Scientists at the University of Hawai‘i Cancer Center are investigating the large resource of natural products from both the land and sea that surround the Hawaiian Islands in search of new therapies to treat cancer. The UH Cancer Center recently created the Natural Products and Experimental Therapeutics (NPET) Program to assist its researchers and scientists in further understanding this valuable resource.

"Nature has good machinery to design chemicals that have effective ways in controlling disease states," said James Turkson, Ph.D., director of the NPET Program. "There is great value in tapping into the resources that are here in Hawai‘i."

Team members of NPET have screened over 200 plants through The Daniel K. Inouye College of Pharmacy at the University of Hawai‘i at Hilo and over 500 natural products, including marine plants and lichen, through the University of Hawai‘i at Mānoa. Within this group of products, they have found several that may show promise. "Sometimes you screen a thousand products before you get one," said Turkson.

The NPET Program comprises faculty of diverse expertise and backgrounds from the Center, the Department of Chemistry at the University of Hawai‘i Cancer Center.

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Dear Friends,

I would like to dedicate this column to Jeffrey Nakamura, the principal architect who designed and directed the building of our new and beautiful cancer center building. He was a partner in the architectural firm Shimokawa+Nakamura. Jeff recently passed away after losing his long and courageous battle against cancer.

The new University of Hawai‘i Cancer Center building in Kaka‘ako provides a $102 million, 162,640 square foot state-of-the-art environment for wet and dry laboratory research, while breaking new ground in building sustainability and energy efficiency. Using a newly created neighborhood of labs and implementing the innovative technology of chilled beam cooling, the project has attained the U.S. Green Building Council’s Leadership in Energy & Environmental Design Gold standing. The design mission was to create a cancer center, inside and out, that embodies the environmental qualities of life in Hawai‘i, and is unlike any other cancer center in the world.

In a framework of steel and concrete and under a skin of a glass curtain wall, the design and construction of biomedical research laboratories are highly technical, unlike any other building type. They require careful engineering of positive and negative directional airflows, precise calibration of the building envelope and openings, balance and quality of ambient and task light, environmental temperature and humidity range control, and separation of office settings, bench laboratories and specialized core laboratories. Jeff was challenged with blending that science and engineering with the aesthetic and cultural significance of being connected to the land, sea, earth, and sky with color schemes, natural materials, naturally ventilated breezeways, and a convertible conference center artfully melded together. This is exactly what Jeff designed for us.

Input from cancer patients helped shape the design elements of the facility, including integration of wood and other natural materials, framing of views to the ocean, and incorporation of Hawai‘i’s environment into the core of the building. All of these elements were a constant reminder to the cancer patients that they are alive and that they have a future.

While most architectural projects are based on programmatic requirements, this project provided the opportunity to design a facility that would assist in the fight against cancer from a personal perspective. Jeff was diagnosed with Stage 4 metastatic soft tissue spindle cell sarcoma shortly after beginning the design process for the Center. Not wanting to let cancer determine his outcome, he embraced the opportunity to design a facility that would be instrumental in finding the cure to a disease that affects millions of people in the U.S., including himself.

Jeff shepherded the design team to create a beautiful facility. After the design of the building was completed, he remained active during the construction phase of the project as an essential participant in the team. He always professed that he was the ‘third partner’ in the architectural firm.

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Hawai‘i at Mānoa, The Daniel K. Inouye College of Pharmacy at the University of Hawai‘i at Hilo, Chaminade University, Hawai‘i Pacific University, and The Queen’s Medical Center. This interdisciplinary group of investigators focuses on the following thematic areas:

- Natural products, organic synthesis, and medicinal chemistry;
- Targeting signal transduction, cell proliferation, and survival pathways;
- Computer-aided Drug Design and Screening (CADDs); and
- Small-molecule inhibitors.

According to Turkson, the integration of all these research activities is vital to produce the potential drugs that fight cancer. He and his team members put these natural products through a variety of screening methods. They compare the compounds’ effects against non-cancerous cells and glioma and breast tumor cells. The NPET Program is studying these two tumor types because breast cancer is very common and glioma tumors presently have a high mortality rate with no known effective treatments.

One product that is showing particularly promising activity in cancer cell lines is the poha berry plant. The berry and other components of the plant were studied by Leng Chee Chang, Ph.D., assistant professor at The Daniel K. Inouye College of Pharmacy at UH Hilo. The berries are eaten fresh or used in making jam. “The ripe berry is a good source of vitamin C, potassium, carotenoids, and bioflavonoids, which may have antioxidant properties,” said Chang. “The crude organic extract from the whole plant has anti-inflammatory activity in vitro, having shown inhibition of breast cancer cells. The plant may actually be more potent so we want to find out more about it.”

Chang gives special thanks to Sam E. Lorch of Lani ko Honua Berry Farm, who has graciously agreed to provide large amounts of plant materials and poha berries for study.

In addition to products that kill cells, the NPET Program is screening products that affect the function of cells. Cancer develops when certain biological molecules in cells go haywire and permit cells to multiply uncontrollably. Scientists try to inhibit the haywire function and stop the cells from growing. This targeting of specific biological molecules within cancer cells is called targeted therapeutics. Herceptin and Gleevec are examples of targeted therapy.

You can read more about these therapies on the UH Cancer Center’s website at www.uhcancercenter.org.

Of the potential products the NPET Program is examining, two are currently being tested on tumors in mice. “If that works well, the researchers will invest in synthesizing the natural product to see if it can be mass produced,” said Turkson. “We have to repeat what nature has done. However, sometimes natural structures are so complex that present technologies cannot synthesize them.”

If a new product reaches this stage, then it proceeds to pre-clinical testing. After this phase comes advanced pre-clinical testing, which takes place at the National Cancer Institute. “They have built tumor models further than we can test them,” explained Turkson. “They will need to replicate what we have done here in clinical testing.”

To have cancer-curing drugs come out of the Hawaiian Islands is still a dream for this new program. But having an NCI-designated Cancer Center here in Hawai‘i increases the likelihood of this dream becoming a reality.

**DIRECTOR’S MESSAGE: Continued from page 2**

design-assist process, working with the construction team to ensure that the project was completed on time and under budget.

Jeff worked tirelessly even after his diagnosis, never using his illness as an excuse and maintaining a positive attitude throughout the project. He loved this project just as much as we loved him.

On June 3, 2013, Jeff peacefully left us.

This building, now rated the most beautiful and well-designed cancer center in the country, is a legacy to Jeff’s vision, hard work, humility, and humanity.

Michele Carbone, M.D., Ph.D.
Director
University of Hawai‘i Cancer Center

**FRIENDS OF THE UNIVERSITY OF HAWAI‘I CANCER CENTER MESSAGE: Continued from page 2**

were among the notable speakers. Herbert Yu, M.D., Ph.D., presented on the interesting and practical topic of “The Role of Exercise in Cancer Survival.” Well-known local oncologist Kenneth Sumida, M.D., presented, “Clinical Trials – What’s the Big Deal?” (See story on page 7)

On behalf of the Friends of the University of Hawai‘i Cancer Center, I call on each and every one of you to show your support for the work of our Center by either making a monetary contribution or being an ambassador in the community so that more people become aware of the excellent work taking place at the Center.

Aloha,

Diane T. Ono
President
Friends of the University of Hawai‘i Cancer Center
New Recruitments Strengthen Research Efforts

An inherent component of University of Hawai‘i Cancer Center Director, Dr. Michele Carbone’s long-range plan to build and grow the Center is to recruit some of the best, brightest, well-established, and promising young scientists in the world. His efforts have resulted in the recent hire of several world-class researchers who possess these desirable attributes.

**Wei Jia, Ph.D.**, joined the UH Cancer Center on March 1, 2013. Jia joined the Center as a professor in the Cancer Epidemiology Program and as the Associate Director for Shared Resources. He was previously a professor and co-director of the Center for Translational Biomedical Research at the University of North Carolina at Greensboro, and the director of the Bioanalytical Core at the David H. Murdock Research Institute at Kannapolis, North Carolina, an internationally recognized lab in metabolomics research. Metabolomics is the scientific study of the unique chemical fingerprints that cellular processes leave behind in a single cell that give an instant snapshot of the function of the cell. Jia’s current research focuses on mass spectrometry-based metabolomics profiling technologies to investigate metabolic changes in cancer and metabolic disorders.

As the Associate Director for Shared Resources, Jia oversees the core support services that assist all the Center’s research programs. They include Analytical Biochemistry, Animal Carcinogenesis, Biostatistics and Informatics, Genomics, Microscopy and Imaging, Nutritional Support, and Pathology.

On May 1, 2013, **Guoxiang Xie, M.D.**, began working at the UH Cancer Center as an assistant specialist in the Cancer Epidemiology Program. Dr. Xie received his medical degree in Pharmaceuticals from Shanghai Jiao Tong University, Shanghai, China in 2007. Before moving to Hawai‘i, he was a research scientist in the Center for Translational Biomedical Research at the University of North Carolina at Greensboro, where he worked with Wei Jia. Dr. Xie’s current research focuses on conducting comprehensive metabolomics studies to 1) identify the metabolite markers for disease diagnosis and classification and 2) identify and evaluate the bioactive components from chemical substances in natural products for the preventive treatment of metabolic disorders including obesity, diabetes, and cancer.

**Jared Acoba, M.D.**, had previously been a clinical assistant professor at the John A. Burns School of Medicine since 2007 and served as an unfunded clinical assistant professor at the UH Cancer Center where he participated in developing clinical trials protocols. Dr. Acoba was officially hired as a part-time assistant professor in the Center’s Clinical and Translational Research Program on May 1, 2013. He maintains his oncology practice with OnCare Hawai‘i, continues as director of cancer research at The Queen’s Medical Center, and provides patient care at The Queen’s Cancer Center, in addition to assuming a more active role in the clinical and translational research efforts at the UH Cancer Center. He has a special interest in gastrointestinal cancers and recently helped design a study for advanced pancreatic cancers that is soon to be activated.

Formerly dually appointed at the UH Cancer Center and the John A. Burns School of Medicine as an assistant clinical professor, and housed at the Center, **Haining Yang, Ph.D.**, has been appointed as an associate professor at the UH Cancer Center in the Cancer Biology Program, effective May 1, 2013. She will continue to devote her research efforts to malignant mesothelioma. Yang began working at the Center as a junior researcher in 2006, and over the years has assumed greater responsibility for the mesothelioma research team’s efforts. She is currently the principal investigator of an R01 grant: “The Role of HMGB1 in the Pathogenesis of Mesothelioma.”

**Ioannis Stasinopoulos, Ph.D.**, started on June 4, 2013 as the new Research Grants Coordinator in the UH Cancer Center Grants Management Office. He has a doctoral degree in molecular biology and his research experience has focused on molecular mechanisms contributing to breast cancer. This experience will enable Stasinopoulos to make informed decisions that will strengthen application research content and overall application packages submitted by Center members.
Visiting Professor at the University of Hawai’i Cancer Center Makes Discovery

A study conducted by Inger Torhild Gram, M.D., Ph.D., visiting professor at the University of Hawai’i Cancer Center found that female smokers may have a greater risk of developing colon cancer than male smokers. This data was recently published in Cancer Epidemiology, Biomarkers & Prevention, a journal of the American Association for Cancer Research.

“Globally, during the last 50 years, the number of new colon cancer cases per year has exploded for both men and women,” said Gram, a professor in the Department of Community Medicine at the University of Tromsø in Norway. “Our study is the first that shows women who smoke less than men still get more colon cancer.”

Dr. Gram and her colleagues found that female smokers had a 19 percent increased risk of colon cancer compared with never-smokers, while male smokers had an eight percent increased risk compared with never-smokers. They also found that the longer and more frequently women smoked increased their risk of getting colon cancer.

Dr. Gram and her colleagues examined the association between cigarette smoking and colon cancer, by tumor location, in a large Norwegian cohort of more than 600,000 men and women. The participants from four surveys initiated by the National Health Screening Service of the Norwegian Institute of Public Health, had a short health exam and completed questionnaires about smoking habits, physical activity, and other lifestyle factors. The participants were followed by linkage to the Cancer Registry of Norway and the Central Population Register. During an average 14 years of follow-up, close to 4,000 new colon cancer cases were diagnosed.

In the next phase of her research, Dr. Gram and her colleagues from the UH Cancer Center will examine this association using data from the Center’s Multiethnic Cohort Study. “It will be very exciting to look at the different ethnicities,” said Gram. “We will be able to see across different ethnic groups, not just Caucasians.”

Dr. Gram hopes to have preliminary results in November 2013 to report back to the American Association for Cancer Research.
Creating Sustainable Partnerships

Many populations in Hawai‘i, including Native Hawaiians, Filipinos, and Micronesian migrants suffer disproportionate burdens of cancer and non-communicable diseases (NCD) such as obesity, diabetes, heart and kidney disease. In March, the 2013 Intercultural Cancer Council Hawai‘i-Pacific Regional Symposium was held jointly at the UH Cancer Center’s Sullivan Conference Center and the John A. Burns School of Medicine to reduce cancer and the NCD health disparities that exist among minority populations in Hawai‘i and the U.S. Affiliated Pacific Island (USAPI) jurisdictions.

The theme of the two-day conference was creating “Sustainable Partnerships.” Under the leadership of the medical school’s Department of Family Medicine and Community Health, the Pacific Regional Cancer Programs partnered with the Hawai‘i Comprehensive Cancer Control Program, the University of Hawai‘i Cancer Center, and others to provide this unique opportunity. About 150 students, community-based coalition leaders from Hawai‘i and the USAPI jurisdictions, partnering academic institutional faculty and staff, and other disparities-addressing community-based organizational representatives learned about the latest in health disparities among the people of Hawai‘i and the USAPI jurisdictions. They shared success stories in preventing non-communicable diseases and cancer and discussed partnership strategies needed to make sustainable improvements in health disparities. To view presentations, posters, and photos, visit https://sites.google.com/a/hawaii.edu/2013icchipac/.
Quest Event Connects University of Hawai‘i Cancer Center with the Public

More than 100 people attended the Quest for a Cure: Progress in Cancer Research event on Saturday, June 1, 2013, at the Ala Moana Hotel. The speakers were University of Hawai‘i Cancer Center scientists Joe Ramos, Ph.D., James Turkson, Ph.D., Herbert Yu, M.D., Ph.D., Thomas Wills, Ph.D., Kenneth Sumida, M.D., and Leimomi Golis, R.N., a cancer survivor and participant in a clinical trial sponsored by the UH Cancer Center.

Questions asked by the audience generated interesting discussion among the panelists regarding their respective research programs and projects, natural products screening and discovery, targeted therapy, the effects of exercise, diet, lifestyle, and genetics on cancer, substance use and prevention among Hawai‘i’s youth, and clinical trials, among other topics.

Hawai‘i News Now anchor Keahi Tucker emceed the event, which was generously underwritten by the Friends of the UH Cancer Center. Displays by Center programs and our community partners provided a wealth of cancer-related information and resources and an opportunity to meet individuals on the frontlines of research and cancer support.

Reaching Native Hawaiian Men

Native Hawaiians experience the highest overall cancer mortality rates among the five major racial/ethnic groups that include the Japanese, Filipino, Chinese, and Whites in Hawai‘i. Native Hawaiian males have the highest incidence and mortality rates for lung and bronchus cancers. Since 2002, the University of Hawai‘i Cancer Center has worked with its community partners, the American Cancer Society and Ke Ola Mamo (O‘ahu’s Native Hawaiian Health Care System) to address the health disparities among Native Hawaiian men. The No Ke Ola Pono o Nā Kāne (for the health of men) project seeks to improve the health and decrease disease rates of Native Hawaiian men by facilitating kūkākūkā (discussion) meetings that focus on health care with groups of community kāne (men). The meetings are based on the cultural tradition of the hale mua (men’s house) where ‘ohana (family) men gathered to share the evening meal, and later planned work activities, taught trade skills to the younger kāne, and discussed current issues and concerns.

In 2012, No Ke Ola Pono o Nā Kāne (NKOPONK) was funded by the Office of Hawaiian Affairs to perpetuate cultural traditions associated with the hale mua by conducting kūkākūkā meetings statewide. NKOPONK held its Report to the Community in March 2013 at the Queen Emma Summer Palace, and presented results that exceeded the projected outputs and outcomes proposed, with 14 kūkākūkā sessions reaching about 147 nā kāne statewide. Over 55 people including legislators, kūkākūkā session facilitators, community leaders, and partners attended the event. The NKOPONK project continues its efforts to improve the health of Native Hawaiian men throughout our islands.

UH Cancer Center Receives Gift from Friends of the University of Hawai‘i Cancer Center

The University of Hawai‘i Cancer Center recently received a generous monetary gift of $50,000 from the Friends of the University of Hawai‘i Cancer Center.

In recognition of this gift, a bench in the Reflection Garden, located on the mauka side of the Center’s new facility, is now named after the Friends of the University of Hawai‘i Cancer Center.

The Reflection Garden was designed as an open area where people can take pleasure in the silence and reflect on life. The garden includes two benches surrounded by calming indigenous plants and sacred stones. The plants were specifically chosen due to their suitability to the Kaka‘ako climate. The stones were gathered from a revered location on the island of O‘ahu and blessed by Kahu Francine Dudoit.

The University of Hawai‘i Cancer Center expresses its deepest appreciation to the Friends of the University of Hawai‘i Cancer Center for their continuous support and generous gifts.

Friends board members left to right: Denis Isono, Lila Johnson, John Landgraf, Earl Stoner Jr., Lynn Takahashi, and Dr. Michele Carbone.
Friends Fund Additional University of Hawai’i Cancer Center Summer Internship Positions

This summer proved to be a bumper crop year for students interested in internships at the University of Hawai’i Cancer Center. The UH Cancer Center has an established summer internship program for junior or senior year high school students and sophomore or junior college students. With the current level of funding, 22 students are in this year’s program – eight in high school and 14 in college.

To help meet the existing demand for internship positions, the Friends of the UH Cancer Center agreed to provide funding for four additional high school summer interns. They are Amber Daniel, Liam Arnade-Colwill, Sydney Parrish, and Alex Huang. Their mentors include Wen-Ming Chu, Ph.D., Haining Yang, Ph.D., James Turkson, Ph.D., and Michelle Matter, Ph.D.

The program introduces students to cancer research by placing them in real research settings at the UH Cancer Center. The goal of the program is to encourage students to pursue careers in the biosciences, particularly cancer research.

High school students receive a stipend of $1,500 and must commit to working 200 hours.

The Friends of the University of Hawai’i Cancer Center will hold its first annual Trees By the Sea holiday fundraiser event. Please plan to come to the Sullivan Conference Center at the new University of Hawai’i Cancer Center for an elegant and fun evening cocktail reception filled with decorated trees, wreaths, and ornaments. What a perfect way to get into the holiday spirit by supporting such a worthy cause.

From left to right: Sydney Parrish, Alex Huang, Amber Daniel, and Liam Amade-Colwill.