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HYPOTHESIS ON THE HUMAN BRAIN 'CHILLING ENZYME' Δ12 DESATURASE, THE TOBA VOLCANO ERUPTION AND ITS GLACIAL PERIOD, AND THE DISPERSAL OF *HOMO SAPIENS* TOWARDS THE AMERICAS DURING THE LAST GLACIAL PERIOD

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***Homo sapiens*, is well known for its expansion drift resulting in a global dispersal across our planet. Using a systems biology, lipidomics based approach using LCMS techniques at post mortem human brains (because our evolution is to our awareness literally engraved in our human brain) we demonstrated that the human brain contains a 'chilling enzyme' Δ12 desaturase. This is the enzymatic step from Oleic Acid [C18:0] towards Linoleic Acid [C18:2, ω-6) in order to protect the brain against hypothermia under environmental extreme cold exposure conditions. Our first hypothesis is that this chilling enzyme may have played a central role in the negative selection pressure on humanity after the Toba volcano eruption about 75,000 years ago, when a very small population of between 1,000 and 10,000 breeding pairs which survived the short intensive glacial period which lasted around 1,000 years became the ancestors of modern humanity. Members of this group went back to Africa, and spread over Australia, Europe and Asia. The 'chilling enzyme' Δ12 desaturase comes back into the 'evolutionary dispersal picture of modern man' about 30,000 years ago when a small group of around 4,500 individuals migrated to the North American continent by a land bridge in the Bering Straits, created by the lowered sea levels due to the large ice sheets. This is our second hypothesis how this 'chilling enzyme' Δ12 desaturase protected the human brain against extreme cold and plays a central role in the human evolution and dispersal of *Homo sapiens* all over the globe. In addition, our evolutionary perception about human brain growth following a stochiometric modelling and the supportive evidence for the 'Out of Africa' theory based on hunter-prey correlations will be discussed.**

Biography

Vincent van Ginneken has completed his PhD from Leiden University and Postdoctoral studies from Wageningen University. He is the Director of Blue Green Technologies, a premier 'Seaweed based Biomass' service organization. He has published more than 117 papers in reputed journals among them *Nature* and has been serving as an Editorial Board Member of several reputed biomedical journals.

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