

### Also In This Issue

- News on WorldCare
- Real-Time Imaging During Brain Surgery

### 'Lit-up' cells in mice may point researchers to leukemia treatment

From Duke University Health System

Using a novel method for viewing the division of stem cells, Duke University Medical Center researchers believe they have identified an unexpected way to interfere with the uncontrolled cell growth that is characteristic of cancer.

By watching what two known cancer-promoting proteins did to blood-forming stem cells, the researchers believe they have seen one protein speeding up cell division, and another controlling the maturation of cells - both hallmarks of cancerous growth.

Stem cells normally divide in two ways: symmetrically and asymmetrically. In symmetric division, a stem cell either splits into two copies of itself or into two new cells that are committed to a particular tissue type, such as blood, liver, or muscle cells. In asymmetric division, a stem cell divides into one stem cell and one mature cell. Normally, stem cells use both methods of division in a balanced, controlled way.

"Some oncogenes (cancer promoting genes) appear to have the ability to alter the development of cells, forcing them to lock into a symmetric division pattern that only produces immature cells," says Tannishtha Reya, Ph.D.

*Continued on the next page* 

*Dear Reader,*

*In this issue of the Health Update we hope you will enjoy reading about some of the latest developments at a few of the WorldCare Consortium Hospitals. These include Duke University Medical Center's research findings of a potential way to interfere with the growth of cancer cells, Mayo Clinic's purchase of an advanced MRI system to be used during brain surgery, and UCLA Healthcare's research findings of benefits to sarcoma patients in using the PET imaging method.*

*Sincerely,*

*Rebika Shaw,  
Regional Director, Corporate Communications*

## HEALTH NEWS

### PET imaging method offers benefits to sarcoma patients

From UCLA Healthcare

Positron emission tomography (PET) is more sensitive and accurate than conventional imaging methods in detecting sarcoma patients' response to treatment, according to a recent study that compared PET and computerized tomography (CT) scanning.

In the study, a team of scientists at UCLA's Jonsson Cancer Center found that standard size-based evaluation methods only identified 20 percent of responders, but PET was able to identify responders 100 percent of the time.

The study has important implications for patients. If conventional imaging fails to detect treatment response, oncologists may discontinue therapies that are actually working. Conversely, using PET scanning to confirm a lack of response to treatment could help prevent patients from undergoing toxic therapies that aren't working.

Currently, doctors evaluate response to treatment using CT or magnetic resonance imaging (MRI) before and after treatment, and the scans are then compared to determine if the tumor has decreased in size. If there is no change, the disease is considered stable. A partial response is tumor shrinkage of more than 30 percent, while a total response is tumor elimination.

However, "We have removed many tumors that have not changed in size with treatment or have even grown but are completely dead on pathologic analysis. Just because the tumor doesn't shrink doesn't mean the treatment didn't work," says Fritz Eilber, MD, director of the Sarcoma Program at the cancer center.

CT and MRI scans provide anatomical pictures of the body, but PET assesses many different biochemical functions in real time, acting as a sort of molecular camera that views what the body is doing. In the study, researchers measured how much sugar the cancer cells were consuming. Because cancer cells are growing uncontrollably, they use much more sugar than do normal cells. With the PET method, researchers could determine whether the cancer cells in the tumor were still alive and dividing after chemotherapy and radiation, Dr. Eilber says.



WorldCare  
7 Bulfinch Place,  
P.O. Box 8310,  
Boston, MA 02114  
Tel. 617.374.9001

## Leukemia Treatment (continued)

When the oncogene makes symmetric division the dominant form, the resulting cells tend to be immature and undifferentiated. Immature cells also tend to be more aggressive in their growth and are often the primary cell type within a cancer, she adds.

For her experiments, Dr. Reya focused on blood-forming stem cells in mice. Using a novel system that recorded dividing stem cells as they "lit up" fluorescent green, the researchers produced short movies of the stem cells' division.

After "seeing" symmetric and asymmetric division as it occurred, the researchers added different oncogene proteins to the system and documented what happened. One oncogene (Bcr-Abl) increased the rate of cell division, yet had no effect on the symmetry of the division. Another oncogene (Nup 98-HoxA9) significantly increased the rate of symmetrical division, thus producing immature cells.

"The Bcr-Abl oncogene is associated with chronic myelogenous leukemia, which is a slow-growing cancer that can often be managed," Dr. Reya explains. "However, the Nup 98-HoxA9 oncogene forces the stem cells into mainly symmetric division, which is associated with the acute form of leukemia. Patients with this acute myelogenous leukemia do not have good options for treatment."

"Theoretically, we could develop a protein that blocks the actions of this oncogene," Dr. Reya says. "This would allow the blood stem cells to recover their ability to divide asymmetrically. This could turn an acute, aggressive and untreatable condition into one that is chronic, but manageable."

## New equipment provides real-time imaging during brain surgery

From Mayo Clinic

Mayo Clinic has purchased an advanced neurosurgical diagnostic

## NEWS ON WORLDCARE

**WorldCare expands contract with AIG.** On July 1st 2008 WorldCare and AIG Europe entered into an agreement that will extend coverage to an even greater number of AIG members. Under the agreement, WorldCare's Second Opinion Services, will be available to members in eleven more West European countries bringing the total number of countries to 44.

### "Above and beyond"

*"I posed an unusual and difficult diagnosis to WorldCare. They tackled the problem, using all of their resources. I even received a call from the head physician. My case manager remains in contact with me. I feel the organization went above and beyond in my behalf."*

### Patient Perspective

### About WorldCare

The global health care community has trusted WorldCare since 1994, when it became the first company to offer physician-referred, patient-specific, second opinion e-consultations (telemedicine) for serious illnesses. WorldCare benefits patients around the world by providing access to top physicians, cutting edge medical practices and best medical advice through highly specialized electronic medical opinions from the best medical centers in the United States.

**WorldCare** – 7 Bulfinch Place – P.O. Box 8310 – Boston, MA 02114  
**Phone:** 617.374.9001 **Email:** [info@worldcare.com](mailto:info@worldcare.com) **Web:** [worldcare.com](http://worldcare.com)

imaging system that eliminates the need for patients to be moved during brain surgery. The magnetic resonance imaging (MRI) system also allows surgeons to use real-time imaging while they operate.

"Real-time images provided by the intraoperative MRI during surgery will help us see if the brain has shifted and if we've removed all of the tumor," says Robert Wharen, a Mayo Clinic neurosurgeon and chair of the neurosurgery department.

Most intraoperative MRIs are fixed in place next to the operating room, requiring patients to be physically moved during surgery. This system is suspended from a ceiling-mounted track that moves it to the patient, rather than the patient having to be moved to the magnet. "This improves the outcome for the patient not only in the successful retrieval of all the

cancerous tissue, but also because the patient does not have to be moved during surgery. The less an anesthetized patient is moved, the better," Dr. Wharen says.

Fewer than a dozen other medical centers in the country are currently utilizing this system. Mayo Clinic's Jacksonville campus is currently the only medical center in the greater Southeast to have purchased this technology.

The new 1,800 square foot suite housing the imaging system became available in summer 2008 in Mayo Clinic's new hospital at its San Pablo Road campus. The equipment is separated from an operating room by automatic sliding doors. At the push of a button, the doors open and the 1.5-Tesla Espree magnet travels to the operating room on its rail system within 90 seconds.



Contact your local WorldCare office if you are interested in obtaining a second opinion from a WorldCare Consortium hospital. Visit [www.WorldCare.com](http://www.WorldCare.com) for more information.