When microbiome meets one health principle: Leading to the holy grail of biology and contributing to overall well-being and social sustainability

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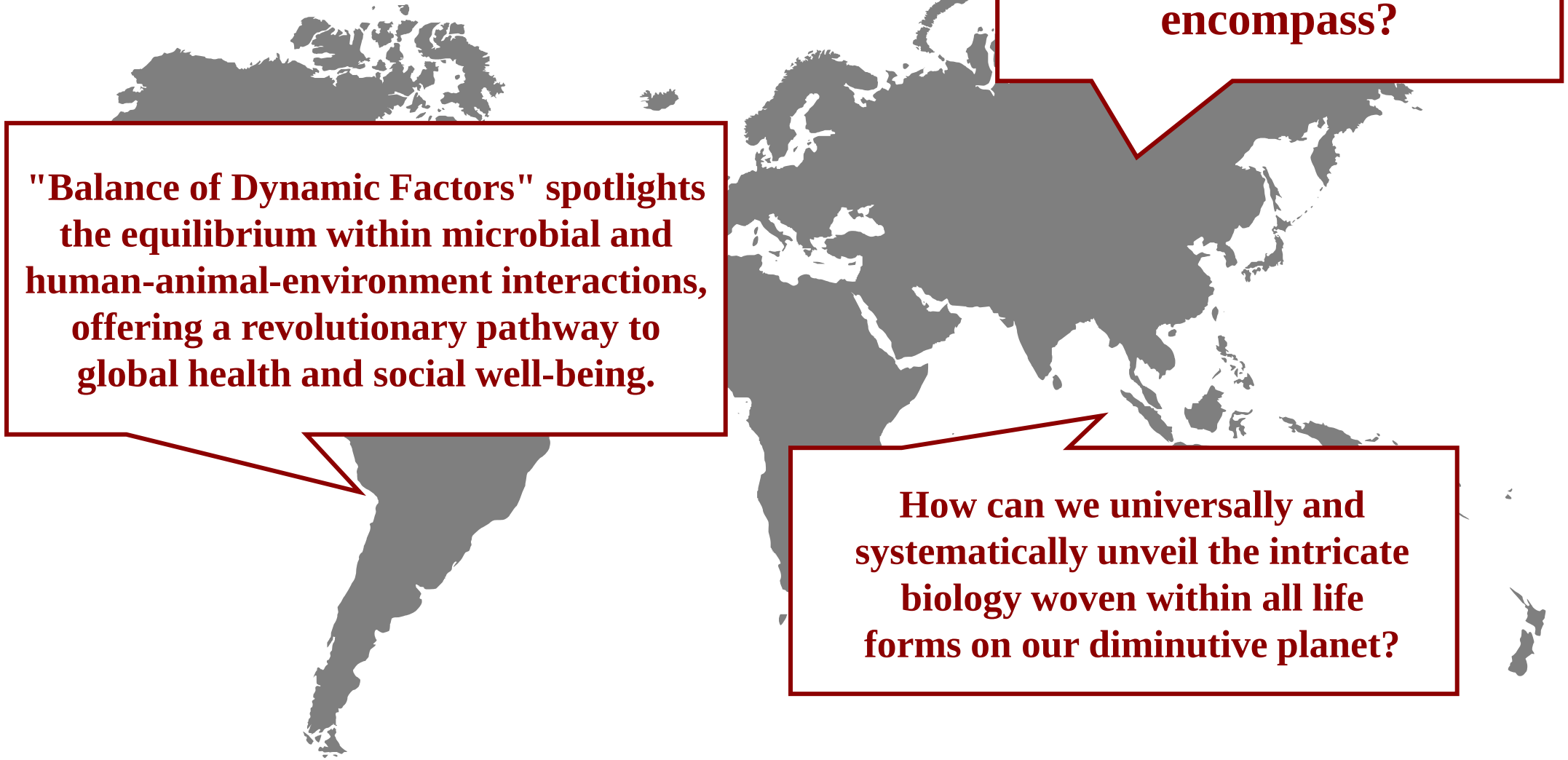
Introduction

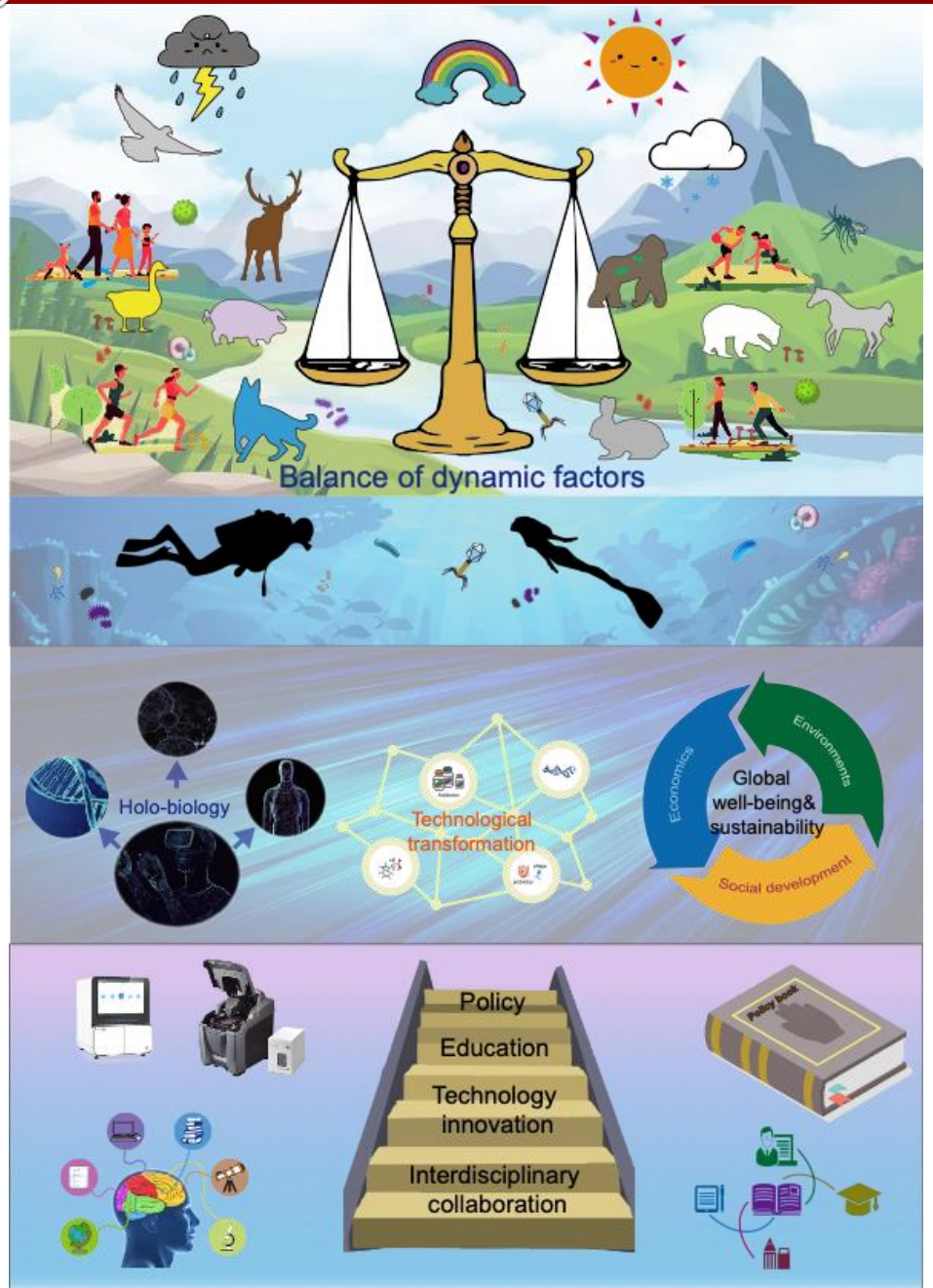


What does biology truly encompass?

"Balance of Dynamic Factors" spotlights the equilibrium within microbial and human-animal-environment interactions, offering a revolutionary pathway to global health and social well-being.

How can we universally and systematically unveil the intricate biology woven within all life forms on our diminutive planet?

Highlights



1

The microbiome is key for interdisciplinary solutions to global health issues.

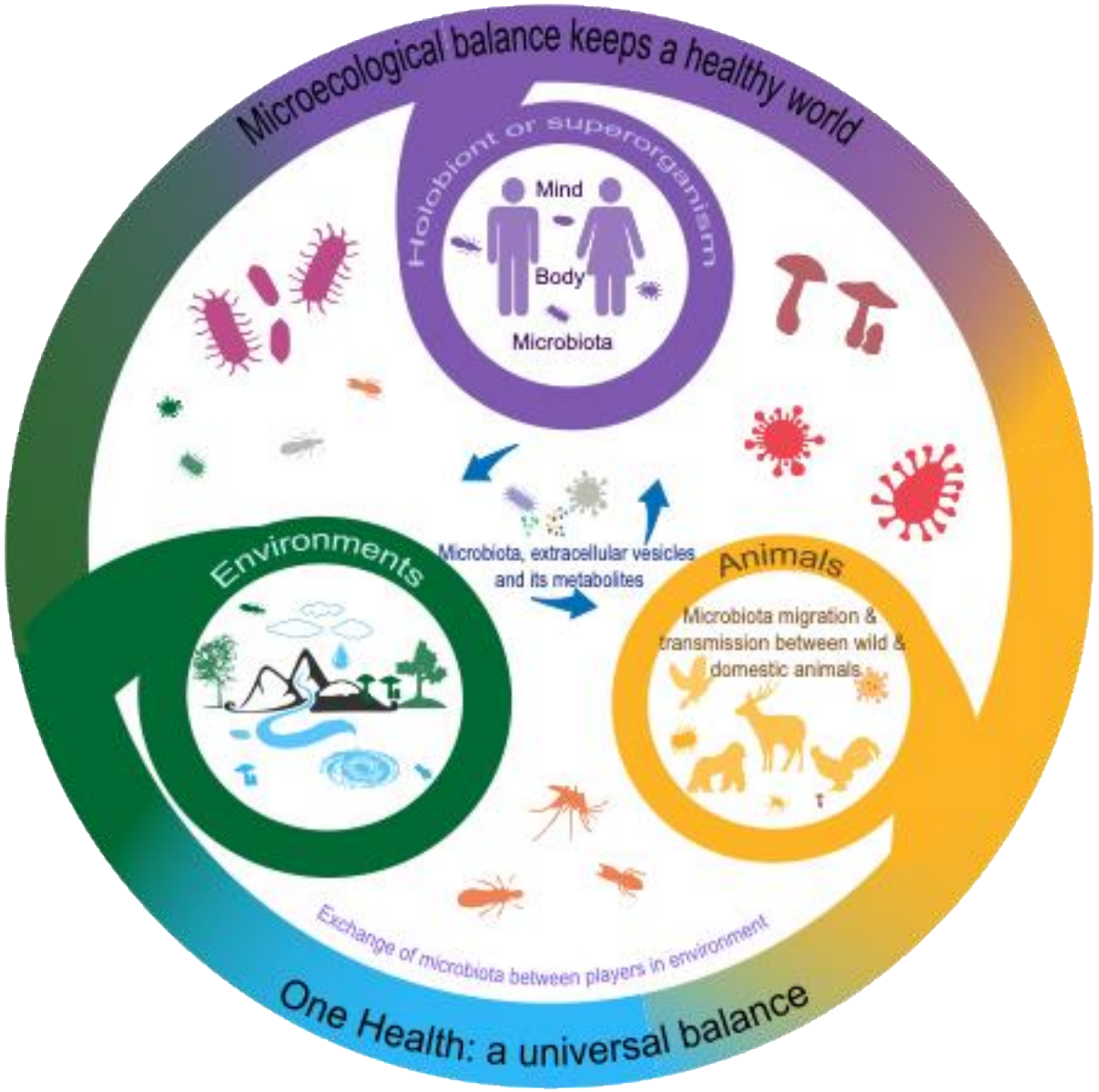
2

A systems-thinking approach for disease surveillance and environmental care should be adopted.

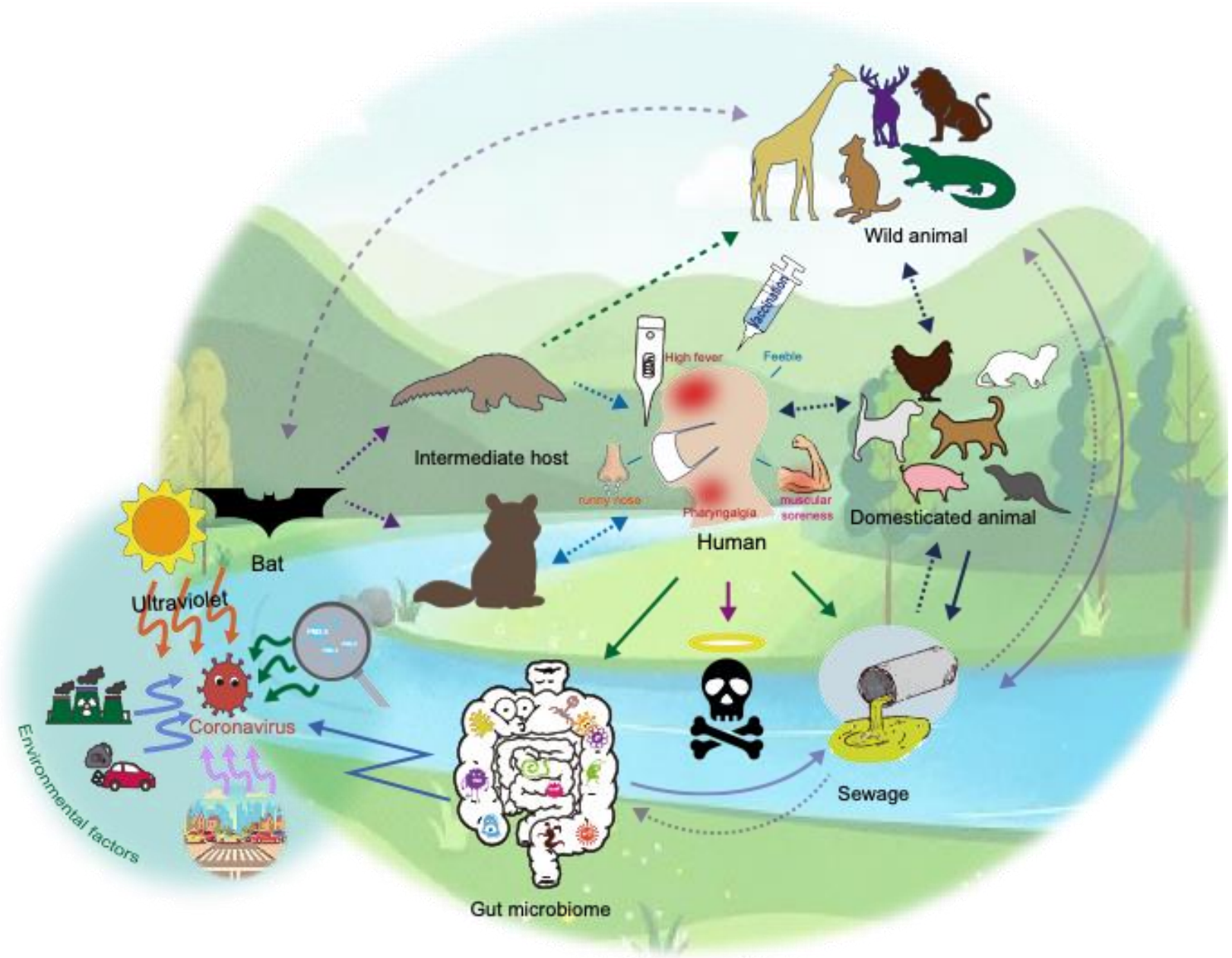
3

Integrate the microbiome and One Health for understanding life complexity and shaping health policies.

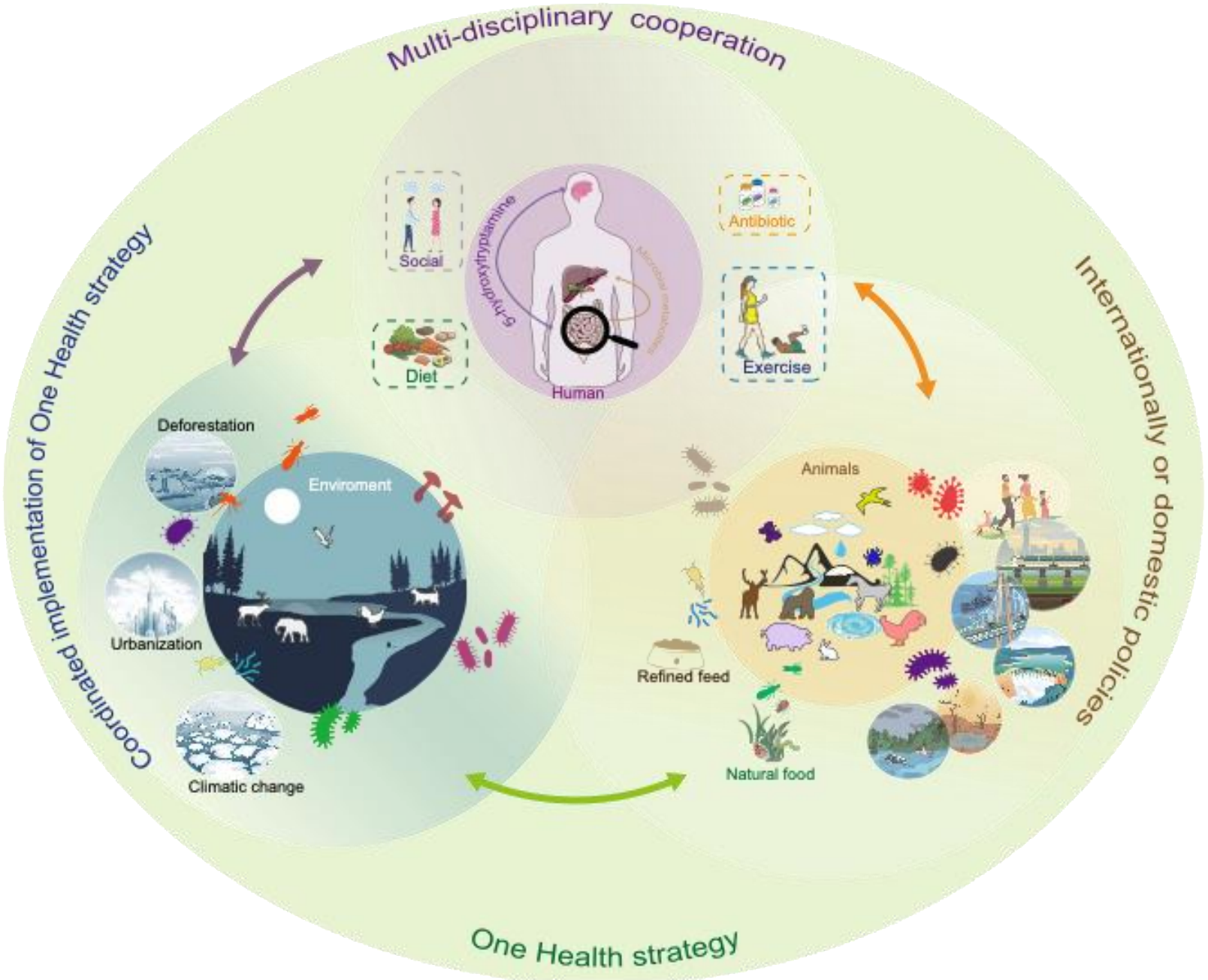
Microbiome: the Indispensable Genome for Creatures and Key Player for the Environment and Ecosystems



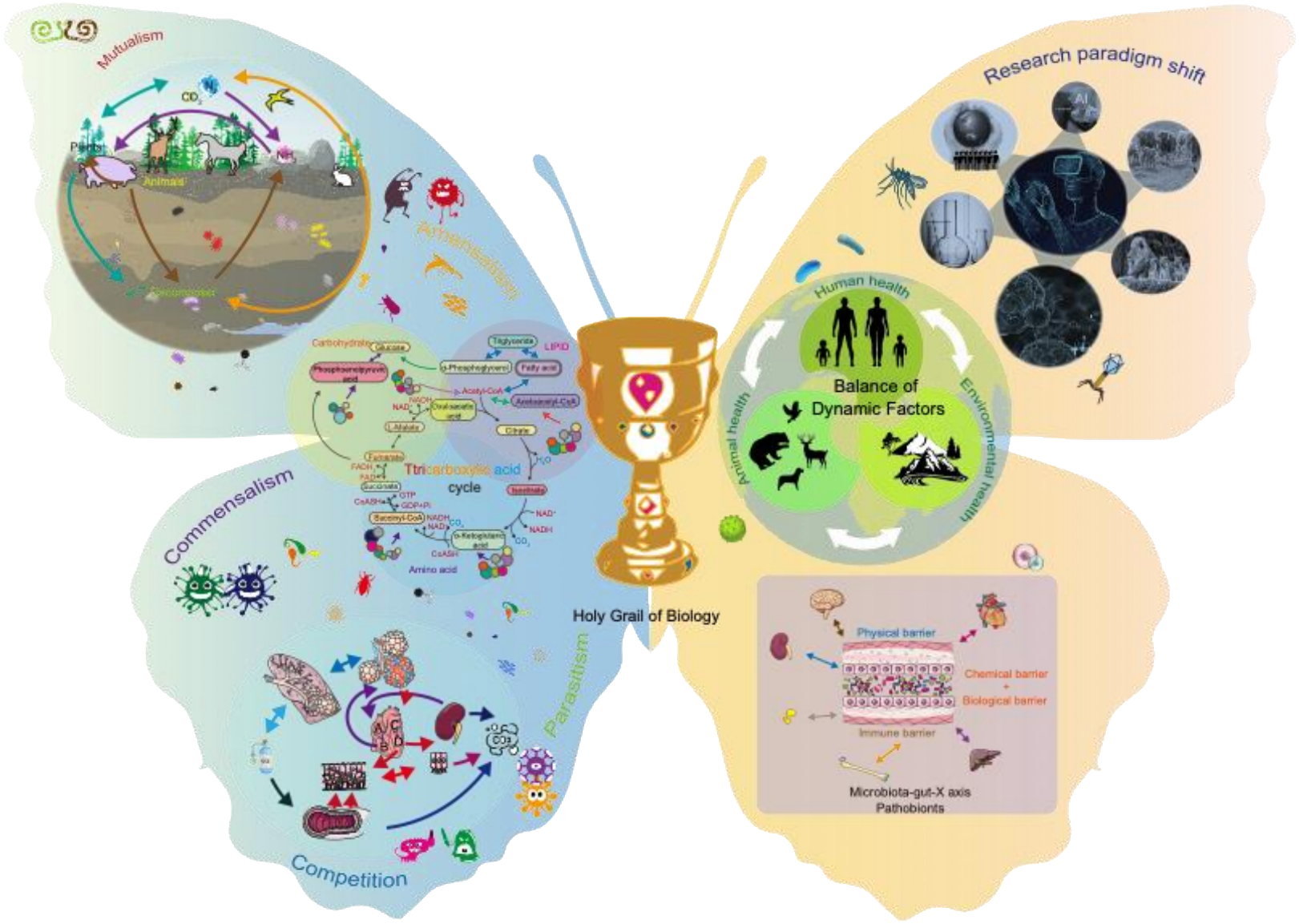
One Health: A Concept to Unite All Well-Beings in Our Globe



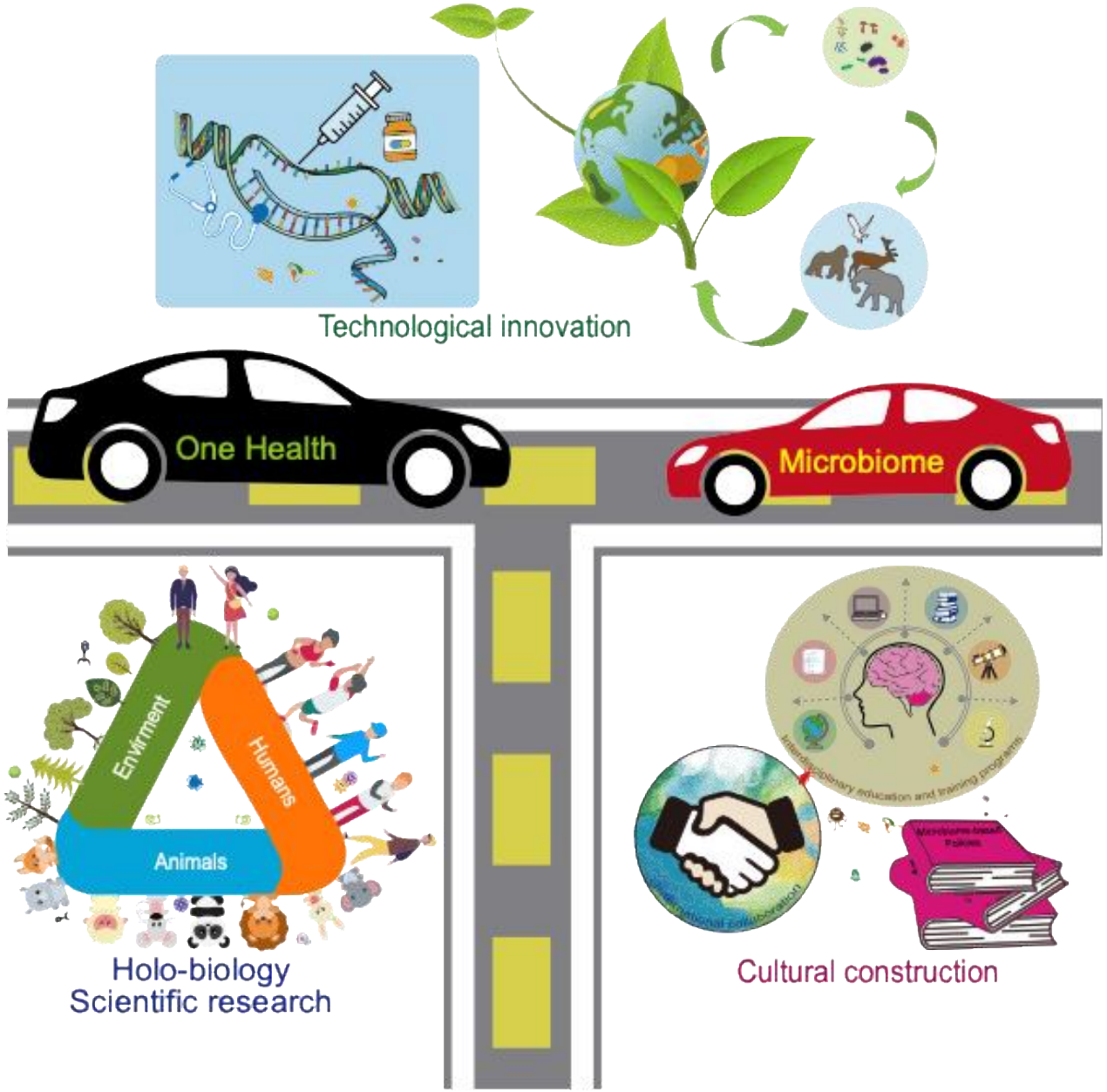
Microbiome Meets One-Health Principles: A Universal Balance Theory for Overall Health and Social Sustainability



How Microbiome and One Health Principles Shape Biology in the Future



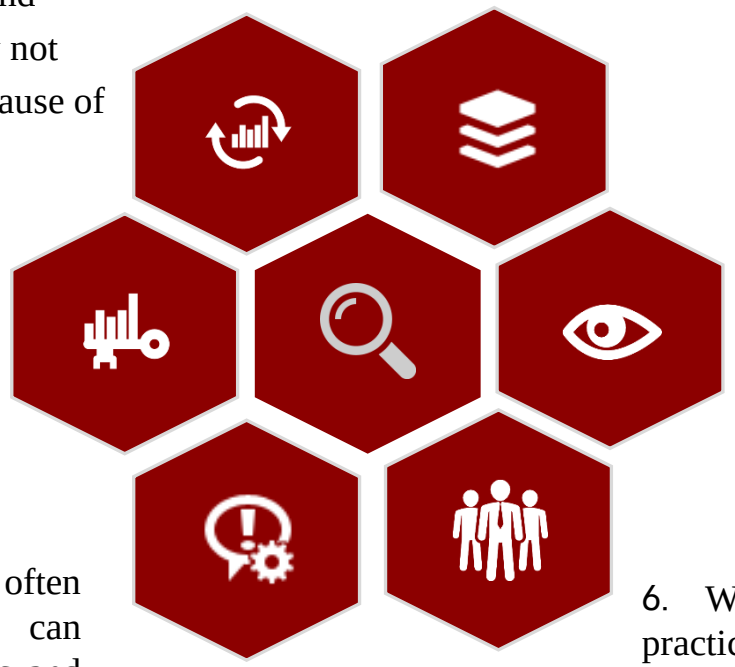
Next Step for Integrating Microbiome and One Health



Limitations of Theory “Balance of Dynamic Factors”

1. The complexity and heterogeneity of microbiomes make their combination with the One Health principle incredibly diverse and dynamic, varying across different hosts and environments. The "balance of dynamic factors" may not fully capture the complexity of these interactions because of the vast diversity of microbes and their functions.

2. Lack of a unified definition of "balance of dynamic factors" causes issues in establishing a universally accepted framework for the theory.



3. Human activities can significantly alter microbiomes, sometimes leading to imbalances. The theory needs to consider the impact of these changes on the balance it seeks to maintain, especially with the increasing recognition of the role of microbiomes in planetary health.

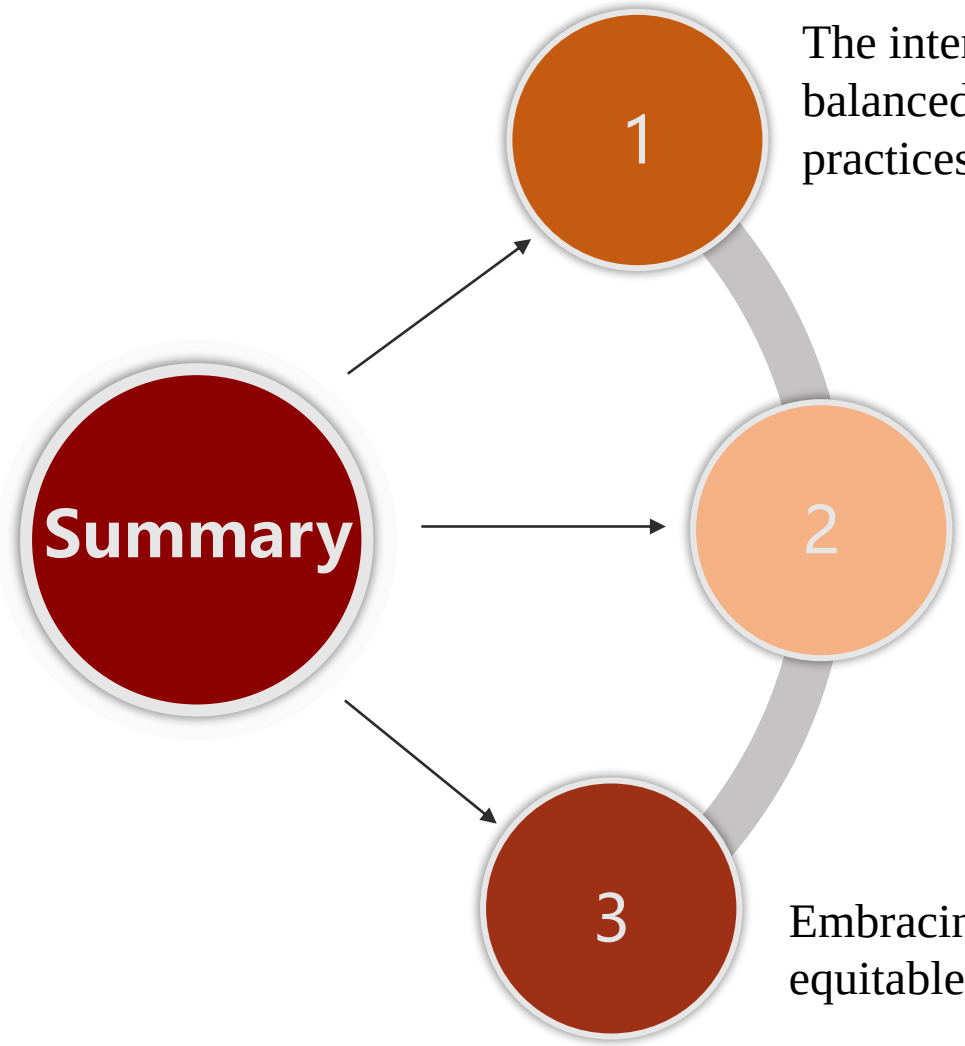
4. Microbes and their hosts are engaged in a continuous process of coevolution. The "balance of dynamic factors" might not fully encapsulate the evolutionary processes that drive these relationships and their impact on overall health and sustainability.

5. Advances in microbiome research are often driven by new technologies, which can introduce biases or require new definitions and standards. This can make it difficult to apply the theory consistently across different studies and environments.

6. While this theory provides a conceptual framework, its practical application in managing microbiomes for health and sustainability is still in its infancy. There is a need for more research on how to manipulate microbiomes effectively to achieve the desired balance.

7. The "balance of dynamic factors" cuts across various disciplines, requiring a high level of interdisciplinary collaboration. This can be challenging owing to differences in terminology, methodologies, and research objectives.

Conclusion and Future Prospectives



The intersection of microbiome science and One Health principles fosters balanced microbial ecosystems, resilience in health systems, and sustainable practices that benefit global health and social sustainability.

The development of a universal balance theory “Balance of Dynamic Factors” for integrating these two fields has the potential to revolutionize global health and social well-being for disease prevention, health equity, and sustainability.

Embracing this integrated approach is essential for creating a healthier, more equitable, and sustainable future for generations.

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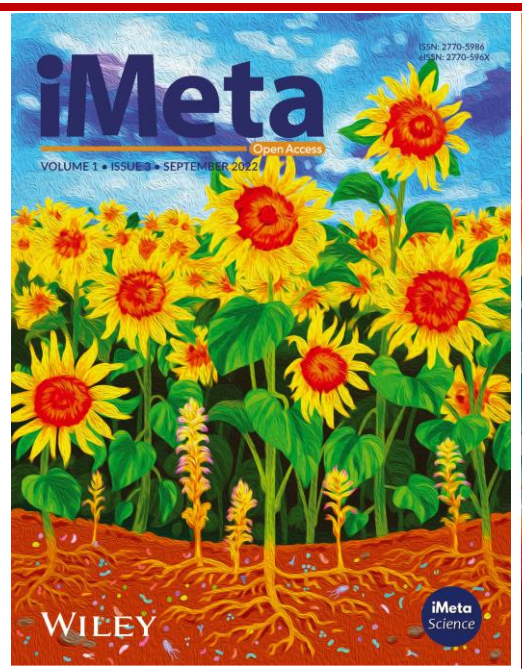

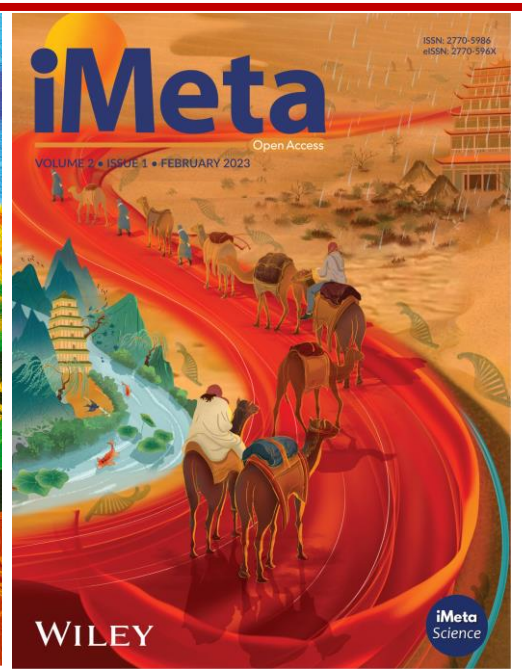

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