A new perspective paper explores the current state and future directions of precision medicine in colorectal cancer (CRC). It outlines advancements in molecular testing and their implications for targeted and immunological therapies in CRC. This research is significant because it suggests pathways to more personalized treatment, potentially leading to higher survival rates and an improved quality of life for CRC patients.
Colorectal cancer (CRC) is the second leading cause of cancer-related deaths globally. While surgery with adjuvant chemotherapy remains the standard treatment, only about 60% of patients reach a five-year survival rate, and one-third experience recurrence within two years. Precision medicine, powered by high-throughput sequencing, seeks to improve these outcomes through individualized therapy based on specific molecular profiles.

The paper, recently published in Cancer Biology & Medicine, discusses the pivotal role of molecular testing in CRC precision medicine. It explores breakthroughs in gene-targeted therapies and immunotherapy, highlighting how molecular testing identifies key gene variations like KRAS and BRAF, guiding targeted treatments.

The paper also delves into emerging therapies, including KRAS inhibitors and innovative immunotherapy approaches, aimed at enhancing treatment efficacy and reducing recurrence rates. This research is significant as it opens the door to more personalized treatment, potentially improving survival rates and quality of life for CRC patients.

The paper details how advancements in gene-targeted therapies and immunotherapy have transformed precision medicine in CRC. By pinpointing specific gene variations, such as KRAS, BRAF, HER2, and RET, molecular testing enables clinicians to select the most effective targeted therapies for CRC.

While established drugs like cetuximab and bevacizumab are commonly used, new drugs targeting KRAS G12C, like sotorasib, and the NTRK inhibitor entrectinib, show promise for treating specific gene mutations. These developments in precision medicine aim to increase treatment efficacy and minimize recurrence.
Xin Hu, a co-author and precision oncology expert at Fudan University Shanghai Cancer Center, states, "Our research underscores the critical role of molecular testing in refining patient stratification and promoting precision treatment in CRC. By identifying new biomarkers and targeted therapies, we aim to boost treatment efficacy and reduce recurrence rates."

Precision medicine is reshaping CRC treatment through targeted therapies and immunotherapy. Identifying key gene variations like KRAS and BRAF helps tailoring treatments, enhancing efficacy and lowering recurrence risks. Immune checkpoint inhibitors and neoantigen-primed cancer vaccines will offer broader options for patients.

This research establishes a framework for integrating molecular testing into clinical practice, leading to more effective CRC treatments, improved outcomes, and a better quality of life for patients.


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