

P005 Improving industrial enzymes: going farther faster by combining rational design with high throughput
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Biomethodes

Most enzymes require limited, specific conditions to act efficiently. As a result, biocatalytic processes have long been designed according to available enzymes and their conditions for activity. A new trend is being observed today as more methods become available to modify enzyme properties: the adaptation of available enzymes to industrial needs. We have developed innovative proprietary technologies to direct the evolution of enzymes and tailor them for industrial use. These technologies combine the precision of site-directed mutagenesis with the high throughput of directed evolution, thus improving the success rate of protein optimisation.

Massive Mutagenesis® is the only high throughput combinatorial site-directed mutagenesis technology. From any gene, it generates a custom genetic diversity. Mutations can thus be chosen by rational methods, taking advantage of structural, phylogenetic or functional knowledge, and combined to explore synergic effects. Associated to high throughput screening, this approach enables tailoring any enzyme to new industrial applications and has been validated in the optimisation of a variety of enzymes and other proteins.