Pirating African Heritage

The Pillaging Continues

A Briefing Paper by the African Centre for Biosafety

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(Source: FAO)
Aframomum angustifolium
(Source: Royal Botanical Gardens Edingbrough)

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Contents

"As Humans have evolved from Nature they ultimately depend upon Nature for their survival. Until we understand what we are as humans (what matter is) and how we are connected to the universe (reality), it is impossible for humanity to be wise, and to be able to evolve cultural knowledge that enables us to live in Harmony with Nature."[1]

Introduction

The African Centre for Biosafety (ACB) is a non-profit, NGO based in South Africa, specialising in promoting biosafety and challenging biopiracy, agrofuels and the commodification of biological resources and associated traditional knowledge. The ACB has in the recent past, done extensive work in the field of biopiracy, intellectual property rights, and the discourse on access and benefits sharing. Its numerous research reports and publications should be read in conjunction with this report.[2]

For many years, NGOs and indigenous peoples have highlighted the theft of African genetic resources through biopiracy. International businesses, institutions, and other players have created profitable private monopolies over African patrimony by staking out patent claims on Africa's genes, plants, and related traditional knowledge. The patent claims are not only economically unjust, but are a moral affront to the many generations of Africans who have cared for and created the continent's rich genetic and cultural diversity.

Notable examples that have been publicly discussed include the Kenyan gene that makes fashionable faded blue jeans,[3] a pelargonium medicinal plant used by the San, Xhosa, Zulu, Sotho, and Mfengu peoples[4] and even human genes related to lactose tolerance.[5] Publications from the Edmonds Institute,[6] the ETC Group,[7] and other organizations provide information on many additional cases.

This briefing paper is a continuation of the ACB's research and campaigning against biopiracy in Africa, which commenced when it collaborated with the Edmonds Institute in publishing a report in 2006, titled *Out of Africa: Mysteries of Access and Benefit Sharing*. That report documented 36 cases of suspected biopiracy in Africa.

We now present a further 7 new cases of suspected biopiracy in Africa, based on a short research study of patent applications lodged and patents granted in the United States, Europe, and elsewhere. In many cases, there are questions that only further research will answer. All of the cases, however, appear to merit investigation by African governments, indigenous peoples and activist organizations to determine conclusively whether biopiracy has occurred and if so, take necessary action.

The granting of a patent rewards the inventor for his/her time, effort and money spent on the invention by allowing him/her to exclusively profit from the invention or product, through giving him/her privileges to prevent anyone else from commercially exploiting the same invention. In order for patents to be granted, the invention must satisfy certain requirements: the invention cannot duplicate an invention that already exists; it must include an inventive step; and must be a useful invention. These requirements constitute global requirements for patentability introduced by one of the agreements of the World Trade Organisation, called the Trade Related Aspects of Intellectual Property Rights (TRIPs). The 7 case studies we present here are for patent applications that are pending or have been granted for inventions that do not meet these fundamental patent requirements. The key question that must be asked is whether a patent examiner would have granted the patent had the existence of prior art been disclosed to him/her. Patent applicants from the scientific community, business and industry and government agencies in the North,

do not disclose the existence of prior art in their patent applications. Although traditional knowledge is held by local and indigenous people and published in journals, databases, periodicals and so forth, patent examiners rarely consider this.

This report once again brings into sharp relief the grave concerns expressed by activists, that the patent systems in Europe and the United States are being used to promote the misappropriation of traditional knowledge and biological resources from the South. It is also our contention that the illegality of a patent cannot be cured by the existence of prior informed consent, benefit sharing or so called fair trade agreements.

Structure of document

The cases of suspected biopiracy are summarized and discussed in a few paragraphs. Patent numbers and/or application numbers are provided for each, as well as contact information for the entity or entities that have lodged the patent claims. Using the provided data, the full patent (application) text can be accessed online at patent websites, such as the US Patent and Trademark Office (USPTO), the World Intellectual Property Organization (WIPO), or the European Patent Office (EPO).[8] Although patent application documents can be accessed, outside of the US, EU, and a few other countries, accurate national level patent status data can usually only be obtained by contacting the national patent office.

Seven cases of suspected biopiracy in Africa

Madagascan *Vernonia* Extracts for Skin Treatments

Title:	Use of Vernonia Extract
Claimant:	Bayer Consumer Care (Germany)
Application:	WO2008125237 (23 Oct 2008)
Countries:	100+ cited on application[9]
Contact:	Gérard Sené, Director Bayer Santé familiale Division Serdex 13, rue Jean Jaurés Tour B F-92807 Puteaux Cedex France Tel: +33 1 49 06 45 60 Fax: +33 1 49 06 45 69 Web: http://www.serdex-plantextracts.com
Status:	The international patent application has been published by WIPO and is awaiting the publication of an initial examiner's report. A patent application has been filed in Chile: CL10662008 (A1).
Africa Info:	Bayer's application states it will seek patents in South Africa as well as OAPI[10] and ARIPO[11] states.

Promotional material from the company Raw Natural Beauty touts Ambiaty as a "rare" "Flower of Youth" and "For the Planet".

Source Raw Natural Beauty)

Agriculture and healthcare giant multinational Bayer, based in Germany, has staked a claim to the use of any extract from any plant of the *Vernonia* genus in Madagascar for "*improving the skin status*". In addition to claiming all *Vernonia* from Madagascar, Bayer's patent application makes specific claim to eight *Vernonia* species. The patent claim further focuses on the shrub species *Vernonia appendiculata*, commonly known as "ambiaty", a plant which is endemic to the island.

Bayer Healthcare's Serdex division[12] has commercialized *V. appendiculata* extract for cosmetic and medicinal uses. Special mention is made in its promotional material that it is protected by a patent.[13] The extract is wholesaled by Bayer to companies that use it as an ingredient in upmarket retail products. The California-based company Raw Natural Beauty sells creams containing a small amount of Ambiaty extract for between US $49-79 for a one half to one ounce (14 – 28 gram) container.[14]

By comparison, Madagascar's per capita gross domestic product of US $377 (2007) implies that an average Malagasy could exhaust his or her entire annual income on seven jars of "Ambiaty Daily Revitalizing Cream", collectively containing a grand total of about 2 grams of the namesake ingredient.[15]

> **an average Malagasy could exhaust his or her entire annual income on seven jars of "Ambiaty Daily Revitalizing Cream"**

There are ample citations that document important traditional uses of the Ambiaty plant in Madagascar. Directly related to the alleged novelty of Bayer's patent claims is Ambiaty's documented traditional use in wound healing and in herbal steam baths[16] – in both cases, traditional uses that obviously relate to skin care and health. It has also been used traditionally in products such as dyes.[17] Yet Bayer's patent application makes no reference to these and other traditional uses of Ambiaty.

In addition, the scope of Bayer's claim – any extract from any *Vernonia* species in Madagascar – is remarkably broad. *Vernonia* are not only widely used in Malagasy traditional medicine; but in medicines across Africa.[18] These include *Vernonia amygdalina*, or Bitterleaf, a familiar food and medicinal plant in much of West Africa,[19] which itself has been subjected to US patents for its medicinal properties.[20]

On the face of it, Bayer's patent claims appear to be biopiracy. It is important to note, however, that the company claims that its business is ethical and beneficial for Africa. Bayer asserts that, through its Malagasy corporate collaborators Sotramex and Soamadina, plants are sustainably harvested and that a "premium" over market price is paid for the raw

plant material. According to Bayer, a "premium" is paid in the form of new classrooms and school supplies for children.

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It is also interesting to note that Serdex, Bayer's French subsidiary that produces the extract, is a member of the Swiss-based Union for Ethical BioTrade. This Union is a private outgrowth of the United Nation's Conference on Trade and Development (UNCTADs) "BioTrade" Initiative and promotes "*sourcing* [of natural products] *with respect*".

Upon accepting Serdex as a member, the Union concluded that an audit of the company "*demonstrated the positive contributions that Serdex and its providers make to local sustainable development in Madagascar, but it also identified areas for improvement*"[21] (without further specificity). Although the Union employs a specialist in intellectual property issues, it is unclear if its audit extended to analysis of the ethics and novelty of Bayer's patent claims, which appear dubious, to say the very least. Most certainly, environmental impact studies will be required to evaluate whether plant extraction in Madagascar is undertaken in a sustainable manner.

Given that a mere few grams of *V. appendiculata* extract retails in expensive stores for huge sums of money, equivalent to the entire annual income of the average Malagasy, Bayer should be asked to back its fair trade claims with real numbers – what prices are paid per kilogram to plant collectors, what is the yield in plant extract, and how much income does the company and its corporate customers derive from sales.

With respect to Bayer's patent applications, there is strong evidence that the company is patenting traditional medicinal knowledge and resources. The company's claims are also very broad, applying to many species that are also found in other parts of Africa. As such, they too may constitute biopiracy.

Bayer has some extremely difficult questions to answer.

Better Sex with Malagasy Biodiversity

Title:	Novel Compounds and Pharmaceutical Preparations
Claimant:	Dicotyledon AG (Sweden)
Application:	WO2008145996 (12 Dec 2008)
Countries:	~100 cited on application
Contact:	Dr. Jarl E.S. Wikberg, CEO Dicotyledon AB Stora Malmgatan 8 SE193 35 Sigtuna Sweden Tel.: +46-70-3 449 549 Email: info@dicotyledon.se http://www.dicotyledon.se
Status:	The international patent application has been published by WIPO and is awaiting the publication of an initial examiner's report. Patents are pending/applied for in the EU: EPO (nat ref 2008750724).
Africa Info:	Dicotyledon's application states it will seek patents in South Africa as well as OAPI and ARIPO states.

Patenting Madagascar's biodiversity isn't just confined to giants such as Bayer. The small Swedish firm Dicotyledon, is staking a patent claim to extracts from *Neobeguea mahafalensis*, a tree commonly called "handy". Dicotyledon claims that the *N. mahafalensis* extracts have a "*sexual enhancing effect*" and can be "*used for treatment of sexual dysfunction*" [sic]. The company's Swedish chief executive officer (CEO) is cited as the lead inventor in the patent application. Four others are from Madagascar.

Dicotyledon is crystal clear about its monopolistic ambitions:

> **A key product in pipeline is a sexual enhancer with a remarkably high potency and long effect duration… All Research and Development is complemented with an aggressive patenting policy … we aim to bring our discoveries to the consumer market world-wide with full Intellectual Property Protection.**[22]

Dicotyledon may want to claim 'handy' as its own; but the truth is that 'handy' is a plant long used as an aphrodisiac in traditional Malagasy medicine. There is no indication in Dicotyledon's patent application or on its website that it has any intention of sharing its bounty on equitable terms or otherwise.

Dicotyledon's patent application, does, however, make the concession that N. mahafalensis is already used as an aphrodisiac in Malagasy traditional medicine. In fact, it lists at least eleven citations of traditional use for sexual functions in the scientific literature.

Although *N. mahafalensis* has long been used by traditional healers, Dicotyledon advances its patent novelty argument by insulting the very people whose knowledge it seeks to

appropriate and commercialize. In its patent application, Dicotyledon states that Malagasy traditional healers use so many plants for sexual enhancement that not all of them could possibly work. The Swedish company further claims that Malagasy healers provide inaccurate information to researchers and that they lack scientific rigor in identifying and characterizing plants – using taste, shape, and traditional knowledge rather than sophisticated and hard to pronounce first world technologies such as mass spectrometers and chromatography.

Dicotyledon continues to advance its attack on traditional medicine by asking patent examiners to ignore documented traditional use, saying: "*Thus, reports on presumed medical effects of plants based on indirect information obtained from local traditional healers and alike is highly unreliable and can't be used in any practical sense for treatment of medical conditions.*"

It then concludes: "*…the* [11] *studies cited above could not have led anyone skilled in the art of plant ethnomedicine* [to conclude] *that* Neobeguea mahafalensis *possesses any particularly useful properties vis-á-vis treatment of sexual dysfunctions.*"[23]

As such, the company reasons, its so-called invention should be considered patentable, despite it staking its monopolistic rights in respect of the same plant for the same purpose used by Malagasy healers, a fact well documented. If Dicotyledon's patent applications were to be granted, the Swedish company will profit from selling Malagasy traditional knowledge.

Prettier Skin for the Conspicuous Consumer from Patented African Cardamom

Official Title:	Cosmetic Compositions in Particular with Anti-Aging Activity Comprising an Extract of Aframomum angustifolium or Longoza Plant
Claimant:	Moët Hennessey Louis Vuitton LVMH (France)
Application:	WO2007042709 (19 Apr 2007)
Countries:	~ 100 cited on application
Contact:	Mr. Sidney Toledano, CEO Christian Dior S.A. 30 avenue Montaigne 75008 Paris France Tel: + 33 1 44 13 22 32
Status:	The international patent application has been published by WIPO with an initial examiner's report. Applications have been filed in the EU, Japan, and Russia. Patents are pending/applied for in China: CN 101282711 (A), the EU: EP1933808 (A1), France FR2891458 (A1), Japan: JP2009510155 (T), Korea: KR20080053367 (A), Russia: (nat ref 2008117398). A patent has been issued by the United States: US Pat 7,381,436 (B2).
Africa Info:	LVMH's application states it will seek patents in South Africa as well as OAPI and ARIPO states.

A. angustifolium in DR Congo

(Source: Public domain. Wikimedia commons)

No company tries harder to associate itself with opulence than France's Moët Hennessey Louis Vuitton (LVMH).[24] The gigantic luxury goods conglomerate peddles Dom Pérignon and Krug champagne, designer luggage, and diamonds (in a joint venture with De Beers), among many other extremely costly items. In 2007, LVMH rang up US $24.8 billion in sales, with an impressive 64% gross margin on goods sold (6.5 times the industry average).[25]

LVMH appears to be an active bioprospector in Africa, as it has laid claim to extracts from the seeds of the *Aframomum angustifolium*, an African native plant, which LVMH claims to prevent ageing of the skin.

A. angustifolium is in the useful Zingiberaceae family, which includes gingers, turmeric, galangal, cardamom, melegueta pepper, and other ornamental, food, and medicinal plants. *A. angustifolium* can be found in most of sub-Saharan Africa, where is has many common names such as matongururu (Zimbabwe), longoza (Madagascar), and Cameroon cardamom.[26]

Through its cosmetics brand Christian Dior S.A., LVMH is selling products with the seed extract such as "Dior Capture Totale Multi-Perfection Correction Serum". The "serum" costs US $135 for a 1 ounce (28 gram) container. Marketing material states that the "secret" of the expensive product is *A. angustifolium*, which is described as "*a rare revitalizing plant grown only in Madagascar*", a claim which is patently not true.[27]

In fact, *Aframomum angustifolium* and closely-related plants have a number of food (particularly as a spice) and traditional medicinal uses in various parts of Africa, although it is unclear if it is used as a skin treatment as well. Nevertheless, LVMH's patent claims are broadly written, and cover any extract from the plant's seeds used in cosmetics and thus may additionally infringe on traditional knowledge.

Although LVMH attended a recent meeting of the Convention on Biological Diversity regarding access to genetic resources and benefit sharing, we have not been able to find any information to indicate that LVMH has a benefit sharing agreement in place to share the profits from its *A. angustifolium* products.

LVMH has sought recognition of its patent in most countries around the world, and according to patent office data, its claims are advancing toward issuance in Europe, Japan, and Russia. In mid-2008, the patent was granted in the United States (US Patent 7,381,436).

New Drugs from East African Cussonia Trees

Info

Official Title:	Polyacetylen Compounds Isolated from Cussonia
Claimants:	Universities of Basel and Bern Swiss Tropical Institute
Application:	WO2006067607 (29 Jun 2006)
Countries:	~ 100 cited on application
Contact:	Dr. Urs Simmen (1st inventor) Institut für Pharmazeutische Biologie Pharmazentrum Klingelbergstrasse 50 4056 Basel Switzerland Tel: +41 (0)61 7215216 Email: Urs.Simmen@unibas.ch
Status:	The international patent application has been published by WIPO as well as an initial examiner's report. A patent application has been filed in the EU: EP1858505 (A2).
Africa Info:	The application states that patents will be sought in South Africa as well as OAPI and ARIPO states.

Swiss researchers are staking claim to drugs from *Cussonia zimmermannii*, a tree found in Tanzania, Kenya, Uganda, Mozambique, and other countries in East and Southern Africa. According to the European research group, the *C. zimmermannii* extracts are active on the human central nervous system's GABA(A) receptor and therefore may be of use in treating a variety of diseases, including epilepsy and mental disorders such as anxiety.

Cussonia zimmermannii

(Source: Rare exotics flower shop, Los Angeles)

The claim that *C. zimmermannii* can be used to treat nervous system disorders will come as no surprise to Africans familiar with the tree's medicinal uses. In fact, even the Swiss "inventors" concede that Kenyan researchers noted in 1986 that the plant is traditionally used to treat mental illness and that in 1964 an article on ethnobotany noted its traditional use in treating epilepsy. In addition, parts of the tree are used to treat other conditions including fever and post-partum bleeding.*28*

On what basis then, do the Swiss institutions claim their candidate drug is novel and inventive? Judging by the patent application, they seem to believe that by isolating and describing a chemical found in *C. zimmermannii*, they have made an invention!

It appears that it would be more accurate, however, to say that the Swiss institutions have used their own Western methods to confirm African traditional knowledge about the plant – rather than inventing something themselves – when it already existed!

Patent examiners at the World Intellectual Property Organization have cast doubt on some of the institution's claims, but a patent is still being sought in Europe and perhaps other jurisdictions.

Lice Treatment from Africa's Lemon Bush Claimed

Info

Official Title:	Essential Oil Compositions for Killing or Repelling Ectoparasites and Pests and Methods for Use Thereof
Claimants:	NoNits, llc (United States)
Application:	WO2008101131 (21 Aug 2008)
Countries:	100+ cited on application
Contact:	Ms. Ricki De Wolff NoNits, llc P.O. Box 13376, La Jolla, CA 92039 United States Tel: (US) +1 858-736-5282 Tel: (SA) +27 11 467 7775 Fax: (US) +1 858 554 0175 Email: rickidwolff@gmail.com
Status:	The international patent application has been published by WIPO as well as an initial examiner's report. Patent applications have been filed in the USA: US2008193387 (A1) and Europe: EPO (nat ref 2008729925).
Africa Info:	The application states that patents will be sought in South Africa as well as OAPI and ARIPO states.

A small US company is staking claim to the use of oil from *Lippia javanica* to repel pests and, particularly, to treat head lice infestations (pediculosis). According to the patent application, the oil can be used in combination with other plant extracts to repel a wide variety of parasites.

Found in Ethiopia and countries to its south, and in particular in Southern Africa, *Lippia javanica* is a well-known native African medicinal plant. [29] A woody, flowering shrub, it goes by the common name of Lemon Bush, Fever Tea, Zinziba, Musukudu, and others.

L. javanica is used traditionally by many Africans, including the Massai, Xhosa, Zulu, and other peoples. Uses include treatment of lice and other human parasites (often in combination with other plants) and non-medicinal uses such as mixing stems from the bush in stored grains in order to repel pests.[30]

Lippia javanica

(Source: Botanical gardens University of Kwazulu Natal)

The company lodging the claim, called NoNits,[31] is registered in the US state of Nevada, but appears to operate from the so-called inventor's home near San Diego, California. (The inventor also lives part-time in South Africa.)

NoNits claims as its intellectual property virtually any pesticidal concoction containing 3% or more of *L. javanica* oil, when mixed with any other plant extract. Claims are laid for use on bedding and other household items, as well as direct application to the human body.

NoNits is clearly seeking to appropriate widely documented traditional African knowledge. It can be hoped that patent authorities will notice and reject the claims, but that cannot be guaranteed. NoNits US patent application (publication 20080193387) and its international counterpart are both currently awaiting review by patent examiners.

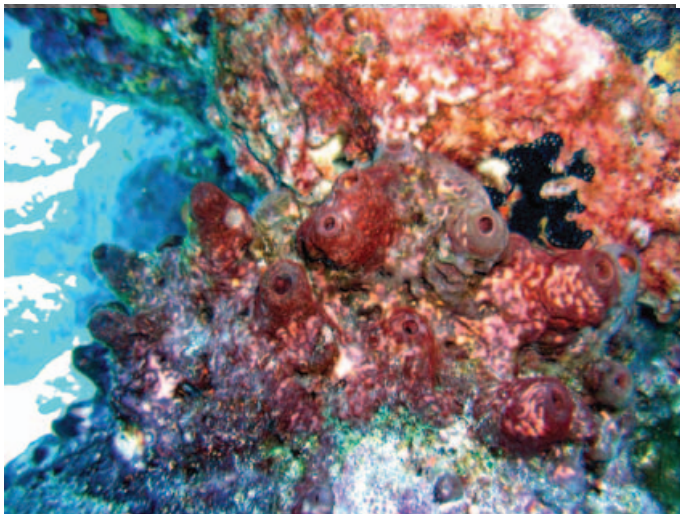
Africa's Marine Resources Up for Grabs

Official Title:	Antitumoral Dihydropyran-2-One Compounds
Claimant:	Pharma Mar (Spain)
Application:	WO2007144423 (21 Dec 2007)
Countries:	100+ cited on application
Contact:	Mr. Luis Mora, General Manager PharmaMar S.A. Avda. De los Reyes, 1 Pol. Ind. La Mina-Norte 28770-Colmenar Viejo Madrid Spain Tel: + 34 91 846 6000 Fax: + 34 91 846 6001 http://www.pharmamar.com
Status:	The international patent application has been published by WIPO as well as an initial examiner's report. A patent has been granted in Spain: ES2276629 (B1.) Patent applications have been filed in the EU: EP1972633 (A1), Australia: AU2006325165 (A1), Canada: CA2633543 (A1), China: CN101331137 (A), Israel: (nat ref 195676), Japan: JP2009519301 (T), Korea: KR20080075911 (A), New Zealand (nat ref 573706), Norway: NO20083117 (A), and USA: US 2009030068 (A1).
Africa Info:	The application states that patents will be sought in South Africa as well as OAPI and ARIPO states.

Africa's terrestrial diversity isn't the only biodiversity being subjected to proprietary claims. For more than a decade, patenting of marine resources has been on the rise worldwide – particularly of potential pharmaceuticals produced by sponges, corals, and other sea organisms.

The marine bioprospecting craze is led by developed country groups, such as the University of Arizona (US), Scripps Institution (US), Pharma Mar (Spain), and the Harbor Branch Oceanographic Institution (US). These groups send divers and even submarines across the world to collect biodiversity in coastal waters and the high seas.

The patent application discussed here is one of many on African marine resources. In this application, Spain's Pharma Mar (part of the Zeltia Group) seeks monopoly over extracts from a sponge their divers collected in the Îles Glorieuses (Glorioso Islands) in 2003. The small islands are located off the coast of Mozambique, northwest of Madagascar. They are controlled by France; but claimed by Madagascar, the Comoros, and the Seychelles.



Theonella swinhoei

(Source: informationsdienst wissenshaft)

The sponge species, *Theonella swinhoei*, has also been collected in Kenya and is found in many other African countries. It is also found in Asia. A key claim of Pharma Mar's patent application is that a potential anticancer compound it extracted from the African sponge is less toxic to humans than a similar compound identified by Japanese researchers in a sample collected in Okinawa, Japan, suggesting that important biochemical properties of *T. swinhoei* are variable between populations.

The unchecked patenting of marine biodiversity is a global problem. Hundreds of patent applications are pending or have recently been granted on potential pharmaceuticals extracted from marine organisms. A number of these involve African resources.[32]

PharmaMar claims that its marine prospecting complies with the Convention on Biological Diversity. According to the company, it gives back by supporting training of young scientists and providing information from its research expeditions to others. It also points out that it only needs to collect a few grams of a sponge or other marine organism in order to assess its pharmaceutical potential.[33]

While most potential pharmaceutical compounds never make it to market, the value of a successful anticancer drug can be enormous, which is why anti-cancer compounds are PharmaMar's priority. For example, the colorectal and lung cancer drug bevacizumab (trade name Avastin), has grossed US $8.4 billion from its introduction in 2004 through

2008. Sales continue to rise. Last year (2008) alone, it grossed nearly US $2.7 billion[34] for Genentech, its maker.[35]

Annual sales of bevacizumab in the United States alone are now greater than the gross national product of a dozen African countries. Given the stakes, African governments (and others) should think carefully about access and benefit sharing issues in marine biopharmaceutical research.

Viral Prospecting: Looking for Vaccines in the Blood of African Hunters

Official Title:	Primate T-Lymphotropic Viruses[36]
Claimants:	US Department of Health
Application:	WO2006091511 (31 Aug 2006)
Countries:	100+ cited on application
Contact:[37]	Donald S. Burke (1st inventor) Dean, Graduate School of Public Health University of Pittsburgh 130 DeSoto Street Crabtree Hall Pittsburgh, PA 15261 United States Tel: +1 412-624-3001 Fax: +1 412-624-3309 E-mail: donburke@pitt.edu
Status:	The international patent application has been published by WIPO as well as an initial examiner's report. A patent has been granted by the European Patent Office: EP1880006 (B1). Patent applications have been filed in Austria: AT427351 (T), Australia: AU2006216838 (A1), Canada: CA2598547 (A1), and the USA: US 2008292657 (A1).
Africa Info:	The application states that patents will be sought in South Africa as well as OAPI and ARIPO states.

It sometimes escapes public notice that viruses not only cause disease; but are also the source of vaccines to prevent it. Viruses are thus not only villains, but can be a very valuable resource for preventing disease.

For example, some viruses will infect people, but without causing serious symptoms. The infected person typically is not even aware that he or she is carrying the virus. For virologists, this type of virus has the potential to be used in the manufacture of vaccines. This is especially true if those viruses don't easily spread from human to human.

In theory, scientists can take this special kind of virus, use genetic engineering to add genes to it, and create a novel product. They can insert genes from a different microbe that causes human disease (for instance, viral encephalitis), into the harmless virus. This genetically engineered virus might then be injected into a patient and cause that person to become immune to infection by the encephalitis strain, but without causing noticeable disease.

Baka indigenous people

(Source: Africa EduSa)

And even if the virus proves to be more harmful than helpful, by patenting newly-identified viruses, scientists and companies can control diagnostic tests for the virus as well as screening tests for pharmaceuticals that may combat it.

Patents on newly-discovered human viruses are not new. Fifteen years ago, controversy erupted when then US government tried to patent the blood of indigenous people from Pacific Ocean islands in Papua New Guinea and the Solomon Islands as well as that of a Guaymi indigenous person from Panama. These patents were filed because the victims' blood contained newly discovered strains of a retrovirus called Human T-Lymphotrophic Virus, or HTLV. But protests from indigenous people and NGOs forced the US to withdraw the patent applications.[38]

During 2004, US government-sponsored researchers from the US Centers for Disease Control and Johns Hopkins University were studying the transfer of viruses between humans and primates. They drew blood samples from 930 people in 12 villages in the Cameroon. The research subjects were Baka indigenous people[39] who had been exposed to monkey blood through hunting and butchering of primates.

In the Baka blood, the scientists found two new kinds of HTLV viruses, which they called HTLV-3[40] and HTLV-4. According to the patent application, they were both found in men who had spear-hunted monkeys, one 48 years old (source of HTLV-3) and the other 63 years old (source of HTLV-4).

HTLV-4 and especially HTLV-3 resemble viruses that infect primates, and it is thought that the Cameroonians were infected by the monkeys they hunted and that the viruses may have undergone mutation or recombination in their human hosts. Notably, the researchers say the viruses do not appear to transmit from human to human, nor do they appear to cause disease in people.

As in the Pacific Island and Panama cases, the US government's Department of Health and Human Services has moved to patent these newly-discovered HTLV viruses, saying that they might be valuable as vectors in vaccines against dozens of diseases.
The US government also claims rights to diagnostic tests to detect HTLV-3 and HTLV-4 infection, and to assays that are used to screen for potential antiviral drugs that might combat HTLV infection. The patent application also claims the viruses per se, as a "composition of matter", meaning that the US government intends to outright own these viruses wherever they occur.

Perhaps having learned from the controversy in the 1990s, this time the US government's claims are not for the Cameroonians' entire blood cell lines, rather, they are limited to the viruses found in the blood samples.

Although the scope of the US government patent claims here are narrower than those in the infamous Pacific and Panamanian patents, many of the fundamental equity and ethics issues remain.

It is unclear if the Baka research subjects know about and approve of the US government claim on materials extracted from their bodies. Were they even aware of this possible eventuality when their blood was taken?

In the event that the viruses are commercialized as research tools or even in vaccines, it appears unlikely that any significant benefit will accrue to Africa. If they prove medically important, will Cameroon even have free access to the diagnostic tests and drug screening data that the US government claims as its property? If vaccines are developed from these HTLV strains, will these only benefit the rich or will the Baka and Cameroonians, whose lives on average last 28 years less than Americans,[41] receive this benefit?

Perhaps not to be outdone by the Americans, a competing team of largely French researchers is also searching for new HTLV viruses in the blood of Cameroonian indigenous people. These researchers have been publishing their research on new HTLV types in the Baka, Bakola, and other indigenous people,[42] in a quick step with the American team, including additional findings intended for publication this year still.[43]

We are extremely concerned that taken together with the recent patent claims on African lactose tolerance genes,[44] which the ACB exposed earlier this year, a disturbing trend appears to be emerging: that of patenting biomedical research materials taken from the bodies of Africans. This is particularly worrying, taking into account that the patent claimants, the US Center for Disease Control and Johns Hopkins University, are both considered as world-leading biomedical research institutions.

a disturbing trend appears to be emerging: that of patenting biomedical research materials taken from the bodies of Africans.

After previous controversies, many scientists considered similar claims as ethically off-limits; but could this taboo be loosening? Time will tell if an open season is being declared on human biomedical samples from Africa, but disagreement with such ethically dubious patent claims should be aired now.

Time will tell if an open season is being declared on human biomedical samples from Africa

Conclusion

African terrestrial and aquatic biodiversity, and even human biological samples, continue to be claimed as the exclusive intellectual property of corporations and other institutions. Adding to the exploitation and gross inequity, these African resources are often patented for use in expensive luxury goods or healthcare products that relatively few Africans can afford and which do not serve most Africans' needs.

The cases described in this report indicate that biopiracy in Africa remains a huge problem. There is little to suggest that the true owners of these resources have consented to the patent claims. In most cases there is even less evidence that sharing of benefits is taking place, much less equitable plans that have been negotiated with Africans as equal partners. In each case, more in-depth research should be undertaken to confirm, challenge and further document misappropriation of African resources.

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7. See URL: http://www.etcgroup.org/en/issues/biopiracy.html
8. For English language searches at these websites the URLs are:
   WIPO: http://www.wipo.int/pctdb/en/
   USPTO: http://patft.uspto.gov/
   EPO: http://ep.espacenet.com/advancedSearch?locale=en_EP
9. Application numbers that begin with "WO" (for "world") are international patent publications under the Patent Cooperation Treaty (PCT). In PCT publications, the patent applicant indicates the member states of the PCT in which the claim is planned to be lodged. This is the number of countries indicated as "cited on application" in this paper. While not every patent applicant eventually follows through and lodges national patent applications in every country indicated, by citing a country on the PCT application, the applicant gains "priority" in that country, preventing others from filing the same claim before they do.
10. OAPI is the *Organisation Africaine de la Propriété Intellectuelle* (African Intellectual Property Organization), based in Yaoundé, with member states Benin, Burkina Faso, Cameroon, Central African Republic, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Mali, Mauritania, Niger, Senegal, Chad, and Togo.
11. ARIPO is the African Regional Intellectual Property Organization, based in Harare, with member states Botswana, the Gambia, Ghana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.
12. Corporate website: http://www.serdex-plantextracts.com/
13. Bayer promotional flyer, URL: http://www.mmpinc.com/Ambiaty-Intro.pdf (accessed 28 July 2009).
14. Corporate website: http://www.rawnaturalbeauty.com/
15. Bayer's wholesale promotional materials suggest using about 1% Ambiaty extract by volume in consumer products. It is assumed that Raw Natural Beauty is using approximately this proportion.
16. See, for example, Rabenoro, C. 1949. *Recherches sur quelques Myrsinacées de Madagascar*" Imprimerie Foulon, Paris (regarding use of *V. appendiculata* in steam baths), cited at URL: http://www.metafro.be/prelude/view_symptom?si=H(046)
17. See, for example, Linton R. 1933. *The Tanala – A Hill Tribe of Madagascar*, Field Museum of Natural History, Chicago(regarding use in dyes), URL: http://www.archive.org/stream/tanalahilltribeo22lint/tanalahilltribeo22lint_djvu.txt
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19. See Protabase at URL: http://database.prota.org/PROTAhtml/Vernonia%20amygdalina_En.htm (accessed 28 July 2009).
20. McGown, J. p. 30.
21. Union for Ethical BioTrade. 2008. *The Union for Ethical BioTrade welcomes Serdex* (press release), 10 September 2008, URL: http://www.uebt.ch/dl/Press_release_UEBT_10_09_08.pdf (accessed 28 July 2009).
22. See URL: http://www.dicotyledon.se/ (accessed 11 June 2009).
23. The discussion of traditional medicine can be found in the description section of the PCT patent application publication.
24. The company deliberately scrambles the order of the letters of its acronym.
25. Reuters Finance, URL: http://www.reuters.com/finance/stocks/ratios?symbol=LVMH.PA (accessed 27 July 2009).
26. Although *A. angustifolium* is sometimes referred to as "cardamom" (or "great cardamom") and is used as a spice in Africa, it is a different Zingiber species than the Asian plant from which most cardamom spice sold in markets outside of Africa is produced.
27. Dior calls *A. angustifolium* "longoza", which is its common name in parts of Madagascar. See URL: http://www.sephora.com/browse/product.jhtml;?id=P141965 (accessed 27 July 2009).
28. See the PCT patent publication, URL: http://www.wipo.int/pctdb/en/wo.jsp?wo=2006067607
29. *Lippia javanica* is also grown in South and Southeast Asia, and hence the reference to the Indonesian island of Java in its scientific name. It is, however, an African native.
30. Many scientific publications detail traditional use of *L. javanica*. Places where citations can be found include PlantzAfrica (URL: http://www.plantzafrica.com/plantklm/lippiajavan.htm) and Flora of Zimbabwe (URL: http://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=148720).

31. In many English-speaking countries, the word “nit” refers to the eggs of lice.
32. See Koyama MM. 2008. *MarineBioprospecting. Key challenges and the situation in South Africa*. African Centre for Biosafety. URL: http:// http://www.biosafetyafrica.org.za/index.php/20090128192/Marine-Bioprospecting-key-challenges-and-the-situation-in-South-Africa/menu-id-100029.html
33. PharmaMar. “Social Responsibility” [sic] (web page), URL: http://www.pharmamar.com/social-responsability.aspx (accessed 27 July 2009).
34. See Genetech’s Avastin sales figures at URL: http://www.gene.com/gene/ir/financials/historical/avastin.html (accessed 27 July 2009).
35. US-based Genetech was acquired by Switzerland’s Hoffman-LaRoche in March 2009.
36. The patent title uses the term “primate”, which might be misunderstood to refer only to monkeys. The viruses that are claimed were isolated in human blood samples.
37. Dr. Burke was formerly at Johns Hopkins University; but moved to the University of Pittsburgh subsequent to the filing of the patent application.
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39. The Baka, who also live in Gabon and the Republic of Congo belong to a group of ethnicities referred to by anthropologists by the (sometimes pejorative) term “pygmies”.
40. Prior to being named HIV (human immunodeficiency virus), the virus that causes AIDS briefly was assigned the name HTLV-3. The “new” HTLV-3 virus referred to in this article, however, is not the HIV virus.
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42. Calattini S et al. 2005. *Discovery of a new human T-cell lymphotropic virus (HTLV-3) in Central Africa*, Retrovirology. 2005; 2: 30. DOI: 10.1186/1742-4690-2-30.
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44. See Hammond E. and Mayet M. February 2009. *Genes from Africa: the colonization of human DNA*, African Centre for Biosafety, URL: http://www.biosafetyafrica.net/index.html/images/stories/dmdocuments/GenesfromAfrica_theColonisation_of_HumanDNA_Brief.pdf