# Kidney organoids

## Cell types

* **Epithelial cells** - Thin, ordered, continuous protective layer of cells around organs and blood vessels in the body. Also, inside some cavities of organs.
  + Modelled as ‘polar cells.’
* **Mesenchyme cells** - Loosely organized undifferentiated cells which gives rise to most tissues, such as skin, blood, and bones etc.
  + Modelled as ‘non-polar cells’
  + **Question:** How dense are the Mesenchyme cells packed compared to the epithelial cells? They seem to be less densely packed than E-cells, which mean the lambda discrepancy makes sense.

## 25.2 Microscopic Anatomy of the Kidney: Anatomy of the Nephron – Anatomy & PhysiologyNephrons

* **Function**: Microscopic structural and functional unit of the kidney. It filters blood into pee. A healthy kidney has about a million of these.
* **Components**:
  + **Renal Corpuscle:** Big blob at the end of tube. Consists of capillaries called the **glomerulus** and cup shaped thing called **Bowman’s capsule**.

**Glomerulus:** Blood is filtered as it is passed through the walls of the capillaries here.

* + - **Bowman’s capsule**: Capsule that collects the filtrate from the glomerulus and passes it into the **renal tubule.**
  + **Renal tubule**: Exchanges some components of the tubular fluid from the glomerulus and ultimately produces pee. Consists of 4 main parts:
    - **Proximal convoluted tubule (PCT)**: Tube immediately after the renal corpuscle.
    - **Loop of Henle**: The thin loop
    - **Distal convoluted tubule (DCT)**: Tube after Loop of Henle
    - **Collecting tubule**: Multiple nephrons feed into the same tubule in the end.

## Nephrons genesis

* Cells of nephrons all come from the Six2+ nephrogenic mesenchyme *cap mesenchyme.*