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Human Embryonic Stem Cell (HESC) Research in Malaysia: Multi-Faith Perspectives

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Introduction

The Malaysian government has identified biotechnology, which includes stem cell research, as one of the core technologies to facilitate the transformation from developing country into a fully industrialised nation. As human embryonic stem cell (HESC) research is contentious, it is argued that it is necessary for the Malaysian government to consider adopting a strict regulatory framework, which includes comprehensive legislation, to govern the research. However, in the formulation of tight regulation, it is important to achieve consensus on the research which is difficult in this multi-religious nation where there are different perspectives of the different faiths on the research.

Religious views have been prominent in debates and reports on cloning and stem cell research, especially in the western world.¹ They are informed by ethical, theological and legal issues. The debate on the moral status of the human embryo is closely linked to philosophical and religious perspectives on the subject of HESC research.

Islam is the official religion in Malaysia, as provided in Article 3 of the *Federal Constitution of Malaysia* which reads: "Islam is the religion of the Federation; but other religions may be practiced in peace and harmony in any part of the Federation." The majority of Malaysia's population is Muslim and there are also large numbers of adherents of other faiths such as Buddhism, Christianity, Hinduism and Sikhism.²

This article explores the different perspectives of these main religions and the following challenges are noted. First, HESC research raises issues of deep

religious significance. Second, within a society, there is religious diversity. Third, this problem is accentuated by the fact that there is no single authoritative voice that speaks for the religion as this involves making interpretations of holy texts that may lead to conflicting ones. Fourth, scientific advances have reached a stage where much modern biomedical research is new both theoretically and in practice, unimaginable when the ancient sacred texts were written. With the emergence of modern developments like HESC research, new orientations to theological/religious texts are required.

Interviews were conducted with representatives of each of these religions which included religious leaders, religious scholars, a pastor, priests and monks. The interviewees expressed their views with references to sacred texts that embody the wisdom of their religion.³ It is noted that it is beyond the scope of this article to discuss in considerable detail the various perspectives for each of the five religions.

The Islamic Perspective

Basic Philosophy

Islam is a monotheistic religion with a belief in one God. Its teachings provide a complete and comprehensive way of life,⁴ encompassing “all fields of human endeavours, spiritual and material, individual and societal, economics and politics, national and international”.⁵ The instructions regulating a Muslim’s daily activities, *shariah*/Islamic law/jurisprudence, apply to all Muslims, everywhere and at all times. As bioethical deliberations are inseparable from religion, Islamic bioethics is decided in accordance with *shariah*. As a dynamic and relevant entity, it also applies to contemporary emerging biotechnologies including HESC research.

Islamic scholars believe that knowledge emanates from God and, as such, human beings have an obligation to use the knowledge to serve society.⁶ Its followers have obligations to seek knowledge, in particular scientific knowledge. The Muslim world attempts to keep at the cutting edge of science. The first verse of the Quran to Prophet Mohammad was: “Read! In the name of your Lord, who has created. Has created man from alaq”.⁷

Moral Status of the Human Embryo

For centuries, Muslim scholars have discussed issues of *ruh*/soul. In the past four decades, this issue has been addressed in the context of increasingly successive scientific developments and advances in biomedical topics including

birth control, abortion, in-vitro fertilisation (IVF), research on embryos, embryo banking, stem cell research and genetic engineering. The Quran, which was revealed by Allah to Prophet Mohammad, is the primary source of teachings for Muslims. The Hadith, which contains the sayings of Prophet Muhammad, is the second most important source of teachings.⁸

Like Catholicism and Judaism, Islam recognises the concept of ensoulment and the status of personhood. Ensoulment refers to the moment at which a human embryo receives the soul and thereby gains its moral status and rights as a legal person. Islam acknowledges dualism, that is, body and soul subsist together and meet to form a complete person.

In both Quran and Hadith, references are made to the *ruh*. References found in the Quran include:

He created all things in the best way and He began the creation of man from clay. Then made his progeny from a quintessence of despised liquid. Then He created him in due proportion and breathed into him of His spirit. And He gave you the faculties of hearing and sight and hearts. Little thanks do ye give!⁹

This verse explains that first, the human is shaped in due proportion, then he/she is ensouled and, finally, the faculties of hearing and sight and heart are formed. It explains that ensoulment occurs during the intrauterine life.

Also in the Quran, other verses provide:

And indeed We created man from a quintessence of clay. Then We placed him as a small quantity of liquid (nufta) in a safe lodging firmly established. Then We have fashioned the nufta into something which clings (alaqa) then We made alaqa into a chewed lump of flesh (mudgha) and We made out of that chewed lump of flesh into bones and clothed the bones with flesh. And then We brought it forth as another creation. So blessed be God, the Best to create!¹⁰

This passage has been interpreted to mean that an embryo is perceived as a human life only later on in the biological development because of the use of the words “thereafter we produced him as another creature.”

In the Hadith, there are some verses which are interpreted that human life begins at the moment of ensoulment which is on 120th day after conception, equivalent to 134 days after the last menstrual period (lmp) used by obstetricians. It says:

Each one of you is put together in his mother’s womb in forty days, then he becomes a hanging clot in a similar time, then he becomes a mass of

flesh in a similar time, then Allah send an angel who is ordered to establish four issues: his sustenance, his destiny, his deeds and whether he will be mischievous or happy, then He breathes the soul unto him.¹¹

Another verse in the Hadith says:

After the zygote (nuftha) has been established in the womb for forty or forty five nights, the angel comes and says "My Lord, will he be wretched or fortunate?" And both these things are written. Then the angel says: "My Lord, would he be male or female?" And both these things are written. And his deeds and actions, his death, his livelihood; these are also recorded. Then his document of destiny is rolled and there is no addition to and subtraction from it.¹²

As early as the 14th century, Muslim scholars had discussed the concept of ensoulment. Ibnul Al Qayim asked:

Does the embryo, before the breathing of the soul unto it, have perception and movement? It is answered that the movement it possesses is like that of a growing plant. Its movements and perception are not voluntary. When the soul is breathed unto the body, the movements and perceptions become voluntary and are added to the vegetative type of life it had prior to the breathing of the soul. It has the life of growth and nourishment like a plant. Once the soul enters the body, then it has the sense of perception and volition, which constitute the basis of human life.¹³

Another scholar, Ibn Hajar Al Asqalani, argued that the liver is the first organ formed in the embryo as it is important for growth and nourishment.¹⁴ He explained that the formation of the brain comes at a later stage when the soul enters the foetus. He linked the soul by the appearance of voluntary movements in the foetus.¹⁵ Islamic religious thinkers link ensoulment to the formation and integration of the nervous system, where the centres of perception and volition are found.

However, among Muslim religious scholars, there is a debate as to the precise moment of ensoulment. Until recently, the unanimous accepted view is that ensoulment occurs after four months/120 days from conception and this view has become well established. In recent times, contemporary religious scholars have argued that there is evidence in both the Quran and Hadith that speak differently, that is, ensoulment occurs after 40 days from conception.¹⁶ This interpretation is supported in these verses of the Quran which provide:

We created man from the finest extract of clay. Then We placed him as a drop of semen in a firm lodging. The We fashioned the drop into a hanging

clot. Then We fashioned the clot into a lump of flesh. The from the lump of flesh We fashioned bones, then covered bones with flesh. Then We formed him into a new creation ...¹⁷

The verses have been interpreted to represent seven stages of foetal development. Each stage is explained as follows:

- The first stage is the creation of clay. This implies the creation of Adam from clay, soil and water. Sperm and egg originate from human bodies which are built from nutrients that originate from clay.
- The second stage is the drop of sperm-egg.
- The third stage is the hanging clot. This forms around the seventh day from fertilisation. The hanging clot is attached to the endometrium by fine villi. It looks like an object hanging to the endometrium.
- The fourth stage is the development of flesh mass or mass of somites. This stage starts at the end of the third week or the beginning of the fourth.
- The fifth stage is the bone development. Early stages of bone development start in the sixth week.
- The sixth stage is the muscle development. Several days after, muscle development start at the sixth week.
- The seventh stage "Then We formed him into a new creation" denotes the beginning of *ruh* around the seventh week.

Some scholars interpret similar time to mean time equals to this period rather than in the same period.

There are other passages in Hadith that suggest that ensoulment takes place on the 40th day after conception:

- Each one of you I put together in his mother's womb in forty days then, and during the same time, he becomes a hanging clot, then, and during the same time, he becomes a mass of flesh, then Allah sends the angel who is ordered breath *ruh* into it, and to down four issues ...¹⁸
- The angel enters to the semen drop, forty days or forty nights after it settles in the womb. The angel says: O Allah, is he mischievous or happy? And the angel writes down. Then the angel says: O Allah is he male or female? And he writes. He also writes his deeds, destiny and sustenance. Then the papers are folded (record closed) with no addition or omission in them.¹⁹
- When the forty two nights have passed over the drop of semen (in the womb), Allah sends an angel who pictures it and witnesses the creation of its hearing, vision, skin, flesh and bone, then the angel asks: O Allah is it male or female, and Allah decides what He wishes, the angel writes.

Then the angel asks: O Allah, his destiny? Allah decides what He wishes and the angel writes. The angel then asks: O Allah, his sustenance? Allah decides what he wishes and he angel writes. Then the angel emerges out with the paper in his hand, after which no addition or omissions takes place to what he was ordered to write.

- The drop of semen settles for forty nights in the womb, then the angel is sent to it ...
- An angel is assigned to the womb when Allah wishes to create something in it after some and forty nights ...

From these Hadith passages, it can be interpreted that the *ruh* is breathed into the embryo after the first 40 days from conception. Contemporary scholars understand the concept that combines the three stages of a fertilised egg, hanging clot and somatic mass to take effect on set of 40 days rather than a succession of three sets of consecutive 40 days. In the first saying, it states that the writing of destiny occurs at the same time as the breathing of the *ruh*.²⁰ The last five sayings, however, do not mention the breathing of the *ruh* but they refer to the fashioning of the creation and writing destiny of the foetus.

While it is debatable whether ensoulment occurs on the 40th day or 120th day after conception, the interpretation is liberal in comparison to other religions. Catholicism, for example, teaches that it occurs at the time of conception.²¹ Accordingly, it can be argued that in research involving human embryos, the destruction of the human embryo which occurs on the fifth day after fertilisation does not violate Islamic law. Similarly, with early termination of pregnancy, it is argued that abortion is not murder since the embryo is not yet a person at that time.²² The *Shariah* makes a distinction between potential life and actual life, determining that actual life should be afforded more protection than potential life. Under most interpretations of Islamic law, the human embryo is not considered as a person and the use of it for stem cell research does not violate Islamic law. Under the same line of analysis, stem cells from aborted foetuses would also be permitted if the abortion was performed before the fourth month of pregnancy. HESC research might be regarded as an act of faith in the ultimate will of Allah as the giver of all life, as long as the intervention is undertaken with the purpose of improving human health.

However, it is noted that prior to ensoulment, the embryo has sanctity but not reaching that of a full human being. A Muslim scholar, Abu Hamid al-Ghazali,²³ stated that the embryo should be respected from the moment of fertilisation. Although ensoulment occurs at a later stage, there should be no disregard for the sacredness of the human embryo. From the moment of conception, the early embryo is a unique developing living creature being prepared by God to receive a soul.²⁴ Therefore, in Islam, human life in all its stages,

is glorified and honoured despite ensoulment, which is interpreted to occur whether on 40th or 120th day after conception.

The majority of the Islamic religious scholars approve of the use of excess ART embryos in research since these embryos will be discarded any way. However, the use of cloned embryos using SCNT technology is not permitted since it involves the deliberate creation of embryos.

Islamic Legal Resolutions/Fatwas

Unlike the Vatican in the Catholic religion, Islam does not have a centralised authority to state an official position on the moral status of human embryos and issues surrounding HESC research. In Islam, there are *Fatwas*, legal opinion issued by a *mufli* expert, demonstrating a ruling within Islamic law based on evidence as a response to question.²⁵ *Fatwas* are not legally binding and they can be revised as science progresses. In Malaysia, *Fatwas* are issued by the National Fatwa Committee.²⁶ In 2005, the *Fatwa* on therapeutic cloning and stem cell research was issued. The *Fatwa* has been influential in the drafting of Malaysia's National Guidelines on Stem Cell Research.²⁷ At the international level, the Islamic Fiqh Academy issues *Fatwas* but these are not binding on Islamic states.

International Islamic Conferences

In 1983, a convention entitled "Procreation in Islam" was held where two papers were presented dealing with the possibility of human cloning as a result of successful cloning in plants, frogs and small marine animals.²⁸ At the conclusion of the convention, a recommendation was made:

To exercise prudence in giving a *shariah* based opinion on human cloning and to call for further medical and Islamic investigation of these issues.

Subsequent to the creation of Dolly in 1997, in every Islamic conference/seminar, reproductive cloning was proclaimed to be prohibited.²⁹ In 1997, the Islamic Fiqh Academy issued a *Fatwa* stating that human cloning is *haram*/prohibited.³⁰ A majority of Islamic scholars consider the activity *haram* for the following reasons:³¹

- The basic concept in reproduction is to abide by *Shariah's* approved system of a marriage, that is, through the union of sperm and egg;
- Reproductive cloning is against the natural process, *fitrah*, of the human relationship of marriage and reproduction;

- The harms exceed the benefits. The harms include disruption of lineage, family relationships and social fabric of humanity;
- The social, moral, psychological implications of human copies; and
- The possibility of interfering with male-female population dynamics.

At least three Islamic Fiqh (Jurisprudence) Councils have given permission for the use of excess IVF embryos for HESC research under certain conditions.³² However, it is not permissible to deliberately create embryos, whether through IVF or SCNT, for research.³³ In the Medical Fiqh meeting in Kuwait in 2000, the Islamic Fiqh Association (IFA) pronounced that excess IVF embryos should be left without medical intervention to end their life naturally. If a responsible doctor suggests that creating spare embryos is necessary for the success of IVF treatment, the doctors should create the minimum number of required embryos in order to avoid the unnecessary wasting of embryos. The spare embryos can be used in stem cell research since they have yet to be ensouled and are not complete human beings. Islamic law prohibits surrogate parenting, adoption of children and adoption of human embryos. This is due to the importance of determining a child's true parentage and inheritance rights. This would free up excess embryos for research purposes since, under Islamic law, they could not be used by anyone other than by the couple who created them. As an institute said:

We believe it is a society's obligation to perform research on these extra embryos instead of discarding them.³⁴

In the context of abortion, the Islamic jurispudent council of Makkah Al Mukaramah, the Islamic world league,³⁵ passed a *Fatwa* which allowed abortion on condition that first, the foetus is grossly malformed with an untreatable severe condition, and second, the foetus is less than 120 days computed from the moment of conception.

Conclusion on the Islamic Perspective

The findings of the interview, which were based on Islamic religious texts and scholarly articles, revealed the following points. The concept of ensoulment is recognised in Islam. While it is debatable whether ensoulment occurs on the 40th day or 120th day after conception, the majority of Islamic scholars adopt the latter interpretation. Either interpretation is liberal. Nevertheless, the early human embryo is granted respect from the moment of conception as it is a developing entity with potential to develop into a human being. The present *Fatwa* in Malaysia, reflecting the recommendations made in international Islamic conferences, permits the use of excess IVF embryos for

HESC research but prohibits the deliberate creation of human embryos for research purposes, whether through IVF techniques or SCNT technology. As the concept of ensoulment in Islam is interpreted liberally, there is a possibility that religious scholars might in future revisit the issue, and that the current *Fatwa* might be revised to permit the use of cloned embryos created by SCNT for HESC research.³⁶

The Roman Catholic Perspective

Introduction

Contentious subjects concerning reproduction, abortion and research on embryos have been debated within the Christian church. Within Christianity, there are many denominations with no consensus on HESC research. As it is not possible for this article to cover perspectives of all denominations, only the Catholic faith is considered. This section explores the Catholic perspective which has expressed the formal position taken by the Vatican.³⁷

Moral Status of Human Embryo

Catholicism is a monotheistic religion with a belief in one God. The main source of its teachings is the Bible and the second source is the tradition, comprising oral and written tradition. This article also refers to the Vatican documents including *Donum Vitae* (the Gift of Life) 1987,³⁸ *Evangelium Vitae* (the Gospel of Life) 1995,³⁹ and *Dignitas Personae* (the Dignity of a Person) 2008.⁴⁰

There are biblical passages which are interpreted to refer to the creation of human by God:

For thou didst form my inward parts, thou didst knit me together in my mother's womb ... Thou knowest me right well; my frame was not hidden from thee, when I was being made in secret, intricately wrought in the depths of the earth, thy eyes beheld my unformed substance; ... the days that were formed for me, when as yet there was none of them.⁴¹

In these verses, the psalmist speaks of God who knows and cares for His creation right from the beginning.

Another verse says: "We are created in the image of God".⁴² This verse can be interpreted to view human development in utero as the creative work of an ever-working God and the process by which an embryo develops from start to finish is the work of God. The spectrum of development reflects an act of creation with each stage of the continuum given the utmost value and therefore demands reverent protection.

The Catholic Church teaches that life begins at conception. With reference to the Gospel of Life, it states:

From the time that the ovum is fertilised, a life is begun which is neither that of the father nor the mother; it is rather the life of a new human being with his own growth ... Right from fertilisation the adventure of a human life begins, and each of its capacities requires time — a rather lengthy time — to find its place to be in a position to act ... The human being is to be respected and treated as a person from the moment of conception and therefore from that same moment his rights as a person must be recognized, among which in the first place is the inviolable right of every innocent human being to life.⁴³

In several sources of the written tradition, there are specific references made to the condemnation of the act of abortion. For instance, the *Didache*⁴⁴ commands, “you shall not murder a child by abortion”.⁴⁵ The unborn embryo/foetus is referred to as “a child”.

The most recent document released by the Vatican is *Dignitas Personae*. This document, released in 2008, provides doctrinal directives on ethical controversies that have emerged since 1987, that is, after *Donum Vitae* was released. In light of scientific developments in the field of medical research, the document aims to address a range of issues which involves ethical controversies and is criticised by pro-life ethicists. It affirms the Vatican’s existing teachings, *Donum Vitae* and *Evangelium Vitae*. It focuses on the dignity of the human being and promotes biomedical research that is respectful of the dignity of every human being and procreation. Reproductive cloning is judged as illicit⁴⁶ and therapeutic cloning is also considered as contrary to human dignity.⁴⁷ Only licit types of stem cells are encouraged⁴⁸ which includes adult stem cell research.⁴⁹

In the middle ages, influenced by Aristotle, the Catholic Church believed that human life began at about 40 days after fertilisation.⁵⁰ However, as the science of the mid-1800s allowed the microscopic visualisation of sperm and eggs and the act of fertilisation, the Catholic Church changed its position as illustrated in the next section.⁵¹

Catholic Position on HESC Research

The Vatican has adopted a strict position that the embryo obtains moral status at the moment of fertilisation and it is thereupon considered as a life. Ensoulment occurs at the time of conception and thus life starts from that moment. “Thou shalt not kill” is a basic belief of the Christian faith enshrined in a fundamental teaching from the Ten Commandments. Thus, the position

taken by the Vatican is that HESC research, whether using embryos created through IVF or through SCNT, is morally wrong and should be prohibited. This is the position adopted despite the fact that HESC research could lead to positive medical treatments and has “healing powers”. According to the faith, to deliberately create life and then destroy it is not morally acceptable.

As explained by Reverend Clarence Dass, a church pastor:

Life is considered as sacred and it should be protected utmost to the end ... life is not to be made used of or to be put to danger or exposed to risks of danger ... only God has the right to give life and to take life. There should be no human intervention and one cannot create life or take away life. The Pope said the mere probability that a human person is involved would suffice in justifying an absolutely clear prohibition of any intervention aimed at killing a human embryo.⁵²

The Catholic faith also does not accept IVF treatment;⁵³ thus the argument that excess IVF embryos are going to be destroyed any way does not justify the use of these embryos for research. The faith interprets that life is a gift from God, created through mutual love between husband and wife and that there should be no human intervention, whether at the beginning or end of life. This means that contraception, IVF treatment, HESC research, abortion and euthanasia are not morally acceptable. In the context of abortion, the act is judged as morally wrong at any stage of the pregnancy.⁵⁴ The Gospel of Life says:

This evaluation of the morality of abortion is to be applied also to the recent forms of intervention on human embryos which, although carried out for purposes legitimate in themselves, inevitably involve the killing of those embryos. This is the case with experimentation on embryos, which is becoming increasingly widespread in the field of biomedical research ... Although one must uphold as licit procedures carried out on the human embryo which respect the life and integrity of the embryo and do not involve disproportionate risks for it, but rather are directed to its healing, the improvement of its condition of health or its individual survival, it must nonetheless be stated that the use of human embryos or fetuses as an object of experimentation constitutes a crime against their dignity as human beings who have right to the same respect owed to a child once born, just as to every person. This moral condemnation also regards procedures that exploit living human embryos and foetuses — sometimes specifically provided for this purpose by in vitro fertilization — either to be used as ‘biological material’ or as providers of organs or tissues of transplant in the treatment of certain diseases. The killing of innocent human creatures, even if carried out to help others, constitutes an absolutely unacceptable act.⁵⁵

Conclusion on the Roman Catholic Perspective

The interview revealed that the Catholic faith in Malaysia follows the official Vatican's clear, unambiguous and firm position on the innate dignity and rights of each human being from the beginning of life to its natural end.⁵⁶ Therefore, HESC research is considered as equivalent to infanticide and adult stem cell research is encouraged as it does not involve the destruction of human embryos. As described by Brownsword, Catholics are in the category of dignitarians in his formulation of the "bioethical triangle" who hold firmly and strictly to the view that human cloning, whether for reproductive or therapeutic purposes, compromises human dignity and thus should be prohibited. They condemn cloning and stem cell research; their condemnation operates as a "conversation stopper."⁵⁷

There are challenges to the Catholic position. There are no biblical references made which could be interpreted to conclude that ensoulment occurs at conception. In addition, while the Gospel of Life states that the beginning of life is at fertilisation, it does not take into consideration the biological definition of the early human embryo in the first 14 days that has not developed primitive streak. Second, the Gospel of Life refers to sperm egg fertilisation, and it has not considered that cloned embryos created through SCNT technology are not products of natural fertilisation. Various sources of the written tradition cited in this article make references to the condemnation of the specific act of abortion, and it is highly unlikely they were referring to the termination of an early embryo which has not reached the 14th day. In addition, these sources, written during those early days, clearly were not referring to the termination of an embryo created through modern technology.

In the UK, some Roman Catholic members of the House of Lords changed their minds after visiting laboratories.⁵⁸ After they had seen for themselves what a four-cell embryo actually is, they argued that the pre-14 day embryo should not be fully protected by the law and they prefer to call it not an embryo but a pre-embryo.⁵⁹ It is noted that Roman Catholics constitute a minority in Malaysia.⁶⁰

The Buddhist Perspective

Basic Philosophy

Buddhism is a non-theistic religion which does not see human life or the world created by a deity. Basic teachings centre on the values of *karuna*/compassion, *prajna*/knowledge, "no-self", non-injury and the relief of suffering of sentient beings. Buddhism believes in reincarnation and it:

sees a human life as coming after past rebirths in which the individual may have been a human, a heavenly being, an animal, a ghost or being suffering in hell. Future rebirths may be of any of such types, depends on the moral quality of a person's actions, their karma ... physical cruelty is seen as likely to lead towards a hellish rebirth and generosity and kindness to a human or heavenly one ... The working of karma ... a natural process in which a volitional act is like a seed and its karmic results are like fruits.⁶¹

A Buddhist's ultimate goal is to attain enlightenment/awakening. This term refers to the specific awakening experience attained by the Buddha sitting under the bodhi tree. On attainment of enlightenment, it is believed that a person is free from the compulsive cycle of *samsara* of birth, suffering, death and rebirth and attains the highest happiness called *Nirvana*. Enlightenment is achieved only by the fulfilment of the *paramitas*/perfections, when the Four Noble Truths are fully grasped and *karma* has reached cessation.

Buddhists consider the cultivation of spiritual identity as critical. Buddha warned his followers that speculation about metaphysical issues was futile because human problems of birth, old age, death and sorrow will remain regardless. The problem of distorted priorities is illustrated in a famous narrative, the Parable of the Mustard Seed.⁶² In the parable, a lady sought out the Buddha, requesting that he restore life to her dead child. The Buddha's reply was that cure was that she needed to prepare tea from five or six grains of mustard seed but the grain must come from a house not visited by death. The woman was not able to obtain a single grain. This narrative illustrates that attention should not just be focused on bodily material life to the neglect of the cultivation of discovery of one's inner life.

The religion places importance on *ahimsa*/non-harming, the First Precept of Buddhism. The "Noble Eightfold Path",⁶³ promulgated by Buddha, prohibits infliction of violence or harm in sentient beings. This principle strictly prohibits acts that cause death or injury to living creatures, whether human or animals.

Possible Response to HESC Research

In Buddhism, there is no central authority competent to pronounce on ethical dilemmas, such as whether or not to allow the destruction of embryos for HESC research, and there is no systematic consideration of these issues by Buddhist scholars.⁶⁴ Within the religion, different sects and groups discuss and resolve these matters at the local level. There is a diversity of views by Buddhists on HESC research, rather than a Buddhist view.

Buddhism teaches the concept of reincarnation/rebirth but not ensoulment. It teaches that human life begins at conception,⁶⁵ although there are interpretations that suggest Buddhism endorses reproductive cloning.⁶⁶ This is because of the chance human life gives to achieve enlightenment. Throughout history, Buddhist scholars have taught that, due to *karma*, the chances of being born as a human being are remote and human life is a precious opportunity to escape from *karma-samsara*/perpetual rebirth by obeying the *dharmal* teachings of Buddha. With Buddhist thought, the status of human being is critical because “it is the only ontological condition by which an entity can achieve enlightenment and liberation from a world marked by suffering.”⁶⁷ In this respect, any form of human reproduction, whether sexual or asexual, that allows for the birth of a human being is sacred and in reproductive cloning, no one is harmed.

However, Buddhism has strong reservations about scientific techniques that involve destruction of life, whether human or animal. The importance that Buddhism places on birth as a human being as a necessary condition of the achievement of *bodhi*/enlightenment may restrict the research. Further, the religion places importance on the principle of *ahimsa* and any research, whether involving animals or human embryos, which causes loss of life, is problematic. By virtue of its belief in reincarnation, it regards “the new conceptus as the bearer of the karmic identity of a recently deceased individual” and therefore, it is entitled to the same moral respect as an adult human being”.⁶⁸ For this reason, Buddhism sees the moral issues raised by HESC research as not different from those raised by abortion and IVF treatment where there is destruction of embryos involved.

In Buddhism, taking one’s life for the benefit of another is not necessarily evil in some circumstances; for instance, the death of a soldier for his country. According to the religion, there are two types of donation, life donation and enforced donation, both of which involve making life sacrifices for another person. These types of donation could be raised as justification for HESC research.⁶⁹ Life donation is where a *Bodhisatta*, a person who accumulates merits in order to be a buddha in the future, donates his/her life for the benefit of another. The donation of his life is counted as a merit earned. However, in the context of consent, while the adult life donor has the full capacity to provide consent to donate his/her life, an embryo in HESC research does not have such capacity, and it is therefore not possible for it to provide consent. The second type of donation, enforced donation, is illustrated by an example where a rape victim aborts her child; the child is described as the enforced donor. The child’s sacrifice is for the benefit of the mother. In the context of HESC research, it is argued that between the two

types of donation, enforced donation is a more plausible argument to justify the research.

Conclusion on the Buddhist Perspective

From the interviews, in Buddhism, there is no clear rule as to the ethics of HESC research and there is scope for disagreements.⁷⁰ As the religion emphasises the central virtues of *karuna*/compassion and *prajna*/knowledge, the faith may be open to advances in scientific understanding and the prospect of the development of medical treatments which alleviate human suffering. However, the religion has strong reservations about scientific techniques that involve the destruction of life for the two main reasons stated above, that are: first, the birth as a human being as a necessary condition for the attainment of *bodhi*/enlightenment; and second, the principle of *ahimsa* prohibits the act of harming a living creature. It can be argued that *ahimsa* refers to non-violence to sentient beings and, since an embryo is not a sentient being, there is no breach of the principle of *ahimsa* and its destruction does not attract the law of *karma*. As Promta argues, the ethics of human genetic research, which includes HESC research, would depend on the intention of the scientist and the use of his/her wisdom.⁷¹

The Hindu Perspective

Basic Philosophy

The Hindu religion is a polytheistic religion which holds a belief in many gods. The purpose of its philosophy is to extinguish human sorrow and suffering. Suffering is inborn, part of life and thus cannot be avoided.⁷² The ultimate objective is to obtain a good life, overcome sorrow and achieve enlightenment through prayers and penance. Hinduism attributes suffering and misery to *karma*, the moral law of cause and effect, and teaches that most sufferings are caused by humans in failure to harmonise their thoughts and deeds in accordance with God's law.

Hinduism and Buddhism share many similar philosophies. Hindus believe in the concept of reincarnation. The *atman* (soul) is an eternal entity. The soul is not born; it is the body which is born. Death is defined as destruction of the body and birth is the acquisition of a new body. While the body dies, the soul remains in perpetuity. During death, the soul has a natural way of continuing to the next phase; it moves to the next stage of life by transmitting from one body to another. The cultivation of spiritual self-awareness is an

important teaching in the Hindu religion. High importance is placed on the achievement of *mokshalnirvana*. This concept means one's union with God and its ultimate goal in life. Such realisation liberates a person from *samsara*,⁷³ which then ends the cycle of rebirth. The religion respects the sanctity of life. Like Buddhism, one of the philosophies of the Hindu religion is *ahimsa*/non-injury of sentient beings.⁷⁴ Respect for life is important, permeating all beings including animals. Consciously destroying life attracts bad *karma*.⁷⁵

The concept of cloning is not new to Hinduism. There are many stories in ancient Hindu mythology and folklore of the creation of beings by some process that resembles cloning.⁷⁶ The narratives have references to the creation of a person or deity through cells of skin or drops of blood.⁷⁷ Devi Parvathi created Lord Ganesha from a fragment of her skin, a spark from Shiva's third eye created Lord Murugan and Kunti Devi conceived her sons, Pandavas, by uttering divine mantras dedicated to Gods. These creations caused the Devas and Rishis difficulties in trying to distinguish the genuine from the replicas.

Possible Response to HESC Research

Unlike the Vatican of the Catholic faith, there is no central authority in the Hindu religion that makes pronouncement of the religion's official position. The resolution of ethical dilemmas depends on the guru/spiritual leader and in conferences, held mostly in India, where the leaders of different sects give their interpretations of such issues.⁷⁸

Hindus believe that life begins at conception, the beginning of a soul's rebirth from a previous life. In the context of abortion, Hinduism is opposed to the deliberate killing of an embryo or foetus except to save the life of the mother. According to the Hindu *Vedas*/religious texts, all lives are sacred, whether humans, animals or plants. However, according to the food chain argument, the survival of one being is at the expense of another, as explained in the following passage:

All life is sacred ... this precept that lies at the heart of the Hindu doctrine of non-violence or *ahimsa* ... However, there is a paradox in this view. The law of nature rules that we must kill in order to survive. Human beings only live ... by consuming the plants and in most cases, the animal life ... The ancient *Rishis* or divine sages, resolved this paradox by referring to the various stages of evolution of consciousness ... plants at the lowest level ... animals then followed, and finally humans were placed at the top of the evolutionary tree ... we protect the highest level ... even if we have to kill the lower levels ... the soul passes through many species ... as many as 8.4 million species — until it finally evolves to the highest level ... which is in the form of a human being. It is this human birth that can then bring

about salvation from the cycle of rebirth and eventually end up with God ... The human life ... the only life which offers us the chance to achieve the ultimate and final union with God ... Recognising this value, Hinduism developed Yoga and Ayurvedic to alleviate illnesses and prolong healthy life ... modern science works on the same quest.⁷⁹

In Hindu mythology, Dadhichi⁸⁰ was a sage whose bones were sought by the gods to destroy a demon. The sage gladly agreed to be sacrificed as the demon had to be eliminated for the good of the world. Instead of interpreting Dadhichi's act as suicide and condemning it, the Hindu religion glorifies him and holds that his sacrifice is for the greater good for people everywhere. In HESC research, the question to ask is whether the destruction of embryos in the research is considered as an extraordinary and unavoidable circumstance that is done for the greater good. If the answer is in the affirmative, it can be interpreted that the Hindu religion may accept the research as ethically justified.

While the principle of *ahimsa* prohibits violence to sentient beings, it can be argued that an embryo is not a sentient being, and therefore the conduct of HESC research does not constitute a breach of the principle and its destruction does not attract the law of *karma*. It has been suggested that if an act could save lives, the religion may regard the act as morally permissible.⁸¹ HESC research, which could lead to medical treatments in future, will alleviate the sufferings of a person that will then assist him/her to cultivate the spiritual awareness to achieve *mokhsa*.

Conclusion on the Hindu Perspective

From the interview, it revealed that there is no clear rule in Hinduism as to the ethics of HESC research.⁸² If the destruction of the embryos in the research is considered an extraordinary and unavoidable circumstance that is done for the greater good, the Hindu religion may accept the research as ethically justified. There have been no objections raised against the research. The principle of *ahimsa* refers to non-violence to sentient beings and it can be argued that an embryo is not a sentient being. As a consequence, the Hindu religion may be open to HESC research.

The Sikh Perspective

Basic Philosophy

The Sikh religion teaches that the goal of life is that it should be lived properly under the instruction of the guru as enshrined in the holy book of the Sikh

religion.⁸³ The religion teaches a person to live an exemplary existence so that he/she may merge with God. The Sikh religion is open to the progress of science and research that will enable human beings to have better lives, produce medicine to heal illnesses and restore health.⁸⁴

Like Buddhism and Hinduism, the Sikh religion teaches the law of *karma* and the concept of reincarnation. The actions and reactions are universal and a person who commits bad acts attracts bad *karma*. Rewards and punishments for any act done or left undone is not limited to only one life span. For actions done or undone in previous lives, a person may suffer or enjoy in the next life. The religion teaches that the soul goes through cycles of births and deaths before it reaches the human form.

Possible Response to HESC Research

The interview revealed that in the Sikh religion, there is no official pronouncement made on the ethics of HESC research.⁸⁵ The central authority for the religion to pronounce on ethical positions is the Sri Akal Takhat Sahib.⁸⁶

The Sikh religion teaches that life begins at conception and it is the creative work of God.⁸⁷ The religion takes a strong position against abortion as it is a sin to destroy lives. In the context of HESC research, it is uncertain whether it considers it morally acceptable. While the Sikh religion has elements of Hinduism such as *karma* and reincarnation, it is difficult to state whether it might adopt a similar approach. As compared to Buddhism and Hinduism, the Sikh religion is relatively new⁸⁸ with limited exploration on the ethics of HESC research. It is therefore suggested that the religious leaders fully debate on these issues.

The Importance of Public Consultations

The interviews confirmed that there is less controversy about embryo experimentation and stem cell research in Malaysia than Australia. Religious views have been less prominent in debates in Malaysia and this may, in large measure, be explained by the *Fatwa* on therapeutic cloning and stem cell research that was issued in 2005.

In the developed western world, including Australia, UK and USA, there have been many lengthy debates that their regulatory frameworks have had to be constructed to address the conflicting concerns between the value of HESC research and the moral objections. In contrast, in Malaysia, there has not been the same level of debates endured in Australia, UK and USA. No specific viewpoints were expressed about any unique Malaysian perspective in

the interviews conducted with the religious leaders for the purpose of this article, with the exception of the Islamic and Catholic faiths.

The interviews did not uncover any special concerns with the technology and the religious leaders indicated that the religious texts themselves can be relied on for guidance. These religious leaders did not express their own views, but only drew from the religious texts. Given that there are no particularly strong preconceived views amongst the religious leaders in Malaysia about the appropriateness of stem cell research, this creates a unique opportunity to construct a best practice regulatory framework which takes into consideration the different religious perspectives but is not beholden to any particularly vocal group. There are good grounds for arguing that it is preferable to create an appropriate framework at the outset than to have to develop a framework after the groups have already developed their own strongly held views on what is ethically acceptable.

While this does not preclude consultation, it means these religious groups will go into such consultations with open minds.

In a multicultural and multireligious society such as Malaysia, legislating HESC research is not without challenges, with no straightforward answers to these complex questions. Therefore, in drafting contentious policies, legislation and guidelines in a pluralistic society, the involvement of different religious groups in the process is crucial. It is recommended that representatives from all major religions of the country present their respective religious views on the contentious issues in open forums. The two religious councils, the Department of Islamic Advancement of Malaysia/Jabatan Kemajuan Islam Malaysia (JAKIM) and the Malaysian Consultative Council of Buddhism, Christianity, Hinduism, Sikhism and Taoism (MCCBCHST) should be involved in the process as their involvement assists in attaining regulatory legitimacy, the first regulatory challenge.

Subsequent to the creation of Dolly in 1997, cloning and related issues were subjects of debate in the international community. Malaysia also debated these issues, and in 2002, a “Seminar on Reproductive Cloning of Human Beings”⁸⁹ was held where presentations were made by stakeholders representing a cross section of the Malaysian society including representatives of the main religions of the country.⁹⁰

Following on from the seminar, a *Fatwa*/legal resolution on reproductive cloning was issued in 2002 by the National Fatwa Committee of Department of Islamic Advancement of Malaysia/Jabatan Kemajuan Islam Malaysia (JAKIM) which prohibits the practice. In 2005, a *Fatwa* on stem cell research was issued which provides:⁹¹

- The use of excess IVF embryos for research purposes is permitted, provided the couple donating the embryo has given consent and the embryo has not reached the blastocyst stage.
- The deliberate creation of an embryo by SCNT is prohibited because the principle of *sad al-zaraie* argues that it would lead to “other evils”, that is, the slippery slope argument.
- Preimplantation genetic diagnosis (PGD) on early embryos is permitted.
- Stem cells from adult stem cells, aborted foetuses from lawfully terminated abortions are permitted.

The interviews conducted revealed that Islamic faith has adopted an official position as reflected in the *Fatwa* discussed above and the Catholic faith adopts the Vatican’s official position which does not permit HESC research. The religions of Buddhism, Hinduism and Sikhism have not made formal pronouncements on their official positions on HESC research, and within each of these faiths, there are opposing views on the research. Therefore, there is a need for these Dharmic faiths to fully explore and debate on these issues.

While there are dissensions amongst these diverse religious groups in Malaysia, the empirical data indicate that conflicts and oppositions to HESC research in the country are not as strong as they are in the western world largely influenced by the Christian faith. Nevertheless, it is recommended that these religious groups should be involved in open forums prior to the enactment of legislation, guidelines and policies as this will achieve consensus.

Conclusion

HESC research is controversial in multireligious Malaysia, with some faiths that teach that the early embryo must be fully protected from the moment of conception, others that adopt the liberal approach, and others not adopting a firm official position, leaving the issue open.

The Abrahamic faiths of Islam, Christianity and Judaism⁹² share a similar trait in that they believe in the concept of ensoulment. These religions adopt different interpretations on when ensoulment occurs, with the Catholic faith taking the strict, absolutist view that ensoulment occurs at the moment of conception and Islam adopting a liberal interpretation, even though it is debatable whether it occurs on 40th or 120th day after conception. In Islam, the *Fatwa* approves and permits the use of only excess ART embryos but not cloned embryos in HESC research. However, *Fatwas* are flexible and with Islam’s liberal interpretation of the concept of ensoulment, there might be debates in future on whether to permit SCNT research, which may lead to

the amendment of the *Fatwa* to approve and permit the use of cloned embryos in research.

In contrast, the Dharmic religions of Buddhism, Hinduism and Sikhism have not adopted official positions on HESC research. It is recommended that these faiths deliberate these issues and it is hoped that each of them arrives at an official position on the research.

In multireligious Malaysia, the early human embryo can still be respected with appropriate limitations, controls, safeguards and accountability through the establishment of an appropriate regulatory framework. While it is not easy to achieve consensus, it is nevertheless crucial to involve these different religious groups in the process of drafting contentious policies, legislation and guidelines in a pluralistic society. As Michael Kirby explains, “the very process of consultation and public debate promote a broad community understanding of the issues, an appreciation of different viewpoints and an acceptance of any regulation adopted, even when they give effect to conclusions different from one’s own.”⁹³

Notes

1. See, for instance, House of Representatives Standing Committee of Legal and Constitutional Affairs, *Human Cloning: Scientific, Ethical and Regulatory Aspects of Human Cloning and Stem Cell Research* (2001) Canberra (Andrews Report).
2. According to the Department of Statistics Malaysia, the demographics of the Malaysian population are 60.4% Muslims, 19.2% Buddhists, 9.1% Christians, 6.3% Hindus and others which include Sikhs. See <http://www.statistics.gov.my/portal/index.php?lang=en> [accessed 13 May 2010].
3. See the sub-heading “The Importance of Public Consultations” in the later section of this article.
4. Face-to-face interview with Dr Musa bin Nordin, President of the Federation of Islam Medical Association in Malaysia, 7 January 2008, interview by Chee Kuen Foong (Patrick).
5. Nordin, M. (2006) Islamic Medical Ethics amidst Developing Biotechnologies. Available at <http://www.fimaweb.net/main/medicalethics/islamicmedicalethicsamidstdevelopingbiotechnologies.doc> [accessed 2 August 2007].
6. In an interview with Musa.
7. 96:12 of Quran.
8. The Hadith is also known as Ahadith.
9. 32: 8–9 of Quran.
10. 23: 12–14 of Quran.
11. Sahih al-Bukahri 1/10.
12. Narrated by Huzaifah Ibn Aseed.
13. Ibnul Al Qayyim, *Altibian Fi Aqsam Al Quraan* at 255 (available only in Arabic).
14. Ibn Hajar Al Asqalani, *Fathel Bari-Ketabul Qadar* at 48 (available only in Arabic).

15. Ibid.
16. Mishal, A. (2002) Human Life before Birth: The Contemporary Issues, *FIMA Year Book*, 1–13.
17. 12-14 of Quran.
18. Sahih Muslim 4/2064; this passage and the next three passages were narrated by Huthaifah Ibn Usaid; Mishal, A. (2002) Human Life before Birth: The Contemporary Issues, *FIMA Year Book*, 1–13, at p. 5.
19. This passage and the next three passages were narrated by Huthaifah Ibn Usaid.
20. Mishal, A. (2002) Human Life before Birth: The Contemporary Issues, *FIMA Year Book*, 1–13, at p. 5.
21. See the section on the Catholic faith.
22. The official *Fatwa* is that abortion is permitted in the first 40 days of conception. However, in the 1990 Islamic World League held in Makkah, this was extended to 120 days after conception. Many Islamic jurists are more stringent and would allow abortion only in the first 40 days of conception. Some jurists will not allow abortion at any time of a pregnancy except to save the life of the mother.
23. Abu Hamid al-Ghazali *Ihya' Ulumiddin* at p. 65. Abu was one of the great Muslim jurists, theologians and mystics of the 12th Century. He wrote on a wide range of topics including jurisprudence, theology, mysticism and philosophy; Nordin, M. (2006) Islamic Medical Ethics amidst Developing Biotechnologies. Available at <http://www.fimaweb.net/main/medicalethics/islamicmedicalethicsamidstdevelopingbiotechnologies.doc> at p. 4 [accessed 2 August 2007].
24. In an interview with Musa.
25. A *Fatwa* may concern any aspects of an individual's life including marriage issues, financial affairs and moral questions.
26. The committee has a website. See <http://www.e-fatwa.gov.my/>.
27. The main provisions of the Malaysian stem cell guidelines reflect the *Fatwa*.
28. This conference, held in Kuwait, was organised by the Islamic Organisation of Medical Sciences (IOMS). The organisation comprises scholars, doctors, scientists, social scientists and legal people.
29. Nordin, M. (2006) Islamic Medical Ethics amidst Developing Biotechnologies. Available at <http://www.fimaweb.net/main/medicalethics/islamicmedicalethicsamidstdevelopingbiotechnologies.doc> at p. 4 [accessed 2 August 2007].
30. This was its 10th conference convened in Jeddah, Saudi Arabia; Nordin, M. (2006) Islamic Medical Ethics amidst Developing Biotechnologies. Available at <http://www.fimaweb.net/main/medicalethics/islamicmedicalethicsamidstdevelopingbiotechnologies.doc> at p. 5 [accessed 2 August 2007].
31. Ibid. at pp. 7–8.
32. Ibid. at pp. 7–8.
33. Ibid. at p. 8.
34. This was stated by the Islamic Institute, based in Washington DC, USA.
35. This was held in Makkah in 1990.
36. During the interview, Musa explained that *Fatwas* are flexible and can be revised. When asked whether in future, it could be amended to permit SCNT, his response was that it would depend on the scientific progress in other countries where such research is legally permitted.

37. There has been no response from the Malaysian representatives of the Protestant faith for an interview despite repeated requests for an interview.
38. See http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19870222_respect-for-human-life_en.html.
39. This is an encyclical written by Pope John Paul II which expresses the position of the Catholic Church regarding the value and inviolability of human life including murder, abortion and euthanasia. See http://www.vatican.va/edocs/ENG0141/_INDEX.HTM [accessed 5 May 2010].
40. See http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_20081208_dignitas-personae_en.html [accessed 6 May 2010].
41. Psalms 139: 13–16.
42. Genesis 1:26.
43. Chapter 3 at 60 of the document.
44. The written sources Tradition, including Didache, were the early teachings of the fathers of the church but they were not compiled into the Bible. They were post-biblical and were letters written by the early church fathers, saints and scholars such as St. Clement and St. John Chrysostom.
45. 2.2 of Didache.
46. 28 and 29 of document.
47. 30 of document.
48. 31 and 32 of document.
49. 32 of document.
50. This was explained by Dr. Laurie Zoloth, professor of medical ethics at Northwestern University of Chicago in Horstman, M. (2004) Buddhism at One with Stem Cell Research. Available at <http://www.abc.net.au/science/news/stories/s1046974.htm> [accessed 7 May 2010].
51. Ibid.
52. Face-to-face interview with Reverend Clarence Dass, pastor of Fatima church, Kuala Lumpur, 10 January 2008, interview by Chee Kuen Foong (Patrick).
53. See Donum Vitae at http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19870222_respect-for-human-life_en.html.
54. The statements on abortion are at 61 and 62 of the document.
55. Chapter 3 at 63 of the document.
56. In an interview with Reverend Clarence Dass.
57. Brownsword, R. (2008) *Rights, Regulation and Technological Revolution*, Oxford University Press, New York, 39.
58. Warnock, M. (1987) Do Human Cells have Rights? *Bioethics*, 1, 1–13, at p. 9.
59. Ibid.
60. About 9.1% of Malaysia's population are Christians and it is not known what percentage of this faith are Catholics. The official data does not indicate the breakdown of the different denominations of the faith. See <http://www.statistics.gov.my/portal/index.php?lang=en> [accessed 13 May 2010].
61. Harvey, P. (2008) A Buddhist Perspective on Pre-Implantation Genetic Diagnosis, *Bionews*, 485, 17–23 November 2008.
62. National Bioethics Advisory Commission, *Cloning Human Beings: Report and Recommendations of the National Bioethics Advisory Commission* (1997) at p. D-24.

63. The Noble Eightfold Path is one of the fundamentals of Buddhist virtuous or moral life. The path is the way to the cessation of suffering, the fourth part of the Four Noble Truths. The symbol of the Noble Eightfold Path is an eight-spoked Dharmachakra.
64. Keown, D. (2004) No Harm Applies to Stem Cell Embryos: One Buddhist's View. Available at <http://www.beliefnet.com/News/Science-Religion/2004/04/No-Harm-Applies-To-Stem-Cell-Embryos-One-Buddhists-View.aspx> [accessed 7 May 2010].
65. Ibid.
66. *Cloning Human Beings: Report and Recommendations of the National Bioethics Advisory Commission* at p. D-23.
67. Ibid.
68. Keown, D. (2004) No Harm Applies to Stem Cell Embryos: One Buddhist's View. Available at <http://www.beliefnet.com/News/Science-Religion/2004/04/No-Harm-Applies-To-Stem-Cell-Embryos-One-Buddhists-View.aspx> [accessed 7 May 2010].
69. Promta, S. (2004) Human Cloning and Embryonic Stem Cell Research, *Eubios Journal of Asian and International Bioethics*, 14, 197–9.
70. Face-to-face interviews with Reverend T. Sangharatana, Priest, Buddhist Maha Vihara on 16 December 2008 and Venerable Bhante Seelawansa & Venerable Bhante Pannasiri, Priests, Buddhist Maha Vihara on 18 December 2008, interviews by Chee Kuen Foong (Patrick). Also see Keown, D. (2004) No Harm Applies to Stem Cell Embryos: One Buddhist's View. Available at <http://www.beliefnet.com/News/Science-Religion/2004/04/No-Harm-Applies-To-Stem-Cell-Embryos-One-Buddhists-View.aspx> [accessed 7 May 2010].
71. Promta, S. (2004) Human Cloning and Embryonic Stem Cell Research, *Eubios Journal of Asian and International Bioethics*, 14, 197–9.
72. Face-to-face interview with Datuk Vaithilingam, President of the Malaysia Hindu Singam, 19 January 2008, interview by Chee Kuen Foong (Patrick).
73. Samsara is a cycle of birth, death and rebirth, as a continuum. Ephemeral pleasures lead people to desire rebirth to enjoy the pleasures of a perishable body.
74. Many Hindus embrace vegetarianism and animal research is difficult to justify.
75. The main holy book for the Hindu religion is Bhagavad Gita. The religion is in harmony with science as confirmed in the Hindu scriptures.
76. See May 2010.
77. Letchumanan, R. (2002) Human Cloning, A Hindu Perspective, Paper presented at Seminar on Reproductive Cloning of Human Beings held in Kuala Lumpur on 6 and 7 February 2002.
78. In an interview with Datuk Vaithilingam.
79. Bhanol, A. (2008) The Ethics of Stem Cell Research: A Hindu View, *Bionews*, 17 October 2008.
80. Dadhichi's story is referred to in a number of sacred texts including Rg Veda, the Srimad Bhagavatam, Srimad Devi Bhagavatam, and the Mahabharata.
81. In an interview with Datuk Vaithilingam.
82. Ibid.
83. Sri Guru Granth Sahib is the basic religious book of the Sikh religion.
84. In a face-to-face interview with Harcharan Singh, President of the Gurdwara Sahib Sentul, Vice President of the Malaysian Consultative Council of Buddhism, Christianity, Hinduism, Sikhism and Taoism (MCCBCHST), 11 January 2008, interview by Chee Kuen Foong (Patrick).

85. In an interview with Harcharan Singh.
86. This is located in Amritsar, in the state of Punjab in northern India and it faces the Harimandir Sahib (the Golden Temple).
87. 74 of Guru Granth Sahib.
88. The religion was founded about 500 years ago.
89. The seminar was jointly organised by Malaysian Foreign Ministry and Institute of Strategic and International Studies (ISIS) Malaysia, a government think tank organisation. It was held in a hotel in Kuala Lumpur on 6 and 7 February 2002.
90. The main religions were Islam, Catholicism and Hinduism.
91. <http://www.islam.gov.my/portal/> [accessed 3 June 2010].
92. Judaism is not covered in this article. For political reasons, the religion is not officially recognised in Malaysia.
93. Kirby, M. (2008) New Frontier, *Regulating Technologies*, eds. R. Brownsword and K. Yeung, Hart Publishing, Oxford & Portland, 367–88 at 387.