

# PHOTOACOUSTIC REFLECTIONS

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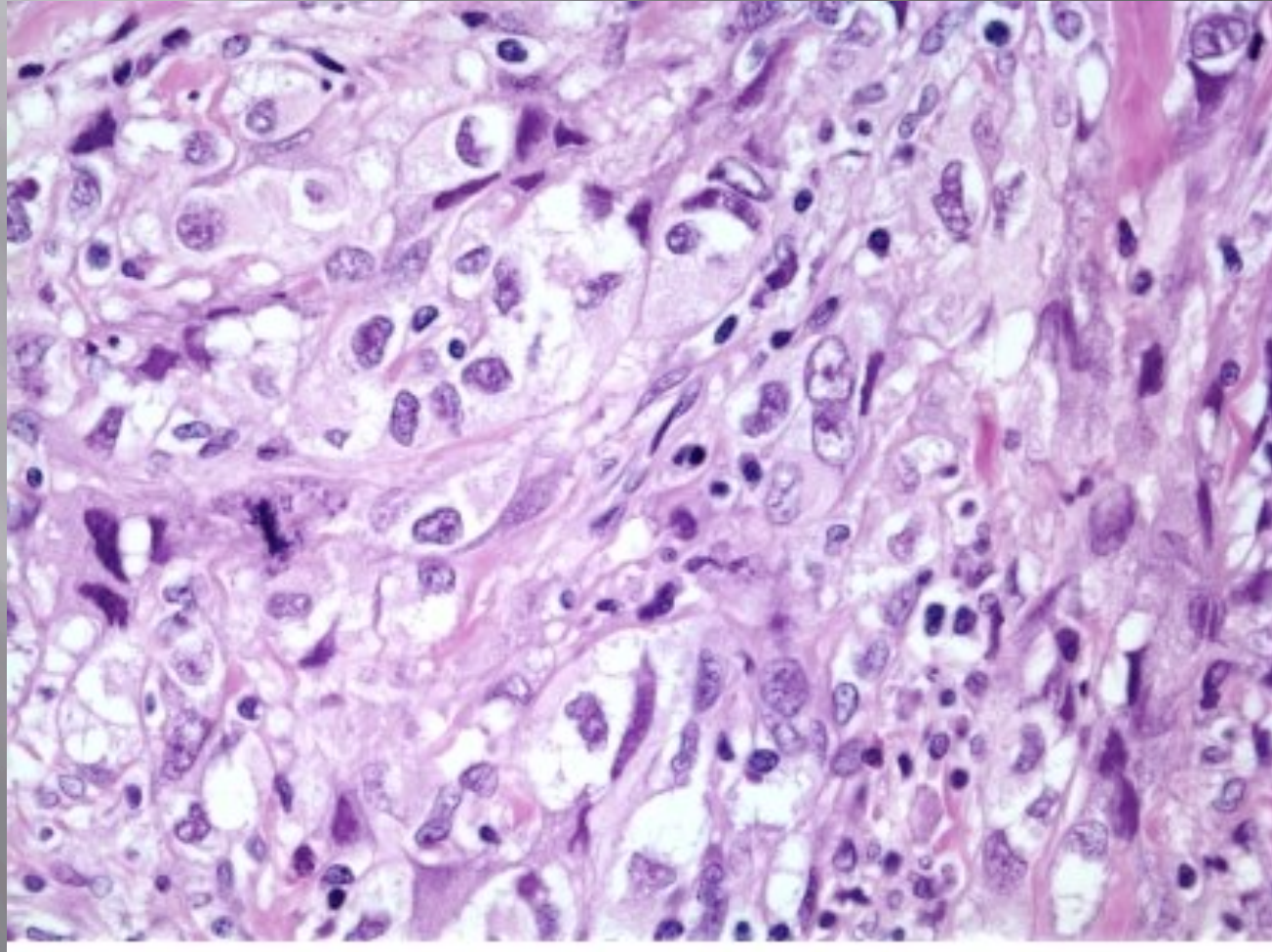
# What is Malignant Melanoma?

- ▣ You can get melanoma by spending too much time in the sun. This causes normal skin cells to become abnormal. These abnormal cells quickly grow out of control and attack the tissues around them.
- ▣ Melanoma tends to run in families. Other things in your family background can increase your chances of getting the disease.
- ▣ The American Cancer Society estimated that during 2008, over 62,480 people in the United States will be diagnosed with melanoma, and approximately 8,420 people will die from the disease.
- ▣ [www.webmd.com](http://www.webmd.com)

# Treatment

- ▣ Surgery
  - Complete surgical removal (excision) is the most successful and the most common treatment for melanoma. The lymph nodes may also need to be removed in stages II and III melanoma
- ▣ Medication
  - Interferon- makes the cancer cells too weak to protect themselves
  - Dacarbazine- used against stage IV metastatic melanoma, destroys by adding alkyl group
- ▣ Radiation
  - Used to treat metastatic melanoma, Radiation damages the genetic material of cells in the area being treated, leaving the cells unable to continue to grow.

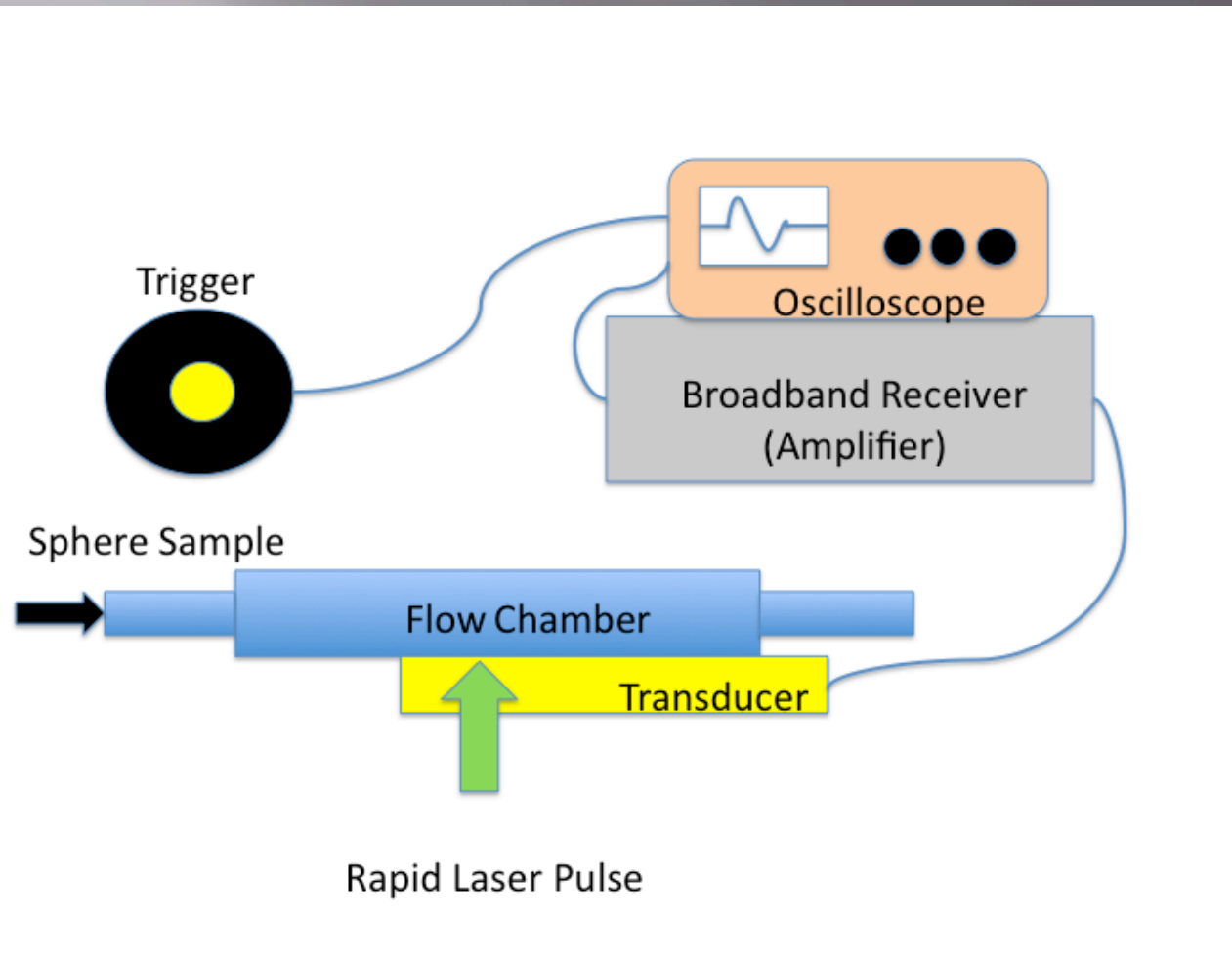
# Metastatic melanoma in the gallbladder



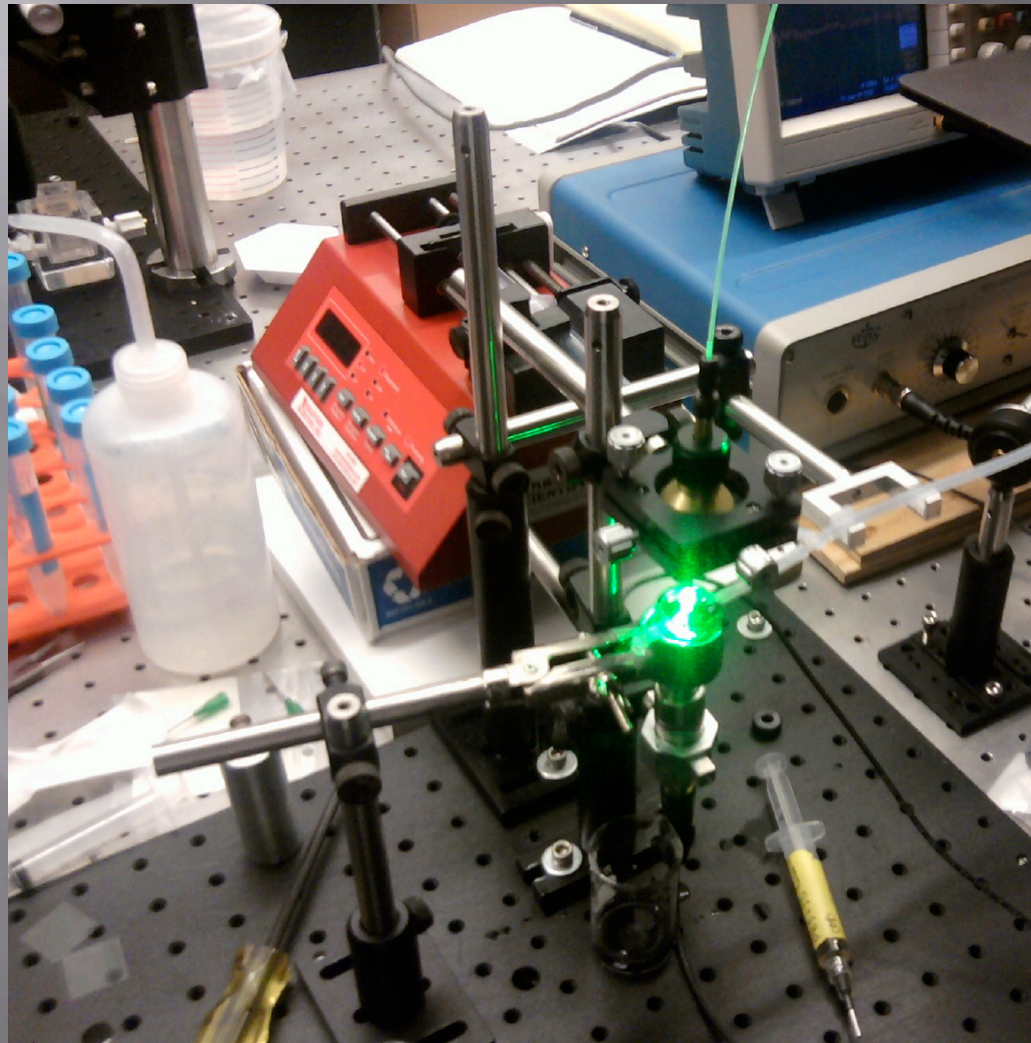
# What is photoacoustics

- ▣ Use of laser energy to generate ultrasound waves
- ▣ Laser is fired at a target cell
- ▣ The cell absorbs the energy
- ▣ The rapid absorption of energy causes the cell to rapidly expand and contract
- ▣ The rapid change in volume causes an ultrasonic pulse to be emitted

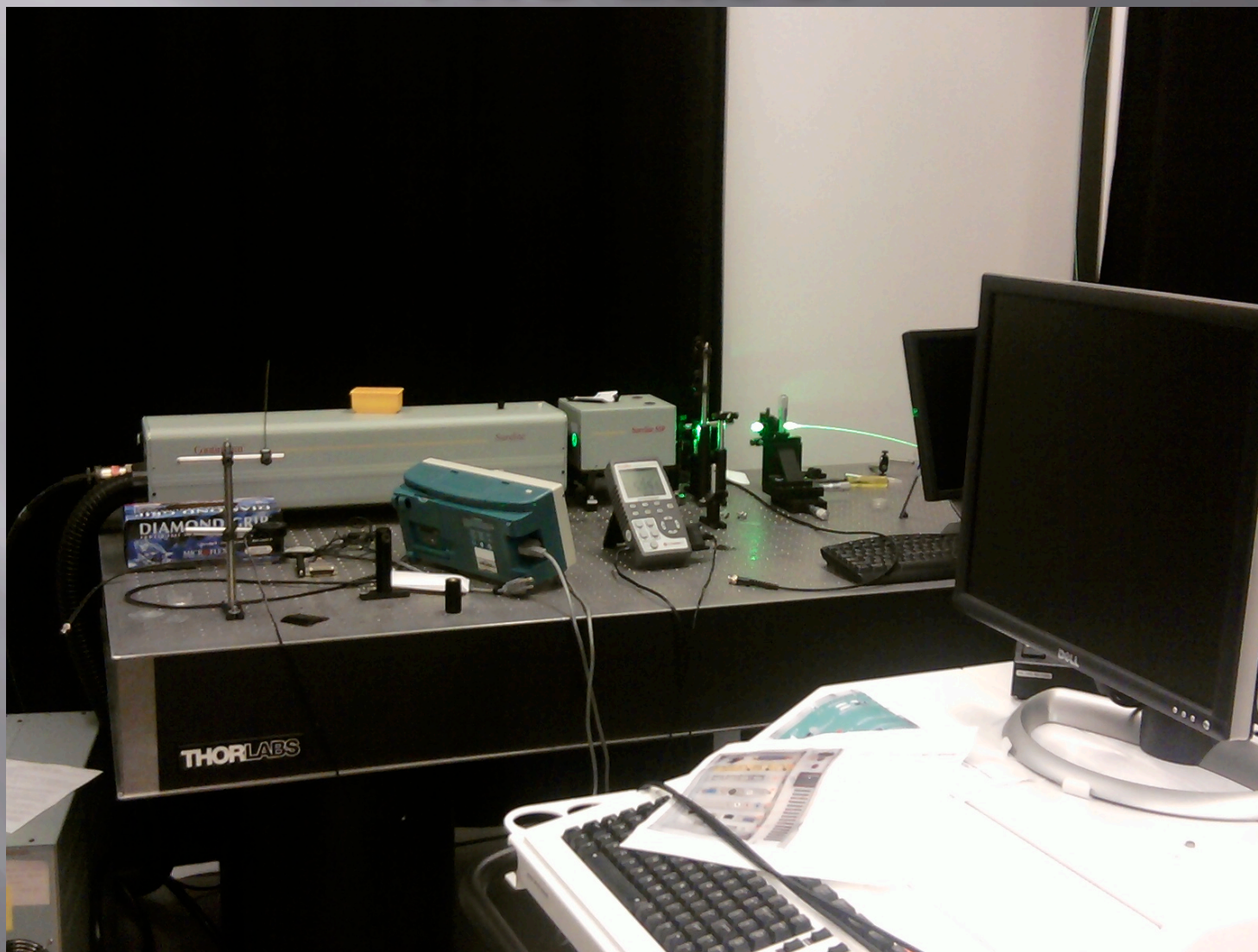
# The Set Up



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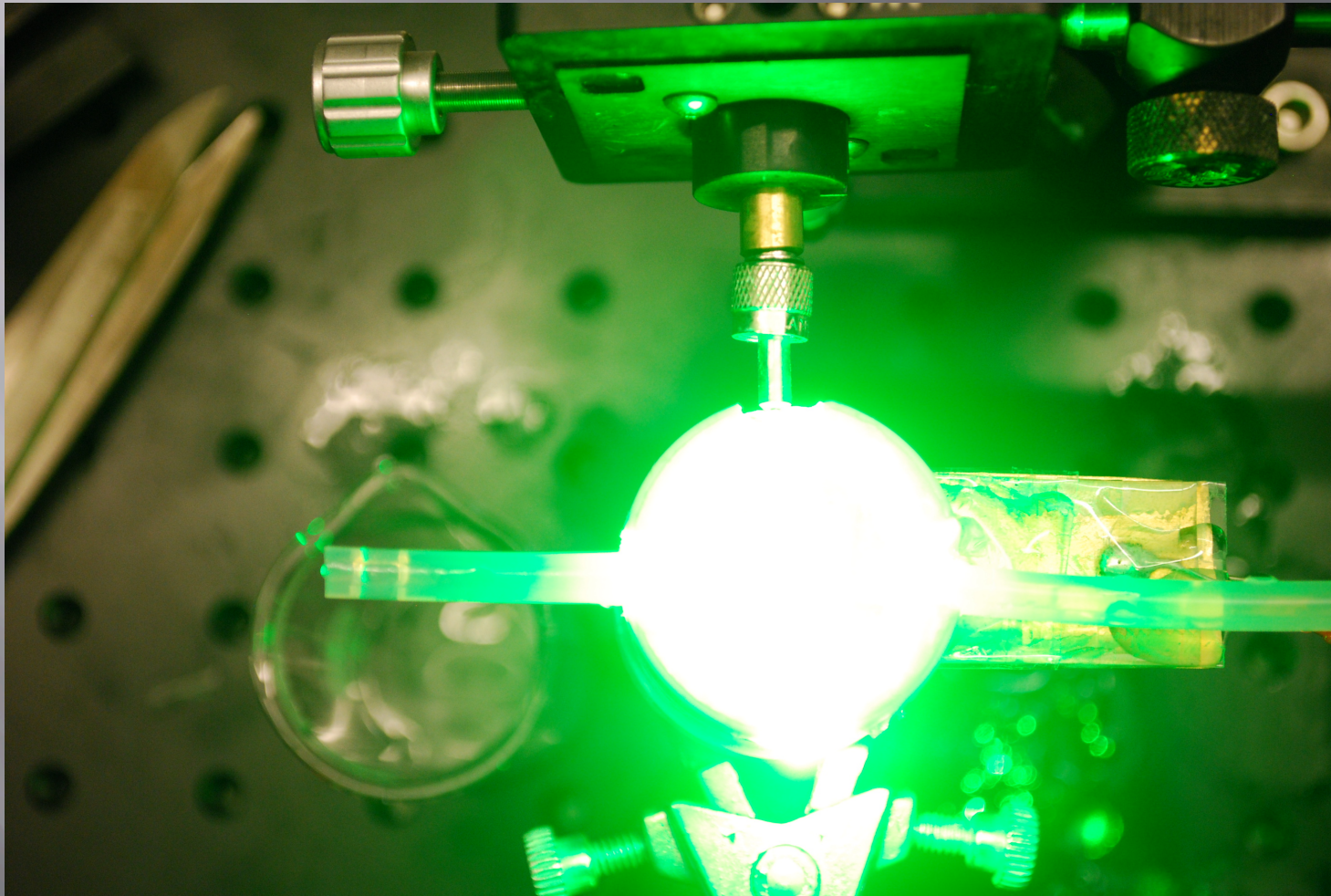


# The Laser

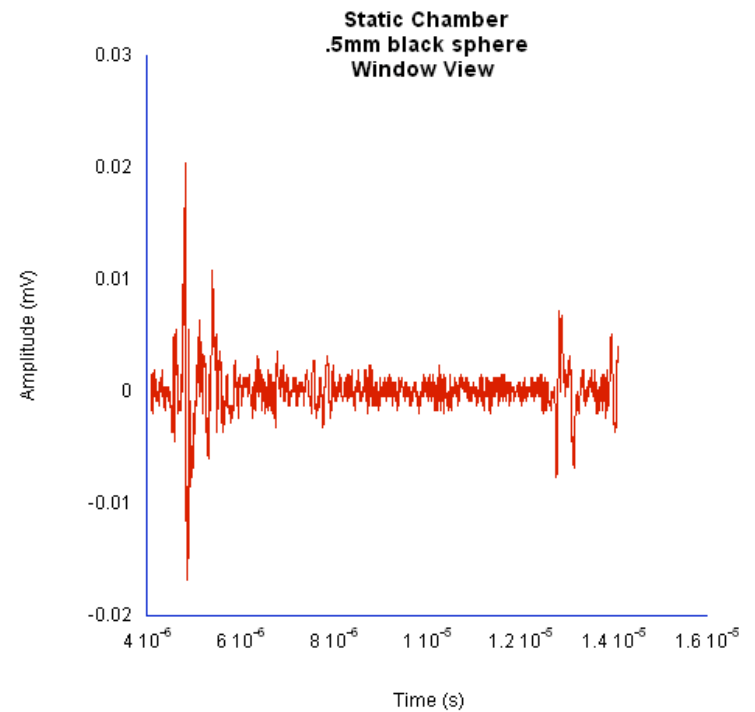
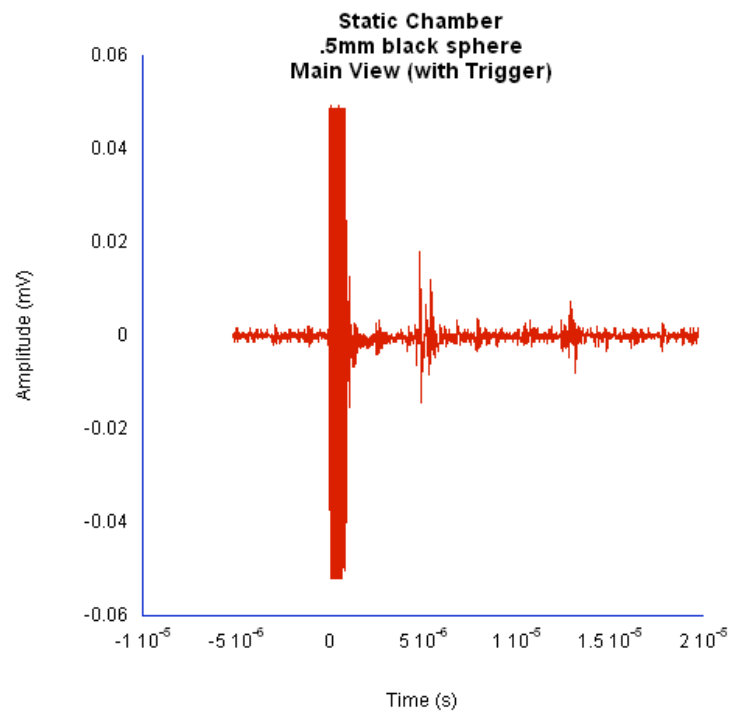




# The Fun Shiny Stuff



# The Data



# Future Work

- ▣ Making this method apply to every cancer
- ▣ Lacing cancer cells with black nanoparticles
- ▣ These cells then undergo elastic expansion
- ▣ The treatment can then be spread to all cancers

THANKS!!!!!!