Software Method for Optimization of Protein Production Rates

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BRIEF DESCRIPTION

BACKGROUND: Genetic engineering of bacteria has become a prevalent way of producing chemicals, providing a cost-effective, scalable, and environmentally safe manufacturing process. However, maximizing the final product titer remains a challenge, requiring the optimization of the bacteria's metabolism and the identification of the optimal protein production rates. Currently, the production rates of these proteins are determined through trial and error, by random mutagenesis, or equivalent random selection methods. As such, the development costs are typically very high.

TECHNOLOGY: UCSF researchers have developed a novel methodology that allows the user to select the production rate of a given protein from very low to very high rates (1 to 100000), thus eliminating the use of trial and error techniques during the optimization process and enabling extremely high protein expression levels. The method is accessible via interactive web-based software.

SUGGESTED USES

The software can be used to engineer bacterial systems to produce a wide range of chemicals, including:

- Therapeutic proteins and small molecules
- Biofuels
- Nutritional supplements
- Amino acids and animal feeds

ADVANTAGES

- Rational control of the protein production rate in bacteria
- Reduced development time and costs for metabolic engineering

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

protein production, chemicals, software, biofuels

CATEGORIZED AS

- Biotechnology
  - Bioinformatics
- Computer
  - Software
- Research Tools
  - Bioinformatics
  - Protein Synthesis

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