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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.



STRESS AND MEMORY IN HEALTH AND DISEASE

SYLVIE L. LESUIS

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IMPACT ON ALZHEIMER'S DISEASE
AND MEMORY MECHANISMS



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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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STRESS AND MEMORY IN HEALTH AND DISEASE

IMPACT ON ALZHEIMER'S DISEASE
AND MEMORY MECHANISMS

ACADEMISCH PROEFSCHRIFT

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geboren te Rotterdam

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