ARMI EXTERNAL SEMINAR SERIES 2021

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Eosinophils promote homeostatic adaption of the intestinal tissue following microbial colonisation

Professor Nicola Harris
Department of Immunology & Pathology, Central Clinical School, Monash University

Abstract

The small intestine is the largest reservoir of eosinophils under homeostatic conditions, yet their role within this tissue remains unknown. To investigate this we utilized a recently developed wholemount imaging technique optimized for the visualization of whole intestinal villi (3D), on eosinophil-deficient Δdbl.GATA1 mice to assess any structural anomalies that may result in the absence of intestinal eosinophils. Our data suggest significant atrophy of small intestinal villi occurs in response to microbial colonization and that eosinophils help to protect the tissue from microbial induced damage. Eosinophil deficiency also resulted in altered intestinal transit time, increased barrier permeability and altered immune homeostasis. Ultrastructural analysis of eosinophils from normal or germ-free mice revealed a role for the microbiota in regulating eosinophil activation, whilst comparative RNA-seq analysis suggested a role for eosinophils in regulating inflammation and the extracellular matrix. Collectively, our findings provide evidence for a critical role of eosinophils in facilitating tissue homeostasis following microbial colonisation.

Bio

Nicola Harris was born in New Zealand where she completed her undergraduate studies and PhD thesis. In 2002 she moved to Switzerland as a postdoctoral fellow at the University of Zurich, then later as an Assistant Professor at the ETH Zurich. In August 2009 joined the Swiss Vaccine Research Institute (SVRI), EPFL, Lausanne, where she was promoted to Associate Professor and gained a prestigious ERC starting grant. In 2018 she moved to Melbourne, Australia where she is currently laboratory head and NHMRC senior research fellow, located within the Department of Immunology and Pathology, Monash University, Central Clinical School, Alfred Medical Research and Education Precinct. Her laboratory studies type two immune responses with a particular focus on understanding their role in immune protection, physiology and wound repair/tissue regeneration both in health and following intestinal helminth infection.

EVENT DETAILS

DATE:
Tuesday, 7 December 2021

TIME:
11am AEDT

ZOOM:
https://monash.zoom.us/j/81025731696?pwd=R3JVeVhyM0tLdWozUFVmeTUxS1dvZz09
Meeting ID: 810 2573 1696
Passcode: 286158

HOST:
A/Prof Mikaël Martino

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