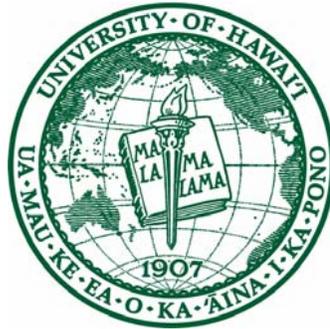


Office of Technology Transfer
&
Economic Development

University of Hawai'i



Annual Report to the 2006
Hawai'i State Legislature

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TABLE OF CONTENTS

I.	PREFACE	3
II.	TECHNOLOGY TRANSFER	4
II-1.	Program Profile	4
II-2.	Program Objectives.....	5
II-3.	Program Accomplishments	6
II-4.	Several Exemplary Licenses.....	6
II-5.	Other Agreements Executed.....	7
II-6.	Program Activity Indicators and Measures of Effectiveness.....	8
III.	ECONOMIC DEVELOPMENT	9
III-1.	Program Profile	9
III-2.	Program Objectives and Accomplishments.....	9
IV.	FINANCIAL ALLOCATIONS	11
IV-1.	Discoveries and Inventions Revolving Fund	11

I. PREFACE

This report was produced by the Office of Technology Transfer and Economic Development (OTTED) of the University of Hawai'i in accordance with the provisions of Section 304-8.92, Subsection (b), Hawai'i Revised Statutes.

- Funding for the establishment of a technology transfer and economic development program at the University of Hawai'i was authorized by the 1988 Legislature as part of the Governor's supplemental budget request. In addition, the Legislature approved the establishment of the Discoveries and Inventions Revolving Fund (Act 40, SLH 1988) to provide the university with a funding mechanism "to develop technologies that have potential commercial value, support the administration of technology transfer activities and facilitate economic development through education and research undertaken at the University." The Board of Regents formally approved the establishment of the Office of Technology Transfer and Economic Development in April 1989.
- During the period of this report, those changes implemented in the past few years have begun to bear fruit, with increases in licensing activity and licensing revenue, improved communication with UH faculty and research staff, and more focused outreach to the State's business community. OTTED reports to the University's Vice President of Research (VPR) and, in close coordination with the Office of Research Services (ORS) and University Connections (UC), is working to help build the research enterprise at the University of Hawai'i. In addition, the VPR's senior staff, which consists of the directors of OTTED, ORS, and UC, the VPR's senior advisor, and the manager for the Center for Marine Microbial Ecology & Diversity (CMMED), have formed the Business Industry Group whose charter is to forge closer ties with Hawai'i, U.S., and international businesses.

II. TECHNOLOGY TRANSFER

II-1. Program Profile

The Office of Technology Transfer and Economic Development performs an essential, on-going service for the University of Hawai'i — identifying, evaluating, protecting, marketing, and commercializing valuable intellectual property owned by the University. The activities of the program are guided by UH Executive Policy E5.500, which sets forth the following objectives:

- To define, clarify and protect the rights and equities of inventors and authors, the University, governmental or private sponsors of research, and the public in inventions and original works by providing for just and equitable recognition of the legitimate interests of each in such innovations.
- To encourage broad utilization of the results of University research and to provide a vehicle for the transfer of new technology and ideas from the University to the community at large, by permitting exploitation of research results—in the public interest and for the public benefit—while protecting the integrity of the academic process and the goal of public dissemination of research results.
- To stimulate innovative and creative scholarship, research and writing and its recognition, by facilitating, where appropriate, the receipt of fair economic rewards from such activities in the form of royalty payments to inventors and authors from licensees and publishers.
- To protect and benefit scholars and researchers in the University by encouraging recourse to the patenting and copyright process and by providing information and support on the procedures and problems involved.
- To encourage and assist scholars and researchers in identifying patentable discoveries; to require prompt and early reporting of such discoveries to the Patent and Copyright Committee; and to promote scholarly publication in a manner that does not prejudice the obtaining of a patent.
- To devise and promulgate clear and practical regulations, procedures and forms for reporting and disclosing original works and ensuring the timely prosecution of patent applications.
- To provide for the patenting and licensing of any invention or the registration and licensing of the copyright in any work, where appropriate, in cooperation with the Patent and Copyright Committee.

- To protect the rights of any government or other sponsor of research in any invention or work that may be generated and to ensure compliance with the other terms of research grants.
- To protect the rights of the University in inventions or other original works which result from the use of University funds or facilities by its faculty and other employees.

While the number of new licenses signed in FY2005 was down slightly from the year before, licensing revenues and the number of active license/option agreements continued to increase. Further, OTTED made a significant contribution to the 2005 UH Business Plan Competition, held by the UH College of Business Administration (CBA), by providing additional prize money for winning business plans built on UH technologies. OTTED was rewarded by seeing the winning team take home the OTTED prize money for their business plan, which was based on a technology from the College of Medicine. OTTED's Technology Showcase Series also continued throughout the year and drew appreciative attendees that led to serious inquiries into the technologies presented.

II-2. Program Objectives

- Transfer University-developed technologies to industry in the public interest and for the public benefit.
- Work with faculty researchers, department chairs, deans and directors to identify promising new technologies developed at the University and encourage their participation in the technology commercialization effort.
- Market, promote, and license the University's inventory of intellectual properties.
- Secure the rights to commercially viable discoveries and inventions.
- Negotiate and draft all appropriate contractual agreements related to technology transfer, including confidentiality agreements, materials transfer agreements, option agreements, license agreements, and inter-institutional agreements for technologies co-developed and co-owned by other universities.
- Work with the Office of Research Services to negotiate and provide for appropriate intellectual property terms in industry-sponsored research agreements.
- Participate in efforts to assist faculty entrepreneurs in the creation of new companies to commercialize University-owned technologies.
- Conduct ongoing outreach efforts to inform faculty members on all campuses about OTTED services and activities, and technology transfer and commercialization concepts, principles and procedures.

- Conduct ongoing outreach efforts to alert Hawai'i businesses and others about the research capabilities, programs, and technologies available at the University of Hawai'i.

II-3. Program Accomplishments

The new technology assessment and licensing strategy that was developed and implemented by OTTED over the past few years is starting to pay off, as is evident from the results of the most recent fiscal year. This approach, which treats patents as economic tools, tends to discourage investments in utility patents that will not appreciably contribute to the licensability of a technology. Rather, the approach used by OTTED presently focuses on evaluating the market potential of technologies before making significant investments in utility patents. To that end, OTTED is filing provisional patent applications, which can be filed at a nominal cost of \$100, on virtually all technologies disclosed by faculty to the Office, but is using the first year after filing the provisional patent applications to market technologies to potential licensees.

In FY2005, OTTED signed 19 license or option agreements. While this is down slightly from year-earlier levels, it exceeds the goal of 15 licenses or options for the year.

Licensing revenues continued to grow in FY2005 and topped \$998,000 for the year, an increase of more than 23% over the previous year. However, OTTED remains less focused on licensing revenues, which can fluctuate quite widely from year to year, and more focused on increasing the number of active licenses. Thus, OTTED continued to work diligently to increase the number of active licenses, which grew to more than 90 by the end of FY2005.

II-4. Several Exemplary Licenses

- ***BioXene (Honolulu, HI)***

BioXene – a Hawai'i-based biotechnology company focused on developing innovative, rapid, and low cost disposable nanobiosensors– was granted an exclusive worldwide license from UH to the patent rights for nanobiosensor constructs and detection methods, a platform technology that can be used to detect a wide variety of targets, including peptides, proteins, nucleic acids, spores, viruses, cells, and metal ions.



Based on this UH technology, BioXene is developing several disposable “mix and measure” nano-scaled protein sensors that will cut detection time to less than an hour and can be performed outside a laboratory without the need of a

skilled technician. Products in development include nanosensors for the detection of affinity-tagged proteins and the avian influenza antibody.

- ***Chemicon International, Inc. (Temecula, CA)***

Chemicon International, Inc. – a California-based serologicals company focused on basic and biomedical research, drug discovery, and diagnostics, serving thousands of customers worldwide in the



academic, clinical, biotechnology, and pharmaceutical sectors - was granted an exclusive, worldwide, royalty-bearing license from UH for the manufacture, use, and sale of a rabbit polyclonal peptide antibody against the filament B protein. The antibody was developed by Dr. Andre S. Bachmann, an Assistant Professor at the Cancer Research Center of Hawai'i, and is now available to the research community through Chemicon International.

II-5. Other Agreements Executed

Thirty-one confidentiality agreements (incoming, outgoing, and mutual), three inter-institutional agreements, and sixty material transfer agreements were executed during the period of this report. These agreements protect the interests of the University in research collaborations and in the commercialization of UH intellectual property.

II-6. Program Activity Indicators and Measures of Effectiveness

Program Activity Indicators	FY 2003-2004	FY 2004-2005
<i>Invention Disclosures Received</i>	56	48
<i>U.S. Patents Filed</i>	38	61
<i>U.S. Provisional Patents Filed</i>	26	39
<i>U.S. Patents Issued</i>	11	4
<i>License/Option Agreements Executed</i>	21	19
<i>Intellectual Property Held (Cumulative)</i>	225 [†]	158 [†]

[†] Includes cryptophycin patents donated to UH by Eli Lilly and Co.

Measures of Effectiveness	FY 2003-2004	FY 2004-2005
<i>Active License/Option Agreements</i>	84	94
<i>Gross License Income Received</i>	\$809,340	\$998,321

III. ECONOMIC DEVELOPMENT

III-1. Program Profile

The goal of OTTED's Economic Development Program is to help Hawai'i businesses and the community gain access to academic, technical, and research expertise at the University of Hawai'i. In cooperation with other State and local economic development organizations, OTTED helps Hawai'i businesses find R&D funding, research partners, student interns, and technical experts at UH.

III-2. Program Objectives and Accomplishments

OTTED's economic development outreach activities complement the licensing activities of the Office and focus on promoting UH research, discoveries and inventions, facilitating University-industry collaborations, and supporting University-based economic development. To meet these objectives, OTTED sponsored several activities in FY2005, including the *Ke Ka'ana 'Ike* UH Faculty Seminar Series, UH Technology Showcase Series, and made one award in the 2005 UH Business Plan Competition.

- *Ke Ka'ana 'Ike* (The Sharing of Knowledge) lectures are brown bag events that are open to the UH community as well as the general public, and are held during 8 months of the year on the UH Manoa campus. Faculty members are invited to present their research and discuss the social and academic significance of their work. The event recognizes faculty research accomplishments, brings students, administrators, and researchers together for interdisciplinary interaction, and highlights diverse areas of research ongoing at UH. In FY2005, seminar topics included, among others, interventions and outcomes for obesity and related factors (April 2005), the origin of the Hawaiian Archipelago (January 2005), understanding how fish benefit from and cope with ultraviolet radiation (December 2004), and the mega tsunami that hit the Hawaiian Islands 120,000 years ago (October 2004). Initiated and organized by OTTED in October 2002, the event has been held 23 times to date and has consistently generated a high level of attendance and interest from UH faculty, researchers, and students.
- In the UH Technology Showcase Series, faculty members and researchers present their UH inventions to Hawai'i technology companies, venture investors, and others in the business community interested in UH research. It is a semi-annual event initiated by OTTED in response to inquiries from companies wanting to know about commercially applicable research projects and opportunities for technology licensing and research collaborations with UH. During OTTED's fourth UH Technology Showcase event, held in December, 2004, three inventors, two from UH's John A. Burns school of medicine, and one from UH's electrical engineering department, presented discoveries and inventions in the areas of biomedical diagnosis, assessment, and treatment. They highlighted the commercial applications, advantages,

and benefits for users. The event has been successful in the past in leading to discussions with venture investors and companies interested in the technologies presented, and in generating licensing activity.

- In the 2005 UH Business Plan Competition, OTTED awarded a \$20,000 cash prize to the team with the top business plan for technology invented at UH. The first place winner, Risk Assessment Laboratories, was awarded \$20,000 from OTTED in addition to the \$25,000 first place prize. The winning team must spend the OTTED award to advance the commercialization of their technology. To be eligible for the award, participants were required to prepare a business plan based on a licensable UH technology from OTTED's portfolio. The award was designed as an incentive for teams to enter the competition with business plans focused on commercialization strategies for UH technologies they felt had promising potential.
 - The winning team, Risk Assessment Laboratories, built their business plan around the development of a test that accurately predicts preterm birth and diagnoses in utero disease in infants. The technology was co-invented by two UH faculty members. Prior to the UH Business Plan Competition, the technology was also presented to investors and high tech companies at OTTED's December 2004 UH Tech Showcase. However, the UH Business Plan Competition provided an opportunity for the team, which included UH law and business students, to formulate a commercialization plan for the technology and encouraged them to start a company to implement that plan.

Based on current and past results, OTTED's participation in the UH Business Plan Competition continues to be a worthwhile and successful opportunity to promote the commercial spin-off of UH inventions to entrepreneurial students and faculty.

- OTTED also supported the Hawai'i Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) Conference in January 2005, which was sponsored by the High Technology Development Corporation (HTDC). Via presentations and discussions, OTTED encouraged partnerships between businesses and UH by promoting the licensing of UH inventions, and the establishment of research partnerships and collaborations.

IV. FINANCIAL ALLOCATIONS

IV-1. Discoveries and Inventions Revolving Fund

Statement of Cash Balances, FY2004-05

Beginning cash balance, July 1, 2004:		\$1,105,858
Revenues:		
Interest earned on short term TCD's	\$24,962	
Royalty Income	\$998,321	
Indirect Overhead (section 304-8.92(a), HRS)	\$370,000	
	<hr/>	
Total Revenues:		\$1,393,283
Expenditures:		
Technology transfer program	\$1,154,012	
Royalty distributions to inventors	\$464,880	
Subtotal Expenditures	\$1,618,892	
	<hr/>	
Other Expenditures:		
Prepayment to Research Corporation of the University of Hawaii	(\$109,545)	
Subtotal Other Expenditures	(\$109,545)	
	<hr/>	
Total Expenditures:		\$1,728,438
Ending cash balance, June 30, 2005:		<hr/> \$770,704
Outstanding Obligations, June 30, 2005:		
Act 106, SLH 1990-UH Software Development and Marketing Program	\$56,317	
Special Projects		
Kauai Tropical Fruit Disinfestation Facility	\$66,081	
Reserve for vacation pay	\$15,000	
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Total Obligated Funds:		\$137,398
Working Capital:		<hr/> \$633,305