

## How Do We Know What Cells are Doing?

You can ask your doctor for these **Bone Turnover Markers** that measure certain biomarkers or indicators of the bone health cycle. These indicators are normally noted within a few hours of your OsteoStrong Session.

- P1NP (procollagen type I N-propeptide)
  - Type I collagen is the main protein of bone matrix and is cleaved to N-terminal (P1NP) and C-terminal (P1CP) propeptides of Type I collagen during bone formation.
  - Increased levels indicate bone formation.
  
- CTX & NTX (C/N-Telopeptide = blood test) (NTX = urine test)
  - Beta-C-terminal telopeptide (CTX) indicates and Urinary N-telopeptide are sensitive and specific markers of bone resorption.
  - These bone markers are measurements of Osteoclast activity.
  - Increased levels indicate bone resorption.
  
- Osteocalcin
  - A non-collagenous protein of the bone matrix specifically synthesized by osteoblasts. The concentration of osteocalcin in serum reflects osteoblastic function and bone turnover. It has emerged as a more specific index of bone metabolism than serum alkaline phosphatase activity.
  - Osteocalcin is secreted by Osteoblast cells indicating osteoblast activity.
  - Indicates new bone growth.
  
- BAP (Bone-specific Alkaline Phosphatase)
  - BAP is the bone-specific isoform of the enzyme serum alkaline phosphatase. It is a glycoprotein found on the surface of osteoblasts and reflects the activity of these cells in bone metabolism.
  - Indicates osteoblast activity.
  - This measurement alone is not helpful to monitor osteoporosis intervention as it can be elevated or decreased in other diseases or drug therapies.