MAYO CLINIC

News and information for patients and friends of Mayo Clinic

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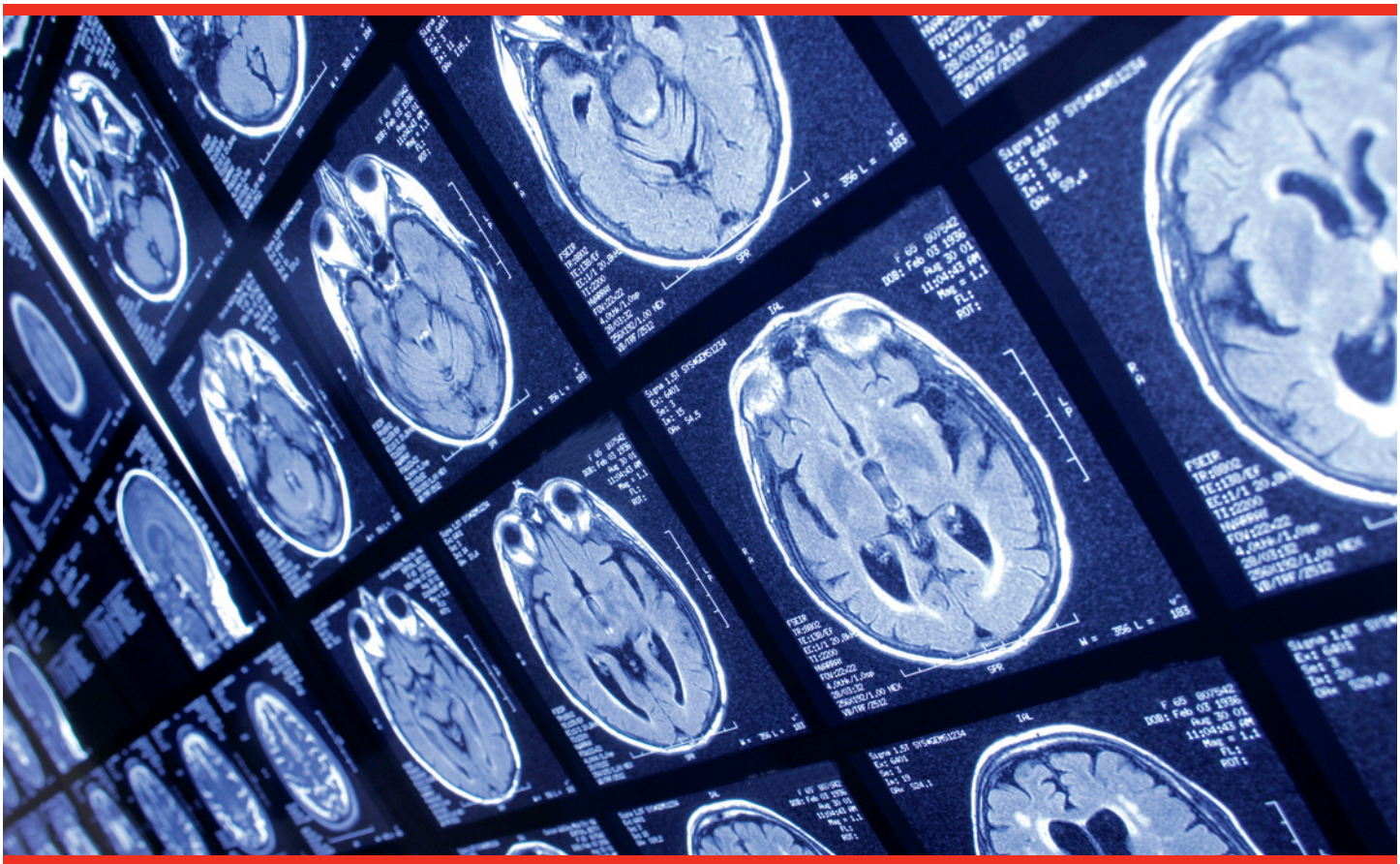
CONNECTION

TAKING ON BRAIN TUMORS: Research, diversity of treatments offer premium care

Brain tumors are as varied as the people they afflict – and this variety makes tumors extraordinarily difficult to treat. At Mayo Clinic, this challenge is managed on three fronts: through multidisciplinary research; the ability to translate discoveries made in laboratories into innovative therapies; and a commitment to delivering comprehensive, compassionate patient care. On each front, the goal is to devise treatment strategies that outpace tumors' capacity for change.

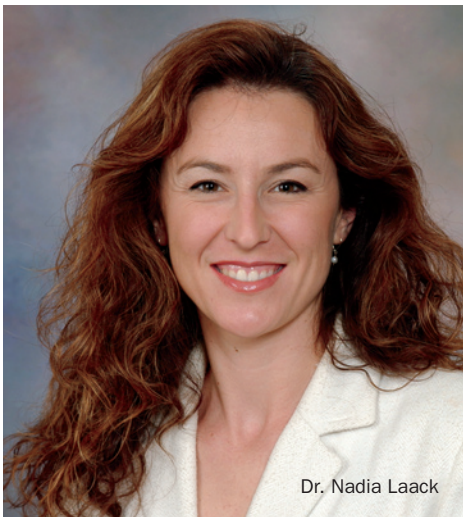
"Tumors have a cache of biological tricks, but Mayo has talented medical, surgical and research teams," said Bruce Pollock, M.D., who is a world authority on non-invasive radiosurgical removal of tumors, including the newest generation of Gamma Knife radiosurgery instruments. Added his Mayo Clinic colleague, Nadia Laack, M.D., a radiation oncologist,



This Issue:

TAKING ON BRAIN TUMORS { cont. }

Depth of research, diversity of treatments offer tumor patients premium care



Dr. Nadia Laack

"Mayo has a long history of expertise in treating patients with brain tumors, and is one of the largest neurosciences practices in the world. Our brain tumor treatment team alone includes more than 100 physicians in a variety of specialties – and because we treat more than 3,200 child and adult tumor patients each year, we have developed an extensive knowledge base of tumor dynamics and treatment approaches."

Diagnosis and treatment

Diagnosis typically starts with a comprehensive physical exam by a neurologist and a neurosurgeon, often coordinated by a neuro-oncologist. Sophisticated diagnostic imaging equipment is used to monitor brain activity and blood flow and to visualize the tumor.

In the Mayo Clinic model of integrated care, physicians in all specialties work closely with each other. This means that all tests and creation of a tumor management plan usually can be completed in days – instead of weeks or months.

Most brain tumor patients whose tumor originated in the brain (a primary tumor) first undergo surgery to remove as much of the tumor as possible. Chemotherapy and radiation may also be used. Patients with cancer that has spread from another region to the brain (metastatic tumor) typically receive radiation as an initial treatment.

In a recent study of patients with a kind of tumor called a low-grade glioma, Dr. Laack's research team found clear survival benefits to aggressive surgery to successfully remove the entire tumor. If complete removal was not possible, data showed that patients survived significantly longer when surgery was followed by radiation therapy. Research such as Dr. Laack's underpins Mayo Clinic's legacy of providing premiere care to brain tumor patients. //

Dr. Bruce Pollock

PEDIATRIC BRAIN TUMORS: Specialized Care

Every year in the United States, around 2,000 children under 16 are diagnosed with a brain tumor. Brain tumors are the second most common type of cancer and cancer death (after leukemia) in children under 15. Yet, recognizing and diagnosing symptoms of brain tumors in infants and children may be challenging. While some children have obvious neurological signs such as seizures, lack of coordination or failing to meet developmental benchmarks, others have symptoms that are less specific. At this time, surgical resection is considered the best treatment for most types of pediatric brain tumors.

Mayo Clinic treats children and adolescents with brain tumors at the T. Denny Sanford Center for Pediatrics. The Sanford Center allows children and their families to meet with pediatric specialists in child-friendly surroundings that feature nature-themed works of art, age-appropriate activities, an education area, and private spaces for families to relax between appointments.

For more information on brain tumor treatment at Mayo Clinic, visit: **www.mayoclinic.org/brain-tumors/**

TAKING ON BRAIN TUMORS { cont. }

Depth of research, diversity of treatments offer tumor patients premium care

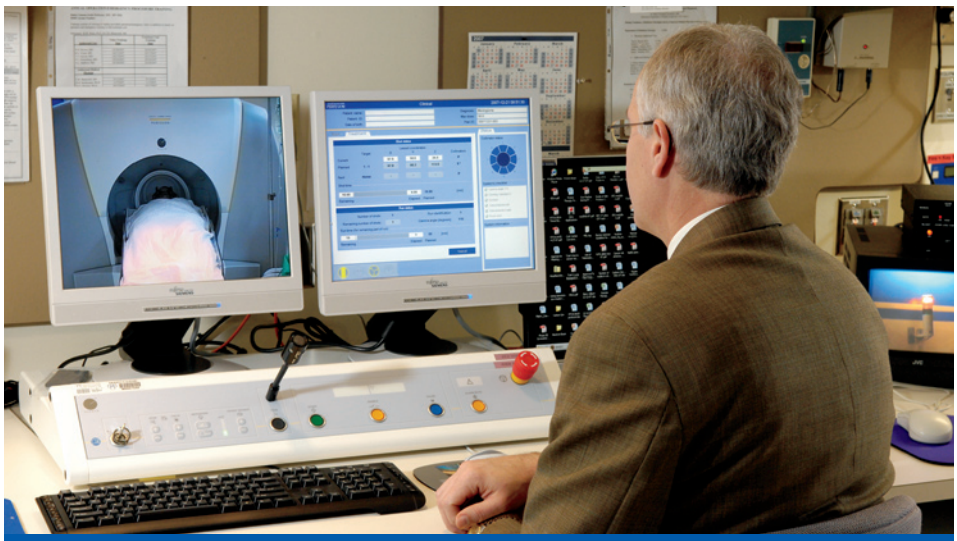
LEADING THE WAY in brain tumor research

Rated the nation's number one neuroscience research center by *U.S. News and World Report* magazine, Mayo Clinic provides state-of-the-art care for an estimated 3,200 brain tumor patients each year. Teams of experts in multiple specialties – neurology, neurosurgery, radiology, neuropathology, radiation therapy, medical oncology, psychology, physical medicine and rehabilitation – work cooperatively to bring the best possible care and outcomes to patients.

Mayo Clinic Cancer Center is one of only four in the U.S. to receive a grant for brain cancer research from the National Cancer Institute called a SPORE grant – which stands for Specialized Program of Research Excellence. The aim of Mayo Clinic's SPORE grant is to foster strong, creative collaboration between basic scientists and clinicians that results in new insights into brain cancer biology – and translates into treatments that improve quality of life for patients.

Leksell Gamma Knife PERFEXION is noninvasive stereotactic radiosurgery that precisely targets a tumor with high-dose radiation that disrupts the integrity of DNA, so tumors are unable to divide and grow.

Mayo Clinic uses the latest technological innovations to visualize, diagnose and treat brain tumors. These include brain scans from magnetic resonance imaging (MRI), magnetic resonance spectroscopy (MRS), single-photon emission computed tomography (SPECT), positron emission tomography (PET) and computerized tomography (CT) scans. Surgical approaches include intraoperative magnetic resonance imaging, computer assisted neurosurgery and awake brain surgery. Radiation therapies for brain tumors include external-beam radiation, fractional stereotactic radiotherapy (FRS) and Leksell Gamma Knife PERFEXION. //



At Mayo Clinic's Gamma Knife™ Center, physicians use computers to plan gamma radiation and control the Gamma Knife™ machine so the radiation dose matches the desired target.

BONE DEEP

First surgery of its kind helps Canadian patient battle a rare form of cancer.

Janis Ollson, pictured with her husband Daryl and their two children.

At 28 and pregnant with her second child, Janis Ollson learned that the pain she had attributed to pregnancy was not the baby. It was cancer.

Her doctors in Canada discovered that a rare form of bone cancer called chondrosarcoma had invaded her lower spine and pelvis. Informing her that surgery was her only hope for survival – and that she was "borderline operable" – they referred her to Mayo Clinic in Rochester, Minnesota.

At Mayo Clinic, a multidisciplinary team of specialists led by orthopedic surgeon Michael Yaszemski, M.D., Ph.D., designed a bold strategy for saving Janis' life. The process began in the anatomy lab, where experts in biomechanics designed a unique method for reconstructing her pelvis. Although Janis would be the first person to undergo this innovative and specialized approach, she did not hesitate when Dr. Yaszemski described the option. "I had so much confidence in Mayo and the people who work here that I was not worried at all," she recently recalled.

Two surgeries, 20 hours

Dr. Yaszemski and a team of eight surgeons, working with critical care medicine specialists, anesthesiologists and nurses, operated on Janis for more than 20 hours in two separate surgeries. In the first surgery, which took 13 hours, the team removed Janis' left leg, half of her pelvis where the tumor was located, her sacrum and part of her lower spine. The second surgery lasted seven hours and focused on reconstruction. During the surgery the team made use of the top of her amputated leg by rotating it and securing it to her remaining pelvis. Her right leg was then shifted and attached to her spine. With this strategy, the team was able to maintain functionality in Janis' right leg while also leaving room for the option of a prosthetic left leg.

Dr. Yaszemski noted that, "Successful, challenging surgeries are truly the product of teamwork – and one of the most important members of the team is the courageous patient," he said. "Janis is a shining example of this."

Focus on family

With her family at her side, Janis got through a long and difficult recovery. She recently celebrated her 30th birthday. "My life's dream was to be the best wife and mother I could be," she said. "I had every intention to walk, swim and play with my children, not just watch them grow up."

Janis set – and met – demanding goals for her recovery, such as walking before her toddler son did and learning to drive her daughter to school. She can stand and walk with an aid, snowmobile, ride a sport bike, cut the grass, take care of the yard and swim with her children. "I'm back to being a mom!" Janis said. "The goal of watching my kids grow has long been surpassed, and for this I will always be grateful to my amazing team at Mayo Clinic." //

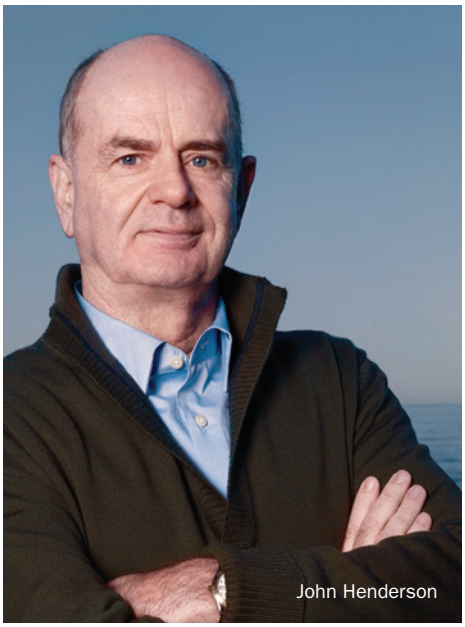
ABOUT CHONDROSARCOMA

Primary bone cancer is cancer that arises in the bone or cartilage itself – rather than cancer that spreads to them from other sites – and it is rare. An estimated 2,000 cases of primary bone cancer are diagnosed in the United States each year. Chondrosarcoma is a cancer that affects cartilage cells, and constitutes 26 percent of primary bone cancers. Because it typically does not respond to chemotherapy or radiation, chondrosarcoma is treated surgically, and relies on limb-salvage measures to restore as much function as possible.

For more information, go to:
www.mayoclinic.org/chondrosarcoma/

ALL IN THE DETAILS

Mayo Clinic's comprehensive care gets high marks from Canadian accountant.



John Henderson

British Columbian John Henderson is a details man, an accountant for whom accuracy and thoroughness are paramount. While health care is very good in Canada, Henderson, now 62, decided 15 years ago that his routine checkups there were not as thorough as they should be for a man approaching 50.

"Every time I thought about where I could go to get a really excellent, detailed physical, Mayo Clinic came to mind because of its reputation as a top institution," he said.

One-stop health care

Henderson telephoned Mayo Clinic in Rochester, Minnesota, and explained his interest in a thorough routine physical exam. He was instantly routed to the International Appointment Office, which made an appointment for him.

Henderson, who places high value on thoroughness, quality and efficiency, found Mayo Clinic to be the perfect fit.

The relationship was cemented upon receipt of his first blood test results from Mayo Clinic. "In Canada, your annual blood test usually produces a reading for cholesterol, and possibly, if you're a man of a certain age, a PSA [prostate-specific antigen] measurement – and that's about it," Henderson said. "When I got Mayo's results, it was a two-page response of blood components that provided a very detailed picture. In terms of the exams themselves, I felt quite comfortable, so I kept coming back." When he reached age 50, he shortened the interval between appointments from two years to one.

Thorough care is a life-saver

Henderson credits Mayo's comprehensive care with the early detection of his prostate cancer about five years ago, for which he returned to Canada for treatment.

The thought of what might have happened had he missed that crucial early exam still moves him. " Had that tumor just grown, I might never have seen my five year-old son play hockey again," he said. "That was my first thought when I got my results." The cross-border collaborative care was a success and today John doesn't miss a game.

Ease and efficiency have been the hallmarks of Henderson's Mayo Clinic care. At his December 2008 physical through the Executive Health Care Program at Mayo Clinic in Arizona, everything went so smoothly that he was able to head home a day early. His physician, Douglas Peterson, M.D., explained it this way: "We know John so well that things move quickly. That's the beauty of Mayo's continuity of care." //

AT A GLANCE
Executive Health Program

Mayo Clinic's executive health exams offer busy professionals one-stop comprehensive care, all expertly and efficiently planned to give them the best value in the shortest time. In the course of one to two days, the patient receives detailed analysis of all major organ systems by Mayo Clinic specialists. The exam is personalized to include the most appropriate specialty consultations in addition to a 60-90 minute session with the coordinating physician.

All test results are reported electronically, reaching the patient's Executive Health coordinating physician within hours of the procedure. The physician reviews them with the patient to provide an individualized lifestyle assessment. If further tests or consults are called for, they are quickly performed to make the most of the executive's time.

For More information on Mayo Clinic Executive Health consults, available at all three Mayo Clinic locations, go to: www.mayoclinic.org/executive-health/.

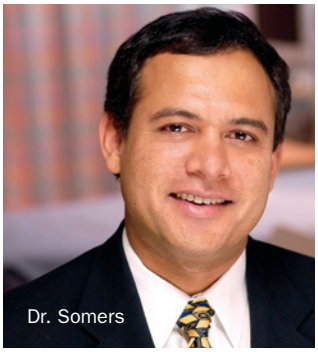
For more information on Canadian patient stories, go to: **www.mayoclinic.org/canada**

PROTEIN FOUND IN BREAST CANCER CELLS MAY LEAD TO MORE EFFECTIVE TREATMENT


Dr. Panos Anastasiadis

JACKSONVILLE, Florida – Researchers at the Mayo Clinic campus in Florida have identified a protein in breast cancer cells that may lead to more effective cancer treatments. The protein, called p120 catenin, has been shown to play a role in both the growth and migration of cancer cells, which makes it an excellent target for therapy. "An anti-p120 agent could provide a much-needed double whammy,'' said lead investigator Panos Anastasiadis, Ph.D. "It could stop cancer's spread and shut down growth at the same time." He added that while the protein's dual roles were discovered in breast cancer cells, the finding has relevance to other kinds of cancer. For more information on breast cancer research and treatment at Mayo Clinic, visit: www.mayoclinic.org/breast-cancer. //

SLEEP APNEA
May be new risk factor for cardiac arrest


Dr. Somers

ROCHESTER, Minnesota – Obstructive sleep apnea, a disorder associated with obesity that disrupts breathing during sleep, appears to place sufferers at higher risk for sudden cardiac death. That's the conclusion of a Mayo Clinic sleep study, the largest of its kind, conducted on nearly 11,000 adults in an overnight sleep laboratory. Sudden cardiac death occurs within 24 hours of the onset of heart distress symptoms. These early results confirm what physicians have long suspected when they noted the low blood oxygen saturation caused by obstructive sleep apnea. "Diagnosing and treating obstructive sleep apnea may prove to be an important opportunity to advance our efforts at preventing and treating heart disease," says the study's principal investigator Virend Somers, M.D., Ph.D. //

To read more about recent research findings from Mayo Clinic, go to: **www.mayoclinic.org/news**

TO YOUR HEALTH: Celiac disease

For most people, eating is a pleasure. But for an estimated one in 100 people, it is a pain, regularly followed by stomach aches, diarrhea or flatulence.

Sound familiar?

If so, Joseph Murray, M.D., gastroenterologist at Mayo Clinic in Rochester, Minnesota, suggests seeking an evaluation for celiac disease, a chronic digestive disorder. "Most people aren't aware of the condition, so they don't seek help," Murray said. "But there are things we can do to significantly improve patients' lives."

Celiac disease is triggered by gluten, found in foods made of wheat, rye or barley and in certain additives. In celiac disease sufferers, gluten prompts an immune reaction in the small intestine that damages the intestinal lining, interferes with digestion and impedes nutrient absorption. //

TREATMENT INCLUDES:

- A gluten-free diet, www.mayoclinic.com/health/gluten-free-diet/DG00063
- Vitamins to counter poor nutrient absorption
- Celiac disease support groups, www.celiac.org/connections.php

SMART MEDICINE

Mayo Clinic's Center for Innovation speeds innovative care to patients.

Innovation at Mayo Clinic is a rolling wave of creative energy seeking a shore. "It's about discovering and implementing new ways to deliver better health care," said Nicholas LaRusso, M.D., medical director of Mayo Clinic's new Center for Innovation. "The center's core mission is to transform the way health care is experienced and delivered."

To encourage creative problem solving, the Center for Innovation uses team-based brainstorming, Post-it notes for recording ideas, diagrams and visualizations to help people "see" novel pathways to solutions.

At the center's heart is the SPARC laboratory space. SPARC brings together designers and multidisciplinary teams to understand the needs of patients, families, physicians and other care team members who pursue innovative solutions through "design thinking."

Design thinking is a new approach to improving products, services and processes that is being adopted by cutting- edge businesses and universities. It integrates technology, human values and business goals to emphasize creativity early in the problem-solving process, rather than analysis and judgment that may impede idea generation. The goal of encouraging conspicuous creativity is to devise the best solutions quickly.

The Center for Innovation is designed to drive discovery in harmony with the Mayo brothers' maxim, uttered more than 100 years ago at the founding of Mayo Clinic: *The needs of the patient come first*. To meet this mandate in the 21st century, the center relies on expertise not usually found in the same medical center office: specialists in anthropology, information architecture and the study of how humans and computers interact who work side by side with Mayo Clinic physicians, surgeons and researchers. //

> *"To truly innovate, a Mayo Clinic discovery must touch and transform real human lives."* Nicholas LaRusso, M.D.

Elements of the Center for Innovation are:

STRUCTURE: On the 17th floor of Mayo Clinic's joined Gonda and Mayo buildings, ideas grow, evolve, interact and thrive in specially designed areas that place labs next to clinical spaces, and also provide ample room for visualizing ideas during brainstorming. This way, reciprocal discovery occurs, moving from lab to clinical care and from the clinic to the lab.

COLLABORATION: Mayo Clinic's success relies on the wisdom of group practice. The Center for Innovation is enriched by an expansive and eclectic collaboration with insurance providers, business and educational institutions to help overcome the problems of a complex, disconnected health care system that is focused more on disease care than it is on maintaining health.

ORGANIZATION: The center's work is organized into platforms that focus on disease prediction, prevention, promoting wellness and early intervention. Developing new tools and technologies that keep people linked with care givers — anytime and anywhere — is central to this strategy. The goal is to extend Mayo Clinic's care model to patients, families, communities and local physicians.

TRANSLATION: The Center for Innovation is built around the principle that new knowledge must be tested and translated. The ultimate proof of its usefulness is when it can be applied to improve people's health. When that happens, the center's mission is fulfilled.

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AROUND THE WORLD

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To request an appointment, or for more information, please contact one of our International Appointment Offices listed below, or online at: www.mayoclinic.org/english/appointments.html

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MAYO CLINIC AND YOU

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COLLABORATION BRINGS HELP & HOPE

Mayo Clinic researcher Dr. Lewis Roberts (right) extends his aspirations to his home country of Ghana.

Improving advanced liver cancer treatments and patients' longevity is the goal of Mayo Clinic researcher Lewis Roberts, M.B.Ch.B., Ph.D. When he returns to his native country of Ghana in West Africa as part of a philanthropic training mission, Dr. Roberts helps realize his dream by raising awareness about risk factors for liver disease. Dr. Roberts chairs Africa Partners Medical, an outreach group that offers education conferences for physicians and healthcare workers focusing on how to improve care to infants, mothers and patients.

One such session held in September 2008 in Kumasi, Ghana, drew 250 attendees, twice the number expected. "The success of these training conferences is really overwhelming, and so satisfying," said Dr. Roberts. "Last fall, the abdominal ultrasound training workshop was so popular we had to turn people away."

Dr. Roberts hopes that modernizing African medical training will allow more patients to live longer. "We can't meet all the needs – they are simply too great," he said. "But we look forward to doing even more when we return this fall." //

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