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Sommario/riassunto	<p>The inclusion of oncogene-driven reprogramming of energy metabolism within the list of cancer hallmarks (Hanahan and Weinberg, Cell 2000, 2011) has provided major impetus to further investigate the existence of a much wider metabolic rewiring in cancer cells, which not only includes deregulated cellular bioenergetics, but also encompasses multiple links with a more comprehensive network of altered biochemical pathways. This network is currently held responsible for redirecting carbon and phosphorus fluxes through the biosynthesis of nucleotides, amino acids, lipids and phospholipids and for the production of second messengers essential to cancer cells growth, survival and invasiveness in the hostile tumor environment. The capability to develop such a concerted rewiring of biochemical pathways is a versatile tool adopted by cancer cells to counteract the host defense and eventually resist the attack of anticancer treatments. Integrated efforts elucidating key mechanisms underlying this complex cancer metabolic reprogramming have led to the identification of new signatures of malignancy that are providing a strong foundation for improving cancer diagnosis and monitoring tumor response to therapy using appropriate molecular imaging approaches. In particular, the recent evolution of positron emission tomography (PET), magnetic resonance spectroscopy (MRS), spectroscopic imaging (MRSI), functional</p>

MR imaging (fMRI) and optical imaging technologies, combined with complementary cellular imaging approaches, have created new ways to explore and monitor the effects of metabolic reprogramming in cancer at clinical and preclinical levels. Thus, the progress of high-tech engineering and molecular imaging technologies, combined with new generation genomic, proteomic and phosphoproteomic methods, can significantly improve the clinical effectiveness of image-based interventions in cancer and provide novel insights to design and validate new targeted therapies. The Frontiers in Oncology Research Topic “Exploring Cancer Metabolic Reprogramming Through Molecular Imaging” focusses on current achievements, challenges and needs in the application of molecular imaging methods to explore cancer metabolic reprogramming, and evaluate its potential impact on clinical decisions and patient outcome. A series of reviews and perspective articles, along with original research contributions on humans and on preclinical models have been concertedly included in the Topic to build an open forum on perspectives, present needs and future challenges of this cutting-edge research area.
