

# G-CSF<sup>HuXp</sup> - More Effective For Human Cell Growth Stimulation Authentic - Human Cell Expressed



## INTRODUCTION

Cytokines are a group of proteins and polypeptides that organisms use as signaling molecules. Most cytokines are glycoproteins less than 30 kDa in size and bind to specific, high-affinity cell surface receptors. Due to their central role in the immune system, cytokines are involved in a variety of immunological, inflammatory and infectious diseases and widely used in research, diagnostics and therapeutics. Cytokines generally alter the gene expression pattern of the target cell which leads to changes in the rate of cell proliferation and/or in the state of cell differentiation. Currently, these proteins are predominantly produced in non-human cells (e.g. E. coli) and therefore lack authenticity due to the absence of physiologically relevant glycosylation. In addition, a number of important cytokines are not commercially available due to inadequate proteolytic processing, protein folding or other post-translational modifications that occur in the non-human cell expression systems.

HumanZyme has developed an efficient human-cell based technology, HumaXpress™, for cost-effective and scalable production of human cytokines. We have an expanding range of tag-free cytokines, including difficult-to-express members of the TGFβ superfamily. As demonstrated below, HumanZyme's authentic cytokines can be used as highly preferred reagents for stem cell, cancer, inflammation research, and antibody development.

## G-CSF<sup>HuXp</sup>

Granulocyte colony-stimulating factor (G-CSF), is a hematopoietic growth factor that stimulates the development of committed progenitor cells to neutrophils and enhances the functional activities of the mature end-cell. Currently, commercially available G-CSF proteins are produced in an E coli expression system and typically have a molecular

mass of 19kDa. HumanZyme Inc. scientists have produced G-CSF<sup>HuXp</sup> expressed in engineered human 293 cells. The proteins are glycosylated forms with a molecular mass range of 22-25 kDa. G-CSF<sup>HuXp</sup> can be cost-effectively produced at large scale.

The bioactivity of G-CSF<sup>HuXp</sup> was determined by the dose-dependent stimulation of the proliferation of murine M-NFS-60 cells. G-CSF expressed in E. coli was compared to the human cell expressed version G-CSF<sup>HuXp</sup>. The results indicate that G-CSF<sup>HuXp</sup> is 4-5 fold more active than the E coli expressed cytokine and is more effective for stimulating cell growth. (See product catalog number HZ-1016, HZ-1017, HZ1018 and HZ-1050 at [www.humanzyme.com](http://www.humanzyme.com).)

