

# First Alzheimer's case has full diagnosis 106 years later

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(Medical Xpress)—More than a hundred years after Alois Alzheimer identified Alzheimer's disease in a patient an analysis of that original patient's brain has revealed the genetic origin of their condition.

The brain specimen tested was discovered in a university basement late last century after a search by rival teams of academics.

"It is extremely satisfying to place this last piece in the medical puzzle that Auguste Deter, the first ever Alzheimer patient, presented us with," said Professor Manuel Graeber, from the University of Sydney.

"It is not only of historical interest, however, as it ends any speculation about whether the disease is correctly named after Alois Alzheimer. Alzheimer's ability to recognise this dementia more than a century ago provides compelling support for specialisation in medicine. Alzheimer was a founding father of neuropathology, an important medical specialty that is still underrepresented."

Professor Graeber, from the University's Brain and Mind Research Institute, Sydney Medical School and the Faculty of Health Sciences, collaborated with Professor Ulrich Müller's team from the Institute of Human Genetics of the University of Giessen in Germany to produce the [molecular diagnosis](#) recently published in [Lancet Neurology](#).

For years scientists have been wondering whether the first case of Alzheimer's disease had a [genetic cause](#). In 1901 Auguste Deter, a

middle-aged female patient at the Frankfurt Asylum with unusual symptoms, including [short-term memory loss](#), came to the attention of Dr Alzheimer. When she died, Dr Alzheimer examined her brain and described the distinctive damage indicating a form of presenile dementia.

For decades the more than 200 slides that Alzheimer prepared from Deter's brain were lost. Then in 1992, after Professor Graeber uncovered new information pointing to their location, two teams of [medical researchers](#) began a dramatic race to find them.

One team searched in Frankfurt but it was a team headed by Professor Graeber, then working at the Max Planck Institute for Neurobiology that finally located the material at the University of Munich in 1997.

The slides were examined and confirmed beyond doubt that Deter was suffering from Alzheimer's disease, with large numbers of amyloid plaques and neurofibrillary tangles in the brain that are hallmarks of the disease. Until now a more sophisticated DNA analysis of the small amount of fragile material in single slides has not been possible.

Since their rediscovery, a significant number of [brain](#) slides have been under the official custodianship of Professor Graeber who has been at the University of Sydney since 2010. He is preparing a book on the material.

"We found a mutation whose ultimate effect is the formation of amyloid plaques. These plaques, which form between nerve cells and seem to suffocate them are the key diagnostic landmark of the disease."

Alzheimer's disease represents one of the greatest health problems in industrialised societies today. An estimated 100 million dementia sufferers are predicted worldwide by 2050, the vast majority of whom

will have Alzheimer's disease.

95 percent of Alzheimer's patients suffer late onset of the illness after they turn 65. Five percent fall ill before that age (early onset) and Auguste Deter belongs to this group.

"We have revealed that Auguste Deter is one of those in which early onset of the disease is caused by mutation in a single gene," said Professor Graeber.

**More information:** [www.lancet.com/journals/laneur...  
rticle/PIIS1474-4422%2812%2970307-1/fulltext](http://www.lancet.com/journals/laneur/article/PIIS1474-4422%2812%2970307-1/fulltext)

Provided by University of Sydney

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