• removal of calcium from bone

Parathyroid hormone (PTH) is secreted by chief cells in the parathyroid gland in response to **decreased plasma-calcium levels**. The plasma-calcium level is the major controller of parathyroid hormone secretion. PTH is a principal controller of calcium and phosphate metabolism and is involved in the remodeling of bone. PTH increases the plasma-calcium concentration and decreases the plasma-phosphate concentration.

PTH has **three modes** of action:

1. Increases calcium removal from **storage in bone** and increases absorption of calcium by intestines, increasing blood calcium levels.
2. **Acts on the kidneys** to decrease calcium excretion and increase phosphate excretion in the urine. Also stimulates 1-alpha-hydroxylase in the kidneys.
3. **Increases the absorption** of calcium in the GI tract indirectly by causing the kidney to produce vitamin D (1,25-dihydroxycholecalciferol).

1. **Hyperparathyroidism** (~~von Recklinghausen's disease~~) causes extensive bone decalcification and is marked by extremely high blood calcium levels and low blood phosphate levels. This leads to muscular weakness.
2. **Hypoparathyroidism** (tetany) causes decreased bone resorption, decreased renal Ca^{2+} reabsorption, increased renal phosphate reabsorption and decreased production of the active form of vitamin D (1,25-dihydroxycholecalciferol). Together these effects **decrease serum calcium** and **increase serum phosphate**.

*** A **diet deficient in calcium** will result in production of PTH and bone resorption.