

## CLINICAL SPECIFICATIONS

### OSTEOCYTE

#### Function:

A star-shaped cell, an osteocyte is an abundant cell found in compact bone. Cytoplasmic extensions, which occupy canals called canaliculi, network osteocytes. Canaliculi are used by osteocytes for the exchange of nutrients and waste through gap junctions. Osteocytes are actively involved in the routine turnover of bony matrix, through various mechanisms. Through a mechanism called osteocytic osteolysis, osteocytes can destroy bone.

#### Antibodies Appear:

Osteoclastogenesis<sup>4</sup>  
Osteopenia<sup>3</sup>  
Osteoporosis<sup>3</sup>

**Known Cross-Reactions:** Phosphatase I,<sup>1</sup> gliadin<sup>5</sup>

#### Clinical Significance:

Circulating autoantibodies to bone contribute to skeletal disorders. High titers of antibodies correlate with the most severe bone impairments.<sup>3</sup>

Bone antibody levels in untreated Celiac patients have been shown to decrease after implementation of a gluten-free diet.<sup>2,3</sup> Bone health impairment associated with Celiac disease includes osteomalacia, rickets and bone pain.<sup>2</sup> Regardless of clinical presentation and independent of reduced body size, according to a review of the literature, there is impaired bone mass measurements at diagnosis of Celiac disease and dietary treatment alone is able to quickly restore bone mass in the axial, peripheral and whole skeleton.<sup>2</sup>

#### References:

1. Arsenis and Huang. Distribution and immunologic cross-reactivity of a phosphohydrolytic activity of calcifying cartilage and metaphyseal bone. *Differentiation*, 1977; 8(1-3):183-189.
2. Mora. Celiac disease in children: impact on bone health. *Rev Endocr Metab Disord*, 2008; 9:123-130.
3. Sugai, et al. Bone-specific antibodies in sera from patients with celiac disease: characterization and implications in osteoporosis. *J Clin Immunol*, 2002; 22:352-362.
4. Takayanagi. Osteoimmunology: shared mechanisms and crosstalk between the immune and bone systems. *Nat Rev Immunol*, 2007; 7:292-304.
5. Vojdani and Tarash. Cross-reaction between gliadin and different food and tissue antigens, *Food Nutri Sci*, 2013; 4:20-32.