

Stem cells and Genesis

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Stem cell research has recently been the object of controversy in both the United States Senate and the media. Recently, a senator quoted Genesis in order to justify research on stem cells derived from embryos, even if it meant their destruction. In some ways, the controversy is unnecessary because of well-known science deliberately overlooked. But in another sense, the controversy shows a terrifying malaise in Western society not seen since Germany in the 1920s–40s. This can teach us many things, and has become especially topical for *Answers in Genesis* because some participants in the controversy have quoted Genesis to justify their stances.

On 9 August 2001, United States President George W. Bush announced that he would prohibit federal (i.e. US-taxpayer) funding for destroying human embryos for stem cell research, but not funding for 60 already-existing stem cells lines obtained by past killing of embryos.¹ For *AiG's* comment, see the Addendum.

What are stem cells?

To understand stem cells, it's necessary to summarize briefly the development of an individual. Each individual begins as a single cell—a *zygote* or an ovum fertilized by a spermatozoon. This fertilized ovum has all the instructions coded in the DNA to make us what we are physically (given the right environmental conditions). But as the embryo grows, different cells in different places have to specialize, so that only certain instructions are executed—the cells become *differentiated*. The instructions are there, but turned off somehow. There are complicated genetic switches involved, and also a process called *methylation*—attaching methyl groups to the chemical 'letters' of DNA which code for instructions that need to be 'turned off'.

All the on/off switching must occur in the right sequence; the information of this sequence is partly encoded in the DNA, but there are also controls outside the genes, hence the term *epigenetic*. This is why it would be impossible to clone dinosaurs and mammoths even if we found intact DNA—we would need the ovum (mother's egg) too.

The result of these elaborately designed switching sequences is that bone cells execute only instructions pertaining to bone—the instructions for blood, nerves, skin,

etc. are still in the cells' DNA, but turned off. Similarly for blood, skin and other types of cells.

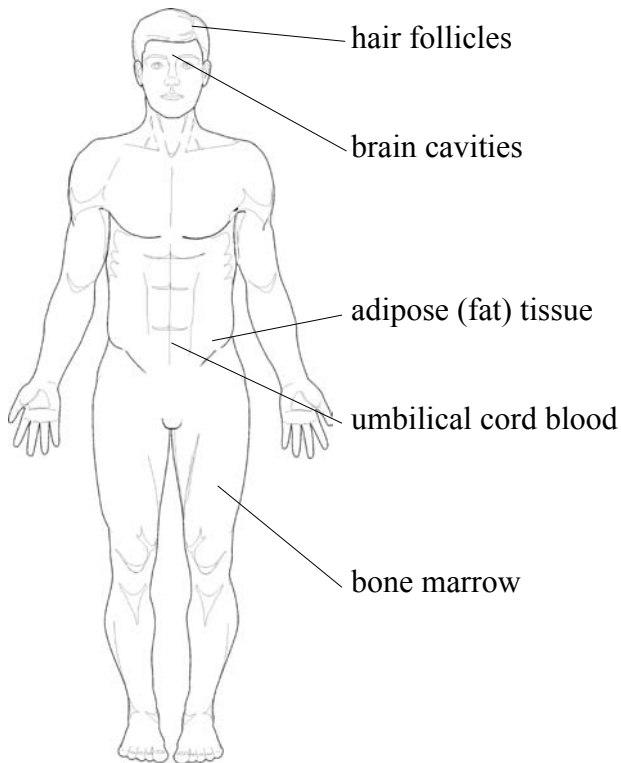
However, stem cells are *undifferentiated*, because they are like embryonic cells in that their instructions haven't been turned off, so they have the potential to grow into any type of tissue. Therefore many researchers have high hopes that they could be used to regrow damaged tissue. They hope that it could help Parkinson's disease, insulin-dependent (Type 1) diabetes (IDD), heart disease, Alzheimer's disease and repair nerves damaged by spinal injuries.

Where are stem cells found?

The main controversy is the use of stem cells from aborted babies or specially cloned embryos—embryonic stem cell research (ESCR). These stem cells develop in the first few days after fertilization. Some high-profile celebrities with disabilities or diseases are urging stem cell research, e.g. the quadriplegic former *Superman* star Christopher Reeve, insulin-dependent diabetic Mary Tyler Moore, and Michael J. Fox who has Parkinson's disease.

But what has been largely overlooked are the many successes of treatments with stem cells **not** derived from embryos, and this suggests another agenda (discussed below) beyond the emotive appeals that pro-life sentiment is allegedly hindering potentially life-enhancing research. For example:

- Adult stem cells are 'Hidden in the nooks and crannies of our brains, bone marrow, and hair follicles'.²
- C.J. Chiu, a professor of cardiothoracic surgery at McGill University Health Center in Montreal, injected a type of stem cell from bone marrow, called a stromal cell, into the hearts of rats. These cells differentiated into new heart muscle that made the right connections to nearby cells so they could all beat together.³
- In rats, stem cells from the hippocampal region of the brain were transplanted into their eyes, and migrated to damaged parts of their retinas and even began to make nerve connections. This may have promise for helping restore vision in patients with age-related macular degeneration (AMD) and retinitis pigmentosa (RP), and even retinal detachments and diabetic retinopathy.⁴
- Stem cells and other versatile 'transient amplifying cells' found in the outer root sheath of hair follicles can be transformed into skin cells which can be used for skin grafts.⁵
- A team led by University of Florida immunologist Ammon Peck permanently cured insulin-dependent diabetes in mice, with stem cells from adult pancreatic ducts. The stem cells differentiated *in vitro* into the insulin producing structures called the *islets of Langerhans*. These islets were injected under the skin of adult mice with IDD, and they functioned as a pancreas, releasing insulin, and blood vessels developed toward them. In a week or so, the mice could regulate their blood glucose levels again. Peck said:



Stem cells could be harvested from either new-born babies (umbilical cord blood) or adults.

‘Our first observation was the fact that one can take a single stem cell and induce it to grow and differentiate into a full-functioning organ, containing all the differentiated, end-stage cells found in the exocrine pancreas.’⁶

- PPL Therapeutics PLC, the British firm that helped clone Dolly the sheep, intends to experiment with a new technique called *dedifferentiation*, i.e. undoing the process of differentiation. They hope to return a skin cell from an adult human to its embryonic state—they claim to have already achieved this with a cow.⁷
- Closer to home, the husband of one of the AiG (USA) staff had a bad case of bone marrow cancer, and donated over 30 million of his own stem cells, which were extracted from his blood prior to his first bone-marrow transplant.
- An abundant source of stem cells is *umbilical cord blood*, which already have proven themselves in treating leukemia. A more recent discovery was that stem cells from umbilical cord blood were injected into mice which had suffered strokes, and they effected a 50% recovery in brain tissue. The *About Genetics* article reports:
 ‘Researchers attending the annual meeting of the American Association for the Advancement of Science presented research suggesting that stem cells from umbilical cord blood may be as useful as stem cells found in fetuses. This breakthrough may lead to an easing of tensions surrounding stem cell research and could eventually lead to breakthroughs in the

treatment of brain damage and brain disease....’

‘Given the abundance of umbilical cord stem cells and the fact that umbilical cord cells are already being used for other disorders like childhood leukemia, many researchers expect that umbilical cord stem cells will start being used to treat stroke victims within the next few years.’⁸

- Probably the best source of stem cells is liposuctioned fat, which should not be hard to obtain in the country with the highest rate of obesity in the world. Researchers have grown cartilage, muscle, or more fat cells, from such stem cells, depending on the nutrients in which the cells were grown.⁹ Charles Vacanti, professor and chairman of the University of Massachusetts Medical Center and a co-editor of *Tissue Engineering* commented:
 ‘These findings are extremely significant for several reasons. They demonstrate the tremendous potential of adult-derived stem and progenitor cells, which are potentially superior to fetal-derived cells. Not only do they avoid the problems associated with rejection, but they may also be simpler to differentiate into the specific tissue needed. Most significantly, their use will very likely obviate the therapeutic need for fetal cells, making that ethical debate a moot point.’¹⁰
- The article ‘Stem cells from skin grow into brain tissue’¹¹ provided still more evidence for this view. A team led by Jean Toma and Freda Miller at McGill University’s Montreal Neurological Institute, Canada, grew stem cells from skin (the dermis) into smooth muscle cells, fat cells and brain cells. They were successful with stem cells from mouse skin and from human scalp. The article commented:
 ‘The new research, published Monday in *Nature Cell Biology*,^[12] bolsters the view that scientists can find alternative—and less controversial sources of stem cells ... one intriguing aspect of growing them from stem cells found in skin is that scientists could have a vast and easily accessible supply. This breakthrough may lead to an easing of tensions surrounding stem cell research and could eventually lead to breakthroughs in the treatment of brain damage and brain disease. ...
 ‘Patients receiving new tissue grown from stem cells taken from their own skin would face far fewer problems of rejection, if any, than they would after receiving a transplant of stem cells derived from human embryos.’¹¹
- The article ‘Brain cells offer disease hope’¹³ yet again ‘proves that embryonic stem cells are not the only stem cells able to be developed into new cells.’ A team at the Walter and Eliza Hall Institute of Medical Research in Melbourne, Australia, grew neurons from adult neural stem cells (NSCs) from mouse brains.¹⁴ The authors state: ‘This demonstrates that a predominant, functional type of stem cell exists in the periventricular region

of the adult brain with the intrinsic ability to generate neural and non-neural cells.’ They believe that the technique can be applied to humans and offers ‘hopes of a treatment for diseases such as Alzheimer’s and Parkinson’s.

The above examples demonstrate very clearly that there is vast potential for adult stem cell research, so the pleas for embryonic stem cell research are unnecessary from a scientific point of view, quite aside from the moral issues discussed below. Therefore the quotes by authorities below are amply supported by **real experimental evidence**:

Geneticist David Prentice says:

‘... adult stem-cell research ... has already shown itself to be extremely promising for treating numerous degenerative diseases such as heart disease, stroke, Parkinson’s, Alzheimer’s, and diabetes. Adult stem cells have been shown in animal models to repair heart damage, provide therapeutic benefit for stroke, and reverse diabetes. And adult stem cells have already been used successfully in human patients to relieve lupus, multiple sclerosis, and arthritis, to name a few.’¹⁵

Markus C. Grompe, a professor of molecular medical genetics at Oregon Health Sciences University reinforced this point when commenting on another study:

‘This would suggest that maybe you don’t need any type of fetal stem cell at all ... that our adult bodies continue to have stem cells that can do this stuff.’¹⁶

Joseph Kincaid, Vice-President of Right to Life of Michigan, said:

‘The current debate in Washington over funding destructive embryonic research is completely overshadowing this ethical and very promising research. In fact, most media reports fail to concede that research using embryonic stem cells has not produced a single cure or successful treatment yet.’¹⁷

Kincaid’s last sentence is supported by research by a team led by Dr Rudolf Jaenisch of the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts, recently published in the journal *Science*.¹⁸ This showed that embryonic stem (ES) cells used in cloning mice often result in severe abnormalities because the epigenetic state of the ES cell genome was found to be extremely unstable. That is, the genes *per se* were OK, but the ES cells had lost much of the switching information, so that they no longer turned on and off the right instructions at the right time. An alleged strong point of embryonic stem cells over adult ones is that they would be the most undifferentiated, so supposedly have the most potential to grow into different types of tissue. But this experiment shows that they may be in reality **too** undifferentiated.

The *Washington Post* reported:

‘If the same is true for human embryonic stem cells, researchers said, then scientists may face unexpected challenges as they try to turn the contro-

versial cells into treatments for various degenerative conditions.’¹⁹

To demonstrate the politically charged atmosphere (and further exploding the myth of the ‘unbiased scientist’), the researchers, at the last minute, deleted a sentence in their article alluding to this problem. Instead, they added a sentence emphasizing the cells’ therapeutic promise, because they were:

‘... afraid that any mention of that potential problem in the article might be exaggerated by political factions that oppose the research on religious and ethical grounds.’

It’s difficult to see why pointing out real experimentally proven dangers of using ES cells should be considered ‘exaggerating’, but the next section shows the main reason why ESCR is wrong.

What about embryonic stem cells?

As shown, this should be a non-event because of the widespread availability and superiority of non-embryonic stem cells, but the reason it **is** an event will be discussed below. All the same, the debate over embryonic stem cells raises important moral issues where there has been sloppy thinking driven by emotive rhetoric. The question could be, would it be right to use embryonic stem cells to alleviate severe diseases if there were no alternative?

When does human life begin?

Because *Answers in Genesis* uses the Bible as the basis for its thinking in every area, it has always taken a strong pro-life position, i.e. that innocent life should not be intentionally harmed from conception (fertilization) till natural death.²⁰ As explained in, ‘Abortion—the answer’s in Genesis’,²¹ this is because the Bible states that murder, the intentional killing of innocent humans, is wrong (Exodus 20:13, Matthew 19:18, Romans 13:9); and that life begins from conception (Psalm 51:5). Here, the Psalmist explicitly states that it was ‘me’ that existed from conception, not some blob of cells that later became ‘me’. The whole tenor of Scripture is that the individual is a human being right from the beginning of biological life; there is nothing to indicate that there is any secondary event of ‘ensoulment’ after the beginning of biological life.

While the Bible doesn’t explicitly mention the union of sperm and egg, this is the scientifically irrefutable beginning of the individual’s life. Note that this doesn’t deny the sufficiency of Scripture, but uses real experimental science to **elaborate** on its clear teaching. Throughout church history, theologians have applied this principle to oppose abortion right from the moment the new individual was present in the womb.²²

It is analogous to using hybridization studies to elaborate on the boundaries of the created kind to elucidate the Biblical teaching that animals reproduce ‘after their kinds’.

E.g. the wholphin, a (fertile!) hybrid of a (false) killer whale and a dolphin shows that they are really members of the same created kind, despite man's classification of them into different genera.²³ It is very different from the long-agers who use 'science' (really uniformitarian assumptions about the past) to **contradict** the plain teaching of Scripture on creation in six literal days about 6,000 years ago, or theistic evolutionists who contradict the 'after the kinds' teaching and assert that one kind turned into another.²⁴

Much of the populist 'pro-choice' rhetoric can be diffused by bringing the questioner back to the key issue: the nature of the being involved. If this is indeed a human being, then substitute, say, 'two-year-old' for 'the unborn child' in all the pro-abortion arguments, as in this response to someone offended by the term 'Baby killers'.²⁵ This substitution would imply that it is acceptable to murder a two-year-old if this would mean that some vital organs could be harvested that would greatly improve the quality of life for others.

However, with the rise of evolution, many pro-abortionists accept that the baby is human, but deny that there is any basis to believe the Biblical teaching that it is wrong to take innocent life simply because it is human. Atheistic philosophers such as Peter Singer have extended this denial of sanctity of human life beyond unborn babies to newborns and elderly people, and he explicitly relates this to the 'fact' of evolution and its corollary of a denial of a Creator who sets moral absolutes. His popularity among academia in the former Allied nations shows that they haven't learnt from Nazi Germany what happens when a society bases morality on evolution. The Germans have learnt, and Singer has had much difficulty spreading his neo-Nazi beliefs there. People like Singer show that it is ultimately futile to try to build a Christian ethic without Christian theology, which in turn is all ultimately based on God's creation as recorded in Genesis.

Cloning

There is a strong link between ESCR and human cloning, which was demonstrated in practical, economic terms when the stock of companies involved in ESCR plummeted when the US Congress banned human cloning.^{26,27} Therefore it's worth summarizing the issues (for more information on both the scientific and ethical issues involved in both human and animals cloning).²⁸

The fact that life begins at fertilization is the main reason that human cloning is wrong. Such experiments would **inevitably** cause embryos, i.e. tiny human beings, to be formed and **intentionally** destroyed. This can be shown by comparing the effort required to make the first mammal clone, the famous Dolly the lamb. Ian Wilmut, her 'maker', took 277 tries to get it right. This would be a loss of human life, which is unacceptable, and University of Pennsylvania bioethicist Art Caplan called it 'barbaric

human experimentation. The way this science is now, it's not working well in animals. You don't want to do it in people.'²⁹ Significantly, Wilmut also does not support human cloning.²⁹

Also not surprising is that Panos Zavos, a former University of Kentucky researcher, who announced plans to clone humans (outside the USA) claimed that human cloning is 'part of human evolution'.²⁹ If he means goo-to-you evolution, he's talking nonsense, because by definition a clone has identical genetic information, while evolution requires information to **increase**. But there is some truth to his comment, although not in the way he meant it. As stated, evolution does lead to a moral vacuum, as admitted by atheists Lanier and Dawkins,³⁰ and human cloning is very much part of this. Instead of refraining from murder, human cloning treats one class of people as disposable.

Does Genesis support ESCR?

This surprising question arises because of recent newspaper headlines, e.g. 'Senators use Bible for lessons on life in stem cell debate'.³¹ Gordon Smith, a Mormon Republican senator of Oregon, who normally opposes abortion, is reported as providing this amazing exegetical 'insight' on Genesis 2:7:

'After reading the passage, Smith said it described a "two-stage process" for creating humans: First, God formed man from the dust of the ground. Then, the verse says, God breathed into man's nostrils "the breath of life; and man became a living soul".'

'Cells, Smith said, are like the dust of the earth, giving form to man but not the "breath of life". To gain that spirit, he said, the cells must be placed in the mother's womb. ...

"I believe that life begins in a mother's womb, not in a scientific laboratory", Smith said.'

It's notable that former US President Bill Clinton also (mis)used this verse to try to impress gullible evangelicals that he was one of them, but he instead claimed that the mention of 'breath of life' shows that babies aren't human until they start breathing, i.e. until they are born. This allowed him to veto even bans on 'partial birth abortion'. But several points must be made in response:

- The creation of Adam and Eve was a special case—neither of them had mothers or came from an embryo, so it's illegitimate to extrapolate from their example. It would be just as (il)logical to claim that since they began lives as adults, human life today doesn't begin till adulthood!^{32,33}
- Following on from this, the passage teaches nothing whatever about the embryo gaining a spirit when placed in a mother's womb, because obviously wombs are not remotely in view here.
- Smith's argument commits the **opposite error** of pro-

abortionists who claim that while the baby is in the mother's womb, s/he is not a separate individual who must be protected from murder. That is, both sides erroneously believe that **where** a being is makes a vital difference to **what** a being is. Smith would presumably reject the pro-abortionist argument, but seems unable to see the inconsistency of his own position.

- Since this passage says that Adam 'became a living soul' (Hebrew *nephesh chayyah*), on a superficial reading this would seem to indicate, if anything, that the life and soul occurred together. It's certainly hard to imagine that someone could use this to teach that a soul enters some time after biological life begins. But in reality, this passage isn't trying to address the issue—'soul' in this context is **not** referring to the non-material aspect of a human being that survives physical death, although it sometimes has this meaning, e.g. *nephesh* in Genesis 35:18 and the Greek equivalent *psyche* in Matthew 10:28. Rather, in the first two chapters of Genesis, *nephesh chayyah* means 'living creature', and is applied to vertebrate animals including land and sea animals as well as man.

Other pro-abortion rationalizations

There are several other pro-abortion arguments that have surfaced recently, although they are not new.

Identical twins

Reference 31 cites claims that it is ethical to research embryos up to 14 days, because there is the possibility of forming identical twins. This supposedly means that it is 'illogical ... to treat an embryo as an individual if it could still become two people', and claims that a minority of Roman Catholic philosophers reason 'that the soul, the hallmark of the individual, could not enter an embryo that has the capacity to divide in two'.

But this is fallacious. Twinning may be a form of asexual reproduction, where one embryo divides into two, but this doesn't mean that s/he wasn't an individual before then. Rather, s/he was one of those rare individuals with the capacity for asexual reproduction. As usual, the point can be clarified by substituting teenagers for embryos, a morally valid substitution if the embryo is human, and positing a world where a small percentage of teenagers split into two identical ones on their 16th birthday. Then it would be less plausible to argue that the teenager wasn't alive before s/he split, or that life didn't begin till 16.³⁴

The early embryo doesn't look human?

*Newsweek*³⁵ uses a picture of a 3-day-old embryo, apparently with the aim of convincing people that it doesn't look human, so it isn't truly human. But arguments from

appearance are often deceptive.

- Statues and store mannequins look human, but are not; abnormal-looking humans like the 'elephant man' are still human. The important thing is that the latter and not the former are individual members, like us, of the single created kind **humanity** i.e. descendants of Adam and Eve (corresponding to the man-made classification of genus *Homo*).
- Therefore, the 3-day-old embryo, being an individual descendant of Adam, **does** look human—just the way a 3-day-old human should look! A five-year-old doesn't look like an **adult** human, but it doesn't mean that a five-year-old is not human—rather, s/he looks like the way a five-year-old should look.³⁶

Most zygotes never make it to term?

On a recent BBC series, *The Human Body*, there was fascinating live photography of conception and the growth of the embryo. But the program asserted that only one in six survive to term. This rather seems like the various figures bandied about with human and chimp DNA similarity³⁷—they seem to grow with the telling—is it 96% or 99%? Other figures are very different, saying that 50–80% survive.³⁸

But this is irrelevant to the humanness of the embryos. For comparison, there are parts of the world where there is a high infant mortality rate, but this doesn't mean that infants are not human. And of course, all we humans have virtually a 100% mortality rate! But the fact that all people will die naturally does **not** make it acceptable to commit murder, so an allegedly high embryonic mortality rate does **not** make it acceptable to destroy embryos **intentionally**.

Media mendacity

The 1 July 2001 cover of *Newsweek* read: 'The Stem Cell Wars: Embryo Research vs. Pro-Life Politics: There's Hope for Alzheimer's, Heart Disease, Parkinson's and Diabetes. But Will Bush Cut Off the Money?'^{22,39} Unfortunately this is typical of the media deceit about pro-lifers—usually there are emotive arguments about denying 'a woman's right to choose', raising the phony spectre of horrific back-alley abortions,⁴⁰ and more recently, claiming that the handful of shootings of abortionists (which we deplore—two wrongs don't make a right) is somehow typical of the millions of pro-lifers. This time the media are trying to lay a guilt trip on pro-lifers for allegedly denying hope to sufferers of diseases and disabilities. As shown above, this is deceitful, mainly because it downplays the real human lives that would be extinguished, and also because it ignores the many successes of non-embryonic stem cells.

The agenda seems to be—convince people that it's OK to discard embryos in the name of research, which will entrench a view in the public mind and the law of the land that

embryos really have no humanity. Or else it will encourage the idea that it's acceptable to kill one class of humans to benefit another. Then the pro-abortionists would have won the entire argument that the preborn have no real intrinsic rights. The slippery slide is that all unborn babies could be defined as disposable tissue rather than a unique human individual. And as Peter Singer shows, the slippery slide won't stop at birth. If a culture discards Christian morality, advanced scientific knowledge won't prevent disaster, but rather, make it more horrific. Germany at the time of the Nazis was the most scientifically and culturally advanced nation in the world.

The media and religion

Often, media hectoring of pro-lifers is accompanied by thundering about keeping religion separate from politics, imposing morality on others, and abusing 'fundamentalists' who actually believe that the Bible is important in deciding moral questions. Two points:

- People might get the wrong impression that the secular media really are against religion mixing with politics or imposing morality. They are not! The important questions are: 'Which religion should be mixed with politics?' and 'Whose morality should be imposed?' Humanists have no qualms about imposing the religion of humanism⁴¹ on society, especially the government school system. And of course, all laws impose morality—laws against murder and rape impose on murderers and rapists the moral view that murder and rape are wrong! It seems the only acceptable morality to impose is one that agrees with the media elite. Imposition is certainly the right term—pro-abortionists not only want the 'choice' to kill unborn babies, but to coerce taxpayers to fund this 'choice'.
- The media aren't opposed to quoting Bible verses! Not, of course, if the verses are used to support what's generally understood to be traditional Christian morality—that would be unthinkable. But it's OK to twist Scripture to support a liberally-approved cause. This was amply shown above in the inane eisegesis by Senator Smith quoted with approval by the news reporters. The media also tend not to mind wrenching out of context passages against judging others (the context was always against **hypocritical** judgments, while **righteous** judgment is **commanded**—John 7:24)—but only to justify a 'non-judgmental' view of practices approved by the liberal elites, e.g. abortion, homosexual activity, fornication etc.—judging 'fundamentalists' and creationists is OK, of course!

Summary

Scientific issues

- Stem cells are those with the potential to form many

different types of tissue

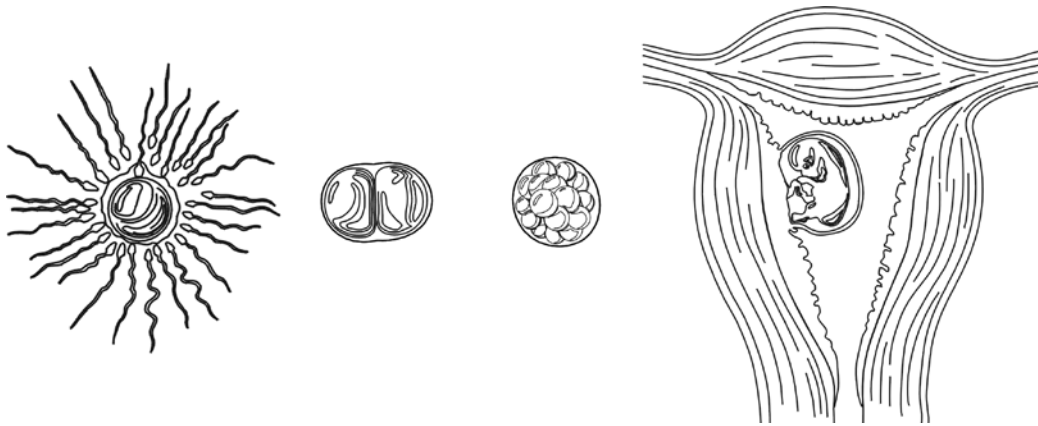
- They are found not only in embryos but in many types of non-embryonic and even adult tissue
- Their potential for growing many types of tissue means that they show promise for treating many types of diseases and disabilities
- The best treatments to date are from non-embryonic stem cells, and the best source so far is liposuctioned fat
- Conversely, embryonic cells have had no successes, and experiments have shown potential dangers
- Embryonic stem cell research is closely linked with human cloning
- Human life begins at fertilization
- Therefore, ESCR and human cloning inevitably lead to death of tiny human beings

Ethical issues

- The Bible teaches that humanity starts at the beginning of biological life
- Since murder, intentionally killing human life, is wrong, it follows that ESCR, human cloning and induced abortions are wrong because they all involve intentional killing of human embryos
- Genesis 2:7 does not support the view that the human embryo does not have a soul or humanity
- The secular media is largely biased towards abortion
- The secular media is not against imposing one's religion or morality, as long as it's humanistic religion or morality
- The successes of non-embryonic stem cell treatment have largely been overlooked
- Justifying the killing of embryos for research or medical benefits will help dehumanize them in the eyes of the public, and perpetuate the idea that one class of humans is expendable
- The previous point seems to be the real agenda behind the push for ESCR

Addendum: AiG's comment on President Bush's decision

AiG, along with many conservative Christian groups, is pleased that President Bush decided to forbid funding of any more destruction of human embryos, and with his restatement of his strong opposition to human cloning. He also refused to allow harvesting of stem cells from 100,000 embryos frozen at fertility clinics, as many evolutionary scientists would prefer, but which we oppose. The President also affirmed the uniqueness of each individual embryo and cited with approval an ethicist who dismissed as 'callous' an attempt to pretend that the early embryo isn't really human. Further, he affirmed that 'human life is a sacred gift from our Creator' and that 'we recoil at the idea of growing human beings for spare body parts or creating life for our convenience'. The President also affirmed the important Biblical principle (cf. Romans 3:8) 'even the most noble



The early stages of human life (not to scale). From left to right: fertilization of the ovum by sperm (thereby forming a zygote), mitosis (cell division), continued mitosis (forming the blastocyst), implantation into the uterine wall and further development of the embryo.

ends do not justify any means'. On 14 August, President Bush promised to veto any congressional bill that would allow embryos to be destroyed for research.

He also correctly pointed out that stem cells are readily available from non-embryonic sources, on which there has been a virtual media blackout, as pointed out in this article. Fortunately, after President Bush's decision, there seems to be a slight increase in the media's admitting this fact. But he said:

'However, most scientists, at least today, believe that research on embryonic stem cells offers the most promise because these cells have the potential to develop in all of the tissues in the body.'

As has been shown, this appears to be contrary to the experimental evidence.

However, President Bush's go-ahead for funding on 60 already-existing stem cells lines obtained by past killing of embryos has raised far more debate among conservative Christians. Some have said that since nothing will bring these embryos back, we may as well research these stem cell lines that might save lives in the future. We recognize the agonizing moral dilemma that led to the decision. A similar dilemma was faced by medical researchers concerning the results of ghastly Nazi medical experiments involving the torture-murder of living prisoners. Here was data which could possibly save human lives; should its source mean it should not be utilized to possibly do good? So, on this view, we should be grateful that the President has at least stopped further embryo destruction for research purposes, and we should recognize that there is a limit to how much a politician can achieve against substantial opposition even within his own ranks.

But others have claimed, in our view correctly, that while we should indeed be grateful for President Bush's decision to abolish funding for more embryo murders, his other decision to allow research on existing stem cell lines still perpetuates the view that human embryos are disposable commodities rather than human life (e.g. the Family Research Council response⁴²). Therefore it makes it harder

to defend embryos from the mass murder perpetrated in abortion mills in the Western world. This is the contrast with the 'Nazi dilemma' mentioned above—the Nazis' atrocities have ceased, but thousands of unborn babies are murdered every day.

There is also a key moral principle that profiting from immoral acts makes one a participant in them, and provides an incentive to commit them. By allowing research to continue, the President has inadvertently **rewarded** those who committed an act he himself said was unethical, i.e. those who destroyed these embryos in the first place. Further, the President's ban on funding of more research, while good in itself, when combined with the limited permission, actually gives these people a **monopoly** on selling embryonic stem cell tissue to federally funded researchers.

References

1. Remarks by the President on Stem Cell Research, White House Press Release, 9 August, 2001, <www.whitehouse.gov/news/releases/2001/08/20010809-2.html>.
2. Hall, A., Awaiting the miracles of Stem-cell research, *Business Week Online*, <www.businessweek.com/bwdaily/dnflash/nov2000/nf20001129_858.htm>, 29 November 2000.
3. Cited in Hall, Ref. 2.
4. Newman, L., Transplanted Stem cells may aid AMD patients, *Ophthalmology Times*, 15 February 2001; commenting on research by Young, M.J. and Klassen, H.J.; in: *Molecular and Cellular Neuroscience*, September 2000.
5. Coghlan, A., Hair today, skin tomorrow, *New Scientist* **170**(2296):19, 2001.
6. Cell Therapy: Stem Cells Reverse Diabetes in Mice, *Applied Genetics News*, <www.findarticles.com/m0DED/8_20/60967567/p1/article.html>, March 2000.
7. New Technique May Create Embryonic Stem Cells Without Using Embryos, *Wall Street Journal*, 3 August 2001.
8. Umbilical Cord Stem Cells: Hope for Millions? <genetics.about.com/library/blstemcells.htm>, 21 February 2001.
9. Zuk, *et al.*, Multilineage Cells from Human Adipose Tissue: Implications for Cell-Based Therapies, *Tissue Engineering* **7**(2):211–228, 2001.
10. Liposuctioned fat is good source of Stem cells, say researchers in tissue

- engineering, *Mary Ann Liebert, Inc.* (Biotechnology publishers), <www.liebertpub.com/press/prdetail.asp?id=69>.
11. The Washington Times, 14 August 2001.
 12. Toma *et al.*, Isolation of Multipotent Adult Stem Cells from the Dermis of Mammalian Skin, *Nature Cell Biology* 3(9):778–784, 2001.
 13. <news.ninemsn.com.au/health/story_17102.asp>, 16 August 2001.
 14. Rietze *et al.*, Purification of a pluripotent neural stem cell from the adult mouse brain, *Nature* 412(6848):736–739, 2001; see online abstract, <www.nature.com/cgi-taf/DynaPage.taf?file=/nature/journal/v412/n6848/abs/412736a0_fs.html&dynoptions=doi997937984>.
 15. Interview with Genetics Prof. David Prentice on stem cell research, *National Review*, 8 June 2001.
 16. Fumento, M., Embryonic stem cell research alternatives exist: use them, *Washington Times*, 31 July 2001.
 17. *Right to Life of Michigan*, 27 July 2001.
 18. Humphreys *et al.*, Epigenetic stability in ES cells and cloned mice, *Science* 293(5527):95–97, 2001.
 19. Weiss, R., Clone study casts doubt on stem cells: variations in mice raise human research issues, *Washington Post*, 6 July 2001.
 20. See *Answers in Genesis* Website, Human life: abortion and euthanasia, <www.answersingenesis.org/home/area/faq/humanlife.asp>.
 21. <www.answersingenesis.org/docs/4214pn11_1999.asp>, first published in *Prayer News* (Australia), p. 4, May 1998.
 22. Beckwith, F.J., *Politically Correct Death: Answering the Arguments for Abortion Rights*, Baker Books, Grand Rapids, pp. 140–141, 1993. This is the most comprehensive demolition of pro-abortion arguments, covering science, ethics, law and Scripture.
 23. Batten, D., Ligers and wholphins? what next? *Creation* 22(3):28–33, 2000.
 24. See refutations of *Progressive Creationism* and *Theistic Evolution* on the *AiG* Website, <www.answersingenesis.org/home/area/faq/genesis.asp>.
 25. <www.answersingenesis.org/home/area/feedback/negative12feb2001.asp>.
 26. Smith, W.J., Cloning debate proves ESCR ‘Bait and Switch’, *National Review*, 3 August 2001.
 27. *Christian Medical Association*; 2 August 2001.
 28. For more information on cloning visit the *AiG* Website, <www.answersingenesis.org/home/area/faq/cloning.asp>.
 29. Human cloning attempt to be outlined Tuesday, *CNN.com*, <www7.cnn.com/2001/HEALTH/08/06/human.cloning/index.html7, 7> August 2001.
 30. From a debate between two evolutionists. Lanier is a computer scientist; Dawkins is a Professor at Oxford and an ardent atheist. Jaron Lanier: ‘There’s a large group of people who simply are uncomfortable with accepting evolution because it leads to what they perceive as a moral vacuum, in which their best impulses have no basis in nature’: Richard Dawkins: ‘All I can say is, That’s just tough. We have to face up to the truth’, Evolution: the dissent of Darwin, *Psychology Today*, p. 62, January/February 1997; Quoted in: *Creation* 20(3):44, 1998.
 31. Zitmer, A., Senators use Bible for lessons on life in stem cell debate, *The Greenville News*, 19 July 2001.
 32. Beckwith, Ref. 22, pp. 145–146.
 33. Geisler, N.L., *Christian Ethics*, Baker Books, Grand Rapids, pp. 138–139, 1989. This is a good presentation of Biblical Christian ethics both in theory and in practice, (see also his online article ‘Any absolutes? Absolutely!’ <www.equip.org/free/DE198.htm>), and Ch. 8 covers the abortion debate well. Both this and Ref. 32 refute the argument used by Clinton, but I don’t think anyone had thought of Smith’s outlandish argument when either of those books were written.
 34. Beckwith, Ref. 22, p. 97.
 35. The Stem Cell Wars, *Newsweek Cover*, 1 July 2001.
 36. Beckwith, Ref. 22, pp. 97–98.
 37. Batten, D., Human/chimp DNA similarity: evidence for evolutionary relationship? *Creation* 19(1):21–22, 1997.
 38. Beckwith, Ref. 22, pp. 96–97.
 39. See also the critique of Ref. 22, Miller, J.J. and Ponnuru, R., Cell Games: Newsweek vs. pro-lifers, *Washington Bulletin, National Review Online*, 3 July 2001.
 40. Beckwith, Ref. 22, pp. 54–59, documents the deceit of pro-abortionists in inflating statistics of deaths from illegal abortions. Sometimes they were so absurd that the quoted numbers turned out to exceed the deaths of woman of childbearing age from **all** causes! Most importantly, this appeal to pity is totally irrelevant—because abortion kills innocent humans, it amounts to claiming that murder should be legal and safe, because people will murder anyway, and if it’s not safe they could get hurt unnecessarily.
 41. What is secular humanism? <www.christiananswers.net/q-sum/sum-r002.html>.
 42. Family Research Council’s Ken Connor on President Bush’s decision on embryonic stem cell research, <www.frc.org/press/content.cfm?get=release&id=P01H02, Family Research Council, Press Release, 9 October 2001.

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