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Sommario/riassunto

Development of an effective anticancer therapeutic necessitates the selection of cancer-related or cancer-specific pathways or molecules that are sensitive to intervention. Several such critical yet sensitive molecular targets have been recognized, and their specific antagonists or inhibitors validated as potential therapeutics in preclinical models. Yet, majority of anticancer principles or therapeutics show limited success in the clinical translation. Thus, the need for the development of an effective therapeutic strategy persists. "Altered energy metabolism" in cancer is one of the earliest known biochemical phenotypes which dates back to the early 20th century. The German scientist, Otto Warburg and his team (Warburg, Wind, Negelein 1926; Warburg, Wind, Negelein 1927) provided the first evidence that the glucose metabolism of cancer cells diverge from normal cells. This phenomenal discovery on deregulated glucose metabolism or cellular bioenergetics is frequently witnessed in majority of solid malignancies. Currently, the altered glucose metabolism is used in the clinical diagnosis of cancer through positron emission tomography (PET) imaging. Thus, the "deregulated bioenergetics" is a clinically relevant metabolic signature of cancer cells, hence recognized as one of the hallmarks of cancer (Hanahan and Weinberg 2011). Accumulating data unequivocally demonstrate that, besides cellular bioenergetics, cancer metabolism facilitates several cancer-related processes including metastasis, therapeutic resistance and so on. Recent reports also

demonstrate the oncogenic regulation of glucose metabolism (e.g. glycolysis) indicating a functional link between neoplastic growth and cancer metabolism. Thus, cancer metabolism, which is already exploited in cancer diagnosis, remains an attractive target for therapeutic intervention as well. The Frontiers in Oncology Research Topic "Cancer Metabolism: Molecular Targeting and Implications for Therapy" emphases on recent advances in our understanding of metabolic reprogramming in cancer, and the recognition of key molecules for therapeutic targeting. Besides, the topic also deliberates the implications of metabolic targeting beyond the energy metabolism of cancer. The research topic integrates a series of reviews, mini-reviews and original research articles to share current perspectives on cancer metabolism, and to stimulate an open forum to discuss potential challenges and future directions of research necessary to develop effective anticancer strategies.