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# Alzheimer's Disease & Dementia

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### **Immunohistological analysis of neuronal length changes in patients with Alzheimer's disease**

We measured the postmortem length of the pyramidal neurons in the cortical layer III in five cortical regions (anterior cingulate gyrus, posterior cingulate gyrus, entorhinal-, perirhinal-, and parahippocampal cortices) in control and Alzheimer's disease patient groups. Our hypothesis was that length of the pyramidal neurons would be smaller in the Alzheimer's disease group and also there would be shift in right left asymmetry. We found pyramidal neurons length asymmetry in controls in anterior and posterior cingulate gyri and in Alzheimer's disease patients only in entorhinal cortex. However, control-Alzheimer's disease group pyramidal neuron length comparison revealed no significance in perirhinal cortex, left side shorter in Alzheimer's disease patients compared to control group in parahippocampal gyrus, both left and right side shorter in Alzheimer's disease patients compared to control group in entorhinal and posterior cingulate cortex and right side shorter in Alzheimer's disease patients compared to control group in anterior cingulate gyrus. Also we measured numbers of DAPI and Fluoro-Jade B stained cells in previously mentioned cortical areas. Our hypothesis was that in Alzheimer's disease group there would be more cells stained with Fluoro-Jade B compared to controls. We found higher numbers of Fluoro-Jade stained cells in all cortical regions in patients with Alzheimer's disease compared to controls. However, only anterior cingulate cortex showed significant increase in their numbers in patients with Alzheimer's disease. Our conclusion is that degeneration in Alzheimer's disease is caused more by shrinkage of the neurons rather than by reduction of their numbers.

### **Biography**

Petr Zach completed his PhD in Neurosciences in 2001. He is studying Classical Neuroanatomy of the brain in Alzheimer's disease by using MRI techniques. He is Head of the Department of Anatomy and also an Author of more than 25 publications in journals with impact factor. He teaches Anatomy/Psychiatry And Pharmacology to medical students at the Charles University.

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