



Editorial for *Oncology Communications*: Integrating Innovation for Transformative Cancer Care

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Abstract

This editorial mainly states the meaning of creating the *Oncology Communications* and highlights the importance and outlook of integrative medicine. We stress the importance of multidisciplinary, interdisciplinary, and cross-disciplinary collaboration, encouraging oncologists to work closely with experts from various fields, including basic medicine, mathematics, physics, sociology, artificial intelligence, and materials science. This collaboration aims to clarify the mechanisms of tumor development and progression, identify novel therapeutic targets, promote clinical translation, and ultimately benefit patients.

Keywords: oncology, integrative medicine, translational research, multidisciplinary collaboration.

1 Introduction

Cancer is a major societal, public health, and economic problem in the 21st century, responsible for nearly

one in six deaths (16.8%) and one in four deaths (22.8%) from noncommunicable diseases (NCDs) worldwide [1]. As the global aging population increases, the incidence of most cancer types continues to rise each year [2]. With the rapid advancements in biomedicine and oncology, cancer survival rates have improved over time. However, considerable challenges persist [3]. Drug resistance is common in almost all cancer treatments, including chemotherapy, immunotherapy, targeted therapy, and hormonal therapy, often leading to treatment failure [4]. The adverse effects of cancer treatments can reduce the patients' quality of life, potentially triggering a chain of events that result in treatment interruption, poor outcomes, and even treatment-related death [5]. Another major challenge for oncologists is elucidating the molecular mechanisms of tumorigenesis and identifying key oncogenic drivers. Although many oncogenes and cancer risk factors have been identified in different cancers, it remains challenging to fully explain the origin of tumors in individuals.

The *Oncology Communications* serves mainly as an international platform for oncologists to share high-quality research and reviews that bridge the gap between laboratory discoveries and clinical applications, ultimately accelerating progress of cancer



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research for the benefit of patients worldwide.

The *Oncology Communications* is a peer-reviewed journal dedicated to advancing knowledge in all areas of cancer research and clinical oncology. The journal publishes high-quality original research articles, reviews, and perspectives that promote communication among basic scientists, clinicians, and translational researchers. It focuses on the following research areas: integrated cancer research, cancer immunotherapy, artificial intelligence for cancer diagnosis and treatment, cancer epigenetics, and next-generation sequencing in oncology. We also welcome submissions of other innovative research.

Hence, we will provide a brief summary of the recent progress and emerging trends in the field of oncology, with a focus on integrative oncology, cancer immunotherapy, artificial intelligence in oncology, and next-generation high-throughput sequencing in oncology.

2 The rise of integrative oncology

Integrative Medicine, which combines Traditional Chinese Medicine (TCM) and Modern Medicine, represents a patient-centered approach focused on holistic health assessment and personalized treatment [6]. Cancer represents a worldwide health challenge that transcends borders. Integrative oncology supports cancer patients and caregivers through evidence-based lifestyle and behavioral changes, as well as complementary therapies within conventional care [7]. A significant number of patients with cancers will seek traditional or complementary health approaches, especially in low- and middle-income countries. However, spheres of influence and tensions between conventional medicine and traditional or complementary medicine may disrupt efforts in evidence-based cancer care [8]. Recently, an increasing number of clinicians and medical associations have recognized the importance of integrative medicine in patients with cancer. The Society for Integrative Oncology and the American Society of Clinical Oncology have released guidelines for integrative oncology care of symptoms of anxiety and depression in adults with cancer and management of fatigue in adult survivors of cancer in recent years [9, 10]. This demonstrates the official organization's acknowledgment of integrative oncology. However, an evidence-based approach is essential when suggesting an integrative cancer plan. We believe that in the foreseeable future, integrative oncology will benefit more cancer patients, especially

in enhancing their quality of life.

3 The era of cancer immunotherapy

In recent years, cancer immunotherapy (including immune checkpoint inhibitors (ICIs), chimeric antigen receptor T-cell therapy (CAR-T), oncolytic viruses, and cancer vaccines, etc.) has undoubtedly changed the anticancer strategies in advanced cancers, significantly impacting prognosis and treatment options [11]. In the field of cancer immunotherapy, the Nobel Prize in Physiology or Medicine has been awarded twice for groundbreaking research related to two different anti-cancer strategies: releasing the "brakes" on the immune system and "training" immune cells to attack tumors more precisely. In clinical practice, the combination of traditional therapy (including chemotherapy, targeted therapy, and radiation therapy) and immunotherapy has become a potent treatment strategy for cancer patients. Cancer treatment has been ushered into a new era of immunotherapy. Nevertheless, numerous challenges remain to be addressed—for example, unavoidable treatment resistance to immunotherapy in certain cancer patients [12], and unexpected adverse effects impairing patients' survival [13]. There is an urgent necessity to develop more effective and well-tolerated drugs and therapeutic strategies. Additionally, more elaborate mechanisms of immunotherapy resistance need to be explored to maximize the efficacy of immunotherapy. Therefore, the scientific and oncology communities must intensify their focus on overcoming immunotherapy resistance and develop new combined treatment strategies to benefit more cancer patients.

4 The rise of artificial intelligence in oncology

Artificial Intelligence (AI) in oncology is advancing beyond the development of algorithms to the integration into clinical practice [14]. The rapid progress of AI in cancer research, including histopathology, radiology, imaging, target identification, drug discovery, and genomics, has significantly shaped cancer research and personalized clinical care for cancer patients [15]. For example, the availability of high-dimensional public datasets coupled with advances in high-throughput sequencing technology, as well as innovative deep learning architectures, has led to an explosion of AI use in various aspects of oncology research [16]. Nevertheless, there remains a significant gap to be bridged before AI technology can be extensively incorporated into clinical practice. Stakeholders are

required to implement objective procedures for the ongoing supervision of AI effects and the assessment of patient safety. Additionally, human oversight is essential for the clinical application of AI to prevent systematic bias. Although certain challenges persist, we believe that advancements in AI technology will inevitably lead to a revolution in tumor diagnosis, treatment, and basic research.

5 The application of next-generation high-throughput sequencing technology in precise oncology

Next-Generation Sequencing (NGS), also known as high-throughput sequencing, is a revolutionary technology that allows for the rapid sequencing of large stretches of DNA or RNA base pairs. Unlike the traditional Sanger method, which sequences single DNA fragments sequentially, NGS performs massively parallel sequencing, capable of analyzing millions to billions of DNA fragments simultaneously [17]. In basic research, NGS enables scientists to gain deeper insights into the molecular mechanisms underlying cancer initiation and progression, discover new driver oncogenes or mutations, and identify novel molecular targets for therapy. In certain types of tumors, NGS has been extensively utilized for diagnosis, prognosis, treatment selection, and monitoring of cancer patients [18]. For example, NGS has been used to predict responses to chemotherapy, immunotherapy, and targeted therapies, as well as to assess relapse risk in breast cancer [19]. Nonetheless, interpreting NGS data remains challenging due to the genome's size and complexity, as well as technical errors from sample preparation, sequencing, and analysis. The informed use of reference standards and associated statistical principles ensures rigorous analysis of NGS data and is essential for its future broader clinical use [20].

6 Conclusion

This editorial highlights the importance of integrative medicine, immunotherapy, artificial intelligence, and next-generation high-throughput sequencing in oncology. The launch of *Oncology Communications* marks the beginning of a promising journey that requires collective effort. We warmly invite the global oncology community to submit their innovative work, join as associate editors, editorial board members, reviewers, and actively contribute to this publication. Collectively, we aim to create a dynamic and collaborative knowledge platform that will advance the next phase of progress in the fight against cancer. We

eagerly anticipate collaborating with you to translate the potential of integrated science into tangible hope for patients worldwide.

Data Availability Statement

Not applicable.

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Conflicts of Interest

The authors declare no conflicts of interest.

Ethical Approval and Consent to Participate

Not applicable.

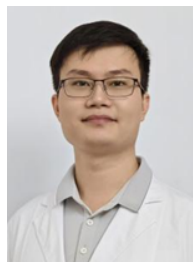
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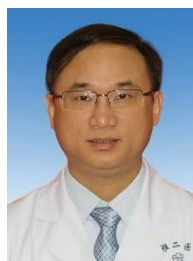
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