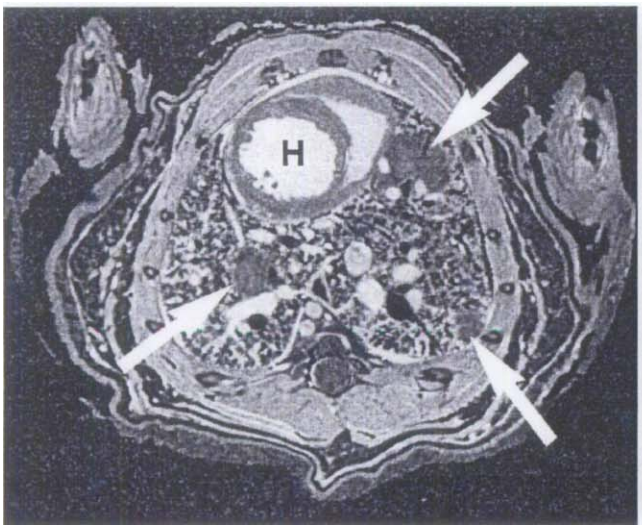
NATIONAL TOXICOLOGY PROGRAM
FACT SHEET
Headquartered at the National Institute of Environmental Health Sciences • NIH • DHHS

MAGNETIC RESONANCE IMAGING

Year 2005

Traditionally, in National Toxicology Program (NTP) toxicology and carcinogenicity studies, lesions are evaluated with conventional optical microscopy of collected tissue samples. Representative samples are collected because examining all the tissue involved is impractical. Because of recent advances in imaging, magnetic resonance imaging (MRI) of the entire body at microscopic resolution is now possible. The NTP is investigating MRI for imaging laboratory animals. MRI microscopy is three-dimensional, can examine the same specimens at different angles, and measures the volume of tissue and organs. MRI of live animals permits acquisition of imaging data at different times over an animal's lifetime. Because the images are digital, web-based viewing will be easier.

MRI is a noninvasive technique that will permit more complete and thorough examination of tissues and organs from test animals without destroying the samples and may also allow more information to be gathered from NTP studies than before. Anticipated uses include monitoring toxic lesions and examining the morphology and functionality of genetically engineered mice. The NTP also hopes in the future to apply this technology to studies of birth defects.



Multiple lung tumors in a C3H mouse
H = left ventricle of the heart

A liver tumor in a C3H mouse
S = spinal cord

For further information, contact:
Dr. Robert Maronpot, NIEHS, P.O. Box 12233, MD B3-10, Research Triangle Park, NC 27709;
Phone: 919/541-4861; E-mail; maronpot@niehs.nih.gov

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