SET OF READY-TO-USE METAGENOMIC CLONE LIBRARIES FOR ENZYME SELECTION AND READY-TO-USE CLONES ENCODING ENZYME OF INTEREST

SUMMARY

One of the main limitations of introducing enzymes to the industry is that from the whole set of enzymes available, only a limited number of them have been experimentally characterized, and among them a minority have been shown to possess characteristics likely needed for industrial operations. In this respect, useful features such as broad substrate specificity complemented with high activity levels under a wide range of thermal and pH conditions and salt concentrations, stability in organic solvents and enantio- and stereoselectivity, are widely used for defining the potential application of enzymes in biotechnology settings; however, not all characterized enzymes matches these criteria and for this reason investigations related to the identification of enzymes of interest by culture-independent methods, namely metagenomic methods, is widely appreciated. By those methods, genes coding enzymes of interest can be screened from various environments including soils, compost piles, landfill leachate, bioreactors and activated sludges, marine water and sediment samples (including tidal flat sediments, deep sea and water column) and freshwater samples (including drinking water, pond water, rivers and hot springs), to cite some

DESCRIPTION OF THE PRODUCT

The MAGICPAH Consortium gets ready a set of 24 ready-to-use clone expression libraries, which can be targeted, for enzyme screening. The total number of available clones is 300,000. They include:

- 8 phage-clone libraries
- 16 fosmid-clone libraries

The origin of the libraries is DNA of microbial communities from:

- 14 distinct marine samples
- 10 distinct terrestrial samples

The MAGICPAH Consortium gets ready a set of 1200 clones containing enzyme of interest. They include those encoding the following activities:

- Rieske non-heme iron oxygenases
- Laccases
- Extradiol dioxygenases
- Esterases and lipases
- *meta*-cleavage product (MCP) hydrolases
- Glycosyl hydrolases

INNOVATIONS AND ADVANTAGES OFFERED

- The clones available are ready-to-use in the form of separate individual clones or pool of clones. This may help designing the most appropriate screening platform.
- In deep and/or preliminary biochemical data are available for all clones encoding activities of interest.
- The targets with relevant biotechnologically-relevant characteristics are identified. Features such as relevance for biotechnology processes (i.e. production of enantiomerss), salt-tolerance, temperature and pH optima and substrate profile are available.

POTENTIAL AREA OF UTILIZATION

The products gather the biggest amount of clone libraries and clones encoding enzymes of interest available. Besides, they constitute thus key products for the identification of future gene products with potential use in biotechnology.

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