

【Upcoming event】 We will hold the iCONM/CHANGE academic Seminar online.
Dec. 18 (Mon) 14:00~16:00 (The web meeting room will be open at 13:45)

Lecture ①

Title: Exploring hypothalamic neurons and microglia: a strategic action plan to combat obesity

Speaker : Rosalia Rodriguez-Rodriguez, PhD

Affiliation : Universitat Internacional de Catalunya (UIC Barcelona)

Position : Associate Professor,

Head of the Biomedical Sciences Unit UI

Lecture ②

Title : Neuro-metabolic models: unravelling brain influence on metabolic disorders

Speaker : Xavier Muñoz Berbel, PhD

Affiliation : Instituto de Microelectrónica de Barcelona, IMB-CNM (CSIC)

Position : Tenure-track researcher

Holding method: ZOOM Webinar

*web conferencing software. we will let you know URL by the day before only for participants.

Language: English

Registration Form

<https://forms.gle/p4NxwskN96vBphYx7>

Registration: by Tuesday, December 12, until 12 p.m.

Title :

Exploring hypothalamic neurons and microglia: a strategic action plan to combat obesity

Abstract :

The continuously rising incidence and prevalence of obesity involves an urgent need to uncover new molecular pathways with therapeutics potential. The brain, and in particular the hypothalamus, is a major integrator of metabolic signals from peripheral tissues that regulates functions such as feeding behavior and energy expenditure. The capacity of the hypothalamus to sense the nutritional state to maintain these functions is altered in obesity. An emerging line of research has pointed out that neuronal lipid metabolism and microglia dynamics play a critical role in regulating energy balance. Here we focus on neuronal carnitine palmitoyltransferases 1 (CPT1), a family responsible for the metabolism of long-chain fatty acids, and on the JNK inflammatory pathway in both neurons and microglia. These are promising targets in the management of appetite, body weight control and insulin resistance at early stages of the disease but also in aging. Finally, the development of innovative platforms based on nanomedicines targeting these processes in either neurons or microglia in the hypothalamus is a challenging but a potential next generation therapy to treat obesity.

Speaker : Rosalia Rodriguez-Rodriguez, PhD

Affiliation : Universitat Internacional de Catalunya (UIC Barcelona)

Position : Associate Professor,

Head of the Biomedical Sciences Unit UIC

URL :

<https://www.uic.es/neurolipid-group>

<https://www.uic.es/en/teacher/rrodriguez>

<CV>

Rosalia Rodriguez-Rodriguez, PhD in Pharmacology, Associate professor, and Head of Biomedicine in UIC Barcelona, has more than 15 years' research experience in the investigation of obesity and related cardiometabolic complications in cellular and animal models, through national and international institutions. Her current research is the study the molecular mechanisms in the hypothalamus underlying obesity and the generation of drug delivery systems for selective targeting of brain cells. She has been PI of 6 research national/international projects and participated in >15 projects related to this investigation. She recently led a bilateral Spain-Japan project with Dr Quader (iCONM) to generate polymeric nanoparticles targeting brain lipid metabolism. A major aim of her research is particularly related with targets in the hypothalamus of importance for energy homeostasis such as a carnitine palmitoyltransferases, endocannabinoid hydrolases, and JNK-related inflammatory pathways in neurons and microglia. In summary, she has co-authored 76 publications (H index=25 and 1900 citations in Scopus) and 2 patents, supervised 16 students (undergraduates, master and PhD), 6 research awards, and is Associate Editor of the section "Obesity" in Frontiers. <https://orcid.org/0000-0002-6908-7197>

Title :

Neuro-metabolic models: unravelling brain influence on metabolic disorders

Abstract :

Due to future restrictions on animal studies, novel in vitro models are necessary, which provide more reliable and accurate results than conventional in vitro cell cultures. In this sense, organ-on-a-chip systems emulating liver, kidneys, lungs, vessels or even brain functions have been already developed, although difficult to implement as routine analysis systems. One of the main problems is on the difficulty to adequately monitor the conditions and evolution of the model after stimuli. In this sense, the integration of sensing elements is still one of the main drawbacks due to the complexity of sensing under physiological conditions. On the one hand, the integrated sensors suffer from ageing and biofouling, which compromise their performance and makes necessary continuous recalibration steps. On the other hand, calibration solutions may compromise cell culture viability and function. In this talk, several strategies for the development of neuro-metabolic models to study obesity and diabetes are presented, which based on the compartmentalization of the chip and/or the implementation of new transduction mechanisms less sensitive to ageing or biofouling.

Speaker : Xavier Muñoz Berbel, PhD

Affiliation : Instituto de Microelectrónica de Barcelona, IMB-CNM (CSIC)

Position : Tenure-track researcher,

URL :

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<CV>

I am PhD in biotechnology (2008) and tenure-track researcher at the IMB-CNM (CSIC) from 2020. I developed unprecedented analytical tools based on microelectronic technologies in Spain (CSIC, University of Seville), France (University of Perpignan), U.K. (University of Bath), Denmark (Aarhus University) and The Netherlands (Groningen University), aiming to resolve important biological questions of clinical interest. Along my career, I have participated in more than 30 projects from FP7, H2020, HE calls and National calls, being PI of 14 and coordinator of 10. I am co-author of +70 publications, with +1700 citations (H-index = 24), +20 proceeding and 3 book chapters. I am co-inventor of 15 patents (3 licensed), I have participate in +80 congresses (15 by invitation) and supervised 9 PhDs. I am Associated Editor of the MPDI journal "Diagnostics" and the responsible of the Lab on Chip section.

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