

THE HISTORY AND FUTURE TRENDS OF ART MEDICINE AND LAW

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The Assisted Reproductive Technologies (“ART”) have resulted in over eight million births to date, heralding remarkable advances in reproductive medicine with a transformational impact on both medicine and law. The effects have been acutely felt on the modern family, as well as on a myriad of areas of legal practice—including Family Law, Estate Planning, Contract, Health, Constitutional, Criminal, Discrimination, Tort Law and, for international arrangements, Immigration and Citizenship laws. This article examines the historical context, present impact, and future trends of ART and the Law. Its purpose is to help better understand these unique developments in order to help law and policy makers harness and craft the policies and frameworks that will be needed to monitor, shape and guide these remarkable possibilities for participants, professionals, law and society.

Practitioner’s Key Points:

- Medical Advances in ART have transformed parentage laws.
- Third-party ART introduces unique legal issues and challenges for estate planners and family lawyers.
- Cryopreserved IVF embryos can trigger Tort, Contract, Family Law, Negligence and Professional Liability Litigation.
- Dramatic changes in current trends in gamete donation and surrogacy have direct implications for lawyers representing intended parents and ART professionals.

Keywords: *Assisted Reproductive Technology; Embryos; Fertility Preservation; Gamete Donation; Posthumous Reproduction; Reproductive Genetics; Reproductive Rights; Surrogacy.*

I. INTRODUCTION

A dispute over whether a former or surviving spouse can use embryos created through in vitro fertilization (“IVF”) during the marriage (potentially with donor sperm or donor eggs), or a custody fight over the parentage of a child born to a gestational surrogate in the midst of a divorce with six potential parents (an egg donor, sperm donor, married gestational surrogate and her spouse, and two intended parents), may be a Family or Estate Planning lawyer’s wildest dream or worst nightmare. These are real-life scenarios that reflect the legally not-so-simple new reality of family building options—and challenges—made possible by four decades of remarkable medical advances in the still-evolving medical field of Assisted Reproductive Technologies (“ART” or “ARTs”).

This article provides a historical overview of the inextricably intertwined medico-legal development of the ARTs and explores the impact of the ARTs on multiple areas of law, with an emphasis on what today’s and tomorrow’s Family Law practitioners will want to understand as they confront the impact of these continually developing technologies on their legal practices. Part I explains the importance of a shared understanding of medical and legal vocabulary. Part II provides a brief medical explanation of what IVF and ART are. Part III tells the “IVF Story”—how IVF developed, first in

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the United Kingdom and, shortly after, in the United States against the legal backlash and reactions it engendered. Part IV is a selective review of the state of the law pre-IVF and its continuing impact on Family Law. Part V traces the subsequent development of ART Law to address specific emerging ART protocols including: embryo cryopreservation (freezing); sperm, egg and embryo donation; and traditional (genetic) and gestational surrogacy. Part VI briefly highlights the impact of IVF on a growing number of intertwined medical and legal developments, ranging from same-sex marriage and parentage, to the expansion of genetic testing that has accelerated the demise of donor “anonymity” while expanding potential tort liability, to increased insurance mandates covering both infertility and oncofertility treatments, and the introduction of “fertility fraud” legislation aimed at punishing fertility doctors for unauthorized practices. Part VII concludes the article with a brief look at potential future ART-related medical advances and reflects on the continuing revolutionary impact of IVF and the ARTs on the law.

1978 heralded the birth of the world’s first “test tube baby,” Louise Brown, in the UK. Her remarkable birth was followed rapidly by Candice Reed in Australia in 1980, and Elizabeth Carr in the US in 1981. Brown recently turned 40 and is herself a mother of two naturally conceived and born children. While her birth was instantly recognized and widely publicized worldwide as a medical phenomenon, much less attention was given to the challenges this new possibility for baby-making would quickly force courts and legislatures to confront. In creating a new way to make babies, IVF also began to force law and policy makers to conceive a myriad of new legal paradigms. In the roughly 40 years since these novel births, IVF has become an accepted medical practice, with over 8 million IVF children born world-wide.¹ Newer technologies that build on IVF have come to be known collectively as the Assisted Reproductive Technologies (or the singular “Assisted Reproductive Technology,” referred to interchangeably as “ART”). The menu of ART procedures to help create babies has grown to include egg and embryo donation, pre-implantation genetic testing (“PGT”) of IVF embryos, gestational surrogacy, and seemingly endless combinations of these technologies. Taken together, they have exponentially expanded not only who can become parents, but also the number of individuals, both men and women, who can contribute genetically or gestationally to the creation of babies that they do not intend to raise. Together these revolutionary medical technologies have made it possible for many infertile couples, same-sex couples, and single patients to all become parents with some degree of genetic and/or gestational connection to a resulting child.

While the changes and challenges ART has introduced for law and policy makers across many areas cannot be overstated, the most notable impacts have been in the areas of Family Law and reproductive rights. The impact of rapid advances in reproductive medicine and introduction of third parties into the process challenge long-standing, foundational legal principles of Family Law, including presumptions of maternity and paternity, and genetic relatedness as a premise of parentage. The rise of interstate and international ART arrangements exponentially complicates both choice and conflict of laws issues. It is an axiom worth remembering that while ART can make previously inconceivable babies, only Family Law can make a legally recognized family, including defining the resulting rights and responsibilities between and amongst the various involved individuals and resulting offspring.

In short, these remarkable medical advances have had a transformational impact not only on reproductive medicine, but on the modern family and the law writ large, impacting a myriad of other areas of legal practice—including Estate Planning, Contract, Health, Constitutional, Criminal, Discrimination, Tort Law and, for international arrangements, Immigration and Citizenship laws. This article strives to examine the historical context, present impact, and future trends of the ARTs and the Law.

II. “*A Rose by any Other Name...?*” TOWARDS A SHARED UNDERSTANDING OF ART VOCABULARY

An essential starting point in any medico-legal analysis of the ARTs is recognizing the need for a shared understanding of essential terms and concepts and, where possible, a shared vocabulary.

As an entire article in this compendium is devoted to this issue, this section is intended simply to introduce and sensitize readers to this critical issue at the outset with two key examples: “donor” and “surrogate.”

In legal terms, a *donor* of sperm or eggs (either or collectively considered “gametes”) or embryos, is defined as someone who (whether compensated or not) provides reproductive tissue with no intention to be a parent; ideally followed applicable law in donating; and as a result should not be recognized as a legal parent.² In medical terms and IVF clinic forms, however, a “donor” has often been considered the individual who *provided* reproductive tissue irrespective of their parental or non-parental intentions,³ inadvertently undermining legal determinations of parentage and non-parentage and prompting parentage-related litigation between and amongst former couples and ambiguously designated donors.⁴

Even more confounding are terms that long predate, but now apply to, newer ARTs and protocols such as artificial insemination.⁵ The history of ART Law and medicine are replete with such linguistic and substantive challenges. In the area of Family Law, they also bring into sharp focus the remarkable rise of intent-based parentage. Before IVF, a woman could become a mother in only two ways: biologically through a pregnancy or legally through an adoption. Intent to parent was irrelevant to the former, while it required complying with long-established, state-specific legal frameworks to protect the latter.

Artificial insemination also introduced the possibility of “traditional” surrogacy, again prior to the advent of IVF and ART. “Traditional” surrogacy involved a woman who had no intent to parent agreeing to be artificially inseminated with an intended father’s sperm, resulting in her being both the genetic and gestational mother of the child. She would typically have agreed to place the resulting child with that man and his spouse, if married, and to consent to a stepparent adoption (by the spouse or couple, depending on state adoption law requirements). Starting with the infamous 1987 case of *Baby M*, traditional surrogacy spawned contentious litigation over claims of illegal baby-selling and violating adoption principles, and led to prohibitive legislation across the US and beyond.⁶ Even today, many⁷ countries prohibit any form of surrogacy.

Today, few jurisdictions recognize the enforceability of traditional, genetic surrogacy arrangements with respect to parentage. In 2017, the National Conference of Commissioners on Uniform State Laws finalized and released an update to the Uniform Parentage Act of 2002 (“UPA 2017”), which recognizes traditional, genetic surrogacy agreements with additional safeguards, including the critical right of a traditional, genetic surrogate to have a “cooling off” period to withdraw her consent until 72 hours after birth, and replaced the term “traditional” with “genetic” surrogacy to more accurately distinguish it from “gestational” (IVF with no genetic connection) surrogacy.⁸ As discussed in more detail *infra*, gestational surrogacy has become standard of care, with compensated arrangements generally made through surrogacy recruiting or coordinating programs (also referred to by some as “brokers” or “agencies”).

The central point is that the legal implications for linguistic complexities that abound in the ARTs can be outcome determinative.

III. MEDICALLY SPEAKING, WHAT IS [AND IS NOT] “ART”?

The term “IVF” technically refers to fertilization of an egg outside of the body *in vitro* (“under glass”), a critical part of a complex set of techniques that are part of IVF and “Embryo Transfer” (“IVF ET”). These include monitoring the ovulatory process (or also manipulating it), obtaining and processing eggs and sperm outside the human body, fertilizing and culturing the fertilized egg(s) in the laboratory, followed by a transfer into a woman’s uterus (with or without prior freezing (“cryopreservation”) and thawing of any eggs, sperm or embryos).⁹ IVF opened up a myriad of treatment options, including egg donation, gestational surrogacy and PGT, and expanded dramatically who could become genetically or gestationally related parents.

Before IVF and ART, reproductive medicine's options to help infertile couples—who were invariably married and heterosexual—were relatively limited. Treatment typically involved medical workups to attempt (often without clarity) to identify which partner - or both - was the source of the infertility. For women, treatments were largely limited to administration of fertility medications such as Clomid to encourage and increase egg development, or in-patient or limited out-patient surgical efforts to open or unblock scarred fallopian tubes, treat endometriosis, or treat some uterine abnormalities.¹⁰ For men diagnosed with, or suspected of, either poor quality or insufficient quantity of sperm, artificial insemination was often the treatment of choice, initially with the husband's sperm if possible, and thereafter if needed a sperm donor's. For a time, mixing an infertile husband's sperm with a fertile donor's sperm was an accepted medical practice, with couples told to go home, forget about the donor, and assume the child could be the husband's.¹¹ This practice later fell into disfavor, a development that paralleled and was likely precipitated by the rise in a number of related factors: genetic testing with its ability to reveal highly accurate genetic heritage, changes in psycho-social recommendations to favor more openness around sperm donation, and increases in same-sex couples' parenting where use of an opposite-sex donor was an obvious necessity.¹²

Historically, sperm donors were invariably anonymous, and selected by the couple's physician, unless a family member or friend volunteered or was enlisted. The initial acronyms were "AIH" for artificial insemination by husband and "AID" for artificial insemination by donor. With the emergence of the AIDS epidemic in the 1980s the latter term was changed to "DI" or "TDI" for therapeutic donor insemination to avoid any confusion.¹³ With artificial insemination originally considered a private, if not secretive, medical treatment, involving only intended parents, their physician, and an anonymous sperm donor (frequently a medical student), the majority of states enacted succinct laws focused on ensuring the husband was for all legal purposes the father of any resulting child.¹⁴ Indeed, the earliest recorded physician assisted donor insemination in the US occurred in 1884 at Jefferson Medical College in Philadelphia, when Dr. William Pancoast determined a woman who had not been able to conceive should be artificially inseminated while under general anesthesia with sperm he collected (reportedly from the handsomest medical student in the class). Only informed of this after the insemination, the husband agreed his wife need never be informed of the use of a sperm donor.¹⁵ Even as donor anonymity began to be questioned in the 1980's, few states took up the challenge of revisiting whether laws should also address the interests of offspring in knowing their genetic histories or identities.¹⁶

From a medical perspective, as it has become more common to treat sperm prior to insemination, through freezing, and/or centrifugation and concentration ("washing"), the lines between simple insemination of ejaculated semen and processing sperm as part of ART treatments have become more blurred.¹⁷ From a legal perspective, courts and legislatures have been inconsistent in interpreting and creating ART laws to include or exclude artificial insemination.¹⁸

IV. THE IVF STORY: TAKING THE "ROAD NOT TAKEN"

"...Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference."
Robert Frost, 1916¹⁹

The IVF story is extraordinary by any measure and began in earnest long before Louise Brown's 1978 birth in the UK. This section briefly highlights some of the major medical and scientific breakthroughs in developing ²⁰ human IVF in the context of the legal and ethical challenges they gave rise to—and overcame—to bring us to today's achievements and tomorrow's hopes.

In the UK, the first IVF birth in 1978 followed at least a decade of joint efforts by Bob Edwards and Robert Steptoe, a British physiologist and obstetrician/gynecologist respectively, to obtain and fertilize eggs outside a woman's body. In 2010, shortly before his death, Bob Edwards received the

Nobel Prize in Physiology and Medicine for his work, an award many felt had been unduly delayed due to the controversial nature of IVF and human embryos.²¹ When Edward's early attempts to obtain human oocytes (eggs) to work on fertilization techniques met with resistance in the UK, he reached out to Drs. Howard and Georgeanna Jones, a respected reproductive surgeon and endocrinologist couple then working at Johns Hopkins, and accepted their offer to provide him human oocytes and work in their lab for several weeks.²² That collaboration led to a lifelong professional and personal relationship, as both groups continued their respective efforts to develop different IVF techniques and medication protocols to achieve an IVF pregnancy – which they did in 1978 and 1981. In Australia, IVF pioneers led by Alan Trounson also achieved an IVF pregnancy and birth in 1980.

Both the UK and Australia responded to these medical accomplishments by establishing national regulatory authorities. In the UK, the Human Fertilization and Embryology Authority was established in 1990 and in Victoria, Australia, the Infertility (Medical Procedures) Act of 1984 was enacted.²³ In the US, both public and regulatory reactions were much less centralized. As IVF has spread around the world, countries have responded with a wide variety of regulations ranging from permissive to restrictive. Given the continuing medical advances and possibilities that have opened up, including among others, PGT; embryonic trait, eugenics, and sex-selection; and risks associated with multiple births, regulation remains a highly fluid area.²⁴

The history of IVF in the US is inextricably tied to both the extraordinary vision and efforts of one couple, Drs. Howard and Georgeanna Jones, and several serendipitously timed events. As esteemed faculty at Johns Hopkins until their mandatory retirement in 1978, they had collaborated throughout their careers with one another and with a number of researchers and scientists on multiple areas of human reproduction and infertility. In 1978, they planned to retire and “enjoy fishing,” a plan unanimously endorsed by their three grown children.²⁵ Fate intervened in the form of a request by Dr. Mason Andrews to join and chair the Department of OB/GYN at Eastern Virginia Medical School, a fledgling new medical school in Norfolk Virginia. They agreed, and on the drive from Baltimore to Norfolk learned of Louise Brown's birth. On arrival, a local newspaper reporter called and asked if IVF could be done in the US, and if so what would it take? “Dr. Howard” (as he was known to distinguish him from “Dr. Georgeanna”) replied “yes” and “money.” The next day, a grateful patient of Dr. Georgeanna's called to ask how much they needed, and the Jones Institute for Reproductive Medicine at EVMS sprang into existence to become the country's first successful IVF clinic.²⁶

The Institute was met with resistance from religious opponents and anti-abortion protesters from the outset. What had been anticipated to be a routine Certificate of Need to open its doors instead initially met intense public opposition. A local newspaper published a false editorial accusing the Institute of forcing abortions of malformed fetuses.²⁷ The latter incident led to a libel lawsuit brought by the Jones' and the Institute, which ended in a retraction, apology, and a financial settlement which was applied to the Institute's ongoing research efforts.²⁸ These difficult pioneering efforts in such a conservative area of Virginia were successful in large part due to the esteemed international scientific and ethical reputation the Jones' brought to the discussion, and paved the way for IVF to take root and expand to other areas of the United States.

Once established, the Jones Institute flourished as the first US IVF clinic, developing pioneering protocols and techniques, including the earliest uses of ovarian stimulation medications and human menopausal gonadotropin (HMG), embryo cryopreservation, and more. Many of today's leading IVF clinics in and outside the US are led by physicians who trained there.

This abbreviated medical history would be remiss not to acknowledge the critical role Howard W. Jones, Jr. held beyond a medical pioneer, as both an ethical visionary and policy advocate. Invited to participate in an intimate two-day Pontifical meeting at the Vatican to discuss the “licitness” or “illicitness” of IVF in 1984, the Joneses reportedly realized the lack of—and need for—ethical guidance surrounding the growing field of IVF. Dr. Howard wrote to the then-president of the leading international medical fertility organization, the American Fertility Society (“AFS,” later renamed the “American Society of Reproductive Medicine” or “ASRM”), suggesting the need

for ethical guidelines. In response, AFS formed its first Ethics Committee, appointed him as chair, and after gathering a highly respected group of physicians, lawyers, theologians, philosophers, and ethicists, a year later published, “Ethical Considerations of the New Assisted Reproductive Technologies.”²⁹ That committee defined an IVF embryo as a unique entity “deserving of special respect” due to its unique ability to form a human being. The definition was adopted by the first US court to resolve a frozen embryo dispute, *Davis v. Davis* (Tenn. 1992),³⁰ and has continued to find a prominent place in the legal lexicon since that time.

From a legal, ethical and policy perspective, as IVF and the ARTs matured, new issues emerged, including concerns that multiple embryo transfers raised serious health risks of multi-fetal pregnancies for women and the resulting children (leading to successful efforts to make single embryo transfer standard treatment), insurance coverage for infertility treatments, and more recently the impact on IVF of so-called “personhood” initiatives. Over the course of his career until his death at the age of 104 in 2015, Dr. Howard was a passionate and impactful voice on each of these—and many other—issues. The reach of the Jones’s legacy goes far beyond their medical breakthroughs.

From a medical perspective, IVF and the ARTs have flourished. What began as a treatment to circumvent blocked fallopian tubes for Louise Brown’s mother and other infertile women, has expanded dramatically to include, for example, the ability to surgically inject an egg with a single sperm (from a man with either too few sperm or whose sperm is of limited motility) [“ICSI” or intracytoplasmic sperm injection], to PGT with its ability to remove and test cells from an embryo that has developed over 5–6 days *in vitro* to the “blastocyst” (eight cell) stage for genetic anomalies, and mitochondrial replacement (substituting donor mitochondria, while leaving an intended mother’s egg’s nucleus intact) and much more. These advances have helped alleviate a number of serious, and often deadly, genetic conditions and made it possible for an increasingly large constellation of individuals to become genetic and/or gestational parents.

V. THE EVOLUTION OF ART LAW: A BRIEF OVERVIEW OF RELEVANT PRE-ART LAW AND PRACTICE

A. PRE-IVF PARENTAGE AND INHERITANCE LAW

Long before the introduction of IVF, within the US both common law and statutory law had, of course, addressed issues of paternity, legal parentage and inheritance rights and obligations to protect both parents and children. Family Law (on which artificial insemination laws were patterned) largely focused on assuring a husband’s legal parentage rights and responsibilities, while Reproductive Law focused on women’s constitutional rights to bodily autonomy and the contours of acceptable intrusions on those rights. Evolving paternity laws included DNA testing to prove genetic fatherhood and ensure child support regardless of marital status, as well as recognition of *de facto* parenting and other behaviors of acting parentally that might suffice to establish legal paternity.³¹ As to maternity, there was no need, and little reason, to provide legal frameworks to ascertain motherhood when pregnancy and birth sufficed.

For inheritance purposes, common law frequently relied on a presumption of paternity and parentage to find a child was the legal child of a deceased man if born to a married woman within a certain length of time—sometimes codified as up to 300 days—after his death.³²

B. PRE-IVF REPRODUCTIVE LAW

Throughout the 1960’s and 1970’s, Reproductive Law had been defined by constitutional issues of reproductive choice, contraception, forced sterilization, and the lightning rod of all reproductive law issues: abortion. Through a series of landmark decisions, the United States Supreme Court in *Griswold v. Connecticut*, *Baird v. Eisenstadt*, and *Roe v. Wade*,³³ had recognized that women had

constitutional protections against sterilization, and rights to obtain contraception and decide whether to continue or end a pregnancy prior to a fetus's viability.

In the contentious wake of *Roe v. Wade* and prior to the introduction of IVF, many states passed both civil and criminal statutes designed to restrict abortion-related activities, and some state laws defined a "fetus" to include an "embryo." Medical dictionaries of the times defined "embryo" in terms of an early conceptus in utero.³⁴ Anti-abortion sentiment and reproductive laws that criminalized "fetal tampering" were used to prosecute some obstetricians who performed late-term abortions. One highly publicized prosecution involved Dr. Kenneth Edelin, then Chief Resident of Boston City Hospital, who was convicted of manslaughter (reversed on appeal) for performing a legal, late-term abortion after a nurse accused him of intentionally depriving the fetus of oxygen at delivery.³⁵ A civil law enacted prior to IVF in Illinois restricting physicians from "fetal tampering" was successfully challenged by an IVF program and the ACLU on the basis that it was so ambiguously vague that physicians could not practice IVF without fear of running afoul of its restrictions.³⁶

What the law—along with most of the lay world—was not prepared for was the profound and widespread impact of IVF. Where conception could once be loosely considered as the onset of pregnancy, IVF both revealed and required more precisely accurate timelines and definitions, including fertilization, cryopreservation, insemination, implantation, and attachment to the uterine wall.³⁷

VI. "LEGALLY SPEAKING:"³⁸ THE POST-IVF DEVELOPMENT OF ART MEDICINE AND LAW

When the first IVF "test-tube baby" burst into the public's eye in 1978, the fervor over this medical break-through far overshadowed the legal changes and challenges they portended. Although much less noticed at the time, IVF, followed rapidly by embryo cryopreservation, not only upended reproductive medicine, but transformed the legal landscape involving reproduction—a transformation that continues to this day. This section provides a conceptual framework of the novel legal tensions IVF introduced, with an overview of the legal impact of three specific technological advances (embryo cryopreservation, gamete and embryo donation, and surrogacy); and a very brief nod to a few more tangentially-related ART developments.

The introduction of IVF challenged three fundamental legal premises:

First, by moving fertilization of egg and sperm outside a woman's body, IVF challenged the very concept of "conception." With the ability to form an embryo "ex utero," these newly possible entities could exist physically separate from a woman's body. These novel scenarios strained the legal assumptions, constitutional protections, and applicability of legal principles established by the line of Supreme Court cases involving a woman's bodily integrity and right to reproductive privacy.

Within the medical and scientific communities, there was robust debate over proper terminology.³⁹ The term "preembryo," "pre-embryo" or "pre-implantation embryo" were all introduced to describe these early stage ex utero IVF embryos that were not permitted to develop beyond an 8 cell stage (usually reached by days 3–5), long before the appearance of the "primitive streak" (the scientific point at which cell differentiation begins and no earlier than day 14). While many within the medical and scientific communities argued that such developmental distinctions were not helpful, they have been repeatedly accepted and relied upon by courts in disputes over IVF embryos. Beyond the scope of this article are detailed discussions of the pivotal legal impact and significance of these various terms.⁴⁰ Notably, IVF embryos were then, and still are, only permitted to develop for a limited number of days before being either transferred into a woman's uterus or cryopreserved for later potential implantation. For purposes of simplicity, this article uses the term "embryo" for any IVF-formed, ex-utero embryo. In short, IVF created novel and still fully unresolved legal issues and tensions around definitions of "fertilization," "conception,"⁴¹ and the nature of—and attendant rights to—the embryo.

Second, the ability to freeze or cryopreserve embryos suddenly expanded the time from fertilization to birth to potentially decades and beyond. From both a Family Law and Trusts and Estates

perspective, all of the legal parent–child assumptions based on a 9 months gestation were immediately antiquated. In 2017, a 25-year-old woman gave birth to a child from a donated embryo that had been frozen for more than two decades.⁴² Cryopreservation also gave rise to a myriad of other novel disputes over embryos—including access; custody and parentage disputes between the patients who created them; as well as tort, contract and malpractice claims by patients against providers for mishaps or mix-ups in storing, transporting, or implanting them. On a procedural level, issues also arose over choice and conflicts of law, and statutes of limitations.

Third and lastly, the introduction of reproductive tissue donors, including gamete donors (sperm or egg) and embryo donors, as well as traditional, genetic surrogates and gestational surrogate carriers, created a growing number of both patients and would-be-parents, all with potentially conflicting legal rights, including those of a constitutional nature, and duties owed to them. As with the other two transformative elements of IVF, there was little directly applicable legal precedent to resolve such disputes.

These three unique aspects of IVF and ART forced a legal reckoning across multiple disciplines.

A. EMBRYOS AND THE LAW

This section provides only a brief historical context and general overview of the wide-ranging scope of this topic, as an article in this compendium details the current state of the law on embryos. Certain legal principles seem to have become widely accepted as applied to the ARTs, while many others still lack consensus. For those interested, a more detailed historical analysis can be found in articles by this author and others.⁴³

Over the past four decades, two major categories of embryo disputes have emerged: (1) disputes between former or surviving spouses or partners over control and use of frozen embryos and parentage of any resulting children; and (2) disputes between patients and providers. The former usually occurs in the context of a divorce, although they may also involve claims surrounding posthumous use and parentage and bring into sharp focus both the need for—but potential inadequacy of—clearly documented informed consent to treatment and agreements as to embryo disposition decisions. Disputes between patients and providers can arise in a number of contexts, including intentional or accidental mix-ups of gametes or embryos, and human or mechanical errors in treatment, storage, transport, and disposition of embryos by physicians or embryologists (usually in the form of malpractice, negligence and contract law) as well as by transportation entities, cryopreservation storage facilities, and manufacturers of various IVF storage equipment.

1. The Earliest Embryo Related Litigation

Two of the earliest known US cases involving IVF embryos were brought by couples against their physicians over treatment and storage of their embryos.⁴⁴ In 1978, a test tube filled with a couple's eggs and sperm were moved precipitously from one program to another in New York City by taxi when the administration of the first hospital learned of what was then a wholly unproven technology. Unsurprisingly the fertilized eggs did not survive, and the couple sued. That court struggled with the nature of the claimed loss, settling on emotional distress, and awarded the wife \$50,000 and her husband a token \$1. Coincidentally, Louise Brown was born during the litigation, instantly transforming what had been seen as a speculative, brave new world claim into a loss of a potential child.⁴⁵

A decade later, a disappointed couple from the Jones Institute sought to fly their last cryopreserved embryo to California to try their luck at a different IVF clinic. The defendant physicians argued their consent forms did not address transporting IVF embryos across country, and that no safeguards were in place for that purpose. The court interpreted the case strictly as a property claim, ruling that the clinic was a bailee and patients could transport their embryos if and how they wished. While the case has at times been cited to support an “embryos as property” theory, no

argument was raised on how to characterize the embryos, and the court did not have to address or resolve that issue.

In 1995, a large scandal involving the University of California Irvine's Center for Reproductive Health broke out. Allegations centered on the doctors' intentional and unconsented use of patients' eggs to fertilize and then implant the resulting embryos into other intended parents, resulting in at least 15 live births, multiple lawsuits, and a multi-million-dollar settlement. Efforts by some couples over parentage and custody of children unknowingly born from their reproductive tissue over 14 years earlier and raised by other couples, were unsuccessful.⁴⁶

2. Early "Divorcing Embryo" Cases

In 1990, the country's first divorce dispute involving competing claims to a couple's frozen embryos was filed.⁴⁷ *Davis v. Davis* created a media frenzy and enormous public interest as it wound through the Tennessee courts for 3 years while closely followed on Ted Koppel's nightly newscast. Because the clinic had recently moved and not yet unpacked their consent forms, there was no written record of what should be done with the couple's stored embryos in the event of a divorce. The ex-wife first sought to use them, and then after her remarriage to donate them to an infertile couple. The ex-husband argued that as a fatherless child, he could not accept the embryos becoming children - even if legally unrelated to him. Eventually, the Tennessee Supreme Court ruled that the "pre-embryos" were "neither property nor persons" but were entitled to "special respect" due to their potential for life. In relying on that standard, the court adopted the reproductive medical community's definition, taken directly from the first AFS Ethics Committee. The court ruled that in the absence of any prior agreement, it was obligated to balance the couples' respective constitutional rights, and that the ex-husband's right *not* to procreate was entitled to more weight than his ex-wife's rights to procreate or donate for procreation. The embryos were ultimately ordered to be discarded, an important reminder that the "special respect" characterization did not preclude that outcome.⁴⁸

In the 30 years since the *Davis* decision, over 20 states' highest appellate courts have ruled on issues relating to control, custody, or ownership of IVF embryos, and parentage and non-parentage of children resulting from them. Commentators describe three broad, sometimes overlapping, theories of law courts have applied: (1) contract analysis; (2) balancing of interests; and (3) contemporaneous mutual consent.⁴⁹ While anti-abortion advocates have continually attempted to characterize embryos as children and opponents have often emphasized property-type characteristics, appellate courts have regularly rejected equating embryos to live children, while frequently being able to avoid characterizing embryos in resolving these cases.⁵⁰

In "patient v. patient" disputes in the U.S. a trend, if not a consensus, seems to have emerged rejecting the concept of "forced procreation." No high court has approved use of frozen embryos to procreate, with or without an agreement to do so, over a former spouse's objection.⁵¹ While beyond the scope of this article, genetics, in the form of donor gametes, have at times also played an inconsistent, complicating role in deciding which former partner gains control of embryos or parentage of children resulting from them.⁵² As egg freezing becomes more widely available and utilized, it may become standard of care, offering patients a less legally entangled alternative.

Courts have not yet reached a consensus over whether medical programs' cryopreservation forms containing patients' dispositional decision-making should be viewed as legal agreements or medical consent forms, and the answer may depend on both the language of the form and state law. Courts that have endorsed a contract analysis have expressed concerns over, and recognized the need for, medical programs to have some degree of certainty in their practices.⁵³ The sub-specialty group of ASRM, the Society of Assisted Reproductive Technology ("SART") has drafted model forms for its professional members, clearly recommending separation of the medical informed consent for IVF treatment from a stand-alone contract for disposition of embryos, including discard as a default disposition provision if other selected options are not available.⁵⁴ A few states, including

California,⁵⁵ Connecticut,⁵⁶ Massachusetts,⁵⁷ and Texas,⁵⁸ require treating physicians to provide patients with options for unused embryos, including donation to another person for procreation, donation for research or clinical training.

3. Provider-Related Embryo Issues

Cases brought against medical providers reflect both the courts' and litigants' necessarily creative approaches to crafting novel legal theories and causes of action, amidst continuously evolving terminology. While beyond the scope of this article, medical and allied professionals sued in civil courts have been found liable under contract, negligence, and malpractice theories for money damages in cases involving frozen embryos that were lost or could not be located and for malpractice in cases involving gamete or embryo mix-ups (which have also led to contested parentage and custody claims between the unintended "donors" and unwitting "recipients"). Two IVF tank failures that occurred at unrelated IVF programs in Cleveland, Ohio and San Francisco on the same weekend in 2018⁵⁹ resulted in multiple lawsuits brought under tort, breach of contract, and in a few instances "wrongful death" claims. The latter cases were dismissed by an Ohio appellate court.⁶⁰

4. Embryo-Related Legislation and Regulation

Today, legislation within the US impacting embryos outside of the area of Family Law ranges from regulation of ART practices at both federal and state levels to so-called "Personhood" initiatives. While a discussion of such legislation is beyond the scope of this article, a few examples are noted here.

The Fertility Clinic Success Rate and Certification Act – also known as the "Wyden law" – passed into federal law in 1992. The law includes reporting requirements for ART programs, a model laboratory certification program states may adopt, and a directive for the CDC to annually publish pregnancy success rates and embryo laboratory incidents reported to it.⁶¹

Beyond the scope of this article are long-standing legislative and regulatory efforts within the U.S. at the federal level to curtail any form of human embryo research and through state initiatives propelled by anti-abortion sentiments to define the beginning of life at fertilization.⁶² The latter, although largely aimed at anti-abortion restrictions, would curtail IVF and ART practices.

The annual inclusion of the Dickey-Wicker Amendment in Congressional appropriations bills since 1996 has maintained the moratorium on federal funding for human embryo research in the US since the beginning of IVF.⁶³ Although no state "personhood" laws have passed to date (with the exception of Louisiana's longstanding law), as of July 2020, seven states have pending bills.⁶⁴

Some states have specific legislation regarding assisted reproductive technologies, but it varies by state which aspects of ART the statutes address. For example, California laws cover the collection and retention of donor information at licensed gamete banks (Cal. Health & Saf. Code §§ 1644–1644.3), unlawful use of gametes or embryos (Cal. Penal Code § 367 g) and establishing parentage when assisted reproduction is used to conceive (Cal. Fam. Code § 7613). In Maine, a subchapter of the code on parentage is devoted to parentage where assisted reproduction is used (Me. Stat. tit. 19 §§ 1921–1924), and another subchapter outlines eligibility of parties to enter a gestational carrier agreement and their respective rights (Me. Stat. tit. 19 §§ 1931–1939). New Jersey laws cover ART as it relates to parentage and requirements for gestational carrier agreements (N.J. Stat. §§ 9:17–38–9:17–71).

Language that an embryo donor, like a sperm or egg donor, is not a parent has been incorporated into UPA 2017 and some states' donor and parentage related legislation.⁶⁵

5. Pre-implantation Genetic Testing of Embryos

IVF has also transformed the world of genetic testing by expanding testing for genetic conditions from parental or pre-natal testing to include embryos. It should not be overlooked, however, that testing embryos requires undergoing IVF at considerable expense and effort, even for non-infertile patients. Recently renamed as pre-implantation genetic testing or “PGT,” embryo testing was first introduced in 1990 by Handyside and Winston, and initially known as either pre-implantation genetic diagnosis (“PGD”) or pre-implantation genetic selection (“PGS”).⁶⁶ It is also increasingly becoming the standard of care, offering patients the opportunity to discover a recognized genetic abnormality before implantation, and the choice to implant only normal or unaffected embryos.⁶⁷ Legal issues have been raised around the accuracy of both the testing and reporting, as well as more recently over how to counsel and obtain informed consent from patients who may only have “mosaic” embryos (a more nuanced emerging categorization between normal and abnormal) given as yet unanswered questions as to both how representative a single cell may be, and—after some children from mosaic embryos were born without abnormalities—whether a self-correcting mechanism may be at play.⁶⁸

B. GAMETE AND EMBRYO DONORS AND THE LAW

Sperm and egg donation raise several legal issues beyond parentage issues.⁶⁹ Large private frozen sperm banks developed in the aftermath of the AIDs epidemic when freezing and quarantining sperm and retesting donors to ensure the sperm was not infected became the standard of care.⁷⁰ Today, sperm banks have extensive internet catalogues that enable recipients to “shop” for physical characteristics and traits, review handwriting samples, photos, and even voice recordings, and frozen semen is routinely shipped nationally and internationally.

While from a legal perspective sperm donation clearly “paved the way” for egg donation when it began in 1983,⁷¹ it is also important to recognize the different paths each took to the present time and the significant medical differences—and resulting legal distinctions—that remain true today. Egg donation started with family and friends as donors. As demand for egg donation grew, clinics and ultimately stand-alone programs also began to recruit anonymous, compensated donors. Unlike sperm donation, however, the medical protocols necessary for egg donation mean every egg donor is a patient to whom her treating physician owes a medical duty of care. Until ASRM lifted its “experimental” designation from egg freezing in 2012, only fresh egg donation was widely practiced and required coordinating the timing of cycles for donors and recipients within a single clinic. Once egg freezing became accepted, hastened by “vitrification” (a faster and more successful freezing technique), frozen egg banks became possible and have developed in a similar manner as sperm banks.

Large frozen sperm and egg banks currently offer shipping and selection to a wide range of prospective parents, as well as more standardized practices around openness between donors and recipients or offspring. Anonymity has rapidly become an oxymoron as both direct-to-consumer genetic testing and the internet have dramatically transformed the ability of donors, recipients and donor-conceived offspring to identify and reach out to one another.⁷² From a legal perspective, medical programs and banks have been moving away from unenforceable assurances of anonymity. An article in this compendium details the dramatic changes in this area.

1. Sperm Donation

Early artificial insemination statutes left many same-sex female couples and single women vulnerable on the issue of legal parentage. In particular, recruiting a known sperm donor, the often informal arrangements that follow, and failing to have a physician perform the insemination in a state where required (regardless of any individual agreement) have all led to ambiguous parentage arrangements and various outcomes when sperm donors have raised paternity claims or the state

has attempted to assign paternity for purposes of child support. While beyond the scope of this article, family law practitioners will want to be aware of the relevant law in their jurisdiction and help clients avoid these vulnerabilities.⁷³

ART and family law practitioners have also often had to explain to unmarried couples or friends that no written sperm donor agreement can protect against a future paternity claim if they fail to use artificial insemination and instead choose to get pregnant the “old-fashioned” way through sexual intercourse.

Another complication is that family laws and newer ART and artificial insemination laws may not be consistent. Despite a California law denying parentage rights to a sperm donor, actor Jason Patric established parental rights over a child conceived with sperm he donated to a former girlfriend, Danielle. Despite California’s Family Code section 7613(b) explicitly barring a sperm donor from establishing parentage based on biological connection,⁷⁴ the appellate court remanded the case to the family court, holding that although Jason could not claim parentage rights based on biology, he could nonetheless assert a claim as a presumed parent based on his relationship with the child after birth.⁷⁵ The appellate court upheld the family court’s finding that Jason established himself as a presumed parent and found that the family court did not improperly rely on Jason’s biological connection to the child in making that finding.⁷⁶

In response to Danielle’s assertion that the court’s holding would allow future sperm donors to assert parental rights where a mother allowed the sperm donor and child to have any sort of relationship, the court found that a “mother wishing to retain her *sole* right to parent her child conceived through assisted reproduction can limit the kind of contact she allows the sperm donor to have with her child to ensure that the relationship does not rise to the level of presumed parent and child.”⁷⁷ The appellate court upheld the family court’s evaluation of Danielle’s conduct that she made efforts to establish, rather than limit, the type of contact between Jason and the child that would allow Jason to establish a parental relationship.⁷⁸

2. Egg Donation

Egg donation only became possible with the invention of IVF. In contrast to sperm donation, egg donors must undergo a relatively lengthy medical process including screening, hormone-induced ovarian stimulation to increase the number of eggs, frequent monitoring, and surgical retrieval. Potential medical risks include ovarian hyperstimulation, the unknown risks of repeated hormone stimulations, and other rare but possible associated risks of any medical procedures.⁷⁹ Fresh egg donation necessitates precise cycle coordination between donor and recipient, carries a risk of the cycle not producing the expected quality or quantity of eggs, may preclude genetic testing, and typically involves a legal agreement. Egg freezing eliminates many of these complexities, reduces many fresh cycle-related costs, and may ultimately transform egg donation to align much more closely with sperm freezing and donation practices today.

Expanded recruitment and compensation for egg donors rose quickly, far outpacing sperm donation fees, and became a very public and hotly debated issue. Attempts to limit reproductive donors’ compensation by SART through voluntary professional guidelines initially met with limited success, and for a time programs followed recommended egg donor fees in the range of \$5,000 to \$10,000, at the risk of not being allowed to advertise on SART’s website. A class action lawsuit related to donor fees removed the SART cap as an anti-trust violation and a second lawsuit found that donor fees are now considered taxable income.⁸⁰

The advent of embryonic stem cell research and the need for donor eggs to create research embryos also fueled the public debate on compensation, and resulted in substantial compensation disparities between reproductive and research egg donors for whom payments beyond strict out-of-pocket expenses were widely prohibited over concerns of potential undue influence or commodification of eggs, and consequently significantly limited the numbers of research egg donors.⁸¹ In 2009, New York became the first US state to approve compensating research egg donors, running contrary to guidelines promulgated by the National Academy of Science.⁸²

The varying degrees to which separated elements of parenthood—intention, genetics and gestation—are weighted in ART parentage disputes continues to be an unpredictable factor in many cases involving egg donation, including cases also involving surrogacy or same-sex couples. Historically, same-sex female couples have been at risk of being mistakenly characterized not as two intended parents, but one being considered an egg donor and/or a gestational carrier, especially where medical consent forms and other written documentation were not properly tailored to reflect their actual intentions. One such case (*K.M. v. E.G.*, 2005) involved twins born to a lesbian couple using one woman’s eggs and the other woman carrying the pregnancy.⁸³ When the couple separated, two lower courts initially ruled against the genetic mother based on the women’s conflicting testimony and the IVF program’s boilerplate consent form which characterized her as an anonymous egg donor. Such litigation within the US has been minimized by the recognition of same-sex marriage, but remains a risk for at least unmarried same-sex couples, and those who intend to travel outside of the U.S., and an adoption is still recommended for additional legal security for same-sex couples and their children.⁸⁴

The rapidly growing practice of freezing eggs for both an individual woman’s own fertility preservation and for donation will increasingly present both opportunities and challenges to those administering, offering or hoping to receive frozen eggs. Currently unanswered legal questions include whether frozen eggs may need to be quarantined as required of sperm and donors retested (egg donors are currently tested twice before retrieval); how donors, intended parents, and future children access information about one another; and whether donors may change their mind as to donated frozen eggs that have not yet been thawed or fertilized.⁸⁵

C. SURROGACY AND THE LAW

While surrogacy in any form challenges long-standing family law principles and presumptions, as IVF and gestational surrogacy have expanded genetic parenting opportunities beyond married or single women who cannot carry a pregnancy, to single men and same-sex male couples, there is a growing consensus that gestational surrogates—in contrast to genetic, traditional ones—are not legal mothers. Beyond parentage issues, surrogacy also forces the law to address potentially competing interests surrounding constitutionally protected rights of privacy and reproductive autonomy, contract law as applied to surrogacy contracts, the legal duties of care medical professionals owe to each of their patients, and potential liability in these multi-party ways of making babies. From a procedural perspective, surrogacy has also raised novel forum-shopping or jurisdictional issues when multiple states (or countries) are involved.

This section highlights the early, foundational surrogacy case law and fundamental legal challenges arising from surrogacy today, while later articles in this compendium discuss more in depth issues regarding how surrogacy is undertaken today.

1. Early, Foundational Developments

The 1988 New Jersey case of *In Re Baby M* is the earliest reported traditional, genetic surrogacy dispute in the US, and has had a significant impact in restricting all forms of surrogacy in New Jersey and other states and compensated surrogacy of any type in a few states.⁸⁶ Mary Beth Whitehead was recruited by a surrogacy program run by Attorney Noel Keane. She received only minimal psychological counseling or screening, which nonetheless revealed concerns that were not passed on to her or the intended parents. When she ultimately changed her mind, offered to return her \$10,000 payment, and attempted to keep the child, the intended parents, William and Elizabeth Stern, sued. Ultimately, the New Jersey Supreme Court struck down the contract as a violation of public policy, rejecting the proposition that a surrogate could contractually agree in advance—or be forced by contract—to terminate her parental rights. Instead it applied a “best interest” standard and granted

physical custody to the legal father and his wife while Whitehead remained the legal mother with visitation rights; Elizabeth Stern was ultimately allowed to adopt the child.⁸⁷

Other early cases also rejected the enforceability of traditional, genetic contracts, while distinguishing gestational surrogacy arrangements. In a 1998 Massachusetts case, *R.R. v. M.H.*, the court refused to enforce a contract requiring a traditional, genetic surrogate to relinquish the child, instead applying adoption laws and ruling any custody determination must be based on the child's best interest after birth.⁸⁸ The court acknowledged that gestational surrogacy presented "considerations different from those in the case before us . . .," accepting the arguments of "Amicus" briefs (including one filed by this author) that, with the absence of a genetic connection, the adoption laws did not apply to gestational surrogates. In 2013 the Wisconsin Supreme Court upheld a traditional, genetic surrogacy contract between former friends, but refused to sever the surrogate's legal maternity rights.⁸⁹

IVF made gestational surrogacy and thus genetic motherhood possible for women who could not carry a pregnancy, and laws recognizing gestational carrier arrangements and these women as legal mothers have continued to expand. In 2018, New Jersey enacted surrogacy legislation allowing compensated gestational (but not genetic) surrogacy,⁹⁰ and in 2020 New York followed suit (which takes effect in 2021, after 10 years of efforts), leaving only Michigan currently disallowing the practice.⁹¹

2. Constitutional Right to Privacy and Reproductive Autonomy

Surrogacy arrangements require balancing a woman's constitutional right to privacy and right to contract.⁹² *Roe v. Wade's* protection of reproductive privacy and autonomy unequivocally supports the widely accepted view, explicitly incorporated into some state surrogacy laws, that intended parents cannot interfere with or overrule a surrogate's reproductive rights by the terms of a legal contract.⁹³ This can become a critical issue if a surrogate should refuse to terminate or selectively reduce at the request of intended parents, despite any contractual agreement to do so. One state has recently introduced explicit legislation on this issue.⁹⁴

3. Duty of Care and Professional Liability

Despite little litigation on issues and obligations for professionals in surrogacy arrangements, a few significant cases imposing an affirmative duty and professional liability are worth noting.

In two cases involving traditional, genetic surrogates, courts identified a heightened duty of care owed by both medical and non-medical professionals to all of the participants, and the anticipated child. Both cases involved traditional, genetic surrogacies arranged by surrogacy broker Noel Keane. In *Stiver v. Parker*, a traditional, genetic surrogate and her husband sued after the child she delivered was born with cytomegalovirus (CMV), presumably contracted from the intended father, whose semen was not tested.⁹⁵ The court held that Keane, the lawyer he hired for the surrogate while signing the contract, and four participating doctors had created a "special relationship" and owed her an affirmative duty of protection, "marked by a heightened diligence."⁹⁶ In the second case, when a surrogate gave physical custody of the child she carried to the single intended father who abused the baby to death, the court again found the surrogacy broker owed a duty to the surrogate and resulting child, holding the surrogacy program, ICA, "must be held accountable for the foreseeable risks of the surrogacy undertaking" because of the special relationship between the surrogacy business, parties to the surrogacy, and the resulting child.⁹⁷

A 2016 trial level case from Maryland illustrates the novel legal challenges medical professionals may confront in screening prospective surrogates and managing their pregnancies. In *Ng-Wagner v. Hotchkiss*,⁹⁸ a couple sued their physician for negligence after their baby died 3 weeks after their gestational surrogate delivered at 25 weeks due to preeclampsia. The couple argued their physician had been negligent in only taking a medical history from their prospective surrogate instead of

obtaining and reviewing either her medical records or requiring a letter from her Ob/Gyn. The surrogate had not reported two pregnancies leading to premature birth and subsequent death of the children due to preeclampsia. The defense argued unsuccessfully that it was within the standard of care to ask the prospective surrogate about her medical history and to rely on it. A \$44.1 million jury verdict was upheld in favor of the intended parents, with the award later reduced to under \$900,000 under Maryland's statutory cap for medical malpractice.⁹⁹

This area of litigation has also grown to include the rights of, and obligations owed to and by, gamete and embryo donors and surrogates, as discussed *infra*.

4. Establishing Parentage (and Non-Parentage) in Surrogacy Cases

While traditional, genetic surrogacy typically still requires an adoption to legally transfer maternity to the intended mother, as noted *supra*, most states have recognized the non-maternal distinction for a gestational carrier and developed alternative pathways to establishing legal parentage in many—but not all—gestational surrogacy arrangements.

A few early cases illustrate these issues and the role of intent. In 1993, in *Johnson v. Calvert*, the California Supreme Court sided with a married couple (who had used their own eggs and sperm) against their gestational carrier when she filed a maternity claim.¹⁰⁰ The Court found that under California law both genetics and gestation can be determinants of legal maternity and that intent should be the “tie-breaker” when those elements were found in two different women. Five years later, in *In re Buzzanca*, the California Court of Appeals relied on intent, as evidenced by the surrogacy agreement, to assign an ex-husband legal paternity for a child born after he and his ex-wife had used both donor sperm and donor egg and separated during their gestational carrier's pregnancy.¹⁰¹ Similarly, in 2015, a Pennsylvania court relied on intent to enforce a surrogacy contract and thus legal maternity rights and responsibilities against actress Sherri Shepherd after her divorce where the former couple had used a donor egg.¹⁰²

While a growing number of jurisdictions are beginning to recognize intended parents who may not have a genetic, or marital, connection, experienced legal counsel is essential to ensure a plan to establish parentage consistent with the applicable jurisdiction's laws is in place *prior* to any pregnancy to protect all the participants and the child. International surrogacy arrangements, the subject of another article in this compendium, bring exponentially more complicated challenges in terms of immigration, citizenship, insurance coverage, and more. Recognizing a gestational surrogate's constitutionally protected bodily autonomy and reproductive rights, the likely heightened duty of care owed to her, the very real potential for conflicts of interest, and the need for independent, experienced ART legal representation, should help guide practitioners in drafting and counseling around legal agreements, including pregnancy management decision-making, and in obtaining legally binding birth orders to establish parentage.

VII. ART's IMPACT ON OTHER AREAS OF THE LAW

IVF and the ARTs have also had an impact on a number of different areas of the law beyond those described above. This section very briefly identifies a number of those legal areas and resources for readers interested in these related developments.

A. REPRODUCTIVE GENETICS AND THE LAW

As noted *supra*, the ability to test embryos by PGT has had a transformative effect on both genetic testing and genetic counseling. This has created or expanded a host of legal issues and raised largely unanswered legal questions, including: the potential for testing and reporting errors; the rapid expansion of testing capabilities and standard of care; revealing and resolving gamete and

embryo mix-ups; how to characterize resulting injuries; the scope and application of health care professionals' duty of care and duty to warn; and whether statutes of limitation are tolled until discovery of earlier detected genetic anomalies that were not adequately disclosed. A number of recent academic articles have addressed these issues in more detail for readers interested in a more extensive analysis and discussion.¹⁰³

As a fundamental tenet of health care, physicians have a duty to warn their patients of a potential genetic anomaly that may impact their immediate family members, and this duty may extend directly to a duty to warn those family members if the physician has reason to know his or her patient does not intend to do so.¹⁰⁴ Whether an egg donor patient's "family" for purposes of such a warning should be considered to include any recipients of her eggs and/or resulting offspring, and how and by whom any such warning is to be delivered, are all as yet unanswered questions.

It is also currently unclear how sperm and egg banks are characterized; what duties of care they owe and to whom; how, to whom, and for how long they may be obligated to provide genetic information; and whether any traditional duty to warn family members applies to these scenarios or entities.

B. REPRODUCTIVE "WRONGS" AND NEW THEORIES OF LIABILITY?

Gamete and embryo mix-ups resulting in born children, while hopefully uncommon, are unfortunately a continuing part of the IVF story. Both accidental and intentional mix-ups have been reported.¹⁰⁵ Cases have been brought on multiple theories of law, including breach of contract, malpractice, "switched before birth" and more. Recently, a Singapore case suggested a new tort when a husband's sperm was discovered not to have been used after his wife delivered the child: loss of expected "genetic affinity."¹⁰⁶ It remains to be seen what additional causes of action may be developed for these types of novel scenarios.

C. SAME-SEX MARRIAGE'S IMPACT ON ART RELATED DISPUTES

As the ARTS have expanded parentage options for both same-sex couples and single parents, these arrangements also challenge longstanding central tenets of legal parentage based on a biological relationship to the child, marriage to the child's biological parent, a preference for two parents over one, acting as a parent, or intending to be a parent.¹⁰⁷ Despite the Supreme Court's legal recognition of same-sex marriage in *Obergefell*, and its assumption that both spouses would be parents of any marital children,¹⁰⁸ same-sex couples in disputes about stored embryos, gametes or born children may still face greater legal challenges since much of the law still relies heavily on genetics and presumptions that may not apply beyond the right to get married.

Disputes between *any* unmarried couple involving use and possession of embryos or custody and parentage of children may also be more complicated than cases involving any married couples. In a ground-breaking case involving a separating unmarried female couple, the Massachusetts Supreme Judicial Court held that nothing in its statutes prevented recognizing a former partner as a child's presumptive parent under the state's parentage statute despite her having no biological relationship with the child or marital relationship with the biological parent.¹⁰⁹ This shifting emphasis on biology, genetics, and intent to parent continues to create unique challenges facing both married and unmarried same-sex couples in disputes over possession and use of embryos.¹¹⁰

Given these issues, practitioners will want to pay careful attention to reviewing or drafting specific disposition provisions in both private agreements and potentially amending clinic form documents for any same-sex clients, married or unmarried.

D. THE FALL OF DONOR ANONYMITY AND THE RISE OF FERTILITY FRAUD

As noted *supra*, the historical cloak of anonymity that originally surrounded sperm donation (and later egg donation) in the US has been replaced with a substantial move towards openness or

“identity release,” hastened by DNA testing and the internet. In this regard the US belatedly joins much of the rest of the world, where numerous countries have banned anonymity for many years.¹¹¹ Anonymous sperm donation as it was historically practiced also left room for some medical providers to use their own sperm, or that of their staff, without their patients’ knowledge or consent. Criminal fraud charges have been brought in some notorious cases, including against Dr. Cecil Jacobson, and more recently against Dr. Donald Cline.¹¹² To date, three states have passed legislation aimed at penalizing such actions as either civil or criminal actions.¹¹³

E. INSURANCE COVERAGE FOR INFERTILITY, FERTILITY, AND FERTILITY PRESERVATION

Efforts to mandate insurance coverage for infertility in the US date back to the 1980s. The first infertility mandates were passed in Maryland in 1985 and in Hawaii in 1989; both were limited mandates, providing some—but not comprehensive—coverage for medically indicated fertility.¹¹⁴ In 1988, Massachusetts enacted what remains one of the most comprehensive infertility mandates in the country, a result of a two-year grassroots effort, that this author participated in.¹¹⁵

Since that time, approximately 16 US states have enacted some form of infertility mandates.¹¹⁶ Coverage varies in terms of whether and to what extent IVF is covered, what types of medical conditions warrant coverage, what preliminary protocols patients may be required to undergo before proceeding to ART protocols, and inconsistent caps on elements such as number of cycles, total costs or maximum patient age. In addition, the extent to which any infertility mandate covers patients who may not have a medical infertility diagnosis, including same-sex couples, single men, and post-menopausal women, have all been the subject of extensive debate in legal and policy circles and are beyond the scope of this article.

Very recently, fertility preservation mandates have been introduced in several states with significant success. These nine mandates to date address the gaps of typical infertility mandates that do not cover, for example, cancer patients: those who are not presently infertile, but who will experience iatrogenic infertility due to procedures or medications. These newer mandates require coverage of the costs of an IVF cycle to retrieve gametes and cryopreserve reproductive tissue in the form of gametes or embryos.¹¹⁷ In 2018, fertility preservation guidelines were issued by the American Society of Clinical Oncology with “key recommendations” for patients with cancer, including that “[s]perm, oocyte, and embryo cryopreservation are considered standard practice and are widely available,” and that “the field of ovarian tissue cryopreservation is advancing quickly and may evolve to become standard therapy in the future.”¹¹⁸

F. ONCOFERTILITY AND ART

From a legal perspective, the arrival of reliable egg freezing technology offers the ability to preserve women’s reproductive autonomy and to avoid future embryo disputes with a former partner or known donor. Today, oncologists increasingly refer their female patients of child-bearing age (and even younger adolescents) to reproductive specialists for very rapid fertility preservation egg or embryo freezing IVF cycles prior to cancer treatment. There are multiple reported cases where such women have hastily undergone IVF cycles with spouses, unmarried partners, and male friends, only to find themselves in litigation over their future access to those embryos.¹¹⁹ Legal and medical issues will need to be balanced as the emerging medical field of oncofertility becomes more established and egg freezing becomes even more reliable. At some point, egg freezing may become the standard of care even for partnered women. Until then, whether and how women are counseled on decisions to freeze embryos or eggs raise novel questions as to informed consent and professional liability.¹²⁰

G. POSTHUMOUS REPRODUCTION

As noted *supra*, posthumous reproduction in terms of the birth of a child after the death of his or her father long predates IVF.¹²¹ With IVF and cryopreservation of sperm, eggs and embryos, legal issues and litigation have now also arisen over who may access and use reproductive tissue stored during a deceased's lifetime, with or without explicit consent, and whether the deceased will be a legally recognized parent to any resulting child, as well as who may authorize procuring—and then potentially use—sperm or eggs from a deceased or incompetent patient, and who will be the legal parent(s) of any resulting offspring.

Regarding parentage, a deceased gamete provider may or may not be a legal parent of posthumously born offspring. In 2012, the US Supreme Court ruled that state intestacy law will determine whether a resulting child is recognized as an heir, and thus entitled to certain financial benefits, such as child support, inheritance, life insurance, and Social Security death benefits.¹²²

Regarding use, a decedent's act of cryopreserving his gametes while alive does not necessarily imply consent to posthumous use for reproduction or parentage.¹²³ Given many courts' strong stance against "forced procreation,"¹²⁴ it would seem unlikely courts would authorize procreative use of cryopreserved reproductive tissue in posthumous reproduction without a decedent's explicit or at least implied consent. Nevertheless, there are multiple anecdotally reported cases of posthumous extraction or continued storage in the absence of the decedent's express consent.¹²⁵

While surgical extraction of sperm from a deceased or comatose individual has been reported since 1978, with the first reported live birth occurring in 1999,¹²⁶ egg retrieval would require both stimulation medications and more complex medical interventions. Such requests have been made and raise numerous legal and ethical questions beyond the scope of this article.¹²⁷ Requests for retrieval of gametes from a deceased or incompetent individual almost always involve extremely difficult and emotional circumstances, quite likely to occur in an emergency and during an intense grief process for those involved. Anecdotally, there are many more cases of posthumous extraction and cryopreservation than there are instances of ultimate procreative use.¹²⁸ Courts may be more receptive to allowing retrieval and cryopreservation to be done to preserve the opportunity for future procreative use but require a separate hearing on any actual use of the reproductive tissue at a later date. An experienced mental health counselor can be invaluable in any decision-making process, and directly addressing the emotional needs of surviving family members has been a very effective way to help navigate grief, clarify ultimate interests and goals, and more clearly address what may be shifting priorities and objectives.

VIII. "LEGALLY SPEAKING": THE FUTURE OF ART LAW AND MEDICINE?

Without question, remarkable new developments in reproductive medicine, genetics and technologies will continue to emerge and outpace the law. Those who want to build biologically related families with the help of donors, surrogates and professionals, will force a continuing expansion of the legal definition of "family" and other legal paradigms, including a reexamination of reproductive rights and its limits in the context of both embryos and individuals.

Remarkable scientific advances are on the horizon. Experimental and still dreamed of developments include: mitochondrial donation or replacement¹²⁹; CRISPR¹³⁰; converting embryonic stem cells into sperm or eggs for reproductive therapies¹³¹; extracorporeal gestation (artificial wombs, fetal sheep experiments to date)¹³²; and creating sex cells from stem cells of same or opposite sex individuals¹³³ (which might allow an individual of either sex to not only overcome infertility but create an egg or sperm and thereby create a genetically linked child to themselves and any same-sex partner, eliminating any need for a gamete donor).

Both mitochondrial replacement therapy and CRISPR are already being employed. The year 2017 saw the first live birth from the use of mitochondrial-replacement therapy.¹³⁴ This technology allows women to have a child without passing on a rare metabolic disease caused by faulty

mitochondria by replacing the mother's diseased mitochondria with healthy mitochondria (containing less than 1% of DNA) from a donor egg, at times misleadingly referred to as a "third-parent IVF."¹³⁵

Experimental uses of CRISPR-Cas9, a promising, precise genome editing technology that uses a tool called Cas9 to literally cut out genetic DNA at the embryonic stage to eliminate certain genetic anomalies before implantation, are underway,¹³⁶ notwithstanding concerns over both potential mistakes and modification of the germline (for disease or potential genetic enhancement).¹³⁷ Assuming the procedure is mainstreamed in the future, there is a possibility that, in addition to social, medical and ethical debates over the practice, malpractice suits will arise should the gene editing process go awry, much like the medical negligence suits arising from mistakes in PGT discussed *supra*.

Past and current assaults on reproductive rights have always had a potential or real impact on the ARTs, as seen in earlier discussions of embryos, gamete donors, and surrogacy. Artificial wombs hold both promise and fear. Just as surrogacy has separated motherhood from gestation, artificial wombs have the potential to completely sever reproductive rights from women's bodily autonomy and give male partners—or society—equal rights to end or continue pregnancies.

However reproductive and genetic medicine, science and technology advance, there will be a need to understand their unique offerings, historical context, and potential impact in order for law and policy makers to harness and help craft the policies and frameworks that will be needed to monitor, shape and guide these remarkable possibilities for law and society.

If the history of the ARTs teaches us anything, it is that what was once thought impossible and inconceivable, can very rapidly become both possible and mainstream. These eight-million once-miracle "test-tube" babies and all the remarkable advances they ushered into focus have and will continue to force society to confront the challenges and opportunities they have brought with them. It is hoped that an awareness of the medical history and developing trends in this inextricably intertwined medico-legal field will help the legal community recognize and protect all the participants and professionals involved in ART family-building and, most importantly, the offspring they continue to make possible.

ENDNOTES

1. Statistics available as of 2018, referencing data through 2014. Sophie Goodchild, *Eight million IVF babies since the birth of the world's first in 1978*, FOCUS ON REPRODUCTION (July 3, 2018), <https://www.focusonreproduction.eu/article/ESHRE-News-GlobalIVF18>.

2. See, e.g., UNIF. PARENTAGE ACT § 102 (9) (UNIF. L. COMM'N 2017) [hereinafter "UPA2017"]. See also Lisa Luetkemeyer & Kimela West, *Paternity Law: Sperm Donors, Surrogate Mothers and Child Custody*, 112:3 MO. MED. 162, 163 (2015).

3. *Donor*, MERRIAM-WEBSTER DICTIONARY ONLINE (2020), <https://www.merriam-webster.com/dictionary/donor> (last visited July 30, 2020).

4. See, e.g., *K.M. v. E.G.*, 117 P.3d 675, 682 (Cal. 2005).

5. SART defines insemination as "the placement of sperm via a syringe into a female's uterus [IUI] or cervix for the purpose of producing a pregnancy." *Insemination*, SOC'Y FOR ASSISTED REPROD. TECH., <https://www.sart.org/topics/topics-index/insemination/> (last visited July 30, 2020); see also *Boardwine v. Bruce*, 88 Va. Cir. 218, 223–24 (Va. Cir. Ct. 2014) (holding the state's artificial insemination statute did not apply to a woman who used a turkey baster to inseminate herself at home using a friend's sperm, and thus granting him paternity rights).

6. Joanna L. Grossman, *End of an Era: New Jersey Legalizes Surrogacy, 29 Years After Baby M*, VERDICT: LEGAL ANALYSIS & COMMENT. FROM JUSTIA (June 5, 2018), <https://verdict.justia.com/2018/06/05/end-of-an-era-new-jersey-legalizes-surrogacy-29-years-after-baby-m>.

7. Such countries include France, Germany, Italy and Spain. Other countries, such as the UK and Denmark, permit uncompensated surrogacy only. *Surrogacy Regulation by Country*, SURROGACY360, <https://surrogacy360.org/considering-surrogacy/current-law/> (last visited July 31, 2020).

8. UPA 2017, *supra* note 2. This article employs the term "traditional, genetic surrogate" to both recognize and distinguish the genetic component and avoid confusion for the reader.

9. ASRM defines ART as: "Assisted Reproductive Technologies are all treatments which include the handling of eggs and sperm and/or embryos. Some examples of ART are in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), pronuclear stage tubal transfer (PROST), tubal embryo transfer (TET), and zygote intrafallopian transfer (ZIFT)." *Assisted*

Reproductive Technologies, AM. SOC'Y FOR REPROD. MED., <https://www.asrm.org/topics/topics-index/assisted-reproductive-technologies/> (last visited July 31, 2020). See also *What is Assisted Reproductive Technology?*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/art/whatis.html> (last visited July 31, 2020) (“Although various definitions have been used for ART, . . . [t]hey do NOT include treatments in which only sperm are handled.”); *What is in vitro Fertilization?*, Soc’y for Assisted Reprod. Tech., <https://www.sart.org/patients/frequently-asked-questions/> (last visited July 31, 2020).

10. Ricardo H. Asch et al., *Pregnancy After Translaparoscopic Gamete Intrafallopian Transfer*, 324 LANCET 1034, 1034–35 (1984).

11. See, e.g., *Harnicher v. Univ. of Utah Med. Ctr.*, 962 P.2d 67, 68 (Utah 1998).

12. Andrea Mechanick Braverman, *How the Internet is Reshaping Assisted Reproduction: From Donor Offspring Registries to Direct-to-Consumer Genetic Testing*, 11:2 MINN. J.L. 477, 495–96 (2010).

13. H.R. 2880, 104th Cong. (1996).

14. See UNIF. PARENTAGE ACT (UNIF. LAW COMM’N 2002) [hereinafter “UPA 2002”]. See, e.g., Cal. Fam. Code § 7611 (Deering 2020).

15. Braverman, *supra* note 12, at 478.

16. Ellen Trachman, *Donor Anonymity Walls are Crumbling – and This New California Law is Helping*, ABOVE THE LAW (Sept. 4, 2019), <https://abovethelaw.com/2019/09/donor-anonymity-walls-are-crumbling-and-this-new-california-law-is-helping/>.

17. *Sperm Washing*, CNY Fertility, <https://www.cnyfertility.com/sperm-washing/>.

18. See Kristine S. Knaplund, *Children of Assisted Reproduction*, 45 UNIV. MICH. J.L. REFORM 899, 900 n.5 (2012) (courts finding AI parentage statutes do not apply to IVF because the processes are completely different); *Boardwine*, *supra* note 5 (holding AI, though expressly included in state’s statutory definition of “assisted conception,” did not apply unless a physician was involved).

19. “The Road Not Taken” was published as part of a compendium of poems by Robert Frost, who autographed and distributed it to his undergraduate students at Amherst College, including Howard W. Jones, Jr. “Dr. Howard” recited the poem over the course of his life, as an example of—and inspiration for—his and his wife, “Dr. Georgeanna’s” pioneering careers and the unexpected twists and turns that led to their pivotal leadership roles in the medical, policy, and ethical development of IVF and the ARTs.

20. Of necessity, this significantly abbreviated story starts at a mid-point: fertility research began over a century ago and IVF animal research and preliminary efforts occurred as early as the 1930’s in the US. For a more detailed medical history of IVF, see Whitney Braun, *The History of Assisted Reproductive Technology in Under 1000 Words*, HUFFPOST (Mar. 14, 2016), https://www.huffpost.com/entry/what-do-christmas-trees-a_b_8851496; and Remah Moustafa Kamel, *Assisted Reproductive Technology After the Birth of Louise Brown*, 14 J. OF REPROD. & INFERTIL. 96 (2013), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3799275/>.

21. Alok Jha, *British IVF Pioneer Robert Edwards Wins Nobel Prize for Medicine*, GUARDIAN (Oct. 4, 2010), <https://www.theguardian.com/science/2010/oct/04/ivf-pioneer-robert-edwards-nobel-prize-medicine>.

22. Robert G. Edwards, *Tribute to Georgeanna and Howard Jones*, 6(3) REPROD. BIOMED. ONLINE 352 (2003).

23. Human Fertilisation and Embryology Act 1990 (Eng.); Infertility (Medical Procedures) Act 1984 (Vic) (Austl.).

24. For readers interested in a review of international regulation, resources including IFFS and ICMART are readily available; and for readers interested in various international judicial treatment of some of the issues raised by IVF and ART, cases from both the ECHR and IACHR are illuminating.

25. HOWARD W. JONES, JR., *IN VITRO FERTILIZATION COMES TO AMERICA: MEMOIR OF A MEDICAL BREAKTHROUGH*, 14 (2014); Danielle Silliman, *How One Doctor Tried for 30 Years to Bring Clarity to the Abortion Conversation*, WASH. POST (Aug. 5, 2015), <https://www.washingtonpost.com/news/acts-of-faith/wp/2015/08/10/how-one-doctor-tried-for-30-years-to-bring-clarity-to-the-abortion-conversation/>.

26. Jones, *supra* note 25 at 18.

27. *Id.* at 40–52.

28. *Id.* at 95–100.

29. Ethics Comm. of the Am. Fertility Soc’y, *The Moral and Legal Status of the Embryo*, in ETHICAL CONSIDERATIONS OF THE NEW ASSISTED REPRODUCTIVE TECHNOLOGIES, 46 Fertility & Sterility 29 (Sept. 1986).

30. *Davis v. Davis*, 842 S.W.2d 588, 589, 596 (Tenn. 1992).

31. UPA § 102(9) (2002).

32. See, e.g., TEX. FAM. CODE ANN. § 160.204(a)(2) (West 2019); LA. CIV. CODE ANN. art. 185 (2020).

33. *Roe v. Wade*, 410 U.S. 113, 163 (1973); *Baird v. Eisenstadt*, 405 U.S. 438, 453–455 (1972); *Griswold v. Connecticut*, 381 U.S. 479, 485 (1965).

34. *Embryo*, STEDMAN’S MEDICAL DICTIONARY (23d ed.1976).

35. *Commonwealth v. Edelin*, 359 N.E.2d 4, 5 (Mass 1976).

36. *Lifchez v. Hartigan*, 735 F. Supp. 1361, 1376 (N.D. IL. 1990).

37. For a more in-depth discussion of the medical distinctions and legal impact, see, e.g., Susan L. Crocker & Celine Anselmina Lefebvre, *Sound Bites or Sound Law and Science? Distinguishing “Fertilization” and “Conception” in the Context of Preimplantation IVF Embryos, ESCR, and Personhood*, 3 ETHICS IN BIOLOGY, ENGINEERING & MED.: AN INT’L J. 247 (Jan. 2012), and Howard Jones & Lucinda Veeck, *What is an Embryo?*, 77 FERTILITY & STERILITY 658, 659 (2002).

38. The widespread interest and questions engendered by the first IVF frozen embryo dispute, *Davis v. Davis*, prompted this author in 1990 to create a national legal column for ASRM (then the American Fertility Society or “AFS”), “*Legally*

Speaking: a column highlighting recent court decisions affecting the assisted reproductive technologies and the families they create,” to analyze for physicians the developing IVF and ART law and its impact on their practices. Still published regularly, “*Legally Speaking*” can be accessed at www.asrm.org. It formed the basis for a textbook co-authored with the late Howard M. Jones, Jr. entitled *LEGAL CONCEPTIONS: EVOLVING LAW AND POLICY OF THE ARTS* (2010).

39. Jones & Veeck, *supra* note 37 at 658; Susan L. Crockin, “*What is an Embryo?*”: *A Legal Perspective*, 36 *CONN. L. REV.* 1177, 1180–81 (2004).

40. *Id.* at 1179.

41. For a detailed discussion of these definitional terms and the significance see, Crockin & Lefebvre, *supra* note 37.

42. Sarah Zhang, *A Woman Gave Birth from an Embryo Frozen for 24 Years*, *ATLANTIC* (Dec 21, 2017).

43. Crockin, *supra* note 39 at 1179; Susan L. Crockin, *The “Embryo” Wars: At the Epicenter of Science, Law, Religion, and Politics*, 39 *FAM. L. Q.* 599 (2005).

44. *York v. Jones*, 717 F. Supp. 421 (E.D. Va. 1989); *Del Zio v. Presbyterian Hospital*, 1978 US Dist. LEXIS 14450 (S.D.N.Y. 1978).

45. *Del Zio*, 1978 US Dist. LEXIS 14450 (S.D.N.Y. 1978).

46. Kimi Yoshino, *UCI Settles Dozens of Fertility Suits*, *LA TIMES* (Sept. 11, 2009), <https://www.latimes.com/archives/la-xpm-2009-sep-11-me-uci-fertility11-story.html>.

47. *Davis*, 842 S.W.2d 588, 589, 596 (Tenn. 1992).

48. *Id.*

49. *Bilbao v. Goodwin*, 217 A.3d 977, 984 (Conn. 2019). Notably, numerous cases have blended these theories together; also, these courts have reversed a number of lower courts’ sympathetic rulings in favor of cancer survivors whose embryos represent their last chance at biological parentage, based on a more dispassionate analysis of the law and facts.

50. *McQueen v. Gadberry*, 507 S.W.3d 127, 158 (Mo. Ct. App. 2016).

51. *Bilbao* 217 A.3d 977 (Conn. 2019); *A.Z. v. B.Z.*, 725 N.E.2d 1051, 1059 (Mass. 2000); and *J.B. v. M.B.*, 783 A.2d 707, 720 (NJ 2001).

52. *See, e.g.*, *Ezzone v. Ezzone*, Ohio No. 96 DR 000359, Ct. Common Pleas, Dir. Dom. Rels. (Ohio Oct 24, 1997) and *McDonald v. McDonald*, 196 A.D. 2d 7 (NY Sup. Ct. 1994), where two courts rejected an ex-husband’s efforts to claim custody over his ex-wife because the children were born with donor eggs; *Litowitz v. Litowitz*, 48 P.3d.261 (2002) (finding couple had equal claims to donor egg embryos only because of contract); and *ARIZ. REV. STAT. ANN. § 25–318.03(A)(3)* (2020) (prioritizing claims of the genetic contributor to embryos formed with donor gametes).

53. *Findley v. Lee*, No. FDI-13-780539 (Cal. Super. Ct. Jan. 11, 2016); *Bilbao*, 217 A.3d 977, 984 (Conn. 2019); *Davis*, 842 S.W.2d 588, 589, 596 (Tenn. 1992).

54. The forms are available for professional members at www.asrm.org; the author has been a member of the long-standing committee that has drafted and revised these forms since its inception.

55. CAL. HEALTH & SAFETY CODE § 125315 (Deering 2020).

56. CONN. GEN. STAT. § 32-41jj (2020).

57. MASS. GEN. LAWS ANN. ch. 111 L, § 4 (West 2020).

58. TEX. OCC. CODE ANN. § 159.011 (West 2019).

59. Bill Chappell, *Fertility Clinic Says Failure May Have Damaged Thousands of Eggs and Embryos*, NPR (Mar. 12, 2018), <https://www.npr.org/sections/thetwo-way/2018/03/12/592855998/fertility-clinic-says-a-failure-may-have-damaged-thousands-of-eggs-and-embryos>.

60. *Penniman v. Univ. Hosp. Health Sys.*, 130 N.E.3d 333, 339 (Ohio Ct. App. 2019); John Caniglia, *UH Freezer Malfunction Update: More than 150 Families Settle Lawsuits in Loss of Embryos*, *Cleveland.com* (Sept. 29, 2019), <https://www.cleveland.com/news/2019/09/uh-freezer-malfunction-update-more-than-150-families-settle-lawsuits-in-loss-of-embryos.html>.

61. 42 U.S.C.S. § 263a-1–263a-7 (LexisNexis 2020) (current through P.L. 116–150).

62. For a historical analysis of this contentious issue, *see, e.g.*, RONALD M. GREEN, *THE HUMAN EMBRYO RESEARCH DEBATES* (Oxford 2001).

63. H.R. 2880, 104th Cong. (1996).

64. Illinois, Missouri, Oklahoma, South Carolina, Tennessee, West Virginia, and Wisconsin; *see Opposing Personhood, RESOLVE: THE NATIONAL INFERTILITY ASSOCIATION*, (July 12, 2020), <https://resolve.org/our-issues/opposing-personhood/>

65. UPA 2017, *supra* note 2, §§ 102, 702 (“A donor is not a parent of a child conceived by assisted reproduction.”). *See also* ALA. CODE § 26–17-702 (2020), ME. REV. STAT. ANN. Tit. 19-A § 1922 (2016), N.M. Stat. Ann. § 40-11A-702 (LexisNexis 2020), 15C V.S.A. § 702 (2017), WASH. REV. CODE ANN. § 26.26A.605 (LexisNexis 2019). Unique among states, Louisiana categorizes an “in vitro fertilized human ovum” as “a juridical person which cannot be owned by the in vitro fertilization parents who owe it a high duty of care and prudent administration.” Excess embryos in that state must be made available, solely to heterosexual, married couples, for “adoptive implantation.” LA. STAT. ANN. § 9:129 (1986).

66. A.H. Handyside et al., *Pregnancies from Biopsied Human Preimplantation Embryos Sexed by Y-Specific DNA Amplification*, 344 *NATURE* 768 (1990), <https://www.nature.com/articles/344768a0>.

67. *See* Am. Soc’y for Reprod. Medicine., *The use of preimplantation genetic testing for aneuploidy (PGT-A): a committee opinion*, 109 *FERTILITY & STERILITY* 429 (2018), https://www.asrm.org/globalassets/asrm/asrm-content/news-and-publications/practice-guidelines/for-non-members/use_of_pgt-a.pdf (value of PGT-A for aneuploidy to be determined); ASRM, *Preimplantation Genetic Testing for Chromosomal Defects Improves IVF Outcomes in Patients with Recurrent Pregnancy Loss*, SOC’Y FOR ASSISTED REPROD. TECH. (Oct. 14, 2019), <https://www.sart.org/news-and-publications/news-and-research/>

press-releases-and-bulletins/preimplantation-genetic-testing-for-chromosomal-defects-improves-ivf-outcomes-in-patients-with-recurrent-pregnancy-loss/ (benefit of PGT-A for patients with recurring pregnancy loss).

68. See, e.g., *Editorial: PGDIS Position Statement on the Transfer of Mosaic Embryos 2019*, 39 RBMO e1, e1 (2019).

69. As egg donation has grown, at least five states have expanded their donor-related parentage laws to explicitly include egg donors and in most cases embryo donation, see, e.g., ALA. CODE § 26–17-702 (LexisNexis 2009); CAL. FAM. CODE § 7613 (Deering 2020); CONN. GEN. STAT. ANN. § 45a-775 (West 2020); FLA. STAT. ANN. § 742.11 (LexisNexis 2020); N.M. STAT. ANN. § 40-11A-702 (LexisNexis 2020).

70. FDA requirements and guidance can be found at: *Donor Eligibility: Final Rule and Guidance Questions and Answers*, U.S. FOOD AND DRUG ADMIN. (Mar. 22, 2018, <https://www.fda.gov/vaccines-blood-biologics/tissue-tissue-products/donor-eligibility-final-rule-and-guidance-questions-and-answers>); some exceptions remain as to sperm from known, sexually intimate partners.

71. Jody Lynée Madeira & Susan L. Crockin, *Legal Principles and Seminal Legal Cases in Oocyte Donation*, 110 FERTILITY & STERILITY 1209 (2018).

72. Braverman, *supra* note 12.

73. A few examples include a sperm donor recruited from Craigslist by a single woman was initially held to be a legal father and liable for child support against his and the woman's intentions. See Luke Ranker, *Shawnee County Judge: Topeka sperm donor William Marotta not legally child's father*, TOPEKA CAPITAL-JOURNAL (Nov. 28, 2016), <https://www.cjonline.com/news/2016-11-28/shawnee-county-judge-topeka-sperm-donor-william-marotta-not-legally-child-s-father>. In Virginia, a single woman similarly found herself with a father and not a donor of her child after a home insemination when the VA Supreme Court ruled did not comply with its statute. Boardwine, *supra* note 5.

74. Jason P. v. Danielle S., 226 Cal. App. 4th 167, 170 (2014) (hereinafter "*Jason P. I*").

75. *Id.* at 181.

76. Jason P. v. Danielle S., 9 Cal. App. 5th 1000, 1019–20 (2017) (hereinafter "*Jason P. II*").

77. *Jason P. I supra* note 74 at 178–79.

78. *Jason P. II, supra* note 76 at 1025–26.

79. ASRM, *In Vitro Fertilization (IVF): What are the Risks?*, Reproductivefacts.org, (Aug. 1, 2020), <https://www.reproductivefacts.org/news-and-publications/patient-fact-sheets-and-booklets/documents/fact-sheets-and-info-booklets/in-vitro-fertilization-ivf-what-are-the-risks/>.

80. *Kamakahi v. Am. Soc'y for Reproductive Medicine*. N.D. Cal. Civ. R. 1–1 (2016) U.S. Dist. LEXIS 186798; *Perez v. Comm'r of Internal Revenue*, 144 T.C.R. 51 (2015).

81. See Robert Klitzman & Mark V. Sauer, *Payment of Egg Donors in Stem Cell Research in the USA*, 18 REPROD. BIOMED. ONLINE 603 (2009), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3667654/>.

82. Libby Nelson, *New York State Allows Payment for Egg Donation Research*, NY TIMES (June 6, 2009) <https://www.nytimes.com/2009/06/26/nyregion/26stemcell.html>; Beth E. Roxland, *New York State's Landmark Policies on Oversight and Compensation for Egg Donation to Stem Cell Research*, 7 REGENERATIVE MEDICINE (2012), <https://www.futuremedicine.com/doi/10.2217/rme.12.20>.

83. *K.M. v. E.G.*, 117 P.3d 673 (Cal. 2005).

84. *Lambda Legal Applauds New York Court Ruling Affirming Adoption Rights for Married Same-Sex Couples*, LAMBDA LEGAL (Oct. 12, 2016), https://www.lambdalegal.org/blog/20161012_court-ruling-affirming-adoption-rights?gclid=Cj0KCQjwgo_5BRDuARIsADDEntSXqSb-r5q-Wn8c3Z0_DWEJJOZ2cRrEDHW9-zp_0PI6dGHOoiNc4wXIaAgvSEALw_wcB.

85. A more in-depth discussion of legal issues surrounding egg donation can be found in Madeira & Crockin, *supra* note 71.

86. *In re Baby M*, 537 A.2d 1227 (N.J. 1988).

87. *Id.*

88. *R.R. v. M.H.*, 689 N.E.2d 790 (Mass. 1998).

89. *Rosecky v. Schissel*, 833 N.W.2d 634 (Wis. 2013).

90. N.J. STAT. ANN. §§ 9:17–60—68 (West 2020).

91. Legal Profs. Group of the Am. Soc'y for Reprod. Medicine. *Surrogacy Laws by State*. LEGAL PROF. GROUP, (Feb. 25 2020) <https://connect.asrm.org/lpg/resources/surrogacy-by-state?ssopc=1>.

92. *Roe v. Wade*, 410 U.S. 113 (1973), holding modified by *Planned Parenthood of Se. Pennsylvania v. Casey*, 505 U.S. 833 (1992).

93. ASRM's 2018 Ethics Committee opinion also recognizes that "gestational carriers are the sole source of consent regarding their medical care..." and there is widespread consensus that separate, ART experienced, independent counsel should be involved in drafting any legal agreements to ensure protections such as that are made part of any contract. Ethics Committee of the American Soc'y of Reprod. Medicine. *Consideration of the gestational carrier: An Ethics Committee Opinion*. 110–6 FERTILITY AND STERILITY 1017 (2018).

94. Angela Mauroni, *Virginia senate approves bill to prevent surrogates from being forced to abort multiples*, JURIST (Feb. 5, 2020). <https://www.jurist.org/news/2020/02/virginia-senate-approves-bill-to-prevent-surrogates-from-being-forced-to-abort-multiples/>.

95. Susan L. Crockin and Gary A. Debele, *Ethical issues in assisted reproduction: a primer for family law attorneys*, 27 J. AM. ACAD. MATRIM. LAW 289 (2015); *Stiver v. Parker*, 975 F.2d 261 (6th Cir. 1992).

96. Stiver, *supra* note 95.
97. Huddleston v. Infertility Ctr. of Am., 700 A.2d 453 (Pa. Super. Ct. 1997).
98. Ng-Wagner v. Hotchkiss, 2018 Md. App. 482, (Md. Ct. Spec. App. 2018). Available at: <https://casetext.com/case/ng-wagner-v-hotchkiss>.
99. *Id.*
100. Johnson v. Calvert, 851 P.2d 776 (Cal. 1993).
101. *In re* Marriage of Buzzanca, 72 Cal. Rptr. 2d 280 (Cal. Ct. App. 1998).
102. *In re* S.S., 128 A.3d 296 (Pa. Super. Ct. 2015).
103. See, e.g., Susan L. Crockin & Kathryn C. Gottschalk, *Legal Issues in Gamete and Embryo Cryopreservation: An Overview*, 36 SEMINARS IN REPROD. MEDICINE. 299 (2018); Crockin and Debele, *supra* note 95.
104. Pate v. Threlkel, 661 So. 2d 278 (Fla. 1995); Safer v. Estate of Pack, 677 A.2d. 1188 (N.J. Super. Ct. App. Div., 1996).
105. Asch, *supra* note 10 (intentional), see Catherine Saillant, *Fugitive in UC Irvine Fertility Scandal Arrested in Mexico City*, LA TIMES (Dec. 27, 2010), <https://latimesblogs.latimes.com/lanow/2010/12/uci-fertility-scandal-ricardo-asch-arrest-mexico-city-extradition.html>; Robert B. v. Susan B., 135 Cal. Rptr. 2d 785 (Cal. Ct. App. 2003) (accidental); Perry-Rogers v. Fasano, 715 N.Y.S.2d 19 (N.Y. App. Div. 2000) (accidental); ACB v. Thomson Medical Pte. et al., (Supreme Court of Singapore 2017) (accidental).
106. ACB, *supra* note 105.
107. Leslie Joan Harris, *Obergefell's Ambiguous Impact on Legal Parentage*, 92 CHI.-KENT L. REV. 55, 56 (2017).
108. Obergefell v. Hodges, 576 U.S. 644 (2015).
109. Partanen v. Gallagher, 59 N.E.3d 1133 (Mass. 2016).
110. Harris, *supra* note 107 at 59–63.
111. For a comprehensive review of donor anonymity and disclosure practices, see INT'L FED'N FERTILITY SOC'Y SURVEILLANCE, *Donation and Anonymity of Donors*, in GLOBAL TRENDS IN REPRODUCTIVE POLICY AND PRACTICE (Glob. Reprod. Health, 8th ed. 2019).
112. United States v. Jacobson, 1993 U.S. App. LEXIS 22534 (4th Cir. 1993); Sarah Zhang, *The Fertility Doctor's Secret*, ATLANTIC (March 18, 2019), <https://www.theatlantic.com/magazine/archive/2019/04/fertility-doctor-donald-cline-secret-children/583249/>.
113. California, Texas, and Indiana. Jody Lynce Madeira, “Legally Speaking” Column, *Fertility Fraud: An Update*, AM. SOC'Y REPROD. MED. (Oct. 21, 2019), <https://www.asrm.org/news-and-publications/news-and-research/legally-speaking/fertility-fraud-an-update/>.
114. HAW. REV. STAT. § 431:10A-116.5 (2020); MD. CODE ANN., INS. § 15–810 (LexisNexis 2020).
115. MASS. GEN. LAWS ch. 175 § 47H (2020).
116. *Infertility Coverage by State*, RESOLVE: THE NAT'L INFERTILITY ASS'N, <https://resolve.org/what-are-my-options/insurance-coverage/infertility-coverage-state> (last visited Aug. 3, 2020).
117. Colorado, Kentucky, Massachusetts, Missouri, New York, Oregon, and Virginia. *Covering Fertility Preservation*, RESOLVE: THE NAT'L INFERTILITY ASS'N, <https://resolve.org/get-involved/become-an-advocate/our-issues/covering-fertility-preservation/> (last visited Aug. 3, 2020).
118. Kutluk Oktay et al., *Fertility Preservation in Patients with Cancer: ASCO Clinical Practice Guideline Update*, 36 J. CLINICAL ONCOLOGY (SPECIAL ISSUE) 1 (2018).
119. E.g., Szafranski v. Dunston, 34 N.E.3d 1132 (Ill. App. Ct. 2015); *Findley*, *supra* note 53; McQueen v. Gadberry, 507 S.W.3d 127 (Mo. Ct. App. 2016); Terrell v. Torres, 438 P.3d 681 (Ariz. Ct. App. 2019).
120. Crockin and Debele, *supra* note 95; Susan L. Crockin, *Legal Issues in Oncofertility Treatment*, in THERESA WOODRUFF ET AL., *TEXTBOOK OF ONCOFERTILITY RESEARCH AND PRACTICE: A MULTIDISCIPLINARY APPROACH* 333–348 (Springer 2019).
121. John Robertson, *Posthumous Reproduction*, 69 IND. L.J.1027 (1994); Hecht v. Superior Court, 20 Cal. Rptr. 2d 275 (Cal. Ct. App. 1993) (discussing the disposition of stored sperm).
122. Astrue v. Capato, 566 U.S. 541, 543, 558 (2012).
123. Woodward v. Comm'r of Soc. Sec., 760 N.E.2d 257 (Mass. 2002); Estate of Kievernagel, 83 Cal. Rptr. 3d 311 (2008); Robertson v. Saadat, 48 Cal. App. 5th 630, 262 Cal. Rptr. 3d 215 (2020).
124. See, e.g., *A.Z.*, *supra* note 51, at 1057 (“As a matter of public policy, we conclude that forced procreation is not an area amenable to judicial enforcement”).
125. Based on multiple unreported cases involving the author’s clients, legal colleagues, and medical programs and personnel involved in these procedures, often under emergency situations, and resolved informally or by expedited court order without objection by various surviving family members, as well as internal data compiled by at least one large private sperm bank concerning the lack of posthumous usage of stored sperm.
126. Barron H. Lerner, *In a Wife's Request at Her Husband's Deathbed, Ethics Are an Issue*, N.Y. TIMES, Sept. 7, 2004, at F5.
127. See David M. Greer et al., *Case 21–2010: A Request for Retrieval of Oocytes from a 36-Year-Old Woman with Anoxic Brain Injury*, 363 N. ENGL. J. MED. 276 (2010) (noting clinical and ethical concerns, including potential discomfort resulting from the necessity of 7–10 days of stimulation medication and a retrieval procedure performed in a position that might also have hastened this particular patient’s death).
128. Based on the experience of the author and colleagues.

129. Jessica Hamzelou, *Everything You Wanted to Know About '3-Parent' Babies*, NEW SCIENTIST (Sept. 28, 2016), <https://www.newscientist.com/article/2107451-everything-you-wanted-to-know-about-3-parent-babies/>.

130. Mohammad-Reza Mahmoudian-sani et al., *CRISPR Genome Editing and Its Medical Applications*, 32 BIOTECHNOLOGY & BIOTECHNOLOGICAL EQUIPMENT 286 (2017).

131. Sonia Suter, *In Vitro Gametogenesis: Just Another Way to Have a Baby?*, 3 J. L. & BIOSCIENCES 87 (2016); Peter Aldous, *Are Male Eggs and Female Sperm on the Horizon?*, NEW SCIENTIST (Jan 30, 2008), <https://www.newscientist.com/article/mg19726414.000-are-male-eggs-and-female-sperm-on-the-horizon/>.

132. See, e.g., Michelle Roberts, *Premature Lambs Kept Alive in 'Plastic Bag' Womb*, BBC NEWS (Apr. 25, 2017), <http://www.bbc.com/news/health-39693851>.

133. Aldous, *supra* note 131.

134. Sara Reardon, *Genetic Details of Controversial 'Three-Parent Baby' Revealed*, 544 NATURE 17 (2017).

135. In lay terms, eggs have both a nucleus, which contains more than 99% of the DNA, and surrounding fluid—mitochondria—that powers the egg and comprises less than 1% of the genetic contribution. A mitochondrial donor is thus even less of a genetic contributor than a full egg donor or sperm donor, and the legal community has been vocal in trying to correct the medical community and mainstream media not to use “three-parent IVF” and to use “three-person IVF” and “mitochondrial donor” (or donation) as the more accurate terms. For more information, see Hamzelou, *supra* note 129; John Harris, *Misleading Talk of 'Three-Parent Babies' Helps No One*, GUARDIAN (Sept. 19, 2012), <https://www.theguardian.com/commentisfree/2012/sep/19/misleading-three-parent-babies-gene-therapy>.

136. Heidi Ledford, *CRISPR, The Disrupter*, 522 NATURE 20 (2015).

137. David King, *Editing the Human Genome Brings Us One Step Closer to Consumer Eugenics*, GUARDIAN (Aug 4, 2017), <https://www.theguardian.com/commentisfree/2017/aug/04/editing-human-genome-consumer-eugenics-designer-babies>.

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