

Nano-scale artificial antigen-presenting cells to promote tumor vessel normalization for enhancing the efficacy of cancer immunotherapy

Structurally and functionally abnormal tumor vasculature hampers the infiltration of immune cells, chemotherapeutic drugs, or immunotherapeutic antibodies in the tumor microenvironment (TME) leading to suboptimal therapeutic efficacy. To address this problem, we have developed nano-scale artificial antigen presenting cells (a-APC) capable of activating antigen specific CD8+ T-cells in vivo to promote tumor vessel normalization (TVN) in melanoma bearing murine model. Activation of CD8+ T-cells resulted in increased immune cell infiltration in TME. This further promoted pericyte coverage over endothelial cells, increased VE-cadherin, and decreased hypoxia in TME. Further, treatment with a-APC synergized with chemotherapeutic drug or immunotherapeutic antibody improved the survival of tumor bearing mice. This study shows that the use of a-APC for activating antigen specific CD8+ T-cells in vivo can promote TVN, thereby synergizing the chemo/immunotherapy to treat cancer.



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4:00 PM | THURSDAY | 1 MAY 2025

●●● **AUDITORIUM, NII**

High-calorie diet feeding reshapes the gut microflora which confers protection against *Salmonella* enteric infection

Salmonella species are gram-negative, rod-shaped bacilli that cause intestinal infections, known as salmonellosis. The clinical symptoms of salmonellosis range from acute abdominal pain and diarrhea to serious life-threatening enteric fevers. Given the evolution of multidrug resistance, active efforts to develop newer preventative and curative therapies must be made. Since *Salmonella* is an enteric pathogen, its interaction with the gut commensal microflora significantly impacts the course of disease pathogenesis. Diet, in turn, plays a key role in shaping the gut microbiota to maintain innate enteric immunity. The consumption of a calorie-rich Western-style diet has been shown to trigger microbial dysbiosis, however, its impact in the context of salmonellosis hasn't been studied in detail. In our study, we have explored the role of high-calorie diet intake in reshaping gut microflora and its impact on the enteric infection of *Salmonella enterica* serovar Typhimurium (STM).



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