## Motivation
- Cochlear Implants restore hearing in cases of severe hearing loss
- 750,000 Americans could benefit from Cochlear Implantation [1]

## Problem: Electrode Arrays
- **Major surgery necessary** to place implant into the cochlea
- **No standard insertion technique** due to big variety of different electrodes
- Optimal placement depends on surgeon’s experience and judgment

## Electrode Array Examples
- Nucleus 24 Contour Advance Electrode, Cochlear Co., Inc.
- HiFocus Helix Electrode, Advanced Bionics
- HiFocus Helix Electrode with its insertion tool

## Solution: PCI [2]
- Acquire CT scan with implanted fiducial markers
- Plan trajectory and build Frame
- Mount Frame onto fiducial markers

### Surgery time decreased by up to 71% [3]
- Ear bone outtake decreased by 99.5%

## Problem: Electrode placement
- Drill path: 1.5mm diameter, 35mm depth

## Tool Design Goals:
- Applicable for every kind of electrode
- Simple movement for electrode deployment
- Suitable for PCI

## The Tool
### Requirements:
- Straight insertion until cochlea curves, followed by
- AOS insertion up to 18mm depth of insertion

## Future Research:
- Attach Tool to Microstereotactic Frame
- Clinical introduction in 2010

## References