

The Egg Freezing Revolution? Gender, Technology, and Fertility Preservation in the Twenty-First Century*

MARCIA C. INHORN

Abstract

Egg freezing is the “newest” new reproductive technology, a form of flash-freezing that allows human eggs to be successfully stored in egg banks. Touted as a “revolution in the way women age,” egg freezing is being heralded as a way for older career women to “rewind the biological clock.” This essay will examine the many factors in American women’s lives—education, career, financial stability, relationship status, medical diagnosis and prognosis—that affect their egg freezing and disposition decisions. “Medical” egg freezing is being used by cancer patients, while “social” or “elective” egg freezing is being used by professional women in their late 30s and early 40s, both of whom face the threat of future infertility. Egg freezing among professional women represents a technological concession to ongoing gender inequalities in American society. These include employment constraints facing career women, the growing demographic surplus of college-educated women who cannot find college-educated male partners, and women’s resultant delays in marriage and childbearing. Ultimately, egg freezing reveals a new and important interface of science and society—one with major implications for human reproduction, women’s lives, and family formation in the twenty-first century.

INTRODUCTION

Oocyte cryopreservation, or egg freezing, is the “newest” new reproductive technology, involving a form of flash-freezing, which allows human eggs to be successfully stored in egg banks, thereby prolonging a woman’s reproductive life span. Egg freezing is being heralded as a “reproductive backstop,” a “fertility insurance policy,” an “egg savings account,” and

*I want to thank Pasquale Patrizio of the Yale Fertility Center, Jennifer DeChello of the Yale Department of Anthropology, and my former Yale students, Mira Vale and Ruoxi Yu, for their research assistance.

particularly as a way for older career women to “rewind the biological clock” (Goold & Savulescu, 2009; Hughes, 2012; Wyndham, Figueira, & Patrizio, 2012). Younger women, in their 20s and early 30s, could also potentially “put their fertility on hold,” “slow down their biological clocks,” and “postpone motherhood” until they are ready via egg freezing technology (Lockwood, 2011; Shkedi-Rafid & Hashiloni-Dolev, 2012). Indeed, the postponement of women’s fertility through egg freezing is being heralded as a “reproductive revolution,” equivalent to the introduction of the birth control pill in the early 1960s (Gibbs, 2010; McDonald *et al.*, 2011).

Yet, the development of egg freezing has not been straightforward. As with many other low-temperature technologies used in biomedicine to “hold still” life processes, the freezing and thawing of human eggs has proved technologically difficult. Although cryopreservation of human eggs was first tried in the early 1980s, and the first reported frozen egg baby was born in 1986 (Lockwood, 2011), the methods of slow freezing being used at that time led to low oocyte survival, chromosomal defects, poor embryo development, and overall low birth rates (De Melo-Martin & Cholst, 2008).

However, since the new millennium, a novel method called *vitrification*, which involves “flash-freezing” of human eggs, has been introduced (Mertes & Pennings, 2012). Despite initial caution, vitrification has led to excellent clinical success rates—an outcome that has encouraged some governments to authorize egg freezing for their citizens (Garcia-Velasco *et al.*, 2013; Lockwood, 2011). Israel has led the way in this regard, with a 2009 policy guideline, followed by approval of egg freezing for clinical use in early 2011 (Shkedi-Rafid & Hashiloni-Dolev, 2011, 2012; Stoop, 2010). Although vitrification technology remained experimental in the United States and most of Europe, the American Society for Reproductive Medicine (ASRM) lifted the experimental ban on October 19, 2012. While not enthusiastically endorsing egg freezing as in Israel, the ASRM allowed egg freezing to be performed in America for a variety of medical and “social” reasons (American Society for Reproductive Medicine, 2012). Still, the ASRM urged caution—stopping short of recommending egg freezing to postpone childbearing. As it pointed out, there were insufficient data on safety, success rates, cost effectiveness, and physical and emotional risks to women, who might be lulled into a false sense of security. Furthermore, reliable data on the ultimate success of either medical or social egg freezing are not yet available, as so few women have yet to use their frozen eggs. In other words, the viability of egg freezing and what it will ultimately mean for American women and their future children remains highly uncertain.

Having said this, in vitro fertilization (IVF) clinics on both the East and West coasts and in many American cities began in 2012 to create their own egg freezing programs, with several commercial egg banks launched by that

time. Egg freezing also began receiving increasing US media attention. For example, a cover story in *The New York Times* explained that parents were offering to subsidize egg freezing for their single, “thirty-something” daughters in the hopes of future grandchildren (Gootman, 2012). Since then many fashion and women’s magazines have run stories about egg freezing, and many American celebrities have “come out” with accounts of their egg freezing experiences in the national media.

EGG FREEZING IN AMERICA: THE EARLY EVIDENCE AND DEBATES

But celebrities aside, who are the ordinary American women who might turn to egg freezing for fertility preservation? In the United States, there are two major categories of egg freezers: first, medical egg freezers—mostly women diagnosed with cancer, the treatment of which will destroy their ovarian function—and the so-called social or elective egg freezers—mostly single women who, for educational, career, and relationship reasons, are concerned about “aging out” of their fertility and are thus elective users of the technology (Mertes & Pennings, 2012; Stoop, Nekkebroeck, & Devroey, 2011). In the United States, most women are elective egg freezers, in their late 30s and early 40s, which, medically speaking, is probably too late to preserve the highest quality, most fertile eggs (Gold, Copperman, Witkin, Jones, & Copperman, 2006; Romain, 2012). In general, elective egg freezers are highly educated professional women, the majority of whom have acquired graduate degrees, often from elite institutions (Inhorn, 2016). They include physicians, lawyers, professors, engineers, business executives and entrepreneurs, government officials, diplomats, and women in the arts, entertainment, and media industries. Although most American egg freezers are Caucasian, increasing numbers of Asian, and to a slightly lesser extent, Black and Latina professional women, are also turning to this technology (Inhorn, 2016).

In terms of relationship status, most elective egg freezers in the United States are single women, who have been unable to find partners committed to marriage and childbearing. The same holds true in Western European countries where the technology has been introduced (e.g., Belgium, Netherlands, United Kingdom). There, elective egg freezers also appear to be high-achieving, professional women, who are single because they are unable to find committed partners (Baldwin, Culley, Hudson, & Mitchell, 2015; Mertes & Pennings, 2011, 2012).

Such first-generation egg freezers represent the “moral pioneers” (Rapp, 1988)—those women who are bravely venturing into the new frontier of human egg freezing. Egg freezing allows these high-achieving professional women to defer the end of reproductive life through the alluring promise

that it is “never too late to become a mother.” However, this particular cryopreservation technology is also leading to heated debates about technoscientific futures in which women themselves may “choose” the best time to conceive. That women may begin to use egg freezing in a politically transgressive manner—to “put off” marriage and motherhood in order to achieve professional goals—is rekindling an American debate over whether women can “have it all” (Hewlett, 2002; Sandberg, 2013; Slaughter, 2012; Spar, 2013). Although egg freezing has yet to become widespread, feminists are already questioning whether women should be encouraged to employ a new reproductive technology in order to achieve both motherhood and professional aspirations, and whether egg freezing actually helps or hinders women’s emancipation (Martin, 2010; Petropanagos, 2010).

Drawing upon the insights from feminist anthropology, medical anthropology, and science and technology studies, this essay attempts to understand these contemporary egg freezing debates—namely, “what is at stake” (Kleinman, 2006) in women’s decisions to “reschedule” motherhood (Richards, 2013). In particular, the essay focuses on three key biopolitical issues—first, the delaying of motherhood within American work cultures and the subsequent “fertility penalty” experienced by many high-achieving professional women; second, the growing demographic gap between college-educated men and women in America, leading to lopsided gender ratios and a high proportion of educated women without partners; and third, how egg freezing may help these single, professional women to put their fertility on hold, while at the same time creating many uncertainties for these very women, their future children, and society in general. The essay will examine these issues in turn, exploring how egg freezing has evoked tensions around gender, race, and class. The essay concludes with some thoughts on the broader impacts of egg freezing for women’s lives in the United States, as well as future directions for research.

DELAYED MOTHERHOOD AND THE FERTILITY PENALTY

With the rise of second-wave feminism, the meaning of motherhood has been at the heart of a major debate set forth in anthropologist Ortner’s (1972) famous feminist essay, “Is Female to Male as Nature is to Culture?” Ortner’s essay set the terms for this debate by placing motherhood at the very center of women’s universal subordination. Namely, Ortner argued that women’s reproductive bodily functions—menstruation, pregnancy, childbearing, breastfeeding, and maternal care—placed them closer to “nature,” while men, as non-reproducers, were free to enact “cultural” endeavors in the arts, politics, religion, and so forth. Whether reproduction and motherhood represent the seat of women’s oppression or their greatest source of power

became a fundamental question for generations of feminist anthropologists, who went on to publish a wealth of foundational texts on the politics of reproduction. Perhaps most famously, this question was taken up by Martin (1987) in her classic ethnography, *The Woman in the Body: A Cultural Analysis of Reproduction* (now in its third edition), where she showed that women's reproduction was viewed metaphorically in American society as a kind of "failed production." Furthermore, this negative view of reproduction had real implications for women as workers, as they struggled to bring their reproductive bodies and motherhood in line with the rigid expectations of workplace culture.

Decades later, these same tensions—between nature and culture, reproduction and production, motherhood and work—remain very much unresolved, as evident in the egg freezing debates. Many proponents of egg freezing have lauded the advantages of this technology as a feminist advancement. Namely, because women have legitimate aspirations for education and employment, they "defer and delay" motherhood until they are established in their careers, finances, households, and stable relationships (Goold & Savulescu, 2009; Lockwood, 2011; Savulescu & Goold, 2008). However, according to other commentators, this postponement is not entirely voluntary (Mertes & Pennings, 2012), but rather is women's concession to an unforgiving labor market and other variables beyond their control (Smajdor, 2011). In demographic terms, the results in most Western countries are (i) significant increases in age at first marriage; (ii) significant increases in age at first birth (to nearly 30 in most Western European countries); (iii) smaller family sizes; (iv) below replacement fertility levels in many nations; (v) increasing levels of age-related infertility among women; and (vi) women's risk of permanent biological childlessness (Lockwood, 2011; Wyndham *et al.*, 2012).

Data show that this "fertility penalty" for highly educated, professional women is real (Lockwood, 2011). For example, in corporate America, nearly one-half (49%) of high-earning women over age 40 are childless, even though 86% of them indicate that they want (or would have wanted) children (Hewlett, 2002). Overall, only about 50% of women who postpone childbearing until their 30s will conceive in the following 6 years, an indication of women's "difficult choices about what to prioritize at different times in their lives—children, education, or career" (Goold and Savulescu, 2009, p. 50).

Egg freezing is being cast as a technology to counteract these effects of fertility postponement and delayed motherhood, while also assisting women in their educational and career goals. From a feminist perspective, egg freezing is said to be a "secondary strategy" to end gender inequities and discrimination in the workplace until the day arrives when government policies are

more favorable to mothers as workers. Some argue that this will follow when more women gain positions of authority and influence (Lockwood, 2011). In addition, giving women extra time on their biological clocks is deemed a corrective to male reproductive advantage. While career women who hope to conceive in their later reproductive years have often been cast as “selfish” for “wanting it all” (Martin, 2010), men “regularly postpone fathering children into their 40s, 50s, 60s, 70s and even their 80s, yet they face little or no censure” (Goold and Savulescu, 2009, p. 52). Furthermore, men have been able to freeze their sperm for more than a century (Becker, 2002). Egg freezing thus confers to women a biobanking technology already possessed by men for decades. Given that women have a longer life expectancy than men, they, too, should be supported in having their children later, according to some advocates (Goold and Savulescu, 2009).

Despite these arguments in favor of egg freezing as a path to gender equality, feminist critics are already worried about the potential deleterious consequences, even backlash, that may accompany the use of this technology. Such outcomes might include eventual employer expectations that women workers postpone childbearing through egg freezing. Professional women who go this route may develop a false sense of security about future reproduction when, in fact, egg freezing cannot provide guaranteed future fertility outcomes. Indeed, feminist philosopher Angel Petropanagos (2010) has argued that promoting egg freezing as a “quick fix” technological solution for professional women does not solve underlying structures of patriarchy. The promotion of egg freezing may serve to reinforce patriarchy by leaving intact various forms of gender inequality—for example, employment policies favoring men, the “glass ceiling” on women’s advancement in the workplace, men’s “lifestyle” choices that disadvantage women, and so on.

THE DEMOGRAPHIC GAP: EDUCATED WOMEN WITHOUT EDUCATED MEN

Moreover, men are almost entirely absent in egg freezing discussions, even though this is a major lacuna. In most cases, professional women are postponing their fertility not because of work, but because they are single and cannot find male partners, even though they want them (Baldwin *et al.*, 2015; Inhorn, 2016). This begs the question: Why are so many high-achieving professional women in the United States remaining single, but not by choice? Although women tend to blame themselves for not finding a husband in a timely manner—or they blame American men for their lack of marital commitment and a number of other perceived male flaws—the answer to this question lies in demography. Namely, in the United States, there are increasing gender disparities in college education, which are

extremely important for women's marital prospects, but which are little discussed.

In his prescient book, *Date-onomics: How Dating Became a Lopsided Number Game*, Birger (2015) examines US census data to describe the growing gender gap in college education. Today, for every four college-educated women in the United States, there are only three college-educated men. For example, in 2012, 34% more American women than men graduated from college. And, at the graduate level, for every 13 women, there were only 10 men with graduate degrees. In other words, American women have been attending college at higher rates than men since the 1980s, and at much higher rates since the 1990s. The result is a shortage of college-educated men, or what Birger calls "the man deficit."

This man deficit is particularly acute for educated women in the 30–39 age range. As Birger argues, "This explains why among college grads age 30–34, the number of never-married women increased 31 percent between 2007 and 2012, even as the number of never-married men increased only 22 percent" (p. 9). These gender ratio disparities among 30-somethings are especially acute in East Coast cities, such as Washington DC and Manhattan, where professional women outnumber professional men by the thousands, according to census data. Because educational "intermarriage" is less common today than at any point over the past half century, many educated women who have not married by their 30s will be unable to find educated partners, due to what Birger calls "a massive undersupply of college-educated men" across most parts of the country (Birger, 2015, p. 5).

In short, egg freezing is educated women's concession to this uneven playing field. Women seem to see egg freezing as a kind of "stop-gap" measure to stop the "ticking" of the biological clock while still holding out for the possibility of a future happy marital relationship. A "man-less world"—where professional women find it difficult to meet educated men who are interested in them and willing to commit, and, in turn, are themselves unwilling to commit to men who are not educated and do not seem to meet their priorities and expectations—is driving many women into egg freezing. These "missing men" are an untold part of the egg freezing story. So is online dating, the twenty-first century mode of meeting potential partners. According to Birger (2015), online dating seems to create a limitless marketplace of options, but one that actually works in favor of college-educated men, who, instead of committing to one woman, "keep their options open" and "play the field."

Unfortunately, egg freezing may increase women's illusions about their ability to eventually find a "perfect" partner while putting their fertility on hold. Furthermore, it may reinforce traditional heteronormative notions of marriage and biological parenting within nuclear family structures, rather

than encouraging women to become “single mothers by choice,” or to pursue other non-traditional family structures (e.g., parenting with other women through the use of donor insemination).

EGG FREEZING UNCERTAINTIES AND THE FUTURE OF MOTHERHOOD

Furthermore, there are many other uncertainties and forms of inequality incumbent in, and engendered by, egg freezing. For one, egg freezing in the United States is extremely expensive—between \$7500–\$18,000 per cycle, depending upon the IVF clinic and the amount and cost of accompanying medications. In the United States, where the IVF industry is privatized, the average cost of IVF is \$12,513 per cycle, the most expensive in the world (Connolly, Hoorens, & Chambers, 2010). Moreover, only 15 US states have laws requiring some degree of IVF insurance coverage. Even in these so-called mandate states, egg freezing is not covered by insurance, even for medical reasons. Because of egg freezing’s high cost, it is economically inaccessible to the vast majority of American women, even those in the educated middle class. However, the great expense of egg freezing is of special concern in poorer minority communities, where women may be financially excluded from egg freezing altogether (Culley, Hudson, & van Rooij, 2009).

Beyond the high costs of egg freezing, the procedure itself involves a significant degree of bodily discomfort and lifestyle disruption. Medically speaking, egg freezing involves stimulation of a woman’s ovaries with powerful hormonal medications—medications that must be injected daily into the abdomen and buttocks, usually by the woman herself. These hormones are intended to produce excess eggs in a woman’s ovaries—eggs that will then be “harvested” through transvaginal ultrasound-guided retrieval under anesthesia. As “half an IVF cycle,” egg freezing is time consuming (i.e., several weeks of medication and multiple IVF clinic visits) and potentially risky (i.e., involving rare but serious reactions to hormonal medications).

These issues are of particular concern to medical egg freezers—generally, young women in their teens, 20s, or early 30s, who have been diagnosed with cancer and who are offered egg freezing as a means of fertility preservation (De Melo-Martin & Cholst, 2008). Many forms of oncological treatment, both radiation and chemotherapy, destroy a woman’s ovarian function. Thus, egg freezing offers young cancer patients the future possibility of biological motherhood. However, egg freezing must occur rapidly, given the urgency of oncological treatment, and the hormones required for ovarian stimulation may increase the threat of some gynecological cancers (De Melo-Martin &

Cholst, 2008; Reinblatt, Barnis, Shalom-Paz, Tan, & Holzer, 2011; Simon, Joi, Partridge, & Runowicz, 2005).

Egg freezing, furthermore, involves difficult decisions about egg disposition, either through prolonged storage, eventual disposal, donation to other women, or donation to research (Mertes, Pennings, Dondorp, & de Wert, 2012). For all women, egg disposition may involve a high degree of uncertainty. However, for women with cancer, disposition decisions may be particularly fraught. Issues of “posthumous disposition” may arise, involving familial intervention and legal questions (Mertes *et al.*, 2012; Spielman, 2011). On the other hand, egg freezing may give young, single cancer patients feelings of psychological comfort, as semen cryopreservation has done for generations of young men with cancer (Reinblatt *et al.*, 2011; Ryan, 2011; Stoop *et al.*, 2011).

Among older women who have frozen their eggs for elective reasons, there are additional considerations about age and the limits of motherhood. Egg freezing effectively allows women to postpone their childbearing well into their postmenopausal years. Indeed, egg freezing gives women in their 40s and 50s—and potentially 60s, 70s, or 80s—the chance to bear children, because “egg age” rather than “womb age” appears to be the crucial variable in a women’s ability to carry a pregnancy to term (Goold & Savulescu, 2009; Lockwood, 2011). Whether such marked fertility postponement will eventually happen has been questioned (Mertes & Pennings, 2012), for it is unlikely that elderly women will want to become first-time mothers. However, if elderly women *do* begin having children with their frozen eggs, the age difference between mother and child will expand considerably. Such significantly older mothers may have decreased energy reserves and be poorer parents. Furthermore, their children may be orphaned early, or be forced to care for their aged mothers while still in their childhood or teenage years (Shkedi-Rafid & Hashiloni-Dolev, 2012).

KEY ISSUES FOR FUTURE RESEARCH ON EGG FREEZING

Given these various concerns, egg freezing is not a straightforward reproductive panacea for either social or medical egg freezers. The development of this expensive technology may be furthering existing gender, racial, and class disparities, thereby reinscribing reproductive privileges for some, at the expense of others. In addition, egg freezing may be perpetuating a hegemonic motherhood mandate, whereby older single women are feeling unduly pressured to freeze their eggs in the hope that, someday, they can still become biological mothers. Furthermore, in the United States, where egg freezing remains unregulated, women who freeze their eggs may face future legal and bioethical conundrums,

including complicated decisions about egg disposition among women in their postmenopausal years, or among the surviving family members of women who have died from cancer. In short, egg freezing raises many new uncertainties about fairness, legality, and reproductive justice in the twenty-first century. Its emergence in the United States—and potentially in many other countries where the technology will soon unfold—demands close scrutiny by feminists, bioethicists, anthropologists, and other scholars deeply concerned with the intersections of gender, race, class, and age.

As shown in this essay, egg freezing is being touted as a technological remedy for some of the most pressing social issues of our times. These include the ongoing demographic and social constraints facing career women, resultant delayed childbearing and declining fertility, and skewed gender ratios in American education, which are having deleterious effects on marriage, mating, and reproduction, particularly for America's most educated women. Clearly, egg freezing evokes serious tensions between reproduction and production, motherhood and work that are observable in America's "lean in" debates (Sandberg, 2013; Slaughter, 2012). However, debates about the growing gender gap in college education in America must also be addressed, as outlined by Birger (2015) in his important volume.

For high-achieving American women who cannot find partners because of the "man deficit," egg freezing may offer a feeling of "empowerment," creating a form of "reproductive affirmative action" in the absence of gender equality (Goold and Savulescu 2009; Lockwood, 2011; Savulescu & Goold, 2008; Stoop, 2010). However, while proponents of egg freezing have expressed the advantages of this technology in terms of gender justice, the ability of this technology to deliver upon these promises remains to be seen. Many future research questions will need to be answered. For example, how many frozen eggs will it take to produce one or two children, given that most frozen eggs will not lead to viable pregnancies? Will women who have banked their eggs actually use them in the future, or will there be millions of stored eggs "on ice"? Will egg freezing eventually become so normalized that younger professional women, in their mid- to late 20s, routinely bank their eggs? What changes will occur if egg freezing is eventually covered by insurance? Will its uptake dramatically increase among educated American women, especially as they learn of the lopsided gender ratios that affect their future marriageability?

Once egg-freezing technology becomes routinely available in IVF clinics and egg banks around the world, women themselves will have to decide upon the potential costs and benefits of this reproductive technology. Whether egg freezing proves to be a "reproductive revolution" or not, it is clear that this newest reproductive technology will have a potentially

momentous impact on women's lives, family formation, and population outcomes in the twenty-first century.

REFERENCES

- American Society for Reproductive Medicine. (2012). *Mature oocyte cryopreservation: A guideline*. <https://www.scribd.com/document/339331836/ASRM-2012-Mature-Oocyte-Cryopreservation-A-Guideline>
- Baldwin, K., Culley, L., Hudson, N., & Mitchell, H. (2015). Oocyte cryopreservation for social reasons: Demographic profile and disposal intentions of UK users. *Reproductive BioMedicine Online*, 32(2), 239–245.
- Becker, G. (2002). Deciding to tell children about donor insemination: An unresolved question in the United States. In M. C. Inhorn & F. van Balen (Eds.), *Infertility around the globe: New thinking on childlessness, gender, and reproductive technologies* (pp. 119–133). Berkeley: University of California Press.
- Birger, J. (2015). *Date-onomics: How dating became a lop-sided numbers game*. New York, NY: Workman Publishing.
- Connolly, M. P., Hoorens, S., & Chambers, G. M. (2010). The costs and consequences of assisted reproductive technology: An economic perspective. *Human Reproduction*, 16, 603–613.
- Culley, L., Hudson, N., & van Rooij, F. (Eds.) (2009). *Marginalized reproduction: Ethnicity, infertility and reproductive technologies*. London, England: Earthscan.
- De Melo-Martin, I., & Cholst, I. N. (2008). Researching human oocyte cryopreservation: Ethical issues. *Fertility and Sterility*, 89, 523–528.
- Garcia-Velasco, J. A., Domingo, J., Cobo, A., Martinez, M., Carmona, L., & Pellicer, A. (2013). Five years' experience using oocyte vitrification to preserve fertility for medical and nonmedical indications. *Fertility and Sterility*, 99(7), 1994–1999.
- Gibbs, N. (2010). The pill: So small. So powerful. And so misunderstood. *Time*, May 3.
- Gold, E., Copperman, K., Witkin, G., Jones, C., & Copperman, A. B. (2006). A motivational assessment of women undergoing elective freezing for fertility preservation. *Fertility and Sterility*, 86(3), S201, P-187.
- Good, I., & Savulescu, J. (2009). In favour of freezing eggs for non-medical reasons. *Bioethics*, 23, 47–58.
- Gootman, E. (2012). So eager for grandchildren, they're paying the egg-freezing clinic. *The New York Times*, May 14, A1.
- Hewlett, S. A. (2002). *Creating a life: What every woman needs to know about having a baby and a career*. New York, NY: Miramax.
- Hughes, V. (2012). Frozen in time. *New Scientist*, 214, 40–43.
- Inhorn, M.C. (2016). *Ice, ice baby: Single women enacting the new reproductive revolution*. Paper presented at a conference on "Momentums: Histories, localities and futures in the anthropology of ruptures and hope," Department of Anthropology, University of Oslo, Norway.
- Kleinman, A. (2006). *What really matters: Living a moral life amidst uncertainty and danger*. Oxford, England: Oxford University Press.

- Lockwood, G. M. (2011). Social egg freezing: The prospect of reproductive "immortality" or a dangerous delusion? *Reproductive BioMedicine Online*, 23, 334–340.
- Martin, E. (1987). *The woman in the body: A cultural analysis of reproduction*. Boston, MA: Beacon.
- Martin, L. J. (2010). Anticipating infertility: Egg freezing, genetic preservation, and risk. *Gender & Society*, 24(4), 526–545.
- McDonald, C. A., Valluzo, L., Chuang, L., Poleschchuk, F., Copperman, A. B., & Barritt, J. (2011). Nitrogen vapor shipment of vitrified oocytes: Time for caution. *Fertility and Sterility*, 95, 2628–2630.
- Mertes, H., & Pennings, G. (2011). Social egg freezing: For better, not for worse. *Reproductive BioMedicine Online*, 23, 824–829.
- Mertes, H., & Pennings, G. (2012). Elective oocyte cryopreservation: Who should pay? *Human Reproduction*, 27, 9–13.
- Mertes, H., Pennings, G., Dondorp, W., & de Wert, G. (2012). Implications of oocyte cryostorage for the practice of oocyte donation. *Human Reproduction*, 27, 2886–2893.
- Ortner, S. (1972). Is female to male as nature is to culture? *Feminist Studies*, 1, 5–31.
- Petropanagos, A. (2010). Reproductive "choice" and egg freezing. *Cancer Treatment Research*, 156, 223–235.
- Rapp, R. (1988). Moral pioneers: Women, men and fetuses on a frontier of reproductive technology. *Women & Health*, 13, 101–117.
- Reinblatt, S., Barnis, A., Shalom-Paz, E., Tan, S. L., & Holzer, H. (2011). Fertility preservation for cancer patients: A review of current opinions and their advantages and disadvantages. In J. G. Schenker (Ed.), *Ethical dilemmas in assisted reproductive technologies* (pp. 219–231). Berlin/Boston: de Gruyter.
- Richards, S. E. (2013). *Motherhood rescheduled: The new frontier of egg freezing and the women who tried it*. New York, NY: Simon & Schuster.
- Romain, T. (2012). "Fertility. Freedom. Finally.": Cultivating hope in the face of uncertain futures among egg freezing women. In C. High, A. H. Kelly & J. Mair (Eds.), *The anthropology of ignorance: An ethnographic approach* (pp. 191–216). New York, NY: Palgrave Macmillan.
- Ryan, G. (2011). Preservation of fertility in children with cancer: Medical, ethical, and legal aspects. In J. G. Schenker (Ed.), *Ethical dilemmas in assisted reproductive technologies* (pp. 209–217). Berlin/Boston: de Gruyter.
- Sandberg, S. (2013). *Lean in: Women, work, and the will to lead*. New York, NY: Alfred A. Knopf.
- Savulescu, J., & Goold, I. (2008). Freezing eggs for lifestyle reasons. *American Journal of Bioethics*, 8, 32–35.
- Shkedi-Rafid, S., & Hashiloni-Dolev, Y. (2011). Egg freezing for age-related fertility decline: Preventive medicine or a further medicalization of reproduction? Analyzing the new Israeli policy. *Fertility and Sterility*, 96, 291–294.
- Shkedi-Rafid, S., & Hashiloni-Dolev, Y. (2012). Egg freezing for non-medical uses: The lack of a relational approach to autonomy in the new Israeli policy and in academic discussion. *Journal of Medical Ethics*, 38, 154–157.

- Simon, B. L., Joi, S., Partridge, A. H., & Runowicz, C. D. (2005). Preserving fertility after cancer. *Cancer*, 55, 211–228.
- Slaughter, A.-M. (2012). Why women still can't have it all. *The Atlantic*, July / August 1–22.
- Smajdor, A. (2011). The ethics of IVF over 40. *Maturitas*, 69, 37–40.
- Spar, D. L. (2013). *Wonder women: Sex, power, and the quest for perfection*. New York, NY: Sarah Crichton Books.
- Spielman, B. (2011). Posthumous reproduction: Ethical and legal perspectives. In J. G. Schenker (Ed.), *Ethical dilemmas in assisted reproductive technologies* (pp. 289–296). Berlin/Boston: de Gruyter.
- Stoop, D. (2010). Social oocyte freezing. *Facts Views & Visions in ObGyn*, 2, 31–34.
- Stoop, D., Nekkebroeck, J., & Devroey, P. (2011). A survey on the intentions and attitudes towards oocyte cryopreservation for non-medical reasons among women of reproductive age. *Human Reproduction*, 26, 655–661.
- Wyndham, N., Figueira, P. G. M., & Patrizio, P. (2012). A persistent misperception: Assisted reproductive technology can reverse the “aged biological clock.” *Fertility and Sterility*, 97, 1044–1047.

MARCIA C. INHORN SHORT BIOGRAPHY

Marcia C. Inhorn is the William K. Lanman, Jr. professor of anthropology and international affairs at Yale University, where she teaches courses in gender and health, reproduction and reproductive technologies, feminist theory and masculinity studies, and ethnographic research design and methods. She is the author of six books, including, *Cosmopolitan Conceptions: IVF Sojourns in Global Dubai* (Duke University Press, 2015), as well as the editor of ten books on gender, technology, and health (www.marciainhorn.com).

RELATED ESSAYS

- Rent, Rent-Seeking, and Social Inequality (*Sociology*), Beth Red Bird and David B. Grusky
- Elites (*Sociology*), Johan S. G. Chu and Mark S. Mizruchi
- The Gendered Transition to Parenthood: Lasting Inequalities in the Home and in the Labor Market (*Sociology*), Marie Evertsson and Katarina Boye
- Labor Market Instability, Labor Market Entry, and Early Career Development (*Sociology*), Michael Gebel
- Changing Family Patterns (*Sociology*), Kathleen Gerson and Stacy Torres
- Biology and Culture (*Psychology*), Robert Peter Hobson
- Family Formation in Times of Labor Market Insecurities (*Sociology*), Johannes Huinink

Maternal and Paternal Employment across the Life Course (*Sociology*),
Michaela Kreyenfeld

Emerging Trends: Family Formation and Gender (*Sociology*), Anna Matysiak
and Natalie Nitsche

The Future of Marriage (*Sociology*), Elizabeth Aura McClintock

Gender Inequality in Educational Attainment (*Sociology*), Anne McDaniel
and Claudia Buchmann

Gender and Women's Influence in Public Settings (*Political Science*), Tali
Mendelberg *et al.*

Implicit Attitude Measures (*Psychology*), Gregory Mitchell and Philip E.
Tetlock

Below-Replacement Fertility (*Sociology*), S. Philip Morgan

Social Change and Entry to Adulthood (*Sociology*), Jeylan T. Mortimer

Gender and the Transition to Adulthood: A Diverse Pathways View
(*Sociology*), Ingrid Schoon

Recent Demographic Trends and the Family (*Sociology*), Lawrence L. Wu