

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-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- κ B 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.1222641110)