

New theory on why more women than men develop autoimmune diseases

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New findings are now being presented on possible mechanisms behind gender differences in the occurrence of rheumatism and other autoimmune diseases. The study, published in *Nature Communications*, can be of significance for the future treatment of diseases.

"It's very important to understand what causes these diseases to be so much more common among women," says Åsa Tivesten, professor of medicine at Sahlgrenska Academy, Sweden, a chief physician and one of the authors of the study. "In this way, we can eventually provide better treatment for the diseases."

In [autoimmune diseases](#), the immune system creates antibodies that attack the body's own tissue. Almost all autoimmune diseases affect women more often than men. The gender difference is especially great in the case of lupus, a serious [disease](#) also known as [systemic lupus erythematosus](#) or SLE. Nine out of ten of those afflicted are women.

It has been known that there is a link between the male sex hormone testosterone and protection against autoimmune diseases. Men are generally more protected than [women](#), who only have one tenth as much testosterone.

New possible mechanisms

Testosterone reduces the number of B cells, a type of lymphocyte that releases harmful antibodies. The researchers behind the study were trying to understand what the connection between testosterone and the production of B cells in the spleen actually looks like, mechanisms that have so far been unknown.

After numerous experiments on mice and studies of blood samples from 128 men, the researchers were able to conclude that the critical connection is the protein BAFF, which makes the B cells more

viable.

"We have concluded that testosterone suppresses BAFF. If you eliminate testosterone, you get more BAFF and thereby more B [cells](#) in the spleen because they survive to a greater extent. Recognition of the link between [testosterone](#) and BAFF is completely new. No one has reported this in the past," says Åsa Tivesten.

Better use of medicines

The results correlate well with a previous study showing that genetic variations in BAFF can be linked to the risk of diseases such as lupus. That disease is treated with BAFF inhibitors, a medicine that has not, however, really lived up to expectations.

"That's why this information about how the body regulates the levels of BAFF is extremely important, so that we can continue to put the pieces together and try to understand which patients should have BAFF inhibitors and which should not. Accordingly, our study serves as a basis for further research on how the medicine can be used in a better way."

More information: Anna S. Wilhelmson et al. Testosterone is an endogenous regulator of BAFF and splenic B cell number, *Nature Communications* (2018). [DOI: 10.1038/s41467-018-04408-0](https://doi.org/10.1038/s41467-018-04408-0)

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