NYU Grossman School of Medicine

DIVISION OF MEDICAL ETHICS

HIGH SCHOOL BIOETHICS PROJECT

Stem Cell Research

Overview

In this unit, students will explore the scientific, conceptual, and ethical implications of embryonic stem cell research. Why does this matter? Well, for one thing, the decision of whether to allow or ban stem cell research may have a significant impact on the lives and welfare of thousands, if not millions, of people. The reason the debate between advocates and opponents of stem cell research is so fierce is that the arguments used are based on deep-seated beliefs about the nature and the status of human life and personhood. One of the main goals of this unit is to provide students with a thorough understanding of several concepts surrounding stem cell research, so that they can develop an informed perspective on the topic. The three main components of the unit are:

- Analysis of key concepts used in the debate about stem cell research.
- Exploration of scientific facts regarding stem-cell research.
- Tools for ethical reasoning and decision-making. In the course of the unit, students will explore questions such as: What exactly are embryonic stem cells? Do embryos constitute human persons? What are current regulations and what ethical claims are they based on?

Contents

2. Pre-Existing Knowledge
3. The Debate: Analysis of Key Concept
4. The Facts: The Science of Stem Cells and Stem Cell Research
5. Ethical Perspectives
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Learning Outcomes

1. Understand and assess the main arguments used in the stem cell debate
2. Learn basic scientific facts about stem cells and stem cell research
3. Understand the ethical and philosophical implications of stem cell research
4. Develop and be able to defend a position on the issue of stem cell research

Procedures and Activities

This unit uses a student-centered and interactive approach to teaching. Activities are designed to allow for a maximum degree of student participation and collaboration. Each activity is marked as an individual, partner, or group activity, or as a teacher-directed class discussion.

The following are various types of activities:

- Individual Activity
- Partner Activity
- Group Activity
- Teacher-Directed Class Discussion

1. Introduction to Topic

The current debate surrounding embryonic stem cell research dates back to 1998, the year Dr. James Thompson from the University of Wisconsin-Madison succeeded in isolating cells of early embryos (donated by individuals who were undergoing treatment at fertility clinics) and developed the first embryonic cell lines. A heated

moral debate ensued about whether the use of embryonic cell lines in research should be allowed or banned. This very public debate culminated with President Bush limiting federal funding of embryonic stem cell research to cells that had already been derived at the time of the announcement, on August 9, 2001.

Despite Bush's decision, the debate has since continued among scientists, bioethicists, religious leaders, patient advocates, celebrities, and politicians. On one side of the debate, there are those who consider any kind of research on human embryonic stem cells to be morally reprehensible, because it involves the destruction of human embryos. On the other side, there are those who believe such research to be crucial in the development of promising ways to combat otherwise incurable diseases, such as Parkinson's disease, or trauma such as spinal cord injury. Early in his term, on March 9, 2009, President Barack Obama lifted the ban on embryonic stem cell research. In 2019, President Donald Trump's administration ended all fetal tissue research, following a sustained campaign by abortion opponents, and then, in April 2021, the Joseph Biden administration lifted the Trump ban. Despite the continued debates, in 2023, 63% of Americans believed embryonic stem cell research is morally correct.

This unit consists of three main components:

- Conceptual Analysis: A close examination of key concepts used in the stem cell debate will give students an impression of how strongly people feel about this issue, and introduce students to overarching questions for this unit: Should stem cell research be allowed or disallowed on ethical grounds? The following analysis of key concepts will raise questions about concepts like 'life,' 'personhood' and 'personal identity.' Key questions include: What is the definition of 'life?' When did you become *you*? Through independent exploration, students will become aware of the extent to which such definitions are used in an ambiguous and misleading way, and that an in-depth understanding of these notions is essential for decisions about the validity of the arguments that use them.

- Scientific Facts: Next, a brief presentation of the scientific facts about stem cell research will provide students with an understanding of the technical terminology and distinctions between "stem cells" and "embryonic stem cells",

etc. What exactly are stem cells? What are embryonic stem cells? What does embryonic stem cell research entail? What are the potential applications and benefits of embryonic stem cells?

- Ethical Reasoning: armed with both an understanding of the key concepts in this debate and an understanding of the scientific facts, students will be ready to consider the ethical implications of this issue. Students will be provided with the tools for ethical decision-making within the context of the major approaches to ethics, including deontological ethics, utilitarianism, and virtue ethics. Understanding these different ethical frameworks will allow students to consider the moral complexity of stem cell research.

2. Pre-Existing Knowledge

Individual Activity

Students will complete a questionnaire meant to tap into any pre-existing knowledge on the subject students may have. Students should answer as many of the following questions as possible:

- What are stem cells? Where do they come from? What do they do?
- What does research on stem cells entail?
- Why is stem cell research controversial?
- What celebrity is/has been advocating for stem cell research, and why? (Examples include: Christopher Reeve, Michael J. Fox, Nancy Reagan) Why do you think people may be opposed to stem cell research?
- Do you know anybody who is either involved in stem cell research, or could profit from the results of stem cell research?
- Based on whatever information you may have about the topic: Are you a) more in favor, b) less in favor, or c) undecided on the question of whether stem cell research should be allowed?
- What key question you would like to explore with regard to this topic?

Collect and discuss students' answers. Organize answers to question #8 on the board.

Questions may include: What exactly are stem cells? Are there different kinds? What are some goals or potential benefits of research on stem cells? Why is it controversial? On what basis should we make a decision? Is it legal now? Point out that all these questions will be answered in the course of this unit. Give a brief overview of the overall structure of the unit.

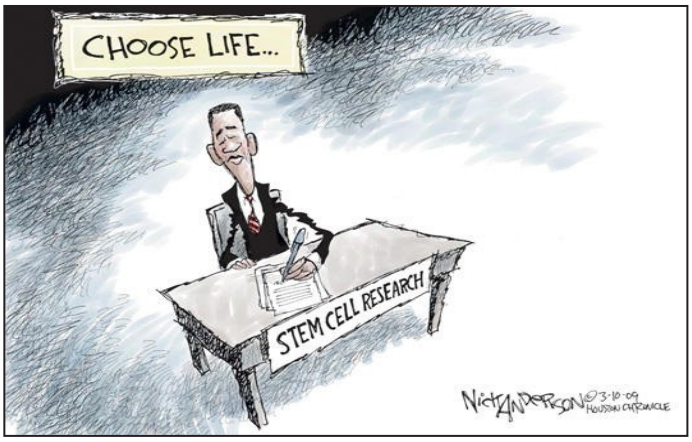
3. The Debate: Analysis of Key Concepts

In this segment, students will be introduced to the debate over stem cell research. By examining statements made by people from different walks of life (politicians, scientists, religious leaders, etc.), students should get a sense of the key concepts used in arguments on both sides of the debate. We offer 5 distinct activities that provide a range of teacher-directed discussions, partner projects, and individual activities to enhance students' understanding of key concepts.

Activity 1: Cartoon Analysis

Teacher-Directed Class Discussion

Share the following cartoon with students. What does this cartoon imply about the nature of the debate over stem cell research, and what seems to be the issue at the heart of this debate?



Courtesy of Nick Anderson. Appeared originally in *The Houston Chronicle* 3/9/09.

Activity 2: Quotation Analysis

Partner Activity

With a partner, students will read the quotes below and answer the following questions:

1) Which of the following statements support stem cell research? Which statements oppose stem cell research?
2) What are some key concepts used in these statements that may require further clarification, in order to fully understand and evaluate the position?

Pope Benedict XVI

Sept. 18, 2006, in an address to an international congress sponsored by the Pontifical Academy for Life and the International Federation of Catholic Medical Associations:
"The destruction of human embryos to harvest stem cells is "not only devoid of the light of God but is also devoid of humanity" and "does not truly serve humanity."

President George W. Bush
Aug. 9, 2001, in an address to the nation on stem cell research:
"An ethicist...told me that [a] cluster of cells is the same way you and I, and all the rest of us, started our lives. One goes with a heavy heart if we use these [embryonic stem cells], he said, because we are dealing with the seeds of the next generation."

Chuck Colson, founder of Prison Fellowship Ministries
July 22, 2006, in an op-ed, "The Veto: Should We Cross the Great Moral Divide?"
"The supporters of embryo-destructive research want to cross a great moral divide. They are seeking not only to destroy human life made in God's image but also to manufacture life made in man's image. Tragically, we are losing this fight, however, because too few people understand the issues."

John Danforth, former U.S. senator and Episcopal priest
November 2005, in a TV ad sponsored by the Missouri Coalition for Lifesaving Cures, advocating a state ballot initiative to allow stem cell research in Missouri:
"My entire political career, I voted pro-life, and that is exactly why I favor the stem cell initiative. I believe in saving human life. I want cures to be found."

Bill Frist, former U.S. senator and Republican majority leader from Tennessee
July 29, 2005, in a speech on the Senate floor: *"I am pro-life. I believe human life begins at conception. I also believe that embryonic stem cell research should be encouraged and supported. An embryo is nascent human life. This position is consistent with my faith. But, to me, it isn't just a matter of faith. It's a fact of science!"*

Orrin Hatch, former U.S. Senator from Utah July 23, 2006, commenting on President Bush's veto of federal funding for stem cell research using human embryos on CBS News Sunday Morning with Charles Osgood:

"I understand that many have ethical and moral reservations about stem cell research, but for the same reason I describe myself as pro-life, I embrace embryonic stem cell research because I believe being pro-life is not only caring for the unborn but also caring for the living."
And on NBC's Meet the Press: *"I just cannot equate a child living in the womb, with moving toes and tigers and a beating heart, with a frozen embryo sitting in a lab somewhere."*

Dr. Leon Kass, former chairman of the President's Council on Bioethics
Oct. 8, 2004, in his Washington Post op-ed, "Playing Politics with the Sick:"
"The moral issue does not disappear just because the embryos are very small or because they are no longer wanted for reproductive purposes: Because they are living human embryos, destroying them is not a morally neutral act. Just as no society can afford to be callous to the needs of suffering humanity, none can afford to be cavalier about how it treats nascent human life."

Kurt Warner, Arizona Cardinals quarterback and founder of First Things First Foundation
Oct. 27, 2006, in a TV ad in response to advertisements advocating stem cell research in Missouri: *"I am all for finding a cure for any and every disease known to man, but there are certain issues that outweigh just finding a cure and doing research and life is one of those. As much as I'm for research, nothing outweighs the pro-life issue. [With embryonic stem cell research] you're taking human life"*

J.C. Watts, former US Congressman from Oklahoma
Aug. 12, 2001, in response to a question on whether he considers the president to be "pro-life" on CNN Late Edition with Wolf Blitzer: *"There's just too many areas that are inconclusive out there for us to get on a slippery slope to say we should take life in order to enhance life"*

Laurie Zoloth, Ph.D., Professor of Medical Humanities & Bioethics and Religion, Director of Center for Bioethics, Northwestern University Sept. 29, 2004, in a congressional testimony to the Senate Subcommittee on Science, Technology and Space:*"While I respect that this is a difference in theology [regarding the moral status of a human child], and while I understand the passion and the conviction of those for whom the blastocyst is a person front the moment of fertilization, I do not believe this, and it is [a] matter of faith for me as well. My passion and my conviction are toward the suffering of the one I see in need, ill or wounded."*

Colleen Parro, spokesperson for the Republican National Coalition for Life, June 2001: *"We do not believe that human beings should ever be sacrificed for the benefit of another. We thought we left that at Nuremberg more than fifty years ago."*

Testimony of a disabled woman at a Congressional hearing: *"Do I want to see again? Dance again? Hear like I once did? I do not want those things at the cost of any living person, and I consider live embryos to be people."*

Paul Berg, Cahill Professor of Biochemistry, Emeritus, Stanford University:
"I am acutely aware of the ethical sensitivities that have been expressed regarding the sources of stem cell lines. But, surely, obtaining cells from legally obtained abortants or from early stage embryos that are destined to be discarded in the course of IVF procedures and making them available for potentially life-saving purposes would be viewed as ethically permissible if not a moral imperative?"

Yvette Cooper, Junior Health Minister, UK Government, December 2000: *"In embryonic stem cells may lie the key to healing within the human body."*

Christopher Reeve, Chairman of the Christopher Reeve Paralysis Foundation. He suffered a spinal cord injury in 1995, and died in October 2004. *"Stem cell research*

holds the promise of hope for 100 million people living with incurable diseases from diabetes to heart conditions to Alzheimer's to Parkinson's, ALS, MS, and spitted cord injury. It will affect the entire American family. I believe this is why we find in this new survey such strong support from people with such diverse religious and ethical beliefs?"

Collect and discuss students' findings. (Answer to question #1: Support: Danforth, Frist, Hatch, Zoloth, Berg, Cooper, Reeve; Oppose:

Pope, Bush, Colson, Kaas, Warner, Watts, Parro, disabled woman at hearing). With regard to the second question, concepts in need of further clarification identified by the students are likely to include: "life" and "human life." In the following activity, students will take a closer look at how these terms are used in the above quotes.

Activity 3: Clarifying Concepts

Partner Activity

With your partner, look at the following statements and replace the underlined words with a synonym or a word/phrase that paraphrases its meaning.

"I am pro-life" (e.g. for the protection of all forms of life, human life).
"An embryo is nascent human life."
"[Embryos] are living human embryos."
"[We should not] take life in order to enhance life."

Collect and discuss students' findings. It should be clear from the previous activity that the word "life" or its derivatives are ambiguously used in these statements. Its meaning ranges from "any kind of organic matter" to "a fully developed, living human being." In the following activity we will take a closer look at the meaning of the concept of life in general, and human life in particular.

Activity 4: Classification of Living Things

Partner Activity

In this activity, students should organize a number of items according to the categories: “alive,” “not alive,” or “not sure.” Students should compare their findings with their partner and discuss what criteria they used to make their decision. Ask students to come up with a definition of life that would cover all items listed in the “alive” category.

Are the following: *Alive, Not Alive, or Not Sure?*

Virus

Sesame seed

Rock

Human embryo

Individual sperm

Human egg before fertilization

Human skin cell

Raindrop

Fingernail

Tree

Yeast

Person in a coma

Person in a persistent vegetative state

Piece of wood

Your computer

Collect and discuss students’ findings. Based on their findings, students should try to come up with a definition of life that they can all agree on.

Students may refer here to one, or all of the “seven signs of life” (movement, respiration, sensitivity, growth, reproduction excretion, nutrition). Based on this

very broad definition of life, students should then come up with a definition of human life. What are the defining characteristics of human life that does not apply to all life, in general?

Activity 5: Protection of Living Things

Partner Activity

Based on our previous discussion, ask a partner: Which of the things that fall under our definition of life in general, and human life, are worthy of special protection? Do human beings deserve more special protection from harm or destruction than other forms of life (e.g. plants, animals, etc.)? Why?

Teacher-Directed Class Discussion

Collect and discuss results. Results may include: Non-human living things deserve protection, only insofar as they are useful or important for us.

Human beings, on the other hand, deserve protection because they are persons and as such have a special status. Therefore, any part of a human organism that is necessary for its existence as a person (heart, brain, etc.) is protected from destruction, whereas parts that are not essential (e.g. fingernails, hair, etc.) are not.

Further Questions for Discussion:

- How about limbs and other individual parts of the human body that are not essential to a person's existence? Is this issue only a matter of life and death, or should human body parts also be protected from impairment? What are possible exceptions?
- Are there exceptions to the protection of persons? (Death penalty, war, self-defense, euthanasia, etc.)
- Who declares exceptions to this rule? On what criteria are these exceptions based?
- Is it possible for something to be a human being and not be a person? If so, does a human being that is no longer considered a person (e.g. a human being

in a permanent vegetative state) still fall under the moral idea that all life should be protected?

- Could it be argued that all human beings (independent of their status as persons) and all parts of a human organism (independent of whether they are essential to the survival of the person) should be protected from destruction just because they constitute a form of life (in the broad sense)?

Let's look at what we've come up with, so far: As we have discovered, the term "life" is used in the debate over stem cell research to mean a broad range of things: in the broadest sense, it is used to refer to all living organisms, whereas a narrower definition of "life" refers to human life, and, more specifically, persons. While there may be cases where we may no longer grant a person special protection (persons that are seen as a threat to our society or country, or those who have committed heinous crimes) or cases in which a living human organism is no longer considered a whole person (people in a permanent vegetative state), we could probably agree that, in general, living human beings and all parts of the human organism are indispensable and their existence should be protected from destruction.

Now, in order to better understand the debate over stem cell research, we need to understand what exactly stem cells are, and in what way the above stated principle, that life (qua human beings, persons) should be protected from destruction, may be violated in stem cell research.

4. The Facts: The Science of Stem Cell and Stem Cell Research

Teacher-Directed Class Discussion

What is a cell?

Ask students to write down a definition. A cell is _____.

Collect students' findings. Answers may include: A cell is the smallest unit of a living organism; basis of any living tissue; contains a nucleus, etc.

Follow-Up Questions:

- How do you think stem cells are different from ordinary cells?
- What does the word “stem” suggest?
- Think of other uses of the word “stem” (e.g. stem of a tree, to stem from, etc.).

Partner Activity

Students will read the following text and answer the questions below.

What are stem cells?
Stem cells are undifferentiated or “blank slate” cells from which other types of cells can develop. The defining characteristic of human stem cells is their ability for self-renewal (produce an exact copy of themselves), while maintaining the potential to develop into other types of cells, such as blood, brain or heart. This characteristic means that stem cells can be used for tissue and organ replacements, thus explaining the high research interest. Although all stem cells share these general characteristics, there are also significant differences among them. There are three major types of stem cells.

Pluripotent stem cells (PS cells). Pluripotent stem cells have the capacity to divide for long periods while retaining the ability to make all cell types within the organism. The best-known type of pluripotent cell is the embryonic stem cell. As the name implies, embryonic stem cells (or ES cells) are derived from embryos at what is known as the blastocyst stage of development. The stem cells originate from the inner cell mass inside a hollow ball of cells that is smaller than the period at the end of this sentence. The unique characteristic of embryonic stem cells is the ability, in theory, to replicate indefinitely while retaining pluripotency. Understandably, such cells are crucial to biomedical science as a potentially inexhaustible source of cells for both research applications and the potential ability to treat a multitude of different diseases.

Fetal Stem Cells. These are derived from specific tissues of a developing human fetus. Scientists can generate cells from different regions of the developing body and cultivate them for long periods. These fetal stem cells seem to retain characteristics of

the tissue from which they were taken. For example, fetal stem cells derived from the brain have the capacity to make only nervous tissue, not blood or heart tissue. Sometimes these are called progenitor cells, indicating that they have the potential to make only a limited range of tissue types.

Adult Stem Cells. These can be isolated from some tissues of the adult body. Bone marrow, for example, is a rich source of stem cells that can be used to treat some blood diseases. Adult stem cells have been found in many different tissues, but they are sometimes limited in their ability to multiply in large numbers or differentiate into a wide variety of cell types.

Induced pluripotent stem cells (iPSCs). These are specially treated adult cells that can be processed to behave somewhat like embryonic stem cells. This is a recent development that offers great promise, with the allure of treating patients with their own cells and avoiding the ethical dilemmas of embryonic stem cells. A Japanese research team in 2006 developed the initial iPS process. In 2014, a different team in Japan found a much simpler method. By exposing myriad adult cells to stress, they can be converted to stem cells. Successful stressors include a low pH (acidic) environment, a bacterial toxin that perforates the cell membrane, and physical squeezing. Each method can convert the cells so that they show markers of pluripotency. In 2010, the Center for iPS Cell Research and Application (CiRA) at Kyoto University became the first center dedicated to developing iPSCs for scientific and therapeutic applications. iPSCs have their own ethical controversy because their unlimited capacity to differentiate may lead to human cloning. Currently, the use of iPSCs in therapy is high-risk, since transplantation can cause tumors, but further research is being done.

1. How are stem cells different from regular cells?
2. What does “pluripotent” mean, and how are pluripotent stem cells such as embryonic stem cells or iPSCs different from fetal stem cells and adult stem cells?
3. What makes embryonic stem cells especially valuable for medical research and treatment?
4. What does the text say about how the different types of stem cells are generated?

More information can be found here:

http://stemcells.nih.gov/info/basics/Pages/Default.aspx

Teacher-Directed Class Discussion

Collect and discuss students' findings. Emphasize differences between adult and embryonic/fetal stem cells. Adult stem cells can be derived without harming or destroying a human being. But because adult stems are already specialized, they can only become the cell type present in the tissue from which they were taken. Embryonic stem cells, on the other hand, can turn into all of the 220 mature cell types in the human body. However, in the process of harvesting embryonic stem cells, the embryos from which they are derived are destroyed. This issue is at the center of the stem cell debate. What is the status of the embryos that are used to harvest embryonic stem cells?

Here are some more facts:

- Embryonic stem cells are typically derived from 3–6-day old human embryos
- These embryos are usually leftover in vitro fertilization embryos, created in a laboratory dish for the purpose of treating infertility
- Unused embryos are typically either donated to research, discarded, or frozen for future use
- The embryo at this stage is part of the blastocyst which consists of an inner cell mass (or embryoblast) and an outer cell layer (trophoblast) that later develops into the placenta
- An embryo in the blastocyst stage is made up of ~150 cells and has no appendages and organs. The embryo has no sentience and cannot feel pain.
- The inner cell mass contains about 50 cells that have not yet developed into specialized cells
- Cells derived from blastocysts are able to replicate themselves, i.e. they form 'cell lines' that can be kept and used in research for a long period of time
- Embryonic stem cells are used to research the origins of many diseases (e.g. Parkinson's, Huntington's, Alzheimer's, spinal muscular atrophy, etc.), are used to develop new drugs, and produce cells and tissues for transplants.

Based on these additional facts about embryonic stem cells:

How are these facts relevant to our discussion about "life" and "human life" in the previous segment?

- What exactly is the status of an embryo that is used to derive embryonic stem cells?
- What kind of "life" is this? It's considered a life (according to the broadest definition of life), but is it "human life"? And if so, does that make it a person?
- Where does the 3-6-day-old embryo fall on the line of human development, starting from the moment of conception and leading to the death of a human being?
- In other words: When did you become *you*?

Teacher-Directed Class Discussion

Collect and discuss students' answers (e.g. the moment I was conceived, the moment I was born, the moment of my first memory, etc.) to the question: When did you become you?

Discussion Questions:

1. What do I mean, when I say, "I became me"?
2. Does that mean that I was not myself in one moment, and in the next moment I was?
3. If so, what are the criteria that would allow us to distinguish between the two states?
4. Does it make sense to say that the six-day-old embryo (that eventually turned into me) is as much myself as I am now? If so, in what sense?
5. How is this related to our discussion of the difference between "human being" and "person"? (Does it make sense to ask: When did I become a person?)

Since I am, as a human being (and especially a young human being), constantly developing, maybe what I mean when I say, "The embryo is me", is "The creation of the embryo is the moment at which the development that made me who I am now, began. The embryo is potentially who I am now."

So, while we would probably say that the embryo constitutes human life and the

early stages of a human being, and thus a potential human being, does that mean that it should have the same protection as the actual person that it may become?

Partner Activity

Ask students to think of other instances in which two objects are the same at different stages of development (e g. acorn-oak tree, egg-chicken, manuscript-book, tadpole-frog, caterpillar-butterfly, etc.), and to decide whether the two should be considered the same thing, and in what sense.

Discussion Questions:

1. If I destroyed the acorn, did I also destroy the tree?
2. Had I not destroyed the acorn, would it (necessarily) have turned into an oak tree?
3. Is the tree that is being prevented from coming into existence by destroying the acorn a particular oak tree?
4. How real is a potential oak tree?
5. Is this comparison valid, or is there something different about human beings? What is the difference?
6. Is there a difference between the acorn I destroyed and other acorns that are kept in storage, but are never used (and thus never allowed to develop into oak trees)?

All these questions lead us now to the question of whether it is ethical or not to destroy embryos to generate stem cells.

5. Ethical Perspectives

As we have seen, one of the key questions in this debate is that of the status of the embryos that are used to develop stem cell lines. Is it unethical to destroy embryos that have the potential to turn into human persons? Should human persons be protected from destruction at all costs? (Let's also consider other cases in which we allow for the destruction of human persons—war, death penalty, lack of money available for safety

and health care, etc.) And even if we deem embryos potential persons worthy of special protection, to what extent does the preservation of potential persons outweigh the impact of stem cell research on future individuals?

Group Activity

Divide students into small groups. Each group will read one of the following texts, reflecting on a particular philosophical approach to making ethical decisions. Ask each group to consider whether a proponent of their approach would consider stem cell research ethical or unethical.

Deontological Ethics

Advocates of Deontological Ethics believe that certain actions are right or wrong in themselves, regardless of what consequences they may have. such actions are forbidden or required by the dictates of reason.

The most influential philosopher to espouse this view—and, arguably, the most important European philosopher of all time—was Immanuel Kant (1724-1804).

Kant argued that the highest good, the only thing that is good without qualification, is a good will. Kant uses the expression "good will" to signify the motivation to do the right thing simply because it is the right thing, or to act from a sense of duty. Right actions done by chance or for ulterior motives deserve no moral approbation.

For something to be good without qualification, it must consequentially improve any situation. This, Kant claims, is true of a good will alone.

But how can a person of good will know what is right? Kant provides a rational method for determining the rightness or wrongness of potential actions, a way for us to rise above our desires and emotions and act on the dictates of reason. He calls his principle the Categorical Imperative (Cl), because it is expressed in the form of a command that must be obeyed under all conditions. In Groundwork of the Metaphysics of Morals he writes: "Act only on that maxim through which you can

at the same time will that it should become a universal law."

This principle is consistent with our natural inclination, when assessing the moral status of an action, to ask, "What if everyone did that?" The categorical imperative instructs us to test each rule or maxim we plan to follow by universalizing it and then checking to see if the universal version is logically consistent with the personal maxim. For example, suppose you take as your personal maxim: "I will make false promises whenever I can benefit from doing so." Now, make this a universal law: "All people will make false promises whenever they will benefit from doing so." A moment's reflection makes it clear that it is logically impossible to adopt the personal maxim and will that it become a universal law. Any advantage you gain by making false promises depends on a tradition of promise keeping.

If breaking promises were the rule, no one would expect you to keep your promise. This personal maxim fails the CI test because it leads to a logical contradiction. By following this procedure each of us can generate his or her moral duty not to make false promises.

In a second formulation of the CI Kant instructs us to "act so that you treat humanity...always as an end and never as a means only." This formulation instructs us to be mindful of the infinite, intrinsic value of human beings. Because of this value, a person cannot be used only as something to help us achieve an end; each human being is an end-in-herself. Kant thought that this formulation is equivalent to the first, in the sense that it will generate the same set of rules. We cannot make false promises to achieve personal ends, for example, because we would be using another as a means only.

Consequentialism/Utilitarianism

Consequentialist ethical theories determine the rightness or wrongness of an action by its consequences, rather than by the type of action. They define the right in terms of the good. The right action is the one that produces the most good. This begs the question, "what is good?". The most widely supported version of consequentialism is called utilitarianism. Utilitarians consider happiness (pleasure or well-being) to be the only thing that is good in and of itself—the only thing that has intrinsic value.

Utilitarians strive to follow the greatest happiness principle: act so as to produce the greatest overall happiness.

1. Identify the feasible courses of action
2. Calculate the sum of "utility" (pleasure and pain) associated with each action for everyone affected.
3. Choose the action that will result in the greatest amount of utility—the greatest happiness, everyone considered.

An attempt has been made to devise a procedure that preserves the fundamental insight of utilitarianism—the importance of promoting the common good, without producing moral judgments that are inconsistent with our ideas about rights, duties, and justice. Rather than apply the utilitarian calculus to each action (Act Utilitarianism), Rule Utilitarians attempt to identify a set of rules, which if followed, would maximize happiness.

Perhaps, "do not kill innocent persons", is such a rule. But what if the common good would be better served if the rule were modified to say, "do not kill innocent persons except those in persistent vegetative states who have written advance directives indicating that they do not wish to be kept alive under such circumstances." Rules with exceptions may produce more overall happiness. But as exceptions multiply, rule utilitarianism can become indistinguishable from act utilitarianism.

Rights Perspective

The idea that human beings have rights can be traced back to Roman law. Roman legislators established legal procedures for Roman citizens to make claims to the protection of their personal interests. This concept was later extended to moral rights using the theory of natural law. In the Declaration of Independence, Thomas Jefferson declares that humans are "endowed, by their Creator, with certain unalienable Rights." Jefferson doubtlessly borrowed this idea from John Locke's masterpiece Two Treatises of Government. Writing in the natural law tradition, Locke argued that people are entitled to certain protections and benefits, not because their government grants them, but because God ordains them. These

natural rights include: life, liberty, prosperity, free will, free choice, and free speech. Therefore, Locke concludes, natural rights cannot be taken away by a government, protest and even rebellion are justified when a government fails to respect the natural rights of its citizenry.

The idea of moral rights that transcend human legislatures follows from the Kantian, duty-based ethics. Kant makes a distinction between perfect and imperfect duties. An imperfect duty, such as the duty to help others, can be discharged in numerous ways. The duty is not to help all who need assistance—an impossible task—but simply to make an effort to offer some aid on some occasions. Therefore, no one can claim a right to your assistance on a particular occasion. Perfect duties, however, such as the duty to keep promises, require specific actions. Therefore, people can expect to be told the truth; they have a right to be told the truth.

Virtue Ethics

The attempt to establish a system of ethics on the virtues began with the Greeks. The idea was to begin with character, in particular the *ethika aretai* (skills of character) that enable humans to flourish. Actions were to be judged based on whether or not they were characteristic of the men who exemplify these "skills." Right action is defined in terms of the behavior of the virtuous.

For the ancient Greeks, what it means to flourish is determined by human nature. Man can experience *eudaimonia*—happiness, fulfillment, success, satisfaction—only when his essence as the "rational animal" is fully developed. This development could be accomplished by practicing the intellectual virtue of wisdom and the moral virtues of courage, temperance, and justice. These admirable human qualities entail behavioral dispositions that represent a balance or "golden mean" that fosters the good life. Cowardice, for example, results from an excess of fear, while foolhardiness or rashness results from an insufficient measure of fear. Courage represents the balance point of having neither too little nor too much fear.

For virtue ethicists, the proper foundation for ethics is the virtues, not right action. The

purpose of morality, after all, is to foster the good life, and it is the virtues that lead to human flourishing. The virtues are fundamental. As such, virtue ethics is grounded in concrete facts about human nature, cultural traditions, and individual lives, rather than in abstract concepts. It strives to build underlying moral fiber—the dispositions, goals, and habits that enable people to behave in exemplary ways under extreme and novel situations. Virtue ethics strives to dig beneath the superficial decision-making process and create an enduring foundation of habits and character traits from which decisions can be made, enabling people to flourish in a complex world.

Teacher-Directed Class Discussion

Each group will first give a summary of their ethical approach and then say whether or not they found it helpful in deciding whether stem cell research should be considered ethical.

Given all the aspects (conceptual, scientific, ethical) of the issue considered in this unit, if you had to make a policy recommendation: Would you suggest—on ethical grounds—that stem cell research should be allowed, or not?

6. References and Additional Information

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