Stress and memory in health and disease

Impact on Alzheimer's disease and memory mechanisms

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Exposure to stressful experiences, either early or later in life, can have a strong impact on learning and memory in adult and ageing individuals. Early life experiences in particular have been implicated in determining the vulnerability and resilience for cognitive decline, especially when the brain is already vulnerable, such as seen in Alzheimer's disease (AD). The first aim of this thesis was to study the effects of experiences early in life (albeit positive or negative) on ageing- or AD-related cognitive decline, and to better understand the underlying mechanisms. I particularly focused on the role of the hypothalamus-pituitary-adrenal (HPA)-axis, and on the expression and functionality of glutamate receptors in this process. Secondly, I investigated why stressful and threatening events are usually remembered so well, an effect that is a.o. attributed to the enhanced release of stress hormones. I investigate how glucocorticoid stress hormones determine memory formation, and how and where these memory traces, or "memory engrams", are stored within the brain.
The studies described in this thesis were performed at the Brain Plasticity Group of the Swammerdam Institute for Life Sciences (SILS), Center for Neuroscience, University of Amsterdam (Chapter 2-9), at the Experimental Genetics Group, LEGTEGG, Department of Human Genetics, Catholic University Leuven, Belgium (Chapter 2), and at the Department of Molecular and Cellular Neurobiology, Center for Neurogenomics and Cognitive Research, Vrije Universiteit Amsterdam (Chapter 9).

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Forget your perfect offering
There is a crack in everything
That’s how the light gets in

Leonard Cohen
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Impact on Alzheimer’s Disease and Memory Mechanisms

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ten overstaan van een door het College voor Promoties ingestelde commissie,
in het openbaar te verdedigen in de Agnietenkapel
op donderdag 24 januari 2019, te 14.00 uur

door

Sylvie Lisa Lesuis
geboren te Rotterdam
Table of Contents

Preface 9

Chapter 1 General Introduction 21

Chapter 2 Positive and negative early life experiences differentially modulate long term survival and amyloid protein levels in a mouse model of Alzheimer’s disease

Chapter 3 Early postnatal handling reduces hippocampal amyloid plaque formation and enhances cognitive performance in APPswe/PS1dE9 mice at middle age

Chapter 4 Targeting glucocorticoid receptors prevents the effects of early life stress on amyloid pathology and cognitive performance in APPswe/PS1dE9 mice

Chapter 5 Early life stress amplifies fear responses and hippocampal synaptic potentiation in the APPswe/PS1dE9 Alzheimer mouse model

Chapter 6 Treatment with the glutamate modulator riluzole prevents early life stress-induced cognitive deficits and impairments in synaptic plasticity in APPswe/PS1dE9 mice
<table>
<thead>
<tr>
<th>Chapter 7</th>
<th>Early life stress impairs fear conditioning memory and synaptic plasticity; a potential role for GluN2B</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chapter 8</th>
<th>Effects of corticosterone on mild auditory fear conditioning and extinction; role of sex and training paradigm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chapter 9</th>
<th>Glucocorticoids induce generalised fear by increasing the size of memory-encoding neuronal ensembles</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chapter 10</th>
<th>General Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Part 1 - The effects of early life experiences on AD vulnerability</td>
</tr>
<tr>
<td></td>
<td>Part 2 - The effects of stress hormones on memory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary</th>
<th>English summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nederlandse samenvatting</td>
</tr>
<tr>
<td></td>
<td>Samenvatting voor niet-ingewijden</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Addenda</th>
<th>Acknowledgements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PhD portfolio/List of Publications</td>
</tr>
<tr>
<td></td>
<td>About the Author</td>
</tr>
</tbody>
</table>
