John A. Burns School of Medicine

Administration
John A. Burns School of Medicine
651 Ilalo Street
Honolulu, HI 96813
Tel: (808) 692-0899
Web: jabsom.hawaii.edu

Interim Dean: Gary K. Ostrander
Senior Associate Dean: Satoru Izutsu

General Information
The John A. Burns School of Medicine (JABSOM) works to improve the quality, effectiveness, and equity of health-care delivery in Hawai‘i and the Pacific region. The school provides opportunity for qualified residents of Hawai‘i and the Pacific Islands, including students from various underrepresented socioeconomic and minority groups, to qualify for an MD degree; provides MD graduates with competency to enter postgraduate programs; and provides residency training programs with emphasis on primary-care specialties.

The school also administers graduate research and professional programs leading to MS, PhD and MPH degrees in the basic medical sciences and health-related fields; BS degree programs in speech pathology and audiology and medical technology; and undergraduate courses for majors in nursing, dental hygiene, biology, nutrition, and other fields.

In addition, the school—together with the Hawai‘i Medical Association and the Hawai‘i Consortium for Continuing Medical Education—sponsors continuing medical education for physicians in the state of Hawai‘i.

The school provides instruction for five major categories of students:
1. Candidates for the MD degree who are admitted directly by the school’s own admissions committee;
2. Candidates for MS degrees in biomedical sciences (with concentrations in cell and molecular biology, clinical research, physiology, and tropical medicine), public health or in speech pathology and audiology who apply through the Graduate Division of UH Mānoa;
3. Candidates for the MPH degree who apply through the Graduate Division of UH Mānoa;
4. Candidates for PhD degrees in biomedical sciences with concentrations in clinical research, cell and molecular biology, epidemiology, physiology, and tropical medicine who apply through the Graduate Division of UH Mānoa; and
5. Candidates for undergraduate degrees in speech pathology and audiology or in medical technology, who apply through the undergraduate admissions office.

In addition, a post-baccalaureate certificate for medical technology clinical training is offered.

The Kaka‘ako Waterfront Complex
In 2005, the John A. Burns School of Medicine relocated to a new $150 million facility in Kaka‘ako, on the water’s edge, between Waikiki and downtown Honolulu. JABSOM’s previous location, the 33-year-old Biomedical Sciences building on the Mānoa campus, will continue to be occupied by the Departments of Public Health Sciences, Medical Technology, and Speech Pathology and Audiology, and by various research units. The Kaka‘ako waterfront complex provides

Contents

| General Information                                      | 260 |
| Advising                                                | 261 |
| Academic Policies                                       | 261 |
| MD Program                                              | 261 |
| Honors and Awards                                       | 262 |
| Postgraduate Medical Education Programs                 | 262 |
| Graduate Programs                                       | 262 |
| Undergraduate Programs                                  | 262 |
| Special Programs                                        | 262 |
| Hawai‘i/Pacific Basin Area Health Education Center      | 262 |
| Overseas Programs                                       | 263 |
| Allied Medical Sciences                                 | 263 |
| Anatomy, Biochemistry and Physiology                    | 263 |
| Cell and Molecular Biology                              | 265 |
| Complementary and Alternative Medicine                  | 265 |
| Epidemiology                                            | 266 |
| Family Medicine and Community Health                    | 267 |
| Geriatric Medicine                                     | 268 |
| Medical Technology                                     | 268 |
| Medicine                                               | 270 |
| Native Hawaiian Health                                  | 270 |
| Obstetrics, Gynecology, and Women’s Health              | 271 |
| Pathology                                              | 272 |
| Pediatrics                                             | 272 |
| Psychiatry                                             | 273 |
| Public Health Sciences                                  | 274 |
| Speech Pathology and Audiology                          | 276 |
| Surgery                                                 | 278 |
| Tropical Medicine, Medical Microbiology and Pharmacology | 278 |
an environment conducive to JABSOM’s goal of becoming a top-ranked research-intensive medical school and offers the opportunity to attract world-class research scientists to JABSOM’s faculty.

Target areas of research, which includes innovations in problem-based-learning medical education, are retro-virology/infectious diseases/AIDS, molecular biology/genetics/neuroscience, genomic medicine, proteomics, and bioinformatics/computational biology.

Plans also include building an incubator center (leaseable research space) to provide biotechnology and bioscience companies a campus-like environment enabling collaboration with academic researchers. A major medical research center, with surrounding space for such companies, as well as Honolulu’s technology infrastructure and ties to Asia and the Pacific, will make the city of Honolulu a prime environment for the growing technology and biomedical research industries.

Accreditation

The school is accredited by the Liaison Committee for Medical Education of the Association of American Medical Colleges and the Council on Medical Education of the American Medical Association.

Additionally, all postgraduate medical education programs in Honolulu hospitals are accredited as UH School of Medicine residency programs by the Accreditation Council of Graduate Medical Education. Approximately 240 physicians serve as house staff members in these hospitals under the direction of the medical school faculty.

Affiliations

The school maintains affiliations with the following community hospitals and medical facilities for medical student and resident training: Hawai‘i State Hospital; Kaiser Foundation Hospital; Kalihi-Palama Health Clinic; Kapi‘olani Medical Center for Women and Children; Kapi‘olani Medical Center at Pali Momi; Kokua Kalani Valley Health Center; Kuakini Medical Center; Lē‘ahi Hospital; The Physician Center; Queen Emma Clinics; Queen’s Medical Center; Rehabilitation Hospital of the Pacific; St. Francis Medical Center; St. Francis Medical Center–West; Shriner’s Hospital for Crippled Children; Straub Clinic and Hospital; Tripler Army Medical Center; Wahiawa General Hospital; Wai‘anae Coast Comprehensive Health Center; and the Veterans Affairs Outpatient Clinic.

Degrees

Bachelor’s Degrees: BS in medical technology, BS in speech pathology and audiology

Master’s Degrees: MS in biomedical sciences (cell and molecular biology, clinical research, physiology, and tropical medicine); MPH and MS in public health; MS in speech pathology and audiology

Professional Degree: MD

Doctoral Degrees: PhD in biomedical sciences (cell and molecular biology, clinical research, epidemiology, physiology, and tropical medicine)

Advising

Premedical advising is conducted by the Student Academic Services Office of the Colleges of Arts and Sciences.

Academic Policies

Undergraduate and graduate students in the School of Medicine must adhere to the academic policies of UH Mānoa. Medical students are exempted from certain UH Mānoa policies and instead must follow academic policies germane to the MD program. Copies are available in the school’s Office of Student Affairs.

MD Program

The MD program follows a problem-based curriculum, which was implemented in fall 1989. It includes the following key features: knowledge is acquired in problem-based modules; self-directed learning is fostered in small group tutorials; students are actively involved in the learning process; faculty members function as both facilitators of learning and resource experts; basic sciences are learned in the context of solving clinical problems; no discipline-specific courses are required; and interdisciplinary basic science lectures are integrated around cases. In addition, students are trained to think critically and to evaluate new information and research data. Evaluation is based on competence in a variety of problem-solving exercises. Early clinical and community experiences are also unique features of the curriculum. The curriculum courses are listed under biomedical sciences (BIOM) and/or medical education (MDED).

Admission Requirements/Application Process

Candidates for MD training must have completed a minimum of 90 semester credit hours of college-level coursework. A baccalaureate degree is strongly recommended.

- 8 semester credit hours of biology with lab
- 8 semester credit hours of general physics with lab
- 8 semester credit hours of general chemistry with lab
- 8 semester credit hours of organic chemistry with lab
- 3 semester credit hours of biochemistry (no lab required)
- 3 semester credit hours of cell and molecular biology (no lab required)

The science courses should be of the type acceptable for students majoring in the above disciplines AND, where indicated, include laboratory experience. Additional enrichment in the biological and social sciences is encouraged. Applicants should be fully competent in reading, speaking, and writing the English language.

Applicants are required to apply through the American Medical Colleges Application Service (AMCAS). The service permits an applicant to file a single web-based application, which is forwarded to as many participating medical schools as designated on the AMCAS application. The AMCAS
application is available from **June 1** at the AMCAS website: www.aamc.org. The deadline to electronically transmit the application to AMCAS is **November 1**.

Applicants must also take the nationally administered Medical College Admissions Test (MCAT), which deals with knowledge of the physical and biological sciences and skills in verbal reasoning and writing. The MCAT must be taken no later than August of the year of application. The oldest MCAT test scores considered in the application screening process must be taken within three years of anticipated matriculation to medical school.

Each entering class of MD candidates is limited to 62 students. Inquiries regarding admissions should be directed to the Office of Student Affairs, Admissions, John A. Burns School of Medicine, 651 Ilalo Street, MEB, Honolulu, HI 96813 or via e-mail medadmin@hawaii.edu. Further information may be obtained on the web at jabsom.hawaii.edu.

**Honors and Awards**

Alpha Omega Alpha is the honorary society for medical students.

**Postgraduate Medical Education Programs**

Postgraduate medical education programs in Honolulu hospitals in family practice, sports medicine, geriatric medicine, internal medicine, obstetrics and gynecology, pathology, pediatrics, neonatal-perinatal pediatrics, developmental-behavioral pediatrics, psychiatry (adult, child and adolescent, geriatric, addiction and forensic), surgery, surgical-critical care, orthopedic surgery, and a transitional year are conducted by faculty and accredited as UH School of Medicine residency programs. Approximately 240 physicians are involved in training, which lasts one to seven years. These physicians serve as members of the house staff in the hospitals while studying their chosen specialty.

The school conducts a postgraduate medical education program at Chubu Hospital in Okinawa for graduates of Japanese medical schools.

**Graduate Programs**

The School of Medicine offers the MS and/or PhD degrees in biomedical sciences with concentrations in cell and molecular biology, clinical research, epidemiology, physiology, and tropical medicine. Master degree programs in public health (MPH, MS) and speech pathology and audiology (MS) are also offered. Refer to the department/program sections of the *Catalog* for more information on each graduate program. Note: Information on the clinical research program is listed under the department of complementary and alternative medicine; information on the cell and molecular biology graduate program is located in the “Interdisciplinary Programs” section of the *Catalog*.

Graduate program inquiries should be directed to the appropriate program chair. General information is available on the web at jabsom.hawaii.edu/JABSOM/admissions/graduate.php.

**Biomedical Sciences**

**Cell and Molecular Biology**

David Haymer, PhD  
Phone: (808) 956-5517  
Email: dhaymer@hawaii.edu  
Web: www.hawaii.edu/cmb

**Clinical Research**

Rosanne Harrigan, EdD  
Phone: (808) 692-0909  
Email: mscr@hawaii.edu  
Web: www2.hawaii.edu/~mscr/

**Epidemiology**

F. DeWolfe Miller, PhD  
Phone: (808) 956-8267  
Email: dewolfe@hawaii.edu  
Web: www.hawaii.edu/publichealth/academics/phd.html

**Physiology**

David Lally, PhD  
Phone: (808) 956-7983  
Email: lally@hawaii.edu  
Web: jabsom.hawaii.edu

**Tropical Medicine**

Sandra Chang, PhD  
Phone: (808) 732-1477  
Email: sandrac@hawaii.edu  
Web: apitmid.hawaii.edu/graduate_studies.html

**Public Health**

Jay Maddock, PhD  
Phone: (808) 956-8267  
Email: ogsas@hawaii.edu  
Web: www.hawaii.edu/publichealth

**Speech Pathology and Audiology**

James Yates, PhD  
Phone: (808) 956-8279  
Email: spauh@hawaii.edu  
Web: www.hawaii.edu/spauh/

**Undergraduate Programs**

For information on medical technology or speech pathology and audiology, refer to the respective sections of the *Catalog*.

**Special Programs**

**Hawai’i/Pacific Basin Area Health Education Center (AHEC)**

AHEC supports travel and housing costs for students to perform training in rural areas (neighbor islands, U.S.-affiliated Pacific Islands) during all years of school, as well as supports distance learning activities (video teleconferencing), two community based interdisciplinary training programs (the programs formerly called Ke Ola), and assists with travel for the
Quentin Burdick Rural Interdisciplinary Training Program. AHEC also performs ongoing research in which students are invited to participate. The research areas include health workforce needs in the Pacific, factors influential in increasing pursuit of health science careers, and the health needs of rural and underserved communities including homeless individuals and families.

Other AHEC activities include recruitment to health science careers for students of all ages, as well as assistance with applications, finding financial support, research experiences and community partnerships, as well as providing continuing education, community health education and expanding community capacity to create programs to improve health.

AHEC is a federally funded program through the Health Resources and Services Administration. The federal mandate is to improve the diversity, distribution and quality of the health professions workforce. The mission of AHEC: To improve the health of the underserved through education. Activities focus on five primary areas: (1) Health education and recruitment to health professions for students across the state from kindergarten through college; (2) Educating health professions students in rural and underserved areas, often in interdisciplinary teams; (3) Recruitment, retention and continuing education of practicing health professionals in medically underserved areas; (4) Providing community based and community driven health education in over a dozen community learning centers across the state; and (5) Providing video connectivity for health education, communication, and other health care services to rural and underserved areas across the state. Other organizations administered in partnership with AHEC include the NIH Science Education Partnership Award (SEPA) program and the Hawai‘i Health Education Training Center for Community Health Workers and Physician Assistants.

Overseas Programs

The school plays an extensive training role at locations outside Hawai‘i and expects that its involvement in the Pacific and Asia will continue. In the scattered islands of Micronesia, the school has trained medical officers (MOs) and physician assistants to bring primary care to a widely dispersed population. The curricula were relevant to the clinical and community health needs of the Pacific Basin. Graduates of the MO program received a Diploma in Community Health, Medicine, and Surgery. Training of other health professionals in the Pacific Basin area continues. On Okinawa, the school conducts a residency training program for graduates of Japanese medical schools. This program is financed by the Okinawa prefectural government. The school conducts a medical student exchange program with medical schools in Korea, Thailand, the Philippines and Japan.

Allied Medical Sciences

John A. Burns School of Medicine
651 Ilalo Street
Honolulu, HI 96813

Faculty

S. Izutsu, PhD (Chair)—clinical psychology, gerontology
K. A. Bauman, MD—community medicine
W. Patrick, PhD—international health education

Allied Medical Sciences department offers course work in a number of fields that do not lead to the MD degree. These include medical history, medical technology, speech pathology and audiology, and sports medicine. For a description of these programs, see the appropriate sections.

Anatomy, Biochemistry and Physiology

John A. Burns School of Medicine
651 Ilalo Street
Honolulu, HI 96813
Tel: (808) 692-1445
Web: jabsom.hawaii.edu

Faculty

*S. Lozanoff, PhD (Chair)—renal and craniofacial morphogenesis
V. B. Alarcon, PhD—mammalian developmental biology
R. Allsopp, PhD—telomerase biology
*N. V. Bhagavan, PhD—clinical biochemistry, role of surfactant in pulmonary function, thyroid and cholesterol metabolism, structural studies on human serum albumin
*M. Diamond, PhD—sexual behavior and reproduction, neural and hormonal influences on sexuality
B. Fogelgren, PhD—developmental genetics, renal disease
S. Fong, MD, PhD—cell and molecular biology
*H. L. Gillary, PhD—human evoked membrane potentials
J. S. Ha, PhD—role of human albumin and its structural variants in coronary heart disease
*D. A. Lally, PhD—exercise physiology
*Y. C. Lin, PhD—cardiovascular, hyperbaric physiology
*Y. Marikawa, PhD—mammalian embryogenesis, cell differentiation, and body pattern formation
D. Merritt, PhD—aging and exercise physiology
S. Moisyadi, PhD—mammalian transgenesis
*H. F. Mower, PhD—problems in carcinogenesis in normal and neoplastic systems
J. Shaman, PhD—sperm biology
*R. M. Smith, PhD—free radical biology
S. Tsuhako, MD—medical education
M. Ward, PhD—sperm physiology and genetics, assisted reproduction technology
*W. S. Ward, PhD—DNA structure, embryogenesis, and sperm biology

* Graduate Faculty
The Department of Anatomy, Biochemistry and Physiology supports the interdisciplinary nature of modern biomedical research and exposes both medical and graduate students to the type of research environment they will encounter in their professional career. The department was formed in acknowledgement of the MD program’s ongoing need for discipline-based expertise in the areas of anatomy, physiology, and reproductive biology, which provides a broad base of knowledge in biological structure and function from the molecular level to the body as a whole, as well as biochemistry, which involves the study of the chemistry and physics of living systems and is fundamental to the understanding of many of the disciplines of medical, biological, and agricultural sciences.

The department offers upper- and lower-level courses in biochemistry and physiology as preparatory coursework for prospective medical students as well as 500-level electives in human anatomy and physiology for medical students that supplement knowledge gained in the tutorials. The training of medical students and postgraduate training of physicians would not be possible without the department’s Willed Body Program.

Students seeking health-related careers in areas such as dentistry, medicine, nursing, nutrition, physical therapy, public health, and the social sciences need many of the department’s physiology courses. Formal programs of study leading to MS and PhD degrees in biomedical sciences (physiology) are also offered. These students may elect to conduct research at the molecular or cellular level, on organs such as the lungs, or on the whole animal or person. Through the interdisciplinary Cell and Molecular Biology Graduate Program, qualified graduate students have the opportunity to work with faculty from other JABSOM departments and programs within the university system as well.

The MS (Plan A) program in physiology prepares students for teaching careers in universities, community colleges, and high schools, as well as for research careers at universities, hospitals, government laboratories, and large pharmaceutical companies. Candidates must take a written qualifying examination, an oral comprehensive examination, and submit an acceptable outline of their proposed dissertation research. They must also submit and defend their dissertation. PhD graduates usually obtain postdoctoral positions elsewhere as further preparation for a career in teaching and research at the university level.

Applicants must submit three letters of recommendation together with either GRE or MCAT scores. All applicants are expected to have adequate backgrounds in biology, chemistry, mathematics, molecular biology, and physics. The course requirements for admitted students vary with their degree and specialization, but all candidates for the MS and PhD degrees must take a written qualifying examination.

The department’s anatomy and reproductive biology faculty are world renowned for their research in the areas of fertilization, reproductive endocrinology, and neurobiology of sexual behavior. Department faculty established the Institute for Biogenesis Research and pioneered the successful “Honolulu Technique” cloning technology which provided scientists with a new and valuable tool for researching the molecular processes involved in embryo formation, cell differentiation, aging, and disease. The biochemistry faculty offer laboratory and research experience either through formal courses or through participation in funded research programs in areas such as clinical biochemistry, bioenergetics, biochemistry of reproduction, and chemical carcinogenesis. Department faculty also have appointments in the Pacific Biosciences Research Center and the Cancer Research Center of Hawai‘i.
Cell and Molecular Biology

John A. Burns School of Medicine
651 Ilalo Street
Honolulu, HI 96813
Tel: (808) 692-1514
Web: www.hawaii.edu/cmb

Faculty
*M. J. Berry, PhD (Chair)—selenoproteins, antioxidants and human diseases
*D. C. Blanchard, PhD—ethoexperimental analysis of defense and aggression; preclinical pharmacology of anxiety, panic and depression; gender differences in emotional behavior
T. Blank, PhD—neurobiology
*G. D. Bryant-Greenwood, PhD—preterm birth in the human, role of relaxins in fetal membrane rupture
*R. L. Cann, PhD—molecular and evolutionary genetics
*D. S. Haymer, PhD—molecular evolution and developmental genetics
P. Hoffmann, PhD—selenoproteins in asthma and inflammation
*D. M. Jameson, PhD—fluorescence spectroscopy; biomolecular dynamics and interactions; ribosomal proteins
*O. LeSaux, PhD—diseases of connective tissue
*P. Li, MD, PhD—diabetes and ischemia-reperfusion injury
*T. W. Lytle, PhD—population genetics, cytogenetics
*M. Matter, PhD—intrigin regulated cell survival and apoptosis
J. Panee, PhD—selenoproteins and natural products as antioxidants
*M. D. Rayner, PhD—structure-function relationships in voltagegated ion channels
*S. E. Seifried, PhD—macromolecular interactions, transcription factor recognition of specific DNA sequences, protein subunit assembly
Z. Stoytcheva, PhD—molecular biology of selenoproteins
C. Todorovic, PhD—neurobiology
P. Tovote, PhD—neurobiology
T. Zeyda, PhD—neurobiology

Adjunct Faculty
T. A. Donlon, PhD—human genetics
*A. Fleig, PhD—electrophysiology (patch-clamp); calcium signaling in muscle cells; regulation of calcium signaling; cellular neuroimmunology
*R. Penner, PhD—electrophysiology (patch-clamp); intra- and intercellular signal transduction; regulation of calcium signaling; cellular neuroimmunology
*H. Turner, PhD—immunogenetics, cannabinoid receptors, cell signaling

The Academic Program

Faculty in the Department of Cell and Molecular Biology have ongoing research programs in areas such as genetics, cell biology, biochemistry and neurophysiology. The department also provides instruction in the basic principles and concepts of genetics, biochemistry and molecular biology to medical students, graduate students from various disciplines, and undergraduates.

The faculty also participate in the training of PhD and MS graduate students in the interdisciplinary Cell and Molecular Biology Program. This program brings together faculty with expertise in biochemistry, cell biology, cell signaling, developmental biology, genetics, immunology/retrovirology, neurobiology/neurophysiology, plant molecular physiology, and reproduction function for collaborative teaching and research activities. Information on the Cell and Molecular Biology (CMB) Program can be found in the “Interdisciplinary Programs” section of this Catalog, on the CMB website, or interested applicants can contact:

Lyn Hamamura
John A. Burns School of Medicine
Cell and Molecular Biology Graduate Program
651 Ilalo Street
Honolulu, HI 96813
Tel: (808) 692-1514
lynh@hawaii.edu

Complementary and Alternative Medicine

John A. Burns School of Medicine
651 Ilalo Street
Honolulu, HI 96813
Tel: (808) 692-0909

Faculty
*R. Harrigan, EdD (Chair)—women’s health, health disparities
N. Apau, MD, MS—asthma
S. Berry, MD—family practice
*A. Brown, PhD—nutrition
E. Cadman, MD—oncology, health disparities
*K. Csiszar, PhD—ethnobotanicals, molecular biology
Z. Hammatt, MPhil, JD—ethics
T. Shintani, JD, MD, MPH—nutrition
*K. Withy, MD—health services research, workforce development

Cooperating Graduate Faculty
M. Berry, PhD—selenoprotein synthesis
L. Chang, MD—neuroscience
D. Easa, MD—health disparities and lung disease in neonates
T. Ernst, PhD—neuroscience
A. Katz, MD, MPH—epidemiology

The Academic Program

The State of Hawai‘i is an environment with the unique rich blend of cultures and ethnicities and many healing traditions, some of ancient origins. Complementary and Alternative Medicine (CAAM) takes on increased significance in Hawai‘i because the diverse population of the state uses these treatment modalities frequently.

The department is committed to conducting both basic and applied research related to complementary and alternative

* Graduate Faculty
therapies in Hawai‘i and the Pacific region; educating the next generation of physicians and other healthcare personnel about the potential risks and benefits of complementary and alternative therapies; providing culturally competent care for people within the state of Hawai‘i by understanding the use of patterns of complementary care used by the Hawai‘i’s population; facilitating the study of medicinal plants, including varieties unique to Hawai‘i and/or the Pacific Rim; and promoting health service research to assess the clinical and financial benefits—or lack thereof—of CAAM therapies for the Hawaiian population.

The CAAM department is involved in a variety of funded research programs and provides research experience for students at all levels. Collaborations with other UH programs such as Korean and Chinese studies and Native Hawaiian and Health Ecology faculties have also been developed to reduce and eliminate health disparities in Hawai‘i and improve the health of Hawai‘i’s people.

Graduate Study

A graduate program leading to the MS in biomedical sciences is offered, with an emphasis on clinical research for clinicians, researchers, educators and consumers. Clinical research is the study of methods used to investigate clinical problems in medicine. Available in Plan A (thesis), the program requires a combination of course work and original research, the latter forming the basis of the master’s thesis.

Students enrolled in the program acquire skills in biostatistics and epidemiology, and master the scientific principles that underlie clinical research methods. They develop the ability to identify and resolve ethical issues in clinical research, to ensure the safeguarding of human subjects, and to understand the workings of Institutional Review Boards and other relevant requirements. In addition, students increase their capacity in obtaining research funding from agencies such as the National Institute of Health.

In addition to offering knowledge and skills needed for careers in clinical research, the program functions as a supportive mechanism for newly trained investigators, actively facilitating career development and encouraging research collaborations, particularly those related to research on health disparities. By providing high quality training to doctoral and post-doctoral candidates, the program aims to increase the mass of clinical researchers at UH Mānoa, including minority investigators. Targeting junior faculty, fellows, residents, and doctoral candidates from biomedical sciences, nursing, social work, psychology and public health, the interdisciplinary nature of the program broadens students’ perspectives and increases opportunities for innovative, cross-disciplinary collaborations in clinical research.

Graduates of the program pursue teaching careers in academia; as well as research careers in academia, government laboratories, and pharmaceutical companies. In addition, some graduates find employment in hospitals or private businesses.

The department also has a doctoral program leading to a PhD in biomedical sciences with a concentration in clinical research.

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**Epidemiology**

Biomedical Sciences D-204
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8267
E-mail: dewolfe@hawaii.edu

**Faculty**

- F. D. Miller, MPH, PhD (Chair)—epidemiology, infectious diseases
- S. Chang, PhD—infectious diseases
- J. D. Curb, MD—epidemiology, chronic diseases
- A. Diwan, PhD—infectious diseases
- J. Douglas, PhD—infectious diseases
- D. Easa, MD—clinical research
- M. T. Goodman, MPH, PhD—epidemiology
- C. Gotay, PhD—cancer research
- J. S. Grove, PhD—biostatistics
- D. J. Gubler, ScD—arboviruses and vector-borne disease, epidemiology and control
- A. Imrie, PhD—epidemiology, infectious diseases
- A. Katz, MD, MPH—epidemiology, infectious diseases
- L. Kolonel, MPH, PhD—cancer research
- L. Le Marchand, MD, MPH, PhD—epidemiology, cancer research
- G. Maskarinec, MD, MPH—cancer research
- S. P. Murphy, PhD—cancer research
- V. Nerurkar, PhD—infectious diseases
- R. Novotny, PhD—nutritional epidemiology
- B. Rodriguez, MD, MPH, PhD—epidemiology, chronic diseases
- L. White, MD, MPH—epidemiology, chronic diseases
- L. R. Wilkens, DrPH—biostatistics
- R. Yanagihara, MD, MPH—infectious diseases

**Affiliate Graduate Faculty**

- P. Effler, MD, MPH—epidemiology, infectious diseases

**Degree Offered:** PhD in biomedical sciences (epidemiology)

**The Academic Program**

Programs of study leading to the doctor of philosophy (PhD) in biomedical sciences are administered by faculty in the School of Medicine. The PhD in biomedical sciences with a concentration in epidemiology is based in the JABSOM Department of Public Health Sciences. Candidates who successfully complete this program will be able to teach and to provide consultative service in basic aspects of epidemiology. In addition, they will be able to conduct independent research.

Applicants must have an acceptable master’s degree in epidemiology or a closely related field or a degree providing comparable background. The Graduate Record Examination (General Test) and three letters of recommendation are required for application.

A prospective applicant is urged to communicate with a faculty member in his or her area of interest or with the program’s chair and to be accepted as an applicant by a faculty

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*Graduate Faculty*
member prior to admission. The faculty member involved will serve as an interim advisor upon the individual’s admission into the PhD program. A listing of the PhD in biomedical sciences (epidemiology) faculty is available at www.hawaii.edu/publichealth/academics/phdfaculty.html.

All candidates take a qualifying examination during their first year of enrollment to ascertain aptitude, strengths, and weaknesses in their basic preparation. The test results will be used in determining subsequent course work. This is usually followed by additional course work, a comprehensive examination, and dissertation research. Candidates should refer to the Catalog for procedural and substantive details.

A few teaching and research assistantships are available for degree candidates. In addition, there are a limited number of tuition waivers. Qualified students may also apply for East-West Center fellowships.

The Academic Program

The family medicine and community health (FMCH) department is a cooperative effort whose faculty members are involved with community partnerships in health professions education. Teaching goals are based on the assumption that primary medical care includes not only high quality, accessible, and acceptable care for episodes of illness, but also a concern for the promotion of a healthy lifestyle and environment for the population served.

Medical student instruction focuses on basic conceptual tools and practical preceptorships with people providing primary care.

The Sports Medicine Fellowship Program is affiliated with the FMCH Residency Program and provides opportunities in the clinical, research, and educational components of sports medicine and exercise science. The evolution of sports medicine into a medical specialty has paralleled a boom in sports participation at all age levels, and scientific findings that regular physical exercise helps to prevent and treat numerous medical conditions. The mission of the program is to develop academic distinction in the multi-disciplinary field of sports medicine through excellence in education, research, patient care, and community service.
The program offers clinical services including sports medicine, athletic team medical care, orthopaedic surgery, sports physical therapy and rehabilitation, sports psychology, and nutrition. The program also serves as a resource for the dissemination of sports medicine and exercise science-related information for the university and the state of Hawai’i.

Geriatric Medicine

John A. Burns School of Medicine
347 N. Kuakini Street- HPM-9
Honolulu, Hawai’i 96817
Tel: (808) 523-8461
Fax: (808) 528-1897

Faculty
P. L. Blanchette, MD, MPH (Chair)—geriatric medicine
J. D. Curb, MD, MPH—clinical epidemiology
R. Gries, MD—geriatric medicine
K. H. Masaki, MD—geriatric medicine
L. Mee-Lee Nakamoto, MD—geriatric medicine
R. Murkofsky, MD—geriatric medicine
J. Pietsch, JD—law and ethics in geriatric medicine
O. Pishchalenko, MD—geriatric medicine
P. Rios Laurel, MD—geriatric medicine
B. Rodriguez, MD, PhD—epidemiology
E. Somogyi-Zalud, MD—geriatric medicine
B. Tamura, MD—geriatric medicine
M. K. Tanabe, MD—geriatric medicine
V. G. Valcour, MD—geriatric medicine
A. Won, MD—geriatric medicine

Degree Offered: MD

The Academic Program

Geriatric medicine is dedicated to the care of older people and to healthy aging throughout life, so that the frailties and disabilities common in older years can be prevented. To provide comprehensive care, geriatrics is often interdisciplinary, and clinical instruction takes place in a wide variety of settings, including outpatient, acute hospital, nursing home, retirement, home care, rehabilitation and palliative care settings. As an age-based specialty like pediatric medicine, geriatric medicine includes aspects of internal medicine, pharmacology, psychiatry, adult development, family medicine, neurology, urology, gynecology, rehabilitation and palliative medicine.

The Department of Geriatric Medicine provides education for: medical students; residents in internal medicine, family medicine, general surgery, orthopedics, pediatrics, ob-gyn and psychiatry; fellows in geriatric medicine and geriatric psychiatry; and practicing physicians. The fully accredited Geriatric Medicine Fellowship Program is for physicians who are graduates of either internal medicine or family practice residency programs. The first year of fellowship training is designed to lead to eligibility for board certification in geriatric medicine. Additional years of fellowship are devoted to research, consultative medicine, medical education, and medical administration.

The Department of Geriatric Medicine is involved in an extensive array of funded research programs, thus providing training and experience in research for students at all levels.

Medical Technology

Biomedical Sciences C-206
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8557
Fax: (808) 956-5457
Web: www.hawaii.edu/medtech/Medtech.html

Faculty
A. G. Theriault, PhD (Interim Chair)—clinical chemistry
N. N. Ebisu, BS—medical technology
S. M. Gon, MPH—medical technology
K. K. Hamamoto, BS—medical technology
K. K. Morton, BS—medical technology
D. Y. Teshima, MPH—medical technology

Degree and Certificate Offered: BS in medical technology, Post-baccalaureate Certificate for Clinical Training

The Academic Program

Medical technology (MEDT) is a health-care profession in which medical technologists (clinical laboratory scientists) perform laboratory procedures used for the promotion of health and the diagnosis, monitoring, and treatment of diseases. Technical skills needed to carry out the tasks include microscopy, venipuncture, manipulation of various labware, and operation of automated instruments. Results of these procedures are essential to the delivery of quality health care. The field is broad and involves several disciplines: chemistry, hematology, immunohematology (blood banking), immunology, and microbiology.

Medical technology is a constantly evolving profession. The continued development of the health-care industry and the emergence of other career opportunities have sustained the demand for clinical laboratory scientists. Employment opportunities exist in hospitals, physician’s offices, reference labs, DNA labs, research, veterinary clinics, and other laboratory industries. Education and experience in medical technology (clinical laboratory science) also enables graduates to pursue careers as physicians, forensic scientists, researchers, educators, health administrators, consultants, and many more.

Admission Requirements

Courses listed in the first two years of the curriculum are required before admission to the medical technology program. Clinical laboratory scientists perform various procedures which directly impact patient care, so it is important that
all applicants be able to perform certain essential functions (technical standards). With appropriate accommodations, if needed, everyone must be able to perform the activities listed below. Additional professional skills are taught in classes after admission.

- Manipulate labware to transfer or prepare reagents and samples (e.g., pipet, charge hemocytometer, prepare blood smear)
- Operate simple instruments according to instructions (e.g., cell counter, centrifuge, spectrophotometer)
- Perform microscopic examinations on various specimens and report the results (e.g., leukocyte differential count, cell morphology, urinary sediments)
- Follow written and verbal directions to perform laboratory tests and report results

Applicants are assessed through performance in MEDT and other courses, an interview, an essay, and personal evaluations. Academic record, interests and aptitude, communication skills, scientific orientation, and personal traits are also considered.

Graduates of Kapi‘olani Community College’s Medical Laboratory Technician program, who have national certification as MLTs or CLTs, should consult an academic advisor regarding adjustments to the admission criteria and course waivers.

### Other Requirements

Medical technology majors are required to have professional liability insurance, which costs about $40 per year. Also, immunization for Hepatitis B virus is highly recommended.

### Advising

Students are encouraged to see a medical technology advisor as soon as possible and prior to each registration period. Appointments can be made by contacting the division office.

### Clinical Training

Clinical training at affiliated clinical facilities located in Hawai‘i follows graduation. A certificate is awarded at the completion of this training. Positions at our affiliated sites are limited, but there are other accredited facilities in the continental U.S.

### Accreditation

The program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences, 8410 West Bryn Mawr Avenue, Suite 670, Chicago, IL, 60631-3415, phone (773) 714-8880, www.naacls.org.

### Certification and Licensure

After clinical training, students are eligible to take a national certification exam. In Hawai‘i, state licensure is also required for employment.

### Undergraduate Study

#### Bachelor’s Degree

**Requirements**

- Complete the degree requirements that satisfy the UH’s General Education Core requirements and program requirements
- Earn a minimum cumulative GPA of 2.0
- Submit by the specified deadline an application for graduation to the Cashier’s Office during the semester preceding the awarding of the degree

#### Curriculum for Medical Technology

**First Semester**

- CHEM 161/161L (3/1)
- BIOL 171/171L (3/1)
- ENG 100 (3)
- †MEDT 151 (2)

**Second Semester**

- CHEM 162/162L (3/1)
- PHYS 151/151L (3/1)
- MATH 241 (4)

**Third Semester**

- CHEM 272/272L (3/2)
- †MEDT 251 (2)
- PHYS 152/152L (3/1)

**Fourth Semester**

- CHEM 274/274L (3/2)
- MICR 351/351L (3/2)

**Fifth Semester**

- PHYL 301 (4)
- BIOC 441 (4)/MBBE 402 (4)
- †MEDT 301 (3)
- †MEDT 331 (1)

**Sixth Semester**

- PHYL 302 (4)
- †MEDT 471 (4)
- †MEDT 302 (3)
- †MEDT 431 (3)

**Summer Session**

- †MEDT 366 (2)

**Seventh Semester**

- †MEDT 451/451L (1/2)
- †MEDT 457/457L (3/2)
- †MICR 461/461L (3/2)

**Eighth Semester**

- †MEDT 464 (3)
- †MEDT 458/458L (3/2)
- †MICR 463/463L (3/2)

†Note: Grade of C or equivalent is required for courses highlighted with a dagger (†).
Post-baccalaureate Study

Certificate for Clinical Training

†MEDT 591 (28)

†Note: Grade of C or equivalent is required for courses highlighted with a dagger (†).

Medicine

University Tower, Queen’s Medical Center
1356 Lusitana Street, 7th Floor
Honolulu, HI 96813
Tel: (808) 586-2910
Fax: (808) 586-7486
Web: uhdom.hawaii.edu

Faculty

E. K. Tam, MD (Chair)—pulmonary
M. A. Antonelli, MD—general internal medicine, rheumatology
R. F. Arakaki, MD—endocrinology
R. D. Bart, MD—neurology
E. F. Bello, MD—infecitous disease
T. Bowen, MPH—AIDS education
J. Brown, MD—infecitous disease
C. S. Chan, MD—general internal medicine
L. Chang, MD—neurology
D. Chow, MD—general internal medicine, infectious disease
C. Cloak, PhD—MRI Researcher
T. Ernst, PhD—MRI research
J. Fu, MD—general internal medicine, hematology, oncology
C. Goshima, MD—general internal medicine
C. S. Hew, MD—general internal medicine
C. M. Higuchi, MD—oncology
R. Hong, MD—cardiology
J. Jacobs, MD—general internal medicine, family practice
R. T. Kasuya, MD—general internal medicine
C. Ling, MD—general internal medicine
C. Lydan, MBA, MPH—AIDS education
J. S. Melish, MD—endocrinology
M. Nagoshi, MD—general internal medicine
I. Nip, MD—general internal medicine
J. Onopa, MD—general internal medicine
J. Rudnick, MD—general internal medicine
N. Sailsutat, PhD—MRI research
D. Sakai, MD—general internal medicine
I. J. Scharz, MD—cardiology
C. M. Shikuma, MD—infecitous disease, AIDS
B. Shiramizu, MD—pediatrics, minority education
K. N. Sumida, MD—hematology
V. Stenger, PhD—MRI research
S. Y. Tan, MD—endocrinology
S. M. Thomas, MD—general internal medicine
N. Tsai, MD—gastroenterology
M. Watters, MD—neurology

Degree Offered: MD

The Academic Program

The Department of Medicine (MED) assists the student in integrating learning in the humanities, social sciences, and the physical and biological sciences by providing progressive experiences in clinical medicine. Early attention is given to the student’s acquisition of habits of continuing self-education and basic clinical skills. These skills include collection and evaluation of data, clinical problem solving, and consideration and perceptiveness in dealing with patients, their families, and other members of the health team.

The department directs integrated residency training programs in community hospitals. The close association of students and graduate physicians in these programs affords valuable learning experiences. Research in selected clinical fields, for which facilities are available, is fostered.

Native Hawaiian Health

John A. Burns School of Medicine
677 Ala Moana Blvd., Suite 1016B
Honolulu, HI 96813
Tel: (808) 587-8570
Web: www.dnhh.hawaii.edu

Faculty

M. Mau, MD, MS (Chair)—Native Hawaiian health disparities
S. K. Brady, MD, MPH—internal medicine, biostatistics-epidemiology
D. Carpenter-Yoshino, MD—general internal medicine, recruitment and retention
C. Ha, PhD—biochemistry, minority education
S. Hirose-Wong, PhD—minority education, cultural competence
N. Judd, PhD—public health, minority education
J. Kaholokula, PhD—behavioral health scientist
M. Kamaka, MD—family medicine, cultural competence
W. K. Mesiona-Lee, MD—internal medicine, recruitment and retention
J. Miyuki, MBA—health administration
D. Paloma, MBA—health administration
E. Saito, MSc—health services research
K. Sakamoto, MS—minority education
J. Silva, MD—obstetrics/gynecology
P. M. Tim Sing, MD—minority education
S. Tsuhako, MD—anatomy and reproductive biology
K. A. Voloch, MD—pediatrics, minority education
B. Young, MD—psychiatry, minority education

The Academic Program

The mission of the Native Hawaiian Health department is to be a center of excellence in education, research, and quality health care practices committed to the optimal health and wellness of Hawai’i Maoli, their families and communities that embraces traditional Hawaiian values and practices. To accomplish this mission the program will actively seek “grass roots” partnerships with others in the community who share
their vision of Ku Pono: Hawai‘i Maoli achieving optimal health and wellness.

Research efforts will be focused on reducing and eliminating health disparities in Native Hawaiians and other Pacific-based populations. This includes activities such as conducting hypothesis driven research, developing pilot studies, training new researchers and networking with Native Hawaiian communities to disseminate research information via the Hawai‘i EXPORT Center, the Heart Failure Disparities in Native Hawaiians Study, the PILI ‘Ohana Obesity study and other NIH funded grants.

Two programs are dedicated to increasing and improving the health workforce serving Hawai‘i, especially in Native Hawaiian communities: the Imi Ho‘ola Post-Baccalaureate Program and the Native Hawaiian Center of Excellence.

**Imi Ho‘ola Post-Baccalaureate Program**

Imi Ho‘ola (Hawaiian for “those who seek to heal”) is a post-baccalaureate program designed to provide educational opportunities to students from disadvantaged backgrounds capable of succeeding in medical school. Although Imi Ho‘ola is not limited to persons of Hawaiian, Filipino, Samoan, Chamorro, and Micronesian descent, a large number of these students have been able to demonstrate that they are from a disadvantaged socioeconomic and/or educational background who have demonstrated a commitment to serve areas of need in Hawai‘i and the Pacific. Imi Ho‘ola has expanded its outreach efforts and developed partnerships with local high schools, colleges and community-based health organizations.

**Native Hawaiian Center of Excellence (NHCOE)**

NHCOE is a federally funded project with six legislatively mandated focus areas: (1) Enhance the performance of Native Hawaiian medical students by offering support for external USMLE board preparation and collaboration with the JABSOM retention program; (2) Develop the research and teaching skills of young Native Hawaiian faculty by offering one- to two-year fellowships; (3) Address information resources through the development of an online searchable database covering Native Hawaiian health and develop cultural competency curricula through conferences and workshops; (4) Focus on research by offering an elective for first year medical students emphasizing the research and learning of Native Hawaiian health issues; (5) Promote student training in rural areas by serving as a resource for students choosing to do electives in rural, Native Hawaiian communities; and (6) Develop a competitive applicant pool through active involvement in the establishment of collaborative efforts with colleges and high schools to develop programs aimed at increasing the numbers of Native Hawaiian medical students.

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**Obstetrics, Gynecology, and Women’s Health**

Kapi‘olani Medical Center for Women and Children  
1319 Punahou Street, Room 824  
Honolulu, HI 96826  
Tel: (808) 203-6500  
Fax: (808) 955-2174

**Faculty**

K. Ward, MD (Chair)—obstetrics and gynecology, maternal fetal, genetics  
M. C. Aaronoff, MD—obstetrics and gynecology  
T. C. Aeby, MD—obstetrics and gynecology  
M. L. Bartholomew, MD—obstetrics and gynecology, maternal fetal  
S. S. Brizzolara, MD—obstetrics and gynecology, urogynecology  
J. M. Burlingame, MD—obstetrics and gynecology, maternal fetal  
R. M. Busse, MD—obstetrics and gynecology  
F. Carlin, MD—obstetrics and gynecology  
M. E. Carney, MD—gynecology oncology  
S. T. Emura, MD—obstetrics and gynecology  
N. S. Fogelson, MD—obstetrics and gynecology  
W. L. T. Fong, MD—obstetrics and gynecology  
G. M. Graham, MD—obstetrics and gynecology, maternal fetal  
M. K. Y. Hiraoka, MD—obstetrics and gynecology  
T. T. F. Huang, PhD—reproductive endocrinology, anatomy  
L. E. Kamemoto, MD—obstetrics and gynecology  
B. Kessel, MD—obstetrics and gynecology/reproductive endocrinology and infertility  
D. S. Kim, MD—obstetrics and gynecology  
T. S. Kosasa, MD—obstetrics and gynecology/reproductive endocrinology and infertility  
G. G. Li, MD—obstetrics and gynecology  
L. K. Millar Sauvage, MD—obstetrics and gynecology, maternal fetal  
R. T. Nakayama, MD—obstetrics and gynecology  
I. A. Oyama, MD—obstetrics and gynecology, urogynecology and pelvic pain  
M. C. Savala, MD—obstetrics and gynecology  
S. D. Sharma, MD—obstetrics and gynecology  
R. A. Soon, MD—obstetrics and gynecology  
A. J. Sueda, MD—obstetrics and gynecology  
K. Y. Terada, MD—gynecology oncology  
T. E. Wright, MD—obstetrics and gynecology  
G. C. Yokochi, MD—obstetrics and gynecology  
I. Zalud, MD—obstetrics and gynecology, maternal fetal

**Degree Offered:** MD

**The Academic Program**

Instruction in obstetrics and gynecology (OBGN) is divided into four general areas: basic clerkship, student electives, residency training, and continuing medical education. The main objectives of the basic clerkship during the third year is to give students an overall perspective of the entire field, an in-depth knowledge of women’s health care, and an ability to perform those technical skills necessary for the care of women.
The elective experiences are developed to allow interested students the opportunity to acquire detailed knowledge and experience in women’s health care or within specific areas of care.

The department directs a residency training program for medical graduates who desire specialty training in the field. The MD education program is closely integrated with residency training to maintain communication and learning experience throughout training. The department has an active research program in the clinical area of human reproduction. The department is divided into the following divisions: ambulatory care, education, endocrinology-infertility, fetal-maternal medicine, gynecology, obstetrics, oncology, urogynecology, and research.

## Pathology

**John A. Burns School of Medicine**  
651 Iilao Street  
Honolulu, HI 96813  
Tel: (808) 692-1130

**Faculty**

P. K. Bryant-Greenwood, MD, MBA (Interim Chair)—anatomic pathology, molecular pathology  
M. Carbone, MD, PhD (Cancer Research Center)—thoracic pathology, molecular pathology  
Y. Hokama, PhD—immunopathology  
B. J. Kaya, MD—anatomic pathology and neuropathology  
S. T. Komura, MD—anatomic and clinical pathology, renal pathology  
K. S. Thompson, MD, MS—pediatric pathology, surgical pathology, genetics  
J. H. Uyehara-Lock, MD—neuropathology  
M. Volini, PhD—molecular mechanisms of biological regulatory processes; signal transduction to the mitochondria

**Degree Offered:** MD

## The Academic Program

Pathology (PATH) is the study of disease. Instruction in pathology is open to undergraduate, graduate, and medical students and residents. All medical students may elect to take PATH 515 as a part of the problem-based learning curriculum. PATH 541 provides essential autopsy experience for all third- and fourth-year medical students, and residents may enroll in one or more of PATH 545 and 699. Instruction in laboratory medicine for the practicing physician, clinical pathology, anatomic pathology, clinical immunology, and molecular diagnostics is offered.

The department directs an integrated residency program in pathology. Residents are based at Kaiser Hospital, Queen’s Medical Center, St. Francis Hospital, and Kapiolani Medical Center for Women and Children and participate in the training of medical students and residents alike. Clinical faculty come from all the community hospitals and provide gross and microscopic specimens for demonstration and clinico-pathologic correlations for medical students and residents. In addition, they participate in seminars and give lectures along with the full- and part-time faculty.

## Pediatrics

**Kapi‘olani Medical Center for Women and Children**  
1319 Punahou Street, Room 742  
Honolulu, HI 96826  
Tel: (808) 956-6525  
Fax: (808) 945-1570

**Faculty**

R. C. Rudoy, MD (Chair)—infectious disease  
A. Adhikary, MD—pediatrics  
K. M. Ash, MD—neonatology  
V. Balaraman, MD—neonatology  
T. M. Bane-Terakubo, MD—pediatrics  
R. D. Barr, MD—neurology  
L. J. Bergert, MD—pediatrics  
R. J. Bidwell, MD—adolescent medicine  
R. B. Boychuk, MD—critical care/emergency medicine  
S. Brigman, MD—pediatrics  
A. G. Britten, MD—critical care  
M. O. Chang, MD—pediatrics  
R. K. S. Chang, MD—critical care  
S. P. Chen, MD—pediatrics  
D. S. Y. Ching, MD—pediatrics, general/child psychiatry  
D. C. Chow, MD—pediatrics  
D. C. Derauf, MD—pediatrics  
P. Eakin, MD—emergency medicine  
G. Erdem, MD—infectious disease  
G. French, MD—developmental/behavioral pediatrics  
B. Gangaram, MD—pediatrics  
F. J. Garcia, MD—emergency medicine  
D. W. Glaser, MD—hematology/oncology  
A. P. Guerrero, MD—pediatrics, general/child psychiatry  
B. M. Halm, MD—emergency medicine  
J. J. Harrington, MD—critical care  
C. Hirai, MD—neonatology  
A. S. Inaba, MD—emergency medicine  
L. K. Iwaishi, MD—developmental pediatrics  
L. M. Iwamoto, MD—neonatology  
S. Kuo, MD—neonatology  
D. K. Kurahara, MD—pediatric rheumatology  
W. T. Kyono, MD—hematology/oncology  
J. E. Lane, MD—critical care  
M. T. Lee, MD—pediatrics  
S. W. H. Loo, MD—neonatology  
J. M. Manaligod, MD—critical care  
D. Medeiros, MD—hematology/oncology  
M. E. Melish, MD—infectious disease  
W. L. Moore, MD—pediatrics  
D. T. Murai, MD—neonatology

* Graduate Faculty
J. E. Musgrave, MD—pediatric nephrology
G. S. Naguwa, MD—pediatrics
L. Y. Nakagawa, MD—emergency medicine
K. T. Nakamura, MD—neonatology
C. R. Neal, MD—neonatology
B. M. Nishikawa, MD—pediatrics
J. K. Okamoto, MD—developmental/behavioral pediatrics
M. M. Okihiro, MD—pediatrics
S. J. Patel, MD—pediatrics
V. Reddy, MD—pediatric cardiology
L. H. Seaver, MD—genetics
W. P. Shea, MD—pediatrics
W. K. T. Shim, MD—pediatric surgery
B. T. Shiramizu, MD—hematology/oncology
C. C. J. Sia, MD—pediatrics
S. L. Sood, MD—pediatrics
A. Tse, PhD, APRN—parent-child, family
M. Uehara, MD—developmental/behavioral pediatrics
R. K. Wada, MD—hematology/oncology
L. R. White, MD—pediatrics/epidemiology
R. W. Wilkinson, MD—hematology/oncology
C. M. Wilson, MD—gastroenterology
R. D. Wong, MD—infectious disease
F. Y. Yamamoto, MD—allergy/immunology
K. S. Yamamoto, MD—pediatric rheumatology
L. G. Yamamoto, MD—emergency medicine
R. T. Yanagihara, MD—infectious disease

Degree Offered: MD

The Academic Program

Pediatrics (PED) is the specialty of medical science concerned with the physical, emotional, and social health of children from birth to young adulthood. The discipline deals with biological, social, and environmental influences on the developing child and with the impact of disease and dysfunction on development.

The Department of Pediatrics offers specialty training for the medical student, as well as post-MD residency training and subspecialty experience.

Psychiatry

University Tower, Queen’s Medical Center, 4th Floor
1356 Lusitana Street
Honolulu, HI 96813
Tel: (808) 586-2900
Fax: (808) 586-2940

Faculty

N. Andrade, MD (Chair)—general psychiatry
I. Ahmed, MD—general and geriatric psychiatry; consultation-liaison psychiatry
D. Alicata, MD—neuroimaging, research, child and adolescent psychiatry
C. Bell, MD—child and adolescent psychiatry
B. Carlton, MD—general and adolescent psychiatry, addiction psychiatry
D. Ching, MD—child and adolescent psychiatry and general pediatrics
J. Else, PhD—sociology, Native Hawaiian mental health and medical conditions
M. Fukuda, MSW, LSW—healthcare planning and administration
D. Goebert, DrPH—healthcare planning and administration
A. Guerrero, MD—child and adolescent psychiatry and general pediatrics, consultation-liaison psychiatry
W. Haning, MD—general and addictions psychiatry
M. Herbst, MD—general and addictions psychiatry
E. Hishinuma, PhD—behavioral research and psychometrics-statistics, youth violence prevention
J. Huh, MD—general psychiatry
M. Kang, MD—general psychiatry, family medicine
M. Kaulukukui, MSW—behavioral health
C. Koyanagi, MD—general and addictions psychiatry
C. Matsu, MD—general and child and adolescent psychiatry
D. Mayeda, PhD—qualitative behavioral research, youth violence prevention
S. Misailidis, PhD—clinical psychology, mixed race/ethnicity
L. Nahulu, MD—child and adolescent psychiatry
H. Nakama, MD—general psychiatry, research
S. Nishimura, MSW—behavioral research, adolescent addictions
J. Onoye, PhD—behavioral neuroscience, women’s health
J. Pearce, MD—neurology
M. Robin, MD—child and adolescent psychiatry
J. Speiss, MD—neuroscience research
J. Streltzer, MD—general and addictions psychiatry, pain medicine
J. Takeshita, MD—geriatric and consultation-liaison psychiatry
W. S. Tseng, MD—general psychiatry
E. Villareal, MD—geriatric and consultation-liaison psychiatry
S. Williams, MD—general psychiatry
V. Yee, PhD—clinical psychology, substance use

Degree Offered: MD

The Academic Program

Psychiatry (PSTY) is a branch of medicine that derives its theoretical foundations from the neurosciences, as well as the

* Graduate Faculty
psychological and social sciences. The investigation of the biological basis of mental illness is one of the most exciting areas of medical research today and is revolutionizing our understanding of mind-body relationships.

The Department of Psychiatry contributes to the overall mission of the School of Medicine by providing leadership in psychiatric training, teaching, research, and services in Hawai‘i, Asia, and the Pacific Basin. The department is committed to expanding knowledge within a cross-cultural and bio-psycho-social framework.

Traditional courses have been replaced with the problem-based learning curriculum. Psychiatric issues are addressed throughout the curriculum but are particularly emphasized in the second year during the brain and behavior sub-unit of Unit IV and in the third year during the Unit VI Psychiatry Clerkship.

Public Health Sciences
Biomedical Sciences D-204
1960 East-West Road
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Fax: (808) 956-9174
E-mail: ogsas@hawaii.edu
Web: www.hawaii.edu/publichealth

Faculty
*J. E. Maddock, PhD (Chair)—social and behavioral health sciences
*K. L. Braun, MPH, DrPH—social and behavioral health sciences/gerontology/Center on Aging
*O. Geling, PhD—social and behavioral health sciences
*A. Grandinetti, PhD—epidemiology
*J. S. Grove, PhD—biostatistics
K. M. Heinrich, PhD—social and behavioral health sciences
*P. S. Holck, MPH, PhD—biostatistics
*E. L. Hurwitz, DC, PhD—epidemiology
*A. Imrie, PhD—epidemiology
*A. R. Katz, MD, MPH—epidemiology
*S. Keller, PhD—social and behavioral health sciences
*Y. Lu, PhD—environmental health
*C. Nigg, PhD—social and behavioral health sciences
V. Yontz, RN, MPH, PhD—health administration

Cooperating Graduate Faculty
C. A. Albright, PhD—Cancer Research Center of Hawai‘i
J. Douglas, PhD—microbiology
D. A. Goebert, DrPH—psychiatry
M. T. Goodman, MPH, PhD—epidemiology
C. Gotay, MPH, PhD—Cancer Research Center of Hawai‘i
D. J. Gubler, ScD—Asia-Pacific Institute of Tropical Medicine and Infectious Diseases
L. Kolonel, MD, MPH, PhD—Cancer Research Center of Hawai‘i
L. LeMarchand, MD, MPH, PhD—epidemiology
G. Maskarinec, MD, MPH—Cancer Research Center of Hawai‘i
B. Rodriguez, MD, MPH, PhD—epidemiology

*Graduate Faculty

Degrees Offered: MPH, MS in public health

The Academic Program

Epidemiology
Epidemiology is the study of epidemics in human populations. Any unusual pattern of disease or disorder can qualify as an epidemic. The challenge of epidemiology is to detect epidemics, understand their cause, and control and prevent further occurrences. Epidemiology also involves the study of the distribution and determinants of health events, including diseases. Determining the prevalence and risk factors associated with these events, as well as measuring the magnitude of such occurrences, is the basis of public health action. An essential part of this determination involves the utilization of epidemiologic and biostatistical methods to evaluate the effectiveness of disease control measures. Epidemiology can thus be considered the science of public health.

The master’s program generally requires two years of combined study and field work but may vary depending on academic background, experience and academic goals of the student. The curriculum provides both breadth and depth. It instills knowledge and skills in epidemiologic methods, biostatistics, the collection and analysis of epidemiologic data, and the epidemiology of chronic and infectious diseases. Each student will have an academic advisor and committee with whom the student will work closely in scheduling and completing the academic requirements of the program.

Students are required to take advanced level training in chronic and infectious disease epidemiology, advanced biostatistics, and research design. There is opportunity for students to choose from epidemiology electives in the following areas: nutrition, genetics, environment, aging, AIDS, cancer and cardiovascular diseases. Course work in specialized statistical applications is also available. Students participate in on-going epidemiological research programs throughout the University during their fieldwork assignment or thesis research.

The curriculum includes a core of required basic and public health offerings that cover such topics as environmental health, health care delivery and organization, health education, and health behavior. The courses provide background and breadth in public health. A capstone paper and presentation during the final term integrates the MPH experience. The MS degree follows a similar but more research-oriented curriculum and requires the completion of a thesis.

Social and Behavioral Health Sciences
Over the last century, chronic diseases have replaced infectious diseases as the leading cause of death in almost every developed country. Lifestyle factors such as tobacco use, lack of physical activity, poor nutrition, unsafe sexual practices, alcohol and drug abuse and overexposure to the sun are the leading cause for a majority of these preventable deaths. In the social and behavioral health sciences specialization, students will learn
about a) biological and social theories of health behaviors; b) biological, behavioral, social and environmental interventions that can decrease premature mortality; and c) skills required for planning and evaluating health promotion programs. A focus on the prevention of infectious diseases through behavior change in developing and developed countries will also be included. Course assignments provide students the opportunity to apply knowledge, to practice skills, to enhance computer literacy, and to improve oral and written communications. Opportunities to participate in university-based and community-based research and service programs are provided.

MPH students specializing in social and behavioral health sciences gain knowledge and skills in research methods, biostatistics, theories of health behavior change, and social epidemiology. The first semester focuses on public health core requirements. The remainder of the program includes advanced and elective course work designated by the student’s program committee to meet the student’s professional goals. Included in the specialization courses is an individual data analysis project based on collected research data. In order for students to develop skills and document competencies in public health, the development and completion of a social and behavioral health sciences study in a public health setting (i.e., a field practicum) is also required. During the final semester, a capstone paper and public presentation based on the practicum integrates a student’s MPH experience.

MS students specializing in social and behavioral health sciences gain knowledge and skills in research methods, biostatistics, theories of health behavior change, and social epidemiology. The first semester focuses on public health core requirements. The remainder of the program includes specialized and elective course work designated by the student’s thesis committee to meet the student’s professional goals. The main objective of the specialization courses is the development of a thesis proposal, which includes an individual data analysis project. This project is based on collected research data and is intended to develop skills and document competencies in public health. During the final semester, a public presentation based on the student’s thesis culminates a student’s MS experience.

Advising

Information, applications, and initial advising about degree programs in public health are available from the assistant dean for student services at the Office of Graduate Student Academic Services, Biomedical Science D-204, 1960 East-West Road, Honolulu, HI 96822; phone (808) 956-8267; fax (808) 956-9174; e-mail: ogsas@hawaii.edu; website: www.hawaii.edu/publichealth.

Graduate Study

Applicants will be expected to have the academic background, experience, interests and commitment for professional training in public health. Applicants must also have computer skills in word processing, spreadsheet construction and internet applications. Academic preparation for the epidemiology specialization should include courses in biology, microbiology, immunology, and chemistry. Experience in an applied health related field or biomedical research is preferred. Academic preparation for the social and behavioral health sciences specialization includes prior course work in mathematics or statistics, biology or human development and sociology or psychology. Experience in an applied health/social sciences field or in health/social sciences research is preferred.

Master’s Degree

MPH students follow a Plan B (non-thesis) program. MS students follow a Plan A (thesis) degree program.

MS Requirements

- Minimum of 30* credit hours for epidemiology or 34-40 credit hours for social and behavioral health sciences, 18 or more in courses numbered 600–798
- One graduate seminar
- Foundation courses
- 6 credit hours of thesis research (PH 700)
- Other courses as designated by the student’s thesis committee
- Final oral examination conducted by the thesis committee

*Most students will exceed the 30-credit-hour minimum to meet their educational objectives.

MPH Requirements

- Minimum of 42 credit hours, 18 or more in courses numbered 600–798
- One graduate seminar
- Required and core courses
- Other courses as designated by the student’s program committee
- Field training experience (PH 791)
- Final competency assessment

Honors and Awards

Joseph E. Alicata Award in Public Health
Elmer J. Anderson Professional Travel Award
Koseki Award for Excellence in Community Service
Pauline Stitt Outstanding Student Award
Robert M. Worth Epidemiology Scholarship
Frances Ayako Matsuda Sano Fellowship in Public Health
School of Medicine
Speech Pathology and Audiology
1410 Lower Campus Road
Honolulu, HI 96822
Tel: (808) 956-8279
Fax: (808) 956-5482

Faculty
*J. T. Yates, PhD (Chair)—audiology
S. Barber, MS—speech-language pathology
E. Hirohata, MS—audiology
L. Ing, MS—speech-language pathology
*E. Isaki, PhD—speech-language pathology
C. Kikuta, MS—speech-language pathology
J. K. Oshiro, MS—speech-language pathology
*K. Pugh, PhD—audiology
*R. Weirather, PhD—speech-language pathology
*L. Weiss, PhD—speech-language pathology

Cooperating Graduate Faculty
A. Peters, PhD—linguistics

Adjunct Faculty
K. Campbell, MS—audiology
V. Chinen, MS—speech-language pathology
C. Coleman, PhD—speech-language pathology
D. Craven, MA—speech-language pathology
K. Fong, PhD—biomedical science
T. Fontanilla, MS—speech-language pathology
M. Holtel, MD—ENT
D. Kau, MS—audiology
P. Mashima, MS—speech-language pathology
L. Nakashima, MS—deaf education
G. Wallace, PhD—speech-language pathology
T. Wong, MS—audiology

Degrees Offered: BS in speech pathology and audiology, MS in speech pathology

The Academic Program
Speech pathology (SPA) deals with disorders of speech-language. Speech-language pathology is the study of human communication and its developed or acquired disorders. Through this discipline, students have the opportunity to deal with a wide variety of disabilities and disorders affecting people of all ages. Speech pathologists treat children and adults in public and private practice in a wide variety of settings. A recent report by the federal government projected the combined fields of audiology and speech pathology as one of the fastest growing of the next decade.

The practice of speech-language pathology requires a minimum of a master’s degree obtained from a program accredited by the Council of Academic Accreditation in Audiology and Speech-Language Pathology in a regionally accredited university. In addition, the practitioner must obtain clinical certification and, in most states, licensure. Standards for practice (and, therefore, educational content) are changing. The prospective student is advised that the standards for graduation will change during the course of his/her study. Program graduates will be required to meet the national standards in force at the time of the student’s graduation. Certification requirements changed in 2005 (SLP).

The program for speech pathology at UH is recognized nationally for its quality and is accredited. It is one of the few programs in the U.S. featuring preparation in a multilingual/multicultural environment.

Accreditation
Our program is accredited by the Council of Academic Accreditation (CAA) in Speech-Language Pathology and provides professional preparation for certification by the American Speech-Language-Hearing Association (the national certifying authority).

Advising
Students considering the major may call the Division of Speech Pathology and Audiology to schedule an appointment with an advisor.

Undergraduate Study

Bachelor’s Degree
Students pursuing a BS degree in speech pathology and audiology should enroll in the Colleges of Arts and Sciences to complete UH Mānoa’s General Education Core curriculum and other specific requirements during their first two years of residence. Upon completion of at least 54 credit hours with a minimum GPA of 2.6, the student should apply to the Division of Speech Pathology and Audiology, School of Medicine, by filing a College and Curriculum Transfer Request form. This form may be filed at any time except during registration periods. For students applying after completion of more than 54 credit hours, the minimum required GPA increases. Students in any UH community college should obtain program outlines from the Division of Speech Pathology and Audiology to familiarize themselves with the pre-SPA requirements so they can complete them during their first two years.

Requirements
- A minimum of 124 credit hours
- 60 credit hours of non-introductory courses
- 15 credit hours in courses dealing with normal development of speech, hearing, and language
- 6 credit hours in linguistics (including LING 410 and 470)
- 3 credit hours in mathematics
- 4 credit hours in zoology
- 4 credit hours in physics
- 3 credit hours in inferential statistics
- At least one speech course dealing primarily with public speaking or discussion and practice in these areas
- 9 credit hours in psychology beyond the basic course

* Graduate Faculty
Required specialized courses for the undergraduate major are ordinarily taken in sequence. By taking introductory courses in the summer session, the student may accelerate completion of the required program.

Junior Year
- Semester I: SPA 300, 301, and 320
- Semester II: SPA 302, 303, and 321

Senior Year
- Semester I: SPA 402, SPA 404, SPA 412
- Semester II: SPA 414, SPA 415, and SPA 421

If qualified, students may complete 1 or more credit hours of practicum in audiology.

Graduate Study

Master's Degree
The department offers the MS degree in speech-language pathology. The MS degree track in audiology is no longer accepting students and has closed effective December 31, 2006. Background preparation should include basic courses in speech-language pathology, clinical methodology, audiology, testing of hearing, habilitation and rehabilitation of hearing, speech and hearing science, clinical practicum, and a minimum of 15 credit hours relating to normal development of speech, hearing and language. If a course in statistics is not part of the undergraduate record, one must be completed as part of the graduate program.

For admission as a regular classified graduate student, applicants must present (a) a baccalaureate degree from an accredited institution of higher learning, (b) a minimum GPA of 3.0 in the major and/or in all courses taken during the final four semesters or six quarters of undergraduate preparation, (c) adequate, appropriate undergraduate preparation, and (d) satisfactory performance on Graduate Record Exam.

If undergraduate deficiencies are present, students with a minimum cumulative GPA of 3.0 may be considered for admission as conditional graduate students upon application to the Graduate Division. This status can be changed to regular when all deficiencies are removed with at least a B average in all courses taken. Students with the best academic records and with limited or no undergraduate deficiencies will be considered for admission first.

Students who do not meet the general admission requirements or who have extensive undergraduate deficiencies may also choose to enroll as post-baccalaureate unclassified students until admission standards are met. Foreign students are not eligible for post-baccalaureate unclassified status. If an unclassified student completes the first 12 credit hours in SPA with a GPA of less than 3.0, no further registration will be permitted.

Each student will have a preliminary conference with an advisor prior to initial enrollment in courses. This evaluation will include a thorough analysis of previous academic preparation to determine the plan of study, including the removal of undergraduate deficiencies if they exist.

Recommendations concerning admission to candidacy for fully qualified students will be made at the end of the first semester of study. The student’s advisor will determine action to be taken in this regard. A general examination may be required upon completion of the first semester of study (minimum 12 credit hours).

Requirements
Both Plan A (thesis) and Plan B (non-thesis) are available for graduate study. The plan to be followed is determined by the student and his or her advisory committee. The decision is based upon the specific interests of the individual student and future educational and occupational objectives.

Under Plan A, 38 credit hours in course work, a thesis (SPA 700—6 credit hours), and a final oral examination on the thesis subject are required. Plan B requires satisfactory completion of 44 credit hours of course work, including SPA 695 or 696 in which a research study is completed. A seminar appearance is also required for Plan B. For both Plan A and Plan B, a final written comprehensive examination in which the student will be examined on his or her course of study is required.

The median time required for completion of this program by an individual admitted with no undergraduate deficiencies is two years.

Continued enrollment and completion of the master’s program require both satisfactory academic progress to maintain minimum Graduate Division GPA standards and demonstrated clinical proficiency in clinical practicum in speech-language pathology and audiology.

Each classified and unclassified graduate student is personally responsible for knowing any additional information and regulations contained in the Catalog and the informational circular available through the Division of Speech Pathology and Audiology. If questions arise, the student’s advisor should be consulted.

These programs are designed so that students who complete either Plan A or Plan B will meet the academic requirements for the Certificate of Clinical Competence in speech-language pathology as established by the American Speech-Language-Hearing Association (the national certifying authority). Students must complete all academic and practical training requirements for national certification, as well as departmental requirements, to qualify for the master’s degree. Following graduation, students may qualify for national certification by taking and passing an examination in their area(s) and successfully completing a nine-month clinical fellowship in their area(s) of training. Upon certification (and, in most states, licensure), an individual may secure employment and/or engage in private practice in his or her area(s) of training.

Admission to courses requires graduate standing, except for certain senior students in their last semester of undergraduate study, and permission of the graduate chair. All graduate courses in the division require instructor’s consent.

The Speech and Hearing Clinic is operated by the Division of Speech Pathology and Audiology of the John A. Burns School of Medicine. Staff members and supervised student clinicians provide diagnostic and therapeutic services to UH students and other children and adults in the community.
Surgery

University Tower, Queen’s Medical Center
1356 Lusitana Street, 6th Floor
Honolulu, HI 96813-2421
Tel: (808) 586-2920
Fax: (808) 586-3022

Faculty

D. Takanishi, Jr., MD (Chair)—general surgery/surgical oncology/surgical critical care
R. Atkinson, MD—orthopedic surgery
L. Burgess, MD—otolaryngology
A. H. S. Cheung, MD—general surgery/transplant surgery
N. L. Furumoto, MD—general surgery
M. B. Gholms, MD—anesthesiology
P. Halford, MD—general surgery
H. C. Ho, MD—surgical critical care/general surgery/trauma surgery
J. Kimura, PhD—molecular biology/orthopedic researcher
W. Koss, MD—general surgery/surgical critical care/trauma surgery
W. M. L. Limm, MD—general surgery/transplant surgery
J. Machi, MD, PhD—general surgery/ultrasonography
G. O. McPheeters, MD—general surgery
M. M. Mugiishi, MD—general surgery
K. Murayama, MD—general surgery/minimally invasive surgery
D. Oda, MD—emergency medicine
A. Oishi, MD—general surgery
F. D. Parsa, MD—plastic surgery
W. Shim, MD—pediatric surgery
S. K. Steinemann, MD—general surgery/surgical critical care/trauma surgery
A. W. Tan, MD—general surgery/trauma/surgical critical care
L. L. Wong, MD—transplant surgery/general surgery
M. Yu, MD—general surgery/surgical critical care/trauma surgery

Degree Offered: MD

The Academic Program

Surgery emphasizes the use of interventional techniques to treat injury and disease. The educational program encompasses the pathology, pathophysiology, diagnosis, treatment, and perioperative management of surgical disease and trauma. The department provides instruction to medical students in all surgical disciplines, as well as the related fields of anesthesiology, radiology, and emergency medicine. It directs general surgical and orthopedic residency programs, as well as a surgical critical care fellowship. Research and continuing medical education programs are provided.

Tropical Medicine, Medical Microbiology and Pharmacology

John A. Burns School of Medicine
651 Ilalo Street
Honolulu, HI 96813
Tel: (808) 692-1600
E-mail: sandrac@hawaii.edu
Web: apitmid.hawaii.edu

Faculty

* D. J. Gubler, ScD (Chair)—arboviruses and vector-borne infectious disease, epidemiology of emerging infectious diseases, prevention and control
* S. N. Bennett, PhD—molecular evolution and epidemiology of emerging infectious diseases
* S. P. Chang, PhD—immunology, molecular biology, molecular approaches to vaccine development
* A. C. Collier, PhD—drug metabolism and pharmacokinetics using in vivo, in vitro and in silico approaches, reproductive pharmacology
* C. B. Cropp, MS—arbovirology
* A. R. Diwan, PhD—medical virology: chemotherapy, vaccines
* J. T. Eifrid, PhD—biostatistics modeling
* E. Furusawa, MD, PhD—viral chemotherapy
* W. L. Gosnell, PhD—host parasite interactions, malaria, immunology
* G. S. N. Hui, PhD—parasitology, immunology, cell biology
* P. H. Kaufusi, PhD—pathogenesis of West Nile virus
* K. J. Kramer, PhD—parasitology, epidemiology, leptospirosis, HIV serodiagnosis
* H. Luo, PhD—pathogenesis of arboviruses and polyomaviruses
* F. D. Miller, PhD—epidemiology of infectious diseases
* V. R. Nerurkar, PhD—pathogenesis of infectious diseases, delineating cellular and molecular mechanisms underlying microbe-host interaction
* S. Verma, PhD—molecular, biochemical aspects of viral diseases
* G. Watt, MD—zoonotic infectious diseases
* B. A. Wilcox, PhD—ecology of infectious diseases, integrative health research, community medicine
* K. Yamaga, PhD—immunological mechanisms of diseases

Cooperating Graduate Faculty

R. D. Allen, PhD—ultrastructure and cell biology
J. M. Berestecky, PhD—enteric bacteria
G. Erdam, MD—molecular epidemiology of group A streptococcal and staphylococcal infections; complications of strep infections like acute rheumatic fever
A. Imrie, PhD—cytotoxic T-cells & HIV
C. Jourdan-Le Saux, PhD—human genetic disorders, asthma, interleukins and pulmonary function
J. H. Kim, MD—HIV viral neutralization, cytokine gene therapy in HIV specific T-cells, HTLV-I and-II mechanisms of Rex protein function
S. R. Kim, PhD—basic immunology of HIV-1 infection
and practice with an ecological perspective on health. The role of ecosystems in human health is a critical area of scientific research and education worldwide. The Ecology and Health Group addresses the connections between ecosystem health and human well-being.

Faculty are engaged in research and action focused on the health of Hawai‘i’s unique local communities and tropical ecosystems. The active research program addresses the infrastructural factors that sustain community health, seeking to identify the best means for supporting the beneficial factors and remedying those that are detrimental. Research activities involve participation in and support of informal and formal networks in multi-ethnic, low-income communities for the purpose of building capacity and improving ecosystem health.

Educational activities are focused on the integration of ecology and health in the MD curriculum, including research opportunities for students to fulfill their 2-year research project requirement, and graduate assistantships for masters and doctoral students in a variety of disciplines. Medical and graduate students have the opportunity to enroll in courses and conduct research under the supervision of ecology and health faculty in conjunction with degree programs in other departments and schools.

### The Academic Program

Tropical medicine is the study of diseases that occur more commonly in the tropical regions of the world. However, in today’s era of globalization and modern transportation, diseases that were once confined to the tropics have spread geographically and played a significant role in the 20th century global resurgence of infectious diseases. As such, research in the area of tropical medicine and medical microbiology has greatly increased in importance in the past 20 years. Tropical medicine faculty conduct studies on infectious organisms and the diseases they cause, including dengue, West Nile, AIDS, hepatitis, viral and bacterial encephalitis, malaria, tuberculosis and Kawasaki disease. The faculty employs a multidisciplinary approach, including immunology, pathogenesis, ecology, epidemiology, diagnosis, prevention, control, treatment, socio-ecological systems, human ecology, microbial and vector ecology, environmental change, and participatory action research to answer fundamental questions associated with the pathogenesis of these diseases. These studies can be laboratory-based, field-based, clinical-based, or include a combination of all three. The field of tropical medicine requires knowledge of virology, bacteriology, parasitology, entomology, immunology, cell and molecular biology, epidemiology, ecology, behavioral science and clinical medicine.

Pharmacology is a medical science concerned with the effects of drugs and chemicals on living organisms. The subject embraces knowledge of the chemistry, actions, absorption, fate, excretion, and uses of drugs. Traditionally, the greatest interests in drugs have been with the health professions. Today, however, knowledge of pharmacology and the allied field of toxicology are relevant to all segments of society.

Ecology and Health focuses on interdisciplinary research and practice with an ecological perspective on health. The role

### Affiliate Graduate Faculty

- P. Effler, MD—Infectious disease epidemiology
- C. F. T. Uyehara, PhD—Developmental and Cardiovascular pharmacology
- Y. Lu, PhD—Gene therapy for HIV-1 infection, gene transfer approaches for neuroAIDS, immunodiagnosis of herpesvirus infection of green turtles, aquaculture virology
- M. E. Melish, MD—Staphylococcal infection and toxins, clinical infectious disease, Kawasaki syndrome
- R. C. Rudoy, MD—Clinical aspects of viral and bacterial diseases
- B. Shiramizu, MD—Pathology of HIV-associated disorders
- E. K. Tam, MD—Inflammation, immunologic mechanisms of pulmonary diseases, genetic and environmental determinants of asthma
- S. Verma, PhD—Diagnosis of Kawasaki syndrome, effect of selenium deficiency on RNA virus mutations
- R. Yanagihara, MD—Transdisciplinary investigations of emerging and re-emerging infectious diseases, use of infectious agents as biological markers to trace ancient and recent movements of human populations

### Degrees Offered

**Master's Degree**

Graduates with a master’s degree have gone on to careers in science education at the secondary and college level, technical and research positions in universities, government agencies and biotechnology companies, or have continued on in PhD and MD training programs at other universities.

#### Requirements

The MS degree requires 21 credits of course work, nine credits of thesis research, completion of a thesis and a final oral examination. A general examination, oral or written, is required before a student is advanced to candidacy for the MS (Plan-A) degree. Although not encouraged, in very unusual circumstances, a non-thesis MS (Plan-B) may be allowed. This program requires 30 credits of course work, a written examination and participation in a research project.

**Doctoral Degree**

Graduates with a PhD degree have pursued professional research, teaching, and administrative careers at various
academic institutions, state and federal government agencies, international health agencies, and biotechnology companies.

Requirements

The PhD program requires course work as determined necessary by the student’s advisory committee, a qualifying examination, comprehensive examination, drafting a written research proposal, dissertation, and final oral examination/defense of dissertation. Students are encouraged to take course work covering a broad array of the disciplines involved in the field of tropical medicine, including coursework offered by other academic departments as relevant to their area of concentration.

Faculty

The department faculty conduct active research in the areas of dengue, West Nile and other flavivirus virology and epidemiology, hantavirus virology and epidemiology, lentiviruses and polyomaviruses, epidemiology and pathogenesis of hepatitis-associated viruses, HIV and other retroviruses, molecular epidemiology and evolution of viruses, ecology of infectious diseases, evaluation of Hepatitis B vaccination programs in Asia and Pacific countries, molecular biology, genetics of drug-resistant bacteria, autoimmunity in rheumatic diseases, characterization of Group A streptococcus, and M. tuberculosis in Pacific Islander and Asian populations. Collaboration with infectious disease clinicians and international research institutes further expand research opportunities in the areas of HIV, Kawasaki disease, dengue, arboviruses, and zoonotic viruses. The department also supports a regional arbovirus diagnostic laboratory that will provide reference services to laboratories in Asian and Pacific countries.

An important aspect of the department’s research effort is the development and evaluation of vaccines for the prevention of important tropical diseases. The department’s Human Malaria Research Group investigates immunological problems in malaria vaccine development and vaccine-induced and naturally-induced immunity to malaria infection. The group collaborates with other research teams in both academic institutions and in the biotechnology industry, as well as with field site scientists in Papua New Guinea and the Philippines. In addition, the department is developing a field site in Vietnam that will provide the platform to evaluate dengue vaccines and drugs for tropical diseases, and to conduct detailed epidemiologic-, ecologic-, and pathogenetic-related studies.

Other research projects in the department include investigations into the relationship of infectious agents to autoimmune diseases, the genetic factors associated with immunological disease, characterization of Group A streptococcus, the study of immune response to Mycobacterium tuberculosis in Pacific Islander and Asian populations, genetics of drug-resistant bacteria, including M. tuberculosis in Hawaii, ecology of leptospirosis, and evaluation of hepatitis B vaccination programs in Asia and Pacific countries.

Research activities in ecology of infectious disease include investigation of the ecological context of water borne and vector borne pathogens. The emphasis is on the integration of molecular, organismal and ecological research methods to better understand the transmission dynamics and behavior of infectious disease. This also includes a research focus on Hawaii’s unique mountain-to-sea catchments as laboratories of infectious disease ecology, and study of the social, environmental, and development factors interacting within these social-ecological systems. The place-based components of this research often incorporate collaborative and participatory research approaches involving local communities, and integrating between the disciplines and sectors relevant to an ecological understanding of infectious disease.

Research activities in pharmacology include studies on plant-derived natural products with a focus on immunostimulation for cancer therapy, mechanisms of protection against vascular injury using animal models of pulmonary oxygen toxicity, and high altitude pulmonary edema.

A major goal of the department is to provide Asian and Pacific countries the expertise needed to expand laboratory and epidemiologic capacity in tropical infectious diseases research. The department also has active research programs with several community hospitals and collaborates closely with the State of Hawai’i Department of Health, providing instruction and expertise in bioterrorism preparedness and diagnosis of infectious diseases using the latest technology.