Production of biopharmaceutical proteins by yeast: Advances through metabolic engineering.

Production of recombinant proteins for use as pharmaceuticals, so-called biopharmaceuticals, is a multi-billion dollar industry. Many different cell factories are used for the production of biopharmaceuticals, but the yeast Saccharomyces cerevisiae is an important cell factory as it is used for production of several large volume products. Insulin and insulin analogs are by far the dominating biopharmaceuticals produced by yeast, and this will increase as the global insulin market is expected to grow from USD12B in 2011 to more than USD32B by 2018. Other important biopharmaceuticals produced by yeast are human serum albumin, hepatitis vaccines and virus like particles used for vaccination against human papillomavirus. Here is given a brief overview of biopharmaceutical production by yeast and it is discussed how the secretory pathway can be engineered to ensure more efficient protein production. The involvement of directed metabolic engineering through the integration of tools from genetic engineering, systems biology and mathematical modeling, is also discussed.

General information
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, Fungal Cell Factories
Contributors: Nielsen, J.
Pages: 207-211
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Bioengineered Bugs
Volume: 4
Issue number: 4
ISSN (Print): 1949-1018
Ratings:
Web of Science (2018): Indexed yes
Scopus rating (2017): SJR 0.426 SNIP 0.407
Web of Science (2017): Impact factor 1.639
Web of Science (2017): Indexed yes
Scopus rating (2016): SJR 0.43 SNIP 0.277
Web of Science (2016): Impact factor 1.691
Scopus rating (2015): CiteScore 0.9 SJR 0.533 SNIP 0.376
Web of Science (2015): Impact factor 1.87
Scopus rating (2014): CiteScore 1.05 SJR 0.681 SNIP 0.573
Web of Science (2014): Impact factor 1.676
Scopus rating (2013): CiteScore 1.44 SJR 0.691 SNIP 0.532
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): CiteScore 1.32 SJR 0.651 SNIP 0.429
ISI indexed (2012): ISI indexed no
Scopus rating (2011): CiteScore 0.75 SJR 0.285 SNIP 0.256
ISI indexed (2011): ISI indexed no
Original language: English
DOI:
10.4161/bioe.22856
Source: dtu
Source-ID: n::oai:DTIC-ART:pubmed/388842300::30157
Research output: Research - peer-review : Journal article – Annual report year: 2013