

Stroke is the third leading cause of death and a major cause of long-term disability in the Western world. Thrombosis or embolism in cerebral arteries determines tissue anoxaemia with depletion of tissue energy supplies and subsequent activation of neurotoxic and neuroinflammatory reactions, which culminate in severe damage to brain tissue. In experimental models of transient brain ischemia, it has been shown that the central region of the injured tissue (core) is mainly characterised by a necrotic type of cell death, whereas in the surrounding tissue (penumbra) cell death mainly occurs via apoptosis. Interestingly, despite the reduced blood flow, the penumbra still displays residual energetic metabolism, thus representing the area more likely to be recovered by pharmacological interventions.

Current therapeutic approaches (antiplatelet and antithrombotic drug), aimed at preserving or restoring cerebral blood flow rather than preventing the actual mechanisms associated with neuronal cell death, only partially ameliorate the clinical outcome of stroke patient, suggesting that more effective therapies are required.

Inflammation is an attractive target for stroke treatment. In this context, current research in neuroprotection involves the study of matrix metalloproteinases, lipid-activated receptors such as nuclear and cannabinoid receptors, and the innate immunity, among others. Another important target in stroke is neuro-repair, aimed to alleviate neurological damage induced by ischemic injury. On the other hand, stroke research guidelines are now focused towards the study of the neurovascular unit in the search for acute stroke therapies. Interestingly, retinal damage shares some of the pathophysiological features of stroke, such as the involvement of excitotoxicity.

These and other subjects are the main topics to be discussed at the 1<sup>st</sup> Workshop on Neurovascular Research, in the frame of the 2<sup>nd</sup> Meeting between the Università della Calabria (Italy) and the Unit of Neurovascular Research, Department of Pharmacology, School of Medicine, Complutense University of Madrid (Spain), funded by the Integrated Actions Programme of the Ministerio De Ciencia e Innovación and the Ministero Dell'istruzione, Dell'università e della Ricerca, of the Spanish and Italian Governments, respectively.

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**UNIVERSIDAD COMPLUTENSE  
FACULTAD DE MEDICINA  
DEPARTAMENTO DE  
FARMACOLOGÍA**

## **1<sup>st</sup> WORKSHOP ON NEUROVASCULAR RESEARCH**

**Under the auspices of  
INTEGRATED ACTIONS  
MINISTERIO DE CIENCIA E INNOVACIÓN, SPAIN  
MINISTERO DELL'ISTRUZIONE,  
DELL'UNIVERSITÀ E DELLA RICERCA, ITALY**



**Departamento de Farmacología  
Facultad de Medicina (Pabellón 3, 1<sup>a</sup> planta)  
Universidad Complutense de Madrid**

**5<sup>th</sup> June, 2009  
Madrid, Spain**

Friday 5<sup>th</sup> June

9.15 Presentation

9.30-10.00 **Plenary lecture**

Giacinto Bagetta & Maria Tiziana Corasaniti (Italy)

**In search of novel neurotherapeutics: is there a place for phytotherapy research**

**Inflammation in brain ischemia.**

Chairpersons R. Nisticò and D. Fernández-López

10.00-10.20 Diana Amantea (Italy)

**Fast activation of matrix metalloproteinases by transient middle cerebral artery occlusion is implicated in the enhancement IL-1beta in the brain of rat**

10.20-10.40 María A. Moro (Spain)

**Role of nuclear receptors PPAR $\gamma$  and LXR in cerebral ischemia**

10.40-11.00 Iván Ballesteros (Spain)

**Resolution of inflammation: implication of PPAR $\gamma$  nuclear receptor activation in alternative activation of immune cells.**

11.00-11.30 **Coffee Break**

**New targets for neuro-repair**

Chairperson J. Pradillo and Diana Amantea

11.30-11.50 Robert G. Nisticò (Italy)

**Synaptic plasticity in brain function and dysfunction**

11.50-12.10 David Fernández-López (Spain)

**Neuroprotection and neurorepair mediated by the activation of the endocannabinoid system after newborn rat brain hypoxia-ischemia**

12.10-12.30 Juan G. Zarruk (Colombia)

**Implication of the cannabinoid type-2 receptor on the modulation of neuroinflammation after focal brain ischemia**

**Glutamate and brain/retinal ischemic injury**

Chairperson R. Russo and M. Sobrado

12:30-12:50 Luigi A. Morrone (Italy)

**Neurochemical evidence to implicate elevated glutamate levels in retinal ischemia/reperfusion**

12:50-13:10 Rossella Russo (Italy)

**Ischemic retinal damage: molecular determinants for retinal ganglion cell death and survival**

13:10-13:30 Olivia Hurtado (Spain)

**Glutamate transporters and brain ischemia**

13:30-13:50 Ana Ramírez (Spain)

**Chronic retinal ischemia induced by high-cholesterol diet**

14.00-15.00 **Lunch**

**New targets in stroke: Innate immunity and the neurovascular unit**

Chairperson L. Morrone and Olivia Hurtado

15:30-15:50 Ignacio Lizasoain (Spain)

**Emerging stroke models**

15:50-16:10 Jesús M. Pradillo (Madrid)

**Role of TLR4 in brain ischemia and in ischemic preconditioning**

16:10-16:30 Isaac García-Yébenes and Victor G. Romera (Spain)

**Hemorrhagic transformation: Setting-up an experimental model**

16:30-16:50 Mónica Sobrado (Spain)

**Upregulation of RCAN in focal cerebral ischemia**

17.00-17.30 **General Discussion**

**Sponsors**

MINISTERIO DE CIENCIA E INNOVACIÓN, Spain  
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E DELLA RICERCA, Italia

**Scientific Information**

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**Meeting Venue**

Departamento de Farmacología, Aula 2, 2nd floor. Facultad de Medicina, Universidad Complutense. Avenida Complutense s/n, 28040 Madrid, Spain.

**Language**

The official language of the conference is English.

**Secretariat**

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