

Supplementary Text 1: Student Position Paper Excerpts. We were fortunate to have a variety of views represented in our class. We were not seeking to reach a consensus, but, rather, wanted each student to develop his/her own position. All of the students wrote papers that clearly articulated their own personal positions. Within their papers, students resolved or explained any dissonance their position had with their faith and/or current legislation. Excerpts from two student position papers are included here.

Supplementary Text 2: Student comments and values. For each teaching strategy, here we include example student comments for each score value.

Supplementary Material: The remainder of the supplementary material includes a syllabus, assignment sheets and rubrics, and the science concept examination.

Supplementary Text 1:

Student 1:

Since I am a Christian, my personal opinions come from a faith in God and His words to us in the Bible. I also believe that God created human beings in His image: “So God created man in his own image, in the image of God he created him; male and female he created them” (Women’s Devotional Bible, Genesis 1:27). This belief and my overall Christian faith affect when I believe human rights begin and how human beings should be treated thereafter. Because I believe that God created us in His image, I do not think we should intentionally destroy another’s chance at life or we should use human beings for research

In 2001, President George Bush said that the government would not federally fund the creation of new lines for embryonic stem cell research. The lines that were already created continue to be used for research. Currently further embryonic stem cell research is privately funded.

People argue that it is worthwhile to use the surplus embryos from *in vitro* fertilization (IVF) procedures when they are not needed anymore. They believe that it would be better to use the embryos to save lives since they will be destroyed anyway.

Before I decided to take this *Stem Cells and Society* class, I opposed using human embryos for stem cell research or treatment. I believe that human rights begin with the onset of fertilization, and therefore using these embryos is immoral and equivalent to destroying a human being. I do not believe there is a “right” way to obtain the embryonic stem cells from the blastocyst. Consequently, I do not think that using surplus embryos from IVF procedures, blastocysts created for research purposes or blastocysts created by somatic cell nuclear transfer (SCNT) are ever justifiable for research or treatment.

Student 2:

Our understanding of the natural world has changed over time. As we’ve developed as a species, our theories to explain our universe and the instruments we used to perceive it have changed. From DNA to genes to proteins, from cells to tissues to organs, the human body is a complex and wonderful thing, no less so than our universe. As with our view of the universe, our view of the body has changed and so to have the instruments we use to understand it and the technologies we use to treat it. As we learn more of our world and our bodies, science asks us to change our views to incorporate new information. Religions, and faith in them, also change over time, but that change rarely keeps pace with our scientific understanding. Most of the major world religions began in a time before we know about how planets form, or how the body develops, or how the

body works. These religions sought to explain our world and ourselves with the information they had at the time... Indeed, to be true to their doctrines and tenets of faith, religious adherents often must choose to resist changing their viewpoints, even in light of new evidence about the world.

Embryonic stem cell research and treatments arising from it are new developments. Responsible scientific research and thoughtful moral consideration can prepare us for the consequences of our ever-advancing technology. We cannot rely on the belief systems of the ancient world to inform our moral decisions. These decisions must be confronted with thoughtful deliberation using all the available evidence, and enlightened by our best assessment of the current state of scientific knowledge. To do any less is to deny what makes us human: our ability to learn, to adapt, and to progress as our knowledge of the universe, and ourselves, progresses.

Supplementary Text 2:

A. Test Tube Babies:

Score 2: The in vitro film made me see the emotional and competitive side of IVF. I forgot the aspect that human beings are naturally competitive and emotional, but the film did a good job to show these components of life... The [film] also made it obvious to me that after it was shown that IVF could be made less risky and produce healthy babies that the procedure wasn't deemed in society as such a bad thing and became part of normal everyday life after it was accepted. (Student 1)

Score -1 The *Test Tube Babies* film only showed the lack of an informed audience we have in the U.S., and how little, in my view, Bible based opinions we have out there. If someone showed you that all you are is a mess of cells, would that change your opinion on whether or not you're alive? Possibly, but not mine. (Student 12)

B. Faith Takes:

Score 2: [The outside expert} gave me new insight on how it can be justifiable by the just war theory. I had already known about religious views of the different groups and moral issues involved but the just war theory made me think about how we clarify for the greater good in society and in our own minds. (Student 1)

Score 1: I loved the idea of outside experts. It shows us that the things we are learning are real and people deal with and think about these things in everyday life. [The outside expert on religion] was hard to follow at times...The large group discussions were alright. I think it would have been more effective if we had more time to discuss in large groups and even debate. This strategy was kind of effective. (Student 4)

C. Persona Positions

Score 1: I liked the idea of using the persona for practicing support of a position. I think it would have been neat to have a mini presentation for everyone to see the opinions of all the personas instead of just supporting our own. (Student 9)

Score 0: The persona paper assignment was ok. I don't really feel like it was all that different than our personal position, because I feel like either way people are going to find ways to incorporate their beliefs and views and have some sort of bias. (Student 8)

-1: The persona was not particularly effective in helping me develop my position, but it did help me clarify my position [on embryonic stem cell research]. It helped me think things through and realize that life is not based on only what is tangible. (Student 12)

Score -2 I didn't really find the persona stuff to be at all informative. I really think that if it were opened up to group discussion as those personas it would have

been more beneficial, but as it was, I thought I only got one perspective. (Student 5)

C. Nation-States:

Score 2: I thoroughly enjoyed [the expert's] visit and talk. As an aspiring law student, I was quite interested in everything he had to say. He was a wealth of information. I think it is crucial to really understand what is going on politically and legally, especially at the state and local level so that one may participate actively and in an informed manner. (Student 4)

Score 1 [The outside expert] did reaffirm what I believed. I did learn a lot from the speakers and it is all knowledge that I will be able to apply to life." (Student 9)

Score 0: [The outside expert] could have been used more effectively. He was very knowledgeable, but spent much of his lecture on when/how to determine when human life begins. (something which we had already covered). I would have liked him to explain [more] current legislation instead. (Student 3)

D. Final Forum (Multiple Student Responses)

The forum was an excellent way to cap off the class, and helped clarify all the ideas.

My opinion about embryonic stem cell research did not change. I welcome new ideas now more than before and I respect seeing how everyone had very interesting stories and backgrounds and why they think the way they do.

It [the forum] strengthened my support behind my views on the topic. Gave me more understanding of what I believe.

The forum allowed me to not only express my opinion, but since it was at the end of the class, I was able to support my opinions and beliefs.

I enjoyed the forum because it gave a broad perspective. It was so freeing to have a Christian standpoint that approved of stem cell research. It was kind of liberating actually. I plan to meet with him outside this class to talk more.

I liked the speakers/guests. They were very informative.

The forum really helped me to develop my point of view and understand how others think. Compare and contrasting views really help me to further understand how I think.

05.09.07

Stem Cells And Society

Bio Sc 2002 TPC

Reference #: 10065

Meeting MWF 9AM-11:30AM

May 14th -June 1, 2007 Note: No class on May 28th.

Townsend Hall, Room 107

University of Missouri-Columbia

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Required Materials:

1. Book: Stem Cell Now, Christopher Thomas Scott, Penguin Group Publishing, 2006.
2. Book: Being Human: Core Readings in the Humanities, Leon Kass, W.W. Norton and Company, 2004.
3. Blackboard: We will maintain additional required course readings and materials at <http://blackboard.missouri.edu>. Your pawprint and password will access a link related to this course.

Course Overview:

Stem Cells and Society will explore the basic biology of stem cell research and the controversy surrounding it. We will begin with the fundamental concepts of developmental biology and stem cell research. As part of this discussion, we will highlight the nature of science, looking at the methods and norms within the scientific community.

The intersection of science and our society has led to legal and ethical issues in which we all play a part. To gain a perspective on the current stem cell controversy, we will examine the public debates in the 1970s surrounding *in vitro* fertilization. Next, we will look at the stem cell initiative in Missouri and several other states, analyzing the

continuum shown between conservative and liberal law. We will also look at federal regulations in the U.S, and make comparisons on a global level. Finally, we will explore the personal and religious viewpoints that have emerged relative to the stem cell debate, examining their connection to human rights and bioethics.

Prerequisites:

Unless otherwise authorized by the instructors, registration for this course requires satisfactory completion of Bio SC 1010 or 1050.

Course Goals:

- 1) to develop, clarify and communicate a personal position on human embryonic stem cell research;
- 2) demonstrate an understanding of the characteristics of stem cells, their microenvironment, and their therapeutic potential; and
- 3) to develop an understanding of science as a human endeavor and the interactions between science and society, with a focus on religion and law related to stem cell research.

Grading:

We will use the following grading scale: A = 90-100; B = 80-90; C = 70-80; D = 60-70; F = < 60.

Assessment:

"Assessment opportunities" will include (With total points = 300):

1. One traditional examination (60 points).
2. One position paper from the perspective of a persona developed in small group work (25 points).
3. One position paper from your own perspective (75 points).
4. Small group presentation "Faith Takes." (20 points).
5. Journal work/in class questions (50 points).
6. Views On Science-Technology-Society Questionnaire (25 points).
7. Participation (30 points, 10 of which will come from your small group).

Full assignment descriptions and scoring rubrics will be made available on Blackboard. Students are responsible for meeting all requirements therein described. Below there is a short overview of the

1. Exam:

This will be a traditional examination with multiple choice, short answer, and essay questions regarding material covered in class or assigned in the readings.

2 and 3. Position paper:

In this assignment, you will be expected to turn in (by date indicated on calendar) a 3 page typed paper which explains and defends your (or a persona's) view of stem cell research and therapeutics. Appropriate font is Times, size 12, all margins 1 inch.

4. Small Group Presentation "Faith Takes": This will be a short presentation within class by each small group relating the faith perspective of 2 groups, one of which is new to all in the group.
5. Journal: You will be asked to keep a journal during this course with 2 objectives: first, a minimum of one page for each day of class should be used to reflect on your thoughts and feelings related to the discourse that day. This can be used to help write your position papers. Second, there will be questions directly posed during class lectures for the purpose of reflective writing.
6. VOSTS: You will be asked to complete at home a questionnaire (40 questions) regarding your views on science and scientists and their interactions with society.
7. Participation:
The first 20 participation points will be a reflection of open participation in class discussions, both formal and informal. Specifically, instructor will look for well supported statements to open questions posed during lecture or the facilitated discussion.

Classroom Policies:

1. Due to the sensitive nature of the course material and the desire to have open and frank discussions, mutual respect must be maintained at all times. If at any time a student chooses to act outside of this respect, instructors will act to resolve the conflict in the fairest possible manner, including the use of University conflict resolution resources.
2. Tardiness: will be directly reflected in your participation score.
3. Absence: because this is a short duration discussion based course, any absence will directly reflected in score for that day's "assessment opportunities."
4. Late work: any work not available to the instructor at the close of class on day assigned (11:30 AM) will be considered late. Late work will be reduced in score by 10 percent for every class period marked thereafter (minimum of 1 class period).

Course Calendar: Larger Font course calendar available on Blackboard.

This is a tentative schedule. Major changes will be announced in class.

Week of May 14th (Week 1)

Monday	Tuesday	Wednesday	Thursday	Friday
<p>Introductions (10 min)</p> <p>-----</p> <p>Introduction with posed question: "What interest personal or scientific led you to take this course?" Notecard: "What developmental milestone do you believe coincides with the onset of human rights?" (30 min)</p> <p>-----</p> <p>Goals/VOSTS Intro (15 min) Introduce the 4 inclusions in the course leading to scientific literacy</p> <p>-----</p> <p>Invitation to Research (15 min)</p> <p>-----</p> <p>Pretest (25 min)</p> <p>-----</p> <p>Break (10 min)</p> <p>-----</p> <p>Development, Weeks 1-5 (10 min)</p> <p>-----</p> <p>Reaction Writing (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not?</p> <p>-----</p> <p><i>In Vitro</i> Introduction (20 min) Including material from PBS website . Explain why a discussion of <i>in vitro</i> in a stem cell class</p> <p>-----</p> <p>Closing Ideas</p>		<p>Welcome (5 min)</p> <p>-----</p> <p>Development, Weeks 6-10 (10 min)</p> <p>-----</p> <p>Reaction Writing (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not?</p> <p>-----</p> <p><i>In Vitro</i> Film (30 min)</p> <p>-----</p> <p>Form Small Groups Introductions, Receive Personas, Visit (25 min)</p> <p>-----</p> <p>Break (15 min)</p> <p>-----</p> <p>Reaction Writing (10 min) "Describe a human being. Use as many descriptors as possible."</p> <p>-----</p> <p>Small Group Discussion (20 min) "Integrate your personal answers into one description of a human. Do not edit"</p> <p>Turn in 3x5 with answer and names.</p> <p>-----</p> <p>Stem Cells Introduction Cell Cycle, Old versus new thinking, what about religion? Set up religious assignment for Friday class (35 min)</p>		<p>Welcome (5 min)</p> <p>-----</p> <p>Development Weeks 11-15 (5 min)</p> <p>-----</p> <p>Reaction Writing (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not?</p> <p>-----</p> <p><i>In Vitro</i> Film (30 min)</p> <p>-----</p> <p>Small Group Discussion (in persona) React to the film and its tie to stem cells. Turn in reaction card (15 min)</p> <p>-----</p> <p>Break (10 min)</p> <p>-----</p> <p>Stem Cells Embryonic and "Adult" Niches (30 min)</p> <p>-----</p> <p>Small Groups Present 5 min on 2 Faith "Takes" on Stem Cell Research Islam, Judaism, Protestant conservative, Protestant liberal, Catholic (50 min)</p> <p>-----</p>

May 14th

Read: Being Human: pgs xvii-xxv, and pgs 5-20.
Stem Cell Now: Ch 1-4.
Journal: Reflect

May 16th

Read: Being Human pgs. 34-48; 146-152; 242-247
Stem Cell Now: Ch 5-6
 Blackboard: "Religious Backgrounds" folder choose two based on group project.
Meet: Small Groups for faith "take"
Journal: Reflect

May 18th

Read: Being Human pgs. 251-258; 354-359; 403-409
Stem Cell Now: Chapter 7-8.
 Blackboard: "10 myths.."
Collect: Data (popular press) on small group persona.
Journal: Reflect
 Journal turn in on Monday.

Week of May 21st (Week 2)

Monday	Tuesday	Wednesday	Thursday	Friday
<p>Welcome (5 min)</p> <p>-----</p> <p>Development Weeks 16-20 (10 min)</p> <p>-----</p> <p>Reaction Writing (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not?</p> <p>-----</p> <p>Stem Cells The Promise: Parkinson's, Heart attack repair, Diabetes, Spinal Injury (70 min)</p> <p>-----</p> <p>Break (15 min)</p> <p>-----</p> <p>Small Group Meeting Persona Profile, build your Persona paper. (30 min)</p> <p>-----</p> <p>Why am I in Science? (NOS) (15 min)</p> <p>-----</p>		<p>Welcome (5 min)</p> <p>-----</p> <p>Development Weeks 21-25 (5 min)</p> <p>-----</p> <p>Reaction Write (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not?</p> <p>-----</p> <p>Large Group Discussion: Life's Beginnings This will be prepare us for the formal discussion next week (30 min)</p> <p>-----</p> <p>The Korean affair When is it cheating? (30 min)</p> <p>Notecard: What should happen to scientists guilty of falsifying data?</p> <p>-----</p> <p>Break (15 min)</p> <p>-----</p> <p>Stem Cells Wrap up Fill in lecture to those questions posed during last weeks. (20 min)</p> <p>-----</p> <p>Small Group Discussion Stem Cells Mix up the groups. (20 min)</p> <p>-----</p> <p>QA (20 min)</p>		<p>Welcome (5 min)</p> <p>-----</p> <p>Development Weeks 26-30 (5 min)</p> <p>-----</p> <p>Reaction Write (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not?</p> <p>-----</p> <p>Examination: Stem Cells (45 min)</p> <p>-----</p> <p>Break (15 min)</p> <p>-----</p> <p>Religion and Stem Cells Guest lecture Sharon Welch (40 min)</p> <p>-----</p> <p>Small Group Discussion What is my philosophy? (25 min)</p> <p>-----</p> <p>2 Assignments: The Law and Decision making models. (10 min)</p> <p>-----</p>

May 21st
Read: Being Human
 pgs. 478-511.
 Blackboard "Korean Affair"
Journal: React
Meet: Small Group
Persona Paper due Wed!!

May 23rd
Journal: React
Examination on Friday
Read: Being Human pg
 541-552; 571-577
 Blackboard "Decisions"
Study: With a Buddy

May 25th
Read: Stem Cell Now: Ch 9-10.
 Blackboard "One nation under..."
Meet: Small group state/ nation exercise.

Week of May 28th (Week 3)

Monday	Tuesday	Wednesday	Thursday	Friday
<p>NO CLASS: See Rudy from Fat Albert for appropriate analogy.</p>		<p>Welcome (5 min) -----</p> <p>Development Weeks 31-35 (5 min) -----</p> <p>Reaction Write (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not? -----</p> <p>Chris presents: Missouri and the United States: (10 min) -----</p> <p>Groups present States and Nations 15 minutes per group: PPT presentation of main points (60 min) -----</p> <p>Break (15 min) -----</p> <p>Guest Lecture Philip Peters, Jr. (30 min) -----</p> <p>Small group prep for Townhall meeting (20 min)</p>		<p>Welcome (5 min) -----</p> <p>Development Weeks 36-40 (5 min) -----</p> <p>Reaction Write (5 min) "Did any of the stages discussed correspond with your understanding of the onset of human rights?" Which and why or why not? -----</p> <p>Final Forum Difficult Dialogues We have Guests!! (60 min) -----</p> <p>Break (15 min) -----</p> <p>Difficult Dialogues Followup Peggy Placier (15 min) -----</p> <p>The Reveal (15 min) -----</p> <p>Class Evaluations (Remainder of Time)</p>

May 30th

Read: from popular press
Build an arsenal.

Prepare: As small groups for
Discussion, see Rubric

Journal: React

POSITION PAPER DUE

ON FRIDAY, Include Decision Model!!!

Academic Dishonesty

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

ADA

If you have special needs as addressed by the Americans with Disabilities Act (ADA) and need assistance, please notify the Office of Disability Services, A038 Brady Commons, 882-4696 or course instructor immediately. Reasonable efforts will be made to accommodate your special needs.

Assignment: Faith Takes oral presentation
Total Points: 20 points
Scoring: see rubric
Exceptions: see syllabus

Description: From the available folders on Blackboard, each small group will examine 2 religious perspectives on embryonic stem cell research. As a group, you will share your findings with the class in a 10 minute presentation (4 minutes of which can be QA). Examine not just the overt stance of a religious group, but the trends within. For instance, there are instances wherein the American subset of a religion might differ in viewpoint from their international members.

Technology: It is not necessary to use PowerPoint for this presentation, but if you so choose, meet with the instructor prior to class to load your slides. Some visual presentation will likely be helpful.

Groups: This is a group project. You are expected to participate by bringing your voice to the table. Those who hold back their group through lack of participation will find their peer evaluations hurting at the end of the intersession.

Hint: There may be some overlap between groups. It is likely that differences will still exist. Why might this be?

Your Presentation should address the following driving questions:

- 1) What is the official stance toward embryonic stem cells for this faith group?
- 2) What rationale is given for this stance?
- 3) What evidence, if any, did you find for disagreement among the faith group's members? If disagreement exists, what rationale/issues are involved?

Good Luck!

Rubric for "Faith Takes" assignment
 Stem Cells and Society
 Total points: 20 points

Refer also to Faith Takes assignment sheet.

To receive an "A" (20 of 20pts)	"B" (17 of 20 pts)	"C" (15 of 20 pts)	Below a "C" (0 - 14 pts)
<ul style="list-style-type: none"> • All of the driving questions have been addressed • All members participate in the presentation • Presentation shows evidence of preparation and rehearsal • Evidence of the use of high quality resources • Demonstrated ability to react and add to previous overlapping presentation • Able to answer questions 	1-2 elements are incomplete or missing	3 - 4 elements are incomplete or missing	5 or more elements incomplete or missing. Meet with Instructor for determination of final points.

GOOD LUCK

Assignment: Persona Paper
Total Points: 25 points
Scoring: see rubric
Exceptions: see syllabus

Description: Each of your small groups has been assigned a persona. The individuals identified by that persona have a number of characteristics that have been identified for them. (In this case, unfortunately stereotyping is the name of the game). Using your understanding of your group persona's needs and goals concerning stem cell research, draft a paper which reflects your common position. Your group will turn in one paper that reflects the group's work.

Length: 3 pages minimum, 5 maximum, double spaced, Times size 12 font. Include a title page and bibliography, but do not use them toward page count.

Hints: Note that the rubric rewards the juxtaposition of opposing views for comparison and contrast with your own. A good position paper not only presents your views, but your understanding of how your view relates to others.

Groups: This is a group project. You are expected to participate by bringing your voice to the table. Those who hold back their group through lack of participation will find their peer evaluations hurting at the end of the intersession.

Proposed Paper Layout:

1. Title page
 - Course (Stem Cells and Society)
 - Group title
 - Member names
 - Title for the paper
 - Date due (05/23/07)
2. Body (3-5 pages double spaced)
 - a. Group description and analysis of its needs (in the field of embryonic stem cell research)
 - b. Group Position and supporting rationale. The rationale needs to provide evidence that your group understands the science behind the issue.
 - c. Opposing Position (compare/contrast) Select an opposing viewpoint to compare & contrast to your persona's position.
 - d. Conclusion Statement
3. Bibliography (use the method of citation preferred by your own field)

Good Luck!

Persona Paper Rubric
Total Points: 25 points

Criteria for an A (22.5 - 25 points)

- Well developed persona description
- Introduction includes analysis of persona group's needs.
- Correct use of terminology
- The position is scientifically accurate .
- The position is consistent with persona.
- Resources used are of high quality.
- Appropriate development is given the opposing view(s) considered within the paper.
- Comparison/Contrast of persona position with opposing view gives convincing respect and weight to both views.
- Conclusion statement is consistent with persona and resources.

Criteria for a B (20-22.5 points)

1 or 2 of the criteria above are incomplete or missing

Criteria for a C (17.5 - 20 points)

3 or 4 of the criteria above are incomplete or missing

Below a C (0-17 points)

Major flaws in assignment, please visit with the instructors.

Assignment: Personal Position Paper
Total Points: 75 points
Scoring: see rubric
Exceptions: see syllabus

Description: In class we have looked at religion, personal philosophies, legislation, and the scientific background of stem cell research. In this assignment, you will give your own personal position on human embryonic stem cell research.

Length: 3 pages minimum, 5 maximum, double spaced, Times size 12 font. Include a title page and bibliography, but do not use them toward page count.

Hints: Note that the rubric rewards the juxtaposition of opposing views for comparison and contrast with your own. A good position paper not only presents your views, but your understanding of how your view relates to others. This can be achieved by considering other claimants in the decision making model.

Proposed Paper Layout:

1. Title page
 - Course (Stem Cells and Society)
 - Name
 - Title for the paper
 - Date due (06/01/07)
2. Body (3-5 pages double spaced)
 - a. Personal background. Who are you?
 - b. A brief analysis of the current state of embryonic stem cell research and a description of fundamental ethical issues surrounding the topic.
 - c. Personal Position and supporting rationale. The rationale needs to provide evidence that you understand the science behind the issue (e.g., an explanation of the different sources of embryonic stem cells.) You should also include an analysis of current legislation in Missouri and the U.S. Do you support the current legislation? Why or why not? Your response needs to demonstrate an understanding of current MO and federal legislation. Identify claimants who might benefit from action based on your position.
 - d. Opposing Position (compare/contrast) Describe claimants who might be harmed by action based on your position. Compare and contrast their views to your own.
 - e. Conclusion Statement
3. Bibliography (use the method of citation preferred by your own field)
4. Include a copy of the decision-making model with your answers to each question. This can be handwritten.

Personal Position Paper Rubric
Total Points: 75 points

Criteria for an A (67.5 - 75 points)

- Well developed personal background including personal philosophy or theology.
- Well described issue/problem regarding embryonic stem cell research.
- Correct use of terminology
- Strong evidence of understanding the science of stem cell research, including SCNT, IVF, therapeutic cloning and reproductive cloning.
- Explanation of how your position is consistent with your personal philosophy or theology.
- The position is compared to current state and federal law, demonstrating a strong understanding of current law.
- The position includes description of claimants who would benefit and those who would be harmed by action supported by your position
- Resources used are of high quality.
- Comparison/Contrast of personal position with opposing view(s) gives convincing respect and weight to both views.
- Conclusion statement is consistent with support given and resources.

Criteria for a B (60-67.4 points)

2 or 3 of the criteria above are incomplete or missing

Criteria for a C (52.5 - 59.9 points)

4 or 5 of the criteria above are incomplete or missing

Below a C (0-52.4 points)

Major flaws in assignment, please visit with the instructors.

Reflective Journal Entries: Total 50 points

Your reflection Journal is a learning tool - a thinking tool. In it, you process, extend, question and refine your thinking through writing. Therefore, each entry should be analytical/reflective as well as descriptive. Also, each entry should include a discussion of how the new information relates or connects to your practice in the classroom or educational setting. Consider using the following "sentence starters" to get (and keep) your Journal writing on track:

- The one thing I'll remember about today's reading (or discussion or lesson) is.....
- I'm still confused about
- What I'm finding hardest right now is ...
- What I learned today fits in with what I already know by
- What I understood today that I haven't understood before was ...
- The activity/part of the reading (etc.) that I liked best was because.....
- A new insight or discovery for me was..... because.....
- Its helps me to understand this information (or these strategies, etc.) when I
 - In what ways does this information help me clarify my own personal position of embryonic stem cell research . . .

Journal entries should include:

- 1) in class reflective writings,
- 2) post-class reflections on class activities and discussions, and
- 3) the assigned readings.

* There should be one journal entry for each class period.

Scoring Rubric:

3 pts:

- In class reflections thoughtfully respond to the prompt
- Evidence of completion of reading assignments via examples used in reflective writing.
- Evidence of thoughtful reflection of class activities.
- Connections are made between readings and class activities, and my own personal position on embryonic stem cell research.

1-2 pts:

- Missing one or more elements above.

The final score for this exercise will be calculated in the following way:

8 entries X 3 pts = 24 pts. Therefore, $\{(total\ pts\ earned)/24\} \times 50$.

Stem Cells and Society Examination

Student Name _____

Date _____

Total Points: 60 points

Instructions: This examination contains 3 sections: multiple choice, fill in the blank, and short answer. It is intended to cover a broad range of stem cell biology discussed in the Maymester course (2007) Stem Cells and Biology and within the assigned readings.

A. Multiple Choice: Circle one letter for the answer which best completes each introductory phrase. Each question is worth 2 points toward the total of 60 points.

1. One proposed therapeutic advantage of somatic cell nuclear transfer is:
 - a. the ability to employ cross-species transplants for the prevention and cure of Cancer.
 - b. the use of a patient's own cells to produce an embryonic stem cell line, which can in turn be used for a number of therapeutic options.
 - c. to limit the differentiation of resultant cells, thus eliminating the concern for teratoma formation.
 - d. the limitation of dangerous somatic cell nuclear build-up.

2. "Adult" stem cells are so called because:
 - a. they are derived from post-embryonic tissue.
 - b. they are only useful in transplants into adults due to limited lifespan.
 - c. they can only be derived from post-adolescent tissue.
 - d. they have a reduced production of telomerase, resulting in terminal differentiation.

3. Ian Wilmut named his cloned sheep "Dolly" in reference to:
 - a. his niece Dolly Mcdermot, who had been diagnosed with a rare form of spinal degeneration.
 - b. the Scottish term dolliea, which refers to "twin."
 - c. Dolly Parton as a reference to the source of the somatic cells used in the process.
 - d. his favorite graduate student who had performed the successful experiment.

4. Based on current evidence, an embryonic stem cell is described as:
 - a. pluripotent.
 - b. totipotent.
 - c. unipotent.
 - d. multipotent.

5. Embryonic stem cells can be derived from blastocysts up to the 14th day of development. The barrier to derivation after the 14th day is:
 - a. the formation of bone surrounding the embryonic niche, which makes harvest of the cells difficult.
 - b. the lifespan of the cells, which in culture is vastly limited after 14 days.
 - c. the legal cutoff established by Roe v. Wade.
 - d. the onset of gastrulation, and further differentiation of embryonic stem cells.

6. Somatic cell nuclear transfer has been effectively used to produce human cells for the therapeutic treatment of:
 - a. Parkinson's disease
 - b. Alzheimer's disease
 - c. Leukemia
 - d. none of the above

7. Of the following descriptive terms, the one that would not describe an "Adult" or embryonic stem cell is:

- a. quiescent.
- b. plastic.
- c. post-mitotic.
- d. self-renewing.

8. Following gastrulation, the cells of the endoderm have been shown to develop into:

- a. eye, mammary glands, and inner ear.
- b. lungs, tonsils, and pancreas.
- c. gonads, urinary system, and fat.
- d. the heart, skin cells, and blood.

9. A proposed example of "transdifferentiation" includes:

- a. neuroectodermal progeny from bone marrow precursors.
- b. the shift from endothelial to mesenchymal cell morphology.
- c. blood cells from cardiac tissue.
- d. production of neuroblasts in the subventricular niche.

10. The reprogramming of a somatic nucleus following nuclear transfer is likely the result of:

- a. the discombobulation of moving through a 5 micron glass pipet tip.
- b. the electrical charge of fusion.
- c. apoptotic signaling as a result of membrane breach.
- d. factors in the cytosol of the recipient egg.

11. The therapeutic transplant of umbilical cord stem cells and/or amniotic fluid stem cells may show an advantage over other stem cells because:

- a. they can be stored at room temperature.
- b. they are incapable of expressing oncogenes.
- c. they show immune privilege.
- d. no one has ever raised a moral objection to the harvest and use of adult stem cells.

12. One difficulty in the development of cellular therapies for severe spinal cord injury includes:

- a. the inability to find a stem cell that will make neurons *in vitro*.
- b. the post-adolescent termination of neurogenesis throughout the central nervous system.
- c. the necessity of age matching cell donors and recipients.
- d. the appropriate axonal targeting of transplanted motor neuron precursors.

13. Of the following, the description that best fits a transit amplifying cell:

- a. limited proliferation.
- b. unlimited plasticity.
- c. unlimited proliferation.
- d. capable of assymmetric division.

14. Difficulty in addressing cellular therapies for stroke include all of the following except:

- a. limited endogenous neurogenic response to stroke.
- b. inability of neural precursors to identify the location of the stroke.
- c. glial scarring prevents complete integration of regenerated tissue.
- d. the appropriate integration of neural progeny into neuronal circuits.

15. The human embryonic stem cell lines currently supported for use in research by the American government may be limited in usefulness by:

- a. their passage in the presence of mouse fibroblasts.
- b. the number of times they have been passaged.
- c. their HLA profiles make them unsuitable for widespread use.
- d. all of the above.

B. Fill in the blank (Who's Who). For the following 5 sentences, fill in the appropriate name from the bank of 10 possible names below. Each question is worth 2 points toward the total of 60 points.

Bank: Louise Brown, George H. W. Bush, Bill Clinton, Fiona Doetsch, Robert Edwards, Elaine Fuchs, Woo Suk Hwang, Leon Kass, Jong-Hoon Kim, James Thomson

16. _____ developed the first human embryonic stem cell line in 1998.
17. A Columbia professor, _____, has led the field in the understanding of the neural stem cell niche located in the subventricular zone.
18. Federal Funding for human embryonic stem cell research in the U.S. was first approved by _____.
19. Falling into disfavor after controversy surrounding inappropriately attained and falsified data, _____ continues to work in the field of stem cells.
20. _____, the first child born following *in vitro* fertilization, is currently 28 years old.

C. Short Answer:

1. Use the space below to draw a simple stem cell niche. Include at least 5 components of the niche as discussed in class. Briefly describe the role of each component. Each component is worth 1 point.

Extra credit (5 points) develop a unique analogy for a stem cell niche and describe components as above, think of Walter in his niche or the space station, but don't steal them. Also, it is not allowed to use an analogy proposed by any group in class.

2. Describe as you would to someone with no scientific background what stem cells are. Include an explanation of the terms "adult" and "embryonic." (5 points)

3. Describe the concepts of natural reproduction, therapeutic cloning, and reproductive cloning. You may use a diagram to make your point. Define any new terms used. Include stages that are similar for each and stages that are different for each. (10 points)