FROM HUMAN EMBRYOS TO INTERSPECIES CREATIONS: ETHICAL AND LEGAL UNCERTAINTIES SURROUNDING THE CREATION OF CYTOPLASMIC HYBRIDS FOR RESEARCH

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ABSTRACT

This article discusses the legal and policy implications of the creation of cytoplasmic hybrid embryos for stem cell derivation research in Canada. Drawing on recent debates in the United Kingdom over the legal and ethical propriety of this research technique, and consequent judicial reflection and legislative developments on the issue, the authors examine the legal status of this research in Canada, provide a critical analysis of arguments for and against conducting cytoplasmic hybrid research, and proffer recommendations for future Canadian policy action.

INTRODUCTION

Human embryonic stem cell research (hESC) is once again embroiled in controversy—this time over the creation and use of interspecies embryos in research. The controversy, which has generated considerable attention in the popular press, stems from applications for licences made by two research teams in the United Kingdom (UK) to create cytoplasmic hybrids through the process of somatic cell nuclear transfer (SCNT). This is accomplished by inserting genetic material from a human somatic cell (such as a skin cell)—or indeed the entire somatic cell—into enucleated non-human oocytes. The process seeks to enable researchers to study disease etiology using embryonic stem cells cloned from human adult cells, while avoiding the medical and ethical concerns associated with reliance on human oocytes for stem cell research. It would also provide a source
of presumably ‘less contentious’ stem cells derived from human adult or somatic cells, though the process is not without controversy, as we will explore below.

In response to the licence applications, the Human Fertilisation and Embryology Authority (HFEA), the UK’s regulator of embryo research (as well as clinical applications of some assisted reproductive technologies (ARTs)), initiated public consultations on the ethical and social implications of creating human-animal hybrid embryos for research. The licensing decision was placed on hold pending the outcome of the consultation, a move that led to: a highly divisive debate among supporters and opponents of the ban; a legislative proposal seeking to ban the use of hybrid embryos and chimeras in research; and, a call by the Science and Technology Committee (STC) of the UK House of Commons for regulation rather than prohibition of the research activity. The STC also criticised the HFEA for putting the applications on hold, and for abdicating its statutory role ‘to make judgement in areas considered within the spirit of the HFE Act [Human Fertilisation and Embryology Act].’

Following the public consultations, the HFEA approved the licence applications in January 2008, thereby permitting research on cytoplasmic hybrids to commence in the UK. A few months later, on 27 March 2008, one of the groups, led by Lyle Armstrong at Newcastle University, announced that they had succeeded in creating hybrid embryos from an enucleated bovine oocyte and human genetic material taken from an embryonic stem cell line. The hybrids were cultured for three days, but no stem cells were derived.

More recently, the UK House of Commons approved amendments to the Human Fertilisation and Embryology Act (HFE Act)—the UK’s assisted reproduction and embryo research legislation—which directly address the legal status of hybrid embryos, or as referred to in the amended law, human admixed embryos. The amendments allow for the creation of human admixed embryos, including cytoplasmic hybrids, under a licence and provided the embryos are not kept for longer than fourteen days from the day of creation, or beyond the appearance of the primitive streak. The amendments also prohibit the reproductive use of all human admixed embryos.

In Canada, the regulatory framework for the creation of cytoplasmic hybrids for research remains unclear and under-examined. Canada’s reproductive technologies and related research legislation, the Assisted Human Reproduction Act (AHRA or Act), criminally prohibits the creation of embryos, human clones and chimeras, and restricts the purposes for which other forms of human-animal combinations can be created. In this brief article, we examine the legality of creating cytoplasmic hybrids for stem cell research purposes under Canadian law, and provide some perspective on how the debate
over the creation of interspecies embryos for research might play out in Canada. Our analysis relies mainly on a review of the AHRA, and of the Tri-Council Policy Statement (TCPS), Canada’s primary research ethics policy instrument (other policy instruments dealing with research on interspecies creations, though not directly relevant to the discussion, appear in Chart 1). We then offer a critical analysis of the ethical and legal implications of creating cytoplasmic hybrids for stem cell research, including recommendations for future Canadian policy action.

**Cytoplasmic hybrids under the AHRA**

The AHRA regulates embryonic and interspecies creations through a combination of outright prohibitions, regulations and licensing schemes. Section 5 of the Act prohibits the creation of (i) a human clone, for any purpose whatsoever, (ii) an *in vitro* embryo, except for the purpose of creating a human being or to provide instruction in assisted reproduction procedures, and (iii) a hybrid, for the purpose of reproduction or transplantation into a human or non-human life form. Section 11 of the Act requires the licensing of transgenic research, the particulars of which are to be specified by regulations. Although no such regulations have been enacted to date, s.71 of the Act allows persons who have engaged in transgenic research at any point within one year prior to the coming into force of the relevant provision to continue the activity without a licence until a date to be established in the regulations. The legal position on creation of cytoplasmic hybrids therefore depends on whether they fall within or outside the class of banned or licensable activities.

A hybrid is defined in the Act to include, among other meanings, ‘an ovum of a non-human life form into which the nucleus of a human cell has been introduced.’ This definition will most likely be used to describe cytoplasmic hybrids under the AHRA. In practice, standard SCNT technique would result in a small amount of human cytoplasm, which may contain mitochondria, being transferred along with the nucleus when inserted into the non-human oocyte. This inevitability, however, would not likely provide sufficient cause in and of itself to render the definition inapplicable. However, the fusion of a whole human cell with a non-human oocyte—as was proposed by at least one of the two aforementioned British research teams—might be more problematic with respect to interpretation, as the hybrid definition speaks only to the introduction of a nucleus into a non-human oocyte. It follows that if the law is interpreted as inclusive of more than a minute amount of cellular material in addition to the nucleus, then the creation of cytoplasmic hybrids for
research would not be prohibited under s.5 of the Act. If, however, the law is interpreted more narrowly, the introduction of not only a nucleus but also a large amount of additional cellular material might result in cytoplasmic hybrids being deemed to fall outside the definition of hybrids, thus increasing the likelihood that they might instead be considered ‘in vitro embryos’ or ‘human clones’.

An ‘in vitro embryo’ is defined in the AHRA as ‘an embryo that exists outside the body of a human being,’ and ‘embryo’ is defined, inter alia, as ‘a human organism during the first 56 days of its development following fertilization or creation.’ The term ‘human organism’ is not defined, so it is not clear if the term refers to ‘wholly human’ organisms alone or also to interspecies creations. A likely interpretation is that the term applies only to ‘wholly human’ organisms, as other mixed entities regulated by the Act (e.g. hybrids and chimeras) are defined specifically and separately from embryos. In other words, if Parliament chose to define interspecies creations separately from embryos, the embryo definition must refer solely to ‘wholly human’ organisms.

Notwithstanding the above, the preponderance of human nuclear and mitochondrial genomic material and cytoplasmic proteins above non-human mitochondrial genomic material and cytoplasmic proteins in the cytoplasmic hybrid might result in it being viewed, legally and scientifically, as mostly human. Moreover, if the cytoplasmic hybrid is created through fusion with a full human cell, this ‘mostly human’ conception would be more likely still, particularly if efforts were made to remove or destroy the non-human mitochondria present therein (e.g., by enzymatic means). It is therefore conceivable, if unlikely, that the end result of this ‘degrees of humanness’ calculus could result in the classification of cytoplasmic hybrids as embryos. Even so, the humanness view would only apply to the statutory scheme under the AHRA, and is arguably of little consequence, at least in legal terms, in vesting rights on or limiting actions by living persons. As Chart 2 illustrates, embryos, foetuses, and other prenatal entities are rarely, if ever recognised as persons under the law, and do not have independent legal rights until birth. Indeed, in a 2005 case, the UK House of Lords favoured the view that ‘testing of embryos to enable the mother to choose to carry a child with characteristics of her choice’ is not expressly prohibited by law, thus further confirming the weak legal status of embryos compared with living persons.

We might well question even the above insinuation that such a classification is unlikely, in light of the fact that in April 2006, the UK HFEA Scientific and Clinical Advances Group issued the general opinion that cytoplasmic hybrids should be classified as human embryos, an opinion subsequently favoured by the HFEA Ethics and Law Committee in May 2006. While a clear distinction
between human embryos and human admixed embryos (including cytoplasmic hybrids) is now maintained in the amendments to the HFE Act, Canadian proponents of the view that cytoplasmic hybrids are embryos may reference these opinions when the debate plays out in the Canadian context.

Furthermore, the AHRA defines a ‘human clone’ as ‘an embryo that, as a result of the manipulation of human reproductive material or an in vitro embryo, contains a diploid set of chromosomes obtained from a single—living or deceased—human being, foetus or embryo,’²⁶ where ‘human reproductive material’ broadly includes any human cells or components thereof.²⁷ Since a cytoplasmic hybrid is produced by manipulating ‘human reproductive material,’ and contains a diploid set of chromosomes from a single human individual (i.e., the cell donor), its classification as an embryo would also lead to classification as a human clone. This interpretation would bring the creation of cytoplasmic hybrids within the class of banned activities under the Act.

While tenable, such an interpretation is vulnerable to criticism for two major reasons. First, given the highly technical nature of the AHRA, it is reasonable to assume that Parliament intended to provide meanings that directly describe the processes of creating hybrids rather than a convoluted interpretation of a number of discrete terms or phrases. As stated by Mykitiuk and colleagues, ‘because the Act legislates specifically with respect to a definition of hybrid, the definition of human clone provided in the Act is exclusive of those entities that are hybrids.’²⁸ Second, accepting that a cytoplasmic hybrid is a human clone renders the hybrid definition in the Act redundant. Mykitiuk and colleagues agree, noting: ‘using non-human oocytes as cells into which human somatic nuclear material is transferred creates a hybrid and not a clone.’²⁹ In other words, from a legal standpoint, hybrids fall outside a strict interpretation of the definition of human clone.

In summary, the legal position on creation of cytoplasmic hybrids for stem cell research purposes depends on whether the cytoplasmic hybrid is considered an embryo (and thus a human clone) or a hybrid. In the arguably less likely case that it is considered an embryo, the AHRA would prohibit its creation. If merely a hybrid, which we contend is the most likely interpretation under the AHRA, its creation would be permitted, subject to future regulations.

**Cytoplasmic hybrids under the TCPS**

The TCPS provides ethical guidance for research involving human subjects and applies to all researchers and institutions
receiving research funds from any of Canada’s three main funding agencies; namely, the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council of Canada, and the Social Sciences and Humanities Research Council of Canada. Although it does not have the legal authority of the AHRA, it is central to the research ethics review process and is a useful barometer for acceptable research standards.

Article 9.5 of the TCPS expressly provides that the ‘formation of animal/human hybrids’ is ethically unacceptable. This provision is at odds with the AHRA, which allows the creation of certain kinds of hybrids for purposes other than reproductive use. This suggests that the provision applies only to the creation of hybrids for reproductive purposes, as it is unlikely that a legal activity would be considered unethical in the primary Canadian research ethics instrument. According to the explanatory notes to the provision, ‘the intrinsic ills, potential harms,’—neither of which are explicitly articulated—‘and the scientific and ethical uncertainty weigh in favour of not approving such research’ at the present time. However, the explanatory notes also urge that ‘discussion and reflection need to continue’ regarding the acceptability of such techniques, which implies that the provision is adaptable to an improved state of knowledge about the scientific merits of, and refined ethical consideration regarding, hybrid research. Such knowledge will emerge from cytoplasmic hybrid research activities in the UK and elsewhere, and deep ethical consideration will likely be at the heart of much of the discourse leading to the creation of transgenics research regulations pursuant to section 11 of the AHRA.

Hybrids are also mentioned in Article 9.3 of the TCPS. However, the provision relates to the creation of ‘hybrid individuals that may survive, or are intended to survive.’ Since neither the creation of individuals (as so considered under the guidelines and under law and thus exclusive of embryos) nor their survival is contemplated by the process of creating cytoplasmic hybrids for research, this provision is not relevant to our analysis.

Critical Analysis

The cytoplasmic hybrid controversy highlights the profound difficulty in crafting enduring legislative provisions to govern scientific conduct. The creation of cytoplasmic hybrids was not a major research area when the UK and Canadian legislations came into force and, as such, was beyond the contemplation of the legislators at that time. It is worth noting, however, that these research areas were likely not beyond the contemplation of scientists working in the field, which might suggest gaps in the consultation process (particularly in
relation to forecasting advances in the field) during the early stages of legislative development in both jurisdictions.

In view of the complex and protracted process of changing legislation, it is perhaps desirable for lawmakers to provide mechanisms for responding to evolving aspects of regulated scientific research, such as by empowering an independent body to amend or expand the scope of legislation to correspond with developments in science or medicine. To the contrary, the AHRA contains highly specific provisions reflective of not only the state of knowledge at the time of enactment, but also of the lawmakers’ desires to create legislation that addressed perceived moral and ethical objections to SCNT and hESC at that same time. As shown above, some of these provisions may pose hurdles for adapting the legislation to emerging circumstances, particularly in ways that favour the acceptance of such research.

A related point, which has been argued elsewhere regarding SCNT, is that it appears inappropriate to impose criminal prohibitions on scientific advances that do no more than provoke an intuitive disgust in some, or which raise unsubstantiated moral concerns. The unarticulated ‘intrinsic ills’ underlying s.9.5 of the TCPS, for example, seemingly invokes such an intuitive response to justify a prohibition against the creation of hybrids. In our view, a regulatory/licensing regime that monitors and controls the known and unknown risks of potentially disquieting research activities based on available evidence is preferable to unsubstantiated appeals to a sense of revulsion.

Also, the Canadian public is generally supportive of stem cell research (including controversial aspects such as SCNT), especially where such research is of scientific or medical relevance. This is not to suggest that public opinion should dictate law and policy, but that public opinion, which has been offered as explicit justification for the current legal regime, has been shown to favour scientific research, no matter how controversial, where there is perceived net public benefit.

Since there is a possibility that an interpretation of the AHRA on the cytoplasmic hybrid issue may be required, it is worth speculating about how the Assisted Human Reproduction Agency of Canada (AHRAC) might respond. It has been noted that the current Board of Directors of the AHRAC is relatively conservative, which is, perhaps, of no surprise since a conservative government appointed the Board. Also, it has been noted that some members of the Board have in the past maintained views against aspects of hESC research, though it is not entirely clear whether those views similarly extend to ESC research involving cytoplasmic hybrids. As stated previously, the legal position on creation of a cytoplasmic hybrid for stem cell research purposes depends on whether it is considered a human embryo or just a hybrid. While it may be untenable to sustain the view
that cytoplasmic hybrids are embryos or human clones, the legislative ambiguity does leave open the possibility of such a restrictive interpretation. Also, given the political commentary surrounding the enactment of the AHRA—which has been relatively conservative and cautionary in tone\footnote{43}—there are reasons to presuppose that those responsible for the administration and enforcement of the Act might well take a conservative approach to the interpretation of the existing provisions. In other words, it is feasible that a formal interpretation of the legislation would lead to the conclusion that the creation of cytoplasmic hybrids is not a licensable activity, but rather falls under the prohibitions in the Act. However, it is worth noting that there is support in academic commentaries for the view that creation of cytoplasmic hybrids for research purposes is indeed allowed under the Act.\footnote{44} In addition, the recent legislative amendments in the UK might tip the scales in favour of an interpretation that would allow a similar approach in Canada.

The cytoplasmic hybrid controversy also highlights the tendency for those opposed to hESC research to proffer the same justifications for the rejection of any scientific advance in the area of embryo research. For example, the objections to hybrid embryo creation cited in the HFEA public consultation document include the usual array of reasons levelled against hESC and, in particular, SCNT, such as: that it undermines human dignity; ‘slippery slope’ appeals that cytoplasmic hybrid research may lead to research using ‘true hybrid’ embryos (i.e., those in which nuclear genomic DNA from humans and non-human species are combined) or human chimeric embryos, and that the creation of interspecies embryos is instinctively repugnant and/or unnatural.\footnote{45}

For some, at the heart of this repugnance is the deeply held belief that embryos are human beings and thus deserving of our utmost respect and protection. Not altogether surprisingly, the Catholic bishops of England and Wales have expressed the view that ‘[h]uman-animal hybrid embryos conceived in the laboratory … should be regarded as human and their mothers should be allowed to give birth to them,’ on the basis that ‘embryos with a preponderance of human genes should be assumed to be embryonic human beings, and should be treated accordingly.’\footnote{46} It should be noted, however, that in contrast to the Catholic position, held by some non-Catholics as well, the conception of embryos as human beings is not consistent with Canadian law, wherein embryos are afforded special status due to their potential to develop into human beings but are nonetheless denied full status as human persons with attendant rights thereof.

That is not to say, however, that are no compelling objections to cytoplasmic hybrid research. For example, some might reasonably question the scientific utility of ESCs derived from cytoplasmic hybrids, given the yet uncertain impact of the non-human
mitochondrial genomic material, maternal RNA and cytoplasmic proteins on early cytoplasmic hybrid embryo development. However, a full examination of the scientific merits and challenges of such research is not relevant to the discussion at hand and is thus beyond the scope of this paper.

The relevance of visceral arguments to policy-making in this context has been keenly debated in relevant literature.\(^47\) One article notes, ‘[a] plausible “thin” explanation for the intuitive “yuck” response is that the creation of interspecies creatures from human materials evokes the idea of bestiality—an act widely regarded as a moral abomination because of its degrading character.’\(^48\) However, others observe that a good case can be made for a research exemption to the creation of interspecies forms ‘when doing so serves important human needs.’\(^49\) According to the latter view, ‘[t]he question of breaching species barriers is…less a matter of principle than a question of pragmatics and context.’\(^50\) While this is not the appropriate forum to weigh in fully on the debate, it suffices to state that the frequency with which these objections are employed in debates on the propriety of embryonic research—often without clearly articulated justification or critical examination—leads one to conclude that they are merely propositional and often based on deeply entrenched ideological positions.

CONCLUSION

By definition, cutting-edge scientific research ventures into previously unexplored and often unanticipated terrain. Where researchers’ abilities to explore such new terrain are regulated by law, it is important that legislation be flexible enough to be responsive to changes in the scope or nature of the research it governs. This can be achieved proactively by involving scientists in the lawmaking process to ensure that prospective research processes are discussed and incorporated into the legislative framework, or by vesting quasi-legislative powers in institutions that implement the legislation. Recent proposals for the creation and use of cytoplasmic hybrid embryos for research purposes have provided us with an opportunity to reflect on the adaptability of Canadian laws governing stem cell research. In particular, as we have shown, the case of cytoplasmic hybrids highlights ambiguities in the language of the *AHRA* that preclude straightforward consideration of the proposed research activities. This lack of certainty raises the prospect that cytoplasmic hybrid research could conceivably be deemed to fall under the prohibited activities in the Act. The possibility of such an outcome is deeply problematic for the progress of Canadian stem cell research, and may in fact frustrate a scientific technique that offers a viable alternative to embryonic stem cell research using human eggs.
Section 3—Definitions
Hybrid: includes an ovum of a non-human life form into which the nucleus of a human cell has been introduced.
Human clone: an embryo that, as a result of the manipulation of human reproductive material or an in vitro embryo, contains a diploid set of chromosomes obtained from a single—living or deceased—human being, foetus or embryo.
Human reproductive material: a sperm, ovum or other human cell or a human gene, and includes a part of any of them.
Embryo: a human organism during the first 56 days of its development following fertilisation or creation, excluding any time during which its development has been suspended, and includes a cell derived from such an organism that is used for the purpose of creating a human being.

Section 5—Prohibited Acts
(1) No person shall knowingly:
(a) create a human clone by using any technique, or transplant a human clone into a human being or into any non-human life form or artificial device;
(b) create an in vitro embryo for any purpose other than creating a human being or improving or providing instruction in assisted reproduction procedures;
(h) for the purpose of creating a human being, make use of any human reproductive material or an in vitro embryo that is or was transplanted into a non-human life form;
(j) create a hybrid for the purpose of reproduction, or transplant a hybrid into either a human being or a non-human life form.

Sections 10 & 11—Controlled Activities/Transgenics
10(1) No person shall, except in accordance with the regulations and a licence, alter, manipulate or treat any human reproductive material for the purpose of creating an embryo.
11 (1) No person shall, except in accordance with the regulations and a licence, combine any part or any proportion of the human genome specified in the regulations with any part of the genome of a species specified in the regulations.

Tri-Council Policy Statement

Section 9—Research Involving Human Gametes, Embryos or Foetuses
Article 9.3: It is not ethically acceptable to create, or intend to create, hybrid individuals by such means as mixing human and animal gametes, or transferring somatic or germ cell nuclei between cells of humans and other species.
Explanatory note: Combining human genetic material with that of other species has the potential to create new life. The creation of hybrid individuals or species, which may survive, [or] are intended to survive, violates our basic norm of respect for human life and dignity. Article 9.3 expresses this concern, while acknowledging that other related research may raise fewer ethical objections.
Article 9.5: It is not ethically acceptable to undertake research that involves ectogenesis, cloning human beings by any means including somatic cell nuclear transfer, formation of animal/human hybrids, or the transfer of embryos between humans and other species.

Explanatory note: Article 9.5 recognises that while some research involving human reproduction is inherently objectionable to some schools of ethical and religious thought, it may not be so for others. Such techniques have provoked vigorous debates arising from conflicts in values, and such discussion and reflection need to continue. In the meantime, the intrinsic ills, potential harms, and the scientific and ethical uncertainty weigh in favour of not approving such research.

CIHR Updated Guidelines for Human Pluripotent Stem Cell Research

Article 8.2: Research that would not conform with the Guidelines

8.2.4: Research in which human or non-human ES cells, EG cells or other cells that are likely to be pluripotent are combined with a human embryo.

8.2.5: Research in which human or non-human ES cells, EG cells or other cells that are likely to be pluripotent are grafted to a human foetus.

8.2.6: Research in which human ES cells, EG cells or other cells that are likely to be pluripotent are combined with a non-human embryo.

8.2.7: Research in which human ES cells, EG cells or other cells that are likely to be pluripotent are grafted to a non-human foetus.

Canadian Council on Animal Care (CCAC) Guidelines

CCAC Guide to the Care and Use of Experimental Animals—Section VII: Special practices

CCAC recently established a Committee on Animal Biotechnology (CABT), which is mandated ‘to develop ongoing guidelines for embryo manipulation, foetal research, and transgenic animals.’

The CABT considers it acceptable for produce animals by means of transgenic/embryo manipulation so long as the research has a positive, scientifically justifiable endpoint and there is no negative impact on the animal’s well being or on the environment.

CCAC Guidelines on Transgenic Animals

The Guidelines provide that although transgenics protocols are to be reviewed according to the usual rules, ‘a close look must be given to the procedures involved and in particular to possible welfare concerns for the progeny from transgenic animal creation protocols.’

Transgenic animal: an animal in which there has been a deliberate modification of the genome – the material responsible for inherited characteristics – in contrast to spontaneous mutation.
## Chart 2: Case law on the legal status of embryos and foetuses in Canada and the US

| Canada |
|-----------------|---------------------------------------------------------------------------------------------------------------|
| **Montreal Tramways Co. v. Leveille,** [1933] SCR 456 | The Supreme Court of Canada (SCC) upheld a judgment from a Quebec court in favour of a plaintiff for prenatal injuries sustained by him when his mother, 7 months pregnant, was injured by the negligent operation of the defendant's tramcar.  
*Held:* Under civil and Roman law, unborn children subsequently born alive are deemed to be living and to possess all rights, including rights of action. |
| **Duval v. Seguin,** [1972] 2 O.R. 686 | A mother was involved in a car accident while pregnant. Her child was born with defects as a result.  
*Held:* An unborn child is within the foreseeable risk incurred by a negligent motorist. When the unborn child becomes a living person and suffers damages as a result of prenatal injuries caused by the fault of a negligent motorist, the cause of action is completed. |
| **R. v. Sullivan,** (1988) 44 CCC (3d) 65 | A charge of criminal negligence was brought against midwives by reason of incidents occurring in the course of delivery.  
*Held:* The foetus is not a person for purposes of the Criminal Code, and in consequence, the charge was without foundation. |
*This case does not explicitly deal with fetal rights, but the Court’s analysis suggests that the meaning of the term ‘everyone’ in the infringed constitutional provision does not include a foetus.* |
| **Borowski v. Attorney General of Canada,** [1989] 1 SCR 342 | Another constitutional challenge to the criminalisation of abortion. The trial and appellate court decisions emphasised that the foetus did not come within the meaning of ‘everyone’ or ‘every individual’ in the constitutional provisions allegedly contravened. Appeal to the SCC dismissed on other grounds. |
| **Daigle v. Tremblay,** [1989] 2 SCR 530 | A prospective father asked the Quebec courts to prevent the mother, his former partner, from obtaining an abortion. An injunction that was granted by the trial judge and affirmed by the Court of Appeal was set aside on appeal by the Supreme Court, on the ground that neither the foetus nor the father had a right to be protected.  
*Held:* The Court held that the foetus was not a ‘human being’ under the Quebec Charter. The prospective father, in contrast to the foetus, had no right to participate in the mother’s decisions. |

A brain scan performed on the Drummonds’ baby revealed a pellet in his brain. It was discovered that Drummond had inserted a pellet gun into her vagina and shot the foetus in the brain 2 days before she gave birth. Drummond charged with attempted murder.

*Held:* A foetus does not have the independent legal rights of a human being until it has completely emerged from the womb. Attempted murder charge dismissed.


Unborn child suffered injuries as a result of mother’s negligent driving of vehicle while she was pregnant.

*Held:* Pregnant mother owes no duty of care to her unborn child, for policy reasons. Imposing a duty of care upon a pregnant woman towards her foetus would result in very extensive and unacceptable intrusions into the bodily integrity, privacy, and autonomy rights of women.

*Note:* The Alberta Tort Liability Act, in direct response to Dobson, provides that a mother may be held liable after birth for the negligent use of an automobile pregnant, but only if at the time the mother maintained automobile insurance. This provision therefore aims to merely compensate families where the child sustained injuries as a result of *in utero* trauma.


Motion to detain and treat pregnant mother addicted to glue sniffing until birth under the court’s *parens patriae* jurisdiction. Two previous children were born permanently disabled and are permanent wards of the state.

*Held:* The Courts are unable to mandate the treatment of a pregnant mother to protect her foetus from the harmful effects of chemical dependency.

**United States**

**Hecht v. Superior Court. 192 Cal.App.3d 560 (1987)**

Challenge to an order directing the personal representative of the deceased's estate to destroy all of deceased's sperm in custody and control of sperm bank.

*Held:* Deceased's interest in his cryogenically preserved sperm was 'property' and public policy would not prohibit posthumous artificial insemination of girlfriend because of her status as an unmarried woman.


Couple sued clinic for alleged negligent destruction or loss of five of couple's frozen pre-embryos that clinic had agreed to cryopreserve and store.

*Held, on appeal:* Absent legislative action expanding the wrongful death statutes, as a matter of law, a cryopreserved, three-day old fertilised human egg is not a ‘person’ for purposes of that statute.
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NOTES

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7 *Ibid.* at p. 3. The HFEA’s decision to seek public opinion could also be viewed as a proper exercise of its statutory discretion.


14 SC 2004, c.2.

15 See generally, *ibid.* s. 5.


17 *Supra* note 14, s. 3.


19 Cf. the position adopted by the UK House of Lords in *R (on the application of Quintavalle) v. Secretary of State for Health*, [2003] All E.R. 113 on the application of the HFE Act to embryos created other than by the process of fertilisation. In the court’s view, the purpose of the HFE Act is to regulate the use and creation of embryos regardless of how they are created, including embryos created using new technologies that were not foreseeable at the time the Act was passed. This position suggests that there is no distinction between embryos created by fertilisation or other processes, such as SCNT. The distinction between human embryos and interspecies embryos is now maintained in the amendments to the HFE Act.

20 *Supra* note 14, s. 3.

However, the law affords some level of protection to prenatal entities, particularly in the context of criminal law. See e.g., s. 242 of the Canadian Criminal Code, R.S.C. 1985, c. C-46 which provides for the offence of failing to procure reasonable assistance in child-birth, resulting in permanent injury to or death (before or after birth) of the child; Canada: Bill C-484, An Act to amend the Criminal Code (injuring or causing the death of an unborn child while committing an offence), 2nd Sess., 39th Parl., 2007 which makes it an offense to cause the death of a child at any time before its birth while committing or attempting to commit an offense against its mother, who the offender knows or ought to know is pregnant; Unborn Victims of Violence Act, 18 U.S.C. 1841 (2004) which makes it an offense to cause the death of or bodily injury to a child in utero during the commission of specified offences, regardless of whether the offender knew or ought to have known that the woman was pregnant at the time of the offence; Williard v. Zurich Insurance Co., (2004) 73 O.R. (3d) 309 (Ontario S.C.) where the court held that although a child has no rights before its birth, once it is born its rights that were previously uncertain ‘crystallize’; R. v. McDonald, [2002] NICA 54 (Northern Ireland Court of Appeal) involving a unsuccessful appeal against a conviction for child destruction, inter alia. The accused destroyed the victim’s unborn child in the course of a sexual assault and attempted murder; Roe v. Wade, 410 U.S. 113 (1973), where the U.S Supreme Court held that the state can legitimately limit the availability of abortion out of an interest in protecting ‘potential life’ once the foetus has reached a stage of ‘viability’ (the ability to survive outside of the woman’s body); and finally, s. 37(1) of the HFE Act, supra note 11, which provides for an amendment to s. 1(1) of the Abortion Act, 1967 (U.K.), c. 87 imposing a 24-week limit on a woman’s ability to procure an abortion, except where necessary to prevent specified risk or grave permanent injury to the physical and mental health of the mother, existing children of her family, or the unborn child.


Supra note 6.

Supra note 14, s. 3.

Ibid.


Ibid.

Supra note 16, Art. 9.5.

Ibid. Art. 9.3.


This strategy is employed in the amendments to the HFE Act, albeit in a manner that might be perceived as improper delegation of legislative authority. See supra note 12, s. 4(10), which empowers the Secretary of State to amend certain sections of the Act or expand the scope of certain definitions if he considers it necessary and desirable to do so in the light of developments in science and medicine.


40 The AHRAC is vested with statutory authority to implement the provisions of the AHRA, including the power to issue research licences. See supra note 14, ss. 21–24.


43 Supra note 35.


45 See Supra note 3.


49 Robertson, *supra* note 47 at W64.