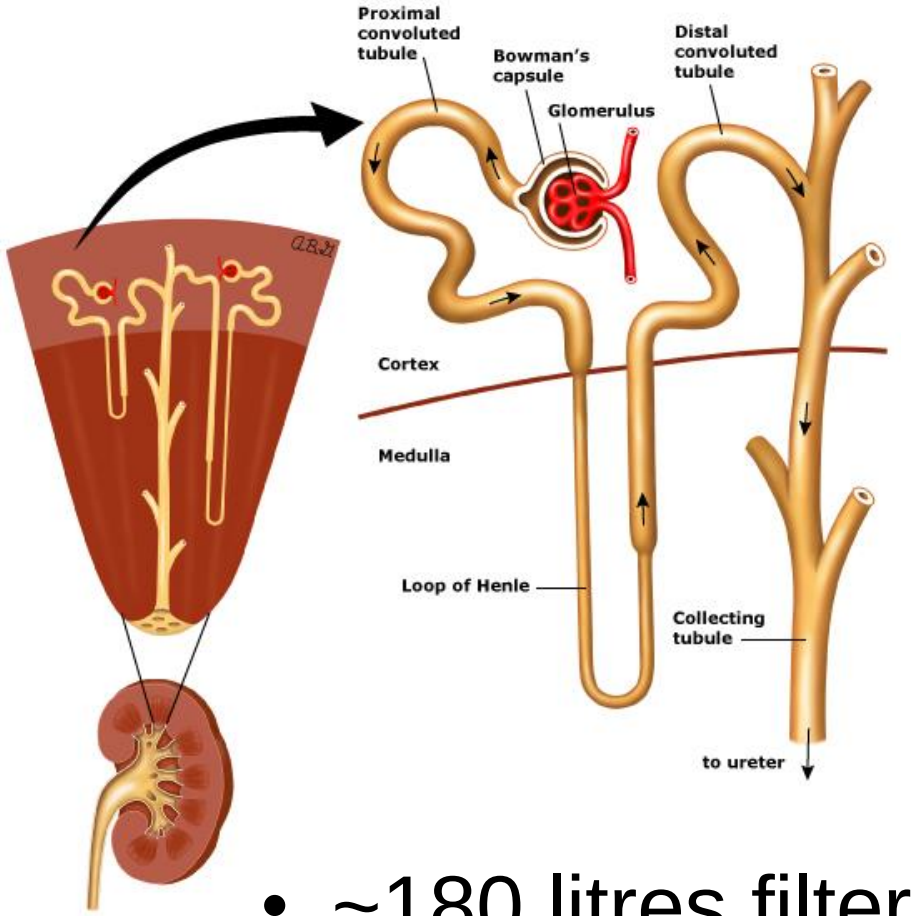
Introduction to kidney function

- **“clean” our blood (removal of waste)**
- **Ensure the right composition (salts etc.)**
- Regulate blood pressure
- Hormone production
- Activation of vitamin D

How do the kidneys do it?



- ~180 litres filtered everyday

The job of the tubules

180 litres contain:

- ~25 mol Na (~1.5kg salt)
- Other solutes: salts (e.g. Mg), sugars, small proteins…….

- **The tubules need to reclaim exactly the right amount of each substance!**

An orchestra of specialised transporters

HNF1B is a conductor

- Regulates development of the kidney
- Directs individual sections of the “orchestra”

Magnesium

- Low Mg is seen in approximately 50% of patients with HNF1B mutations
- Typical complications: fatigue, cramps

Uric acid

- Waste product
- High blood levels seen in some patients with HNF1B
- Can cause gout

"By God, for a minute there it suddenly all made sense!"