# ABSTRACTS
## * Author Presenting Paper

**9 Lipid-soluble antioxidant vitamins on immunity.** B. P. Chew and J. S. Park, *Washington State University, Pullman.*

The relationship between vitamin deficiencies and infectious disease morbidity and mortality has been known for centuries. Interest on the importance of the lipid-soluble antioxidant vitamins retinoids, carotenoids and tocopherols has increased in recent years due to their role in disease etiology. The underlying mechanism of action of these micronutrients is, in a large part, attributed to their immune modulatory action. Vitamin A and related retinoids play important roles in regulating mucosal immunity, B and T cell responses, cytokine production, and neutrophil function. The vitamin A ligands all-trans and 9-cis retinoid acid bind to the retinoid acid receptors RAR and RXR; the latter dimerize and bind to retinoic acid response elements on target genes. Dietary carotenoids also have been reported to enhance both humoral and cell-mediated immune function in numerous species. The action of carotenoids has previously been attributed to their provitamin A activity. However, carotenoids such as astaxanthin and lutein do not possess provitamin A activity but have similar immune-enhancing action. Vitamin E compounds such as the tocopherols and tocotrienols are chain-breaking antioxidants against lipid peroxidation and regulate prostaglandin and leukotriene production. They similarly modulate immune function including changes in lymphocyte subsets, cytokine production, humoral and cell-mediated immunity, and neutrophil function. Recent studies on the role of retinoids, carotenoids and tocopherol in gene regulation and apoptosis have advanced our knowledge on the mechanism by which they regulate immunity and health. This discussion will address specific immune responses and their relevance to animal health and production.

**Key Words:** Lipid-soluble vitamins, Immunity