Contribution ID : **19** Type : **Oral**

Molecular Mechanisms governing αβ T-cell receptor autoreactivity towards CD1b

Tuesday, 3 December 2019 12:00 (15)

Central to both systems of innate and adaptive immunity is the mediation of T-cell recognition of antigen presenting molecules presenting antigens (Ag) by T-cell receptors (TCR). CD1 molecules are Major Histocompatibility Complex (MHC) class I like molecules involved in the presentation of foreign and self-lipid antigens. CD1b exhibits the largest hydrophobic antigen binding cleft, allowing it the capabilities of presenting self and foreign lipids with long carbon tail (up to 80 carbons). While the first molecular mechanism regulating T cell reactivity towards CD1b have been established in the context of mycobacterium tuberculosis infection, the mechanisms surrounding T- cell reactivity towards self-lipid antigens are recently being elucidated. The presentation of self-lipid antigens by CD1b has been established, and includes members of phospholipid, sphingolipid, and ganglioside lipid species. Using tetramer technology with CD1b loaded with targeted self-lipids, a broad repertoire of αβ TCRs have been elucidated, and exhibit discriminatory reactivity between phospholipids and sphingolipids. The crystal structures of CD1b in complex with an αβ TCR (PG90) exhibiting reactivity towards CD1b presenting rare phospholipid, phosphatidylglycerol (PG), and an αβ TCR (BC8B) against a broad repertoire of phospholipids, including phosphatidylcholine (PC), demonstrate differing mechanisms of self-ligand reactivity and recognition. Presentation of both PG and PC by CD1b have implicated roles in cellular stress, autoimmunity, bacterial infection, and anti-tumor properties. These diverse mechanisms of antigen selectivity provide a deeper understanding into their immune cell function in the context of autoimmunity and disease.

Speakers Gender

Male

Travel Funding

Level of Expertise

Early Career <5 Years since PdD

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No

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