

INcitate knowledge

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Coordination of Master in Neurosciences

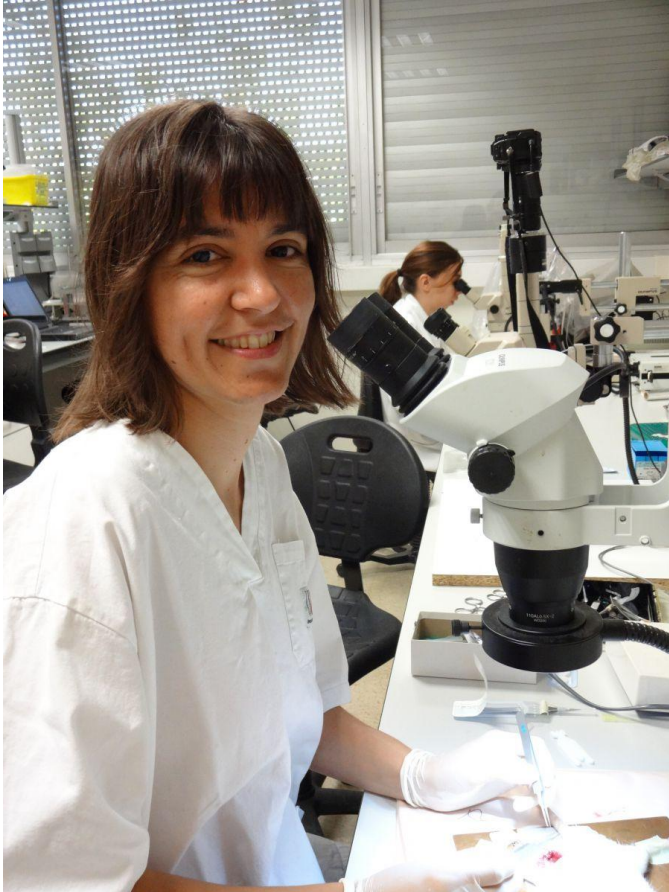
Neuroplasticity and Regeneration research group

1.- What research are you currently developing?

I have been working in the field of peripheral nerve regeneration in animal models since I started working on research, mainly investigating strategies to improve functional recovery after peripheral nerve injuries. One of my current projects focuses on the study of the plastic changes that motoneurons and the spinal circuits suffer after injury of a peripheral nerve, and how these changes could be modulated by activity dependent therapies. With one of my PhD students, Ariadna Arbat, we have evaluated the changes that the spinal circuits suffer after nerve injuries in an animal model, and we are currently assessing different protocols of physical exercise to modulate these changes. Rehabilitation therapies have been widely used in neurological patients and it is assumed that these facilitate functional recovery and promote plasticity of the injured system, so we want to further understand the effects of these rehabilitation therapies - in our case in the form of physical exercise- on the spinal circuits after peripheral nerve injuries, how these therapies can modulate these changes, if they are also affecting the process of axonal regeneration and reinnervation and finally, which are their effects on functional recovery.

2.- How is the day-to-day inside your laboratory?

My day to day in the lab is not easy to define. Sometimes I have teaching duties, so I am not that much into the lab. I also spend quite a lot of time in front of my computer, either working on my classes, answering a crazy amount of emails, fighting against the bureaucracy, writing or correcting papers, defining future projects... However, I still manage to be in the lab time to time. I can perform the surgeries related with our animal models, electrophysiological tests, histological and immunohistochemical analysis and also primary neuronal cultures. I supervise my students, but eventually they become so good in performing the different techniques that they do not need me anymore. Therefore, at the end they are the ones that carry on most of the “lab” work.



3.- What therapeutic applications do you think can your research have?

Rehabilitation therapies are one of most used strategies to treat neurological disorders and injuries. However, it still not clear whose are the mechanisms through which these therapies exert their benefits over functional recovery, or which kind of rehabilitation therapy, for how long and when has to be applied to maximize their positive effects. Therefore, I think that a better knowledge of the effects of different activity dependent therapies on the injured nervous system and their ability to modulate plasticity is quite important for the clinics.

4.- How you encourage future scientists to be part of neuroscience research?

Our nervous system is, clearly, the most complex system we have. It also contains our self, and any injury can be so devastating, it seems mandatory that research and clinicians find new strategies to overcome the disabilities induced with its failures. Therefore, I think neuroscience is a challenge both for the complexity of its normal function, but also for the difficulty to finding strategies that promote its recovery after lesions. You can study all your life and still you will not know enough about how our nervous system functions. And you can investigate all your career strategies to cure some of the problems related with neurological dysfunctions, and I am sure you still will not be able to solve all the challenges of that pathology. I am not sure if this are words to encourage future research or to discourage them, but I think the nervous system is so complex, we are still far from answering all the questions we have. Therefore, let's continue working on it!