

# CELL SIGNALING, CELL THERAPY AND CANCER THERAPEUTICS

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## Molecular diagnosis and personalized medicine of cancer, transforming bench study of cell signaling to clinical applications

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Personalized medicine, in concert with targeted oncologic therapy, has become one of the most active, rapidly advancing, and clinically challenging pursuits in cancer treatment. A major concern for molecular geneticists and clinicians must be to focus upon prioritizing those issues that are most important for research and targeted management in these most prolific days of cancer medicine. In no area of medicine is this more apparent than in cancer medicine, where arrays of specific genetic alterations have been used to manage various types of malignancies. The discoveries that form our understanding of cancer have substantially accelerated over the past decade. These emerging findings have significantly affected the traditional practice of oncology and have resulted in a subspecialized multidisciplinary approach to patient care that incorporates personalized therapies such as targeted molecular therapy, prognosis, risk assessment, and prevention, all of which are primarily based on molecular diagnostics and imaging. This presentation, using colorectal cancer as a model, updates readers on recently acquired knowledge of cell signaling and emphasizes new uses for that knowledge in the changing landscape of specialized multidisciplinary care and personalized medicine. Novel therapeutic agents against specific genetic, molecular, and antigenic targets are discussed, as is the process for deciding whether to use these agents.

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