

Researchers engineer new thyroid cells

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Researchers have discovered a new efficient way to generate thyroid cells, known as thyrocytes, using genetically modified embryonic stem cells.

The findings, which appear in the journal *Stem Cell Reports*, are the first step to developing a similar protocol using human stem cells that will allow the modeling of thyroid disease to better understand its causes and the development of therapies.

Thyroid disorders affect approximately 10 percent of the U.S. population and include Grave's disease or Hashimoto's disease, which can result in hyper or hypothyroidism, [thyroid nodules](#), goiter or cancer.

Researchers from Boston University School of Medicine (BUSM), engineered mouse embryonic stem cells cultured in the lab to express a genetic switch for a specific gene, Nkx2-1, that is important for thyroid development. Then they guided the [embryonic stem cells](#) through various stages while switching Nkx2-1 on and off for short periods of time and found there was one narrow timeframe where turning on this gene converted the majority of cells to thyroid cells.

"This method resulted in high yield of our target cell type, thyroid cells, but it may be applicable for the derivation of other clinically relevant cell types such as [lung cells](#), [insulin-producing cells](#), [liver cells](#), etc.," explained Laertis Ikonou, PhD, assistant professor of medicine at BUSM and member of the Center for Regenerative Medicine (CREM) at Boston Medical Center and BUSM.

The researchers hope this study will lead to the development of therapeutics or stem cell/genetic engineering technologies that will improve the quality of life for the many people afflicted with thyroid and other disorders.

Provided by Boston University Medical Center

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