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REVIEWS

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IMMUNOLOGY



SEND IN THE DRONES!

Defining the migratory behaviours of leukocytes in interstitial tissues

Sting operations

How immune mechanisms shape the pain response

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April 2014
volume 14 no. 4



REVIEWS

217 Pathological pain and the neuroimmune interface

Peter M. Grace, Mark R. Hutchinson, Steven F. Maier and Linda R. Watkins

Here, the authors describe the immune mechanisms that are involved in pain, one of the key features of inflammation. They explain how the immune and nervous systems interact to initiate and propagate pain, and discuss the immune components that can be targeted for alleviating pathological pain in patients.

232 Leukocyte migration in the interstitial space of non-lymphoid organs

FEATURED ARTICLE

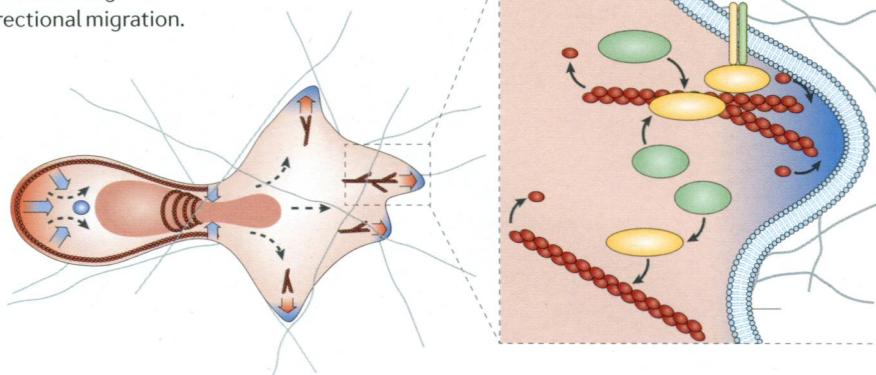
Wolfgang Weninger, Maté Biro and Rohit Jain

This Review follows neutrophils and T cells as they journey from the blood into tissues in search of sites of infection or injury. It highlights the mediators, which form temporally and spatially coordinated gradients within the tissues, and the mechanisms, including physical structures, that guide this directional migration.

247 The production and regulation of IgE by the immune system

Lawren C. Wu and Ali A. Zarrin

IgE provides protective immunity against helminths, but is also involved in the pathogenesis of allergic diseases. In this Review, Wu and Zarrin discuss recent studies using different IgE reporter mice, as well as other genetically modified mice, that have provided new insights on the cells and pathways involved in the production and regulation of IgE, and highlight the areas in need of additional studies.



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Mechanisms regulating skin immunity and inflammation
Manolis Pasparakis, Ingo Haase and Frank O. Nestle

FOXP3 and Scurfy: how it all began
Fred Ramsdell and Steven F. Ziegler

Links to further information

The full text of articles includes author biographies, links to glossary terms and links to websites and databases with relevant information.

Key points provides a bullet-pointed summary of the main topics covered in each article.

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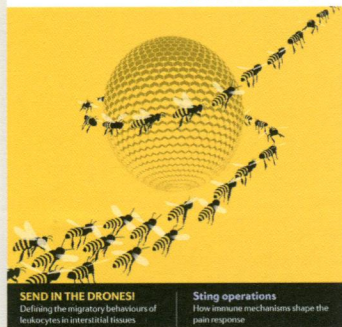
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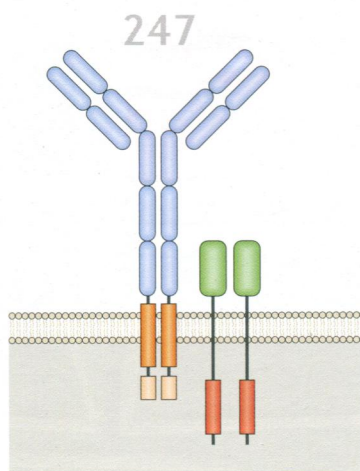
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► **COVER:** 'The Swarm' by Simon Bradbrook, inspired by the Review on p232.



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- ANTIVIRAL IMMUNITY Editing HLA-E expression
- 211 INNATE IMMUNE SIGNALLING TIRAP diversifies the sites of TLR signalling
- 212 TUMOUR IMMUNOLOGY Inflaming tumour spread
- IMMUNOGENETICS Tracking immune activity across the genome
- 213 INNATE LYMPHOID CELLS Support for indie B cells
- 214 IN BRIEF Neuroimmunology | Regulatory T cells | MHC molecules
- NEUTROPHILS Nanoparticles targeting the bad guys
- INFLAMMATION TNF snuffs out steroids
- 215 IN BRIEF Myeloid development | HIV | Inflammation

PERSPECTIVES

OPINION

- 261 **New roles for cyclin-dependent kinases in T cell biology: linking cell division and differentiation**

Andrew D. Wells and Peter A. Morawski

Three models have been proposed to explain the link between T cell division and differentiation — epigenetic changes, asymmetric division and the direct regulation of gene expression by cell cycle factors. In support of the third model, this Opinion article describes cell cycle-independent roles for the cyclin-dependent kinases as regulators of immunologically relevant transcription factors.

INNOVATION

- 271 **Democratizing systems immunology with modular transcriptional repertoire analyses**

Damien Chaussabel and Nicole Baldwin

Systems biology approaches have revolutionized many fields, including immunology, but analysing and interpreting such large-scale datasets is challenging. Here, the authors describe a novel approach that has been developed to address this issue. It relies on the grouping of co-dependent genes into 'modules', which are then used to build 'fingerprints' that can simplify the analysis of large-scale datasets.

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