



## Human Fertilisation and Embryology Act 2008 Parliamentary Briefing 2

### Human-animal hybrid embryos

The Human Fertilisation and Embryology Bill (HFE Bill) allows the creation of four different types of human-animal hybrid embryo. This briefing deals with the issues raised by cloned human animal hybrid embryos. In our view, whilst these are important, the issues raised by the third type, genetically modified (GM) embryos, are far more important, because it is clear that the Government's aim is eventually to allow the creation of GM children.

#### What are the issues?

In HGA's view, the concern about these experiments is not that they will lead to the creation of hybrid monsters. However we object strongly to the way in which scientists have misled the public over the nature of these embryos and their potential in scientific research. Since they raise significant ethical issues, and because the public is so opposed to them, we oppose their legalisation.

#### Scientific issues

##### 'These embryos are 99% human'

Throughout the hybrid embryos debate, the science lobby has consistently claimed that these embryos are 'basically' human, or 99.9% human. This claim has now acquired the status of fact, and was repeated by the Secretary of State for Health when introducing the debate on the Bill in the House of Commons. **Yet it is completely scientifically untrue.** The claim is clearly part of a systematic spin strategy to minimise the significance of the interspecies mixing in these embryos, and thereby allay public concerns.

If the egg is the size of a football, the human nucleus that is introduced is roughly the size of a billiard ball. The main part of the egg outside of the nucleus is called cytoplasm and its purpose in eggs is to be a large store of protein and other molecules for the earliest stages of development. Until the blastocyst stage, at which the scientists hope to extract stem cells, the vast majority of the material in the embryo will be of animal origin. Gradually, the human genes will be turned on, and some human proteins made, but not until much later than the stage at which the scientists want to extract stem cells will it be possible to say that these embryos are mainly human. At the early embryo stage, is the least appropriate moment to claim that the DNA determines the embryo composition and species identity.

#### Genetically Modified Embryos

In the Bill, the third type of hybrid embryos is embryos genetically modified with animal genes. In addition to this the Bill permits the creation of GM embryos with genes from any species, by removing the ban on creating GM embryos in the 1990 Act. GM embryos have received almost no public attention, yet the ethical and social issues they raise are far more important than the other types, for a simple reason. Whilst the other embryos are only for research purposes, the Government's own documents show that allowing GM embryos is in order to allow the development of safe technology for creating GM children, which it wants to legalise in a few years time. In fact, the Government initially proposed to take the momentous step of allowing GM children through regulations!

The ethical case against HGM rests on three points:

**HGM is medically unnecessary but if permitted will immediately be used to make designer babies.** There are many ways for parents to avoid passing on genetic conditions, but only genetic modification can genetically enhance children and that is where its real market will be. If HGM was permitted, it would be impossible to prevent its use for enhancement, just as drugs and surgery are used today.

**Genetically designing our children would turn them into just another consumer commodity,** this undermines human dignity.

**HGM would soon become the basis for a new eugenics,** a society in which there would be new inequalities based on peoples "genetic merit". Disabled people are worried that consumer eugenics would reduce society's tolerance for them. Since the technology would be very expensive, rich people would be able to give their children genetic advantages over others.

**In HGA's view since HGM would be a disaster for our society it makes no sense to allow research intended to develop it. We urge MPs to support amendments restoring the existing ban of genetic modification of human embryos.**

## These embryos are very unlikely to develop or produce stem cells

In order for the embryo to develop, animal proteins in the egg cytoplasm are required to turn off the genes in human DNA that make proteins appropriate to skin cells, and to turn on the genes appropriate to embryos. This is extremely difficult, which is why cloning is so inefficient, and why many cloned animals have deformities, and die. The root of the problem is the unnaturalness of forcing the reprogramming of the skin cell DNA in this way.

Because cloning is so difficult, there are still no stem cells from cloned embryos. It is certain that it will be even more difficult when there is a species mismatch between the cytoplasm and the nucleus. The hope that this work will succeed is based on one scientific paper, published in 2003, whose results have never been repeated even by the original laboratory. It is argued that animal eggs are needed because human eggs are in short supply. But the strategy of using cow or rabbit eggs simply because there are more of them available is a strategy of applying brute force of numbers to the problem of cloning's inefficiency. The chosen solution will make the efficiency even lower, and cancel out any gains.

## Embryonic stem cell lines from cloned interspecies hybrid embryos will be abnormal

Even if ES cell lines can be obtained they will almost certainly be abnormal, which will invalidate any experimental results obtained with them. The species mismatch will compound errors from nuclear transfer. **It is extremely unfortunate that there has been such an extraordinary degree of hype about these experiments and that hopes of cures have been raised that are extremely unlikely to be fulfilled.**

## Induced Pluripotent Stem Cells

In 2007, Japanese scientists developed a method for turning skin cells into stem cells that are equivalent to embryonic stem cells. These Induced Pluripotent Stem (IPS) cells would seem to obviate the need for cloning and embryos, and Ian Wilmut has abandoned his plans to create human-animal hybrids in favour of IPS cells. A number of disease-specific IPS cells already exist and although IPS cells are not perfect models, **they are clearly scientifically and ethically far superior to cloned human-animal hybrids.**

We have recently been in correspondence with two British Nobel Prize winners, who have not found fault with our scientific arguments. The Academy of Medical Sciences report retreats to the defensive position that 'Although it is not yet clear how useful approaches involving cytoplasmic hybrid embryos will be ... uncertainties will only be resolved by actually

## Revulsion is rational

Most people find that the idea of human-animal hybrid embryos makes them very uneasy, but these feelings have a rational basis. The working of nature depends on species being distinct. A bird, is an integrated system in which the parts work well together, and nature's beauty comes from that internal harmony. In creating hybrids, scientists take two entirely different systems, and shove them together, violently disrupting their harmony.

The creation of such mixtures epitomises humanity's lack of respect for nature. Most biologists nowadays focus on molecules and cells and have lost their grasp of the larger whole. From this viewpoint, species barriers appear unreal, since all organisms are composed of similar molecules. Scientists tend to dismiss opposition to species mixing as irrational, and they deride it as 'the yuk reaction'. But in our view, revulsion at the violence they do to the integrated systems of nature is completely rational, as is indignation at their refusal to respect natural limits.

carrying out the necessary experiments.' This may seem like a reasonable argument, but it is a far cry from the bullish statements that were initially made about this research. **The point is that the public and the Government have been persuaded to overcome ethical concerns and their resistance to human-animal hybrids on the basis that this is vital and promising medical research, not on the basis that, 'Well it might work, so lets have a try'.** It is said that all research possibilities must be kept open. But in the real world, science-funding bodies rightly close off certain avenues of research every day, by refusing to fund certain research proposals. **We must judge the likely value of research when we decide whether we are prepared to cross established ethical lines for the sake of the knowledge that it may bring.**

## Creating embryos purely for research is unethical

Human Genetics Alert is not a pro-life organisation and we are not opposed to research on surplus embryos. However, creation of embryos purely for the purposes of research is unethical, because the embryo is then created not for the purposes of procreation, but merely as a tool for research. It turns the embryo into nothing more than a source of biological raw material. This is not consistent with the concept of the embryo as deserving of respect, which underlies the law. This is why, although many countries allow embryo research, only a handful allow the creation of embryos purely for research.

## Conclusion

The science lobby has severely misled MPs and the public about the nature of human-animal hybrid embryos, and their usefulness in medical research. No convincing case has been made about their value that should lead us to override the public's resistance, and ethical concerns.