

# INcitate knowledge

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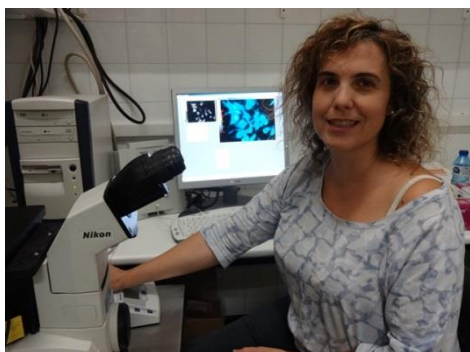
**ASTROLAB**

## *1.- How and why you ended up working as a neuroscientist?*

The truth, by chance. After my BSc, I knew I wanted to do a PhD and devote myself to research, but there were so many interesting subjects and neuroscience was not something I had specifically pursued at that stage. So, first I moved to the University of Stanford to collaborate in two different projects in Molecular Biology of plants, then I was some months in the CSIC in Barcelona performing basic research to understand DNA transcription... until an old classmate called to encourage me to apply for a grant to conduct research in Neurochemistry with Dr. Picatoste, here at the UAB. Since then, most of my scientific career has been in the field of neuroscience!

## *2.-What research are you currently developing?*

I believe that brain is not about neural circuits but integrated circuits, where glia modulates neurons. Therefore, our research focus is in understanding astrocytes. We are currently working in three projects to study how astrocytes regulate synaptic transmission. I believe brain is not about neural circuits but in particular, we are discovering how astrocytic CREB activation regulates calcium responses (calcium signalling for astrocytes is like electrical excitability for neurons) and we would like to investigate if astrocytic CREB could be a therapeutic target in Alzheimer. We also are interested in the role of ApoE4 expression and calcium signalling in astrocytes, and astrocytic calcium signalling in models of [Adrenoleukodystrophy](#).



## *3.-What are the major contributions in neuroscience in the past 20 years?*

Difficult, difficult ... There have been many! Personally, I like breakthroughs that break dogma, and without any doubt the discovery of adult neurogenesis represented a big shake of one of the great pillars of neuroscience.

More related to our current research, I would like to stress the discovery that astrocytes are not mere scaffolding cells for neurons but they regulate synaptic transmission, and hence processes of learning and memory consolidation.

***4.- Could you recommend us a research paper published during the last years?***

There many interesting papers, but related to my research, I suggest a research article published in the journal of Cell Stem Cell in 2013. Under the supervision of Dr. S.A. Goldman and Dr. M. Nedergaard , human glial progenitor cells were engrafted into neonatal mice. After 4-5 motnhs, human astrocytes had calcium signals faster, long-term potentiation was sharply enhanced and mice had better learning performance assessed by Barnes maze navigation, object location memory and contextual and tone fear conditioning.

Han et al., 2013, Cell Stem Cell, 12 (3), 342.

<http://dx.doi.org/10.1016/j.stem.2012.12.015>

***5.- How will you encourage future scientists to be part of Neuroscience research?***

We know very little about the brain and it is in continuous change! Therefore, there are many questions to answer, but here are the good news: nowadays there are a wide range of techniques that will allow us to answer many questions that 5-10 years were unthinkable that could be answered. We need motivated scientists!