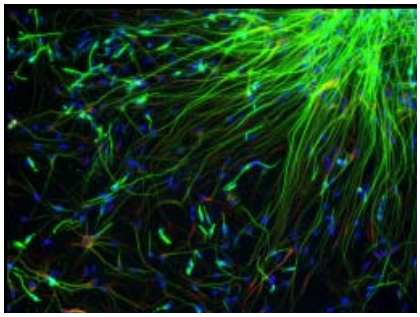
**GE Healthcare and Cell Technologies Fact Sheet**

**Cells in drug discovery and research**
GE Healthcare is a leading provider of enabling technologies in pharmaceutical and biotechnology research, development and production. In recent years, a deeper understanding of inter and intra-cellular mechanisms, enabled by sophisticated visualization and analysis techniques, has helped place the use of cells at the center of the drug discovery and research process.

By understanding how drug candidates and biopharmaceuticals behave inside cells, it is possible to gain a deeper earlier knowledge of how they may behave in-vivo. The earlier in the research process the effects of a potential drug can be assessed, the sooner decisions can be made about progressing it into the next stage of development. This can save costs and help to accelerate a notoriously expensive and slow process, as well as reduce the need for animal testing. Cells have become an essential tool in the drug discovery and research process.



*Human neural stem cells from the spinal cord. Imaged on a GE INCell Analyzer*

**Stem cells in drug discovery and research**
Recently, stem cells, the unspecialized starting cells from which all of the body's mature cells are made, have emerged as increasingly powerful research tools. Stem cells, and more specifically, fully functional mature cells manufactured in bulk from human embryonic stem cells (hESCs), could provide reliable, uniform and predictive new assay tools for cell-based screening in drug discovery.

Currently, cell-enabled drug R&D utilizes established mature cell lines derived from specific organs and tissues of animals and human donors. Animal models, primary human tissue, and cell lines have important roles in drug metabolism and toxicity studies. However, these systems have limitations. Animal models are not fully reliable predictors of human responses because of basic physiological differences between species; using fresh primary human liver tissue and cells, for example, means limited availability and variability depending on donor and methods used in processing the samples; human mature cell lines available today do not have the same attributes as their normal counterparts in the body, and cannot be relied on to accurately reflect the physiology being studied.

Many scientists and physicians believe that if they can understand and harness the power of stem cells, they will usher in a new era of medicine in which the body's own capacities for development and repair can be directed to cure numerous maladies such as Parkinson's, diabetes, and heart disease

**GE Healthcare's cellular discovery and analysis tools**
With cell-based screening now playing a role in all stages of drug R&D, a reliable, consistent and plentiful supply of cells is critical if shortages of cell assays are not to become a significant bottleneck. GE Healthcare's Cell Factory™ provides researchers with ready-grown frozen cellular assays for drug screening. This means researchers can focus on their areas of expertise, without the need to spend time laboriously growing cells for their work.

Combining GE Healthcare's Cell Factory™ cell proliferation, reproduction and manufacturing with Geron's hESC technology will make it possible to generate a large scale supply of hESC-derived cells which retain normal cellular functions. The first products developed in the GE Healthcare and Geron alliance are scheduled to be available for researchers by early 2010. The program will use stem cells derived from approved hESC lines listed on the NIH Human Pluripotent Stem Cell Registry[i].

GE Healthcare's INCell Analyzer 2000 and its associated software tools comprise an advanced automated digital microscopy system for rapid analysis of cellular assays. It helps scientists study

cellular processes in their true biological context and allows them to gather better data and gain more knowledge about cellular systems in a much shorter time.

**GE Healthcare enabling extraction and processing of cells for therapy and research**
The use of adult-derived stem and regenerative cells in therapy is heralded as one of the most promising areas of medicine. This involves extracting cells from patients' own fat (adipose) tissue, bone marrow, peripheral or umbilical cord blood, processing and sometimes growing them on to make them available for use by clinicians for therapeutic purposes. GE Healthcare has a portfolio of stem cell extraction and processing tools for such cellular therapy and research.

The Celution® System[ii], licensed from Cytori, is a European-approved, cell processing device, which extracts and makes a dose of a patient's own adipose (fat) tissue-derived adult stem and regenerative cells available at the point-of-care. Current uses include breast reconstruction after lumpectomies in the treatment of breast cancer.

GE Healthcare's AXP AutoXpress™ Platform, licensed from ThermoGenesis, was the first automated, functionally closed, sterile system to harvest stem cells from umbilical cord blood. It brings automation and precision to cord blood processing, which would otherwise be performed manually.

*Cells culture in a WAVE™ bioreactor*

For research and therapeutic uses, blood or bone marrow are separated into their various components by centrifugation and sedimentation. GE Healthcare's Ficoll-Paque™ is a range of sterile, ready-to-use density gradient media for the separation of cells

Core to the use of stem cells in cell therapy is the ability to extract them from a patient and then culture more of them through a process known as cell expansion. GE Healthcare's WAVE Bioreactor™ is a cell culture device suitable for applications in gene and cell therapy and regenerative medicine.

For GE's ethical policy on working with stem cells, please see: **http://tinyurl.com/ge-stem-cells**

**Media Contact**
For more information on GE Healthcare's enabling technologies in cell therapy and research please contact:

Conor McKechnie
EMEA Media Relations, GE Healthcare
+44 1494 498 276; conor.mckechnie@ge.com

---

[i] *GE Healthcare's cell research programs use established hESC lines approved by the National Institutes of Health or others established in line with good ethical practice. GE will not be associated with the primary harvest of human embryo-derived cells or tissues. The hESC lines with which GE Healthcare and Geron work were derived from surplus in vitro fertilized embryos originally created as part of an in vitro fertilization (IVF) procedure. The embryos, which would otherwise have been destroyed, were donated by the parental donors under informed consent.*

[ii] *Celution is available in the US for research purposes only; it is not FDA approved for clinical use in the US.*