

Eduardo Molina-Holgado



Endocannabinoids in normal brain physiology and pathology

In summer 1989 just after finishing my BSc (Biology, Biochemistry and Molecular Biology) at the Universidad Autonoma de Madrid I moved to Montreal to join the laboratory of Dr. Tomas A. Reader at the département de physiologie (Université de Montréal) as a PhD student. I knew Tom's papers on dopaminergic function in a short course of neurochemistry I attended with Drs Fernandez-Ruiz and Ramos at Universidad Complutense (Department of Biochemistry) in Madrid and I was really interested in learning about the interaction of dopamine and amino acids neurotransmitters in models of Parkinson's disease. After 4 years I wrote a PhD thesis entitled "Biochemical studies of neurotransmitters in the central nervous system of adult rats after neonatal lesion of dopaminergic neurons". Tom was an enthusiastic professor and a close witness of the birth of neurochemistry; he was a disciple Dr. Eduardo de Robertis in Buenos Aires and later in Montreal an active collaborator of Dr. Herbert Jasper. During those years I met many prestigious neuroscientists; I remember with affection to Nico Van Gelder, Serge Rossignol, Yves Lamarre, Laurant Descarries or Bob Dykes.

In the spring of 1994 I joined as a postdoc Dr. Guillermina Almazan's laboratory at the Department of Pharmacology and Therapeutics (McGill University). The experience I gained in her lab actually marked my scientific career as it made me become a cell biologist focused on the study of the function of brain glial cells. The culture of oligodendrocytes and the study of its physiology in normal tissue and in pathology has been one of my main interests through these years. In 1997 I returned to Madrid to Dr. Carmen Guaza's laboratory at Cajal Institute (CSIC) to investigate neuroimmune interactions in glial cell cultures and in models of multiple sclerosis (MS). Carmen has really been my mentor and her friendship has always been a strong support to my career. With Carmen, my brother Paco and my long time collaborator Dr. Angel Arevalo, we studied how immune mediators modulate astrocyte and oligodendroglial activity and our work contributed to the realization that a family of membrane derived lipids known as endocannabinoids are involved in CNS immune modulation and signaling during development. We reported that oligodendroglial cells express cannabinoid receptors that are involved in cell survival and also that activation of these receptors have therapeutic potential in a viral model of MS.

After 6 years in the Cajal Institute I moved to The National Paraplegic Hospital (Hospital Nacional de Paraplejicos) in Toledo to set up a new laboratory in a project led by Prof. Manuel Nieto-Sampedro. Together with my senior collaborators Drs. Arevalo and Daniel Garcia-Ovejero we were the first to report the modulation and the function of the endocannabinoid system after spinal cord injury. On the other hand, I continue to study endocannabinoid function in oligodendrocytes and in neural stem/precursor cells.

For a complete list of publications, please visit the following link:

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