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EDITORIAL

Gastrointestinal cancer research in the era of precision medicine

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Lin Shen. M.D., Professor, Chief, Vice President, Peking University Cancer Hospital. Professor Lin Shen received her degree in oncology from Peking Medical University and specialized in gastrointestinal cancers. Her work focuses on precision medicine inadvanced gastric cancer, colorectal cancer with liver metastases, gastrointestinal stromal tumors, and other gastrointestinal malignancies. She is also interested in clinical trials and translational research, especially early stage clinical trials. Professor Shen has published over 130 papers and has hosted as a principal investigator or participated in over 80 global and domestic multicenter clinical trials. The results of several of these studies have provided evidence to standardize the clinical practice for gastrointestinal tumors in China. Now, Professor Shen is Chairman of Chinese Anti-cancer Drug Clinical Trials (ACTS), General Secretary of Gastric Cancer Committee and Vice-chairman of Colorectal Cancer Committee of Chinese Anti-Cancer Association (CACA), and also she is Chairman of Chinese Society of Multidisciplinary Team (CSMDT).

In the new era of precision medicine, increasing knowledge of the underlying signaling pathways and molecular defects involved in cancer growth or progression has enabled the discovery of several prognostic and predictive biomarkers. This in turn has led to the development of novel early diagnostic methods, accurate disease classification, therapeutic targets, and personalized therapy. Hence, we summarized the current status of gastrointestinal cancer-related biomarkers and treatment options.

Despite the continuous decline in both its incidence and mortality in recent decades, gastric cancer (GC) remains the fifth most prevalent malignancy; furthermore, the prevalence of GC in China is relatively higher than that in other countries. With the development of molecular biological techniques, molecular classifications of GC have emerged, and they show potential value in guiding precise and personalized therapy. Until now, 3 to 4 GC molecular classifications have been established. In particular, several biomarkers in immunotherapy have been explored. Based on the tumor microenvironment, a framework for classifying tumors according to tumor-infiltrating lymphocytes (TILs) and programmed death-ligand 1 (PD-L1) expression has been proposed. Here, we reviewed the development of molecular classifications and characteristics of different subtypes, and then discussed the application of molecular classification in clinical management, especially in immunotherapy.

Traditionally, *in vitro* cell lines derived from cancer cells and *in vivo* animal models are used to predict the clinical outcomes of novel drugs. Nevertheless, because of the lack of tumor heterogeneity, the differences in

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