Research reveals how lymph nodes expand during disease

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Cancer Research UK and UCL scientists have discovered that the same specialised immune cells that patrol the body and spot infections also trigger the expansion of immune organs called lymph nodes, according to a study published in *Nature* today.

The immune system defends the body from infections and can also spot and destroy cancer cells. Lymph nodes are at the heart of this response, but until now it has never been explained how they expand during disease.

The researchers – at Cancer Research UK's London Research Institute – found that when a type of immune cell, called dendritic cells, recognises a threat they make a molecule called CLEC-2 that tells the cells lining the lymph nodes to stretch out and expand to allow for an influx of disease fighting cells.

It's long been known that these same dendritic cells patrol the body searching for threats and call for reinforcements to tackle them.

Dr Caetano Reis e Sousa, lead author at Cancer Research UK's London Research Institute, said: "This important research helps us unravel how the immune system works and its role in diseases, such as cancer. We've shown for the first time the dual role of dendritic cells in responding to disease - both recognising that there is a threat in the body but also telling the lymph nodes to stretch out. This expansion of the lymph nodes, the command centres of the immune system, gives more room for

immune cells to gather and launch their attack against infections and cancer."

Dr Sophie Acton, first author and a Henry Wellcome Postdoctoral Fellow at UCL visiting Dr Reis e Sousa' lab, said: "The more we understand about how the immune system recognises and responds to disease the better we can start to harness it to attack cancer. We need to now see if this is the same mechanism that is used in the immune system's response to cancer and how we can exploit it to fight the disease."

Professor Nic Jones, Cancer Research UK's chief scientist, said: "Research like this is at the heart of Cancer Research UK's new strategy to support work that builds our understanding of the role that the immune system plays in cancer. We're at an incredibly exciting time in piecing this together and the more we learn the more we will have new avenues to exploit the immune system in new treatments."

More information: Dendritic cells control fibroblastic reticular network tension and lymph node expansion, *Nature*, DOI: 10.1038/nature13814

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