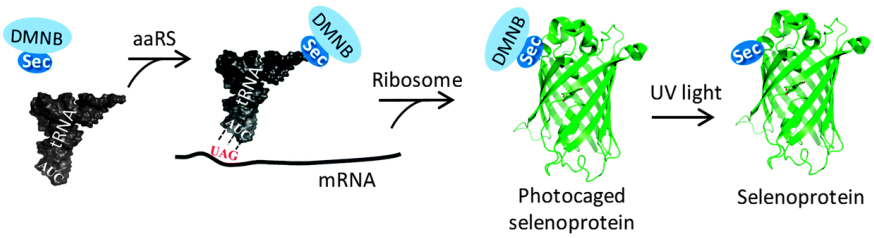
Production of recombinant selenoproteins

BRIEF DESCRIPTION OF A TECHNOLOGY

Selenocysteine (Sec) is of significant technological importance as a component of both natural proteins and designer biocatalysts, however the availability of such proteins is hampered by technical limitations. The inventors developed a general approach for incorporation of a genetically encoded photocaged Sec residue (DMNB-Sec), which can be converted to Sec by UV illumination inside producing yeast cells or in protein preparations.



Key system components:

- Yeast *S. cerevisiae* cells with an orthogonal pair of tRNA/tRNA aminoacyltransferase;
- Plasmid encoding a target gene with TAG codon(s) at desired position(s);
- Unnatural amino acid, DMNB-Sec.

PURPOSE

Production of natural or artificial proteins containing a selenocysteine residue at any predefined position; light-controlled activation of proteins for research and biotechnological applications.

FIELDS OF APPLICATION

Biotechnology; protein science; biomolecular engineering; biosimilars

TECHNOLOGY READINESS LEVEL

Technology validated in lab.

INTELLECTUAL PROPERTY

Patent: EP3019194 (B1).
Applicant: Vilnius University.

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PUBLICATIONS

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