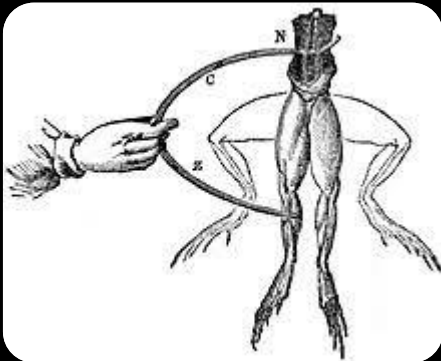


The History of Brain Machine Implants

Key moments of history in the development of brain machine implants.

1780 – Luigi Galvani discovers that the muscles of dead frogs can be stimulated using an electrical spark.



1874 – Roberts Bartholow experiments with electrical stimulation on the brain of a woman with a hole in her head.

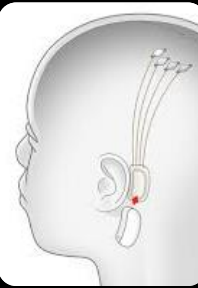
1870 – Edward Hitzig and Gustav Fritsch cause muscle movements through the electrical stimulation of specific parts of a dog's brain

1952 – Jose Delgado demonstrates the ability to control behaviour using implanted electrodes, by stopping a charging bull.



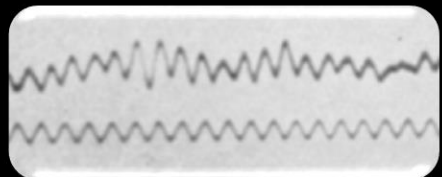
1996 – Neurotrophic Electrodes are implanted in a paralysed man enabling him to control a computer cursor.

2005 – a man with tetraplegia is able to control a robot arm due to a brain computer interface created as part of the BrainGate project.



2016 – Elon Musk launches Neuralink to develop ultra high bandwidth brain machine interfaces.

1924 – Hanns Berger uses an EEG to record electrical activity from a human brain for the first time.



1969 – The first cochlear implant is implanted restoring a sense of sound and demonstrating the possibilities of neural implants.

1997 – Deep Brain Stimulation is approved in the USA as a treatment for Parkinson's disease.

2018 – three people with paraplegia are able to walk due to wireless spinal implants.

2012 – BrainGate allows a woman to drink from a bottle by controlling a robotic arm with her thoughts.

Project Credits

This timeline supports the *Illuminating the Self* public engagement project exploring the CANDO research project. In particular the development of the film *Deep Mind* by Operating Theatre.

The development of *Deep Mind* was funded by Wellcome and the Catherine Cookson Foundation. It was supported by Newcastle University.

For further information visit www.cando.ac.uk/illuminatingtheself

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- A bull charges towards Jose Manuel Rodriguez Delgado. Image: Delgado
- Neuralink demonstration. Image: Neuralink

