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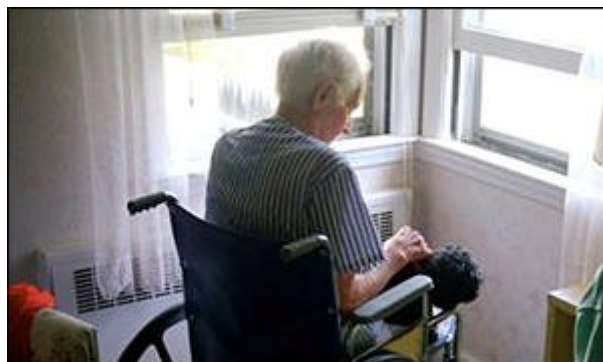
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Front Page Tuesday, 13 November, 2001, 15:27 GMT

Gene clues to Parkinson's

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Scientists are looking at genetic causes for Parkinson's disease

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Scientists are piecing together the genetic jigsaw which could explain what makes people susceptible to Parkinson's disease.

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A genetic link has already been made in the rarer early-onset form of the disease, which is seen in people diagnosed under 40.

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But two studies from researchers from Duke University Medical Center in North Carolina, America now suggest genetics could play a crucial role in late-onset Parkinson's.

The research is significant because it had been thought that environmental factors were the primary cause of Parkinson's later in life.

Experts in the UK said it was likely certain gene variations acted as an 'Achilles' heel', leaving the body vulnerable to environmental factors.

“
Genes may act as an 'Achilles' heel' for some sort of environmental assault that most people can fight off.
”

Parkinson's disease is a disorder of the nervous system, which causes shaking, muscle

**Professor Adrian Williams,
Parkinson's Disease Society**

stiffness. There is no known cure, but patients can be treated with medication.

Around 120,000 people in the UK have Parkinson's.

Deposits in the brain

US researchers found the strongest genetic link to late-onset Parkinson's on chromosome 17, near the tau gene, which has previously

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been linked to other diseases of the central nervous system.

Dr Jeffrey Vance, director of the Genomics Research Laboratories at Duke's Center for Human Genetics, said: "Tau is the first example of a gene thought to be involved in susceptibility to late-onset-Parkinson's disease.

"Tau by itself does not cause Parkinson's, but we found that a form of tau protein may make some people susceptible to Parkinson's disease."

Tau protein is important in maintaining the structure of brain cells.

Malfunctioning tau proteins bunch together and leave fibrous deposits in the brain, something which is seen in Alzheimer's patients.

“
Tau by itself does not cause Parkinson's, but we found that a form of tau protein may make some people susceptible to Parkinson's disease
 ”

**Dr Jeffrey Vance,
 Duke University
 Medical Center**

Autopsies of the brains of Parkinson's disease sufferers have not shown the tau deposit.

But Duke researchers noted mutations in the tau gene were associated with two Parkinson-like diseases.

They analysed blood samples from 1,056 people from families that had been affected by Parkinson's for tiny differences in their genetic code.

This produced significant evidence that the tau gene was linked to late-onset Parkinson's.

However, the researchers admit more work needs to be done to determine the exact nature of the link.

Blood samples

A second study identified 174 families in the America and Australia which had one or more members with Parkinson's.

One hundred and forty-seven families had the late-onset form of the disease.

Researchers analysed blood samples to see if there were any common genetic factors which

could be linked to susceptibility to Parkinson's.

The researchers found a genetic link to distinct regions on five different chromosomes.

Chromosome 6 contains the Parkin gene, which had previously only been thought to be involved with early-onset Parkinson's.

Eleven families with early-onset Parkinson's, and seven with late-onset had mutations of the Parkin gene.

Margaret Pericak-Vance, director of Duke's Center for Human Genetics, and lead author on one of the studies, said: "Like many complex traits, it's likely that Parkinson's disease is caused by a web of interacting genetic and environmental risk factors, in which specific genetic templates are more susceptible to the influences of environmental exposures."

The studies are published in the Journal of American Medical Association.

Professor Adrian Williams, senior medical advisor to the UK's Parkinson's Disease Society, told BBC News Online: "We'll probably find that environmental risk factors and genetics work together.

"Genes may act as an 'Achilles' heel' for some sort of environmental assault that most people can fight off."

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