PART I: MORAL STATUS

Introduction to Part I

All bioethical issues involve entities that are morally relevant or significant because they have moral status. To have moral status is to deserve to be an object of our moral concern. Moral agents owe duties and obligations to an entity with moral status. They have rights and their interests count. So in addressing bioethical problems, it's always important to look closely at the moral status of the entities relevant to them. With this in mind, part I discusses two current bioethical issues: chapter 1 discusses stem cell therapy; chapter 2 looks at xenotransplantation. The entities relevant to stem cell therapy are persons (patients who stand to benefit from the therapy) and the very young embryos that would be used to develop and provide the therapy. The entities relevant to xenotransplantation are animals (non-human animals, such as baboons and pigs) who would be used as organ sources, and human beings (including both patients who stand to benefit from xenotransplants, and human non-persons, such as anencephalics, who might be an alternative organ source). Grounds for the moral status of these are discussed, and the ethics of stem cell therapy and xenotransplantation are then considered.

1 Stem Cell Therapy

The aim of this chapter is not to clear up the ethical controversy over stem cell therapy; the problem is too intractable for that. Rather, the aim is to show how focusing on the moral status of those that stand to be affected by stem cell therapy, namely persons and embryos, elucidates the controversy. In 1.1 stem cell therapy itself, and the general worries about its permissibility, are outlined. Then the grounds for the moral status of the two relevant entities are explained. The two relevant entities are persons (potential beneficiaries of the therapy) and embryos utilized by the therapy. Since the moral status of persons is relatively uncontentious, more time is spent discussing embryos. Here two questions are addressed: first, is there a viable version of the potentiality principle; and, second, if so, do very early embryos (of the kind that would be used in stem cell therapy) fall under that principle? It's argued in this chapter that the moral status of very young embryos can be grounded in potentiality, so the ethics of stem cell therapy have to be considered in the light of this.

1.1 Stem Cell Research and Therapy

Why are stem cell research and therapy so hotly contested at present? The main focus in this chapter is on the way stem cell therapy trades off the interests of persons and potential persons. The former would

be beneficiaries of the therapy. The potential persons in question are the very early embryos that are jeopardized by stem cell research and therapy. Before looking at this trade-off in depth, stem cell therapy in general, and the main ethical worries it raises, are sketched. (Note that, throughout the discussion, 'embryo', 'blastocyst', 'foetus', and the like, are used to refer to human ones.)

What are Stem Cells, How Might They be Useful, and Where are They From?

The crucial thing about stem cells is that they can transform into other types of cells, such as muscle, nerve, heart, blood and skin cells. Many serious medical conditions are due to disease of, or damage to, cell tissue. These include demise of heart tissue due to heart disease, neuronal degenerative disorders such as Parkinson's and Alzheimer's disease, spinal cord injuries to nerve cells, and severe burns that destroy skin cells. Feasibly, new cell tissue of the relevant type could be produced from stem cells and the resultant material could be transplanted into patients to repair or replace damaged tissue. So, for example, stem cells could be transformed into cardiac cells and transplanted into a patient suffering heart disease, thereby repairing their damaged organ. It's also considered feasible to grow stem cells into an entire transplant organ, though it's unclear whether they can be cultivated to the level of organization required. There are other important, though less dramatic, potential benefits. Drugs could be tested on cultures of specialist cells (liver, skin, and so on) derived from stem cells, as opposed to people. And stem cell research offers opportunities to improve our general understanding of human development. Another, even more futuristic-sounding, possible use of stem cells is to develop therapies to increase life-span (see Holm 2002: 493–7).

Stem cell research and therapy present myriad ethical worries. There isn't space here to discuss all these, but at least some general comments can be made by way of introducing the topic, and a way of structuring the issues can be suggested. The first thing to note is that the investigation of stem cells is nascent; in fact, it's arguable that potential beneficiaries have been somewhat misled into thinking that stem cell therapy is more imminent than is the case. On the other hand, it's also important to bear in mind that, because stem cell therapy seems to promise such enormous medical benefit, only a tiny fraction of the potential therapeutic value of stem cells has to be realized to make a huge difference to patients. Because our thinking about stem cells is in its infancy, numerous future developments are possible, most of which

invite ethical worries. Many of these are familiar from other biomedical procedures, such as embryo research, abortion and assisted fertility; in fact, the issue discussed fully in this chapter, the moral status of the embryo, is a case in point. But stem cell therapy adds new urgency to these, as well as raising some distinctive concerns. (For a summary of ethical issues, see Holm 2002: 497–507.)

A way to structure one's thinking about the controversy is to distinguish ways of acquiring stem cells. Stem cells are found in embryos, foetuses and adults. Let's take each in turn, starting with embryos. At about five days or so an embryo develops to become a blastocyst (a hollow ball of cells that looks a bit like a blackberry), from which, in principle, stem cells could be extracted (extracted stem cells would not on their own transform into an adult human because they can't give rise to tissue, such as the placenta, required for full embryonic development). An important distinction here is between using 'spare' embryos created as part of a fertility treatment programme, and actually creating embryos for the purpose of extracting stem cells. There's a further important distinction because stem cells could be extracted from cloned embryos produced using somatic cell nuclear transfer. This process involves removing the nucleus of an oocyte (the female germ cell, or egg) and replacing it with the nucleus of a somatic cell (such as a skin cell) taken from the patient to be treated by stem cell therapy (for more on cloning techniques, see 10.1). Stem cells would then be extracted from the resultant blastocyst. Here it's important to note a very strong practical consideration in favour of using cloned embryos, namely that a recipient would not reject materials developed from stem cells extracted from their cloned embryos. So much for embryonic stem cells; what about non-embryonic sources? Stem cells are found in the primordial germ cells of foetuses (germ cells are those that would develop into sperm or egg cells). So stem cells could be extracted from electively aborted foetuses. Finally, adult stem cells are found in the blood cells of umbilical cords at the time of birth; also, mature humans carry stem cells around with them, albeit in progressively decreasing numbers, for example in their bone marrow. So, at present, there seem to be five main potential sources of stem cells: 'spare' embryos; embryos created in order to extract stem cells; cloned embryos; foetuses; and adults. (For a summary of the current state of scientific affairs, see DoH 2000.)

The obvious ethical problem, and the one discussed at length in this chapter, is the use of embryos. Here there are some points to bear in mind. First, suppose it turns out that we can do stem cell therapy using a non-embryonic source, perhaps by reprogramming adult stem cells.

We would not have thereby avoided the tricky ethical question about embryos, because the development of any stem cell therapy would require considerable research, and it's generally agreed that the research needs to be done on embryonic stem cells. So to get to the stage where non-embryonic stem cell therapies are available, embryos would have to be utilized. Another point to bear in mind here is that the kind and severity of ethical problems depend on which type of embryo is used. Extracting stem cells from 'spare' embryos seems morally more palatable than creating embryos in order to acquire stem cells; but not, of course, to someone who takes fertility treatment to be unethical in the first place (see chapter 8). Cloning embryos raises further worries, such as whether it puts us on a slippery slope to human reproductive cloning (see chapter 10). Concerning the stem cells found in foetuses, perhaps, since abortions are sanctioned, there is no great moral step required to extract stem cells from aborted foetuses (though, of course, an anti-abortionist would disagree, and anyone might worry that stem cell therapy would thereby provide an inducement to abort; see Polkinghorne Review 1989). Utilizing adult stem cells seems morally least problematic (though the fact that adult stem cell therapy would be preceded by embryo research should be kept in mind), but at present the prospects for therapies using adult and foetal stem cells are less bright than those for therapies using embryonic sources.

In sum, stem cell therapy is a hugely exciting biomedical possibility, but there are serious ethical qualms about the development and provision of such therapy, especially around the extraction of embryonic stem cells. Recall that the aim of this chapter is to address the ethics of stem cell therapy via the notion of moral status. One way of pursuing the stem cell controversy is to reflect on the relative moral status of persons (recipients of stem cell therapy) and embryos (which are jeopardized by stem cell research and extraction). So our focus is on whether these entities have moral status; and, if so, on what grounds, and to what extent, relative to one another. The next section looks at the moral status of persons, then the moral status of embryos is discussed.

1.2 Persons

That persons have moral status is so uncontentious that it might seem unnecessary to discuss it. None the less, once the question has been

raised as to the grounds of the moral status of persons, some interesting issues arise. Consider, first, some points about the development of the idea of 'persons'.

Locke and Kant

Locke's famous discussion is a milestone in the development of the concept 'person' (Locke 1997: II. xxvii; for comments on the concept of a person prior to Locke, see Poole 1996: 39–40). Locke does two important things: first, he separates out persons and human beings; second, he discusses identity conditions for persons (the conditions under which a person can be identified with someone in the past, and so held morally responsible for their actions). The first of these is important at present; the second is important in part III. On Locke's account, then, 'person' and 'human' are distinct categories: not all humans are persons, and perhaps not all persons are human. Locke went on to define a person as follows: 'A thinking intelligent being, that has reason and reflection, and can consider itself, the same thinking thing, in different times and places.' On this account a certain psychological capacity, comprising rationality and self-consciousness, is the distinguishing feature of persons. In sum, Locke said that personhood is a distinctive state (being a person is not the same as being a human), and creatures achieve that state in virtue of distinctive psychological characteristics (rationality and self-consciousness).

A related line of thought is associated with Kant. Kant agrees with Locke that personhood is a matter of psychological capacities. But whereas Locke talked of rationality and self-consciousness in general, Kant associates personhood with a capacity for moral agency. Sometimes Kant's view is summed up in metaphors such as 'persons are members of the moral community'. This is a bit obscure; to get inside Kant's thinking, focus on his notion of freedom, or an autonomous will. For the most part, the world comprises things that 'behave' in ways that are causally determined; by natural laws, in the case of inanimate things, and by non-rational impulses and instincts in the case of animals. But a normal, mature human such as you and me is capable of, as it were, rising above this causal nexus and imposing its will on the world. This is due to our rational faculty, an ability to 'stand back' from the world, consider, and act on the basis of reasons. For Kant, the quintessential exercise of this capacity is moral action. This is often captured in a phrase such as 'ability to act in conformity to the moral

law'. This means that a paradigmatic exercise of the capabilities Kant had in mind is when an agent works out their duties, and acts out of a sense of duty. Uniquely, persons have this capacity and it ensures their moral status.

What status does this confer on persons? According to Kant, 'everything has either a *price* or a *dignity*. If it has a price, something else can be put in its place as an *equivalent*; if it is exalted above all price and so admits of no equivalent, then it has a dignity' (Kant 1948: 102). Crucially, persons belong in the latter category: they have a dignity not a price. By contrast, non-persons have an exchange value. Think about some familiar object, such as my coat. It's a thing, not a person (it displays none of the capacities relevant to moral agency). As such it has an exchange value. The money that changes hands when it's bought or sold is of equivalent value to the coat. Or the coat could be exchanged for some non-monetary item, in a barter exchange (we could agree to swap coats, for example). However it is organized, the transaction is based on the exchange value of the coat. No such transaction is appropriate in the case of persons. There is nothing, monetary or non-monetary, that has the equivalent value of a person. Persons are priceless. That's what Kant meant by 'dignity', and it's the basis of the famous Kantian dictum: don't treat people merely as means but always as ends in themselves (see Kant 1948).

It's very important that Kant shares Locke's view that persons, not humans, have moral status. 'Persons' does not mean 'humans'. To see this, focus on the Kantian condition for moral status, namely a capacity for moral agency. Not all humans are persons, because not all humans are capable of moral agency (these are the 'human non-persons' discussed in the next chapter). On the other hand, if extra-terrestrials with a capacity for moral agency exist, on Kant's account they too would be, and have the moral status of, persons. And there's nothing to preclude non-human animals on this planet from personhood provided they exhibit Kantian characteristics. So if research revealed that chimpanzees exhibit the relevant capacity for moral agency, they would be (non-human) persons. (For an eloquent diatribe against this abstraction of persons from animals, implicit in the Locke–Kant line of thought – and the role it's played in modern moral philosophy – see Poole 1996.)

Two issues arise here. The first is that, assuming that we can agree on what psychological abilities are relevant to personhood (see Dennett 1976; Tooley 1998), it still has to be explained why psychological capacities confer moral status on creatures. In a classic article on abortion, Marquis (1989: 186–7) makes the point perfectly:

> The term 'person' is typically defined in terms of psychological characteristics, although there will certainly be disagreement concerning which characteristics are most important. Supposing that this matter can be settled, the pro-choicer is left with the problem of explaining why *psychological* characteristics should make a *moral* difference . . . it is legitimate for the anti-abortionist to demand that the pro-choicer provide an explanation of the connection between psychological criteria for being a person and the wrongness of being killed.

Marquis's point is that there's a 'fact–value gap'. In other words, there's a gap between the fact of having certain psychological characteristics and the value judgement that creatures that have them enjoy moral status. What bridges this gap?

This difficulty puts pressure on the basic claim that psychological characteristics confer moral status. But perhaps the Kantian line of thought about persons helps alleviate this problem. There's only a problem here if there is some sort of divide, or difference in kind, between psychological characteristics and moral status; in other words, if there is a gap between the two. But for Kant the distinctive thing about persons is their capacity for rational moral agency. In other words, what is so distinctive about persons, according to Kant, is that we have a rational capacity that is evinced in our moral deliberations. So for Kant there aren't two sets of things, psychological ones (such as rationality) and ethical ones (such as moral action); there's just one thing: rational moral agency. In which case, there isn't the gap between the factual (psychological) and valuable (moral agents and agency) that gave rise to the problem. (To pursue these themes, see Frankfurt 1971; Rorty 1976; Singer 1979: 72–84; Harris 1985: ch. 1; Warren 1997: 96–9.)

The second issue that arises is this. Kant said that not only do persons have moral status, but also only persons have moral status. In other words, a capacity for moral agency is both sufficient and necessary for moral status. This is important for the discussion in this chapter because Kant's position ruins the strategy of part I, which is to look at bioethical problems by considering the moral status of various entities affected by biomedical innovations. So is Kant right to restrict moral status to persons? Nowadays, this looks anachronistic. Our current intuitions, practices and institutions clearly indicate that we take entities other than persons to matter, morally speaking. Of course, whether or not we are right to do so is very pertinent. But surely the view that persons and only persons have moral stature is, nowadays, something for which we should argue, as opposed to something

we should take on Kant's word. So let's assume that Kant is wrong, and personhood is a sufficient but not necessary condition for moral status, and see where the arguments lead us (cf. Cohen 1986; Engelhardt 1986: 104ff; Rollin 1998).

1.3 The Potentiality Principle

This section moves on to the moral status of the other set of creatures that stand to be affected by stem cell therapy, namely embryos. The moral status of such entities is much more contentious than that of persons. Often it's grounded in their potential, the 'potentiality principle' being that entities enjoy moral status in virtue of their potential to develop into persons. The aim of this section is to present a cogent and defensible version of the principle.

Potentiality as Possibility and Probability

That we are on difficult terrain is indicated by a contradiction in our thinking about the kinds of entities in question. On the one hand, we tend not to think of entities such as embryos and foetuses as negligible. In fact, we tend to think of all entities connected with our reproduction and development as significant, even tangential materials such as menstrual blood (think of the taboos surrounding them). On the other hand, it's very hard to convincingly state the relevance of entities' future personhood to their present moral status. By definition, potential persons are not persons. If *X* is a potential *Y*, then *X* isn't a *Y*, precisely because it's only potentially a *Y*. Superficial grammatical features can obscure this. Saying, '*X* is a potential *Y*' can seem to confer some of *Y*'s identity on *X*. But a paraphrase clarifies matters: saying, for example, '*X* has some likelihood of becoming a *Y*' makes it clear that, since the *X* is not a *Y*, *Y*'s moral status is, presumably, irrelevant to it (Engelhardt 1986: 110–13).

The last point indicates that the moral significance of potential persons should be grounded on their current potentiality, and not on whatever moral status they might enjoy in their future incarnations as persons. Given this, it's natural to put the potentiality principle in terms of possibility: if *X* is a possible *Y*, and *Y* has moral status, then *X* has moral status. Since, for example, it's possible for a foetus to become a person, then the foetus has moral status. But this proves too much.

With sufficient scientific dexterity, it's possible for something to become lots of other things. So if we interpret potentiality as possibility, a thing acquires moral significance by reference to any morally significant thing it could conceivably be turned into. A specific example of the problem is that gametes can 'possibly become a person', in the sense in which ingredients can become a cake. So on this account individual sperm and eggs would have moral status. But this would have unwanted repercussions, such as moral prohibitions on contraception and celibacy, and the moral prescription to fertilize as many eggs as possible.

Maybe we can avoid these difficulties by interpreting potentiality as probability rather than possibility. True, it's possible for one thing to become lots of other things. But many transformations are quite unlikely. Some would require remarkable scientific intervention. By contrast, it's very likely that an embryo or foetus will result in a person. This interprets the potentiality principle as: if X is a probable Y, and Y has moral status, then X has moral status. Since embryos and foetuses are very likely to result in a person, they thereby acquire moral status. But again there's a very simple counter-argument. The probabilities in question (of one thing becoming another) vary according to circumstances. So, given the principle, moral status would also vary according to such circumstances. But this involves us in paradoxes. It's not the case that all babies are born in like circumstances. Some are born into poverty or suffer congenital defects whilst others are born healthy to comfortably-off parents. Given this, the probability of neonates in dissimilar circumstances achieving personhood varies dramatically. So, according to the 'potentiality as probability' principle, they have dissimilar moral status. But surely this isn't right; surely all babies have the same moral status despite their uneven starts in life?

Understanding potentiality as either possibility or probability hasn't worked. At this point there are various options. The potentiality principle could be abandoned in favour of concentrating on other grounds for the ethics of our treatment of entities such as embryos and foetuses. Perhaps it's their instrumental value for persons (Engelhardt 1986: 110–13) or their rudimentary interests (Singer 1979: 119–22) that matter. But, on reflection, such strategies seem unsatisfying (besides which, they are intrinsically problematic); so perhaps it's worth persevering with potentiality as the ground for our sense of the moral significance of entities that are expected to become persons.

Active Potentiality

The best way to proceed distinguishes active and passive potentiality. To explain, consider a conker, a horse chestnut tree and a table. The conker might become a horse chestnut, and that tree might become a table. But reflection on the two transformations reveals that they are of different kinds. Left to its own devices, the conker will become a horse chestnut tree; left to its own devices, a horse chestnut will not become a table. There's an immediate difficulty in the phrase 'left to its own devices'. The conker-to-horse-chestnut transformation doesn't take place independently of all other factors. For example, without soil and water the conker will die, rather than become a horse chestnut. So external factors are important in the realization of its potential. This seems to spoil any distinction because the latter kind of transformation, from horse chestnut to table, is also achieved by external influence, namely carpentry.

But the passive/active potentiality distinction survives this initial problem (cf. Tooley 1998: 122–3). The relevant sense of potentiality is not the potential to realize a transformation independent of any external factors (almost nothing transforms itself that way). Rather, the distinction is in terms of the kind of external influence required. For a conker to turn into a horse chestnut, what's required is that external factors don't frustrate its natural ability to achieve the transformation. What is required is that the environment is not lacking things (such as soil and water). By contrast, what's required to turn a horse chestnut into a table is not just negative (factors that would frustrate the transformation are not present) but also positive; specifically, that the carpenter makes a table of the tree. So in the former case the transformation is effected by a potential tree in appropriate circumstances; in the latter case it's effected by an external agent (the carpenter) making a thing out of something that wouldn't otherwise become that thing. It's in this sense that the conker has the active potential to become a horse chestnut whereas the tree's potential to become a table is merely passive.

Active potentiality is connected to the Greek word *telos* and the phrase 'inherent teleology'. The idea shared by all these is the natural, in-built tendency of a thing to develop in a certain way. It seems very promising so far as grounding the moral status of potential persons is concerned. It takes as the potentiality principle: if *X* has the active potential (or *telos*, or inherent teleology) to become a *Y*, and *Y* has moral status, then *X* has moral status. Conceptuses, embryos, foetuses and neonates have the active potential to become a person, and there-

fore enjoy moral status. (For a recent reappraisal of the potentiality principle along the lines I've taken here, see Reichlin 1997; for a classic objection to the potentiality principle, see Tooley 1972; a more recent critique is by Perrett 2000.)

Gametes and Active Potentiality

One difficulty with putting the potentiality principle in terms of active potentiality or inherent teleology involves gametes. Do gametes fall under the principle, as just stated? In other words, do gametes belong in the same category as post-fertilization entities (conceptus, embryo and foetus)? The problem is that gametes are in one sense like, and in another sense unlike, post-fertilization entities. They are like them in that it seems to be part of their inherent *telos* to become a person. The sole purpose for which we produce gametes is reproduction (they have no other biological function). They contain the genetic materials from which the resultant person's genome is formed. Without intervention (freezing, for example) the only fate awaiting gametes that fail to contribute to fertilization is destruction. So it sounds unconvincing to say that it is the inherent *telos* of a conceptus to become a person, but not that of a gamete. On the other hand, unlike post-fertilization entities, external agency is required to enable gametes to fulfil their potential. Sperm have to be introduced to the egg, by sex or some equivalent, such as IVF (or, if parthenogenesis were possible, the gamete has to be manipulated by the technician). Recall the phrase 'left to its own devices'. Left to its own devices, a gamete does not become a person; rather, it persists for a while and then disintegrates.

A way to reflect on this ambiguity about gametes is to construct a thought experiment to test out our intuitions. Imagine that our reproductive system is very different to how it actually is. Imagine that all normal, healthy adults produce an egg and a sperm in their abdomen every two years. No action is required to do this. It happens as a natural physiological process, just as men in our world produce sperm or women in our world produce eggs. Sperm is reliably introduced to the egg, and fertilization normally takes place. The post-fertilized entities then develop in the abdomen and a child usually results. It seems right to say that, if this really were our reproductive system, we would not think of the sperm and egg as of any less significance than any other entity at any later stage in the reproductive process. The mere fact that, at the gamete-to-conceptus stage, two entities had to fuse would not be seen as relevant. It would be no more relevant than the 'fusion' of proteins ingested by a woman carrying a developing embryo in the real

world. In the possible world, gametes would be potential persons, alongside post-fertilization entities.

Now come back to our world, with the thought experiment in mind. It would seem that, here, we do think of the gamete-to-conceptus stage as a different kind of transformation to those that take place post-fertilization, and that the entities (gametes) involved are of a different kind. Presumably this is because of the way in which the gamete-to-conceptus transformation is achieved, namely by external agency. Were the process internal, as in the thought experiment, we wouldn't make this distinction; but because it's not, we do. The important feature is that, as a matter of contingent biological fact, we have to do something (have sex or some equivalent) if the gamete-to-conceptus stage of a person's development is to be completed. We don't have to do anything equivalent for the development of a post-fertilization entity. So we don't have to include gametes under the potentiality principle as presented in this section; in which case, the potentiality principle as stated here avoids the problem with gametes.

1.4 Does the Potentiality Principle Apply to Embryos Used in Stem Cell Therapy?

The aim of the previous section was to present a viable version of the potentiality principle. But a further question has to be addressed before moral status becomes a useful way of approaching the controversy over stem cells. The entities jeopardized by stem cell therapy are blastocysts that start to form at around five days. Are they too young to be potential persons? Suppose not. Then embryonic stem cell therapy is morally problematic because it would trade off the interests of two kinds of morally significant creatures, namely persons and embryos.

There are two reasons for thinking that the blastocysts jeopardized by stem cell therapy are too young to fall under the potentiality principle. Each is linked to facts about human reproductive biology. First, most of the stuff that makes up a blastocyst doesn't contribute to the formation of the later embryo; rather, it supports and nourishes the embryo proper, principally in the form of placenta and foetal membranes. Second, very early embryos can split to form two (or more) embryos, resulting in twins (or more). At around fourteen days the 'primitive streak' of cells appears, after which neither of these points apply. It's this that motivates the view that up to fourteen days there's a morally unproblematic 'pre-embryo', a view that underpins relatively permissive approaches to embryo research such as that in the UK (see

HFEA 1990; cf. Brody 1998). Let's look more closely at these two sets of facts.

Support Systems

The first set of facts relates to the point that the bulk of the pre-embryo does not form the embryo proper. Most of what makes up the pre-embryo will develop into support systems such as the placenta and foetal membranes. One response is what Alan Holland (1990: 31) labels 'I'm-in-there-somewhere'. Some of what constitutes the early embryo develops into a person, so that person can be traced back to the relevant parts. Thus the early embryo 'contains' (amongst other things) an early incarnation of that person. Since that young human being is a potential person, the early embryo has moral stature according to the potentiality principle as outlined in 1.3. The problem with this is indeterminacy. It's not possible to identify those parts of the pre-embryo that develop into that person versus those that develop into support systems. Since there's no determinate portion of the embryo with which the person can be identified, the 'I'm-in-there-somewhere' response founders.

There's a somewhat obscure, but interesting, rejoinder to this that takes us into the area of the philosophy of the body. It's tempting to think that there's no problem in delineating, or drawing a line around, oneself. For example, I know where I end and my environment begins. My hand is inside the line; the cup I'm holding is outside it. But it's easy to generate ambiguities. What about that hair of mine that's just about to fall out? The dead nail on my little toe? The sweat about to drip off me, the saliva I'm about to spit out, or the bacteria living in my gut? What about the urine in my bladder? It's not so obvious, after all, how to draw the line around even an adult human being. What about the foetus? There is the same temptation to draw a line around the miniature human familiar from ultrasound scans and pictures. But, on reflection, again it isn't so obvious. Perhaps the placenta, umbilical cord and all the other stuff that the pre-embryo develops into should go inside the line drawn around the human being. The obvious objection to this is that much of it doesn't survive birth. Having done its job, the placenta, for example, is discarded. But recall that lots of what I might call a part of me – dead toe-nails, urine, and the like – is about to be discarded. In fact, almost all of it is, eventually, since almost every one of my current cells will die before I expect to. So according to this line of thought, everything that the pre-embryo develops into is part of the individual human being.

But although this would defuse the 'support systems' argument, we could be drawn either way here. We might say that all of what the pre-embryo develops into is the individual human, or we might not. There doesn't seem to be a correct conceptualization. Impressed by the point about dead toe-nails and urine, one might say that the placenta, for example, is part of the individual human being, of which the foetus is another part. On the other hand, it does sound very odd to think of the placenta as an earlier part of oneself. So this line of thought is somewhat inconclusive.

Twinning

The second set of facts that suggest the blastocyst is too young to fall under the potentiality principle concerns twinning. It's important to clarify why it matters that the pre-embryo might develop into more than one foetus. The problem starts with a dilemma. Bear in mind that twins are two human beings, and the claim under consideration is that the pre-embryo from which they developed is also a (very young) human being. There are only two choices: either the pre-embryo is one human being or it's two. Take the latter first. The human being that is the pre-embryo is now twins. The problem here is known as co-location. It's generally held that two distinct entities can't occupy one and the same location in time and space. The intuition here is clear: we ordinarily think that if there's, say, a cup there, then nothing else could be there too. We offend this principle if we say the pre-embryo in question is now twins. We'd be committed to saying that there are two entities in one location. Moving to the other horn of the dilemma, we say that the human being that is the pre-embryo is a single human being (that will become twins). The problem here is the principle of transitivity (if $a = b$ and $b = c$ then $a = c$). If one of the twins is identical with the pre-embryo, and so is the other twin, then the two twins are identical with one another, which is clearly untrue.

We can avoid the dilemma by saying different things about pre-embryos that will split and pre-embryos that won't. We might say that the life of a non-twin can be traced all the way back to conception, but the life of a twin can be traced back only to the stage after which the splitting occurred. But then one's origins would depend on whether one happens to be a twin. More to the point, suppose we kill two embryos, one of which would have split, the other of which would not. Surely it's not the case that if we kill the former we kill a human being, but if we kill the latter we do not kill a human being. Presumably, then,

what goes for twins goes for non-twins: life can be traced back only to the point after which twinning could occur, about fourteen days after conception. Before that there's no human being, just a pre-embryo, lacking moral status. The problem with this conclusion is simply that it doesn't sound right. People tend to think that their life began at conception. There's a good argument from twinning to a conclusion we'd be reluctant to accept. (For further discussion see Holland 1990; Eberl 2000.)

Potentiality Revisited

An impasse seems to have been reached. But perhaps there is a way out of it, albeit a very contentious one. It might have occurred to the reader that the potentiality principle, which was laboured in 1.3, has been left behind. The focus has been on the question as to whether the blastocyst that would be affected by stem cell therapy is a very young human being; specifically, does a human life begin at conception or fourteen days? Making this question central brought us to an impasse. Perhaps it would be better to refocus on the potentiality principle. Then the question is not what the very early embryo is, but whether it (whatever it is) falls under the potentiality principle. Now, the contentiousness here is that most people would say that these two questions – 'is the early embryo a human being?' and 'does the early embryo fall under the potentiality principle?' – are really one and the same. They say this because, if the early embryo is a human being, then, presumably, it is a potential person, and so falls under the potentiality principle. Conversely, if the early embryo is not a human being, then it becomes a potential person only after fourteen days, and falls under the potentiality principle from that point.

But perhaps we should agree with only half of this. In other words, it sounds right to say that, if the early embryo is a human being, it falls under the potentiality principle. But could it fall under the principle even though we're unsure as to whether it's a human being? When we rekindle the spirit of the potentiality principle as presented in 1.3, an intriguing possibility opens up. Recall that potentiality is not about the possibility or probability of one thing becoming another. It's about one thing having the active potential – *telos* or inherent teleology – to become another. What is important is the sense in which a thing naturally strives or urges toward becoming something else (recall the conker and the horse chestnut tree). Now, we reached an impasse when discussing whether the five-day-old blastocyst is a pre-embryo, embryo

proper or human being, but, arguably, the natural *telos* of that whole entity from conception onward is toward the development of personhood. For all the indeterminacy (which bits of the blastocyst end up in the embryo proper, which not; whether it divides or not), one thing seems clear: the point or *telos* of everything involved is personhood. The point of the placenta is to support that which will (hopefully) become a person. If the embryo splits, it splits into two (or more) things that have the active potential to develop into persons. So the early embryo seems to have the feature crucial to the potentiality principle, namely an inherent teleological 'urge' toward personhood.

1.5 The Stem Cell Controversy and Moral Status

Stem cell therapy is said to be morally problematic because its most promising form uses embryonic stem cells, so it jeopardizes very early embryos that have moral stature. Thus the question as to whether very early embryos have moral status is clearly central. The general point of the foregoing discussion is that there is a way of making out that the blastocysts jeopardized by embryonic stem cell therapy have moral status. Does this mean, then, that embryonic stem cell therapy can be ruled out on ethical grounds? That would be too quick. What has been presented amounts to a prima facie case against stem cell therapy. But prima facie grounds can be overridden. And many considerations other than moral status are relevant to the morality of stem cell therapy. The point of this section is to indicate how the debate between proponents and opponents of stem cell therapy might develop in light of the moral status of early embryos.

To begin, it's worth bearing in mind that, in the end, the matter might well be decided by some factor much more prosaic than the moral status of creatures that stand to be affected by stem cell therapy. Stem cell therapy might turn out to be a big let-down: for example, there might be some insurmountable technical problem with extracting and cultivating stem cells, or successfully transplanting resultant materials. Or, for example, the financial costs might be so great as to present an overwhelming resource allocation argument against developing stem cell therapy. In such events, a moratorium would be placed on stem cell therapy research and development; or, if a programme of stem cell therapy research and development were ongoing, it would be terminated. So the kind of debate described in this section unfolds only if there is no such prosaic reason for abandoning stem cell therapy.

The Stand-off between Proponents and Opponents of Stem Cell Therapy

Proponents of stem cell therapy might point out the important distinction between things having moral status, and the relative moral status that things have. Specifically, it's one thing to accept that both patients and blastocysts have moral status, another to say that they enjoy equal moral status. (This is one of the many points at which a more comprehensive theory of moral status is required than can be offered here; for an important recent attempt, see Warren 1997.) Given this, the proponent's position is that stem cell therapy is prima facie wrong because it endangers creatures of moral stature (namely embryos) but justifiable because of the benefit it would confer on creatures of greater moral status (namely therapees).

The proponent's position seems perfectly cogent, but it does beg the question as to why they think persons have higher moral status than embryos. They might appeal to the fact that the patient is, as it were, up and running. Typically, potential beneficiaries of stem cell therapy are said to be mature individuals, such as the actor Christopher Reeves, whose established lives were cruelly truncated by accidents and illnesses. Crucially, such patients experience the harms and benefits that accrue from decisions to allow or disallow stem cell therapy. Also, such patients are probably entrenched in important relationships with others (spouses, children, and so on) who will have similar experiences. By contrast, the life of a blastocyst, for all its potential, has hardly got going at all. It experiences nothing; specifically, it experiences nothing in virtue of decisions to allow or disallow stem cell therapy.

Opponents of stem cell therapy will not be convinced by such manoeuvres. They will say that the crucial point about moral status has been missed here. The very point of asking after the moral status of entities is provided by the following principle: there is something very wrong with developing any biotechnology that endangers creatures of moral stature. Given this, establishing the moral status of blastocysts requires us to recognize that there is something very wrong in principle with developing any biotechnology that endangers them. In which case, the kinds of considerations just adduced on behalf of proponents of stem cell therapy will appear simply irrelevant. It's about neither whether a life is 'up and running' nor what is experienced by those (patients and others) affected by stem cell therapy. Rather, it is about identifying those things in the world that have rights to protection, then protecting them. So if, as has been suggested above, there

are grounds for the moral status of blastocysts, then stem cell therapy is unavoidably problematic.

The proponents of stem cell therapy might retort: yes, but how problematic? They might appeal to some analogies to argue that opponents are proving rather too much. There are two obvious analogies from within bioethics, namely abortion and research. Recall the stem cell therapy's opponents' principle that there is something very wrong with developing any biotechnology that endangers creatures of moral stature. This principle would rule out all abortions (because aborted foetuses have moral status) and all invasive medical research (on subjects that have moral status). But, argue the proponents, this is to rule out too much. Specifically, it would rule out abortions to save the life of the mother and medical research in which the benefits very clearly outweigh risks to subjects. But, again, the opponent of stem cell therapy would say that the crucial point is being missed. The point of making moral status central is given by the principle just mentioned; in which case analogues such as abortion and research are themselves intrinsically morally problematic, no matter how medically beneficial or expedient.

Summary of Chapter

The aim of this chapter is to introduce the ethics of stem cell therapy by reflecting on moral status. The point reached is inconclusive because the controversy over stem cell therapy is too complex to be decided here. None the less, the controversy has been elucidated by considering the moral status of affected entities. If blastocysts are morally negligible, there can be no directly moral objection to stem cell research and therapy (though there might well be other objections, such as cost). But since there are grounds for considering blastocysts to have moral stature, further reflection is required on whether proponents or opponents of this biomedical innovation hold the correct view.