Learning Activity 3: Teaching Notes for Case Study Role-Play

Eggs & Blood: Gifts & Commodities Module

by Katayoun Chamany updated July 2018

This case uses a combination of textual and visual resources to explore the intersection of emerging biotechnologies and egg markets. The simultaneous growth in these two areas, stem cell research (SCR) and assisted reproductive technologies (ARTs), has resulted in the bidirectional traffic of human cells, tissues, and bodies creating new bioeconomies and forms of what some describe as biolabor.

Since 1978, when Louis Brown was born using in vitro fertilization (IVF), developments in reproductive technologies have continued to prompt practices and policies that vary across the international landscape. Combined with IVF, individuals can now screen their embryos via Preimplantation Genetic Diagnosis (PGD), or choose to freeze eggs and embryos for future use using improved vitrification (freezing) techniques. Regulation of these technologies is mixed, with some countries restricting use for specific traits, and others permitting their use for sex selection. Though the sale of embryos or eggs is prohibited in most countries, some have opted for barter systems where eggs secured via ovarian hyperstimulation for reproductive purposes can be used in SCR in exchange for lower IVF costs.

This case specifically addresses procedural justice, with respect to whose bodies are being used to source the biological materials needed for ART and SCR. Additionally, the case also investigates distributive justice with respect to who benefits from the applications of research, and who is marginalized by biomedical research policy because of shifting societal values and inequities. To dive deeper into these aspects of the case, I have contextualized the case using an intersectionality framework. Intersectionality is a term that was proposed by Kimberle Crenshaw in the late 1980s to describe the situations in which identity politics can be destructive. Crenshaw posits that multiple social categories (e.g., race, ethnicity, gender, sexual orientation, socioeconomic status, ability) intersect at the micro level of individual experience to reflect multiple interlocking systems of privilege and oppression at the macro, social-structural level (e.g., racism, sexism, heterosexism, ableism). (Bowleg, AJPH 2012). The approach seeks to move away from conflating, or ignoring, aspects of a person's lived experience and, rather, uses a multidimensional perspective that highlights the additive effect of multiple forms of oppression.

The pedagogy used here is also in line with Crenshaw's theory and draws on Gloria Ladson-Billings work on Culturally Relevant Pedagogy. It is different from other pedagogies in that it is "specifically committed to collective, not merely individual, empowerment." There are three major components to CRP: "(a) Students must experience academic success; (b) students must develop and/or maintain cultural competence; and (c) students must develop a critical consciousness through which they challenge the status quo of the current social order." Culturally relevant professors create classrooms and departments where students don't experience a conflict between doing well in science and other parts of their identities. By including diverse views and membership in this case study role play, the assignment aims to address issues important to those most marginalized in society and acknowledges the value of knowledge and resources from diverse communities. An update on the pedagogy authored by Ladson-Billings can be found in the Harvard Education Review (CRP 2.0 the Remix).

This case is one of four in the *Stem Cells Across the Curriculum* project and can be used with biology majors and non-majors at the undergraduate and graduate level. Collectively, the cases trace the trajectory of cell biological research and tissue culture techniques that support biomedical research. A central theme of the cases is the trade offs involved in conducting research involving human subjects and biospecimens to advance life science research. The four cases (in italics) span six decades of scientific research on human cells beginning with the establishment of the first human cell line (*HeLa Cells & HPV Genes: Immortality & Cancer*), to the derivation and use of blood and embryonic stem cells (ESCs) (*Eggs & Blood: Gifts & Commodities*), to differentiation of adult stem cells (ASCs) in culture (*Disease & Disability: Hope & Hype*), and culminating with induced pluripotent stem cells (iPSCs) and their relative scientific and therapeutic potential as compared to ASCs and ESCs (*Stem Cells & Policy: Values & Religion*). The cases deliberately move from a historical case study that provides students with emotional distance and a rich array of resources to arrive at a decision, to contemporary and contentious cases for which precedent and law are more limited. Though they can be used in combination and in sequence, each case can also be used on its own.

In this case study, using role-play, students analyze the case of public funding for oocyte provision to serve stem cell research. This case study approach to teaching and learning presents a fictionalized story that is based on real world events. The activity promotes the development of higher order thinking skills associated with the later stages of the 7E model of learning proposed by Arthur Eisenkraft (Engage, Elicit, Explore, Explain, Elaborate, Evaluate, Extrapolate) and helps students develop empathy and tolerance for multiple points of view. Additionally, the case study provides scaffolding to move students through Perry's Model of Ethical Development by focusing on the integration of affective and cognitive learning.

By adopting the role of a stakeholder attending a symposium, students learn about the biological, ethical, legal, and social dimensions of using eggs, embryos, fetal tissue, and adult tissue for scientific and therapeutic research. The learning resources invite students to consider advantages and disadvantages associated with various models of egg provision and tissue acquisition as well as informed consent practices designed to provide stem cell researchers with necessary biological resources.

Because each student adopts the role of an attendee of an international conference, students acquire depth by *exploring* a specific person's view, disciplinary approach, and rationale, as well as breadth through engagement with peers who have adopted different roles and provide multiple perspectives. By engaging in dialogue, students construct knowledge together. By *explaining* and *elaborating* on their character's position they are better able to understand the range of policies and practices in the private and public sector regarding compensation for biospecimen provision involving blood, tissues, and cells.

The choice to use real-world characters, organizations, and the conference setting reflects the desire to impart a level of authenticity to this performative assessment designed to judge a student's ability to use specific content knowledge and skills within a real-world context. The hyperlinks to real-world post-doctoral fellowships, undergraduate journals, and college programs are included to broaden students' knowledge of existing venues for interdisciplinary scholarly activities and to help them consider publishing the work they create for this assignment.

This capstone activity asks students to grapple with the benefits, risks, and trade-offs of any given policy regarding egg provision using public funding. Through their personal policy proposals students must identify potential areas of compromise and articulate specific practices and policies they are not willing accept and provide the rationale for doing so. This approach is in line with Perry's Model of Ethical Development intended to move students from dualistic thinking to relativistic thinking, and ultimately to arrive at a committed stance.

Portions of this case have been used at Eugene Lang College of Liberal Arts at The New School in a non-majors stem cell seminar course and in University Lecture courses for liberal arts and design students. It has also been adapted for a Bioethics and Human Reproduction course offered in the Science Technology and Society program at Vassar College and a medical anthropology course at Fordham University. Depending on how the case is delivered it will span one to four class sessions of ninety minutes each. Students are asked to complete readings, conduct research, view multimedia and works of art, and engage in discussions during class, and ultimately craft a policy proposal that addresses the biological, ethical, legal, and social dimensions of providing compensation through government sources for egg/oocyte provision for embryonic stem cell research (ESCR).

Instructors of cell biology courses will easily connect to topics such as gametogenesis/meiosis, mitosis, cell signaling, endocrinology, gene-environment interactions, and embryogenesis. Instructors focused on biotechnologies can use the case as a springboard for conversations about PGD, SCNT cloning, cybrid construction, cell identification and isolation techniques (FACs, etc.), .), and the creation of new embryo-like entities or synthetic stem cells. For students with limited biology background these topics can be explored using the accompanying slide sets for this Module with more emphasis placed on the social context of the investigations.

STUDENT LEARNING OUTCOMES:

- Categorize and summarize evidence-based arguments for and against the liberalization of hESC and the ways in which policy has been shaped by these competing positions.
- Identify the characteristics of human oocytes that play a role in nuclear reprogramming and genetic expression necessary for pluripotency (the ability to become any cell of the body)
- Explain advantages and disadvantages regarding scientific and therapeutic potential of stem cells derived from embryos, fetuses, and adult tissues. Which of these sources of stem cells offer the most flexibility and for what purposes? Which source has a wider range of possible cell fates? Which source has less potential for the development of unwanted outcomes such as tumor formation? How does genetic diversity play a role in both participatory and distributive justice.
- Describe how advances in stem cell research can both challenge and confirm stereotypical views on the role of females in society (nurturer, giver, mother, etc.) and tissues and cells associated with reproduction (cord, placenta, fetal, menstrual, breast) using feminist perspectives.
- List the risks to mental and physical health that are associated with different models of biospecimen acquisition (egg sharing, donation of extranumerary embryos, research-only embryos, savior siblings, fat, menstrual blood, and peripheral blood).
- Critically analyze arguments for specific policies shaped by competing positions for or against public funding for oocyte provision for stem cell research, and map these to specific stakeholders.
- Gain familiarity with the various arguments presented by scientists, feminists, policy makers, social justice scholars regarding compensation for oocyte procurement for stem cell research and to be aware of the diverse points of view *within* these stakeholder groups
- Construct evidence-based policies that recognize trade-offs regarding benefit and risk, and mitigate the drawbacks of any particular model, being careful to consider who benefits and who carries burden.
- Recognize the influence that advances in basic science, law, business, human rights, and medicine can have on one another.

Instructors can set the stage for the case study role-play activity using Activity 1 and 2 in this module or using the materials associated with Activity 3.

Setting the Stage Using Learning Activity 1 and 2 and Other Resources

Prior to using this case based role-play activity, instructors may choose to utilize other learning activities associated with this *Eggs & Blood: Gifts & Commodities* Module to address the earlier steps in the 7E model of learning (Engage, Elicit, Explore, Explain, Elaborate, Evaluate, Extrapolate). Learning Activity 1 introduces students to the case study presented in Activity 3 by *eliciting* prior knowledge and *engaging* students in a progressive disclosure activity designed to provide a cursory review of the history of IVF and the arguments for and against compensation for egg provision. Learning Activity 2 provides students with an opportunity to *explore* secondary literature, infographics, and videos, and *explain* what they have learned about the biological, ethical, legal, and social dimensions of stem cell derivation from different sources including, embryos, menstrual blood, fetuses, fat, cord blood, and ovarian tissue.

Essential Resources associated with this module and the Video Resource Guides provide a range of references spanning the biological and social sciences and include shorter news pieces and summaries regarding policy for courses short on time, or interested in using multimedia to set the stage. In the **Essential Resources** under the section titled "Legislation to Protect Embryos from Research or Expand the Supply of Embryos for Research" the influence of policy on the supply of human embryos available for research purposes is presented. Regarding US policies, resources explaining the Dickey Wicker Amendment, federal bills, and state initiatives are included. Examples of international legislation include the UK, which on January 22, 2001 passed a bill allowing the cloning of humans for embryonic stem cell research and South Korea's Bioethics and Biosafety Act of 2005, which in response to the Hwang cloning scandal restricted research to those embryos created in excess by the reproductive sector. The resources listed under the Video Resource Guides also touch on policy and practices regarding human egg and embryo generation and use. As one example, the seven-minute video clip from Religion & Ethics Weekly titled "Embryonic Stem Cell Controversy" can be accessed through the Embryos, PGD, and Cybrids Video Guide to set the stage as it provides a provocative narrative regarding one family's decision to use IVF and PGD for reproductive and research purposes, illustrating the concept of "dual use" biological resources. The story of the Trevino family's egg sharing scheme to create a savior sibling for their son living with NEMO disease is short, but rich in content, covering ethical, scientific, and social dimensions. The video interviews the family and George Daley, a stem cell researcher, and highlights how IVF combined with positive and negative genetic selection of embryos led to the creation of savior siblings and stem cell lines. Because the mother underwent several rounds of hormone stimulation to generate 36 embryos, the story allows for the discussion of motherhood themes involving sacrifice and risk. When the Trevinos failed to secure enough cord stem cells from the savior sibling for their son, they used multiple bone aspirations from her hip, which can be a prompt for discussions of new forms of kinship and bonding. Instructors can extend this story to popular culture by referring to the trailer from My Sister's Keeper, which is based on the novel by Jodi Picoult. The Trevino family's intentional approach can be juxtaposed to those families that utilized the same technologies for reproductive purposes and left open the possibility for research as described in the article by Wadman (Link). In this news piece, the decision to exclude 72 disease-related cell lines from the US National Stem Cell Registry raises the issue of informed consent, reconsent, or secondary consent. Though it is not clear whether the Trevinos participated in some form of exchange, such that their IVF and PGD cycles were provided at reduced cost in exchange for donations to stem cell research, instructors could raise this issue for discussion. If instructors are interested in exploring issues of potential exploitation and health risk, the trailer for the documentary "Eggsploitation" produced by the Center for Bioethics and Culture introduces these ideas as do some of the clips from the "Lines that Divide," which they also produced (see the clip with the image of the young girl and the clip with the image of the red tinted embryo).

Timelines: Instructors can refer to the **Timelines** of events and highlight the evolution of assisted reproductive technologies, payment for gametes, and emergence of embryonic stem cell research.

Setting the Stage Using the Materials in Activity 3

The Trajectory of Events provides a timeline and list of resources intentionally designed to be broad regarding assisted reproductive technologies and stem cell research, as well as public policies regarding the use of extranumerary embryos, cloned embryos, and bodily tissues in biomedical research and therapy. Within the list are links to a few short videos that can set the stage very quickly.

Stakeholders Connections, Biographies, and References present students with a chart of 21 characters, their area of expertise, their affiliation, and relationship to the case study. This chart is followed by a list of biographies coupled with a customized list of references for further character development.

Questions to Consider embedded in the case assignment overlaps with **Discussion Questions** provided with this module, but are intended to be more focused and customized based on the goals of the case study learning outcomes. Instructors should review the questions and choose those that are appropriate for the time frame and goals for their course. Students will find it useful to review these questions early on as they prepare their character statements, as they offer an opportunity to *explore* the content deeply and *elaborate* on their character's views.

The Grading Rubrics provide a detailed and structured overview of criteria essential to the role-play activity and the personal policy position paper. These should be customized for the course and shared with students early on.

The Primer associated with this module can be assigned in courses for which stem cell research, social justice, or feminist views are not already embedded. The primer is a rich resource replete with hyperlinks to infographics, slide shows, and video. Depending on the goals of the course and the background of the instructor and students, specific sections of the primer may be more appropriate for groups with background knowledge in some areas and not others. The table of contents can direct individuals to these sections.

The Case Study is a fictionalized story presented in three parts to provide a real worldview and context to the assignment (all organizations, characters, and events are real). The three parts utilize a constructivist approach to learning and are designed to move students from the familiar and reflexive binary responses to more critical and evidence-based responses that demonstrate tolerance and understanding of multiple points of views (Perry's Model for Ethical Development). The case draws on research from cognitive science that suggests learning is retained when students move from situational interest (the case study and role-play presented by the instructor) to personal interest through the use of narrative (identification with a specific character in the role-play) and the incorporation of personal values (the policy position paper). The sections in italics present directives to students.

Part I: Character Statement, Questions and Counter Argument

Part I asks students to adopt the role of a specific character who may have a stake in this policy. They *explore* the case material on their own and *explain* what they have learned to their peers about their character's position regarding policy by posting a character statement that details their expertise and position, provides a counter argument to opposing views, and poses questions to other characters. This statement is posted online prior to the convening of the symposium. The **Stakeholders Possible Connections, Brief Biographies and References** and **Questions to Consider** documents prepare students for this task. Students can be required

to review these statements and questions ahead of time prior to the simulated symposium, but instructors would need to build in an online venue for this review and interaction being mindful to provide adequate time.

Part II: Oral Role-play & Dialogue

In Part II students engage in an in-class simulated symposium hosted by the International Network of Feminist Bioethicists in which they maintain the role of their character throughout. The network and the conference in 2012 were real events. Through facilitation by the instructor, who acts as Chair of the symposium, students defend their character's position using evidence but remain open to other people's views. Since each student represents a stakeholder with different views, discussion leads to requests for clarification. Through this discussion students will *elaborate* on their characters' positions and understand that commitment for a position evolves through ongoing activities that often require revisiting new evidence and hearing multiple viewpoints. The deliberate distinction between debate and dialogue emphasizes the need to hear those views that might diverge from an assigned character's views. Though debate can ask students to use evidence to craft a position, students can become so vested in "winning" the debate, that they are no longer listening, nor willing to amend their position. Thus, the symposium is intentionally framed as a dialogue to allow students to grapple with the full complexity of this case and provide students with an opportunity to experience shades of grey and bring more inquiry to a discussion aimed at identifying points of connection and shared values. To see the difference in using debate, discussion or dialogue, with special attention to issues of identity, status, and power, see this chart compiled and adapted from Rahnesh Nagda, Patricia Gurin, Jaclyn Rodriguez, and Kelly Maxwell's work on Intergroup Dialogue (IDG), Diana Karda and Todd Sevig's work on IGRC, and Sally Berman's paper on this topic from the Dialogue Group of the Boston Chapter of Educators for Social Responsibility (ESR). Additionally, reviewing this book review or summary of Daniel Yankelovich (Magic of Dialogue) and Mark Hicks' explanation of how dialogue can contribute to Multicultural Communications Competencies may also prove helpful for instructors and students. In the case itself, students are provided with a link to a brief and easy to read comparison chart of deliberative dialogue and debate, created by the American Library Association as well as the chart by Rahnesh Nagda et al.

Part III: Written Personal Position Policy Proposal

Part III asks students to shed their character role and to step back into the role of a student and write a position paper that addresses policy. Here they are asked to *evaluate* the various models for biospecimen acquisition and compensation in an effort to take a position on using public funding for oocyte provision that serves stem cell research. Students must decide whether this use of public money is warranted, or whether other models prove to be more ethically and scientifically relevant. The range of stakeholders involved with the symposium allows students to *extrapolate* from the singular issue of oocytes being used to create embryos specifically for research to considering other embryonic sources, such as extranumerary embryos from fertility centers, or adult stem cell tissue sources. Here, again, the **Stakeholders Possible Connections, Brief Biographies and References** and **Questions to Consider** documents prepare students for the task. Additionally a **Grading Rubric** can be shared with students and used to evaluate their performance.

This approach to teaching and learning is constructivist because the position papers reveal what is most important to students and can then serve as reasoning tools in discussing policies for regulating stem cell resources. As students construct their knowledge they become more self-aware of their own learning, reflect on social values, and grapple with how their personal values mesh or clash with social policy. With respect to Blooms Taxonomy of Cognition, students acquire and remember content knowledge, connect specifics to broader concepts, and synthesize mental models, in an effort to evaluate various proposals.

FORMAT and CLASSROOM MANAGEMENT:

Timing

The case study has been used in science, technology, and society courses (Vassar), general science education courses (The New School and SFSU), a developmental biology course (SFSU), and feminist anthropology studies (Fordham). Depending on the level of course and content the case may span three weeks or one. Instructors should be mindful of what they assign and organize time both inside and outside of class to execute the case properly. The nuances that emerge during a seminar-based course where time can be spent exploring resources associated with this Learning Activity will most likely be glossed over or missed entirely in a lecture course if time is not allocated properly. In the bare minimum, students should have at least one week to prepare their character statements and another week to complete readings, engage in in class dialogue, and submit a position paper. If they are being asked to review each other's character statements then more time may be needed. Two class sessions should be dedicated to the dialogue and debriefing of the dialogue. Additionally, as this is an unconventional assignment, students will need directive and instructors may want to spend 20 minutes reviewing the components of the case, the resources available, and due dates.

Assigning Resources and Readings

The resources listed in the **Stakeholders Connections, Biographies, and References** include primary and secondary resources specific for each character and total between 20-30 pages of reading for each character. However, if an instructor intends for students to have a common set of readings in addition to these, they may choose to:

1. Use only the article authored by Baylis as it covers most ethical issues and reviews the science needed to understand the controversies at hand. Though this article is a bit dated, it can easily be updated with the events listed in the **Trajectory of Events.**
2. One article from each category of the Essential Resources that accompany this module.
3. Use the twelve references listed below.
4. Assign the Primer associated with this module. Though this approach is less constructivist, the complexity of the case study may require introductory students to have a resource that provides foundational knowledge before exploring on their own.
5. For introductory courses, assigning the Stein article works well for those students who may go on to seek medical degrees. It has a nice connection to the history of Henrietta Lacks and the HeLa cell line. Additionally Stein is a clinician with a degree in medical ethics and has worked with the ASRM and many community health groups.

Reference	**Key themes**
Baylis, F. 2008. Animal eggs for stem cell research: A path not worth taking. *American Journal of Bioethics*. 8(12): 18-32. Link	Biological explanation for embryos for stem cell research (cybrid, clones, extra,research only); **moral status of embryo**; commodification; **health risks;** international dimensions; feminist and **social justice perspectives**; does not support compensation
Stein, A. L. 2011. The conundrum of oocyte donation, human research, OHSS, and ethics. *The American Journal of Bioethics: AJOB*. 11(9): 35-37. Link	Donor **recruitment, informed consent**, risks associated with procedure protocol and **long-term care**; historical reference to **Henrietta Lacks**

Haimes, E. et al. 2013. ISSCR: Committee Forum. Position statement on the provision and procurement of human eggs for stem cell research. *Cell Stem Cell.* 12 (3):285-291. Link	Professional Society for Stem Cell Research; **egg sharing** and volunteers for **research only embryos**; **undue inducement;** commodification; exploitation; supports compensation with caps
Waldby, C. Fall 2010/Spring 2011. Citizenship, labor and the biopolitics of the bioeconomy *In* Technology, Justice, and the Global Reproductive Market. Double issue 9.1-9.2. *The Scholar and Feminist Online.* Link	Biological explanation for embryos for stem cell research; bioeconomy; **capitalism; labor; commodification of bodily goods**; international dimensions; not supportive of compensation without regulation
Thompson, C. 2007. Why we should, in fact, pay for egg donation. *Regenerative Medicine.* 2 (2):203-209. Link	Limited explanation of the biology of embryos for stem cell research; choice; autonomy; **research ethics**; supports compensation
Roxland, B. 2012. New York State's landmark policies on oversight and compensation for egg donation to stem cell research. *Regenerative Medicine.* 7(3):397. Link	Public funding model for **research only embryos**; social justice and equity with reproductive sector; enhanced informed consent; supports compensation
Haimes, E. et al. 2012. Eggs, ethics and exploitation? Investigating women's experiences of an egg sharing scheme. *Sociology of Health & Illness.* 34(8): 1199. Link	Public funding model using **egg sharing** with IVF and SCR; autonomy; exploitation; social justice; cautious about compensation with suggestions to mitigate exploitation
Ballantyne, A. & de Lacey, S. 2008. Wanted—egg donors for research: a research ethics approach to donor recruitment and compensation. *International Journal of Feminist Approaches to Bioethics*. 1(2):145-164. Link	Public funding model for research only embryos and egg sharing model; informed consent; autonomy; choice; egg sharing; health volunteers; **"just" participant selection** to avoid exploitation; research ethics approach, but no mention of monitoring long term health of providers; supports compensation under strict recruitment criteria
Ikemoto, L. 2009. Eggs as capital: human egg procurement in the fertility industry and the stem cell research enterprise. *Signs: Journal of Women in Culture and Society*. 34:763-782. Link	Bioeconomy**; labor;** Raises concerns about how informed consent can serve as a contract for **relinquishing ownership and rights to profits made from downstream goods;** introduces **other examples of bodily goods** and **John Moore case**; cautious about compensation and downstream outcomes of a flat payment model
Generations Ahead. March 29-31 A Disability Rights Analysis of Genetic Technologies. Report on the Convening of Disability Rights Leaders. Chicago, Illinois. 17 pages. Link	**Commodification** concerns; **disability rights**; discrimination; does not support compensation
Benjamin, R. April 17, 2013. Which comes first: the woman or her eggs? *Huffington Post.* Link	Challenges public funding models based on disproportionate distribution of burden and risk those of lower **socioeconomic status** and potential health risks and commodification of the body.

Kurtzberg, J. et al. 2005. Untying the Gordian knot: policies, practices, and ethical issues related to banking of umbilical cord blood. *Journal of Clinical Investigation*. 115(10):2592-2597. Link	Introduces **other examples of bodily goods** and the case of **genetic diversity** and **immunological matching**; **public biobanking;** cautious about compensation

Assigning Characters in Part I

Five teaching challenges emerge:

Character Assignments: Some characters in the role-play are quite popular, and students can feel slighted if they do not get their first choice. One can avoid this by assigning the roles randomly to students, but this goes against the idea of moving students towards their personal interests. Another approach is to ask students who did not get their first choice to specifically comment on the depiction of the desired character by their peer during the debrief period. I have used up to 16 characters at one time, and in larger classes I assign two students to each character. In this latter scenario one student performs in character during the symposium and the other submits observer notes critiquing the performance and pointing out where they may have done things differently had they been performing. This latter scenario works well in classes with shy students, students with learning disabilities, or where English is a second language.

Researching Character Roles:
In an effort to aid students in delving beyond surface level research, I have included a list of character biographies each of which is followed by a bibliography of resources. Instructors need to be mindful about character assignments and equity in workload with regard to research. Though some characters may have up to ten resources, many of the readings are short on the order of 1-2 pages, with one or two longer in length. Most characters have about 20-30 pages or reading. Students can be encouraged to do more research or view the resources of their potential opponents and allies. Instructors should note that some characters may appear to have larger reading loads or more resources than others. Instructors need to be mindful about character assignments having some equity in workload. As many of the resources are papers published in law journals (see Papademas character), they tend to have very long page lengths however, much of the page is a result of lengthy footnotes and citations, so instructors may want to share this with students who may see a 50 page paper assigned to them and feel it is unfair. That said, some are long and can be shortened, such as the article regarding cord blood banking by Mohapatra, which could be limited to the first two pages and last 13 pages orcould be replaced by an article by Kurtzberg, J. et al. 2005. Untying the Gordian knot: policies, practices, and ethical issues related to banking of umbilical cord blood. *Journal of Clinical Investigation*. 115(10):2592-2597, but this replacement does not address the racial and inequity issues associated with biobanking. Other students such as those playing Jennifer Lahl, may appear to have less reading, however the instructor should point out that this character is assigned a film that requires viewing multiple video clips or the film in its entirety if secured by campus.

Some instructors choose to provide students with both the detailed biographies and list of references that appear in the **Stakeholders Connections, Biographies, and References** document, while others teaching more advanced students may omit the biography. In this latter case, it is strongly recommended that students be provided with the curated list of references for their character as they were chosen to bring forth a range of diverse views to the overall role-play dialogue. If students are left to conduct research on their own, they may only identify the dominant narrative for their character and the dialogue will be short changed as a result. Calla Papademas (#3) is a good example, in that surface level research

will pull up little on this character, most of which suggests that she supports the “gift” approach but the Durrell review, indicates that Calla has a strong voice on shifting practices so that providers are informed of health risks and the role that damages can play in health law. That this character can provide perspective regarding altruistic donation as well as health risk is important.

Choosing Characters:
Whatever the choice, instructors should strive for a diverse representation of expertise, values, and lived experiences in character assignments. One point instructors may want to highlight is the racial and gender diversity among the list of characters; 17 of the 21 possible characters identify as female, 5 of the 21 characters identify as being from under-represented minorities, and two individuals are disabled. There are characters that address issues of under-represented minorities and affiliate with those groups and these include Mohapatra, Ikemoto, Goodwin, Benjamin, and the organizations SAMA and Womenlink. Instructors should explain that diversity with respect to race is not coincidental and, rather, representation can reflect the distribution of power in terms of who guides and directs research agendas and health policy. In choosing characters, it is best to select a group of characters that address the issues of under-represented minorities, address support for compensation (Klitzman, Ellison, Eggan/ Egli, Thompson, Werner-Falymayer, Goodwin), argue against compensation (Lahl, Berg, Papademos, Feminist Activist Groups, Shenfield) and those that present caveats to compensation (Ikemoto, Benjamin, Nahman). Additionally, if the conversation is to encompass biological understanding of stem cells, some characters that can provide alternative models for bioresource acquisition from adult stem cell sources should be included (Mohapatra, Briganti, Woods/Tilly).

If all characters are not assigned some resources can be redistributed to other characters. Some of the Feminist Activists Groups do not have robust scholarly or web presence, but articles under other characters who are cautious about oocyte provision can be moved or recommended to students desiring to play those characters, such as #19 Shalev & Werner-Felmayer and #7 TedX talk by Ruha Benjamin. Elimination of Mohapatra would remove any mention of a recent court decision that allows for compensation for bone marrow donations using apheresis, which provides precedent for compensation schemes. If the *Eggs & Blood: Gifts & Commodities* module is following the *HeLa Cells & HPV Genes: Immortality & Cancer* module, instructors may want to include Mohapatra, or replace this character with Doreen Flynn or a member of the More Marrow Donors organization, two of the plaintiffs in the court case. These character profiles are available in Learning Activity 3 and a robust discussion of participatory action research models is provided in the Primer for the *HeLa Cells & HPV Genes: Immortality & Cancer* module.

There are 21 roles provided, but if the class is smaller the following “short list” can work for a class of 10 students: #2 (religion), #4 (NYSTEM), #7 (CIRM and Social justice), #8 (egg sharing and ISSCR statement), #9 (pro payment, autonomy), #11 (cord blood), #12 (Feminist activists con payment), #13 (disability and social justice), #14 (stem cell researchers), #18 (menstrual blood). This selection will work if the #12 feminist activist groups are also asked to read the paper authored by #19 Werner-Felmeyer as it provides data on ways in which egg sharing can be problematic which is in opposition to the view held by Haimes #8, and the Ellison and Meliker paper #5 which has a strong pro payment argument. Additionally, with only one disability activist #13 Berne in the list, disability can also be addressed by #7 Ruha Benjamin if her book chapters are assigned, or #13 Berne can be switched for #5 Ellison. The “short” list results in an elimination of characters debating the existence of ovarian stem cells (#15, #16) If an instructor prefers to include this latter perspective, they may choose to switch #11 cord blood banking, or #18 menstrual blood collection for #15/16 ovarian stem cells. Additionally, the short list does not have a diverse representation of participants from under-represented minorities, thus, if one wants to in which include that #7 (CIRM and social justice) and #4 (NYSTEM) could be switched out for #21(Goodwin race and black

markets). Lastly, given that some characters use a more theoretical approach while others are more practice oriented, instructors should be mindful to have a good mix of characters representing theory and practice.

Though many role-play exercises place students in stakeholder groups (feminists, religious groups, scientists, etc.) this case study deliberately includes a range of characters from these generalized groups, but does so in a manner that highlights the diversity of opinion *within* these groups. It is crucial that students do not walk away from the experience believing that all the members of a particular group share the same position or use the same evidence or arguments. Though it may seem that those affiliated with a specific stakeholder group, say "scientists" or "feminists," share values and goals, it is imperative that character assignments represent the diversity of opinion within stakeholders' groups. For smaller classes this may prove challenging, if the instructor wants to have disability, race, and various adult stem cell sources raised in the dialogue. So sometimes breadth will need to be sacrificed to ensure that diversity of approaches within stakeholders' groups shine through. Alternatively, the instructor can provide some class sessions prior to the role-play to present these challenges. Instructors should provide ample opportunity to showcase the fact that those who may seem to share the same end goal do not do so for the same reasons, and that those that support particular initiatives, such as documenting oocyte provider long-term health outcomes, may not seek the same end goals. For instance, feminists disagree on compensation schemes using different kinds of arguments that include upholding choice and autonomy, reducing risks to providers, avoiding commodification of the body, ensuring "just participant" selection in providers, and addressing access to downstream products and profits associated with stem cell research.

Stakeholders Connections: The chart depicting possible common ground or oppositions among characters in the **Stakeholders Connections, Biographies, and References** is provided, but instructors should use discretion in implementing it in their classrooms. In upper level or seminar-based courses it might be appropriate for students to complete the last two columns on their own (Allies/Opponents; Buzzwords for Resources). In more introductory level courses, the chart was provided with these columns filled in, as students did not have the time to conduct open-ended research. It is also important for instructors to explain that though some individuals may share some values, it does not imply that these individuals would share *all* values. Students should inform their performance by what they have learned about their character and how they imagine this person to respond to the policy proposals at hand. It is useful to remind students that most policy decisions involve compromise and, therefore, they should feel comfortable shifting their position in response to good ideas that might be in line with their character's overall philosophical beliefs.

If instructors would like to modify and prefer a document in Pages or MS Word, they can contact me at chamanyk@newschool.edu and I can send these assignment in that format for ease of editing.

As an example of the complexity in the case, Robert Klitzman and Brooke Ellison both aim to propose socially just policies through NYSTEM regarding compensation models for oocyte provision, yet Ruha Benjamin and Lisa Ikemoto would most likely be critical of the NYSTEM proposal despite NYSTEM's claim to uphold social justice. Benjamin and Ikemoto would argue that the NYSTEM model does not adequately address existing and pervasive economic inequity in society. Similarly, Patty Berne and Brooke Ellison are individuals who live with disability, however, Patty is an advocate for the social model of health while Brooke has advanced the agenda of the biomedical model of health through her support of NYSTEM funded activities. Yet another example would be Chelsea Briganti, Seema Mohapatra, and John Tilly. All three appear to be interested in stem cell banking, however, Briganti supports altruistic donation to public

banks, Mohapatra supports incentivizing donation to public banks for those most in need by addressing economic and ethnic inequity, and Tilly supports the emergence of a profit-making banking industry. Another complication arises when one looks at "pro stem cell research" supporters. Stem cell scientist Robin Lovell-Badge clearly supports funding for stem cell research, but cautions against promoting therapeutic misconception or hype for stem cell therapies. Stem cell supporter Brooke Ellison, on the other hand, produced the documentary film "Hope Deferred," which suggests that stem cell therapies are a definitive outcome and worth the financial investment and takes it title from the Proverb 13:12 from the Bible "Hope deferred makes the heart sick, but a desire fulfilled is a tree of life." Lovell-Badge and Ellison both support stem cell research, but they take very different approaches to drumming up support for this area of research.

UPDATE: The case can evolve with new research and policies. Most recently, Magdalena Zernicka-Goetz and Ali Bricanlou have created embryoid bodies in the absence of maternal tissues, using embryonic stem cells (Shabazi et al., 2016; Deglincerti, et al , 2016). For this case study, the work presents arguments both for and against the use of human eggs in research. The issues surrounding how these new lifelike entities can survive past day 13 and skip developmental milestones, have been posed by George Church and others in an important paper publishing on *eLife (* Aach et al, 2017). These advances put into question the usefulness of the "14-day rule." Thus, instructors could add or update characters for the role-play, Because many of the individuals on the Zernicka-Goetz paper and the Brivanlou team are women, and represent many nationalities, adding characters using this work, provides scientific and ethical content and meets the goals of culturally relevant pedagogy.

To successfully have robust dialogue, the instructor may need to do some individual prompting or provide directives to students regarding their character's views, arguments, and rebuttals. Providing feedback along these lines after reviewing the character statements and questions, will help students recognize areas in need of more exploration or challenge, allowing them to fully develop their responses and positions in advance of the symposium.

Adopting a Character Role: Students will often be very nervous adopting the role of a real person. This is true even for those students who are comfortable with seminar discussions. Because they may be nervous the instructor should repeatedly throughout the activity remind them that this is a learning environment and that any mistakes or misrepresentations can be useful for " teachable moments." Precisely, because they will be nervous it is important when roles are being assigned to inform students that there will be plenty of opportunity for debriefing where they can explain their discomfort, excitement, confusion, and their choices.

Role-play and Dialogue

Depending on how many characters are assigned, the role-play can take 50 minutes (8-10 roles) or 90 minutes (11-15 roles). For non-forced discussion to take place, the instructor should facilitate the conversation and draw on each character to address the questions posed in the case to ensure a balanced discussion. For instance the symposium could be organized around themes based on the character statements or questions posted; e.g. who would like to speak about compensation? Reading over the short biographies prepares the instructor to call upon specific characters to respond to a particular question, and direct the conversation to allow for all voices to be heard. This type of facilitation works much better than having each student address each question in succession or to do formal introductions, as the facilitated discussion allows for a more natural flow of conversation. The instructor should only intervene as facilitator to ensure that students do not slip into debate, hold the floor for too long, and move through a number of issues in a timely fashion. This may

require the instructor, as facilitator, to summarize and pose questions to participants to shift discussion accordingly and help make sense of the arc of the conversation. It is also important to note that given the time constraints most students will not be able to ask their two questions. Hence, the written statement and questions serve a place for the instructor to assess all students regardless if they have a chance to vocalize their views during the discussion.

As students will feel some pressure, they may revert to casual language, and the facilitator may need to remind students to refrain from language that makes assumptions that are not agreed upon by all in attendance. For instance, instructor may ask students to refrain from using "women" or gender specific pronouns for oocyte providers, as some providers may not identify with that gender label. This is particularly true for the individuals that provided ovarian tissue for the Tilly work as they were undergoing gender reassignment surgery. Instructors can suggest that students adopt neutral terms such as "oocyte provider" or "individual." Similarly, some students may use the term "cripple" or " handicapped" when discussing disability, and instructors will need to determine if the terms are being reclaimed as they are in "crip studies" or whether students are using these terms in ways that could be interpreted as derogatory or deficient. Lastly, the area that may prove most challenging is when students begin to discuss economic inequity. Because so many students are grappling with economic hardship, instructors will need to monitor language regarding poverty very carefully and take into account the context in which it is raised. For some students using the word "poor" is offensive and they would prefer an address of the systemic factors leading to poverty and thus, prefer the terms "impoverished" or "under-resourced."

Five teaching challenges emerge during Part II:

Opening Script: A script to set the stage is provided in the **Learning Activity 3 Student Assignment**. This can be modified, but should involve framing the discussion, reminding students to maintain their character role and to refrain from slipping into discussion from their own personal view, and emphasizing the nature and goals of dialogue versus debate.

Prepping for Authentic Engagement: Students often are reluctant and nervous to jump right in. One approach to minimize a slow start is to have a "coffee break" of 10-15 minutes where like-minded characters can assemble and discuss their stance together and recognize that there might be strange bedfellows in that they may agree about outcomes but their rationale may be quite different. In this way, students recognize their allies' positions and the subtle nuances in stances that exist within these groups.

Emergency Intervention: The dialogue may omit a crucial element or perspective. In this situation, an intervention can be introduced in the form of a "late attendee" joining the dialogue. This person could be the instructor assuming a role of a scholar or activist who brings this omitted view into clear focus, or a student teaching/learning assistant who assumes the role of a student representative from the home institution at which the case study is taking place etc.

Equitable Student Participation and Student Input on Success: Because the role-play moves quickly it can be difficult to monitor the degree and quality of the participation of each student. The "Characters' List For Instructors" allows instructors to see at a glance the positions and allies that should emerge. In an effort to equalize speaking time among all students, it is useful for the instructor to turn the conversation to allies and opponents of the character being represented by a student that happens to be speaking often and at length. By drawing out other characters the conversation develops more complexity, and the frequent speaker must pause and reflect before speaking again. "The Role Play Rubric" is designed to facilitate assessment, however, asking each student to reflect on who performed most convincingly during the role-

play is a helpful way to debrief and, also, to gather a more accurate and thorough account of what transpired. This can be done as a quick Round Robbin style (one minute per student, and captured with written notes or audio recording). Again, this allows *each* student to contribute a reflective statement post role-play, but will require 15-20 minutes depending on class size.

Debriefing: For this component, a thirty-minute debriefing session at minimum is essential as strong opinions are brought to bear and conflict emerges. This can be done immediately after the role-play if the class session allows, but it can also be conducted in the next class session. Because students may be assigned a character for which they have no lived experience, it is not uncommon for students to present stereotypes as they craft their role. The stereotypical presentation is not something that takes away from the role-play, but it does need to be addressed fully by the instructor and the class in the debriefing. For example, a student may be assigned a character that holds a different position from them with respect to socioeconomics, race, ability, or gender, and may inadvertently offend peers with their depiction of the character. It is best to allow students five minutes to write down some immediate responses to the role-play experience, collect and review these anonymous submissions while they jot questions down for their peers, and then commence the debrief. This way, if there is a student who does not feel comfortable voicing concern or discontent, the instructor can present that view being careful not to reveal the identity of the student. For a discussion on the diversity of stem cell banks and incentivizing contributions, instructors may want to review the background materials on HLA diversity as explained in the Mohapatra reading and also more generally the teaching notes that address race and biology in the *HeLa Cells & HPV Genes: Immortality & Cancer* Module for Activity 1 (page 5). It is important that students do not leave the classroom believing that race is a biological construction, and rather instructors should take time to explain how environments and evolution result in differing frequencies of genetic traits, but that these are not discontinuous in human populations.

Personal Policy Position Paper

This part of the case study asks students to revisit their personal stance on the case after having completed the role-play and address the *evaluate* and *extend* steps of the 7E learning cycle. The goal is to craft an informed essay that recognizes multiple points of view, and explains each perspective using objective reasons supported by evidence in order to arrive at a **decision concerning the compensation via public funding for oocyte providers serving stem cell research**. Instructors can edit the list of **Questions to Consider** to align the prompts to their course more directly.

Students must consider the benefits, risk, and trade-offs and the implications of such a decision for related controversies moving forward. The **Grading Rubric** is adapted from the curriculum "Issues, Evidence, and You" from the Science Education for Public Understanding of Project (SEPIP) at the Lawrence Hall of Science (Wilson & Sloane, 2010). This particular curriculum is designed to develop an understanding of scientific content and scientific problem solving approaches related to social issues without promoting an advocacy position. In this adaptation there is a strong focus on personal commitment, as research as shown that having students check in on their personal values results in greater long-term learning retention. In using this approach, I have found that students are able to grapple with moral reasoning more directly.

I have also asked students to consider evidence on three levels: social, legal, and scientific. In other words, students cannot take a stance on public funding and regulation without addressing the consequences of their approach in these three areas. They must provide evidence that would support, or argue against, public funding and updated regulations from each vantage point.

Providing the rubric to students in advance results in much more sophisticated arguments because it supplies them with a set of criteria with which to evaluate different arguments and proposals. Because the rubric is organized at these different levels, students cannot take a stance without addressing the consequences of their position or proposal as they relate to issues in these areas. Instructors should customize the rubric for their course appropriately.

Five teaching challenges emerge in Part III

Explaining the Rubric: Some of the categorization in the rubric may be unfamiliar to students and require explanation. For instance, in the area on "stance" there are a number of subcategories, one of which is "compensation." In the context of a oocyte provider, compensation can be viewed as a benefit or exchange for biolabor, but some might argue that the National Organ Transplant Act prohibits commodification of the human body and its parts. The counterargument could be the case of Flynn v Holder, which has made it possible to provide compensation for bone marrow stem cells of a specific haplotype to achieve immunocompatability for those with rare genotypes. The issue of compensation is often nestled in arguments regarding the commercialization and privatization of biomedical research. Students should mention the Bayh-Dole Act which led to a shift from government funded research being a public good, to the creation of a profit making industry based on licensing fees for patented materials. Another term that may need explanation is "prolife." Most students will understand this to refer to the lives of embryos, but in this context students must clarify whose lives are being protected and whose lives might be burdened or harmed. Students must clarify whose lives are being protected by the policy stance; embryos, oocyte providers, or people living with disability? Some who live with disability may believe that investing in biospecimen-based research rather than social models (e.g. physical structures, information access, social support, assisted technologies, etc.) to support health is not promoting the lives in their community. Others that live with disability or disease may see investment in biobanking as supporting lives in this community through the biomedical model of health (e.g. cell based therapies, drugs, etc.). For the issue of privacy, students should recognize that gamete donation results in cells that are not identical to the donor because only half the genetic information of the donor is contained in the eggs or sperm, however, biospecimens of any other cell type would be traceable to the donor. Given the complexity and the dependency on role assignments and the role-play some attention to the rubric should be provided when it is distributed.

Single Perspective: Less advanced students struggle with the complexity in this assignment as they are not accustomed to addressing both sides of an issue and taking a stance. Most have experience with opinion but struggle to craft an argumentative essay that uses quality evidence. Instructors may want to include a reference to the Online Paradigm Writing Assistant that has a tab and tutorials for writing argumentative essays under the menu link "Convince." Additionally, the grading rubric can be less complex and be customized to prevent the introductory student from feeling overwhelmed or intimidated.

Not Taking a Stance: Because the goal of this case study is to move students away from debate and dualistic thinking, instructors may want to be lenient in this regard on a case-by-case basis regarding the position papers. Papers can be rich in their analysis, yet struggle to come to a "one answer fits all" solution and instead provide solutions that are dependent on the context of the type of research, the community research site, and other variables. If the essay is well evidenced but does not take a stance it may still qualify for a high mark. As is detailed in Perry's Model of Ethical Development to move students from dualistic thinking to multiplicity, or relativistic thinking, is an accomplishment for introductory level students. If students are more advanced they may arrive at a committed stance, and this would be a sign of successful ethical reasoning.

Being Clear About the Number of Issues: Instructors may want to adapt the case such that different questions are addressed in the position paper (either compensation/damages, privacy, or consent). If instructors provide the **Questions to Consider** they should be clear about whether they expect students to address and provide sufficient time for research, writing, and potentially if using all areas, expand the length of the essay. If the rubric is adapted it should indicate which issues need to be addressed, otherwise student papers will represent a wide range of responses with some students addressing only one aspect of the case, and others addressing several. That said, it is common for students to feel overwhelmed by the number of questions in the **Questions to Consider** document and the detail in the rubric, so another approach may be to provide a streamlined sequenced set of open-ended questions that provide much less directive and a simplified rubric. A more truncated list may work for more advanced students who would understand that a discussion of public and private funding models and their associated regulations should be included, but introductory students may be better served with questions that provide more specific directives. An example of the open-ended type of short list questions is provided below:

1. Should hESCR research continue and why?
2. What are strengths and problems associated with hESCR?
3. If not, what alternatives would you propose and what are the strengths and weaknesses of these alternatives?
4. If it should continue, what policies do you propose to mitigate the drawbacks?
5. If it should continue, should oocyte providers be compensated?
6. If so, how? If not, how would research continue?
7. Who argues for and against policies similar to the ones you propose?
8. Where have similar policies been attempted and what were their effects?

Incorporating Biology: Because the case is so heavily focused on the ethical dimensions students often neglect to include any scientific reasoning for human embryonic stem cell research. If the rubric is adapted and biology learning outcomes are desired, the rubric should clearly direct students to use biological evidence to support their position and clarify the characteristics specific to ASCs, iPSCs, and ESCs. the **Media and Infographics** portion of the *Stem Cells Across the Curriculum* site containing PPT slide sets, Timelines and Infographics tracing the trajectory of technologies may be most helpful in quickly reviewing the biology and technology of assisted reproduction and stem cell research.

ASSESSMENT:

Instructors can choose which portions of the case study to assess based on course goals. For the written documents rubrics are provided on the next pages.

Part 1: Character Position Statement + Counter Argument + Two Questions Rubric

Possible	Earned	Item
10		**Statement:** Clear statement of who character is and what specific expertise or experience they bring.
10		**Statement:** Identifies a point of controversy that is pertinent to the character and provides clear and direct presentation of perspective and position on public funding being used for oocyte provision for SCR.
10		**Statement:** Narrows in on one or more core themes (nature of informed consent/broad/ narrow/controlled access; maleficence/health risks/privacy/community discrimination; beneficence/compensation/access to goods; autonomy/choice; public good/ volunteer; commodification/private funding; health risk data gathering)
10		**Statement:** Use of factual evidence with concrete examples (historical or contemporary) that serve as precedent or relevant comparison.
15		**Two Questions:** Questions are posed to potential allies / opponents. Questions are appropriate, insightful, and demonstrate comprehension of material.
10		**Counterargument:** Identifies a point of controversy that is pertinent to the character and most likely to be argued by someone with very different values or lived experience.
10		**Counterargument** Demonstrates foresight with respect to the factual evidence that might be used by opponents to argue against character's position and speaks directly to that.
10		**Counterargument:** Narrows in on one or more core themes (nature of informed consent/ broad/narrow/controlled access; maleficence/health risks/privacy/community discrimination; beneficence/compensation/access to goods; autonomy/choice; public good/ volunteer; commodification/private funding; health risk data gathering)
10		**Rebuttal:** Comprehensible, demonstrates logical reasoning, and does not simply reiterate statement section
5		**Citations:** Reference section is complete, demonstrates the use of at least five class resources sources, and is appropriately formatted.
100		

Part II: Role-Play and Dialogue

For the role-play dialogue, instructors might be challenged by the speed by which conversation turns and find it difficult to take notes and stay engaged as the facilitator. For this reason instructors may choose:

1. To have someone else take notes or serve as facilitator
2. Refrain from formal assessment and instead summarize and debrief orally with the students; this may be particularly important in large classes where it may not be possible for every student to speak.

For note taking purposes a chart with the following headings may prove useful, and information for the Stakeholders Possible Connections Chart can be placed in the first three columns. The remaining columns would be completed based on student performance

Character & Student	Perspectives & Position	Allies & Opponents	Clarity of position	Stays True to Character	Provides Evidence	Pertinent Q&A	Counterargument (Engages in Dialogue)

Role Play Rubric

Score	Meaning
90-100	Clearly articulated their position; provided evidence of their experience; provided insight on the perspective they bring to the discussion; gave ample accurate supporting facts and precedent, connected the facts to the case in a concrete manner, and responded directly to the comments and statements made by other stakeholders, and addressed opposition with questions and counterarguments
80-89	Clear position, mostly accurate facts/precedent, some possibly irrelevant or inaccurate; Responded directly to comments and statements made by other stakeholders, using evidence and examples; addressed some of opposition with questions and counterarguments
70-79	Weak response; few facts & relevant evidence cited, illogical engagement with other stakeholders
60-69	Weak response; inaccurate and irrelevant facts, poor detail & logic, no engagement with other members.
< 59	Did not participate

Part III: Position Paper Grading Rubric (see separate document)

NOTE of IMPORTANCE REGARDING INTERSECTIONAL ANALYSIS

As many will be unfamiliar with intersectional analysis, instructors are strongly encouraged to review the Pedagogies and Philosophies document on the *Stem Cells Across the Curriculum* website and the Primer associated with this module. The Primer provides a comprehensive view of many of the topics that will emerge during discussion with learners from diverse backgrounds. . Additionally, an article titled “Critical Pedagogy:

Stem Cell Research as it Relates to Bodies, Labor and Care (Dispatch)" was published in 2016 in the Studies in Social Justice Journal that provides a review of this approach (Chamany, 2016)

FURTHER LEARNING: Instructors and students would benefit from accompanying this engagement activity with Learning Activity 1 and 2 or assigning the Primer associated with this Module. The Supplemental Materials include a list of Discussion Questions. Additionally slide sets, infographics, video, timelines, and artwork can be found on the module site as well as the **Media and Infographics** section of *Stem Cells Across the Curriculum*.

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