

Hacking Humanity: Human Augmentation And You

quaddi & r3plicant
Rio Hotel & Casino
July 2012





who we Are.





Who We Are Not.

- Doctors
- Your Doctors





WARNINGS

- This talk does not constitute medical advice.
- Technologies & research described are purely experimental and dangerous.
- DO NOT ATTEMPT ANY MODIFICATIONS IN THIS TALK.
- ALWAYS CONSULT YOUR DOCTOR FOR ANY HEALTH CARE RELATED ISSUES.
- There are a few graphic graphic medical images in this presentation.

Objectives

- Take a quick trip through the history of human augmentation.
- Briefly get up to date on current medical stance/ethics of human augmentation.
- Become familiar with the current technologies, physiology, and feasibility of various augments.
- Highlight barriers to, and risks of augmentation.
- If we have time...



Design &
Build
Complex
Mods

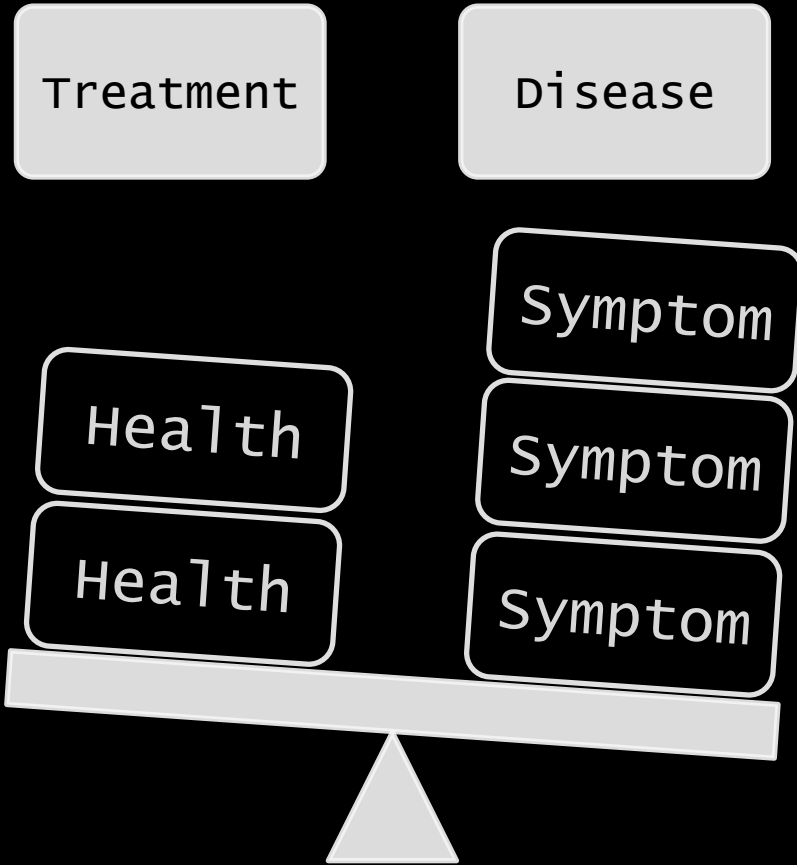
Integrate
into the
Human
body

Hope No
One Dies

Human Augmentation

The problem.

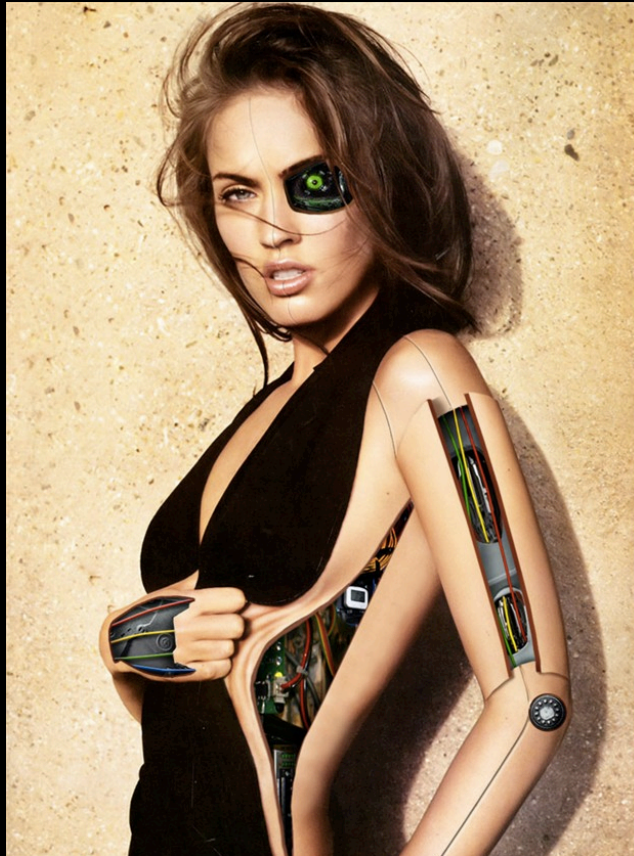




Traditional Medical Paradigm

Treat disease to replace loss of function, and/or alleviate suffering.





The Enhancement Paradigm

Use medical technology to improve
the human condition



Definitions

- Enhancement
- Augmentation
- Cyborg
- Transhumanism



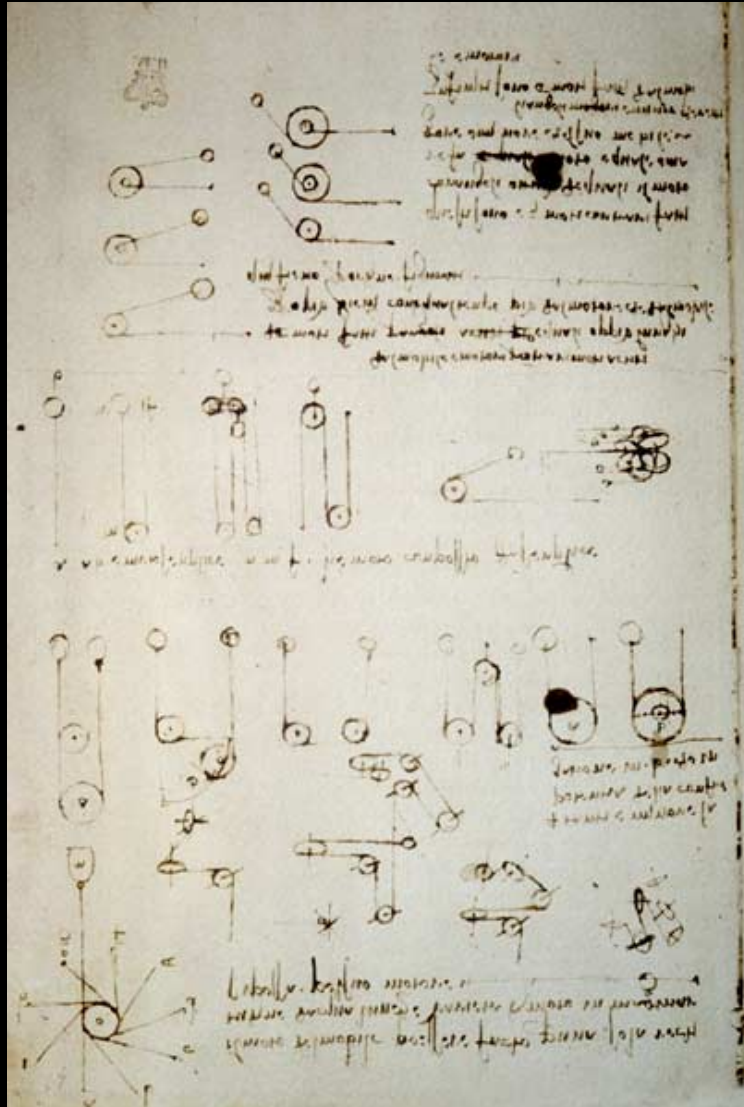


History

The first cyborg circa 75 million BC



History



Real History

- 1500s Basic prosthetics
- 1924 EEG
- 1927 First therapeutic use of amphetamine
- 1940 first hip implant surgery
- 1952 Cage-ball artificial heart valve.
- 1958 first implantable cardiac pacemaker
- 1976 First neural implants
- 1982 Artificial heart
- 1984 Cochlear implant FDA approval
- 1990s Microprocessor controlled robotic knee
- 1990 first gene therapy SCID
- 1991 first synthetic 3D nano structure
- 1994 L ventricular assist device.
- 1997 first neural implants to treat disease
- 1999 First DNA nano machine
- 2004 total artificial heart FDA approved
- 2006 DNA Vaccine success
- 2007 – 2010 Gene therapy success
- 2008 Bladerunner of South Africa restricted from Olympics
- 2008 neural control by human brain.



why Augment?





Step 1

Pick your mod





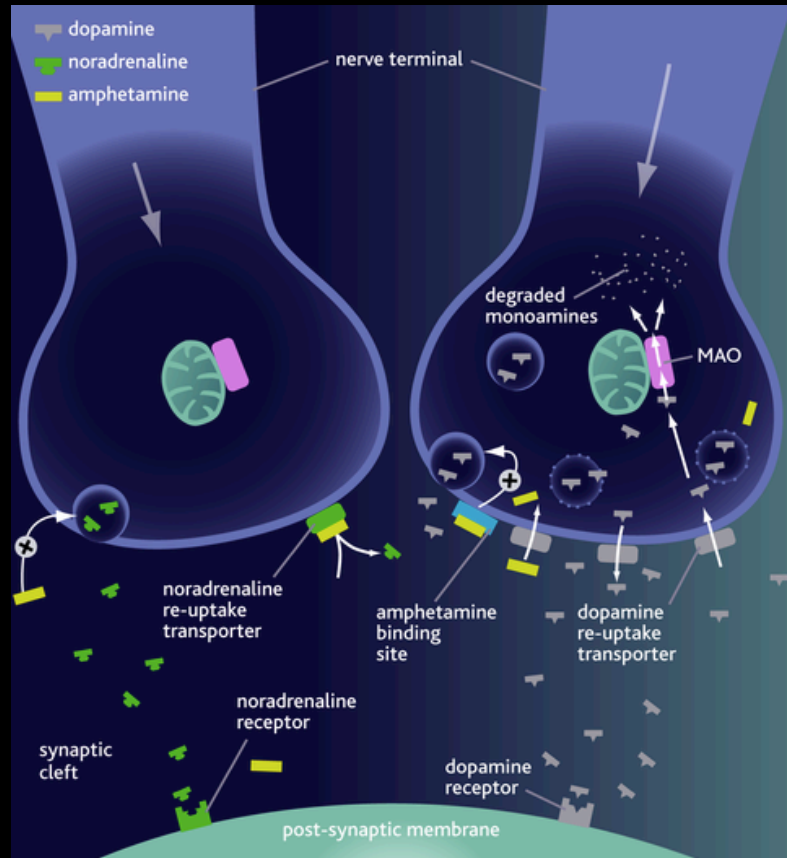
Mechanical/Biomechanical





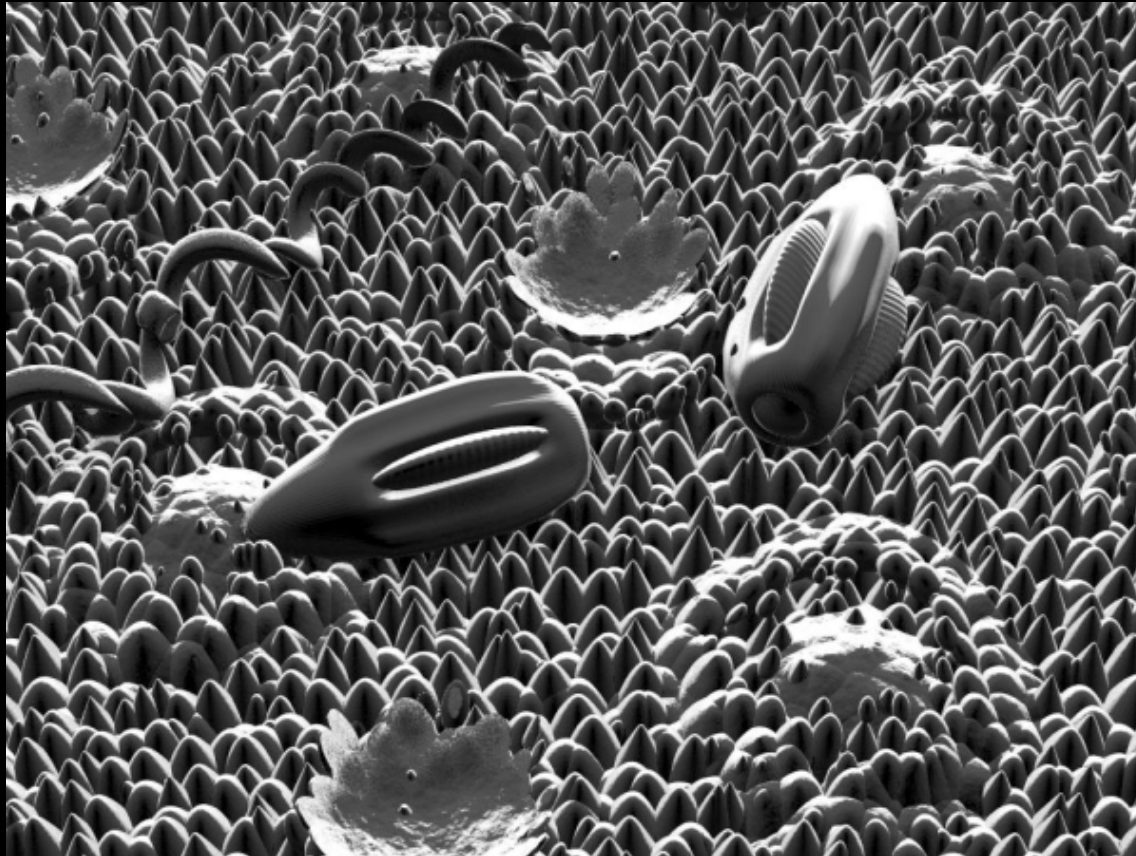
Chemical





Synaptic Transmission





Nanobots



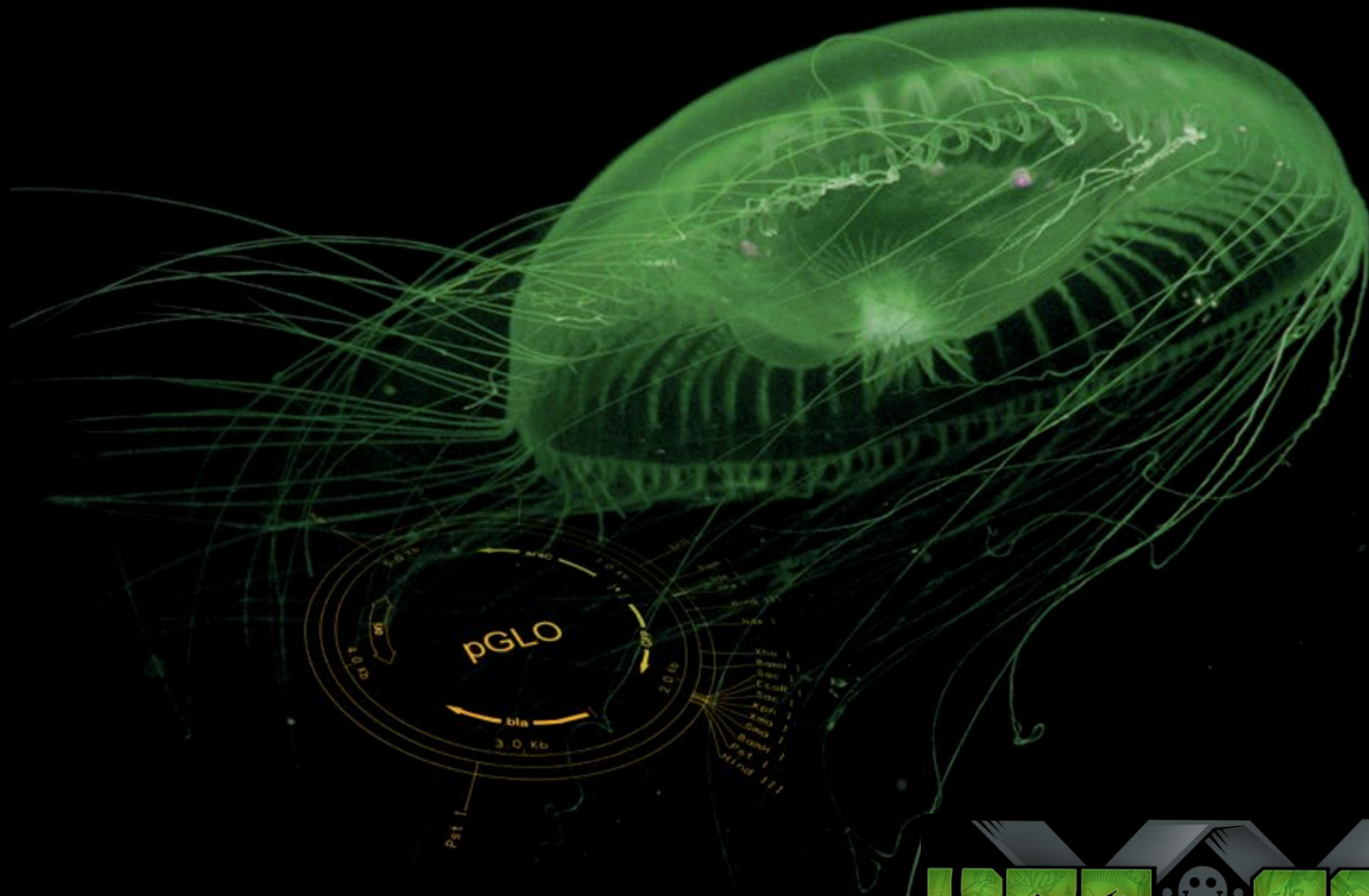


Genetics

Rewrite your source code

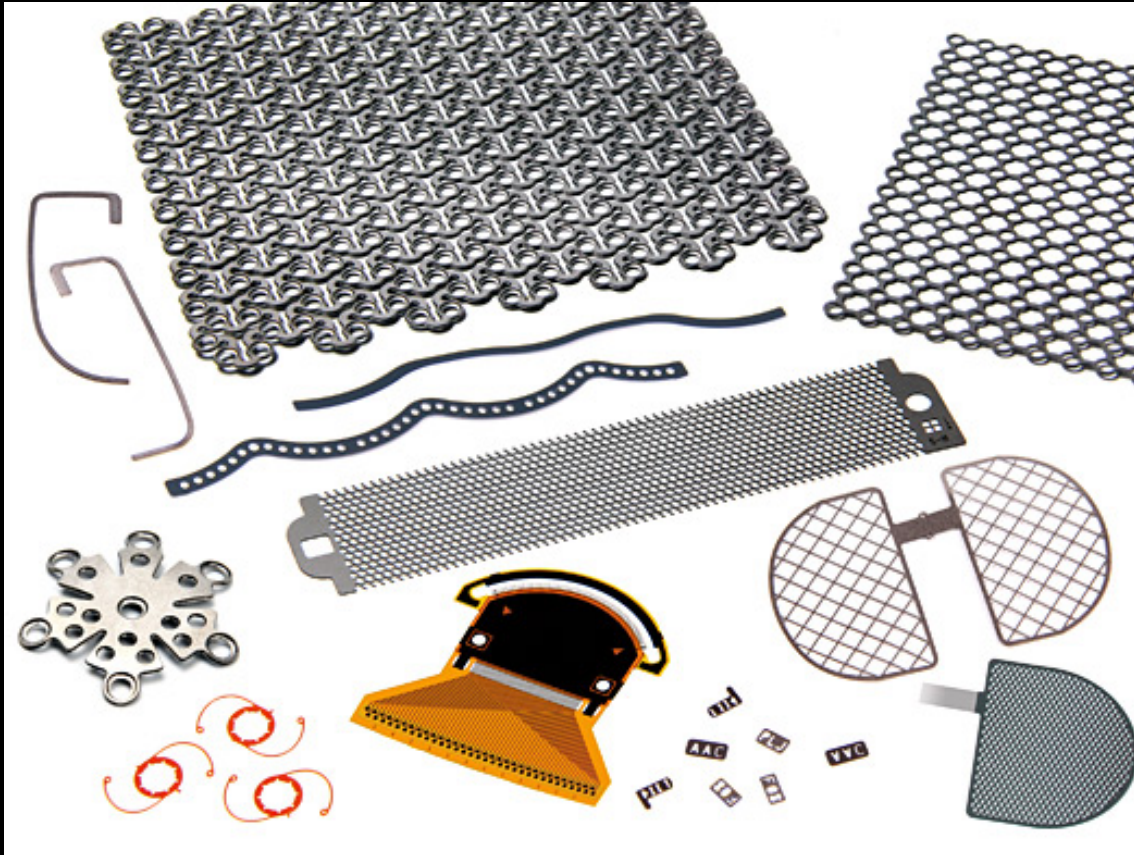


Trials



Mistakes





Step 2

Pick your materials



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what we use now.

Pick your materials



Materials

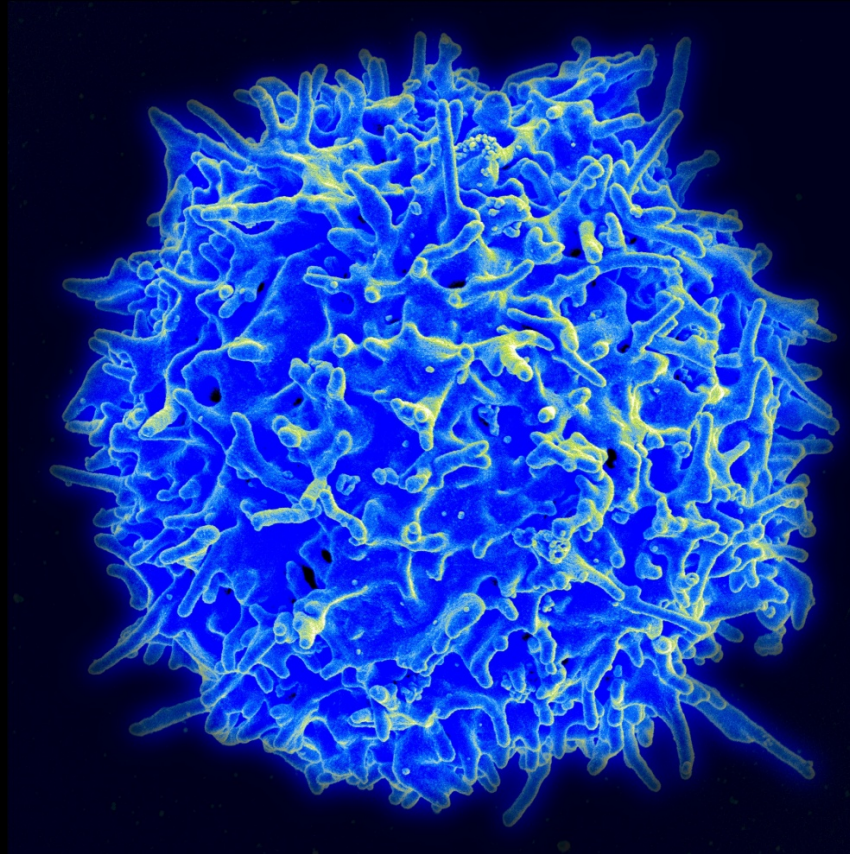
Metals

- Chromium
- Nickel
- Molybdenum
- Titanium
- Magnesium alloys
- Iron
- Cobalt

Polymers

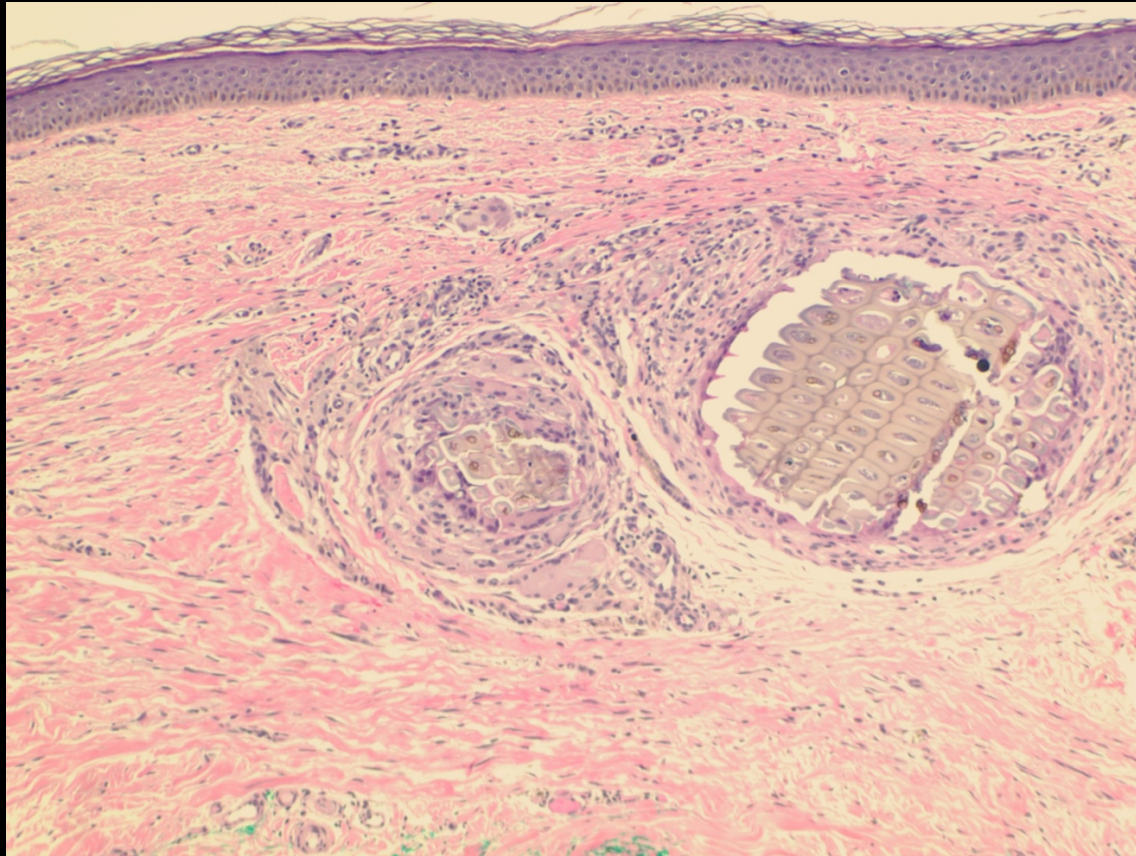
- Polyethylene
- Trimethylene carbonate
- Polyglycolic acid
- Spider silk
- Polyetheretherketone
- Polysulfone





why we use it.





Foreign Body Reaction





Pop Quiz





“My family and I are deeply sorry for all that vice president Cheney has had to go through this past week. We send our love and respect to them as they deal with situations that are much more serious than what we’ve had this week.”





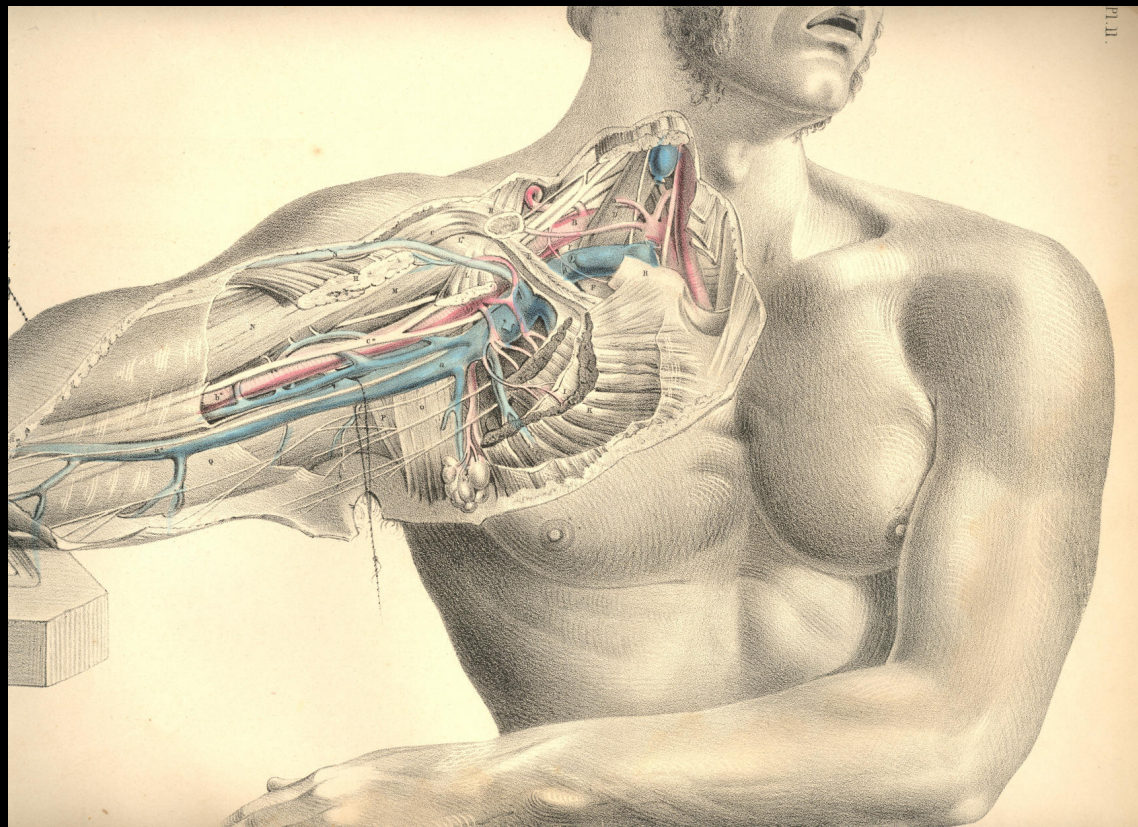
Step 3
Pick your site



Step 3: Pick Your Site

- Match function of mod with location.
- Ease of upgrade?
- Careful not to disrupt normal function of native tissue.



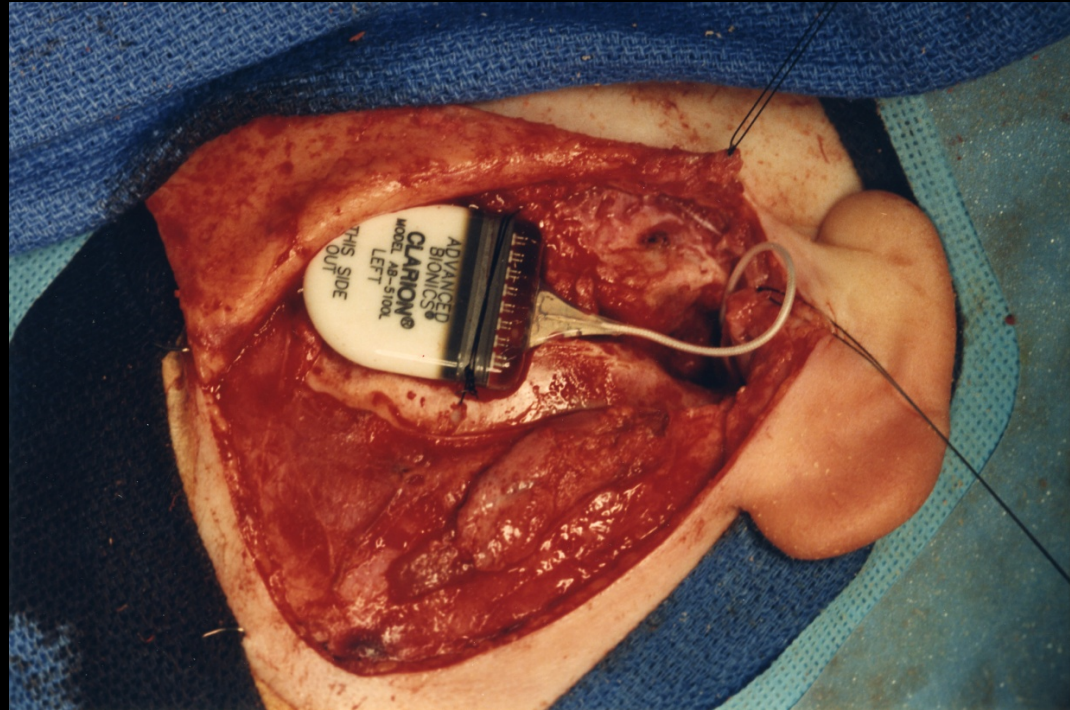


Brachial Plexus



Possible Sites

- Head:
 - Brain parenchyma
 - Ventricles
 - Middle ear
- Body cavities:
 - Thoracic
 - Abdominal
- Subdermal





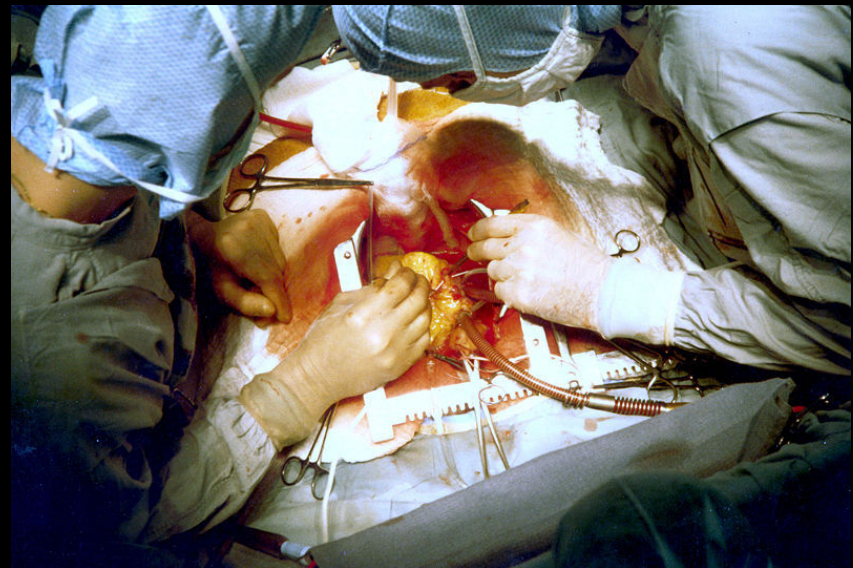
Step 4

Implant your mod.



Step 4: Implant Your Mod.

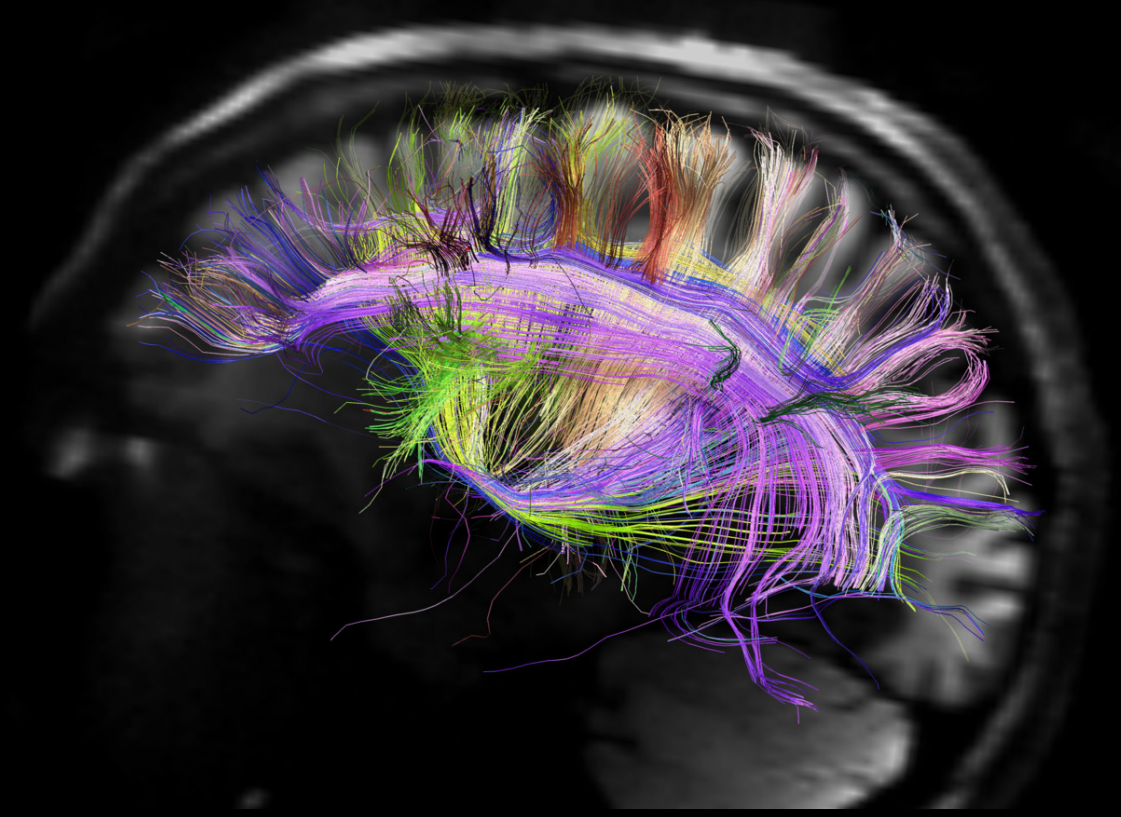
- Expertise needed.
- No back alley jobs.
- Multiple risks.





Infection

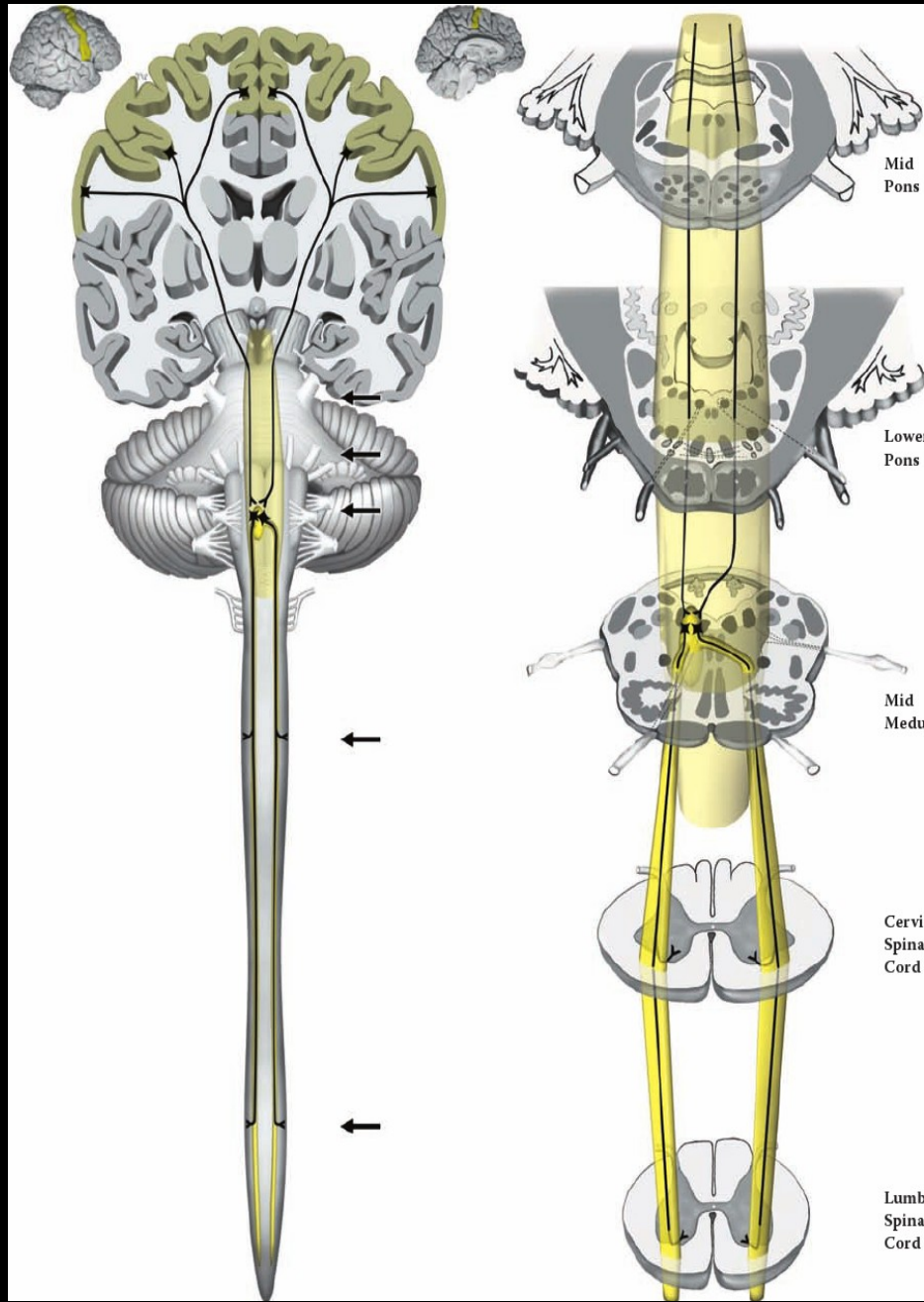




Step 5

Connect your mod







Decode the signal





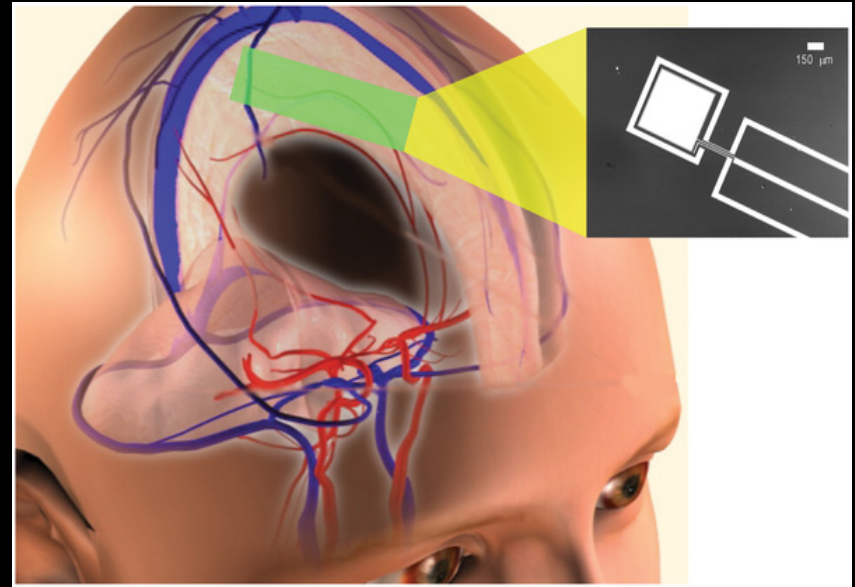
Step 6

Power your mod



Step 6: Power Your Mod.

- Implantable batteries
 - Heat?
 - Toxic materials?
 - Size?
 - Capacity?
- Fuel cells
 - Fuel?
 - Capacity?





Step 7

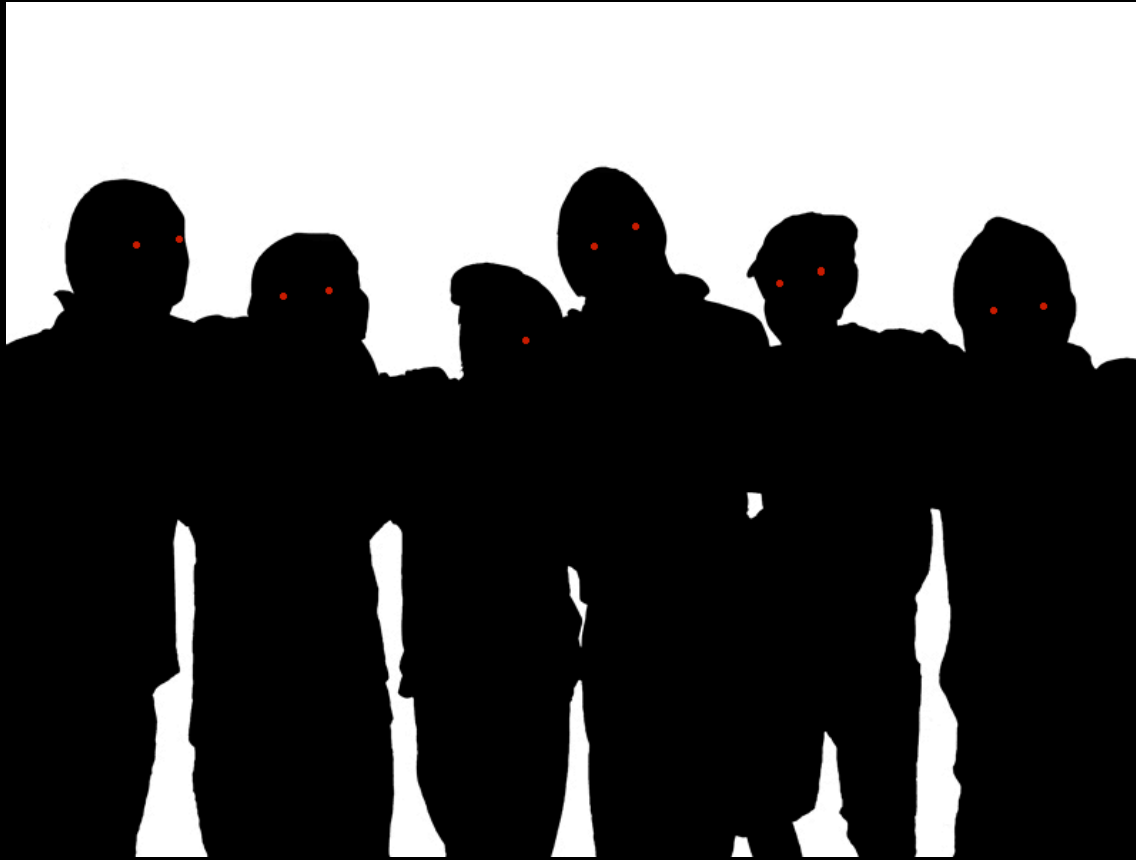
Save Your Pennies



Typical Cost

- Cardiac pacemaker – \$22,734 USD
- Hip replacement – \$22,527 (per hip)
- Leg prosthesis – \$35,789 (per leg)
- Cochlear implant – \$39,547 (Per ear)

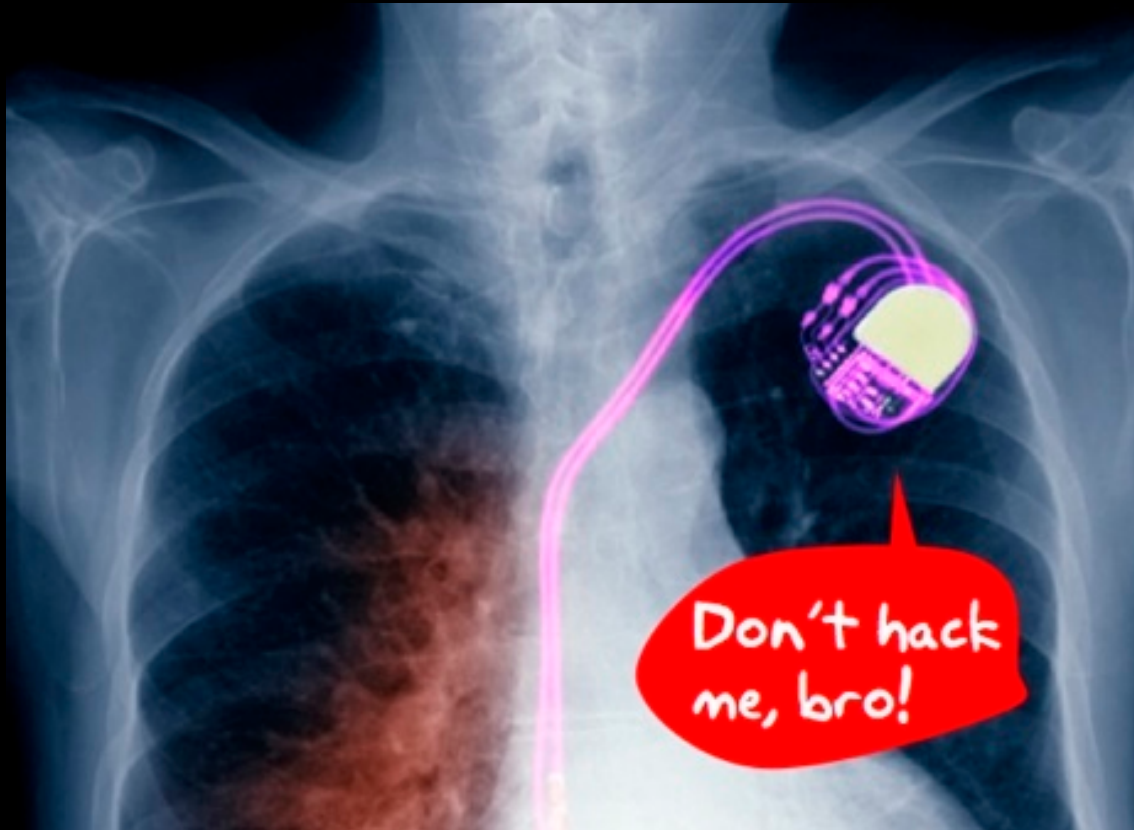




Step 8

Support Your Local Augmented.





Step 9

Cyborg: Secure Thyself.

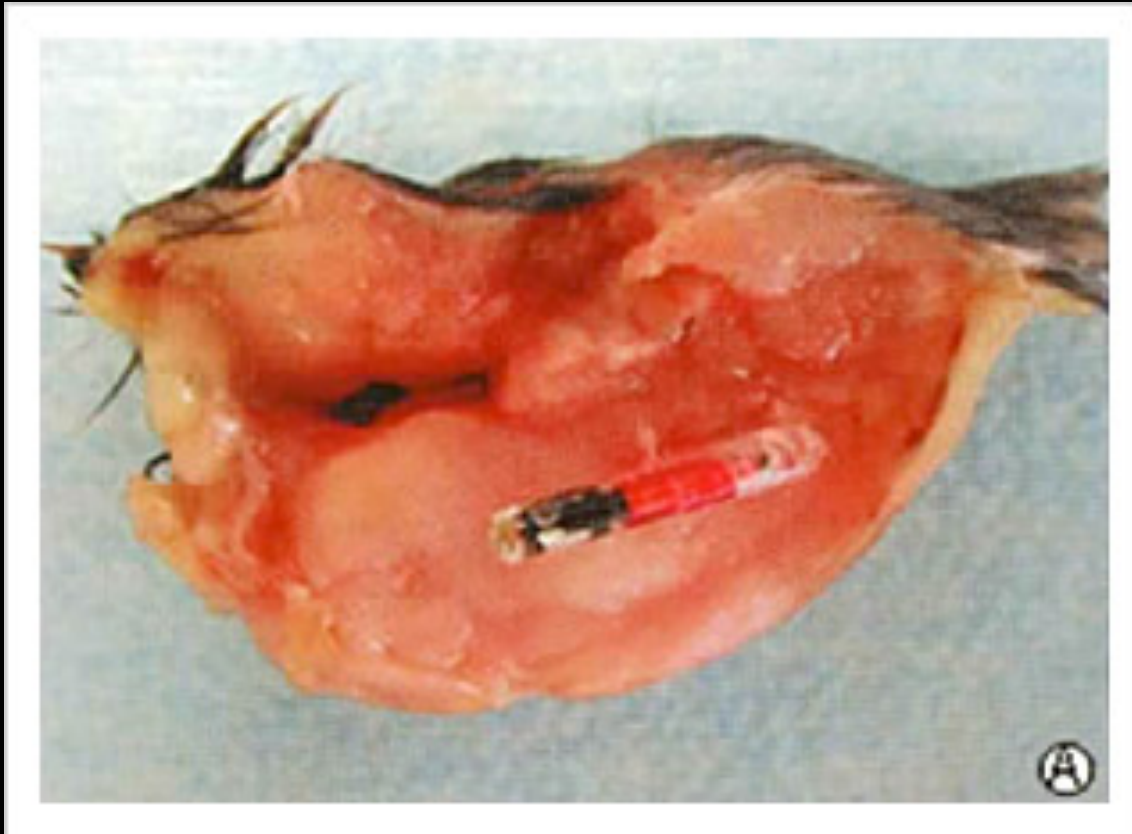




Step 10

Prepare for unforeseen Consequences.





Step 10

Prepare for unforeseen Consequences.





Q&A

