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### Einstein'S Brain Found To Be Anatomically Distinct

From: Stig Agermose <[stig.agermose@get2net.dk](mailto:stig.agermose@get2net.dk)>  
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Stig

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Einstein's brain found to be anatomically distinct

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By EMMA ROSS

LONDON (June 17, 1999 7:01 p.m. EDT <http://www.nandotimes.com>) - We always thought something must have made Albert Einstein smarter than the rest of us. Now, scientists have found that one part of his brain was indeed physically extraordinary.

In the only study ever conducted of the overall anatomy of Einstein's brain, scientists at McMaster University in Ontario, Canada, discovered that the part of the brain thought to be related to mathematical reasoning - the inferior parietal region - was 15 percent wider on both sides than normal.

Furthermore, they found that the groove that normally runs from the front of the brain to the back did not extend all the way in Einstein's case. That finding could have applications even to those with more pedestrian levels of intelligence.

"That kind of shape was not observed in any one of our brains and is not depicted in any atlas of the human brain," said Sandra Witelson, a neuroscientist who led the study, published in this week's issue of The Lancet, a British medical journal.

"But it shouldn't be seen as anatomy is destiny," she added. "We also know that environment has a very important role to play in learning and brain development. But what this is telling us is that environment isn't the only factor."

The findings may point to the importance of the inferior parietal region, Witelson said.

While the differences may be extraordinary between Einstein and everyone else, there may be more subtle, even microscopic, differences when the anatomies of the brains of people who don't fall into the genius category are compared with each other, she said.

The researchers compared the founder of the theory of

relativity's brain with the preserved brains of 35 men and 56 women known to have normal intelligence when they died.

With the men's brains, they conducted two separate comparisons - first between Einstein's brain and all the men, and next between his brain and those of the eight men who were similar in age to Einstein when they died.

They found that, overall, Einstein's brain was the same weight and had the same measurements from front to back as all the other men, which Witelson said confirms the belief of many scientists that focusing on overall brain size as an indicator of intelligence is not the way to go.

Witelson theorized that the partial absence of the groove in Einstein's brain may be the key, because it might have allowed more neurons in this area to establish connections between each other and work together more easily.

She said it is likely that the groove, known as the sulcus, was always absent in that part of Einstein's brain, rather than shrinking away as a result of his intelligence, because, as one of the two or three landmarks in the human brain, it appears very early in life.

"We don't know if every brilliant physicist and mathematician will have this same anatomy," Witelson said. "It fits and it makes a compelling story, but it requires further proof."

John Gabrieli, an associate professor of psychology at Stanford University who was not connected with the study, said the finding relating to the groove and connections between the neurons in the brain may be the key.

"We don't have a clue, so anything that is suggested is interesting," he said. "There must have been something about his brain that made him so brilliant."

Brilliance of the kind Einstein possessed is so extreme, however, that although the findings may give a clue to the neurology of genius, whether they could apply to normal differences in intelligence is more doubtful, Gabrieli said.

Witelson said the next stage is to scan the brains of living mathematicians and look for minute differences.

Witelson and her team acquired Einstein's brain after they were contacted by its keeper, scientist John Harvey, who had read about the university's brain research.

Harvey was a pathologist working at a small hospital in Princeton, N.J., when Einstein died in 1955 at the age of 76. Harvey performed the autopsy, determined Einstein died of natural causes and took the brain home with him.

Some parts of the brain were given to scientists, but no major study was ever conducted, until now.

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