



Technology Offer

Glue your proteins of interest together:

Fast and ultra-specific enzymatic conjugation of a protein with another, synthetic compounds or even whole cells

Ref.-No.: 0109-5804-LI

Connectase is an enzyme that fuses target proteins or synthetic compounds via a small recognition tag, using a different reaction mechanism compared to known protein ligases. It prevents side reactions entirely and has absolute specificity, even in highly in complex solutions with minimum concentrations of target molecules.

Background

Conjugation methods are essential tools in protein engineering, drug development and molecular research. They are used to generate covalent bonds in antibody drug conjugates (ADCs), to functionalize particles and surfaces, or to label target proteins in complex solutions. However, the currently employed methods suffer from a number of downsides, such as limited specificity, side reactions, a low catalytic efficiency, the requirement of non-physiological reaction conditions, or the need to introduce lengthy sequences in the target proteins.

Technology

Scientists at the Max Planck Institute for Biology have identified Connectase¹, an enzyme that fuses target proteins or synthetic compounds via a small recognition tag. Connectase uses a different reaction mechanism compared to known protein ligases and thereby prevents side-reactions entirely. This mechanism allows the control of the reaction equilibrium in order to obtain complete molecular fusions. Connectase shows absolute specificity, even in highly complex solutions with minimum concentrations of target molecules. It is available in different variants, with temperature optima ranging from 20°C - 110°C, and with different recognition sequences for specific fusions in parallel. These characteristics present significant advantages over state-of-the-art methods and make Connectase the tool of choice for processes that require robust molecular fusions at high precision.

We are looking for licensing partners and in respect to adaptation to specific settings collaboration partners to the MPI to further apply this technology to other technical problems in order to solve them.

Patent Information

Patent application was filed.



Literature

Fuchs, A. C. D. *et al.* Archaeal Connectase is a specific and efficient protein ligase related to proteasome β subunits. *Proceedings of the National Academy of Sciences* **118**, e2017871118, doi:10.1073/pnas.2017871118 (2021).

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