# Fighting tuberculosis using the body's natural anti-microbial processes

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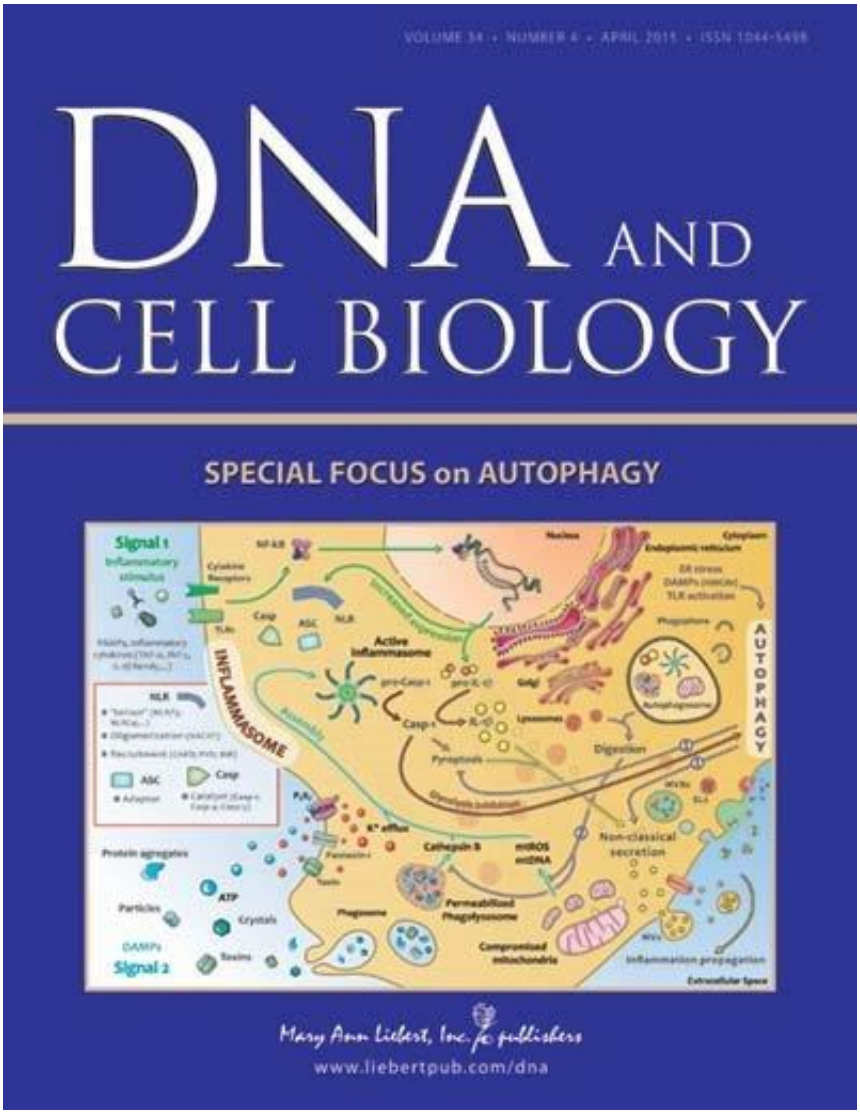


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A new approach to combatting tuberculosis would take advantage of a complex, natural process called autophagy that the human body uses to recycle nutrients, remove damaged cell components, eliminate invading bacteria, and respond to inflammation. In addition to its potential as a novel therapeutic strategy, autophagy is the focus of increasing research to understand the role it may have in a range of diseases including heart disease, diabetes, and age-related neurodegenerative disorders such as Alzheimer's disease, as discussed in a series of in-depth articles that comprise the special issue "Autophagy in Disease" of *DNA and Cell Biology*.

Carla Bento, Nuno Empadinhas, and Vi'tor Mendes University of Cambridge, U.K. and University of Coimbra, Portugal, highlight recent advances in research aimed at manipulating autophagy to enhance the immune system's ability to fight off infection by *Mycobacterium tuberculosis* in the Review article "Autophagy in the Fight Against Tuberculosis."

In the Editorial introducing the special issue, Guest Editor Sandra Morais Cardoso, University of Coimbra, describes how cells rely on autophagy in normal physiology and the broad scope of diseases that can be affected by processes linked to autophagy. Articles in the issue focus on the potential role of autophagy in inflammasome activation and the resulting effects on inflammation. They also debate how autophagy may affect cardiomyocytes, the cells involved in heart function, and what role it might play in heart disease. The potential to use autophagy as a therapeutic tool to intervene in these disease processes, and others such as type 2 diabetes or Alzheimer's disease, is also a featured topic in this special issue.

"Autophagy is an essential cellular process in which cytoplasmic contents including organelles are engulfed in a membrane and digested by lysosomal enzymes ("eating self"); this process is activated in times of

stress, starvation, infection and cancer," says Carol Shoshkes Reiss, PhD, Editor-in-Chief, of *DNA and Cell Biology* and Professor, Departments of Biology and Neural Science, New York University, NY. "Dr. Cardoso was a superb guest editor for this collection of reviews on autophagy. She was able to recruit an exceptional group of papers, including this one on tuberculosis."

**More information:** The issue is available free on the *DNA and Cell Biology* website until May 15, 2014.

Provided by Mary Ann Liebert, Inc

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