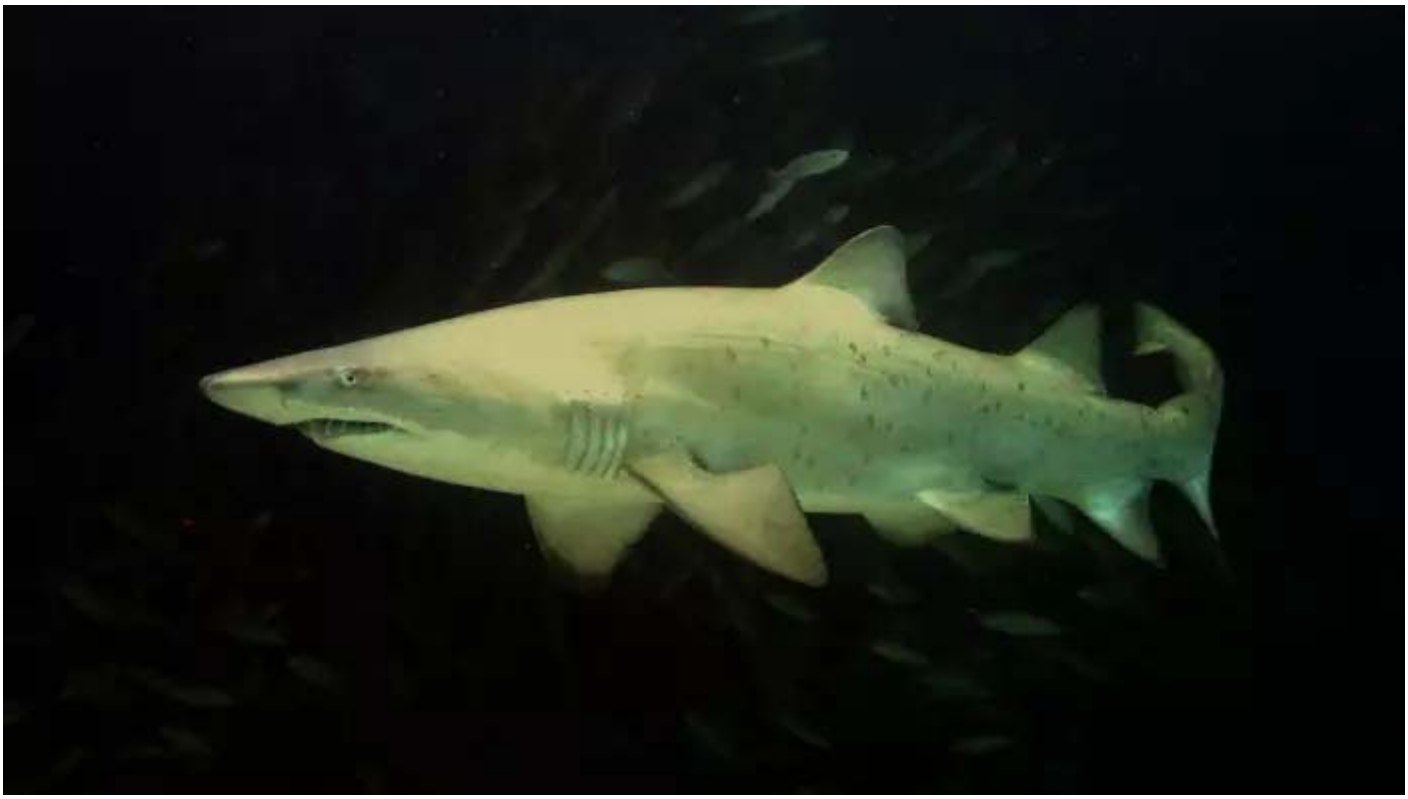
Medical science

# Shark antibodies join battle against Alzheimer's

## Danish drugmaker hails neuroscience breakthrough in breaching the blood-brain barrier



*Tests on mice showed that therapeutic antibodies could be attached to the shark-derived antibodies, which acted as a transporter enabling the barrier to be crossed*

2 HOURS AGO by: Sarah Neville, Global Pharmaceuticals Editor

Lundbeck (http://markets.ft.com/data/equities/tearsheet/summary?s=dk:LUN), the Danish pharmaceuticals company, has breached the blood-brain barrier in mice using shark antibodies for the first time, in a development it says could be used to treat Alzheimer's and Parkinson's diseases.

The drugmaker, which has had a longstanding focus on treating brain diseases such as depression and schizophrenia (http://www.ft.com/cms/s/2/d61ccbea-81be-11e2-b050-00144feabdc0.html), has undertaken the work in partnership with Ossianix, a privately held US group, to which it has paid an undisclosed sum to develop the treatment.

One of the biggest challenges in neuroscience is finding a way to allow therapeutic drugs to cross the human blood-brain barrier (http://next.ft.com/content/4d5fd240-32da-11e6-ad39-3fee5ffe5b5b). The barrier is a layer of cells around cerebral blood vessels that shields the

brain from toxins. Patients either have to take large quantities of drugs so that some molecules pass through the barrier from the bloodstream, or drugs have to be delivered by other means such as a direct injection into the brain.

The companies on Thursday announced that in tests on mice they had discovered that therapeutic antibodies could be attached to the shark-derived antibody, which acted as a transporter enabling the barrier to be crossed.

Frank Walsh, founder and chief executive of Ossianix, said human clinical trials could begin in two years, and if successful treatment could be made available to patients in less than a decade.

Mr Walsh added it was hoped the discovery would be used to help reverse the damage caused by some neurological diseases such as Alzheimer's and Parkinson's.

Kim Andersen, senior vice-president and head of research at Lundbeck, said the work "utilised 400m years of nature's evolution" since sharks were the first species to develop antibodies.

A key property of the shark antibody is its small dimensions — "a tenth the size of a normal antibody". Mr Walsh likened it to a "Trojan horse" that, when grafted on to therapeutic antibodies, allowed them to cross a barrier that for many years was seen as impermeable. This, in turn, allowed drugs to reach the brain in far higher concentrations.

The work comes against the backdrop of "a lot of failure in the Alzheimer's field", added Mr Walsh. The latest company to announce that an initially promising Alzheimer's treatment had disappointed was Eli Lilly, when it said in November that its experimental medicine Solanezumab had failed a large clinical trial (http://next.ft.com/content/972f829c-b171-11e6-a37c-f4a01f1b0fa1).

Lundbeck, which had revenues of DKr14.5bn ($2bn) in 2015, said the technology could pave the way for many new and more effective treatments of brain diseases, including some that are untreatable.

It cautioned, however, that the research was in an early phase and there was a risk it might not be applicable for use in humans.

Peter Welford, a research analyst at Jefferies, said "the depth and number of programmes that Lundbeck has within the Alzheimer's field is not widely known".

He added that Alzheimer's had become a core area of research for the company and that it was pursuing "a number of different pathways and technologies" aimed at finding a way of modifying the disease.

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