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Co-immobilization by DNA binding protein tags

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The development of improved protein immobilization approaches is a significant step for many biotechnological applications. A large array of different protein immobilization approaches have been developed based on physical, covalent and bio-affinity interactions. Most of these immobilization techniques only allow for the immobilization on the surface of a single target protein and do not allow the controlled co-immobilization of several proteins. Therefore, we aspire to develop a system that allows controlling the structure of a multiple protein complex both in solution and on surfaces. To do this we propose to use several DNA binding proteins with different sequence specificities and high binding affinities as fusion tags to the target proteins to be immobilized. In this system, the co-immobilization of the target proteins is controlled by the localization of specific sequences on a double stranded DNA molecule. In this work, we performed experiments as a proof of concept for the proposed novel immobilization system based on DNA binding proteins tags. Specifically, two different DNA binding proteins were selected (scCro16 and SpoIIID) as candidates for the role of DNA binding protein tags. These proteins were successfully expressed in *E. coli* and purified using ion exchange chromatography and we optimized and performed an Electrophoretic Mobility Shift Assay (EMSA) to assess the suitability of the selected DNA binding proteins to work as DNA binding tags in the context of the proposed immobilization system. The EMSA assay showed that scCro16 and SpoIIID works as expected binding to its specific DNA binding sequence.

Biography

Atsbeha Gebreegziabxier has completed his MSc from Universitat Rovira I Virgili, Spain. He is the Director of HIV/AIDS Research, EPHI, Ethiopia. He has published more than 4 papers in reputed journals.

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