Assignment 2: Structured Class Discussion

Scientific discoveries are made when scientists ask questions, seek answers and establish collaboration with other scientists and non-scientists. Science is also often an incremental process that can be influenced by a number of societal factors. The articles below trace how the interplay among individuals practicing basic science, law, business, human rights, and medicine has shaped the course of stem cell use and the direction of scientific research in the public and private sectors. This assignment also hopes that sharing your summaries and questions with one another will stimulate your curiosity for further investigation.

Instructions

Day 1:

1. You will be assigned to a small group or will complete the assignment individually.
2. Each student or small group will be assigned one of the news stories from the larger set in the "Stem Cell Research News Stories." Each article examines either scientific or social issues related to stem cells, but no one article contains the whole story. Together the articles span a broad range of subjects that include cloning, human rights, patents, international and national legislation, religious and ethical views, and basic science.
3. Outside of class each student should read the article, take notes, and address these questions for discussion:
   - When was your article published? The field moves quickly so be aware of the date as well as the year.
   - Who published your article?
   - If your article stimulates political or ethical debate, do you understand why?
   - If your article reviews societal implications, can you tell us why these might be viewed as promising and/or disturbing?
   - If your article reviews potential therapeutic applications of this research, can you review the limitations?
   - What aspect of the biology do you find puzzling?
   - What do you find most ambiguous or unclear about stem cell research and cloning? List a series of questions.

Day 2:

4. During class, you will assemble into small groups and discuss your answers for 15 minutes. Bring your notes and the original article to facilitate your discussion.
5. The small group will prioritize the answers to the questions and prepare to share these with the class. The group should assign one person as the reporter for the group.
6. For the remainder of the time, the class will hold a structured discussion.
   - The first group will present only ONE answer to each of the questions for discussion distributed on Day 1.
   - The remaining groups will then determine if they can respond to any of the questions remaining from the first group.
   - From the groups that can respond to these questions, one will be selected.

- This group will share their answers to the first group's questions and then present new information and new questions they have identified for discussion.
- The cycle of discussion then repeats itself until all of the groups have had a chance to contribute something unique to the discussion.

Stem Cell Research News Stories

1. Lewis, R. (2000). "Stem cell legacy: Leroy Stevens." *The Scientist* 14(5):19. Short article that describes work in the late **1960s and 1970s** that laid **the groundwork** for current stem cell research.
2. Lewis, R. (2000). "A paradigm shift in stem cell research." *The Scientist* 14(5):1. Slightly longer article that details the **history of stem cell** research and some of **the techniques for tracing cell fate.**
3. Harris, J. (2000). "Intimations of immortality." *Science* 288:59. **AND** Vogel, G. (2000). "In contrast to Dolly cloning resets telomerase clock in cattle." *Science* 288:586-587. Both articles highlight the relationship between **telomere length and aging** and how new stem cell technologies need to pay attention to this aspect of reprogramming.
4. Agres, T. (2001). "Stepping up for stem cells." *The Scientist* 15(17):1. A detailed review of the political and financial aspects associated with **stem cell research in the U.S.**
5. Entine J. and Satel S. (2001). "Race Belongs in the Stem Cell Debate." *Washingtonpost.com*. September 9. Questions the **genetic diversity of stem cells lines** that qualify for U.S. federal funding. http://www.washingtonpost.com/ac2/wp-dyn/A60970-2001Sep8?language=printer. **OR** Brainard J. (2003). "Low Number of Federally Approved Stem-cell Lines Raises Ethical and Safety Concerns, Panel Says." *The Chronicle of Higher Education*. November 11. Reviews the results of two studies conducted by **ethicists that question the therapeutic potential of U.S. established stem cell lines** that qualify for federal funding.
6. Muscular Dystrophy Association. (2000). "MDA Researchers Discover Possible Key to Effective Stem Cell Therapy in Muscle Diseases." September 15. A news release that describes a **molecular switch for cell differentiation.** http://www.mdausa.org/news/000915stemcell.html.
7. The Stem Cell Network. (2002) "Adult Stem Cells Used to Repair Damage from Parkinson's Disease." *Stem Cell Network.* April 9. Reviews a revolutionary procedure to stimulate **adult neuronal stem cells** to differentiate into functioning neurons**.** http://www.stemcellnetwork.ca/news/articles.php?id=27
8. Fox, M. (2003). "Human Cloning Experiment Repeated." *MSNBC.com.* December 16. News coverage of ACT's efforts to clone using **parthenogenesis.** http://www.msnbc.msn.com/id/3730738/ .
9. Kirchheimer, S. (2004) "Are Men Obsolete?" *WebMDHealth Online.* April 21. Describes an experiment in which **genomic imprinting** allows human cloning via **parthenogenesis**. http://my.webmd.com/content/article/85/98826.htm?z=1728_00000_1000_ln_05 .

10. Lamb, G. (2004) "In Cloning Debate, a Compromise." *Christian Science Monitor Online.* April 8. Reviews the U.S. President's Bioethics Council report that **distinguishes between reproductive cloning and therapeutic cloning research**. Also mentions the efforts of Doug Melton, Harvard researcher, to provide **economically feasible stem cell lines for research**. http://www.csmonitor.com/2004/0408/p14s01-stct.html. **OR** Labi, A. (2004). "University of Cambridge to Open $30-million Center on Stem-cell Research." *The Chronicle of Higher Education Online Today's News.* June 22.

11. Sullivan, B. (2004) "Religions Reveal Little Consensus on Cloning." *MSNBCOnline*. Reviews various **religious perspectives on cloning and stem cell research** and contains an interactive for deeper learning. http://msnbc.msn.com/id/3076930/**.**
12. Scherer, R. (2004). "States Race to Lead Stem-cell Research." *The Christian Science Monitor Online.* February 25. Review of **state funding initiatives** to support stem cell research. http://www.csmonitor.com/2004/0225/p01s03-usec.html.
13. Recer, P. (2004). "Korea's Successful Human Cloning to Obtain Stem Cells Sparks Calls for US Ban." Provided by Canada Press (CP). February 12. Review of the **South Korean human cloning** experiment using somatic nuclear transfer. http://mediresource.sympatico.ca/health_news_detail.asp?channel_id=13&news_id=3353 .
14. Brooke, J. (2005). "Without Apology, Leaping Ahead in Cloning." *The New York Times.* May 31: 1. Review of the **South Korean human cloning** experiment using somatic nuclear transfer with eleven patients. **AND** Fairclough G. (2005). "Women Offer Eggs to Doctors in South Korea." *Wall Street Journal*. November 25:B1. Review of the ethical and financial issues surrounding **ooycte donation and the cultural differences** in approach. **AND** Fifield, A. et al. (2006). "Seoul Panel Confirms Stem Cell Fraud." *Financial Times.* January 11: 7. **AND** Kevles, B.H. (2006). "Barely a Drop of Fraud; Why It Shouldn't Taint Our View of Science." *The Washington Post.* January 8: 03. **Review of the impact of scientific fraud.**
15. United Nations. (2005). Press Release on the Declaration on Human Cloning, Fifty-Ninth General Assembly Plenary 82nd Meeting. New York, NY. Press release of the vote on **the Declaration to ban human cloning** for any purpose. http://www.un.org/News/Press/docs/2005/ga10333.doc.htm.
16. Gibbs, W. (2005). "The California Gambit," in Special Report: The Future of Stem Cells. *Scientific American/Financial Times*: A24-27. June 27. Review of **Proposition 71** and the financial repercussions. http://www.sciam.com/print_version.cfm?articleID=00074394-3130-12BC-ADB783414B7F014C. **AND** Hall, C. (2004). "Stanford Medical Dean Put on Stem Cell Panel." *San Francisco Chronicle.* November 6: 4. Review of the controversial nature of the **California stem cell research oversight committee** http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2004/11/06/BAGHR9NBI01.DTL **AND** Egelko, B. (2005). "State Supreme Court Refuses to Hear Challenge to Stem Cell Research Program." *San Francisco Chronicle.* March 24: 3.

http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2005/03/24/BAGFIBTQC71.DTL&type=printable.

17. Valente, M. (2005). "Argentina: MDs Use A Stem Cell Technique to Treat Diabetes." *Cord Blood Registry Online.* January 12. . Review of **adult stem cell therapy for diabetes.** http://www.cordblood.com/cord_blood_news/stem_cell_news/a_argentina.asp
18. Pondrom, S. (2005). "Current Human Embryonic Stem Cell Lines Contaminated With Potentially Dangerous Non-human Molecule." *University of California San Diego News Online.* January 23. Review of the **animal protein contamination** in human stem cell lines. http://www.eurekalert.org/pub_releases/2005-01/uoc--che011805.php.
19. Tufts University. (2004). "Fetal Cells Foster Research." Online News. Tufts University. August 30. http://enews.tufts.edu/stories/083004FetalCellsFosterResearch.htm
20. Rabin, S. (2005). "The gatekeepers of hES cell products." *Nature Biotechnology's Cell Therapies Focus Online* 23(7): 817-819. Review of the ethical and financial **access issues associated** with the U.S. stem cell lines. http://www.nature.com/nbt/journal/v23/n7/pdf/nbt0705-817.pdf. **OR** Cookson, C. (2005). "Universities and Companies Rush o File Stem Cell Patents in Spite of Controversy." *Financial Times.* June 20: 1.
21. Immunotherapy Weekly. (2005). Embryonic stem cell lines derived on serum-free placental fibroblasts. NewsEdge Corporation. First announcement of **human stem cells grown without animal products.** http://www.bioportfolio.com/july_05/22_07_2005/Embryonic_stem_cell_lines.html
22. Kahn, J. (2005). "The Stem Sell." *New York Times Magazine* October 16: 94 (four pages). This article reviews stem cell injections as an **anti-aging** and **beauty aid.**
23. California Stem Cell Report (2006). "Ortiz Not Satisfied With Egg Expense Rules." California Stem Cell Report. Reviews **exploitation** issues surrounding egg donation. http://californiastemcellreport.blogspot.com/2006/02/ortiz-not-satisfied-with-egg-expense.html
24. Dalrymple, M. (2006). "Bush Vetoes Stem Cell Bill As Promised." Online. Video. ABCNews. 2006. http://www.abcnews.go.com/Politics/wireStory?id=2212851 Or Stolberg, S.J. (2006). "First Bush Veto Maintains Limits on Stem Cell Use." *New York Times* July 20:11. Discusses the **first veto during the Bush Administration** and outlines the other bills to prohibit embryonic stem cell research.
25. Sharrer, Terry.(2006). "HeLa" Herself. The Scientist. 20(7):22. This is an interesting update on one of **the first cell lines** to be established.
26. Wade, N., et al. (2006). "In New Method for Stem Cells, Viable Embryos." *New York Times* Aug 24:A1. Describes a method for deriving embryonic stem cells based on preimplantation genetic diagnosis with accompanying blog commentary **http://www.the-scientist.com/blog/display/24413/**