

P014 Continuous affinity-based selection of new starch-binding molecules.

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The techniques of affinity chromatography and continuous fermentation have been combined in a unique process which mimics clonal selection based on the ability of bacteria to adhere to a solid support. Mixed populations of bacteria were passed through a fermenter containing immobilised starch matrix. This "affinity fermenter" selectively retains organisms able to adhere to the matrix. Under continuous washout conditions designed to flush out weakly bound organisms the specifically bound bacteria are retained and multiply. Thus, bacteria expressing a receptor for the immobilised ligand (R+ve) are simultaneously enriched and amplified. Enrichment factors of 55 million fold were achieved. This technology has considerable potential for rapid screening of bacterial surface-display libraries and in facilitating directed evolution studies. We have now applied this technology to the directed evolution of new starch-binding molecules. Our most recent results will be presented.