

Innovative method of protein production – increasing production yield by more than 50 %

Field of application

The production of recombinant proteins is a multi-billion dollar industry. In order to lower production costs, companies are very active in developing methods for increasing protein yield.

State of the art

Current lines of research focus on the over-expression, down-regulation and/or disruption of suitable target genes. Thus, for instance, cellular metabolism can be reduced, leaving increased capabilities for the production of specific proteins of interest. However, such techniques are very cumbersome, time consuming and consequently relatively expensive.

Innovation

A major limiting factor in the production of proteins is the low stability of their initiating molecule – the corresponding mRNA. However, specific means to increase mRNA stability and retention time in the cell have remained elusive. An innovative method, invented by a scientist at RWTH Aachen, is now about to close this gap in biotechnology. Briefly, using sequence specific RNA species, the stability of any target RNA of interest can be increased. The underlying mode of action consists of the binding of *in silico* designed RNAs to the target RNA of interest. This is followed by a posttranscriptional modification process. As a result, the RNA is protected against various enzymatic degradation processes. Hence, the retention time of the target RNA can be significantly increased, leading to enhanced protein production. Cell based *in vitro* assays employing the invention feature substantially higher signal intensity and sensitivity.

The invention can be applied in archaeal as well as all eukaryotic organisms and used in a broad range of cell types. Applications encompass a wide variety of industry branches in white, red and green biotechnology.

Your benefits at a glance

- ✓ Cheap, specific and targeted method to increase protein yield using well known mRNA species
- ✓ Significant increase of signal intensity and sensitivity in cell based *in vitro* assays
- ✓ Substantially reduced production costs for biopharmaceutical manufacturing companies
- ✓ Straightforward mode of action and rapid realization
- ✓ Broad range of applications: suitable for white, red and green biotechnology

Technology commercialization

Technologie-Lizenz-Büro GmbH is charged with the commercialization of this technology. The inventor currently sets up a spin-off company.

Patent portfolio

A European Patent (EP) application was filed on 04 October 2016.

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