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Obituary for the first human clone

By David van Gend

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Has there ever been a greater anticlimax in science than **the announcement** on January 17 that, at last, a cloned human embryo had been created? Even a few months ago the news would have flooded the world's media; now it hardly rates a mention.

The reason is clear: on November 21 last year, cloning as a serious science suddenly died, and was superceded by a technique so simple and powerful (and entirely ethical) that it has left the world of stem cell research both **stunned and elated**.

The cloning experiment published in January in the journal *Stem Cell* was performed a full year ago, in the bygone era when scientists still believed cloning was the only way to get hold of specialised embryonic stem cells. That is no longer the case, and no scientist in 2008 has any compelling reason to attempt human cloning. As news, this "breakthrough" is out of date even before publication; it is an ugly artifact of the brief and unlamented era of cloning.

In November two teams of scientists published a new technique of "reprogramming" adult cells to an embryonic state without ever creating or destroying a **human embryo**. This had been **proven in animal models last year**, and within months was **confirmed in humans**. These "induced pluripotent stem cells" (iPS cells) show all the properties of cloned embryonic stem cells, but are obtained easily and **ethically** by simple manipulation of the skin cell of an adult.

This is good news for science, which has still never been able to obtain a single stem cell by cloning embryos, and even better news for those of us who find it unthinkable that embryonic humans should be created with the sole purpose of destroying them in research.

The potential for this development to bypass the central ethical objection to cloning was recognised immediately by Professor Loane Skene, former Chair of the Lockhart Review which advised the Government in 2005 to permit cloning.

On the day the iPS research was published **she responded**: "What this does is take away the step of using the egg, and creating the embryo which is particularly ethically contentious and it offers the opportunity to get stem cells that are matched to a particular person."

Most remarkable has been the graciousness with which leading advocates of cloning have accepted its demise, and moved wholeheartedly towards the ethical new science of reprogramming adult cells.

First Professor Ian Wilmut, who cloned Dolly the sheep and holds the UK license to clone humans, **announced in November** that he was walking away from his cloning license in favour of iPS reprogramming, which he declared to be both "100 times more interesting" and "easier to accept socially".

At the same time **Professor James Thomson**, who first discovered human embryonic stem cells, proved that these new iPS cells derived from human skin had every property of cloned embryonic stem cells, and declared "Isn't it great to start a field and then to end it?"

And last month in the journal *Nature*, the former Director of Embryonic Stem Cell Research at the Australian National Stem Cell Centre, Professor Martin Pera, writes of "a new year and a new era". It is a happy era where there is no conflict between stem cell science and basic human dignity: "The generation of iPS cells through direct reprogramming avoids the difficult ethical controversies surrounding the use of embryos for deriving stem cells."

Initial concerns that the technique used viral vectors which might provoke tumours were settled within a week, as the offending viral vector was shown to be unnecessary; such is the intensity of research in this new field that **concerns** (PDF 101KB) raised at dawn are settled by sundown.

There are no remaining uses for cloning - only abuses - and because these abuses are now possible, they demand proactive legislation nationally and internationally.

We know that certain overseas doctors fully intend to be the first to bring a cloned embryo to birth. They are supported by academics like Melbourne's Daniel Elsner, who wrote in the prestigious *Journal of Medical Ethics* in 2006: "People who wish to reproduce by cloning should be permitted to do so, provided there is no reasonable alternative."

And far worse, we have the sick proposal to farm cloned fetuses for their organs - proposed in the same journal by another Melbourne man, Julian Savulescu, who is the Professor of Practical Ethics at Oxford. In an **article** entitled "Cloning as a source of transplant tissue" he writes: "It is morally required that we employ cloning to produce embryos or foetuses for the sake of providing cells, tissues or even organs for therapy, followed by abortion of the embryo or foetus."

These abuses would never happen in Australia, but are sure to be attempted by rogue doctors in less regulated countries. Therefore we need to revisit and empower the **United Nations resolution** (PDF 104KB) of 2006 which called for a ban on human cloning.

More immediately, South Australia and ACT legislators are about to vote on cloning, and have the chance to reverse the tide on national legislation which has been based on a scientific illusion. They can now, with good conscience and better science, reject a practice which has always been **unethical**, but is now clearly unnecessary.

Instead, let us all support stem cell science which is both **effective** and ethical, which gives us hope but does not degrade our humanity.

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