

Regulation of Host Immunity by Endogenous and Symbiotic Lipid Mediators

Sungwhan F. Oh, Ph. D. (Harvard Medical School)

Preparing adequate immune system during normal immune development and triggering necessary but not excessive response upon inflammation and infection are crucial for host health. To achieve these time-sensitive goals, our body has prepared specialized regulatory factors, including lipid mediators with immunomodulatory functions both in physiological and pathophysiological conditions. In this presentation, two distinct cases will be discussed: 1) how resolvins, endogenous lipid mediators derived from omega-3 polyunsaturated fatty acids, can expedite resolution of acute inflammation and 2) how glycosphingolipids, produced by symbiotic gut microbes, can contribute to immune maturation and protect host from excessive inflammation. Lipidomic profiling of the host systems at the normal condition and over the time course of inflammation provides information on the spatial and temporal regulations of these effector molecules, as well as clues for the further therapeutic implications.