

February 2019

Cause

1. New research by scientists at the Gladstone Institutes has identified a protein, known for its role in forming blood clots, as an important catalyst in the cognitive decline seen in Alzheimer's. Fibrinogen was found to be responsible for the series of molecular and cellular events that can destroy memory storage sites in the brain. Fibrinogen leaks from the blood into the brain, activating immune cells and triggering them to attack neuronal synapses. Importantly, the researchers discovered that fibrinogen was able to cause the same destructive effect without amyloid plaques being present, giving an alternative theory to exactly what processes can initiate AD.

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2. Air pollution, and its effects on long-term health, is the subject of studies conducted by Barbara Maher, Professor at the Centre for Environmental Magnetism and Paleomagnetism at Lancaster University. With the help of four Manchester Primary Schools, Professor Maher is looking at how certain plant species may protect our brains, particularly young, still-developing brains, against airborne particles that can lead to Alzheimer's. She believes that planting hairy, rough-leaved trees (as hedges) near roadsides can reduce the number of dangerous, ultrafine particles people are exposed to, by up to 60%. Her studies are the subject of a documentary, "Something in the Air".

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3. Researchers from Penn State and the University of Washington have developed a method of highlighting protein aggregation, using a new fluorescence technique. Misfolded proteins play a role in several neurodegenerative diseases, such as Alzheimer's disease. The new method employs "turn-on fluorescence" which only lights up the protein compounds when misfolding starts to occur. Previous methods have been unable to detect this part of the aggregation process and scientists now hope they will be able to focus on the mechanism which may be the turning point in the development of neurodegenerative diseases.

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Cure

1. A cannabis-based treatment, already licensed to treat some symptoms of multiple sclerosis, is being trialled in the UK with pensioners who have symptoms of Alzheimer's disease. Sativex, a peppermint-flavoured mouth spray containing cannabinoids, is being tested by scientists to see if it will ease agitation and aggression.
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2. Researchers from the Yale University Alzheimer Disease Research Center have reported success with a "cocktail of designer molecules" that interfere with the Alzheimer's development process. Working with mouse models, the scientists created a polymer compound that can pass through the blood-brain barrier and stop the damaging interaction of prion proteins and amyloid-beta. When fed the compound, mice engineered to have Alzheimer's experienced a regaining of memory and a repair in synapses. Further tests are required to ascertain if the compounds are safe for use in humans.
<https://www.futurity.org/alzheimers-disease-cocktail-1946252/>

Care

1. A pledge of \$70 million annually has been made by the Australian Government to fund a new "Specialist Dementia Care Program". Announced by the Minister for Senior Australians and Aged Care and Minister for Indigenous Health, Ken Wyatt, with Greg Hunt, Minister for Health, the program aims to establish more than 30 specialist care units. These units will provide best practice person-centred care for people with "severe behavioural and psychological symptoms of dementia". The program also includes a commitment to the introduction of at least one specialist care unit in each primary health network.
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2. Research into Frontotemporal Dementia has found that people with the disease lose their ability to daydream and have no inner monologue. Neuroscientists at the University of Sydney studied 35 people with FTD, 24 with Alzheimer's disease, and another 37 cognitively healthy people. The participants were asked to view coloured, geometric shapes on a computer screen and, when the presentation finished, report any thoughts they had while watching the images. The individuals with AD showed as many instances of mind-wandering as their "normal" peers, indicating preservation of at least some internal mentation, whilst the FTD individuals reported thinking nothing or thoughts only about the shapes themselves, indicative of a fixation on external environmental stimulus. People with FTD commonly exhibit rigid thinking patterns, an inability to problem-solve or

change routines. Using neuroimaging analysis, the scientists discovered disruption to large-scale brain networks in the hippocampus, associated with the loss of daydreaming.

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3. As the Royal Commission into Aged Care Safety and Quality continues and hears evidence from various sources – both professional and private – shocking cases of elder abuse have been exposed. Instances of physical assault, malnutrition, neglect, and lack of access to basic equipment, such as wheelchairs and continence pads, have all been reported. Other issues, such as extended waiting periods (for entry into residential care) and staff shortages, have been cited as major problems affecting the industry. The RC hearing will continue throughout the year.

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