#### ****100-plus study: the secret of ageing in mental health****

Why do some develop dementia at 70, while others live to be far over 100 years in great mental health? Hendrikje van Andel-Schipper, a Dutch woman who lived until the age of 115 with full cognitive abilities, showed that dementia is not an inevitable symptom of aging. Her mother reached 100 years, also without any signs of dementia.

This raises several exciting scientific questions: how can the human brain remain functionally competent for more than 100 years? Do these super-agers possess unique mechanisms that protect them from developing damage in the brain, or mechanisms that repair damage accumulated over time? The answers to these questions are likely to provide new insights and directions for treating neurodegenerative diseases.

Extreme old age without dementia often occurs within families, suggesting that heredity plays an important role in the protection against dementia. Therefore, genes might hold important clues to unravel the secret of delaying or escaping from cognitive decline during aging. For this reason, Henne Holstege set up the 100-plus study in 2013 at the VUmc Alzheimer Center. She collected a cohort of individuals who are just like Mrs. van Andel-Schipper, extremely old and without dementia: cognitively healthy centenarians.

Currently, the 100-plus Study cohort includes >300 centenarians, and Holstege thoroughly analyses their cognitive status, the composition of their blood and brain tissue, and she profiles their genomes. Recently, Dr. Holstege discovered a genetic variant that protects against Alzheimer Disease. This genetic factor occurs more often in centenarians than in the normal population and much more often than in dementia patients. Intriguingly, this factor modulates the immune system, not only in the immune cells in the brain, but also in the blood, such that those who have the protective genetic variant are more capable of dealing with aging-associated damage than others.

To further elucidate the mechanism behind the protection, Holstege now also includes the children and siblings of the centenarians in the study, as well as the partners of these people. This crucial, yet costly expansion is in need of financial support. The kind donation of the horstingstuit-foundation contributes to this particular expansion of the 100-plus study.