

**Mussel adhesive protein fused with cell adhesion recognition motif triggers integrin-mediated adhesion and signaling for enhanced cell spreading, proliferation, and survival**

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Adhesion of cells to a surface is a basic and important requirement in the fields of cell culture and tissue engineering. Previously, we constructed the cell adhesive, fp-151-RGD, by fusion of the hybrid mussel adhesive protein, fp-151, and GRGDSP peptide ; fp-151-RGD apparently enhanced cell adhesion, proliferation, and spreading abilities. In the present study, we investigated the potential use of fp-151-RGD as a biomimetic extracellular matrix material at the molecular level by elucidating its substantial effects on integrin-mediated adhesion and signaling. Apoptosis derived from serum deprivation was significantly suppressed on the fp-151-RGD-coated surface, indicating that RGD-induced activation of integrin-mediated signaling triggers the pathway for cell survival. Analysis of the phosphorylation of focal adhesion kinase clearly demonstrated activation of focal adhesion kinase, a well-established indicator of integrin-mediated signaling, on the fp-151-RGD-coated surface, leading to significantly enhanced cell behaviors, including proliferation, spreading and survival, and consequently, more efficient cell culture.