

Homework #1
due Friday, January 27th, 2012 @ 5pm

Imaging Modalities:

1. Brown adipose tissue (BAT) was thought to only exist in rodents, hibernating mammals, and in newborns. A set of articles in the April 2009 *New Engl J Med* (<http://www.nejm.org/toc/nejm/360/15>) showed compelling evidence that BAT exists in adult humans. At this time, little is known about its role adult physiology, but I'm very curious, and so is the NIH. Studies are needed to measure its location, quantity, activation, and heat generation *in vivo*. **(a)** Spend at least one hour learning about brown adipose tissue (Wikipedia, journal articles, etc), and list your sources. **(b)** identify the one imaging modality that you feel would be most useful in the study of BAT in humans, and construct a clear argument for why (500-600 words).

Math Preliminaries:

2. Nishimura 2.1 (a) (b)
3. Nishimura 2.2 (b) (c) (d)
4. Nishimura 2.3
5. Nishimura 2.6
6. Nishimura 2.7

MRI Physics:

7. Nishimura 4.1
8. Nishimura 4.2