Vitamin-D metabolism

- **UVB**
  - 7-dehydrocholesterol converted to cholecalciferol
  - Skin

- **LIVER**
  - Dietary cholecalciferol
  - >90%
  - Cholecalciferol converted to 25OH-cholecalciferol

- **KIDNEY**
  - 25OH-cholecalciferol converted to 1,25(OH)$_2$cholecalciferol

- **Skeleton, Gut, PTH GLAND, Muscle**
  - Dietary cholecalciferol
  - <10%
Actions of ‘activated’ Vitamin D

1,25(OH)₂cholecalciferol

- Stimulates osteoblasts in bone
- Strengthens muscle
- Increases resorption of calcium
- Increases calcium and phosphate absorption
- Suppresses PTH
- Affects immune cells and reduces proliferation of malignant cells

1,25(OH)₂cholecalciferol
OSTEOMALACIA

Severe case of bone fragility as a result of lack of vitamin D
Mineralised osteoid in bone (normal green/turquoise on Goldner’s trichome stain)

NORMAL
ie lots of mineralised osteoid

Unmineralised osteoid
(lilac/brown)
Lacks calcium

OSTEOMALACIA
very little mineralised osteoid