

Welcome to your new edition of **The Human Express**

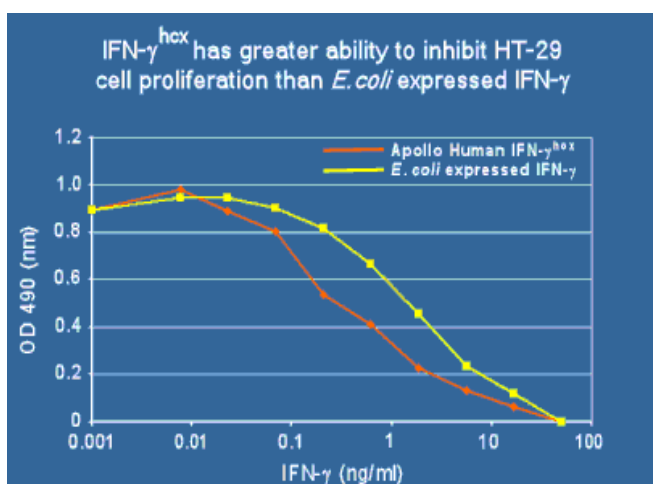
In this issue we provide you with more information about our products and their benefits to you. We discuss the importance of human-specific glycosylation in human interferons and provide further evidence of the superiority of human cell expressed proteins in stem cell research.

We are also really pleased to announce a new agreement to supply Millipore in the US with human cell expressed human LIF (LIF hcx™) for resale in worldwide markets.

Human-specific glycosylation of human interferons

Apollo Cytokine Research's goal has been to supply recombinant human proteins with human-specific glycosylation and optimal bioactivity and stability. Apollo produces human cell expressed (hcx™) IFN-alpha 2b and IFN-gamma cytokines as well as the IFN-gamma receptor 1 extracellular domain fused to the Fc region of human IgG1.

Apollo's recombinant hcx™ proteins are unique in being produced from human cells and containing human-specific post-translation modifications including glycosylation, which make them more similar to naturally occurring IFN proteins than *E.coli* or CHO expressed recombinant human IFNs.



IFN-gamma hcx™ has greater anti-proliferative activity than *E. coli* expressed IFN-gamma, demonstrating the advantage of using human cell expressed IFNs.

IFNs are known to be a family of pleiotropic cytokines with antiproliferative, antitumour, and immunomodulatory properties. Current clinical uses of IFNs include treatment of viral infections, cancers and autoimmune diseases. IFNs occur naturally as glycoproteins, and glycosylation of IFN-beta has been associated with 10-fold higher antiviral, antiproliferative and immunomodulatory activity.

[Full article >>](#)

HXC Proteins in Stem Cell Research

Erythropoietin (EPO) is the primary regulator of the survival, proliferation and differentiation of erythroid progenitors. Recombinant human EPO (rhEPO) is used to treat anaemia, resulting from cancer or chemotherapy, kidney disease, infection or inflammation.

Like many other cytokines, native rhEPO is heavily glycosylated, with up to 35% of its molecular weight consisting of N- and O-linked oligosaccharides. Until recently the only commercially available rhEPO was purified from Chinese Hamster Ovary (CHO) cells.

It is becoming apparent that species-specific post-translational modifications, particularly glycosylation, are pivotal to protein function.

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USEFUL LINKS

- >> [Resource Center](#)
- >> [Why use hcx™ proteins?](#)
- >> [FAQs](#)
- >> [Contact Us](#)

PRODUCTS

- >> [View Proteins](#)
- >> [View ELISA kits](#)

Apollo's **hcx™** Proteins

- [Activin RIA – Fc Chimera](#)
- [Adiponectin](#)
- [Amphiregulin](#)
- [BAFF](#)
- [BAFF R – Fc Chimera](#)
- [beta-NGF](#)
- [CCL2/MCP-1](#)
- [CCL3/MIP-1 alpha](#)
- [CCL4/MIP-1 beta](#)
- [c-kit](#)
- [c-kit – Fc Chimera](#)
- [CD33 – Fc Chimera](#)
- [CD40 \(167aa\) – Fc Chimera](#)
- [CD40 \(173aa\) – Fc Chimera](#)
- [CD209L - Fc Chimera](#)
- [CRC-beta – Fc Chimera](#)
- [Cripto-1 – Fc Chimera](#)
- [DCSIGNR - Fc Chimera](#)
- [EPO](#)
- [EPO R – Fc Chimera](#)
- [FGF basic / FGF-2](#)
- [FGF R1 alpha \(IIIc\) - Fc Chimera](#)
- [FGF R4 - Fc Chimera](#)
- [Flt-3 - Fc Chimera](#)
- [Flt-3 Ligand](#)
- [G-CSF](#)
- [G-CSF R – Fc Chimera](#)
- [GM-CSF](#)
- [GM CSF – Fc Chimera](#)
- [Growth Hormone](#)

Apollo set out to determine whether human cell expressed rhEPO (EPO hcx™) promotes erythroid development of human CD34⁺ stem cells more effectively than commercially available non-human cell expressed rhEPO (expressed in CHO cells).

The results of the study demonstrated:

- EPO hcx™, possessing human cell specific glycosylation, promotes greater erythroid differentiation of human CD34⁺ stem cells compared to non-human cell expressed rhEPO.
- The enhanced activity of EPO hcx™ *in vitro* may translate to more effective *in vivo* activity, thereby improving current therapeutic applications.

[Full article >>](#)

Apollo enters into [supply agreement with Millipore](#)

Apollo has entered into a supply agreement with Millipore Corporation in the US to supply the company with human cell expressed human Leukaemia Inhibitory Factor (LIF hcx™) for resale in worldwide markets. LIF is a patented protein that plays a role in the growth and development of cells. Millipore is the exclusive worldwide supplier of human LIF, a cytokine (protein) that can be used to prevent stem cells from differentiating into more specialised cell types. Apollo's LIF hcx™ may allow researchers to maintain stem cells in an undifferentiated state prior to transformation into specialised cells such as heart muscle cells.



Apollo will use its proprietary human cell-expressed (hcx™) protein technology to produce human LIF for sale by Millipore under Apollo's hcx™ trademark. The company's first supply of LIF hcx™ to Millipore is scheduled to occur later this month.

[Read Press Release >>](#)

New Proteins

We are constantly adding new proteins and ELISA kits to our unique range. The following proteins are now available on our website and more will be coming soon. If you are interested in proteins not yet on our product list, please [contact us](#) with details about the protein and your requirements.

- [Activin RIA - Fc Chimera](#)
- [Adiponectin](#)
- [CD33 - Fc Chimera](#)
- [CRC beta - Fc Chimera](#)
- [Cripto-1 - Fc Chimera](#)
- [Leptin](#)
- [M-CSF R - Fc Chimera](#)
- [TRAIL R1 - Fc Chimera](#)
- [TRAIL R2 - Fc Chimera](#)
- [Transferrin](#)
- [VEGF-121](#)

- [Growth Hormone R - Fc Chimera](#)
- [IFN alpha 2b](#)
- [IFNAR2 - Fc Chimera](#)
- [IFN gamma](#)
- [IFN gamma R1 - Fc Chimera](#)
- [IGFBP-3](#)
- [IL-1ra](#)
- [IL-1 RI - Fc Chimera](#)
- [IL-2](#)
- [IL-2 R alpha - Fc Chimera](#)
- [IL-2 R beta - Fc Chimera](#)
- [IL-2 R gamma - Fc Chimera](#)
- [IL-3](#)
- [IL-3 R alpha - Fc Chimera](#)
- [IL-4](#)
- [IL-4 R alpha \(148aa\) - Fc Chimera](#)
- [IL-4 R alpha \(207aa\) - Fc Chimera](#)
- [IL-5](#)
- [IL-5 R alpha \(308aa\) - Fc Chimera](#)
- [IL-5 R alpha \(322aa\) - Fc Chimera](#)
- [IL-6](#)
- [IL-7 R alpha - Fc Chimera](#)
- [IL-8](#)
- [IL-10](#)
- [IL-10 R alpha - Fc Chimera](#)
- [IL-12](#)
- [L-Selectin - Fc Chimera](#)
- [Leptin](#)
- [Lymphotoxin-alpha](#)
- [MC-148 - Fc Chimera](#)
- [M-CSF](#)
- [M-CSF R - Fc Chimera](#)
- [MCP-1/CCL2](#)
- [MIP-1 alpha/CCL3](#)
- [MIP-1 beta/CCL4](#)
- [NGF R \(209 aa\) - Fc Chimera](#)
- [NGF R \(222 aa\) - Fc Chimera](#)
- [Noggin](#)
- [NT-3](#)
- [Oncostatin-M](#)
- [Ox40 - Fc Chimera](#)
- [SCF](#)
- [SCF R - Fc Chimera](#)
- [SCF sR](#)
- [TGF-beta 1](#)
- [TGF-beta RII - Fc Chimera](#)
- [Thrombopoietin](#)
- [TNF-alpha](#)
- [TNF-beta](#)
- [TNF RI - Fc Chimera](#)
- [TNF RII - Fc Chimera](#)
- [TRAIL R1 - Fc Chimera](#)
- [TRAIL R2 - Fc Chimera](#)
- [Transferrin](#)
- [TrkA - Fc Chimera](#)
- [TrkB - Fc Chimera](#)
- [TrkC - Fc Chimera](#)
- [VEGF-C](#)
- [VEGF-121](#)
- [VEGF-165](#)

Conference Schedule

We had some really great feedback at the Drug Discovery meeting in Boston in August and are looking forward to meeting more of you at the upcoming conferences. Come and have a chat and we can talk to you more about our proteins and their potential for your research.

- **ISICR Annual Meeting**
16-19 September, Oxford, UK
- **4th Garvan Signalling Symposium**
15-16 October, Sydney, NSW, Australia
- **Cytokines in Health & Disease**
26-30 October, San Francisco, CA, USA
- **Third Barossa Meeting : Signalling Systems**
14-17 November, Barossa Valley, SA, Australia
- **ASCB 2007 Annual Meeting**
1-5 December, Washington, DC, USA



If you'd like to make an appointment with our team, please email us at contact@apollocytokineresearch.com

For more information on any of the articles introduced in this newsletter, please refer to our website.

Apollo's AccuKine™

ELISA Kits

[G-CSF ELISA Kit](#)

[GM-CSF ELISA Kit](#)

[IL-2 ELISA Kit](#)

[IL-3 ELISA Kit](#)

[IL-4 ELISA Kit](#)

[IL-6 ELISA Kit](#)

[IL-10 ELISA Kit](#)

[Lymphotoxin-alpha ELISA Kit](#)

[TNF-alpha ELISA Kit](#)

[TNF-beta ELISA Kit](#)

[VEGF-165 ELISA Kit](#)