

## Point of view

# Embryo research – why the Cardinal is wrong

Lord Walton of Detchant

### Author's abstract

*Reasons are given for suggesting that individuation of the human embryo does not begin until the primitive streak forms at about the fourteenth day after conception; this view, though contested by many, is held by very many committed Christians of all denominations. In the conceptus or pre-embryo, after the formation of a blastocyst at about four-five days after fertilisation, biopsy of a single cell from the outer layer of cells (which later can form the membranes and placenta) can be used to determine the sex of the conceptus and will ultimately be used to detect the presence of an abnormal gene such as that for Duchenne-type muscular dystrophy, without detriment to development of the basal cell mass from which the embryo forms. The potential benefits in the prevention of inherited disease are profound.*

While I have always admired the total integrity and absolute sincerity of my fellow-Novocastrian, Cardinal Basil Hume, and while his views are invariably worthy of respect and careful attention, I regret to say that in attempting, in his article in *The Times* earlier this year (1), to expose what he believes to be myths and falsehoods generated by the debate on so-called embryo research he has himself fallen into the trap of perpetuating several errors of argument and logic which are being regularly advanced by opponents of research. The issue as to when human life begins is, I agree crucial, and those who, like the Cardinal, believe that it begins at conception are, I accept, sincere. But he and his supporters cannot claim exclusive occupancy of the moral high ground when many distinguished moral theologians including, for example, the Archbishop of York (2), the Rev Professor Gordon Dunstan (3), Lord Soper (4) and that eminent Australian Roman Catholic scholar the Rev Dr Norman Ford (5) strongly support the view that individuation of the human embryo (that is, the earliest evidence of the existence of a human individual) cannot

be thought to arise until the appearance of the primitive streak at about the fourteenth day after fertilisation. I write as a member of the Methodist Church and am able to say that a report which has been recommended for study by that Church has endorsed that view (6).

May I now, therefore, make it clear why I, and many scientists, believe that the term 'embryo research', though enshrined in the Human Fertilisation and Embryology Bill, is in some respects misleading. When the female egg or ovum, released into the uterus at the time of ovulation, is fertilised by a sperm, the process of cell division begins and within the first few days floating free in the uterus are groups of undifferentiated but pluripotential cells, each forming what I and others prefer to call a conceptus (product of conception) or a pre-embryo, rather than an embryo. The term pluripotential means that it is impossible to identify which cells will form the membranes within which a fetus will eventually lie and which will later form an identifiable embryo from which a fetus will form. By about the fourth or fifth day the conceptus becomes a blastocyst in which there is a nodule or cluster of cells, the basal cell mass, from which the embryo later derives and also an outer ring of cells capable of forming the membranes and the placenta. But no such blastocyst is yet attached to or embedded in the wall of the uterus and about 80 per cent of those formed are spontaneously aborted. About one in five begins to attach to the uterine wall at about the seventh day, subsequently receiving a blood supply and nourishment from the maternal circulation and later beginning to produce at about the fourteenth day that specific linear arrangement of cells within the basal cell mass which constitutes the primitive streak. It is at this stage that a true embryo, from which the fetus later forms, can be thought for the first time to exist.

Research now in progress under the close supervision of the Interim Licensing Authority is attempting to find means of improving the present 10-20 per cent success rate of *in vitro* fertilisation by studying the hormonal and other influences which promote implantation of blastocysts. Of even greater importance to the parents and relatives of patients with many progressive disabling and ultimately fatal inherited diseases is work which has confirmed that it

### Key words

Embryology; fertilisation *in vitro*; conceptus; pre-embryo; embryo; human genetics; gene; blastocyst; antenatal diagnosis; x-linked inheritance; muscular dystrophy; pre-implantation diagnosis.

is possible to remove a single cell from the outer layer without detriment to the subsequent development of the basal cell mass into an embryo. In a woman who is a carrier, for example, of the now isolated x-linked gene responsible for Duchenne-type muscular dystrophy which therefore affects boys, it has been possible to identify the sex of the blastocyst produced in the 'test-tube' by fertilisation with her husband's sperm and to implant only those blastocysts that are female. Now, it will soon be possible to determine whether the specific Duchenne dystrophy gene is present in a cell from the outer layer of the conceptus; if it is, the blastocyst can be allowed to degenerate naturally, but if it is not then it can be implanted, thus allowing the carrier woman to bear normal sons and non-carrier daughters. This technique is called pre-implantation diagnosis. For a woman who may well have seen one or more brothers become progressively weaker, requiring a wheelchair by about ten years of age, and dying in the early twenties, this prospect engenders enormous hope, especially for those who have in the past had one or more abortions at 12–14 weeks when found to be carrying male fetuses. It is quite true that embryo research does not offer a means of finding a treatment for this and many other inherited diseases but it brings prospects of prevention undreamt of only a few short years ago, prospects of untold benefit to life and human health while we await the very much longer time scale of research, perhaps some ten or more years, which will lead to treatment by replacing defective genes.

So what are the myths which the Cardinal seeks to perpetuate? First, he suggests that once a decision is taken in Parliament to allow research, the momentum of science and technology will take over – the so-called 'slippery slope' argument. This is quite untrue; the Bill specifically outlaws many types of experiment such as cross-species fertilisation which all responsible scientists would find abhorrent and restricts research to the first 14 days. All such research can only be conducted in the future under the most careful and rigid supervision of the new Statutory Licensing Authority. To carry out any such work without a licence will become a criminal offence. Secondly, while he agrees that helping infertile couples is an admirable and worthwhile objective, his wish to ban research would effectively make it a criminal offence to carry out the research which has been conducted in this country for over 20 years and which alone has made *in vitro* fertilisation possible. Without such research, Louise Brown and thousands like her would never have been born. Thirdly he denies that embryo research is needed to fight inherited disease. I hope I have explained why this is untrue and the need is in fact

urgent. Fourthly he talks of the systematic elimination of embryos found to have defects; some have even talked of 'killing' embryos whereas in fact those carrying abnormal genes will simply be allowed to degenerate naturally, as indeed many do during the process of normal conception. Surely it is preferable to allow that to happen to a small group of undifferentiated cells carrying an abnormal gene rather than to abort at 12–14 weeks a fetus found to be similarly defective (I appreciate that the Cardinal would not support the latter either but Parliament and society decided long ago that such a course was acceptable).

The Cardinal and his supporters must surely understand that many dedicated and committed Christians of denominations other than his own (and even some of his own denomination) who share totally his belief in the sanctity of human life and the dignity of the individual nevertheless believe fervently that the benefits to suffering humanity which can be derived from research on an undifferentiated group of cells containing a human conceptus within the first 14 days after fertilisation far outweigh the counter-arguments he has adduced. The House of Lords and the House of Commons have each accepted that view by very large majorities. At the time of writing the Bill has passed through all its stages in Parliament and awaits the Royal Assent. It will then become an Act. The potential benefits to society and to suffering humanity will be incalculable. To have rejected its sensible and humane provisions would have dealt a devastating blow to the future of medicine and biological science, and, I believe sincerely, to that fundamental Christian ethic of aiding those less fortunate than ourselves.

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## References

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