

## Expression of Interest MSCA-IF

**Title:** MSCA-IF: Neuroinflammation

**Research Area:** Life Sciences - Neuroscience

**Research Centre:** Principe Felipe Research Center (CIPF)

**Web page:** [www.cipf.es](http://www.cipf.es)

**Department Name:** Neurobiology

**Scientist in Charge:** Vicente Felipo

Dr. **Vicente Felipo**, Director of the Neurobiology Department and of the Program on Neuroinflammation and Neurological Impairment at Principe Felipe Research Centre (Spain), welcomes postdoctoral candidates interested in applying for a Marie Skłodowska-Curie Individual Fellowship (MSCA-IF). Please note that applicants must comply with the Mobility Rule.

**Orcid:** <http://orcid.org/0000-0003-3145-9538>

### Brief description of the institution:

**Principe Felipe Research Center (CIPF)** is a private foundation linked to Valencia Regional Health Administration focused on basic **biomedical research** with a translational orientation. CIPF research is clustered around four main programmes: (1) molecular and cellular mechanisms of rare, metabolic and cancer diseases, (2) neuroinflammation and neurological impairment, (3) genomics, nanomedicine, cellular therapies and regenerative medicine and (4) bioinformatics.

**CIPF counts on cutting-edge technological devices and instrumentation.** Several services stand out for their singularity (e.g. animal facility with a SPF rodent area and experimental operating theatres), while others are remarkable due to their translational character (genetics, genomics, electron and confocal microscopy, nuclear magnetic resonance, cytomics and screening). CIPF makes part of the **EU-OPENSREEN ERIC** research infrastructure contributing with a specialised screening node and manages the **Regional government biomedical cluster**, a powerful computing infrastructure devoted exclusively to develop research on personalised medicine.

The centre offers an attractive, gender-responsive research environment, with a strong in-house training programme structure. The Training and Education programme is conducted by our own staff together with relevant external researchers and links with the main Universities delivering titles. We have a number of programmes designed for future researchers, graduate and predoctoral students and postdoctoral researchers. The centre is committed to the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (Charter&Code) through the development of the Human Resources Strategy for Researchers (HRS4R).

In addition, CIPF delivers a diverse communication programme aimed to bring biomedical research closer to young people and the general public and actively participates in a variety of public engagement initiatives.

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### **Brief description of the Research Group:**

The Laboratory of Neurobiology performs basic and translational research on cognitive, motor and sleep alterations in different pathological situations, including: minimal and clinical hepatic encephalopathy (HE), hyperammonemia and developmental exposure to food and environmental contaminants. The aims are:

In animal models:

1. Unveil the molecular mechanisms leading to neurological impairment
2. Identify new therapeutic targets for its treatment
3. Design and assess new therapeutic procedures to reverse neurological impairment

In patients:

4. study the mechanisms, diagnosis and treatment of neurological impairment
5. Bring to the clinic the therapeutic procedures developed in animal models
6. Identify early diagnostic procedures for neurological impairment
7. Bring to the clinic the diagnostic procedures identified

Our recent results indicate that the process leading to cognitive and motor impairment in HE (Fig. 1) involves: induction by liver failure of hyperammonemia and peripheral inflammation which, acting synergistically induce neuroinflammation, which alters GABAergic and glutamatergic neurotransmission and cGMP levels, leading to cognitive and motor impairment. There are mechanisms by which neuroinflammation, intra- and extra-cellular cGMP and GABAergic and glutamatergic neurotransmission modulate each other. This leads to the neurological alterations, but also offers the possibility of restoring cognitive and motor function by acting on any of the components of the system: cGMP, neurotransmission or neuroinflammation.

The research of the group focuses now in identifying the mechanisms by which:

- 1) hyperammonemia and peripheral inflammation induce neuroinflammation
- 2) neuroinflammation impairs neurotransmission and cognitive and motor function
- 3) neuroinflammation, intra- and extra-cellular cGMP and GABAergic and glutamatergic neurotransmission modulate each other and cognitive and motor function

Unveiling these mechanisms (which also occur in other pathologies) is allowing us to identify new targets and assess new therapeutic treatments that restore cognitive and motor function in HE (and could restore them also in other pathologies).

### **Research line/s of interest:**

In animal models:

1. Unveil the molecular mechanisms leading to cognitive and motor impairment
2. Identify new therapeutic targets for its treatment
3. Design and assess new therapeutic procedures to reverse cognitive and motor impairment

Identifying the mechanisms by which:

- 1) peripheral inflammation and hyperammonemia induce neuroinflammation
- 2) neuroinflammation impairs neurotransmission and cognitive and motor function
- 3) neuroinflammation, intra- and extra-cellular cGMP and GABAergic and glutamatergic neurotransmission modulate each other and cognitive and motor function
- 4) microbiota modulates the immune system, neuroinflammation and cognitive and motor function

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PRINCIPE FELIPE  
CENTRO DE INVESTIGACION

### Requested focus areas:

The application of the potential candidate for MSCA-IF should be focused on one of the following areas:

Identifying the mechanisms by which:

- 1) peripheral inflammation and hyperammonemia induce neuroinflammation
- 2) neuroinflammation impairs neurotransmission and cognitive and motor function
- 3) neuroinflammation, intra- and extra-cellular cGMP and GABAergic and glutamatergic neurotransmission modulate each other and cognitive and motor function
- 4) microbiota modulates the immune system, neuroinflammation and cognitive and motor function

### Application process:

Interested researchers are requested to send **your CV in Europass format** (max 3 pages) and propose a **research project** that will strengthen and complement the presented research (max 2 pages) to [researchsupport@cipf.es](mailto:researchsupport@cipf.es) before May 15<sup>th</sup> 2020.

### More information:

[www.cipf.es](http://www.cipf.es)

<http://www.cipf.es/en/neurobiologia>

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