How to help people who have heart attacks

Meghan McGovern

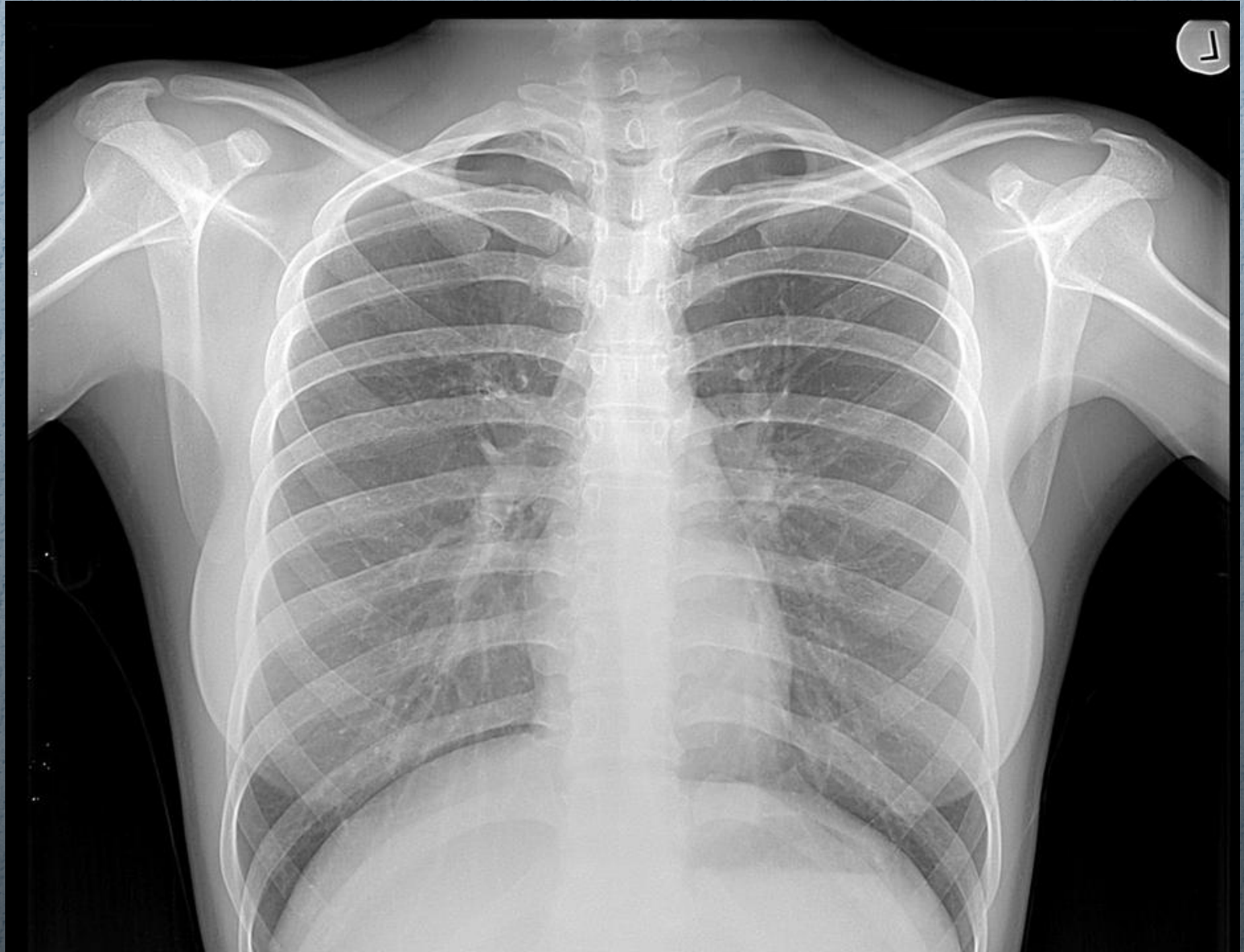
Monday, December 03, 2012

Introduction

- Went to school in California (the library starred in a alien movie)
- Back to school for Master's (extra school?!)
- Love of applied math and science
- To help more people

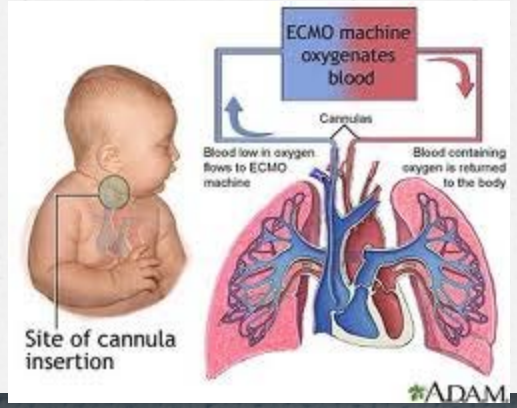
Introduction to BME

- Definition of Biomedical Engineering (BME)
  - Integration of biology and engineering.
  - Applies engineering principles specifically to the medical field in order to improve patient care and quality of life.



Heart-Lung Machine

Extracorporeal Membrane Oxygenation



Electrocardiograph (ECG)

Artificial Hearts

Tissue Engineering

- Researchers Rebuild Beating Heart with Cardiac Derived Cells!
  - January 22, 2008
- Arteries
- Veins
- Skin
- Bone
- Cartilage
- https://mediamill.cla.umn.edu/mediamill/embed/7238

Artificial Organs

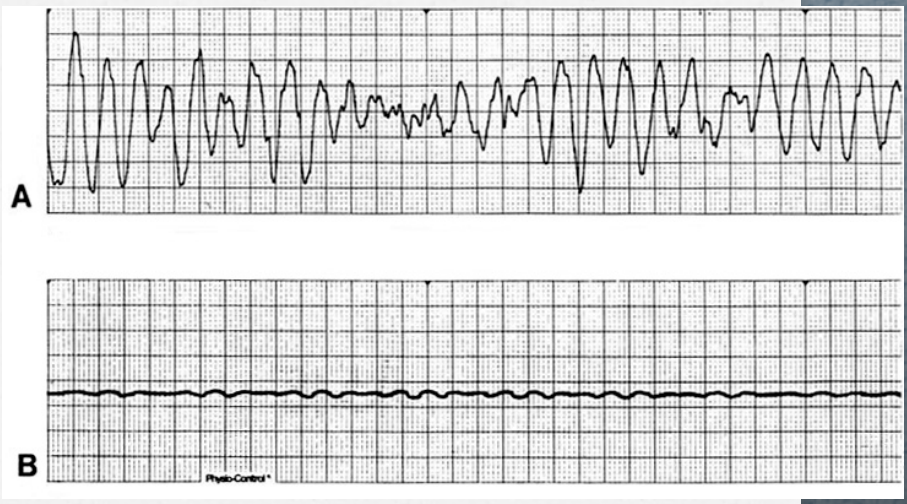
- Hearts
- Dialysis Machines
- Lungs
- Kidneys
- Liver
- Hearing Aids
- Cardiac Pacemakers
- Synthetic Blood Vessels
- Joints
- Arms
- Legs
- Etc.

And So Much More!

- Medical Imaging Systems
- Blood Chemistry Sensors
- Robotics
- Computer Modeling
- Biomaterial Design
- Biomechanics
- Automated patient monitoring
- Sports Medicine
- ETC.

My Research

- Algorithm for Optimization of Results Based on Real Time Ventricular Fibrillation Waveform
- Hypothesis: Traditional defibrillation protocols waste time on compressions
- Amplitude Spectral Area (AMSA)



Future

- Prove AMSA measurements
- New commercial defibrillator (AED)