

Chapter 11

Social Issues Related to Gene Patenting in Latin America: A Bioethical Reflection

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ABSTRACT

The chapter reports on the experiences of both experts and lay people on the level of knowledge and social representations of genomic research and its applications in a number of Latin American developing countries. Issues discussed include access to prevention and therapeutic methods related to genomic medicine in Latin America, risks associated to genetic modifications in humans, lack of equity in the access to health benefits, control by biotechnological companies, commercialization of gene sequences through patents which leads to commercial exploitation of underdeveloped countries, among others

INTRODUCTION

With the advent of genetic knowledge and the possibility of gene patenting a commercial mentality has been dominating the genetic research area. Issues related to gene patenting such as globalization of regulations, health policies, relation between developed and developing countries, equity, economic power of biotechnological companies and accepted uses of biotechnology deserve bioethical reflection.

The patenting of human genes has been possible through the completion of the Human Genome

Project, sequencing the entire human genome and characterizing the function of many genes (International Human Genome Sequencing Consortium, 2001; Craig Ventor et al., 2001) and upon the acceptance of patent offices of developed countries. There are great expectations regarding the social applications on health of genomic information as a field where patents of human genes can have industrial use. Many genes are related to hereditary diseases; 1,112 genes have been identified related to Mendelian inheritance diseases (Catalog of Mendelian Inheritance Diseases, 2010) and many others act on multifactorial diseases, such as cancer or diabetes. This has created interest in

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patenting sequences with use in health industry for diagnosis, prognosis and treatment.

Furthermore, the biotechnological industry is growing enormously due to the creation of genetically modified organisms to improve crops and cattle with profits by patenting.

Data in this chapter are drawn from Latin American journal articles and from our own investigation on social representations of genomics in four Latin American countries (Argentina, Chile, Mexico, and Peru).¹

ADVANCES IN GENOMIC RESEARCH IN LATIN AMERICA

In general, there is an impression that Latin American countries are not prepared to respond to the explosive development of genomics and genetic engineering which has taken place in developed countries. There is little interest in most Latin American governments for research in this area since they believe that other priorities are more important. As a result, Latin American countries act mostly as consumers with the added problem of the little information that lay civilians possess. There is also lack of legal norms to regulate this field in general. This contributes to the generation of certain anxiety since there are fears that certain issues raised by the expansion of genomic research could be manipulated and used for the interest of a few.

In general, developing countries are left behind in biotechnology and genomic medicine development, but there are some exceptions at Latin America such as Brazil, Cuba, Argentina and Mexico in the development of genomics. Cuba has linked biotechnology to its health care sector. Brazil represents the biggest market at Latin America. Argentina is moving towards being a force at Latin America in transgenic market. Mexico has recognized the potential for genomics in addressing public health issues.

Brazil has 71 biotechnological companies, most working on transgenics and some have developed genetically engineered health care products, such as insulin, vaccines, kits for diagnosis and immunization; since 1998 the Human Genome Project for Cancer has been functioning under the sponsorship of Ludwig Institute of the United States and the Foundation for Research Protection at Sao Paulo (Fundación de Amparo a la Investigación del Estado de Sao Paulo—FAPESP) (Bisang et al., 2009, p. 73-74). Brazil has created the Genomic Institution ONSA in 1997 uniting several laboratories. The first development was sequencing the first Latin American microbial genome, the bacteria *Xylella fastidiosa* (Simpson et al., 2000). Furthermore, several projects have been initiated which link universities and research institutions with regional agriculture and health problems. Examples are: the sequencing of *Chromobacterium violaceum*, a human pathogen; the sequencing of *Herbaspirillum seropedicae* of farm value; the sequencing of RNA transcripts of human cancers; and the sequencing of RNA transcripts of the disease caused by *Leishmania chagasi* (Simpson, 2001).

An example in Cuba has been the development of the first human vaccine with a synthetic antigen for meningitis B. The vaccine against *Haemophilus influenzae* type B (Hib) infection made in Cuba is much cheaper and safer product than other existing vaccines. This was possible due to the commitment and involvement of government bodies, public research institutions, universities and the health system (Thorsteinsdóttir et al., 2009).

Argentina has used its Intellectual Property Rights laws to develop the pharmaceutical sector for competition in the global marketplace and constitutes an example of a developing country moving forward in creating national guidelines, approval procedures and research institutes to evaluate the risks of genetically modified organisms.

Genomic medicine has become a priority to the Mexican government as a means of finding

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