



# The Origin of Species

Human-animal chimeras pose grave questions about the future identity of mankind. All the more reason to press on with the science

Of all the Beast Folk living on the island of Dr Moreau, the setting of HG Wells's prescient 1896 novel, perhaps the most disconcerting is the Ape-Man. The human-primate hybrid laces his inane jabber with "big thinks", garbled renditions of things he has heard but not understood. This swaggering spectre, at once familiar and yet utterly alien, still haunts the world 120 years later.

Humanity now stands at one of the greatest crossroads in its history. For the first time, scientists in the US have begun implanting pigs and sheep with chimeric embryos mixed with human stem cells. The aim is to understand whether it might be safe to use livestock to grow organs that could one day plug the world's dire transplant shortage. This week a panel of government advisers will issue the first clear guidelines on the legality of such research in Britain.

The defining scientific question of our age is nothing less than what it means to belong to the human species. Huge advances in genetics have made possible things that only existed in the shadowy imaginings of Wells's day.

Last year Chinese researchers announced that they had genetically engineered human embryos in an attempt to cure a rare inherited disease called beta thalassaemia. It failed. But it will not be

many years before changes to the fabric of human DNA that can be passed down from generation to generation are a serious medical tool.

In Britain, scientists are also carrying out pioneering clinical trials of gene-editing methods to treat otherwise irreversible cancers. The UK has already become the first country in the world to legalise mitochondrial donation, another genetic therapy that mixes material from the eggs of two women to create so-called "three-parent babies".

The human-animal chimeras now growing in the wombs of livestock are even closer to the frontier of what is technically and morally feasible. This mingling of species is hard enough to achieve in the laboratory, let alone in the field. Harder still is working out what to make of the small fraction of these creatures that will be human, and whether this confusion of the natural order is a price worth paying.

The potential rewards of this work are not merely tantalising. They are revolutionary. An effectively unlimited supply of organs for the mortally ill; cures for diseases written into the bodies of newborn babies; new weapons in the last line of defence against cancer: no doctor could ethically turn his or her back on such breakthroughs.

But the public must be wary, of being lulled by

technological optimism into forgetting the gravity of the problems raised by these methods. It is entirely legitimate to debate their use. Indeed, it would be negligent not to.

Politicians, philosophers and above all ordinary citizens need to get to grips with an area of science that has developed beyond our present capacity to assimilate it. It is imperative for a democratic society to determine its own future lest the job fall to technocrats and pressure groups.

What Britain should not do is submit to the hysterical reflex, common in many European countries, to strangle fundamental biology in its cradle for fear of what it might become.

These early trials are vital. Policy-making uninformed by evidence about what is safe and effective is no more than a self-indulgent thought experiment. Britain, which has competent regulators and some of the strongest genetic research institutes in the world, is ideally placed to test these methods and then to reach its own conclusions about whether to use them.

This is not, to adopt the vocabulary of one animal welfare charity, "Frankenscience". It is science. And without it we would be reduced to the level of Dr Moreau's Ape-Man, burbling a cascade of meaningless big thinks.