Novel PHB-based protein microarray using extracellular depolymerase substrate binding domain for site-directed capture ligand to detect protein-protein interaction

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This work describes a novel method for the selective and non-covalent immobilization of proteins to PHB-based microarray with proper orientation of the proteins. The strategy is based on specific binding domain of the extracellular PHB depolymerase to PHB chip. The versatility of the substrate-binding domain of PHB depolymerase has been studied by using green flourescent protein (GFP) fusion protein for protein chip method. Analysis using protein chip method indicated that the GFP fusion proteins derived from the bacteria specifically immobilized on the PHB-based microarray. To demonstrate that the method could be used to immobilize proteins of interest, GFP fusion protein with substrate-binding domain of depolymerase was constructed and immobilized on the PHB-based microarray. This capture ligand immobilization method takes the advantages that the immobilization reaction is highly selective for the intended protein, the immobilization is non-covalent and stable [This work was supported by the Center for Ultramicrochemical Process Systems (CUPS)].