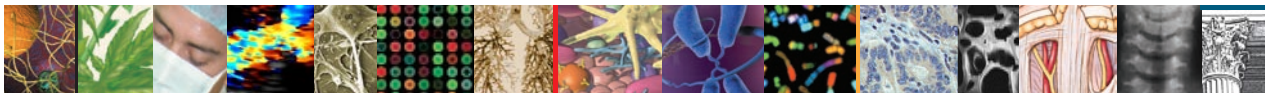

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Perspective

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The Egg Trade — Making Sense of the Market for Human Oocytes

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Anna Behrens is 24 years old. Tall and slim, she is working toward her Ph.D. in art history at an Ivy League school. During her undergraduate years, Anna accumulated $27,000 in credit-card debt. In the fall of 2005, frustrated by her economic straits, Anna answered an advertisement in her university's magazine promising $25,000 to a "tall, athletic woman" willing to "give a gift of life and love." Anna visited the agent who had placed the ad, underwent medical tests at a fertility clinic, and met the couple that was searching for eggs. Through the agent, they offered her $20,000 plus medical expenses. Six weeks later, after 2 weeks of hormone injections, mood swings, and bloating, Anna returned to the clinic and had eight healthy oocytes removed. The couple took them, and Anna took her money. She will probably never know whether her eggs resulted in a successful pregnancy.

Encouraged, Anna went back to the agent in February 2006, offering to donate again. This time, as a "proven" donor, she received $22,000 from another couple, enough to eliminate her debt and pay for a Caribbean vacation.

Then, in September 2006, Anna saw another ad seeking healthy young women for egg donation. But this time, the oocytes were for research: using somatic-cell nuclear transfer (SCNT), scientists would attempt to use her eggs to generate a line of infinitely reproducing embryonic stem cells.

Intrigued, Anna answered the ad and learned that medically, the procedure was identical to what she'd already experienced. But there was no couple to meet this time and no baby to be produced. There was also no money. Instead, Anna was told apologetically, she would be reimbursed only for actual expenses — the bus fare, in her case, for trips to the in vitro fertilization (IVF) clinic.

Anna Behrens is not a real person. But her story plays out thousands of times annually in the United States. According to the Centers for Disease Control and Prevention, in 2003, at least 5767 babies were born after being conceived with donated eggs — an 11% increase from 2002. Since success rates for IVF using donated eggs averaged 30 to 50% in 2003, the number of IVF cycles performed that year using such eggs was considerably higher: 12,996. Some small fraction of the eggs were probably truly "donated," given by friends or family members out of love. The rest were sold, for an average of about $5,000 per harvest. Eggs like Anna's were relatively rare, bought by would-be parents willing to pay a premium for particular genetic traits.

For stem-cell science, however, the numbers and market were entirely different during the same

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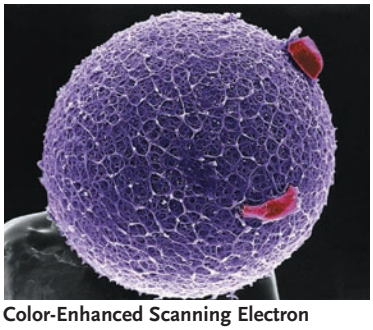
period. Most commercial laboratories in the United States were concentrating on adult or umbilical-cord stem cells, research trajectories that don't depend on obtaining human embryos or oocytes. Most university laboratories were working either with the handful of stem-cell lines created before 2001, when the Bush administration's prohibition on federal funding for embryonic stem-cell research went into effect, or with lines created from donated embryos left over from IVF treatment. Only a few laboratories had announced their intent to use donated human oocytes to generate specific stem-cell lines.

Such reluctance is understandable, for stem-cell science in the United States has been controversial since its inception. Some opponents liken the technology to cloning and therefore reject it; others vehemently disapprove of using embryos as research material. In such a heated environment, any proposal involving the use of human eggs will be incendiary, drawing new types of opponents into the political debate. Indeed, such opposition has already arisen, driven largely by women's organizations worried about the health implications for egg donors and the potential for commodification inherent in egg donation.

To forestall these concerns, stem-cell scientists have been quick to promise never to purchase eggs. In April 2005, the National Academy of Sciences published its Guidelines for Human Embryonic Stem Cell Research, recommending that no payment be provided for donating oocytes for research. These recommendations were quickly adopted into law by states that explicitly permitted or promoted SCNT. Massachusetts legislation, for example, limits payment for egg donation for SCNT research to reimbursement for reasonable costs. In California, stem-cell researchers using state funds are prohibited from compensating egg donors for anything beyond direct expenses.

In theory, therefore, SCNT progress rests largely on the hope that one small segment of society will altruistically provide, free, the raw material for basic scientific research. It is a noble theory — but an implausible one. Why should young women — most of whom have not yet used their eggs to produce their own children and nearly all of whom have no chance of benefiting directly from the research — be expected to volunteer? And why should they categorically be denied any form of payment?



Color-Enhanced Scanning Electron Micrograph of a Human Egg.

Yorgos Nikas/Wellcome Trust

Answers to these questions typically focus on fears of exploitation, positing not reasons why women might volunteer but rather reasons why they shouldn't receive any payment. One recent publication, for example, argues that "Offering payment [to egg donors] would likely induce economically vulnerable women to sell their eggs. . . . The potential for disproportionate recruitment of low-income women, women of color, and young college women . . . is high."[1] If women were allowed to sell their eggs for research, worries another author, "[a] market in eggs for research would emerge, valuing women's reproductive tissue over their well-being."[2] These are legitimate concerns. But they mask the central contradiction highlighted by Anna's story: in the United States, we already allow women to "donate" their eggs for profit. We allow them to undergo the same procedure and to undertake what is arguably a far more emotional endeavor — passing their genes to a child they will never know. How can we conclude that providing eggs for reproduction is less exploitative or dangerous than providing them for research?

We can't. Which is why, as the demand for human oocytes grows, I believe that we need to reconfigure the debate over eggs and reexamine the issues raised by egg donation.

The most critical issue is the health of the women involved. If women are going to donate eggs, we must ensure that their health is not compromised. We need, therefore, to subject egg donation to far more scientific scrutiny than it currently receives. We need more longitudinal studies of the drugs involved in ovarian hyperstimulation, for example, more long-term follow-up of egg donors, and deeper analyses of the conditions under which dangerous complications occur. A recent report by the Institute of Medicine and the National Research Council confirms that egg donation is relatively safe.[3] But five women are known to have died as a result of the procedure in the United Kingdom, and roughly 0.5 to 5% have reportedly had side effects ranging from respiratory distress to renal failure.[3-5] We need to understand what went wrong in these cases and whether certain preconditions put women at particular risk.

Once these factors are better understood, a second obvious need is to ensure that potential donors are fully informed. Currently, there are no federal guidelines covering egg donation; donors thus learn

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only what their brokers, clinics, or research laboratories choose to tell them. All live organ donors, by contrast, must undergo a formal process of informed consent overseen by the congressionally established Organ Procurement and Transplantation Network. Blood donors fall under the purview of the Food and Drug Administration and are both subject to the agency's rules and protected by its consent provisions. Even participants in federally funded studies, some of whom undergo only an interview, are covered by federal regulations describing what kind of information they must receive and how their personal data will be protected. Certainly, egg donors deserve at least the same levels of information and protection, both of which could easily be provided by federal regulation regarding informed consent and by mandated insurance coverage.

A third task is to decide as a society whether we're comfortable with providing monetary compensation for any form of egg "donation." This decision should entail a thoughtful consideration of semantics and analogies. Too frequently, discussions of compensation are dismissed with facile references to other body parts. "If men can sell their sperm," proponents say, "why can't women sell their eggs?" Or, on the other side: "We don't allow people to sell their kidneys. Why should they sell eggs?" But such lines of reasoning lack logic. Rather than accepting their implications, we need seriously to consider how we want to define eggs and whether we want women to be allowed to sell them.

Several countries that are engaged in stem-cell research have already launched this discussion and implemented egg-sale policies. In Britain, for example, where the research is supported and overseen by the government, women may donate eggs for both research and reproduction. But they cannot receive any payment beyond compensation for reasonable expenses and loss of earnings up to a predetermined limit. The result is predictable: a dearth of eggs. The country has therefore allowed "egg sharing," whereby women undergoing IVF can donate excess eggs to other infertile women or to research in exchange for a discount on their own treatment. This practice has generated a small stream of eggs. But as its proponents quietly acknowledge, it is essentially hypocritical — redefining the interaction to avoid any reference to compensation. It also depends on the acquisition of eggs from women who — infertile and desperate for access to treatment — are arguably far less attractive than our fictional Anna Behrens.

In Singapore, another would-be stem-cell hub, egg donation is legal, but monetary compensation is limited to a small reimbursement for travel and personal expenses. In Israel, paid donation is illegal, but women undergoing assisted reproduction may share their eggs with other women. And in South Korea, since the Woo Suk Hwang scandal, egg donors cannot receive any financial reward or personal benefit.

These approaches seem relatively clear and (with the possible exception of Britain's) internally consistent. The United States, by contrast, maintains the absurd inconsistency illustrated by the case of Anna Behrens: $20,000 for an egg used for reproduction; nothing for the same egg used for stem-cell research. Such a policy would make sense only if we deemed assisted reproduction socially more valuable than research. But this argument is not being made and perhaps could not logically stand, given that the alternative to assisted reproduction would often be adoption. Instead, opponents of egg selling tend to refer to the fears of commodification and the risks to donors — all of which, if valid, apply equally to the reproductive and research uses of eggs.

What we need, therefore, is a fresh debate on egg donation and a new set of policies. We need to consider the health risks and ways of identifying and mitigating them. We need to ensure that all potential donors are fully informed of these risks and fully protected against them. We need to make clear that the benefits of egg donation, for reproductive or research purposes, are complicated, and that few of these benefits will ever flow directly to the donor. At the moment, though, the politics of egg donation have blinded us to these real issues. We have not thought deeply about what makes sense for science, for women, and for society. Instead, we are only fighting about the price.

An interview with Dr. Spar and with Emily Galpern of the Center for Genetics and Society in Oakland, California, can be heard at www.nejm.org.

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