

RUBISCO SELECTION SYSTEM

Tech ID: 34215 / UC Case 2026-009-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

The enzyme Rubisco, largely found in plants, algae, and photosynthetic bacteria, is responsible for the majority of biological carbon fixation on Earth. However, it has slow kinetics and has resisted decades of protein engineering efforts to improve its catalytic rate. UC Berkeley researchers have designed an in-vivo system that allows large libraries of Rubisco sequences to be functionally screened for improved enzymatic properties. They generated an E. coli strain whose growth rate is linked to Rubisco performance, allowing for pooled assays and the use of deep sequencing as a readout. This system allows for much higher throughput screening of Rubisco than any previous method and significantly increases opportunities to identify catalytically superior Rubisco sequences.

SUGGESTED USES

- » Rubisco protein engineering
- » High throughput Rubisco screening
- » Rubisco sequence data generation for large language model development

ADVANTAGES

- » In vivo & low-cost assay
- » High throughput screening
- » Simple to express and screen large libraries of sequences

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Compositions and Methods for Genome Editing in Plants
- ▶ Compression of Genetic Information in Multiple Reading Frames
- ▶ Improving Photosynthetic Performance of Plants
- ▶ 2'-fluoro RNA Activators for Enhanced Activation of Csm6 in RNA Detection Assays
- ▶ Composition and Methods of a Nuclease Chain Reaction for Nucleic Acid Detection

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INVENTORS

- » Savage, David Frank

OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
 - » Genomics
 - » Health
- » **Medical**
 - » Screening
- » **Research Tools**
 - » Screening Assays

RELATED CASES

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