

Immunogenic Sugar Moieties of HIV-1 and SARS-CoV and Their Therapeutic Potential

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Abstract

Sugar chains are abundantly expressed on the outer surfaces of the vast majority of viral, bacterial, protozoan and fungal pathogens, as well as on the membranes of mammalian cells. This class of carbohydrate molecules is structurally diverse and characteristically suitable for storing biological signals for molecular and cellular recognition. Exploring the biological information contained in sugar chains is an important topic of current post-genomic research. To facilitate these investigations, we have focused on the development of carbohydrate-based microarray technologies. Two complementary platforms of carbohydrate microarrays, a method of non-covalent immobilization of carbohydrate antigens on micro-glass slides and a method of photo-coupling of saccharide moieties on a bioarray substrate, have been recently established by our laboratory and collaborators. In this presentation, we attempt to summarize our progress in using these technologies to explore the immunogenic sugar moieties, especially those that are expressed by viral pathogens (SARS-CoV and HIV-1) but share strong antigenic cross-reactivities with human cancers. Potential of this class of carbohydrate moieties in development of novel antiviral and anticancer strategies will be discussed.

Biography

Dr. Denong Wang received his Ph.D. degree in immunology and glycobiology with the late Professor Elvin A. Kabat at Columbia University (1993) and had postdoctoral training in the laboratories of Professors Leonard A. Herzenberg and Leonore A. Herzenberg (Department of Genetics, Stanford University) and Professor Bernard F. Erlanger (Department of Microbiology, Columbia University). His primary field is immunology with research emphasis on carbohydrate antigens and the structure-function relationship of antibody combining-sites. He has recently entered the developing field of post-genomic research. His group published the first description of a carbohydrate-based microarray technology in the March 2002, issue of Nature Biotechnology. He was head of Functional Genomics Division, Columbia University Genome Center 1998-2003. He has served for NIH study sections in the areas of postgenomics research and technologies in the past few years. Currently, Dr. Wang is Principal Investigator & director of Stanford Tumor Glycome Laboratory, which is one of the seven key laboratories of the NIH Alliance of Glycobiologists for Detection of Cancer and Cancer Risk.

Speaker Info

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