1.Desert mammals do not readily find water, hence they must excrete very less amount of water. They are able to produce highly concentrated urine. ... The Henle's loops of juxtamedullary nephrons along with counter flowing blood vessels, called vasa recta, help in conservation of water. The kidneys play a vital role in the excretion of waste products and toxins such as urea, creatinine and uric acid, regulation of extracellular fluid volume, serum osmolality and electrolyte concentrations, as well as the production of hormones like erythropoietin and  1,25 dihydroxyvitamin D and renin. The functional unit of the kidney is the nephron which consists of the glomerulus, proximal and distal tubules, and collecting duct. Since they are desert animals, gerbils have several characteristics that have allowed them to adapt to dry environments. Gerbils have an excellent ability for [thermoregulation](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thermoregulation), and they have a high level of heat tolerance. They have a unique water metabolism in that they require very little water to function (Winkelmann and Getz, 1962). Gerbils can obtain sufficient water from their diet and their kidneys have a highly efficient [urine-concentrating capacity](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/kidney-concentrating-capacity) to ensure adequate hydration. The ratio of long-loop nephrons to short-loop nephrons in gerbils is high. Ninety-six percent of their nephrons are long loop which allows them to efficiently concentrate their urine

2. The glomerular filtration barrier functions as a highly organized, semipermeable membrane preventing the passage of the majority of proteins into the urine. This barrier is composed of the glomerular basement membrane, the podocyte, and the slit diaphragm between the podocytes. The glomerular filtration barrier is a highly specialized blood filtration interface that displays a high conductance to small and midsized solutes in plasma but retains relative impermeability to macromolecules. The filtration barrier of the glomerulus consists of a fenestrated capillary epithelium with a negatively charged surface that repels many plasma proteins.