COLLEGE OF
NATURAL SCIENCES

OVERVIEW

Biology
Botany
Chemistry
Information & Computer Sciences
Mathematics
Microbiology
Physics & Astronomy

www.hawaii.edu/natsci
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A message from the Dean

Over the last three years there has been a renaissance in the development of the College of Natural Sciences. Building upon the foundation of our wonderful faculty, students, and staff we have made significant progress in reimagining the College into one of the most vibrant and creative colleges in the country. We are unique. We offer unique opportunities. We offer a quality choice for students and a world-class choice for professors and researchers.

While many challenges remain, I could not be more pleased with our upward trajectory. We have hired over thirty new faculty in the College who have brought a whole range of fresh new ideas and approaches. They contribute to a high excitement level in the College. Our faculty have been very successful in increasing our research awards by 65 per cent over the last year. We are deploying world-class research and education infrastructure with the renovations of Edmondson Hall, now complete, and the upcoming renovations of Snyder and Keller Halls. This fuels the “startup feel” of the College of Natural Sciences.

Throughout the previous century research, scholarship, and education fragmented into many disciplines and subdisciplines. This fragmentation served to accelerate progress. In this century, however, such fragmentation now only hinders. Progress and success now spring from our effectiveness in connecting and reintegrating all our disciplines. I believe that every day in our College of Natural Sciences we are starting to achieve an unprecedented level of connectivity and reintegration in all our endeavors.

Overall, I highly encourage you to visit and explore our College of Natural Sciences and see what it has to offer. We are reinventing what it means to be the very best. To experience the energy level alone is well worth a visit.

WILLIAM L. DITTO
Dean, College of Natural Sciences

Over $93 million awarded to NatSci for research since July 2011

New Staff

Dr. Steven Robinow
Interim Associate Dean

Dr. Robinow was appointed Associate Dean in 2014 after serving as chair of the Department of Biology at UH Mānoa. In his current role, Dr. Robinow is responsible to Dean Ditto for the day-to-day operations of the College.

Dr. Robinow received a BA in Genetics from UC Berkeley and a PhD in Biology from Brandeis University. He accepted an appointment at UH in 1995 after conducting post-doctoral research at the University of Washington. As a Professor in the Department of Biology at UH Mānoa he taught both undergraduate and graduate courses.

Mary Hoffman
Director of Operations

Mary Hoffman came to UH after a two year mid-career break traveling extensively for fun and also serving as a volunteer with Rotary International. It was a break after serving 25 years in various fiscal/management roles at Washington State University, most recently as the Director of Finance for WSU Extension Services and Assistant Director for the College of Agricultural, Human and Natural Resource Sciences. Hoffman left Pullman, Washington and came to UH Mānoa.

As Director of Operations, she and her staff are responsible for the management of personnel, procurement, account management, space management, and inventory. They also provide training and instruction on college policies and procedures.
$e^{i\pi} = -1$
The Department of Biology’s state-of-the-art $15 million renovation of Edmondson Hall is a testament to the commitment of the University of Hawai‘i to the importance of the biological sciences. Laboratory space for undergraduates, graduate students and faculty as well as offices, meeting rooms all new this year will be complemented with a soon-to-be renovated Snyder Hall that will house the Department of Microbiology and provide additional space for the Department of Biology. The undergraduate degree programs in Biology and Marine Biology prepare students for careers in the private sector and with state and federal agencies, as well as admission to professional and graduate schools. Our undergraduate degree programs develop scientists for careers in research and education for the state and the nation. The department cooperates with biologists across the Mānoa campus and within the University of Hawai‘i system.

The Department of Botany illustrates the mission of the University: we educate around the themes of botany in ahupua‘a (place-based learning via our field and lab courses), kuleana (coursework in researcher responsibility and ethics), and ‘ohana (service to our community).

— Tom A. Ranker, Chair of Botany
Chemistry is emerging from a turning point with renewed energy. The next five years will be a period of unprecedented growth, with strategic hiring that will double the size of our tenure-line faculty from 10 to 20. New recruits in biochemistry and other areas will complement a tradition of excellence in natural products chemistry, as well as programs in materials science and astrochemistry that have more recently emerged on the national stage. Our infrastructure will need to keep pace; the recent acquisition of two nuclear magnetic resonance (NMR) consoles is only the first of many improvements to our facilities, and new staff hires provide enhanced services for students and faculty. At the end of this decade, Chemistry will still be grounded by our foundation of research excellence and academic rigor, but we will be bolstered by a transformation across our complex infrastructure and the energy that accompanies this amazing growth.

Chemistry is the study of matter—but what matters to Chemistry? —Kristin K. Kumashiro, Chair of Chemistry

In computer science, you can create something amazingly useful out of nothing: a computer program. —David Chin, Chair of Information & Computer Sciences
Department of MATHEMATICS

The University of Hawai'i at Mānoa’s Department of Mathematics maintains a comprehensive mission of research, graduate and undergraduate education, and service to the university and community. Our faculty maintain active research programs in both pure and applied mathematics, and are well respected nationally and internationally. We are a campus leader in outreach, especially in K-12 education.

Long recognized for our strengths in pure mathematics, we have recently been building a program in applied mathematics, leading to increased collaborations outside the department and college, and an interdisciplinary certificate for undergraduates in Mathematical Biology.

We educate approximately 5,000 University of Hawai'i students every year, and are continually adapting our programs to address the needs of the students and the community, to strengthen the employment prospects of our majors and graduate students, and generally to ensure that we provide at least as good a mathematics education as can be obtained at our mainland counterparts.

Department of MICROBIOLOGY

85% of undergraduates and 39% of graduate majors are from Hawai'i and as many as 39.5% of our graduates live in Hawai'i, several holding key positions in State and municipal governmental agencies. The Department of Microbiology has concentrated on highly essential areas vital to the State, such as general and applied microbiology (including biotechnology), microbial genetics, microbial physiology (molecular biology), medical microbiology, microbial ecology, and bioremediation, food microbiology, immunology, animal virology (includes marine animal virology) and cell biology.

Our primary objectives are: 1) to produce highly qualified and competent majors in the selected microbiology areas, 2) to develop and maintain a strong and supportive research program to complement our teaching, and 3) to be a center of excellence and information resource in microbiology for Hawai'i, the Pacific region, Southeast Asia and Asia. Research conducted by our faculty is a vital part of our responsibilities and contributes significantly to our graduate program. Several research projects have received national and international attention and are supported by Federal, State, and private agencies. Two of our instructional faculty won the UH Regents’ Excellence in Research Award: Professors Maqsudul Alam (2001) and Philip C. Loh (1965).

Microbiology is a fundamental part of the biological sciences, we thrive on excellent research and education. — Maqsudul Alam, Chair of Microbiology

DEPARTMENTAL FACTS

http://www.hawaii.edu/microbiology/

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<th>Undergraduate Degrees</th>
<th>Undergraduate Certificate in Mathematical Biology, Minor in Mathematics, BA/BS Mathematics</th>
<th>Graduate Degrees</th>
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Data current as of October 2014

DEPARTMENTAL FACTS

http://math.hawaii.edu/

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Data current as of October 2014

P.A.M. Dirac
Many great scientific discoveries started out with a simple question —What if?
— Pui Lam, Chair of Physics and Astronomy

The Department of Physics and Astronomy at the University of Hawai‘i at Mānoa is dedicated to excel in research, teaching, and service.
Research areas: High-energy theory and experiment, particle astrophysics, free-electron laser, optics, nanophysics, condensed matter theory, and detector development.
Recent recognition: Ranked among the top 12th department in the nation by the National Research Council in 2010.

New program initiatives: Proposed Astrophysics BS and Astronomy BA programs.
Outreach activities: Annual UH Physics Open House, Annual Hawai‘i Physics Olympics, and QuarkNet.

DEPARTMENTAL FACTS

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<tr>
<th>Undergraduate Degrees</th>
<th>Graduate Degrees</th>
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41 GRADUATE STUDENTS 6 STAFF

YEARLY RESEARCH AWARDS

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Data current as of October 2014
The internet and digital communications have revolutionized libraries and archives. The Library & Information Science Program educates and mentors leaders who can provide preservation and access to our cultural heritage through libraries and archives.

— Andrew B. Wertheimer
Chair of Library & Information Science

Our graduates empower readers and information seekers from infants to senior citizens. For a half-century LIS graduates have run public, school, special, and university libraries, as well as archives. In the 21st century, they are helping build digital libraries and archives that are revolutionizing the networked world.

Recent progress towards strategic planning goals includes:

• The LIS Program is recognized by US News & World Report’s Top 10 ranking in the School Library Media Specialization, (and #27 overall in the ranking). To support continued leadership in this area, we recently hired Rae Anne Montague, who had been Associate Dean at the University of Illinois.

• Strategic Partnerships: Established a dual degree agreement with Education Technology and working on one with the School of Hawaiian Knowledge.

• Formed a Native Hawaiian LIS Student organization, co-sponsored a conference on indigenous librarianship; increasing the percentage of Native Hawaiian students.

• Established online course in Asian Studies Librarianship; working on an exchange agreement with the University of Tsukuba, Japan.

• Increased offerings on archives and digital archives to reflect student interest.

• Plan to experiment with informatics offerings—depending on new hires.

• The faculty continue to advance in research and grants (e.g. Gazan’s “Interdisciplinary Research Metrics in Astrobiology”; Harada’s IMLS $250K “Pathways to Excellence and Achievement in Research and Learning.”

Library & Information Science Program

College of Natural Sciences

Program Facts

<table>
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<th>Graduate Degrees</th>
<th>MLIS Library &amp; Information Science, PhD Communication &amp; Information Sciences</th>
<th>Chair of Department</th>
<th>Andrew B. Wertheimer</th>
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</table>

75 Graduate Students | 4 Faculty | 2 Dual-Culture Faculty | 1 Half-Time Faculty

http://www.hawaii.edu/lis/
The Marine Option Program
provides the future leaders of
the marine community. Dive in!
— Cynthia Hunter, Director

The Marine Option Program (MOP) facilitates ocean-related, experience-based academic and internship opportunities for students in all majors. A typical “classroom” may be on a white, sandy beach measuring green sea turtles or at 20 meters under the surface practicing scuba surveying techniques on coral reefs or historic shipwrecks. Informative (and usually fun!) day trips— the fish auction at dawn, behind-the-scenes at the Pacific Tsunami Warning Center, hikes to albatross nesting sites, to name a few—are organized for students each semester. MOP also acts as a training and proving ground for high-performing students, preparing them for career service in marine-oriented agencies through classroom and field experiences. MOP holds an annual Student Symposium each April where students from all ten University of Hawai’i campuses gather to present their skill project accomplishments. Awards are given to recognize the top students. The Symposium is usually held in April of each year. Visit our website for more information and join us!

— Cynthia Hunter, Director

Program

http://www.hawaii.edu/mop

GRADUATE PROGRAMS

MS Marine Biology, PhD Marine Biology

Program Directors
Tim Tricas
Stephen A. Karl

Graduate Degrees

1 FACULTY

49 GRADUATE STUDENTS
(STARTED 2012)

44 FACULTY

7 COOPERATING FACULTY

9 AFFILIATE FACULTY

Marine biological studies at the University of Hawai’i have a long history of groundbreaking research and hands-on graduate training through internationally recognized graduate programs in Oceanography, Zoology, Botany, and Microbiology. The College of Natural Sciences together with the School of Ocean & Earth Science & Technology now sponsor a new graduate program that offers PhD and MS degrees in Marine Biology. This program takes advantage of 46 regular faculty who sit in several academic departments and research units such as Hawai’i Institute of Marine Biology and the Kewalo Marine Lab. Research interests of our faculty span the study of marine organisms, ecosystems, biogeochemical processes, reefs and oceanic fisheries, and human/marine interactions.

The program partners with state and federal agencies, such as NOAA’s Pacific Islands Fisheries Science Center, and Hawai’i’s Department of Land and Natural Resources, to offer research and mentorship opportunities.

— Dr. Tim Tricas, Co-Director

http://www.hawaii.edu/mbiograd
New Undergraduate Majors

ASTRONOMY BA

Programs

BA ASTRONOMY

This undergraduate degree provides a flexible program for students interested in astronomy but who also have a wider range of career interests.

Students might want to teach astronomy, or become involved with the vast astronomical enterprise. The BA in astronomy could lead to a career supporting observatories as a technician, engineer, or designer of astronomical equipment or software.

This program is also a solid choice for science writers, journalists, or data scientists when combined with a second undergraduate degree or graduate degree.

BS ASTROPHYSICS

This degree is a rigorous program for those students who want to do graduate studies in astronomy, astrophysics, or physics and are aiming at a long-term research career. It requires in-depth study of physics and mathematical applications to astronomy.

Students learn about the key physics governing the universe - basic kinematics and electromagnetism, quantum mechanics and relativity - and practice applying these concepts to phenomena ranging from asteroids to galaxy clusters. They learn to carry out and analyze astronomical observations, and gain research experience via a senior project with a faculty member.
The Department of Chemistry offers both a BS and a BA degree in biochemistry. Biochemistry is a more specialized area at the interface of biology and chemistry that seeks to understand the chemical reactions and structures that are found in all living organisms.

Students can expect to take courses in chemistry, biology, physics and mathematics before taking more specialized courses. Undergraduates can choose electives in genetics, neuroscience, microbiology, biotechnology as well as human and animal physiology.

Students who earn a degree join research labs to conduct projects for either a university or a biotech or pharmaceutical company or accept positions in laboratories analyzing biological samples for drugs, poisons, bacteria, and viruses and many other possibilities.
Stephanie D. Kraft-Terry — Junior Specialist

“May your choices reflect your hopes not your fears.”
— Nelson Mandela

Stephanie Kraft-Terry earned a BS in Chemistry at Pacific University and a PhD in Experimental Neuroscience at the University of Nebraska Medical Center in Omaha. She then moved to a postdoctoral research position in the Neuroscience and MRI Research Program at the University of Hawai'i at Mānoa. In 2014 she moved to the University of Hawai'i at Mānoa to found a new translational and molecular magnetic resonance imaging program.

Dr. Bennett has an interest in finding ways to detect the susceptibility to and early development of diseases such as diabetes and cancer, so patients can be treated early and successfully. With a specific focus on magnetic resonance microscopy, Dr. Bennett uses a combination of chemistry, physics, and molecular biology to develop highly sensitive imaging probes. His company, Nanodiagnostics, develops novel, sensitive molecular imaging contrast agents to enable large-scale studies of kidney morphology and function.

Kevin Bennett — Associate Professor

“The big lesson in life, baby, is never be scared of anyone or anything.”
— Frank Sinatra

Kevin Bennett earned his PhD in Biophysics at the Biophysics Research Institute at the Medical College of Wisconsin. He was an IRTA postdoctoral fellow at the National Institutes of Health and an Assistant Professor, Undergraduate Chair, and MRI Director at the Magnetic Resonance Research Center at Arizona State University. In 2014 he moved to the University of Hawai'i at Mānoa to found a new translational and molecular magnetic resonance imaging program.

Dr. Bennett has an interest in finding ways to detect the susceptibility to and early development of diseases such as diabetes and cancer, so patients can be treated early and successfully. With a specific focus on magnetic resonance microscopy, Dr. Bennett uses a combination of chemistry, physics, and molecular biology to develop highly sensitive imaging probes. His company, Nanodiagnostics, develops novel, sensitive molecular imaging contrast agents to enable large-scale studies of kidney morphology and function.

Mark Hixon — Professor, Sidney and Erika Hsiao Endowed Chair in Marine Biology

“I must be the change I wish to see in the world.”
— attributed to Mahatma Gandhi

Mark Hixon was born in California in a Navy family. He earned his undergraduate and graduate degrees in marine biology at the University of California, Santa Barbara. He first worked on coral reefs as a National Science Foundation postdoctoral fellow at the University of Hawai'i at Mānoa, then was a professor at Oregon State University until 2013, when he returned to the University of Hawai'i.

Mark’s primary expertise is the ecology of coral reefs, especially fishes. His research emphasizes undersea experiments using SCUBA. Mark was honored as the most cited author on coral-reef ecology in America in 2004 by the Institute for Scientific Information Citation Index.

He is a Fulbright Senior Scholar and Aldo Leopold Fellow, and serves on the editorial boards of the scientific journals Ecology and Ecological Monographs, and as an ad-hoc editor for the Proceedings of the National Academy of Sciences. Mark is a featured presenter of TED talks on the web and appearances on the PBS TV show Saving the Oceans.
Biology

Amy Moran — Associate Professor

“What lies on the bottom of the ocean and shakes? A nervous wreck.”

Amy Moran was born in Massachusetts, studied at Bates College and the University of Oregon, and was a postdoctoral fellow at the University of Washington and the University of Southern California before moving to a research faculty position at the University of North Carolina at Chapel Hill. She subsequently moved to a faculty position in the Biology Department at Clemson University, where she worked for eight years before joining the Biology Department and Marine Biology Program at the University of Hawai‘i at Mānoa in the fall of 2013.

Her publications and research interests cover wide area, and are focused mainly on the physiology and ecology of marine invertebrate larvae. She has worked on larvae and benthic marine systems in the Pacific Northwest, Central America, the South Pacific, the Caribbean, and Antarctica. In her spare time she tends her own 9-year-old larva and spends as much time as possible in the water.

Biology

Robert Thomson — Assistant Professor

“To keep every cog and wheel is the first precaution of intelligent tinkering.” — Aldo Leopold

Bob Thomson grew up in southeastern Michigan. He attended the Rochester Institute of Technology as an undergraduate in Biology and the University of California, Davis earned a PhD in Population Biology. He did postdoctoral work at University of California, Davis.

His research focuses on phylogenetics, evolution and conservation biology. In particular, his phylogenetic efforts are aimed at improving Bayesian methods for phylogenomic inference and resolving particularly recalcitrant nodes in the tree of life. Much of his empirical research focuses on evolutionary biology of amphibians and reptiles, as well as translating this work into conservation and management. In his spare time, Bob enjoys distance running and spending time in the more remote corners of the US.

Amber Wright — Assistant Professor

“When you work for yourself, you have to be your own best boss.”

Amber Wright was born and raised in Honolulu and graduated from Kaiser High School. She studied ecology and evolution for her BS at Cornell University, conservation biology for her MA at Columbia University, and received her PhD in population biology from the University of California, Davis. Inspired by growing up in Hawai‘i catching lizards, she has studied introduced species and the role of lizards in food webs, as well as disease ecology in raccoons and the effects of climate change on reptiles and amphibians. The common thread of her research is understanding how animals respond to natural and anthropogenic variation in resource availability.

Ambra is looking forward to building a research program that will contribute to conserving Hawai‘i’s unique biodiversity. She still likes to catch lizards in her spare time.

Biology

Floyd Reed — Assistant Professor

“Evolution is what happens when life is busy without a plan.”

Floyd Reed grew up in Appalachian mountains in North Carolina. He earned a BS at Warren Wilson College, an MS at Western Carolina University and his PhD from Cornell University. His postdoctoral work was at the University of North Carolina from the Max Planck Institute for Evolutionary Biology in Pils, Germany.

Reed moved with his family to Hawaii from Germany where he was a PI at the Max Planck Institute for Evolutionary Biology and worked on engineering genetic pest management techniques. Before this he was a postdoc at the University of Maryland, College Park studying recent human evolution, and graduated with his PhD from Cornell University where he worked on population genetics in humans and fruit flies. At the University of Hawai‘i, he is interested in developing techniques to prevent avian malaria in native Hawaiian forest birds and learning more about the amazing natural diversity of Hawai‘i.

Biology

Masato Yoshizawa — Assistant Professor

“We can be easily to be amazed by how lives evolve and survive especially in harsh conditions.”

Masato Yoshizawa was born in Japan and earned a PhD in neuroscience at Kyoto University. He then did postdoctoral research at the University of Maryland College Park and then worked as a research assistant professor at University of Nevada, Reno.

Yoshizawa’s research interest is in the evolutionary process of traits under the selection pressure where he is resolving its mechanisms by a combination of developmental biology, behavioral, genetic/genomic, sensory biology and neurophysiological technique. He is currently using an evolutionary model, cavefish Astyanax mexicanus, a species consisted of surface-dwelling and cave-dwelling populations, and is expanding his research to Hawaiian native species.

Biology

Peter Marko — Associate Professor

“You miss 100% of the shots you don’t take.”

Peter Marko received a PhD in Population Biology from the University of California, Davis, followed by postdoctoral fellowships at the Friday Harbor Laboratories, University of Washington, Smithsonian Tropical Research Institute, Panama, and the Natural History Museum of Los Angeles County. He held faculty positions at the University of North Carolina and Clemson University before coming to the University of Hawai‘i at Mānoa.

Peter’s research focuses on biogeography, evolution, and conservation of marine organisms. Lab members are actively engaged in projects aimed at distinguishing the demographic and selective processes that shape patterns of genetic variation in natural populations, learning how genetic data can be understood and conservation efforts can potentially guide conservation efforts.

Biology

Amber Wright — Assistant Professor

“On the mainland, people would often ask if I wanted to move back to Hawaii. Of course I did, but it seemed like such a long shot. Now, I am so proud to say that I am a professor at the University of Hawai‘i at Mānoa.”

Amber Wright was born and raised in Honolulu and graduated from Kaiser High School. She studied ecology and evolution for her BS at Cornell University, conservation biology for her MA at Columbia University, and received her PhD in population biology from the University of California, Davis. Inspired by growing up in Hawai‘i catching lizards, she has studied introduced species and the role of lizards in food webs, as well as disease ecology in raccoons and the effects of climate change on reptiles and amphibians. The common thread of her research is understanding how animals respond to natural and anthropogenic variation in resource availability.

Ambra is looking forward to building a research program that will contribute to conserving Hawai‘i’s unique biodiversity. She still likes to catch lizards in her spare time.
Anthony S. Amend — Assistant Professor

"Putting the 'Fun' in Fungi."

Anthony Amend received a PhD in 2008 from the Botany Department at University of Hawai'i at Mānoa and did postdoctoral work at University of California, Berkeley followed by a position as a NOAA postdoctoral fellow at University of California, Irvine. “I am interested in complex microbial communities, and I work in a variety of different systems maintaining a strong focus on microbes that are associated with living hosts.” Members of Amend’s lab study fungi-associated native plant leaves, fungi living inside reef building corals, and the microbial diet of endemic tree snails. The lab uses a variety of classic microbial techniques, works within a classical biogeography theoretical framework and makes heavy use of genome sequencing technology. “I’m thrilled to be discovering and describing so many novel Hawaiian organisms and happy to be teaching two large undergraduate classes as well as a graduate seminar focusing on the ecology of fungal symbiosis. Undergraduates, graduate students and postdocs in my lab are unlocking the many secrets of Hawai’i’s unexplored fungal diversity.”

Orou G. Gaoue — Assistant Professor

“To solve our current conservation problems, we must improve our understanding of the current states of our resources but also how endangered they will become in the future.”

Orou Gaoue received his PhD in Ecology, Evolution and Conservation Biology from the University of Hawai‘i at Mānoa in 2008. He was a postdoctoral fellow at the Institute for Theoretical and Mathematical Ecology at the University of Miami and a post-doctoral fellow at the National Institute for Biological and Mathematical Synthesis (NIMBioS) at the University of Tennessee at Knoxville before returning to University of Hawai‘i at Mānoa. Research in his lab uses mathematical models and social network analysis to investigate the ecological impacts of global change on plant-human interactions, the viability of endangered plants populations and the sustainability of wild plants harvest by local people. Orou Gaoue teaches graduate level courses on Ecological Statistics and Ecological Modeling, and undergraduate courses in Plant Conservation Biology, and Advanced Ethnobotany.

Nicole A. Hynson — Assistant Professor of Community Ecology

“Ecology from the ground up.”

Nicole received her PhD from University of California, Berkeley in 2010 in the Department of Environmental Science, Policy and Management, after which she was a postdoctoral scholar at University of California, Irvine. “I study the ecological factors that shape plant and fungal communities. In particular, my lab focuses on the ecology of the mycorrhizal symbiosis. We use a variety of cutting-edge techniques from molecular biology and physiological ecology in a range of settings from microcosms to field sites across the globe.” Nicole teaches two undergraduate and one graduate course in ecology in the Department of Botany and advises both undergraduate and graduate students whose work focuses on fungal ecology, plant-fungal interactions, and cataloging the mushroom rooms of Hawai‘i. She is teaching and training the next generation of fungal biologists.

Tom Apple — Professor

“When you take a risk and things work out, it’s really great. When you take a risk and it doesn’t work, it’s pretty good too, because you learn something important.”

Tom Apple grew up in Bethlehem, PA and received his BS at Penn State and his PhD in Physical Chemistry from the University of Delaware. Following a Department of Energy post-doctoral at the Ames Laboratory at Iowa State University, Apple took a professorship at the University of Nebraska, moved to Rensselaer Polytechnic Institute (RPI) in 1991 where he later served as Chair of the Chemistry Department, Dean of the Graduate School and Vice Provost.

In 2005, Apple was appointed Dean of Arts & Sciences at the University of Delaware and later promoted to Provost and Chief Academic Officer. Apple was hired as Chancellor of UH Mānoa in 2012 and served two years in that post. His research involves magnetic resonance applied to solid materials, primarily catalysts, polymers and nano-composites. His research has been funded by NSF, DOE, and NIH.

Matthew Cain — Assistant Professor

“It depends upon what the meaning of the word ‘is’ is.” — William Jefferson

Matt Cain was born and raised in Congers, New York, which is about 30 miles north-west of New York City. Cain earned a BS in chemistry from State University of New York at Geneseo in 2007, then received a PhD from Dartmouth College in 2011. He began his postdoctoral studies at MIT in January 2012 concentrating on metallo- and early metal complexes. In May 2014, he left MIT and started as an Assistant Professor at the University of Hawai‘i at Mānoa in July 2014. As an avid skier, he will be trading in his skis, Timberland boots, and flannels for a longboard, stylish boating shoes, and “shirts”.

Ho Leung Ng — Assistant Professor

“As one who grew up here, I know that our Hawai‘i students can be successful at the highest levels if they are provided the resources and guidance.”

Ho Leung Ng grew up in Hawai‘i and earned a BA in Biochemistry from Harvard University and a PhD from UCLA. He went to University of California, Berkeley for his postdoctoral research studies and then at a biotechnology company in the San Francisco Bay Area.

He specializes in protein crystallography and related biochemical and biophysical methods, including protein expression and computational methods for structure determination. “Proteins are miraculous molecular machines with fascinating relationships between structure and function.” Dr. Ng recently learned that his work will be supported by the National Science Foundation’s CAREER program. His research program focuses on membrane proteins and receptors, particularly those involved in cancer therapeutics.
Depeng Li — Assistant Professor, Security and Privacy

“Keep your privacy to yourself, but share your security philosophy with others.”

Depeng Li earned his PhD degree in Computer Science at Dalhousie University, Nova Scotia, Canada focusing on group communication security. He was a postdoctoral researcher participating in a joint smart grid security research project of Massachusetts Institute of Technology (MIT) and Masdar Institute.

He has impressive industry R&D experience at Microsoft USA focusing on security analyses for Windows & Server system and previously at Research In Motion (RIM) developing Blackberry smartphones.

At the University of Hawai’i at Mānoa, he continues his active research on enhancing security, privacy and performance in system, software, and networking for Internet of Things, self-organized network (e.g. wireless networks, sensor networks), and cloud computing. Specifically, his research projects involve network protocol vulnerabilities assessment, security best practices, risk mitigation and analysis, and the design of secure systems. He has published approximately 30 referred papers.

Jason Leigh — Professor, Director of LAVA: the Laboratory for Advanced Visualization & Application

“The quality of the lens can determine the quality of the insight.”

Jason Leigh was born in Hong Kong and educated in the United States. He earned a BS from the University of Utah, MS and CS from Wayne State University and PhD from the University of Illinois at Chicago. His research expertise includes big data visualization; virtual reality; high performance networking; and video game design. Leigh teaches classes in Software Engineering course designed to train LIS students as youth advocates. He is also a convener for the International Federation of Library Association and Institutions (IFLA) LGBTQ Users special interest group (SIG).

Dusko Pavlovic — Professor, Security Strategies

“Know your enemy. Maybe your enemy knows you, so you get to know yourself that way.” — Sun-Tzu & Socrates

Dusko Pavlovic was born in Sarajevo, studied mathematics in Utrecht, the Netherlands and worked at McGill University, Montreal before turning to computer science at Imperial College London. He left academia, to work in software research in Palo Alto, returned as a Visiting Professor at Oxford and an Extraordinary Professor of Security at the University of Twente, the Netherlands and held a chair in Information Security at Royal Holloway University of London.

He founded the Adaptive Security and Economics Lab (ASECOLab.org) bringing together prominent security strategists, and initiated several ongoing research threads. It is now undergoing a transformation into a joint research venue, affiliated both with the University of Hawai’i at Mānoa and with Royal Holloway University of London. His publications covered a wide area from mathematics and quantum information theory, theoretical computer science and software engineering, to security and network computation.

Nodari Sitchinava — Assistant Professor

“Millions saw the apple fall but Newton was the one who asked why.” — Bernard Baruch

Nodari Sitchinava received both a BS and MENG from Massachusetts Institute of Technology and a PhD from the University of California, Irvine. He joined the University of Hawai’i at Mānoa’s ICS department after spending some time as a researcher at the Massive Data Algorithmics (MADALGO) Center at Aarhus University in Denmark and the Institute for Theoretical Informatics at Karlsruhe Institute of Technology in Germany.

Nodari Sitchinava’s research focuses on developing parallel algorithms—techniques for cooperation among all the processors of a system to solve computational problems faster and more efficiently. His techniques can be used to speedup computation on individual multicore systems or to address Big Data challenges by distributing the data across multiple systems and using the computational power of a grid or cloud infrastructure.

Peter-Michael Seidel — Assistant Professor, Computer Design and Verification

“Just prove it.”

Peter-Michael Seidel was born in Germany and earned both a PhD and a Habilitation degree in Computer Engineering at the University of the Saarland, Germany. He became a tenure-track faculty member at Southern Methodist University followed by private sector work as a design engineer at Advanced Micro Devices. Verification has become the dominant cost in the modern design process for digital systems. The use of abstractions, hierarchical reasoning and the formalization of the designers’ intuition have been shown to be very powerful in helping prove the design correctness of complex systems. To further develop these techniques and make them feasible for general commercial settings will help make the design and optimization of digital systems a more widely scalable engineering process that can keep up with the increasing complexities and verification challenges that future digital systems have to offer.

Rae-Ann Montague — Assistant Professor, Library and Information Science (LIS)

“If I can’t dance, I don’t want to be part of your revolution.”

Rae-Ann Montague was born in Halifax, Nova Scotia, Canada. She received a BSc and an MEd from St. Mary’s University and then earned an MLSIS and PhD at the University of Illinois.

Dr. Montague’s interests span several areas of education (e.g., inquiry, K12 literacy, learning communities, and online education) and social justice (e.g., critical theory, globalization, incarceration, LGBTQ affairs, literacy and youth advocacy).

Montague serves as principal investigator for Mix IT Up! - a collaborative project designed to train LIS students as youth advocates. She is also a convener for the International Federation of Library Association and Institutions (IFLA) LGBTQ Users special interest group (SIG).
Robert Harron — Assistant Professor

“Challenge accepted!” — Barney Stinson

Robert Harron was born in Canada and raised, mostly, in Montreal. After earning a BSc in mathematics and physics from McGill University, he received his PhD from the University of Chicago. He was a Gibbs assistant professor at Yale University and was awarded the Dylan Hixon ’98 Prize for Teaching Excellence in Natural Sciences and Mathematics.

Harron studies algebraic number theory, a subject that evolved from the work of Fermat, Euler, and Gauss, and aims to understand the structure of solutions to polynomial equations. His research lies in the fields of Iwasawa theory and arithmetic statistics, with a healthy dose of computational number theory.

Asaf Hadari — Assistant Professor

“The most exciting phrase to hear in science, the one that heralds new discoveries, is not ‘Eureka!’ but ‘That’s funny...’” — Isaac Asimov

Asaf Hadari grew up in Israel. Hadari received his undergraduate degree at Tel Aviv University and received his PhD from Princeton University where his advisor was Andrew Wiles. He is joining the faculty at University of Hawai‘i at Mānoa after postdoctoral positions at Boston University and the University of Wisconsin–Madison.

Hadari’s research is in a field called geometric group theory. This is a relatively new field that incorporates ideas from many different areas of mathematics—group theory, low dimensional topology, geometry and dynamics. In particular, he studies mapping class groups which are some of the most ubiquitous objects in mathematics. His work is in pure mathematics, but occasionally incorporates computer experiments.

Yuriy Mileyko — Assistant Professor

“An investment in knowledge pays the best interest.” — Benjamin Franklin

Yuriy Mileyko was born in Ukraine. He earned his BS and Specialist degrees in Applied Mathematics at National Taras Shevchenko University of Kyiv and his PhD at Rutgers University and the New Jersey Institute of Technology. He was a postdoctoral fellow at Georgia Institute of Technology and then became a Visiting Assistant Professor at Duke University.

Yuriy is conducting research in applied and computational topology. His work is primarily concerned with developing topological and geometric tools for problems in science and engineering, with a focus on topological analysis of large data sets, network analysis, and collective behavior.

Thomas Hangelbroek — Assistant Professor

“A mathematician’s best friend is the wastepaper basket.”

Thomas Hangelbroek grew up in Hinsdale, Illinois and earned a PhD at the University of Wisconsin at Madison. He was a NSF postdoctoral fellowship at Texas A&M University and then taught at Vanderbilt University.

Thomas Hangelbroek works on kernel based approximation problems, a topic at the interface of approximation theory, harmonic analysis and numerical analysis. Kernels are prized for their ability to solve computational problems in high dimensions, especially those featuring irregular or complicated geometry.

Sarah Post — Assistant Professor

“[Mathematics] brings together phenomena the most diverse, and discovers the hidden analogies which unite them.” — Joseph Fourier

Sarah Post was born in Dallas, grew up in Massachusetts and earned a PhD at the University of Minnesota. She became a postdoctoral fellow at Centre de Recherches Mathématiques at the University of Montreal.

Sarah works on integrable systems in mathematical physics; that is, the study of physical models that possess some form of symmetry making them tractable. In particular, she is currently researching the algebraic and geometric structures of such systems as a classification tool for special functions and orthogonal polynomials.

Daisuke Takagi — Assistant Professor

“If you can’t explain it simply, you don’t understand it well enough.” — Albert Einstein

Daisuke Takagi earned his undergraduate degree and a PhD at the University of Cambridge, England. He went on to be a postdoctoral fellow at the Courant Institute at New York University. He also was a fellow at Woods Hole Oceanographic Institution researching geophysical fluid dynamics.

Daisuke Takagi works in applied mathematics and fluid dynamics. Using a combination of theoretical and experimental techniques, he develops mathematical models of various biological, engineering, and geophysical systems featuring fluid flow. His recent work has focused on predicting and controlling the movement of mobile robots and swimming organisms.
Veronica Bindi — Assistant Professor

“Shoot for the Moon! Even if you miss, you will be among the stars.”

Veronica Bindi earned a MSc in Astronomy and a PhD in Physics at the University of Bologna. She worked 5 years as Research staff at the Italian Institute for Nuclear Physics and at CERN as Project Associate.

Particle Astrophysics and Heliophysics: Bindi is involved with the Alpha Magnetic Spectrometer (AMS) experiment, installed since 2011 on the International Space Station where it will operate for the next ten years. AMS measures particles in space with the aim of discovering dark matter (DM) and cosmic antimatter, and to better understand the cosmic ray propagation in our galaxy. She is participating in the analysis effort providing a major contribution on the positron and antiproton studies crucial for the understanding of the DM nature. In parallel, she is leading the heliophysics task force involved in the study of Solar energetic particles and Solar activity with AMS.

Sladjana Prisic — Assistant Professor

“Our virtues and our failings are inseparable, like force and matter. When they separate, man is no more.” — Nikola Tesla

Sladjana Prisic received her PhD in biochemistry from Iowa State University studying enzymatic mechanisms and structure-function relationship of terpene cyclases. Prisic received her postdoctoral training in microbiology and proteomics at Boston Children’s Hospital at Harvard Medical School while working on Mycobacterium tuberculosis. She continued her research in Boston focusing on “alternative” ribosomes and their role in TB pathogenesis which is the work that she has transplanted to the College of Natural Sciences.

In addition to being a devoted scientist, Prisic is passionate about teaching and mentoring, with special emphasis on supporting underserved and underrepresented students.

Benoit Smagge — Assistant Professor

“Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning.” — Albert Einstein

Benoit J. Smagge received his PhD in 2007 from the Biochemistry, Biophysics, and Molecular Biology department at Iowa State University. He moved to Boston for his postdoctoral research in the laboratory of Dr. Timothy A. Springer at the Immune Disease Institute, Children’s Hospital Boston at Harvard Medical School.

Benoit is also a Research Scientist at Minerva Biotechnologies in addition to teaching in microbiology. His research areas include the development of anti-cancer therapeutics and the development of novel stem cell reagents.

Danny Marfatia — Associate Professor

“The combination of physics and Hawai’i is bliss.”

Danny Marfatia received his PhD at the University of Wisconsin, Madison. He went to Boston University as a Research Associate and was an Assistant Professor at the University of Kansas prior to joining the University of Hawai‘i at Mānoa.

Theoretical Particle Physics: Danny Marfatia’s current research thrust is in the directions of the physics of neutrinos and of dark matter. As someone who connects theory with experiment, his immediate interest is to provide theoretical input on what kinds of neutrino experiments would yield the most interesting physics. He has also been working on explaining recent anomalies in data related to the detection of dark matter, and how these explanations may be tested in future dark matter experiments and at the Large Hadron Collider.

Philip von Doetinchem — Assistant Professor

“As a young faculty, I am happy that the dark matter puzzle has not been solved yet. This gives me the great opportunity…”

Philip von Doetinchem earned his PhD at the RWTH Aachen University, Germany. von Doetinchem did postdoctoral research at the Space Sciences Laboratory at the University of California, Berkeley.

Particle Astrophysics: Philip von Doetinchem is working on the detection of anti-particles in cosmic rays, which might be able to provide important insights for solving the puzzle of the nature of dark matter. He is a collaboration member of the running International Space Station based AMS experiment. In addition, he is a collaboration member of the balloon-borne general antiparticle spectrometer (GAPS) instrument, which had a successful prototype flight in 2012 and is in the full instrument design stage. He is involved in data analysis and hardware development.
Jelena Maricic — Assistant Professor

"The most exciting surprise gifts come from nature —
when we figure them out!"

Jelena Maricic earned a BS in Physics at the University of Belgrade where she also was a research fellow. She received both her MS and PhD from the University of Hawai‘i and was a postdoctoral fellow. She was an Assistant Professor at Drexel University before returning to join the University of Hawai‘i Physics Department faculty. She received an Early Career Research Program award from the Department of Energy in 2013.

Neutrinos and Dark Matter: She has been conducting her research in Japan, USA, France and Italy investigating the nature of dark matter, the mysterious substance vastly present in the Universe that we know very little about. Her other interest are neutrino elementary particles and if they hold the key to the question of why there is more matter than antimatter in the Universe: fundamental asymmetry to which we owe our own existence!