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Perspective

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Charting a new vision for life sciences, embracing the grand mission of Healthy China−Jinggangshan Declaration

Microecology and Health Professional Committee of China Medicine Education Association (CMEA)

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1. The call of the times: Microecology at the forefront of national strategy

On July 6, 2025, the China Association for Science and Technology (CAST) released the "Top Ten Frontier Scientific Questions" with "The interactive regulatory mechanisms between human microecology and hosts" prominently featured[1]. This not only represents national-level recognition of the strategic value of microecology but also the historical mission entrusted to us by the times. At this pivotal moment, the Professional Committee successfully convened its Sixth Academic Symposium in Jinggangshan, the cradle of the revolution, with the theme of "Innovation, Leadership, Collaboration, and Development"[2]. The event brought together over 4000 experts and scholars, including Academician Zhengming Huang and Academician Mingyong Xie, as well as over 4000 colleagues online, to collectively envision the grand blueprint of "Microecology • Broad Perspective • Large-Scale Industry". The high degree of alignment between the CAST's cutting-edge initiatives and the Specialized Committee's academic actions underscores the foresight of our direction and the urgency of our responsibilities.

2. Mission and responsibility: Building the foundation for a healthy China through scientific innovation

A "Healthy China" is rooted in science and centered on the people. The Specialized Committee must courageously undertake three major responsibilities:

1) Unlocking the "black box" of science: Focusing on the cutting-edge issue of "host-microecology interaction regulation", integrating multi-omics, AI, and clinical big data to break through the bottleneck in mechanism understanding and provide new paradigms for disease

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prevention and treatment.

2) Driving industrial "great leaps forward": Accelerating the integration of industry, academia, research, and application, leveraging the outcomes of the "Kangbai microecology Popularization Education Base" and industrial development forum launched at this conference to promote the commercialization of microecology-based formulations and other innovations.

3) Building a "talent reservoir": Starting with the compilation of the undergraduate textbook on medical microecology to fill educational gaps in the discipline, and through the young scholars forum to stimulate innovative forces, injecting relentless momentum into the field's development.

3. Strategic actions: Igniting the flames of innovation with the Jinggangshan spirit

The Jinggangshan Conference is not only an academic gathering but also the starting point for a new journey. The Specialized Committee will advance the three major actions with the momentum of "sparks igniting a prairie fire":

1) Academic leadership initiative: This Conference has deepened the construction of the "One Conference, One Training Program, One Base" (annual conference, training program, science popularization base) platform, host interdisciplinary symposia, and tackled core issues such as host-microbiota interactions, gut-brain axis, gut-lung axis, and other gut-to-distant-organ regulatory mechanisms, as well as environmental-microecological interactions.

2) Industrial collaboration initiative: Microecology is the ultimate code linking humans, animals, and the environment, and serves as the cornerstone of the "One Health" strategy[3]. Through interdisciplinary collaboration between academia, industry, research, and application, we will uncover the dynamic equilibrium network between environment, microorganisms, and hosts, and promote the implementation of technologies and achievements such as chip-level microbial monitoring.

3) Science popularization and inclusive action: With the Kangbai Education Base as the core, we will cover hundreds of primary, secondary, and higher education institutions, thousands of communities, and enterprises, promoting microecology health kiosks to bring microecological knowledge from laboratories into people's homes.

4. National responsibility: Demonstrating the value of the society in scientific and technological self–reliance

In the face of new global technological competition, the Specialized Committee must become an integral part of the national strategic force:

1) Serving national needs: Integrating microecological research into interdisciplinary fields, launching an environmental-animal-human microecology science program, incorporating microecological resource conversion into the national bio-manufacturing strategy, addressing national engineering and technological challenges such as "new drug development" and "bio-manufacturing", and assisting in overcoming "chokepoint" technologies.

2) Contributing Chinese wisdom: Exploring unique pathways for traditional Chinese medicine's microecological regulation, building on the "integration of traditional and Western medicine" framework established at the Wudang Mountain Conference, and establishing a Chinese-characteristic theoretical framework of microecology.

3) Setting international standards: Establishing Chinese standards, constructing the world's first One Health evaluation system of microecology covering antibiotic-resistant bacteria transmission and ecological toxicity warnings, and establishing a dynamic database of environmental and human microbiota to empower public health decision-making. Leading standard-setting efforts, Chinese microecological research aims to become a global leader in the field.

5. Writing the grand chapter of microecology with a passionate heart

From the spark of Jinggangshan to the call of the China Association for Science and Technology, the spring of microecology has arrived. Let us remember "The Top Priorities of the Country", with the courage to "pioneer uncharted territories" and the resolve to "Ten years to sharpen a sword", and transform the Specialized Committee into a source of scientific innovation, an engine for industrial revolution, and a vanguard for "Healthy China".

Conflict of interest statement

The authors declare that there is no conflict of interest.

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Authors' contributions

Xiao CL planned the structure of the article and took the lead in writing the manuscript. Huang ZM supervised the writing. Lu JH, Wei H, Luo J, Liu HT, Liu XY, Ling ZX, Yuan JL, and Zhu BL provided critical feedback. All authors read and approved the final manuscript.

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