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Funding for global health and vaccine research

Ruth Branston and James Whitworth from the Wellcome Trust discuss the strategic goals of this major medical research charity. As an example of their concerns, they address the challenges facing the development and deployment of vaccines and highlight the multiple mechanisms available for funding this important area of research. [See page 280](#)

Challenges for the development of enteric vaccines

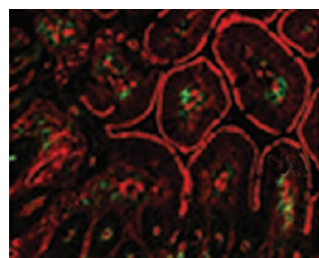
Drawing from a recent meeting sponsored by the Bill and Melinda Gates Foundation, Cecil Czerkinsky and Jan Holmgren provide a commentary on the scientific challenges encountered in the development of effective mucosal vaccines, particularly in light of the poor nutritional status and the presence of chronic environmental enteropathy in populations with the greatest need. [See page 284](#)



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The importance of geohelminths

Infections by intestinal and soil-transmitted helminths (geohelminths) are extremely prevalent in low- and middle-income countries. Philip Cooper discusses human immunity to geohelminths and their potential effects on nonparasite mucosal immune responses, including immunity to vaccines, susceptibility to infectious diseases, and the course of inflammatory bowel disease and asthma. [See page 288](#)



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Mucosal immunity to HIV-1 infection: a view from Africa

Pietro Pala and colleagues discuss aspects of mucosal immunology relevant to efforts to prevent mucosal transmission of HIV, and the unique challenges that must be confronted in endemic areas, such as parts of Africa, for prevention to be effective. [See page 300](#)

Diverse roles of autophagy

The process of autophagy is now recognized to have importance in immunity to pathogens and in

many disease processes. Johan Van Limbergen and colleagues review recent findings concerning autophagic mechanisms, their molecular regulation, and their clinical relevance for many diseases, including Crohn's disease in humans. [See page 315](#)

Cholera toxin B-induced IgA protects against asthma

The B subunit of cholera toxin (CTB) is known to have immunoregulatory properties when administered to mucosal tissues. Hermelijn Smits and colleagues demonstrate the ability of locally delivered CTB to suppress airway inflammation in a mouse model of asthma. [See page 331](#)

Epithelial cell-derived retinoic acid and TGF-β condition mucosal dendritic cells

Dendritic cells in mucosal tissues have unique capacities, including the ability to drive the differentiation of regulatory T cells. Iliyan Iliev and colleagues found that epithelial cell-derived retinoic acid and transforming growth factor-β drive the expression of CD103 on dendritic cells as well as their ability to induce gut-homing regulatory T cells. [See page 340](#)

B-1a B cells as a primary source of SIgA

A large proportion of secretory immunoglobulin A (SIgA) in the intestine is not derived from B cells generated in classic germinal centers of organized lymphoid tissues. Maria Rosado and colleagues provide data indicating that in the absence of immunization, SIgA in the gut is produced by B-1a B cells that are derived from splenic precursors. [See page 351](#)

Candida albicans and dendritic cell functional plasticity

Pierluigi Bonifazi and colleagues examine the intracellular signaling pathways that are induced in dendritic cells by the yeast and hyphal forms of *Candida albicans* to initiate regulatory and effector T-cell responses. [See page 362](#)