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Perspective

NEW MOLECULAR APPROACHES TO ALZHEIMER'S DISEASE

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PERSPECTIVE

Alzheimer's disease is a neurodegenerative disorder and the most common and devastating form of dementia. It affects mainly older people, accounting for 50–80% of dementia cases. The age is the main associated risk factor and based on the onset age, early-onset (EOAD) or late-onset (LOAD) forms are distinguished. AD has a strong impact both on the life-style of patients and their families and on the society, due to the high costs related to social and medical care. So far, despite the great advances in understanding of the AD pathogenesis, there is no a cure for this form of dementia and current available treatments are limited to temporarily relieve symptoms.
In this review, firstly we give an overview of the current knowledge of the genetic basis of both forms of AD with a particular emphasis on the insights in the understanding of the pathogenic mechanisms of this disorder. Then we discuss the promising relevance of "omics sciences" and the open challenges of the application of Big Data in promoting precision medicine for AD.

In June 2021, the Food and Drug Administration (FDA) approved aducanumab for the treatment of some cases of Alzheimer's disease. This is the first drug approved in the United States to treat the underlying cause of Alzheimer's by targeting and removing amyloid plaques in the brain.

Levels of one neurotransmitter, acetylcholine, are particularly low in the brains of people with Alzheimer's disease. Over time, different areas of the brain shrink. The first areas usually affected are responsible for memories.

Currently, the only approved drugs for Alzheimer's merely alleviate some of the symptoms — partially and temporarily — but do not stop the disease from progressing. Although it was first officially described 115 years ago, and of course existed long before that, we still do not have a cure for this devastating disease.

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