

中国科技核心期刊(科普类)

1933 年创刊

中国历史最悠久的综合性科普期刊

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2024 年

11 期

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## 分子医学:

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CN 31-1093/N  
ISSN 1000-8292

邮发代号: 4-202  
定价: 12.00 元





# 分子医学

## 对东西方医学文明的贡献

文 / 季米特里奥斯·A. 斯潘迪多斯

中医是一种源自中国传统医学的替代医疗实践。中草药起源于古代中国，药用历史源远流长，在从感染到癌症等多种疾病的治疗中发挥了重要作用。中医药的主要优点是引起的不良反应较少，正逐渐被认可是一种有效的替代与辅助医学。一般来说，中医通过应用体内稳态和平衡的原理来调节人体的健康状态。古代中国的经典医学文献（如《黄帝内经》）对人体肿瘤的诊断和治疗已有所描述。时至今日，现代中医已经在很多方面融合了西医，并基于分子医学的突破不断更新知识体系，现代方法学将这些新成果应用于当代研究和传统中医。中国科学家通过与西方科学家的学术论文合作、科研合作及学术会议交流，推动中国在分子医学领域走向国际前沿。

毫无疑问，在西医中，细胞癌基因的发现彻底改变了我们对癌症的认知，因此被公认为20世纪最重大的发现之一。从西方医学之父希波克拉底首次描述癌症，到细胞癌基因的发现，关于癌症的病因、诊断和治疗的进展甚微。癌症这一疾病范畴包含了约200种不同类型的疾病，几乎影响人体的所有部位，这使确定病因和控制病情的难度大大增加。近年来，随着组织培养、脱氧核糖核酸（DNA）重组技术、基因转移技术等一系列技术的突破，人类致癌基因得以分离——这些致癌基因是促使人体良性或恶性肿瘤生长的关键因素。

尽管基因事件（癌基因和抑癌基因突变）为癌症的遗传学基础提供了证据，但后来人们逐渐认识到，表观遗传事件对完成多步骤的致癌过程也是不可或缺的。这些表观遗传事件包括甲基

化、乙酰化、分化、压力和肥胖等。压力可以理解为由内或外在压力源引发的体内稳态失衡，机体通过一系列生理和行为的适应性反应来对抗这一状态，以恢复被改变的平衡。20世纪初，人们用源自希腊语的“稳态”（homeostasis）一词命名了“体内的稳定状态”这一概念。古希腊时期，自然哲学家用“和谐平衡”和“均衡法则”来描述稳态，希波克拉底将其描述为“体质健全”（eucrasia），古希腊哲学家伊壁鸠鲁则称其为“身心平衡”（eustatheia）。这些都展现了对稳态这一重要概念的深刻认识。

现代医学的癌症治疗主要依赖于抑制致癌蛋白功能的化学抑制剂或抗体，以及向肿瘤细胞引入抑癌基因或其产物。然而，传统中医学，尤其是中草药和针灸，作为癌症辅助治疗的积极作用不应被忽视。在《中国药典》收录的2 000种药物中，至少有400种对癌症治疗有效。

分子医学从分子水平解释疾病发生、发展规律，进而开展疾病预测、诊断和治疗。肿瘤类器官、外泌体、肝癌细胞治疗等分子医学细分领域发展如火如荼，有望取得突破性进展，助力人类攻克重大疾病，进一步推动医学文明的发展。

总之，分子医学的最新发展有望革新医疗体系，增加人类的预期寿命。无论在东方还是西方，分子医学都对现代医疗实践发挥了巨大的推动作用。📖

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本文由广州誉嘉生物科技有限公司杨丽珊翻译。

PREFACE

Molecular Medicine [Contributions to Eastern and Western medical civilizations]

Text/Demetrios A. Spandidos

Traditional Chinese Medicine (TCM) is an alternative medical practice derived from traditional Chinese medicine. Chinese herbal medicine originated in ancient China and has a long history of medicinal use. It plays an important role in the treatment of a variety of diseases, from infections to cancer. The main advantage of TCM is that it causes fewer adverse reactions and is gradually being recognized as an effective alternative and complementary medicine. Generally speaking, TCM regulates the health of the human body by applying the principles of homeostasis and balance in the body. The diagnosis and treatment of human tumors have been described in ancient Chinese classical medical texts (such as the Yellow Emperor's Canon of Internal Medicine). Today, modern TCM has integrated Western medicine in many aspects and continuously updated its knowledge system based on breakthroughs in molecular medicine. Modern methodologies apply these new results to contemporary research and traditional Chinese medicine. Chinese scientists have promoted China to the international forefront in the field of molecular medicine through academic paper cooperation, scientific research cooperation and academic conference exchanges with Western scientists.

There is no doubt that in Western medicine, the discovery of oncogenes has completely changed our understanding of cancer and is therefore recognized as one of the most significant discoveries of the 20th century. From the first description of cancer by Hippocrates, the father of Western medicine, to the discovery of oncogenes, there has been little progress in the etiology, diagnosis and treatment of cancer. The category of cancer includes about 200 different types of diseases that affect almost all parts of the human body, which greatly increases the difficulty of determining the cause and controlling the disease. In recent years, with the breakthrough of a series of technologies such as tissue culture, recombinant DNA technology, and gene transfer technology, human oncogenes have been isolated - these oncogenes are the key factors that promote the growth of benign or malignant tumors in the human body.

Although genetic events (mutations in oncogenes and tumor suppressor genes) provided evidence for the genetic basis of cancer, it has been gradually recognized that epigenetic events are also essential for completing the multistep carcinogenic process. These epigenetic events include methylation

Stress can be understood as an imbalance of homeostasis caused by internal or external stressors. The body fights against this state through a series of physiological

and behavioral adaptive responses to restore the altered balance. In the early 20th century, people named the concept of "stable state in the body" with the word "homeostasis" from Greek. In ancient Greece, natural philosophers used "harmonious balance" and "balance law" to describe homeostasis. Hippocrates described it as "physical health" (eucrasia), and the ancient Greek philosopher Epicurus called it "physical and mental balance" (eustatheia). All of these show a deep understanding of the important concept of homeostasis.

Modern medical cancer treatment mainly relies on chemical inhibitors or antibodies that inhibit the function of oncogenic proteins, as well as the introduction of tumor suppressor genes or their products into tumor cells. However, the positive role of traditional Chinese medicine, especially Chinese herbal medicine and acupuncture, as an adjuvant treatment for cancer should not be ignored. Among the 2,000 drugs included in the Chinese Pharmacopoeia, at least 400 are effective for cancer treatment.

Molecular medicine explains the occurrence and development of diseases at the molecular level, and then carries out disease prediction, diagnosis and treatment. The sub-fields of molecular medicine such as tumor organoids, exosomes, and liver cancer cell treatment are developing in full swing, and are expected to make breakthrough progress, help humans overcome major diseases, and further promote the development of medical civilization.

In conclusion, the latest developments in molecular medicine are expected to revolutionize the medical system and increase human life expectancy. Molecular medicine has played a huge role in promoting modern medical practice in both the East and the West.

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This article was translated by Yang Lixi from Guangzhou Yujia Biotechnology Co., Ltd.

Science 2004