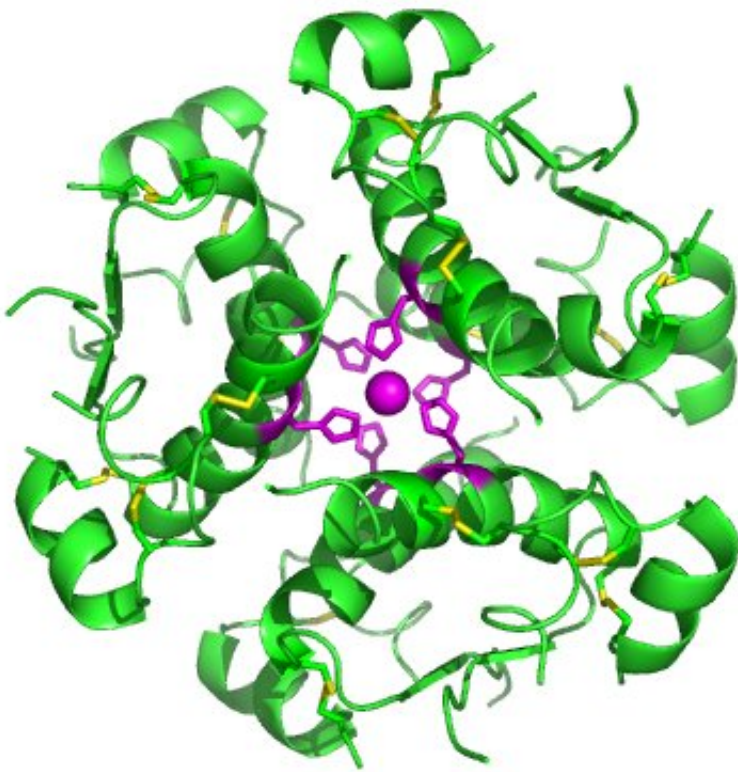


Key enzyme identified in protection of beta cells and regulation of insulin

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High-resolution model of six insulin molecules assembled in a hexamer. Credit: Isaac Yonemoto/Wikipedia

Physiologists at the Medical College of Wisconsin have identified the enzyme thioredoxin reductase as playing a key role in protecting beta cells from oxidative stress and in the regulation of insulin secretion.

Researchers also show in this study that beta cells adapt in the absence of thioredoxin reductase by turning on alternative antioxidant pathways of protection from [oxidative stress](#).

In addition, beta cells are very resistant to oxidative stress and use thioredoxin reductase to protect themselves from the imbalance. Oxidative stress is believed to contribute to loss of beta cell function and beta cell death in both type 1 and type 2 [diabetes](#).

"We hope that by understanding how beta cells protect themselves, we can develop novel therapeutic strategies designed to boost endogenous resistance to oxidative stress and thereby protect beta cells from damage associated with diabetes," said Jennifer Stancill, Ph.D., co-author of the study published in *Function*.

More information: Jennifer S Stancill et al, Deletion of thioredoxin reductase disrupts redox homeostasis and impairs β -cell function, *Function* (2022). [DOI: 10.1093/function/zqac034](https://doi.org/10.1093/function/zqac034)

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