

The Ethical Position of Singapore on Embryonic Stem Cell Research

By Dr Sylvia Lim and Mr Calvin Ho

INTRODUCTION

Bioethics is sometimes regarded as the interface between the rapidly advancing fields in the life sciences and the values that bind society together. Hence, it is often regarded as an important but difficult subject to engage.

In June 2002, the Bioethics Advisory Committee (BAC) published its recommendations for the conduct of human stem cell research, therapeutic cloning and reproductive cloning in Singapore. Its recommendations (Table 1) have been accepted by the Government as the ethical position of Singapore on these subjects.

This article focuses on the recommendations of the BAC on human embryonic stem cell research and the process by which this recommendation was reached.

ABOUT BIOETHICS GENERALLY

"Bioethics" is a combination of two Greek terms – "bios" which means life and "ethike" which is concerned with what a person should do. It has been used to denote the study of ethical issues arising in the practice of biological disciplines, which includes medicine, nursing and other biological and life sciences. In fact, given the breadth of the life sciences, bioethics is also relevant to areas that are less directly connected with the human person. The natural environment and various sociopolitical moral issues that impact on a person's health (such as unemployment, poverty, unjust discrimination, crime and war) are some examples.

Bioethics is often regarded as "applied" ethics in that it is concerned with ethical issues that have either arisen or that

Table 1. Summary of Recommendations.

Recommendation 1	Research involving the derivation and use of stem cells from adult tissues is permissible, subject to the informed consent of the tissue donor.
Recommendation 2	Research involving the derivation and use of stem cells from cadaveric foetal tissues is permissible, subject to the informed consent of the tissue donor. The decision to donate the cadaveric foetal tissue must be made independently from the decision to abort.
Recommendation 3	Research involving the derivation and use of ES cells is permissible only where there is strong scientific merit in, and potential medical benefit from, such research.
Recommendation 4	Where permitted, ES cells should be drawn from sources in the following order: (1) existing ES cell lines, originating from ES cells derived from embryos less than 14 days old; and (2) surplus human embryos created for fertility treatment less than 14 days old.
Recommendation 5	The creation of human embryos specifically for research can only be justified where (1) there is strong scientific merit in, and potential medical benefit from, such research; (2) no acceptable alternative exists; and (3) on a highly selective, case-by-case basis, with specific approval from the proposed statutory body.
Recommendation 6	For the derivation and use of ES cells, there must be informed consent from the donors of surplus human embryos, gametes or cells.
Recommendation 7	There should be a complete ban on the implantation of a human embryo created by the application of cloning technology into a womb, or any treatment of such a human embryo intended to result in its development into a viable infant.
Recommendation 8	There should be a statutory body to license, control and monitor all human stem cell research conducted in Singapore, together with a comprehensive legislative framework and guidelines.
Recommendation 9	In obtaining consent from donors of cells, gametes, tissues, foetal materials and embryos, the information provided to the donors must be comprehensive, and there must not be any inducements, coercion or undue influence.
Recommendation 10	The legislative and regulatory framework should prohibit the commerce and sale of donated materials, especially surplus embryos. Researchers should not be prohibited from gaining commercially from the products of research, as well as treatments and therapies developed from the donated materials.
Recommendation 11	The legislative framework should provide that no one shall be under a duty to participate in any manner of research on human stem cells, which would be authorised or permitted by the law, to which he has a conscientious objection.

About the authors:

Dr Sylvia Lim (MBBS, 1979) and Mr Calvin Ho (LLB, 1998) are members of the Secretariat of the Bioethics Advisory Committee (BAC). The Secretariat manages the day-to-day operations of the BAC and is also responsible for research on a broad range of subjects. Please visit the BAC website at www.bioethics-singapore.org for more information about the BAC.

might arise from the practical application of the life sciences. As a result, many other disciplines are involved in shaping the content of bioethics. The “big three” disciplines have been identified as moral philosophy, moral theology and law.

WHY IS BIOETHICS IMPORTANT

The discovery of the double-helix structure of the DNA by James Watson, Francis Crick and others 50 years ago, mark a critical point in the development of the life sciences. The Human Genome Project and other gene-mapping initiatives that followed greatly increased our understanding of life processes at the molecular level. The new knowledge gained is slowly changing the meaning of health care, and the slow shift in emphasis from treatment of the sick to a prevention-based approach is indicative of this. It is not inconceivable that some time in the future, it will be possible to isolate “abnormal” genes and apply the right technology to get them “fixed”. More evidently, the potential of the life sciences to improve life is doubted by few today.

However, like any new technology, advancements in the life sciences present new challenges. For instance, artificial reproductive technologies (ARTs) such as in-vitro fertilisation are likely to be an important reproductive option in dealing with infertility – an increasingly common feature in the social demographics of many countries. ARTs are also likely to benefit families with a history of congenital disease. Conversely, ARTs present many difficult ethical dilemmas. At the core of these is the debate over the moral status of an embryo. At one end, are those who believe that an embryo is a human being and it should be accorded with full moral status and be treated in the same manner as an adult person. At the other end, are those who contend that an embryo is simply a collection of cells that is not yet self-conscious and accordingly has no right to life.

The ethical issues arising from ARTs are among the varied issues generated by new life sciences technologies. Bioethics has since become an important platform on which these issues are presented and discussed among interested parties. While there may not always be a solution to the issues presented, the process of constant discussion and engagement is recognised as an important step in achieving consensus on a way forward with minimal disruption to the values that a society regards as fundamental.

THE BIOETHICS ADVISORY COMMITTEE

Recognising the importance of such a “platform” in Singapore, the BAC was appointed by the Cabinet in December 2000 for two-fold purposes: examine the potential ethical, legal and social issues arising from research in the life sciences in Singapore, and recommend policies to the Life Sciences Ministerial Committee.

The first issue to be considered by the BAC was Singapore’s ethical position on human stem cell research and cloning. Its recommendations have been published in June 2002 in its report entitled *Ethical, Legal and Social Issues in Human Stem Cell Research, Reproductive and Therapeutic Cloning* (full report is available at www.bioethics-singapore.org).

CONTROVERSY OF EMBRYONIC STEM CELL RESEARCH

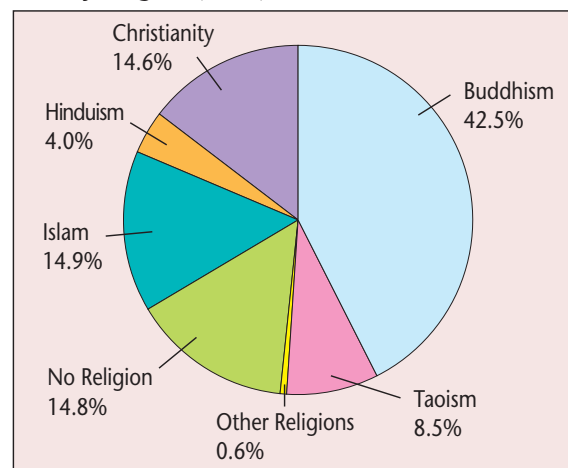
Human embryonic stem cell research remains controversial in Singapore and in many other countries. As with ARTs, the moral status of an embryo is central to the controversy. Although the BAC understands the moral concerns in the use of human embryos in research, it appreciates the potential therapeutic benefits that embryonic stem cell research can confer, particularly in advancing therapies for many of the presently incurable diseases.

For its deliberation, the BAC recognised the need to moderate extreme views at the outset. As a multi-racial, multi-religious and pluralistic society, Singapore’s bioethical position should not be characterised by a single norm, perspective or persuasion. Rather, its position should reflect the diversity of opinions directed at promoting the common good of all. In addition, the BAC recognised the need to attain an ethical position that is “just” and “sustainable” from its assessment of the various concerns associated with human embryonic stem cell research. In requiring a “just” outcome, the BAC acknowledged its obligation to respect the common good, particularly in the sharing of the costs and benefits. In “sustainable”, the obligation to respect the needs of generations yet unborn was also assumed. Taken together, the BAC considered that the best way forward was one that allowed the pursuit of social benefit but in a manner that either avoided or ameliorated potential harm.

WORKING A WAY FORWARD BY CONSENSUS

Having established the broad principles that underlie its approach, the BAC conducted extensive and detailed research on ethical, legal and social issues relating to human stem cell research and cloning. It also brought together the views of religious, medical, professional and civic groups in Singapore on these subjects. The views of the main religious groups in Singapore were particularly noted as they formed the basis in determining the moral status of an embryo (Table 2). The religious composition of adult Singapore residents in the year 2000 is shown in Chart 1.

Chart 1. Resident population aged 15 years and over by religion (2000)



Figures are derived from the Advance Data Release No.2 on Religion by the Singapore Department of Statistics as part of the Singapore Census of Population, 2000.

◀ Page 21 – *The Ethical Position of Singapore on Embryonic Stem Cell Research*

After careful deliberation, the BAC adopted the intermediate position on the moral status of an embryo, and considered it ethical to conduct research on it only in very limited circumstances:

- **Within the 14th Day Limit:** Research may be conducted on an embryo before it reached the 14th day from the day the gametes were fused. However, all such research is to be subject to strict regulation and undertaken only if there is very strong scientific merit in, and potential medical benefit to be derived from, such research. The BAC did not agree with the extreme view that an embryo is merely a collection of cells. While the BAC was prepared to recognise the special status of an embryo before it reached the 14 days limit, it did not consider this special status to be equivalent to the status that a living person would

have. Accordingly, the BAC considered it ethical to conduct research on such an embryo on a strictly regulated basis and subject to the conditions stipulated; and

- **Beyond the 14th Day Limit:** The BAC considered it unethical for research to be conducted on an embryo that has reached the 14th day limit and that such an embryo would be accorded full status as a person.

Many countries have similarly adopted the time limit of 14 days from fertilisation as the ethical boundary, beyond which research on the embryo should not be permissible. The common basis for this time limit is the appearance of the primitive streak at about that time. At that stage, the embryo would be regarded as having developed irreversible individuality and, at that point, become morally significant.

Table 2. Feedback to BAC from the main religious groups in Singapore.

Religious Group	Embryonic Stem Cell Research	Therapeutic Cloning	Reproductive Cloning
Baha’l	“...affirm that the human soul comes into being at the time of conception.” But the exact moment and nature of events in conception is a mystery. Believers who are faced with complex ethical questions are “free to come to their own conclusions” but “should be careful not to make dogmatic statements or offer their own understanding as the teachings of the Faith.”		
Buddhist	For “Support research on human stem cell that will benefit humankind as a result.”	For	Against
Catholic	Against “The human being is to be respected and treated as a person from the moment of conception;...”	Against	Against
Christian	Against “cloning of human beings should be banned unequivocally...” “Opposes stem cell research using human embryos.”	Against	Against
Hindu	For “...killing a foetus is a sinful act” but “whether the 14-day old foetus is endowed with all the qualities of life is not well regarded. Therefore, there is no non-acceptance to use ES cells to protect human life and to advance life by curing diseases.”	No specific comment received	No specific comment received
Jew	For “...a fetus prior to forty days gestation is not considered to be an actual person”	Unclear but “likely that Rabbinic authorities will not favor such a leniency.”	No specific comment received
Muslim	For “An embryo is only considered as a human life after it is 4 months” when “a soul is introduced...”	For	Against
Sikh	Against “...human life begins when the male and female living cells unite” and “totally respects the sanctity of the Gift of Human Life by God...”	Against	Against
Taoist	Against “.....not supportive of research thatgoes against nature, and that involves the killing of another life, e.g. using embryos for research.”	Against	Against

Please note that “For” also reflects the views of parties who are receptive to the relevant subject matter considered by the BAC and in the context of the consultation conducted by it.

Nevertheless, the BAC acknowledged that the 14th day time limit is not a conclusive statement on when an embryo becomes morally significant. Instead, the time limit is set as a matter of practical necessity so that a “just” and “sustainable” position can be attained. That is, one that allows research on human embryonic stem cells to proceed in view of potential therapeutic benefits that can be procured for the good of all, but only in very limited circumstances to ameliorate any potential harm.

CONCLUSION

The consensual approach of the BAC in arriving at an ethical position for Singapore on human embryonic stem cell research has been highlighted. This position is “just” in that it allows the pursuit of a technology that may greatly improve human life and is “sustainable” in that the path of pursuit will be a narrow one.

More important, the BAC recognised that bioethics is constantly evolving. As such, it emphasised the need to continue professional and public dialogue. It is hoped that this will encourage active participation in the on-going development of bioethics in Singapore. ■