

## SPOTLIGHT

### Articles of Significant Interest Selected from This Issue by the Editors

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#### ***Ehrlichia chaffeensis* Nuclear Translocated Ankyrin Protein Interacts with *Alu* Elements**

Host cell gene transcription is modulated by the obligately intracellular bacterium *Ehrlichia chaffeensis* during infection of mononuclear phagocytes, but the mechanisms involved have remained undefined. Zhu et al. (p. 4243–4255) demonstrate that a large, 200-kDa ankyrin repeat-containing protein of *E. chaffeensis* is translocated to the host cell nucleus, where it interacts with a poly(A) stretch within the repetitive mobile element *Alu-Sx* embedded in upstream gene regulatory regions and introns. A genome-wide analysis identified a small subset of p200 gene targets associated primarily with transcription, apoptosis, ATPase activity, and structural components, providing evidence of a novel molecular strategy involved in reprogramming host cell gene expression to promote survival of the pathogen.

#### **Class A Scavenger Receptor (SRA) Modulation of Cytokine Responses to Gram-Negative Bacteria Is Independent of SRA-Mediated Phagocytosis**

Bacterium-elicited host cytokine responses have been demonstrated to correlate inversely with class A scavenger receptor (SRA) expression. However, whether there exists an obligate relationship between SRA-mediated bacterial phagocytosis and the inflammatory response is unknown. Amiel et al. (p. 4567–4573) utilized SRA-dependent and -independent bacterial strains to demonstrate that in vitro and in vivo modulation of cytokine responses by this receptor and the resultant endotoxic shock are functionally independent of SRA-mediated bacterial phagocytosis. These results provide novel insights into an immune function for SRA in the context of bacterial infection by microbes that can evade phagocytic recognition by this receptor.

#### **Nod1 Controls *Salmonella enterica* Infection through Regulation of Lamina Propria Dendritic Cells**

Nod1 is an intracellular pattern recognition molecule that detects peptidoglycan from the bacterial cell wall. The intracellular lifestyle of *Salmonella enterica* serovar Typhimurium is in keeping with the idea that this pathogen may be targeted by Nod1. Le Bourhis et al. (p. 4480–4486) show that Nod1 plays a critical role in dendritic cells (DCs) from the intestinal lamina propria of mice after oral infection with a *Salmonella* strain that invades these cells. The authors show that Nod1 deficiency impairs the ability of these DCs to limit bacterial growth, thereby impacting the survival of the animal.

#### **Cigarette Smoke Impairs the Capacity of Alveolar Macrophages To Clear Infections by Nontypeable *Haemophilus influenzae***

Despite the sterility of the lung, constant exposure to pollutants allows access of pathogens, such as nontypeable *Haemophilus influenzae* (NTHI), to the lower respiratory tract. Martí-Llitas et al. (p. 4232–4242) dissected the interplay between NTHI and alveolar macrophages and its modulation by cigarette smoke extract (CSE), showing that CSE damages the ability of macrophages to clear NTHI infection by impairing their phagocytic capacity. This impairment was associated with a reduction in the activation of phosphatidylinositol 3-kinase signalling triggered upon NTHI infection, which was observed to occur in cell lines and in human alveolar macrophages from smokers and patients with chronic obstructive pulmonary disease. Of potential therapeutic relevance, treatment with glucocorticoids did not compensate for CSE-dependent phagocytic impairment.