

House Concurrent Resolution 218 2006 SLH

A Report to the Legislature On Hawaii's Bioscience Industry and Workforce

Prepared By:
High Technology Development Corporation
An Agency of the State of Hawaii
Administratively Attached
to the
Department of Business, Economic Development & Tourism
January 2007

This report has been cataloged as follows:
High Technology Development Corporation
A report to the Legislature on Hawaii's bioscience industry and workforce. Honolulu: 2007.

1. Biotechnology Industries-Hawaii.
2. Life Sciences-Hawaii.

HD9999.B442.H6.2007

Table of Contents

Executive Summary

1. Background
2. Introduction
3. Findings from Consortium Members' and Stakeholders' Discussion
4. Recommended Strategic Directions
5. Summary

Attachments:

- A. Copy of HCR 218 HD1, SLH 2006
- B. List of Stakeholder Participants and Designee/Attendee at Meeting Held on November 16, 2006
- C. HCR 218 HD1: The Concept
- D. Pre-Meeting Questions
- E. Table 25 - SWOT Analysis (Source: Hawaii's Life Sciences Road Map by the Hawaii Life Sciences Council)

Executive Summary

1. Background

House Concurrent Resolution 218 HD 1 requested “the High Technology Development Corporation, an agency of the State of Hawaii, John A. Burns School of Medicine, Cancer Research Center of Hawaii, Department of Education, Department of Land and Natural Resources, the Hawaii Community Development Authority, and Kamehameha Schools, to confer and strategize to develop and operate a technology-based consortium supporting K-12 education, medical research and development activities, and an incubator and innovation center for technology-based companies on state land adjacent to the Mother Mary Waldron Park or other appropriate lands in Kakaako.” These entities are referred to as the consortium members in HCR 218 (Attachment A).

The Honorable Senate President Robert Bunda and House Speaker Calvin K. Y. Say of the State of Hawaii in a memorandum dated November 1, 2006, requested the consortium members convene a meeting and report their recommendations to the 2007 legislature. The consortium members met on November 16, 2006 at the High Technology Development Corporation’s Board Room at the Manoa Innovation Center. A list of the representatives from each of the above-mentioned organizations is attached (Attachment B).

2 Introduction

This report recognizes that much work has already been done to train and prepare Hawaii’s workforce for tomorrow’s future. Educational institutions, workforce development groups, state agencies, and private sector organizations have been and continue to be involved in identifying needs and providing the necessary skills and education to fill nontraditional jobs. In addition, many professional, private, and public affairs groups have been engaged in identifying the future needs of our state, as well as developing and recommending good public policies.

Given the tremendous amount of information already available nationally and locally on the subject of developing a skilled workforce to fill the jobs of the 21st century, this summary will attempt to reference some of these resources while focusing on the purpose of HCR 218 - Hawaii’s workforce needs in the life sciences industry, which includes biotechnology and biosciences.

However, the focus of this report is to address a current and future need for skilled and educated workers as Kakaako grows into a life sciences hub for the State of Hawaii. The assumption is that co-located within Kakaako adjacent to the University of Hawaii’s John A. Burns School of Medicine, Pacific Biomedical Research Center, and Kewalo Marine Laboratory, will be the planned Cancer Research Center of Hawaii, and Regional Biocontainment Laboratory of the Pacific, and the Kamehameha Schools/KUD/Phase 3 International Asia Pacific International Research Center. This co-location typically creates an environment for synergism and partnerships which will

further enhance and grow the biotechnology and bioscience industries. A conceptual project design is attached (Attachment C).

3. Findings from the Consortium Members' and Stakeholders' Discussion

- a. Members agreed there is a growing need for skilled biotechnology and biosciences workers at various levels of skills and education. A more in-depth analysis is recommended to better assess current and future demand and to develop appropriate program plans to meet these demands.
- b. Consortium members were open to all possibilities of working together with the biosciences industry and community to fill the demand for a skilled biosciences workforce. While the stakeholders agreed to work together, there was agreement on expanding or redefining the "team" that best meets the goals of the resolution. Other stakeholder organizations mentioned include the State Board of Career and Technical Education, State Workforce Development Council, and county economic development boards.
- c. While a new Department of Education (DOE) school may be needed in Kakaako District, DOE is open to all options concerning the location of the school in Kakaako. In addition, DOE is interested in collaborating with the public and private sectors to bring about opportunities for student internships, students career paths development, and a K-12 bioscience magnet school.
- d. The University of Hawaii is keenly interested in building upon its research and development community in all areas including biosciences, and growing their current ratio of 25% to the national average of 50%.
- e. In addition to scientists and researchers there is a demand for the "second tier" workforce e.g., research technicians and laboratory workers. Hence, a plan to develop K-12 through higher education should also focus on providing for this second tier. Further, members recommended that the University of Hawaii Community Colleges System be an active partner in the development of a plan for a biosciences workforce, particularly with respect to "second tier" curricula.
- f. Consortium members agreed that for the purposes of this HCR 218 there are already several excellent reports that have documented the needs and proposed plans for a new workforce in Hawaii. Members recommended that these reports can be updated and integrated to focus strictly on a bioscience workforce development plan.

Some of these reports include:

(a) *"Hawaii Life Sciences Road Map: Competitive Opportunities in the Global Economy A Report to Stakeholders July 2005"*

(b) *“Human Resources Development In Technology: A Prototype Plan, July 2006”*

(c) *“State Workforce Investment Act Plan, July 1, 2005 to June 30, 2007”* and subsequent *“Application For A Community-Based Job Training Grant Submitted to the U. S. Department of Labor Employment and Training Administration by the University of Hawaii Community Colleges.”*

(d) *“Building an Institute for Triple-Helix Research Innovation”*, University Clinical, Education and Research Associates (UCERA), John A. Burns School of Medicine, University of Hawaii.

(e) *“Rising Above The Gathering Storm: Energizing and Employing America for a Brighter Economic Future (2006) Committee on Science, Engineering, and Public Policy”*, The National Academies.

The Strengths/Weaknesses/Opportunities/Threats (SWOT) Analysis contained in the “Hawaii Life Sciences Road Map” is particularly applicable and “presents a comprehensive picture of Hawaii’s current assets and competitive position.” (Attachment E.)

- g. While general workforce development funding is allocated to the Department of Labor and Industrial Relations, members agreed that consideration should be given to directly funding tech-based economic development workforce programs through the Department of Business, Economic Development & Tourism or the state’s High Technology Development Corporation. This method will address the specific and unique hiring needs and issues of the biosciences industry. Working with educational institutions from K-12 through the university to develop a technology-based economy will require more than general workforce development programs.
- h. The Hawaii Community Development Authority (HCDA), created by the legislature as an agency of the State of Hawaii as a planning and regulatory authority for Kakaako, provided input on the HCR 218 reference to various locations for a school and bioscience innovation center in Kakaako, as follows:

State land adjacent to Mother Mary Waldron Park: we believe the site must be studied in a holistic manner. The whole site, including the park, needs to be planned as one master plan. Ownership of the site is split between the State, through DLNR, the City, and HCDA. We strongly believe that the community and stakeholders need to be involved in the planning process from the very beginning. We would suggest a charrette run by a good architect/planner team to master plan the site with community members and stakeholders. Once the charrette establishes a shared vision and common goal, ways can be found on how to go about developing the various pieces.

Other appropriate lands in Kakaako: HCDA would be able to work with the consortium to identify where these lands, whether currently privately or state owned, are and exploring possibilities/evaluate compatibility with

adjacent uses and the KCDD Mauka and Makai Area plans.

HCDA noted also that this concept of a mixed-use project with a school component is consistent with the planning objectives of the “*Kakaako Community Development District (KCDD) Mauka Area Plan.*” The KCDD Mauka Area Plan designates the site for public use with an elementary school component that would utilize the Mother Mary Waldron Park playground. School, park, and community uses programmed for the site would essentially create a town center for the Kakaako District.

- i. In direct response to the challenges described in the report titled “*Hawaii Life Sciences Road Map: Competitive Opportunities in the Global Economy*”, Kamehameha Schools Bishop Estate who owns land in Kakaako adjacent to the JABSOM and the planned CRCH, bided and selected Kajima Urban Development/Phase3 Properties to design and build a premier life sciences project in Kakaako. This project, **Asia Pacific International Research Center**, would support Hawaii’s vision and desire to diversify its economy and provide good-paying technology jobs for its citizens. Consortium members believe projects like the planned **Asia Pacific International Research Center** are necessary component of the state’s plan to build Kakaako into life sciences and biosciences industry and fulfill the intent of this House Concurrent Resolution to provide biosciences innovation space including wet and dry laboratory space. Furthermore, in a little over ten years the land lease from the University of Hawaii to the State High Technology Development Corporation for the Manoa Innovation Center will expire. A new home to move existing and new Hawaii technology-based entrepreneurs and companies from Manoa Innovation Center will be needed; the **Asia Pacific International Research Center** could be their new home.
- j. Finally but certainly not least, community representatives were contacted and informed. These included the Kakaako Improvement Association, Kakaako Business and Landowners Association, and Victoria Ward Estate/General Growth Properties. There were no objections to the concept of a mixed-used project focused on the bioscience industry, however, if a project moves forward further consultation and communication with all community organizations and individuals is recommended. While the County Kakaako Downtown Neighborhood Board was contacted and informed of this resolution, it was premature to do a presentation to the full board.

It should be noted that the objective of technology projects is economic development and as a result should include input from the community to be successful. Once built and operational, the project should be a responsible partner within the community and openly communicating with its constituents.

4. Recommended Strategic Directions

- a. As previously noted above, existing reports on growing a technology workforce for Hawaii should be updated with a specific focus on implementing a *biosciences curriculum program and biosciences innovation project* as described in HCR 218.

An important component of this planning effort should be a current review of Hawaii's biosciences private sector industry and research sector needs and an analysis of future employment opportunities.

The biosciences innovation center in Kakaako will be the crossroad for bioscience companies, research institutions, and educational organizations to collaborate and implement programs that will grow the industry.

A consultant(s) should be retained to coordinate and prepare detailed information in an action plan format that will include a pre-design feasibility and development plan for a biosciences innovation center. To accomplish this program and project planning effort, funding of approximately \$75,000 is recommended in 2007.

- b. In 2006 the state legislature created and appropriated \$5 Mil for a Construction Academy to sustain and fill the needs of a fundamental and basic industry in Hawaii. The academy will offer construction trade skills training and employment opportunities to its citizens.

As recently reported by our local community college system and the state Department of Education, there are many barriers that must be overcome including development of basic skills, financial ability, competition between school, family, and jobs, and underdeveloped interest and motivation. However, as in the example of the Construction Academy, the community colleges and DOE are working with the private sector to provide the talent to continue to grow and diversify Hawaii's economy.

This bold approach to help sustain an important industry such as construction should be considered for Hawaii's science and technology industry. A Science and Technology Academy with a focus toward Hawaii's unique strengths such as biosciences will provide the leadership and direction needed to grow and sustain this industry. The model already exists and with some tweaking can also work for biosciences.

- c. For a "small and diverse technology community" as these islands are, we have most of the building blocks necessary to make Kakaako a nexus of technology-based economic development, where academia and technology commercialization cross paths to create attractive jobs. What is missing is the alignment of all these resources and talents within the state.

To become successful, private industry working with academia and government must provide their input and remain a partner in the process, but to become significant as an industry the state will need to provide the vision, leadership, and support through coordination and collaboration. The State High Technology Development Corporation mission and purpose is to facilitate the growth and development of the commercial high technology industry and with adequate resources can serve as the facilitator. Providing an attractive and sustainable future for the citizens of our state should be our goal.

- d. To facilitate the goal of building a life sciences and biosciences industry in Kakaako, it is highly recommended that the state immediately begin to seek partnerships with organizations that have already invested time and money in planned bioscience facilities in Kakaako. As previously mentioned, Kamehameha Schools Bishop Estate has reached beyond their normal investment portfolio criteria to the community-at-large to provide a viable life sciences project. This broad forward-thinking vision is a credit to the state and the objectives of the estate's trust.

Current investment by KSBE is \$20 million and additional monies have been spent to acquire New Market Tax Credits to lower the high cost of new and expensive bioscience laboratory facilities. Biotechnology and bioscience companies as well as research institutions must keep their overhead (rental and related expense) to a bare minimum of their overall operating expense, instead investing their money in the research and development of their products. However, even with an investment of \$20+ million, KSBE will need assistance and support. Since the state will enjoy the benefits of a successful project in terms of economic diversification, higher-paying jobs for its citizens, attraction and creation of wealth, some form of investment by the state should be considered and supported.

The State High Technology Development Corporation supports a partnership with KSBE and its developer that will fulfill the objectives of HTDC and this House Concurrent Resolution. The state in the late 1980's believed in its ability to diversify Hawaii's economy by funding the Manoa Innovation Center, Maui Research & Technology Center, Hawaii Ocean Science & Technology Park, and its first incubator partnership with the then Hawaiian Telephone Company, the Kaimuki Technology Enterprise Center or KAITEC. Since its inception in the early 1990's the Manoa Innovation Center has assisted 109 technology companies and successfully graduated approximately 76.92%. To name a few, these companies include Aspect Software, Digital Island, Hoku Scientific, Blue Lava Wireless, and 21st Century Systems. A similar challenge exists today in the biosciences industry and the state needs to initiate to make it happen like it did with Manoa Innovation Center and other projects.

Attachment A

HOUSE OF REPRESENTATIVES

H.C.R. NO. 218

TWENTY-THIRD LEGISLATURE,
2006

H.D. 1

STATE OF HAWAII

HOUSE CONCURRENT RESOLUTION

REQUESTING THE HIGH TECHNOLOGY DEVELOPMENT CORPORATION, UNIVERSITY OF HAWAII JOHN A. BURNS SCHOOL OF MEDICINE, CANCER RESEARCH CENTER OF HAWAII, DEPARTMENT OF EDUCATION, DEPARTMENT OF LAND AND NATURAL RESOURCES, THE HAWAII COMMUNITY DEVELOPMENT AUTHORITY, AND KAMEHAMEHA SCHOOLS TO PLAN A TECHNOLOGY-BASED COLLABORATIVE PROJECT ON STATE LANDS, OR OTHER APPROPRIATE LANDS, IN KAKAAKO.

WHEREAS, the High Technology Development Corporation (HTDC) operates statewide technology innovation centers to increase Hawaii's high-tech industries and provide attractive high-tech jobs in the state in biotechnology, medical technologies, life sciences research and development, and other innovative sectors; and

WHEREAS, the University of Hawaii John A. Burns School of Medicine (UH JABSOM) situated in Kakaako Makai, located within the Kakaako Community Development District (Kakaako District), and the planned UH JABSOM Phase II will provide new opportunities for education and training in medical technologies; and

WHEREAS, the new University of Hawaii Cancer Research Center of Hawaii (CRCH), a planned national cancer research center in Kakaako, will provide new opportunities for education and training related to cancer clinical research and development; and

WHEREAS, Kamehameha Schools (KS) plans to develop a private life sciences catalyst project on former state land fronting Ala Moana Boulevard; and

WHEREAS, the Department of Education (DOE) will require a location to support K-12 educational needs in the Kakaako District, and will significantly benefit from interaction with a research and technology park in close proximity; and

WHEREAS, Kakaako Makai is envisioned to become a premier medical and life sciences research and technology park in the Pacific; and

WHEREAS, the Hawaii Community Development Authority (HCDA), under the general policies and direction set by the Legislature, implements the management and development of state lands in the Kakaako District to support the needs of the public; and

WHEREAS, the Department of Land and Natural Resources (DLNR) owns, in fee title, the land adjacent to the Mother Mary Waldron Park in the Kakaako District, which is one of the few, if not last, remaining state-owned land parcel in Kakaako suitable for development; and

WHEREAS, the Hawaii Science and Technology Council (HSTC) (formerly the Hawaii Life Sciences Council) has been instrumental in coordinating the efforts of HCDA, UH JABSOM, CRCH, HTDC, and other stakeholders to create a unified vision for Kakaako to become a globally competitive zone of innovation and to establish the best governance or collaborative structures required to achieve this vision; and

WHEREAS, there is tremendous public value and benefit for the collaboration and cooperation of activities in an area central to education, training, research, and technology, where private companies will support the collective needs of UH JABSOM, CRCH, HTDC, DLNR, and DOE; and

WHEREAS, the Legislature recognizes the tremendous importance of providing for these activities on lands owned by the State and at no cost to the state departments and agencies involved; and

WHEREAS, a center of this magnitude and value to the future of Hawaii's children and citizens requires well-conceived planning and cooperation among stakeholders; now, therefore,

BE IT RESOLVED by the House of Representatives of the Twenty-third Legislature of the State of Hawaii, Regular Session of 2006, the Senate concurring, that:

- (1) The Executive Director of the HTDC or the Director's designee;
- (2) The Dean of UH JABSOM or the Dean's designee;
- (3) The Director of the CRCH or the Director's designee;
- (4) The Superintendent of Education or the Superintendent's designee;
- (5) The Executive Director of the HCDA or the Executive Director's designee; and
- (6) The Chairperson of the Board of Land and Natural Resources or the Director's designee; and
- (7) The Executive Director of the HSTC or the Director's designee; and
- (8) By invitation, the Chief Executive Officer of Kamehameha Schools, or the Chief's designee,

are requested to confer and strategize to develop and operate a technology-based consortium supporting K-12 education, medical research and development activities, and an incubator and innovation center for technology-based companies on state land adjacent to the Mother Mary Waldron Park, or other appropriate lands in Kakaako; and

BE IT FURTHER RESOLVED that the consortium is requested to invite and accept public input from the community and take community concerns into consideration prior to formulating its recommendations; and

BE IT FURTHER RESOLVED that the Executive Director of the High Technology Development Corporation is requested to be responsible for convening the consortium, drafting a report that summarizes the findings and recommendations of the consortium, and submitting the report, including necessary proposed legislation, to the Legislature no later than 20 days prior to the convening of the Regular Session of 2007; and

BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be transmitted to the Executive Director of HTDC, Dean of UH JABSOM, Director of CRCH, Superintendent of DOE, Director of DLNR, and the Executive Director of HCDA, Executive Director of HSTC, and the Chief Executive Officer of KS.

Report Title:

Requesting HTDC, UH JABSOM, CRCH, DOE, DLNR, HCDA, HSTC, and KS to plan a technology-based collaborative project on state lands in Kakaako.

Attachment B

List of Stakeholder Participants and Designee/Attendee at Consortium Meeting held November 16, 2006:

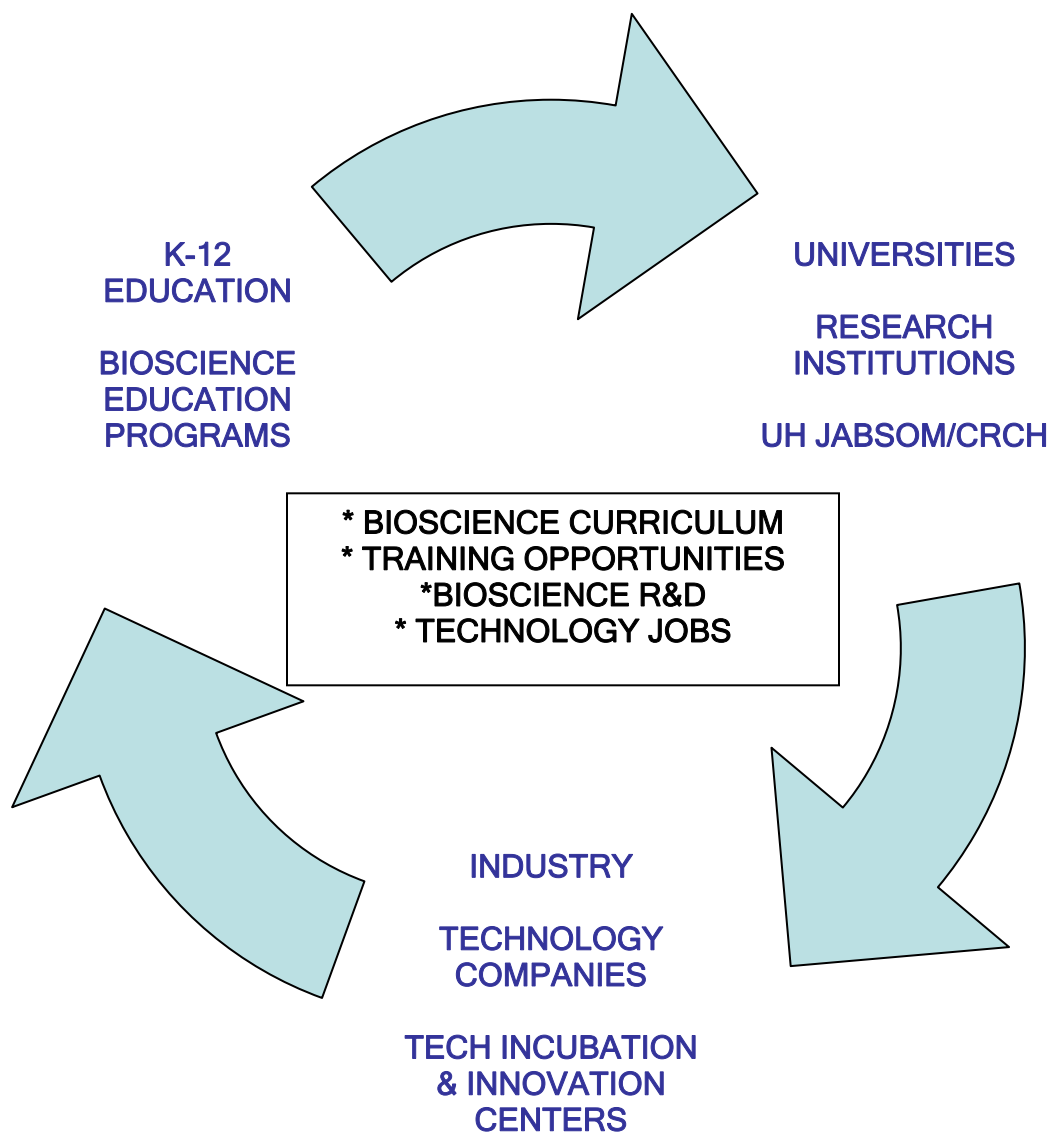
1. Yuka Nagashima, Executive Director & CEO, and Kay Yamada, Projects Development Manager, High Technology Development Corporation, An Agency of the State of Hawaii administratively attached to the Department of Business, Economic Development & Tourism.
2. Daniel Ishii and Jim Gaines, Interim Vice President for Research, University of Hawaii, representing Gary K. Ostrander, Interim Dean, University of Hawaii John A. Burns School of Medicine, and Vice President, Graduate Research and Education.
3. Carl-Wilhelm Vogel, Director, Cancer Research Center of Hawaii, University of Hawaii.
4. Heidi A. Meeker, Planner V, Planning Section, Office of Business Services, Department of Education representing Patricia Hamamoto, Superintendent for the State Department of Education.
5. Daniel Dinell, Executive Director, Hawaii Community Development Authority, An Agency of the State of Hawaii administratively attached to the Department of Business, Economic Development & Tourism.
6. Kirk O. Belsby, Vice President for Endowment, Kamehameha Schools, representing Dee Jay A. Mailer, Chief Executive Officer, Kamehameha Schools.
7. Lisa H. Gibson, President, Hawaii Science & Technology Council.

Absent:

1. Peter T. Young, Chairperson of the State Department of Land & Natural Resources.

Attachment C

HCR 218, HD1, 2006 SLH, The Concept



INITIATIVES:

- * ONGOING COLLABORATION AMONG CONSORTIUM MEMBERS
 - * JOINT DEVELOPMENT OF BIOSCIENCE CURRICULUM
 - * INTERNSHIPS AT RESEARCH INSTITUTIONS
- * TRAINING OPPORTUNITIES WITH TECHNOLOGY COMPANIES
 - * BIOSCIENCE INNOVATION CENTER

GOALS/RESULTS:

- * INCREASED GRADUATES OF BIOSCIENCE
- * PIPELINE OF GRADUATES TO FILL GROWTH IN BIOSCIENCE JOBS
 - * INCREASED RESEARCH AND DEVELOPMENT COMMUNITY
 - * GROWTH OF A TECH INDUSTRY NICHE FOR HAWAII

Attachment D

Pre-Meeting Questions for Consortium Members: Strategy for Collaboration

1. What kind of collaboration would help you as a member of this consortium?

2. How can a project with this concept located in Kakaako help to meet your objectives and goals?

3. What would you be willing to contribute toward this project (concept)?

4. What questions do you have for the consortium and members?

Attachment E

Table 25 – SWOT Analysis
Source: Hawaii Life Sciences Road Map
Hawaii Life Sciences Council

Table 25 – SWOT Analysis

Strengths	Weaknesses
<p>Highly-educated and hard-working labor force Generations of expertise in key areas such as plant sciences, information technology, marine, and health-care related High quality of life Competitive educational institutions able to attract top-flight researchers Relatively high concentration of health care, education, and engineering workers Strong employment concentrations in biological sciences, earth sciences, astronomy, marine, food-related, and health specialties Important military, defense orientation and mindset for ‘duty’</p>	<p>Talent recruitment and retention Commercialization of Intellectual Property Lack of venture capital at all stages High school students lack exposure to Science & Technology career opportunities on the Islands Below average numbers of math and computer sciences teachers Relatively low federal R&D funding beyond line-item appropriations Lack of a coordinated workforce development pipeline Lack of critical mass of life science firms Inadequate wet lab space Lack of a community clearing house for publicizing and coordinating life science initiatives Hawaii is not effectively marketed outside of the state</p>
Opportunities	Threats
<p>Medical research, specifically oncology and infectious diseases Consumer health and food safety Monitoring and managing biological risk Marine-based consumable water and food products Biomass and biofuels Telemedicine, health-related IT Nutraceuticals Write more and obtain greater share of research grants through unique collaborations Leverage strong military presence to realize opportunities Increase incentives for entrepreneurialism Improve industry-academia partnerships Targeted federal R&D funding strategy</p>	<p>Human Capital Flight (Brain Drain) Increased competition, both from other US states and globally Risk of negative perceptions of Hawaii as nothing more than a tourism location in the absence of a coordinated branding and positioning effort Dwindling base of experienced management professionals Possible reductions in corporate investment if industry fails to find compelling reasons to have a strong presence in Hawaii Risk of confusion and loss of focus due to multiple and overlapping state and regional entities involved in knowledge-based, technology-driven economic development Political controversy regarding science and health policy</p>