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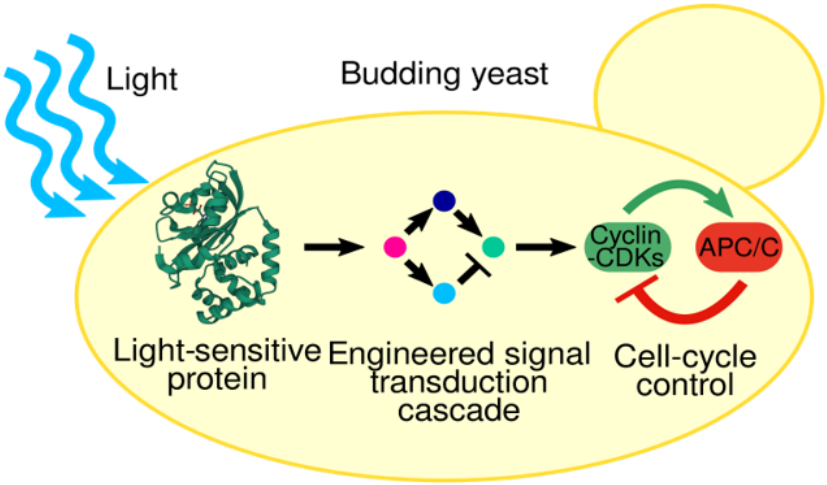
Licensing Opportunity

TTO – Technology Transfer Office

New Method for in vivo Evolution of Dynamic and Multi-state Proteins



Dynamic and multi-state proteins can be evolved by placing them in a signalling cascade downstream of an external signal such as light and upstream of the cell cycle in budding yeast.

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Keywords

Dynamic proteins, optovolution,protein evolution

Intellectual Property

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Description

Directed evolution, a crucial technique in biological engineering, has significantly contributed to improving various biomolecules. However, existing methods are constrained to steady-state functionalities, preventing their utility in systems demanding dynamic or multi-state properties. The optovolution method offers a novel approach, enabling the evolution of proteins with such intricate functionalities.

Advantages

Optovolution allows for the simultaneous evolution of all the states of a protein and switches among them. This addresses the limitation of traditional methods. For example, optovolution was used to evolve better optogenetic gene expression systems, which control the expression of specific genes based on light input.

Applications

- Control of enzymes
- Control of cell function in bioreactors
- Drug discovery and development for the design of targeted therapies
- Bioengineering