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What are the prospects of slowing the progression of Alzheimer's disease?

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Alzheimer's disease (AD) impacts daily living through cognitive decline that usually starts with impairment of episodic memory and progresses, over a period of 8 to 10 years, to cause a more generalized cognitive dysfunction, behavioral dysregulation, and psychiatric symptoms. The emergence of these symptoms reflects the largely predictable advance of degenerative changes in the brain. These include: (i) the formation of dystrophic neurites around a central core of amyloid (plaques); (ii) the formation of abnormal filaments (neurofibrillary tangles) made up of a highly phosphorylated form of the microtubule-associated protein tau in the perikarya of certain neurons (particularly pyramidal cells), along with neurophil threads in axons and nerve terminals; and (iii) the selective loss of neurons, principally pyramidal, cholinergic, noradrenergic and serotonergic neurons. Medicines that slow or stop the cascade of neurodegenerative change that characterizes AD have the potential to significantly reduce the global burden of dementia. The discovery of such a medicine is critically dependent on understanding the biological basis of AD. The amyloid hypothesis has provided the major conceptual framework for efforts to identify agents to slow the progression of AD. However, the veracity of this hypothesis is now being questioned in light of the failure of drug candidates that reduce A_B concentrations in the brain to slow disease progression. This means that a new conceptual framework is now needed in order to discover effective disease-modifying therapies for AD. Such a framework will be discussed and the pivotal role of cortical pyramidal cells emphasized.

Biography

Alan M Palmer has formed or co-founded six biotech start-up companies. He is presently a Board director of Cerebroscience Ltd, MS Therapeutics Ltd, One Nucleus, Neuro 360 Ltd and the British Neuroscience Association. With over 100 peer-reviewed papers to his name, his scientific research has had a high impact, particularly in the study of Alzheimer's disease and traumatic brain injury. He is Visiting Professor at University College London and the University of Reading and Life Science Entrepreneur in Residence at the University of Bristol. He was voted London Biotechnology Network Entrepreneur of the Year in 2005.

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