



Monday March 9, 2009
16:30 to 18:00

Lyon Convention Center
France

STEM CELLS: EVEN MORE PROMISING? Advances in Life Sciences

Moderator

- **Peter Wrobel**, Editorial Director of Science Business Publishing, UK

Speakers

- **Laurence Dahéron**, Head, HSCI, iPS Core Facility, Harvard University, Boston, USA
- **Corey S. Goodman**, President, Biotherapeutics and Bioinnovation Center, Pfizer, USA
- **Alastair Kent**, Director, Genetic Interest Group, UK
- **Alan J. Lewis**, President and CEO, Juvenile Diabetes Research Foundation, USA
- **Marc Peschanski**, Director, I-STEM, France

Summary

- Stem cell research remains one of the most exciting and promising fields in Life Sciences. Important results make the media headlines almost every week.
- In the last couple of years there have been remarkable major breakthroughs on human embryonic stem cells (hESC) and with the discovery of iPS (human induced pluripotent stem cells).
- First of all this session gave an overview of recent breakthroughs and the status of stem cell basic research.
- The subsequent discussions included their significance for developing regenerative medicine, their impact on other domains, such as toxicology, new drug targets discovery, the very recent revoke of the Bush administration restrictions on federal funding of embryonic stem cell research by President Obama, as well as their implications within the ethical dimension.
- **Laurence Dahéron** and **Alan Lewis** gave a short presentation on recent developments in stem cell research and the challenges which scientists are facing currently.
- The first hESC were derived in 1998. In 2007, the first human iPS were generated, in 2008, researches derivated the first disease-specific iPS cell lines, and in early 2009, the biotech company Geron requested FDA to test hESC-derived cells in patients with spinal cord injury in a first clinical trial.

- Though, iPS are hoped to replace hESC research at least in some areas. It remains unclear so far, to what extent iPS are truly pluripotent and still many questions need to be resolved, in particular their potential toxic effects and safety issues. The key problem being the massive genetic changes in the cells and many artefacts which could be observed.
- **Marc Peschanski** presented a high throughput screening approach for using hESC in a drug development program at the iSTEM institute in Paris. Furthermore he showed a biomarkers discovery strategy for in vitro predictive toxicology using hESC.
- The discussions among the panellists developed three key messages:
- At first, stem cell research is about serious life-threatening diseases. People with these diseases would have no prospects, if it was left to classical pharmacology approaches.
- Basic research on hESC showed the clear potential for new interventions or therapies. Therefore, for people with severe genetic disorders research on hESC is their only hope.
- **Corey Goodman** pointed out that iPS might not keep its promise to fully replace hESC research. The uncertainties of iPS stability and artefacts so far known are too unsecure for a drug development plan. Hence, Pfizer is committed to work with both, eHSC and iPS.
- Secondly, the ethical dimension is well recognised. The audience expressed its uncertainty whether or not to work with hESC.
- **Alastair Kent** agreed that it is a challenging individual decision to use hESC or not. However, he stated that not using hESC for research on severe life-threatening diseases is unethical for those who hope to cure these diseases with the help of stem cell research.
- Therefore, he called for the creation of a regulative framework, transparent to the public domain, clear about rules, a system that respects the source of material, and a realistic time scale for fulfilling high expectations.
- He said that we need a rational and calm public discussion to solve the issues and we need to segregate the hypes from the hopes and build trust.
- Thirdly, all panellists called on young researchers to involve themselves in one of the most attractable research fields of regenerative medicine – not necessarily, but in particular stem cells.
- There is plenty of research work to be done. Research needs the most creative and proactive minds.
- **Marc Peschanski** mentioned that France is currently recruiting in this field.

Quotes

"Yesterday, President Obama lifted the cover of unmeanted federal funding of a mystified stem cell research by the Bush administration."

Peter Wrobel

"Human embryonic stem cells remain the gold standard and powerhouse for cell therapies and drug discovery."

Alan Lewis

"For us as Pfizer, iPS are too unsecure to plan their therapeutic use so far."

Corey Goodman

"There is no alternative to human embryonic stem cells."

Alastair Kent

"The key issue is a publicly available transparent control of technology."

Alastair Kent

"It will take ten to twelve years of development before a stem cell therapy or a derived product is approved. FDA requests very extensive safety studies."

Alan Lewis

"At Pfizer no one is forced to work with human embryonic stem cells. We ask employees, if they feel comfortable to work with hESC."

Corey Goodman

"Mostly all research work which has been conducted with stem cells so far, is on a small scale level with only a few cells. For drug discovery we will need billions of cells."

Marc Peschanski