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The activity of the research group is centered on the identification of molecular mechanisms underlying neurodegeneration, new diagnostic biomarkers and molecular targets, and their validation at pre-clinical stage. In particular, the role of neuroinflammation in brain diseases and neurodevelopmental disorders and the molecular mechanisms underlying microglial activation are studied by means of in vitro and ex vivo models (e.g. primary cells cultures; organotypic cultures).

Techniques: cell and molecular biology; biochemistry; immunocytochemistry.

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-Ajmone-Cat MA, D'Urso MC, di Blasio G, Brignone MS, De Simone R, Minghetti L. Glycogen synthase kinase 3 is part of the molecular machinery regulating the adaptive response to LPS stimulation in microglial cells. *Brain Behav Immun.* 2015 Nov 22 [Epub ahead of print]

-Ajmone-Cat MA, Mancini M, De Simone R, Cilli P, Minghetti L. Microglial polarization and plasticity: evidence from organotypic hippocampal slice cultures. *Glia.* 2013 Oct;61(10):1698-711. doi: 10.1002/glia.22550. Epub 2013 Aug 5

-De Simone R, Ajmone-Cat MA, Pandolfi M, Bernardo A, De Nuccio C, Minghetti L, Visentin S. The mitochondrial uncoupling protein-2 is a master regulator of both M1 and M2 microglial responses. *J Neurochem.* 2015 Oct;135(1):147-56. doi: 10.1111/jnc.13244. Epub 2015 Aug

-Potenza RL, De Simone R, Armida M, Mazziotti V, Pèzzola A, Popoli P, Minghetti L. Fingolimod: A Disease-Modifier Drug in a Mouse Model of Amyotrophic Lateral Sclerosis. *Neurotherapeutics.* 2016 Oct;13(4):918-927. doi: 10.1007/s13311-016-0462-2.