**How Medical Ethics Misses the Point: IVF, Cancer, and Egg Provision**

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Scottish surgeon George Beatson made the link between hormones and reproductive cancers in the 1890s. The relation between hormones and cancer is not contested, and hasn’t been for over a century. But that fact hasn’t stopped industries from using them: hormones have been used in medicine and agriculture in the United States since the 1930s for everything from fattening beef and chickens to stunting the growth of girls who seemed to be getting too tall, from attempting to prevent miscarriages to trying to reduce the affects of aging in women. The history of synthetic hormone use includes both the purposeful withholding of the correlations between hormone use and cancer when giving drugs to women in the 1960s so that they did not “worry” too much. Congressional ratification of funds to study the effects of hormones in meat when it became evident that men’s sperm counts were becoming radically diminished.[[1]](#endnote-1) While meat production is a multi-billion industry, so is the production of humans through IVF, and the link between the hormones used in IVF and cancer would be an obvious idea to study.

Artificial Reproductive Technology (ART), or In Vitro Fertilization (IVF) involves removing eggs from a woman’s ovaries, combining them with sperm, and then implanting the embryo into the same or a different woman’s body.[[2]](#endnote-2) A series of hormonal drugs stimulate oocyte production before a doctor removes the eggs, and hormones also stimulate the tissue surrounding implant area to encourage the embryo to develop into a fetus. The procedure has sustained a profitable industry since 1987, however, the profits belie two nasty secrets.

First, nearly three in every 200 births in the US is the result of donated eggs, which means that young women are asked to undergo a procedure with no benefit to themselves, in a system of medical representation that is skewed toward reproduction and away from their health interests. At the same time, the very viability of the entire IVF industry depends on externally produced eggs, for without them pregnancy rates would be too low to sustain a profitable industry.[[3]](#endnote-3) (While only 12% of IVF procedures use donor eggs, they account for half of IVF live births.[[4]](#endnote-4)) Second, the IVF industry portrays the procedure as often successful and extremely safe. IVF advertisements peddling motherhood bear sweetly swaddled babies and a visit to the IVF clinic shows welcoming, pastel-pink-and-blue walls replete with large framed pictures of chubby little hands and feet (quite different from the screaming babies used to advertise condoms). And yet, no data tracks the physical or psychological consequences of egg donation. No one currently follows donors, and in the twenty-year history of artificial egg extraction no one ever has. No protocol or requirement exists mandating clinics to contact women after egg extraction, and a woman or her family has no one who can accept a report of subsequent injuries or health issues.[[5]](#endnote-5)

Several commentators point out that the lack of long-term health data means that IVF remains experimental, and thus devoid of the possibility for informed consent.[[6]](#endnote-6) Clinics and spokespeople uniformly communicate the absence of data on egg donation and hormones as evidence that no risk exists.[[7]](#endnote-7) For example, a 2012 study found that the risk of breast cancer for those who take hormonal drugs for IVF at a young age (precisely the demographic targeted by egg recruiters), actually *increased by 59% after 16 years.*[[8]](#endnote-8) After 16 years, the young donors will still be far "too young" for cancer (at under 40), and thus in a group suffering misdiagnosis for that very reason. Still, in a Reuters report, the American Society for Reproductive Medicine (or ASRM, a self-proclaimed interdisciplinary group of fertility experts that represents IVF clinics), claimed that the data is reassuring, since IVF *overall* is “not associated with an increased risk for development of breast cancer.”[[9]](#endnote-9) As a result of this informational quagmire and misrepresentation of data, prospective clients and donors, as well as potential regulators, falsely assume that the hormonal drugs used in IVF procedures have been assessed by the FDA for their safety in egg extraction.[[10]](#endnote-10)[[11]](#endnote-11)[[12]](#endnote-12)

Bringing together the rhetorical, historical, economic and medical strands of the IVF story, demonstrate how forms of injury remain invisible.

**Recruitment**

Despite the fertility industry’s ubiquitous ruddy-baby advertising, it’s neither easy nor inexpensive to produce a baby.[[13]](#endnote-13) Fewer than 30% of IVF procedures result in a live birth, a statistic just large enough to prompt would-be parents to spend upwards of $10-30,000 or more per cycle, often multiple times.[[14]](#endnote-14) Contingent on age, success rates hover at 40% for women under 35, then plunge to about ten percent for women over 42. However, if older women use an oocyte from a markedly younger woman, the chances of a live birth leap to just over 50%.[[15]](#endnote-15)

Egg recruiters, sometimes as discrete agencies and sometimes as a part of IVF clinics, represent the egg extraction process in various ways in their attempts to recruit young fertile women to undergo the procedure. One broker, for example, invites women to consider selling oocytes because *Egg Donation Inc.* is “Where Dreams Come True.”[[16]](#endnote-16) Another program plays the gamete market as if it were recruiting models, and bids itself as “The Agency for Superdonors, known for representing the brightest, most beautiful, and accomplished donors in the country.”[[17]](#endnote-17) This agency encourages young women to think about the process as giving a gift, telling women that “Egg donation is possible through … the beauty of the human heart. Without angels like you loving couples who are struggling to have a child would have little hope.” [[18]](#endnote-18) These recruiting themes reflect dual psychological tactics, inviting young women to join and enable the great march of humanitarian scientific progress on the one hand, while upholding the conservative model of normative procreation on the other.[[19]](#endnote-19) The sites pleasantly neutralize egg retrieval as a "medical procedure," drugs as "medications," and the doctors as "your physician"[[20]](#endnote-20) and blend scientific euphemism with a humanitarian calling.

Anthropologist Gaylene Becker interviewed one man in the process of selecting eggs for transplant by going through women’s photographs. He said, “With the pictures, you start looking at them as people, and that made it more difficult. I found myself thinking, ‘This is a really nice looking woman.’ Then I felt like, ‘What do I care? I’m not calling her up on a date!’ But it was distracting from the birth data, from the genetic factors.”[[21]](#endnote-21) His struggle is explicable: How *are* we supposed to look at young women in inviting poses? After all, the people selecting eggs and sperm are partaking in a highly intimate, if technologically mediated-process, one that in the case of 98.3% of live births results from a sexual encounter.[[22]](#endnote-22) Gamete consumers half-cruise, half mail-order, half rationalize their way through half-understood reproductive science.[[23]](#endnote-23) This ambiguity charges the recruitment sites, as does another: although the buyers purchase sperm more or less as a commodity on the free market, no regulations insist that clinics test the donors or the collected sperm for various genetic flaws.[[24]](#endnote-24) In this seemingly *hors la loi* frontier, it’s buyer beware, all the way. But of what?

A misleading language of donation serves a critical function; it enables IVF to fit within the idea of the nuclear family even as it radically disrupts the traditional path to procreation. For example, The Pacific Fertility Center in California website magically turns a frightening and intrusive event (making one’s way to an office, being poked and prodded, giving self-injections, having numerous blood tests, sitting in a waiting room, and dealing with strangers) into one that “many of our egg donors say … has been one of their most rewarding experiences.”[[25]](#endnote-25) It is almost impossible to believe that the carefully choreographed page uses actual testimonials, so perfectly do they address every possible hesitation a young woman might have. While one plucky testimonial claims that, “It's such a neat feeling to know I have helped to give new hope to a childless couple,” another implies that she gets to give something away at no cost to her, since “All those eggs would be wasted anyway.” If you’re worried about the drugs, worry no more: “It was exciting to see my body respond to the treatments as I daily got closer to giving my recipient the opportunity to bring a new life into the world.”[[26]](#endnote-26)

Ads portray infertile couples as loving, deserving, struggling, and dreaming. This rhetoric blends representations of these victims of tragic infertility with hazy-edged photos of babies and children, and the noble and innocent goal of wanting a child tints the whole IVF infrastructure as similarly unimpeachable.

Soft-focus nostalgia blurs a not-so-warm-and-fuzzy fact: most so-called donors actually *sell* their gametes to clinics, which then re-sell them to prospective parents. It's not like a gift exchange, with the donor angel handing the shiny-wrapped egg to the noble infertile couple. In that sense, the word donor misrepresents the exchanges at play in the gamete market. Of all the attendant ethical and practical considerations around egg extraction, the most vibrant ones fizz around the issue of reimbursement and payment, fretting over the commodification of human life.[[27]](#endnote-27)

Loosely basing its calculation on the time involved in sperm donation (which has no price recommendation, but usually pays about $75 a pop) multiplied by the extra time required for egg extraction, the ASRM suggests that eggs should be priced at around $5000.[[28]](#endnote-28) The report claims that the amount paid to donors should not be so high that “women will discount the physical and emotional risks of oocyte donation out of eagerness to address their financial situations or their infertility problems.”[[29]](#endnote-29) Most women selling eggs do so in part for the cash, and to the young people who are the most coveted donors, even a small amount of cash can be a large motivator. Donor-payment structure reflects real-world salary distribution: Harvard women donors make more than those from University of Kentucky, straight A students make more than lower-scoring women.[[30]](#endnote-30) Since the ASRM has opposed monitoring the physical and emotional risks, ASRM’s concern that women will discount the physical and emotional risks both conflates the issues presented to infertile women and those considering extraction, and it also implies that the physical and emotional risks are known and can be measured (i.e. discounted).[[31]](#endnote-31)

It would be more accurate to substitute the label "donor" with "person undergoing extraction," "seller," or "genetic parent", but the websites and their mission to romanticize the nuclear family forego such clumsy terms. The euphemism "donor" serves to prop up the normative, heterosexual, nuclear economic unit of reproduction. This is ironic because the actual practice of IVF expands single people's and same-sex couples’ ability to have children. The money doesn't discriminate; a cheap egg supply works for nearly everyone.

The following quote by an ethicist demonstrates the typical divide that has taken place in the ethicists’ corner of the debate: “When people want to [provide an egg] for altruistic reasons, it's a wonderful gift. … When donation becomes commercialized, it raises all sorts of deep, philosophical questions about using humans as a means to an end.”[[32]](#endnote-32) The quote suggests that an altruistic intent would be in itself enough to defer the deep philosophical issues, ranging from coercion to eugenics, that a purely commercial venture might raise. This false distinction between gifting and commercialization confuses a critical point. No matter the donor's intent, doctors, nurses, money lenders, accountants, pharmaceutical companies, lawyers, and many others profit from commercialized, for-profit, IVF.[[33]](#endnote-33) Even when the gamete is freely given, the structure it enters is commercialized. By missing this key point the ethicists offer a nostaligic inaccurate view of medicine, thus missing an opportunity to take a hard look at the industry that upholds this gift economy, and joining the industry in advocating for cheap eggs.[[34]](#endnote-34)

Anonymity has also worked to assuage anxiety both about the baby-exchange market. Many potential egg recipients insist on anonymity, at least in part because of the stigma of using donated eggs.[[35]](#endnote-35) Some others implicated in donations – recruiters, physicians, recipients, even donors themselves – also prefer anonymous donorship. Anonymity is the primary reason the industry gives for not wanting long-term follow-up on donors, despite the risk that critical genetic material about a genetic donor will not be accessible to the children.[[36]](#endnote-36)

Anonymity has another consequence as well; it leaves those undergoing extraction vulnerable in medical emergencies. Because good health is required of donors, those considering selling or donating eggs have typically not had to deal with or understand the health system before, nor have they developed the skills to successfully negotiate the multiple demands of being a patient, which can leave them vulnerable.[[37]](#endnote-37) One woman who had been hired to undergo egg extraction suffered a severe stroke in reaction to Lupron. Since her parents did not know she was undergoing the procedure, they were called in only after she was in the emergency room.[[38]](#endnote-38) Medical settings often require full disclosure to ensure proper diagnosis or treatments, especially in emergencies, and secrecy or unease around medical history heightens risk.

The framing of the system requires young women to provide the raw material for a highly profitable service. They are given untested drugs and not warned of a decades long history linking hormones to cancer. The industry represents an innocent process in the higher service of The Family (or more accurately, certain The Families). Potential donors are represented as individual enablers of that more global story and urged on the basis of ethics not to demand payment for their trouble and risks. How could we have gone so far wrong?

**More is Better**

In 1978, British physicians announced Louise Brown as the first test tube baby. Her mother did not take fertility drugs, nor was she aware at the time of the implant that the IVF process had not yet yielded a live birth. In this instance, the single egg usually produced in an ovulation cycle was removed from her body, fertilized in a lab, and implanted, and it is still, of course possible – if not efficient to the clinics – to do this.[[39]](#endnote-39) [[40]](#endnote-40) In the 1980s, doctors began injecting hormones to artificially increase the number of eggs produced in one cycle, enabling doctors to implant more than one egg at a time and increase the chance of pregnancy (as well as the chance of twins and triplets). Multiple egg harvesting also enabled the freezing of embryos, making possible several pregnancies from one round of super-ovulation; and finally, it facilitated older women getting pregnant with the eggs of younger women. In tandem with the rise in IVF, the number of women over 35 having children has increased by twelve-fold since 1970.

In the first phase of egg extraction, called hyper-stimulation, doctors give three potent hormonal drugs serially to encourage the development of extra eggs. The laproscopically harvested eggs then undergo fertilization in a Petri dish, and those that start the process of cell division become embryos.

The hormones regulate what happens “down there” by altering brain chemistry.[[41]](#endnote-41) Central to the functioning of the endocrine system, hormones enable cells to communicate, and they control growth, mood, and the messaging required for reproductive cycles. Fertility drugs purposefully disrupt the endocrine system to force it to produce extra egg follicles. Beyond that basic understanding, the precise mechanism of these drugs remains largely unknown.

The word hormone calls to mind a natural substance, but excess hormones can produce extreme effects. First, a gonadotropin-releasing hormone agonist (GnRHa, or Luteinizing-hormone-releasing hormone, LHRH) is self-administered daily for 1–2 weeks (yes, you give yourself a needle!), blocking pituitary function to create a temporary menopause that enables the physician to sync the donor's ovulation with the woman who will receive the embryo.[[42]](#endnote-42) Lupron, a drug initially approved in the palliative care of prostate cancer, is currently the prevalent choice of GnRHa despite a criminal investigation into its fraudulent marketing, the falsification of data, numerous settlements for price fixing, and findings of significant and irreversible effects.[[43]](#endnote-43)

Second, an injection of gonadotropin spurs the development of several egg follicles. These drugs may include Gonal/f, Perganol, and Clomid. Normally used to promote fertility in women who have a deficiency of the hormone, the overdose of gonadotropin in fertile women triggers the brain to develop of several egg-containing follicles.[[44]](#endnote-44) A third injection, this time of human chorionic gonadotropin, forces an extreme ovulation with the goal of producing several eggs at one time.[[45]](#endnote-45).

In one of the main stumbling blocks for both studying and regulating hormone use, the notably finicky drugs can have opposing effects at high and low doses: low doses of Lupron, “result in the ovaries producing estrogen or the testes producing testosterone; only after reaching a high dose is the drug’s desired effect, inhibition of estrogen or testosterone production, achieved.”[[46]](#endnote-46) Because of this effect, scientific methods that typically hypothesize effects based on assumptions about larger or smaller doses working in a linear, rather than opposing way, have muddied the data. Scientists’ use of experimental animals that have greater or less susceptibility to hormones than humans also skews results.[[47]](#endnote-47)

As is true with most supplements, including vitamins, just because hormones are produced by the body does not necessarily make them safe when ingested. A more “natural” state for women of reproductive age may well be one in which she is nearly constantly pregnant. In fact, not giving birth to children is one of the known risks for breast and ovarian cancer, since the hormones released during ovulation overload the hormone receptors in breast and ovarian tissues. Pregnancy gives a break of nine months per child to these overloads, and over the course of two to four decades, the breaks add up. In other words, without the breaks induced through pregnancy, the overloaded hormone receptors can create malignancies.[[48]](#endnote-48) Most pregnant women don't think of their pregnancy term as a break from anything except possibly menstruation and taking out the garbage, but the link is clear.

The link between hormones and hormone receptors also backs the recent finding that hormone replacement therapy (HRT) increases cancer risk by 6%. So many people went off the HRT in the last decade that many experts attribute the recent small decline in breast cancer mortality (from about 44,000/year to about 41,000/year) to the reduced use of HRT. HRTs were prescribed for decades to boost the hormone levels of menopausal women. Drug companies promoted HRT for maintaining a natural balance without regard for the natural hormonal changes in aging bodies. They were sold, without any evidence that they fulfilled such a promise, for reducing hot flashes and weight gain, as well as a cure-all for the symptoms of aging: decreased skin tone, muscle mass, bone density, and memory.[[49]](#endnote-49)

Fifty years after the treatment began, enough convincing evidence was found against the manufacturers of Pfizer (the company that purchased Wyeth, which had produced prempro hormone replacement treatments) that juries awarded millions of dollars in punitive damages to plaintiffs, indicating findings of reckless disregard for women’s health in selling the drug without warnings or adequate study. Since then, more than 9000 other women have sued Pfizer for their cancers.[[50]](#endnote-50) Some plaintiffs who allege their cancers were caused by HRT showed that Wyeth, the manufacturer of the drugs, knew the dangers of HRT well before the Women’s Health Initiative found that it caused increased rates of cancer, strokes and other health problems, while in other cases Pfizer has successfully argued that cancer has many causes.

The HRT case offers one strand in a complex story of the way synthetic hormones have been falsely marketed as natural substances. It also demonstrates how easily we assume that data are being collected and regulation is taking place as drugs become increasingly common and accepted. In fact, the opposite is often true. While numerous cases have found that Wyeth (now Pfizer) showed reckless disregard for the lives of those people taking its hormones, the creeping normalcy of certain procedures and drugs in the medical field still renders invisible whole swaths of questions about drug safety.

In another example of the ill-fated twentieth century use of hormone therapies, DES, (diethylstilbestrol) was given to women for several seemingly conflicting uses: to prevent miscarriages, suppress milk production, and as a morning after contraceptive in the 1950s and 1960s. Historian Susan Bell has found evidence from the 1940s citing reasons that DES would be harmful to pregnant women. Yet only decades later did the injury become evident: the *children* of those who took DES had high rates of cancer.[[51]](#endnote-51) The absolutely critical point in thinking about cancer as an injury cannot be overlooked here: *Only the rarity of the cancer types triggered further investigation*; had the DES-exposed babies suffered from common forms of cancer, the DES correlation would almost certainly never have been made. These cancers would merely have been absorbed into the statistics.[[52]](#endnote-52)

In other words, the nearly twelve-decade long correlation – but ultimately lack of research on the causal link between cancer and hormones -- hasn’t particularly influenced the medical administration of hormonal drugs. Endocrine disruptors are now ubiquitous in modern life, found in plastics, chemicals, and fertilizers (including PCBs, chlorine, BPA, atrazine, DDT, and various other plastics, several of which have been phased out in Europe and Canada due to their carcinogenicity)[[53]](#endnote-53) Even small additional exposures to hormonally active substances disrupt the calibrations of the endocrine system, which already vary enormously among individuals.[[54]](#endnote-54)

Oncologist Siddhartha Mukherjee notes that doctors have known since the 1960s that the estrogen and progesterone in HRT treatments act as pathological activators of breast cancer. He writes, “A more integrated approach to cancer prevention, incorporating the prior insights of cancer biology, might have predicted this cancer-inducing activity … and potentially saved the lives of thousands of women.”[[55]](#endnote-55) The market for ova offers a nearly perfect example of how there is no way to enforce, or even encourage, an increased organization of the fields of cancer biology, drug marketing, and medical (or medical-like) protocols. An injured patient cannot bring a legal suit for what the whole practice of medicine “should” have, or could have known, though she can sometimes bring a lawsuit against a drug manufacturer asserting that it should have known or disclosed the dangers of a particular drug.[[56]](#endnote-56) This has been demonstrated continually in the medical field. The years-long gap before blood was tested for HIV offers a similar example.

As with any critique of large institutions, a delicate balance of power, money, class, and influence affects who gets to speak, and who gets heard. With the insurance coverage of some states, and some clinics offering loans (with rates of upwards of 25% interest) the IVF industry offers a financial mainstay to many hospitals and clinics, and big money combined with doctors and researchers nearly always brings multiple conflicts of interest. Even the parameters defining infertility have changed in the last few years, down from a diagnosis after two years of trying to become pregnant to a standard recommendation of a visit to a clinic after six months. The economics offers an obvious answer to the question Mukherjee does not broach (*why* is there no such integration) and it may well be the sole reason. However, other stories coincide with the blind eye.

**Terminated Discussion**

Enter, for example, the rights of the fetus. A social anxiety about the relationships among birth control, IVF, and abortion has itself aborted the discussion about the status of embryos and fetuses, including their right to uncompromised health by limiting multiple embryo implantations. A full discussion of this mix would take entire libraries to address, but noting the peculiar alliance amid these interests shows the complicated vectors of silence around cancer and hormones in IVF and the non-regulation of the industry.

The earliest attempts at IVF took place in New York and the United Kingdom in the aftermath of the 1973 US Supreme Court decision on abortion. In *Roe v. Wade*, the court weighed the government’s two competing interests of protecting a mother’s health and also protecting a potential human life. Based on the 19th amendment's right to privacy, the court ruled that a woman can terminate an early pregnancy in harmony with her own beliefs on the mystery of life. States maintain the authority to limit abortions as fetuses become more viable later in a pregnancy. The court walked a fine line traced through a history of non-governmental involvement in reproduction – particularly in not funding or legislating birth-control--and lawyers still debate the logic of their arguments.

IVF also falls under the penumbra of reproductive rights. Pro-choicers therefore worry that discussion or regulation of IVF (based in concern for future children’s health) will lead down a slippery slope and set a precedent valuing fetal rights to life over a women’s right to reproductive choice. In this view, any public debate on IVF practices will reopen the uneasy questions around abortion. Logically, if regulation of embryo implantation implies that embryos have a life, and should not be killed, these fetal rights would also apply to abortion, which should then be banned. By this argument, pro-choice logic leads to a silently non-regulated IVF. Similarly, a consistent pro-life position requires either that IVF be banned, or at the very least that no freezing or destruction of embryos – a seemingly unavoidable aspect of IVF – take place. Both positions have anxiety about these implications, which leads to a "don't talk about it" climate.

Although the IVF industry has been going strong for over three decades, there have never been widespread public policy discussions about IVF as there have been on abortion. There is one pretty simple reason for this: the economic power of both the industry and the people who undergo the procedures. The average woman undergoing IVF is white, married, in the top 10% income bracket, educated, and 36 years old, undertaking a now highly visible, acceptable, and widely advertised procedure. On the other hand, the majority of abortions are undertaken by unmarried women of color, under 25 years old in a highly controversial procedure.[[57]](#endnote-57) Abortion offers an easier target for those on either side of Roe v. Wade. A deeper troubling aspect is that the gene pool represented by IVF participants is at face value the one a nation would want to reproduce (if only genes were all that mattered!) If economic prosperity and socio-economic heterogeneity is the goal of a capitalistic society, then replicating a rich, educated, married white person looks pretty appealing. (It doesn't take long probing cancer's underbelly to note the metastasis of some diseased social assumptions.)

 A second masked issue is that IVFers and pro-lifers ally around the reproductive project.[[58]](#endnote-58) Historically, pro-life arguments have been based less on arguments for increased governmental regulation into peoples’ personal lives than on ideals of gender roles and family prescribing that young women should get married and become primary care-takers of children. Demographically, pro-choicers tend to be more educated, and education often requires women to defer giving birth, or at least to appreciate the possibility of deferring it (by birth control or abortion). While the Catholic Church has stood firmly against IVF, Evangelical Christians have remained agnostic on the issue. In that sense, pro-non-regulated-IVF and pro-life share a primary interest in enabling procreation.[[59]](#endnote-59)[[60]](#endnote-60)[[61]](#endnote-61) [[62]](#endnote-62) These reproductive ideologies roll future children and Ideal Families into assumptions about health, through claims, for example, that health insurance should pay for reproductive technologies (but not for abortion, as shown in the recent debate on health care reform). Some fifteen states require that insurers provide coverage for infertility, despite mixed research on whether having children actually improves peoples’ happiness, life-satisfaction, and mental wellbeing.[[63]](#endnote-63)

**Reading the Data**

A recent report offers an illustration of how easily the lack of data can be manipulated to sound as though no correlation exists between hormones and cancer. In 2006 the California Institute for Regenerative Medicine initiated a $3 billion program to fund stem cell research; the main source of stem cells would be oocytes extracted from young women. The Institute convened a committee through the Institute of Medicine and the National Research Council to simultaneously examine the risks oocyte donation.[[64]](#endnote-64) Though they admit that no knowledge on the long term effects of IVF exists, the NRC nevertheless concluded: “The evidence to date… does not support a relationship between fertility drugs and an increased prevalence of breast or ovarian cancer.”[[65]](#endnote-65) The reports cites a *lack* of evidence as evidence of *no* danger, rather than highlighting that no data exists on the long term effects of IVF drugs on young, fertile women.

The scant research that has been done on fertility hormones and cancer has tracked infertile women, both those who became pregnant with IVF and those who did not. [[66]](#endnote-66) Infertile women present a completely different population than donors; they tend to be women ten, twenty, not uncommonly thirty years older, often peri-menopausal; they already have age or life-related hormonal imbalances that young egg donors do not. Generally, meta-studies agree that the first wave of research found an increase in cancers among those who took fertility drugs, followed by a wave of research that found no significant difference, followed by a recent wave that finds very significant differences. In most studies, the subject numbers are small, the follow-up times are short, the range of cancers studied is too narrow, the doses and types of drugs quickly change, and the studies provide no information on the effects of the drugs on donors.[[67]](#endnote-67)

One of the very few longitudinal studies tracking infertile women who had ovarian induction treatments found some dire results. The 2009 study tracked 15,030 women who gave birth in 1974-76, and found that women who did not get pregnant within 12 months after the treatment had double the risk of cancer when compared to untreated women. Furthermore, the median age at cancer diagnosis was 49.4, very significantly under the median age of the average population. The study includes women who took the ovulation-inducing agent clomiphine citrate (Clomid, on which long term animal studies have not been completed), and does not include more aggressive treatments developed in the 1980s.[[68]](#endnote-68)

The authors of the study conclude that treatment exposure without subsequent pregnancy raises the risk of a variety of cancers, including uterine cancer, breast cancer, malignant melanoma, and non-Hodgkin’s lymphoma. This makes sense when we consider the increased risk caused by hormonal exposure that is not offset by the
"pregnancy break." They further point out that the few small trials have been inadequate to study cancer incidence.[[69]](#endnote-69) An adequate study of the cancer risk from hormone exposure would take a registry of thousands of women, which the reproductive industry has actively opposed, and which the desire for anonymity further complicates. And then there's the money barrier: it’s not clear who would fund a study.

Clearly, a definitive answer would require more research. A 1994 study, again of infertile women who took the ovulation-stimulating drug clomiphine citrate for more than a year, showed that they had over double the risk of developing invasive ovarian tumors compared with the general population.[[70]](#endnote-70) A 2008 study found an association between IVF therapy and breast cancer, advising further study.[[71]](#endnote-71) A 2011 Dutch study, the first to add a control group of non-infertile women, found that fertility treatments double the rate of ovarian tumors.[[72]](#endnote-72)

The link between hormone exposure for reproduction and cancer incidence seems utterly undeniable at this point, but full consensus in the medical community is rare. Debate over the 1994 study brewed in the subsequent issue of the *New England Journal of Medicine*, demonstrate the critical differences among physicians about what constitutes adequate evidence. Several of the letters, citing details in method, dismissed the correlation out of hand, advocating for the continued use of the drug even without counter-evidence of its safety.[[73]](#endnote-73) One letter turned to anecdotal clinical evidence, citing a three-fold increase in invasive ovarian cancer rates for patients who have taken fertility drugs, in a control group of 1100. The authors of that letter conclude that regardless of the details of the data used and small control groups, legitimate grounds for concern exist about the potentially increased rates of ovarian cancer.[[74]](#endnote-74)

In lieu of large randomized control trials, some medical studies focus on case-by-case clinical reports. Two British doctors, Ahuja and Simons, collected 60 such reports made in UK medical literature between 1992-1997 regarding a variety of fatal and life-threatening cancers that followed within a few years of ovarian stimulation. The authors note the difficulty in systematically correlating these incidents to causation given a variety of factors including the more potent stimulation drugs now used, the difficulty of tracking those who have undergone ovarian stimulation, and the requirement of physician interest in making the correlations, writing them up, and publishing them.[[75]](#endnote-75) Because of the lack of a registry or any follow-up, cases of cancer following fertility treatment, when they turn up at all, appear most often in clinical case reports, blogs, documentaries, and magazine articles, venues that make the incidents easy to dismiss as individual and anecdotal, albeit tragic, cases. Although the lag time of cancer makes it difficult to attribute cause, nevertheless, single adverse outcomes have led, in the past, to the discontinued use of experimental drugs. In the face of negligible research or commitment from the medical industry, informal testimonies in the public sphere may be the only way to turn the tide from silence to disclosure.

The Ahuja and Simons report offers a key document in this debate, because these reproductive physicians uncovered the colon cancer and subsequent death of a 39-year-old British woman who had undergone oocyte extraction for her sister at the age of 33. The IVF file had been closed as a successful procedure after the birth of a baby girl. Five years later the clinic made contact with the sister regarding the status of frozen embryos, and learned then of the donor's death. This is exactly the kind of information that formal tracking procedures would bring to light. Upon researching that case study and others, these doctors concluded that such links should not be ignored.[[76]](#endnote-76) Ahuja has since become active in the UK in advocating for embryo donation, cutting down the need for new rounds of fertility treatments.

Even one of the studies most often cited as evidence for no-increased cancer risk with IVF actually concludes that: “Given the recent marketing of fertility drugs and the fact that exposed women are only beginning to reach the cancer age range, *further follow-up is necessary* [italics mine].”[[77]](#endnote-77) The author of this study, Dr. L. Brinton, told me about the virtual impossibility of tracking egg donors to find out the long term risks, given that such a study would cost millions of dollars, though a relatively small cost compared to industry profits. With no central registry, making these correlations would require intricate tracking, including finding the DMV records of donors, figuring out names changed after marriage, and comparing these to cancer registry data.[[78]](#endnote-78)

Even if a study or registry were to start now, it would take 30 to 40 years to collect adequate data, by which time the drugs will surely have changed. Tracking data using population aggregate, as has been done to track the efficacy of population-wide cancer screening, will not work, given the low numbers of donors compared to the high numbers of cancers, with the cancers possibly spread among at least four or five types.[[79]](#endnote-79) Until this issue gains more traction, we are stuck hoping that our future families will have more palatable fertility options. As I've frequently noted, however, if hope is our strongest weapon against cancer, the party is over.

Conclusion

The Hippocratic Oath begs the medical profession first to "do no harm." The document mentions treating sick people several times, but never treating well people. The Oath provides an ethical bedrock of medical practice, but remains problematic for any procedure that requires a medical exchange between a healthy person and a sick person. Organ donation shares this predicament. Anthropologists have written extensively on the unknown long-term health consequences for organ donors. Medical anthropologist Sharon Kaufman has written on the multiple pressures imposed by self and family on younger relatives to donate organs within kinship networks. This practice puts families in the excruciating position of having to trade risks that a younger healthier family can take--or perhaps choose who among more than one potential donor should take those risks--against the possibility that an aging parent or relative may gain a small increase in lifespan. Complicated issues of gifting and marketing, caretaking, familial economics and inheritance, gender, and family relationship history all take their toll in these sometimes heartbreaking decision-making processes.

IVF differs slightly because the FDA regulates oocytes not as organs but as human tissues, encouraging the idea that embryos are merely clumps of cells rather than personally invested beings or items produced with significant effort and technological infrastructures that may one day become people. Still, the egg market mimics the organ market in that, typically, older people covet the tissues of younger people (age-related fertility accounts for some 80% of IVF cases, and a not insignificant proportion of the others are required as the corrective to earlier surgeries and drugs for cancer and other illnesses). [[80]](#endnote-80)

In that sense, IVF relies on – one might even say, requires -- structural inequities among the generations as well as the material differences in the bodies of younger and older people. A recent book aimed toward middle school students (*yes, children)* touted egg donation as a way to pay for college.[[81]](#endnote-81) Ironically, it is precisely these increasing educational expenses that lead some women to wait until their mid-30s and 40s to have children, so they have time to pay off what they owe and save for their children’s future debts. (In addition, but for another article, the industry has been equally as slow to consider the health of its other main non-clients, the babies it is in the business of producing, who are often born prematurely.[[82]](#endnote-82))

Many assumptions huddle under the umbrella of reproduction: that reproduction is natural; that benevolent science can help; that medical doctors guided primarily by the interests of health perform the procedure; that eggs should be free or cheap; that hormones are natural and therefore not dangerous; that reproduction is a social, and therefore, a medical right; that unborn children do not yet have rights (to know their genetic parents, to not be put at risk for prematurity, or other health risks).

This cluster of even contradictory ideas can sometimes crowd out not only active debate about each of these complex points, but also of an astonishing fact: neither clinics nor government in the United States track the main players in IVF -- the genetic parents, the birth parents, nor the babies. Though couched in the terms of the wellbeing of families, there is no question that IVF really is a barely regulated, billion dollar market.[[83]](#endnote-83) Unlike any comparable commodities-based system (stock market, futures, meat production), this one exists without the usual protections against injury (tort, malpractice) or the expected guarantee of the product or contract's quality. While there are a very few cases in court over egregious errors in IVF, it is difficult to sue for a poorly designed product when that product is your baby. Furthermore, the messy notions of health, family, children, medicine, and age come bogged down with histories of drugs, choice, and markets. These take place in an economic structure downright unfriendly to the health and education of actual, existing children.

These details of IVF, embodying the spectacular promise of science and technology and the extremes of marketing and profit-based medicine, combined with the political instabilities of reproduction and what rights fetuses and children have, make IVF one of the perfect contemporary case studies in understanding the way cancer slips through virtually every means we have of making injuries visible, tracking them, compensating for them, and easing the substantial burden of future injuries.

Jennifer Schneider found in her research, “once a young woman walks out of an IVF clinic, she is of no interest to anyone…. In fact, the people who benefit from egg donations – IVF clinics and researchers, have every reason to avoid follow-up of egg donors and studies of their possible long-term risks.” Jennifer Schneider, M.D. “It’s Time for an Egg Donor Registry and Long-term Follow-up,” Testimony at Congressional briefing, November 14th, 2007, http://www.geneticsandsociety.org/article.php?id=3820

1. For a history of this story, see environmental historian Nancy Langston’s *Toxic Bodies*, Yale UP. [↑](#endnote-ref-1)
2. <http://www.cdc.gov/art/> (accessed March 12, 2011). [↑](#endnote-ref-2)
3. Family Issue Factsheet, No, 2010-03 (March 2010), SB 1306/HB 2651 – Human Egg Provider Protection Act, Center for Arizona Policy. [↑](#endnote-ref-3)
4. In 2008, 18,121 births, nearly half of all IVF births, involved donated eggs. [↑](#endnote-ref-4)
5. One study found that only 2.8% of donors interviewed had been contacted by the clinic after their donation. [↑](#endnote-ref-5)
6. Victoria Uroz, and Lucia Guerra, “Donation of Eggs in Assisted Reproduction and Informed Consent,” Medicine and Law, 2009 28: 565-575 and Jennifer Schneider, M.D. “It’s Time for an Egg Donor Registry and Long-term Follow-up,” Testimony at Congressional briefing. See also, Francine Coeytaux, MPH Testimony on Egg Retrieval to California Senate Committee, Joint Oversight Hearing on the Implementation of Proposition 71, the Stem Cell Research and Cures Act (March 9th, 2005).

November 14th, 2007, http://www.geneticsandsociety.org/article.php?id=3820 [↑](#endnote-ref-6)
7. Helen Pearson, “Special Report Health effects of egg donation may take decades to emerge,” *Nature* 442, 607-608 (10 August 2006). [↑](#endnote-ref-7)
8. Louise K. Stewart et al. “In Vitro Fertilization and Breast Cancer: Is there Cause for Worry? *Fertility and Sterility*, forthcoming. [↑](#endnote-ref-8)
9. Andrew M. Seaman“IVF in young women tied to later breast cancer,” Jun 23, 2012**.** (These last words in the article were quoted from Dr. Linda Giudice, president-elect of the American Society of Reproductive Medicine. [↑](#endnote-ref-9)
10. “Pharmaceutical firms have not been required by either government or physicians to collect safety data for IVF drugs regarding risk of cancer or other serious health conditions, despite the drugs having been available in the United States for several decades.” Dr. Parisian's February 2005 memo now posted at [www.ourbodiesourselves.org](http://www.ourbodiesourselves.org) [former Chief Medical Officer of the FDA, Dr. Suzanne Parisian]. “Essentially, a whole industry has arisen and flourished now for over a decade with few of the regulatory oversights we have come to expect of medical practice in the United States.” Parisian, <http://www.geneticsandsociety.org/article.php?id=180>. Even the most clear and presumably easy to regulate practice, that of implanting multiple embryos that result in multiple births, is not regulated, despite the extraordinary risks and disabilities suffered by prematurely born children, and the dramatic increase in the incidence of prematurity among older women and multiple births, is not regulated. [↑](#endnote-ref-10)
11. Studies find that many clinics do not follow even the few unenforceable guidelines laid out by the ASRM. Aaron Levine, “Self-Regulation, Compensation, and the Ethical Recruitment of Oocyte donors,” *Hastings Center Report*, March –April 2010 pp. 25-36. Based on advertisements to potential egg sources, Levine finds the compensation to range between $3000 and $50,000, and factors in appearance; ethnicity; use of an agency, clinic, or hospital; demand; and SAT score. A 1992 law that mandates reporting of fertility clinic “success rates” i.e. live births, does not report compensation, restrict donation or compensation, or mandate medical practices, (Fertility Clinic Success Rate and Certification Act). <http://www.asrm.org/about/> (accessed July 17, 2011). [↑](#endnote-ref-11)
12. In one of the very few instances where the FDA has been involved with IVF, in 1992 it recommended against (but didn’t disallow) the use of a cell-line created from African Green Monkey epithelial cells that had been used to culture human embryos. The FDA warned that this xeno-transplantation could result in cross-species infection of the sort that is believed to have caused HIV/AIDS “Of public health concern is the potential for cross-species infection by retroviruses, which may be latent and lead to disease years after infection. Moreover, new infectious agents may not be readily identifiable with current techniques.”

(<http://www.fda.gov/BiologicsBloodVaccines/Xenotransplantation/default.htm>) In 2009 the FDA recommended against using embryos co-cultured with non-human animal cells, and would allow it only by permission. The FDA recommended that mothers and babies of embryos co-cultured with in the Vera cell line be closely followed, since some viruses may remain dormant for years. Embryos had been found to be more robust when co-cultured using the Vera cell line, made from African Green Monkey epithelial cells, or other animal-derived cell lines or body parts. The FDA wrote: “co-culture of human embryos with nonhuman animal cells raises health concerns for the recipients of such embryos, the offspring resulting from such embryos, and the general public” and that “FDA plans to enforce investigational new drug application (IND) requirements for investigations involving further production of embryos co-cultured with live nonhuman animal cells. [A. Veiga et al, “Use of co-culture in Human Embryos on Vero cells to improve clinical implantation rate,” *Human Reproduction* 14 (Suppl. 2) pp. 112-120, 1999] However, currently it is not our intent to take enforcement action based on the transfer of already existing embryos created by co-culture with live nonhuman animal cells.” (“Information and Recommendations for Physicians Involved in the Co-Culture of Human Embryos with Non-Human Animal Cells” available at: <http://www.fda.gov/BiologicsBloodVaccines/Xenotransplantation/ucm136532.htm>).

Rebecca Skloot reports on the use of cow uterus to grow human embryos, “Sally has 2 Mommies and 1 Daddy,” Popular Science, [http://www.popsci.com/popsci/medicine/article/0,12543,411770,00,html](http://www.popsci.com/popsci/medicine/article/0%2C12543%2C411770%2C00%2Chtml)

See also RF Skloot, “The Other Baby Experiement,” *NYT* Feb 22, 2003. [↑](#endnote-ref-12)
13. Cost per live birth, $56,000 in 2001 (<http://www.nature.com/fertility/content/full/ncb-nm-fertilitys29.html>) -- (including high costs of the multiple births resulting from multiple egg implants). [↑](#endnote-ref-13)
14. The probabilities logic is also reflected in some IVF loan programs. Prospective parents can borrow and pay $120,000 for six cycles of treatment. If a woman gets pregnant on the first procedure they get nothing back, however if she doesn’t get pregnant after six attmepts, she will get 20% of her money back (minus 20% interest). [↑](#endnote-ref-14)
15. 42.9% for women under 35 to only 10.9% for women over 42, live birth success rates nearly double with frozen oocytes, to 26.2%. Use a “fresh oocyte donation,” and your chances leap to 51.6%. <http://www.pacificfertilitycenter.com/welcome/rates.php> (accessed March 22, 2011). [↑](#endnote-ref-15)
16. <https://www.eggdonor.com/?section=donor&page=process&gclid=CPe__-fRg6gCFUgaQgodvwhiqA> (accessed April 4, 2011) [↑](#endnote-ref-16)
17. <http://www.eggdonation.com/index.php> (accessed April 4, 2011) [↑](#endnote-ref-17)
18. <http://www.eggdonation.com/index.php> (accessed April 4, 2011) [↑](#endnote-ref-18)
19. (http://www.thedonorsource.com/faq.htm) [↑](#endnote-ref-19)
20. The “Donor Source” website’s FAQs claims that the risks of ovarian hyper stimulation syndrome (OHSS) occur in 1-3% of procedures. Though the difference between 1% and 3% leaves a whopping 300% margin of error, it still under-estimates the available data by a significant margin, elides the lack of data on this point, and neglects to mention that the syndrome is on a continuum, with the 1-3% representing the most extreme, dangerous responses to the drugs. OHSS “carries an increased risk of clotting disorders, kidney damage, and ovarian twisting. Ovarian stimulation in general has been associated with serious life threatening pulmonary conditions … including thromboembolic events, pulmonary embolism, pulmonary infarction, cerebral vascular accident (stroke) and arterial occlusion with loss of a limb and death.” (Dr. Parisian's February 2005 memo now posted at www.ourbodiesourselves.org) In recent data, a New York study of 587 women undergoing extraction and nearly a thousand cycles, finds complications severe enough to prompt women to seek medical attention in 8.5% of the cycles. (Maxwell KN, Cholst IN, Rosenwaks Z. “The incidence of both serious and minor complications in young women undergoing oocyte donation.” [Fertil Steril](http://www.fertstert.org/article/S0015-0282%2807%2903951-9/abstract%22%20%5Ct%20%22_blank). 2008 Dec; 90(6):2165-2171. Epub 2008 Feb 4. Delvigne, Annick and Rozenberg, Serge. “Epidemiology and prevention of ovarian hyperstimulation syndrome (OHSS): a review” Human Reproduction Update, vol. 8, no. 6, 2002, pp 559-577.) Other studies find higher rates. In a paper prepared for the Bioethics Advisory Committee as background information on oocyte donation for research, Ng Soon Chye reported that OHSS occurs as a common side effect in up to 20-30% of ART patients, and the moderate form of the syndrome, which is of major concern, occurs in 1-10% of such patients. Nothing in any recruitment website I have found mentions the lack of long-term research data or follow-up. (http://www.thedonorsource.com/faq.htm) Studies find that consent forms systematically mislead women selling eggs, where short term studies are cited as proof of the safety of egg donation, side-effects are consistently down-played, and the lack of long term data are portrayed as if the long term hazards were non-existent, rather than completely unknown. (Sauer, Mark. 2001. Defining the incidence of serious complications experienced by oocyte donors: A review of 1000 cases. *American Journal of Obstetrics and Gynecology* 184: 277-278. and “Eggsploitation: the infertility industry has a dirty little secret,” a film by the Center for Bioethics and Culture, (Lines that Divide, 2009) Dir. Jennifer Lahl.) One study found that 34% of former egg donors didn't recall being aware at the time of donation of the risk of OHSS, though the majority reported experiencing mild or moderate forms of the syndrome. Twenty percent of the 80 donors interviewed said that they didn’t know that there were any risks at all of the hormonal drugs and egg retrieval. (Fertility and Sterility in November 2008.) Of course, just because people don’t remember something doesn’t mean they weren’t told. I’ve attempted on several occasions to attain a copy of the informed consent that I signed, and like many other women, have been sent other documents, but not that one. [↑](#endnote-ref-20)
21. Gaylene Becker, *Elusive Embryo*, University of California Press, 2000 p. 154 [↑](#endnote-ref-21)
22. The field of epigenetics finds increasingly that what scientists took to be individual genetic expression immune to environmental factors over generations, has in fact resulted from a complex interplay of genetic development and environment. Environmental factors such as chemical exposures from tobacco to plastics and radiation, food resources from famine to over-indulgence, and social networks such as familial affection, alter not just an individuals chance of disease and well-being, but genetic messaging for generations. (Humans are becoming taller over generations because of better nutrition, and the grandchildren of mice that are licked by their mothers release fewer stress hormones even when they themselves are not licked, to name just two findings of epigeneticists). Thus, personal traits thought to be linked to genetic well-being, for example, physical appearance and disease history -- so carefully vetted through oocyte and sperm selection -- may be completely misled. [↑](#endnote-ref-22)
23. The median age of egg donors is 28.7, so older couples will be looking at young women. (LR Shover et al., “The Personality and Motivation of Semen Donors: A Comparison with Oocyte Donors,” 1992, 7(4) *Hum. Reprod*. 575-576. P. 575. The study involved psychological evaluation of 17 sperm and 45 oocyte donors.) Indeed, some ads do remind one of personals: “'Desperately Seeking Smart, Sensitive, Sunny Samaritan. We are [Yale] alumni looking for a donor match: A lovely light-eyed lady with a quick, sharp laugh. Wit and warmth a must.'' Cited in: Joseph Berger, “Our Towns; Yale Gene Pool Seen as Route to Better Baby,” *New York Times*, January 10, 1999. [↑](#endnote-ref-23)
24. Ironically, by trying so hard to evade the eugenics question through the language of donorship, we may be creating exactly the opposite. The field of epigenetics finds increasingly that what scientists took to be individual genetic expression immune to environmental factors over generations, has in fact resulted from a complex interplay of genetic development and environment. Environmental factors such as chemical exposures from tobacco to plastics and radiation, food resources from famine to over-indulgence, and social networks such as familial affection, alter not just an individuals chance of disease and well-being, but genetic messaging for generations. (Humans are becoming taller over generations because of better nutrition, and the grandchildren of mice that are licked by their mothers release fewer stress hormones even when they themselves are not licked, to name just two findings of epigeneticists). [See Hannah Landecker, “Food is Licking is Plastic: The Social As Signal in Environmental Epigenetics”, in which she explains the epigenetic model and teases out some of its many consequences. And “Food as Exposure: Nutritional Epigenetics and the Molecular Politics of Eating,” CSW Update, May 2010 pp 18-26. ] Thus, personal traits thought to be linked to an unchanging, heritable genetic pattern, so carefully vetted through oocyte and sperm selection, may be completely misled. Add this to the use of sex selection, the increasing evidence of high rates of disabilities among IVF children, the significantly lower methylation rates (the process that switches genes on and off) in utero among IVF fetuses, and the sheer number of IVF babies, and we may be working with eugenics-in-reverse. [↑](#endnote-ref-24)
25. Pacific Fertility Center (<http://www.donateyoureggs.com/egg_donor_testimony.php>) accessed April 4, 2011. [↑](#endnote-ref-25)
26. Pacific Fertility Center (<http://www.donateyoureggs.com/egg_donor_testimony.php>) accessed April 4, 2011. [↑](#endnote-ref-26)
27. Gametes precisely *are* commodities, even if we don’t want to think of children as commodities. They have the kind of mobility that typically defines commodities, and they also, albeit with short questionaires describe favorite animal and similar looking movie-star, more or less interchangeable, mass produced, and made with low-wage labor. Children, on the other hand, are for the most part stuck with their parents. Once explicitely productive members of the family farm, business, or home, their position is now as much an expression of normativity and an archytpal definitive model for unselfish love. [↑](#endnote-ref-27)
28. Ethics Committee of the American Society for Reproductive Medicine, “Financial Compensation of Oocyte Donors.” <http://www.asrm.org/uploadedFiles/ASRM_Content/News_and_Publications/Ethics_Committee_Reports_and_Statements/financial_incentives.pdf> 2007. [↑](#endnote-ref-28)
29. Ethics Committee of the American Society for Reproductive Medicine, “Financial Compensation of Oocyte Donors.” <http://www.asrm.org/uploadedFiles/ASRM_Content/News_and_Publications/Ethics_Committee_Reports_and_Statements/financial_incentives.pdf> 2007. [↑](#endnote-ref-29)
30. Aaron Levine, “Self-Regulation, Compensation, and the Ethical Recruitment of Oocyte donors,” *Hastings Center Report*, March –April 2010 pp. 25-36. Sometimes, people fly across the country to take IQ tests and to interview for the job. For example: on payment for egg donation: Bonnie Steinbock, “Payment for Egg Donation and Surrogacy,” *The Mount Sinai Journal of Medicine*, 71(4) Sept 2004, 255-265. It’s impossible to gather information on average or usual payments for oocytes. Steinbock concludes that “Donors should not be paid for their eggs, but rather should be compensated for the burdens of egg retrieval.” (255) Kenneth Baum, “Golden Eggs: Towards the Rational Regulation of Oocyte Donation,” *Brigham Young Univeristy Law Review*, 2001. [↑](#endnote-ref-30)
31. Jennifer Schneider puts it this way: “The problem with this approach is that it creates the myth of providing an ethical framework for the practice; yet the price setting for donating eggs is not equivalent to providing guidance for risk taking.” [↑](#endnote-ref-31)
32. Ernlé Young, director of the Center for Biomedical Ethics at Stanford. Quoted in Joan Hamilton, “What are the Costs,” *Stanford Magazine*, Nov/Dec 2000. [↑](#endnote-ref-32)
33. No bright line separates reimbursement for the product of one’s labor and the origin of one’s labor; work by definition requires lending of one’s time, energy, and body in exchange for some reimbursement. What difference does it make if that energy is expended on the courtroom floor, in a factory assembly line, or at the clinic? The framing of payment for a body part in opposition to reimbursement for the service maintains a false divide between the pay for one’s services (spending time at the clinic, taking the drugs, undergoing surgery), and the actual thing that is being extracted and exchanged: the egg. The National Organ Transplant Act (NOTA) specifies the illegality of buying or selling organs for profit. [↑](#endnote-ref-33)
34. One recent article suggests that because the reproductive industry artificially decreases the price of eggs through such recommendations, the industry should come under the rubric of anti-trust laws, and at least one law firm has initiated such litigation. Kimberly Krawiec, “Sunny Samaritans and Egomaniacs: Price-Fixing in the Gamete Market,” *Law and Contemporary Problems*, 72:59 summer 2009, pp. 59-90. [↑](#endnote-ref-34)
35. See for example, Peggy Orenstein, “Your Gamete, Myself,” *NYT Magazine*, July 15, 2007 pp. 34-41, 68 & 53. The article is entirely from the perspective of the users of oocytes from other women. [↑](#endnote-ref-35)
36. About 4 years ago the SARM held a conference in Chicago to consider the potential adverse consequences of starting an industry-wide registry by IVF clinics. Ultimately they decided to create an ad hoc committee to investigate this process, based on the idea that recipients unhappy w lack on anonymity, it would result in fewer donors, that it would be expensive to set up a registry that would protect anonymity and thus increase the cost of the procedure. Interview with Dr. Jennifer Schneider, May, 2011. The physician Jennifer Schneider, whose daughter died of colon cancer shortly after going through three cycles of hormone treatments for egg extraction, attempted to inform the clinic of the potential cancer risks to the children involved. She writes: “After Jessica’s death I learned the name of her egg broker and phoned her. I told her Jessica had died of a potentially genetic disease and the broker needed to tell the recipients of Jessica’s eggs about this, because their child/children will need to be tested. The broker told me that she only keeps records for a few years, and had already destroyed all records pertaining to Jessica, so that the broker no longer had information about who were the recipients.” Jennifer Schneider, M.D., “It’s Time for an Egg Donor Registry and Long-term Follow-up,” Testimony at Congressional briefing, November 14th, 2007, (<http://www.geneticsandsociety.org/article.php?id=3820>). [↑](#endnote-ref-36)
37. Young women “are unlikely to understand the huge difference between the statements ‘There are no known long-term risks,’ and ‘There are no long-term risks.’” Jennifer Schneider, M.D. “It’s Time for an Egg Donor Registry and Long-term Follow-up,” Testimony at Congressional briefing.

November 14th, 2007, http://www.geneticsandsociety.org/article.php?id=3820 [↑](#endnote-ref-37)
38. With over $100,000 in medical bills that she was responsible for, she was given only a “dropped cycle” fee of $650. [Joan Hamilton, “What are the Costs?” Stanford Magazine]. For these reasons, woman’s health advocate Francine Coeytaux recommended, in her Testimony on Egg Retrieval to California Senate Committee that took place to debate the retrieval of eggs for stem cell research, that each woman should have her own doctor whose “only job is to look out for the well-being of the woman.” Francine Coeytaux, MPH, Testimony on Egg Retrieval to California Senate Committee Joint Oversight Hearing on the Implementation of Proposition 71, the Stem Cell Research and Cures Act by March 9th, 2005. [available at: <http://www.geneticsandsociety.org/article.php?id=180>). [↑](#endnote-ref-38)
39. Robert Edwards, one of the scientists who developed the procedure first with mice and then with Ms. Brown, was awarded the Nobel Prize in 2010 for his work on IVF. [↑](#endnote-ref-39)
40. RC Edwards, “IVF, IVM, natural cycle IVF, minimal stimulation IVF – time for a rethink.” *Reproductive Medicine Online* 2007; 15: 106-19. [↑](#endnote-ref-40)
41. “GnRH analogs are not like any other medication currently available for treatment of disease. As we continue to learn more about these analogs’ mechanisms of action, it is increasingly apparent that they do not just affect the gonadal [sex] hormones, but are powerful modulators of automonic neural function.” JR Mathias and MH Clench, “Placebo Controlled Study Randomizing Leuprolide Acetate.” Digestive Diseases and Sciences, 40(6): 1405. [↑](#endnote-ref-41)
42. GnrH are “powerful modulators of autonomic neural function,” JR Mathias and MH Clench, “Placebo Controlled Study Randomizing Leuporlide Acetate,” *Digestive Diseases and Sciences*, June 1995, 40(6):1405. [↑](#endnote-ref-42)
43. Judy Norsigian, a women’s health advocate, writes that according to the Food and Drug Administration (FDA) Lupron has caused: “asthenia gravis hypophyseogenea (severe weakness due to loss of pituitary function), amnesia, hypertension, rapid heart rate, muscular pain, bone pain, abdominal pain, ... Although the FDA approved the drug for several specific uses, such as the treatment of endometriosis and fibroid-associated anemia, it has not approved Lupron for use in multiple egg extraction procedures — something that is not well understood by many women who undergo these procedures.” [Gründker C, Emons G (2004). "Role of gonadotropin-releasing hormone (GnRH) in ovarian cancer". *Reprod. Biol. Endocrinol*. 1: 65.] The package inserts for Lupron discuss the testing of the drug on men regarding to testosterone levels, but mention no testing on women. At the time that Lupron switched to being widely used, Andrew Friedman, the lead Lupron investigator, received numerous grants from Takeda Abbotts Pharmacueicals and was found guilty of falsifying 80% of the data in Lupron studies (Federal Register 1996). This falsified data has been since cited as credible reference data (7). NIH and OSHA place Lupron on its list of hazardous drugs, known teratogen (TH Shepard ed. *Catalogue of Teratogenic Agents*, 7th Ed, Johns Hopkins University Press, 1992 p. 233. Lupron’s original use was for palliative care in prostate cancer: when tested in original rat studies, all rats at all doses developed pituitory ademonams (tumors). Testimony of Lynne Millican, Before the Subcommittee of Science, Technology and Space, Committee on Cammerce, Science, and Transportation, United States Senate, March 27, 2003. [↑](#endnote-ref-43)
44. Delvigne, Annick and Rozenberg, Serge. “Epidemiology and prevention of ovarian hyperstimulation syndrome (OHSS): a review” *Human Reproduction Update*, vol. 8, no. 6, 2002, pp 559-577. [↑](#endnote-ref-44)
45. There is some debate as to what damage the insertion of the needle does to the embryo, as well as debate about the lack of selection of the sperm. Marc Kirschner et al, “Molecular Vitalism,” *Cell* 100 pp. 79-88, January 2, 2000. p. 86: “Part of the old misunderstanding of regulation, as even implied by the name, was the assumption that embryonic cells have a single path of development from a very early stage, and that regulation after surgery entails undoing that path and initiating another. Competence belies all this. The cells have a broad range of possibilities, all equally valid…” [↑](#endnote-ref-45)
46. John Peterson Myers, PhD, and Fred S. vom Saal, PhD, “Should public health standards for endocrine-disrupting compounds be based upon sixteenth century dogma or modern endocrinology?” *San Francisco Medical Society*. The cancer drug Tamoxifen, aimed at blocking estrogen receptors to defer or prevent a cancer recurrence, carries a similar effect, but it can sometimes activate tumor growth rather than cell death, and is a known cause of endometrial cancer, strokes, and deep vein thrombosis. [↑](#endnote-ref-46)
47. For a full explanation of the way different strains of mice have been politicized in this way, see Nancy Langston, *Toxic Bodies*, Yale UP. [↑](#endnote-ref-47)
48. As one radiologist told me, based on years of reading mamograms, the breast tissue of post-menopausal women who take hormones reacquires the density of younger women’s breasts because of the hormone receptors in the tissue. Interview with Dr. Fabienne C. March 10, 2012. [↑](#endnote-ref-48)
49. Collaborative Group on Hormone Factors in Breast Cancer. Breast cancer and hormonal contraceptives: collaborative reanalysis of individual data on 53297 women with breast cancer and 100 239 women without breast cancer for 54 epidemiological studies. Lancet 1996;347(9017): 1713-1727. [↑](#endnote-ref-49)
50. Prempro Settlement Reached in Lawsuit Over HRT Breast Cancer, Published: August 31st, 2010 (accessed March 15, 2011), <http://www.aboutlawsuits.com/prempro-settlement-reached-lawsuit-breast-cancer-12483/>. Elizabeth Watkins, *The Estrogen Elixir: A History of Hormone Replacement Therapy in America*. Baltimore and London: Johns Hopkins University Press, 2007. [↑](#endnote-ref-50)
51. Susan Bell, **DES Daughters, Embodied Knowledge, and the Transformation of Women's Health Politics in the Late Twentieth Century,**  [↑](#endnote-ref-51)
52. Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 163 Cal.Rptr. 132, 607 P.2d 924 (1980). In this decision, written by California Supreme Court Justce Mosk, is important in the history of product liability law. The court decided to distribute have the producers of DES pay the damage award based on market share, since the defendant could not prove which manufacturer produced the drug she took. The FDA authorized the use of DES in 1947 as a miscarriage preventative on an experimental basis. Manufacturers did not test the drug for efficacy and safety, and the drug was removed from the market for miscarriage prevention in 1971. DES was “produced from a common and mutually agreed upon formula… it was customary for doctors to prescribe the drug by its generic rather than its brand name.” [↑](#endnote-ref-52)
53. Patricia A. Hunt et al., “The Bisphenol A Experience: A Primer for the Analysis of Environmental Effects on Mammalian Reproduction,” *Biology of Reproduction* 81, 807-813 (2009). This article notes that 90% of governmental studies find that BPA exposure during fetal development increases the risk of prostate cancer for the male children (several times more studies than those with industry sponsors), whereas 0% of the industry studies find this correlation (in a study of articles published through December 2004.) p. 809. [↑](#endnote-ref-53)
54. Rebecca Jordan-Young. *Brain Storm: The Flaws in the Science of Sex Differences*. Cambridge, MA: Harvard University Press, 2010. [↑](#endnote-ref-54)
55. *Emperer of Maladies,* p . 456 [↑](#endnote-ref-55)
56. “According to a study by the European Society of Human Reproduction and Embryology,… direct costs of fertility treatment vary substantially between countries, but the U.S. stands out as notably more expensive than other countries. While the average price of IVF treatment in Japan was 3,149 Euros ($4,012) and Belgium’s 2,441 Euros ($3,109), the U.S. averaged 10,812 Euros ($13,775). The next highest nation on the list after the U.S. was Canada, with a substantially lower cost of 6,766 Euros ($8,740). On top of that, American facilities only met one quarter of the estimated demand for fertility treatment.” (Newsweek report, *The Human Reproduction Update*). [↑](#endnote-ref-56)
57. Abortion costs between $300 and $900. [↑](#endnote-ref-57)
58. Teenagers account for 19% of abortions, and women between twenty and twenty-four obtained 33%. Women of color are far more likely than white women to have an abortion: black women are almost four times more likely and Hispanic women two and a half times more likely.96 Fifty-seven percent of women who have abortions are economically disadvantaged. Two-thirds of all abortions are undergone by women who have never been married (although many of those women will later marry). In contrast, 54% of women undergoing some form of assisted reproductive technology (IVF and related procedures) in 2002 were over the age of thirty-five. (Guttmacher Inst., Facts In Brief: Induced Abortion In The United States (2006), http://www.guttmacher.org/pubs/fb\_induced\_abortion.html // Victoria Clay Wright, Nat’l Ctr. For Chronic Disease Prev. & Health Promotion, Assisted Reproductive Technology Surveillance—United States, 2002, at 6 (2005), available at http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5402a1.htm [↑](#endnote-ref-58)
59. “In contrast to women seeking abortions, people seeking IVF are fulfilling relatively traditional family roles. Although some will be lesbian and others will be single women, most are likely to be married, and they obviously have devoted a great many emotional and financial resources to the goal of having children.” … “The continued hostility toward abortion, even to the earliest form of possible abortion embodied in emergency contraception, coupled with the absence of attacks on IVF, can best be described as a relative indifference to the moral status of the embryo, but rather a great deal of hostility toward economic equality of women, sexual activity outside of marriage, and marriages that are not organized along traditional gender lines.” Dena S. Davis, J.D., Ph.D., “The Puzzle of IVF,” *Houston Journal of Health Law & Policy* pp. 275–297 275. [↑](#endnote-ref-59)
60. 1.2 million abortions in US / 150,000 IVF cycles per year (both are estimates since clear statistical gathering does not exist). [↑](#endnote-ref-60)
61. There are ways around the fetus-to-abort=fetus-to-be-future-person conflation. We could, for example, simply think of them as different kinds of object. How one treats anything varies based on the situation around it – in one scenario a pile of Deutchmarks will buy a house, in another it will provide kindling. In a world with a lot of kindling, it might be legal to throw it away, whereas one might have more attachment to the money that will buy a house, even if that requires some regulations, such as taxation. The pro-procreative stance of both anti-abortion activists and those in favor of unregulated IVF stand in an alliance that remains under acknowledged in a debate that often descends into ad hominem attacks. A more complex idea of how categorizations of unborn children fit into ideologies of procreation, would be helpful. There is no logical reason that a right to privacy and abortion should prevent future children, *who are wanted*, and their parents, who are paying extreme amounts of money for them, from having rights to known and avoidable harms, such as multiple births, genetic testing, or the longterm risks of fertility drugs. There is, furthermore, no reason that IVF, which accounts for nearly 1 per cent of all health care costs (unlike abortion), should not be an issue of public policy concern. [↑](#endnote-ref-61)
62. The idea of bearing children early and often of the Catholic Church is probably one that would lower cancer risk. A woman who starts menstruating at 15 and has 8 children and breast-feeds each for 18 months, will have 216 fewer ovulation cycles, with the bursts of hormones they entail, than a woman who has no children. To be sure, childbirth has always come with its own risks. There is no “natural” body to which hormones are given; we are already in a complex of natural and chemical hormones, middle-class expectations and desires that lead to later childbirth. For this reason, perhaps, IVF seems like the next step in a progression leading to choice for women of when to have their children. But it also relies on a version of pro-natalism in which the desire to have children trumps other kinds of choice, including the choice to have information on the long term consequences of the procedures. In this latter sense, the historical route that IVF has taken whittles away what choice means. The desire for children is produced in such a way (a baby is human and thus priceless, will pay anything for one) to elide long term consequences such that any critique is understood as a critique of children. Despite the earnest concern raised over commodifying eggs, virtually no one notes the specter that IVF commodifies the desire to produce children and the ideologies of procreation in an economy less and less friendly to actual children. It’s nearly as if the sentimental innocence of children themselves forecloses questions about how they are produced. [↑](#endnote-ref-62)
63. “Using data sets from Europe and America, numerous scholars have found some evidence that, on aggregate, parents often report statistically significantly lower levels of happiness ([Alesina et al., 2004](http://www.economics.harvard.edu/faculty/alesina/files/Inequality%20and%20Happiness.pdf)), life satisfaction ([Di Tella et al., 2003](http://www2.warwick.ac.uk/fac/soc/economics/staff/faculty/oswald/macrohappinessoct2001.pdf)), marital satisfaction ([Twenge et al., 2003](http://www.jstor.org/pss/3600024)) and mental well-being ([Clark & Oswald, 2002](http://www2.warwick.ac.uk/fac/soc/economics/staff/faculty/oswald/revwellbeinginpanelsclarkosdec2002.pdf)) compared with non-parents.” Reported in NYT. It may well be that parents most likely to have used IVF – wealthier, older parents, are happier than the average family. However, health benefits are usually not calculated based on demographics. [↑](#endnote-ref-63)
64. Linda Giudice, Eileen Santa, and Robert Pool (eds), “Assessing the Medical Risks of Human Oocyte Donation for Stem Cell Research, Workshop Report,” *The National Academic Press*, 2007. P. xii. [↑](#endnote-ref-64)
65. Linda Giudice, Eileen Santa, and Robert Pool (eds), “Assessing the Medical Risks of Human Oocyte Donation for Stem Cell Research, Workshop Report,” *The National Academic Press*, 2007. p.2. [↑](#endnote-ref-65)
66. Kramer, W., J. Schneider, and N. Schultz. 2009. US oocyte donors: a retrospective study of medical and psychosocial issues. Human Reproduction 24(12): 3144-3149, Pappo, I., L. Lerner-Geva, A. Halevy, L. Olmer, S. Friedler, A. Raziel, M. Schachter, and R. Ron-El. 2008. The Possible Association between IVF and Breast Cancer Incidence. Annals of Surgical Oncology 15(4): 1048-1055, Ahuja, K. and E.G. Simons. 1998. Cancer of the colon in an egg donor: policy repercussions for donor recruitment. Human Reproduction 13: 227-231, Dor, J., Lerner-Geva, L., Rabinovici, J. et al. (1996) Cancer incidence in a cohort of infertile women treated with in vitro fertilization. 52nd Annual Meeting of the American Society for Reproductive Medicine (suppl.) pp. 147.

Shenﬁeld, F. (1996) Cancer risk and fertility treatments: a question of informed consent. J. Fertil. Counseling, 15–16, Mosgaard, B.J., Lidegaard, O., Kjaer, S.K. et al. (1997) Ovarian stimulation and borderline ovarian tumours: a case continue study. Hum. Reprod., abst. 012. [↑](#endnote-ref-66)
67. Helen Pearson, “Health effects of egg donation may take decades to emerge,” Nature 442, 607-608 (10 August 2006). Calderon-Margalit, R et al 2008, “Cancer Risk after Exposure to Treatments for Ovulation Induction,” American Journals of Epidemiology finds an increased risk of cancer at any site, [↑](#endnote-ref-67)
68. Since Clomid, newer fertility drugs have become standard, “but again, this standard has developed without any epidemiologically sound, long-term safety data. It is noteworthy that while Lupron has become ‘standard’ within superovulation regimes, it is administered at various doses for various times, varying even within the various patients, and has varying effects.” Testimony of Lynne Millican, Before the Subcommittee of Science, Technology and Space, Committee on Cammerce, Science, and Transportation, United States Senate, March 27, 2003. “Clomid is a drug of considerable pharmacologic potency. … Clomid is indicated only in patients with demonstrated ovulatory dysfunction. … Long-term toxicity studies in animals have not been performed to evaluate the carcinogenic or mutagenic potential of clomiphene citrate.” <http://www.drugs.com/pro/clomid.html> (accessed March 12, 2012). [↑](#endnote-ref-68)
69. R. Calderon-Margalit, Y Friedlander, R Yanetz, K Kleinhaus, MC Perrin, O Manor, S Harlap, and O Paltiel, “Cancer Risk after Exposure to Treatments for Ovulation Induction.” Am J Epidemiol. 2009 Feb 1;169(3):365-75. Bandera CA. Advances in the understanding of risk factors for ovarian cancer. J Reprod Med. 2005;50:399-406. Russo J, Moral R, Balogh GA, et al. The protective role of pregnancy in breast cancer. Breast Cancer Res. 2005;7:131-142. [↑](#endnote-ref-69)
70. Mary Anne Rossing, Janet R. Daling, Noel S. Weiss, Donald E. Moore, and Steven G. Self, “Ovarian Tumors in a Cohort of Infertile Women,” N Engl J Med 1994; 331:771-776. [↑](#endnote-ref-70)
71. Pappo, I., L. Lerner-Geva, A. Halevy, L. Olmer, S. Friedler, A. Raziel, M. Schachter, and R. Ron-El. 2008. “The Possible Association between IVF and Breast Cancer Incidence.” Annals of Surgical Oncology 15(4): 1048-1055 [↑](#endnote-ref-71)
72. Flora van Leeuwen et al, *Human Reproduction*, 2011. [↑](#endnote-ref-72)
73. Correspondence: “Risk of Ovarian Cancer after Treatment for Infertility,” *N Engl J Med* 1995; 332:1300-1302, May 11, 1995. [↑](#endnote-ref-73)
74. “Overall, fertility-drug treatment was reported by 20 of 622 case patients with invasive ovarian cancer (3.2 percent), as compared with 11 of 1101 controls (1.0 percent)” [Letter to the editor from: Daniel W. Cramer, M.D., Patricia Hartge, Sc.D., Philip C. Nasca, Ph.D., Alice S. Whittemore, Ph.D.] [↑](#endnote-ref-74)
75. K.K.Ahuja and E.G.Simons, “Cancer of the colon in an egg donor: policy repercussions for donor recruitment,” *Human Reproduction* vol.13 no.1 pp.227–231, 1998. [↑](#endnote-ref-75)
76. P. 228. They also note that, “Empirical findings about the actual experiences of parents and children in families created by assisted conception should form the basis of future policy, rather than uninformed opinion.” In this article and subsequently, Dr. Ahuja advocates egg sharing, in which infertile women undergoing IVF donate as “a gesture of goodwill or in return for subsidized treatment” extra oocytes. While most studies of fertility drugs have focused on cancers of the reproductive organs, both normal and malignant colorectal cells have estrogen receptors, and different types of estrogen have different effects on the proliferation of colon cancer cells. [↑](#endnote-ref-76)
77. Brinton L., Long-term effects of ovulation-stimulating drugs on cancer risk. Reprod Biomed Online. 2007 Jul;15(1):38-44. P. 42. Finds that studies have short follow-up times (under ten years), don’t include newer drugs that have the use of newer that have known links to cancer, and how fertility drugs might affect women with genetic dispositions to cancer or who have used other hormones such as oral contraceptives. Going through the studies on fertility drugs and ovarian, breast, and endometrial cancers, she concludes that it will be important to “Fully resolve effects of exposures such as gonadotropins, used more recently with IVF.” (38) She also notes the chemical similarity of Tamoxifen, known to increase the risk of endometrial cancer, to clomiphene. [↑](#endnote-ref-77)
78. Conversation with author, March 11, 2011. [↑](#endnote-ref-78)
79. One controversy shows the depth of the resistance to thinking about the risks of egg extraction. In 2005, Huang woo-Suk, a South Korean researcher working on stem cell research, resigned in a highly publicized controversy after he was found to have paid lab assistants for eggs. Though he nothing illegal, a worldwide scandal resulted. In the aftermath, Judy Norsigian made a statement about the lack of research into the long term health consequences of egg donation that went virtually unnoticed. [↑](#endnote-ref-79)
80. Because about 80% of infertility is age-related, David Fleming, director of the Center for Health Ethics at the University of Missouri asks: “with all due respect—is [IVF] a question of need or a question of want?” Referring to the delay in having children as a lifestyle choice leading to infertility, Dr Sherman Silber caused much debate in the infertility community, with his claim that: “It’s hard to call infertility a disease. It’s normal aging,” he says, adding that only about 20 percent of women who seek treatment have what’s called a “valid diagnosis,” such as that they don’t ovulate. “The incidence of infertility is zero to 1 percent in teenagers. For women in their early 20s, only 1 to 2 percent are infertile. In their late 20s, 16 percent of women are infertile, and in their mid- to late 30s, 25 percent are infertile. By age 40, more than half of women are infertile, and pregnancy beyond age 43 is very uncommon.” Iva Skoch, “Should IVF Be Affordable for All? Fertility treatments are more expensive in the U.S. than anywhere else. But some clinics are aiming to change that,” *Newsweek* July 21, 2010. ([http://www.newsweek.com/2010/07/20/should-ivf-be-affordable-for-all.html#](http://www.newsweek.com/2010/07/20/should-ivf-be-affordable-for-all.html) accessed March 15, 2011.) [↑](#endnote-ref-80)
81. Written for 9-12 year olds Kristi Lew, Egg Donation: The Reasons and the Risks, New York: Rosen Publishing 2010. Lew does not mention the lack of long term studies on donation, other saying that “most doctors” believe that the procedure is safe. [↑](#endnote-ref-81)
82. Fleming, director of the Center for Health Ethics at the University of Missouri, argues that the increasing numbers of IVF babies “ultimately increase the cost of health-care coverage for everyone,” not only because of the expense of the treatments, but because of the higher levels of health problems after they are born. Since the oldest ART baby is only in her thirties, the long term data on the health of artificially conceived babies has not been collected. Because of the multiple dimensions of the increasing proportion of children born to women over 35, and the specific chemical and hormonal environments of IVF embryos and fetuses, it can be hard to disentangle the cause of the two-three fold increases in rates of ADHD, various severe syndromes, childhood cancers, bipolar disease, obesity, autism (over 80% of autistic children are under 18) and other disabilities suffered by IVF babies and children. For example, scientists increasingly question whether the media in the Petri dish affect the developing embryos, since IVF babies have been found to have significantly lower methylation rates (the process that switches genes on and off) in utero, and higher rates of cancers, ADHD, and other disabilities. See also the BBC documentary, “The Ghost in Our Genes.” Very rarely do studies on IVF children note the fertility drugs taken by there genetic and birth parents, and never to they refer to the co-cultures of the embryos. In particular, one IVF doctor found rates extremely disabling genetic syndromes increase by over 1000% for IVF babies, and yet has been unable to find an IVF clinic willing to work with her to longitudinally collect the data. For this reason, the increasing number of warnings about the health effects of IVF remain at the level of “association” rather than causal proof. Researchers at Johns Hopkins find that urological disorders are 7.3 times more likely in IVF children, which required extensive surgery to help “most” children to gain urinary continence.  (<http://www.sciencedaily.com/releases/2003/03/030319082147.htm>), http://www.newscientist.com/news/news.jsp?id=ns99991678  , http://www.hopkinsmedicine.org/press/2002/November/021115.htm

The British government’s Human Fertilisation [sic] and Embryology Authority warned in 2009 that IVF babies have a 30% higher risk of genetic abnormality. (March 23, 2009, LifeSiteNews.com), and a “pro-IVF geneticist” found that babies born by in IVF suffer from rare genetic disorders 10 times more often than babies conceived during intercourse. The Financial Post reports that University of Toronto geneticist Dr. Rosanna Weksberg saying, “We are seeing a significant increase in risk … The most important message is ... we need follow-up study.” Among the most severe disabilities are and Angelman syndrome, but she is also unable to find clinics willing to work with her to collect the data.

U.S. Centers for Disease Control and Prevention found that IVF babies suffer from heart valve defects, cleft lip and palate, and digestive system abnormalities due to the bowel or esophagus failing to form properly. (Human Reproduction journal, 2008). The disabilities could be caused be the injection of substandard sperm, or the use of co-cultures in the media. [↑](#endnote-ref-82)
83. “Buying and selling human oocytes (eggs) is a $3 billion dollar industry (2007), Family Issue Fact Sheet, No. 2010-03 (March 20210), SB 1306/HB 2651 – Human Egg Provider Protection Act, Executive Summary, Center of Arizona Policy. This Act requires Arizona physicians to treat egg providers with the same standard of care as a patient. [↑](#endnote-ref-83)