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Original design by Jane Walker

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Printed in the UK by The Friary Press on acid-free paper

According to the ancient Chinese philosophers, the principle of balance and harmony between two opposing forces — the concept of Yin and Yang — is the foundation of the entire universe. In a Review article this month, Thomas Decker and colleagues (page 675) draw on this principle to illustrate the opposing activities of type I interferons in bacterial infection. Type I interferons are well known as potent antiviral immunoregulators, but it is now emerging that they are also produced in response to bacterial infection. In this situation, their activities can be both favourable and detrimental. On the one hand, they mediate increased immunity to some Gram-positive bacteria. On the other hand, they can increase sensitization of effector cells to death induced by certain intracellular bacteria.

This concept of balance can also be applied to the activities of the most recently discovered type I interleukin — interleukin-21 (IL-21), and its receptor, which are the subject of the Review by Warren Leonard and Rosanne Spolski on page 688. IL-21 has both positive and negative effects on numerous immune cells, from augmenting T-cell proliferation and driving B-cell differentiation to inhibiting dendritic-cell maturation. Although such activities might be beneficial for antitumour responses, they could contribute to the development of autoimmune disease.

As Louis Schofield and Georges Grau propose in their Review on page 722, dysregulated immune responses could be to blame for the pathogenesis of severe malarial disease. So, a fine balance between what constitutes an appropriate antimalaria immune response and what might exacerbate disease, owing to overactive immune responses, will need careful consideration in the design of effective malaria vaccines.



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