



Faculty of Biological Science and Technology
Zoology and Botanical Department
Practical Histology

Accessory Organs of Digestive System

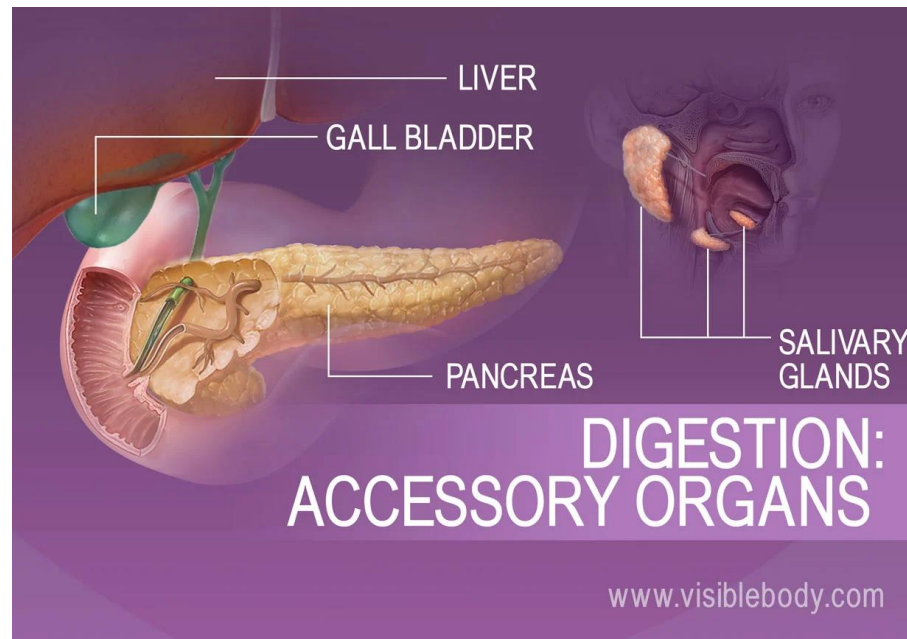
Part 1

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Introduction

- ▶ Glandular organs like salivary glands, pancreas, liver and gall bladder known as accessory organs of digestive system
- ▶ These organs help digestion of food, secretion of enzymes or water and nutrient absorption

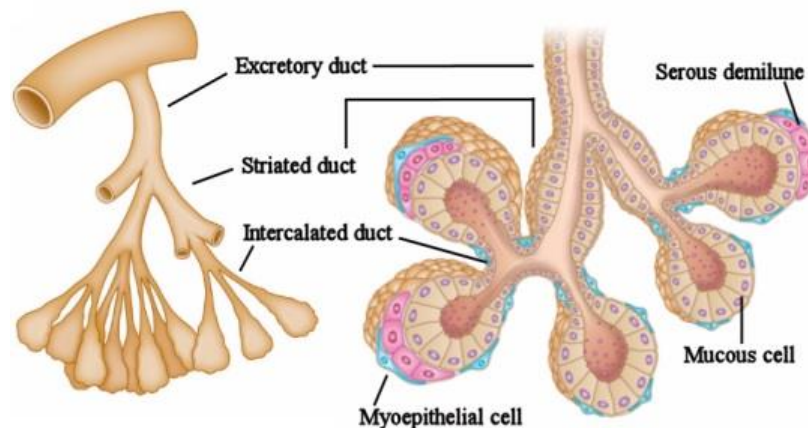
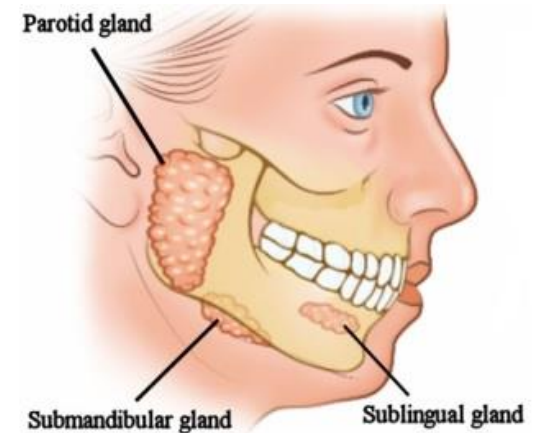


From: <https://www.visiblebody.com/learn/digestive/digestive-accessory-organs>



Salivary glands

- ▶ Salivary glands produce saliva. There are large, three pairs of salivary glands and numerous scattered salivary glands throughout oral cavity in human
- ▶ The main salivary glands include:
 - ▶ Parotid glands
 - ▶ Submandibular glands
 - ▶ Lingual glands
- ▶ All salivary glands are compound tubuloacinar exocrine glands. The secretory units of these glands are merocrine
- ▶ Each gland is surrounded by capsule which is composed of dense connective tissue. Septa give rise from capsule dividing gland parenchyma into lobules. The salivary gland parenchyma consists of secretory units and ducts
- ▶ The secretory units composed of three different cell types including serous cells, mucous cells and myoepithelial cells
- ▶ Ducts classified as intercalated ducts, striated ducts and excretory duct in ascending order



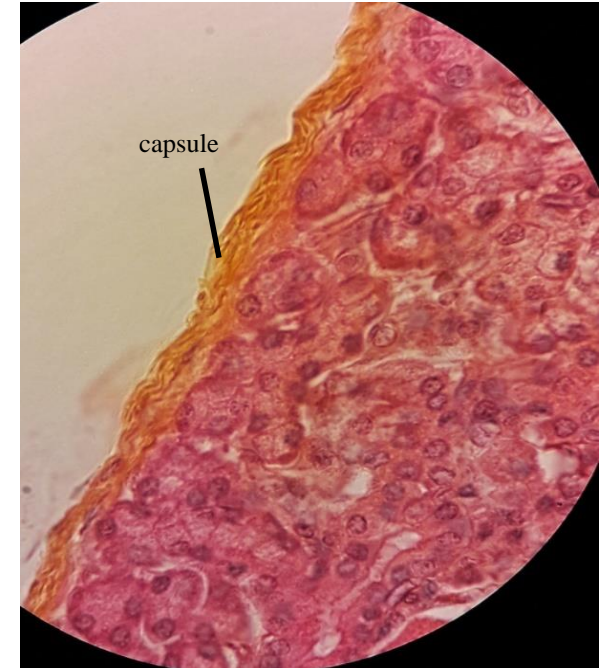
From: Andreasen, 2018



Salivary gland



Septum and lobules in cross section of salivary gland. H&E, 4X. This picture is taken from histological slide in histology laboratory of Isfahan University

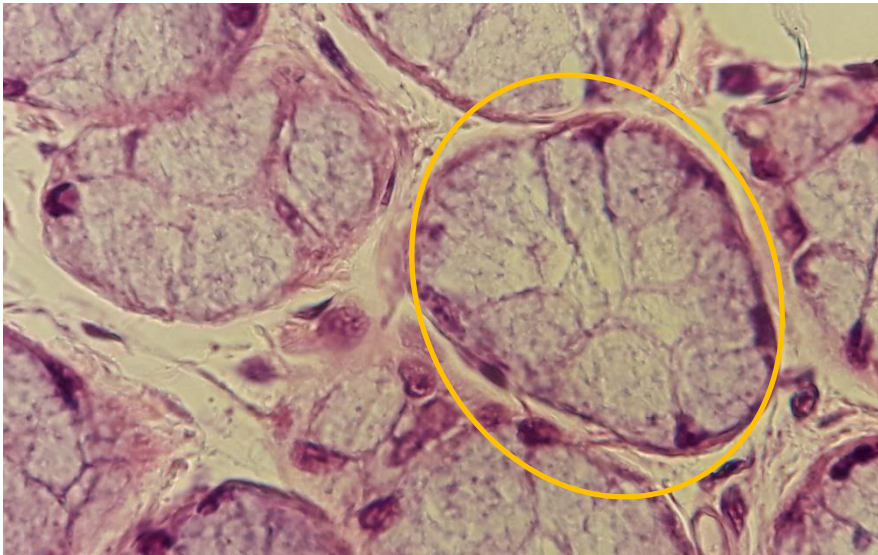


Capsule in cross section of salivary gland. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University



Mucous and serous secretory units

- ▶ Mucous cells are columnar in shape with flat, dense nucleus located in the base of cells. They have pale cytoplasm
- ▶ Serous cells are basophilic, glandular cytoplasm with spherical nuclei



Cross section of submandibular gland. Yellow circle depicts mucous secretory unit composed of mucous cells. H&E, 100X. This picture is taken from histological slide in histology laboratory of Isfahan University

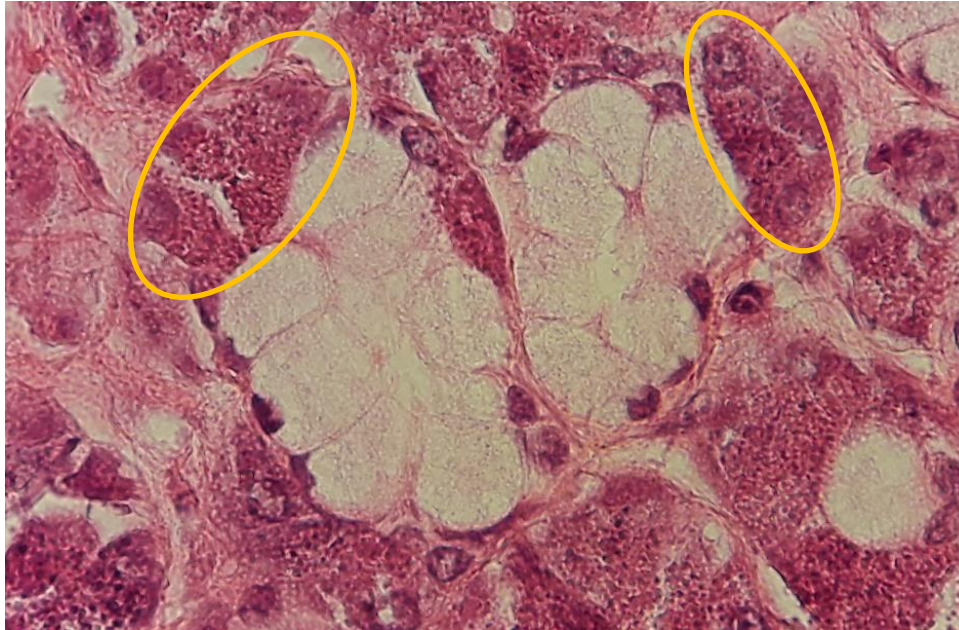


Cross section of parotid gland. Yellow circle depicts serous secretory unit composed of serous cells. H&E, 100X. This picture is taken from histological slide in histology laboratory of Isfahan University



Serous Demilune

- ▶ Serous demilune is composed of serous cells located at the distal end of mucous secretory units

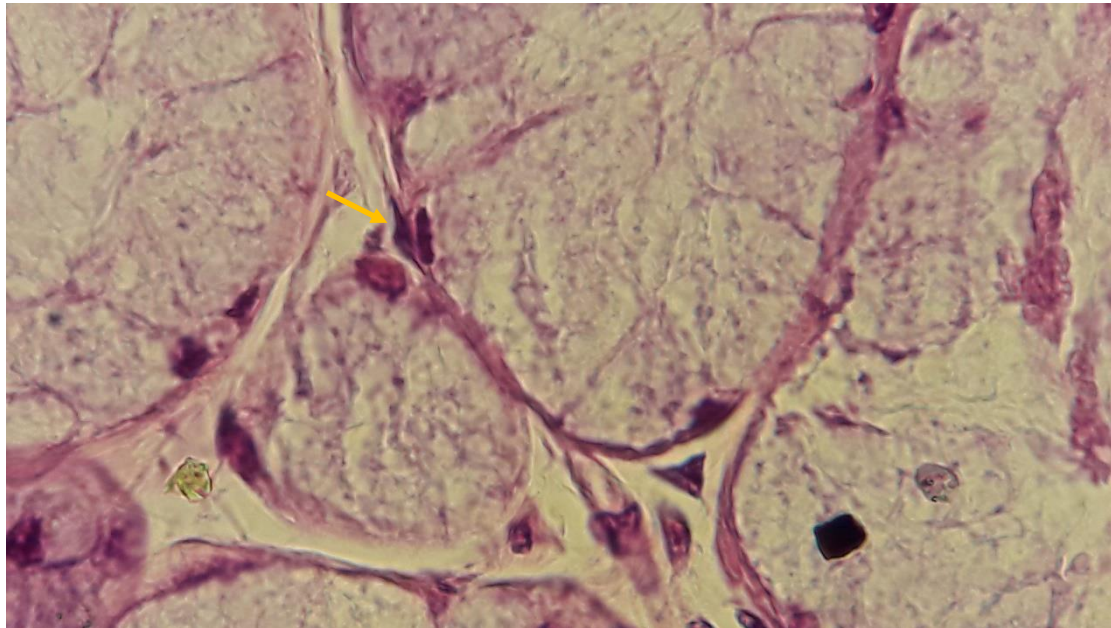


Cross section of salivary gland. Yellow circles depict serous demilunes. H&E, 100X. This picture is taken from histological slide in histology laboratory of Isfahan University



Myoepithelial cells

- ▶ Myoepithelial cells are modified epithelial cells found in many glandular organs such as salivary glands
- ▶ They are stellate shape located above basement membrane, but beneath luminal cells

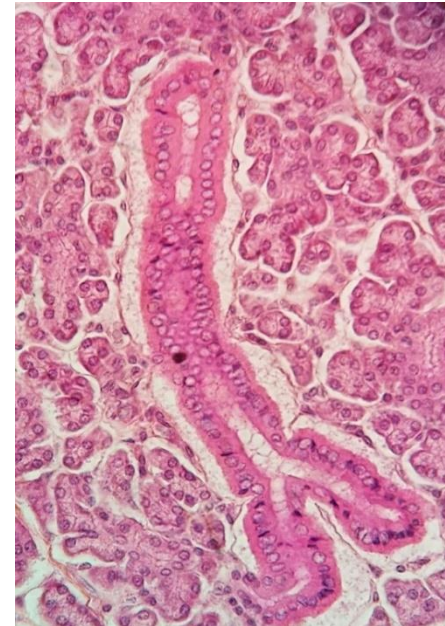
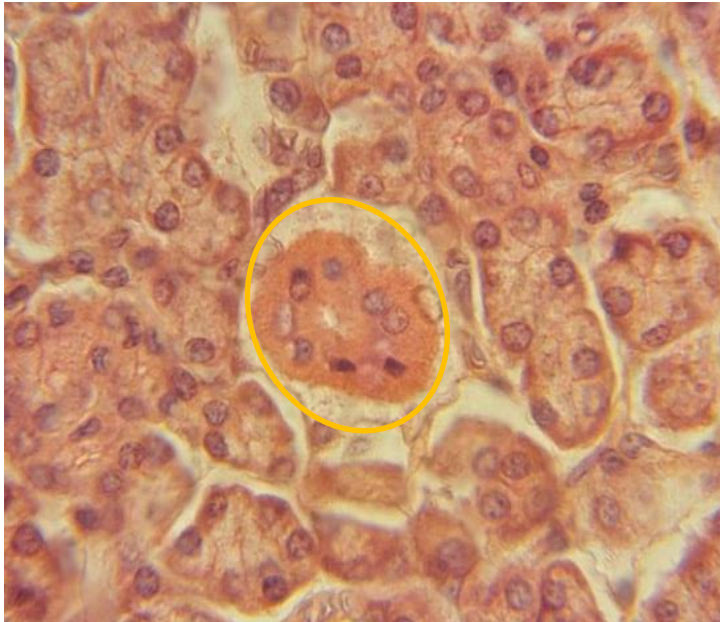


Cross section of salivary gland. Yellow arrow depicts myoepithelial cell. H&E, 100X. This picture is taken from histological slide in histology laboratory of Isfahan University



Intercalated ducts

- ▶ Intercalated ducts are present in both salivary glands and pancreas
- ▶ They have simple cuboidal epithelium and are seen within lobules

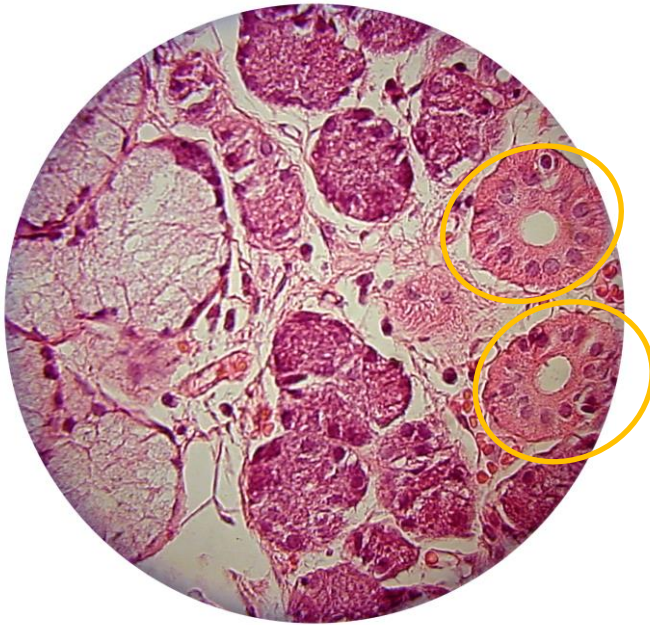


Left: cross section of intercalated duct. Yellow circle enclosed intercalated duct. H&E, 100X. Right: Longitudinal section of intercalated duct. H&E, 40X. These pictures are taken from histological slide in histology laboratory of Isfahan University



Striated ducts

- ▶ Striated ducts are lined by simple columnar epithelium
- ▶ The most characteristic feature of them is many infoldings of basal plasma membrane

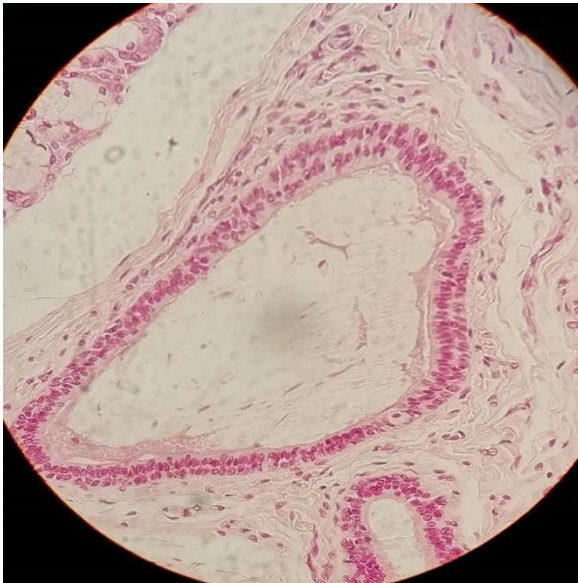


Two striated ducts are depicted by yellow circles in cross section of submandibular gland. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University



Excretory ducts

- ▶ Excretory ducts are interlobular ducts embedded in connective tissue of septa
- ▶ Different type of epithelium including stratified cuboid or columnar, simple cuboid or columnar and pseudostratified columnar epithelium can be seen in excretory ducts wall

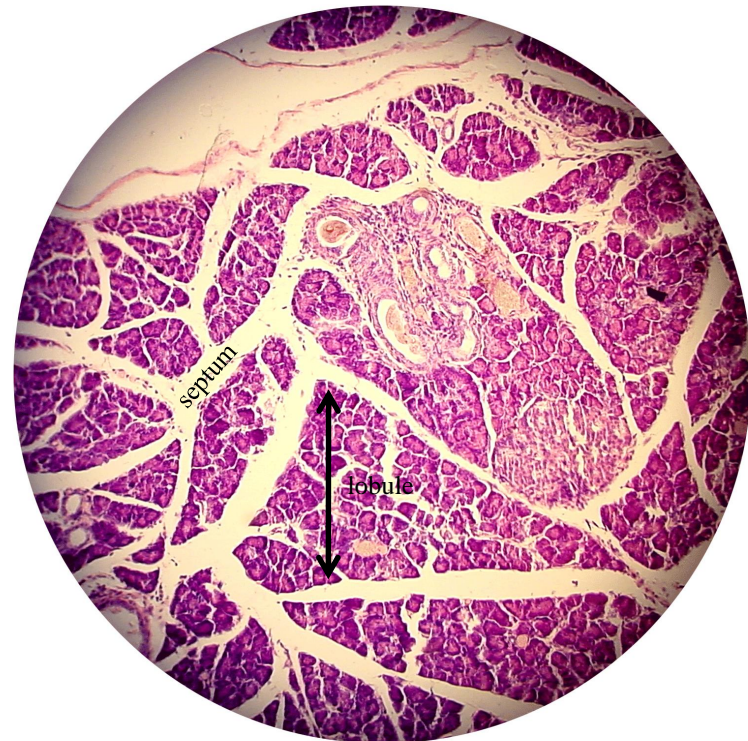


An excretory duct are seen in cross section of salivary gland. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University



Pancreas

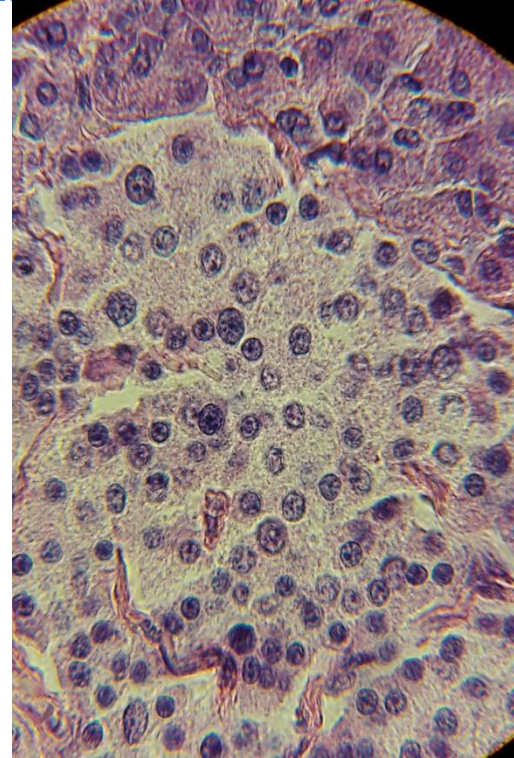
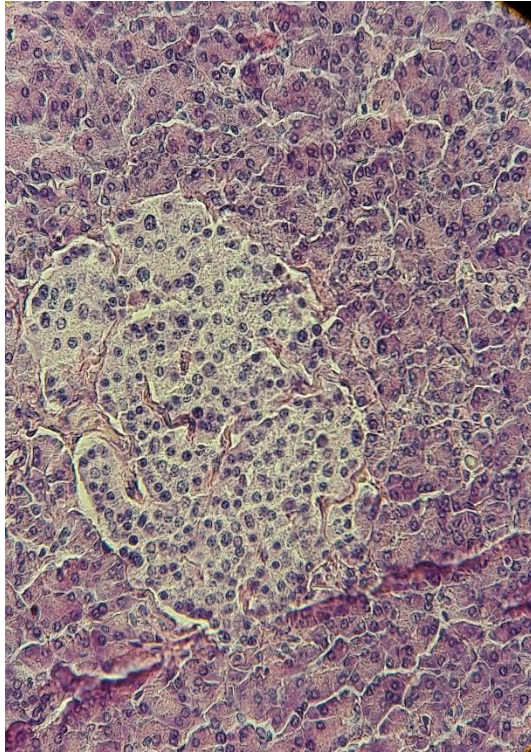
- ▶ The pancreas is an lobulated organ encompassed by thin capsule (thin areolar tissue)
- ▶ Histologically pancreas made up of two parts:
 - ▶ Exocrine part which is composed of serous acini and ducts system
 - ▶ Endocrine parts known as Langerhans islets
- ▶ Exocrine portion of pancreas has structure similar to parotid glands
- ▶ A Langerhans islet consists of cluster of lighter staining cells scattered between exocrine portion of pancreas



Cross section of pancreas. H&E, 4X. This picture is taken from histological slide in histology laboratory of Isfahan University



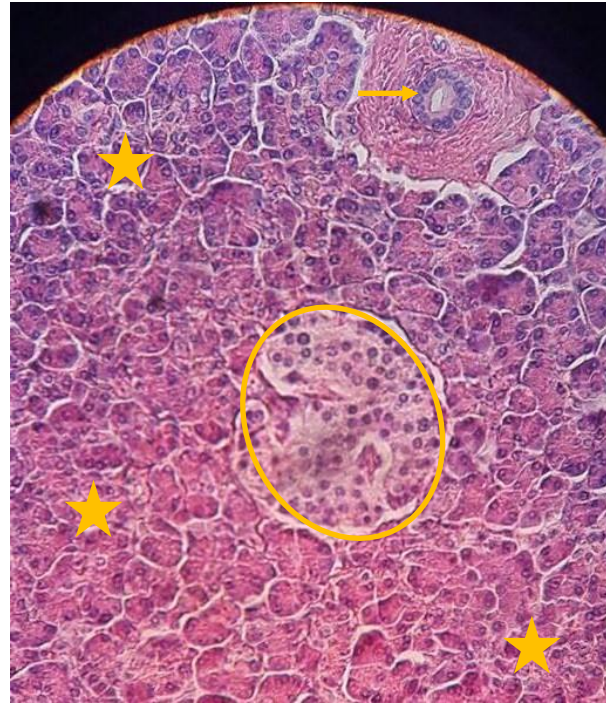
Pancreas



Left: an islet of Langerhans surrounded by serous acini in cross section of pancreas. H&E, 40X. Right, islet of Langerhans is composed of four different cell types, but they are not distinguishable exactly by light microscopy. H&E, 100X. These pictures are taken from histological slide in histology laboratory of Isfahan University



Pancreas



Cross section of pancreas. Yellow circle: islet of Langerhans, yellow star: serous acini, and yellow arrow: intercalated duct surrounded by connective tissue. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University