Editorial: Tumor-associated antigens and their autoantibodies, from discovering to clinical utilization

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Editorial on the Research Topic

Tumor-Associated Antigens and Their Autoantibodies: From Discovering to Clinical Utilization

The detection of autoantibodies in human sera can be used as an important indicator for the diagnosis of autoimmune diseases and has been widely used in clinical research and clinical practice. Researchers in cancer field have found that various types of autoantibodies against cell self-antigens also exist in the sera from cancer patients ([1], [2]). These antigens related to tumorigenesis are called tumor-associated antigen (TAA). Through the study of the molecular structure and function of some human autoantigens, it is found that there are a wide variety of cellular autoantigens that induce autoantibody responses. Therefore, these cancer-associated autoantibodies might be used as biomarkers for immunodiagnosis of certain type of cancer, or as a tool to monitor therapy as well as as an indicator to predict disease prognosis ([3–9]). Different approach and technology, including serological analysis of recombination cDNA expression libraries (SEREX) and proteomics, have been extensively used in the identification of TAAs in cancer ([10], [11]). A bunch of proteins in cancer and pre-cancer conditions were identified and characterized ([12–17]). More recently, we have noticed that some of other approaches were also used to identify TAAs and detect anti-TAAs autoantibodies, such as whole genome derived peptide arrays and proteome microarray technology ([18–20]).

In recent two decades, major developments have been made in the field of research on TAAs and anti-TAAs autoantibodies, and many studies have demonstrated that serum anti-TAAs autoantibodies can be used as effective biomarkers for cancer immunodiagnosis ([1–9]). The diagnostic value, clinical utility, and pathogenic significance of TAAs or anti-TAAs autoantibodies are the focus of ongoing research.

This special issue mainly focus on the recent studies associated with the idea and possibility that identification of TAAs and their anti-TAAs autoantibodies can be useful for cancer immunodiagnosis and cancer immunotherapies.

In this Research Topic, our guest editors have invited investigators to contribute original research articles as well as review articles which were mainly related to TAAs and anti-TAAs autoantibodies in cancer immunodiagnosis and cancer immunotherapies, and assembled the current Research Topicfor updating the recent advances in this field. In this special issue, we have received 29 submitted manuscripts, and 18 manuscripts with 139 authors have been accepted for publication. For example, a paper of Jiang et al. used a protein array technology and identify a panel of anti-TAAs autoantibodies in the early detection of lung cancer; a paper of Liu et al. used neoantigen reactive T cells combined with tomotherapy to treat a patient with advanced HCC, who reached a long time progress free survival; a paper of Qiu et al. has evaluated the diagnostic value of autoantibody against PDLIM1 for improving the detection of ovarian cancer; a study from Wang et al. has tested and validated anti-14-3-3 zeta autoantibody might be a biomarker for predicting hepatocarcinogenesis; a study from Lu et al. suggests that the combined application of PD-1-based immunotherapy and anti-cancer drugs has become a new expectation for clinical treatment of colorectal cancer. In addition to these original research papers, several review articles were also included in this Research Topic. For example, a review article from Zhang et al. has summarized the latest advances in the classification of immunotherapy and the process of classification, identification and synthesis of tumor-specific neoantigens, as well as their role in current cancer immunotherapy; a review article from Li et al. has provided an overview of the tumor-associated antigens and anti-TAAs autoantibodies as biomarkers in the immunodiagnosis of steosarcoma; a review article from Jin and Wang has proposed a concept of immunogenic cell death (ICD)-based cancer vaccines and summarized sources of ICD-based cancer vaccines and their challenges, which may broaden the understandings of ICD and cancer vaccines in cancer immunotherapy.

In summary, this Research Topic covers many important aspects in cancer immunology, especially relating to TAAs and anti-TAAs autoantibodies. This Research Topicalso includes recent advances in the basic and clinical studies relating to cancer immunodiagnosis and cancer immunotherapy. We hope that this special issue can provide useful and helpful information to investigators in this field.

Author contributions

JZ and XG have written the manuscript and BJ and QZ have revised the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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