Maastricht University

Neuroepigenomics in Alzheimer's disease

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Statements belonging to the PhD thesis
Neuroepigenomics in Alzheimer's disease: The single cell ADds

1. Previous neuroepigenomic studies in sporadic Alzheimer's disease (sAD) relying on classical bisulfite techniques have overestimated biologically relevant effects related to DNA methylation, in reality attributable to DNA hydroxymethylation, or, on the other hand, have overlooked or underestimated effects related to both modifications, when these were to cancel each other out. – *This thesis*

2. Interrogation of epigenetic marks is most informative when studied at the single-cell level, where intercellular differences can be dissected leading to a more refined understanding of their contribution to the disease. – *This thesis*

3. sAD-associated dysregulation of bisulfite methylation patterns in the dorsal raphe nuclei (DRN), including that of *TNXB*, is dependent on both the disease phenotype and the cell type analyzed. – *This thesis*

4. Patient-specific induced pluripotent stem cells (iPSCs) allow one to interrogate functional effects of genetic, epigenetic and transcriptional variants linked to risk, as well as to protective, environmental factors. – *This thesis*

5. Epigenomic data should be integrated into bigger multi-omics and multi-level data sets in order to dissect the functional consequences of changes in epigenetic marks and to address the significance of these alterations in the disease causation and progression. – *Discipline*

6. A plain exhaustive search for contributing factors is unlikely to be fruitful for neuroepigenomic research in sAD, where a more systematic approach towards understanding the role of epigenetic mechanisms in the disease is essential. – *Discipline*

7. An iPSC-derived neuron might not be optimally suited to model all disease-relevant phenotypes of sAD. – *Discipline*

8. The identification of sAD-associated epigenetic profiles is crucial in order to improve our understanding on affected molecular mechanisms and interacting environmental factors that could explain the complex underpinnings of the disease. – *Impact paragraph of this thesis*

9. It is important to look at the past to understand the present and obtain an insight into the future. – *Yang et al. (2016) Dementia and Neurocognitive Disorders*

10. Progress is made by trial and failure; the failures are generally a hundred times more numerous than the successes; yet they are usually left unchronicled. – *William Ramsay*

11. The more I learn, the more I realize how much I don't know. – *Albert Einstein*

Renzo J.M. Riemens