

Web watch

HUMAN PROTEIN FACTORY

- <http://www.hgpd.jp>

In vitro research has the advantage of being able to easily study proteins that have tissue-specific, stage-specific or intrinsically rare expression *in vivo*. Proteomics on a whole-proteome scale by *in vitro* expression is now becoming more plausible because of the accumulation of both genome sequencing data and cDNA clones. A collection of 33,275 human Gateway entry clones and complementary *in vitro* protein expression methodologies that allow proteome-scale production of human proteins has now become available.

The human Gateway entry clones were constructed by cloning of PCR-amplified open reading frame (ORF) fragments from full-length human cDNA clones or other resource cDNAs. This human protein factory was validated by expression of 13,364 human proteins in the wheat-germ cell-free system and assessment of activity in a variety of assays. For example, of the 75 tested phosphatases, 58 (77%) showed biological activity. Several cytokines that contain disulphide bonds were produced in an active form in this expression system. Furthermore, protein microarrays were developed by direct spotting of crude human proteins on glass slides.

Human protein factory provides a foundation for simple and efficient conversion of the human transcriptome into an *in vitro*-expressed proteome. The use of this protein-supply method would make it possible to easily and effectively reconstitute and analyse not only *in vitro* reactions of the enzyme–substrate recognition, but also protein–protein interactions, post-translational modifications and processing. This resource has a wide range of capabilities and excellent functionality, and should greatly contribute to advancing post-genomic research. The human Gateway entry clones are available to both academia and industries and the clone of your favorite protein can be ordered online.

Ekat Kritikou