SIgN Immunology Seminar

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Phenotypic and functional characterisation of the CD16+ monocyte subset and its implications in human diseases.

Date
Monday,
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Time
3pm – 4pm

Venue
SIgN Seminar Room,
Immunos Building
Level 4
Biopolis

Monocytes constitute about 5-10% of peripheral blood leukocytes in humans. Besides being precursors cells of tissue macrophages and inflammatory dendritic cells, they also fulfill critical roles in innate and adaptive immunity during infection and inflammation. Blood monocytes are heterogenous and can be broadly classified into 2 major subpopulations based on the differential surface expressions of CD14 and CD16. In healthy individuals, 80% of blood monocytes belong to the $CD14^{+}CD16^{-}$ subset while the $CD14^{+/lo}CD16^{+}$ (hereafter $CD16^{+}$) subset constitutes the remaining 20%. The minor $CD16^{+}$ subset has been termed "inflammatory" as it expresses high levels of TNFα and produces little IL-10 upon stimulation with LPS. Our own study with Dengue virus showed that the $CD16^{+}$ monocytes upon exposure to Dengue virus could secrete high amount of pro-inflammatory cytokines, like TNFα, IL-1β and IL-6 and participates in disease pathogenesis. Moreover, we also have data showing that the $CD16^{+}$ subset could perform antibody-dependent cellular cytotoxicity. They are able to efficiently eliminate antibody-coated tumour cells in a fashion similar to NK cells, and mediated through CD16 (i.e. FcγRIIIA), a signature marker on this subset. $CD16^{+}$ monocyte subset is expanded in the blood in numerous pathological conditions. Indeed, we observed a significant expansion of this subset in sepsis patients, while other groups also reported similar findings in viral infections and autoimmune disorders. Hence, it seems that the $CD16^{+}$ subset are playing key roles in many inflammatory diseases.