



A researcher demonstrates the process of cloning in a laboratory in National Chung Hsing University in Taiwan © Reuters

Big questions

We speak with Global Agenda Council Members about the big questions that will define the year ahead



The future of biotechnology: what needs to happen for biotechnology to reach its full potential?

From the Survey

“Creating a new technology is less dependent on the huge resources of large organisations. Biohacking and garbage biotech are increasingly popular using off-the-shelf ingredients.”

Tim Harper
Chief Executive Officer and President, Cientifica

From the Survey

“Advances in biology and the biomedical sciences increase the need to prevent their exploitation for malicious or hostile uses and to reinforce their beneficent ends. In the short term, new fatal infectious diseases cause concern; in the long term, it will be our ability to manipulate the human genome.”

Jeanne Guillemin
Researcher, Harvard Sussex Program on Chemical and Biological Weapons, University of Sussex

Sir Leszek Borysiewicz
Vice-Chancellor of the University of Cambridge, and Member of the Global Agenda Council on the Future of Universities

I am an optimist – I believe that advances in biotechnology will help eradicate diseases, while advances in plant sciences will make it possible to feed the future global population of 9 billion, as well as solve critical issues of water security. However, to get there we will have to tackle the ethical and legal constraints on these advances; this will be crucial for progress.

The power of genetics, the ability to genetically modify organisms, from bacteria to plants to mammals, is of course a huge issue. Because at the same time that it allows us to create stronger, better and more efficient organisms, it also raises the ethical question of whether man has the right to manipulate life. Moreover, the biggest area of development is currently in the mass databases available to scientists. On the one hand they allow us to profile and link patient data in order to increase our understanding and make new discoveries, but on the other hand, the databases touch on the issue of privacy.

There are already ethical constraints in place, both among the scientific community and among the public. In many cases, research must first be approved by an ethics committee, while scientists are always held to account by their peers. The final decision on ethics should be decided by public debate, but the form that debate takes can vary widely, and in the UK, for example, we've seen very different reactions. The issue of genetically modified food was largely met by public hysteria, while the 2008 Embryology Bill (which included regulations on hybrid human-animal embryos for research purposes and sex selection) was a two-year debate that was incredibly well-informed and open.

Individual scientists have to ask themselves what they are doing and what they are hoping to achieve. You cannot control every scientist or every country, but scientists must be open to public scrutiny and they must engage in public debate early on, explaining the potential benefits of their research and anticipating the potential harm ■