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Research interests:

1. Neurochemistry and pharmacology of neurotransmission
2. Pharmacological neuroprotection

The studies of the pharmacological and neurochemical regulation of ion channels and calcium signaling have been the focus of my laboratory since 1975. I have projected these studies towards the understanding of the basic principles governing the exocytotic release of catecholamines, neuronal survival, and neuronal death. More recently, my laboratory is making efforts to translate this accumulated knowledge to the understanding of altered neurotransmitter release and cell vulnerability in neurodegenerative processes, particularly Alzheimer's disease (AD), amyotrophic lateral sclerosis (ALS), and Huntington's disease (HD). Ultimately, the overall effort addresses the search of a neuroprotective medicine capable of delaying AD and/or ALS progression and improve the quality of life of patients suffering these terrible diseases. I recently created the spinoff **DNS Neuroscience** to ease the transfer of my laboratory knowledge to society; it focus mostly on repositioning of medicines in clinical use toward neuroprotection in neurodegenerative diseases.

Selection of publications

1. Martínez-Ramírez C, Baraibar AM, Nanclares C, Méndez-López I, Gómez A, Muñoz MP, de Diego AMG, Gandía L, Casarejos MJ, **García A.G.** Altered excitability and exocytosis in chromaffin cells from the R6/1 mouse model of Huntington's disease is linked to overexpression of mutated huntingtin. **J. Neurochem.** 2018;147:454-476.
2. De Diego Amg, **García A.G.** Altered exocytosis in chromaffin cells from mouse models of neurodegenerative diseases. **Acta Physiol** 2018, e13090.
3. López-Gil A, Nanclares C, Méndez-López I, Martínez-Ramírez C, De Los Rios C, Padín-Nogueira Jf, Montero M, Gandía L, **García A.G.** The quantal catecholamine release from mouse chromaffin cells challenged with repeated ACh pulses is regulated by the mitochondrial Na⁺/Ca²⁺ exchanger. **J Physiol.** 2017;595:2129-2146.
4. Punzón E, García-Alvarado F, Maroto M, Fernández-Mendivil C, Michalska P, García-Álvarez I, Arranz-Tagarro Ja, Buendía I, López Mg, León R, Gandía L, Fernández-Mayoralas A, **García A.G.** Novel sulfoglycolipid IG20 causes neuroprotection by activating the phase II antioxidant response in rat hippocampal slices. **Neuropharmacology.** 2016;116:110-121.
5. Calvo-Gallardo, E., De Pascual, R., Fernández-Morales, J.C., Arranz-Tagarro, J.A., Maroto, M., Nanclares, C., Gandia, L., De Diego, A.M.G., Padín, J.F. and **GARCÍA, A.G.** Depressed excitability and ion currents linked to slow exocytotic fusion pore in chromaffin cells of the SOD1^{G93A} mouse model of amyotrophic lateral sclerosis. **Am. J. Physiol.** 2015 **308**: C1-C19.
6. **García, A.G.**, Garcia-De-Diego, A.M., Gandia, L., Borges, R. And Garcia-Sancho, J.: Calcium signalling and exocytosis in adrenal chromaffin cells. **Physiol. Rev.** 2006 **86**: 1093-1131.
7. Montero, M., Alonso, M.T., Carnicero, E., Cuchillo, E., Albillos, A., **García, A.G.**, Garcia-Sancho, J. And Alvarez, J.: Chromaffin-cell stimulation triggers fast millimolar mitochondrial Ca²⁺ transients that modulate secretion. **Nature Cell Biol.** , 2000 **2**: 57-61.
8. López Mg, Montiel C, Herrero Cj, Garcia-Palomero E, Mayorgas I, Hernández-Guijo Jm, Villarroya M, Olivares R, Gandía L, Mcintosh Jm, Olivera Bm, **García A.G.** Unmasking the functions of the chromaffin cell α_7 nicotinic receptor by using short pulses of acetylcholine and novel selective blockers. **Proc. Natl. Acad Sci USA** 1998; 95: 14184-14189.
9. Michelena P, García-Pérez Le, Artalejo Ar And **García A.G.** Separation between cytosolic calcium and secretion in chromaffin cells superfused with calcium ramps. **Proc Natl Acad Sci USA.** 1993; 3284-3288.
10. **García, A.G.**, Sala, F., Reig, J.A., Viniestra, S., Frias, J., Fonteriz, R. And Gandia, L.: Dihydropyridine BAY-K-8644 activates chromaffin cell calcium channels. **Nature**, 1984 **309**: 69-71.