

Olfactory system pathology in Alzheimer's Disease

Citation for published version (APA):

Son, G. (2021). *Olfactory system pathology in Alzheimer's Disease: evidences from rodent and human studies*. [Doctoral Thesis, Maastricht University]. Gildeprint Drukkerijen.
<https://doi.org/10.26481/dis.20210526gs>

Document status and date:

Published: 01/01/2021

DOI:

[10.26481/dis.20210526gs](https://doi.org/10.26481/dis.20210526gs)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

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- The final published version features the final layout of the paper including the volume, issue and page numbers.

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I. Summary

Although Alzheimer's disease (AD) is an irreversible and incurable neurodegenerative disease, olfactory dysfunction as an early AD indicator provides clues towards diagnostic methods and gives insight into onset mechanisms in AD pathogenesis. This thesis describes the relationship between olfactory pathology and olfactory dysfunction in AD. First, the olfactory sensory neuron has independent enzyme expression that can produce β -amyloid ($A\beta$). Second, AD pathology, including $A\beta$ accumulation and microgliosis, is associated with structural damage of the olfactory system. Third, the olfactory pathologies are related to the olfactory sensory neuronal deficits that are, in turn, correlated with cognitive decline in AD. Therefore, these findings examining olfactory pathology are essential to unraveling the mechanism of olfactory dysfunction related to the development of AD. These findings support the need for further investigations towards potential diagnostic methods and understanding the basis of early pathogenesis in the olfactory system.