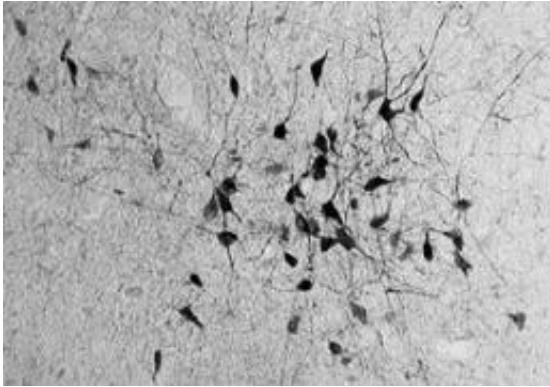


# A new type of nerve cell found in the brain

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Neurons affected by dysfunctional thyroid. Copyright: Mittag et al.

Scientists at Karolinska Institutet in Sweden, in collaboration with colleagues in Germany and the Netherlands, have identified a previously unknown group of nerve cells in the brain. The nerve cells regulate cardiovascular functions such as heart rhythm and blood pressure. It is hoped that the discovery, which is published in the *Journal of Clinical Investigation*, will be significant in the long term in the treatment of cardiovascular diseases in humans.

The scientists have managed to identify in mice a previously totally unknown group of nerve cells in the brain. These nerve cells, also known as 'neurons', develop in the brain with the aid of [thyroid hormone](#), which is produced in the [thyroid gland](#). Patients in whom the function of the thyroid gland is disturbed and who therefore produce too much or too little thyroid hormone, thus risk developing problems with these [nerve cells](#). This in turn has an effect on the function of the heart, leading to cardiovascular disease.

It is well-known that patients with untreated hyperthyroidism (too high a production of thyroid hormone) or hypothyroidism (too low a production of thyroid hormone) often develop heart problems. It has previously been believed that this was solely

a result of the hormone affecting the heart directly. The new study, however, shows that thyroid hormone also affects the heart indirectly, through the newly discovered neurons.

"This discovery opens the possibility of a completely new way of combating cardiovascular disease", says Jens Mittag, group leader at the Department of [Cell and Molecular Biology](#) at Karolinska Institutet. "If we learn how to control these neurons, we will be able to treat certain cardiovascular problems like hypertension through the brain. This is, however, still far in the future. A more immediate conclusion is that it is of utmost importance to identify and treat pregnant women with hypothyroidism, since their low level of thyroid hormone may harm the production of these neurons in the foetus, and this may in the long run cause cardiovascular disorders in the offspring."

**More information:** 'Thyroid hormone is required for hypothalamic neurons regulating cardiovascular functions', Jens Mittag, David J. Lyons, Johan Sällström, Milica Vujovic, Susi Dudazy-Gralla, Amy Warner, Karin Wallis, Anneke Alkemade, Kristina Nordström, Hannah Monyer, Christian Broberger, Anders Arner and Björn Vennström, *Journal of Clinical Investigation*, 2013;123(1), online 21 December 2012, [doi:10.1172/JCI65252](https://doi.org/10.1172/JCI65252)

Provided by Karolinska Institutet

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