Audible Human Project

Royston (ME, IE and BioE), NIH R21

15 students for course credit from 1996 - 2007, 3 IMSA students from 1998 - 2001

The Visible Human Project of the National Library of Medicine has catalyzed the development of advanced visualization software that has aided in anatomy education and biomedical research. It has triggered numerous medical technologies, with applications spanning from improving imaging technology to simulating surgical procedures [1]-[3].

![Figure](image)

**Figure.** Contact sensor array for noninvasive acoustic source localization, left. Computational mesh for airways, right.

REU participants will help develop and experimentally validate an upper torso acoustic model focused on the pulmonary system. This model will simulate breath sound generation, transmission and measurement via contact sensors placed on the torso surface as shown in Figure. It will also simulate the transmission and measurement of externally introduced sound via the airways or via percussion of the torso surface. Subject-specific torso acoustic models will be generated for healthy male human subjects based on noninvasive measurements. Detailed acoustic measurements on these same subjects will then be used to validate the simulation models. REU students will develop experience of acoustic principles and vibrational analysis.

