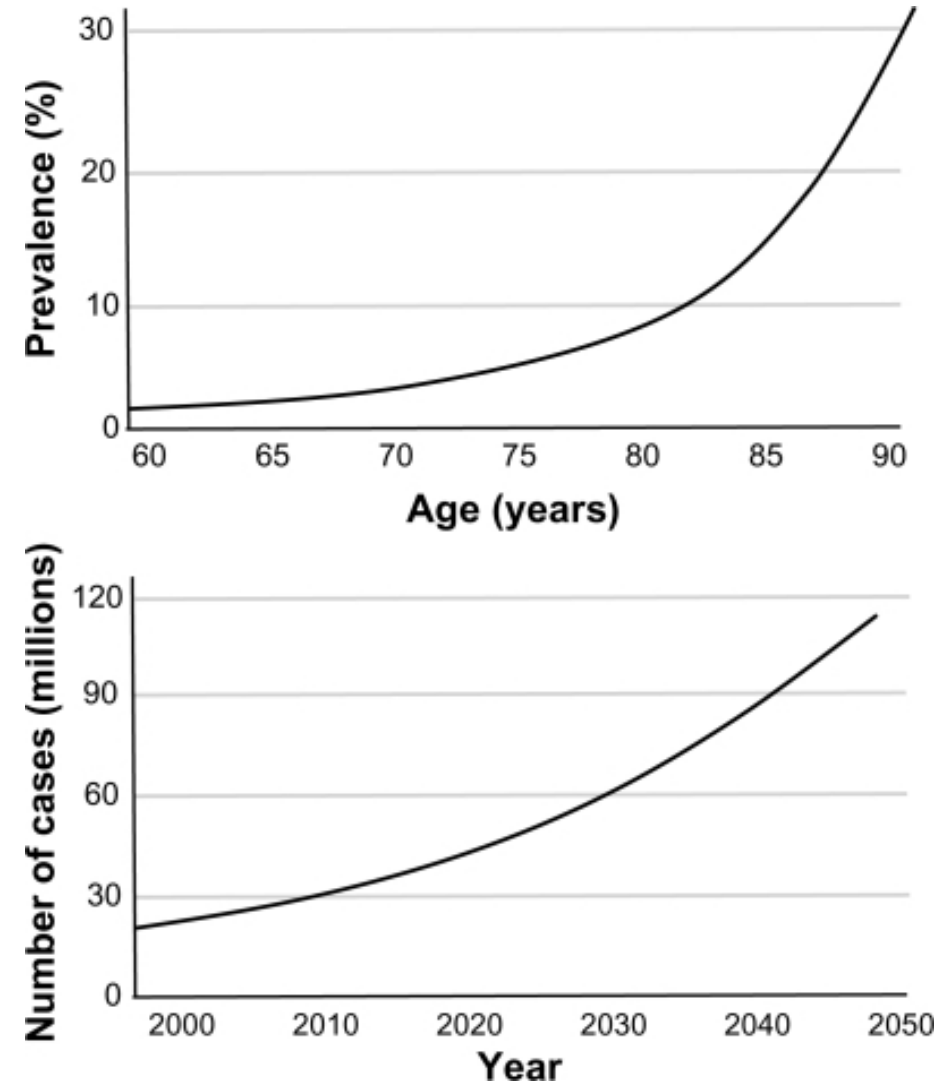


Support for the Amyloid Cascade Hypothesis in Guiding Further Avenues of Treatment in Alzheimer's Disease

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What is Alzheimer's Disease?

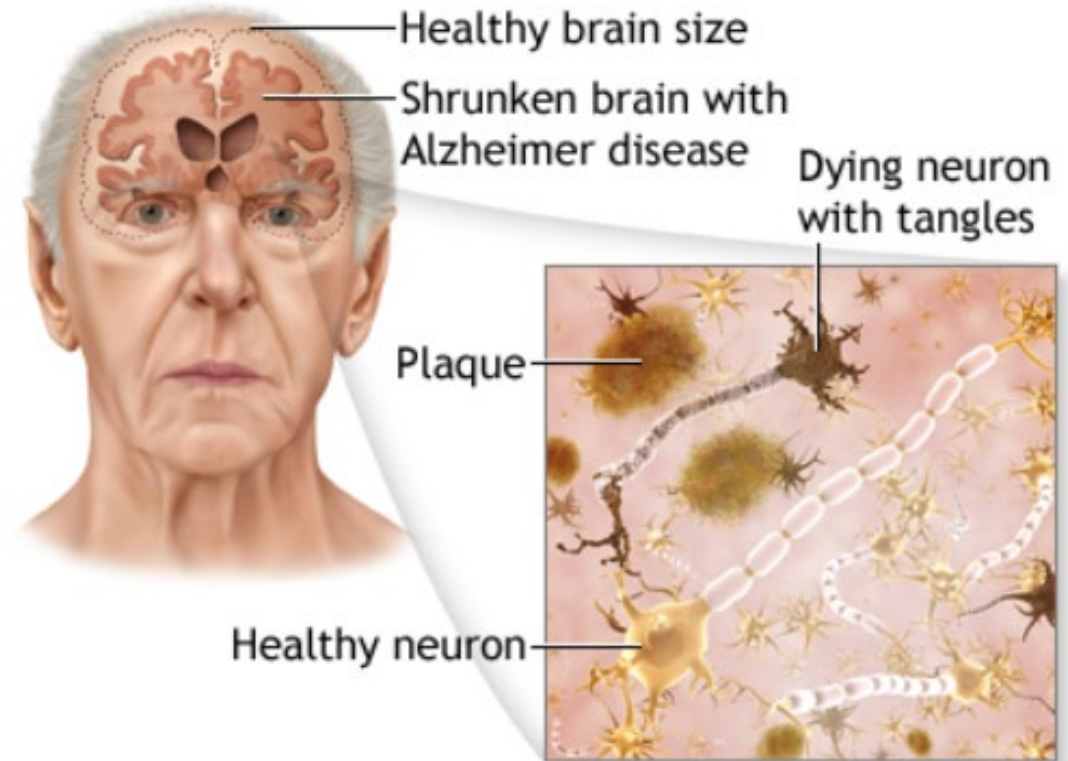
- Alzheimer's Disease (AD) is the most common form of dementia
- Neurodegenerative
- Currently around 50 million people affected, expected to rise to 150 million by 2050
- Deaths attributed to AD rose by 89% from 2000-2014



Credit - Grand, Jacob & Caspar, Sienna & Macdonald, Stuart. (2011). Clinical features and multidisciplinary approaches to dementia care. Journal of multidisciplinary healthcare. 4. 125-47. 10.2147/JMDH.S17773.

How does AD work?

- Characterized by tau neurofibrillary tangles and amyloid-beta ($A\beta$) plaques
- Mechanism historically viewed via “Amyloid Cascade Hypothesis”
- Dysregulation of protein causes harmful species of $A\beta$ to form
- Tau protein normally promotes stability, becomes unbound

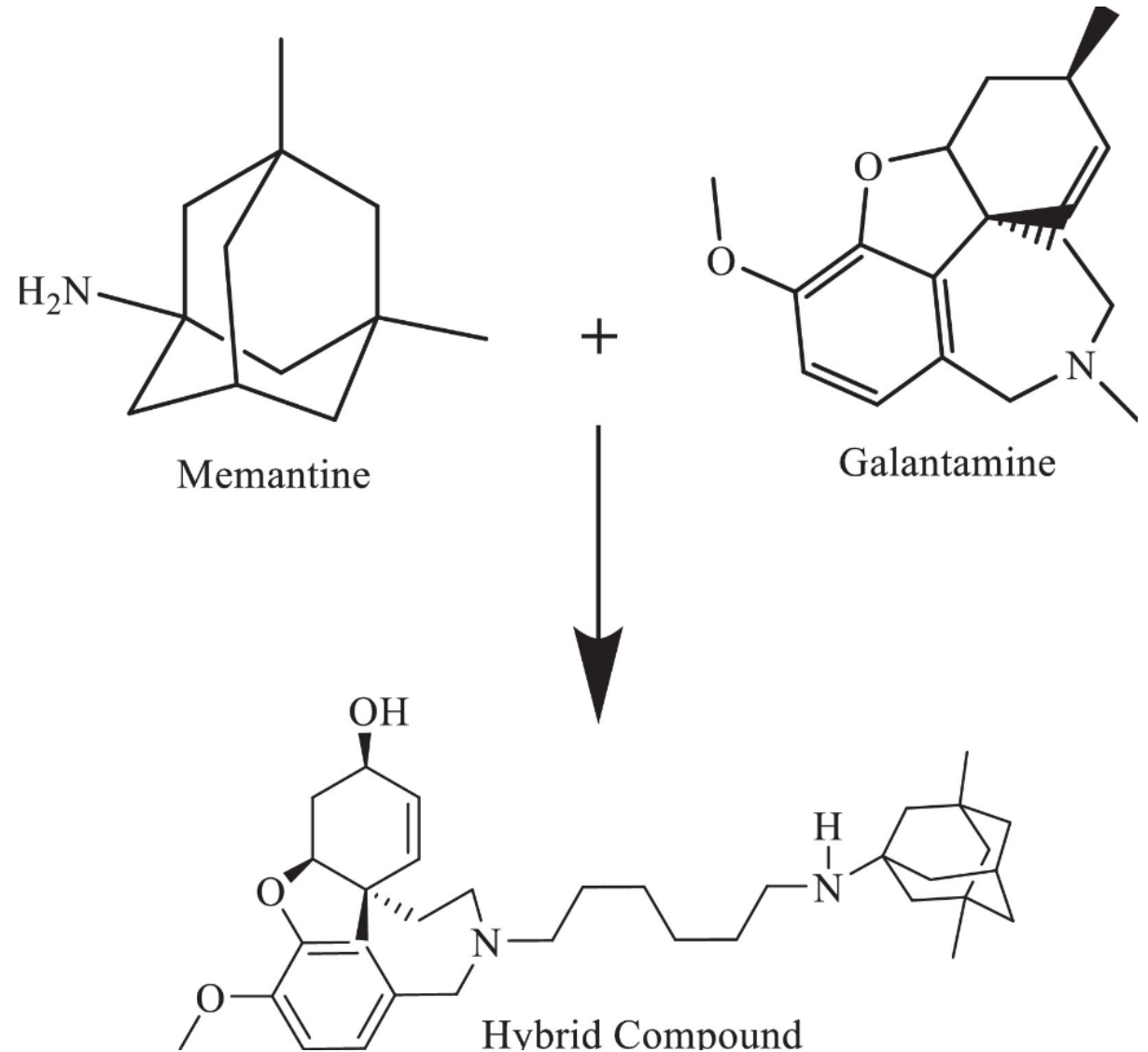


ADAM.

National Library of Medicine, 2023,
<https://medlineplus.gov/ency/article/000760.htm>

Treatments & Criticisms

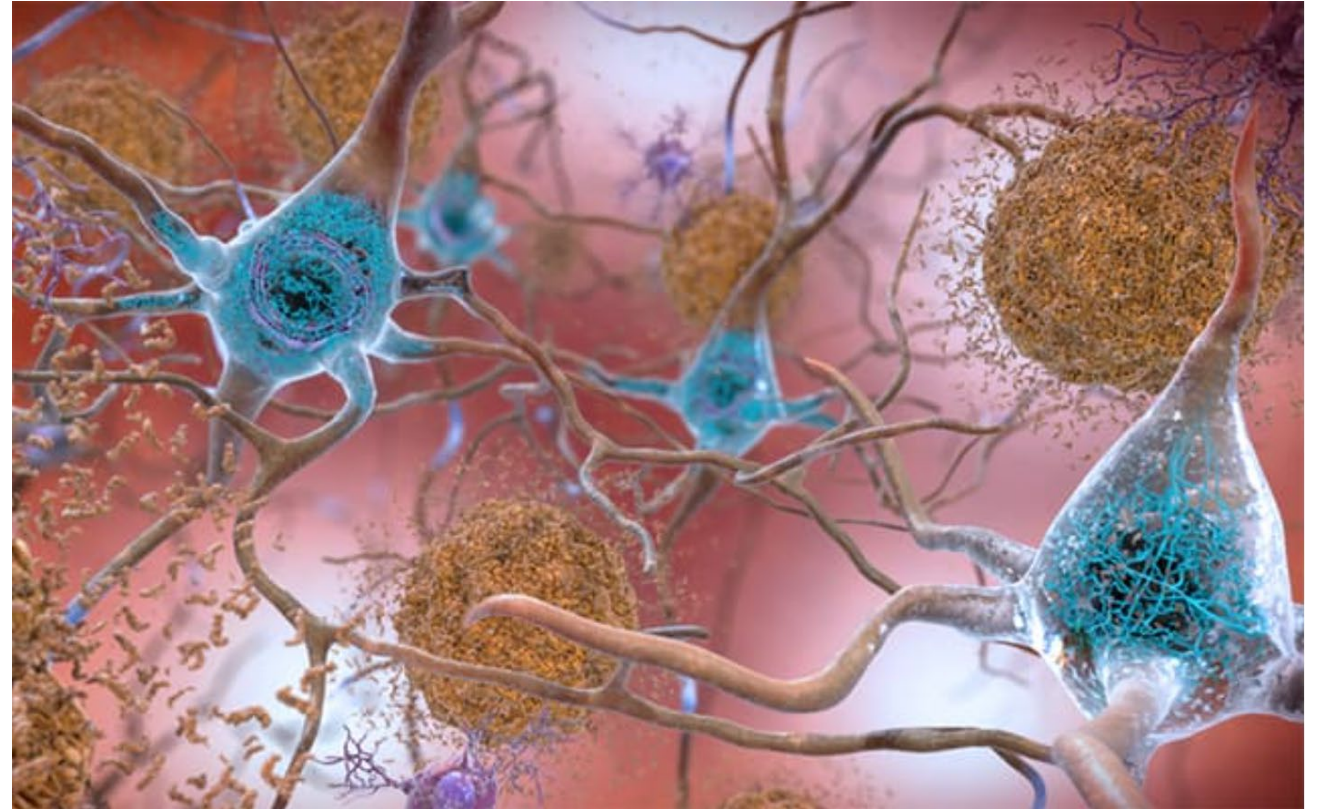
- Currently no cure for the disease
- Until very recently, medications and therapies only able to alleviate symptoms
- Aduhelm was approved, showed slowing of cognitive decline
- Some scientists have criticized lack of clinical success treating A β plaques
- Suggested to focus on tau pathologies



Rouchan Ali, Ghanshyam Das Gupta, Pooja A. Chawla, Aducanumab: A new hope in Alzheimer's disease, Health Sciences Review, Volume 4, 2022, 100039, ISSN 2772-6320, <https://doi.org/10.1016/j.hsr.2022.100039>.

Findings & Conclusions

- Completed a comprehensive literature review
- AD is now believed to operate via an amyloid-induced tau pathology
- Multiple other factors have been shown to reduce $A\beta$, such as
 - Hormone treatments
 - Butyrylcholinesterase inhibition
 - Induced oxidative stress
- Aduhelm, the only drug to show slowing effects, attacks $A\beta$ plaques



National Institute on Aging, NIH, 2017

Next Steps

- Amyloid Cascade Hypothesis should continue to guide research
- Identify effects of combining listed therapies and treatments
- Treatments should initially be studied in mice to examine the interactions of preemptive and corrective treatments
- Further emphasis should be placed on clinical trials
- With further research and treatment, AD can be decreased in severity and prevalence

References

