



Infectious
Diseases Labs

A*STAR IDL

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Friday 14th August 2026

11:00 AM to 12:00 PM (SGT)

Venue: Codon A & B, Matrix

Alveolar macrophages diversify into two distinct states on weaning for protection against acute respiratory infection

Alveolar macrophages (AMs) originate from embryonic precursors that mature and establish themselves during the first week of life. However, whether AMs continue to remodel in the developing lung remains unknown. Here, we report that AMs undergo metabolic and functional reprogramming into two distinct immune states as the host develops. In juvenile mice, AMs are homogeneous and hyporesponsive, but they diversify into two subsets that can be distinguished by their surface TREM1 expression upon weaning. While most AMs in adult mice remain TREM1- and maintain a quiescent and hypometabolic phenotype, a minor subset of AMs is reprogrammed into a TREM1-expressing state with superior immune defense functions, confirmed by enhanced protection against a mouse model of influenza A infection. Collectively, we demonstrate how age-dependent diversification of AMs influences the outcome of respiratory infection during host development, highlighting the untapped potential of reprogramming AMs to alleviate pulmonary diseases.

Jia Tong Loh is an Assistant Professor at Nanyang Technological University, School of Biological Sciences. She received her Ph.D. from Nanyang Technological University and did her postdoctoral training at Singapore Immunology Network. She was awarded numerous competitive research grants, including the NMRC Young Investigator Research Grant in 2018 and 2022 and the MOE Academic Research Fund Tier 2 in 2025. Her laboratory is currently interested in understanding early-life immune responses and how they can be shaped by environmental influences.

Hosted by: Dr Stefan Oehlers

Seminar is open to all. No registration required.

Questions? Contact us at seminars@a-star.edu.sg

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