# IN BRIEF

## SIGNAL TRANSDUCTION

### DNA damage sensor in the interferon response

A new study links DNA damage sensors with the type I interferon (IFN) response to cytosolic DNA. Stimulator of IFN genes (STING) is an endoplasmic reticulum (ER)-residing protein that promotes IFN signalling downstream of cytosolic nucleic acid sensors. Kondo *et al*. observed that cytoplasmic MRE11 (together with its binding partner RAD50) is essential for STING translocation from the ER to the Golgi apparatus and for interferon regulatory factor 3 phosphorylation in response to cytosolic double-stranded DNA (dsDNA). Cytoplasmic MRE11 seems to sense dsDNA through interactions with the sugar–phosphate DNA backbone, whereas its nuclease activity prevents excessive IFN production, probably by subsequently cleaving the MRE11-bound DNA. As it was dispensable for IFN expression downstream of herpes simplex virus and *Listeria monocytogenes*, the authors suggest that MRE11 may initiate a type I IFN response downstream of cell-intrinsic damage.

**ORIGINAL RESEARCH PAPER** Kondo, T. *et al.* DNA damage sensor MRE11 recognizes cytosolic double-stranded DNA and induces type I interferon by regulating STING trafficking. *Proc. Natl Acad. Sci. USA* 6 Feb 2013 (doi:10.1073/pnas.1222694110)

## INFLAMMATION

### Group 2 ILCs in the skin

Group 2 innate lymphoid cells (ILCs) that have previously been detected in the gut, lungs and adipose tissue express CD25 and interleukin-33 receptor (IL-33R) and produce IL-5 and IL-13 following stimulation. Here, Kim *et al*. characterize group 2 ILCs in the skin. $LIN^{-}CD25^{+}IL\text{-}33R^{+}$ group 2 ILCs were detected in healthy human skin, and their numbers were increased in skin lesions from patients with atopic dermatitis. Moreover, group 2 ILCs producing IL-5 and IL-13 were enriched in the skin of mice with atopic dermatitis-like disease and promoted disease pathogenesis in these mice. Unlike group 2 ILCs at other anatomic locations, cutaneous group 2 ILCs did not require IL-25 and IL-33 signalling for their pathogenic function but instead depended on thymic stromal lymphopoietin, the levels of which are known to be increased in patients with atopic dermatitis.

**ORIGINAL RESEARCH PAPER** Kim, B. S. *et al.* TSLP elicits IL-33-independent innate lymphoid cell responses to promote skin inflammation. *Sci. Transl. Med.* 30 Jan 2013 (doi:10.1126/scitranslmed.3005374)

## INNATE IMMUNITY

### An innate immune role for TOSO

TOSO (also known as FAIM3) is expressed on the cell surface of B cells and activated T cells and has been suggested to be the Fc receptor for IgM. Lang *et al*. now report that TOSO is also expressed by monocytes and granulocytes and is crucial for their function. Following stimulation, $Toso^{-/-}$ granulocytes showed enhanced degranulation and reactive oxygen species generation compared with wild-type controls. Moreover, $Toso^{-/-}$ monocytes and granulocytes had defective phagocytosis and delayed activation of nuclear factor-κB in response to lipopolysaccharide (LPS). In contrast to wild-type mice, $Toso^{-/-}$ mice were resistant to LPS-induced sepsis as a result of low cytokine expression. However, $Toso^{-/-}$ mice failed to control *Listeria monocytogenes* infection, and the high bacterial titres led to increased lethality compared with infected wild-type controls. Thus, TOSO is a regulator of innate immune responses.

**ORIGINAL RESEARCH PAPER** Lang, K. S. *et al.* Involvement of Toso in activation of monocytes, macrophages, and granulocytes. *Proc. Natl Acad. Sci. USA* 25 Jan 2013 (doi:10.1073/pnas.1222264110)