

NO:1: Pro HeLeu...
CHARACTERISTICS: (A) LENGTH: 12 amino acids
(i) MOLECULE TYPE: peptide (xi) SEQUENCE CHARACTERISTICS: (A) LENGTH: 12 amino acids
510 (2) INFORMATION FOR SEQ ID NO:3: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 20 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3: CCGGCCTCAATCCCGTTCCCGC20 (2) INFORMATION FOR SEQ ID NO:5: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 22 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5: AAACGTGGGAATTAGTGATGTTTAA24 (2) INFORMATION FOR SEQ ID NO:7: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 24 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7: CAGACGAGGCCTTGATCTCC20 (2) INFORMATION FOR SEQ ID NO:9: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 24 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9: TCGCGCTGTGGCTACTCTCC20 (2) INFORMATION FOR SEQ ID NO:11: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 24 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11: TCGCGCTGTGGCTACTCTCC20 (2) INFORMATION FOR SEQ ID NO:13: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 24 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13: TCGCGCTGTGGCTACTCTCC20 (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 24 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15: TCGCGCTGTGGCTACTCTCC20 (2) INFORMATION FOR SEQ ID NO:16: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 34 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16: CAAGCTATAGTCTCCTCCCTG36 (2) INFORMATION FOR SEQ ID NO:17: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 159 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17: CGGATACCCAGTCTACGTGTTGGAGACTGTGTACAAGGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAG

PACIFIC GENES & LIFE PATENTS

the Commodification & Ownership of Pacific Indigenous Experiences & Analysis of Life

Editors: Argha Te Pareake Mead and Steven Ratuva

SEQUENCE CHARACTERISTICS: (A) LENGTH: 40 amino acids
(i) MOLECULE TYPE: peptide (xi) SEQUENCE CHARACTERISTICS: (A) LENGTH: 40 amino acids
(2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 40 amino acids
ThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAGThrArgArgLeuValPro1510CATCTCTGGGGACTATGTTCCGGCCCGCCTAG



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(1) SEQUENCE CHARACTERISTICS
TOPOLOGY: linear (ii) MOLECULE TYPE: CDNA
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TYPE: nucleic acid (ii) ORIGIN

KULEANA NO HALOA (RESPONSIBILITY FOR TARO): PROTECTING THE SACRED ANCESTOR FROM OWNERSHIP AND GENETIC MODIFICATION

by Walter Ritte, Jr. and Le`a Malia Kanehe

Kamali'i o Ka Po

Chant by Frank Kawaikapuokalani Hewett

Auhea wale 'oe kamali'i o ka po
Eia ho'i au kamali'i o ke ao
Wakea ka lani, Papa ka honua
No ka luna ko luna
No ka lalo ko lalo
He kuleana keia

Auhea wale 'oe kamali'i o ka po
Eia ho'i au kamali'i o ke ao
Ho'ohokulani ka wahine
Haloa ke kalo, Haloa ke kanaka
He kuleana keia

Where are you, oh child of darkness
Here I am, child of light
The sky above, the earth below
What is above belongs above
What is below belongs below
This is our responsibility.

Where are you, oh child of darkness
Here I am, child of light
Ho'ohokulani, the woman
Haloa the taro, Haloa the man
This is our responsibility

Genealogy ties the Hawaiian people to the land, nature and each other. Genealogy allows Hawaiians to trace our beginnings, to our original parents, and our firstborn. In our oral traditions, genealogical chants identifying family names would last for hours.

The gods, Wakea, sky father, and Ho'ohokukalani, star mother, gave birth to Haloa, the first born. Haloa was stillborn and placed in the earth outside of the front door. Haloa grew into kalo, the first taro plant. The second born of Wakea and Ho'ohokukalani was man, whose kuleana (responsibility) was to care for Haloa, the elder brother. Haloa, the kalo, became the staple food crop for the Hawaiian people.

This genealogy ties the Hawaiians directly to nature and places a spiritual obligation to malama (take care of and protect) their eldest brother. Haloa is also a metaphor for all living things in Hawai'i, as survival on little dots of land in the middle of the largest ocean mass, the Pacific Ocean, demanded an intimate and reverent spiritual relationship with nature. Understanding and knowing our mo'oku'auhau (genealogy) informs us of where we come from; who our kupuna (ancestors) are, including gods, all life of the sea and land, including humans; our place in the world; and who we are in that context and what our kuleana (responsibilities) are for our kupuna (ancestors) and mo'opuna (grandchildren/generations yet to come). All of these traditional Hawaiian concepts have played a significant role in guiding our work in response to research at the University of Hawai'i to both genetically modify Haloa and to claim patents/ownership over him.

Genetic Engineering: What does it mean to genetically alter the ancestors?

In general, the Hawaiian community was not concerned about genetic manipulation and biotechnology until word spread in early 2005 that the University of Hawaii (UH) tried to genetically modify Haloa, our sacred taro. The Hawaiians immediately demanded the University of Hawai'i sign a moratorium against any genetic engineering of Hawaiian kalo. In May 2005, the University of Hawai'i's College of Tropical Agriculture and Human Resources (CTAHR), who did the genetic modification, signed a memorandum of understanding (MOU) in which the University agreed to a moratorium on genetically modifying Hawaiian varieties of kalo. The University has already genetically engineered Chinese varieties of taro and reserved the right to continue to do so in the MOU. The University has other non-Hawaiian varieties in its collection, which include other Pacific varieties, which are not covered by the moratorium MOU, and therefore, susceptible to genetic engineering.

UH needs to show more respect for native Hawaiian culture. Hawaiians would never dream of patenting or genetically manipulating kalo. Kalo is a gift handed down to us by our ancestors. We have a Kuleana or responsibility to honor, respect and protect Haloa, so he in turn will sustain us.

On the island of Moloka'i, Hawaiians have expressed their deep concern about genetic engineering, by referring to this technology as "mana mahele." It is the way we have described owning and selling of our mana or life force. Mana is the spiritual force Hawaiians have which comes from their knowledge and intricate relationship with nature. Part of mana is what the westerners call "biodiversity." In traditional Hawaiian thinking, land comes from the gods and was traditionally managed by the Ali'i (chiefs) for the collective benefit of all the people. In 1848, the foreign concept of owning land was introduced by

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i) SEQUENCE CHARACTERIS...
TOPOLOGY: linear (ii) MOLECULE TYPE: CDNA...
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R) TYPE: nucleic acid (C) GMP...

western business interests wanting to secure land title in Hawai'i. The time when the traditional land tenure system was supplanted for private land ownership was called "the Mahele." This Mahele severed the Hawaiians from their lands. Today lands in Hawai'i can only be bought by the very rich.

The genetic modification and patenting of our kalo, Haloa, has become the symbol of the second Mahele, now called the "Mana Mahele." The Biotechnology Industry now starting in Hawaii cannot succeed without the manipulation and ownership of our Mana or biodiversity and related traditional, Indigenous knowledge. They have taken our lands and now they come to take our Mana, our very soul.

Hawaiian concerns and activism around this issue was captured on Hawai'i's television news stations and in major newspapers. This began to wake up the Hawaiian people to the broader issues of bioprospecting, biopiracy and biotechnology. Although there was a growing movement against genetic engineering among haole (Caucasian) environmentalists and organic growers, it had not significantly included Hawaiians. Furthermore, although bills to regulate bioprospecting in Hawai'i were introduced in the Hawai'i State Legislature since 2003 and lobbied by some Hawaiian organizations, strong participation amongst Hawaiians did not ignite until more Hawaiians understood that Haloa, our first ancestor, was in harms way.

We have also worked with legislators to introduce a bill in the 2006 session of the state legislature to ban any genetic engineering of taro.¹ If passed, Senate Bill 2749 would prohibit genetic engineering of Hawaiian varieties of taro, but permits testing of an existing genetically modified non-Hawaiian variety of taro for a five year period, provided that adequate safeguards exist to prevent pollen from being released.² This is an important condition because we do realize that horizontal gene transfer can occur between the GE taro and non-GE Hawaiian varieties, thereby contaminating the natural stocks.

Plant Patents on Kalo: What does it mean to own the ancestors?

Later in 2005, it came to light that the UH took out three U.S. plant patents on varieties derived from the Hawaiian variety, Maui Lehua. Hawaiians asked the question, "Who gave the University the right to patent a hybridized taro plant several years ago?"

Maui Lehua is one of 300 Hawaiian varieties that has been developed over centuries by extensive breeding by Hawaiians to suit differing microenvironmental and cultivation conditions, for special qualities of color and taste, and for different cultural, social, medicinal, and ceremonial purposes.³ "Native cultivation of taro in Hawaii had created a greater number of varieties adaptable to varying conditions of locale, soil and water than are to be found anywhere else in Polynesia or, we believe, in the world."⁴ The three patented lines carrying within them the traits that Hawaiians and other Pacific islanders have breed for over millennia. Palehua, Pa'akala and Pauakea, were hybridized by cross-pollinating the Micronesian male Ngeruuch variety from Palau, which is resistant to taro leaf blight disease (TLB), with the Hawaiian female Maui Lehua, which is known for its desirable agronomic properties (such as taste), but also highly susceptible to leaf blight.⁵

In 1999, the University applied for three separate plant patents claiming invention of Pauakea, Pa`akala, and Pa`lehua. All three are substantially similar, except corm colors are white, pink and purple, respectively, as indicated in the Hawaiian names attached to these hybrids ("kea" = white; "akala" = pink; "lehua" refers to the famous Maui Lehua which has a purple corm) For example, the Pauakea plant patent claims invention for "a new and distinct variety of taro plant . . . that is characterized by resistance to taro leaf blight caused by *Phytophthora colocasiae*, resistance to root rot caused by *Pythium* spp., vigorous growth, large mother corm size, and white corm of very good flour quality and good eating quality." In 2002, the USPTO issued plant patent, PP12,342 for Pauakea (January 8, 2002), PP12,361 for Pa`lehua (January 22, 2002), and PP12,772 for Pa`akala (July 16, 2002), all with named "inventor" Eduardo E. Trujillo, a UH researcher, and "assignee" University of Hawai`i.⁷ The University has also sought world-wide patent rights.⁸

Some university researchers have claimed that what UH is doing regarding hybridizing kalo is the same as what Hawaiians have always done by doing selective cross-breeding of kalo varieties. But, Hawaiians have never claimed an exclusive, monopolistic ownership over kalo through patenting. Respected native activist, Alapa`i Hanapi, aptly explains that "ownership of taro is 'like slavery . . . it is as if someone owns your relatives.'" Kalo was not invented by the University of Hawai`i; and they have no right to "own" or "license" it. If anyone owns the kalo, we do collectively as Hawaiians, and as Hawaiians, we have demanded the UH give up its taro patents and return these varieties to Hawaiians. Hawaiians are the appropriate stewards to care for the kalo. We are the custodians who have guided the appropriate use of kalo for millennia as a benefit for all people of Hawai`i. Given that the male parent for these hybrids is a Palauan variety, the indigenous peoples of Palau who are responsible for the Ngeruuch variety, should also be involved with the rightful repatriation and stewardship and custodianship of these new varieties. In any case, UH does not have a right to claim ownership.

Another concern related to these patents on kalo relates to the mandatory licensing agreement that taro farmers must agree to before they are permitted to grow the patented hybrid varieties. A taro farmer from Hanalei on the island of Kaua`i, Chris Kobayashi, has strongly stated,

As a farmer, I strongly object to patents on taro or any other crop. Why should farmers have to pay for huli? Our taxes have helped to fund UH. Some of us have been cooperators with UH on different taro research programs including breeding, cultivation and diseases. More importantly, how can anyone claim ownership of plants that have evolved and been selected or bred by farmers for specific environmental conditions and desirable properties over generations?¹⁰

In the patent withdrawal demand letter sent to the Dean of the College of Tropical Agriculture and Human Resources, Andrew Hashimoto, we stated that,

we object to several aspects of the licensing agreement that farmers must sign in order to obtain the patented cultivars, such as the collection of a 2% royalty on gross sales of corm. The collection of royalties from farmers whose taxes already support the University's

operations, including taro breeding activities, is abhorrent. It represents a superfluous and unjust levy on Hawaiian taro farmers.

The licensing agreement also prohibits Hawaiian farmers from selling, breeding or conducting research on the licensed plants. Such provisions can only stifle creative breeding and research on the part of Hawaiian farmers, which UH, as an institution charged with serving the public good, should encourage rather than prohibit.

Finally, the licensing agreement requires farmers to grant UH unrestricted access to their property to inspect, evaluate or retrieve samples of the plants. Such provisions invest UH with police-like powers to conduct intrusive inspections of farmers' private property, powers unbefitting a publicly-funded institution whose mission is to serve rather than police Hawaiian citizens, including its farmers.¹¹

The Hawaiian people have now demanded the University drop their patents on Pa'akala (US Patent No. PP12,772), Pa'lehua (US Patent No. PP12,361) and Pauakea (US Patent No. PP12,342) or face a lawsuit. Although the cultural violations are of primary concern, we have preliminarily identified at least two legal means to challenge these patents based on prior art and failure to validate claimed properties. Our letter to Dean Hashimoto also briefly explains the basis for our legal challenge:

1) Prior art:

According to the patents, the female parent of all three patented varieties is "Maui Lehua," an unpatented cultivar that "belongs to the Group Lehua of Hawaiian-Polynesian taros." As you know, Hawaiian-Polynesian taros derive from a few varieties first introduced to Hawaii in the 4th to 5th century A.D. by the Islands' earliest settlers. From these few varieties, Hawaiians conducted extensive breeding over centuries to generate over 300 types of taro suited to differing microenvironmental and cultivation conditions. These varieties of taro were developed for food as well as ceremonial and medicinal uses.¹² Roughly 63 varieties, including Maui Lehua, are extant. Therefore, the qualities of the patented varieties derive to a considerable extent from Maui Lehua, whose properties are the result of many centuries of breeding efforts by native Hawaiians. Thus, the patent claims for the three patented varieties are invalidated by considerations of prior art.

2) Failure to validate claimed properties:

Irrespective of prior art considerations, the patents are invalid due to the failure of the "inventor" to properly validate claimed properties of the patented varieties. In a bulletin of the College of Tropical Agriculture and Human Resources released in August of 2002, soon *after* the third patent was issued on July 16, 2002 (for Pauakea), the "inventor" and his colleagues candidly admit that:

"To date, only preliminary observations are available on the soil and nutrient requirements, *disease susceptibility*, crop duration, and *yield* of the three new cultivars [i.e. the three just-patented varieties]. No controlled experiments have yet been done to confirm the preliminary observations mentioned here."
(emphasis added)¹³

In each of the patents, "resistance to leaf blight caused by *Phytophthora colocasiae*," "(high) tolerance to root rot caused by *Pythium spp.*" and "(extra-)large mother corm size" are explicitly cited as claimed properties of the patented varieties. The first two claimed properties fall under the head of "disease susceptibility," while the latter claimed property is the primary determinant of "yield." Thus, the patents were granted on the basis of putative properties that were ascribed on the flimsy basis of "preliminary observations" that had not been confirmed by controlled experiments.¹⁴

In the first half of 2006, Hawaiians, including taro farmers, Hawaiian Studies students and faculty, Hawaiian culture-based charter school students, and supporters held several protests, demanding that the University withdraw the patents.¹⁵ The protestors' overwhelming political message of no patents on kalo was uniquely brought to life through cultural means, including erecting an ahu (altar) and dancing hula and offering chants in honor of Haloa. University officials responded that faculty contracts require them to protect the intellectual property rights of its scientists. The University eventually offered to assign the patents to a Hawaiian organization, but Hawaiians rejected the offer and made clear that we object to anyone patenting kalo, even ourselves.¹⁶ As a result of protests, discussions and negotiations, however, the UH finally agreed to terminate the plant patents.¹⁷ The University filed legal documents with the US Patent Office that disclaimed all proprietary interests in hybridized kalo effective June 16, 2006 and on June 20, 2006, Hawaiians celebrated their victory with a ceremony and by tearing up the three patent documents.¹⁸

Concluding thoughts

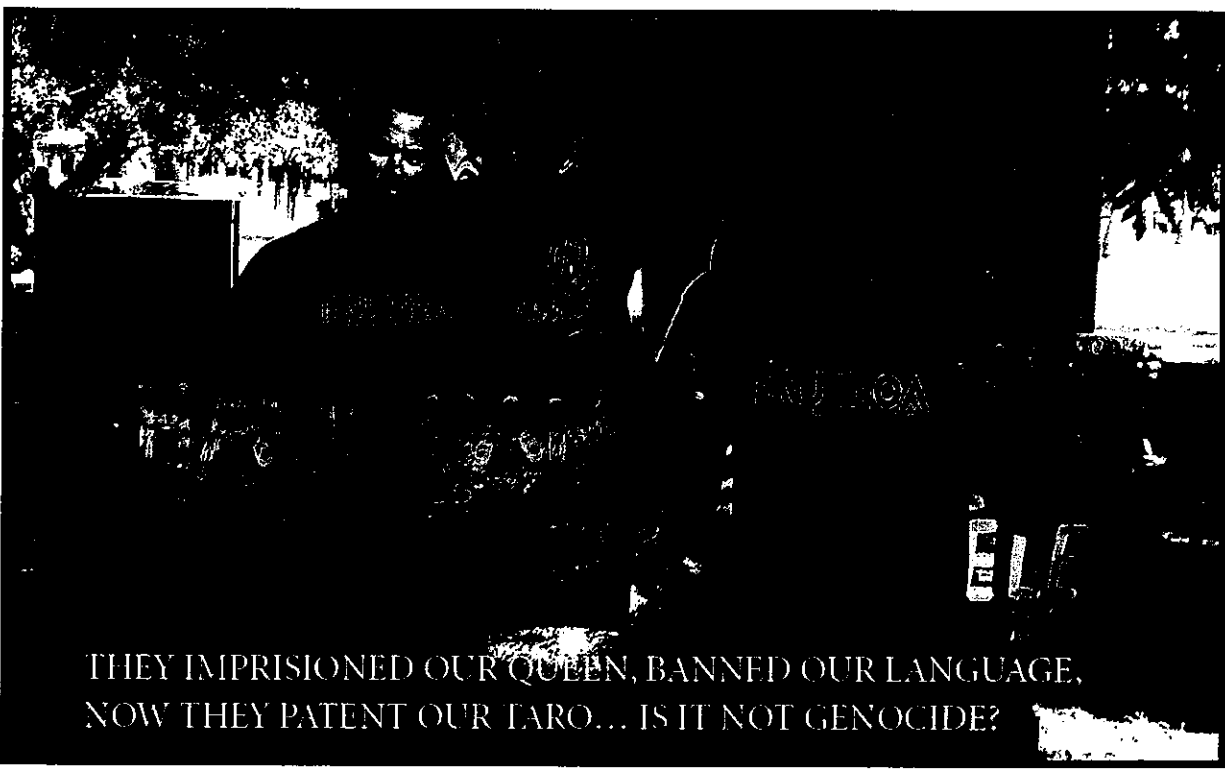
The treatment of Haloa, the kalo, by the University has become the window through which Hawaiians can view their future with biotechnology. It has become painfully clear that unacceptable manipulation and ownership of nature, the biodiversity that has sustained Hawaiians for thousands of years, is a major foundation for the economic success of biotechnology in Hawai'i. Although the kalo patents no longer exist, we know that much more of Hawai'i's biodiversity remains in jeopardy of manipulation and patenting. Accordingly, while appreciating the University's willingness to cooperate with our demands regarding kalo, we have also requested that in the future, "UH consult with the Native Hawaiian community before claiming or obtaining intellectual property rights over living organisms of these Islands."¹⁹

The spiritual relationship of the Hawaiians to the biodiversity of Hawai'i as represented by the genealogy of Haloa, the firstborn, has been ignored by the State of Hawai'i. Haloa, the kalo, has now become the focal point and rallying point of efforts to control or stop the advancement of biotechnology in Hawai'i. It is becoming clear that unless the concerns of the native Hawaiians are met, the future of biotechnology is dubious at best. This uncertainty will keep away the capital investment that this new industry desires.

Through our experience with protecting Haloa and kalo, it appears that a fundamental conflict of interest exists between the biotechnology industry and Hawaiians. The biotech industry demands manipulation and ownership of sacred things. Meanwhile, the Hawaiian people continue to assert the rights and responsibilities inherent in our understanding of kuleana over Hawai'i. We respect our

SEQUENCE DESCRIPTION
SEQUENCE CHARACTERISTICS
TOPOLOGY: linear (ii) MOLECULE TYPE: CDNA
GTCTCC20 (2) INFORMATION FOR SEQ ID NO:5: (i) SEQU
TYPE: nucleic acid (ii) STR

genealogy, gifts of nature and traditional knowledge that our ancestors have passed down to us over generations, and for which we have kuleana to maintain and protect for the benefit of future generations, na mamo o Haloa. E ola mau no Haloa (Haloa will live on.)



Taro Patent Protests, Hawaii, 2005 (Walter Ritte)

Footnotes

1. There were also two bills (SB2751 and HB3219) introduced to provide a 10-year moratorium on testing, propagating, cultivating, growing, and raising genetically engineered coffee and taro, but neither bill has succeeded this session. Unlike kalo, coffee does not have any traditional cultural relationship with Hawaiians or Hawai'i.
2. Status of SB2749 can be checked at <http://www.capitol.hawaii.gov/site1/docs/getstatus2.asp?billno=sb2749>.
3. Press Release, University of Hawaii Told to Give Up Taro Patents: UH's Right to "Own" Sacred Taro Challenged, January 12, 2006. Contact Walter Ritte (ritte@hotmial.com) or Chris Kobayashi (waioli2@verizon.net).
4. E.S. CRAIGHILL HANDY AND ELIZABETH GREEN HANDY WITH COLLABORATION OF MARY KAWENA PUKUI, NATIVE PLANTERS IN OLD HAWAII: THEIR LIFE, LORE, & ENVIRONMENT, 71, (Bishop Museum Press, 1991).
5. PP12,342, Taro cultivar named 'Pauakea,' January 8, 2002, Inventor: Trujillo; Eduardo E., Assignee: University of Hawaii, Appl. No. 426393, filed Oct. 22, 1999. All three plant patents are available at the United States Patent and Trade Mark Office website, <http://patft.uspto.gov/netahtml/srchnum.htm>.
6. *Ibid.*
7. *Ibid.*
8. Press Release, *supra* note 3.
9. Craig Gima, "Protestors block medical school," HONOLULU STAR-BULLETIN, May 19, 2006, <http://www.starbulletin.com/2006/05/19/news/story06.html>.
10. PP12,342, *supra* note 5. "Huli" refers the cutting used for replanting which is cut from the crown of the corm to about six to nine inches up the stalk. E.S. CRAIGHILL HANDY AND ELIZABETH GREEN HANDY WITH COLLABORATION OF MARY KAWENA PUKUI, NATIVE PLANTERS IN OLD HAWAII: THEIR LIFE, LORE, & ENVIRONMENT, 71, (Bishop Museum Press, 1991). Interestingly, the plant patent for Pauakea describes this traditional farming practice as "huli reproduction" and claims that, "a large number of plants of the new variety have been reproduced by this method and the resulting plants have exhibited the distinguishing characteristics of the original plant which was used for asexual propagation, indicating that the new 'Pauakea' cultivar is established." PP12,342, *supra* note 4. Therefore, although not in a legal sense, but in a practical sense, this traditional farming practice and the traditional knowledge inherent within it, is also claimed in this patent.
11. Letter from Walter Ritte and Chris Kobayashi, to Dean Andrew Hashimoto, University of Hawai'i College of Tropical Agriculture and Human Resources, 2 (date?) (on file with author).
12. Cho, John J. "Breeding Hawaiian Taros for the Future." Dr. Cho is a professor at UH's Dept. of Plant and Environmental Plant Sciences, Maui Agricultural Research Center.
13. Trujillo, Eduardo E. et al. "Promising New Cultivars with Resistance to Taro Leaf Blight: 'Pa'lehua', 'Pa'akala', and 'Pauakea'," Cooperative Extension Service, College of Tropical Agriculture and Human Resources, University of Hawai'i at Manoa, August 2002.
14. Letter from Walter Ritte and Chris Kobayashi, *supra* note 10, 1-2.
15. Craig Gima, "Protestors block medical school," HONOLULU STAR-BULLETIN, May 19, 2006, <http://www.starbulletin.com/2006/05/19/news/story06.html>.
16. Alexandre Da Silva, "Lab work on taro opposed," HONOLULU STAR-BULLETIN, June 6, 2006, <http://www.starbulletin.com/2006/06/06/news/story09.html>.
17. Susan Essoyan, "Activists tear up 3 UH patents for taro," HONOLULU STAR-BULLETIN, June 21, 2006, <http://www.starbulletin.com/2006/06/21/news/story03.html>
18. *Ibid.*
19. Jan TenBruggencate, "UH expected to abandon controversial taro patents," THE HONOLULU ADVERTISER, June 20, 2006, <http://www.the.honoluluadvertiser.com/article/2006/Jun/20/ln/FP606200342.html?print=on>.