

Are age-related diseases the result of evolutionary tradeoffs favoring the young?

While granting human species some advantages over our primate cousins, recent genomic adaptations appear to have come at a cost. Research published last week (May 23) in [CellSystems](#) proposes that an evolutionary tradeoff, advantageous in early life, contributes to Alzheimer's and possibly other aging-related diseases.

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In 1957, evolutionary biologist [George Williams](#) proposed a theory: adaptations that made species more fit in the early years of life likely made them more vulnerable to diseases in the post-reproductive years.

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[Han Liang](#) of the University of Texas MD Anderson Cancer Center led a team to test this theory. The researchers started by focusing on enhancers, pieces of DNA with the ability to boost the activities of certain genes.

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Liang's group found that genes lying close to these enhancers, and therefore possibly under their control, were important for brain development. It is plausible that the enhancers were positively selected for during evolution because of their effects on these brain-related genes. However, they also found evidence of proximal associations between the enhancers and genes implicated in Alzheimer's, Parkinson's disease, type 2 diabetes, hypertension, and osteoporosis. According to Williams's theory, these aging-related diseases would manifest later in life and would go unnoticed during the Darwinian selection process because of the advantage they bestowed in the early years. "Because this happened after reproduction, selection will not see those kinds of change," says Liang.

Read full, original post: [Aging-Related Diseases May Be a Negative Outcome of Human Evolution](#)