

All are Welcome!

Breast milk IgG engages the neonatal immune system to instruct responses to gut antigens

23 OCT 25 THURSDAY 3PM

AUDITORIUM LEVEL 1

Maternal antibodies fundamentally regulate gut immunity in the developing infant, yet the mechanisms underlying this process remain elusive. Here, we show that maternal IgG, ingested in the first week of life, restrains microbiota-dependent adaptive immune responses weeks later, following weaning. This activity is dependent on efficient binding to gut bacteria and engagement of Fc and complement-dependent effector functions in offspring. Further, ingestion of microbiota-specific maternal IgG serves to limit aberrant neonatal responses to dietary antigens encountered at weaning. These discoveries reveal a mechanism wherein maternal IgG engages the offspring immune system in early postnatal life to broadly tune subsequent mucosal responses. This mode of immune instruction provides adaptability to reinforce intestinal homeostasis in the face of dynamic shifts in food and bacterial antigens during development.

Recent Publications:

1. M. K. Shenoy, D. M. Rico, A. K. Lorant, H. Touré, S. Gordon, L. J. Milburn, J. S. Schwensen, M. E. Cabán, M. A. Koch, Breast milk IgG engages the mouse neonatal immune system to instruct responses to gut antigens. Science 389, eado5294 (2025).
2. Y. Wu, J. Y. Huang, M. T. Conlon, M. K. Shenoy, J. L. Chao, M. Y. Chooi, M. A. Koch, M. Y. Gerner, Distal Immunization and Systemic Cytokines Establish a Transient Immune Alert State in the Intestine. The Journal of Immunology 213, 373–383 (2024).
3. V. P. O'Brien, Y. Kang, M. K. Shenoy, G. Finak, W. C. Young, J. Dubrulle, L. Koch, A. E. Rodriguez Martinez, J. Williams, E. Donato, S. K. Batra, C. C. S. Yeung, W. M. Grady, M. A. Koch, R. Gottardo, N. R. Salama, Single-cell Profiling Uncovers a Muc4-Expressing Metaplastic Gastric Cell Type Sustained by Helicobacter pylori-driven Inflammation. Cancer Research Communications 3, 1756–1769 (2023).

Our Speaker



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Dr Shenoy is a mucosal immunologist, specializing in how maternal and environmental factors shape early life interactions between the nascent immune system and the developing microbiome. She recently started her lab at the Singapore Immunology Network (SIgN – A*STAR), following her training at the University of Washington, the University of California San Francisco, and the Fred Hutchinson Cancer Center.

Hosted by Dr Chris Chan Seow Neng/Dr Pek Junwei

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