



A Global Immunology through Interconnections, Civilizations, and Structures

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Abstract

This research urges greater focus on the numerous layers of social context responsiveness of immune function, including its behavioral elements. Newer research is discovering that illness temporarily affects these same social networks and that some aspects of culture may be able to "get under the skin" to affect inflammatory responses. Psychoneuroimmunology has shown that the quantity and quality of social connections can affect immune responses. In addition to taking into account the effects of structural elements, such as a society's economic, political, and environmental landscape, on exposure to infections and subsequent immune responses, the study approach put out here integrates these findings. A comprehensive study of the influences of social circumstances on the patterning of morbidity and death is crucial, as the COVID-19 pandemic has revealed. Such a paradigm is provided by social immunology, which also identifies significant risk factors for immune system dysfunction.

Keywords: Social networks; Illness behavior; Social immunology; Culture; Immune response

Introduction

Health and illness are social phenomena in socially living animals. Infectious disease is one area where this is especially true. Pathogen exposure frequently follows social network patterns. When an individual becomes infected, complex, integrated immune responses are triggered at the level of the person, who is also a part of relationships that can affect the type and amount of resources (such as food) required to sustain an effective immune response as well as the capacity to express behaviors [1-4] that may also have an impact on the course of the infection. Being the most socially complex species, we have extremely complex and varied interpersonal connections and social networks in addition to being rooted in sociocultural environments that influence every part of our life. In order to develop a more comprehensive understanding of human immune function with subsequent effects on morbidity, mortality, and pathogen transmission, I contend that psychoneuroimmunology and related fields can benefit from embracing the complexity and culturally contingent nature of our social lives. I provide "social immunology" as one such study framework in this article.

Case presentation

This method seeks to comprehend the ways in which 1) an individual's social networks affect immune function and vulnerability to infection, 2) immune responses during infection affect social relationships, and 3) larger social contexts, such as the structure of society and cultural values and norms, are capable of influencing immune function and vulnerability to infection. Eric Shattuck is an interdisciplinary scientist with training in psychoneuroimmunology, evolutionary medicine, and biological and cultural anthropology. His work focuses on the biological and cultural determinants of health in various social contexts, with an emphasis on infectious disease. The ultimate goal of this research is to (Figure 1) advance our comprehension of inflammation, immunity, and its psychological and behavioural correlates in the context of the wide range [4-9] of human cultures and social groups. Other ongoing initiatives investigate the relationships between discomfort, rage, and opiate use and abuse, as well as the relationships between sleep, social stress, and inflammation in the developing world, and they also investigate Indigenous perceptions

of typical infectious disease symptoms. After earning his B.A. in Anthropology from the University of Georgia in 2005, Eric went on to earn his M.S. in Biomedical Anthropology from SUNY Binghamton in 2009, where he collaborated with Dr. Chris Reiber on a project about prosocial behaviours after vaccination. He worked as an intern at the Centers for Disease Control and Prevention's Infectious Disease Pathology Branch in Atlanta, Georgia, while getting that degree. While researching with Professor Michael Muehlenbein and his Evolutionary Ecology and Physiology Lab at Indiana University, he earned his Ph.D. in Biological Anthropology in 2015. Since then, he has finished post-doctoral training under the supervision of Drs. Michael Muehlenbein and Thankam S. Sunil at the University of Texas at San Antonio. He

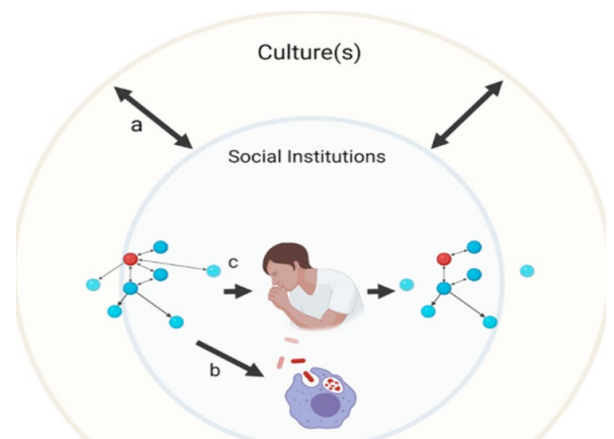


Figure 1: Multiple social settings affect how the immune system functions.

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Received: 05-Jan-2023, Manuscript No. icr-23-85491; **Editor assigned:** 07-Jan-2023, PreQC No. icr-23-85491(PQ); **Reviewed:** 21-Jan-2023, QC No. icr-23-85491; **Revised:** 23-Jan-2023, Manuscript No. icr-23-85491(R); **Published:** 30-Jan-2023, DOI: 10.4172/icr.1000126

Citation: Shattuck O (2023) A Global Immunology through Interconnections, Civilizations, and Structures. Immunol Curr Res, 7: 126.

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Results and Discussion

Ecoimmunology, which studies how environmental elements like seasonality and day length affect immunity, might be compared to social immunology. We might legitimately expect social settings to influence physiological responses because our species depends on sociality. Since social [9] networks and relationships are a part of larger sociocultural systems, the social immunology framework adopts an even broader viewpoint. These systems, which differ within and between nations and other sociopolitical groupings (2016 for the necessity of viewing culture as a dynamic system and the difficulties associated with equating culture solely with race/ethnicity, nationality, and other broad groups), shape these networks and relationships and thus contribute to the variable relationships between social factors and immunological outcomes.

Social immunology at the individual level

The quantity and calibre of a person's social connections, or social networks, can have an impact on health in a variety of ways, including through social support, resource availability, and interpersonal engagement. Interpersonal interaction obviously affects the spread of pathogens, and some evidence indicates that frequent and/or simultaneous pathogen exposure may have an impact on immunity and susceptibility to infection, either temporarily or permanently. In this regard, varying frequency of pathogen exposure via social networks may have significant effects on immune function over the course of a person's life. The immunological impact of repeated exposure to other, non-latent/chronic viruses like influenza could be the subject of further study. There might also be consequences between generations. The above-discussed immunological alterations may be ameliorated by having access to health-related resources like proper diet and medical knowledge, which can be aided – or hampered – by one's social networks. Therefore, we may anticipate that people who had a lot of social interaction but limited access to healthcare resources would experience [8] many infectious "hits," which could lead to an earlier onset of immunosenescence and an increased risk of infection. Although only when under mild stress, more diversity in social networks has been found to have a protective impact against catching a cold after experimental immunisation and fewer upper respiratory infections. Indeed, increased interleukin-1 beta (IL-1 beta) and TNF-production by LPS-stimulated leukocytes was associated with perceived

social role conflict (i.e., the degree to which responsibilities of various roles interfere with each other) in men but not in women, suggesting that the stresses brought on by social networks themselves can affect immune function.

Conclusion

Specific and nonspecific immune responses are triggered by invading pathogens and cancer cells in the immune system. Immunotherapy aims to improve these reactions in order to stop the spread of cancer cells. The understanding of how stress affects immunological and cytokine response is developing.

Acknowledgement

The University of Nottingham provided the tools necessary for the research, for which the authors are thankful.

Conflict of Interest

For the research, writing, and/or publication of this work, the authors disclosed no potential conflicts of interest.

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