



Hon Robert Brokenshire MLC
FAMILY FIRST PARTY



PARLIAMENTARY SPEECH

HUMAN CLONING AND ANIMAL HYBRIDS BILL

(Full title: Statutes Amendment (Prohibition of Human Cloning for Reproduction and Regulation of research involving embryos) Bill)

Speech made in two sittings: 5 and 19 February 2009

5 February 2009

STATUTES AMENDMENT (PROHIBITION OF HUMAN CLONING FOR REPRODUCTION AND REGULATION OF RESEARCH INVOLVING HUMAN EMBRYOS) BILL

Adjourned debate on second reading.

(Continued from 3 February 2009. Page 1144.)

The Hon. R.L. BROKENSHERE (15:24): This is a bill about which I have great concern, and I want to put that on the public record in the introduction of my second reading speech. On the straightforward question of the moral situation with respect to this bill, I will demonstrate through my remarks the reasons why I believe that this bill should be opposed on straight-out moral grounds.

In the animal kingdom and in agriculture I support genetic improvements and sciences, and we are seeing the acceleration of opportunities to increase production through the breeding of animals. That is one thing; that is about food production. However, when one starts getting into the moral issues around allowing scientists and researchers to use human embryos, and so on, and to effectively become involved in human cloning, I think we are on incredibly dangerous ground. History has shown us the problems that can occur in society when we make bad legislation and, to my way of thinking, this piece of legislation would have enormous negative ramifications. It would, I am sure, be the worst legislation that I have spoken about, with potential negative ramifications to the community and to society in the future.

Also, I cannot really understand why the government has brought this bill before the parliament when science has gone past this bill. The scientific issues around this bill are now historical, and I will demonstrate to my colleagues why we have moved on and, therefore, the need to oppose and not support this bill.

However, this is a great moment in this parliament, because it is a triumph for parliamentary democracy. Where on party lines we might often differ, in this debate we will vote side by side with those who agree in conscience on a very important issue. If members vote on this bill in the way that I hope they will, it will be an even greater achievement for parliamentary democracy, because we will have rejected what I see as an undemocratic and, sadly, prevailing mentality at state and federal levels, where governments can decide on legislation and then force it down the throat of parliaments across the nation. Western Australia had the intestinal fortitude to reject this legislation, and so can we in the Legislative Council.

My legal adviser has said that the argument on this bill can be summarised by a phrase that might appeal to the Hon. Robert Lawson MLC QC, and that is the Latin phrase *novus actus interveniens*. That phrase, in legal terms, is most often used in the law of contract, and it translates literally to a situation where a new act has intervened; a new fact has arisen that has made the previous compact or agreement untenable. That is precisely what we have in this debate.

The advent of induced pluripotent stem cell research (or iPS for short) is a breakthrough that evaporates the previous merits of the clumsy, unethical and unproductive theory of science that has been therapeutic cloning. My colleague the Hon. Dennis Hood MLC did a fantastic job for honourable members wrestling with this issue and their conscience in summarising the debate on this issue.

I do not propose to traverse all the science of the honourable member's great contribution—a contribution that I am sure would have brought a tear to the eye of the Hon. Andrew Evans. Speaking of the Hon. Andrew Evans (to which I will return, and which I will retrace in a little more detail, as it is highly relevant to this debate), I want to repeat something he said in the debate of 26 May 2003 in concluding his contribution on the predecessor to this bill.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

I am very pleased that he made this statement, because it not only agrees with what I have complained about with respect to the River Murray handover package late last year but also the trend that we are increasingly seeing—and this was the Hon. Andrew Evans speaking as an MLC more than five years ago. In concluding his contribution on cloning, he said:

Another concern I have is the nature of the process of agreement via the Council of Australian Governments [COAG], followed by federal legislation and then state legislation presented to us almost by way of a fait accompli. COAG does not have any constitutional status and is not directly empowered by the Australian people or our state parliament to make decisions of this kind. I do not agree with a process that fails to take into account the wishes of the South Australian parliament. I trust this does not become a more regular occurrence.

I say, 'Hear, hear!' This is not a parliament for rubber-stamping. This is a parliament for the people of South Australia, particularly our chamber, the Legislative Council. It is a house of review, it is a watchdog area of the democratic system and it is there to stop big brother—that is, COAG—making decisions in an isolated situation for our community and then expecting us to follow those decisions here in this parliament. I will continually refuse to do that. It is not good policy practice, it is not good parliamentary practice but an undemocratic practice, and it is not what the South Australian people want.

Whilst from time to time they may complain about having three tiers of government, I am sure that the South Australian community want debate unfettered from ministerial council meetings. They want debate that will be in the best interests of the economy and the social fabric and wellbeing of our community now and into the future, and this bill certainly is not in the best interests of the social fabric now or into the future for South Australians. A former member, the Hon. Nick Xenophon (now senator Xenophon), said in concluding his contribution on 5 June 2003:

It is important that, on an issue such as this, state parliament ought not to be rubber-stamping what COAG wants.

Sadly, the Hon. Andrew Evans' trust has not been respected, Senator Xenophon's wish has not come true and we are seeing more legislation forced down our throat out of COAG and down through this parliament. It is an affront to parliamentary democracy, and it has happened from both sides of federal politics in recent governments. Yet this state government wants to abolish the Legislative Council. It is quite unbelievable; it is something that those of us who are listening to our communities must fight against at all costs, because the last thing we need is a total dictatorship. We got rid of that in the Second World War and we do not want it returned in this millennium.

I look forward to the fight to ensure that we protect democracy in South Australia. On 5 June 2003 in this place, the Prohibition of Human Cloning Bill was read a second time and taken through its remaining stages. There was no division, so we know that, by a majority, this parliament had no objection to prohibiting human cloning—none whatsoever. Just under 5½ years ago everyone had an ethical problem with cloning—not long ago at all. Indeed, the same was the case in the federal parliament in late 2002. In fact, in federal parliament on 12 November 2002, Senator Abetz summarised the absolutely unanimous rejection of human cloning when he said:

I think that all senators in this chamber are united in their opposition to human cloning. I understand that the Prohibition of Human Cloning Bill 2002 went through the other place without dissent and on the basis that the practice of human cloning is unacceptable.

There were no interjections and no heckles when he said that. Hence, the Hon. Dennis Hood MLC makes a very good point upon which I encourage members to meditate. He asked:

What has been the amazing new discovery, the great prospect, that has given good cause to overturn this parliament's previously stated position on banning all forms of human cloning?

There are none. No compelling reason is presented, and I believe that we would be making a most serious mistake if we were to support this bill. I will start to talk about the science. In this and previous debates on an earlier version of this bill we have heard of one professor, Shinya Yamanaka. We tried to get in contact with him but he is a busy man. However, a presentation he made in January 2008 was available online to observe. Not only was that instructive for us but I believe it would be of great benefit to members. I will refer to that later in my speech. I want to dwell for a moment on the significance of the induced pluripotent stem cell discovery of Professor Yamanaka and his independent research colleague Professor James Thomson.

The changing of the guard in stem cell research occurred in November 2007, when independent research team studies were released concurrently: one in *Science* magazine by James Thomson and his colleagues at the University of Wisconsin-Madison, and the other research in *Cell* magazine by Shinya Yamanaka and colleagues at Kyoto University in Japan.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

Here are some pertinent facts about this discovery, focusing first on Yamanaka. In November 2007, the internationally respected *New York Times* reported on Yamanaka's individual discovery of induced pluripotent stem cells. On 11 December 2007, Professor Yamanaka was profiled at length in the *New York Times*, and I will retrace just the first paragraphs of that profile, as it runs for some length. It says:

Inspiration can appear in unexpected places. Dr Shinya Yamanaka found it while looking through a microscope at a friend's fertility clinic. Dr Yamanaka was an assistant professor of pharmacology doing research involving embryonic stem cells when he made the social call to the clinic about eight years ago. At the friend's invitation, he looked down the microscope at one of the human embryos stored at the clinic. The glimpse changed his scientific career.

'When I saw the embryo, I suddenly realised there was such a small difference between it and my daughters,' said Dr Yamanaka, 45, a father of two and now a professor at the Institute for Integrated Cell-Material Sciences at Kyoto University. 'I thought, we can't keep destroying embryos for our research. There must be another way.'

Yamanaka and US Professor James Thomson, with their separate research on either side of the Pacific, but both demonstrating the viability of iPS cells, were together in the 2008 *Time* magazine list of 100 most influential people in leadership, heroics, pioneering, science, the arts, and business. Yamanaka, Thomson and fellow Professor Yu were jointly nominated for the 2007 *Time* magazine Person of the Year, with the following statement:

A fierce moral debate—whether the therapeutic potential of stem cells could justify destroying embryos to get them—appeared to vanish when scientists in Wisconsin and Japan announced that they had figured out how to convert adult skin cells into near-perfect copies of the wonder cells. More research remains to be done, but this might be the most delightful discovery since common bread mould birthed the age of antibiotics.

The February 2008 edition of *Science* magazine, the magazine of the American Association for the Advancement of Science, an association that claims to service 10 million scientists, said of Yamanaka, 'Few researchers have rocketed from relative obscurity to superstar status as quickly as Shinya Yamanaka.'

Yamanaka, and other researchers who have woken up to the revolution of iPS, keeps going from strength to strength at a pace that saw Professor Ian Wilmut jump ship, real quick, early in the piece. Testimony to the rapid pace of developments and honing of the technique are demonstrated in the following Washington Reuters article of Sunday 12 October 2008, as follows:

Researchers trying to find ways to transform ordinary skin cells into powerful stem cells said on Sunday they found a shortcut by 'sprinkling' a chemical onto the cells. Adding the chemical allowed the team at the Harvard Stem Cell Institute in Massachusetts to use just two genes to transform ordinary human skin cells into more powerful induced pluripotent stem cells, or iPS cells.

'This study demonstrates there's a possibility that, instead of using genes and viruses to reprogram cells, one can use chemicals', said Dr Doug Melton, who directed the study published in the journal *Nature Biotechnology*. Melton said Danwei Huangfu, a postdoctoral researcher, in his lab developed the new method. Melton, a Howard Hughes Medical Institute investigator, said in a statement:

The exciting thing about Danwei's work is you can see for the first time that you could sprinkle chemicals on cells and make stem cells...Stem cells are the body's master cells, giving rise to all the tissues, organs and blood. Embryonic stem cells are considered the most powerful kinds of stem cells as they have the potential to give rise to any type of tissue. Doctors hope to some day use them to transform medicine.

Melton, for instance, wants to find a way to regenerate the pancreatic cells destroyed in type 1 diabetes and perhaps cure that disease. I seek leave to conclude my remark later.

Leave granted; debate adjourned.

19 February 2009

**STATUTES AMENDMENT (PROHIBITION OF HUMAN CLONING FOR REPRODUCTION AND
REGULATION OF RESEARCH INVOLVING HUMAN EMBRYOS) BILL**

Adjourned debate on second reading.

(Continued from 5 February 2009. Page 1209.)

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

The Hon. R.L. BROKENSHIRE (16:40): On the last occasion I was reading from a Reuters article of 12 October, and I will resume reading from that article. If honourable members or others wish to read my entire speech, my office is happy to assist. I want to talk about inserting genes, as follows:

... pluripotent stem cell such as the embryonic cells are difficult to make, requiring the use of an embryo or cloning technology. Many people also object to their use, and several countries, including the United States, limit funding for such experiments. In the past year, several teams of scientists have reported finding a handful of genes that can transform ordinary skin cells into iPS cells, which look and act like embryonic stem cells. To get these genes into the cells, they have had to use retroviruses, which integrate their own genetic material into the cells they infect. This can be dangerous and can cause tumours and perhaps other effects.

Last month, US researchers did the same thing using a harmless virus called an adenovirus, but the method was not efficient. And last week, Shinya Yamanaka of Kyoto University in Japan, who discovered iPS cells in mice, used a loop of genetic material called a plasmid to reformat the cells. Huangfu tried treating the cells first with valproic acid. After she did this, it only took two of the four usual genes to reprogram the cells into iPS cells, she reported. This is good, because the other two genes usually needed can promote cancer. The Melton team used retroviruses to carry the two genes in but suggest they might not be necessary.

'These results support the possibility of reprogramming through purely chemical means, which would make therapeutic use of reprogrammed cells safer and more practical,' they wrote in their report. Huangfu said the valproic acid unravelled the chromatin—the physical structure of the chromosomes—making it possible to get in and alter the DNA more easily. 'We may need two types of chemicals, one to loosen the chromatin structure, and one to reprogram. We are looking for that reprogramming chemical, and it should be possible to find it eventually,' she said.

So, there is great hope here. It is hard to understand why South Australian scientists do not want a piece of this action. It is beyond belief that South Australian scientists are pushing for such dangerous and immoral practices to be considered by this chamber and this parliament when all this other work is so far advanced and takes all the ethical and moral debate out of it.

The development that I just described, which was announced last month across the world, has reduced the risk of using viral vectors as the catalyst to induce adult cells to become induced pluripotent stem cells, as attested by headlines in press around the world last month. Some examples are, 'Yamanaka's team creates cancer risk-free iPS cells', 'Scientists eliminate viral vector in stem cell reprogramming', and 'Reprogramming iPS cells without viruses'. Yamanaka himself explains his iPS discovery in a 20-minute video. If members are interested they could go to the Japanese website which was published in January 2008 and which is:

www.tv.janjan.jp/movie/edit/fccj/080109fccj_shinya_yamanakai_v_01.php

The video is a presentation he made at a press conference at the Foreign Correspondents Club of Japan. For the sake of the press he avoids, as much as he can, the scientific jargon; and his English is quite good so members would be able to understand his presentation. I can give members the link if they would like it.

He begins his presentation by explaining that embryonic stem cells have the following problems: first, immune system rejection because—and this is critical to remember—the embryonic stem cells are not derived from the patient's own cells. Clearly, as we have seen on many occasions when foreign cells are put into patients, there is a negative reaction with the immune system. Secondly, there is the ethical problem, which has been and will be debated at length in this council. Due to those two problems, and other problems that Yamanaka does not explain, there have been no clinical applications in any country—none.

He goes on to explain that, in order to solve both those problems, he and those in his research team 'would like to make, to generate, ES-like pluripotent stem cells directly from a patient's own cells, such as skin cells by reprogramming'. He uses the phrase ES for embryonic stem, so I will use that in this summary of his presentation. Skin cells, Yamanaka explains, have the same blueprint as the ES cells (embryonic stem cells) with about 40,000 genes the same.

His research for the first three to four years was to establish what were the transcription factors or, if you like, the triggers that took embryonic stem cells and made them into skin cells when an embryo normally gestates in the womb at the early or blastocyst stage. Once they found those, using a vehicle called a retrovirus they sought to trigger ordinary skin cells to become pluripotent; if you like, to revert back to behaving like the parent embryonic stem cells they once were—but with cells derived from the patient, not from a human embryo.

The retrovirus catalyst had issues which, as I have outlined, have now been ironed out. So, too, has the tumour issue that some in this debate have tried to wrongly claim puts paid to the iPS argument. At about the 10-minute mark of his presentation on the video I am describing, Professor Yamanaka puts that

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

argument to rest. That was a problem at one stage, but he clearly states that it has been sorted out; so it is no longer a matter for consideration or debate.

The eventual human iPS cells that Yamanaka created, he explains, 'can proliferate very rapidly and they can maintain the same morphology for a long time'. In other words, behaving like embryonic stem cells. In fact, Yamanaka says that iPS cells are almost indistinguishable from ES cells.

Yamanaka goes on to explain, most excitingly, that human iPS cells can differentiate—that is, move from pluripotency into a specific type of cell, as would ES cells—into neural cells and those neural cells, his trials show, can express dopamine, which means that iPS cells can be used to treat Parkinson's Disease—an incredible breakthrough.

Yamanaka also explains that they can make heart cells which beat like heart cells, independent of the human body. He goes on to explain that human iPS cells can differentiate into many other types of cells, such as muscle, cartilage, gut, epidermal (skin) cells and, as I said, neural tissue. Yamanaka explains that the oncogene, or cancer-causing gene, that they identified early in this process, but, as I have explained, they flushed out that tissue within one month of the initial discovery.

The subsequent concerns about using the remaining retrovirus catalysts, as I explained three months ago, have been resolved, and now scientists believe that they can use chemicals to induce pluripotency without the concern that some people had with retrovirus-induced pluripotency.

You know, it is interesting to note how quickly after the November 2007 changing of the guard that the embryonic stem cell dependent community, that is, those who are wedded to that research because they have government funding to continue that research, reacted with hostility to iPS, saying it would cause tumours and cancer.

Within a month, Yamanaka and Thomson had sorted out those issues, so then the critics shifted to shaky ground, spreading fear that iPS relied on a retrovirus. Late last year that line of attack was also blocked. This is an exciting, rapid pace in the field of science, and Yamanaka and his other scientists need to be congratulated, in my opinion.

It scares the hell out of that embryonic stem cell community who are wedded to hundreds and thousands nation-wide in existing research funding, and it is unfortunate that the funding is actually taking place instead of the opportunities presented here that then take away the ethical concerns for so many of us in society.

Let us not cloud our vision on why scientists are pushing hard for this bill and continued embryonic stem cell research. I ask the minister to outline the funding base for existing embryonic stem cell research. Family First will want specific answers on what the funding base is. Where does the money come from? How much is there Australia-wide? What have been the receipts of funding in South Australia for that research, and what results has that produced? How dependent are BresaGen and Repromed on that funding?

I do not want to be brushed off and have those answers declined, as the government did on the Murray debate on a host of questions I had. I might add that I had a whole lot more for debate, but I ducked out at one point and suddenly the debate on the bill was rammed through at a pace I had never seen in my time in parliament. I walked back in and it was all over; it was absolutely phenomenal. I am here for this debate, and I am not going away until we have put all that funding on record. No flippant answers: this debate is too important to refer us to a report or say it is too hard to find that information.

Returning to the Yamanaka presentation, he concludes by outlining the expected future uses of iPS cells, which are in truth almost limitless. His first targets would be spinal cord injury; diabetes; Parkinson's disease, as I have already mentioned; and cardiac dysfunction. He jokes (perhaps he has been visiting in America for too long; the joke goes down poorly with a Japanese audience) that he also hopes iPS technology can treat baldness, an ailment which appears in its early stages on Yamanaka.

I want to highlight how Yamanaka's presentation concludes, because it illustrates why I believe honourable members should absolutely and categorically reject this bill in its entirety and in so doing cast a big yes vote for iPS research. Yamanaka lists three government sponsors of his work: the Japan Science and Technology Agency; the Ministry of Education, Culture, Sports, Science and Technology, and the National Institute of Biomedical Innovation. You see, where there is a will there is a way, and I congratulate Yamanaka for getting those government sponsors.

As you can imagine, Professor Yamanaka is popular, not only in Japan but also across the world. We approached him to discuss his research but unfortunately, due to workloads and schedules, he was not

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

available. Let us talk about Yamanaka's research colleague, Professor James Thomson, from the University of Wisconsin. I think his story demonstrates how legislators can guide scientists towards the right outcomes. MSNBC profiled him in June 2005 with the opening statement, 'Seven years ago when James Thomson became the first scientist to isolate and culture human embryonic stem cells he knew he was stepping into a whirlwind of controversy.' In the MSNBC profile, Thomson was critical of the shackles that had been put on his embryonic stem cell research by the Bush administration. Yet even at that point in 2005, before the 2007 discovery and whilst Thomson was trying to exploit embryonic stem cells, MSNBC reports:

Some of Thomson's other pronouncements might seem more surprising:

- that supporters of stem cell research are over-estimating the prospects for transplantation cures;
- that the current stem cell lines aren't well-suited for such applications anyway; and
- that there's no need to resort to therapeutic cloning right now—or perhaps ever.

What did those ethical legislative shackles drive Thomson to do? He looked for ethical alternatives and, with Yamanaka in late 2007, we are thankful that he hit the jackpot.

There is no denying that this is an inspirational story of what happens when legislators have the fortitude to direct their scientists, not just give them funding but actually direct them. Thomson's shift into iPS is no less dramatic than Wilmut's, given his foundational role in getting embryonic stem cell research going at the end of the last millennium. That fact was not lost on *The New York Times* which, on 22 November 2007, wrote:

If the stem cell wars are indeed nearly over, no-one will savour the peace more than James A. Thomson.

It is worth noting that this was written more than 12 months ago and, as I outlined when profiling the work of Professor Yamanaka, much improvement on the November 2007 prospect has occurred. The war is over; it is just that we have this redundant legislation we are asked to pass to approve of cloning, a legacy of a former scientific era. I do not understand why the minister, or the government, wants to put this legislation to the parliament on behalf of the people of South Australia. It makes no sense to me at all, nor to many others who continually email and contact us with the same concerns that Family First has with the legislation.

I also want to mention that iPS is moving not only to clinical trials but also to use in diagnostics. The Californian Institute for Regenerative Medicine is using iPS technology to produce a cell-based tool to diagnose long QT syndrome, a common cause of sudden heart death. Yamanaka explains, in the video presentation I mentioned earlier, that the iPS technology can already be used to work out why patients get sick, to screen medications to work out which will be most effective for patients, and to identify potential drug side effects.

I now turn to the adult stem cells part of this debate. Under this section I again want to mention my colleague the Hon. Dennis Hood. He went into this in more detail, but I will briefly mention a few points. Treatments have been developed using stem cells already available in the adult body, as follows:

- the adult central nervous system, long thought not to contain cells capable of dividing, in fact harbours stem cells. Such cells may help treat Alzheimer's and Parkinson's disease, and haematopoietic stem cells from bone marrow may one day provide transplants to replace blood and immune cells. This research is moving ahead at a great pace;
- umbilical cord blood stem cells have been successfully used in the treatment of diseases, including helping to obtain bone marrow matches for children suffering from leukaemia. In total, 85 diseases have been successfully treated using cord blood stem cells and there is the potential to treat more;
- investing in embryonic research diverts resources away from umbilical cord blood stem cell research and from adult stem cell research, and this is counter-productive.

It is bizarre to think that they are still allowing embryonic research. Indeed, as recently as 20 November, just a few months ago, we heard the internationally breaking news of a mother of two, Claudia Castillo, aged 30 and a TB sufferer, bed-ridden after her windpipe became blocked. On that day, on page 6, *The Advertiser* quoted a report from *The Daily Mail* in London, as follows:

A mother of two has become the first person in the world to undergo an organ transplant using her own stem cells.

How exciting is that! No embryos involved, no cloning, no animal hybrids—just the mother's own stem cells. The report continues:

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

The breakthrough is thanks to the pioneering work of British scientists, who are hailing a new dawn in transplant surgery which could revolutionise the lives of millions. The University of Bristol researchers are the first to use adult stem cells to grow an entire organ.

They actually used adult stem cells to grow a windpipe which has then been successfully implanted.

With the tragic circumstances in Victoria, and with the windpipe being highly susceptible to damage in intense fire situations, what a breakthrough this would be and a blessing for some of the burns victims. Scientists believe the technique could be extended now to organs such as the heart and the lungs and are confident that it will be the normal way of carrying out transplants in just two decades.

Having retraced the scientific developments, building upon what my colleague the Hon. Dennis Hood MLC outlined, I want to contrast the present debate with the climate change debate for a moment, which might, at first, seem odd to members. In the climate change debate, we are presented with compelling evidence about the science pointing a particular way.

On *60 Minutes* on the evening of Sunday 17 August 2008, the Prime Minister Kevin Rudd was challenged about the science by reporter Tara Brown, who asked, 'How certain are you that mankind is the cause behind global warming?' Prime Minister Kevin Rudd answered:

Well, I just look at what the scientists say. There's a group of scientists called the International Panel on Climate Change—4,000 of them. Guys in white coats who run around and don't have a sense of humour. They just measure things. And what they say to us is it's happening and it's caused by human activity.

I make reference to this because, first of all, I have outlined today the pioneering work of Yamanaka and Thomson, their research teams and associates. Members have also received a letter from over 160 Australian doctors concerning this bill. As I understand it, *Medicine with Morality* wrote to every member of parliament about this bill—160 doctors absolutely opposed to the government's bill.

The Hon. Dennis Hood set out the dramatic turnarounds of the father of cloning, Professor Ian Wilmut, and others (including Thomson who I have spoken about earlier today) from cloning to ethical stem cell research. Will members listen to the science? If that line of argument is good enough on climate change, it is good enough on the evaporated merits of human cloning, also.

I want to talk about the risk to women—a very important part of this debate, in my opinion. I want to revisit the risk to women of this cloning science. My colleague, the Hon. Dennis Hood, recounted a harrowing tale of the pain a woman experiences when induced ovulation goes wrong. Opposing cloning is a pro-woman gesture. I want to place on record my concern that supporting cloning puts women at risk.

We cannot be ignorant of that fact. As I said, my colleague, the Hon. Dennis Hood, said enough about that issue and I will not labour that point, but it is a very important point that must be considered. Precursor cells are from aborted girls. I want to highlight another critical point in this debate. It is not clear, and I invite the minister to make it crystal clear. The Prohibition of Human Cloning Act 2003 talks about precursor cells as a source for eggs from which embryos may be made by cloning or by fertilisation. To do cloning for somatic cell transfer, you need ova, but no country in the world that permits cloning has been able to get fresh eggs from women without paying them. My question is: where do you get the eggs?

One possibility to be allowed under this bill which has not received much attention, and this is tragic, is aborted girls; not those blobs of flesh that people say are aborted girls in the early weeks of gestation but aborted girls with developed ovaries. Here is how the argument develops: a precursor cell is a cell which could develop into a germ cell, that is, a sperm cell or an egg cell. Section 13 of the current Prohibition of Human Cloning Act bans the use of precursor cells from a human embryo or foetus to create a human embryo. So, there are two sources in the ban: human embryo and human foetus.

The act defines source 1, the human embryo, as something less than eight weeks after fertilisation. At eight weeks, we are informed, no ovaries or ova will have developed in the embryo. So, you are not going to be able to source ova from a human embryo.

That leaves source 2, the human foetus. Eggs from precursor cells for cloning, for somatic cell transfer, will have to come from aborted girls—aborted girls, I might add, at 16 weeks gestation or older. Now remember, under the Abortion Reporting Committee criteria, abortion after 20 weeks is a late-term abortion and babies are viable these days even within that second trimester. Is this true? I seek a guarantee from the minister, a guarantee at the very least of the nature of that which he made relating to country health, a guarantee that no ova from the ovaries of aborted girls, aborted girls of at least 16 weeks gestation, will ever be used for this research.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

Mr President, honourable members, please, we must have an answer on this: where will the ova come from? I say to the minister: do not deny me an answer, do not deny the mothers of these children, because there is a corollary to that question. If the answer is yes to the truth about aborted girls, if precursor cells come from aborted girls' ovaries, then tell me this: will the mothers of those aborted girls know that this is what is going to happen? Will they be given informed consent to that exploitation occurring when they abort that child? This is very important. I am standing here for women and their dignity. I know that it is tough stuff in the debate but it has to be debated. There are very strong moral issues here.

How absolutely remarkable it is that scientists are asking us to harvest ova from aborted girls for cloning research, and yet in South Australian hospitals day in, day out we are disposing of umbilical cords and their blood, a rich source of stem cells with, so far, 85 treatments and growing.

I turn now to hybrids. I touch on this briefly because my colleague the Hon. Dennis Hood said much on the issue of hybrids. We are talking here about inseminating, in the immediate future if this bill passes, human sperm with animal eggs for sperm viability. The Hon. Dennis Hood quite rightly states that there are other better ethical ways to do this testing. However, the opportunity is there in this bill for animal sperm and human eggs—that is undeniable.

We have seen recent news in *The Advertiser* of 20 abnormalities, this year alone, nationwide in compliance with gene technology regulation. There is every risk that a rogue experiment could occur and I, for one, advocate that we must never let that be a possibility and we must ensure that this bill does not pass through parliament.

When we consider hybrids, we need to be informed that two kinds of hybrid are possible. One is true hybrids, which involves fertilising a human egg using animal sperm, or an animal egg using human sperm. Another type is cytoplasmic hybrids (cybrids) which are produced by cloning (cell nuclear replacement) technology. However, all types of hybrid embryos are unethical and strike at the very heart of what it means to be human.

In the United Kingdom, from the same kind of spin doctors who tried to rebadge drought as dryness, we have seen pro-hybrid campaigners try to describe hybrids as 'human admixed embryos'. We must be alert to the spin and careful dodging of scientific reality that can happen in these debates.

I want to remind honourable members that, in the debate on this issue in 2003, not one member in either this or the other place raised any objection to the banning of animal hybrid experiments. We—I say 'we' because I was a member of the other place then—all agreed that it was appropriate to ban that type of experimentation and, for that matter, human cloning. Five years ago, no scientist came to us to say that they wanted to test sperm viability by making man cows. As a dairy farmer, I am as offended for the cows as I am by the people putting forward the concept.

In relation to the voting on the legislation, I note that in 2003 I voted for the Rau amendment, along with 25 of my colleagues from all sides of politics, as opposed to 18 who voted against the amendment. The member for Enfield's amendment provided that there would be a cut-off date for the use of so-called leftover IVF embryos for research. The bill at that time contained a clause providing that the date (the goal posts, if you like) could be shifted by COAG's own motion without reference to any parliament. It sounds like some of the stuff that we have dealt with in relation to the River Murray—it just keeps going on without any reference to the parliament. I note that that was a Howard government concept.

The amendment was simply to prevent COAG from shifting the goal posts without reference to the state parliaments. As I have said, the vote was 25 to 18. That is a very interesting outcome, because some of the current ministers, including the Minister for the River Murray, were sitting on my side of the chamber. In the context of the recent debate that we had on the River Murray handover and our concern about COAG dictating what we should do, I find that interesting—and it has already come home to roost with the objections from Premier Brumby in relation to the cap.

Perhaps more instructive is that the Premier voted against that amendment, and I commend him for that. As we did in the Murray debate, we have heard that, if we change anything, everything will fall over. That is the catch cry: if you change anything at all in this parliament that is put up by the government, everything will fall over.

In 2003, the member for Enfield used some colourful analogies. In essence, he claimed that the then health minister (the current minister's predecessor) was complaining that the sun would not come up in the morning if the bill was amended at all. Let us put paid to this nonsense that you cannot amend national COAG-agreed legislation. The parliament allows that, and that right should be protected, especially in

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

cases like this where the basis of the bill is fundamentally flawed. I give notice that I have filed amendments to this bill, which I will outline at the committee stage.

If we have the courage, there is a niche market for South Australia. When this bill was previously before us prior to the proroguing of parliament, the prospect of South Australia becoming a niche market, a frontrunner in iPS science, was raised with members of the Adelaide University research group, who have promoted this bill. The science is clear. Why don't we move into the area? Why don't we arrest this alleged brain drain, which I do not think is occurring, by establishing research in iPS?

The science is viable, as I have pointed out in my speech. Everyone from Wilmut downwards through the cloning ranks has said that iPS is infinitely more viable than cloning. You do not need expensive new equipment; laboratories can perform this work right now. Surely, at a time when there is a crucial need in South Australia for the creation of jobs for the future and opportunities for new industry development, together with our great universities and the intellectual capacity of our young people and the scientists we already have here in South Australia, why do we not make South Australia the headquarters for iPS research?

There is much more I would like to put on the record, including recent and significant developments in the growing field of pluripotent stem cell research and also the findings that cloning simply no longer has merit. There is no merit to cloning. I am seeing stories showing that previous assumptions about cloning of animal hybrids are being refuted regularly. I encourage members to read their emails on this subject as I believe more will come their way. I have said plenty on the subject and I will leave it to other members to update us on the science now occurring in early 2009. We are seeing reports virtually weekly.

In conclusion, all that is required is direction from our parliament in South Australia as the proportionally elected representatives of the people of South Australia. We can tell the scientists of South Australia that we have a preference—IPS. I have spoken to a lot of people and have had a lot of phone calls, letters and emails, and overwhelmingly, almost without exception, all of the representation and discussion I have had with South Australian people is that they want this bill disallowed. They do not want to see it passed and they support the opportunities we have now with skin cells and IPS.

It is up to us to tell the scientists that there is a new way forward, a better and exciting way that will allow a lot of health innovation opportunities for those people suffering so much at the moment not only in our state and nation but around the world. It could come from us by showing a lead here and encouraging our scientists and universities to focus on the future and not try to further develop science practices that are now obsolete. I am not an expert scientist—I acknowledge that—but I can read, be briefed and listen to what people have to say. I can weigh it up also with the parallel and most important consideration, namely, the moral values around this most important matter.

We have people here who are saying that we must not go down the track of genetically modified food. In fact, we have members inviting us to a briefing, which I will attend, but clearly is all one way with regard to making sure we do not allow genetically modified food and those engineering practices. We have a lot of people running around opposed to that. However, I suggest that that issue is nowhere near as serious morally or ethically as is this bill. This bill needs to be chucked out—it is obsolete.

I put this analogy to members: we have the health minister running around spending a lot of taxpayers' money promoting all the good values about the Marj and how we have to have a new hospital at a cost of \$1.7 billion—

Members interjecting:

The Hon. R.L. BROKENSHIRE: Sorry; I forgot. My colleagues have corrected me—it changed yesterday and it will now remain the RAH. We have a health minister saying that we must have a greenfields site for the RAH, that we cannot continue with the existing RAH campus. I put on the public record, as it ties in with what we are debating now, that in London and other parts of the world they have tertiary, leading, research-orientated, world-class hospitals such as we have with the RAH, and do members know how old the campuses are? They are over 300 years old. They are beautiful, magnificent buildings. They have not knocked them down, because they were built to last 500 years.

In conclusion, I point out that the health minister is saying that this government must lead the way in modern practices, in scientific opportunities for the future, that we must be at the cutting edge, and that that is why we have to spend \$1.7 billion that we do not have but have to borrow, because we have to dispense with the old campus because we want to lead Australia in modern health practices. That is what the Minister for Health is saying, yet on the other hand the same Minister for Health is asking us to support his bill that is ancient science. We have moved on past all that.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

I do not understand it, and I ask minister Hill to tell the parliament what is going on here. If you are a leading edge minister and government, with the most proactive and creative health department in the southern hemisphere, and you are going to build this magnificent cutting edge campus for future generations to come, why would you bring in old-fashioned, scientific legislation that brings up so much in the area of debate with respect to moral values? The community do not want this bill to be passed. I cannot understand the government. Either you are for the future and right on the cutting edge with the sciences or you are in the past. I say to the health minister that he cannot have it both ways.

This is not a debate about whether South Australia becomes a scientific backwater. Any scientist who wants to argue that can debate it with me any day, because we are not here choosing against progress. It would be good to see just one genuine piece of evidence from those scientists who are already funded that shows me that what I have said today is wrong. We have put a lot of research into this area, and a lot of people have fed us the information, and I know that what we have been told about future opportunities with respect to iPS is true and correct.

We are making a choice between two sciences: one is unethical and the other is ethical; one has a future and the other is without a future; and one offers hope to patients with incurable diseases and the other offers false hope. We have a choice here for parliamentary democracy and common sense and for aligning with the science rather than the whims of bureaucracy. I urge honourable members to acknowledge the change in the wind, the fresh breeze of induced pluripotent stem cell research, rather than the stale stench of dead cloning science. I oppose this bill.

The Hon. I.K. HUNTER (17:22): The use of embryonic stem cells has been a controversial issue, mostly due to views about when life begins and the moral status of pre-embryos and embryos. Let me say at the outset that this is the nub of the debate for me. To my mind, life is about living as a productive and healthy member of our community, aspiring to achieve our full potential. That opportunity is what we need to be able to provide for those individuals in our community who are disabled by an accident or a disease that will not allow them to function optimally. Embryonic stem cell research may provide solutions for these individuals but, in order to achieve those solutions, we need research innovation, and that requires passing this legislation.

Today I will discuss why supporting this legislation is not a question of the science but instead is an issue about health and improving life quality and is, therefore, an ethical issue. I will discuss what embryonic stem cells are in reality and not what they have been perceived to be, and I will discuss why at this point in time they are more important than adult stem cells. I will also talk about their potential to improve the health and quality of life of many people in our community. In addition, I will remind the chamber that South Australia has been a leader in social policy and medical research throughout its short history, and I believe that it is time for us to move to the forefront again.

At this point I would like to summarise what the bill does, and I do not believe that I would be able to do that any better than the Minister for Health did in the other place. I will quickly repeat his words here. As the minister stated, the purpose of the legislation is:

- to streamline current processes for embryo research licensing and to strengthen oversight;
- to extend the scope to regulate the creation, development and use of all embryos, not just excess ART embryos, and to regulate the use of donated eggs;
- to alter the definition of an embryo to reflect the point at which fertilisation is complete;
- to extend the criteria for licences issued for research and training to include the use of the embryos not created by fertilisation;
- to permit a licence for research techniques such as somatic cell nuclear transfer and parthenogenesis;
- to clarify what constitutes proper consent by donors and an embryo that is unsuitable for implantation;
- to strengthen and extend consent provisions to include all donors whose genetic material is incorporated in the cells used; and
- to increase penalties for breaching prohibitions.

We also need to consider what will happen if we do not pass this legislation. Some in the other place say 'Not much', but I disagree.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

Scientists are conservative by nature, and we need to allow them to proceed with certainty in the pursuit of their science. If we do not pass this legislation, we leave many of them in limbo. For example, researchers based in federally-funded centres that have some state funding may decide not to proceed with research for fear that they are unwittingly stepping outside what is permitted by law. Also, some researchers, who may be working in public hospitals and get NHMRC grants, may feel in a bit of a quandary, not knowing which laws apply to them. We cannot allow such uncertainty and ambiguity to exist.

We come to debate this matter, about which people on both sides of the issue feel extremely passionate, to bring the state legislation in line with the current federal legislation. This is an issue on which everyone has an opinion—an opinion which is usually deeply held. No-one seems to be ambivalent, and I expect this debate will reflect this passion—as it should.

I urge all members to support the passage of this legislation, no matter what their private views are, for the good of the many and for future generations. This legislation has the potential to improve life for millions of people. South Australia is a state that so often has been at the forefront of debates that were considered controversial at their time. We are the state of female suffrage, decriminalisation of homosexuality and Aboriginal Land Rights; and with the effluxion of time we wonder, looking back, what all the fuss was about when those debates were occurring.

We are the state that educated a young Howard Florey, before he went on to save millions of lives by working out how penicillin could be mass produced, and which nurtured the early studies of Lawrence Bragg, who went on to be a joint winner of a Nobel Prize in Physics in 1915 at the age of 25 for his work into the diffraction of x-rays by crystals. We have encouraged our youth to dream of the possibility of a better world and we have reaped the rewards of their living their dreams. We have enjoyed living in a progressive state where ideas and free inquiry have been able to flourish.

But on this issue we are not innovators: we are playing catch-up—not breaking new ground. We are the last state in the commonwealth to debate this legislation. Stem cell research, and embryonic stem cell research in particular, has so many possibilities to benefit human kind. Embryonic stem cells have the potential to change millions of lives for the better, as I will outline shortly.

Most of us are familiar with the arguments about why stem cells are so important as a research tool and why they may be a rich source of clinical treatments. It is worth summarising these features for the record. I want also to speak about the advances with iPSCs (induced pluripotent stem cells) and why they are not an excuse to abandon work with ESCs.

In order to do that properly I do need to summarise the science, albeit briefly. Before I go further, I will touch on Dolly the sheep—the spectre of whom some have evoked in this debate to argue against this legislation. Let us be very clear: cloning of an entire organism is not relevant to this debate. The cloning used in the process of creating Dolly was fundamentally different from embryonic stem cell research. Stem cell research relates to the use of cells that can be changed into another type of cell for the purpose of regeneration of tissue, but cloning such as that used in the Dolly instance was a replication of an entire organism. It involved taking a somatic cell nuclear transfer clone to term. Such action is not possible or permissible under this bill, and to evoke this argument is to confuse the debate; and it does not bring any clarity to our deliberations.

I return to the science. The human body is made up of about 210 types of cells, all of which do specific jobs in the body. Most cells are mature or adult and unable to differentiate into other kinds of cells. On the other hand, by their very nature, embryonic stem cells are pluripotent or totipotent and are able to evolve into any one of these particular types of body cells, unlike adult stem cells.

Research is currently being conducted around the world to discover the full abilities of embryonic stem cells, but we are really only scratching the surface. Much has been made of the possibilities for embryonic stem cells to treat, and perhaps cure, conditions such as Alzheimer's, Parkinson's Disease and spinal cord injuries. This, in part, has been due to some high profile individuals afflicted by these conditions and supporters who have pushed embryonic stem cell research into the limelight. Whilst embryonic stem cells show extraordinary possibilities in these areas, there are many other areas where life-changing and life-saving possibilities are currently being researched.

The Hon. Mr Hood has made some claims—and to my mind they were ill informed—about the lack of success in developing cures and treatments from embryonic stem cells. Really, he was very badly informed. Science, no matter how much we would wish it otherwise, is not in the business of overnight cures. Science is about the slow, deliberate, step by step build-up of knowledge, of checking and rechecking that knowledge and of slowly moving towards the use of that knowledge in real world

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

applications, in this case, for medical treatment. To criticise science for that cautious deliberation is really a great disservice to the debate.

Let me go on to summarise just some of the areas where stem cell research is showing some promise. One of the many benefits of embryonic stem cell research is the ability for researchers to examine these cells to gain a better insight into some birth abnormalities and discover why it is that some cells become cancerous. By gaining further understanding of both of these things, scientists are better prepared to work towards prevention, therapy and, perhaps one day, cures.

Type 1 diabetes is typified by the destruction of islet cells, the cells responsible for the production of insulin. Novocell, a San Diego based research company, told a conference in Eury, France, in 2008 of its positive results in laboratory testing in mice in replacing islet cells. Simultaneous to Novocell's research, ES Cell International in Singapore and Geron of California are also working on their own research using embryonic stem cells to find a cure for Type 1 diabetes. Type 1 diabetes is one of the most serious and common chronic diseases in Australian children.

Organ donation in Australia and around the world does not occur in high enough numbers to provide all those in need with the organs that will save their lives. Pluripotent stem cells offer the possibility of a renewable source of replacement cells and tissues. Liver transplant is just one area where organ demand outstrips organ supply. A collaborative team of researchers based in Japan and the US National Institute of Health has had success in coaxing embryonic stem cells into liver-like cells, which may prove to be the answer for people suffering liver diseases like cirrhosis and hepatitis.

Another collaborative project, this one between California Stem Cell, the Amyotrophic Lateral Sclerosis Association and a small Belgian firm, is currently working with motor neuron cells searching for a cure for Lou Gehrig's disease, which is a progressive disease that causes the degeneration of motor neurons.

Further, there is hope that research utilising embryonic stem cells will find a cure for Sandhoffer disease, an illness which sees a toxic build-up of debris with the neurons and which eventually kills those neurons. Muscular dystrophy affects approximately 1,500 South Australians, and research into embryonic stem cells has shown that these pluripotent stem cells can be generated into new muscle cells to replace the diseased muscles in sufferers.

Advanced Cell Technology in Worcester, Massachusetts has been undertaking studies in rats on age-related macular degeneration. They have been able to persuade embryonic stem cells to grow into cells resembling retinal pigment epithelial cells, the cells that support the photoreceptors in the retina. The studies have shown that the cells have boosted the thickness of degraded retinas, increasing sight, a most promising result.

In August last year, that same company announced that it has used embryonic stem cells to create human blood cells and can control what type of blood is produced. The cells have been shown to operate just the same as other blood cells and would help avoid medical crises brought on by insufficient blood supplies. Embryonic stem cells have been used to generate alveolar type 2 cells, the cells that line the human lung. We are often reminded that heart disease is the leading cause of death among Australians, with one Australian dying every 10 minutes from some form of cardiovascular disease. Embryonic stem cells have been shown to produce the three main types of heart cells: cardiomyocytes, endothelial cells and vascular smooth muscle cells.

In addition to these conditions, embryonic stem cells have demonstrated potential in treating burns, strokes, osteoarthritis and rheumatoid arthritis. Add to this the potential for increased knowledge that this research could bring to IVF research, and I conclude that supporting this bill is the right thing to do.

Infertility is an issue that would have touched so many of us here today, either directly or through our support of family and friends. This proposed legislation will allow researchers to improve methods of infertility treatment through further research of parthenogenesis, a process by which human eggs are stimulated to divide and grow without fertilisation. This would allow scientists to trial new techniques and develop more successful fertilisation techniques into the future.

Standing here today, we can only begin to speculate about how bright the future might be. In the words of Albert Einstein:

Imagination is more important than knowledge. For while knowledge defines what we currently know and understand, imagination points to all we might yet discover and create.

For all the possibilities of stem cell research that we currently know, who can tell what benefits may arise in the future from this form of research? After all, Florey's groundbreaking research work in mass

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

producing penicillin would not have occurred without Fleming's serendipitous discovery of the antibiotic a decade before—so much for the arguments that embryonic stem cells (ESCs) do not have a promising future.

As I have stated, this is not a new debate. Around the world this issue has already been thrashed out many times over. The United Kingdom has some of the most liberal legislation in this regard, and it is no accident that it has been at the forefront of some of the most significant discoveries to date. I turn to the UK now to address another criticism raised by the Hon. Dennis Hood in his contribution.

In fact, it was in the UK that Professor Sir Martin Evans first identified and isolated embryonic stem cells back in 1981. It was in the UK, too, that the world's first stem cell bank was established. The United Kingdom parliament has amended its Human Fertilisation and Embryology Act to allow for the destruction of embryos for human embryonic stem cell harvest. Effective from July 2006, the United Kingdom National Stem Cell Network has been established to coordinate research.

Licensed researchers are able to undertake research using surplus IVF embryos and partake in therapeutic cloning. In 2008, permission was given for scientists to undertake research on human-animal hybrid embryos under extremely strict conditions. This is not contemplated in the bill presently before us. I repeat: this is not contemplated in the bill presently before us, despite some speakers seeming to imply that it is.

It concerns me when contributions in this place are so muddled that they may confuse the public. The Hon. Dennis Hood, for example, mentioned this issue a few times in his contribution and, once again, I think he gets things mixed up. He said, at one point, that 'some scientists want to use the eggs of other mammals such as rabbits, cows, sheep or monkeys', and he went on to talk about this technology being used in patients. Well, no, actually.

Scientists want to use animal eggs to test systems. Why waste hard-to-get human eggs on testing? There is no question of creating human-animal hybrids for clinical use in patients; the ethical guidelines do not allow it, not even in the UK. The Hon. Mr Hood goes on to say in his speech that this bill is solely about—and this is the important point—'extending research into new and unknown realms which allow for the mixing of human and animal genetic material'. Yes, it does, but not for any outlandish purpose. It is clearly limited in the legislation to just one purpose—the testing of the viability of sperm, not for research, making into stem cells, patient use or any other purpose.

Like many of my honourable colleagues, I, too, have received a few letters and emails about this bill suggesting that I vote against it, often on the grounds that it is against God's will. Most correspondents do not identify the particular god or religion they are relying on for this authoritative statement, so I thought I would quickly canvass a summary of the religious position generally. Not all religions have the same point of view. While I appreciate that people personally hold deep religious conviction, it seems that some religious people and some religions have no objections to embryonic stem cell research.

Religious beliefs are not universal and even within various religions there exists a multiplicity of views. I do not hold myself up to be a religious scholar by any stretch. So, when I turned to what I consider to be a well-researched book on the subject, I found that the different world religions offer wildly different points of view, reinforcing my belief that we need to look outside of religion for guidance on these issues.

As I understand it, the Roman Catholic faith and Eastern Orthodox versions of Christianity believe that human life begins at the time of conception and any destruction of this life is comparable to murder. Buddhism and Hinduism both place the beginning of life at conception but, in both religions, the embryonic stem cell debate has yet to register as far as I can determine. Fundamentalist Protestants tend to believe that life begins at conception whilst more moderate Protestant denominations do not believe that an embryo has the same moral status as a foetus or a human.

Most academics note that neither conservative nor orthodox Judaism view life beginning at conception, thus most scholars seem to believe that Jewish bioethics support embryonic stem cell research. The general consensus in Islam is that embryos are not human and personhood does not occur until the fourth month. Generally, Islamic scholars have used the teachings of the Koran and other sources of Islamic law to demonstrate support for embryonic stem cell research.

However, even within these faiths we find great dissent. For any who believe that the soul enters the body upon conception, the matter of twinning remains unresolved. In the early period after conception the zygote may split into two to create twins. This issue becomes particularly thorny for those who claim that life begins at conception. One can be split into two or even four zygotes, all of which have the potential to

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

develop into humans. These zygotes can then be brought back together in this early period, and the one zygote that became four zygotes can become just one again, all with no cells being created or destroyed.

For those who believe that life begins at conception, that that is the point where 'humanness', or souls, enter the equation, then this surely provides a logical quagmire. One can be divided into four, so does one soul split four ways or are new souls created? If these four can then be brought back to one, a process whereby no material is damaged or destroyed, what, hypothetically, happens to the excess souls? This is a philosophical mind-twister that is, quite frankly, beyond me.

With so much dissent within and between religions, we cannot say that there is universal religious opposition to this legislation. As religious scholars debate this issue amongst themselves, and continue to debate it, the people of South Australia have come to a pretty clear consensus on the issue. Polls have suggested that 82 per cent of South Australians support this legislation (I refer to a Roy Morgan research poll of 2006).

While there is dissent within and between religions in regard to this research, it is worth remembering the similarities that exist between the world's religions that are happily embraced by those of us who share an ethical framework not dependent upon a supernatural being—namely, the desire to help those in need and to alleviate suffering where we can. Whether or not we approach these issues from a religious position, it is worth remembering our commonality, our desire to act in the best interests of humankind, to protect the vulnerable, the sick and the suffering and to do what we can to alleviate that suffering. So, if there is no common religious position upon which we can rely, we are forced to fall back on the best scientific information available to us which, as I hope I have outlined, demonstrates that we must continue to explore the possibilities of embryonic stem cell research for the potential alleviation of illness and suffering.

Around the world, legislators are grappling with the ethics surrounding stem cell research, and the issue before us today is an ethical debate. Although the specifics of the science will, as with all science, continue to be explored and argued by its practitioners, the fact is that stem cells offer possibilities for humankind that were once confined to the realm of fantasy. We are standing on the precipice of medical history.

Members of both houses of this parliament have been petitioned by community members advocating that the discovery of induced pluripotent stem cells signals the end for the need of embryonic stem cell research. There may be members of the council who believe that the discovery of iPSCs renders this debate unnecessary, but I urge caution before honourable members grasp at this straw. Anyone who tries to confuse the debate by claiming that it is certain that induced stem cells can do what we are already certain that embryonic stem cells can do is indulging in wishful thinking.

I appreciate that this is a very complex area and I realise, given the complex nature of the debate, that some people may be confused about what is actually being debated here. But to argue that induced stem cells currently provide equal possibilities as embryonic stem cells is just wrong. Those who clutch at such an argument want the benefits of research into stem cells without the moral quandary that embryonic stem cells present to them. I understand that desire, of course I do; however, it is just not borne out by the science as it stands today.

Let me turn to induced pluripotent stem cells. iPS cells were discovered almost simultaneously by a team at the Genome Centre in Wisconsin in the United States and a team at the University of Kyoto in Japan. The discovery of induced stem cells is very exciting indeed and needs much further exploration. iPSCs offer interesting possibilities for the future, and who knows what that might hold. I quote from the influential science journal *Nature*:

Flexible cells from non-embryonic sources do offer exciting possibilities: perhaps adult human cells can be reprogrammed and cells from testis and amniotic fluid can be coaxed into an array of functioning tissues. If such cells can be derived from individual patients with diseases, these non-embryonic sources could be of great value. But this value is more likely to be unleashed if they are studied alongside embryonic stem cells rather than in their place.

Shinya Yamanaka, who headed the University of Kyoto team, has himself stated that at this point in time—although I will admit that recent events of the past few weeks have caught up with us—he is not sure of the possibility of the use of iPSCs.

In an interview with the *New Scientist*, Yamanaka outlined both the possibilities and the limitations of the discovery, as follows:

Theoretically scientists should now be able to make patient-specific iPS cells quite easily but at the moment we have to use retroviruses to carry the foreign material into cells, which could generate tumours. This is the same problem we had with gene therapy, so we wouldn't use this on patients yet. At this stage, iPS cells should be used only for testing new drugs, until we find ways of making changes without using retrovirus.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

Of course, as we heard from the previous speaker, Yamanaka now feels that he has cracked that issue, but he goes on to say:

We also need a more detailed comparison between iPS cells and embryonic stem cells in terms of what they do. If it is proved that iPS cells are as good as or better than embryonic stem cells, I think they can replace them. I do want to avoid the use of embryos if possible. Ultimately I think that patients' lives are more important than embryos.

This is a man who has developed this new realm of investigation in science, and he says 'but ultimately I think that patients' lives are more important than embryos'.

The key point really in what he is saying is that these two systems must be researched side by side. We must not throw one away but, rather, keep both systems in place so that we can learn more about both of them. At this point we do not know what we may lose by discounting a particular avenue of research. We must allow scientists to make the decisions about such research, knowing that they do so with regard to stringent ethical guidelines which we can determine.

So, with the ins and outs of the science left to be debated by experts, the ethical debate remains, and it is the ethical debate that we must confront. I respect those members who have deeply-held views about the morality of experimenting on embryonic stem cells. I disagree with them, certainly, but I can see how they come to hold such views.

The ethics surrounding this legislation are complex and are not taken lightly by any of us. However, for the reasons that I have outlined, I believe that we are ethically required to pass this legislation. We have a duty as a society to try to alleviate the suffering of others. To my mind, this means the suffering of other human beings and, to me, the term 'human being' does not extend to the cells created shortly after fertilisation.

Despite what opponents wish to argue, this is not a permissive piece of legislation. It is in fact very prescriptive, placing tight and careful controls around research. The legislation provides that no research can be conducted past the 14-day mark, and that is not an arbitrary date. On day 15, the primitive streak begins to form.

Prior to that, the mass of cells has no nervous system, no heart, no ability to think, feel, fear or love. It is a ball of cells that, given a very specific set of circumstances, may indeed form into a human but which, in nature, of course, very often does not. The set of circumstances required for that to happen is incredibly rigid and, for the cells in a Petri dish in a laboratory, there is no potential at all for those cells to form into a human being.

It is worth remembering that the chance of a blastocyst becoming a human when fertilisation happens in utero is also not high. Four in every five embryos conceived naturally are lost. Furthermore, the progesterone-only mini-pill—the preferred contraceptive of some women—does not suppress release of the egg as do other forms of the contraceptive pill. Instead, this particular pill inhibits fertilised eggs from implanting in a woman's womb.

In nature, the majority of fertilised eggs do not go on to become humans, and to see every zygote or blastocyst as having the full moral status of a human being does not, to my mind, make sense. If all were given the same status as humans, I am not sure, for a start, how we would address the issue of naturally wasted blastocysts. Of course we do not, and those who argue the humanness of the fertilised ovum conveniently turn a blind eye to this inconvenient fact. That is not to say that I am denying that a blastocyst—or a pre-embryo, if you like—is bereft of moral status. On the contrary, I believe that it does have a moral status and it should be treated with a level of respect that befits that status.

However, the moral status of the pre-embryo is not absolute. In fact, it is particularly fluid. Take, for example, two common examples which are in many ways the same but, by virtue of a particular set of circumstances, each instance is considered very differently, resulting in the different moral status of the pre-embryo involved.

In one example, a couple who are not trying to get pregnant do fall pregnant but, after conception, the fertilised egg miscarries. The couple may not even know what has happened and do not grieve. The other instance is a couple trying desperately to conceive. They also manage to conceive naturally but, soon after conception, they miscarry. One case is a tragedy; one case is not. In one case, a potential life is grieved for and, in the other, it is not; it is not even known about.

On either side of the debate, I do not think that the reactions of the two couples I have described would be viewed as anything other than normal. Because of the very specific set of circumstances in each case, the pre-embryo is given very different moral status.

**HON R BROKENSHIRE MLC – FAMILY FIRST PARTY –
PARLIAMENTARY SPEECH (continued)**

The other argument often conjured up is the 'slippery slope' argument, one which is very emotive and is used to stir up images reminiscent of Huxley's *Brave New World*. It is also completely nonsensical. This argument centres around the idea that, if we allow this legislation (or something like it) through this parliament, we will suddenly lose control of scientists. We will face a world where ethics cease to matter, as out-of-control researchers experiment in more diabolical scenarios. I have just one question: why? Why would passing this legislation suddenly suggest that all controls that parliaments have enjoyed over societies would suddenly disappear?

As I have stated, this is a very tightly prescribed piece of legislation which clearly states what is and what is not allowed. As parliamentarians, we will continue to monitor what happens and respond as it does happen.

By its very nature, scientific research is about exploring the unknown. If we already knew the results, it would not be research at all. I understand that looking into the unknown can be challenging but, for progress to occur, we cannot shy away from exploration. Risk is inherent in all that we do but, by acknowledging those risks—as this legislation does—we are able to manage them.

Before I finish, I wish to remind members that this legislation is not addressing conditions in which an egg has been fertilised by sperm. Quite plainly, this legislation deals with something quite different—a research embryo created through the manipulation of egg cells in a Petri dish, with no involvement of sperm. Are we suggesting that this could have the same moral status as a fertilised embryo resulting from the joining of an egg and a sperm? On reflection, I think probably not.

Dr Lawrence Goldstein, Professor of Cellular and Molecular Medicine at the University of California, put it quite plainly:

The embryos in question are simple clusters or balls of cells that have been generated within a dish in a lab, have never been in a woman's body, and are thus not pregnancies or fetuses. Such embryos are at a developmental stage before any organs such as the heart or nervous system have yet formed and are capable of being frozen or thawed—not typical attributes of 'people' as most of us define them.

And I agree with that summary. Because I accept this analysis of the pre-embryo, because I believe we have an ethical duty to pursue medical research that may lead to treatments and, hopefully, cures for so many debilitating diseases and conditions that currently affect so many people, and because I believe the stringent ethical guidelines mandated in this legislation provide appropriate respect for pre-embryos, I will be supporting this bill. I commend this legislation to the chamber and will celebrate its passage through this council.

Debate adjourned on motion of Hon. J.S.L. Dawkins.