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Leiden  
The Netherlands

## **Nurturing nature : testing the three-hit hypothesis of schizophrenia**

Daskalakis, N.

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# Stellingen (Propositions)

*behorende bij het proefschrift*

**NURTURING NATURE** *Testing the three-hit hypothesis of schizophrenia*

1. Maternal absence is not an early-life stressor, but enhances the pup's responsiveness to stressful experience.

*This thesis*

2. Glucocorticoids, early-in-life, program the amygdala fear pathway with life-long consequences for emotional reactivity.

*This thesis &  
Moriceau et al., Journal of Neuroscience 2006*

3. A severe schizophrenia-like phenotype precipitates in rats genetically-selected for enhanced dopamine susceptibility upon a combined exposure to early-life adversity and pre-pubertal social isolation.

*This thesis*

4. Genetic susceptibility does not dictate the development of mental disease, but consists of highly reactive alleles that, in response to negative environmental input promote vulnerability, and in response to positive environmental stimulation enhance resilience.

*This thesis*

5. The fast decrease of growth hormone receptor levels under stress ensures that the organism's energy expenditure is mainly used for coping and adaptation.

*da Silva Almeida, Thesis, Utrecht University, 2011*

6. The outcome of gene-by-environment interactions depends on the developmental stage of the organism.

*Lenroot & Giedd, Journal of Child Psychology and Psychiatry 2011*

7. CRH-independent interactions between different cell populations in the central amygdala contribute to the mechanism of fear.

*Ciocchi et al., Nature 2010 & Haubensak et al., Nature 2010*

8. Don't get involved in partial problems, but always take flight to where there is a free view over the whole single great problem, even if this view is still not a clear one.

*Ludwig Wittgenstein*

9. Great scientific ideas arise "in action" at the bench.

10. A good wine can only mature with age; likewise, the forming of important values should not necessarily be dictated by the pace of scientific revolution.

Nikolaos Daskalakis  
Leiden, 8 December 2011