Two Chicks in a Lab with Eggs

BY LISA CAMPO-ENGELESTEIN AND SARAH B. RODRIGUEZ

One winter morning, the two of us—both postdoctoral fellows in medical humanities and bioethics—gathered with a handful of reproductive science graduate students in the lab to watch a demonstration on making alginate beads. Due to their three-dimensional nature, the beads are capable of holding ovarian follicles—the beads act as though they were a small ovary. The scientists in the lab have managed to mature the follicles maintained in the beads into eggs, fertilize these eggs, and produce the birth of live mice. This research was begun in an effort to develop a means of gathering ovarian follicles from young human cancer patients before they commence cancer treatment that may result in their infertility, thus preserving parts of their ovaries for later use in in vitro fertilization.

But the point of this paper is what else happened that day in the lab. The graduate students and the fellows began

talking about the inability of the lab to extend the experiment to see if human ovarian follicles are similarly capable of maturing into eggs that would be fertilizable. As the recipient of a grant from the National Institutes of Health, the lab must abide by the Dickey-Wicker Amendment, which bans federal funding for research involving human embryos and parthenotes. A parthenote is an egg that begins dividing as though it were fertilized even though fertilization has not occurred. Eggs can be induced to develop into parthenotes (a process known as parthenogenesis) in the absence of sperm by several different chemical and mechanical stimuli that mimic fertilization. The lab scientists understood the prohibition of federal funding for embryos, but they were frustrated that parthenotes were lumped in with embryos, especially given their scientific differences, because the ability to use human parthenotes would significantly improve their understanding of egg maturation in humans. We were surprised to learn about the ban on parthenote research, and somewhat chagrined to recognize how little we knew about the Dickey-Wicker Amendment. Our discussion with the scientists of why a parthenote was legally and ethically equated to an embryo in the Dickey-Wicker Amendment began the first of several joint research projects.¹

Many have noted the importance of multidisciplinary work, and here we describe how such work—well, worked. We also show how our postdoctoral fellowships could be used as a model for the postgraduate training of others in medical humanities and bioethics. But first, a bit about our backgrounds, because our multidisciplinary work is not just about being embedded with scientists, but also about coming at medical humanities and bioethics from different disciplines. Lisa approaches her work from a philosophical background, with careful attention to power dynamics that can lead to health care inequities and injustices. Sarah comes at her work from a historical perspective, looking at how an issue developed in order to contextualize ethical issues and frame questions being asked today. Yet given that we both work in the broader field of medical humanities and bioethics, our work by its very nature is multidisciplinary. Furthermore, we are both interested in reproductive health and how the issues brought forward and the questions being asked are influenced by and influence the larger culture. We learn from each other the importance of historic contextualization and philosophical inquiry, and we join our work with the work in the lab.

By being embedded in the lab, we can both learn more about reproductive science and enable scientists in the lab to think about their work away from the bench. We discuss the differences between the scientific process and the historical and ethical research processes, as well as the similarities among the disciplines. We learn about the science of ovaries, ovarian follicles, eggs, embryos, and parthenogenesis, which furthers our ability to carefully analyze the intricacies of reproductive technologies. The scientists learn about the legal, historical, and ethical parameters of the science, providing them a useful context for understanding how and why their work is seen as it is by those outside reproductive science. It is this embedded nature of our fellowship that we suggest would make for a strong fellowship training in medical humanities and bioethics, for it not only provides a greater understanding of science for us, but also engenders multidisciplinary research projects that few of us had contemplated, like the one on the Dickey-Wicker Amendment.

Through these intellectual exchanges, we encounter the difficulty of talking across disciplines. To speak to each other, we were forced to develop, as one of our mentors has termed it, a “common language.” Without compromising complexity, we had to construct a way of expressing ourselves and our ideas in a way that made sense to the scientists, and vice versa. Without this common language, scientists sometimes do not see the value of perspectives from the medical humanities and bioethics, at least in our experience. Part of the reason for this (we learned from the reproductive scientists in our lab) is their sense that the medical humanities and bioethics voice is generally negative, amounting to nothing more than finger wagging. By working in the lab and providing suggestions of different ways to look at a topic or different questions to ask, we were able to provide examples of a constructive voice from bioethics and medical humanities.

But reproductive scientists also often hear critical voices from the public. By interacting with each other in the lab, we are able to begin to discuss perceptions and help contextualize why reproductive science is often met with such visceral reactions by nonscientists. In so doing, we also explored reproductive scientists’ own visceral reactions to critiques of their work. For example, for the summer’s brown bag discussion group, we selected and led the discussion on Emily Martin’s article, “The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female
Roles.” As the title suggests, Martin describes how gender roles are often projected onto reproductive biology, resulting in the portrayal of eggs as passive and of sperm as active. We were surprised by some of the scientists’ negative reaction to this article. Upon further discussion, we realized that many of the scientists felt that Martin was chastising them, and we were able to move past the tone of the article to elicit its more significant content. Only by breaking down Martin’s argument into a common language were some of the scientists able to understand and appreciate her claims. In the end, the discussion of Martin’s article was a success because the scientists grew more aware of the gendered language in reproductive biology and made a choice to avoid it. Moreover, the discussion led to multidisciplinary research projects on the topic, such as an examination of how science textbooks from middle school through medical school employ gendered language.

We believe the strength of our embedded fellowship is in large part due to our ability to effectively communicate with each other through a common language. We learned to convey our work and its value in a way that makes sense to these scientists. The credit is not just ours, however; the scientists also strove to construct a common language. In fact, the science contribution started long before we worked together. It began when the principal investigator of the grant, Teresa K. Woodruff, recognized the importance of incorporating humanities and social science projects into the overall project. Part of doing this included embedding medical humanities and bioethics postdoctoral fellows in the lab, per the suggestion of Laurie Zoloth. Teresa understood that such an arrangement would encourage more interaction between scientists and humanists, which would lead to multidisciplinary projects. It also showed an appreciation for the value of thinking about science and technology beyond the bench. Putting scientists and humanists “on the same team”—having them work for the same organization to achieve similar, or at least related, goals—established a level of camaraderie and trust from the get-go, thereby creating an environment that would allow professional relationships and projects across disciplines to flourish.

While the success of our fellowships relies in part on the personality of the scientists whose lab we are in, our lab can still be seen as a model from which to copy future embedded fellowships in medical humanities and bioethics. The importance of this to the future of medical humanities and bioethics is clear. As academic disciplines become increasingly technical, we must be able to understand each other to have meaningful dialogue—something that is particularly helpful if ethical problems arise and only possible through a common language. By establishing medical humanities and bioethics postdoctoral fellowships embedded in scientists’ laboratories, multidisciplinary work—and, perhaps more importantly, a common language—will hopefully emerge.

Lisa Campo-Engelstein earned a Ph.D. at Michigan State University in philosophy specializing in bioethics, feminist theory, and social/political justice. When she cowrote this article, she was a senior research fellow in medical humanities at the Oncofertility Consortium, Northwestern University Feinberg School of Medicine, where she examined ethical issues in the areas of reproductive technologies, cancer, and women’s health. She will continue analyzing these issues in her new position as an assistant professor at Alden March Bioethics Institute, Albany Medical College. She coedited Oncofertility: Ethical, Legal, Social, and Medical Perspectives (Springer, 2010), and her work has appeared in Science, the Journal of Clinical Oncology, the Journal of Medical Ethics, and the American Journal of Bioethics.

Sarah B. Rodriguez earned her Master of Arts in the history of science and medicine from the University of Wisconsin-Madison and her Ph.D. in societal and preventive medicine from the University of Nebraska Medical Center. She was a senior research fellow in medical humanities at the Oncofertility Consortium when she cowrote this article; she is now a postdoctoral fellow in medical humanities and bioethics at Northwestern University Feinberg School of Medicine. She is interested in the history of women’s sexual and reproductive health, and especially in how this history frames current discussions. She coedited Oncofertility: Ethical, Legal, Social, and Medical Perspectives (Springer, 2010) and her work has appeared in Science, the American Journal of Bioethics, and the Journal of the History of Medicine and Allied Sciences.