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EDITORIAL

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Computational Biomedicine

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Abstract: The announcement of the inaugural issue of *Computational Biomedicine* introduces a groundbreaking platform dedicated to exploring the synergy between computational methodologies and biomedical research. Focused on fostering dialogue amongst researchers from diverse disciplines, it aspires to create a thriving ecosystem that integrates computer scientists, biologists, clinicians, engineers, and mathematicians. The debut of *Computational Biomedicine* signifies not only the commencement of a journal but also ushers in a new paradigm in research, where computational methodologies and biomedical sciences converge. We kindly invite your attention and encourage your support for *Computational Biomedicine*.
Keywords: Computational Biomedicine; Journal aims; Innovation Science;

1. Charting the Convergence of Computational Methodologies and Biomedical Sciences - A New Frontier in Research and Innovation

The launch of Gemini 1.5[1-4] and Sora[5-8] in earlier 2024 ushered in a new era of artificial intelligence(AI), with the interdisciplinary integration of biotechnology, pushing *AI+life sciences* to a new stage. As we stand in a new era of interdisciplinary scientific discovery, it is with great excitement and anticipation that we introduce the inaugural issue of [*Computational Biomedicine*], a groundbreaking platform dedicated to exploring the synergistic interface between computational methodologies and biomedical sciences. This journal embodies our collective vision to foster interdisciplinary collaboration, accelerate knowledge translation, and propel advancements that reshape healthcare and our understanding of life's intricate mechanisms.

2. The Nexus of Computation and Biomedicine: A Growing Alliance

We applied different combinations, including *theoretical + biomedicine*, *interdisciplinary + biomedicine*, *artificial intelligence + biomedicine*, *and computational + biomedicine*, to search in the *Web of Science* and made preliminary statistics on the publication of computational and biomedical articles since 2000, plotted in **Figure 1**.

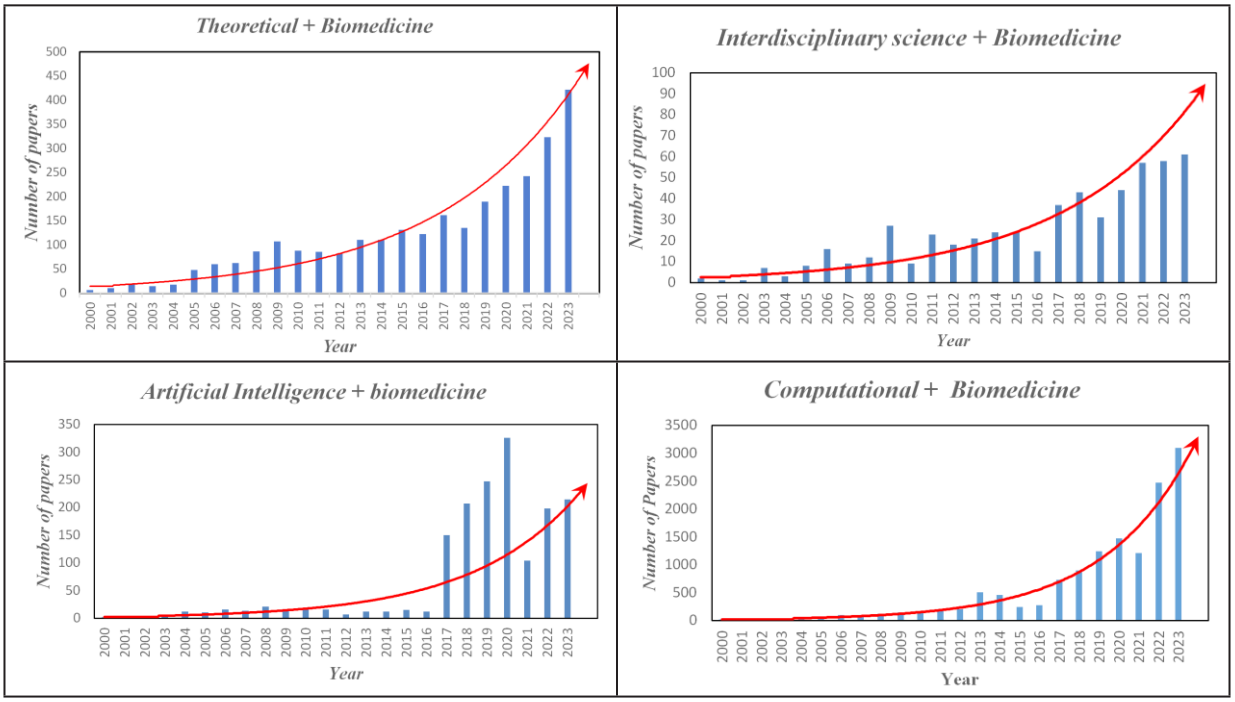

Figure 1. The growth trend of published papers from 2000 to 2023.

From **Figure 1**, it can be seen that the combination of computation and biomedicine has increasingly attracted the attention of scientists. Computational methodologies have emerged as indispensable tools in biomedical research, transcending traditional experimental boundaries to unravel the complexities of biological systems. Machine learning, artificial intelligence, advanced simulations, and large-scale models are just a few examples of how digital prowess is harnessed to decode the genome, predict disease trajectories, optimize drug design, and enhance personalized medicine.

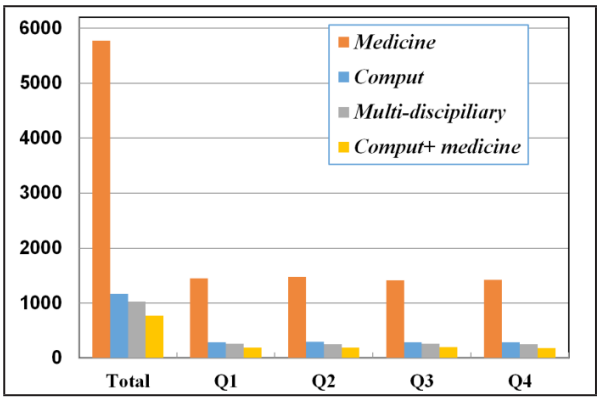

Figure 2. The journal distribution in the field of Computer Science and Medicine in JCR.

Meanwhile, we also conducted preliminary statistics in Journal Citation Reports (JCR) and found that the

growth rate of journal distribution has been relatively slow. Though, since 2000, a continuous number of computational biomedical journals have been published, compared to the publication status of articles, there has been little change in the number of journals in the past 10 years, especially in computational biomedical journals. There was little change in the number of journals from 2010 to 2022. The distribution of SCI journal entries in computational, medical, interdisciplinary, and computational medical fields in 2022 is shown in **Figure 2**.

There are many medical Journals, but there are few accepted computational biomedical articles. For researchers engaged in computational biomedical research, they hope to have more professional journals to introduce their work. Our journal aims to be the epicenter where these technological marvels converge with the depth and breadth of biomedical inquiry.

3. Promoting Innovation by Interdisciplinary Science

Scientists with different professional backgrounds have different preferences when searching for literature. Many times, for biomedical researcher, it is difficult to find how computational methods can serve biomedical applications. However, computer or bioinformatics experts find it difficult to understand what specific types of work their developed tools can be used for, making it difficult to make substantial progress in practical innovation.

We aim to facilitate dialogue among researchers from diverse backgrounds, creating a vibrant ecosystem where computer scientists, biologists, clinicians, engineers, and mathematicians can converge. By promoting the cross-pollination of ideas, methodologies, and perspectives, we seek to inspire novel approaches and unconventional solutions to our time's most pressing health challenges. The editorial board, comprising esteemed experts from both domains, embodies this commitment to interdisciplinary collaboration.

4. Empowering Researchers, Advancing Science

We envision [*Computational Biomedicine*] as an advanced repository of knowledge. By providing a rigorous, yet supportive environment for publishing cutting-edge research, we aim to empower scientists to push the achievable frontiers. Our commitment extends to ensuring equitable access to research findings, fostering transparency, and upholding the highest standards of scientific integrity.

5. Looking Ahead: Navigating the Future Together

Strong scientific publishing is a necessary "driving force" in innovation and technological strength [9-10]. We are committed to staying at the vanguard of scientific progress, adapting to emerging trends, and nurturing the next generation of thinkers and innovators. As we embark on this journey, we are keenly aware of the responsibilities and opportunities. The first issue of [*Computational Biomedicine*] marks not just the beginning of a journal, but the dawn of a new paradigm where computational methodologies and biomedical sciences intertwine to lead the path towards healthier futures.

In conclusion, we, the editorial members, invite you to join us on this exhilarating voyage. Your contributions to [*Computational Biomedicine*] will be pivotal in shaping the future of biomedical research. Let us together harness the transformative power of computation to enrich human health and wellbeing.

Sincerely,
Yonghong Zhang
Dongqing Wei

Conflict of Interest

No potential conflict of interest was reported by the authors.

References

[1] Our next-generation model: Gemini 1.5. Available from: https://blog.google/technology/ai/google-gemini-next-generation-model-february-2024/#architecture [Last accessed on 10 May 2024].

[2] Gemini 1.5: Unlocking multimodal understanding across millions of tokens of context. Available from: https://storage.googleapis.com/deepmind-media/gemini/gemini_v1_5_report.pdf [Last accessed on 10 May 2024].

[3] https://developers.googleblog.com/2024/02/

gemini-15-available-for-private-preview- in-google-ai-studio.html

[4] Gemini 1.5 Pro - A highly capable multimodal model with a 10M token context length. Available from: https://twitter.com/JeffDean/status/1758146022726041615 [Last accessed on 10 May 2024].

[5] O'Callaghan J. How OpenAI's text-to-video tool Sora could change science-and society. *Nature*, 2024; 627(8004): 475-476. https://doi.org/10.1038/d41586-024-00661-0.

[6] Introducing Sora, our text-to-video model. Available from: https://twitter.com/OpenAI/status/1758192957386342435 [Last accessed on 10 May 2024].

[7] https://twitter.com/sama

[8] https://openai.com/sora

[9] Cyranoski D. Strong medicine for China's journals. *Nature*, 2010; 467(7313): 261. https://doi.org/10.1038/467261a.

[10] Publish or perish. *Nature* , 2010; 467: 252. https://doi.org/10.1038/467252a