

Multiple Sclerosis, Autoimmunity, and Vit D deficiency

Researchers from Oxford University and the University of British Columbia have discovered that Vitamin D deficiency affects a section of the human genome already linked with multiple sclerosis (MS) risk, adding further weight to theories that this vitamin deficiency might play a role in development of the disease.

"Here we show that the main environmental risk candidate -- vitamin D -- and the main gene region are directly linked and interact," said co-author George Ebers.

The study was published in the journal *PLoS Genetics*.

MS is a [disease](#) characterized by the loss of the myelin sheath that insulates cells in the central nervous system. The loss of this insulation leads to disordered transmission of nerve signals, causing a cluster of neurological and muscular symptoms.

Scientists do not know what causes MS, but both genetic and environmental factors have been implicated. One study found that rates of the disease were significantly higher among Northern European populations who receive less sunlight than among those who receive more, suggesting a vitamin D link.

Vitamin D is produced by the body upon exposure to sunlight, and deficiencies are common in areas of the world far from the equator. The vitamin is now believed to play a critical role in immune functioning and the prevention of autoimmune diseases.

MS is highly suspected of being an autoimmune disorder.

In the current study, researchers examined a portion of chromosome six known to play a role in MS risk -- the risk is three times higher among those carrying one copy of the DRB1*1501 gene variant on this chromosome, and 10 times higher among those carrying two. They found that proteins activated by vitamin D bind to and alter the functioning of a section of the chromosome right near this gene. This suggests that [vitamin D deficiency](#) during pregnancy might alter the function of fetal genes, predisposing children to MS.

"Our study implies that taking vitamin D supplements during [pregnancy](#) and the early years may reduce the risk of a child developing MS in later life," lead researcher Sreeram Ramagopalan said.