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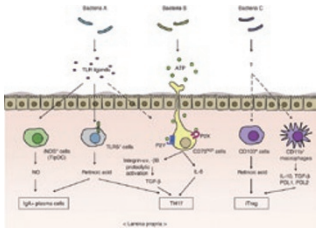

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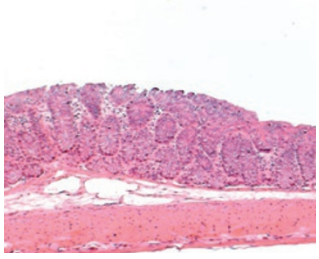
Innate control over immunity to intestinal bacteria

In their insightful review, Kenya Honda and Kiyoshi Takeda discuss recent advances in understanding how innate responses in the mucosa control adaptive immunity to commensal and pathogenic bacteria. See page 187

A key role for flagellin

One key molecule expressed by intestinal bacteria is flagellin, the primary structural component of flagella. Matam Vijay-Kumar and Andrew Gewirtz discuss the mechanisms by which flagellin is recognized by the innate immune system, its role in host defense and chronic inflammatory disease, and potential approaches to developing novel therapies. See page 197



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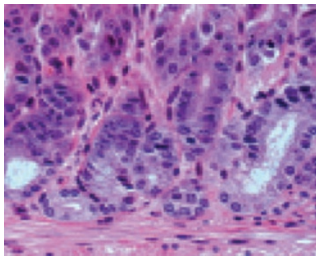
Asthma—up in a puff of smoke!

The correlation between exposure to cigarette smoke and increased incidence of asthma has long been known. Lander Robays and colleagues discuss the immunological basis of this association. In particular, they focus on the hypothesis that inappropriate activation of dendritic cells undermines the usual tolerogenic response to innocuous antigens when they are inhaled with cigarette smoke. See page 206



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MEP1A is a susceptibility gene for UC

Metalloproteases are important in the induction and regulation of intestinal inflammation. Sanjita Banerjee and colleagues demonstrate that the gene for the α-subunit of the metalloproteinase meprin A is a susceptibility gene for ulcerative colitis in humans. Furthermore, they provide functional evidence from a mouse model of colitis. See page 220

A_{2A} AR controls inflammation in *H. pylori* infection

Adenosine can inhibit inflammation via its ability to induce cAMP. Mohammad Samiul Alam and colleagues demonstrate a key role for A_{2A} adenosine receptor (AR) signaling in regulating inflammation induced by *Helicobacter pylori* infection. See page 232

T helper 17 cells mediate "dry eye" disease

"Dry eye" is the second most common problem among patients seeking eye care, and it can have a considerable impact on quality of life. Cintia De Paiva and colleagues demonstrate an increase in messenger RNA for a variety of pro-inflammatory cytokines in the conjunctiva of recently diagnosed patients. Further investigation in a murine desiccating-stress model of the human condition revealed the presence of interleukin (IL)-17 and IL-17-secreting cells and, crucially, that IL-17 depletion ameliorated pathology. See page 243

COX-2 in oral tolerance

Cyclooxygenase-2 (COX-2) and regulatory T cells have previously been shown to be involved in mucosal immunoregulation, whereas interleukin-4 has no reported role in oral tolerance but is associated with mucosal pathology. Femke Broere and colleagues bring together these various strands by demonstrating that COX-2 in mucosal dendritic cells may contribute to regulatory-T-cell induction via the prevention of interleukin-4 production by T cells. See page 254

Peyer's patch regulatory B cells

B cells can have regulatory properties in the intestine. Jayaum Booth and colleagues demonstrate that in sheep, Peyer's patch (PP) cells—in contrast to cells from blood or lymph nodes—were hyporesponsive to activation with CpG oligodeoxynucleotide. This poor activation was traced to interleukin-10 spontaneously produced by a regulatory population of PP B cells. See page 265