

ADVANCES IN NUTRITION & IMMUNE FUNCTION



Key findings: what have we learned?

- Nutritional status, frailty, vitamin and mineral deficiencies alter immune response
- The process of aging is associated with perturbations to immunity, resulting in the production of excessive pro-inflammatory cytokines, vulnerability to infectious agents and poor response to vaccination
- Among the micronutrients, vitamin D is strongly related to optimal immune function
- The Mediterranean diet pattern may be a more protective maintenance diet than the Western diet pattern for IBD patients in remission
- The therapeutic value of food is illustrated by the application of food-based approaches in the field of food allergy, such as observed through oral immunotherapy (OIT)
- Oxylipins as biologically active lipid mediators on the immune system provide a mechanistic insight into the body's inflammatory response to various triggers

Key research areas: what needs to be done?

Nutrition, Immunity and COVID-19

- Characterize the relationship of frailty and obesity with micronutrient status and the combined effects on infection risk and vaccine response



Dietary-related Inflammation and Cancer Risk

- Reduce the translational gap between research and practice, by designing and implementing dietary pattern clinical trial interventions to reduce the inflammatory potential of the diet, for chronic disease prevention and improved survival
- In addition to inflammation and immune modulation, identify other potential biological mechanisms underlying the role of dietary patterns in human health



Dietary Patterns and Inflammatory Bowel Disease

- Identify the synergistic effect of healthy fats and fibers on gut and metabolic health
- Explore the role of the Mediterranean dietary pattern on the gut-brain axis
- Understand the causal role of the gut microbiome on gut immunity and metabolic responses



Obesity and Immunity

- Quantify the impact of obesity and obese asthma on immune dysregulation and identify potentially targetable mechanisms



Aging and Chronic Inflammation

- Clarify the influence of relevant biomarkers, like CXCL9, on chronic disease and aging
- Understand how current anti-aging interventions, like metformin, exert their influence on immune cells in the context of aging



How to Induce Oral Tolerance

- Understand the factors in infancy and young childhood which drive durable oral tolerance to food
- Methodological improvements to food allergen immunotherapy to balance risk and benefit
- Increased attention to the patient centered outcomes of reduction of severity of allergic reactions



Vitamin D and Immune Function

- Improve knowledge of the in vivo responses of immune cells to vitamin D
- Clarify the impact of immune-related disorders on vitamin D metabolism
- Establish personalized vitamin D interventions for immune health



Diet, Oxylipins and Inflammation

- Clarify the relationships between dietary intake of PUFAs and oxylipin profiles in immune responses
- Identify novel oxylipins and temporal effects during the inflammatory response and resolution

