



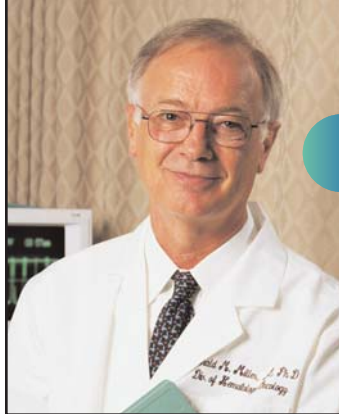
DISCOVERIES

A publication of the JAMES GRAHAM BROWN CANCER CENTER



Agripharmaceutical possibilities grow in Kentucky.

Kentucky's abundant burley tobacco plant may hold key to a more cost-effective cervical cancer vaccine.



letter FROM THE DIRECTOR...

Dear Friends,

The James Graham Brown Cancer Center continues to move forward in its efforts to become a National Cancer Institute designated cancer center. This summer the Brown Cancer Center Scientific Advisory Committee (comprised of cancer center directors and leading cancer researchers from around the U.S.) visited the Brown Cancer Center to evaluate the scientific programs and research infrastructure. They were very enthusiastic about our progress.

Our researchers continue to make important discoveries in the battle against cancer. Working with Dr. Kenneth Palmer, a new recruit to the Brown Cancer Center's satellite program, the Owensboro Cancer Research Program (OCRP), Drs. A. Bennett "Ben" Jenson and Shin-Je Ghim have created a new cervical cancer vaccine that can be produced in tobacco. This vaccine, which is currently being tested in animal models of papillomavirus infection, promises to be much less expensive to produce than the cervical cancer vaccine recently approved by the FDA (also discovered by Drs. Jenson and Ghim). This vaccine may be a practical alternative in the third world, where cervical cancer is the second leading cause of cancer death in women and cost of the standard vaccine is prohibitive. We have also been fortunate enough to recruit Dr. Keith Davis, a leading expert in plant-produced therapies, to direct the OCRP. He hopes to recruit a total of seven new faculty to the new facility over the next five years.

Scientists in the Molecular Targets and the Structural Biology Programs continue to be quite successful on the drug discovery front. Brown Cancer Center faculty have three novel compounds (discovered in our laboratories) currently in early phase clinical trials, with more than fourteen additional compounds in various stages of preclinical development. We believe that our program, which is one of the strongest of its kind at any U.S. cancer center, will be able to take at least two new anti-cancer drugs per year into Phase I trials over the next ten years. There is certainly reason to hope that several of these compounds will become important new cancer treatments.

None of this progress would have been possible without the remarkable support that we have received from the Louisville community. The "Finding Answers to Cancer" campaign has now raised more than \$46 million, which provides us with the resources to continue to support and retain our outstanding faculty. The success of this campaign has given us the flexibility needed to grow very quickly into a nationally recognized center. Much of the success of this campaign can be attributed to the work of Campaign Chairman Bob Rounsavall and his fellow campaign volunteers.

An important component of the campaign is the Mint Jubilee Gala, a black-tie event held on the eve of the Kentucky Derby. This year more than 1,400 people attended this annual event that recognizes the contributions of our scientists and benefits the center's prevention and outreach efforts.

We hope that each of you had a good summer. We are excited about the opportunities for continued success at the Brown Cancer Center and appreciate all of your support.

Donald Miller, MD, PhD
Director of the James Graham Brown Cancer Center

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Discoveries is published for the friends, faculty and staff of the James Graham Brown Cancer Center.

Discoveries
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Finding THE ANSWERS TO CANCER IN PLANTS

Tobacco is vilified as a leading cause of cancer deaths, but could it also be the key to producing an affordable cure? As ironic as it sounds, researchers at the James Graham Brown Cancer Center think it is possible, and they are developing the technologies and facilities needed to make it so.

Kenneth Palmer, PhD, of the Owensboro Cancer Research Center is one of the believers. Trained in virology and plant biotechnology at the University of Cape Town in South Africa, and at Cornell University, Palmer is an expert in the development of novel vaccines and antiviral drugs, especially those used to prevent and treat cancers with viral etiology. Working in conjunction with Brown Cancer Center researchers A. Bennett “Ben” Jensen, MD and Shin-je Ghim, PhD, inventors of the recently released 100% effective cervical cancer vaccine, Palmer is developing a second-generation vaccine that will be grown in tobacco plants, making it much more affordable to produce. Their success would ensure that underprivileged women around the world would have access to the vaccine.

The process for growing the vaccine in tobacco plants involves inserting genes needed for vaccine development into a virus that grows in the plants, or introducing the gene directly into the tobacco genome. The leaves of the virus-infected or genetically engineered plants are then harvested and ground up to produce a green liquid. Proteins of interest are extracted and purified to generate the final product.

As amazing and innovative as this research is, it wouldn't be possible without equally impressive research



Mitchell Memorial Cancer Center in Owensboro has partnered with the Brown Cancer Center researchers to create the Owensboro Cancer Center Research program which will be led by Keith Davis, PhD (right).



Keith Davis, PhD

facilities. Just such a facility now exists, as a result of a unique series of events.

The Brown Cancer Center and Owensboro Medical Health System's (OMHS) Mitchell Memorial Cancer Center were already in discussions to create a major cancer research center in Owensboro at the existing Large Scale Biology Corporation (LSBC) bioprocessing plant when LSBC filed for bankruptcy. Brown Cancer Center Director Donald Miller and OMHS President and CEO Jeff Barber recognized that the 30,000 square foot plant could still remain a key component of their plans.

On March 29th, OMHS purchased the LSBC plant and formed a new company – Kentucky Bioprocessing, LLC (KBP), a wholly owned for-profit subsidiary of OMHS. The project was partially financed by a Kentucky Agriculture Finance Corporation loan. Along with the manufacturing plant (which can process tobacco plants and other types of plants), the purchase also included the facility's 22,000 square foot greenhouse complex, 15 additional acres, and the intellectual property needed to operate the facility.

“The future for plant-made pharmaceuticals and the potential benefits of this field in conjunction with cancer research is limitless,” said Miller. “The partnership with OMHS and the accessibility to KBP is a great opportunity for Brown Cancer Center researchers.”

“This is an opportunity for us to provide an essential resource in the production of original products with the Brown Cancer Center and others,” Barber said. “Developing new drugs creates more promise for treating cancer and other chronic illnesses to better address the needs of patients.”

As part of Miller and Barber's plan, KBP will not only process plants for other contractors, but will also process the plants that are genetically engineered by scientists at the new Owensboro Cancer Research Program (OCRCP), housed at the newly built Mitchell Memorial Cancer Center. These scientists will be University of Louisville faculty and will be working with and supporting the research of Brown Cancer Center researchers in Louisville.

The executive director of the OCRP is Keith Davis, PhD. Davis received his PhD in Molecular Cellular, and Developmental Biology at the University of Colorado, Boulder and completed his post doctorate training at Harvard Medical School. He then joined the faculty at The Ohio State University in the Department of Plant Biology and Plant Biotechnology Center, and served as its director for three years. Davis was Vice President of Agricultural Biotechnology at Icoria, Inc. (formerly Paradigm Genetics) prior to joining the OCRP.

Davis has broad experience in plant biotechnology and believes KBP's facilities are ahead of its time for plant-based protein manufacturing.

Under Davis' direction, four labs are currently under construction at OCRP. Each lab will be approximately 1,000 square feet and will support five to six researchers who will collaborate with and support Brown Cancer Center researchers.

By making OCRP another location for Brown Cancer Center clinical research and using KBP to produce the drugs or vaccines the hope is that, "We can demonstrate to the pharmaceutical companies that this

is a viable option," says Davis. "And if a drug makes it through clinical trials and is economically viable, then that is when we can start to bring in the farmers."

Kentucky's tobacco farmers are an added value to this effort because they have decades of experience growing tobacco. Davis says some farmers actually prefer growing the crop for protein production, since it is less labor intensive than growing tobacco for traditional uses.

Owensboro economic development business leaders are excited about KBP and what it can do for the community and area farmers. "It has the potential to revolutionize the pharmaceutical industry," Nick Brake, president of the Greater Owensboro Economic Development Corporation said in published reports.

In time, this revolutionary new technology may enable more Brown Cancer Center researchers to achieve even more amazing advances in their search for the answers to cancer. ■

Turning **TOBACCO** INTO A VACCINE

The bioprocessing plant can process 3,000 lbs. of tobacco per hour. A continuous flow centrifuge then spins out the solids and a filtration system reduces the volume to concentrate the extracted protein. The ceramic ultra filtration system was custom built for this facility and KBP controls the intellectual property for this novel system.

KBP is set up to process a tobacco plant into a vaccine within a 24-hour shift. It is equipped with the highest level of laboratory clean rooms where the vaccine can be purified and concentrated under sterile conditions and packaged to produce the ready-to-use vaccine.



Dream BECOMES REALITY

WITH FDA APPROVAL OF HPV/CERVICAL CANCER VACCINE

Brown Cancer Center tumor immunobiology researchers

A. Bennett “Ben” Jenson, MD and **Shin-je Ghim, PhD** knew soon after beginning their work in 1989 with the human papillomavirus (HPV) that they wanted to find a way of neutralizing this vicious virus that is the primary cause of cervical cancer. A few short years later at Georgetown University, they, along with their former lab partner Richard Schlegel, MD, PhD, invented the world’s first 100 percent preventative cervical cancer vaccine.

Cervical Cancer is the number two cancer killer of women worldwide, and the number one killer in underdeveloped countries – approximately 500,000 women are diagnosed with cervical cancer annually, with nearly a quarter of a million deaths. In the United States, about 15,000 women are diagnosed with cervical cancer and there are about 5,000 deaths.

HPV is the most common sexually transmitted disease. The vaccine that Jenson and Ghim helped invent protects against HPV-16 and 18, which are responsible for 76 percent of all cervical cancers. In order for the vaccine to be effective and protective, it must be given before either virus infects a woman, and/or before sexual activity begins. Merck & Co., Inc. developed a quadravalent vaccine, GARDASIL® that also protects against HPV-6



and 11, which cause 95 percent of genital warts.

Even though it took 17 years for the vaccine to reach the Food and Drug Administration (FDA), it took the federal agency just six months to approve GARDASIL for use in females 9-26 years of age. GARDASIL was evaluated and approved on June 8th under the FDA’s priority review process – a process for products with potential to provide significant health benefits.

“The development of this vaccine is a product of extraordinary work by scientists, as well as by FDA’s

review teams, to help facilitate the development of very novel vaccines to address unmet medical needs,” said Andrew C. von Eschenbach, MD, Acting Commissioner of the Food and Drug Administration.

“I knew that if it ever got that far, it’s too big of a medical breakthrough not to be approved,” Jenson told the *Courier-Journal* after hearing the news of the FDA’s approval.

Just three weeks later, on June 29th, the Advisory Committee on Immunization Practices (ACIP) of the Center for Disease Control and Prevention (CDC) recommended

Award

The Louisville Metro Council honored **A. Bennett “Ben” Jenson, MD**, and **Shin-je Ghim, PhD** with Certificates of Merit for Outstanding Service for their dedication and monumental contribution to the fight against cervical cancer. Previously, Jenson presented information on cervical cancer and the vaccine to the Health and Human Services Committee, at Chairwoman Councilwoman Mary Woolridge’s (3rd District) request.

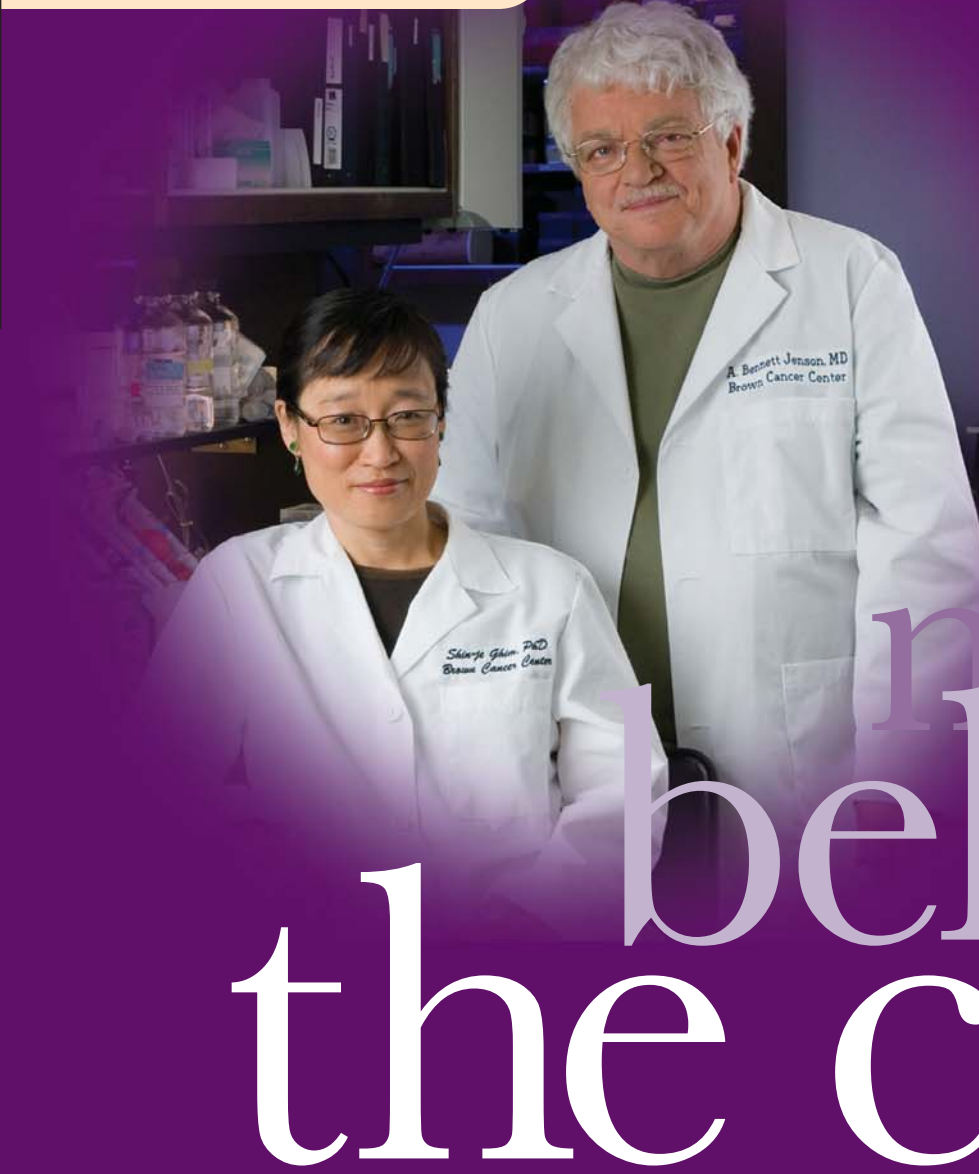
that it be routinely given to 11-12 year old girls. The ACIP recommendation also allows for vaccination of girls beginning at nine years old, as well as girls and women 13-26 years old.

But before the CDC recommendation even came out, Merck had already made the vaccine available to doctors’ offices around the country on June 19th. And in the company’s last two weeks of second quarter earnings, Merck posted \$10 million in sales.

Jenson praised the vaccination recommendation, telling the *Courier-Journal*, “I think every woman who is eligible should be protected from HPV infection.”

Ghim agreed. “They should be allowed to have the vaccine to protect themselves,” she said. “That is my woman’s point of view.”

A less expensive, but equally powerful version of the vaccine is needed since it requires three inoculations costing approximately \$300-\$500 per treatment course. Jenson and Ghim are working with researcher Kenneth Palmer, PhD, of Kentucky Bioprocessing LLC, to make the second-generation vaccine using agripharmaceuticals, specifically by turning tobacco plants into vaccine factories. ■



The minds behind the cure.

The human papillomavirus (HPV) has been identified as the primary cause of cervical cancer. Is it also responsible for some types of head and neck cancers? That is the question that researchers are now trying to answer. Although head and neck cancers are still largely attributed to environmental exposures, such as tobacco and alcohol use, recent studies suggest that at least 25 percent of such cancers may also be linked to HPV.

In 2000, researchers at Johns Hopkins examined 23 patients with head and neck tumors and found HPV-16, the tumor-causing strain of the virus, in 25 percent of those patients. The study, which suggested a strong link between HPV and cancer of the tonsils, was later published in the *Journal of the National Cancer Institute* (May 2001, Vol. 92, No. 9).

Studies such as this led Dr. Carolyn Fang at Fox Chase Cancer Center in Philadelphia to begin a feasibility study in 2001 to evaluate the frequency of HPV infection in tumors of the head and neck. Her study is also attempting to examine potential relationships among behavioral, psychosocial, and immunologic variables in head and neck cancer. Participants, all of whom are head and neck cancer patients, are asked to complete a brief psychosocial and behavioral assessment and to provide a blood sample for immunologic assays. A sample of cells is also obtained from their tumor site. Collaborators at the

“This clinic has unique access to this population as well as a unique opportunity to participate in clinical research,”

said Brown Cancer Center Principal Investigator and Behavioral Oncologist Jamie L. Studts, PhD.

“It’s one important aspect of our multidisciplinary clinics.”

Children’s Hospital of Philadelphia analyze the blood and tissue samples.

The Brown Cancer Center joined the study in January 2006 and is assisting the staff at Fox Chase to identify 100 head and neck cancer patients who have not yet started treatment – 50 patients from each center. Through the Brown Cancer Center’s Multidisciplinary Head and Neck Clinic, eight patients have already been identified and added to the study. Fox Chase has approximately 30 patients currently enrolled.

“This clinic has unique access to this population as well as a unique opportunity to participate in clinical research,” said Brown Cancer Center

Principal Investigator and Behavioral Oncologist Jamie L. Studts, PhD. “It’s one important aspect of our multidisciplinary clinics.”

Along with Studts, the Brown Cancer Center team includes co-investigator Jeffrey M. Bumpus, MD and research coordinator Elizabeth Matera.

The researchers at Fox Chase hope to use the innovations pioneered by Brown Cancer Center scientists Drs. A. Bennett “Ben” Jensen and Shin-je Ghim during the development of their 100% effective cervical cancer vaccine (marketed as GARDASIL®), to better understand how specific immunologic responses to viral infections are associated with the production of tumors. They are specifically interested in any correlation between the use of GARDASIL® and a decrease in the incidence rate of laryngeal papillomatosis (tumors occurring inside the voice-box, vocal cords, or respiratory tract) and other head and neck cancers that are caused by HPV-16 or HPV-18.

“The idea that this project could lead to more resources and more attention to issues of head and neck cancer patients is a step in the right direction for these patients, providing more support for these patients and giving clinicians a stronger foundation of research on which to base patient care decisions,” said Studts. ■

Faculty PROFILES

Kathy B. Baumgartner, PhD

Associate Professor
Epidemiology and Population Health



Kathy B. Baumgartner, PhD, joined the University of Louisville faculty in July 2005 and holds a joint appointment in the School of Public Health and Information Sciences and the Brown Cancer Center.

Her research focuses on population health issues, particularly in the area of breast cancer incidence and recurrence and the roles of various genetic and environmental factors in breast cancer incidence.

Baumgartner is a principal investigator in the 4-Corners Women's Health Study, a large case control study of approximately 4,900 women funded by the National Institutes of Health aimed at determining differences in breast cancer incidence among women in the southwestern U.S., along with the roles of genetic susceptibility, metabolic factors and lifestyle factors.

She also serves as a co-investigator for the Health, Eating, Activity and Lifestyle (HEAL) study, which examines the influence of body weight, body composition, diet, physical activity and hormones on the prognosis of more than 1,000 women with breast cancer.

Baumgartner is currently beginning a new study investigating recurrence, survival and long-term quality of life among women previously diagnosed with breast cancer. The study includes a population-based measure for recurrence, an evaluation of the difference in survival rates between different ethnic groups and an evaluation of the impact of breast cancer on quality of life more than 15 years post-diagnosis. She will also be collaborating with the Brown Cancer Center and the Kentucky Cancer Program as well as the Kentucky Cancer Registry to investigate issues of breast cancer incidence and mortality in Kentucky.

Baumgartner earned her PhD in Epidemiology from the University of Texas School of Public Health in Houston.

Richard N. Baumgartner, PhD

Chair, Professor and Distinguished University Scholar
Epidemiology and Population Health



Richard N. Baumgartner, PhD, joined the University of Louisville faculty in July 2005 and holds a joint appointment in the School of Public Health and Information Sciences and the Brown Cancer Center.

His research revolves around the complex interplay between nutrition, body composition, hormones, genes, and chronic disease risk in populations.

He currently has two studies underway. The "Aging Process Study" is a longitudinal study of changes associated with age; examining nutrition and body composition by measuring cognitive and physical functioning abilities in community-dwelling elders. The second study, called the "Health, Eating, Activity and Lifestyle (HEAL) study" examines the influence of body weight, body composition, diet, physical activity, hormones, and selected genes on the prognosis of more than 1,000 females with breast cancer. Baumgartner is currently seeking funding to expand both of these studies and to launch a new study exploring the effects of obesity on other forms of cancer. He plans to collaborate with researchers at the Brown Cancer Center and the Kentucky Cancer Program.

Prior to joining UofL, Baumgartner served as Associate Director of the University of New Mexico Clinical Nutrition Program, then as Director of the Aging and Genetic Epidemiology Program. He also served as Interim Chief of the Division of Epidemiology and Preventive Medicine.

Baumgartner earned his PhD in Nutritional Epidemiology from the University of Texas School of Public Health in Houston.

James W. Lillard, Jr., PhD, MBA

Smith & Lucille Gibson Endowed Chair
School of Medicine



James W. Lillard, Jr., PhD, MBA, is an Associate Professor in the School of Medicine's Department of Microbiology & Immunology and a senior scientist at the Brown Cancer Center.

His research is funded by the National Institutes of Health (NIH), the U.S. Department of Defense and the Crohn's & Colitis Foundation of America.

Lillard's research focuses on the molecular and cellular mechanisms that affect inflammation and immunity. His research has applications in cancer cell metastasis, as well as a variety of infectious and inflammatory diseases. His findings have resulted in publications and patents directed toward controlling and treating infectious diseases and cancer.

Lillard has served on the editorial board and as reviewer for multiple scientific journals and a number of review panels and advisory committees for the NIH, Department of Defense, Food & Drug Administration and other professional organizations.

A graduate of The Ohio State University, Lillard earned his BS in Electrical & Computer Science Engineering and completed his PhD in Microbiology & Immunology at the University of Kentucky College of Medicine. He completed a postdoctoral fellowship as an UNCF-Merck fellow in the Department of Microbiology at the University of Alabama at Birmingham.

Before joining the University of Louisville and the Brown Cancer Center in March 2006, Lillard was an Associate Professor of Immunology at Morehouse School of Medicine (MSM) in Atlanta, Georgia. While at MSM, Lillard earned an MBA from Emory University Goizueta Business School and served as the Technology Transfer Officer where he applied his expertise to the commercial development of biotechnology including financial valuation and licensing of intellectual property.

Evening OF HOPE FOR SURVIVORS

Schedule your mammogram today at (502) 562-4419.

Each October, nearly 800 breast cancer survivors gather at Buckhead Mountain Grill, across the river from downtown Louisville, for a celebration of food, fun, entertainment, and camaraderie. For women who have bravely faced breast cancer, this special evening offers a respite from their disease and hope for the future.

Because this is a celebration, each year brings a different theme designed to inspire guests to don creative attire. This year's event is called *Who Was That Lady?*, and

is scheduled for **Tuesday, October 10th**. Past participants have been treated to special entertainment and tributes including dance performances, celebrity encounters, aeronautical displays, and pink fireworks. Special guests have included Kentucky First Ladies, Miss Americas, and Hollywood stars. This year's event promises to

continue the tradition with some special surprises of its own.

As the son of a breast cancer survivor, Wes Johnson, vice-president of Buckhead Mountain Grill, knows just how important it is to celebrate the good times. It is in his mother's honor that the restaurant provides dinner at no cost to the women attending. The entire Buckhead family gets into the spirit too, volunteering their time to make the event possible.

The Kentucky Cancer Program (KCP) organizes and sponsors this event and uses it as a kick-off for the annual Komen Louisville Race For the Cure. AstraZeneca and Rocky's Italian Grill also help make it possible. ■



Ann Marchal shows off her pink boa at the *Pretty in Pink Celebration* in 2003.



Breast cancer survivor Fran White does the hula with her hula hoop as John Castellanos from the *Young and Restless* looks on during the 2005 Celebration.

All breast cancer survivors are invited to attend this year's celebration, *Who Was That Lady?* There is no cost for the event, but reservations are required. For more information or to make a reservation, contact the Kentucky Cancer Program at (502) 852-6318.

Kentucky

CANCER PROGRAM'S

BREAST CANCER AWARENESS EVENTS

As part of its commitment to provide the full scope of services to cancer patients and their families, the James Graham Brown Cancer Center administers the Kentucky Cancer Program (KCP), a network of cancer control services that connects all Kentuckians—the public, health-care providers and patients—with the Commonwealth's cancer control resources.

The Kentucky Cancer Program's mission is to promote cancer education, research, and service programs to reduce cancer incidence and mortality. It is funded by the General Assembly and jointly administered by UofL's Brown Cancer Center and the Lucille Parker Markey Cancer Center at the University of Kentucky. With 12 regional offices throughout the state, KCP identifies cancer problems and mobilizes communities to action.

Many breast cancer activities are planned around National Breast Cancer Awareness month during October.

RACE FOR THE CURE

KCP is a sponsor of the Komen Louisville Race for the Cure® and also hosts the annual kick-off free dinner for breast cancer survivors at Buckhead Mountain Grill.

October 10, 5:30 p.m.
Breast Cancer Survivor Celebration

Buckhead Mountain Grill
Jeffersonville, Indiana

For more information, call 502-852-6318

October 14, 8:30 a.m.
Louisville Race for the Cure
Waterfront Park

For more information, call 584-CURE

WEEKEND RETREATS

KCP sponsors many support programs for breast cancer survivors. The organization has been offering free weekend retreats since 1997 for newly diagnosed women. Participants come together to share their experiences and to learn ways to improve the quality of their lives. Four retreats are held annually at Foxhollow, with one being devoted to the special cultural and spiritual needs of African Americans. KCP also works with Casting for Recovery from Vermont to offer a weekend of fly-fishing.

October 27-29

Casting for Recovery
Wooded Glen Retreat Center,
Henryville, Indiana

November 17-19

Foxhollow Wellness Center
Crestwood

SUPPORT GROUP

KCP sponsors a support group, Living Beyond Breast Cancer, offering a mind, body, and spirit experience for African American women. The group meets the fourth Monday of every month.

October 23, 5:30 p.m.

Living Beyond Breast Cancer
Med Center One,
501 East Broadway
Louisville

Call KCP at **(502) 852-6318** for more information on all of these events.

KCP OFFICES

The twelve regional offices of the Kentucky Cancer Program are staffed by control specialists who coordinate the following:

- • • • Community coalitions to address specific cancer problems
- • • • Outreach to special populations including African Americans, Hispanics, individuals with limited literacy and rural, medically underserved populations
- • • • Educational presentations to schools, churches, businesses and civic groups
- • • • Community screenings to detect cancer in early stages
- • • • Special events to raise cancer awareness
- • • • Professional education
- • • • Resources for cancer patients and families

• **Bowling Green**

(270) 842-0950

• **Elizabethtown**

(270) 360-0901

• **Hazard**

(606) 487-8360

• **Highland Heights**

(859) 442-3525

• **Lexington**

(859) 219-0772

• **Louisville**

(502) 852-6318

• **Madisonville**

(270) 821-4298

• **Maysville**

(606) 759-0300

• **Morehead**

(606) 784-6458

• **Owensboro**

(270) 683-2560

• **Paducah**

(270) 442-1310

• **Somerset**

(606) 679-7204

Leukotriene RESEARCH

COULD HOLD KEY TO ALMOST ALL INFLAMMATORY DISEASE

Is there life after Vioxx?

The answer may be found in the unlikely cancer research laboratory of Haribabu Bodduluri, PhD.

In the first floor lab of the Donald E. Baxter, M.D. Biomedical Research Building, Bodduluri and colleagues research leukotrienes, naturally occurring lipids that may be related to inflammation and allergic reactions, seeking to understand the role of the leukotriene B4 receptor.

Experiments with “knock out” mice – in which the leukotriene receptor gene is disrupted – are shedding light on the role of chemoattractants in inflammation and development of different cancers, in particular lung cancer.

Ironically, leukotrienes were first discovered 25 years ago, but largely ignored in the scientific stampede to develop Cox 2 inhibitors, the anti-inflammatory agent in Vioxx. Merck & Co., Inc.’s withdrawal of the best-selling drug on September 20, 2004, because of increased risk for heart attacks and strokes, has moved leukotriene research to the forefront.

“It is ironic. Most of us think of our immune system as our best friend, but research may show that with aging, it may become our worst enemy.”



Haribabu Bodduluri, PhD

Leukotriene research could hold the key to almost all inflammatory disease: from lung cancer to atherosclerosis to arthritis and other autoimmune diseases. Bodduluri is in the process of expanding his research at the Brown Cancer Center from lung cancer to colon cancer in mice. His results have consistently shown that “knocking out” certain leukotriene receptors in mice results in animals that do not become arthritic, suffer lung inflammation or develop tumors.

Similarly, the development of arteriosclerotic plaques and lesions is reduced. His research has been supported by the National Institute of Health, Kentucky Lung Cancer Research Program and others. His results have appeared in *The Journal of Immunology*, *Journal of Biological Chemistry* and *Arteriosclerosis, Thrombosis and Vascular Biology*.

“The comparisons with Cox inhibitors are inevitable,” Bodduluri says. “Our research design targets the same pathways.”

With 91 million prescriptions for Vioxx written in the United States alone, the pharmaceutical ramifications are huge. The increased scientific scrutiny that other Cox 2 inhibitors are now receiving and the aging of the baby boomers underscores the urgency to develop viable anti-inflammatory drugs.

“It is ironic. Most of us think of our immune system as our best friend, but research may show that with aging, it may become our worst enemy.” ■

Blood Test

HELPS PREDICT SURVIVAL OF BREAST CANCER PATIENTS

The Brown Cancer Center is the only cancer center in the region to offer a recently FDA-approved test that can predict progression-free and overall survival in women with metastatic breast cancer, thus paving the way for oncologists to make critical decisions about patients' treatment **earlier** than previously possible.

The CellSearch™ test detects circulating tumor cells (CTC) – cancer cells that have detached from solid tumors and entered the blood stream. When CTCs detach from their tumors and enter the blood stream, they begin the process of metastasis. To metastasize, or spread cancer to other sites in the body, CTCs travel through the blood and take root in another tissue or organs.

The CellSearch™ System, produced by Veridex, LLC, a Johnson & Johnson company, is the first-of-its-kind technology that automatically finds and counts CTCs in a tube of blood (approximately

7.5mL). The CellSearch™ test is **not** for use with early breast cancer or for screening purposes. Instead, it is a tool that oncologists can use to help choose more effective treatment regimens for metastatic breast cancers.

"At the Brown Cancer Center, we pride ourselves in offering our patients the latest leading-edge technology," said Alvin Martin, MD, Brown Cancer Center pathologist. "CellSearch™ gives physicians and their patients a clearer picture of the battle they face."

Currently patients go through several rounds of treatment before it is known whether or not their therapy is working.

"Now oncologists have a very powerful prognostic tool," says Carolina Salvador, MD, Brown Cancer Center medical oncologist. "One of the most challenging aspects of managing cancer is determining the most effective course of therapy. Measuring CTCs allows us to be more effective and accurate in the treatment management of our patients with metastatic breast cancer." ■

Those interested in learning more about CellSearch™ testing, should contact the Brown Cancer Center's **Mint Jubilee Resource Center** at **(502) 562-4158**.

"At the Brown Cancer Center, we pride ourselves in offering our patients the latest leading-edge technology," *said Alvin Martin, MD, Brown Cancer Center pathologist.*



Golf OUTINGS TAKE AIM AGAINST CANCER



FINDING ANSWERS to CANCER

Campaign for
The James Graham Brown
Cancer Center

Golfers will be hitting the greens in Louisville and Bowling Green this fall to raise funds in the fight against cancer. Proceeds from both events will benefit Finding Answers to Cancer, the capital campaign for the University of Louisville's James Graham Brown Cancer Center.

The center's \$80 million capital campaign provides support for expanding research and patient services as the center seeks National Cancer Institute designation. This designation will allow the Brown Cancer Center to greatly expand its clinical trials program, offering more people in Kentucky and the region hope in the fight against cancer.

THE FALL GOLF CLASSIC

Monday, October 9th

Club at Olde Stone

Alvaton, KY (near Bowling Green)

This event is chaired by Kela Lyons Fee, MD, a Bowling Green physician whose colorectal cancer is in remission. Cost is \$250 per golfer or \$1,000 per foursome. Sponsorship opportunities are also available.

TAKE AIM AGAINST CANCER

Monday, October 16th

Persimmon Ridge Golf Club

Louisville, KY

The cost to participate in this event is \$300 per golfer or \$1,200 per foursome. Sponsorship opportunities begin at \$500 per hole and extend to a \$10,000 Gold Sponsorship, which includes a hole sponsorship, tickets for two foursomes to play and attend the Sunday evening "tee-off party," four additional tickets to the party and recognition on promotional materials.

To participate in the golf outings or to learn more about sponsorship levels, contact the Brown Cancer Center's Development Office at **(502) 562-8021**.

JAMES GRAHAM

BROWN CANCER CENTER a proud member of **UofL HealthCare**

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