

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

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It is important to monitor or measure toxicity of environmental pollutants or new drugs. Cell chip technology has become a promising tool because high-throughput and sensitive screening is possible. In the present work, we propose "gluing" method for cell chip construction by displaying mussel adhesive proteins (MAPs) on the surface of target cells (insect *Drosophila* S2 and mammalian Chinese hamster ovary (CHO) DG44). Mussels use their adhesive proteins, fp-5, in order to attach on the rock in the tough sea. In the present work, we present construction of recombinant baculovirus expression vector, rBV-FP5, infection of recombinant viruses to target cells for expression and location of MAP on cell surface, and construction of cell chip using MAP-displayed infected cells. Our proposed cell chip construction method does not need any harmful chemical linkers for cell immobilization. In addition, we would construct universal recombinant baculovirus expression system which can give adhesion ability to target cells. The constructed cell chip system is applicable for environmental toxicity sensor or drug screening at a cellular level.