

**BHE 011**  
**PAPPA as a Potential Tissue Engineering Therapy**

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**Abstract**

We have recently identified a protein that holds potential in increasing growth factor bioavailability and as a therapeutic agent in tissue engineering applications - pregnancy-associated plasma protein-A (PAPP-A). PAPP-A is suggested to regulate bone formation via IGF-I signaling and increasing bioavailability. However, to our knowledge, no one has considered the direct effects of PAPP-A on bone cell function. We found evidence for PAPP-A in osteoblastic differentiation and subsequent mineralization in an in vitro tissue culture model. We have also found a connection between PAPP-A, IGF-I and another growth factor, bone morphogenetic protein-2 (BMP-2) and bone formation. It is unclear whether these effects are due to possible direct PAPP-A signaling through its receptor or via its increasing the bioavailability of IGF-I extracellularly.

This project will further our knowledge base for PAPP-A and its potential in bone regeneration. We will leverage this knowledge for federal applications to develop PAPP-A as a new therapeutic intervention.