

## Perspective

# The Role of Evolutionary Medicine in Understanding Modern Health Challenges and Future Prospects

Elijah Morgan\*

Department of Public Health, New York Medical College, USA

\*Address Correspondence to Elijah Morgan, [elijamorr@yahoo.com](mailto:elijamorr@yahoo.com)

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## Introduction

Evolutionary medicine, in its classical form, posits that the ailments of modern humans result from a mismatch between adaptations to past environments and our current circumstances. This approach recognizes that cultural evolution is faster than biological evolution, leading to a significant discrepancy between our bodies' adaptation to ancient natural environments and our present highly anthropic and artificial living conditions. In this article, we explore two key areas of potential future evolution: Diet and physical activity levels, both of which have undergone dramatic changes in industrialized societies. We also acknowledge that the unprecedented human population size in the 21st century has opened up new opportunities for sexual selection and mutation, potentially giving rise to ongoing micro-evolutionary processes.

## Description

Evolutionary medicine draws upon our understanding of mammalian and hominin evolution to explain the diseases and ailments prevalent in modern human populations. By examining the principles of evolution, this field also helps us comprehend the changing responses of pathogenic microorganisms to treatments. Its fundamental principle is rooted in the fact that humans have evolved over millions of years in specific natural environments, adapting biologically to the lifestyles and conditions prevalent during those times. However, rapid cultural evolution has drastically transformed our environments and lifestyles in recent history, creating a significant disconnect between our ancient biological adaptations and our present circumstances. The concept of the Environment of Evolutionary Adaptedness (EEA) suggests that until several thousand years ago, humans primarily relied on gathering and hunting in natural environments for

sustenance, rather than food production. This lifestyle had profound implications, including nomadism, low population density, access to a diverse and natural diet, and regular physical activity. While the specifics of the EEA varied based on geographical location and climate, we can gain insights into this ancient lifestyle through early modern descriptions of present-day hunter-gatherer societies. Although these descriptions often pertained to marginalized communities inhabiting environments unsuitable for agriculture and animal husbandry, they revealed that the EEA lifestyle was not excessively physically demanding but did require daily physical activity. Given that our biological characteristics may not be optimally suited to our present environments, evolutionary medicine acknowledges a significant mismatch between our bodies and the highly artificial living conditions of today. This approach assumes that biological evolution is a slow and gradual process occurring over thousands of generations. Consequently, evolutionary medicine suggests that to safeguard our health, we must manipulate recent technological, social, and cultural changes to restore elements of our ancestral ways of life.

## Conclusion

Evolutionary medicine provides valuable insights into the health challenges faced by modern humans due to the mismatch between our ancient adaptations and current living conditions. By considering our evolutionary history, this field offers potential solutions for restoring aspects of our ancestral lifestyle. However, as humans continue to shape their own evolution, the future remains uncertain, and the consequences of genetic changes and adaptations are yet to be fully understood. The ongoing nature of evolution calls for further exploration and awareness as we navigate the complex.