

Insect and Mammalian Cell Surface Expression of Mussel Adhesive Protein for Efficient Cell Chip Immobilization

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Nowadays, it is important to measure toxicity of environmental pollutants and new drug candidates. Because employing living organisms directly in this measurement is extremely dangerous, cell chip technology has become a promising tool. In addition, screening via cell chip is high-throughput and sensitive. Therefore, it is necessary to develop fresh ideas for gluing cells on chip slides. As a part of that, we try to express fp-5, a kind of mussel adhesive protein (MAP), on the surface of cells. In the present work, we present (1) construction of recombinant baculovirus expression vector, (2) infection of recombinant baculoviruses to target cells (insect *Drosophila* S2 and mammalian human 293T) for displaying MAP on cell surface, and (3) construction of cell chip using MAP-displayed infected cells. We improved the surface of not chips, but cells. Moreover, our proposed cell chip construction method is biocompatible: no needs of any harmful chemical linkers. The constructed cell chip system would be a new platform and applicable for biosensor to check toxicity of various compounds at a cellular level.