# Robopsy™

A Low-cost, CT-Guided, Tele-Robotic Percutaneous Lung Biopsy Assistant

*Patent Pending*

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**Clinical Need**

- Lung cancer is the most deadly.
- Diagnosis requires biopsy.
- 125k percutaneous biopsies US.
- Current procedure manual, iterative, time consuming.
- Difficulty targeting lesions <10mm.
- Precise imaging data not efficiently utilised.
- Risk of complications.

Goal: *"To create a needle guidance system to assist radiologists in targeting lesions during CT guided biopsies"*

- Dr. R. Gupta, Fall 2004, MGH

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**Device**

- Through prior art search.
- Studied MGH procedure.
- Function Requirements
  - Deigned …
  - Mimics radiologists’ actions (only 4 actuated DOF)
  - Plastic Structure: Radiolucent; Moldable; Disposable; Lightweight, 10 cm form factor
  - CT Machine Independent
  - Grips, Angles, Releases needle
  - Adhesive Patient Mounted
  - Passive respiration / motion compensation.
  - Remote operation
  - Real-time position feedback
  - Intuitive user interface

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**Testing**

- Commercial thoracic phantom
- Custom designed gelatin phantom with calibrated targets & simulated ribs
- Human factors analyses
- Iterative device design
- Porcine in-vivo testing
- Future – Human validation

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**Funding/Awards**

- 2004 2.75 Project - $4k
- 2005 MIT IDEAS - $5k
- 2005 MIT $1k
- CIMIT Grant – $100k
- 2006 BMEidea 3rd - $1k
- 2007 MIT $100K 1st - $30k

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