Frontiers in Bioscience Landmark

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Special Issue

Tumor-Induced Immune Suppression: Mechanisms, Consequences and Cancer Immunotherapy

Guest Editor

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Message from the Guest Editor

Dear Colleagues,

This issue of Frontiers of Bioscience will feature a series of contributions addressing the role of tumor-induced immune suppression in cancer escape from the host immune system and in cancer immunotherapy. Despite significant, recent success of the immune checkpoint blockade (ICB) in treatment of patients with melanoma and other solid tumors, many patients fail to respond to immune therapies used alone or in combination with conventional chemo/radiotherapies. Further, initially favorable responses are often followed by a rapid relapse, as the tumor develops resistance to therapy. In an effort to define the mechanisms driving tumor resistance to therapy, current studies are increasingly focused on dissecting the intimate relationship that exists between the tumor and immune cells in the tumor microenvironment (TME). Perturbations in this relationship, whether induced by the tumor or immune cells, lead to reprogramming of the TME that profoundly affects cancer progression and outcome. Many different mechanisms appear to drive reprogramming in the TME; accordingly, the targeting of molecular/genetic/cellular pathways mediating tumor/immune cell interactions has emerged as a promising strategy for changing pro-tumor to anti-tumor milieu of the TME.

With increasing interest in improving beneficial effects of immune therapies, attention has been directed at overcoming or eliminating tumor-induced immune suppression. Immunotherapy aims at the restoration of vigorous and effective anti-tumor immune responses able to arrest tumor progression. However, as every tumor presents a distinct immunosuppressive profile, the selection of strategies able to convert “cold” to “hot” tumors may be difficult, requiring a deeper understanding of the processes that take place in the TME during cancer development and progression. In this Special Issue, we hope to generate a discussion of how to rationally select and optimize cancer immunotherapies in the face of the remarkably efficient and highly personalized immunoinhibitory environments most tumors create. The objective is to gather and review the available information about (1) the role tumor-induced immune suppression plays in immunotherapy outcome, and (2) the capability of tumors to evade/respond to immunotherapy. Such knowledge could serve as a basis for the rational

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design of future highly successful immunotherapy strategies. Clearly, a better understanding of the nature and mechanisms underpinning tumor-induced immune suppression is necessary if we are to successfully deliver immunotherapy to cancer patients, especially those with an advanced disease.

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