

BACKING INNOVATION IN BIOTECH

Pakistan attaches great importance to innovation and advancement in the field of biotechnology and its various initiatives seem to be paying off, explains Hameeda Asif.

the Mashelkar
the need to
national interest
-organisms as
India, and the
thereof, should

should turn on
be granted for
ecies that have
ion towards a
the additional
business.

of the IP and
Luthra & Luthra
contacted at:

n the area
rmaceutical
compliance
and Indian
compliance





The importance and potential of biotechnology in Pakistan was realised in 1959 when the country's first Commission on Science and Technology emphasised the need for forming research organisations in areas of vital importance to national development. Since then, biotechnology has been promoted in practically all science policy documents and Pakistan's commitment to this field has been reflected in a separate allocation of the development budget to biotechnology.

Pakistan has many institutions working on various aspects of biotechnology. Some universities offer up to Master's degree level in this discipline. The Pakistan Biotechnology Information Centre (PABIC) serves as a hub to disseminate information, to support collaborative efforts, and to develop a network of institutions and individuals working in this field.

The National Commission on Biotechnology (NCB) was established in 2001 as an advisory body to the Ministry of Science and Technology to monitor new developments in the field of biotechnology at national and international levels, and to recommend appropriate measures for the benefit of the country.

NCB has been working in partnership with the government, various local biotechnology institutes and professionals to improve the lives of individuals by providing technical assistance, technology sharing and information resources. There are at least 30 institutions working in different fields of biotechnology. NCB also provides various biotechnology products

for commercialisation in areas including healthcare, agriculture, environment, food stuffs and livestock.

The Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad, is a research and development centre functioning under the auspices of the Pakistan Atomic Energy Commission. It has the mandate to create and maintain new genetic material for sustained agricultural development and to conduct research on applied problems in the field of agriculture and biology, using nuclear and other related techniques. NIAB also markets products such as Nucleus seed for many varieties of crops that are produced in limited quantities. In addition to various commercial varieties, seeds of advanced lines of cotton, rice, mungbean, chickpea and lentil are also made available for research purposes only.

Recent developments are seen in The National Institute of Biotechnology and Genetic Engineering (NIBGE), Faisalabad, which is the country's main biotech research establishment, concentrating on research into plant, environmental and medical biotechnology. NIBGE has become a leading centre for research on the cotton leaf curl virus by deciphering the virus's genetic code and documenting the genetic diversity of the virus existing in the field.

The Institute has been a pioneer in establishing Polymerase Chain Reaction (PCR)-based diagnostic techniques for infectious diseases that are now routinely performed in many hospitals. Its contribution regarding the genotyping of

the Hepatitis-C virus in the local population has also been greatly appreciated. NIBGE is soon going to have state-of-the-art equipment (CV Chromoscan) for undertaking human chromosomal analysis, karyotyping, molecular diagnosis for genetic disorders and cancers, and comparative genomic-based hybridisation.

The first-ever biotechnological pharmaceutical plant in Pakistan, which was established by the efforts of two pharmaceutical companies—Laboratories Bago of Argentina and Ferozsons Laboratories of Pakistan—was inaugurated in July 2009. This plant will produce medicines to alleviate the scourge of cancer and to cure Hepatitis B and C. It is hoped that Pakistan will no longer need to import these medicines at high prices.

IP protection

Prior to the year 2000, the granting and protection of patents and designs in Pakistan were performed under the Patents and Designs Act, 1911. This act has been repealed by two separate ordinances: The Patents Ordinance, 2000, relating to the grant and protection of patents; and The Registered Designs Ordinance, 2000, relating to registration and protection of industrial designs. On 31 December, the 2003 Rules for Patents Ordinance were introduced namely, The Patents Rules, 2003.

The government established an institution, the Intellectual Property Organization of Pakistan (IPO-Pakistan), on August 7, 2005. The mission of IPO-Pakistan is to integrate and upgrade the

"THE PAKISTAN BIOTECHNOLOGY INFORMATION CENTRE SERVES AS A HUB TO DISSEMINATE INFORMATION, TO SUPPORT COLLABORATIVE EFFORTS, AND TO DEVELOP A NETWORK OF INSTITUTIONS AND INDIVIDUALS WORKING IN THE FIELD OF BIOTECHNOLOGY."

Pakistan is among the world's four largest producers of cotton and offers a rapidly expanding market for insecticides and pesticides for investors. Similarly, the introduction of Bt Rice in Pakistan could result in a substantial reduction in the use of insecticides in rice production and better control over its diseases, which would be an enormous benefit to rice growers and the whole economy, and provide an ideal environment for investment and commercialisation.

Another growth area will be the development of alternatives to non-renewable energy resources, especially fossil fuels, with the use of biotech applications. There are a number of benefits to producing and using bio-fuels, and the growth of the ethanol industry offers enormous potential and can spark off new capital investments for overall economic development in Pakistan.

Another growth area is Pakistan's pharma industry, which is predominantly working in generic pharma at present. Today, Pakistan has more than 400 pharmaceutical manufacturing units, including those operated by 25 multinationals.

It is claimed that Pakistan's pharmaceutical industry meets around 70 percent of the country's demand of finished medicine, having good manufacturing practices (GMP) in accordance with the domestic and international standards. Currently, the industry has the capacity to manufacture a variety of products ranging from simple pills to sophisticated biotech, oncology and value-added generic compounds.

On other hand, industrial and environmental biotechnology are also part of the core industrial sectors that are driving the transition of the key manufacturing sectors (e.g. pharmaceutical, chemical, automotive, textile, food/feed, agricultural, etc.) towards more sustainable and greener economic and environmental models.

Successful efforts in these directions will reduce dependence on access to inputs and will make the technology more readily available to poor farmers. It is possible that the introduction of agricultural biotechnology in developing countries such as Pakistan could contribute to increased productivity and food that would contribute to poverty reduction and provide improved nutrition.

Some progressive work has also been seen in medical and health biotechnology, but more technical effort in some particular areas is also required, especially to reduce the high percentage of genetic disorders and diseases such as HIV, TB, hepatitis and malaria, of which

millions of people in Pakistan are suffering. There is also a need to identify solutions to help the population live fuller, richer and secure lives through lower-cost, higher-quality medicines.

The disease burden obviously has enormous economic consequences that can only be dealt with in identifying potential solutions to these health problems and increasing capacity in medical and health biotechnology. This also depends on the research being relevant to poor people, which in turn depends on the economic, social and policy environment.

The intellectual property rights governing such technology should also be properly secured. Further, there is a need for full implementation of the TRIPS Agreement (Agreement on Trade-Related Aspects of Intellectual Property Rights) so that Pakistan's industry will get a stronger patent regime and product patents of biotechnical inventions in line with the other WTO member countries.

Hameeda Asif is patent attorney at Bharucha & Co. She can be contacted at: hameeda.asif@bharuchaco.com



Hameeda Asif

Hameeda Asif did her Master's in Biochemistry and is presently studying law at S.M. Government Law College, Karachi. She joined Bharucha & Co. in April 2005 as a trainee in the patents department and is now qualified to be a patent agent. She is primarily involved in dealing with matters relating to patent and industrial design, and particularly she looks after searches, examination reports and opposition matters. She has extensive experience in advising national and International clients in both legal and technical issues relating to patent and industrial design matters, especially relating to pharmaceutical, chemical and biotechnological sectors.

IP infrastructure for improved service delivery; increase public awareness; and enhance the enforcement and co-ordination activities for achieving the goal of an IP-based nation. IPO-Pakistan has focused its activities on promoting awareness in the public through seminars and conferences, and arranging the accommodation of the three major IP offices dealing with patents, trademarks and copyright in the same building.

According to the Pakistan Patents Ordinance, 2000, biotechnological invention is not an excluded subject matter and is patentable if it is a product or process that is novel, inventive, industrially applicable, and not contrary to law or morality.

Pakistan is basically an agricultural country and its economy is mainly agrarian. It is the biggest sector of the economy and earns about 30 to 40 percent of its national income from agriculture. Currently, there are several local patent applications filed with the Patent Office in different fields of biotechnology and various patents have been granted particularly in the agricultural field.

However, some patent applications are also filed in other fields of biotechnology. CEMB filed applications for a procedure for the detection of the Hepatitis B virus using the polymerase chain reaction on July 18, 2007 and for the development of a modified, such as pegylated recombinant human interferon for therapeutic use on July 18, 2007. Both these applications are currently pending at the Patent Office.