreaticoduodenal arcades, including anterior and posterior superior pancreaticoduodenal arteries arising from the gastroduodenal artery (GDA) and anterior and posterior inferior pancreaticoduodenal arteries arising from the superior mesenteric artery (SMA).

The blood supply to the body and tail segments is primarily via the splenic artery with the 2 biggest branches including the dorsal pancreatic artery and the pancreatic great (magna) artery, which arise from proximal and midportions of the splenic artery, respectively.

- The accessory duct (of Santorini) originates with the dorsal pancreatic anlage, which is the larger bud from the embryologic foregut, comprising the pancreatic body and tail.
- The main duct (of Wirsung) originates with the ventral, smaller, anlage that develops into the pancreatic head and uncinate process.
- Usually, the main and accessory pancreatic ducts fuse, and the main duct becomes the primary conduit for drainage of secretions into the duodenum.
- The pancreatic duct courses through the center of the gland and is joined by tributaries that enter it at right angles.
- In the head, the duct turns caudally and dorsally and runs parallel to the common bile duct before joining it at the ampulla of Vater and entering the major papilla.
- The accessory duct usually enters the duodenum more proximally through the minor papilla.



Contrast extravasation

- Exocrine function:
  - Pancreatic **acinar cells** secrete pancreatic digestive enzymes into duodenum via pancreatic duct
- Endocrine:
  - Pancreatic **islet cells** (of **Langerhans**) secrete insulin, glucagon, and other polypeptides into portal venous system

CT

- Normal pancreas demonstrates attenuation of 40-50 HU on NECT
- Should demonstrate avid, rapid, homogeneous enhancement after administration of IV contrast with peak enhancement typically slightly earlier than standard portal venous phase
  - Peak enhancement often seen at roughly 40-45 seconds (pancreatic phase)
  - Inhomogeneous enhancement increasingly common in older patients due to fatty infiltration
- Main pancreatic duct typically measures under 3 mm and should gradually taper

MR

- Normal pancreas should demonstrate T1 signal, which is **equal or greater** to liver
  - Pancreas generally shows highest T1 signal of any parenchymal organ in abdomen
- Variable parenchymal signal on T2WI (generally low-to-intermediate signal), limiting utility of this sequence for detection of tumors
- Enhancement kinetics after administration of gadolinium similar to CECT
- Diffusion-weighted imaging may be helpful for lesion detection