

# Destroying unwanted embryos in research

Talking Point on morality and human embryo research

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Some of the human embryos generated by *in vitro* fertilization (IVF) are treasured by the couples whose gametes were fused to create them; they may fulfil the wish of the prospective parents to have a child. We call these ‘wanted embryos’. It would be wrong to destroy such embryos in research; however, not all embryos are wanted. We argue that it is, with the consent of the parents, morally permissible to conduct destructive research on embryos that are not wanted—perhaps because the reproductive wish of the parents has been fulfilled or abandoned. Moreover, we also argue that it is morally permissible to produce embryos specifically for research. Our arguments are intended to apply only to embryos—not fetuses or fetal tissue—and we assume that an embryo becomes a fetus eight weeks after fertilization.

**We argue that it is, with the consent of the parents, morally permissible to conduct destructive research on embryos that are not wanted...**

The case for using embryos in research is clear: embryo research may lead to the development of therapies that lengthen lives, alleviate suffering and allow parents to achieve their reproductive goals. Its proponents hope that research on embryonic stem (ES) cells—totipotent or pluripotent cells taken from an early embryo—will lead to techniques for inducing stem cells to form tissues and organs *in vitro* for transplantation (Solter *et al*, 2004). This may help to close the growing gap between organ demand and supply, and to improve transplantation success rates; it might be

possible to produce tissues that are genetically identical to the cells of the recipient, thereby avoiding the problem of graft rejection. Tissues produced from ES cells could also be used as ‘cellular models’ to study a range of human diseases, and to test new drug candidates for efficacy and toxicity (Savulescu, 2007a). This would reduce the need to conduct potentially harmful experiments on animals and people. Finally, ES cell research might also make possible the development of new infertility treatments, for example, by allowing the generation of gametes—eggs and sperm—from ES cells *in vitro* (Clark *et al*, 2004; Chen *et al*, 2007). These could be used to treat infertility in cases where a patient is unable to produce gametes, perhaps because the gonads or the ovaries were surgically removed as a treatment for cancer (Testa & Harris, 2005).

Ultimately, it may be possible to generate ES cell lines without destroying embryos (Chung *et al*, 2006; Klimanskaya *et al*, 2006). In addition, it is now possible to produce stem cells directly from somatic cells by inducing them to dedifferentiate into so-called induced pluripotent stem cells (iPS; Drusenheimer *et al*, 2007; Takahashi *et al*, 2007; Yu *et al*, 2007; Nakagawa *et al*, 2008; Park *et al*, 2008). However, developing stem-cell science to the point at which functional tissues can be generated from ES cell lines or iPS cells will almost certainly involve the destruction of many embryos. It is also arguable that totipotent stem cells are themselves embryos, as they have the same developmental potential. Therefore, stem-cell research without embryo destruction might not be possible.

Research on embryos may also have other benefits that are unrelated to stem-cell technologies. For example, by tracking

the development of embryos produced through various IVF protocols, researchers will be able to test alternative techniques for culturing, storing, freezing, testing and implanting IVF embryos. Most of the embryo research conducted in the UK aims at improving IVF treatments (Human Fertilisation and Embryology Authority, 2007). Studying embryo development could also provide useful information about the causes of miscarriage and congenital disease.

**...embryo research may lead to the development of therapies that lengthen lives, alleviate suffering and allow parents to achieve their reproductive goals**

The medical possibilities created by embryo research are immense. Failing to pursue this research could result in thousands, perhaps millions, of avoidable deaths, not to mention great pain and suffering. In our view this would be morally equivalent to killing these people. Even if it is not morally equivalent to killing, those who draw a distinction between killing and allowing death through inaction typically admit that there are strong reasons to prevent avoidable deaths. There are therefore powerful reasons to pursue destructive embryo research.

Yet, opponents believe that it would be wrong to destroy unwanted IVF embryos in order to realize these medical benefits. Perhaps the most common argument given is that embryos are persons. This is a claim about the moral status of the embryo. To say that a being

is a person is to ascribe it roughly the same rights, claims and interests as would be possessed by ordinary adult humans under the same circumstances. Clearly it would be wrong to kill an adult human for research—subject to one possible exception that we will return to later—regardless of whether other people want this person to survive. Those who believe that embryos are persons extend this conclusion to embryos. If embryos have the same moral status as persons, then it will be wrong to kill them in the same circumstances (Tonti-Filippini, 1999).

The view that embryos are persons has some implausible implications, however. One of these can be brought out by considering so-called ‘embryo-rescue cases’ (Liao, 2006; Annas, 1989). Suppose that thousands of embryos have been created as the by-products of assisted reproduction. These are no longer wanted; however, they have been frozen and stored in a large warehouse, perhaps because the government prohibits their destruction. Someone notices that a fire has started in the warehouse, which might destroy the embryos, but is also threatening the life of a single employee of the warehouse. As a fire fighter, you are faced with a choice: either you can save the thousands of unwanted embryos or you can save the life of the warehouse worker.

**...if we supposed that embryos were persons, we would have to conclude that more than 220 million people die each year due to spontaneous abortion...**

Intuitively, it seems clear that you should save the warehouse worker. However, if embryos are persons, then surely you should save them, as it is morally permissible—if not obligatory—to save thousands of persons in preference to one. Therefore, our intuitions seem to be incompatible with the view that embryos are persons.

This hypothetical case is designed to test our moral intuitions. However, the view that embryos are persons also has some implausible implications in real life. More than 50% of embryos die within eight weeks of conception—a phenomenon known as spontaneous abortion

(Leridon, 1977; Boklage, 1990). On the basis of this evidence, it has been estimated that there are more than 220 million natural embryo deaths worldwide each year (Ord, 2008). Now, if we supposed that embryos were persons, we would have to conclude that more than 220 million people die each year due to spontaneous abortion—which is more than seven times as many people as die from cancer. It would surely follow that we ought to do something to reduce this staggering death toll: we should try to discover its biological basis and we should prioritize the development of therapeutics to prevent it given that it would be a greater cause of human death than all other causes combined (Ord, 2008; Annas, 1989; Murphy, 1985; Fleck, 1979, 1984). Perhaps it would be difficult to prevent many cases of spontaneous abortion; however, if embryos are persons, then we owe it to them to at least ascertain whether the blight that kills so many of them can be prevented. After all, we pour resources into the prevention of diseases—such as acquired immune deficiency syndrome (AIDS) and cancer—that kill far fewer persons.

It seems implausible that such reprioritization is morally required. Intuitively, spontaneous abortion is regrettable, especially for the couple who wanted a family, but it is not on a par with cancer or AIDS, even though—if embryos are persons—it kills far more people. Our intuitions about the importance of spontaneous abortion seem to be incompatible with the view that embryos are persons.

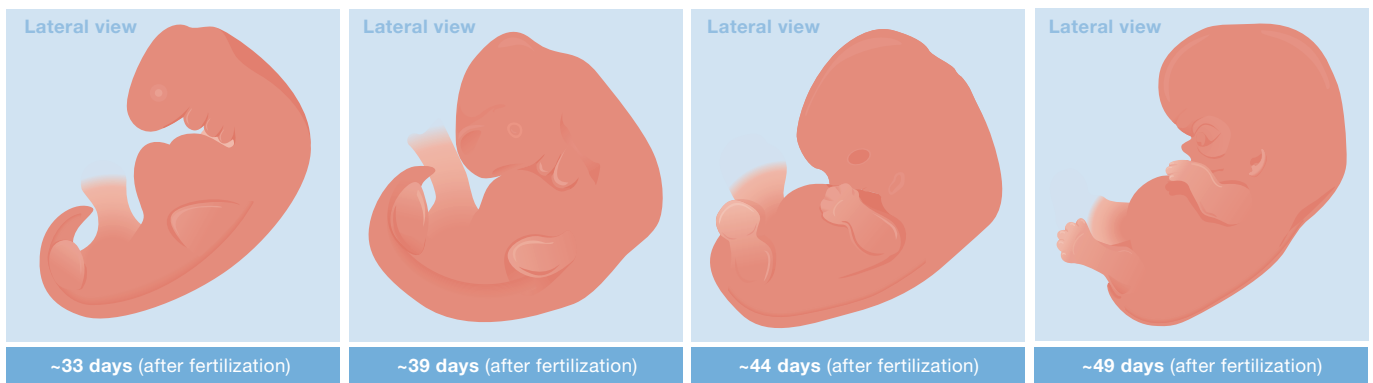
We have highlighted two implausible implications of the view that embryos are persons. First, we might have to save embryos in preference to (other) persons in embryo-rescue cases. Second, we must make spontaneous abortion and embryo loss a scientific and medical priority. Those who do not want to accept these implications are left with two options. The first option is to accept that embryos are not, after all, persons, but rather are beings with some lower moral status. If this is correct, then we can no longer infer from the fact that it is wrong to kill persons in research that it is wrong to destroy embryos in research. The second option is to accept that embryos are persons, but persons who happen to find themselves in special circumstances such that they no longer have the normal right to be rescued from natural or accidental deaths. Something similar is sometimes thought of elderly

persons. Few would think that the elderly have no right to be rescued; however, some might hold that their claims to be rescued are weaker than those of younger people.

**...it is not clear why species membership should have any moral significance...**

It is implausible, however, that anything that deserves the name of a person could warrant as little moral consideration as we give either to human embryos in hypothetical embryo-rescue cases or to spontaneous abortion. It seems unlikely, for example, that we could be indifferent to any disease that killed 220 million people per year, even if it affected only the very old. Moreover, even if we did tolerate the deaths of 220 million people from disease, we would nevertheless take great cognisance of those deaths, and would accord the dead the dignity of the same burial rituals that we accord to others. Neither of these seems to be required in the case of early spontaneous abortion (Annas, 1989; Sandel, 2005). The only viable option is to accept that embryos are not persons; hence, the claim that they are persons has no place in the debate on whether unwanted embryos might be destroyed in research.

Of course, even if embryos are not persons, we could have significant moral reasons not to kill them, just as we might have significant reasons not to kill higher animals. Moreover, this possibility is not ruled out by our intuitive responses to embryo-rescue cases and spontaneous abortion, as those scenarios do not involve actively killing embryos, but rather merely failing to rescue them. It seems doubtful, however, that there are any significant reasons not to kill unwanted embryos. Post-coital contraception, the oral contraceptive pill and intra-uterine contraceptive devices all kill some embryos, and almost 200,000 abortions are performed each year in England and Wales alone ([www.statistics.gov.uk](http://www.statistics.gov.uk)), which causes outcry only among a minority. Moreover, many countries require that surplus embryos produced through IVF must be destroyed after a certain time period—10 years in the UK—and this requirement is not generally regarded as morally abhorrent or as some form of capital crime against humanity.



Our reactions to hypothetical cases also suggest that there are no significant reasons against killing embryos. Consider the following scenario. A refrigerator containing 1,000 unwanted embryos has fallen onto a small child and is crushing her to death. You can save the child, but only by upturning the fridge in such a way that all of the embryos will spill out of their test tubes and die.

It seems clear that you should save the child. This suggests that destructive embryo research will also be morally permissible, if not required. Indeed, destructive research involving unwanted embryos might be closely analogous to the refrigerator case. Consider the following scenario. By conducting research on 1,000 unwanted embryos that have been left to science, a scientist might be able to develop a cure. It can reasonably be expected that this research will save the life of at least one person; however, it will also result in the destruction of all of the embryos. If we judge that it is permissible to destroy the embryos in the refrigerator case, then, to be consistent, we should also judge it permissible to destroy the embryos in this research case.

It is, moreover, difficult to identify any good argument for the view that there are reasons not to destroy unwanted embryos in research. Let us consider some arguments that are sometimes given against killing a being—human or otherwise. One widely held view argues that we should not kill beings that have certain mental capacities (McMahan, 2002). The most popular candidates in this regard are consciousness, self-consciousness, sensitivity to pleasure and pain, and rationality. But why should we think that these mental attributes give us reasons not to kill?

First, everyday judgments made by people about the wrongness of killing tend to depend on the mental capacities of the organism to be killed. Most of us would happily accept that it is generally permissible to kill bacteria, protozoa, molluscs or insects—organisms that are non-conscious, non-rational, and insensitive to pleasure and pain. By contrast, many would agree that it is normally wrong to kill pigs and dogs, which are almost certainly conscious and sensitive to pleasure and pain, and which might also be self-conscious.

Second, most people think that humans who lack the most important mental characteristics possessed by typical adult humans also lack some of their rights, claims and interests (Savulescu, 1999). For example, it is widely accepted that brain-dead humans in intensive-care units have significantly weaker claims to life-sustaining treatment than ordinary living persons—when the brain dies, everything that matters in the life of that person also seems to die. Indeed, even permanently unconscious persons who do not meet the criteria for brain death are often thought to have lost many of their claims and interests. When Liverpool football fan Tony Bland was left permanently unconscious after the Hillsborough football disaster, one Law Lord held that the withdrawal of artificial feeding and hydration would be justified because Bland no longer had any interests (Airedale NHS Trust v Bland, 1993).

Third, it is easy to concoct science-fiction scenarios, which support the view that the mental characteristics of a being affect the wrongness of killing that being. Suppose, for example, that it were possible to transplant a human brain into a sheep, fully preserving the memories, mental

capacities and personality of the donor. The result would be a human mind and brain in the body of a sheep. We would clearly have strong reasons not to kill this being. Indeed, we would think it as wrong, or nearly as wrong, to kill this being as to kill an ordinary person. Similarly, suppose that a human mind with all of its memories, mental capacities and personality could be uploaded into a robot, which would then have precisely the same mental characteristics as the person from which the mind came. Would we have reasons not to switch this robot off? Again, it seems plausible that we would.

**...it is not clear what is wrong with depriving something of the possibility of a valuable future when we know that this future will not be realized**

Suppose that we do indeed possess significant moral reasons not to kill beings that have consciousness, self-consciousness, sensitivity to pleasure and pain, and/or rationality. Clearly, this view is compatible with our suggestion that there is no significant reason not to kill embryos. Embryos are not conscious (Brusseau & Myers, 2006; Derbyshire, 2006)—most estimates place the onset of fetal consciousness at or after 24 weeks (Anand & Hickey, 1987; Burgess & Tawia, 1996; Royal College of Obstetricians and Gynaecologists, 1997; Mellor *et al*, 2005). Embryos also cannot experience pleasure and pain—this ability probably does not develop before 16 weeks gestation (Lee *et al*, 2005; Mellor *et al*, 2005; Van de Velde *et al*, 2006; Derbyshire, 2006)—and

they are certainly not self-conscious or rational—self-consciousness does not develop until late in pregnancy or after birth, and rationality, of course, develops much later (Tooley, 1983; Singer, 1979). Indeed, until 14 days post-conception, embryos lack even the beginnings of a nervous system.

A second view about the ethics of killing places great weight on species membership (Williams, 2008). It holds that some beings should not be killed simply because they are human or members of some other morally significant species. To justify the special moral significance that they accord to being human, proponents of this view might appeal to the fact that humans typically have certain mental characteristics—for example, rationality (Finnis, 1995). However, they then claim that even humans lacking these characteristics retain the same moral significance: merely being a member of a species that typically exhibits rationality is enough.

The problem with this view is that it is not clear why species membership should have any moral significance (Savulescu, 2009). After all, the assignment of beings to different species depends on various biological criteria that seem to lack any moral content or relevance. Chimpanzees and humans are classified as different species based on the fact that they cannot mate and create fertile offspring. However, surely this does not explain the differences in the rights of humans and chimpanzees. Similarly, adult Australians and adult Americans can reproduce with one another and produce fertile offspring. However, again, it seems implausible that this is what explains their equal moral status: a more satisfying explanation would appeal to their similar mental attributes (Savulescu, 2007b, 2009).

**...in producing embryos for research, we produce them with the intention of treating them in permissible ways**

A third view about the ethics of killing holds that we should not kill a being when doing so will deprive it of a valuable future. According to this view, it seems clear that it might be wrong to kill embryos, as some embryos will, if they are

not killed, go on to become persons with valuable lives (Marquis, 1989).

However, unwanted embryos are unlikely to have lives of value. If they are not destroyed in the process of research, they are instead destined to languish in freezers until they are destroyed for some other reason. Destroying these embryos in research would not deprive them of a valuable future.

One can imagine a more nuanced view that avoids this problem: we should not kill a being when doing so would deprive it of the possibility of a valuable future. Note, however, that this modified view is less appealing than the original version: it is not clear what is wrong with depriving something of the possibility of a valuable future when we know that this future will not be realized. Moreover, this view has implausible implications. Suppose it were possible to dedifferentiate adult skin cells, and then induce them to develop into embryos and, eventually, children. Skin cells would therefore have the potential for a valuable future, and it would follow from the view under consideration that it would be wrong to destroy any of the thousands of skin cells that we all shed each day (Savulescu, 2002a). It might be argued that skin cells themselves lack the potential for a valuable future. They can simply be transformed into entities that do have this potential. But the same can and has been argued with respect to embryos (McMann, 2007).

We have argued that embryos are not persons. We have also argued that there are no significant reasons not to kill unwanted embryos. However, even if we are wrong about both of these things, it might still be permissible to destroy unwanted embryos in research. This is because it might sometimes be permissible to kill beings—including persons—that we otherwise have strong reasons not to kill (Harris, 1975; Savulescu, 2002b). Consider the following case: You are a doctor in a small African hospital and you receive an emergency call from an isolated village. When you reach the village, you find all of the villagers in an unconscious state. You surmise that they are suffering from one of two unusual brain diseases, which we might call encephalitis A and encephalitis B. There is a 60% chance that the disease is encephalitis A and a 40% chance that it is encephalitis B. Both diseases are lethal in approximately

50% of cases if untreated, but can be easily cured by drug A and drug B, respectively, and you have plenty of both of these drugs in your medical kit. The problem is that the two drugs interact in a manner that renders them both inactive, so there is no point in giving both drugs to all of the villagers. Instead, you consider two options: either give drug A to all of the villagers, or perform an exploratory brain procedure on one of the villagers, whom you will select randomly. This will allow you to determine which of the two diseases the villagers are suffering from and will allow you to save all of the others. However, the subject of the exploratory procedure will certainly die.

**When [embryos] are not part of a plan to form or extend a family, they can still have a special moral value: as a means of extending knowledge and saving or improving the lives of people**

Would it be wrong to kill one of the stricken patients, as described under option two? There are two reasons for thinking that it would not. First, option two is a course of action that maximizes the total number of survivors. Second, that course of action also improves the survival chances of each individual patient, including the person who gets killed by the exploratory procedure. Had you gone for option one, this person would have had a 20% chance of dying as there is a 40% chance that he or she has encephalitis B, meaning that drug A will be ineffective, and that condition has a 50% mortality rate. By choosing option two, you reduced the chance of each individual dying to 10%.

Suppose that it is indeed permissible to kill one of the villagers in this case in order to save the others. Arguably, it follows that it is permissible to destroy unwanted embryos in research—at least when these embryos are selected randomly. Using some embryos in research might, by leading to medical advances, significantly improve the life expectancy, not to mention the quality of life, of other embryos that go on to become people. Therefore, it might be that the chance each embryo has of living a long and good life is improved by the practice of lethal embryo research.

It would be wrong, under any circumstances, to use wanted embryos for research. Wanted embryos have a special value for their prospective parents. In destroying such embryos in research, we would cause great harm to the parents, and would also violate their moral claim to determine what is done to and with the embryos they produce (Devolder, 2005a).

However, killing unwanted embryos whose parents have consented to their use and destruction in research will neither harm nor violate the claims of the parents. Moreover, as we have argued, these embryos are neither persons, nor do they have any other properties that would give us reasons not to kill them. Finally, we have suggested that even if embryos were persons, or beings that we had strong reasons not to kill, it might still be permissible to destroy unwanted embryos in research; for example, when that research maximizes the survival prospects of each embryo. The case against destructive research on unwanted embryos therefore seems flawed on three counts. By contrast, there is a strong and obvious case for such research—pursuing it might result in the development of medical technologies that will do great good.

Even if it is permissible to destroy existing unwanted embryos in research, it could still be wrong to produce embryos that might end up being destroyed in research. It is, however, difficult to see why this would be wrong. Most of us think that it is permissible to produce embryos through IVF knowing that some might be destroyed for no better reason than because it is impractical to store them indefinitely. If it is permissible to produce embryos in such circumstances, then surely it is also permissible to produce embryos that might be destroyed in research. In that case, not only will the embryos be destroyed for a stronger reason—to advance medically important research, rather than to free-up freezer space—but they will also be produced for what is arguably a weightier reason—to advance medically important research, rather than to meet the desires of parents for children (Devolder, 2005b).

It is also, we believe, permissible to create embryos specifically for the purposes of research. This is often thought to be more objectionable than merely creating embryos that might be used for research. One argument given is that in producing embryos for research, we use them merely as a means

to benefit others, as we do not give those embryos any chance of survival. However, this problem could easily be avoided. We could simply randomly assign some research embryos to be donated to infertile couples who wish to have a child (Devolder, 2005b). All embryos would then have some chance of survival and some chance of destruction, just as with ordinary IVF embryos. A second argument would be that it is wrong to produce embryos for the purposes of research because this involves producing embryos with the intention of subsequently destroying them. In standard IVF cases, by contrast, we produce embryos with purely reproductive intentions. The inevitable destruction of some embryos is merely an unintended side effect of IVF. This argument might, perhaps, succeed if it were wrong to destroy unwanted embryos in research. However, we have already argued that this is not so. Once embryos have been produced, it is permissible to destroy them in research, provided that they are unwanted and that the parents consent. Therefore, in producing embryos for research, we produce them with the intention of treating them in permissible ways. It is difficult to see what could be wrong with that.

Embryos have a special moral value when they are a part of a plan to form or extend a family. When they are not part of a plan to form or extend a family, they can still have a special moral value: as a means of extending knowledge and saving or improving the lives of people.

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