



## Lesson 1

### Vocabulary Exercise

---

In the framework of acquainting middle school students with the field of biomedical engineering, the vocabulary sheet is designed to specifically elucidate key terms related to magnetic resonance imaging machines (MRI). This educational resource aims to deepen understanding of MRI technology in the broader context of biomedical engineering.

---

**Recommended Grade Levels:** 6-8

#### MRI Vocabulary List for Lesson 1

1. **Medical Imaging:** A way doctors look inside your body using special tools like an X-ray or MRI.
2. **Magnet:** A thing that can pull metal towards it.
3. **MRI (Magnetic Resonance Imaging):** A big machine that uses magnets to make pictures of the inside of your body.
4. **Atomic Nucleus (Nuclei is plural):** The tiny center part of an atom, like the pit of a peach.
5. **Hydrogen Nuclei:** The center part of hydrogen atoms, which are found in water and fat.
6. **RF (Radiofrequency) Pulses:** Quick zaps of energy that make the tiny parts inside your body move so the MRI can see them.
7. **Relaxation:** This is how atoms in your body calm down after being excited by magnets and radio waves, and it helps us make clear pictures of your insides.
8. **T1 (Spin-Lattice) Relaxation:** How long it takes for the tiny parts inside your body to line up with the magnets.
9. **T2 (Spin-Spin) Relaxation:** How quickly the tiny parts lose their special pattern.
10. **Signal:** The noise or picture that comes from the tiny parts moving.
11. **Lauterbur & Mansfield:** Two scientists who helped make the MRI machine.



12. **Gradient Magnetic Field:** Special magnets in the MRI that help make the pictures clear.
13. **Nobel Prize in Physiology or Medicine:** A big award for smart people who help us understand our bodies and keep us healthy.
14. **Diagnostic Capabilities:** What the MRI pictures tell doctors about your body.
15. **Soft Tissues:** Parts of your body that aren't bones, like your muscles and organs.
16. **Nuclear Magnetic Resonance (NMR):** A big idea that helps the MRI machine work by studying the tiny parts inside your body.
17. **Resolution:** How clear and detailed the MRI pictures are.
18. **Atom:** The tiny parts that make up everything around us.
19. **Organ:** A part inside your body that has a special job, like your heart or lungs.
20. **Image:** A picture, like the ones the MRI machine makes of your body.