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Contributions of translational behavioral neuroscience to the advanced diagnostic and therapeutic approaches towards dementia

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Clinical manifestations of Alzheimer's disease (AD) are complex and heterogeneous, far from restricted to the progressive loss of learning and memory. Loss of judgment and executive functions together with the early appearance of Behavioral and Psychological Symptoms of Dementia [BPSD] are considered a strong source of distress and burden for the patients and caregivers. Actually, growing number of studies assessing AD therapeutic strategies targeting mnemonic effects also look for benefits on these other symptoms. At the preclinical level, behavioral neuroscience has confronted the difficulty of modeling this clinical heterogeneity in experimental animals and scarce literature examine the whole array of symptoms. The author will summarize the findings obtained in the Spanish colony of 3xTg-AD mice using a multidimensional behavioral screening approach (functional, BPSD and cognition, social) together with other levels of study (cellular, neurochemical, physiological, immunoendocrine and neuropathological). Evidence of appearance of BPSD-like symptoms were provided from premorbid and prodromal stages associated with early impairment of the neuro-immuno-endocrine network, advanced biological age and disruption of neurophysiological homeostasis. These alterations worsened with age, were gender-dependent and related to increased vulnerability and mortality. This comprehensive multidimensional behavioral screening has provided a unique tool to assess the potential preventive and/or therapeutic value of strategies based on life-style (voluntary and forced exercise), psychological stimulation (postnatal handling, environmental enrichment, family structure), pharmacological interventions (Melatonin, Huperzine A, Huprine-derivates, 5HT-4 agonists) and Ab-immunotherapy (scFv-h3D6). The contributions of behavioral neuroscience from our and other laboratories offer a promising scenario for translational research.

Biography

Lydia Gimenez Llort completed her PhD from CSIC - University of Barcelona and postdoctoral studies from Karolinska Institutet. She is Associate Professor of Psychiatry at the Department of Psychiatry and Forensic Medicine, Autonomous University of Barcelona. She is also member of the Institute of Neuroscience where she was part of the Directive board and coordinator of the Master in Neuroscience. She founded the scientific network 4the5.net and she's member of 2009-SGR-0051, RETICEF (RD06/0013/0003), UCM-CM ENEROINN 910379 and Neurogenet Consortium. She represents Spain at the European COST-action TD1005 'Pain Assessment in Patients with Impaired Cognition, especially Dementia'. She has published 70 papers in reputed journals.

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