

RESPECT LIFE, DON'T PATENT IT.

By

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One could be forgiven for thinking that there are no dissenting voices in the scientific community regarding the release of genetically engineered organisms in the environment. This simply is not true. In February 1999, 22 prominent scientists supported the publication of research by Professor Arpad Pusztai at the Rowett Research Institute in Scotland which showed that rats fed on genetically engineered organisms (potatoes) had suffered significant damage to their vital organs. Pusztai's findings had been suppressed by the Institute, he lost his post and the scientists wanted to know why?

In September 2000 the US Food and Drug Administration began a safety investigation when it became clear that a variety of genetically engineered corn which was banned for human consumption was found in a popular snack. The GE corn produced by Aventis Corporation contained an inbuilt pesticide which could cause allergic reaction in some people. Traces of the banned protein were found in the cornmeal taco shells by the environmental organisation Friends of the Earth. These taco shells were being distributed by Kraft, a subsidiary of the tobacco company Philip Morris.

In Britain **The Royal Society** which had issued a positive report on GE foods in 1998 was much more cautious in its February 2002 report. It stated that while there was no known bad health effects of GE foods, GE crops could cause allergies particularly among farmers and food industry workers. It also warned that GE technology “could lead to unpredictable harmful changes in the nutritional state of foods” and that baby foods were particularly vulnerable. Third World people whose diets are restricted could also be adversely affected. Professor Smith, one of the authors of the report, gave the example of poor people in central America where maize accounted for 50 percent of their diet. Eating GE maize could have negative nutritional affects on those people ¹.

On the environmental front an article in the scientific journal Nature in October 2001 revealed that researchers at the University of California had that found the world's oldest varieties of maize had been 'contaminated' by genetically engineered maize. Ignacio Chapela, assistant professor of microbial ecology at Berkeley's College of Natural Resources said that this is a very serious development. The regions where the samples were discovered are known for their diverse varieties of corn. These need to be protected from genetic pollution.

The organisation **English Nature** also confirmed that a generation of 'super weeds' have been found on a headland of GM crops and even in fields some distance from the GE crops in Canada. These weeds have accumulated genes from the modified crops and in turn have become resistant to a series of herbicides ².

¹ Brown, Paul, “Scientists Warn of GM Food Risk”, The Guardian Weekly, February 7th-13th, 2002, page 10.

² Brown, Paul, op. cit, The Guardian Weekly, February 7th-13th, 2002, page 10.

During the last week of 2002 a US biotech company, Prodigene, was fined \$250,000 because a genetically engineered food crop had been contaminated with an experimental pig vaccine designed to prevent stomach upset in piglets. The US authorities claimed that the corn did not reach the food chain.

During the same week it was confirmed that horizontal gene transfer is taking place in Britain. According to research at the National Institute for Agricultural Botany at Cambridge up to 48 percent of the weed wild turnip growing in the GM crops had swapped genes with its cultivated relative, making it resistant to weedkiller. These are some very important critiques of the impact of genetically engineered organisms on human health and environmental well-being.

The proponents of GMOs argue that the risks posed by them are minimal. What does risk mean? It is often taken to mean that there is a low probability of something happening. But risk ought to be defined as the probability of a given outcome multiplied by the consequences of that event if it were to happen. So something with a low probability can still pose a high risk if the consequences are enormous. That is why from an ethical perspective the precautionary principle would call for a moratorium on the deliberate release of genetically engineered organisms until the risks are better understood scientifically and minimized. The recent remarks by the US trade representative Robert B. Zoellick that the European cautious stance on genetically engineered food was 'Luddite' and 'immoral' demonstrates that he knows as little about ethics as he does about the persecution of Ned Ludd and his followers in the first decade of the 19th century³.

Patenting Life

Let me now turn to the related issue - namely the patenting of living organisms. Whereas I could see a place for genetically engineered organisms in the future if methods of transferring genetic material were improved and the regulatory agencies, nationally and globally, were better equipped, I am implacably opposed to patenting life.

Patents give an exclusive right to an inventor to make or sell an invention for about 20 years. To be patentable an invention must be new or novel, involve a non-obvious inventive step and have a useful or commercial application. Patents have been around since the fifteenth century, but, until 1980 these criteria excluded living organisms. These were always regarded as discoveries of nature, and therefore unpatentable.

All this changed in 1980 when Ananda Chakrabarty (an employee of General Electric) won a U.S. Supreme Court case allowing him to patent a microbe he had genetically engineered to digest oil. The Chief Justice declared that the "relevant distinction is not between animate and inanimate things but whether or living products could be seen as human-made inventions". This decision heralded a new era in which living organisms can be patented.

It is one of the ironies of the modern world that many countries that are economically poor are rich in biodiversity. Most rich countries - the United States, European

³ www.nytimes.com/2003/02/11/international/europe/food.

countries and Japan are located in temperate climate zones where species diversity is quite moderate. Genetic diversity is at its richest in tropical countries, which are estimated to contain over 80% of the world's genetic resources. I lived for over a decade with the T'boli people on the edge of the tropical forest in Mindanao and was aware that there was a greater diversity of tree species in 2 hectares of rainforest than in all Ireland.

In what the corporate world calls '**bioprospecting**'- and others call '**biopiracy**'- scouts are sent to these areas to seek out valuable organisms or plants, often drawing upon the wisdom of indigenous and local peoples. They then take samples back to laboratories where they isolate active ingredients or genetic sequences and patent them as their own inventions. Communities can end up having to pay for the right to use something that was previously part of their legacy. The biotech industry argues that this knowledge only becomes valuable once money has been spent on research and commercial products have been developed.

The first criteria for patenting, namely that it must be new would seem to rule out the patenting of genetically engineered organisms. The geneticist does not create new genes. All the geneticist does is identify gene with particular properties which the biotechnologist then transfers to another organisms. In other words genetic engineering merely juggles the pre-existing components of life. No new gene or genetic material is ever created therefore, genetic material or DNA ought not to be patentable. Jeremy Rifkins states that "no reasonable person would dare suggest that a scientist who isolated, classified and described the properties of hydrogen, helium or oxygen ought to be granted the exclusive right for twenty years"⁴.

Since the historic 1980 decision of the US Supreme Court rich and powerful transnational corporations (TNCs) like Du Pont, Monsanto and Aventis have patented seeds, plant tissue and animals. A transgenic mouse called 'Oncomouse' was the first mammal to be patented in 1988. A human breast-cancer gene was spliced into its makeup to aid cancer research. Today human gene sequences, cell lines and stem cells are being patented mainly by corporations.

Privatising the Commons

There is a similarity between what happened with the Enclosure Acts in Britain in the 18th century, and what is happening today with TRIPS. Canadian Pat Roy Mooney, a veteran campaigner against life patenting, points out: "*Rich landlords who orchestrated the enclosure movement argued that the commons must be privatised so that they could take advantage of the new agricultural technologies and feed growing urban populations. In the same way, and with the same arguments, as the Enclosure Acts used to drive rural societies from their ancestral lands (and rights) TNCs are now pursuing another Enclosure Act - the intellectual property ('IP') system. It is privatising the*

⁴ Rifkins, Jeremy, The Biotech Century, Victor Gollanez, London, page 45.

intellectual commons and monopolising new technologies based on these commons" ⁵.

A New Colonialism

What has been happening since the latter part of the 20th century is a new, more invidious form of colonialism. Many of the agribusiness, pharmaceutical and biotech corporations involved in this enterprise have their headquarters in the U.S. They can bring enormous pressure to bear on politicians on the national and global stage to design a regulatory regime that promotes their products.

GATT and the WTO

The Trade Related Intellectual Properties (TRIPS) of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) was such an initiative. GATT and its successor the World Trade Organisation (WTO) with its two sister institutions the World Bank (WB) and the International Monetary Fund (IMF) have been forcing Third World countries to adopt 'free-trade' policies during the past two decades. Ironically the Cambridge economist Ha-Joon Chang has documented in his recent book Kicking Away the Ladder that not a single one of the developed countries promoted 'free-trade' when they were developing their own economies ⁶. Under TRIPS, countries are obliged to bring their patent laws into line with the industrialised nations by extending them to include living organisms or by setting up equivalent systems of intellectual property rights. TRIPS does not require biotechnology companies to ask for prior consent before accessing biological resources, nor does it demand that patent holders share the benefits with the people or lands from which the genes originated. A WTO meeting in November 2001 in Doha said that exclusive rights provided by patents are an important incentive to the development of new drugs. Most Western governments support the current WTO patent agreement and have so far resisted calls by developing countries to have it reviewed.

I am opposed to patenting life on a number of grounds:

Theological

Life, which was once considered sacred and a gift from God in almost all the religions and cultures of the world, is now perceived by some as a human invention - a collection of genes and chemicals that can be engineered, bought and sold by a patent holder. Life will only have value in so far as it generates a profitable return on investment for large companies. Such a reductionist, mechanistic and materialistic concept of life is at variance with the tenets of all the major religions and with the

⁵ Mooney, Pat Roy "Private Parts: Privatisation and the Life Industry", Development Dialogue, April 1998, page 138.

⁶ Ha-Joon Chang, 2002, Kicking Away the Ladder, Anthem Press, PO Box 9779 London, SW1 7QA.

spiritual traditions of tribal peoples. A nineteenth century speech, attributed to the native North American Chief Seattle, bemoaned Western arrogance that thought we could, “*buy or sell the sky or the warmth of the land*”. For Chief Seattle, every part of the Earth was ‘*sacred*’, but now no part of the Earth is sacred. The lawyer Andrew Kimbrell believes that the US Supreme Court decision on patenting living organisms has “transformed the status of the biotic community from the common heritage of the earth to the private preserve of researchers and industry”⁷.

The US Supreme Court’s view of life also differs radically from the way life is understood, revered and cherished in the Judeo-Christian tradition. The first line of the Bible insists that everything was created by a living God: “*In the beginning God created the heavens and the earth*” (*Gen 1:1*). The text is very clear that all living beings, including human beings, are creatures of God.

The first account of creation goes on to teach that all beings have their own inherent value. This dignity derives from the fact that they are created by God (*Gen 1:12, 19-25*). In the second account of creation the man is given the privilege of naming the animals (*Gen 2:19-20*). The text recognises that all creatures, including humans, have a common origin. They are created from the soil. God invites the man to care for the animals with a sense of responsibility and good stewardship. While this gives humans dominion over other creatures, it is not an arrogant dominion with the right to oppress and exploit. Rather, it is supposed to be patterned on God’s own care and sovereignty, enhancing God’s creation.

Furthermore, in the Judeo-Christian tradition, creation is an all-encompassing activity. It is not a once-off action in the distant past by a mechanistic God who immediately abandons the world to its own devices. Right from the time of Origen in the second century creation was seen as a continuing reality. God did not create merely *ex nihilo* but also his action is seen as continuing - *creatio continua*. God is perceived as living in each of His creatures in the here and now. God holds together the web of life and leads all creation into the future (*Psalms 104*). Our world is evolving and has its own unique processes. The Bible does not share the reductionist myopia of the US Supreme Court that saw life as an isolated entity and as a product of human industry.

Patenting is a fundamental attack on an understanding of life as interconnected, mutually dependent and a gift of God given to all creation: “*Oh, come to the water all you who are thirsty; though you have no money, come! Buy corn without money, and eat, and, at no cost, wine and milk.*” Isaiah 55:1. It opts instead for an atomised, isolated, commodified, understanding of life. It is also at variance with the Judeo-Christian conviction that freedom, openness and possibility are the hallmarks of life in God’s creation.

The Bible recognises that humans are companions and stewards of other creations in the community of life (*Gen 2: 15*). In *Gen 2: 15-17* God settles the man in the garden and invites him to cultivate and care for it. The text goes on to place certain limits on the man’s use of the natural world. Yahweh God gives him this admonition: “*You may eat indeed of all the trees in the garden. Nevertheless, of the tree of the*

⁷ Andrew Kimbrell, 1993, [The Human Body Shop](#), Harper, San Francisco, page 200.

knowledge of good and evil you are not to eat, for on the day you eat of it you shall surely die” (Gen 2: 16-17).

The Bible is very critical of those who, puffed up with arrogance, refuse to recognise that they are dependent on God. In the story of the Tower of Babel (Gen 11) humans repudiate God’s sovereignty and attempt to storm heaven under their own steam. It would not be misrepresenting the meaning of this text to interpret any claim to own life as usurping the divine prerogative as the author of life.

It is not just the Bible that teaches that life is special and sacred. Most cultures and religious traditions affirm that there is a qualitative difference between living and inanimate reality. In his book Biophilia, the Harvard biologist, Edward O Wilson, argues that during our evolutionary development humans were hard-wired genetically to bond with other species in the living world. In the prologue he uses a image from the living world to illustrate the powerful attraction of other life forms. "*We learn to distinguish life from the inanimate and move towards it like moths to the porch light*"⁸. Nothing, and certainly not the commercial demands of transnational corporations should be allowed to blur or eliminate that vital distinction between life and non-life.

Impoverishing farmers

The patenting of seeds also gives enormous economic power to a small number of agribusiness corporations and they sell their wares on the global market. These will not be cheap. The insect-resistant maize hybrid produced by Pioneer Hi-Breed requires access to 38 different patents controlled by 16 different patent holders. In addition, farmers will be forced to pay royalties on succeeding generations of plants and animals that they buy or produce. It will be illegal to save seeds from the previous harvest without permission and payment, and this will make farmers totally dependent on the corporations. The impact on Third World countries will be devastating. It will lead to a further flow of financial resources from the South to the North, and, in the process, institutionalize the dependence of Southern agriculture on Northern corporations. New scientific information on molecular biology and genetics and new agricultural technologies will be concentrated in the hands of these corporations.

Corporations controlling staple food crops

If biodiversity continues to be privatised for the exclusive benefit of Northern corporations, this will give them control over the food supply of our world. At present 10 corporations control 32% of the commercial seed market, valued at \$23 billion, and 100% of the market for genetically engineered seeds. Also, with massive resources being channelled into biotechnology, financial support for traditional crops and farming methods is tiny.

Unsustainable agriculture

⁸ Wilson, Edward O, 1984, Biophilia, Harvard University Press, Cambridge, Massachusetts, prologue

Patents promote unsustainable and inequitable agricultural policies. A disastrous decline in genetic diversity could result from patenting crop species. The development of genetically uniform organisms is preferred by the agribusiness corporations because it is then easier for them to maintain their patent claims. Biotech companies holding broad spectrum patents on food crops encourage farmers to grow modified varieties with promises of greater yields and disease resistance. The seeds are also genetically engineered to be resistant to the corporations herbicide, thus adding to the corporation's profit. However, numerous examples world-wide show that the 'improved' crops have failed to yield according to corporate promises, and have led to a diminishing of the rich diversity of traditional crop varieties.

False promises to the poor

The biotech industry boasts that genetically engineered rice could help prevent blindness among poor children. Millions of dollars of public funding went into developing this technology which was hailed as proof that biotechnology would help feed and supplement the diet of the poor who might be lacking in Vitamin A. The researchers, Ingo Potrykus and Peter Beyer, who developed the transgenic beta-carotene enhanced rice were so afraid of the complexities of patent negotiations that they quickly signed away the publicly-funded technology to AstraZeneca (now Syngenta), one of the world's largest agrochemical and biotech companies. Already there are some 70 patents on the so-called 'golden rice, whose efficacy appears to be somewhat exaggerated.

Animal Welfare

Attempts have been made to genetically engineer fish, cattle, sheep, pigs and chickens to increase their growth rates, have lower fat levels, and more tolerance of diseases common to overcrowded and unhygienic factory farms. Also being researched are pigs and poultry that are more docile and better suited to intensive farming conditions, and even featherless chickens to avoid the cost of plucking them. In sheep the incorporation of human and bovine growth hormone genes has resulted in disrupted joint development and a diabetes-like condition, suppression of appetite and a shortened lifespan. All of the above are example of the abuse of animals.

Health Drugs too expensive for Third World poor

Patents enable companies to create a monopoly on a product, permitting artificially high pricing. Third World critics of the Western-dominated pharmaceutical industry point out that these corporations spend millions of dollars researching profitable lifestyle drugs like Viagra but neglect the diseases of the poor like malaria and tuberculosis (TB). The court case in South Africa in 2000, where 40 transnational pharmaceutical companies took the South African government to court to prevent it importing cheap generic drugs which were needed to treat AIDS, illustrates the determination of giant corporations, such as GlaxoSmithKline, to protect their patents at any cost. The usual rationale - huge research and development costs - that the companies give for seeking patents did not pertain in this case. The medication was developed in public institutions. The disparity in costs were staggering. At present, Ciprofloxican, an essential medicine for AIDS sufferers, costs South Africa's public

health sector 52p (sterling) per pill and the country's private health care providers more than £3 (sterling) per pill. If the new law is implemented, a generic drug could be imported from India for 4p per pill. Obviously, access to generic drugs would assist 37 million people suffering from AIDS in Africa alone. The court action, which was watched with interest around the world, turned into a PR disaster for the giant pharmaceuticals.

Drug dependency on specific companies

The genes that are perceived to 'cause' many common illnesses have either been patented or applications have been lodged for the patent. Already Duke University in the US has taken out a patent on the Alzheimer's gene which they have licensed to Glaxo. The National Institute of Health has applied for a patent on a Parkinson's disease gene. Myriad Genetics, which is now owned by Novartis, has applied for a patent on a cardiovascular disease gene. A patent on the melanoma gene is owned by Millennium Pharmaceuticals. Even a gene associated with obesity has now been patented by Millennium Pharmaceuticals and licensed to Hoffmann-LaRoche. These and a host of other patents will now be enforced in Europe since the Directive on the Legal Protection of Biotechnological Inventions was passed by the European Parliament on 12 May 1998. The EU Council of Ministers approved the Directive in Autumn 1998, but the Dutch Government has filed a nullity suit at the European Court of Justice against it. Italy also opposes it. The Dutch challenge says that it violates the basic rights of citizens by creating dependencies between patients and single companies who are patent holders.

Increasing health costs

The U.S. Biotech company Myriad Genetics has applied for a patent on the breast cancer gene BRCA 1, as well as all therapeutic and diagnostic applications that result from the knowledge of the gene. If this patent is granted the company will be allowed to charge patients every time a diagnostic screening is performed. At present, it costs Britain's National Health Service (NHS) £600 to screen patients for two breast cancer genes BRCA-1 and 2. It costs £30-35 for each subsequent test. Myriad Genetics, on the other hand, charges £1,500 to screen and £300 for succeeding tests. Such costs would be prohibitive and restrict access to these tests to the rich. Staff at the Regional Genetics Service of Central Manchester Healthcare wrote to all the members of the European Parliament in July 1997 stating that patenting genes would make, "*the possibility of genetic testing for disorders such as heart disease or breast cancer so prohibitively expensive it would be beyond the scope of the National Health Service (NHS)*".

Hinder Progress in Science and Medicine.

Opponents of patenting also believe that a patenting culture will promote a climate of secrecy in science. The scientific information and the materials that are required for specific research will become more expensive and difficult to obtain if one corporation owns a patent on them. This, in practice, will deter rather than promote research. With the passing of the Biopatenting Directive, a patent owner can now decide who will be allowed to use a gene or gene sequence for developing a

diagnosis, therapy, medicine or transgenic organism. Recently a British and US team of researchers were working together on isolating and decoding a gene for breast cancer. Once the gene was isolated the U.S. team patented it and effectively pushed their British colleagues out of the race.

I was delighted to learn that Sir John Sulston, the British scientist who won the Noble Prize for medicine in 2002, is also opposed to patenting life. Sir John exemplifies all that is good in traditional British scientific endeavours. He was able, for example, to devote 30 years of his life to studying a hermaphrodite nematode. His patient and painstaking research led him to discover how cells develop and die under instruction from their genes. Anyone studying how cancers develop needs this kind of accurate information which is why he shared the 2002 Nobel Prize for medicine. In collaboration with Bob Waterston in the United States, Sulston promoted the publicly funded and public access to the human genome.

Writing in The Guardian, Andrew Brown author of In The Beginning Was the Worm comments that "*Sulston believes passionately that the information on the genome sequence must be freely available and that it is wrong to patent human gene sequences, both morally and scientifically. It is morally wrong because human genes are discovered, and not invented, while the patent on a discovery blocks all invention in that area. 'If you patent a discovery which is unique, say, a human gene or even just one particular function of a human gene, then you are actually creating a monopoly and that's not the purpose of the world of patent. Indeed, the purpose (of patents) is to cause inventors to compete with each to get better products. So mousetraps are in one category, human genes are in another!' says Sulston*"⁹.

It was also clear to Sulston that to achieve results in his work he depended on the collaboration of other scientists. Sulston realised that he could not have made significant breakthroughs in his field without building on the work of other scientists. His studies of the worm's cell lineage would not have been possible without the very detailed physical map of the worm produced by other researchers. Brown insists that: "*There is no doubt that Sulston believes that DNA patents are immoral. But he is just as keen to argue that they damage science*"¹⁰. Finally, Sulston has not become an extraordinarily rich man like many other researchers in molecular biology and genetics. He believes in working for the common good, the betterment of human kind and the increase in knowledge that should be available to everyone.

Campaigns should oppose TRIPs Art. 27.3 (b) and promote the UN Convention on Biodiversity

It is crucial that Third World countries and non-government organisations (NGOs) from the North and South should call for a root-and-branch review of the section of TRIPS that is promoting patenting life namely, Art. 27.3(b). It is important to oppose patenting, Private Variety Protection (PVP) or Material Transfer Agreement (MTAs) in order to protect the biological resources of the South from predatory Northern TNCs who are bent

⁹ Andrew Brown, "One man and his worm", The Guardian, October 9, 2002, pages 2-4.

¹⁰ *ibid* page 4.

on gaining monopolies on the seeds of many staple crops ¹¹ . The article should be amended as follows: "member countries shall exclude from patentability all life forms, including plants, animals, micro-organisms and parts thereof; and also exclude from patentability all natural processes for the production of plants, animals, microorganisms and all living beings". There must also be a concerted effort to rescind the one-cut-suit for all approaches to patenting which is vigorously promoted by the multinational corporations.

The Convention on Biodiversity

In 1989 the UN organization UNEP set up a working group to design international laws and conventions to protect biodiversity. This was in response to the current extinction spasm which is having such a devastating effect on all life on the planet. It is estimated that up to 40,000 species are pushed across the abyss of extinction each year. At the Earth Summit 150 countries signed the Convention on Biological Diversity (CBD). It has now been ratified by 183 countries but curiously Ireland has not yet signed this important international treaty. The objective of the CBD is to protect biodiversity and to ensure that there is a fair and equitable distribution of any financial benefits derived from these biological and genetic resources. For this reason CBD is more in sympathy with the rights of Third World countries, traditional farmers and tribal peoples. Articles 3 and 15 recognize the right of each country to sovereignty over its genetic and biological resources. In order to guard against biopiracy it requires that anyone or any corporation who wishes to gain access to these resources must obtain the consent of the host country (Art. 15.5). This is good news for Third World countries many of which are rich in biological resources. On the other hand, it is not good news for the pharmaceutical and agri-business corporations that would like access to these resources free of charge. It is particularly mindful of the role played by tribal people and traditional farmers in enhancing and maintaining biodiversity down through the centuries (Art 8 and 15). It also affirms that the "conservation of biological diversity is a common concern of humankind". Article 27. 3 b) of TRIPs at present effectively negates all the above.

It is worth noting that while the US is pushing TRIPs in every possible forum it has not yet signed the CBD. The US Embassy in Thailand sent a strong letter to the Thai government when it began to draft legislation to protect its indigenous medical knowledge. The letter stated that the new legislation was in breach of the TRIPs agreement. Many developing countries fear that if they do not bring in TRIPs like legislation they may be put on the United States' Super 301 "Watch List" of free-trade offenders.

In campaigning terms people and groups ought to promote the Convention on Biological Diversity (CBD) ensure that there is a fair and equitable distribution of any

¹¹ MTAs are legal contracts between two or more parties specifying the conditions under which material like seeds can be exchanged. According to John Barton and the late Wolfgang Siebeck, "failure to perform what is promised in an MTA is a breach of contract which gives one party the right to bring action against the other party, such as suing for damages". J.H. Barton, W.E. Siebeck, "Material transfer agreements in genetic resources exchanges; the case of the International Agricultural Research centers, Issues in Genetic Resource, No 1, International Plant Genetic Resources Institutes, Rome, May 1994.

financial benefits derived from biological and genetic resources. This is the place to design mechanisms, including financial remuneration, which will reward individuals and companies for their investment and creativity in developing new products.

We also need to ensure that public research institutes protect the interests of poor, Third World farmers, and promote genuine sustainable agriculture. They will do this by protecting biodiversity and securing the rights of communities over their own biological resources and indigenous knowledge.

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