Cell Stem Cell
Forum

Researching the Relationships between Tissue Providers, Clinicians, and Stem Cell Scientists

Erica Haimes[1,*] and Ken Taylor[1]
[1]Policy Ethics and Life Sciences (PEALS) Research Centre, Newcastle University, Fourth Floor, Claremont Bridge, Newcastle upon Tyne, NE1 7RU, UK
*Correspondence: erica.haimes@newcastle.ac.uk
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Access to human reproductive tissue is essential for many forms of stem cell research. We identify questions for future studies of tissue providers, procurers, and end-user scientists, and suggest that international comparative studies of all three parties, and of the relationships between them, will improve the ethical supply of tissue.

Many stem cell scientists are dependent on a supply of human reproductive tissues (hRT), such as eggs, embryos, fetal tissue, and placentas, to conduct their research. The processes through which that tissue arrives in the laboratory might be considered of little importance to many bench scientists, but we suggest that the field of stem cell research would benefit from an active interest in the relationships between those asked to provide tissue (often patients), those acquiring that tissue (often, but not only, IVF clinicians), and those using that tissue (stem cell scientists). Understanding the interactions between these three key parties will help to ensure an ethical and efficient supply of hRT.

A growing body of research on actual and potential tissue providers supplies important insights into their reasons for giving or not giving tissue. We suggest that this research is a useful foundation for developing studies of the roles, values, and experiences of the other two parties and for studying the relationships between all three.

In this article we use current knowledge to identify questions for future studies into this important aspect of stem cell research.

Why Is Knowledge about These Relationships Important for Stem Cell Scientists?

Scientists wish to contribute to the greater good through the development of treatments for serious illnesses. They can only achieve this goal by ensuring a regular supply of a range of hRT. Such tissue does not just arrive, silently and seamlessly, into the laboratory, but has to be actively sought. Sometimes it even has to be fought for politically, as the USA Lamberth ruling indicates; there is a need to build trust in this "sensitive" area (Gottweis, 2010). One element of that trust is ensuring that tissue is acquired ethically, through understanding what is important to tissue providers, tissue procurers, research funders, and wider society.

While trust is not the only aspect that requires examination in this complex field, it is considered central to the successful acceptance of developments in medicine, science, and biotechnology, as is the need to overcome undeserved mistrust (O'Neill, 2002). Evidence of a lack of trust ranges from the concerns raised by the Henrietta Lacks case (Skloot, 2010) to media (mis)representations of stem cell research to "society's doubt about the implications of science and its concerns about the hubris of scientists" (Moreno, 2010; p. 1031).

The building of trust relationships needs to be addressed internationally, as a corollary to the global demand for hRT for research. "Scientific tourism" (scientists traveling around the world to work under regulatory conditions more favorable to their research) is understandable within the ambitions of the therapeutic promise, but needs to be tempered by awareness of the processes of tissue transactions within any particular country. The provision and procurement of hRT varies between different cultural, regulatory, and ethical frameworks; scientists need to be aware of these variations and of their implications for the ethical conduct of their laboratory work. While the "Hwang scandal" is past history, the focus of attention, demonstrated by the recognizable shorthand reference, was as much the scientist who acquired and (mis)used the tissue as the fabricated results. The scandal is a reminder of the need to ensure that everyday practices of tissue procurement and use are not achieved at ethical cost to tissue providers, or at a cost to the trust relationship between all three parties.

Paradoxically, ethical safeguards can inhibit the involvement of scientists in procuring tissue. For example, the UK Polkinghorne Guidelines for acquiring fetal tissue for research enshrine the "principle of separation," which ensures that researchers have no direct contact with potential tissue providers (Woods and Taylor, 2008). While valuable in protecting the autonomy of tissue providers, this principle can have the unintended effect of limiting the knowledge and understanding between providers and scientists. Trust exists in the context of a relationship between two or more parties; one of its components, openness, is enhanced by communication. If the separation principle means that that communication has to be taken on by mediating tissue procurers, then the need for all three parties to understand each other's actions and motivations is reinforced.

Insights from Studies of Potential Tissue Providers

There is a growing body of evidence-based research on the providers of varying types of hRT. These studies are valuable for understanding what matters to potential and actual providers and for identifying useful questions to ask of the other two parties.

Current research is dominated by studies of the disposition decisions of couples with frozen embryos (for a detailed review of this international research, see Haimes and Taylor, 2010). Collectively, these studies indicate that most couples have great difficulty in committing to a decision and that none of the available options, including giving to research, is ideal. What might appear an obvious source of research materials is, to the potential providers, a series of complex challenges (Lyerly et al., 2011). These findings suggest that understanding tissue provision from the potential providers' viewpoint reveals factors that need to be addressed (e.g., through robust consent, and other, practices) if greater levels of provision are to be achieved (Kalista et al., 2011).

In a rare empirical study of providers of fresh embryos for hESC research (Haimes and Taylor, 2009), interviewees were preoccupied with IVF treatment and their overriding concern to have a baby. The request to provide fresh embryos to research was a secondary consideration and judged in relation to its effect on their chances of pregnancy. Producing eggs and then embryos was interviewees' initial goal because these steps represented the vital early markers of success without which no baby could result. In other words, eggs and embryos were both extremely valuable to the patients; few interviewees were prepared to give away eggs for research until fertilization had been attempted. Eggs are therefore not morally simple material, as is often assumed; they caused interviewees as many dilemmas as embryos, at that stage of their treatment. This finding suggests that attention should be paid to the careful timing of requests for fresh embryos and eggs. Although interviewees referred to the importance of "the embryo," the morally laden, abstract entity that they knew was the subject of debate and which they felt deserved respect, it did not play a dominant role in their decision making. Such findings suggest that the moral status of the human embryo can be accorded a less determining role in ethical analyses of hESC research.

Considered together, research on providers of frozen and fresh embryos suggests two other important issues: (1) that providers do not necessarily share clinicians', scientists', nor regulators' definitions of what constitutes "spare" embryos or eggs; and (2) that attention needs to be paid to the specific features of the clinical context in which people are asked to provide hRT.

The study on fresh embryo provision suggested that a study on the provision of fresh eggs for research was necessary, since it was clear that egg provision is less ethically straightforward than might have been supposed. An ongoing study of volunteers to a controversial "egg sharing for research" scheme (which involves the provision of eggs for SCNT research in exchange for reduced IVF fees) may offer additional insight. The theoretical literature on this, and other schemes encouraging egg provision for research, debates the ethics of inducement, exploitation, and commodification. However, the fresh embryo project (Haimes and Taylor, 2009) suggests that egg providers will have other insights to add, including what personal, social, and economic factors persuade potential tissue providers to become active volunteers to such a scheme, given what is now known about how precious these eggs are to IVF patients.

Pfeffer (2008) adds to this work on providers through a study of women who gave fetal tissue from abortions to stem cell researchers. During focus group discussions women realized they had not understood the implications of the successful derivation of stem cell lines from their tissue. The association of these lines with "renewal, regeneration, and immortality" reinforced the physical reality of the fetus which was "the very thing abortion is meant to eliminate" (p. 2544). This greater knowledge meant women started to doubt their decision. This finding suggests that scientists and tissue procurers need to acknowledge and address such contradictions, perhaps by emphasizing the hoped-for, longer-term benefits of research.

This research on providers of embryos (frozen and fresh), eggs, and fetal tissue is a valuable beginning, but further questions can be asked, comparing and contrasting potential and actual providers of a wider range of tissues in a wider range of countries. Some examples are as follows.

(1) Do different types of hRT (e.g., eggs, sperm, embryos, fetuses, placentas, umbilical cords, amniotic membranes, and fluids) raise different issues for potential providers? How might these be addressed, to the providers' satisfaction, so that they turn from being potential to actual providers?
(2) Research tissue is often described as "spare," "surplus," or "waste:" is this how potential hRT providers view their materials (the studies on embryo disposition suggest otherwise)?
(3) Does the type of intended research, or a particular research team, affect the decision to provide hRT? What do potential providers want to know about the research?
(4) How do potential hRT providers define and measure costs and benefits of provision?
(5) What measures would potential hRT providers suggest to ensure ethical protection?
(6) What do hRT providers regard as effective practices and policies in encouraging provision? Who would they prefer to discuss their decisions with?
(7) How do hRT providers conceptualize their contribution: as donations, gifts, altruism, sharing, exchanging, or selling? Does this affect their decision?
(8) What other factors affect their decision making? How do these compare with what clinicians, scientists, and policymakers assume to be important to providers?

Without such comparative studies and evidence-based conclusions, we are reduced to speculating about what encourages people to supply tissue for research, what discourages them, and why.

The Role of Tissue Procurers

Even this brief indication of what can be learnt from studying providers suggests the usefulness of studying those tasked with the pivotal role of procuring tissue to see how they manage this process. Attention has been given to the ethics of arrangements for acquiring tissue (such as the impact of different consenting procedures; Cohen et al., 2008), but less is known about how tissue procurers implement these arrangements

in practice (Kalista et al., 2011) or how their activities are affected by their relationships with tissue providers and with the end user scientists. Important questions to ask (again across the full range of tissues and countries) include the following.

(1) Who are the tissue procurers?
(2) What motivates them to act as go-betweens and how does this affect how they do their main jobs?
(3) How do they think they should conduct their professional relationships with providers and with scientists? Do they see themselves as advocates for the science, the providers, or both?
(4) What value do they place on measures such as inducements to provide tissue?
(5) Are there any patients, clinical settings, or types of tissue that they feel should not be included in requests to help research? If so, why?
(6) How might they be assisted to do a more effective job, within robust ethical guidelines?

Acknowledging the global variations in tissue acquisition, it is also important to ask whether tissue transactions between providers and procurers take place under fair social and economic conditions or whether local inequalities and injustices skew such negotiations. These questions are open to empirical investigation.

The Views and Experiences of Stem Cell Scientists

Scientists' collaborations with procurers can benefit from a greater understanding of what is actually involved in acquiring tissues, to make these transactions more effective and efficient while still ethically acceptable. This suggests, however, that there are also useful studies to be conducted with scientists, to understand how they see their role in these tissue transactions. Questions might include the following.

(1) How much do scientists know about how hRT arrives in their laboratories?
(2) Do scientists regard themselves as having any responsibility for the ethical procurement of hRT? Would they like a direct involvement in acquiring tissue?
(3) Do scientists see a need to build trust relationships with tissue providers, procurers, and wider society? If so, how might they do this?
(4) What do scientists regard as effective practices in encouraging provision? How do these compare with the experiences of providers and procurers?
(5) Do scientists view different types of hRT differently in terms of how they should be provided, acquired, and used?
(6) How influential are the legal, ethical, and cultural contexts in which they work in shaping their research?
(7) Is stem cell science the same or different from other areas of research in terms of how human tissue should be provided, procured, and used?

These questions are just the tip of an investigatory iceberg; others will emerge through research and debate. Given that many stem cell scientists have to play an increasingly public role in defending and promoting their work, it is important for them to know more about other parties' practices and experiences in this controversial aspect of their work, to assist them to provide an evidence-based advocacy.

Next Steps

Studying tissue providers and procurers, their relationships with each other, and their relationship with stem cell scientists enables scrutiny of the highly complex moral, cultural, economic, and political transactions that underpin the uses of hRT in research. It also assists the identification of any misunderstandings and gaps in communication between all three parties, thereby building more trust between them and improving the ethical and efficient acquisition of hRT for research. A more detailed understanding of tissue transactions will also assist scientists to tailor messages about the need for tissue and about the long-term benefits of contributing to scientific research. Therefore a constant questioning of the processes of acquiring hRT by all those involved is essential to improving best practice.

These outcomes will be more robust if future investigations (1) encompass the full range of hRT; (2) include a wider range of countries; (3) combine the perspectives of all three parties; (4) integrate socioethical collaborations within large-scale stem cell projects; (5) learn from tissue transactions in other areas of scientific research; and (6) combine to produce updated, evidence-based policy and practice guidelines for all those involved.

The work of scientists depends on the trust of wider society, so it is in the interests of all those engaged in stem cell science to attend to these issues.

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