GE Position Statement on Stem Cell Research: June 2005

Background

Over the last several years there has been a dramatic increase in the level of interest from both professional and lay communities concerning research employing primary human stem cells. Stem cells exhibit, to varying degrees, two defining features: the ability to divide and thus produce more stem cells almost indefinitely (termed self renewal), and the potential to become many different kinds of tissue, e.g. nerve, muscle or blood etc. (termed multipotency).

Stem cells can be isolated from various sources including bone marrow, blood and certain tumors however most research has focused on arguably the most useful type of stem cell – termed embryonic stem (ES) cells. Primary ES cells can be isolated from a microscopic ball of cells that form a few days after eggs are fertilized. Many groups have been able to isolate and propagate these stem cells in culture and produce continuous ES-derived cell lines that retain many of the functional properties of primary ES cells.

GE Position

- GE has ongoing or planned research that could use both adult-derived stem cells and established embryonic stem (ES) cell lines, to investigate the practicality of developing novel methods of producing human cells that could be used in predictive drug screening applications. Better methods for evaluating drugs for safety (toxicity) and efficacy using human cells, will aid the development of more effective new medicines and could help reduce the need for testing some potential new medicines on animals.

- GE will conduct research in accordance with US federal guidelines, UK and any other applicable country’s legislation and recommendations regarding stem cell research.

- Our ES cell research programs will employ established ES cell 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.

- In a rapidly evolving scientific field, our intention is that GE’s position will accurately reflect the most recent government and public opinions and therefore, from time to time we will update our position statement to reflect such changes.

- We acknowledge the considerable debate and take very seriously the ethical and societal issues associated with research using stem cells derived from embryonic or fetal tissue. We conduct our research in an ethically and scientifically responsible manner

Questions and Answers

Is GE carrying out work on established stem cell lines?

GE is conducting or planning to conduct research using established stem cell lines. The research will establish methods to efficiently transform stem cell lines into cells that closely mimic the behavior of specialized cells found in different human tissues and organs e.g. heart, liver, brain etc. These specialized cells will be used to improve the way that new drugs are tested before they are given to patients.
What is an established ES cell line and how do they differ from primary ES cells?
An established ES cell line is a population of cells that occasionally grow out from primary ES cells when they are kept in artificial culture. Established ES cell lines are very similar to primary ES cells however they can be grown in very large numbers and can be maintained and developed in culture for long (many years) periods of time without the destruction of fertilized eggs.

Why are ES lines so important?
ES cell lines are important for two main reasons:
1) They have a greater capacity for self renewal and multipotency than any other type of stem cell line.
2) They can be grown continually and in large numbers in artificial culture.

Why is GE interested in stem cells?
Many of the human cell types that could be usefully used in drug testing applications are very difficult to obtain and maintain in culture, for example liver cells (hepatocytes) or heart cells (cardiomyocytes). Stem cells represent unique populations of cells because they can be grown in large numbers and then changed or transformed into very specialized cell types such as cardiomyocytes or hepatocytes. Being able to produce large numbers of specialized cells would be extremely useful to the development of new medicines.

Where would GE obtain established ES cell lines?
We will use NIH approved established ES cell lines or others that are established in accordance with good ethical practice. We will not be associated with the primary harvest of human embryo stem cells.

Does GE work on human embryo or fetus-derived material?
The research at GE involves adult-derived stem cells or established embryonic stem cell lines. GE will not be associated with the primary harvest of human embryo-derived cells or tissues.

How does GE dispose of unwanted cells?
Our research is conducted on established cell lines, which are similar to many other human cells used in general research activities. They are maintained, handled and disposed of in accordance with local safety guidelines involving the use of non-pathogenic human cells.