DNA-LINKED ENZYME-COUPLED ASSAYS

Tech ID: 24191 / UC Case 2014-193-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,829,798	11/10/2020	2014-193

BRIEF DESCRIPTION

With the rise of biotechnology, synthetic biology, and metabolic engineering, enzymes can be used as tools to catalyze a desired chemical reaction, even those that are non-natural. As enzymes often act on an array of structurally related compounds, they are often probed for activity on substrates other than their natural one to form a structure activity relationship (SAR). Additionally, when searching for the best performing enzyme, it is often desirable to either apply protein engineering to create new enzymes with a desired characteristic or screen several homologs. Though there are many assays for monitoring enzymatic reactions, many are laborious and low-throughput and therefore severely limit the space that can be experimentally mined. As gene synthesis costs continue to decrease, the ability to perform such assays becomes the dominant bottleneck in mining efforts. A high throughput assay for enzyme activity, which matches the scalability of new DNA synthesis methods would constitute a significant advance in the art.

UC Berkeley researchers have developed assays and methods to improve throughput and cost of enzyme characterization that matches the scalability of new DNA synthesis. The assay developed is a DNA-linked enzyme-coupled assay which can monitor enzyme reactions in a manner amenable to multiplex gene synthesis and can be linked to multiplex readout in droplets and deep sequencing instrumentation.

SUGGESTED USES

» detects the presence of an enzyme of interest and monitors and characterizes enzyme reactions in a high throughput format assay.

ADVANTAGES

» improve throughput and cost of enzyme characterization that matches the scalability of new DNA synthesis methods.

» sample preparation steps of cloning plasmid DNA, transformation, and protein purification are eliminated, as is LCMS for analytics.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Medical**

» Research Tools

» **Research Tools**

» Expression System

RELATED CASES

2014-193-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ One-Pot Multiplex Gene Synthesis (Option-Agilent)

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