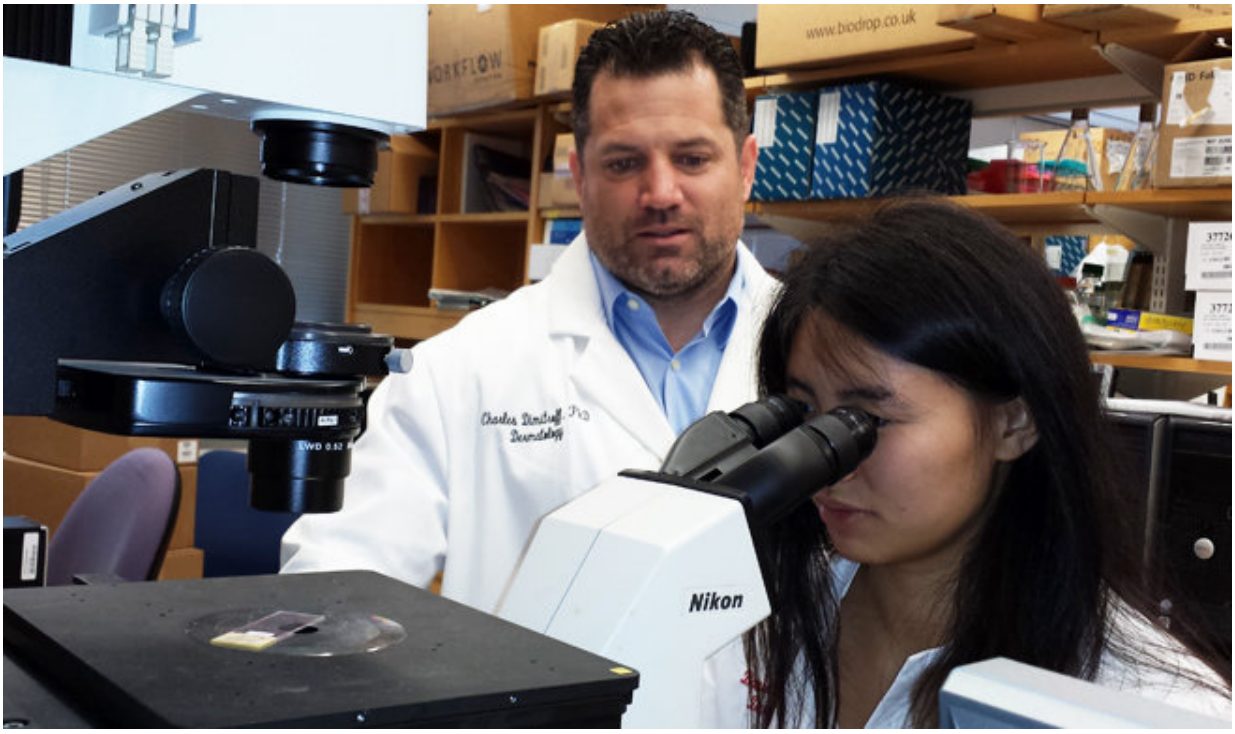
Glycans at the 'I' of the storm in humoral immunity and melanoma progression

August 22 2018



Charles J. Dimitroff, PhD, left, helps to train the next generation of immune/cancer research scientists. His laboratory is focused on the glyco-pathological basis of immunity, inflammation and cancer. Credit: Charles Dimitroff, Brigham and Women's Hospital

Two new studies have unveiled how a peculiar molecule impacts how antibody-producing cells develop and function as well as how normal

melanocytes progress to melanoma malignancy.

"These findings on fundamental immunology and melanoma development originate from totally different areas of research, though have intersected at the bench," said Charles Dimitroff, Ph.D., of the Department of Dermatology at Brigham and Women's Hospital.

The Dimitroff lab, along with collaborators at Imperial College London, recently published two back-to-back-articles in the journal, *Nature Communications*, detailing novel findings on cell surface carbohydrates ('glycans') regulating human B cell function and human melanoma progression—two scientific areas seemingly at the opposite ends of the research spectrum.

Over a five-year period in the Dimitroff laboratory, Nicholas Giovannone, Ph.D., and Jenna Geddes Sweeney, Ph.D., who were investigating the global glycan features of human B cells at various stages of differentiation and of normal and malignant melanocytes, independently discovered that a distinct glycan feature known as blood group I-antigen or "I-branches" was remarkably central to glycan-mediated processes regulating both human B cell signaling/activation and melanoma aggressiveness. Precisely how these I-branch features control B cell differentiation and humoral immunity or drive melanoma progression are still under intense investigation and likely to reveal new targets for immunomodulation or anti-cancer treatments.

More information: N. Giovannone et al, Galectin-9 suppresses B cell receptor signaling and is regulated by I-branching of N-glycans, *Nature Communications* (2018). DOI: 10.1038/s41467-018-05770-9

Provided by Brigham and Women's Hospital