

N°1679 / PC

TOPIC(s) : Enzyme engineering & Discovery / Artificial enzymes and de-novo enzyme design

Directed Evolution of Metalloenzymes through Electrochemical Droplet Microarrays

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PURPOSE OF THE ABSTRACT

In recent years, surface-display technology has attracted more and more attention of scientists. It is reported as a leading protein engineering tool to target proteins to the cell surfaces of microorganisms. Because of its correlation between the target proteins and their genetic machineries, it is also considered as an evolution of artificial chemicals (Barderas and Benito-Peña, 2019). It is a perfect tool to adapt different screening methods in directed evolution. With the help of surface display systems, a new electrochemical screening platform is developed for direct enzyme-activity screening and to find out the correlation of enzyme structure and electrode surface. In this way, metalloenzymes could be directed to adapt their application environment, for example, in enzymatic biofuel cells.

FIGURES

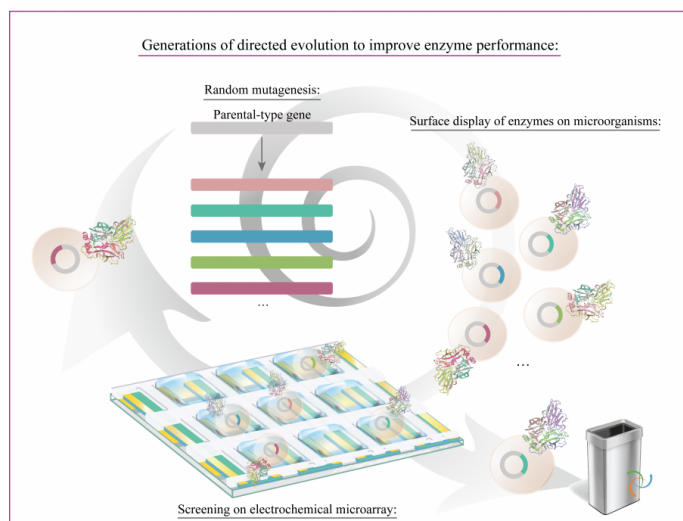


FIGURE 1

New directed evolution circle

The new directed evolution circle is built up by random mutagenesis, surface display systems and electrochemical microarrays.

FIGURE 2

KEYWORDS

Protein engineering | Surface display | Directed evolution | Electrochemical microarray

BIBLIOGRAPHY

The 2018 Nobel Prize in Chemistry: phage display of peptides and antibodies. Barderas, R., and Benito-Peña, E. (2019). *Anal. Bioanal. Chem.* 411, 2475-2479.

A dual tag system for facilitated detection of surface expressed proteins in *Escherichia coli*. Jarmander J, Gustavsson M, Do TH, Samuelson P, Larsson G. *Microb Cell Fact.* 2012 Sep 3;11:118. doi: 10.1186/1475-2859-11-118. 10.1186/1475-2859-11-118 PubMed 22943700