

# Product Information

## CHOZN® ZFN-Modified GS<sup>-/-</sup> CHO Cell Line

CATALOG NO. CHOGS

### Product information

The CHOZN GS<sup>-/-</sup> cell line was created using Sigma's proprietary CompoZr® Zinc Finger Nuclease (ZFN) technology. ZFNs are a class of engineered DNA-binding proteins, which facilitate targeted genome editing by binding to a user-specified locus and causing a double-strand break (DSB). The cell then employs endogenous DNA repair processes, either non-homologous end joining (NHEJ) or homology-directed repair (HDR), to heal this targeted DSB. These repair processes can be channeled to generate precisely targeted genomic edits resulting in an organism or cell line with specific gene disruptions (knockouts), integrations, or modifications.

Glutamine synthetase (GS) is one of the most commonly used selectable markers in the biopharmaceutical industry. Glutamine is an essential amino acid for cellular growth. The GS enzyme is responsible for the conversion of glutamate into glutamine. Without this enzymatic activity, cells can no longer synthesize glutamine endogenously and if glutamine is not supplemented in the culture media, the cells will die. Cell lines producing recombinant proteins can be selected for by linking the expression of gene(s) coding for the recombinant protein(s) to the expression of an exogenous GS gene. In GS deficient host lines, only those cells that have been successfully transfected with an exogenous GS gene will survive when the culture is grown in the absence of glutamine. In host lines that have a functional endogenous GS gene, MSX (Methionine Sulphoximine) can be used to suppress the endogenous GS activity and enable the use of GS selection in these lines. However, for biopharmaceutical manufacturing, an MSX-free process is advantageous. To accomplish this using GS selection, a GS knock-out host cell line is required. Leveraging the ZFN technology, SAFC has engineered a novel CHO K1 GS<sup>-/-</sup> cell line. SAFC's CHOZN GS<sup>-/-</sup> cell line has been developed for use in MSX-free GS selection processes for the development of recombinant cell lines. This CHOZN GS<sup>-/-</sup> cell line is adapted to chemically-defined, suspension growth in EX-CELL® CD CHO Fusion media (SAFC catalog number 14365C) and maintains the robust characteristics of wild type CHO K1.

### Kit components

Component	Cat. No.	Quantity
CHOZN GS <sup>-/-</sup> cell line	CHOGS-1VL	1 Vial of cells with >7.5e6 cells/mL

### Features and benefits

- First-ever commercially available GS<sup>-/-</sup> CHO cell line
  - Enables rapid development of recombinant cell lines by strong metabolic selection
  - GS knockout enables strong metabolic selection without the addition of MSX (GS inhibitor)
  - Fewer clones need to be screened to isolate robust, high-producers=decreased cell line development resources
  - GS selection is industry-accepted method
  - No IP, or associated royalties
- CHOZN GS<sup>-/-</sup> cell line developed by targeted mutagenesis using the ZFN technology
  - Significant decrease in the possibility for off-target mutations that result from traditional mutagenesis strategies
- Cell line adapted to suspension growth in chemically defined, animal component free media.
  - Regulatory friendly
  - Easy to scale up
- Cells originated from ECACC CHO K1
  - Cells maintain CHO K1 robust growth characteristics
- cGMP manufactured, full viral testing, complete traceability
  - Regulatory-friendly
- Comprehensive protocols detailing recommended selection strategies
- Trouble shooting with readily accessible technical experts
  - Easy to use

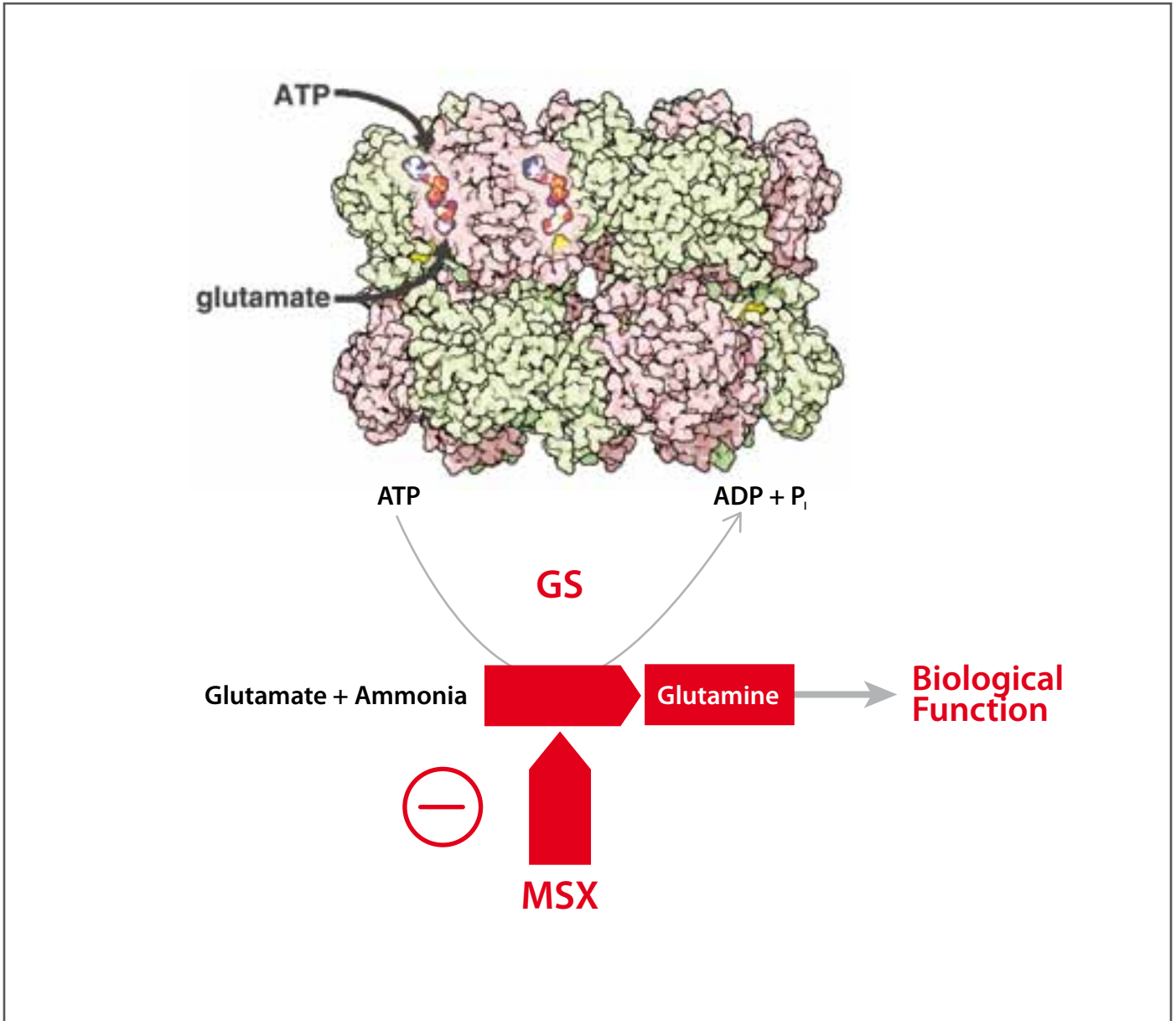
### Precautions and disclaimer

The CHOZN GS<sup>-/-</sup> cell line is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

### Storage and stability

Store the cells in liquid nitrogen vapor phase immediately upon arrival.

Figure 1. The GS Pathway



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