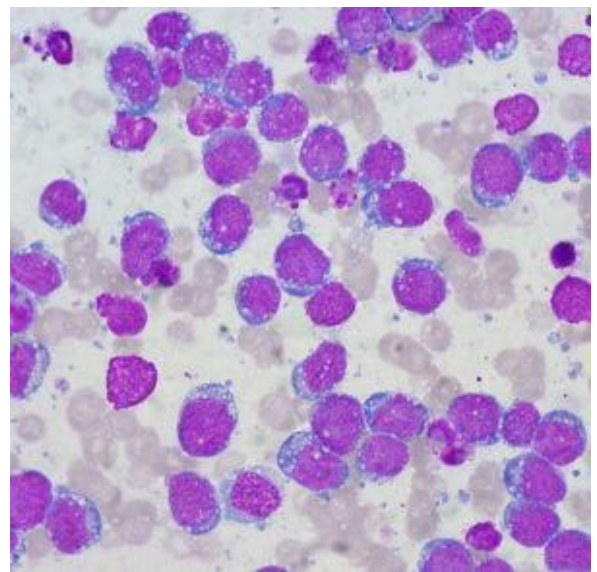
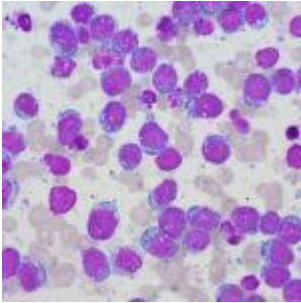


# The link between malaria and cancer



Burkitt's lymphoma (Ed Uthman, Wikimedia Commons)

Researchers have found that the damage to DNA caused by the malaria parasite in cells increases the risk of those cells turning into cancerous cells.

Burkitt's lymphoma – a B cell cancer – has previously been epidemiologically linked with malaria endemic areas. It was not known what caused this association and this led researchers at the The Rockefeller University, headed by Michel C. Nussenzweig, to investigate this further.

In this study, the researchers infected mice with *Plasmodium chabaudi*, a malaria parasite specific to rodents, to establish

a chronic infection. They found that the infection with the parasite led to efficient expansion of the germinal centre B cells. All these B cells were expressing activation-induced cytidine deaminase (AID), an enzyme which mutates DNA. These B cells therefore undergo DNA damage which leads to chromosome translocation.

They found that AID played a role in production of *Plasmodium*-associated B cell lymphoma and therefore malaria infection is linked to B cells cancers such as Burkitt's lymphoma. However, the malaria infection by itself did not result in increased risk of cancer. Instead, the *Plasmodium* infection acts by altering lymphoma phenotypes to ones that favour mature B cell lymphomas. The parasite does this by inducing the germinal centre B cells which express AID. Most malaria-infected individuals who develop lymphomas are co-infected with EBV. EBV is a virus which encodes lymphoma-promoting proteins.

This study has been able to show the mechanism behind the association between malaria infection and the development of B cell lymphomas. This knowledge may help prevent the development of these lymphomas in endemic areas.

Journal Article: [Robbiani et al., 2015. Plasmodium Infection Promotes Genomic Instability and AID-Dependent B Cell Lymphoma. Cell](#)

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