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Tumor-associated carbohydrate antigen, Tn, as a cancer prognosis marker and therapeutic target

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Elevated expression of tumor-associated carbohydrate antigens (TACAs) is associated with various cancers. A variety of malignant and normal tissues have been screened by immunochemistry using antibodies against TACAs. Overexpression of TATAs (tumor-associated carbohydrate antigens) has been observed on the cell surface of many malignant tumors. The Tn antigen (GalNAc-Ser/Thr) is one member of TACAs presented as mucin-type carbohydrates. Using the LAE vaccine technology (Linear Array Epitope), we have developed an anti-Tn vaccine, which induces anti-Tn antibodies with high specificity and high affinity in mice. Using the anti-Tn antibody, we have demonstrated that the expression of Tn is positively correlated with the degree of malignancy in prostate, breast, colon, cervical, oral squamous cell carcinoma (OSCC), and pancreas cancers. In the case of OSCC, the expression of Tn was positively correlated with staging recurrence, and distant metastasis as well as withinvasive pattern grading score (IPGS). The results suggest that Tn expression may serve as a reliable indicator for OSCC prognosis evaluation. Our studies have also demonstrated that anti-Tn vaccine can protect against spontaneous prostate cancer formation in transgenic adenocarcinoma of the mouse prostate (TRAMP) mice. Together, our results show that tumor-associated carbohydrate antigen, Tn, can serve as a cancer prognosis marker and therapeutic target.

Biography

Jaulang Hwang received his PhD in Biological Chemistry from the University of Michigan, Ann Arbor. Dr. Hwang was supervised by Dr. Ira Pastan, NCI, NIH, for his post doctorate training. He then returned to Taiwan and as an Associate Research Fellow and was later promoted to Research Fellow, at the Institute of Molecular Biology, Academia Sinica. In addition to his research at Academia Sinica, Dr. Hwang held many roles including: President of Taiwan Genomics and Genetics Society, Associate-Director of the Institute of Molecular Biology, Academia Sinica, and Dean of the College of Sciences, National Chung Cheng University. Currently, he is a Distinguished Professor at the Department of Biochemistry, Molecular and Cellular Biology, Taipei Medical University.

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