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► **COVER:** 'Maturation', inspired by the Essay on p476.



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The innate immune system is one of the first lines of defence against invading pathogens. One of the effector mechanisms used by this system is the production of antimicrobial peptides, which have a broad range of actions against microorganisms, including Gram-positive and Gram-negative bacteria, fungi and viruses. Defensins are one such type of antimicrobial peptide and recent studies have described their potent antiviral action. In their Review on page 447, Mary Klotman and Theresa Chang discuss recent studies that have shed light on the multiple and complex mechanisms by which defensins inhibit viral infection, either by direct effects on viruses or indirectly by affecting the target cell and immune cells. The clinical relevance of these functions is also considered.

In addition to eliminating pathogens, the immune system must be tightly regulated to ensure that damage to self tissue is prevented. To achieve this, a strict balance of activating and inhibitory signals delivered by receptors on the surface of immune cells is required. Members of the signal-regulatory protein (SIRP) family provide such signals. On page 457, Neil Barclay and Marion Brown discuss the molecular interactions between the SIRP-family members and their ligands, and how these interactions have a role in immune-cell regulation.

On page 433, another family of proteins involved in the control of immune cells is described. Carcinoembryonic antigen-related cell-adhesion molecules (CEACAMs) have been implicated in intercellular binding interactions that control various normal and pathogenic processes. The involvement of these proteins, with an emphasis on CEACAM1, in the modulation of immune responses is discussed.

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