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

Technology validated in lab.

Intellectual property

Applicant: Vilnius University.

Inventors

• Saulius Klimašauskas
• Rasa Rakauskaitė
• Viktoras Masevičius

Relevant publications


Contacts

• Prof. Dr. Saulius Klimašauskas
Institute of Biotechnology, Life Sciences Center, Vilnius University
E-mail: saulius.klimasauskas@bti.vu.lt
Phone: +370 5 223 4350

• Dr. Ramūnas Grigonis
Innovation Office, Department for Research and Innovation, Vilnius University
E-mail: ramunas.grigonis@cr.vu.lt
Phone: +370 5 268 7006