

Do your genetics make you more susceptible to infections?



A novel genetic condition that causes immunodeficiency and a severe sensitivity to opportunistic infections, including a fatal fungal pneumonia, has been identified by researchers in a recent study.

Primary immunodeficiencies, sometimes referred to as in-born errors of immunity (IEIs), are genetic flaws that are more prone to allergies, autoimmune, anti-inflammatory disorders, cancer, and infectious illnesses. Despite recent medical advancements, over 50% of IEI patients still do not have a genetic diagnosis, which might prevent them from developing life-threatening conditions and passing away. This is the reason why the research is so crucial.

A mutation in the gene encoding the protein IRF4—a transcription factor essential for the maturation and operation of B and T white blood cells as well as other immune cells—represents the mistake in this instance. Researchers have discovered an IRF4 mutation linked to Whipple's disease in this study. Whipple's illness is an uncommon bacterial infection of the gut that results in diarrhoea, weight loss, stomach discomfort, and joint pain.

Seven patients with significant combined immunodeficiency were identified by a team of researchers from six unrelated

families living on four continents. These patients had pneumonia brought on by the fungus *Pneumocystis jirovecii* on many occasions. The DNA-binding domain of IRF4 exhibited the identical mutation in each case. This multimorphic action, which is further detailed in the study, may be a new mechanism for disease in humans.

Journal article: Oriol Fornes, O, et al., 2023. [A multimorphic mutation in IRF4 causes human autosomal dominant combined immunodeficiency](#). *Science Immunology*.

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