April 7, 2014

MEMORANDUM

TO: John Holzman
Chair, Board of Regents
University of Hawai‘i

VIA: David Lassner
Interim President, University of Hawai‘i

VIA: Donald Straney
Chancellor, University of Hawai‘i at Hilo

FROM: Matthew Platz
Vice Chancellor for Academic Affairs, University of Hawai‘i at Hilo

SUBJECT: REQUEST TO APPROVE THE CHANGE OF STATUS FROM “PROVISIONAL” TO “ESTABLISHED” FOR THE PHARMD DEGREE OFFERED AT THE DANIEL K INOUYE COLLEGE OF PHARMACY, UNIVERSITY OF HAWAI‘I AT HILO

SPECIFIC ACTION REQUESTED:

It is requested that the University of Hawai‘i Board of Regents approve the change of status from “provisional” to “established” for the PharmD degree offered at the Daniel K Inouye College of Pharmacy, University of Hawai‘i at Hilo (UH Hilo). In addition to the summary of the program below, please find attached a self-study of the program and appendices for your review.

Approval of:

☐ New Program Proposal
☒ “Provisional” to “Established” for the PharmD degree offered at the Daniel K Inouye College of Pharmacy, University of Hawai‘i at Hilo

RECOMMENDED EFFECTIVE DATE:

Upon Board approval
ADDITIONAL COST:

No additional costs are associated with this request.

PURPOSE:

The PharmD degree completed its provisional cycle, and in accordance with Board of Regents’ policy, was reviewed under the procedures of program review at UH Hilo, and recommended for established status.

The Pharm.D program is a four-year course of study leading to the Doctor of Pharmacy (Pharm.D.) degree. The curriculum, rooted in basic, biomedical, and pharmaceutical sciences, is designed for students to acquire knowledge of the scientific underpinnings of pharmacy practice. The social, behavioral and administrative sciences that inform pharmaceutical care are integrated throughout the curriculum. Pharmacy practice arenas of therapeutics, drug information, pharmaceutical care, and experiential education permeate each year through Pharmacy Practice Experiences (PPE). PPE capitalizes on community outreach and service learning that taps into Hawai‘i’s cultural values and diverse biosphere inclusive of its Native Hawaiian Health systems and community practices that embody cultural healing and alternative therapeutics.

BACKGROUND:

Board of Regents’ Policy 5-1 confers upon the Board the authority to grant established status to provisional degree programs. University of Hawai‘i Executive Policy E5.201 requires that requests for a change from provisional to established status respond to questions in Appendix D of the policy. This response is presented in the attached document.

Summary for BOR Academic Affairs Committee review.

Significance/Contribution of this degree:

Thus far three classes of student pharmacists have completed the program and received the Pharm.D. degree. Enrollment in the Pharm.D. program currently stands at 344. Graduates of our PharmD program are now fully licensed registered pharmacists who are gainfully employed throughout the entire State of Hawai‘i, on every neighbor island, in community pharmacies, chain pharmacies, hospitals, long term care facilities, industry, academia, and in PGY1 residency programs. In addition, our graduates are employed in the following states: Alaska, Arizona, California, Colorado, Connecticut, Florida, Hawai‘i, Idaho, Illinois, Indiana, Louisiana, Michigan, Minnesota, New Jersey, New Mexico, Nevada, New York, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Washington and Wisconsin, as well as in Washington DC and Guam.
Employment prospects for professionals in pharmacy are currently good in Hawai‘i and in many other areas of the United States. More distinctive jobs become available all the time for someone with a PharmD degree. An example is one of our inaugural graduates working as a Clinical Coordinator in the MS in Clinical Psychopharmacology program offered by the Daniel K. Inouye College of Pharmacy (CoP). Below are the placement rates for our PharmD graduates from the first two graduating classes.

Both locally and nationally, there is a significant and growing need for the medication expertise only found in those professionals with a PharmD degree. The cost of medication-related hospitalizations and ER visits in Hawai‘i alone is staggering. According to Hawai‘i Health Information Corporation, the charges to payers for medication-related acute care (hospital and ER) in 2010 were $869,528,960. There is ample evidence in the peer-reviewed literature that adding pharmacists to care teams improves quality and reduces costs. Thus, the PharmD program is critical to improving healthcare in Hawai‘i through expansion of the workforce with needed expertise in medication management.

Cost and resource allocation/reallocation implications:

The CoP has become a major economic engine in the State of Hawai‘i. An independent economic impact study revealed the CoP contributes over $50 million per year in economic activity throughout the State. No doubt this is an under-estimate, since the College has attracted over $30 million in extramural support that was not taken into account.
The CoP budget projections have been prepared to cover the start-up phase through FY2016. The 5-year pro forma budget is shown in Appendix E. At full enrollment, the current level of State appropriation to the CoP and tuition will lead to a balanced budget. We expect any surpluses will be used to enhance the pharmacy program. The cost template form can be seen following this summary.

**Demand projections:**

The following is taken directly from the American Association of Colleges of Pharmacy website:

http://www.aacp.org/resources/student/pharmacyforyou/Pages/joboutlook.aspx

“A shortfall of as many as 157,000 pharmacists is predicted by 2020 according to the findings of a conference sponsored by the Pharmacy Manpower Project, Inc. Complete findings are detailed in the final report, 'Professionally Determined Need for Pharmacy Services in 2020.'"

“In December 2000, Health Resources and Services Administration (HRSA) of the Department of Health and Human Services (HHS) released a report, "The Pharmacy Workforce: A Study of the Supply and Demand for Pharmacists." This report, mandated by Congress, was conducted to determine whether and to what extent a shortage of pharmacists exists. The report concludes that there is an increasing demand for pharmacists' service that is outpacing the current and possibly future pharmacist supply. This conclusion is based largely on the growth of vacant positions across the entire range of pharmacy practice sites. "While the overall supply of pharmacists has increased in the past decade, there has been an unprecedented demand for pharmacists and for pharmaceutical care services, which has not been met by the currently available supply," the report says. The report also states that factors causing the shortage are not likely to abate in the near future."

Job prospects are expected to be good over the 2008-18 period. Employers in many parts of the country have previously reported difficulty in attracting and retaining adequate numbers of pharmacists. However, the economic downturn has impacted the need for pharmacists and the number of available hours for pharmacists to work and this is decreasing the level of difficulty in attracting pharmacists. The other factor that may affect job prospects is healthcare reform and its impact on the services that pharmacists provide and the manner that healthcare is delivered. This factor could be variable in either direction. Once the economy stabilizes, we may see a return to the excellent job prospects that have been experienced in the last five years.
Another factor that bodes well for the professional employment is the Affordable Care Act. First of all, it has been estimated by the CBO that approximately 40,000,000 more Americans will receive prescription drug benefits as a result of this Act. In addition, the creations of groups such as Accountable Care Organizations (ACO) are mandated by the Act, and the ACO will include pharmacy services most logically managed by those holding the Pharm.D. degree. At the same time, Medication Therapy Management (MTM), is becoming more prevalent throughout the country, and will likely be commonplace in the near future.

**Accreditation impact (if any):**

The CoP has obtained full accreditation from the Accreditation Council for Pharmacy Education (ACPE) and meets all the requirements set forth by the Western Association of Schools and Colleges (WASC).

**Examples (2-3) of similar models from peer institutions:**

Given that all colleges of pharmacy must abide by the standards and guidelines set forth by ACPE, all colleges of pharmacy can be considered peers. Alternatively, Southwestern Oklahoma State University and Ferris State University may be considered as peers in that they are two State Universities, located in rural areas, and offer a PharmD degree. Links to their mission and vision statements follow:

http://www.swosu.edu/academics/pharmacy/docs/COP-mission-vision-values.pdf

http://www.ferris.edu/HTMLS/colleges/pharmacy/mission/homepage.htm

**Similar programs at other UH campuses (if duplication, why is this program necessary):**

The Daniel K. Inouye College of Pharmacy is the only college of pharmacy in the State of Hawai‘i. There are no similar programs in the UH System.

**Statement from campus administration of new program’s strategic value within the UH priorities.**

UH Hilo is proud to be home to the Daniel K. Inouye College of Pharmacy, the only College of Pharmacy in the state of Hawai‘i and in the Pacific Region. In a few short years the College has become a mature success. It has now graduated several outstanding
classes of students, and these graduates have matriculated to excellent professional placements at impressive rates. The faculty have successfully competed for federal funds and do research that improves the health care of the people of Hawai‘i. The Pharm D program of the Daniel K. Inouye College of Pharmacy is among the top strategic priorities of UH Hilo.

**ACTION RECOMMENDED:**

It is recommended that the University of Hawai‘i Board of Regents approve the change of status from “provisional” to “established” for the Pharm D degree offered at the Daniel K Inouye College of Pharmacy, University of Hawai‘i at Hilo.

Attachments  
Academic Program Cost and Revenues Template  
Self-Study in Support of Change from Provisional to Established Status

Cc:  
Cynthia Quinn, Executive Administrator and Secretary of the Board of Regents  
Joanne Itano, Interim Executive Vice President for Academic Affairs
Doctor of Pharmacy (PharmD) Program
The Daniel K. Inouye College of Pharmacy
University of Hawaiʻi - Hilo

A SELF-STUDY IN SUPPORT OF CHANGE FROM PROVISIONAL TO
ESTABLISHED STATUS

1. IS THE PROGRAM ORGANIZED TO MEET ITS OBJECTIVES?

Program Description:

The Daniel K. Inouye College of Pharmacy University of Hawaiʻi – Hilo (CoP) offers a four-year course of study leading to the Doctor of Pharmacy (PharmD) degree. The curriculum, rooted in basic, biomedical, and pharmaceutical sciences, is designed for students to acquire knowledge of the scientific underpinnings of pharmacy practice. The social, behavioral, and administrative sciences that inform pharmaceutical care are integrated throughout the curriculum. Pharmacy practice areas of therapeutics, drug information, pharmaceutical care, and experiential education permeate each year through Introductory and Advanced Pharmacy Practice Experiences (IPPE and APPE). These IPPE and APPE capitalize on community outreach and service learning that taps into Hawaiʻi’s cultural values and diverse biosphere inclusive of its Native Hawai’ian Health systems and community practices that embody cultural healing and alternative therapeutics. The wide range of medical specialties available among different healthcare institutions throughout the United States and U.S. Territories such as Guam, American Samoa and Puerto Rico provide clinical sites to fulfill ACPE requirements. The CoP embraces the Institute of Medicine’s (IOM) five core competencies for the health science disciplines as key components of the curriculum. These include patient safety, patient centered care, team relationships, technologically informed practices and inter-professional education (IPE), which are also endorsed by the American Association of Colleges of Pharmacy (AACP).
Objectives of the program:

1. Produce graduates with competencies of entry-level pharmacists.
2. Satisfy the educational requirements for licensure as a pharmacist.
3. Socialize doctoral students to pharmacy as a profession and a health science discipline.
4. Educate pharmacists to deliver healthcare within the quality philosophy of Institute of Medicine (IOM) and IOM core competencies in health professions education.
5. Stimulate doctoral students in the quest for scholarship in research and practice.
6. Prepare the next generation of pharmacy leaders.

Prospects for graduates:

Graduates of the PharmD program seek employment with community pharmacies, chain pharmacies, hospitals, long term care facilities, industry, academia, and in PGY1 residency programs. Our graduates are employed in the following states: Alaska, Arizona, California, Colorado, Connecticut, Florida, Hawai‘i, Idaho, Illinois, Indiana, Louisiana, Michigan, Minnesota, New Jersey, New Mexico, Nevada, New York, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Washington and Wisconsin, as well as in Washington DC and Guam.

Employment prospects for professionals in pharmacy are currently good in Hawai‘i and in many other areas of the United States. More distinctive jobs become available all the time for someone with a PharmD degree. An example is one of our inaugural graduates working as a Clinical Coordinator in the MS in Clinical Psychopharmacology program offered by the CoP. A partial list of the employment of the PharmD graduates can be seen in Appendix A. Below are the placement rates for our PharmD graduates from the first two graduating classes.
Admission Requirements:

To be eligible for admission to the PharmD program, students must meet the following minimum requirements:

- **Prerequisite Courses:** Admission is contingent upon the successful completion of all prerequisite courses with a minimum grade of "C" (C- grades are not accepted). Students may be in the process of completing prerequisite coursework (see below) at the time of application.

**International Applicants** must also complete a minimum of 30 semester hours of coursework in the United States at any regionally-accredited college or university. Of the 30 required semester hours, 15 semester hours must be allocated to non-remedial science courses.

<table>
<thead>
<tr>
<th>Required Prerequisite Courses</th>
<th>Semester Hours</th>
<th>Quarter Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Biology I &amp; II for Science Majors with Labs</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Microbiology with Labs</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>General Chemistry I &amp; II for Science Majors with Labs</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Organic Chemistry I &amp; II for Science Majors with Labs</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Human Anatomy &amp; Physiology I &amp; II with Labs</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Calculus I or Advanced Calculus</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>English (including 3 credits composition)</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>A course that includes a World/Cultural Diversity component</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Social/Behavioral Sciences</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Communications (with a public speaking component)</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>66</strong></td>
<td><strong>99</strong></td>
</tr>
</tbody>
</table>
• **Pharmacy College Admission Test (PCAT):** The PCAT is required for applying to the CoP. The CoP will not accept any other admission test in place of the PCAT. All PCAT scores must be sent to PharmCAS (this is an organization that disseminates applications to all enrolled college of pharmacy’s). Applicants are encouraged to take the PCAT in July or September of the application year or earlier.

• **PharmCas Application:** Students must apply and submit a complete application through PharmCAS. A complete application includes a personal statement, PCAT scores, two professional letters of recommendation (electronic letters of reference are acceptable), applicable fee(s), and official transcripts from all regionally-accredited colleges and/or universities attended.

• **Early Decision Deadline:** The CoP participates in the PharmCas Early Decision Program which is a **binding** option for applicants who have decided that a particular pharmacy degree program is their first choice and that they will enroll if accepted.

• **Supplemental Application:** Upon receipt of an applicant’s PharmCAS application, the CoP Admissions Committee formally requests, via email, that the applicant complete a supplemental application, technical standards form, and residency declaration form, as well as submit a non-refundable $50.00 application fee. A due date is indicated in the email.

The CoP operates on a competitive, rolling admissions process. **Early submission of applications is strongly recommended.** Applicants are responsible for tracking the progress of their application and verifying that all necessary documents have been received by the UH Hilo Office of Student Services. The application review process begins in August each year and continues until all seats are filled. Upon receipt of all required application components noted above, the complete file and applicant profile will be reviewed by the CoP Admissions Committee. At that time, the Committee decides to invite the candidate for an interview, place the candidate on hold for further review, or reject the applicant. Eligible students are invited for a personal interview. CoP conducts closed file interviews. This approach was selected by the Admissions Committee as it helps remove preconceived biases based on students' experiences, grades, test scores, personal statements, etc. Interviews are conducted from December through May with additional interviews as needed. Complete applications and interview scores are reviewed by the Admissions Committee for final admission decisions.
Transfer Applicants:

The CoP may accept transfer students from other ACPE accredited pharmacy schools, as long as these students are in good academic standing and have legitimate reasons for seeking a transfer. Transfer applicants must have completed or be in the process of completing all required prerequisite courses listed on the admissions website.

Transfer students will only be accepted for Fall enrollment. Complete applications for transfer are due by February 1st of the matriculation year. It is important to note that there is no guarantee that coursework taken at a previous College of Pharmacy will transfer into The Daniel K. Inouye College of Pharmacy at the University of Hawai'i at Hilo. Students may only transfer didactic coursework, Introductory Pharmacy Practice Experience (IPPE), or Advanced Pharmacy Practice experience (APPE) will not be considered for transfer credit.

To be considered for transfer the applicant must meet all of the following criteria:

1. Complete, or be in the process of completing all required prerequisite courses with a grade of C or better, as listed on the admissions website.
2. Have a minimum GPA of 3.0 or higher and be in good academic standing in an ACPE accredited pharmacy school.
3. Have a legitimate reason for seeking transfer.
4. Submit all of the application materials as indicated below.

To apply as a transfer student, they do not complete a PharmCAS application, but instead they need to submit the following documents:

1. A letter to the Director of Student Services indicating why the applicant wishes to transfer and explaining any difficulties encountered at his/her current institution.
2. Official transcripts from all institutions attended - undergraduate, graduate, and professional.
3. A catalog and a detailed pharmacy syllabus for any courses for which advanced standing consideration is requested.
4. A letter from the Dean of the pharmacy school/college in which the student is enrolled. The letter must indicate the student’s current academic status and/or terms of withdrawal/dismissal.
5. The applicant must also complete a CoP Supplemental Application Form, residency declaration form and submit a $50 application fee (instructions for this process and application forms are available via email request to pharmacy@Hawai'i.edu).

Upon receipt of all required application components noted above, the complete file and applicant profile will reviewed by the Associate Dean for Academic Affairs. If the review is positive the applicant’s file will be forwarded to the Admissions Committee for consideration. Additional documents, or letters of recommendation may be required as determined necessary by the Associate Dean for Academic Affairs of CoP, or by the Chair of Admissions Committee. After review of the application, the Admissions Committee will decide to invite the applicant for an interview or reject the applicant.

Students who are not currently in good academic standing at their pharmacy school will not be considered for transfer admission.

Advanced Standing and Transfer of Credits:

All requests for advanced standing by newly admitted, transfer, readmitted, or enrolled students are processed on a course-by-course basis. Advanced standing will be considered only for coursework taken in which a letter grade of “C” or better has been achieved. To request such consideration, a student would need to submit a letter of request to the Associate Dean for Academic Affairs in which the student lists a course(s) previously taken, which might be similar in content to a profession all course(s) that he/she is scheduled to take. The student is also advised to provide an official course description(s) and a syllabus (syllabi) of the course(s) previously taken. All requests must be submitted prior to the start of the course being considered. The materials are forwarded to the Course Coordinators who provide a recommendation to the Associate Dean for Academic Affairs of UHH CoP. The Associate Dean will either grant or deny advanced standing.

Program Curriculum:

Professional Year 1 Fall Courses - Total of 17 credits

- PHPP 501 Introductory Pharmacy Practice Experiential (IPPE) I (1)
- PHPS 504 Pharmaceutical Immunology (3)
- PHPS 501 Biochemistry—biomolecules (3)
- PHPS 505 Pharmaceutics I (3)
- PHPP 511 Culture & Inter-professional Health Care (2)
- PHPS 503 Pharmaceutical Calculations (2)
- PHPS 512 Introduction to the Pharmaceutical Sciences (3)

**Professional Year 1 Spring Courses - Total of 17 credits**

- PHPP 502 Introductory Pharmacy Practice Experiential (IPPE) II (1)
- PHPP 508 Introduction to Biostatistics (3)
- PHPS 509 Pathophysiology (4)
- PHPS 502 Biochemistry—metabolism (3)
- PHPS 506 Pharmaceutics II (3)
- PHPP 510 Foundation of Integrated Therapeutics and OTC drugs (3)

**Professional Year 2 Fall Courses - Total of 19 credits**

- PHPP 503 Introduction Pharmacy Practice Experiential (IPPE) III (1)
- PHPP 506 IPPE Retail Rotation (1)
- PHPP 514 Evidence-Based Medicine (3)
- PHPP 515 Integrated Therapeutics I (7)
- PHPS 511 Pharmacokinetics (3)
- PHPP 527 Drug Information (2)
- PHPP 528 Pharmacy Communications (2) 50% of Cohort
- Elective (2). Choose two credits of elective – 50% of Cohort

**Professional Year 2 Spring Courses - Total of 17 credits**

- PHPP 504 Introduction Pharmacy Practice Experiential (IPPE) IV (1)
- PHPP 520 Pharmacy Law and Ethics (3)
- PHPP 523 Wellness, and Disease Prevention (2)
- PHPP 516 Integrated Therapeutics II (7)
- PHPP 528 Pharmacy Communications (2) – 50% of Cohort
- PHPP 519 Health Care Systems (2)
- Elective (2). Choose two credits of elective - 50% of Cohort

**Professional Year 3 Fall Courses - Total of 16 credits**

- PHPP 505 Introduction Pharmacy Practice Experiential (IPPE) V (1)
- PHPP 522 Pharmacy Practice Management and Marketing (2)
- PHPP 517 Integrated Therapeutics III (7)
- PHPP 525 Complementary Medicine (3)
- Electives (3). Choose three credits of electives:

**Professional Year 3 Spring Courses - Total of 16 credits**

- PHPP 524 Pharmacoeconomics (3)
• PHPP 518 Integrated Therapeutics IV (7)
• PHPP 521 Applied Pharmaceutical Care (3)
• PHPS 591 Basic and Applied Toxicology (3)

Professional Year 4 Courses - Total of 36 credits

• Fourth Year (P-4) - Advanced Professional Practice Experiences: 42 weeks
  ✓ PHPP 540 Advanced Pharmacy Practice Experiential - Ambulatory Care (6)
  ✓ PHPP 541 Advanced Pharmacy Practice Experiential - Community Practice (6)
  ✓ PHPP 542 Advanced Pharmacy Practice Experiential - Medicine (6)
  ✓ PHPP 543 Advanced Pharmacy Practice Experiential - Hospital Pharmacy (6)
  ✓ PHPP 544 Advanced Pharmacy Practice Experiential - Elective I (6)
  ✓ PHPP 545 Advanced Pharmacy Practice Experiential - Elective II (6)

Electives – 6 credits

• PHPP 546 Advanced Pharmacy Practice Experiential – Elective III (6)

Electives - 2 Credits

• PHPP 550 History of Pharmacy (2)
• PHPS 550 Genetics in Medicine (2)
• PHPP 555 Overview of Veterinary Medicine and Veterinary Pharmacology (2)

Electives – 1 Credit

• PHPP 553 Current Topics in Health Care
• PHPP 557 Personal Finance
• PHPP 554 Zoonotic Diseases
• PHPP 564 Advanced Managed Health Care
• PHPP 560 Pharmacy Leadership
• PHPS 553 Radioactivity in Pharmacy
• PHPS 554 Herbal Medicine and Hawai‘ian Medicinal Plants
• PHPS 555 Geographic (Tropical) Medicines
• PHPS 559 Environmental Toxicology
• PHPS 562 Discovery & Development of Blockbuster Drugs
• PHPS 563 Current Advances in Neuropharmacology
• PHPS 565 Genetics & Pharmacology of Malaria
• PHPS 561 Emerging Trends of Drug Discovery
• PHPS 567 Pharmacogenetics
• PHPS 568 Antibiotic Mechanisms
• PHPS 569 Cancer Prevention
• PHPP TBD Pharmacy and Therapeutics Committees
Curriculum in professional schools such as colleges of pharmacy is much more dynamic than in most undergraduate and graduate programs. This is due to many factors including the constant influx of new drugs, new understanding of disease states, changing evidence based on new findings in clinical trials, all forming the basis for changing in practice guidelines. Elective course offerings change based on the areas of expertise of new faculty hires.

All changes in the Curriculum must go through a rigorous process before being implanted: starting at the CoP Curriculum Committee followed by approval of the entire faculty of the CoP, after that all changes go through the UH Hilo curricular review process. Some of the more significant changes since the original curriculum was proposed include, decreasing the credit hours for biochemistry, increasing the credit hours of the Integrated Therapeutics courses (that include the disciplines of pathophysiology, pharmacology, medical chemistry and therapeutics), and decreasing the hours dedicated to pharmacokinetics. The most recent significant change was adding courses in Drug Information and Communication. These changes are related to program objective four: Educate pharmacists to deliver healthcare within the quality philosophy of Institute of Medicine (IOM) and IOM core competencies in health professions education. The creation of a Pharmacy Leadership elective goes toward fulfilling program objective five: Prepare the next generation of pharmacy leaders.

Student Services Offered:

The CoP Office of Student Services works in conjunction with the UH Hilo Division of Student Affairs in order to offer CoP students the broadest and most comprehensive range of services and to encourage their academic and personal success while at the CoP. Students of the CoP have access to personal and professional counseling, personal mediation services, crisis services, academic aid, and financial aid.

Academic Advising and Career Counseling for PharmD Students:

Academic, career, and personal counseling and advising is a recognized need for PharmD students. In order to meet this need, CoP has made these services easily accessible to our students. Academic and career advising and counseling is facilitated through faculty advisors who are able to address the specific academic and career concerns and questions for CoP students effectively. Each CoP student is assigned to an academic advising group nominally composed of six students and an advisor (faculty member) during orientation of their P1 year. An attempt is made to have the composition of the groups be as culturally diverse as possible.
Faculty advisor responsibilities include:

- Serving as the student’s advisor and academic/professional counselor.
- Overseeing and monitoring the academic progress and professional growth of the student.
- Assisting the student in seeking academic and personal counseling services provided by the institution.
- Serving as an advocate for the student when appropriate.

Student advising is required of all CoP faculty members. Faculty advisors meet with each student individually at least once per semester. In addition to faculty advisors, the Dean, Associate Deans, Director of Student Services, and the Academic Advisement Specialist as well as other faculty members are also available to assist students with academic advising, counseling, enrichment, and non-academic concerns. This goes toward fulfilling program objective three: Socialize doctoral students to pharmacy as a profession and a health science discipline.

**Student Organizations and Leadership Opportunities:**

The CoP offers its student pharmacists numerous opportunities to get involved in student organizations. During the 2013-2014 academic year the college will have fifteen student organizations; nine professional pharmacy organizations, two student-led community service project initiatives, and four student councils that represent each of the four cohorts of professional students.

**Professional Student Pharmacist Organizations**

- UHH Student Chapter of American Association of Pharmaceutical Scientists (AAPS)
- Academy of Managed Care Pharmacy Student Chapter (AMCP)
- American Pharmacist Association – Academy of Student Pharmacists Hawai‘i Chapter (APhA-ASP)
- Hawai‘i Student Society of Health-Systems Pharmacy (HSSHP)
- Kappa Psi Pharmaceutical Fraternity Epsilon Psi Chapter
- UHH Chapter of National Community Pharmacist Association (NCPA)
- Phi Delta Chi Professional Pharmacy Fraternity Gamma Theta Chapter
- Phi Lambda Sigma Pharmacy Leadership Society Delta Lambda Chapter
- Rho Chi Academic Honor Society in Pharmacy Delta Iota Chapter

**Student-Led Community Service Project Initiatives**

- A Life of Healing and Awareness (A.L.O.H.A.) Project
- Pacific Islander Mobile Screening Clinic (P.I.M.S.C.)
Student Councils

- Class of 2014 Student Council
- Class of 2015 Student Council
- Class of 2016 Student Council
- Class of 2017 Student Council

Each student organization has a different focus and mission: Some of the organizations have interests based on community pharmacy, clinical pharmacy, or research, and some are focused on professional development in different areas such as leadership or academics. All of the student organizations practice community service to varying degrees. All CoP student organizations have a designated faculty advisor. Also, a student services staff member is designated to support all organizations in their operations. Every student pharmacist in the college has the opportunity to become involved in any of the twelve student organizations available to them, and many do get involved. Total membership in each organization can range from over 20 to 120 student pharmacists. Across all of the organizations, there are over 70 elected positions available for student pharmacists to gain various types of leadership experience. These student groups help toward fulfilling program objectives three: Socialize doctoral students to pharmacy as a profession and a health science discipline, and five: Prepare the next generation of pharmacy leaders.

Passing the North American Pharmacist Licensure Examination (NAPLEX):

After a PharmD student has graduated from an accredited college of pharmacy, but before they can practice pharmacy, they must pass the NAPLEX. The NAPLEX is administered and controlled by the National Association of Boards of Pharmacy (NABP). The following is taken directly from the NABP website, “The NAPLEX, or North American Pharmacist Licensure Examination, measures a candidate’s knowledge of the practice of pharmacy. It is just one component of the licensure process and is used by the boards of pharmacy as part of their assessment of a candidate’s competence to practice as a pharmacist.” The overall pass rate of our first two CoP graduating classes is approximately 96.5%. This goes toward fulfilling program objective two: Satisfy the educational requirements for licensure as a pharmacist.
Student Scholarly Endeavors:

It can be readily seen by the following lists the level of involvement our students demonstrate in the area of research and goes toward fulfilling learning objective five: Stimulate doctoral students in the quest for scholarship in research and practice. At any point in time during an academic semester a minimum of 50 PharmD students are engaged in either pharmaceutical science or pharmacy practice research.

Publications: (student names are in bold)


Poster Presentations and Abstracts:


Engen W., Morris K., Hamad M. Impact of hydration state on levothyroxine sodium chemical stability (Poster). American Society of Health System Pharmacist (ASHP) 2011 Midyear Clinical Meeting, New Orleans, LA; presented December 5, 2011

Goldsberry, J., Stevens, J., Tokumaru, S., Goo, R. (2012) Appropriate Use of Epoetin Alfa (Procrit) for Patients with Chronic Renal Insufficiency on Kaua‘i, HI. Presented at ASHP Midyear Clinical Meeting 2012 in Las Vegas, NV


Kim, P, Sakamoto, S, Ma, C. Reviewing the transition and aftermath of patients switched over from Warfarin to dabigatran in an outpatient clinic, Follow up and Results, ASHP Midyear Meeting 2012, Las Vegas, NV

Kim, P, Sakamoto, S, Cheng, B, Voidtriede, C, Ma, C. “Reviewing the transition and aftermath of patients switched over from warfarin to dabigatran in an outpatient clinic”, ASHP Midyear Meeting 2011, New Orleans, LA


Masri, J., Goldsberry, J., Kang, M., Batz, F. (2013) Student-directed implementation of a community health fair in a rural setting (poster); presented at the University of Hawai‘i at Hilo Inaugural ALEX Student Research Conference, Hilo, HI (Feb 2013).

Masri, J., Goldsberry, J., Kang, M., Batz, F. (2013) Student-directed implementation of a community health fair in a rural setting (poster); presented at the Hawai‘i Pharmacists Association 2013 Annual Meeting, Honolulu, HI (Apr 2013).


Instructional Videos Developed at UHH for PharmD Curriculum:


Mapping of Course Material to Professional Outcomes:

The CoP recently mapped all the content of core courses, both didactic and experiential, to our Professional Terminal Degree Outcomes for Student Pharmacists. The map can be found in Appendix B. The mapping was done by the faculty in each course focusing on what students should be able to do in a professional environment upon completion of the curriculum. The Assessment Committee chose a performance level scale originally developed by Miller (1990) for medical education, and subsequently used by other health professions including nursing and pharmacy (level 1 knows, level 2 knows how, level 3 shows how, level 4 does) to insert into map. This map was reviewed by both the Assessment and Curriculum Committee to assure that all terminal outcomes were adequately covered in the curriculum. This mapping goes toward fulfilling program objective one: Produce graduates with competencies of entry-level pharmacists.
2. IS THE PROGRAM MEETING ITS LEARNING OBJECTIVES FOR STUDENTS?

The American Association of Colleges of Pharmacy (AACP) annually administers anonymous, standardized surveys of preceptors (professional pharmacists who supervise students in their clinical rotations), alumni, and faculty on various aspects of program quality. The results reported below are from the “Curriculum” section of each survey, which measures the impact of the program on students’ professional knowledge and abilities.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Preceptor 2012 (n=115)</th>
<th>Alumni (Class of 2011) (n=34)</th>
<th>Faculty 2012 (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The PharmD program prepares students to develop and use patient-specific pharmacy care plans.</td>
<td>93.8%</td>
<td>100.0%</td>
<td>96.4%</td>
</tr>
<tr>
<td>2. The PharmD program prepares students to effectively manage a patient-centered pharmacy practice.</td>
<td>93.6%</td>
<td>100.0%</td>
<td>89.3%</td>
</tr>
<tr>
<td>3. The PharmD program prepares students to develop disease management programs.</td>
<td>90.0%</td>
<td>93.9%</td>
<td>96.3%</td>
</tr>
<tr>
<td>4. The PharmD program prepares students to manage the system of medication use.</td>
<td>99.1%</td>
<td>96.9%</td>
<td>92.9%</td>
</tr>
<tr>
<td>5. The PharmD program prepares students to promote the availability of health promotion and disease prevention initiatives.</td>
<td>98.1%</td>
<td>97.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>6. The PharmD program prepares students to communicate with patients, caregivers, and other members of the interprofessional health care team.</td>
<td>96.5%</td>
<td>97.1%</td>
<td>89.3%</td>
</tr>
<tr>
<td>7. The PharmD program prepares students to search the health sciences literature.</td>
<td>96.5%</td>
<td>100.0%</td>
<td>81.3%</td>
</tr>
<tr>
<td>8. The PharmD program prepares students to evaluate the health sciences literature.</td>
<td>92.9%</td>
<td>97.1%</td>
<td>90.6%</td>
</tr>
<tr>
<td>9. The PharmD program prepares students to demonstrate expertise in the area of informatics (resources, devices, and methods required to optimize the acquisition, storage, retrieval, and use of information in pharmacy and healthcare).</td>
<td>93.7%</td>
<td>94.1%</td>
<td>89.7%</td>
</tr>
<tr>
<td>10. The PharmD program prepares students to apply state and federal laws and regulations to the practice of pharmacy.</td>
<td>97.2%</td>
<td>85.3%</td>
<td>96.7%</td>
</tr>
<tr>
<td>11. The PharmD program prepares students to maintain professional competence.</td>
<td>99.1%</td>
<td>97.0%</td>
<td>90.6%</td>
</tr>
</tbody>
</table>
Surveys of student satisfaction with instructional aspects of the program:

Each term the College administers online, anonymous, course and instructor evaluations for all didactic courses.

<table>
<thead>
<tr>
<th>Results of Instructor Evaluations for Most Recent Term, Fall 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Scale 1= Strongly Disagree, 2= Disagree, 3 = Agree, 4 = Strongly Agree)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Non-response</th>
<th>Applicable Answers</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>The course covered the material this instructor stated it would in the syllabus.</td>
<td>119</td>
<td>3648</td>
<td>3.55</td>
<td>0.55</td>
</tr>
<tr>
<td>The reading materials assigned for the course facilitated my learning.</td>
<td>298</td>
<td>3469</td>
<td>3.45</td>
<td>0.61</td>
</tr>
<tr>
<td>The instructor was available during office hours or by appointment when requested.</td>
<td>665</td>
<td>3102</td>
<td>3.54</td>
<td>0.56</td>
</tr>
<tr>
<td>When students asked the instructor questions, the instructor responded in a helpful way.</td>
<td>116</td>
<td>3651</td>
<td>3.51</td>
<td>0.59</td>
</tr>
<tr>
<td>Students seemed comfortable interacting with and asking questions of the instructor.</td>
<td>113</td>
<td>3654</td>
<td>3.52</td>
<td>0.59</td>
</tr>
<tr>
<td>The instructor was consistently well-prepared for class.</td>
<td>126</td>
<td>3641</td>
<td>3.55</td>
<td>0.58</td>
</tr>
<tr>
<td>The instructor was able to explain concepts clearly.</td>
<td>124</td>
<td>3643</td>
<td>3.46</td>
<td>0.63</td>
</tr>
<tr>
<td>The instructor facilitated my learning of the subject.</td>
<td>126</td>
<td>3641</td>
<td>3.45</td>
<td>0.63</td>
</tr>
<tr>
<td>The instructor’s lectures met the relevant course objectives.</td>
<td>140</td>
<td>3627</td>
<td>3.53</td>
<td>0.56</td>
</tr>
<tr>
<td>The instructor clearly identified the learning objectives for his/her lectures.</td>
<td>144</td>
<td>3623</td>
<td>3.52</td>
<td>0.58</td>
</tr>
<tr>
<td>The content provided by the instructor increased my knowledge of the topic.</td>
<td>122</td>
<td>3645</td>
<td>3.49</td>
<td>0.60</td>
</tr>
<tr>
<td>The instructor explained the concepts in a manner that facilitated learning.</td>
<td>126</td>
<td>3641</td>
<td>3.46</td>
<td>0.63</td>
</tr>
<tr>
<td>The instructor's lectures were well-organized.</td>
<td>141</td>
<td>3626</td>
<td>3.50</td>
<td>0.62</td>
</tr>
<tr>
<td>The instructor’s quiz and exam questions reflected the learning objectives.</td>
<td>349</td>
<td>3418</td>
<td>3.45</td>
<td>0.66</td>
</tr>
<tr>
<td>The instructor regularly checked for student understanding.</td>
<td>161</td>
<td>3606</td>
<td>3.46</td>
<td>0.61</td>
</tr>
</tbody>
</table>
It is apparent from the results of the two surveys shown above that the PharmD program is meeting its learning objectives for students.

3. ARE PROGRAM RESOURCES ADEQUATE?

The Dean heads the CoP. There are currently two Associate Deans positions (Research and Academic Affairs). The College consists of two Departments each headed by a Chair. Currently, the Department of Pharmaceutical Sciences consists of 15 full-time tenure-track/tenured faculty, two non-tenure-track instructors, one non-tenure-track Assistant Specialist, and one staff member, located in four buildings on the Island of Hawai‘i (Hilo). The tenure-track/tenured faculty members are responsible for teaching the curriculum, performing research in their area of specialty, and providing a variety of committee-based service at the CoP and UH Hilo. The two instructors are integrated in the curriculum and offer laboratory-based practical coursework in pharmacy and genetics. The Assistant Specialist teaches individual classes in her field of expertise, assists in the pharmacy laboratory course, and acts as senior laboratory manager in Dean Pezzuto’s laboratory. One staff position is occupied by the department secretary who reports to the Department Chair and assists faculty in departmental matters on a day-to-day basis. In the Department of Pharmacy Practice, there are currently 19 full-time faculty and two staff members located on four main islands. Fifteen full-time tenure track faculty maintain responsibility for teaching both didactic and experiential/clerkship rotations, maintain active patient care services, and provide service and scholarship activities. Three non-tenure track specialists and one instructor also teach didactic coursework, maintain active practices, and teach in the experiential setting. They also have service responsibilities and some scholar activities. The Department of Pharmacy Practice contains the Office of Experiential Education which employs four individuals. This group oversees all activities related to the experiential/clerkship rotations. There is also a department secretary who reports to the Department Chair.

We have recently hired office assistants in each department who will provide support for the unit secretary.
Currently the CoP has 44 active Affiliate Faculty, many serve as preceptors, but others are UH Hilo faculty in various disciplines. The number of faculty and staff continues to increase. Full staffing will entail about 91 employees and will be achieved by 2014 (see Appendix C).

A biographical one-page summary for all current FTE appointments and can be found in Appendix D.

The Daniel K. Inouye College of Pharmacy is part of the financial management of the UH System. A fiscal officer and an assistant fiscal officer have been retained by the CoP. They help to manage financial matters with the assistance of departmental and administrative secretaries. The CoP budget projections have been prepared to cover the start-up phase through FY2016. The 5-year pro forma budget is shown in Appendix E. At full enrollment, the current level of State appropriation to the CoP and tuition will lead to a balanced budget. We expect any surpluses will be used to enhance the pharmacy program.

The initial annual tuition of the College was set at $15,000 for residents and $30,000 for nonresidents. The current tuition schedule endorsed by the BOR is shown in Appendix F. We have established our own academic calendar such that P4 students working through the summer of their third year are not required to pay additional tuition (i.e., the entire program is eight semesters). The entering class size is 90. Our attrition rate is low. We aim to maintain a student body of 50% residents and 50% nonresidents.

A list of extramural funding received by CoP faculty is summarized in Appendix G. We anticipate growth in this area over the years.

**Projections:**

The table below shows the total staffing plan, student body, and budget surplus. It is expected any surplus will be utilized for program development. More details are provided in Appendices C, E, and F.

### Planned Growth for CoP

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensated Staff</td>
<td>75</td>
<td>88</td>
<td>91</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>Student Body</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Surplus</td>
<td>$147,568</td>
<td>$24,172</td>
<td>$162,464</td>
<td>$2,156</td>
<td>$47,348</td>
</tr>
</tbody>
</table>
UH Hilo College of Pharmacy Private Fundraising Update:

As part of the University of Hawai‘i System, CoP continues to partner with the University of Hawai‘i Foundation, the private, not-for-profit 501(c)(3) organization which raises private, non-governmental funds on behalf of the UH System. Since beginning private fundraising on behalf of the newly established College of Pharmacy in 2004-2005, the UH Foundation has raised a total of $2,110,615 to date. This represents approximately 10% of total fundraising results ($21,880,698) for the entire UH Hilo campus during that same period. Of the $2.1 million raised, some $282,933 has been directed by donors to be invested in the UH Foundation endowment to provide a permanent source of funding for College of Pharmacy initiatives. The endowment has earned an annualized 8.8% rate of return over the past three years and has paid out 4-5% per year for expenditure in accordance with the terms of donor agreements. Endowed funds currently being invested on behalf of the College of Pharmacy include four endowed scholarship funds and one endowed faculty development fund. In addition to its four permanently endowed scholarships, the CoP has also benefited from an array of 13 annual scholarship funds. Donors include national pharmacy chains (CVS Caremark, Walgreens, Wal-Mart, etc.), as well as local companies (Aloha Shoyu Company), and community members, including retired pharmacists. During 2012-2013, a total of 39 PharmD students are benefiting from private scholarships at the College of Pharmacy.

The corporate community has also been generous in supporting the college through sponsorship of other activities, including the annual White Coat Ceremony (which KTA Super Stores, CVS Caremark and Walgreens have all supported), the Dean’s Welcome Reception, marketing case study competitions, diversity training programs, student job fairs, and the like. Most recently, Target has stepped forward to support a unique student-run mobile health screening clinic targeted at the underserved Pacific Islander population on Hawai‘i Island.

Another role of the UH Foundation—through its Office of Alumni Relations—is to support the work of the volunteer-led UH Alumni Association through membership services, alumni programming and partnerships, and alumni communication. In 2010-2011, the UH Foundation assisted a group of CoP friends and faculty with the formation of a new UH Hilo College of Pharmacy Alumni and Friends Association. Alumni from the first two graduating classes are being encouraged to give back to the college. Despite the fact that they are just getting started in their careers, and many carry significant student loan obligations, CoP alumni are beginning to respond in encouraging numbers. The inaugural Class of 2011, the Class of 2012, and the Class of 2013 raised funds to establish a new
student scholarship as their graduation class gifts. As of this date, over 25% of CoP’s first two
cohorts of PharmD graduates have already made contributions to the CoP.

The next challenge on the horizon for the CoP is to secure funding for the construction of a
permanent building. While primary funding is being sought from the Hawai‘i State Legislature, we
are working on supplementing this core funding with private gifts. Named giving opportunities have
been crafted by the UH Foundation, with the approval of the UH Board of Regents, and thus far, a
total of $98,450 has been contributed toward the building/design fund. This is in addition to the $1
million gift received in 2009-2010 from the J.M. Long Foundation enabling the expansion of the
temporary modular facility which the College currently occupies.

**Merit Scholarships:**

As summarized in Appendix E under revenue, the budget of the CoP has been reduced by about
$1,300,000 and the money goes into a scholarship pool. In working with the UHH Financial Aid
Committee, some internal resources have been allocated to support CoP students based on merit.
For FY2011, the allocation was $225,000. The CoP has created a paradigm in which approximately
25% of this amount was utilized to attract highly competitive students based on merit. The plans
allowed us to admit four students, two residents and two nonresidents, who will receive a scholarship
that is approximately 50% of the tuition charge. The scholarship will be provided for four years,
pending superior performance in the program. In the first three years, the balance of the scholarship
allocation will be used to support current students who have demonstrated superior performance.
Once the Class of 2014 graduates, equilibrium will be established in which each of the four classes’
will have students who will receive a total of 25% of the allocation. We are confident this program will
help us recruit highly competitive students and maintain a robust program. In the current fiscal year,
the amount of merit scholarship funding allocated for the CoP was increased to $425,000. We are
hopeful further increases will be provided in the future.

**Fiscal Administration:**

Each Department and major unit in the CoP has been assigned a budget for management. The unit
secretary, who reports to the unit director, is primarily in charge, receiving supervision from the
college budget officer. Adjustments are being made in the overall budget assignments and
categories based on our ongoing experience. We expect after one or two more years of adjustments,
the entire process will be stabilized.
Physical Facilities:

**Long Term Plan:** The College continues to pursue its goal of constructing a state-of-the-art permanent facility. It is estimated that this facility will require an expenditure of approximately $66M. To this end, the state legislature has provided $5.5M in funding to plan this new facility. These funds were released by the Governor and the University on October 31, 2009. On September 9, 2010, the University of Hawai‘i named WCIT Architecture of Honolulu to design the permanent home for the College of Pharmacy. Final design plans were completed by December, 2011.

Funding for this building was requested but not provided by the State Legislature in 2012 or 2013. In concert with our University Relations Office, we will continue to be diligent in meeting with our State Representatives and the community-at-large.

**Short Term Accommodations:** The administrative team, faculty and staff offices are now distributed among the County Annex Building on Rainbow Drive, the College’s Interim Modular Facility on campus, and the Waiakea Research Station south of Hilo. Phase 1-B of the Interim Modular Facility, supported by a generous gift from the J. M. Long Foundation, has added a second 2,190 square foot lecture hall, a 1,680 square foot pharmaceutical compounding teaching laboratory, a pharmacy practice laboratory, a 715 square foot student center for student meetings, and eight faculty offices. Both lecture halls are now equipped with audiovisual and distance learning technologies linking our students to professors on Oahu and Maui (and potentially anywhere worldwide), reducing or eliminating the need for faculty to travel to Hilo to deliver their lectures. These additions have allowed us to consolidate all of our didactic activities at the Interim Modular Facility, and we no longer require use of classroom or laboratory space on campus. The completion of Phase 1-B of the Interim Modular Facility has also allowed us to further consolidate the faculty and staff formerly housed at the Wainaku Executive Center with those at the County Annex and the Interim Modular Facility.

**Forestry Building, Nowelo Street:** The College continues to lease one laboratory (1,200 square foot) and associated office space in this facility. This laboratory houses the Dean’s research group as well as some instrumentation used by several other faculty members.

**County Annex Building:** Office space at the County Annex Building on Rainbow Drive currently houses 19 faculty members, including the Chair of Pharmaceutical Sciences, eight staff members and the Pre-Pharmacy Program office. The Dean also maintains his offices in this location. Four
conference rooms of varying size and two support rooms are also located in this facility. A Polycom system has been installed in one of the larger conference rooms at this location.

**Waiakea Research Station:** In addition to research laboratories located at the Interim Modular Facility, the Waiakea Research Station, located five miles south of Campus on Stainback Highway, continues to be a center for much of the research ongoing at the College. This facility houses the research laboratories for 10 of our faculty members as well as a shared instrumentation facility.

While it is clear that having facilities and activities spread across five locations spanning the town of Hilo is somewhat less than optimal, the current situation allows us to move forward with both our teaching and research missions. The faculty, staff, and students all understand that this is a temporary necessity while we work toward our permanent building. The current situation serves to highlight the importance of the construction of a permanent building to consolidate the College’s activities and optimize the relationships of our faculty, staff, and students.

**Research Infrastructure:** Over the last five and a half years, the College has invested heavily in research equipment and infrastructure in order for our faculty to be competitive with their peers when seeking extramural support. A list of major equipment is summarized in Appendix H. This investment is paying off as the research programs of several of our faculty members have attracted federal grants or foundation support. The College will continue to invest in its research infrastructure to the limits of the available budget in order to provide state of the art laboratory capabilities for all of its faculty members.

**IT Infrastructure:** The College has invested in upgrading the internet access capabilities throughout the Interim Modular Facility. Upgrading from 100BaseTX to Gigabit Ethernet service and doubling the number of wireless access points throughout the facility has virtually eliminated internet access problems. Our existing one gigabit/sec Ethernet trunk line to campus will be replaced with a 10 gigabit/sec trunk line as soon as the campus line will accommodate it.

**Outer island offices and sites:** Additional office sites have been added to the various outer islands since there has been placement of faculty to the islands of Oahu (seven faculty), Maui (one faculty) and Kauai (one faculty).

On the island of Oahu, the College maintains an approximately 4,000 square foot facility that houses seven office cubicles for six faculty, three private offices, one conference room, one classroom, and a student lounge. The faculty uses this facility for weekly student seminars in medicine, ambulatory
care, retail and hospital experiential rotations for P2, P3, and P4 students. The distance learning technology enables sharing of sessions with Kauai, Hilo and Maui.

On the island of Kauai, faculty member Dr. Roy Goo is currently housed in a temporary space at Wilcox Memorial Hospital and has access to a distance technology classroom at Kauai Community College. Future plans include leasing an approximate 1,000 square foot office that will house an office and small classroom.

On the island of Maui, faculty member Dr. Anita Ciarleglio retains office space and distance learning capabilities at the Maui Community College continuing education department.
As can be seen in the following figure Pharmacy Practice Faculty practice at sites throughout Hawai’i, on the four major islands, collaborating in the advancement of patient care services. These sites provide both IPPE and APPE rotations.
The figure below shows the IPPE and APPE practice sites across the State of Hawai‘i. Students complete IPPE rotations in Hilo during the fall and spring semesters of both P1 and P2. Students can complete the P1 and P2 summer IPPE rotations at various locations throughout the State.
The APPE sites across the mainland and US Territories are shown below. Students have the opportunity to complete APPE rotations with affiliated sites throughout the mainland including the US Territories. Unique learning opportunities are available to students in Guam, American Samoa, and Saipan. Not depicted below is the affiliated site in Bangkok, Chulalongkorn University, where students have the opportunity to complete an international APPE rotation.
4. IS THE PROGRAM EFFICIENT?

Given the unique accreditation requirements of the PharmD degree, comparisons with other programs in the UH System are not feasible. The PharmD program is exceptionally productive, generating nearly $10M per year in tuition revenue, and operating at a surplus which has allowed the program to subsidize less financially viable initiatives. With no additional resources, the College of Pharmacy has leveraged the resources used to deliver the PharmD degree to offer the following additional degrees:

- BA in Pharmacy Studies
- PhD in Pharmaceutical Sciences

This portfolio of degree offerings distinguishes the UH Hilo PharmD program from others and demonstrates optimal use of College resources. This thriving scholarly environment has resulted in securing numerous competitive federal grants, including prestigious NIH and NSF grants, as well as over $30M in healthcare transformation grants.

Another indicator of program efficiency is the program’s graduation rate. Presently the CoP has graduated three classes of students, the Class of 2011, 2012 and 2013. At this time the graduation success rate is 95%. Since its beginning the CoP has enrolled 537 students into six cohorts of students and less than 3% of these students have left the program due to personal or academic reasons.

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrolled</th>
<th>Left Program</th>
<th>Graduated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 07-Sp 08</td>
<td>91</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2011</td>
<td>91</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Fall 08 – Sp 09</td>
<td>178</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2011</td>
<td>88</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2012</td>
<td>90</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fall 09 – Sp 10</td>
<td>267</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2011</td>
<td>84</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2012</td>
<td>90</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2013</td>
<td>91</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Fall 10 – Sp 11</td>
<td>351</td>
<td>3</td>
<td>84</td>
</tr>
<tr>
<td>Class of 2011</td>
<td>84</td>
<td>0</td>
<td>84</td>
</tr>
<tr>
<td>Class of 2012</td>
<td>89</td>
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<tr>
<td>Class of 2013</td>
<td>86</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2014</td>
<td>92</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fall 11 – Sp 12</td>
<td>353</td>
<td>1</td>
<td>88</td>
</tr>
<tr>
<td>Class of 2012</td>
<td>88</td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>Class of 2013</td>
<td>85</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2014</td>
<td>88</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2015</td>
<td>92</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fall 12 – Sp 13</td>
<td>351</td>
<td>1</td>
<td>85</td>
</tr>
<tr>
<td>Class of 2013</td>
<td>85</td>
<td>0</td>
<td>85</td>
</tr>
<tr>
<td>Class of 2014</td>
<td>84</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2015</td>
<td>94</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Class of 2016</td>
<td>88</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application Cycle for the</th>
<th>Class of 2011</th>
<th>Class of 2012</th>
<th>Class of 2013</th>
<th>Class of 2014</th>
<th>Class of 2015</th>
<th>Class of 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Applicants</td>
<td>229</td>
<td>1035</td>
<td>1161</td>
<td>1042</td>
<td>1088</td>
<td>888</td>
</tr>
<tr>
<td>Matriculated into Program</td>
<td>91</td>
<td>90</td>
<td>90</td>
<td>89</td>
<td>89</td>
<td>88</td>
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</tbody>
</table>
5. EVIDENCE OF PROGRAM QUALITY

Accreditation or other external evaluation:

The CoP PharmD program is fully accredited by the Accreditation Council for Pharmacy Education (ACPE). Full accreditation status is awarded to a program that has met all ACPE standards for accreditation and has graduated its first class. Based upon an on-site visit and thorough review, the UH Hilo College of Pharmacy was granted full accreditation in June 2011 for a period of two years. Continuation will be determined at a future ACPE Board meeting, following a site visit to assess the ongoing progress of the program.

Student performance on external exams: As stated above the NAPLEX is the qualifying exam for pharmacists. Shown in the table below our first time pass rate has increased to 92.86% for the class of 2012. Of the 172 students who graduated in 2011 and 2012, 166 have passed the NAPLEX which represents a overall pass rate of 96.5%.

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>NAPLEX (National Licensing Examination)</th>
<th>Multistate Pharmacy Jurisprudence Examination (MJPE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>School's Passing Rate</td>
<td>Candidates</td>
</tr>
<tr>
<td>2011</td>
<td>81.25%</td>
<td>80</td>
</tr>
<tr>
<td>2012</td>
<td>92.59%</td>
<td>81</td>
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</tbody>
</table>

Another key indicator of the quality of the PharmD program at UH Hilo is that 95% of students graduate on schedule (i.e., within 4 years).
Student Satisfaction:
The CoP results from the AACP survey of graduating students demonstrated that the large majority (81.6% in 2012) of students, after four years in the pharmacy program, would still choose CoP over other schools of pharmacy.

| 86. If I were starting my pharmacy program over again I would choose the same college/school of pharmacy. |
|--------------------------------------------------|--------------------------------------------------|------------------|
| Strongly Agree | Agree | Disagree | Strongly Disagree | Unable to comment |
| 49.1% | 30.8% | 40.1% |
| 45.5% | 50.8% | 42.8% |
| 1.8% | 4.6% | 8.8% |
| 0.0% | 0.0% | 4.5% |
| 3.6% | 13.8% | 3.7% |

Student Awards/Recognitions:

2011:
- **Cherie Chu** – Mylan Excellence in Pharmacy Award
- **Jill Gelviro** – United States Public health Service Excellence in Public Health Pharmacy Practice Award
- **Chris Lai Hipp** – ASHP Student Leadership Award

2012:
- **Wendy Yamasaki-Herring** – Mylan Excellence in Pharmacy Award
- **Prabu Segaran** – United States Public Health Service Excellence in Public Health Pharmacy Practice Award
- **Christopher Lai Hipp** - CoP Student Leader of the Year
- **National Community Pharmacist Association Hawai’i Chapter** - CoP Student Organization of the Year
- **Shanele Shimabuku** - Healthy Eating and Active Living (HEAL) Grant, $16,000
  - Pacific Islander Mobile Screening Clinic

2013:
- **Pacific Islander Mobile Screening Clinic** – AACP Student Community Engaged Service Award
• Amanda Nicolas – UH Hilo Ka Lama Ku Student Leadership Recognition Ike Papalua Award: To have the gift of vision
• A Life of Healing & Awareness (A.L.O.H.A.) Project - UH Hilo Ka Lama Ku Student Leadership Recognition Laulima Certificate: No task is too big when done by all
• Lara Berger, Denise Kobashikawa, Keri Oyadomari – Poster Presentation Honorable Mention, “Pharmacist led protocol for IV to Oral antibiotic switch in an antibiotic stewardship program.” AMCP National Convention
• Kappa Psi, Epsilon Psi Chapter – Traveler’s Award, Pacific West Province
• William Engen – Mylan Excellence in Pharmacy Award
• Marcus Kouma – Natural Medicines Comprehensive Database Recognition Award
• Davis Hanai – United States Public Health Service Excellence in Public Health Pharmacy Practice Award
• Ann Txakeeyang – Lilly Achievement Award

Student scholarship opportunities and recipients for the 2012-2013 school year are as follows:

Community Health Center Success Scholarship in Pharmacy:
The purpose of this award is to provide an annual scholarship to support one UH Hilo College of Pharmacy student through four consecutive years in the Pharm.D. program. To be eligible for consideration students must have graduated from a high school in the state of Hawai‘i, be enrolled full time in the UHH CoP Pharm.D. program, and demonstrate financial need. Preference for this award is for students with an interest in pursuing a career as a pharmacist in a community health center setting and with prior volunteer or work experience, preferably in a federally qualified community health center setting, or alternatively in a hospital. The recipient must maintain good academic standing in the College to continue the award for four years.

Recipient: Edwina Leung, Class of 2015

CoP Inaugural Class of 2011 Scholarship:
Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a minimum GPA of 3.0 and demonstrate leadership and community service that promotes the CoP. This scholarship is available to second, third and fourth year students only.

Recipient: Nicole Tabandera, Class of 2014

CoP Class of 2012 Scholarship:
Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a minimum GPA of 3.0 and demonstrate leadership and community service that promotes the CoP. This scholarship is available to second, third and fourth year students only.

Recipient: Christine Lucas. Class of 2013
Steven Nishimoto, Class of 2014

CoP Wal-Mart Scholarship:
Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have financial need, a minimum 3.0 GPA, desire to enter community practice upon graduation and demonstrated evidence of leadership. Preference for this award will be for individuals who have
achieved high academic standing over the past three years and have previous experience in community practice. The amount of the scholarships will be based on the availability of funds.

Recipient: Mylan Phan, Class of 2013

**CVS Caremark:**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have an interest and commitment to practice in a retail pharmacy setting upon graduation. This scholarship will not be awarded twice to the same individual. The number and amount of the scholarships will be based on the availability of funds.

Recipients: Angela Li, Class of 2013  
Cassie Kim, Class of 2013  
Hai Huang, Class of 2014  
Antonio Verduzco, Class of 2015  
Naoto Oki, Class of 2014  
Trina Tran, Class of 2015  
Nicole Young, Class of 2015  
Michelle-Yen Le-Fisher, Class of 2013  
Keith Acab, Class of 2014  
James Yi, Class of 2014

**Elwin and Valerie Goo Endowed Excellence Scholarship:**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a minimum GPA of 3.5. This scholarship is available to third year and fourth year students.

Recipient: Margaret Kang, Class of 2013

**Good Neighbor Pharmacy Scholarship:**

The purpose of this award is to provide scholarship assistance for third or fourth year students enrolled in the University of Hawai‘i at Hilo College of Pharmacy. Funds shall be used for costs associated with attendance (tuition, books, fees, etc.). Recipients must show academic merit as demonstrated by a minimum cumulative GPA of 2.5, be a student member of the National Community Pharmacists Association for at least six months, and provide evidence of community service. In addition, preference shall be given to past participants of the NCPA Student Business Plan Competition.

Recipient: Nicole Tabandera, Class of 2014

**Haga Family Endowed Scholarship:**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Selection will consider both academic merit and financial need. Recipients must have a 3.0 GPA or higher. Preference is given to Big Island High School graduates. The number and amount of the scholarships will be based on the availability of funds.
Recipients:  Tasha Medeiros, Class of 2013
           Dayna Wong, Class of 2014

**Grace Mizuko Miyawaki Pharmacy Scholarship:**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Preference is given to students who have graduated from a high school in Hawai‘i and demonstrates some degree of financial need. The number and amount of the scholarships will be based on the availability of funds.

Recipient:  Jarred Prudencio, Class of 2015

**Hawai‘i Independent Pharmacies Endowed Excellence Scholarship**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a minimum GPA of 3.5, be a graduate of a high school in the state of Hawai‘i and demonstrate financial need.

Recipient:  Reece Uyeno, Class of 2013
           Ericson Ganotisi, Class of 2015

**J.M. Long Foundation Pharmacy Scholarship:**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo and preference is given to students in their 2nd or 3rd professional year of study. Recipients must have interest in practicing in a retail community setting. The number and amount of the scholarships will be based on the availability of funds.

Recipients:  Jillian Wewers, Class of 2015
           Stacie Takahashi, Class of 2014
           Jaymie Kanda, Class of 2014
           Darian Oshiro, Class of 2015
           Tracy Ng, Class of 2015
           Madison Karr, Class of 2015
           Jizan-Anne Evangelista, Class of 2014
           Mariko Katagiri, Class of 2014
           Shadi Obeidi, Class of 2014
           Chi Ngo, Class of 2015

**Edwin and Georgiana Kam Endowed Excellence Scholarship:**

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a cumulative grade point average of 3.5 or above, be graduates of a high school in the state of Hawai‘i, and preference shall be given to recipients who demonstrate creative initiative and exceptional practices utilizing the skills of a student pharmacist to benefit a need in the community as identified through personal essay, clubs, or activities.

Recipients:  Jozelle Gabriel, Class of 2015
           Melissa Yoneda, Class of 2013
National Association of Chain Drug Stores (NACDS) Foundation Pharmacy Partners Scholarship:

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have interest in pursuing a career in community pharmacy. The number and amount of the scholarships will be based on the availability of funds.

Recipient: Koon Ting, Class of 2014

UH Hilo College of Pharmacy Alumni Association Scholarship

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a 3.0 GPA or higher and demonstrate a strong interest in participating in UHH CoP Alumni Association activities and show leadership and community service that promotes the UH Hilo CoP. This award is available for second, third or fourth year students.

Recipient: Kelly Ishizuka, Class of 2015
Christopher Lai Hipp, Class of 2013

Walgreens Diversity Scholarship:

Scholarships are for full-time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a minimum 2.0 GPA and have demonstrated efforts toward raising awareness and/or educating others of diversity in the Pharmacy profession. This scholarship will not be awarded twice to the same individual. The number and amount of the scholarships will be based on the availability of funds.

Recipient: Shanele Shimabuku, Class of 2013

Aloha Shoyu CoP Scholarship:

Scholarships are for full time students who are pursuing a Pharm.D. degree at UH Hilo. Recipients must have a 3.0 GPA, demonstrate financial need not necessarily as determined by federal guidelines, and must be graduates of a high school in the state of Hawai‘i.

Recipient: Kristi Anne Nishek, Class of 2015

UH Hilo College of Pharmacy Merit-Based Scholarship Award:

This prestigious award recognizes exceptional academic achievements. Scholarship recipients are chosen based on a competitive process which takes into consideration academic and leadership success. Awards are available for incoming and current students enrolled full time in the Pharm.D. program.

Recipients: Christopher Kamei, Class of 2013
Victor Lin, Class of 2013
Marcus Kouma, Class of 2013
Tina McDonald, Class of 2013
Prabu Segaran, Class of 2013
Cheryl Lopez, Class of 2013
Faculty publication record

As can be seen from Appendix I the faculty of the CoP have published extensively.
6. ARE PROGRAM OUTCOMES COMPATIBLE WITH THE OBJECTIVES?

Student Job Placement:

In addition to the overall placement rates of our PharmD graduates shown below that exemplifies the worth of their degree and education: Twenty-eight are currently in residencies or fellowships, one is attending another professional school, and at least three have obtained jobs in academia. This data clearly indicates that we have fulfilling all six of our Program Objectives.

![Placement Rate in Positions Requiring a PharmD for First CoP Graduating Classes](image)

7. ARE PROGRAM OBJECTIVES STILL APPROPRIATE FUNCTIONS OF THE COLLEGE AND UNIVERSITY?

The PharmD degree is well aligned with both campus and university missions and planning priorities. At UH Hilo, the strategic plan clearly states that it is a core responsibility of the University to improve the quality of life of the people of Hawai’i, the Pacific region, and the world. Both locally and nationally, there is a significant and growing need for the medication expertise only found in those professionals with a PharmD degree. The cost of medication-related hospitalizations and ER visits in Hawai’i alone is staggering. According to Hawai’i Health Information Corporation, the charges to payers for medication-related acute care (hospital and ER) in 2010 were $869,528,960. There is ample evidence in the peer-reviewed literature that adding pharmacists to care teams improves quality and reduces costs. Thus, the PharmD program is critical to improving healthcare in Hawai’i through expansion of the workforce with needed expertise in medication management.
The PharmD program also makes a significant contribution to the UH System strategic outcomes and performance measures. As mentioned previously, the PharmD program offers a pipeline to support Native Hawai’ians in achieving the PharmD degree. The College of Pharmacy also makes a major contribution to the state’s economy, with economic impact estimated at $50M per year, not including the grants and contracts generated by its faculty.

On top of being the only College of Pharmacy in the state of Hawai’i, it’s the only one in the Pacific region. As such, our mission includes serving every neighbor island as well as territories through the Pacific. Our vision is to improve health in Hawai’i and throughout the Pacific and to become a top ranked college of pharmacy – more specifically, in the top 25. Essential to this goal is a strong commitment to research and scholarship.

Hawai’i and the University’s unique and extraordinary biological, physical and cultural resources are assets to international collaborative research, teaching, and learning. International collaborations have given students an intellectual and cultural enriching experience and increases their marketability worldwide; faculty an expanded platform for both research and teaching; and economic growth opportunities for Hawai’i and the University.

The College of Pharmacy extends its reach by sending students to conduct clinical rotations in Guam, Saipan, Alaska, and American Samoa. The U.S.-THAI Student Pharmacists and Pharmacists Exchange Program was established in Fall 2011 aiming to promote global health through the exchange of international experiences. The first two student pharmacists visited Chulalongkorn University in Bangkok, Thailand in April 2012. During this six week rotation, the students visited community pharmacies and clinics, both government and private hospitals, along with a traditional Thai medicine pharmacy and patient home visits. The second group of students traveled to Bangkok in November 2012 and the third group of students will visit this upcoming November 2013. A Memorandum of Understanding (MOU) is under discussion for students to conduct rotations at several clinical sites in China. Counter agreements are under review for Chinese students from collaborating Universities to come to CoP’s clinical sites for rotation or clinical observation. Students and research exchanges with Chinese collaborators (e.g. Zhejiang University, Xiamen University, Hainan University, Shanghai Jiaotong University, etc.) are expected to start in Fall 2013. Additionally, CoP has initiated research collaborations and exchanges with a very prestigious Japanese University, Matsuyama University, 4-2 Bunkyo-cho, Matsuyama, Ehime.
Through educating international students, international research collaboration, and clinical rotation programs, the CoP reaches out to countries and areas that need help in health care development. The importance of pharmacists’ role in health care community has been widely accepted around the world. More and more developing countries are in the process of employing higher standards in Pharmacist educational requirements, and higher degree requirements for pharmacy health professional (similar to the PharmD degree). While centered between the East and the West, College of Pharmacy at UH Hilo is positioned and ready to offer valuable contributions to the larger community through various layers of collaborations.

Through our strategic planning process, careful qualitative and quantitative analyses were conducted, and action plans developed to support the achievement of this vision. It is clear from our analyses that Top 25 pharmacy programs are distinguished from others in research excellence that is reflected in significantly greater research funding\(^1\). Accordingly, faculty are recruited with solid credentials and proven track records. They come here with the intent of being associated with a research intensive college and contributing to the achievement of our vision.

In the recent *US News and World Report* rankings, UH Hilo College of Pharmacy was ranked #74 out of 123 ranked pharmacy programs. Of the 42 new pharmacy programs established in or after 2000, only 3 programs ranked higher than UH Hilo. One of those is in a university that has achieved an undergraduate ranking (#12) as one of the Top Public Schools in the Midwest region. The other two are in universities dedicated exclusively to healthcare. Thus, a ranking of #74 for a pharmacy program in a small, primarily undergraduate institution that is categorized as a Liberal Arts College and not ranked is a significant accomplishment and indication of progress toward our vision. The following charts demonstrate how favorably the UHH College of Pharmacy compares with other ranked programs:

---

Mean Total Grants Per Year

Number of Funded Faculty PI

- Blue bars represent Total # funded faculty PI
- Red bars represent Total FTE faculty
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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<th>I</th>
<th>J</th>
<th>K</th>
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<tbody>
<tr>
<td>1</td>
<td>Academic Program Cost and Revenues Template: Provisional to Established (Updated 10/31/12)</td>
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<td>ENTER VALUES IN HIGHLIGHTED CELLS ONLY</td>
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<td>3</td>
<td>UH-H School of Pharmacy</td>
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<td>4</td>
<td>Provisional Years (adjust as needed to show all provisional years)</td>
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<td>5</td>
<td>Year 1</td>
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<td>Year 3</td>
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<td>7</td>
<td>ENTER ACADEMIC YEAR (i.e., 2011-2012)</td>
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<td>8</td>
<td>Students &amp; SSH</td>
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<td>9</td>
<td>A. Headcount enrollment (Fall)</td>
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<td>11</td>
<td>B. Annual SSH</td>
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<td>13</td>
<td>Direct and Incremental Program Costs Without Fringe</td>
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<td>C. Instructional Cost Without Fringe</td>
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<td>C1. Number (FTE) of FT Faculty/Lecturers</td>
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<td>E. Unique Program Costs</td>
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<td>G. Tuition</td>
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<td>Program Cost per SSH With Fringe</td>
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<td>35</td>
<td>K. Instructional Cost with Fringe/SSH</td>
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<td>37</td>
<td>K1. Total Salary FT Faculty/Lecturers</td>
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<td>K2. Cost Including Fringe of K1</td>
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<td>M. Total Program Cost/SSH</td>
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<td>N. Total Campus Expenditure/SSH</td>
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<td>Instruction Cost with Fringe per SSH</td>
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<td>K. Instructional Cost/SSH</td>
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<td>G. Comparable Cost/SSH</td>
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<td>Program used for comparison</td>
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<td>UH-M School of Medicine</td>
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<td>Reviewed by campus VC for Administrative Affairs</td>
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<th>H</th>
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<td><strong>Instructors</strong></td>
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<td><strong>Headcount Enrollment</strong>: Headcount enrollment of majors each Fall semester. Located at: <a href="http://www.hawaii.edu/rm/upa.php?category=Enrollment">http://www.hawaii.edu/rm/upa.php?category=Enrollment</a> Campus data may be used when majors are a subset of enrollment reported in IRR reports.</td>
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<td><strong>Annual SSH</strong>: Course Registration Report located at: <a href="http://www.hawaii.edu/rm/upa.php?title=Course+Registration+Report">http://www.hawaii.edu/rm/upa.php?title=Course+Registration+Report</a> Add the SSH for the Fall and Spring reports to obtain the annual SSH. This is all SSH taught by the program, including non-majors. Adjust if majors are subset of SSH reported.</td>
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<tr>
<td><strong>Instructional Cost without Fringe</strong>: (automated calculation) Direct salary cost for all faculty and lecturers teaching in the program. <em>Formulas for column D: IF(OR(D32&lt;0),D34&lt;0,D32+D34,)</em></td>
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<td><strong>C1. Number of full time faculty and lecturers who are &gt;5 FTE.</strong></td>
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<td><strong>C2. Number of part time lecturers who are &lt;5 FTE.</strong></td>
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<tr>
<td><strong>Other Personnel Cost</strong>: Salary cost (part or full time) for personnel supporting the program (APF, clerical lab support, advisor, etc.) This includes personnel providing necessary support for the program who may not be directly employed by the program and may include partial FTEs. Add negotiated collective bargaining increases and 4% per year for inflation thereafter.</td>
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<td><strong>Unique Program Cost</strong>: Costs specific to the program for equipment, supplies, insurance, etc. For provisional years, this would be actual cost. For established years, this would be projected costs using amortization for equipment and add 4% per year for inflation thereafter.</td>
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<tr>
<td><strong>Total Direct and Incremental Costs</strong>: C + D + E. <em>Formulas for column D: IF(OR(D10&lt;0),D17&lt;0),SUM(D13,D15,D17),)</em></td>
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<td><strong>Tuition</strong>: Annual SSH X resident tuition rate*. <em>Formulas for column D: IF(D10&lt;0,D16</em>D22,)*</td>
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<tr>
<td><strong>Other</strong>: Other sources of revenue including grants, program fees, etc. This should not include in-kind contributions unless the services or goods contributed are recorded in the financial records of the campus and included in Direct and Incremental Costs in this template.</td>
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<td><strong>Total Revenues</strong>: G + H. <em>Formulas for column D: IF(D10&lt;0,D21</em>0),SUM(D21,D23),)*</td>
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<td><strong>Net Cost</strong>: F - I This is the net incremental cost of the program in the campus. A negative number here represents net revenue (i.e., revenue in excess of cost). If there is a net cost, please explain how this cost will be funded. <em>Formulas for column D: IF(AND(D10&lt;0,D16&lt;0),D18-18,)</em></td>
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<tr>
<td><strong>Instructional Costs with Fringe/SSH</strong>: (K2 + K4) / B. <em>Formulas for column D: IF(D10&lt;0),(SUM(D33,D35)/D10,)</em></td>
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<tr>
<td><strong>K1. Salaries without Fringe for Full Time Faculty and Lecturers who are &gt;5 FTE based on FTE directly related to the program. Add negotiated collective bargaining increases and 4% per year for inflation thereafter.</strong></td>
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<td>*<em>K2. K1 X 1.35. <em>Formulas for column D: IF(D32&lt;0),D321</em>35,)</em></td>
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<tr>
<td><strong>K3. Salaries without Fringe for Lecturers who are &lt;5 FTE based on FTE directly related to the program. Add negotiated collective bargaining increases and 4% per year for inflation thereafter.</strong></td>
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<td>*<em>K4. K3 X 1.05. <em>Formulas for column D: IF(D32&lt;0),D34</em>1.05,)</em></td>
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<td><strong>Support Cost/SSH: The campus' non instructional expenditure/sh + systemwide support – organized research (UHM only) as provided by UH Expenditure Report</strong> <a href="http://www.hawaii.edu/rm/upa.php?title=Expenditures+Study">http://www.hawaii.edu/rm/upa.php?title=Expenditures+Study</a> <em>Formulas for column D: IF(OR(D37&lt;0),D38-0),D37</em>1D38<em>D39,)</em></td>
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<td><strong>For example, from the 2010-11 UH Expenditure Report</strong> <a href="http://www.hawaii.edu/rm/upa/php/Expenditures+Study">http://www.hawaii.edu/rm/upa/php/Expenditures+Study</a>, the support expenditures/sh per campus is:</td>
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<td><strong>UHM</strong>: $957,000 + $66 - $128 for organized research = $335</td>
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<td><strong>UHH</strong>: $437 + $45 = $482</td>
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<td><strong>UHWO</strong>: $230.00 + $28 = $258</td>
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<td><strong>Hau CC</strong>: $155.00 + $34 = $189</td>
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<td><strong>Hon CC</strong>: $234.00 + $44 = $278</td>
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<td><strong>Kap CC</strong>: $123.00 + $28 = $152</td>
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<td><strong>Kau CC</strong>: $329.00 + $59 = $387</td>
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<td><strong>Lee CC</strong>: $123.00 + $28 = $150</td>
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<td><strong>Med CC</strong>: $160.00 + $35 = $195</td>
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<td><strong>Win CC</strong>: $264.00 + $40 = $304</td>
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<tr>
<td><strong>Total Program Cost/SSH</strong>: K + L. <em>Formulas for column D: IF(OR(D31&lt;0),D38&lt;0),D31</em>D38,)*</td>
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<td><strong>Total Campus Expenditure/SSH</strong>: Taken from UH Expenditure Report. For example, for 2009-2010: UHM = $925-131 (organized research) = $782, UHH = $662, UHWO = $501, Hon CC = $408, Kap CC = $318, Kau CC = $798, Lee CC = $320, Med CC = $398, Win CC = $457</td>
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<td><strong>Comparative Program/Division Incremental Cost/SSH</strong>: Taken from UH Expenditure Report <a href="http://www.hawaii.edu/rm/upa.php?title=Expenditures+Study">http://www.hawaii.edu/rm/upa.php?title=Expenditures+Study</a> or campus data, as available. Please note in the space provided, the program used for the comparison.</td>
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<td><strong>Rev. 10.31.12</strong></td>
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Appendices
Appendix A

Employment of the PharmD graduates
<table>
<thead>
<tr>
<th>Name</th>
<th>UHH-CoP Graduation Year</th>
<th>Employer</th>
<th>Position</th>
<th>Employer City</th>
<th>Employer State</th>
<th>Employer Primary Practice</th>
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<tbody>
<tr>
<td>Edlynne K. Akana</td>
<td>2011</td>
<td>Waianae Coast Comp. Health Ctr</td>
<td>Pharmacist</td>
<td>Waianae</td>
<td>HI</td>
<td>Clinic Based Pharmacy</td>
</tr>
<tr>
<td>Jason J. Braithwaite</td>
<td>2011</td>
<td>Intermountain Health Care</td>
<td>PGY2 Pharmacy Administrator</td>
<td>Salt Lake City</td>
<td>UT</td>
<td>Other</td>
</tr>
<tr>
<td>Dan Feng Cai</td>
<td>2011</td>
<td>Kmart Pharmacy</td>
<td>Pharmacist</td>
<td>Chehalis</td>
<td>WA</td>
<td>Chain Community Pharmacy</td>
</tr>
<tr>
<td>Cheri H.L. Chu</td>
<td>2011</td>
<td>Queen's Medical Center</td>
<td>Staff Pharmacist</td>
<td>Honolulu</td>
<td>HI</td>
<td>Hospital</td>
</tr>
<tr>
<td>Zoe K. Chun-DeLa Cruz Dante</td>
<td>2011</td>
<td>Kapiolani Community College</td>
<td>Instructor</td>
<td>HI</td>
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</table>
Appendix B

Map of Program Outcomes
## University of Hawaii – Hilo Pharmacy Professional Degree Outcomes

### Domain I. General Ability-Based Outcomes

<table>
<thead>
<tr>
<th>Competency</th>
<th>Domain</th>
<th>I. Critical Thinking and Problem Solving</th>
<th>II. Professional Practice-Based Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Outcomes</td>
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<td></td>
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</tr>
<tr>
<td>1. Identity, retrieve, and evaluate information to make informed decisions.</td>
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</tr>
<tr>
<td>2. Solve complex problems within the context of scientific, clinical, legal, social, cultural, ethical arenas.</td>
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<tr>
<td>3. Apply and integrate biomedical, pharmaceutical, and clinical science knowledge to solve pharmacy practice-related problems.</td>
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<tr>
<td>Competency</td>
<td>Domains</td>
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<tr>
<td>Communication</td>
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</tr>
<tr>
<td>Learning Outcomes</td>
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<td></td>
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</tr>
<tr>
<td>1. Demonstrate the ability to read and listen effectively.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Solve complex problems within the context of scientific, clinical, legal, social, cultural, ethical issues.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Apply and integrate biomedical, pharmaceutical, and clinical science knowledge to solve pharmacy practice-related problems.</td>
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<tr>
<td>Competency</td>
<td>Domains</td>
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<tr>
<td>B. Ethical Decision Making</td>
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<tr>
<td>Learning Outcomes</td>
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</tr>
<tr>
<td>1. Demonstrate the ability to read and listen effectively.</td>
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</tr>
<tr>
<td>2. Solve complex problems within the context of scientific, clinical, legal, social, cultural, ethical issues.</td>
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</tr>
<tr>
<td>3. Apply and integrate biomedical, pharmaceutical, and clinical science knowledge to solve pharmacy practice-related problems.</td>
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<td></td>
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<tr>
<td>Competency</td>
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<td></td>
</tr>
<tr>
<td>C. Professional and Social Responsibility</td>
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</tr>
<tr>
<td>Learning Outcomes</td>
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</tr>
<tr>
<td>1. Demonstrate sensitivity and tolerance within multicultural interactions and settings.</td>
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<tr>
<td>2. Make and defend rational, ethical decisions.</td>
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<tr>
<td>3. Apply cultural competencies in professional behaviors.</td>
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<tr>
<td>4. Demonstrate community responsibility through community services.</td>
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<tr>
<td>5. Demonstrate leadership abilities through involvement in health and human service initiatives.</td>
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<tr>
<td>6. Advocate improved professional approaches to meet pharmacy-related needs.</td>
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| Domain II. Professional Practice-Based Outcomes

<table>
<thead>
<tr>
<th>Competency</th>
<th>Domain</th>
<th>I. Professional Practice-Based Outcomes</th>
<th>II. Professional Practice-Based Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Learning Outcomes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Gather and organize patient-specific data, scientific literature, outcomes, and pharmaceutical products effectively.</td>
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<tr>
<td>2. Identify ongoing or potential drug-related problems and the root cause of the problems.</td>
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<tr>
<td>3. Interpret/evaluate data needed to prevent/resolve medication-related problems.</td>
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<tr>
<td>4. Implement changes in the pharmaceutical care plan based upon drug-related problems.</td>
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<tr>
<td>5. Formulate and implement a pharmaceutical care plan through collaboration with healthcare professionals and the patient in a variety of healthcare settings.</td>
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<tr>
<td>6. Continuously revitalize and adjust the pharmaceutical care plan to ensure optimal outcomes.</td>
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<td>Learning Outcomes</td>
<td>Competency</td>
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<tr>
<td>-------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
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<tr>
<td>II. Professional Practice-Based Outcomes</td>
<td>1. Manage pharmacy operations, medication distribution and control systems</td>
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<tr>
<td></td>
<td>2. Manage human resources</td>
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<tr>
<td></td>
<td>3. Manage facilities and equipment</td>
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</tr>
<tr>
<td></td>
<td>4. Manage fiscal resources</td>
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<td>5. Manage and market change in response to professional evolution</td>
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<tr>
<td></td>
<td>a. Participating pharmacy system's process for:</td>
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<tr>
<td></td>
<td>i. Reporting and managing medication errors and adverse drug reactions</td>
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<tr>
<td></td>
<td>ii. Conducting drug use evaluations</td>
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<tr>
<td></td>
<td>b. Participating in the development, implementation, evaluation, and modification of a formulary system</td>
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<tr>
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<td>6. Apply principles of pharmacoeconomics and health outcomes research/quality assessment to evaluate pharmaceutical care plans and pharmacy services.</td>
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<td></td>
<td>C. Promote Public Health</td>
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<tr>
<td></td>
<td>1. Provide emergency care within the scope of pharmacy practice</td>
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<tr>
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<td>2. Promote public awareness of health, wellness, prevention and disease management</td>
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<td></td>
<td>D. Provide Drug Information and Education</td>
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<td>1. Provide evidence-based pharmacoeconomics and health-related information to health professionals and the public</td>
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<td>2. Develop, analyze, present educational material to various audiences and settings</td>
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<td>3. Provide education based upon applying the knowledge of social and behavioral sciences to address the human responses to pharmaceutical and health-related therapeutics</td>
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Appendix B.xls
Appendix C

Staffing of the CoP
### UHH-College of Pharmacy Payroll Plan 2010-2017

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<thead>
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<th>Department</th>
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<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
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<td>TOTAL</td>
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### Summary by Group

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<th>FY15</th>
<th>FY16</th>
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<td>Other</td>
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<tr>
<td>Student</td>
<td>10</td>
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</table>
Appendix D

Faculty Biographical Sketches
Research Focus - Department of Pharmaceutical Sciences

Natural Products Drug Discovery

Molecular and Cell Biology
Medicinal Chemistry

Cancer - Malaria - Cardiovascular Disease
Neurodegenerative Disorders - Tuberculosis
Department of Pharmaceutical Sciences

- André S. Bachmann  
  Department Chair  
  Associate Professor
- Robert P. Borris  
  Associate Dean for Research  
  Associate Professor
- Leng Chee Chang  
  Assistant Professor
- Mahavir B. Chougule  
  Assistant Professor
- Linda Connelly  
  Assistant Professor
- Jean Cruz  
  Secretary
- Edward Fisher  
  Associate Dean for Academic Affairs  
  Professor
- Daniela Guendisch  
  Assistant Professor
- Aaron T. Jacobs  
  Assistant Professor
- Susan I. Jarvi  
  Director, Pre-Pharmacy Program  
  Associate Professor
- Tamara P. Kondratyuk  
  Assistant Specialist & Laboratory Manager
- Dana-Lynn T. Koomoa-Lange  
  Assistant Professor
- Kenneth R. Morris  
  Professor
- Anthony J. Otsuka  
  Instructor
- Mimi F. Pezzuto  
  Instructor
- Dianqing Sun  
  Assistant Professor
- Ghee T. Tan  
  Assistant Professor
- Gary R. Ten Eyck  
  Assistant Professor
- Anthony D. Wright  
  Associate Professor
André S. Bachmann, Associate professor and Chairman of the Department of Pharmaceutical Sciences, studies polyamine inhibitors and proteasome inhibitors that affect the proliferation of cancer. Much of his research is providing new insights into neuroblastoma and other pediatric forms of cancer. Bachmann has been studying ODC, a protein that often is over-expressed in cancer. He has shown that this protein promotes neuroblastoma tumor growth, while a specific inhibitor of ODC called DFMO promotes cancer cell death. Bachmann’s lab also is studying the molecular mechanisms of cell death in neuroblastoma, with the goal of trying to identify novel, natural product-derived drugs that inhibit these processes. Bachmann has advanced his laboratory research with DFMO to the clinic which led to phase I (2010) and phase II (2012) clinical trials with relapsed neuroblastoma patients (ongoing), in collaboration with Giselle Sholler and the Neuroblastoma and Medulloblastoma Translational Research Consortium (NMTRC) at the Helen DeVos Children’s Hospital in Grand Rapids, MI.

Education
- M.S., Microbiology, University of Zurich, Switzerland
- Ph.D., Biology, University of Zurich, Switzerland
- Postdoctoral Fellow with Karin Moelling, Molecular Oncology & Medical Virology, University of Zurich, Switzerland

Classes & Courses
- PHPS 598 Cancer Prevention (Course Coordinator and Lecturer)
- PHPS 703 Cancer Cell Biology (Lecturer)

Active Grants
- R01, National Cancer Institute (NCI), NIH
- Hawaii Community Foundation (HCF)

Selected Peer-Reviewed Publications
- Oncogene, 2005, 24(36):5606-18
- Cancer Research, 2008, 68(23):9825-31
- Molecular Cancer Therapeutics, 2009, 8(7):2067-75
- PNAS, 2009, 106(16):6507-12
- Biochemical Pharmacology, 2010, 80(2):170-8
- Biochemistry, 2012, In press

Awards and Honors
- Swiss National Science Foundation Award, 1994
- Siemens National Mentor Award, 2007
- Inaugural Weinman Award for Translational Research, 2010

Selected News Releases
- Star Bulletin, Honolulu, April 27, 2008
- Star Advertiser, Honolulu, June 26, 2010
- Tribune Herald, Hilo, August 31, 2010
- Tribune Herald, Hilo, March 7, 2012
Robert P. Borris, Associate Professor of Pharmaceutical Sciences and Associate Dean for Research, is a veteran natural products chemist with extensive experience in new drug discovery and development. His current research focuses primarily on the chemistry of terrestrial plants and microorganisms. A major focus of the Borris lab is an investigation of the changes in expression of plant metabolites in response to change in the local environment. The goal of this work is to develop a sensitive and non-destructive means for monitoring environmental change before that change is manifest in decline of the local flora. A second major focus of the Borris lab is the discovery of new, biologically active, plant metabolites. In collaboration with Dennis Stevenson and Daniel Atha of the New York Botanical Garden, J.C.S.Pretorius of the University of the Free State (Bloemfontein, South Africa), P.C. Zietsman of the National Museum (Bloemfontein, South Africa), and Manana Khutsishvili of the Georgian Academy of Sciences (Tbilisi, Georgia), as well as other faculty members at UHH, this group is exploring terrestrial plants as a source of potential drug leads for a range of human and veterinary diseases. Within the lab, the chemotherapy of drug resistant microorganisms is a major interest.

**Education**
- B.S., Biology, Loyola University, Chicago, IL
- B.S., Pharmacy, University of Illinois, Chicago, IL
- Ph.D., Pharmacognosy, University of Illinois, Chicago, IL
- Postdoctoral Fellow with Manfred Hesse, Organic Chemistry, University of Zurich, Switzerland

**Classes & Courses**
- Pharmaceutical Calculations

**Active Grants**
- Ecological Genomics and Metabolomics (ECOGEM), in EPSCoR-III, NSF

**Selected Publications**
- *Journal of Natural Products* 68 (8), 1247-1252 (2005).
- *Journal of Natural Products* 67 (6), 1036-1038 (2004).

**Selected Awards and Honors**
- Board of Directors, Institute for Triple Helix Innovation, Honolulu, 2009-present.
The research interests of Dr. Chang are on the isolation, identification, and biological evaluation of natural products of higher plant and microbial origin. She has worked on compounds with potential cancer chemotherapeutic, in particular, Raf Kinase inhibitors from Streptomyces species and endophytic fungi. Raf kinases are proto-oncogenes that act as the entry point of the MAPK (mitogen-activated protein kinase/ERK (extracellular signal-regulated kinase) pathway. The role of MAPK/ERK signaling in tumorigenesis and metastasis has been well studied and is a validated chemotherapeutic target. Chang’s lab also is studying the identification of cancer chemopreventive agents from higher plants through exploration of ethnopharmacology and traditional medicine. Currently, her lab’s is studying Moringa oleifera (marunggay) and Morinda citrifolia (Noni). Marunggay is extensively eaten by the local Filipino population in Hawaii. Moringa oleifera showed significant inhibition of nitric oxide production with lipopolysaccharide (LPS)-induced RAW 264.7 mouse macrophage cells. We hope the identification of bioactive compounds from Moringa oleifera will be used as lead in standardized dietary and nutritional development in the future.

Education
- M.S., Natural Products Chemistry, University of Malaysia, Sabah, Malaysia
- Ph.D., Pharmacognosy, University of Illinois at Chicago, Chicago, Illinois, USA
- Intramural Research Training Fellow with Carole A. Bewley, Laboratory of Bioorganic Chemistry, NIDDK, National Institutes of Health, Bethesda, Maryland.

Classes and Courses
- PHPS 501 Biochemistry I
- PHPS 504 Immunology
- PHPS 554 Herbal Medicines
- PHPP 523 Wellness, Prevention and Disease Management
- PHPS 599v Directed Studies

Active Grants
- IDeA Networks for Biomedical Research Excellence (INBRE), NIH
- Hawaii Community Foundation (HCF)
- Cancer Research Center of Hawaii (CRCH)

Selected Publications
- Bioorganic Medicinal Chemistry, 2010, 17:6598-6602
- Journal of Natural Product, 2010, 73:880-884
- Marine Drugs, 2010, 8:429-437
- Planta Medica 2008, 74:555-559

Awards and Honors
- Van Doren Scholar Award, 1997
- Cottrell College Science Award, 2005
- D. John Faulkner Travel Award, 2006
Mahavir B. Chougule, Assistant Professor of the Department of Pharmaceutical Sciences, investigates the use of therapeutic agent and targeted nanotechnology based formulations for treatment of cancer and pulmonary disorders. His research work is focused on delivery of therapeutic agents, siRNA, and proteins using targeted nanocarriers for the treatment of cancer and pulmonary disorders to improve the efficacy and minimize the adverse side effects. Chougule has shown that the delivery of inhalation of anticancer drug loaded nanoparticle significantly inhibits tumor growth compared to aerosolized solution. Chougule has also investigated the anticancer activity and molecular mechanism of Noscapine, a natural opium alkaloid against lung and breast cancer. He also developed the spray dried nano-liposomal dry powder inhalers for management of pulmonary disorders and topical nanocarrier cream formulation for treatment of skin disorders. Chougule's research also focused on inhalation delivery of therapeutic agent and gene based nanocarriers for the treatment of pulmonary disorders. Chougule has 16 publications, 8 patents, 2 review article, one book chapter, and 45 scientific presentations to his credit.

Education
• Diploma of Pharmacy, Bombay Technical Education Board, India
• Bachelor of Pharmacy, Amravati University, India
• Master of Pharmacy, Pharmaceutical Technology, The Maharaja Sayajirao U of Baroda,
• Ph.D., Pharmacy, The Maharaja Sayajirao University of Baroda, India
• Postdoctoral Research Fellow, Florida A & M University, USA

Classes & Courses
• PHPS 505 Pharmaceutics
• PHPS 512 Introduction to Pharmaceutical Sciences
• PHPP 500 History of Pharmacy
• PHPS 755 Advance Pharmaceutics
• PHPS 750 Overview of the Pharmaceutical Sciences

Selected Publications
• PLoS One, 2011; 6(3): e17733
• Lung Cancer, 2011; 71(3): 271-82
• Molecular Cancer Therapeutics, 2010; 9(11): 3003-14

Active Grants
• Center for Magnesium Education & Research
• Hawaii Community Foundation (HCF)
• NSF outreach partnership
• RCUH Seed Grant
Linda Connelly, Assistant Professor of Pharmaceutical Sciences, studies the molecular basis of primary tumor growth and metastasis. Her current focus is on the role of osteoprotegerin in breast cancer using both in vitro techniques and the chick embryo metastasis model. Her lab is also investigating the role of the macrophages and inflammatory signaling molecules in tumor progression.

**Education**

- BSc (Hons), First Class, Biochemistry with work placement, University of Glasgow, UK
- Ph.D., Molecular Pharmacology, Wolfson Institute for Biomedical Research, University College London, UK
- Postdoctoral Fellow in the Dept of Medical and Molecular Pharmacology, UCLA and the Dept of Cancer Biology, Vanderbilt University Medical Center

**Classes & Courses**

- PHPS 703 Cancer Biology (Course Coordinator/Lecturer)
- PHPS 509 Pathophysiology (Physiology lecturer)
- IS 201 Pre Pharmacy Orientation (Course Coordinator)
- PHPS 202 Overview of Drug Classes (Course Coordinator/Lecturer)
- Introduction to PCAT Preparation (lecturer/online course designer)

**Active Grants**

- AREA R15 (NIH/NCI)

**Selected Publications**

- *Oncogene*, 2011, 30 (12):1402-12

**Awards and Honors**

- Davidson Prize for Biochemistry, 1998
- Wellcome International Prize Travelling Research Fellowship, 2002-2005
- Minority-Serving Institution Faculty Scholar in Cancer Research, 2010
- Excellence in teaching award for Pharmaceutical Sciences, 2010
- Excellence in teaching award for Pharmaceutical Sciences, 2012
Dr. Fisher has devised and presented many innovative continuing education seminars and NSF sponsored short courses. While serving as the founding Chair of the Department of Pharmaceutical Sciences, Midwestern University-Glendale College of Pharmacy, he gained extensive experience starting up a new college of pharmacy. He now plays an integral role at UHH CoP in the evolution and implementation of the curriculum, in mentoring students and faculty, admissions, academic policies, strategic planning, student affairs, and professional accreditation. He is licensed as a pharmacist in Arizona and Pennsylvania, and has practiced in a variety of clinical settings. He is currently taking a leadership role in the CoP effort to expand academic programs.

Education
- B.A., Biology, Temple University, Philadelphia, Pennsylvania
- B.S., Pharmacy, Temple University School of Pharmacy, Philadelphia, Pennsylvania
- Ph.D., Pharmacology/Toxicology, Temple University, Philadelphia, Pennsylvania

Classes & Courses
- Basic and Applied Toxicology (Course Coordinator)
- Provide lectures in the area of nutrition and weight control

Active Grants/Contracts
- Tripler Army Medical Center Psychopharmacology Instruction/Training Contract
- U.S. Department of Education Clinical Pharmacy Training Program Grant

Selected Publications

Awards and Honors
- Upjohn Pharmacy Award for Excellence in Research, 1987
- National Rho Chi Advisor of the Year, 1996
- APhA-APPM Presentation Merit Award, 1997
- Southwestern University School of Pharmacy Dean's Council of Students Teacher of the Year Award, 1991
- AACP Teacher of the year (Midwestern University-Glendale), 2005
- Julius W. Sturmer Memorial Lecture Award, 2008

Selected News Release
- The Wester, Sun City, Arizona, September 15, 2005.
Daniela Gündisch (Guendisch)

Assistant Professor
Pharmaceutical Sciences
danielag@hawaii.edu

We are developing novel ligands for ion channels with one emphasis on nicotinic acetylcholine receptors (nAChRs) (design, synthesis and structure-activity relationship studies (SAR)) as potential therapeutics or as diagnostic tools for in vivo imaging (PET, SPECT). We have used natural products such as nicotine, cytisine, epibatidine, ferruginine, anatoxin-a, and the endogenous ligands acetylcholine and choline as structural templates or as starting material in our synthesis projects. For example, in our cytisine-based project we have developed a novel compound, which we have shown to be a partial agonist with subtype selectivity for α4/β2* nAChRs and antidepressant activity in collaboration with Marina Picciotto (Yale University) and Roger Papke (University of Florida).

Education
- Pharmacy, University of Tübingen, Germany
- Ph.D., Pharmaceutical Chemistry, University of Tübingen, Germany
- Postdoctoral Fellow with Eddythe London, NIH/NIDA, Brain Imaging Center, Baltimore, U.S.A.
- Habilitation, Pharmaceutical Chemistry/Medicinal Chemistry, University of Bonn, Germany

Classes & Courses
- UHH/CoP: PHPS 506, 512, 553; PHPP 514, 515, 516, 517, 518, 521, 523, 594 (Medicinal Chemistry, Nuclear Pharmacy, PP, Therapeutics)
- Germany/Europe: general, analytical, bio-inorganic, organic, pharmaceutical, and medicinal chemistry; radiopharmacy; therapeutics; accompanying courses during rotation (pharmacy students): medicinal chemistry and radiopharmacy for Ph.D. students (also for the Erasmus/Sokrates program of the European Union); CE (diverse topics, e.g. for the German Chemical Society (GdCh))

Active Grants
- University of Hawaii Hilo Research Council
- INBRE, NIH
- Hawaii Community Foundation (HCF), together with Leng Chee Chang (PI) and Supakit Wongwiwatthanunukit

Selected Publications
- Science, 2011, 332, 1330-1332
- JPET, 2009, 329, 377-386
- Synapse, 2005, 55, 89-97
- BMC, 2004, 12, 4953-4962
- J Med Chem, 2002, 45, 1064-1072
- Life Sci, 2000, 67, 463-469
- Mol Pharmacol, 2000, 57, 642-649

Awards and Honors
- Ph.D. Scholarship Award, University of Tübingen, Germany, 1992
- Research Scholarship Award, University of Tübingen, Germany, 1994
- Nomination for the Teaching Award, (Universities of Baden-Württemberg), Germany, 1997
- NIDA Director’s Award of Merit (Development of PET/SPECT Tracers), 1998
- Habilitation Award, University of Bonn, Germany, 2001
- Rottendorf Award (Pharmaceutical Sciences), Germany, 2007
- Teaching Award for Pharmaceutical Sciences (UHH/CoP), 2009, 2011
- Travel Grants (UHH), 2009, 2010
Faculty

Aaron T. Jacobs
Assistant Professor
Pharmaceutical Sciences

jacobsa@hawaii.edu

Aaron T. Jacobs, Assistant professor of Pharmaceutical Sciences, studies the activation of cellular stress responses and their effects on viability and function in relation to disease processes. A wide variety of reactive compounds, including antineoplastic drugs; xenobiotics; and endogenous metabolites are capable of inducing large-scale adaptive responses at the cellular level. One aspect of his current research examines the role of electrophilic metabolites in the activation of the heat shock response. This response is regulated by the activation of heat shock factor-1, which then drives the expression of numerous genes. Currently, his laboratory is investigating the role of specific heat shock-induced genes in tumor cell growth and viability. His work also examines stress-mediated gene expression in neurons.

Education
- B.S., Biology, University of California, Irvine
- Ph.D., Pharmacology, University of California, Los Angeles
- Postdoctoral Fellow, Vanderbilt University

Classes & Courses
- Integrated Therapeutics II-IV
- Recent Advances in Drug Discovery

Active Grants
- RCUH Seed Grant
- P20, IDeA Networks of Biomedical Research Excellence (INBRE), NCRR

Selected Publications
- Accounts of Chemical Research, 2010, 43(5):673-683
- Chemical Research in Toxicology, 2008, 21(2):432-444

Awards and Honors
- Phi Beta Kappa, 1991
- Excellence in Teaching, 2010
Susan I. Jarvi, Associate professor and Director of the Pre-pharmacy Program, studies host-parasite and parasite-parasite interactions and influences on transmission and virulence of infectious disease. Jarvi is studying tolerance to infectious disease as evidenced through a recent population explosion of a low elevation native Hawaiian bird population despite high prevalence of *Plasmodium* infection. Her goal is to characterize and begin to define potentially novel mechanisms involved in tolerance to malaria in this relatively simple, geographically-isolated, natural disease system. Jarvi’s lab is also interested in continued development of molecular-based methods for the detection and evaluation of pathogen diversity, and development and implementation of vaccines.

**Education**
- M.S., Veterinary and Animal Sciences (Genetics), University of Massachusetts, Amherst
- Ph.D., Biology, Northern Illinois University, DeKalb
- Postdoctoral Fellow at the Beckman Research Institute of the City of Hope National Medical Center Duarte, CA, and at the Molecular Genetics laboratory of the Smithsonian Institution, Washington DC.

**Classes & Courses**
- PHPS 504 Pharmaceutical Immunology
- PHPS 594 Genetics and Pharmacology of Malaria

**Active Grants**
- INBRE 2010
- Hawaii Community Foundation grant

**Selected Publications**
- *Molecular & Biochemical Parasitology* 2009 163:114-118
- *Biology Direct* 2008 3:25
- *Conservation Genetics*, 2008, 9, 339-348
- *Vaccine* 2008 Oct 26, 42. 5338-44.

**Awards and Honors**
- 1982 Excellence in Student Teaching
- 1988 Outstanding Graduate Student, Northern Illinois University

**Selected News Releases**
Dr. Kondratyuk research work related to search of natural product chemopreventive drugs and their important role in the treatment and prevention of cancer. Screening results led to the discovery of many biologically active compounds including phenazines from unexplored sea-living species. The major cellular target for chemoprevention research is NFκB pathway. Dr. Kondratyuk showed that marine phenazines deregulate activity of NFκB pathway and activate protective mechanism against neoplastic transformation apoptosis. Variety of molecular mechanisms controlling apoptosis and cell cycle by NFκB inhibitors from natural products are under investigation.

Education
- M.S., Biochemistry, Kiev State University, USSR
- Ph.D., Biochemistry, Moscow State University, USSR
- Postdoctoral Fellow, Klinikum Der Friedrich-Schiller University, Medicinal Chemistry, Germany
- Postdoctoral Fellow, Department of Biochemistry Purdue University, Molecular Biology, USA

Classes & Courses
- PHPS 505/L, Pharmaceutics I and II
- Graduate Course PHPS 600 Natural Products and Cancer Chemoprevention

Active Grants
- 2P01 CA48112-13 (PI Pezzuto), NIH/NCI

Selected Publications
- Phytochemistry, 2010, 71: 641-7
- Pharm. Biol.2004, 42: 46-63
- JBC, 1997, 272: 16978-83
- JBC, 1995, 270: 7750-6
Dr. Koomoa, Assistant Professor of the Department of Pharmaceutical Sciences, investigates the novel role of proteins in the malignant progression of cancer, and other pathophysiological processes. Much of her research is providing new insights into neuroblastoma and other types of cancers driven by myc expression (c-myc and N-myc).

Koomoa’s lab investigates the ion channel proteins and channel regulatory proteins that are often over-expressed or down-regulated in cancer. Koomoa has shown that these proteins play a critical role in regulating neuroblastoma tumor growth, and metastasis, while inhibitors of these proteins inhibit these processes. In addition, Koomoa’s lab investigates the role of these proteins in other physiological and pathophysiological processes (e.g. Immune cell function, Central Nervous System disorders). This project involves using molecular biological, biochemical and biophysical techniques. Multi-plexed assays were established using the Perkin Elmer High-throughput Operetta imaging, live-cell ratio-metric calcium imaging and electrophysiological patch-clamp measurements, in order to correlate results from multiple assays.

Education
- B.S., Cell and Molecular Biology, San Diego State University (San Diego, CA)
- Ph.D., Molecular Pharmacology, Physiology and Biotechnology, Brown University (Providence, RI)
- Postdoctoral Fellow, Laboratory of Cell and Molecular Signaling, Queen’s Medical Center/LCMS (Honolulu, HI)
- Postdoctoral Fellow, Natural Products and Cancer Biology, UH Cancer Center (Honolulu, HI)

Classes & Courses
- Integrative Therapeutics IV (PHPP 518)
- Biochemistry (PHPS 602)

Active Grants
- K01, National Cancer Institute (NCI), NIH
- Young Investigator’s Awarde (ALSF)
- UH CoP start-up Funds

Selected Publications
- *International Journal of Oncol.*, 2012, accepted
- *Molecular Cancer Therapeutics*, 2009, 8(7):2067-75

Awards and Honors
- American Association for Cancer Research Minority Scholar in Cancer Research Award (2011)
- Fellow, Keystone Symposium on Molecular and Cellular Biology (2009-2010)
- University of Hawai’i Research Council Fellowship Award (2007 and 2008)
- Carl Storm Fellowship (2007)
- Helen F. Cserr Memorial Fellow, Outstanding Academic Achievement (2004-2005)
- MDIBL Research Fellowship, Mt. Desert Island Biological Laboratory (2003)

Selected News Releases
- Star Advertiser, Honolulu, September, 2012
- Tribune Herald, Hilo, September, 2012
Ken Morris, professor in the Department of Pharmaceutical Sciences, studies pharmaceutical materials, dosage form design and processing. His research is widely recognized for its contributions to modernizing dosage form development in the pharmaceutical industry. Integration of advanced solids analytical techniques, with physical chemical and engineering principles to predict the response of pharmaceutical crystalline material to processing stress is used to systematically design dosage forms that perform as needed and are capable of being produced at scale. Current projects include measuring compaction properties of crystalline materials for the design and optimization of tableting processes and characterization of grape powders and the design of clinically viable delivery systems.

Education
- M.S., Pharmaceutical Chemistry, University of Arizona
- Ph.D., Pharmaceutics, University of Arizona
- Solid State and Crystallographic internship, Cambridge, UK, Paul Raithby, advisor

Current Classes & Courses
- Pharmaceutics I and II
- Pharmacokinetics
- Pharmaceutical Development

Active Grants
- NSF-ERC-SOP, structured organic composites
- CTGC, Grape commission

Selected Publications (since 2000)
- Chemical Engineering Science, special issue in press
- J. Nutrition, on-line 7/22/2009
- Journal of Computational Chemistry, 30(5):733-742 4-15- 200
- Journal of Electrostatics (2007), 95(12), 2645-2656
- Journal of Colloid and Interface Science. (2005), 209(2) 325-335

Awards and Honors
- 2010 Professional achievement University of Arizona College of Pharmacy
- 2007 AAPS Fellow.
- 2006 AAPS Outstanding Manuscript Award in Analysis and Pharmaceutical Quality
- 2006 Best Paper Award in Informatics, International Journal of Computers and Chemical Engineering
- 1994 Fred Simon Award for Best Paper in the PDA Journal of Pharmaceutical Science and Technology
- 1987 EPA Research Paper of the Year
- 1983 Outstanding Research Award, Environmental Protection Agency, Environmental Research Laboratory
Faculty

Anthony J. Otsuka

Instructor
Pharmaceutical Sciences
ajotsuka@hawaii.edu

Anthony Otsuka came to the department after being an Assistant Professor in the Department of Genetics at UC Berkeley for 8 years and Associate and Full Professor of Genetics at Illinois State University for 21 years. Having been raised on Maui, one of his goals is to support higher education in the islands. There are three foci of the lab’s research: axon guidance mechanisms in the nematode, Caenorhabditis elegans, characterization of lipid-accumulating mutants in C. elegans, and analysis of gene regulation in the bacterium, Escherichia coli. The axon guidance project focuses on a novel neural form of the cytoskeletal protein, ankyrin, which is required for proper synapse formation. This protein interacts with the B'-regulatory subunits of the protein phosphatase, PP2A, and with the microtubule plus-end protein, CLASP2. These components, along with CRMP (UNC-33) and the GSK-3beta signaling pathway, may be important for proper wiring of the nervous system. Using the single nucleotide polymorphism/restriction site cleavage (SNP-Snp) technique, a number of lipid-accumulating C. elegans mutants are being mapped. These mutants may help to elucidate the insulin pathway in this model organism and may have applications to the study of diabetes. E. coli produces its own biotin (vitamin H). The regulator for the biotin biosynthetic genes is a bifunctional protein that activates biotin and also represses transcription of the biotin operon. Structure/function studies of this protein have been previously carried out in the lab.

Education

- B.S., Chemistry, Massachusetts Institute of Technology, 1972
- M.S., Chemistry, University of California, San Diego, 1974
- Ph.D., Chemistry, University of California, San Diego, 1979
- Postdoctoral Fellow with Sydney Brenner, Medical Research Council Laboratory of Molecular Biology, Cambridge, England 1979-1981

Classes & Courses

- Genetics in Medicine (PHPS 550)
- Molecular Biology (at ISU)
- Molecular and Developmental Genetics (at ISU)
- Biotechnology Laboratory (at ISU)
- Advanced Neural Development (at ISU)

Selected Publications

- Nature Immunol., 2006, 8:206-13
- Gene, 2000, 252:147-54
- Gene, 1986, 44:255-61

Awards and Honors

- N. I. H. Postdoctoral Fellowship, 1979-81
- Monbusho Fellowship for Study in Japan, 1996
- Japanese Society for the Promotion of Science Fellowship for Study in Japan, 1997
- ISU College of Arts and Sciences Outstanding College Service Award, 2001
Mimi F. Pezzuto, R.Ph., is an instructor in the Department of Pharmaceutical Sciences, responsible for the Pharmaceutics I, II Practice Laboratory. The lab course is designed to give students a practical understanding of pharmaceutical dosage forms and compounding techniques used in the practice of pharmacy. In addition to the laboratory course, Mimi also is responsible for courses including History of Pharmacy PHPP 550, Wellness and Prevention PHPP 523, Healthcare Systems PHPP 519, and Current Topics in Healthcare PHPP 598.

Education

- B.S. Pharmacy, University of Illinois at Chicago College of Pharmacy

Selected Publications

- Hana Hou! The magazine of Hawaiian Airlines, October/November 2010

Awards and Honors

- Pharmacy of the Year, 1993, 1994 Walgreen Company

Selected News Releases

- Tribune Herald, Hilo, May 20, 2010
Research in my laboratory focuses on the design and synthesis of novel small molecule and natural product based anti-infective and anti-cancer agents. The chemical approaches include classical organic synthesis, parallel and high-throughput chemistry, solid-phase organic synthesis, followed by traditional medicinal chemistry optimization of the emerging lead compounds.

Education
- Master, Organic Chemistry, East China University of Science and Technology, Shanghai, China
- Ph.D., Organic Chemistry, The University of Memphis, TN, USA
- Postdoctoral Fellow with Richard Lee, Medicinal Chemistry, University of Tennessee Health Science Center, TN, USA

Classes & Courses
- Course Coordinator and instructor, Integrated Therapeutics I (PHPP 515)
- Instructor, Integrated Therapeutics II-IV (PHPP 516-518)
- Course Coordinator and instructor, Discovery and Development of Blockbuster Drugs (PHPS 562)
- Instructor, Introduction to Pharmaceutical Sciences (PHPS 512)

Active Grants
- Academic Research Enhancement Award (AREA) R15, NIAID/NIH
- IDeA Networks for Biomedical Research Excellence (INBRE), NIH
- Leahi Fund of the Hawaii Community Foundation (HCF)
- UH Hilo Seed grant

Selected Publications

Awards and Honors
- Faculty Travel Grant, ACS Division of Organic Chemistry, 2012
- Excellence in Teaching Award for Pharmaceutical Sciences, 2011
- Gordon Research Conference on Combinatorial Chemistry Graduate Fellowship Award, 2005
Malaria is one of the major public health challenges undermining development in the poorest countries of the world. Disease control is hampered by the lack of an efficacious vaccine, and the occurrence of multidrug resistant strains of *Plasmodium falciparum*. A significant number of plant species have been identified by various cultures as having antimalarial properties, and current antimalarial therapy consists substantially of natural products and related derivatives. Artemisinin (ART) is a key ingredient in combination drug therapies recommended by the World Health Organization (WHO) for the treatment of multidrug resistant strains of falciparum malaria. However, the number of stereogenic centers present in the ART molecule makes total synthesis difficult and unadaptable to industrial production at acceptable costs. With a view to tackling global health challenges, my lab aims to discover and develop natural product-inspired antimalarial agents that are not only clinically efficacious, but also economical to synthesize in large scale making the drug affordable to low-income countries. Established antimalarial lead compounds identified from natural sources will be synthesized and structurally modified to improve their antimalarial selectivity and potency against the erythrocytic, hepatic and gametocyte stages of *P. falciparum*. Studies will also be conducted to elucidate the mechanism(s) of action of these lead compounds as therapeutic and transmission blocking agents. Such efforts may ultimately lead to the identification of new molecular targets for malaria. In addition to the synthetic and analoging project described above, an equally important goal of the antimalarial drug discovery and development program at UH Hilo College of Pharmacy is to uncover biologically active molecules from nature as chemotherapeutic candidates for multidrug resistant malaria. To that end, endophytic fungi and the medicinal plants of various cultures around the world are being explored as potential sources of novel antimalarial agents.

**Education**

- Ph.D., Molecular Pharmacology, University of Illinois at Chicago.
- Postdoctoral Fellow, Public Health Research Institute/New York University.

**Classes & Courses**

- PHPS 555 - Geographic Medicine & Global Health
- PHPS 502/752 - Biochemistry-Metabolism
- PHPS 702 - Bioassay Development: Principles and Practices in Drug Discovery

**Selected Publications**


**Awards and Honorstan**

- Kilmer Prize for meritorious work on natural products, American Pharmaceutical Association and American Society for Pharmacognosy.
Gary R. Ten Eyck, Assistant Professor in the Department of Pharmaceutical Sciences, examines the neuroendocrinology of reproductive behaviors, particularly territoriality and paternal care, and communication utilizing neuropharmacological approaches. His lab also studies the evolutionary significance of direct development; particularly sensory systems. These investigations use the Puerto Rican coquí frog (*Eleutherodactylus coqui*). This amphibian differs from the “conventional” frog because it undergoes direct development, as oppose to metamorphosis, and exhibits paternal care. Investigations on reproductive behaviors, communication, and developmental biology are significant since the Puerto Rican coquí was recently introduced on the Island of Hawai‘i and its widespread distribution is a major environmental and economical concern.

**Education**
- B.S., Biology, Central Michigan University
- M.S., Biology, Central Michigan University
- Ph.D., Biological Sciences (Neuroscience), University of South Dakota
- Postdoctoral Fellow, NSF Developmental Neurobiology, University of Michigan

**Classes & Courses**
- Neuropharmacology
- Integrated Therapeutics (Course Coordinator)
- Environmental Toxicology
- Overview of Drug Classes

**Selected Publications**
- *Neuroscience Letters*, 2005, 388:100-105

**Awards and Honors**
- Office of the Vice President for Research, Research Award, University of Michigan, 2002
- NSF Postdoctoral Fellowship, University of Michigan, 1997
- Matthew A. Johnson Award, Doctoral Dissertation, University of South Dakota, 1997
- National Science Foundation EPSCoR Graduate Research Fellowship, University of South Dakota, 1995

**Selected News Releases**
- Statewide Interview: Island Issues Public Affairs Broadcast with Sherry Bracken, May 30, 2010
- Big Island Buzz, UH Hilo is Joined by a Coqui Frog Expert, Jan 12, 2010
- Honolulu Herald Tribute, Coquí Pro joins UH Hilo, Jan 6, 2010
- UH Hilo Press Release, Coquit Expert joins College of Pharmacy, Jan 5, 2010
- Big Island Chronicle, University News, Coquí expert joins UHH College of Pharmacy, Jan 05, 2010
Faculty

Anthony D. Wright
Associate Professor
Pharmaceutical Sciences
adwright@hawaii.edu

Tony, as well as being an Associate Professor in the Department of Pharmaceutical Sciences, is a world leader in marine natural products drugs discovery and a recognized expert in the area of structure elucidation using NMR. His academic career spanning over 30 years, including an interlude as a high school teacher of Mathematics, Chemistry and Physical Education, has been spent searching the natural world, mainly its oceans, for the chemical treasures it has to offer. His research group discovered the first compounds from the marine environment to have selective antimalarial activity and were also the first to isolate endophytic fungi from marine algae. His group was at the forefront in developing new methodologies for solving chemical structures of various natural products an area where they are still active. Here in Hawaii, Tony, his post doc, a senior in marine biology, various volunteers and collaborators are looking into the natural products chemistry and biological activity of niche macro- and micro-organisms found on the Big Island of Hawaii, Guam and various other locations around the world.

Education
• BSc Hons La Trobe University, Melbourne, Australia (1976)
• Dip Ed La Trobe University, Melbourne, Australia (1977)
• PhD James Cook University, Queensland, Australia (1988)
• Post Doctoral Fellow, Department of Pharmacy, ETH, Zurich Switzerland (1989)

Classes & Courses
PharmD
• Introduction to the Pharmaceutical Sciences
• Pharmaceutics
• History of Pharmacy
• Toxicology and Substances of Abuse
Graduate and Faculty
• NMR application and theory

Active Grants
• Since arriving in Hilo (2007) Tony has obtained a small amount of extramural funding. Currently, he has no external grants

Selected Publications
• Journal of Medicinal Chemistry, 2002, 45, 3067-3072
• Chemosphere, 2006, 65, 604-608
• Marine Biotechnology, 2008, 10, 64-74
• Marine Ecology Progress Series, 2009, 385, 137-149
• Marine Drugs, 2009, 7, 565-575

Awards and Honors
• ETH Zurich, Switzerland, Post Doctoral Scholarship, 1989
• American Society of Pharmacognosy Young Investigator Awardee, 1995

Selected News Releases
• Dive into your imagination October 2008: http://www.diveintoyourimagination.com/cool-scientists-you-should-know/cool-scientists/dr.-anthony-d.-wright-303.html
Department of Pharmacy Practice

Julie Adrian, Assistant Professor: Dr. Adrian received her B.S. with High Honors in Agriculture with specialty in Animal Science from the University of Hawai‘i at Hilo in 2000 and her Doctorate of Veterinary Medicine from Oklahoma State University in 2004 graduating within the top 10% of her class and as a member of Phi Zeta. She is licensed to practice veterinary medicine and has also maintained both National (Federal) and State Drug Enforcement Agency (DEA) licensures. She has veterinary accreditation recognized by the USDA, APHIS, and the Bureau of Animal Industry. She has privately practiced veterinary medicine from 2004, and professed undergraduate students in pre-veterinary medicine since 2006 and pharmacology students since 2010. Her scholarly interests and publications include veterinary toxicology, drug-induced euthanasia and psychological effects of euthanasia of pets to owners, zoonotic diseases, and the benefits and detriments of guava tree part consumption for nutritional and medicinal purposes. Her work has also been featured in the New York Times and the Honolulu Star Advertiser. Dr. Adrian is an editorial board member of the Journal of Veterinary Science and Technology, reviewer for the Journal of Biotech Research, and editorial board member of the International Journal of Livestock Production. She is a member of the American Veterinary Medical Association (AVMA) and the Hawaii Island Portuguese Chamber of Commerce.

Katherine Anderson, Pharm.D., Assistant Professor: Dr. Anderson received a Doctor of Pharmacy degree from Washington State University College of Pharmacy and completed an ASHP-accredited specialty geriatric pharmacy residency at the Department of Veterans Affairs Medical Center in Boise, ID. She is a Certified Geriatric Pharmacist (CGP) and a Fellow of the American Society of Consultant Pharmacists (FASCP). Dr. Anderson is a member of the Hawai‘i Pharmacists Association, American Pharmacists Association, American Society of Consultant Pharmacists, American Association of Colleges of Pharmacy, and American Society of Diabetes Educators. She has a background in independent geriatric consultancy and holds licenses in HI, WA, OR, ID, UT, AK, AR, and AZ. Dr. Anderson’s research focuses on the development and validation of culturally-sensitive tools to assess cognition, prescription literacy, pillbox organization, and barriers to disease state management for populations with high incidence of diabetes. Dr. Anderson received the Foundation of the American Society of Consultant Pharmacists Innovative Practice Award in 2007 for the development of the “Medi-Cog”, a cognitive/pillbox skills screen developed to aid clinicians in assessing patients’ ability to appropriately self-manage medications. In 2010 she received Clinical Pharmacy Services Improvement and Patient Safety Pharmacist Collaborative Life Saving Patient Safety Awards for achieving improved health outcomes in a rural, underserved population. Dr. Anderson is a student advisor for APhA and the Pacific Islander Mobile Screening Clinic, a UHH CoP student-led outreach serving ethnically diverse population island-wide to achieve adequate access to medical care and educate regarding safe and effective use of medications.

Forrest Batz, Pharm.D., Assistant Professor: Dr. Batz received a Doctor of Pharmacy degree from the University of California, San Francisco (UCSF) School of Pharmacy and completed an ASHP-accredited pharmacy residency at the Department of Veterans Affairs Medical Center in Tucson, AZ. Dr. Batz has worked in drug information, conducted research in community pharmacy practice, and helped develop a model for integrative pharmacy practice. As a writer
and speaker, he has worked since 1997 supporting health professionals to integrate natural medicines information into daily practice. Dr. Batz served as a founding assistant editor of the Natural Medicines Comprehensive Database and continues to serve as a contributing editor. He is a co-author of the A-Z Guide to Drug-Herb-Vitamin Interactions and co-editor of the Herb-Drug Interaction Handbook. He is actively involved in programs to remove pharmaceuticals from the waste stream and waterways, and serves on the Green Pharmacy Advisory Board of Teleosis Institute. Dr. Batz is a member of the Hawai‘i Pharmacists Association, American College of Clinical Pharmacy, American Pharmacists Association, American Society of Health System Pharmacists, and American Association of Colleges of Pharmacy.

**Ben Chavez, PharmD, Assistant Professor:** Dr. Chavez received his Doctor of Pharmacy degree from the University of Florida in 2004. He completed a psychopharmacology residency in 2005 at Nova Southeastern University in conjunction with the South Florida State Hospital and the Oakland Park Veterans Affair psychiatric outpatient clinic. He is a Board Certified Psychiatric Pharmacist (BCPP) and a licensed practicing pharmacist. He was a Clinical Assistant Professor at Rutgers University, Ernest Mario School of Pharmacy from 2005-2010, where he served as a course coordinator for their Neuropsychiatric Therapeutic course, as well as for the Advanced Neuropsychiatry elective. He taught several lectures, including schizophrenia, depression, attention-deficit hyperactivity disorder, anxiety disorders, and many more. His practice site during his time at Rutgers was the inpatient psychiatric unit at Monmouth Medical Center. There he worked as an integral part of the treatment team with direct patient contact and also precepted pharmacy students. He also coordinated students from different disciplines there, including pharmacy, medical, and physician assistant students. He has served on several committees at Rutgers University Monmouth Medical Center, as well as for the College of Psychiatric and Neurologic Pharmacists (CPNP), a national pharmacy organization. He was the chair of the Continuing Education committee for two years at the Ernest Mario School of Pharmacy. He was on both behavioral health and pharmacy committees at Monmouth Medical Center. He has been very involved in CPNP on both the Mentoring committee for two years, and currently serving in the Recertification Committee helping to develop continuing education content for board certified psychiatric pharmacists. He also was an Adjunct Assistant Professor at Drexel School of Medicine in Philadelphia where he gave lectures to medical students. He has also lectured at the University of Medicine and Dentistry of New Jersey for physician assistants. He is also on the Board of Editors for the Annals of Pharmacotherapy and has been published in several peer-reviewed journals.

**Anita E. Ciarleglio, Ph.D., Assistant Professor:** Dr. Ciarleglio received her B.S. in pharmacy from St. Louis College of Pharmacy, and her Ph.D. in Pharmacology at St. Louis University School of Medicine. She is licensed as a registered pharmacist in Hawaii. She subsequently performed postdoctoral work at St. Louis and at the University of Miami School of Medicine. She has held many professional and instructional positions, notably conducting in-depth continuing education programs for pharmacists through Pacific Seminars Inc. and serving as an ambulatory care clinical pharmacist at Kaiser Permanente. Dr. Ciarleglio has instructed hundreds of students each semester through statewide distance-learning programs, as well as being highly active in several community education programs the pharmacy technology programs for the education of pharmacy technicians.
ACPE Self Study: Appendix 25-1
Biographical Sketches

Lara Gomez, Pharm.D., Assistant Specialist, Clinical Education Coordinator: Dr. Gomez received her Doctor of Pharmacy degree at the University of New Mexico College of Pharmacy in 2001. Following an Infectious Disease residency at UNM/Health Sciences Center in 2002, she joined the Lovelace Sandia Women’s Hospital as a staff and clinical pharmacist. She has had teaching experience in the University of New Mexico Doctor of Pharmacy program and is certified in APhA Immunization Therapy, Diabetes, and Tobacco Treatment programs. She has been with KTA Pharmacy since she returned home to Hilo in 2005. Dr. Gomez holds professional licensure in the States of Hawaii and New Mexico.

Roy Goo, Pharm.D., Assistant Professor: Dr. Goo received his Doctor of Pharmacy Degree at the University of the Pacific Thomas J. Long School of Pharmacy and Health Sciences in 2007 and completed a PGY-1 residency at Tripler Army Medical Center in 2008. Following the completion of his residency Dr. Goo developed the first Emergency Department Clinical Pharmacy Program for the Department of Defense while serving as a clinical pharmacist for both the Emergency Department and the Progressive Care Wards. Dr. Goo currently serves as an officer in the United States Army Reserve and joins the faculty of the University of Hawai`i at Hilo after working briefly as a long-term care consultant pharmacist on the islands of Kauai and Maui.

Patricia Jusczak, RPh, BPharm, Assistant Specialist, Clinical Education Coordinator: Pat Jusczak received her B.S. in Pharmacy from the Massachusetts College of Pharmacy and is licensed as a registered pharmacist in Massachusetts and New Hampshire. Her background includes work in community pharmacy practice, but most extensively in hospital pharmacy, for more than 30 years. Working in various practice models in acute care community hospital settings, she was Director of Pharmacy Services for over 13 years, Clinical Coordinator for over 8 years, and has practiced as a consulting pharmacist for an outpatient surgery center. During this time she developed, implemented, and managed drug formularies, drug distribution systems, drug therapy protocols, clinical intervention programs, pharmacy computer systems, and quality improvement programs. She has been preceptor to pharmacy students and adjunct faculty with colleges of pharmacy for more than 20 years. Her areas of specialty include medication safety, pain management, Joint Commission Standards for Hospitals, and medication management practice standards.

Eryn Kishimoto, PharmD., Assistant Specialist: Dr. Kishimoto received her Doctor of Pharmacy degree at the University of the Pacific and completed her post-graduate first year residency at The Queens Medical Center in Honolulu, Hawaii. Previous to her joining the college in June 2012, she was a clinical pharmacist at Hawaii Medical Center – Liliha. Dr. Kishimoto currently practices at Straub Hospital in Acute Medicine.

Carolyn S.J. Ma, Pharm.D., BCOP, CHTP/I, Associate Professor and Chair: Dr. Ma received her Doctor of Pharmacy degree from the University of California at San Francisco and completed a Clinical Pharmacy Residency at Thomas Jefferson University Hospital and second year Oncology Pharmacy Specialty Residency at The Hospital of the University of Pennsylvania. Dr. Ma practiced as a Board Certified Oncology Pharmacist at the Queens Medical Center in Honolulu for many years with subspecialty and program development experience in autologous bone marrow transplant, pain management and oncology drug
research trials. She subsequently became Vice President for Clinical Programs for Am Med International in Hong Kong, a start up company that builds cancer clinics in China. Prior to her return to Hawaii in 2007, she was a management consultant for Stanford Hospitals and Clinics with expertise in JCAHO Medication Management as well as pharmacy and ambulatory care clinic workflow change management. Dr. Ma is also a certified practitioner and instructor of Healing Touch, an energy based bioenergy field complementary modality. She currently sits on the Board of Pharmacy and is current President for the Hawaii Pharmacists Association. In 2011, Dr. Ma was recipient of the Bowl of Hygeia award.

Christina Mnatzaganian, Pharm.D., Junior Specialist, Clinical Track Faculty: Dr. Mnatzaganian received her Bachelor’s of Science in Business Administration (2003) and Doctor of Pharmacy (2011) degrees from University of Arizona in Tucson. She completed the ASHP-accredited University of Hawaii-Hilo PGY1 Community Pharmacy Practice Residency in 2012 on the island of Maui. She is licensed as a pharmacist in Hawaii and Arizona and is a current member of the American Pharmacists’ Association, the American Society of Health-System Pharmacists, the American Association of Colleges of Pharmacy, and the Hawaii Pharmacists’ Association.

Yaw B. Owusu, Pharm.D., Assistant Professor: Yaw Owusu received his PharmD degree from Temple University School of Pharmacy, Philadelphia, PA in 2007. He completed a postgraduate pharmacy practice residency at Baylor University Medical Center, Dallas, TX in 2008. In July 2008, Owusu entered a postgraduate year 2 Ambulatory Care residency at The University of Texas at Austin and the Blackstock Family Health Center (University of Texas Southwestern - Austin Family Medicine). From summer 2008 to summer 2010, he completed a Master of Science program at the University of Texas at Austin specializing in health outcomes research with the Divisions of Pharmacy Practice and Administration. Owusu has been a licensed pharmacist since 2007.

Candace Tan, Assistant Professor: Dr. Tan received her Doctor of Pharmacy Degree from the University of Southern California in 2009. Following this, she completed a primary care focused PGY-1 residency also at the University of Southern California and then joined the College of Pharmacy immediately after completion of the program. Dr. Tan is also a Board Certified Ambulatory Care Pharmacist (BCACP).

Sheri Tokumaru, Pharm.D., BCPS, Assistant Professor: Dr. Tokumaru received her Doctor of Pharmacy degree from the University of Michigan and completed a pharmacy practice residency at the University of California at San Francisco where she solidified her interest in critical care. She subsequently completed a specialized pharmacy residency in critical care at the University of Kentucky. After her training, Dr. Tokumaru worked as a clinical pharmacist at Cedars-Sinai and at the University of California San Diego Medical Center in various intensive care units. She most recently taught at the University of Illinois at Chicago College of Pharmacy where she precepted and mentored both students and pharmacy residents in the Neurosciences Intensive Care Unit and the Medical Surgical Intensive Care Unit. Dr. Tokumaru regularly taught throughout the pharmacy curriculum through lecturing in critical care topic areas, serving as a recitation leader and being a course coordinator. Her current practice site is in the Neurosciences Intensive Care Unit at The Queen’s Medical Center on Oahu. She
lectures in the areas of infectious diseases, critical care and cardiology and enjoys teaching in both the didactic and clinical settings.

Peyton Wong, Pharm.D., Associate Specialist: Dr. Wong received his Pharm.D. degree from the University of California, San Francisco. He completed a Pharmacy Practice Residency at Boston University Medical Center. After his training, Dr. Wong practiced Clinical Pharmacy for next 13 years in areas of internal medicine and primary care, with an emphasis in anticoagulation, and served as an Adjunct Professor of Clinical Pharmacy at the University of the Pacific, School of Pharmacy. Prior to joining the faculty at the University of Hawaii, Hilo College of Pharmacy, Dr. Wong took on a more administrative role working as an Inpatient Anticoagulation Clinical Coordinator for a 1000-bed medical center in the San Francisco Bay area.

Supakit Wongwiwatthanukit, Pharm.D., Ph.D., Associate Professor: Dr. Wongwiwatthanukit received his B.S. in Pharmacy with First-class Honors from the Prince of Songkhla University, Thailand. He obtained his Pharm.D. with High Honors from College of Pharmacy, University of Illinois at Chicago. Subsequently, he earned his M.Sc. and Ph.D. in Pharmacy Practice from College of Pharmacy, Purdue University. Prior to joining the University of Hawaii at Hilo College of Pharmacy, Dr. Wongwiwatthanukit was an assistant professor and graduate program coordinator of clinical pharmacy program at Chulalongkorn University, Bangkok, Thailand. He has been a graduate student advisor for more than 30 students and an active member of many academic committees. He received the Purdue Research Foundation Fellowship Award and the Jenkins-Knevel Award for Excellence in Research. He was also a winner of the Nagai Award for Pharmacy Practice Research, a recipient of 2010 Excellence in Teaching Award for Pharmacy Practice University of Hawaii at Hilo College of Pharmacy, and recently a 2010 winner of Outstanding Poster Presentation Award for Pharmacy Practice in the Research Conference in Pharmaceutical Sciences, Bangkok, Thailand. Dr. Wongwiwatthanukit’s research focuses on four research themes which include: (1) development and validation of an instrument to assess humanistic outcomes (e.g., health-related quality of life, self-efficacy, life-long learning); (2) applying state of the art pharmacoeconomic analysis and health outcomes research to conduct translational comparative effectiveness and cost-effectiveness research, which compares different interventions and strategies to prevent, diagnose, treat and monitor health conditions. The goal is to inform patients, providers, and decision-makers about which interventions, especially medication therapy, are most clinically and cost-effective for specific patients under specific circumstances and ultimately serve to improve community healthcare practices with larger and more diverse populations; (3) evaluation of the patient-oriented pharmacy services, medication therapy management, and clinical trials in the areas of tobacco cessation, dyslipidemia, obesity, diabetes, self-care, self-medication/herbals and dietary supplements; (4) characterization of components within natural products on their safety, efficacy and quality profiles using analytical tools to acquire molecular spatial data on minimally processed relevant natural products. He is the recipient of over a dozen grants and has published more than 30 articles in peer-reviewed research journals, six books, and other publications.
Appendix E

Five Year Pro Forma
### OPERATING BUDGET

#### PERSONNEL

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<thead>
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#### OPERATIONS

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#### REVENUE

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<td>P2 Number of Students</td>
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<td>In-State Tuition Revenue</td>
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<td>P4 Number of Students</td>
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<td>Carry Over from the year before</td>
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<td>Total Revenue</td>
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**Difference**

| Difference | $ 147,568 | $ 12,391 | $ 68,598 | $ 3,205 | $ 3,313 |

**Expenditures are based on operating costs associated with grants and contracts, including subcontracts, personnel, equipment, supplies, travel, etc.**
Appendix F

Tuition for the CoP
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<td>UH MĀNOA²</td>
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<td>Graduate Business</td>
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¹ All students are subject to campus-based student fees not shown here.

² Full-time (FT) tuition applies to students enrolling for 12 or more credits. In accordance with University concurrent enrollment policy, students enrolling at multiple institutions/campuses during the same term pay the applicable tuition at each campus. Unless a special tuition schedule applies, regular day tuition applies to any credit course offered throughout the year for which a General Fund appropriation is authorized.

³ The CBA master's degrees offered in executive format charge the resident tuition established here plus additional fees delegated to and approved by the President.

Approved by the Board of Regents: October 26, 2011
<table>
<thead>
<tr>
<th>PI Name</th>
<th>Title</th>
<th>Award Sponsor</th>
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<td>Development of Neuroblastoma Therapeutics by Optimization of Polyamine Inhibitor Strategy</td>
<td>University of Hawaii Foundation</td>
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<td>Carolyn Ma</td>
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<td>Deborah Joanez</td>
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<td>Eugene Konamie</td>
<td>Inhibition of cardiac vascular network formation by targeted anticancer drug sorafenib</td>
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<td>John Pezzuto</td>
<td>&quot;Pharm2Pharm&quot; Service Innovation in Rural Haeae</td>
<td>HEALTH &amp; HUMAN SVC, DEPT-CTR FOR MEDICARE &amp; MEDICAID</td>
<td>14,346,045</td>
<td>7/1/12</td>
<td>6/30/15</td>
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<td>John Pezzuto</td>
<td>Clinical Pharmacy Training Program FY 2011</td>
<td>Education, Dept - Fed</td>
<td>1,500,000</td>
<td>9/1/10</td>
<td>8/31/12</td>
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<td>John Pezzuto</td>
<td>BIRE</td>
<td>NIH</td>
<td>3,244,858</td>
<td>6/1/10</td>
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<td>Karen Pellegrin</td>
<td>Biscorn -Sub award (Jacob, M Pezzuto, Helfman)</td>
<td>NC</td>
<td>35,296</td>
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<td>Kenneth Morris</td>
<td>UHH Outreach Partner Proposal for the NSF-ERC-SOPS</td>
<td>RUTGERS, STATE UNIVERSITY OF NEW JERSEY</td>
<td>50,000</td>
<td>7/1/11</td>
<td>6/30/12</td>
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<td>Kenneth Morris</td>
<td>materials and dosage form characterization</td>
<td>GLAXOSMITHKLINE</td>
<td>78,688</td>
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<td>6/30/13</td>
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<td>Kenneth Morris</td>
<td>UHH Outreach Partner Proposal for the NSF-ERC-SOPS</td>
<td>RUTGERS, STATE UNIVERSITY OF NEW JERSEY</td>
<td>80,000</td>
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<td>Lara Gomez</td>
<td>Rural East Hawaii Workforce Development Network</td>
<td>Bay Civic, Inc.</td>
<td>120,000</td>
<td>9/1/10</td>
<td>8/31/13</td>
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<td>Lung Chee Chang</td>
<td>BRIDGES-Potential of Physalis peruviana(poha) in the Treatment of Breast</td>
<td>UH-JABSOM Cancer Center</td>
<td>25,000</td>
<td>9/1/12</td>
<td>7/31/13</td>
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<td>Linda Connelly</td>
<td>Osteoprotein in breast cancer cells: role in tumor growth and metastasis</td>
<td>NIH</td>
<td>410,100</td>
<td>9/1/12</td>
<td>8/31/15</td>
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<td>Linda Connelly</td>
<td>Role of Endogenous Osteoprotein Expression in Breast Cancer Metastasis</td>
<td>Hawaii Community Foundation (HCF)</td>
<td>50,000</td>
<td>5/18/11</td>
<td>11/18/12</td>
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<td>Mahavi Chougule</td>
<td>Transdermal Permeation of Magnesium Suplement Cream Formulations Across Skin</td>
<td>Center for Magnesium Education and Research, LLC</td>
<td>16,347</td>
<td>10/25/11</td>
<td>4/25/12</td>
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<td>Mahavi Chougule</td>
<td>Targeted Nanocarriers of siRNA for the Treatment of Asthma</td>
<td>HCF-Lean Fund</td>
<td>35,000</td>
<td>8/18/11</td>
<td>2/18/13</td>
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<td>Robert Borris</td>
<td>EPSCOR</td>
<td>NSF</td>
<td>979,510</td>
<td>9/1/09</td>
<td>8/31/14</td>
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<td>Susan Jari</td>
<td>A statewide targeted pathfinder surveillance study: Diversity of Avipoxvirus and avian malaria in native Hawaiian forest birds</td>
<td>INTERIOR, DEPT-FISH &amp; WILDLIFE SVC</td>
<td>58,414</td>
<td>9/1/12</td>
<td>3/1/14</td>
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<td>Susan Jari</td>
<td>Efficacy of a vaccine against Angiostrongylus costaricensis to A. cantonensis in rats (Rattus rattus) from Hawaii</td>
<td>HAWAII COMMUNITY FOUNDATION MED RISH FUNDS</td>
<td>40,000</td>
<td>7/20/12</td>
<td>10/20/14</td>
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Overall - Total: 37,142,293
Appendix H

Major Equipment
Large Equipment

- Two (2) Bruker Avance DRX 400MHz multinuclear NMR spectrometers
- Varian MS500-IT LC-MSn system with ESI and APCI interfaces
- Agilent 6530 LC-qTOF mass spectrometer with ESI and APCI interfaces
- Agilent 7000B GC-QQQ mass spectrometer
- Bruker powder X-ray diffractometer
- Mettler Toledo TGA/DSC1
- Shimadzu UV-1800 and UV-Mini 1240 UV/Vis spectrophotometers
- Nicolet iS10 FTIR with Centaurus microscope
- Jasco J815 CD spectropolarimeter
- Rudolph Research Autopol IV multiwavelength polarimeter
- Buchi B540 melting point instrument
- Beckman Quanta MPL flow cytometer
- Accuri C6 flow cytometer
- Sorvall WX90 Ultracentrifuge
- Perkin Elmer Cyclone Plus Phosphor Scanner
- Perkin Elmer Geliance 1000 gel imager
- Perkin Elmer Wizard beta counter
- Perkin Elmer 2480 gamma counter
- Perkin Elmer Tricarb 2910 TR liquid scintillation counter
- Perkin Elmer Microbeta Trilux Microplate Liquid Scintillation Counter
- Beckman Coulter LS6500 multipurpose liquid scintillation counter
- Perkin Elmer Microbeta Filterman-96 cell harvester
- Stratagene Mx3005P realtime QPCR system
- Applied Biosystems StepOne realtime QPCR system
- BioRad CFX-96 realtime QPCR systems
  BioRad C1000 thermal cyclers
- Agilent 2100 Bioanalyzer
- Licor Odyssey infrared imager
- Biotek Synergy 2, Synergy MX, MicroQuant and ELx800 microplate readers
- Perkin Elmer Victor-X5 microplate reader
- Lumistar luminescence plate readers
- Perkin Elmer Operetta High Content Screening System with integrated CO-2 incubator, Columbus Data Manager, and Volocity 3D image analysis software
- Leica TCS-SPE laser confocal microscope
- Zeiss, Leica and Olympus upright, inverted, stereo, and fluorescence microscopes
- Patchclamp electrophysiology system
- New Brunswick I24 and E24R shakers
- Fisher Isotemp and NAPCO CO₂ incubators and forced air incubators
- Thermo Excelsior ES tissue processor
- Thermo Microm 360 microtome
- Thermo Microm HM550 cryostat microtome
- Several Mettler-Toledo and Shimadzu analytical and toploading balances
- Cahn Analytical C-35 microbalance
- Several Buchi and Heidolph rotary evaporators with Lauda recirculating chillers
- Heidolph LR20 20 liter rotary evaporator
- 4 Savant SpeedVac concentrators
- Genevac EZ2plus evaporator system
- 2 Labconco Freezone Plus lyophilizers
- Yamato, Market Forge and Tuttnauer autoclaves
- Sorvall Legend XTR and Micro 21R centrifuges
- Numerous pH meters (Orion and Mettler), hotplates, stirrers and vortex mixers
- CEM Discover and Biotage Initiator microwave reactors
- Ten (10) analytical HPLC systems (Beckman Series Gold, Shimadzu Prominence, Dionex Ultimate 3000, PE Series 200, Waters 600e), Agilent 1220 Infinity with PDA or UV/Vis detectors, Shimadzu and Varian ELSD detectors, Waters Fluorescence detector, ESA Coulochem III electrochemical detector and a Dionex Corona ultra CAD detector
- Two (2) preparative HPLCs (Shimadzu)
- Two (2) Biotage Isolera flash chromatography systems
- Two (2) MPLC system (Buchi), LPLC pumps (FMI), with a variety detectors and other components
- Kromaton HPCPC system with 50ml, 200ml and 1L rotors and a multiwavelength detector
- Numerous Refrigerators, -20C freezers, -80 freezers and liquid nitrogen storage systems
- Rigaku LN40 liquid nitrogen generator
- BT Industries spinning band distillation system
- SG-Water Glass Contour solvent purification system
- New Brunswick CelliGen BLU mammalian cell bioreactor
- Eppendorf bench top centrifuges (5810R, 5702, 5424, 5424R, 5430R)
Appendix I

Faculty Publications
Julie Ann Luiz Adrian, DVM, Assistant Professor/Veterinary Pharmacy, Pharmacy Practice

1. Adrian JAL, Arancon N, Mathews B, Carpenter. Proximate analysis, in vitro organic matter digestibility, and energy content of common guava (Psidium guajava L.) and yellow, strawberry guava (Psidium cattleianum var. lucidum) tree parts and fruits as potential forage. *Journal of Agricultural and Food Chemistry*, in press.


**PUBLICATION UNDER REVIEW**


Book Chapters:


Robert P. Borris, PhD, Associate Dean for Research and Associate Professor


2. Three New Amides from Streptomyces sp. H7372. J. Braz. Chem. Soc. 22 (2), 223-229. Published online 21 September 2010


Leng Chee Chang, PhD, Assistant Professor, Pharmaceutical Sciences


Plants from the Western Himalayas for Cytotoxicity and as Potential Cancer Chemopreventive Agents. Pharm. Biol. 47, 533-538.

Benjamin Chavez, PharmD, Assistant Professor, Pharmacy Practice


28. Publications – Book Chapters

Mahavir Chougule, Assistant Professor, Pharmaceutical Sciences


13. Chougule M, Tekade R, Current Scene and Prospective Potentials of siRNA in Cancer Therapy, J Pharmacogenom Pharmacoproteomics 2012, 3(6), e125

Peer-reviewed Book Chapter


Peer-reviewed Reviews


Linda Connelly, PhD, Assistant Professor, Pharmaceutical Sciences and Office of Pre-Pharmacy

1. Russ S. Muramatsu, Mark H.J. Litzinger, Edward Fisher, and Junji Takeshita, Alternative Formulations, Delivery Methods, and Administrative Options for Psychotropic Medications in Elderly Patients with Behavioral and Psychological Symptoms of Dementia, the American Journal of Geriatric Pharmacotherapy, 8(2), 21-17, April 2010.


**Edward Fisher, PhD, Associate Dean for Academic Affairs**

3. Edward Fisher, PhD, Associate Dean for Academic Affairs

**Roy Goo, Assistant Professor, Pharmacy Practice**

Daniela Guendisch, Assistant Professor, Pharmaceutical Sciences


10) Gündisch D, Eibl C.
From acetyl bispidine to an extended bispidine amide framework: Synthesis and structure-affinity relationships for nicotinic acetylcholine receptors (nAChRs). *Biochem Pharmacol* 2009; 78:905.


**Elizabeth Heffernan, MA, Director of Student Services**


Susan Jarvi, PhD, Director, Pre-Pharmacy Program and Associate Professor


Book Chapters

Deborah Juarez, ScD, Associate Professor, Pharmacy Practice
22. Juarez DT; Davis JW; Brady SK; Chung RS. Prevalence of Coronary Heart Disease and Its Risk Factors Related to Age in Asian, Pacific Islanders, and Caucasians in Hawai‘i. *Journal of Healthcare for the Poor and Underserved.* 2012; 23(3):1000-10.
25. Davis J, Juarez DT, Hodges K. Relations of ethnicity and body mass index with the development of hypertension and hyperlipidemia. *Ethnicity and Disease*. (in press)

Eugene Konorev, MD, Assistant Professor, Pharmaceutical Sciences


Tamara P. Kondratyuk, PhD, Laboratory Manager and Assistant Specialist


Dana Koomoa-Lange, PhD, Assistant Professor, Pharmaceutical Sciences


Kenneth R. Morris, PhD, Professor, Pharmaceutical Sciences


5. Xiaoming Chen, Joseph G. Stowell, Kenneth R. Morris, Stephen R. Byrn,


14. Engers, David A., Fricke, Molly N., Newman, Ann W., Morris, Kenneth R.,
“Triboelectric charging and dielectric properties of pharmaceutically relevant mixtures” *Journal of Electrostatics* (2007), 95(12), 2645-2656.


**Book Chapters**


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**Karen Pellegrin, PhD, Director of Continuing/Distance Education and Strategic Planning**


John M. Pezzuto, PhD, Dean and Professor


34. Cheenpracha, S., Park, E.J., Rostama, B., Pezzuto, J.M., and Chang, L.C. Inhibition of nitric oxide (NO) production in lipopolysaccharide (LPS)-activated murine macrophage RAW 264.7 cells by the


**Book Chapters**


**Book Edited**


**Perspective**


**Dianqing Sun, Assistant Professor, Pharmaceutical Sciences**


**Anthony D. Wright, PhD, Associate Professor, Pharmaceutical Sciences**


Ghee Tan, PhD, Assistant Professor, Pharmaceutical Sciences


Refereed Book Chapters


Refereed Reviews


Sheri Tokumaru, PharmD, Assistant Professor, Pharmacy Practice


Supakit Wongwiwatthananukit, Associate Professor, Pharmacy Practice


BOOKS


