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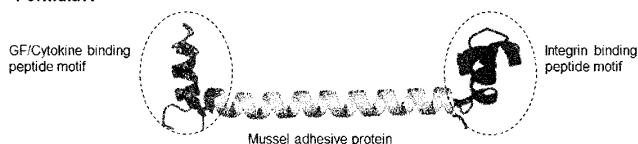
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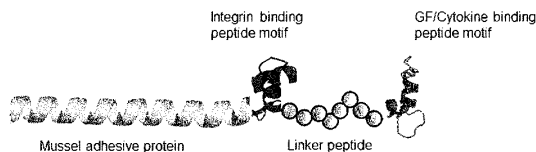
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(54) Title: PROTEIN SUBSTRATE TO BIND GROWTH FACTOR

Formula A



Formula B



(57) **Abstract:** Protein substrates are provided comprising integrin binding motif and growth factor (GF) binding peptide motif that enable binding to and activation of both a growth factor receptor and an integrin, simultaneously or selectively. The substrate proteins may be in the form of a mussel adhesive protein where extracellular matrix (ECM) protein derived integrin binding peptide motifs and GF binding peptide motifs are recombinantly incorporated into the mussel adhesive protein. Also provided are use of the protein substrate for regulating cellular behavior including cell adhesion, migration, or proliferation which are essential process in bioprocess, wound healing, tissue engineering, and therapeutic application. In other embodiments, the present invention provides a method and composition of stabilizing and protecting a growth factor from protease digestion or internalization into cells (or cellular uptake) in order to maintain the persistent and durable function of growth factors.

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