



# ***Electroceuticals and Electrodiagnostics***

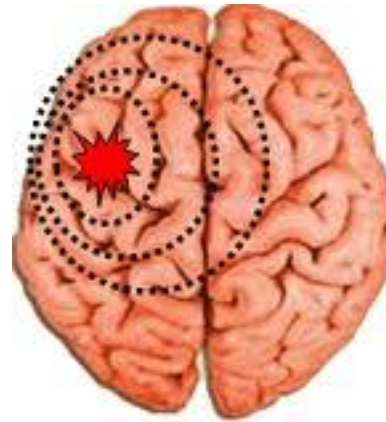
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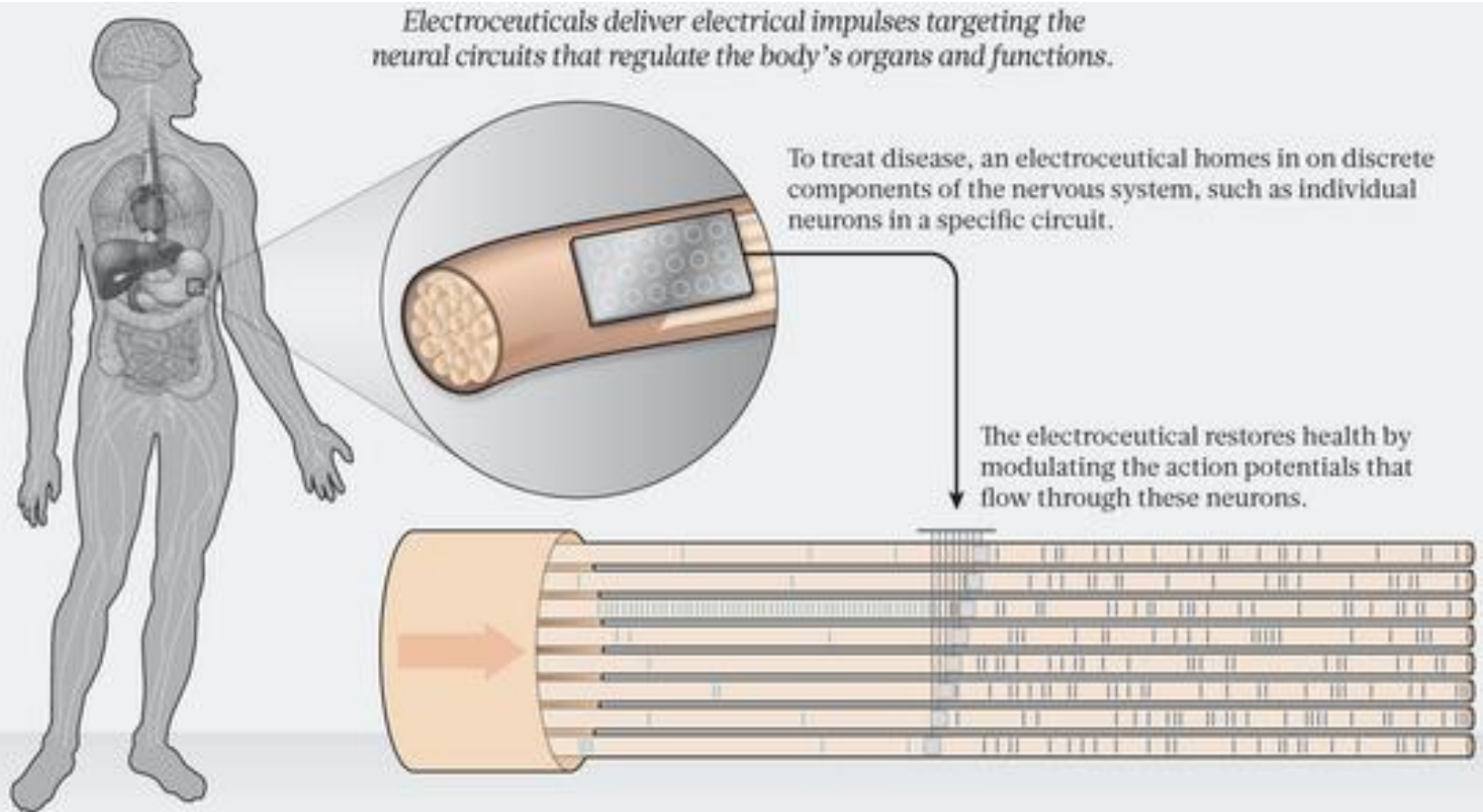


# *The healthcare need*

- Increasing prevalence of chronic diseases
- Poor compliance with oral medications
- Side effects with polypharmacy
- Lack of efficacy of current drugs
- Correct treatment is predicated on correct diagnosis



# Electroceuticals (bioelectronic medicine)



# *Advantages and challenges*

- Relatively cheap to develop
- Controllability
- Fewer side effects
- Guaranteed compliance
- Tuneable to an individual patient
- Animal models
- Surgical implantation
- Neural interface
- Decoding neural signals
- Power and data transfer
- Longevity of devices
- Safety aspects



# Neuroprosthetics @ Newcastle

Epilepsy brain prosthesis

Visual prosthesis

Spinal cord injury

Hand/Leg bionics

Electrodiagnostics

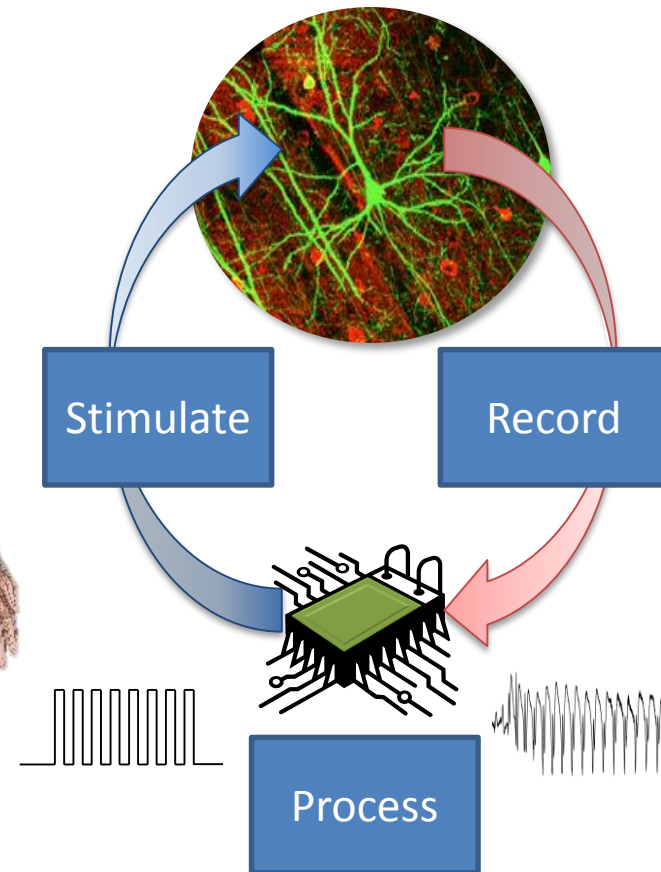
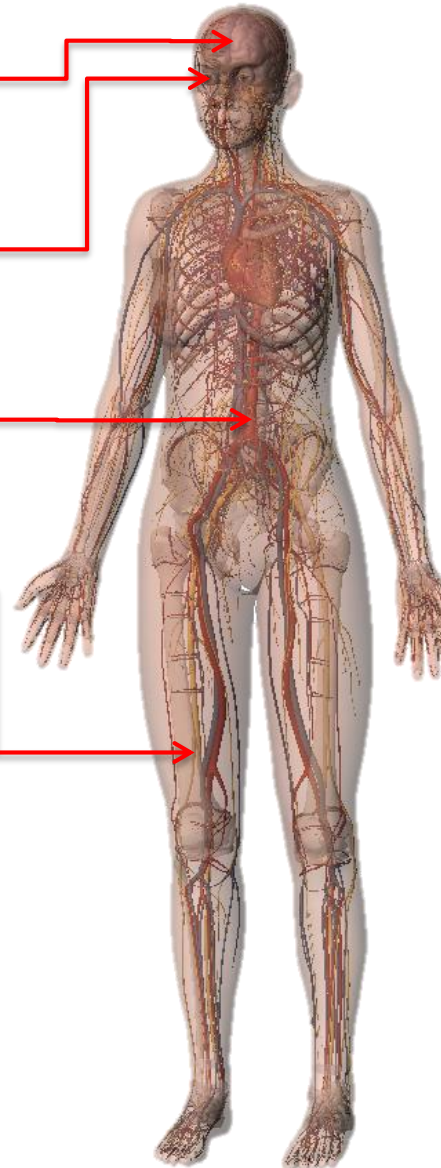
Multi-EMG recording

<http://www.cando.ac.uk>

<http://www.optoneuro.eu>



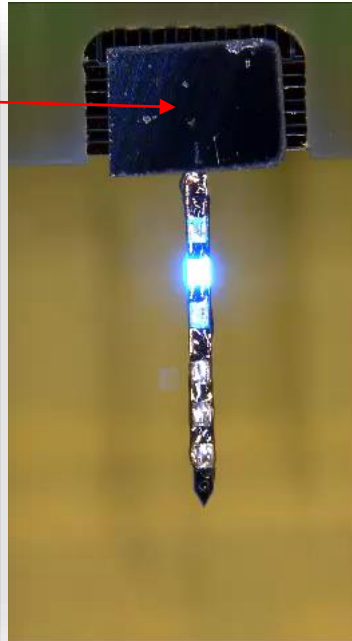
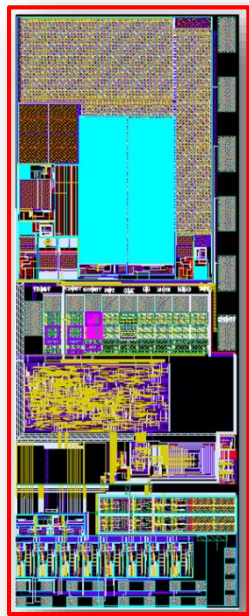
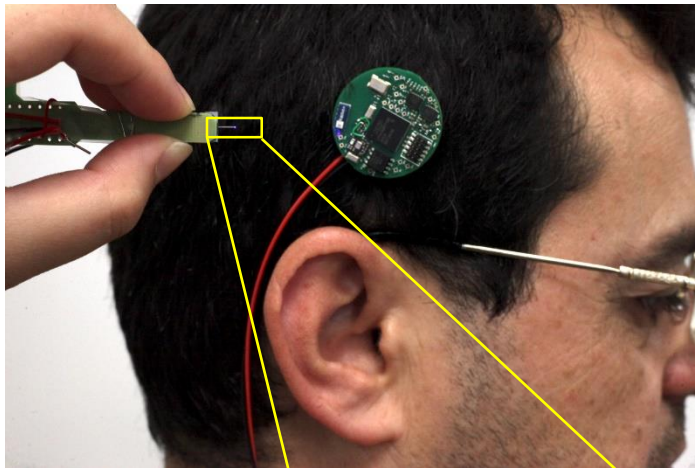
**wellcome**trust



Closed loop neural interfaces!!

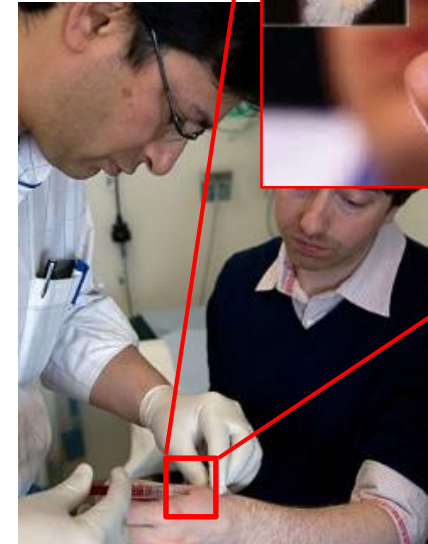
# Injectable electronic systems

## Surgical neuroprosthetics



CANDO & Visual prosthesis

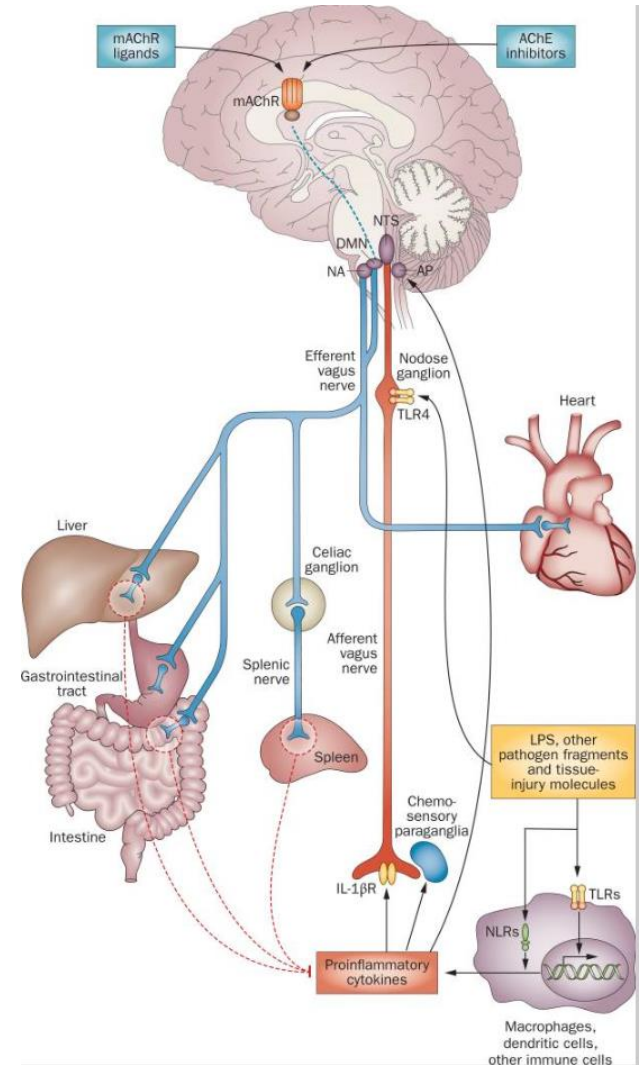
## Injectable bioelectronics



2.1 mm

2.1 mm

11.5 mm



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