• Make Vit D
• Hydroxylated in Liver to 25-OH-D
• Hydroxylated in Kidneys to 1,25-(OH)2-D

Mechanism of Vit D action in the intestine:
Genomic:
• Acts as a steroid hormone
• Binds to intracellular receptor
• Transported to DNA
• Promotes synthesis of calbindins

Non-genomic:
• Direct effect on cell membranes to increase calcium absorption

Mechanism of Vit D action on the bone:
• Only acts on osteoblasts
• Vit D increases calcium absorption which is the main way in which it affects bone mineralisation
• Vit D also helps precursors differentiate into osteoblasts/osteocytes
• Increase calbindins also has a good effect on bone mineralisation

Mechanism of Vit D action on the kidneys:
• Increase reabsorption of calcium and phosphate ions.

Causes of Vit D deficiency:
Primary:
• Low synthesis due to low sun exposure
• Low dietary intake

Secondary:
• Bile duct obstruction
• Coeliac disease
• Liver disease (Vit D resistant)
• Kidney disease (Vit D resistant)

Vit D intoxication:
If you overdo supplements it can become lethal.

Although 1,25 is regulated. Formation of 25 is not regulated. Therefore there will be high conc of 25-OH-D.

Symptoms:
• Nausea