Ethical issues in the Development and Use of Biotechnology for Health Care in Developing Countries

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Biotechnology in Developing Countries
The publication of the results of the Human Genome project and the mapping of about 20 000–35 000 human genes (Lander et al 2001; Venter et al 2001) has resulted in the speculation about how quickly the results of this exercise would translate into benefits of genetic therapeutic options for humans (Coors, 2003). These initiatives lead one to expect an increase of new vaccines and treatment regimes for various diseases. New technologies like gene chips and RNA interference are contributing significantly towards research in areas of stem cell research, gene therapy and vaccine development. The majority of all new medicines developed today are through genetic manipulations designed to attack the molecular targets of the disease, thus providing tremendous potential for cure. Since the field of molecular biology has advanced knowledge of various cellular pathways, both during normal and disease conditions, several recent technologies are targeted to modify those pathways thus preventing progression of the disease. For example, inflammation, programmed cell death, and metabolic disorders could be prevented by target blockers.

Medical biotechnology promises a revolution in healthcare through development of new therapeutics and diagnostics. The exponential growth of the biotechnology industry both in developed and developing countries holds promise in making significant contributions to public health. Developing nations could begin to view the development of drugs based on biotechnology, as not only a means to reduce the burden of disease, but also to be equally compatible with the developed world in scientific capability. In a recent study conducted by the Canadian Program on Genomics and Public Health in seven developing countries, these countries are found to be developing the know how to meet the local health needs, even for the poor (Thorsteinsdottir et al 2004). According to a recent report, India now has the twelfth most successful biotechnology sector in the world as measured by number of companies (Ernst & Young 2004). If the current rapid pace of progress of its health biotechnology industry is any indicator, India has a promising future at the national and international level. One of the major successes of the country was the indigenously developed hepatitis B vaccine, a recombinant form of hepatitis B surface antigen, produced in Pichia pastoris and manufactured under the name Shanvac-B (Kumar et al 2004). However, indigenously developed biotechnology products are still not widely accepted both by the general public or the medical fraternity.
The development and use of these new technologies also call for an examination of the ethics of engagement with these new technologies both from a public health as well as an individual’s perspective. The global context in which these technologies have been developed is indicative of the tremendous disparities in expenditure between the nations developing the technologies and producing them and the others. Furthermore, the dispensation of the new economic order and the intellectual property rights implemented through TRIPS and other international agreements give rise to scepticism in developing countries about the effectiveness of guarantees in the Universal Declaration on the Human Genome (Benatar, 2002). The role of United States in supporting the pharmaceutical companies who opposed the South African initiative to import generic drugs to combat the HIV/AIDS epidemic while acting to override the very same TRIPS agreement to import drugs to resolve the anthrax threat within the US does not serve to belay such scepticism (Benatar, 2002).

The Ethical Challenges

In the development of biotechnology, improvement of health care also produces several ethical challenges. These new technologies may well lead to an escalation of health care costs associated with the sophisticated methods of diagnosis, treatment and prevention. In addition, the use of genetic information of the patient for treatment as well as products made through biotechnology raises ethical, social and legal issues. A major concern is that the technology will be driven by efforts to address diseases in developed countries and will ignore the public health issues in poor countries. Recent changes in the regulatory mechanisms for clinical research within India and the potential for exploitation of relatively treatment naive populations and the highly trained technicians for clinical research by the developed countries have been causes for concern (Nandy et al, 2005, Srinivasan et al, 2006).

Countries like India and China which possess significant number of qualified and highly skilled clinicians and researchers also need to have regulatory mechanisms that provide intellectual freedom to their scientists to develop their ideas in settings that provide for and stimulate research. The regulatory mechanisms that evolve should not be viewed as impediments that interfere with intellectual autonomy. There is a risk that in these situations, regulation may begin to be seen as protectionism at its best and interference with intellectual activity at its worst. Both the lack of resources and shrinking resources in the public sector leads these researchers to view the private sector as a source for funds.

An Ethical Framework for Use of Biotechnology in Developing Countries

Thus while the potential for benefit from the development and use of biomedical technologies exists, the fears regarding the exploitative potential cannot be dismissed. There is a need to situate this debate within an ethical framework and obtain ethically justifiable solutions. This calls for the development of an ethical framework that offers solutions that address the issues of development; the use of technology and the potential for inequities that this technology harbors. Foucault’s technologies of the self provide a
useful framework for this dilemma (Foucault, 1994a). He links the techniques of production, signification and domination to a fourth technique of self improvement by a subject that he labeled ‘technology of the self.’ ‘Technologies of the self’ permit individuals to effect by their own means, or with the help of others, a certain number of operations on their bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection or immortality.’

— Foucault, 1994b, p.225.

Even as new technologies emerge, the process of new knowledge creation that is associated with the development and use of this technology calls for new forms of communication between individuals, groups and new infrastructures. One example of the changes brought about by technology is the development of internet. This transfer of information calls for knowledge about how to communicate through the net; the infrastructure needed includes a computer. Technology does have the potential to result in giving privileges to certain population groups. The ability to use the net, for example, allows those who are able to access it and obtain information while those who are not able to obtain a computer with internet connectivity are left out of the race. Foucault situates the production of this knowledge within the framework of the context that requires different modes of communication and infrastructure and links it to the techniques of domination that could be produced through such access (Coors, 2003).

The fact that such technology may not be available to a majority of the population is not a reason, however, to discourage the production of such knowledge. Should such knowledge be perceived by individuals as contributing in any way towards improvement of the individual’s situation/status/understanding, such knowledge production is to be welcomed. To prevent the possession of such knowledge from privileging a few, a process of regulating this knowledge or technology is needed either to make it accessible to those in need or encouraging universal access through public provision. It also calls for the use of such technology to be based on a well-informed process of acquiring the capacity to realize the advantages and disadvantages of its use and then opting for its use and sharing of accurate information by the producers of this knowledge (Besley, 2005). A Foucauldian approach places the responsibility for informing on the producers of such knowledge. Any decision-making by an individual to use such technologies for his/her betterment should be based on a process of informed autonomous decision-making. In ethical decision making, these ideals of perception of benefit, informed decision making, and equitable availability of such knowledge are enshrined in the three basic principles of ethical decision-making, beneficence, autonomy and justice.

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References:

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