The heterogeneity of the biliary tree

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Hepatology Snapshot

The surface epithelium comprises large cholangiocytes
- High columnar morphology
- Highly susceptible to pathology
- Large role in bile modification
- Hormone responsive (e.g. secretin, somatostatin)
- Predominantly mucinous acini
- Complex network of peribiliary vascularplexus

PBGs in direct contact with lumen
- Tubular acinar structures
- Mixed population of mature cholangiocytes and progenitor cells
- Predominantly mucinous acini that produce:
  - Mucins, trefoil factors, glycoproteins, IgA, lysozyme, lactoferrin
  - More neutral mucus than acid mucus
  - Equal amounts of carboxylated and sulphated mucus

PBGs in indirect contact with lumen
- Tubulo-alveolar acinar structures
- Mixed population of mainly progenitor cells and stem cells
- Predominantly serous (and seromucinous) acini that produce:
  - IgA, alpha-amylase, trypsin, lipase, glycoproteins, lysozyme, lactoferrin
  - More acid than neutral mucus
  - More sulphated than carboxylated mucus

The different cell populations in the axial direction are situated in all large ducts.
- Small cholangiocytes: Low columnar morphology, more susceptible to pathology, less susceptible to pathology, small role in bile modification (e.g. no CFTR expression), less acid than neutral mucus, low columnar morphology
- Large cholangiocytes: Negative for AE2, CFTR, and Glut-1, more sulphated than carboxylated mucus

70% of bile is produced by hepatocytes. Bile is collected in the bile canaliculi and flows downstream through a merging network of ducts into the common bile duct. Along the way, cholangiocyte secretion contributes another 30% of the volume of bile. Large cholangiocytes lining the large bile ducts are primarily responsible for secretory and absorptive processes. Small cholangiocytes can adopt this function upon injury of susceptible large cholangiocytes.