

Review of: "Somatic evolution of Cancer: A new synthesis"

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This excellent article by Baig et al. offers a novel perspective on cancer prevention and evolution, suggesting that many mechanisms and pathways associated with cancer are repurposed from normal physiological functions. This new theory challenges the classical view of cancer as a somatic evolution that must reinvent itself in each case. The paper presents an innovative and unconventional perspective on cancer, which is a significant advantage. It encourages researchers to think differently about the origins and prevention of cancer, which can lead to new insights and potential treatment approaches. This article effectively integrates principles of evolutionary biology with cancer biology. It underscores the importance of considering how evolution has shaped mechanisms to prevent cancer, linking these mechanisms to pre-existing processes such as wound healing. Furthermore, the paper takes a holistic approach by outlining five classes of strategies to prevent cancer, covering various stages from mutation prevention to controlling wound healing cascades. This comprehensive approach provides a detailed framework for understanding cancer prevention. This theory offers a fresh perspective that aligns with several empirical observations and provides a framework for further research in the field of cancer biology.

I have read this paper with great interest. Here I provide several critiques for this piece:

1. The analogy between wound healing and cancer, while insightful, might oversimplify the complexity of cancer biology. The actual mechanisms of cancer development are likely more multifaceted.
2. The theory is intricate and multi-faceted, with numerous interconnected components. This complexity might make it challenging to apply practically and necessitates further experimental validation.
3. The evidence presented is largely based on theoretical arguments and existing observations. While these correlations are intriguing, additional empirical data is needed to establish causation and test the predictions of this theory.
4. While the theory provides a new perspective, it doesn't immediately translate into practical applications for cancer research or treatment strategies. The authors could further explore how this theory could lead to tangible benefits in cancer prevention and therapy.
5. The theory places substantial emphasis on the prevention of cancer-related mutations in the germline but doesn't address the role of genetic variability and its contribution to cancer. Many cancers result from somatic mutations, which are not discussed in detail.

In summary, this interesting paper presents an intriguing and innovative theory that challenges traditional views of cancer biology and prevention. Its holistic approach and focus on the evolutionary underpinnings of cancer mechanisms are commendable. However, it is essential to recognize that this theory is primarily theoretical and lacks

empirical support. Further research is needed to validate its claims and to explore practical applications for cancer prevention and treatment. The complexity of the theory and its limited discussion on genetic variability may also be points of concern for some researchers. Nevertheless, it provides a thought-provoking framework for future investigations into the origins and prevention of cancer. I believe this paper deserves to be published in Qeios.