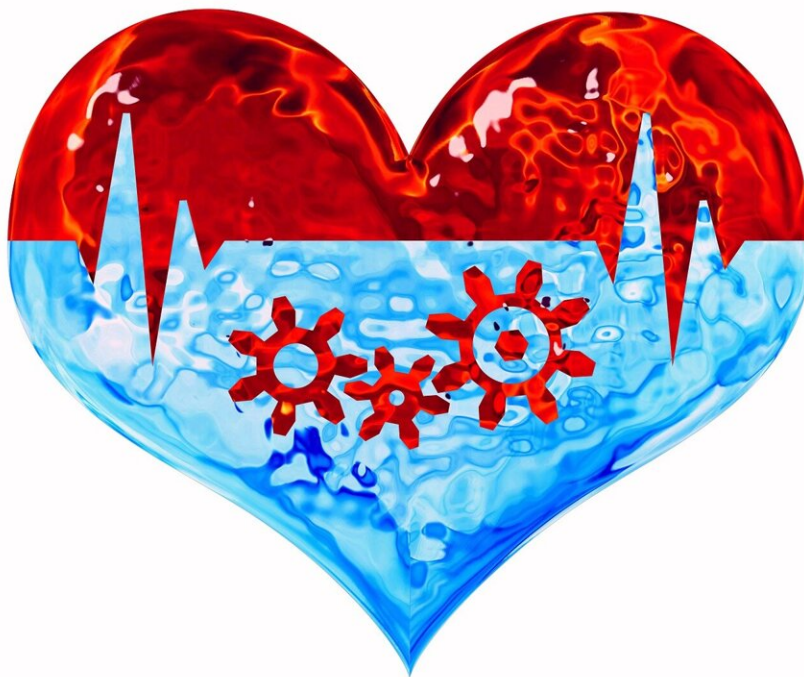


# Q&A: New thesis reveals mechanisms that regulate cellular defense against oxidants in the heart

October 10 2023

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Zaher Elbeck from ICMC at the Department of Medicine, Huddinge (MedH) is defending his thesis, titled "Redox and epigenetic modulators regulate cardiac function and remodeling in health and disease," on 16

October 2023. The main supervisor is Christer Betsholtz (MedH).

## **What is the main focus of your thesis?**

My thesis focuses on exploring and clarifying the nature of oxidants and antioxidants, and reveals novel mechanisms that regulate our [cellular defense](#) against oxidants in the heart. I highlight that all oxidants and antioxidants are (bio)[chemical compounds](#), meaning that each of them has also its unique biological function in our cells due to its [chemical structure](#), besides being oxidants or antioxidants.

## **Which are the most important results?**

We show that heart failure is not necessarily associated with reduced capacity of defense against oxidants, and therefore that our intake of antioxidants is not always useful and may instead have adverse effects. By using an experimental model for heart failure, I show that an antioxidative treatment improves [cardiac function](#) in those subjects that have reduced antioxidative capacity but worsens heart function in subjects with sufficient antioxidative capacity.

## **How can this new knowledge contribute to the improvement of people's health?**

The conclusions made in this work would help improve the clinical outcome of antioxidative therapies for heart failure patients, which have been so far unsuccessful. In order to harness antioxidative therapy for therapeutic use, a personalized approach is essential. This would involve assessing an individual's antioxidative capacity before initiating treatment.

## **What are your future ambitions?**

I am planning to continue researching new mechanisms that regulate our cellular antioxidative response, and to develop noninvasive biomarkers for assessing antioxidative capacity of our hearts. This would help in the early diagnosis of [heart failure](#) and in developing a personalized approach for treatments.

**More information:** Redox and epigenetic modulators regulate cardiac function and remodeling in health and disease.

[openarchive.ki.se/xmlui/handle ... 0830169692702658f230](https://openarchive.ki.se/xmlui/handle/0830169692702658f230)

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