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# Online archive to link tumor scans, genetic data

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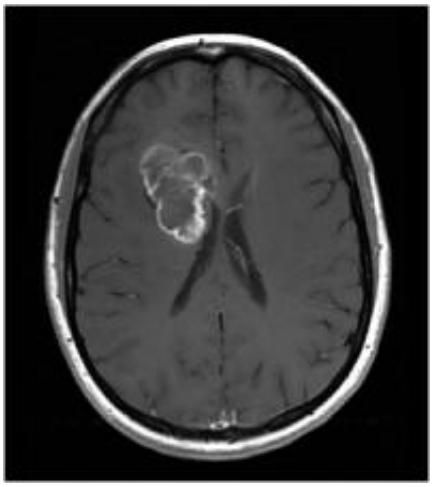

The Cancer Imaging Archive, created by scientists at Washington University School of Medicine, will make millions of images like this scan of a brain tumor accessible to both researchers and the general public.

The National Cancer Institute (NCI) has chosen Washington University School of Medicine in St. Louis to create an innovative, Internet-accessible database of millions of cancer images.

The Cancer Imaging Archive (TCIA) will combine tumor scans collected from multiple cancer research initiatives into a single searchable database accessible to both research scientists and the general public.

One of the first projects to be included will be The Cancer Genome

Atlas, a collaboration to catalog the genetic errors in more than 20 different types of cancers. The university's Genome Institute has played a leading role in that effort.

For the first time, TCIA will connect the genetic information from the genome atlas project to X-rays and MRI, CT and PET scans used to diagnose patients' cancers. The links will make possible new studies of tumors that may improve diagnosis and treatment, says Fred Prior, PhD, director of TCIA at Washington University's Mallinckrodt Institute of Radiology.

"Linking scans to genetic information may help us to identify aspects of the tumor's appearance that can help us determine the genetic type of the tumor," Prior says. "That could be extremely important for diagnosis and treatment of some cancers."

As an example, Prior cites glioblastomas, a type of dangerous and difficult-to-treat brain tumor. Genome atlas researchers have identified four distinct genetic signatures in these tumors and plan to use those signatures to customize treatments. If scientists can correlate tumor scans to particular genetic subtypes, it may expedite efforts to improve treatment.

TCIA can also be used by patients and the public, who can search for images of tumors based on the type of scan and the area of the body where the tumor is found. Organizers are making the data publicly accessible for educational and informational purposes. Patients' names and identifying information will not be made public.

Prior is director of the university's Electronic Radiology Laboratory, where researchers specialize in quality assurance, analysis and management of biomedical imaging data. The laboratory's scientists have been actively working with the National Biomedical Imaging Archive, a

software package originally created at the NCI. Prior and his colleagues adapted the package for use in the National Lung Screening Trial, and now they have modified it to build TCIA.

“TCIA will support a wide variety of cancer research initiatives by providing scientists with easy access to the enormous amounts of data in the archive,” Prior says. “This data will also be available to the general public with links to Web pages that help them understand the images.”

NCI is providing $800,000 to Washington University during the first year of the TCIA project and additional funding in its second and third years.

The website for TCIA is www.cancerimagingarchive.net . Registration and use of the archive are free.

Provided by Washington University School of Medicine in St. Louis