# Abstract

Several philosophical accounts of disease are constructed around the idea that disease is a failure of physiological parts or processes to perform their biological function. Determining whether a phenotype—such as obesity—is a disease or determining the level of functioning at which some aspect of physiology—such as response to insulin—becomes pathological throws considerable weight on the concept of biological function. However, there are a number of philosophical theories of biological function, each of which defines function differently. It is not clear which theory, or combination of theories, we should use to explicate the medical conception of function. We have no systematic way to determine how biologists and medical practitioners conceive of, or write about, function in their respective disciplines. To further complicate matters, natural language is replete with ambiguities, and scientific manuscripts often use terms imprecisely. Without a descriptive understanding of how different conceptions of function are used in biology and medicine, we have little hope of bringing insights about biological function to bear on disputes about function and malfunction in medicine. Here we explore how one can extract semantics about function by focusing on analysing grammatical constructions. Specifically, we develop a systematic method for analysing references to function by outlining a classification scheme that combines syntactic and semantic analysis in a dependency-grammar framework.

# Keywords

Function

Dysfunction

Biological function

Philosophy of medicine

Experimental philosophy

# Short Bios

## Joshua Christie

**Josh Christie** is an evolutionary biologist who worked on integrating theoretical models with philosophical theories on biological function, with the Theory and Method in Biosciences group at the Charles Perkins Centre, a multidisciplinary research institute at the University of Sydney examining lifestyle-related disease. He developed methods to operationalise and quantify biological function, as well as using natural language processing to understand how biologists use the concept of "function" in the literature.

## Zachary Wilkinson

**Zach Wilkinson** has a background in philosophy and psychology, with theoretical and empirical research interests broadly in the health sciences. They conducted research in the emerging field of arts and health, building theoretical models through qualitative research for the evaluation of implementation and treatment effectiveness. They have also conducted theoretical research into the use of aggregate methods in the social sciences, aiming to facilitate pragmatist understandings of the role aggregation can play in clinical contexts. Zach is currently in mixed-methods, public health research working on large systematic reviews and treatment adaptation in the illicit drug space.

## Stefan Gawronski

**Stefan Gawronski** is a research assistant in the Theory and Methods in Bioscience group at the Charles Perkins Centre, a multidisciplinary research institute at the University of Sydney examining lifestyle-related disease. His current work applies methods of experimental philosophy to topics such as concepts of biological function and genetic essentialist biases. His research interests focus on the history and philosophy of biology.

## Paul Griffiths

**Paul Griffiths** is Australian Research Council Laureate Fellow and Challis Professor of Philosophy at the University of Sydney. A philosopher of science focused on the life sciences, he heads the Theory and Methods in Bioscience group at the Charles Perkins Centre, a multidisciplinary research institute examining lifestyle-related disease, and the ARC Laureate project ‘A Philosophy of Medicine for the 21st Century’. He is a Fellow of the American Association for the Advancement of Science, of the Australian Academy of the Humanities, and of the Royal Society of NSW. From 2011-13 he was President of the International Society for History, Philosophy and Social Studies of Biology.