

College of Natural Sciences

About the College

The College of Natural Sciences is a part of the Colleges of Arts and Sciences. The faculty and administration of the College recognize that the scientific world and the world at large are constantly evolving. Students graduating today will be required to make decisions as members of local, national, and international communities that will impact the environment and the quality of life of all sentient beings that inhabit it. Cognizant of the importance of these decisions, a recent reorganization of the life sciences has resulted in a dynamic program that is responsive to the ever-changing information needs of both those who major in the biological sciences and those who major in other disciplines at the University.

Departments within the College

- The **Biology Program** is a cooperative program whose faculty members are from the Biology Program and the Departments of Botany, Cell and Molecular Biology, Microbiology, Molecular Biosciences and Biosystems Engineering, and Zoology. The program houses the Bachelor of Arts degree program for pre-professional students and the Bachelor of Science degree program with five specializations: cell and molecular biology, ecology/evolution/conservation biology, marine/aquatic biology, organismic biology and general biology.
- **Department of Botany** is the only botany department located in a tropical environment in the United States. This department houses the Bachelor of Arts, Bachelor of Science, Master of Science and PhD programs in Botany.
- **Department of Chemistry** offers the Bachelor of Arts, Bachelor of Science, Master of Science and PhD in Chemistry.
- **Department of Information & Computer Science** houses six degree programs: BA in Information and Computer Sciences, BS in Computer Science, MS in Information and Computer Sciences, MLISc in Library and Information Sciences, PhD in Computer Science, PhD in Communication and Information Sciences.
- **Department of Mathematics** offers preparation in the full spectrum of mathematical sciences, including algebra, geometry, differential equations, real and complex analysis, logic, number theory, and probability and statistics, as well as various topics in applied mathematics.
- **Department of Microbiology** offers programs leading to the BA, BS, MS and PhD in microbiology. The graduate programs feature specialization in microbial ecology, biochemistry, physiology, genetics, and ultrastructure; metabolic regulation and the regulation of gene expression; medical microbiology; animal and environmental virology and viral pathobiology; and immunology, immunogenetics, and immunochemistry. In addition, an option is offered in cell biology that leads to the MS and PhD in microbiology. Research programs in interdisciplinary fields are possible.
- The **Department of Physics & Astronomy** offers both the MS and PhD degrees in Physics and Astronomy.
- The **Department of Zoology** offers undergraduate programs leading to Bachelor of Science and Bachelor of Arts degrees, a zoology minor, and graduate programs that offer Master of Science and PhD degrees. Of particular note is the department's emphasis on tropical marine biology and evolutionary biology.
- The **Department of Ecology, Evolution and Conservation Biology** offers a graduate specialization in an interactive University-wide program with opportunities for degrees in the departments of the College of Natural Sciences, the School of Medicine, and the College of Tropical Agriculture and Human Resources. The program allows students to tailor their Masters' or Ph.D. research programs to their own interests and needs.

Degree Programs

Bachelor of Arts

- Biology
- Botany
- Chemistry
- Information and Computer Sciences
- Mathematics
- Microbiology
- Physics and Astronomy

Bachelor of Science

- Biology
- Botany
- Chemistry
- Information and Computer Sciences
- Marine Biology
- Mathematics
- Microbiology
- Physics and Astronomy
- Zoology

Master of Arts

- Mathematics
- Ecology, Evolution and Conservation Biology

Master of Library and Information Sciences (MLISc)

Dual Masters Programs

- MLISc and Master of Arts in American Studies
- MLISc and Master of Arts in Asian Studies
- MLISc and Master of Arts in History
- MLISc and Master of Science in Information and Computer Sciences
- MLISc and Juris Doctor
- MLISc and Master of Arts in Pacific Islands Studies

Master of Science

- Botany
- Chemistry
- Microbiology
- Information and Computer Sciences
- Physics and Astronomy
- Zoology

Graduate Certificate

- Advanced Library and Information Science

Doctoral Programs

- Botany
- Chemistry

- Communication and Information Sciences
- Computer Science
- Ecology, Evolution and Conservation Biology
- Mathematics
- Microbiology
- Physics and Astronomy
- Zoology

Interesting Facts about the College

In its ranking of Physical Sciences, *The Guardian* (England) ranked the University of Hawai'i at Manoa 15th overall among universities and research institutes from the United Kingdom, the United States, Germany and Canada in terms of the impact of publications by researchers.

Research

College of Natural Sciences is home to top researchers in the Natural Sciences. Research projects include both those basic to the advance of knowledge in science as well as those designed to be applied for the betterment of society. Recent studies in elementary particle physics have given evidence that the neutrino does in fact have mass. Compounds extracted from blue/green algae have shown promise for use as a chemotherapy drug, to fight a number of types of cancer. Studies in Microbiology have shown organisms that are capable of living in environments of the strongest acids. Studies of Botany have shown that the silver sword, unique to Hawai'i, is related to plant organisms indigenous to the mainland. Breakthroughs in Mathematics have solved problems that have been considered unlovable for decades. The use of the supercomputer in the Department of Information and Computer Sciences gives potential for analysis for even the most complicated problems.

Facts & Figures

Total Enrollment: 1862 (Men 1043, Women 819)

No. Undergraduates: 1472 (Men 849, Women 623)

No. Graduate students: 390 (Men 194, Women 196)

Ethnic Diversity of Student Body

- Asian/Pacific Islander: 1185 – 63%
 - Japanese: 372 – 19%
 - Chinese: 244 – 13%
 - Korean: 79 – 4%
 - Filipino: 169 – 9%
 - Native Hawaiian/Part Hawaiian: 126 – 7%
 - Pacific Islander: 51 – 3%
 - Other Asian: 64 – 3%
 - Mixed Asian/Pacific Islander: 80 – 4%
- Hispanic: 37 – 2%
- Caucasian: 424 – 23%

- Other Ethnic:
- African American: 13 – 0.7%
- American Indian/Alaska Native: 5 – 0.3%
- Mixed: 185 – 10%

Student Profile

- Best Student Paper Awards – each year several Zoology graduate students win these awards for presentations they make at professional meetings. Notably, for the last four years, the Best Student Paper award at the annual meetings of the American Society of Ichthyologists and Herpetologists have been won by UHM Zoology graduate students.
- Jill Zamzow won the ARCS Zoology scholarship and the ARCS Scholar of the Year Award, as well as the UHM Arts and Sciences Advisory Council Award.
- Kelly Benoit-Bird won the University Research Council award for graduate student research (2002)
- Grace Liu won the University Research Council award for undergraduate student research.
- Isabella Aiona Abbott Award for Undergraduate Excellence in Research: Annual award of up to \$500 to recognize excellence in botanical study for UHM undergraduates.

Extramural Grants and Awards (2001 – 2002)

- Research Awards: 167 Grants, \$16,730,285
- Non-research Awards: 39 Grants, \$2,278,743
- NASA Grant for \$8 million for 5 years
- AHI Contract for \$48 million for 5 years
- Department of Energy High Energy Physics, \$2 million per year

Selected Research Projects

Physics Department - The Free Electron Laser Program:

The Active Hyperspectral Imaging (AHI) Sensors Project: AHI is a fundamental extension of a research program in which UH researchers have made important advances. The basis of the technique is passive hyperspectral imaging, which detects the spatial patterns of selected impurities in the atmosphere by detecting only certain colors of light which they emit under ambient illumination. The technique derives its utility by identifying the particular impurities on the basis of their unique spectral emission over wide wavelength ranges. AHI imaging uses laser light to excite a much higher level of emission from the impurities than can be achieved with ambient illumination. This greatly increases both the selectivity and the sensitivity of the detection. The Nuclear Treaty Program Office, the agency for whom the U.S. Space and Missile Defense Command is administering the AHI contract, is currently interested in this research for real-

time detection of nuclear debris from clandestine nuclear detonations. But the technique, if practicable, would also have applications in the detection of trace levels of chemical or biological elements.

Community Service Initiatives

- Hawai'i Physics Olympics (annual): for High School Students
- Hawai'i Region of the International Bridge-building Contest: for high school students to stimulate interest in science and test their physics knowledge.
- Physics Internship Collaboration with Punahou School: provides high school seniors with opportunity to engage in research activities with the UH FEL group.
- Chemistry Department: 25 talks to high school, intermediate school and elementary school audiences.
- Open House in Chemistry hosted up to 400 high school students per year for last 23 years. During event, small groups of students tour research laboratories, and take a genuine university chemistry examination. Awards are given to those that score the highest.
- First Alien Alga Cleanup in Waikiki for removal of *Gracilaria salicornia*.
- Assistance of the community of Rongelap Atoll in development of resettlement plans and biological/environmental/ethnobotanical evaluations of their traditional resources.
- Created the Emergency Environmental Workforce for those left unemployed by the events of September 11.
- Established the Ecological Informatics, Inc. non-profit organization to support the funding of biodiversity projects in the Pacific region.
- Collaboration on a project with 'Ilio'ulaokalani Coalition, Inc. an association of traditional Hawaiian cultural practitioners to assess some of the ecological impacts caused by wild-harvesting native Hawaiian plant populations.
- Presentations to local schools that provided information on Hawaiian plants and promoted science as a fun way to learn more about the environment.
- Hookahuahou: Program for reef restoration
- Design and implementation of the Hui Konohiki Program – for strengthening the wise stewardship of Hawai'i's natural resources.
- Undergraduate Mentoring in Environmental Biology (through NSF Grant). This project recruits undergraduate college students from the Pacific Islands and brings them to Hawai'i, Guam and Berkeley to work with professors conducting research in environmental biology.
- Hawai'i Networked Learning Communities: a partnership with the Hawai'i Department of Education to improve science, mathematics and technology learning in K-12 rural schools. The program has a Summer Institute on Leadership Development, focused on developing leadership skills among school teams, including processes and strategies to strengthen standards-based instruction and inquiry learning approaches in science and mathematics.

- The Biology Program offers summer Professional Development Courses for high school teachers.

Faculty Profile

Publications and Presentations: Summary (2000 – 2002)

Total Faculty Publications: 676. 4 Books, 11 Book Chapters, 267 Articles, 13 Technical Reports, 432 Paper Presentations, 163 Conference Proceedings, 19 Peer Reviewed Publications, and 2 Patents

Leadership roles in International, National, Regional and State Professional Organizations

- Board of Directors, International Society for Analysis: Professor Csordas,
- Evaluation Panel, Supporting Learning and Teaching, England, 2000: Ralf Kaiser
- Founding Editor, *Waterbirds* 2000: David Duffy
- National Science Foundation Panel: Professor Guentner
- Research Associate, California Academy of Sciences: David Greenfield
- Steering Group, United Kingdom Astrochemistry Steering Group, 2001: Ralf Kaiser
- Board of Directors, International Society for Artificial Life: Lee Altenberg
- Associate Editor, *IEEE Transactions on Evolutionary Computation*: Lee Altenberg
- Associate Editor, *BioSystems: Journal of Biological and Information Processing Sciences*: Lee Altenberg
- Editorial Board, *Genetic Programming and Evolvable Machines*: Lee Altenberg

Faculty Awards and Honors

- Austrian Research Center Award for Physics, 2001: John Madey
- Biacore Award, 2000: Garry Rechnitz
- Distinguished Service to Science, Policy and Management from the Hawai'i Secretariat for Conservation, Hawai'i Conservation Conference, 2000: Sheila Conant
- Edmund H. Fullin Award for Best Paper by a Young Researcher, 2000: Ticktin
- Faculty Achievement Award, 2001: Chris Hundhausen
- Faculty Performance Award: Agnes Fok, Mark Merlin
- Fellow of the American Physical Society, 2001: Xerxes Tata

- First UH Manoa faculty member to win both Excellence in Teaching and Excellence in Research Awards: Robert Liu
- Miescher-Ishida Prize for contributions to the field of symbiosis- International Society Endocytobiology, 1999-2000: Margaret McFall-Ngai
- National Research Service Award: Sean Callahan
- National Science Foundation Career Award, 2002-2007: Chris Hundhausen
- Outstanding Information Science Teacher (2000), by the American Society of Information Science and Technology and the Institute for Scientific Information: Peter Jacso.
- Outstanding Junior Investigator Award from the U.S. Department of Energy: Peter Gorham
- Outstanding Paper Award, International Conference on Computers and Education, International Conference on Computer Aided Instruction, 2000: Dan Suthers
- Pacificnews.net HI Technology Award, 2002: Brian Chee
- Pono Tech Award for Higher Education, ITEC Corporation, 2001: Brian Chee
- Pono Tech Award: Kent (Kim) Bridges
- Presidential Citation for Meritorious Teaching, 2000: Curtis Daehler
- Presidential Citation for Teaching, 2001: Rebecca Knuth, Steven Robinow
- Regent's Medal for Excellence in Teaching, 2001: Kent (Kim) Bridges
- Regents' Medal for Excellence in Research: Maqseudul Alam, Ralph Freese, Margaret McFall-Ngai, Stephen Olsen
- Spotlight Award, Center for Innovations in Learning Technologies, 2000: Dan Suthers
- Y. Fukuda, et. al. (1998) Super-Kamiokande Collaboration is now the most cited experimental particle physics paper in history. Six of the top ten cited papers are from SuperK and K2K

The College has 122 full-time and 15 part-time faculty members.

Administration

[Charles F. Hayes](#), Professor and Interim Dean of Natural Sciences
 AB 1963, Wheaton College; MS 1965, PhD 1967, West Virginia
 Interdisciplinary condensed matter (experiment)

The Faculty

Botany

Professors

[Gerry Carr](#), Professor, Chair and Undergraduate Advisor
BA 1968, Eastern Washington U; MS 1970, Wisconsin; PhD 1975, UC Davis
Biosystematics, Cytogenetics, Chromosome Evolution, Vascular Plant Families

[David Duffy](#), Professor
BA 1975, Harvard; PhD 1980, Princeton
How ecosystems respond to perturbations, either natural or man-made, at scales ranging from the individual through the landscape

[Sterling Keeley](#), Professor
AB 1970, Stanford; MS 1973, San Diego State; PhD 1977, Georgia
The Vernoniae (Cichoriodeae, Asteraceae)

[Celia Smith](#), Professor
AB 1976, Mount Holyoke College; MS 1979, Hawai'i; PhD 1983, Stanford
The physiological ecology of reef algae and corals with related issues in marine ecology

[Alan Teramura](#), Professor and Director, Lyon Arboretum
BA 1971, MA 1973, California State; PhD 1978, Duke

Associate Professors

[Kim Bridges](#), Associate Professor
BA 1964, MS 1967, Hawai'i; PhD 1970, UC Irvine
Distribution of [seagrasses](#), the tropical species and their distribution patterns in the Pacific and ecosystem studies

[Curt Daehler](#), Associate Professor
BS 1991, Lafayette College; PhD 1996, UC Davis
Population biology of invasive plants, plant-herbivore interactions, hybridization between native and introduced plants - implications for conservation and plant evolution

[Will McClatchey](#), Associate Professor
BS 1989, Oregon State; MS 1993, Brigham Young; PhD 1996, Florida
Economic botany, ethnobotany, ethnography, ethnopharmacology

[Cliff Morden](#), Associate Professor
BS 1978, MS 1980, Brigham Young; PhD 1985, Texas A&M

[George Wong](#), Associate Professor and Graduate Chair, Botany
BA 1972, MA 1977, San Francisco State; PhD 1983, UC Davis
Systematics of Basidiomycetes, i.e., Auriculariales, [Agaricales](#), Gasteromycetes

Assistant Professors

[Don Drake](#), Assistant Professor

BS 1981, Florida Institute of Technology; MS 1987, Ohio University; PhD 1993, Hawai'i

Plant ecology, especially aspects of seed ecology that influence plant population and community dynamics and are relevant to conservation in the Pacific region

Kaeo Duarte, Assistant Professor

[Tamara Ticktin](#), Assistant Professor

BSc 1994, PhD 2000, McGill University

Understanding the ecological implications of cultural uses of plants

[Dave Webb](#), Assistant Professor

BA 1967, West Chester State; PhD 1978, Montana

Ecological Anatomy, Structure and Ultrastructure, Plant Morphogenesis

Chemistry

Professors

[Roger E. Cramer](#), Professor (Inorganic) and Associate Chair

BS 1965, Bowling Green; PhD 1969, Illinois

Coordination compounds as drugs, organouranium chemistry, interaction of metal ions with vitamin B1, ionophores

[Craig M. Jensen](#), Professor (Inorganic)

BS 1979, UC Santa Barbara; PhD 1984, UCLA

Inorganic and organometallic synthesis, mechanisms of homogeneous catalysis, hydrogen storage materials.

[Robert S. H. Liu](#), Professor (Organic)

BS 1961, Howard Payne; PhD 1965, CIT

Organic photochemistry; bioorganic studies of vitamin A isomers, visual pigments and bacteriorhodopsin; primary processes and protein-substrate interactions.

[Richard E. Moore](#), Professor (Organic)

BS 1957, San Francisco; MS 1959, PhD 1962, UC Berkeley

Isolation, structure determination, and biosynthesis of natural products from microalgae and marine organisms.

[Marcus A. Tius](#), Professor (Organic)

BS 1975, Dartmouth; PhD 1980, Harvard

Total synthesis of complex organic molecules, synthetic methods.

[Thomas T. Bopp](#), Professor (Physical)
BS 1963, CIT; PhD 1967, Harvard
NMR Spectroscopy, anisotropic liquids.

[John D. Head](#), Professor (Physical)
BSc 1973, University College (London); PhD 1979, British Columbia
Theoretical and computational chemistry, theory of chemisorption and catalysis,
electronic structure of large molecules and clusters.

[David W. Muenow](#), Professor (Physical)
BA 1961, Carleton College; PhD 1967, Purdue
Mass-spectrometric characterization of volatiles in volcanic basalts, glasses,
silica melts and meteorites; subseafloor magmatic processes.

[Karl Seff](#), Professor (Physical) and Chair
BS 1959, UC Berkeley; PhD 1964, MIT
X-ray crystallography, intrazeolitic chemistry

[George Andermann](#), Professor (Analytical)
BS 1949, UCLA; MS 1961, PhD 1965, Southern California
X-ray emission spectroscopy, surface and trace analysis, molecular electronic
structure, anharmonic vibrations in crystals via infrared optical properties, natural
products material science.

Associate Professors

[Thomas Hemscheidt](#), Associate Professor (Organic)
Diplom Biology 1979, Bochum (Germany); PhD 1983, Munich
Marine natural products.

Assistant Professors

[Katja Michael](#), Assistant Professor (Organic)
Diplom Chemistry 1990, PhD 1996, Munich (Germany)
Carbohydrate synthesis, bioorganic and medicinal chemistry.

Ralf I. Kaiser, Assistant Professor (Physical)
Diploma Chemistry 1991, PhD 1994, Münster (Germany)
Reaction dynamics, combustion chemistry, astrochemistry, laboratory
astrophysics, astrobiology, planetary chemistry.

[Kristin K. Kumashiro](#), Assistant Professor (Physical)
BS 1989, Hawai'i; PhD 1995, Yale
Biological solid-state NMR (applications and methodology development), elastin

Information and Computer Sciences

Professors

[David N. Chin](#), Professor and Undergraduate Chair

BS 1980, MIT; PhD 1987, UC Berkeley

Natural language processing; user modeling; intelligent agents, user interfaces, and software maintenance; geographic information systems (GIS)

[Martha Crosby](#), Professor

BS 1959, Colorado State; MS 1975, PhD 1986, Hawai'i

[“Human Searching: Interactions between the User and the Interface
Hypermedia Lab”](#)

[Will Gersch](#), Professor

BEE 1950, City College of New York; MS 1956, NYU; DrEngSc 1961, Columbia
Statistical Data Analysis, Time Series Analysis, Biomedical Engineering,
Computer System Performance, Pattern Recognition

[Stephen Y. Itoga](#), Professor and Department Chair

BS 1965, MS 1966, Cornell; PhD 1973, UCLA

Computer graphics, animation, knowledge based systems

[Philip Johnson](#), Professor

BS 1980, Michigan; MS 1985, PhD 1990, Massachusetts-Amherst

Software Engineering, High Tech Entrepreneurship

[Art Lew](#), Professor

BA 1982, La Salle; PhD 1990, Stanford

Decision tables, Petri net simulation, reconfigurable computer architecture, and dynamic programming

[David Pager](#), Professor

BSc 1956, Capetown; PhD 1967, London

Compilers, Computability, Artificial Intelligence

[Wesley Peterson](#), Professor

AB 1948, BSE 1949, MSE 1950, PhD 1954, Michigan

Associate Professors

[Lee Altenberg](#), Associate Professor

AB 1980, UC Berkeley; PhD 1985, Stanford

Theoretical population genetics and evolutionary computation

[Violet Harada](#), Associate Professor

BEd 1964, MEd 1966, MLS 1976, EdD 1982, Hawai'i

School Library Management

[Peter Jacso](#), Associate Professor and Program Chair
Doctoral degree, university diploma, Eotvos Lorand U School of Political Sciences and Law, (Hungary) 1979; Postgraduate diploma, International Computer Education and Information Center, (Hungary) 1984; MLIS 1994, Hawai'i
Digital Libraries, Information Quality, Information Retrieval, Database Design

[Rebecca Knuth](#), Associate Professor
BS 1971, Colorado; MA 1975, N Colorado; MLIS 1989, Hawai'i; PhD 1995, Indiana
International Librarianship; History of Books and Libraries; Children's Materials & Services

[Isao Miyamoto](#), Associate Researcher
BE 1968, Takamatsu Tech College; ME 1973, DrEng 1980, Tokyo
Software Engineering

[Diane Nahl](#), Associate Professor
BA 1976, MLS 1983, PhD 1993, Hawai'i
Human-System Interaction, Driving Informatics

[Joan Nordbotten](#), Associate Professor
Data management, HCI evaluation, ALN, and virtual museum applications

[Larry Osborne](#), Associate Professor
BS 1970, Juniata College; MLS 1971, PhD 1983, Pittsburgh
Information Systems; Library Automation

[Jan Stelovsky](#), Associate Professor and Graduate Chair
MA 1979, Washington State; DrTechSc 1983, Swiss Federal Institute of Technology
Hypermedia, Human-Computer Interaction, Cognitive Science

[Kazuo Sugihara](#), Associate Professor
BS 1980, MS 1982, PhD 1985, Hiroshima

Assistant Professors

[Edoardo S. Biagioni](#), Assistant Professor
BS 1982, MIT; Informatik Diplom 1985, ETH, Zurich; PhD 1991, U of NC Chapel Hill
Networking, systems, and languages

[Kim Binsted](#), Assistant Professor

Artificial intelligence (AI), human-computer interaction (HCI) and computational linguistics

Donald DeRyke, Assistant Professor

BS 1967, Weber State College; BS 1970, Utah; MS 1981, Southern California

Chris Hundhausen, Assistant Professor

BA 1991, Lawrence U; MS 1993, PhD 1999, Oregon

Human-computer interaction, visualization, computer-supported collaborative learning

Luz Quiroga, Assistant Professor

BSc 1971, Universidad Industrial de Santander; MSc 1984, Autonomous National U of Mexico; PhD 1999, Indiana

Acquisition and Modeling of User's Interest Profile in Information Filtering Systems

Dan Suthers, Assistant Professor

BFA 1979, Kansas City Art Institute; MS 1988, PhD 1993, U of Mass

Technology for education, artificial intelligence, human-computer interaction

Mathematics

Professors

Christopher Allday, Professor

BA 1965, MA 1969, Christ's College, Cambridge (UK); PhD 1970, UC Berkeley
Algebraic Topology

Edward Bertram, Professor

BA 1962, MA 1964, PhD 1968, UCLA
Group Theory and Combinatorics

David Bleecker, Professor

BA 1969, Stanford; PhD 1973, UC Berkeley
Differential Geometry

Thomas Craven, Professor

BA 1969, Reed; MA 1971, PhD 1973, Cornell
Commutative Algebra

George Csordas, Professor

BA 1964, Toronto; MS 1966, PhD 1969, Case Western Reserve
Complex Function Theory

Karl Heinz Dovermann, Professor

Diploma 1974, Bonn (Germany); PhD 1978, Rutgers
Algebraic Topology

Ralph Freese, Professor
BA 1968, UC Santa Barbara; PhD 1972, CIT
Lattice Theory, General Algebra

Mark Gotay, Professor
BS 1973, Duke; MS 1975, PhD 1979, Maryland
Mathematical Physics, Symplectic Geometry

Hugh Hilden, Professor
BS 1958, Rutgers; MS 1966, PhD 1968, Stevens Institute of Technology
Geometric Topology

Gerald Hile, Professor
BS 1966, Harvard; PhD 1972, Indiana
Partial Differential Equations

Thomas Hoover, Professor
BS 1964, Redlands; MS 1966, UC San Diego; PhD 1970, Michigan
Operator Theory

William Lampe, Professor
BA 1964, Lafayette; PhD 1969, Pennsylvania State
Universal Algebra

Robert Little, Professor
BS 1965, Stanford; MA 1969, PhD 1972, Cornell
Algebraic Topology

Adolf Mader, Professor
MS 1961, Tübingen (Germany); PhD 1964, New Mexico State
Group Theory

James Nation, Professor
BA 1970, Vanderbilt; PhD 1973, CIT
Lattice Theory

Marvin Ortel, Professor
BA 1968, Johns Hopkins; PhD 1973, Maryland
Complex Function Theory

L. Thomas Ramsey, Professor
BA 1970, North Dakota; PhD 1975, Louisiana
Harmonic Analysis

David Ross, Professor
BA 1978, Swarthmore; MA 1980, PhD 1983, Wisconsin
Logic, Probability

Wayne Smith, Professor
BA 1974, MA 1977, PhD 1983, UC Berkeley
Analysis, Function Theory

David Stegenga, Professor
BS 1968, Purdue; MA 1971, PhD 1973, Wisconsin
Analysis

Joel Weiner, Professor
BA 1965, MA 1968, PhD 1971, UCLA
Differential Geometry

Leslie Wilson, Professor
BA 1969, Oregon; MS 1970, PhD 1973, Illinois
Singularity Theory

Associate Professors

Dale Myers, Associate Professor
BA 1965, MA 1966, PhD 1972, UC Berkeley
Mathematical Logic

Kenneth Rogers, Associate Professor
BA 1951, Trinity College (UK); PhD 1954, Cambridge
Number Theory

James K.M. Siu, Associate Professor
BA 1953, MA 1956, Hawai'i
Mathematics Education

George Wilkens, Associate Professor
BS 1980, MS 1983, PhD 1987, North Carolina-Chapel Hill
Differential Geometry, Control Theory

Assistant Professors

Ronald Bleecker
Ph.D.--Oregon
Algebra & Number Theory

Monique Chyba, Assistant Professor
Ph.D.--Geneva, Switzerland
Control Theory, Differential Geometry

Erik Guentner, Assistant Professor
BA 1987, Pennsylvania; MA 1990, Michigan; PhD 1994 Pennsylvania
Noncommutative Geometry

Limin Yang
Ph.D.--Virginia Tech.
Functional Analysis

Physics & Astronomy

Physics

Professors

Luis R. Elias, Professor
University of Wisconsin, Madison 1972
Free Electron Laser Physics

James R. Gaines, Professor and Department Chair
BA 1956, Berea College; PhD 1961, Washington
Condensed matter (experiment)

[Frederick A. Harris](#), Professor
BS 1963, MS 1965, PhD 1970, Michigan
Elementary particles (experiment)

Charles F. Hayes, Professor and Interim Dean of Natural Sciences
AB 1963, Wheaton College; MS 1965, PhD 1967, West Virginia
Interdisciplinary condensed matter (experiment)

Pui K. Lam, Professor
BS 1977, CIT; MA 1980, PhD 1983, UC Berkeley
Condensed matter (theory)

[John G. Learned](#), Professor
AB 1961, Columbia; MS 1963, Pennsylvania State; PhD 1968, Washington
Elementary particles, cosmic ray astrophysics (experiment)

John M.J. Madey, Professor
BS 1964, MS 1965, CIT; PhD 1970, Stanford
Free-Electron Laser Physics

[Stephen L. Olsen](#), Professor
BS 1963, CCNY; MS 1965, PhD 1970, Wisconsin
Elementary particles (experiment)

Sandip Pakvasa, Professor
BS 1954, MS 1957, Baroda (India); PhD 1965, Purdue
Elementary particles (theory)

[Michael W. Peters](#), Professor
BS 1959, CIT; PhD 1964, Wisconsin
Elementary particles (experiment)

Klaus Sattler, Professor
Diploma-Phys 1970, Karlsruhe (Germany); DrScNat 1975, Zurich; Habilitation
1982, Konstanz (Germany)
Scanning tunneling microscopy (experiment)

Xerxes Tata, Professor
BS 1974, Bombay; MS 1976, Indian Institute of Technology; PhD 1981, Texas-
Austin
Elementary particles (theory)

San Fu Tuan, Professor
BA 1954, MA 1958, Oxford; PhD 1958, UC Berkeley
Elementary particles (theory)

Chester A. Vause, Professor
BS 1974, Hawai'i; MS 1976, PhD 1979, Rutgers
Condensed matter (theory)

Associate Professors

[Thomas E. Browder](#), Associate Professor
BS 1982, Chicago; PhD 1988, UC Berkeley
Elementary particles (experiment)

Arnold Feldman, Associate Professor
BS 1958, Brooklyn; MS 1961, PhD 1967, Syracuse
Teacher Education

[Peter Gorham](#), Associate Professor
University of Hawaii, 1986
Elementary particles, astrophysics (experiment)

Eric B. Szarmes, Associate Professor
BS 1985, British Columbia; PhD 1992, Stanford

Free-Electron Laser Physics

Researchers

Teng Chen, Research Scientist
Duke University, 1999
Free Electron Laser Physics

Michael D. Jones, Associate Researcher
BA 1968, Northwestern; PhD 1974, Chicago
Elementary Particles (experiment)

Shigenobu Matsuno, Assistant Researcher
BS 1976, U of Nagoya; MS 1978, U of Kobe; PhD 1982, Tokyo
Elementary particle astrophysics

Astronomy

[Hervé Aussel](#), Junior Researcher
BS 1993, MS 1994, Université Paris VII/Observatoire de Paris-Mendon; PhD
1999, Université Denis Diderot (Paris VII)
JCMT Fellow; galaxy formation and evolution, interstellar dust emission

[Joshua E. Barnes](#), Associate Astronomer
BA 1979, Harvard; PhD 1984, UC Berkeley
Galaxy dynamics

[Ann M. Boesgaard](#), Professor
AB 1961, Mt. Holyoke; PhD 1966, UC Berkeley; DSc (H) 1981, Mt. Holyoke
Stellar spectroscopy

[Fabio Bresolin](#), Junior Researcher
Laurea in Astronomy 1990, University of Padova (Italy); MS 1993, University of
Alabama; PhD 1997, University of Arizona
Hot massive stars

[Schelte J. "Bobby" Bus](#), Assistant Astronomer
BS 1979, California Institute of Technology; PhD 1999, MIT
IRTF Support Scientist; asteroids

[Kenneth C. Chambers](#), Associate Astronomer
BA 1971, MS 1982, Colorado; MA 1985, PhD 1990, Johns Hopkins
High-redshift galaxies, radio galaxies, galaxy formation

[Paul H. Coleman](#), Associate Astronomer
Ph.D., 1985, University of Pittsburgh

Large-scale structure of the universe

[Antoinette Songaila Cowie](#), Astronomer
BSc 1971, Glasgow U (UK); PhD 1980, Boston
Cosmology

[Lennox L. Cowie](#), Astronomer
BSc 1970, Edinburgh (UK); PhD 1976, Harvard
Cosmology

[Harald Ebeling](#), Associate Astronomer
Diploma-Physics 1987, Universität Bonn; PhD 1994, Ludwig-Maximilians-
Universität München
Optical and X-ray astronomy, clusters of galaxies, cosmology

[Yanga R. Fernández](#), Junior Researcher
Ph.D., 1999, University of Maryland
SIRTF Fellow; comets, asteroids

[Christ Ftaclas](#), Astronomer
Ph.D., 1978, City University of New York
Instrumentation, extrasolar planets

[Donald N. B. Hall](#), Astronomer
BS 1966, Sydney; PhD 1970, Harvard
Instrumentation

[James N. Heasley](#), Professor and Astronomer
BA 1969, Chicago; PhD 1973, Yale
Stellar populations

[J. Patrick Henry](#), Professor (Physics and Astronomy)
AB 1969, LaSalle College; PhD 1974, UC Berkeley
Galaxy clusters

[Klaus-Werner Hodapp](#), Associate Director, Hilo Operations, and Astronomer
PhD 1984, Heidelberg (Germany)
Star formation, instrumentation

[Esther M. Hu](#), Astronomer
BS 1974, MIT; MSc 1976, PhD 1980, Princeton
Cosmology

[David C. Jewitt](#), Astronomer
BSc 1979, London; MS 1980, PhD 1983, CIT
Planetary astronomy

[Robert D. Joseph](#), Astronomer and Faculty Chair
BA 1961, Greenville College; MA 1964, Vanderbilt; PhD 1971, Washington U
Infrared galaxies

[Nick Kaiser](#), Astronomer and Associate Director for National Telescope Projects
Ph.D., 1982, University of Cambridge
Gravitational lensing

[Rolf-Peter Kudritzki](#), Director of the Institute for Astronomy
BS 1971, PhD 1973, Technische Universität Berlin
Hot massive stars

[Jeffrey R. Kuhn](#), Astronomer and Associate Director, Maui Operations
BA 1977, Kalamazoo College; MS 1979, PhD 1981, Princeton
Sun, astrophysics, instrumentation

[Jing Li](#), Assistant Astronomer
BS 1982, Beijing Normal U (China); PhD 1994, U of Paris (France)
Solar physics

[Haosheng Lin](#), Assistant Astronomer
BS 1982, Tamkang U (Taiwan); PhD 1992, Michigan State
Solar physics

[Michael Liu](#), [Beatrice Watson Parrent Postdoctoral Fellow](#) and Hubble Fellow
BA 1992, Cornell; MA 1993, PhD 2000, UC Berkeley
Star/planet formation

[Gerard A. Luppino](#), Astronomer
BS 1983, Pennsylvania State; PhD 1989, MIT
Instrumentation, gravitational lensing

[Eugene A. Magnier](#), Assistant Astronomer
BS 1989, PhD 1993, MIT
Star formation, large-scale surveys

[Andisheh Mahdavi](#), Junior Researcher, Chandra Fellow
Ph.D., 2001, Harvard
Dark matter halos, clusters of galaxies

[Eduardo L. Martín](#), Assistant Astronomer
BS 1988, PhD 1993, U of La Laguna (Spain)
Stellar and substellar astrophysics

[Robert A. McLaren](#), Specialist and Associate Director (Mauna Kea)

Ph.D., 1973, University of Toronto
Instrumentation, infrared astronomy

[Karen J. Meech](#), Astronomer
BA 1981, Rice; PhD 1987, MIT
Planetary astronomy

[Roberto H. Méndez](#), Astronomer
Ph.D., 1978, University of La Plata, Argentina
Planetary nebulae in our Galaxy and others

[Donald L. Mickey](#), Specialist
AB 1964, Harvard; PhD 1968, Princeton
Solar astronomy

[Tobias C. Owen](#), Astronomer
BA 1955, BS 1959, MS 1960, Chicago; PhD 1965, Arizona
Planetary astronomy

[Andrew J. Pickles](#), Specialist and Telescopes Support Scientist
BSc 1974, Birmingham (UK); MSc 1975, Sussex U (UK); PhD 1983, Australian
National
Galaxies

[Jana Pittichová](#), Junior Researcher
MS 1995, Comenian University (Bratislava); PhD 1999, Slovak Academy of
Sciences (Bratislava)
NATO-NSF Postdoctoral Fellow; comets

[Norbert Przybilla](#), Research Fellow
Ph.D., 2002, Ludwig-Maximilians-Universität München
Stellar spectroscopy

[Narayan S. Raja](#), Associate Specialist
BTech 1982, MTech 1984, Indian Institute of Technology (Bombay); PhD 1992,
Michigan State
Computer Section

[John T. Rayner](#), Associate Astronomer and IRTF Support Scientist
BSc 1983, London; MSc 1984, PhD 1988, Edinburgh (UK)
Star formation, instrumentation

[Bo Reipurth](#), Visiting Astronomer
Ph.D. 1981, University of Copenhagen
Star formation and molecular clouds

[Pui-Hin W. Rhoads](#), Associate Specialist
BS 1984, MS 1986, Hawai'i

[A. Kathleen Robertson](#), Librarian
BA 1967, Cal State San Francisco; MLS 1969, UC Berkeley; MA 1976, Calgary

[David B. Sanders](#), Astronomer and Associate Director, Research Support
BS 1970, Virginia; MS 1972, Cornell; PhD 1982, SUNY
Molecular clouds, interacting galaxies, submillimeter astronomy

[Theodore Simon](#), Astronomer
BS 1963, Case Institute of Technology; MA 1965, PhD 1970, Harvard
Stellar atmospheres

[Alan N. Stockton](#), Astronomer and Associate Director
BA 1964, UC Berkeley; PhD 1968, Arizona
Instrumentation; active galaxy nuclei

[István Szapudi](#), Assistant Astronomer
MA 1991, Eotvos U (Hungary); PhD 1995, Johns Hopkins
Theory of large-scale structures

[David J. Tholen](#), Astronomer
BS 1978, Kansas; PhD 1983, Arizona
Planetary astronomy

[Alan T. Tokunaga](#), Astronomer and IRTF Division Chief
BS 1971, Pomona College; MS 1973, PhD 1976, SUNY Stony Brook
Star formation, instrumentation

[John Tonry](#), Astronomer and Faculty Chair
AB 1975, Princeton; MA 1976, PhD 1980, Harvard
Cosmology, supernova, instrumentation

[R. Brent Tully](#), Astronomer
BS 1964, British Columbia; PhD 1972, Maryland
Galaxy clustering

[Richard J. Wainscoat](#), Specialist and Telescopes Support Scientist
BS 1981, Western Australia; PhD 1986, Australia National U
Galaxies

[Jonathan P. Williams](#), Assistant Astronomer
Ph.D., University of California, Berkeley, 1995
Submillimeter astronomy

Gareth Wynn-Williams, Professor of Physics and Astronomy, Astronomy
Graduate Program Chair
BA 1966, MA 1970, PhD 1971, Cambridge
Interstellar matter

Microbiology

Professors

Maqsoodul Alam, Professor
PhD 1982, Moscow State; PhD 1987, Munich
Signal Transduction in Microorganisms

Richard D. Allen, Professor
BA 1957, Greenville College; MS 1960, Illinois; PhD 1964, Iowa State
Membrane biology

James T. Douglas, Professor
AB 1969, MA 1972, PhD 1977, UC Berkeley
Bacterial Diseases: Tuberculosis, Leprosy, Brucellosis; Leptospirosis

Agnes Fok, Director, Biology Program and Professor of Biology
BA 1965, University of Great Falls; MS 1966, Utah State; PhD 1971, Texas-
Austin

Philip C. Loh, Professor
BS 1950, Morningside; MS 1953, Iowa State; MPH 1954, PhD 1958, Michigan
Virus diseases of aquatic animals, particularly the penaeid shrimp

Paul Q. Patek, Professor
BS 1970, UCLA; PhD 1976, Texas-Houston

Associate Professor

Francoise M. Robert, Associate Professor
BS 1964, Liege; MS 1976, PhD 1981, Minnesota
Microbial Ecology; Bioremediation of Organic Pollutants and Characterization of
the Microbial Populations Involved in the Process

Assistant Professors

Sean Callahan, Assistant Professor

Tung Hoang, Assistant Professor

Zoology

Professors

Julie Bailey-Brock, Professor

BS 1964, PhD 1968, Swansea (UK)

Marine invertebrate zoology; coral reef polychaetes; invertebrate community structure on reefs and near outfalls

Sheila Conant, Professor and Chair

BA (Hons) 1966, MS 1968, Hawai'i; MS 1972, PhD 1972, Oklahoma

Life history, ecology and conservation biology of endemic Hawaiian birds

Ian Cooke, Professor

AB 1955, MA 1959, PhD 1962, Harvard

Cellular control of secretion from neurons and endocrine cells

Gordon Grau, Professor and Director, Sea Grant

BA 1968, Loyola; MS 1973, Morgan State; PhD 1978, Delaware

Environmental physiology and comparative endocrinology of estuarine fish

David Greenfield, Professor

BA 1962, Cal State Humboldt; PhD 1966, Washington

Systematics of fishes; assemblage structure of cryptic coral-reef fishes

Michael Hadfield, Professor

AB 1959, MS 1961, Washington; PhD 1967, Stanford

Chemical signaling in marine invertebrates; metamorphosis; conservation and evolutionary biology of Hawaiian tree snails

Robert Kinzie, Professor

BS 1963, Santa Clara; MS 1966, Hawai'i; PhD 1970, Yale

Aquatic ecology; coral biology; limnology

John Stimson, Professor

BA 1963, Occidental College; MA 1965, PhD 1968, UC Santa Barbara

Population and community ecology of corals and reef fishes

Christopher Womersley, Professor

BSc 1973, PhD 1977, Newcastle Upon Tyne

Physiology ecology and adaptive biochemistry; dehydration and freezing stress; biological control

Associate Professors

Charles Birkeland, Associate Adjunct Professor

BS 1965, Illinois; MS 1968, PhD 1970, Washington

Coral reef ecology and management; marine community ecology

Heinz Gert de Couet, Associate Professor

BA 1972, Max-von-Laue-Gymnasium, Koblenz; Diplom-Biologe 1978, Technische Hochschule Darmstadt; PhD 1981, Technische Hochschule Darmstadt (Germany)

Molecular genetics and developmental biology

Leonard Freed, Associate Professor

BA 1969, Northwestern; MS 1981, PhD 1981, Iowa

Avian biology; evolutionary and behavioral ecology; conservation

James Parrish, Adjunct Associate Professor

BS 1956, South Carolina; PhD 1972, Rhode Island

Trophic ecology of fishes; fishery biology; marine community ecology

Steven Robinow, Associate Professor

BA 1978, UC Berkeley; PhD 1989, Brandeis

Hormonal regulation of nervous system development

Andrew Taylor, Associate Professor

BA 1974, Harvard; PhD 1984, Duke; MAS 1989, Ohio State

Population ecology, particularly of interspecific interactions

Assistant Professors

Timothy Tricas, Assistant Professor

BA 1974, U. Pacific; MA 1976, Cal State Long Island; PhD 1986, Hawai'i

Behavior, ecology and sensory biology of fishes

Athula Wikramanayake, Assistant Professor

BA 1974, U. Pacific; MA 1976, Cal State Long Island; PhD 1986, Hawai'i

Developmental biology of marine invertebrates; evolution of pattern formation

Prominent Alumni

Botany Alumni

- Izzie Abbott, internationally known phycologist
- Vicki Caraway, State Botanist with the Department of Land and National Resources
- Robert DeWreede, Professor, University of British Columbia
- Lisa Floyd-Hanna, Professor, Prescott College
- Dennis Grossman, Vice President for Science, Association for Biodiversity Information
- In Sun Kim, Professor and Chair, Department of Biology, Keimyung University

- Kanehiro Kitayama, Professor, Center for Ecological Research, Kyoto University
- James Kwon, Biologist, U.S. Fish and Wildlife Service
- Jane Lewis, Associate Professor, National Taiwan Ocean University. President, Ecological Informatics, Inc.
- Mark Littler, Senior Researcher, Botany Department, U.S. National Museum
- Alain Meyrat, Director of Agricultural Sciences, University of Nicaragua
- Tim Motley, Chair, Cullman Program for Molecular Systematic Studies, New York Botanical Garden
- Bernabe Santelices, Professor and internationally known marine ecologist, Catholic University (Santiago, Chile)
- Sy Sohmer, President and Director of the Botanical Research Institute of Texas
- Roy Tsuda, President, University of Guam

Chemistry Alumni

- Lynn Jelinski, former Vice President for Research at Louisiana State University, a final candidate for Chancellor position at UH Manoa.
- Ruby Evangelista Kirkup, Vice President of the Wound and Trauma Care at Johnson & Johnson.
- Lynne McCusker, Senior Researcher at ETH, in Zurich
- Charles J. Simmons, professor in the Division of Natural Sciences at UH Hilo
- Nam Ho Heo, Professor in the Department of Industrial Chemistry at Kyungpook National University (Korea)
- Yang Kim, Professor in the Department of Chemistry at Pusan National University (Korea)
- V. Ramamurthy, Bernard-Baus Professor of Chemistry at Tulane University
- Hing-Leung Sham, Senior Research Fellow at Abbott Laboratories (developed several drugs, particularly related to HIV protease inhibitor, that have earned more than \$100,000,000).
- Manual Soriaga, Professor in the Department of Chemistry, and Head of the analytical Division at Texas A & M
- Do Weon Lee, Professor of the Department of Chemical Engineering, Seoul National University
- John Yamamoto, Senior Chemist at Rohm and Haas
- Esther Alegria (Padilla), Technical Manager at Wyeth-Ayerst Laboratories
- Bill Baker, Professor in the Department of Chemistry at the University of South Florida.
- Michael Kerr, Professor of Chemistry at the University of Western Ontario

Mathematics Alumni

- John Mackey, Preceptor in Mathematics, Harvard University
- Ann Nishoka Eisenberg, Author of HyperGami and JavaGami computer programs (with Mike Eisenberg).

- John Rossi, Professor and Head, Mathematics Department, Virginia Polytechnic Institute and State University

Microbiology Alumni

- Joanne Furuya, Director, Crime Laboratory, Honolulu Police Department
- Myron Honda, Supervisor of Environmental Health, Hawai'i Department of Health Laboratory
- Rebecca Sciulli, Head of Bioterrorism Branch, Hawai'i Department of Health Laboratory
- Kenneth Tenno, Director of Laboratory of Water Quality, Department of Wastewater Management
- James Foppoli, State Veterinarian, Halawa Laboratories, Hawai'i State Department of Agriculture
- Glenn Hashiro, Supervisor of the Laboratory of Clinical Biochemistry, Tripler Medical Center
- Bruce Keswick, Director, Laboratory of Infectious Disease, Proctor & Gamble, Cincinnati, OH
- Dennis Palmer, Section Head, Dade International, Miami Florida.
- Russell Kelly, Head, Laboratory of Virology, Freshwater Institute in Winnipeg, Canada
- Henry Subasinghe, Associate Director, Institute of Animal Pathology, Colombo, Sri Lanka

Physics and Astronomy Alumni

- Robert Svoboda, Group leader and distinguished faculty member at LSU
- Constantine Sennis, Group leader and Senior staff Member at Los Alamos National Laboratory
- Ralph Becker-Szendy, Senior Staff at the Premier IBM Almaden Laboratory
- John Flanagan, Senior Staff at the Japanese National Accelerator Laboratory.

Zoology Alumni

- Joseph Sylvester, Department of Fisheries, U.S. Virgin Islands
- Paul Atkins, National Geographic Society, Natural History Films
- Celestino Aguon, Biologist, Guam Department of Wildlife and Aquatic Biology
- Jane Albert, Genetics Department, Columbia University
- Jack Randall, Curator Ichthyology, Bishop Museum
- Gareth Nelson, Curator Ichthyology, American Museum of Natural History; Fellow, Royal Society of London
- Sudaphol Sudara, Director of the Marine Laboratory, Chulalongkorn, Thailand
- William Brown, Director, Bishop Museum
- Austin Lamberts, MD/Smithsonian Research Institute
- Charles VanRiper, III, Director, of Fish and Wildlife Coop Unit, United States Fish and Wildlife Service
- Lawrence Baer, Professor, University of Michigan Medical School
- Carol Hopper, Director of Education, Waikiki Aquarium

- Craig MacDonald, Director of Ocean Research, Hawai'i State Department of Business, Economic Development and Tourism
- Tom Hourigan, Biologist, Bureau of Land Management, Washington, D.C.
- Cynthia Hunter, Acting Director, Waikiki Aquarium
- Stephen Miller, Head, ecological Services, United States Fish and Wildlife Services, Pacific Eco-Region
- Aprilani Soegiarto, Department Chair of Natural Sciences, Indonesian Institute of Sciences (Jakarta)