

LETTER TO THE EDITOR

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Chinese physician-scientists: dual-role professionals emerging amid institutional constraints

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Main text

A surgeon fresh from the operating room, hastily dons a lab coat and enters the lab to conduct cell cultures. Such dual-identity work scenarios are gradually emerging within China's top-tier medical institutions. Physician-scientists, hybrid professionals who straddles the realms of clinical care and biomedical research, has been hailed as a linchpin of medical progress. However, their career trajectories continue to confront profound systemic challenges.

The development of physician-scientists in China remains in its nascent stages. Although the initial objective of the eight-year medical training program was to cultivate such dual-competency professionals, over a decade of implementation has resulted in unsatisfactory outcomes [1, 2]. Systemic obstacles including promotion criteria prioritizing clinical productivity, excessive clinical workloads, and hospital performance evaluations focused on outpatient visits and surgical volumes, have made the nurturing of physician-scientists a daunting challenge. Moreover, the current research assessment metrics and criteria for clinical professionals in China have contributed to a widespread emphasis on short-term goals within scientific investigation. (Fig. 1)

Academic institutions have endeavored to enhance training methods through interdisciplinary initiatives in recent years, such as “Clinical Medicine + X” programs, the creation of “clinician-investigator” roles, and dual mentorship systems involving both clinical and research mentors. Concurrently, the National Natural Science Foundation of China has increased funding support for clinician-led research. In addition, we are eager to observe the implementation outcomes of the 4 + 4 medical training model within China's healthcare education framework from an academic perspective [3]. While these reforms demonstrate continued development in policy design and innovation in educational models, creating a sustainable framework that fits China's distinct healthcare ecosystem is still challenging.

The extensive patient population in China produces a plethora of clinically significant inquiries. Nevertheless, substantial clinical experience runs the risk of regressing into monotonous procedural work without thorough scientific investigation. On the contrary, fundamental research that is not directly relevant to clinical applications finds it difficult to have a translatable impact.

The global decrease in the number of physician-scientists exacerbates these challenges, despite the various solutions that have been suggested to tackle this issue [4, 5]. Moreover, rapid technological progressions, such as artificial intelligence, multi-omics integration, and regulatory science, require proficiency in emerging interdisciplinary fields, significantly increasing the complexity of training requirements.

The aforementioned situation significantly hinders the development of translational medicine. It is imperative for policymakers and institutional leaders to recognize

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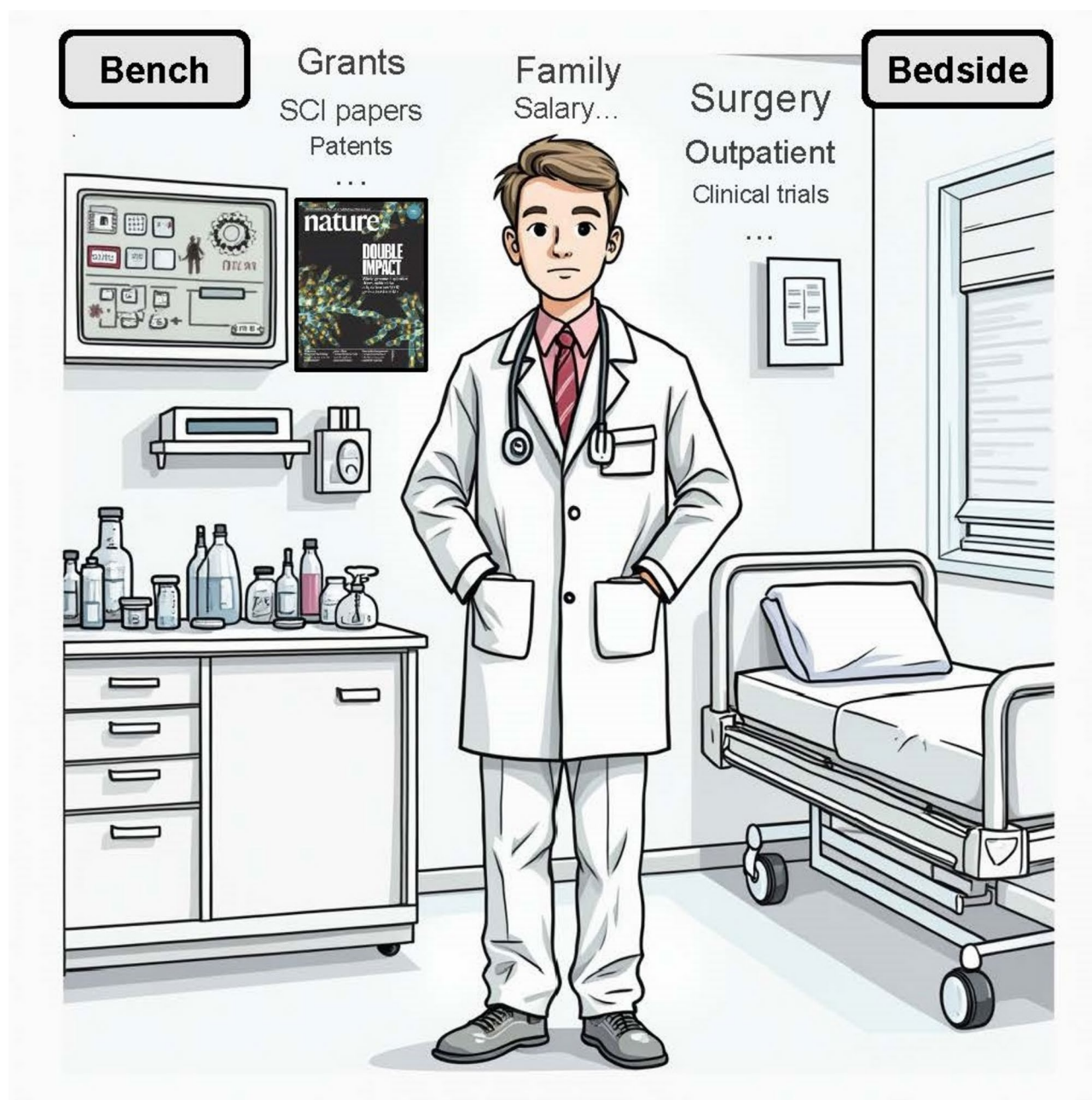


Fig. 1 The current situation of physician-scientists in China

that the advancement of medicine is not about selecting between the microscope and the stethoscope, but about enabling those who are proficient in utilizing both tools.

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Author contributions

ZL wrote the manuscript, collected data and acquired fundings, YZ designed the study and reviewed the manuscript. All authors read and approved the final manuscript.

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Declarations

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Competing interests

The authors declare that they have no competing interests.

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References

1. Shan D. China's bewildering medical education pathways. *Lancet*. 2023;401:999–1000.
2. Wan M, Liu S, Zhu J, Xiao S, Yuan L, Lei X, Lei H, Shi X, You W, Ruan G, Li J. Challenges of senior 8-year-program medical students' scientific research in China: A multicenter questionnaire-based study. *Med (Baltim)*. 2022;101:e29026.
3. Wang C, Chen S, Zhu J, Li W. China's new 4 + 4 medical education programme. *Lancet*. 2019;394:1121–3.
4. Garrison HH, Deschamps AM. NIH research funding and early career physician scientists: continuing challenges in the 21st century. *FASEB J*. 2014;28:1049–58.
5. Jain MK, Cheung VG, Utz PJ, Kobilka BK, Yamada T, Lefkowitz R. Saving the endangered Physician-Scientist - A plan for accelerating medical breakthroughs. *N Engl J Med*. 2019;381:399–402.

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