

References and Resources

Books

Ishiguro, K. (2006). *Never Let Me Go*. New York, NY. Knopf Publishing Group. This paperback version of a novel narrated by a female clone was originally published in 2005. This would be a good addition for a freshman seminar course or an advanced level biology course that has the space and time to include fictional literature as a backdrop.

Gilbert, Tyler, and Zackin. (2005). *Bioethics and the New Embryology: Springboard for Debate*. Sinauer Publishing. New York, NY. This text was developed by Scott Gilbert and his students in freshman seminars at Swarthmore College. Also a website with white papers on ethical and historical dimensions of stem cell research with videos and animations <http://8e.devbio.com/keyword.php?kw=bioethics>.

Alberts, B. et al. (2003). *Essential Cell Biology*, Second Edition. Garland Publishing. New York, NY. A comprehensive text for introductory level biology students or non-majors. This text also offers thought questions at the end of each chapter. This text contains a glossary and many ancillary materials.

Maienschein, J. (2003). *Whose View of Life? Embryos, Cloning, and Stem Cells*. Cambridge: Harvard University Press. An excellent text that reviews the history of embryology, cell biology, IVF, cloning, and stem cell research. The last few chapters are an up to date account of the U.S. legislation pertaining to fetal and embryonic research.

Alberts, B. et al. (2002). *Molecular Biology of the Cell*, Fourth Edition. Garland Publishing. New York, NY. A detailed and comprehensive text designed for science majors. This text contains a glossary and many ancillary materials.

National Research Board on Life Sciences. (2002). *Stem Cells and the Future of Regenerative Medicine*. National Academy of Sciences. Washington D.C. A comprehensive review of the science and applications of stem cell research.

Rensberger, B. (1996). *Life Itself*. New York, NY. Oxford University Press. A “coffee table” book written for the general public and strongly recommended for non-majors. This paperback book, complete with a glossary, does an excellent job of placing intricate cellular processes in context. The book is also an excellent resource for cell biology majors, reminding them to place things in context and to integrate what they have learned.

Oral Histories

Stem Cells: Science, Ethics, and Politics

University of California, Berkeley. (2006). Stem Cell Research: Documenting the Science Politics, Law, and Ethics. Regional Oral History Office, Bancroft Library. In progress. ROHO has produced some excellent materials on a wide range of topics and their work in the biomedical sciences is particularly illuminating for biology majors who often miss the historical and groundbreaking work that led to scientific discovery and science policy.

http://bancroft.berkeley.edu/ROHO/collections/subjectarea/sci_tech/stem_cell.html

Video and Images

Science Reviews

University of Michigan. (2006). "Stem Cells Explained and Explored." Online. University of Michigan. March 21. This site reviews ASC and ESC procurement and their applications with good animations and clear narration.

http://www.umich.edu/news/stemcells/022706_TabA.html or <http://www.lifesciences.umich.edu/research/featured/tutorial.html> .

National Institutes of Health. (2001). *Stem Cells: Scientific Progress and Future Research Directions*. Online. National Institutes of Health. This report contains appendices with excellent **images** of fertilization, telomere extension, embryogenesis, genomic imprinting, and cell culture techniques. <http://stemcells.nih.gov/info/scireport/>.

C-Span. (2001). "National Academy of Sciences Forum." VHS and DVD. National Academy of Sciences. C-Span. Washington D.C. August 7. This collection of **five video** segments varying in length and price reviews the open discussion concerning the science and ethics behind human cloning. The forum depicts heated exchanges among stem cell scientists (Irv Weissman, Rudolf Jaenisch) bioethicists (Alta Churo), and fertility and reproductive specialists (Alan Trounson, Brigitte Bisselier, Antinori Servino, Panos Savos). Segment titles include: Human Reproductive Cloning; Human Cloning Research; Human Cloning Public Policy Issues; Animal and Human Cloning Data; and Cloning for Stem Cells. This ID number 165550 entered in the search tool at the URL will provide details. The cost for each DVD segment or VHS ranges from \$30.00-60.00. Phone number for ordering is 1-877-662-7726. <http://www.c-spanstore.org/cgi-bin/cspanstore/process.html>.

Public Broadcasting Service. (2001). "Life's Greatest Miracle." Online. VHS. Erikson & Nilsson Production in association with WGBH/Boston and ZDF Germany, RAI 3 Italy, NHK Japan, BBC Open University England, SVT1 Sweden, NRK Norway, DR TV Denmark, YLE1 Finland, RUV Iceland. November 20. These video clips contain excellent animation and real-time imagery of gametogenesis, fertilization, embryogenesis, and sex determination. Part 4 "The First Two Weeks" and Part 5 "The Embryo Takes Shape" are particularly useful for this module. The collection contains

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eight short **video** clips (5-7 minutes in length).

<http://www.pbs.org/wgbh/nova/miracle/program.html>.

Public Broadcasting Service. (2001). "Transforming Cells." Online. Online News Hour With Jim Lehrer. MacNeil/Lehrer Productions. April 12. An excellent seven-minute **video** clip showing President Bush explain his stance and Marc Hedrick at the UCLA School of Medicine explain his work with fat cells that can differentiate into all three germ layers. Towards the end of the clip Anthrogenesis Corporation in NJ demonstrates how human placentas, which are normally discarded, can be used to derive stem cells. http://www.pbs.org/newshour/bb/health/jan-june01/stemcells_4-12.html#

Public Broadcasting Service. (2001). "Explaining the Science." Online. Online News Hour With Jim Lehrer. MacNeil/Lehrer Productions. August 9. An excellent seven-minute **video** clip of President Bush announcing his decision to limit stem cell research funding. John Gearhart and Mary Hendrix discuss the need for the research and Anthony Fauci explains the possibilities. http://www.pbs.org/newshour/bb/health/july-dec01/stemcellscience_8-10.html#

Public Broadcasting Service. (2001). "Background:Cloning Human Stem Cells." Online. Online News Hour With Jim Lehrer. MacNeil/Lehrer Productions. November 26. An excellent seven-minute **video** clip that illustrates ACT chimeric human/cow clone and there is also an excellent discussion of commodification issues on the Meet the Press transcript at this link. http://www.pbs.org/newshour/bb/health/july-dec01/cloning_11-26.html#

Ontario Genomics Institute. (2002). *ENGAGE: Stem Cells Resource Package*. Online. Ontario Genomics Institute (OGI) by Genome Canada, and the Joint Centre for Bioethics (JCB) at the University of Toronto. This pdf document is a comprehensive background on the topic of stem cell research with a good deal of national and international policy information. The **images** are useful for non-majors courses. <http://www.stemcellnetwork.ca/engage/materials.php>.

University of Utah. "What Is A Stem Cell?" Online. Genetics Science Learning Center at the Eccles Institute of Human Genetics University of Utah. This site has an intricate interactive **animation** that contains a sidebar of corresponding text. The "differentiation telephone booth," though an elementary level analogy, emphasizes the importance of signals needed for cell differentiation <http://gslc.genetics.utah.edu/units/stemcells/whatiscc/>.

Dolan DNA Learning Center. "Cloning 101." Online. Cold Spring Harbor Laboratory. This **animation** depicts the process of obtaining clones by natural means, such as twins and plant cuttings. The animation then reviews frog cloning, the cloning of Dolly, and the Honolulu technique used to clone mice. <http://www.dnalc.org/cloning.html>

Dolan DNA Learning Center. "How Embryonic Stem Cells Are Made." Online. Cold Spring Harbor Laboratory. This is a step through **animation** that clearly and simply

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depicts the culturing and differentiation of stem cells derived from a blastocyst. However, it should be noted that the induction signals are not reviewed <http://www.dnalc.org/stemcells.html>.

Chui, A.. "Human Embryonic Stem Cells." Online. NIH. This site contains text and an **animation** that walks through fertilization, extraction of embryonic stem cell and then induction of those cells to create insulin producing cells in the diabetic patient. http://www.sumanasinc.com/scienceinfocus/sif_stemcells.html.

Schindler, L. et al. "Science Behind the News: Understanding the Immune System." Online. The National Cancer Institute. An excellent **slide show** reviewing the basics of immunology with colorful graphics. <http://newscenter.cancer.gov/sciencebehind/immune/immune01.htm>.

FDA. (1995). "FDA consumer: From Test Tube to Patient: New Drug Development in the United States." Online. Food and Drug Administration. This site reviews animal and clinical studies and the regulations that safeguard patients and consumers including informed consent. http://www.fda.gov/fdac/special/newdrug/ndd_toc.html.

Kessler, S.L. (1999). "The Gift of Life." Online. New Jersey Public Television and Radio. A video of the Ayala family and the struggles they endured to save their daughter, Annissa's life from leukemia. The parents conceived another child, Marissa Eve, as a bone marrow donor for her sister Annissa. The entire one-hour video is available as **short video** clips. <http://www.njn.net/television/specials/giftoflife/videomenu.html>.

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Dalrymple, M. (2006). "Bush Vetoes Stem Cell Bill As Promised." Online. Video. ABCNews. 2006. <http://www.abcnews.go.com/Politics/wireStory?id=2212851>

Kalb, C. et al. (2004) "Stem Cell Division." *Newsweek* October 25: 42-49.. A comprehensive review of the current restrictions and Proposition 71 in California. Also describes the stem cell lines created by Doug Melton that are now publicly available at no cost. There is also a 2-minute **video** clip of Irv Weissman describing the stem cell ban/restriction being one based on idealism. <http://www.msnbc.msn.com/id/6263270/site/newsweek/>.

Public Broadcasting Service. (2004). "Stem Cell Research." Online. Online News Hour With Jim Lehrer. MacNeil/Lehrer Productions. August 10. An excellent ten-minute **video** clip showing James Thomson working on stem cells and his viewpoints on the federal funding issue, a snapshot of Ron Reagan junior and John Kerrey at the Democratic

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National Convention calling for a change in policy, and NIH director, Elias Zerhouni, describing the limited number and cost of using stem cell lines listed in the national stem cell registry. There is also a short clip of a privately funded venture between a Chicago based IVF clinic and the Reproductive Genetics Institute which has established 100 cell lines. Transcript available online. http://www.pbs.org/newshour/bb/health/july-dec04/stemcell_8-10.html.

CBS. (2004). "The Issues: Stem Cell Research with Elizabeth Kaledin." Online Video. CBS News. July 8. This 2.5-minute **video** news clip shows Doug Melton of Harvard University demonstrating the potential of stem cells in public health. Melton changed research directions from developmental biology in frogs to human stem cell research when he learned that his children have diabetes. The clip also shows President George Bush stating his views on stem cell research. <http://www.cbsnews.com/stories/2004/07/08/eveningnews/main628171.shtml>.

The Science Channel. (2004). "Science At The Edge: Stem Cell Research Segment." VHS. K. Davinov. Film Oasis, The Science Channel, LLC, and Grenada International. March. This 15-minute **video** clip midway through a one-hour weekly news shows Jeff Stapp's moral predicament. Jeff suffers from leukemia and though he has recently fathered a child from which stem cells could be obtained from the cord blood, he chooses to save them for his child and continues to wait for adult stem cell research to move forward.

Public Broadcasting Service. (2004). "Innovation: Miracle Cell." Online. Jared Lipworth and Erin Chapman. April. A 2-minute short **video** clip of a woman who was paralyzed while trying to save her children from a car accident and her attempt to stimulate her own adult stem cells to regrow nerve tissue. <http://www.pbs.org/wnet/innovation/episode6.html>.

Deutsche Welle Online.(2003). "Germany Hints at Loosening Stem Cell Law." Online. Deutsche Welle Online. October 30. This one-minute **video** news clip depicts Justice Minister Bridgette Zypries speaking out on loosening the laws surrounding stem cell research in Germany. http://www.dw-world.de/english/0,3367,1430_A_1016499_1_A,00.html#.

AAAS. (2003). "Alan Leshner: Therapeutic and Reproductive Cloning Video." Online. AAAS. This one-minute **video** clip focusing on the use of the term cloning to describe applications for reproduction as well as research. <http://www.aaas.org/ScienceTalk/video.shtml>.

CNN.com. (2002). "Couple Wants to Have a Baby Using Human Cloning: Interview With Erin Runnion on Connie Chung Tonight." Online transcript and video. CNN.com. August 12. This **video** is available for purchase from CNN by calling 1-800-CNN-NEWS or using the online form <https://orion.fdch.com/forms/orcnn.html>. The video and online transcript contain a one-hour interview of infertile American couple interested in cloning as a reproductive technology. The video clip also contains an interview with Panos

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Zavos, embryologist at the Kentucky Center for Reproductive Medicine, who supports the use of cloning for reproductive purposes and Dr. Zev Rosenwaks, Director of the Reproductive Medicine at the Neill Cornell Medical Center of New York. There is also a very short interview with John Brown, Louis Brown's father. Louis was the first "test tube baby" produced by *in vitro* fertilization.

<http://www.cnn.com/TRANSCRIPTS/0208/12/cct.00.html>.

CBSNews. (2002). "60 Minutes: The Holy Grail." VHS. CBS Worldwide Inc. New York. June 5. This 30-minute **video** clip can be purchased by calling 1-800-848-3256 shows couples saving cord blood as a future resource from which to obtain stem cells. The video clip has an interesting statement by Keone Penn, a child suffering from sickle cell anemia: "I love stem cells," he says. "I mean they saved my life. If it weren't for them I wouldn't, you never know, I probably wouldn't be here today." Also has a link to an interactive stem cell learning page that requires FLASH. The transcript is freely available from this web site.

<http://www.cbsnews.com/stories/2001/11/28/60II/main319351.shtml>.

Australian Broadcasting Company. (2002). "New Research Further Divides Stem Cell Debate: Australian Parliament Video." Online. Lateline. Ultimo. June 21. This 2.5-minute **video** clip describes recent work from Minnesota on adult stem cell research and the impact that the finding has on policy decisions concerning embryonic stem cell research in Australia. <http://www.abc.net.au/lateline/stories/s588386.htm> and http://www.abc.net.au/lateline/av/2002/06/20020621ll_stemcell.ram.

CNN.com. (2002). "Stem Cell Debate Video Gallery." Online. CNN. This site contains a collection of news clips available as short **video** downloads from the link Video Gallery. Includes gender, political, social, and religious perspectives.

<http://www.cnn.com/SPECIALS/2001/stemcell/>.

- Stem Cell Debate Continues: Gordons adopted IVF embryos and children suffering from diseases speak out (July 17, 2001)
- Stem Cell Support Grows: Senators viewpoints and differences amongst sources of stem cells (July 18, 2001)
- Stem Cell Research Grows in UK : Dr. Peterson's move from California to UK (July 20,2001)
- Against Stem Cell Testing: Pope and Bush wraps first meeting with Pope (July 23, 2001)
- Women Represent Two Sides of Stem Cell Debate: What to do with frozen embryos in fertility labs? (July 30, 2001)

Public Broadcasting Service. (2001). "Background: Cloning Human Stem Cells." Online. MacNeil/Lehrer Productions. November 26. This site links to a 7- minute video clip providing the logic and science behind human cloning. The pro argument is presented by Michael West, former president of Advanced Cell Technology and the counter argument presented by Kansas Senator Sam Brownback. The Discussion portion of this segment is available only as text in the transcript located at this URL and reviews the statements for human cloning made by Professor Ronald Green, Chair of the Religion

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Department at Dartmouth and against human cloning by Leon Kass, Chair of the President's Council on Bioethics and bioethicist at the University of Chicago. Transcript available online. http://www.pbs.org/newshour/bb/health/july-dec01/cloning_11-26.html#.

Public Broadcasting Service. (2001). "Explaining the Science." Online. MacNeil/Lehrer Productions. August 9.. A 7-minute **video** segment that shows President Bush's announcement to limit federal funding of stem cell research to adult stem cells and embryonic stem cell lines established before August 9, 2001. John Gearhart explains the need for more stem cell line. An exchange between Iowa Senator Tom Harkin and Mary Hendrix from the University of Iowa at a hearing on stem cell research is also shown. Anthony Fauci also discusses stem cell possibilities Transcript available online. http://www.pbs.org/newshour/bb/health/july-dec01/stemcellscience_8-10.html#

Public Broadcasting Service. (2001). "Transforming Cells." Online. MacNeil/Lehrer Productions. April 12 A 7-minute **video** clip demonstrating the ethics behind stem cell research, with a 20 second clip of President Bush making a statement that "cloning humans is wrong." Also shows Marc Hedrick at UCLA School of Medicine describing his work with fat as a source of stem cells that can differentiate *in vitro* into all three germ layers and the Anthrogenesis Corporation in NJ using discarded human placentas to derive stem cells and differentiate them *in vitro*. Transcript available online. . http://www.pbs.org/newshour/bb/health/jan-june01/stemcells_4-12.html#.

Council For Responsible Genetics. (2001). *What Your Mother Never Told You About Stem Cells*. Online. Council for Responsible Genetics. This site provides a brief overview of both the science and the ethical and social dimensions of stem cell research. http://www.gene-watch.org/educational/stem_cells_mom.pdf.

Literature

Comprehensive Reviews (Scientific, Ethical & Legal)

Invitrogen/Nature. (2006). "Insight: Stem Cells." Invitrogen and Nature Publishing. June 29. 1059-102. Invitrogen is the leader in stem cell reagents and protocol development and the review focuses on basic science and therapeutic potential. http://www.nature.com/nature/supplements/insights/stem_cells/index.html

Scientific American and *The Financial Times*. (2005). The Future of Stem Cells: Special Supplement. June 20. This special supplement co-published by the two organizations has several articles which cover a wide range of subjects including therapy, law, and business. The section on state laws is particularly useful. <http://news.ft.com/reports/stemcells2005> .

Bent, S.A. (2005). "Under the Microscope." *The Scientist* 19 (13): 22-23. This is an excellent review of the embryo research legislation in many countries. This article

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denotes the conflict between the EU and the UK outlook on stem cell patents and there is a good website for additional information at Cardiff Center for Ethics and Law (<http://www.ccels.cardiff.ac.uk/launch/whittakerpaper.html>). <http://www.the-scientist.com/article/display/15595/>

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Shaw, J. (2004) "Stem-cell Science: When Medicine Meets Moral Philosophy." *Harvard Magazine* July-August 106(6): 36-45. Reviews the work of Harvard scientists, Doug Melton and Jill McMahon and the stem lines they established to circumvent current federal guidelines regarding federal funding. <http://www.harvardmagazine.com/online/070483.html>.

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National

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