Caritas MALTA

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Caritas Malta Epilepsy Association

L-Universita' ta' Malta

Tghix bl-epilessija
- Living with Epilepsy

2016 National Epilepsy Conference

Epilepsy Research in Malta

PRIFYSGOL CAERDYDD
CARDIFF UNIVERSITY

Giuseppe Di Giovanni, PhD
Full Professor of Human Physiology

Department of Physiology & Biochemistry, Faculty of Medicine and Surgery, University of Malta
School of Biosciences, Cardiff University, UK

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Article abstract

Nature Medicine **15**, 1392 - 1398 (2009)
Published online: 22 November 2009 | doi:10.1038/nm.2058

Enhanced tonic $GABA_A$ inhibition in typical absence epilepsy

David W Cope[1], Giuseppe Di Giovanni[1,2], Sarah J Fyson[1], Gergely Orbán[1,2], Adam C Errington[1], Magor L Lőrincz[1], Timothy M Gould[1], David A Carter[1] & Vincenzo Crunelli[1]

The cellular mechanisms underlying typical absence seizures, which characterize various idiopathic generalized epilepsies, are not fully understood, but impaired γ-aminobutyric acid (GABA)-ergic inhibition remains an attractive hypothesis. In contrast, we show here that extrasynaptic $GABA_A$ receptor–dependent 'tonic' inhibition is increased in thalamocortical neurons from diverse genetic and pharmacological models of absence seizures. Increased tonic inhibition is due to compromised GABA uptake by the GABA transporter GAT-1 in the genetic models tested, and GAT-1 is crucial in governing seizure genesis. Extrasynaptic $GABA_A$ receptors are a requirement for seizures in two of the best characterized models of absence epilepsy, and the selective activation of thalamic extrasynaptic $GABA_A$ receptors is sufficient to elicit both electrographic and behavioral correlates of seizures in normal rats. These results identify an apparently common cellular pathology in typical absence seizures that may have epileptogenic importance and highlight potential therapeutic targets for the treatment of absence epilepsy.

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Researchers - Professors Vincenzo Crunelli And Giuseppe Di Giovanni

A New Approach To The Treatment Of Absence Seizures

Professors Vincenzo Crunelli and Giuseppe Di Giovanni at Cardiff University are exploring the role of the thalamus (a structure located in the centre of the brain) in absence seizures. The thalamus, which relays nerve signals to and from the cortex (the folded surface of the brain) and also helps to regulate sleep, consciousness and alertness, is thought to be important in the generation of absence seizures.

Absence seizures are generalised seizures that are characterised by a sudden interruption of activity, transient loss of consciousness and a blank stare. They are a feature of many idiopathic generalised epilepsies, yet their underlying mechanisms are not fully understood and anti-epileptic drug treatment is only effective in 50-80% of people affected. This research could potentially lead to the development of more effective anti-absence drugs in the future.

Read more about this research into a new approach to the treatment of absence seizures here.

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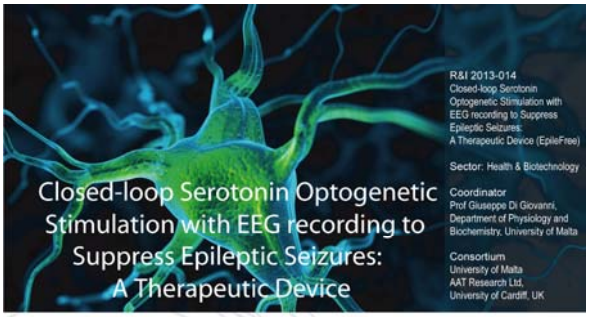


EpileFree MCST R&I 2013

The EpileFree Project is a collaboration between the University of Malta, AAT Research Ltd, and the University of Cardiff, and is aimed at suppressing epileptic seizures via a newly designed therapeutic device. The device is based on optogenetic treatment, a combination of optics and genetics for real-time control and monitoring of the activities of individual neurons in living tissue.

In 2010, a number of academic research journals saw optogenetics as one of the breakthroughs of the decade. Optogenetic stimulation will be used to affect the serotonin neurotransmitter pathways, permitting greater control over the activity of specific circuits in the dorsal raphe nucleus of the brain during epileptic seizures. The device will therefore be able to detect and halt seizures prior to their occurrence and, in so doing, overcome current limitations in current epilepsy treatment.

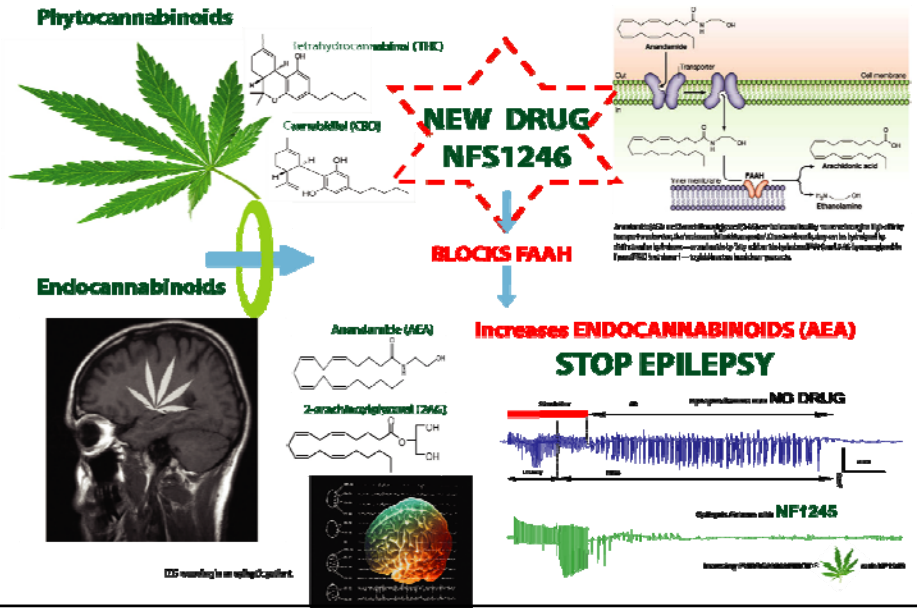
This three-year EpileFree Project, funded by the Malta Council for Science and Technology (MCST) through the National Research and Innovation (R&I) Programme, brings together industry and academia with the aim of looking into a potential new treatment for absence seizures. This project will further the researchers' understanding of the pathophysiology of epilepsy with the goal of developing and commercialising a device to stop epilepsy.

The Malta Council for Science & Technology

Xjenza

mcst.gov.mt

Medical Marijuana for Epilepsy?



Malta Neuroscience Network
October 2015

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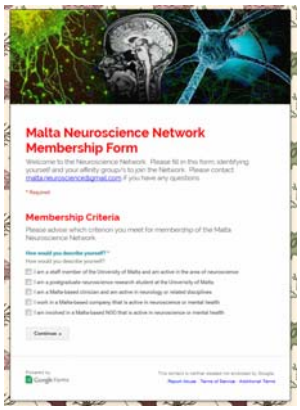


The President's Foundation for the Wellbeing of Society

Malta Neuroscience Network

NarrativeStructures

You are cordially invited to attend a talk by:

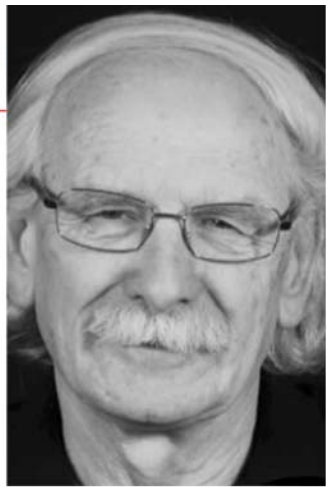
Professor Giacomo Rizzolatti

World leading neuroscientist, Professor Emeritus in physiology at the University of Parma, the director of the "Social and Motor Cognition" centre at the Italian Institute of Technology, and discoverer of "mirror neurons" on

"Mental wellbeing: Understanding others"

Friday 4th December, 2015, at 19:00hrs, at The Palace, Valletta.

- R.S.V.P.: information@narrativestructures.com
- Admission is free and the talk will be followed by refreshments.
- Spaces are limited. Please register to reserve a seat.
- For more information on the work of the Malta Neuroscience Network please email Professor Giuseppe Di Giovanni: giuseppe.digiovanni@um.edu.mt



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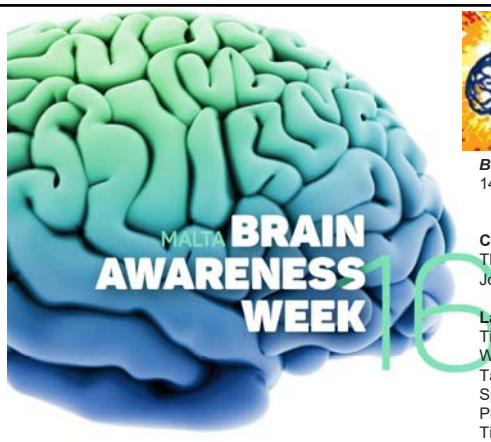

A global campaign to increase public awareness of the progress and benefits of brain research

MALTA NEUROSCIENCE NETWORK

DATES 14-20 March

Further details will be available soon

Brain Awareness Week - Program
14th – 19th March 2016

Monday 14th

CINEXJENZA
The Diving Bell and the Butterfly Dr Owen Falzon and Dr Josanne Aquilina

Tuesday 15th

Lab visits at University of Malta
Time: 10:00 -13:00
Wednesday 16th
Talk:
Speaker: **Prof Crunelli**
Place: Italian Culture Institute
Time: 19:30

Thursday 17th

Lab visits at University of Malta
Time: 10:00 -13:00
Talk:
Speaker: **Prof Rizzolatti**
Place: South Auditorium, Mater Dei Hospital
Time: 17:30

Friday 18th

Open lecture on the Brain (Christian Zammit) venue TBC

Saturday 19th

MEET THE RESEARCHERS Party at the Old University, Valletta

THE UNIVERSITY OF MALTA
RESEARCH, INNOVATION & DEVELOPMENT TRUST

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All proceeds will go towards research in brain disorders at the University of Malta.

RESEARCH IN EPILEPSY AND DEPRESSION

MALTA'S SCIENCE AND ARTS FESTIVAL

Science in the City on the 30 September **2016**

BRAIN THEME

SAVE THE DATE!!

6th Conference of the Mediterranean Neuroscience Society (MNS)

Valletta, June 2017