Production of recombinant selenoproteins

BRIEF DESCRIPTION
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/IRNA aminoacyltransferase;
- Plasmid encoding a target gene with TAG codon(s) at desired position(s);
- Unnatural amino acid, DMNB-Sec.

APPLICATION
- Biotechnology;
- protein science;
- biomolecular engineering;
- biosimilars

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

TECHNOLOGY READINESS LEVEL
TRL 4 – technology validated in the laboratory.

INTELLECTUAL PROPERTY
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PUBLICATIONS

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