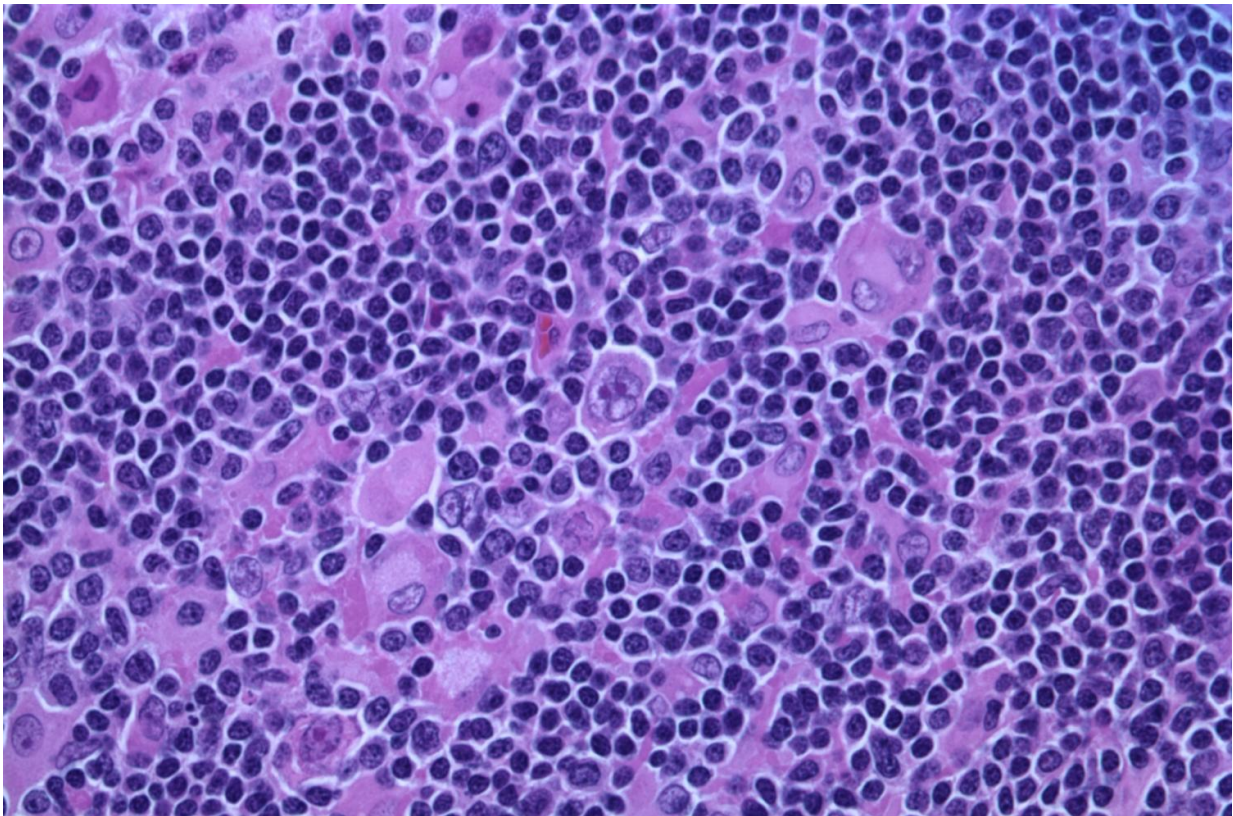


Genetic link found between the immune system and lymphoma

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Hodgkin lymphoma, nodular lymphocyte predominant (high-power view) Credit: Gabriel Caponetti, MD./Wikipedia/CC BY-SA 3.0

People who inherit genetic changes which alter the function of their immune system are at increased risk of developing Hodgkin lymphoma,

a major new study reports.

Scientists at The Institute of Cancer Research, London, identified six new [genetic changes](#) that increase the risk of developing Hodgkin lymphoma - one of the most common cancers in young adults.

Many of the DNA changes seemed to affect the function of the immune system, and three had previously been associated with autoimmune diseases such as [multiple sclerosis](#), rheumatoid arthritis or lupus.

The researchers stressed that the link did not mean people with autoimmune diseases are at increased risk of lymphoma, but did offer important genetic clues for understanding both lymphoma and autoimmune diseases better.

One of the genetic changes discovered increases the risk of Hodgkin lymphoma by more than a third and others by at least 15 per cent each - information that could point to new targeted drugs for the disease.

The study was published today in *Nature Communications* and was funded by a wide range of organisations including Bloodwise, Cancer Research UK and the Lymphoma Research Trust.

Scientists at The Institute of Cancer Research (ICR) analysed genetic data from 5,314 cases of Hodgkin lymphoma and 16,749 controls, from four different European studies.

The study is the largest of its kind for Hodgkin lymphoma. For most people, Hodgkin lymphoma can be successfully treated with first-line therapies - but there is a need for new treatments for those for whom first line treatment has failed.

The researchers identified six new single-letter changes in DNA that

were linked to the development of Hodgkin lymphoma - and five of these affect the way a type of white blood cell, called B cells, develop.

Hodgkin lymphoma is a [cancer](#) of the B cells - which are responsible for producing antibodies as a critical component of the immune system.

The study also picked out clear differences in genetic risk between two different subtypes of Hodgkin Lymphoma - nodular sclerosis Hodgkin Lymphoma (NSHL) and mixed cellularity Hodgkin Lymphoma (MCHL).

For example, a single-letter change located in DNA near the gene LPP increased the risk of NSHL by 37 per cent, but had little effect on the risk of developing MCHL.

Professor Richard Houlston, Professor of Molecular and Population Genetics at The Institute of Cancer Research, London, said:

"Hodgkin lymphoma is a cancer of immune cells called B cells, and our study links the risk of the disease to changes in the genes that control how B cells develop.

"Interestingly, we found that some of the genetic changes we have linked to Hodgkin lymphoma have previously been associated with the risk of [autoimmune diseases](#) such as multiple sclerosis and [rheumatoid arthritis](#).

"It doesn't mean that if you develop an autoimmune disease you are at increased risk of lymphoma, but it does offer fascinating genetic clues to these diseases. The new information could point towards new ways of diagnosing, treating, or even helping to prevent Hodgkin lymphoma."

Professor Paul Workman, Chief Executive of The Institute of Cancer Research, London, said:

"Understanding the genetic changes that underpin cancer's development is crucial for all aspects of our quest to defeat cancer - to understand which patients are most at risk from different types of cancer, to improve diagnosis, and to develop treatments that are most likely to work for individual patients.

"This important new study sheds light on the DNA changes that can contribute to a person's risk of developing Hodgkin lymphoma, and offers clues as to how they might increase that risk, including the interesting link to the immune system. These findings could lead to new ways of managing the disease."

Dr Alasdair Rankin, Director of Research at Bloodwise said: "Because of research, treatments for many people with Hodgkin lymphoma are now good, and around 80 per cent of all people affected survive in the long-term. Although this is good news, treatments can have long-term health effects, such as infertility and secondary cancers, so finding kinder treatments for Hodgkin lymphoma is important. We welcome this study, which sheds new light on how Hodgkin [lymphoma](#) develops."

Provided by Institute of Cancer Research

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