

# CONTROLLING SIBLING PROTEIN ORIENTATION AND CONFORMATION VIA NATIVE BINDING INTERACTIONS

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## ABSTRACT

Native bone tissue is composed of a matrix of collagen, non-collagenous proteins, and calcium phosphate minerals, which are primarily hydroxyapatite (HA). The SIBLING (small integrin-binding ligand, N-linked glycoprotein) family of proteins is the primary noncollagenous protein group found in mineralized tissues. These proteins are believed to mediate the interfacial binding interactions that occur between collagen, HA, and cells in bone tissue. In this talk, three SIBLINGs in particular will be examined: bone sialoprotein (BSP), dentin phosphoprotein (DPP), and osteopontin (OPN). Specifically, the effects of SIBLINGs on mineralization, cell binding of MC3T3-E1 cells, and collagen fibrillogenesis are explored with respect to applications in a bone tissue scaffold. The results will be presented and discussed relative to the early stages of the process of native bone formation, with broader implications in the development of a biomimetic bone tissue scaffold.