



# Ionic Neuromodulation For Epilepsy Treatment

## Fact Sheet

### Project Information

#### IN-FET

Grant agreement ID: 862882



#### DOI

[10.3030/862882](https://doi.org/10.3030/862882)

Project closed

#### EC signature date

24 September 2019

#### Start date

1 January 2020

#### End date

31 March 2024

#### Funded under

EXCELLENT SCIENCE - Future and Emerging Technologies (FET)

#### Total cost

€ 3 369 758,75

#### EU contribution

€ 3 369 758,75

#### Coordinated by

SCUOLA INTERNAZIONALE  
SUPERIORE DI STUDI AVANZATI  
DI TRIESTE



Italy

## Project description

### Revolutionary approach to treat drug-resistant epilepsy

Around 30 % of patients with epilepsy have a drug-resistant form of the disease. In this condition, even two anti-epileptic drugs are unable to achieve freedom from seizure when prescribed as mono-therapies or in combination. Currently, there is no approach that has produced meaningful improvement in such patients. This EU-funded consortium is developing a totally new approach to manipulate neuronal cell excitability – applying neuronal firing by direct ionic actuation at the microscopic scale and monitoring cell responses by nanoscale transistors. This multidisciplinary consortium aims to establish proof-of-principle for breakthrough neuromodulation

technology by enabling future brain implants for epilepsy treatment through in vitro testing of special polymers and ultra-sensitive ion sensor arrays.

## Fields of science

[medical and health sciences](#) > [basic medicine](#) > [neurology](#) > **[epilepsy](#)**

[natural sciences](#) > [chemical sciences](#) > **[electrochemistry](#)**

[natural sciences](#) > [chemical sciences](#) > [inorganic chemistry](#) > **[alkali metals](#)**

[natural sciences](#) > [chemical sciences](#) > [inorganic chemistry](#) > **[alkaline earth metals](#)**

[natural sciences](#) > [biological sciences](#) > **[biophysics](#)**

## Keywords

[neurotechnologies](#)

[iontronics](#)

[neuromodulation](#)

[nanotechnology](#)

[epilepsy](#)

[micro-fabrication](#)

## Programme(s)

[H2020-EU.1.2. - EXCELLENT SCIENCE - Future and Emerging Technologies \(FET\)](#)

MAIN PROGRAMME

[H2020-EU.1.2.1. - FET Open](#)

## Topic(s)

[FETOPEN-01-2018-2019-2020 - FET-Open Challenging Current Thinking](#)

## Call for proposal

**[H2020-FETOPEN-2018-2020](#)**

[See other projects for this call](#)

## Sub call

H2020-FETOPEN-2018-2019-2020-01

# Funding Scheme

[RIA - Research and Innovation action](#)

## Coordinator



### SCUOLA INTERNAZIONALE SUPERIORE DI STUDI AVANZATI DI TRIESTE

Net EU contribution

**€ 847 812,49**

Total cost

**€ 847 812,49**

Address

**VIA BONOMEA 265**

**34136 Trieste**



Region

**Nord-Est > Friuli-Venezia Giulia > Trieste**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#) [Website](#)

[Participation in EU R&I programmes](#)

[HORIZON collaboration network](#)

## Participants (8)

---



*UNIVERSITE DE GENEVE*



Net EU contribution

**€ 276 160,13**

Address

**RUE DU GENERAL DUFOUR 24**

**1211 Geneve**

Region

**Schweiz/Suisse/Svizzera > Région lémanique > Genève**

Activity type

## Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 276 160,13



### IBM RESEARCH GMBH

 Switzerland

Net EU contribution

€ 880 562,50

Address

**SAEUMERSTRASSE 4**  
**8803 Rueschlikon** 

Region

**Schweiz/Suisse/Svizzera > Zürich > Zürich**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 880 562,50



### THE UNIVERSITY OF SHEFFIELD

 United Kingdom

Net EU contribution

€ 569 238,75

Address

**FIRTH COURT WESTERN BANK**  
**S10 2TN Sheffield** 

Region

**Yorkshire and the Humber > South Yorkshire > Sheffield**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 569 238,75**



## **CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LA NANOELETTRONICA**

 Italy

Net EU contribution

**€ 1,00**

Address

**VIA TOFFANO 2**

**40125 Bologna** 

Region

**Nord-Est > Emilia-Romagna > Bologna**

Activity type

**Research Organisations**

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 430 000,00**

 **THIRD-PARTY** 

## **UNIVERSITA DEGLI STUDI DI UDINE**

 Italy

Net EU contribution

**€ 215 000,00**

Address

VIA PALLADIO 8  
33100 Udine 

Region

**Nord-Est > Friuli-Venezia Giulia > Udine**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 215 000,00**

---

 **THIRD-PARTY** 

**UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA**

 Italy

Net EU contribution

**€ 214 999,00**

Address

VIA UNIVERSITA 4  
41121 Modena 

Region

**Nord-Est > Emilia-Romagna > Modena**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 214 999,00**



**MULTI CHANNEL SYSTEMS MCS GMBH**

 Germany

Net EU contribution

€ 143 855,00

Address

**ASPENHAUSTRASSE 21**  
**72770 Reutlingen** 

Region

**Baden-Württemberg > Tübingen > Reutlingen**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 143 855,00



**UNIVERSITEIT MAASTRICHT**

 Netherlands

Net EU contribution

€ 222 129,88

Address

**MINDERBROEDERSBERG 4**  
**6200 MD Maastricht** 

Region

**Zuid-Nederland > Limburg (NL) > Zuid-Limburg**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 222 129,88

**Last update: 2 April 2024**

**Permalink:** <https://cordis.europa.eu/project/id/862882>

European Union, 2024

