Institute for Alternative Futures
Foresight Seminars on Health and Innovation

SUMMARY

WHAT'S NEW WITH EWE?
CLONING, MEDICAL SCIENCE, AND HEALTH IMPLICATIONS
May 9, 1997

Congressman Vernon Ehlers of Michigan made preliminary remarks.

The speakers were:
Walter Truett Anderson, PhD, Meridian Institute
Julian Cooper, PhD, PPL Therapeutics
Jim Robl, PhD, Univ. of Massachusetts Amherst and Advanced Cell Technology
Gladys White, PhD, National Advisory Board on Ethics in Reproduction

The speakers examined the potential uses of cloning techniques and their health and ethical implications. Cloning and other biotechnology advances are products of bionic convergence; the synergistic creation of knowledge when advances in computing technologies are applied to biology, in general, and genomic research specifically. The speakers agreed that there is a need to educate the public and foster informed dialogue. There was a concern that without a minimum level of scientific understanding, the government, media and public could react to these developments out of fear and without careful consideration of the potential for significant health gains.

Cloning will contribute to research on health and disease

The speakers explained that recent advances in cloning techniques will increase our knowledge of health, disease and treatment. Genetic engineering techniques will be used to insert specific genes into animal breeds appropriate for studying human health. This research will uncover the genetic basis of many human health problems. Additionally, cloned animals in which selected characteristic have been successfully inserted will then used for further research into specific disease processes or to test new potential treatments. These animals, including cows, goats, pigs, and sheep, will provide improved research models, which may significantly reduce the cost of research and speed the development of new treatments.

Cloning may revolutionize how the pharmaceutical industry manufactures therapies

Robl's and Cooper's presentations described a process known as pharming. PPL Therapeutics uses nuclear transfer technology to create transgenic animals that produce a desired protein in their milk. By milking these animals, therapeutic proteins can be extracted which then may be used to treat Cystic Fibrosis, hemophilia, and other human ailments. Another important aspect to cloning is that it can be used in plants, to develop nutriceuticals, such as a banana that vaccinates the person who eats it.

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Cloning will improve health, but may raise equity problems

Genetic technologies may generate new knowledge, therapies and preventatives, but many future products may be available only to those in developed nations or the affluent in developing nations. However, these products may have great potential to improve health in poorer areas of the world; health that will eventually translate into wealth. Thus, explicit government policies and collaborations with industry will be necessary to identify priorities for research and assure access to these technologies and their resulting products.

An informed public debate is more important than ever

We have a growing 'know vs. know-not' gap that is becoming as dangerous as the 'have vs. have not' gap. According to Anderson, "The sheep-cloning experiment has produced an eerily perfect illustration of C. P. Snow's famous 'two cultures' thesis – that we have a scientific culture and a literary culture which scarcely speak the same language. Scientists have leaped into an exploration of the medical and agricultural applications, while the media has fastened on the ethics of human cloning. If there is to be sound public policy in this area, it is going to have to be bi-cultural."

Discussion

Representative Ehlers, the speakers and the audience engaged in an extensive discussion. This exchange generated a number of questions that public policy makers and business decision makers need to address as cloning, genetic and other new technologies are developed.

Policy questions

- How can the government assure a thorough and appropriate public dialogue about the benefits and risks of new technologies?
- What are the risks that governments need to examine and from which to protect the public?
- How should the government adjust agricultural, food and medicines regulations to oversee the next generation of bio-genetically engineered research and products?
- How can governments encourage technological developments to improve the nation's health?
- How can the government assure fair access to promising and innovative therapies?

Business questions

- How can business collaborate with government to expedite research and development of health enhancing discoveries?

- How can business inform the public about scientific advances and stimulate dialogue while avoiding negative publicity?
- How can business collaborate with the government and the public to mediate the impacts of change as genomic convergence redesigns the health and medical research, development, manufacturing, and distribution industries?