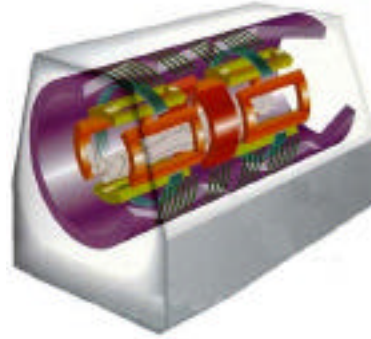


Magnetic Resonance Imaging  
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Biomed Seminar III  
Due: 3/27/06



The very first MRI image of a human being was taken on July 3, 1977. The MRI can now be seen on display in the Smithsonian museum.

The center of the MRI is called the bore of the MRI and is where the patient will lay during the procedure. The patient will lay on his or her back in the isocenter of the magnetic field that is going to be generated from the MRI. There are two different types of magnets in the MRI, the main magnet and the gradient magnet. The main magnet creates a stable, homogenous magnetic field and the gradient magnet creates a variable field. The main magnetic field is between .5 and 2 Tesla and can be composed of a resistive, permanent, and superconducting magnet. Superconducting magnets are used to create this strong magnetic intensity by bathing coils of wire wrappings in liquid helium at 452.4 degrees below zero. This lowers the resistance of the wire to practically zero.



Radio frequencies trigger the hydrogen atoms in the body to align with the magnetic field. The reason hydrogen atoms are used is because they have a single proton and a large magnetic moment. This means that when a magnetic field is applied the protons will align with the field. When the frequencies are turned off, the excess energy is released from the atom and the data from that atom is recorded and sent into a computer. The computer will do a Fourier transform on the data and produce a 2-D image or a 3-D model.



#### References:

1. [www.uhrad.com/mriarc/mri007.htm](http://www.uhrad.com/mriarc/mri007.htm)
2. [www. Howstuffworks.com](http://www.Howstuffworks.com)
3. <http://en.wikipedia.org/wiki/MRI>
4. **Mechanisms of immune suppression in patients with head and neck cancer: influence on the immune infiltrate of the cancer. inter. cancer journal**