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Bill gives important tool to scientific community

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The Patterson Bill gives Australian scientists an opportunity to fully explore every aspect of embryonic stem cell research. Significant work and progress has been made under the current law which allows for human embryonic stem cell research under licence.

The bill allows the introduction of somatic cell nuclear transfer, otherwise known as therapeutic cloning. This technology enables the development of human, disease-specific embryonic stem cell lines. How does this work, and why is it so valuable?

The process begins by taking the nucleus from a cell - for example, a skin or blood cell - of a patient who has a complex disease, such as Parkinson's or leukaemia. This nucleus is then placed in an ovum which has had its nucleus removed. The environment of the egg helps form a blastocyst, which is an early-stage embryo containing a few hundred cells from which scientists can grow a human embryonic stem cell line that carries the trait of the disease. These cells may then be directed to form the relevant cell types of the disease under investigation.

This process is so valuable because this cell line can then be used to investigate how the disease begins and progresses in the earliest stages. Because this is a human cell line it would be a particularly powerful and valuable platform for the development of diagnostics or as a method of drug candidate screening. It would also hopefully be the basis of developing treatments for a number of common, debilitating diseases.

Stem cell research is an area of great importance in the field of regenerative medicine. Stem cells can potentially be used to address the underlying cause of a disease and possibly reverse or correct it. In a field of such high potential it is very important not to hype the potential benefits of technology. To over-promise and under-deliver is to do the science and patients a great disservice.

This is complex research which will take time to overcome such hurdles as cell purity, cell expansion or growth, directing the cells to the required type such as nerve, blood, muscle, heart, lung or liver, for example. This process is by no means simple and will take some years to achieve.

The process that has resulted in the Patterson Bill obtaining an affirmative vote has been a very important one. It began with the Lockhart review. Then followed a debate involving the public, patient groups, ethicists, scientists, the media and elected representatives, eventually resulting in a conscience vote. This has been a process that has educated many participants about the fundamentals of stem cell research. This should not be seen as the end of the debate but rather a part of a continuing dialogue between the many participants involved in this important endeavour. The common bond is a desire to relieve human suffering and improve the quality of life for patients suffering from diseases which at present have very limited or no form of treatment. This endeavour must be grounded in the context of ethics, legislation and public opinion. Communication between scientists, parliamentarians and the public, which happened in this debate, must be continued so that informed decisions can be made as progress is made.

The outcome of the legislation will be to add an important research tool to a very active and

successful research initiative in stem cells in Australia. It will also enable our researchers to collaborate with their colleagues in other countries, for example Britain and the US, where the technology is permissible. Australia will remain an active, internationally recognised driver of stem cell research and not a bystander simply observing important developments occurring out of its reach.

There has been a significant effort on the part of parliamentarians to understand the science. It is not an easy technology to grasp and the ethical considerations are considerable. The Australian stem cell research community recognises the commitment of Kay Patterson, Natasha Stott Despoja, Ruth Webber and Mal Washer in raising stem cell research to the parliamentary agenda, and opening the field for scientists and patients.

Professor Stephen Livesey is executive director of the Australian Stem Cell Centre.

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