

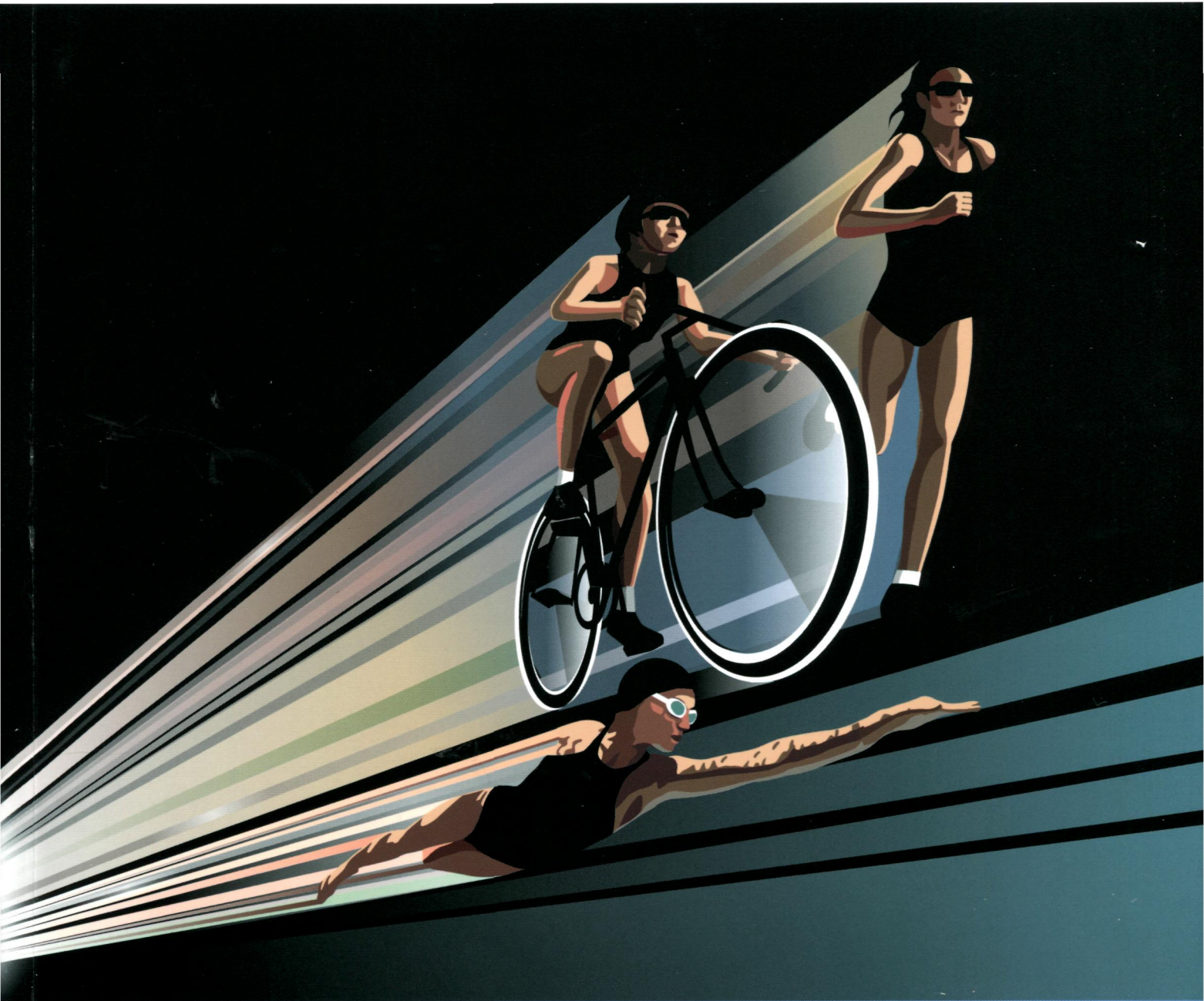
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REVIEWS

august 2014 volume 14 no. 8
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IMMUNOLOGY



THE T CELL TRIATHLON

Transitioning through the three phases of T cell development

The starting blocks

Classifying mononuclear phagocytes on the basis of their origin



Stockbroker/Alamy

From milk to more — immune roles for butyrophilins p559

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August 2014
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REVIEWS

529
FEATURED
ARTICLE

Developmental gene networks: a triathlon on the course to T cell identity

Mary A. Yui and Ellen V. Rothenberg

T cell development can be divided into three major regulatory phases by the checkpoints that occur at commitment to the T cell lineage and at β -selection. The three phases are each governed by different gene networks that confer distinct cellular characteristics. The correct developmental programme depends on the sequential operation of these gene networks, and cells that fail to enforce the boundaries between phases may be predisposed to leukaemic transformation.

546 Assembly and localization of Toll-like receptor signalling complexes

Nicholas J. Gay, Martyn F. Symmons, Monique Gangloff and Clare E. Bryant

In this Review, the authors describe how Toll-like receptors (TLRs) assemble with signalling adaptor proteins to form higher-order scaffolds that signal in response to pathogen sensing. Productive TLR signalling involves cooperative assembly, post-translational modification and subcellular localization of the components of the signalling complexes.

559 Immune modulation by butyrophilins

Heather A. Arnett and Joanne L. Viney

The butyrophilins are members of the immunoglobulin superfamily that have previously been poorly understood; however they are now emerging as key modulators of the immune system. Here, the authors describe the diverse ways in which butyrophilins can modify immune cell activity and discuss the potential of targeting this family for therapeutic purposes.

PROGRESS

521 OAS proteins and cGAS: unifying concepts in sensing and responding to cytosolic nucleic acids

Veit Hornung, Rune Hartmann, Andrea Ablasser and Karl-Peter Hopfner

The presence of nucleic acids in the cytosol alerts the cell to viral infection or damaged self. The oligoadenylate synthase (OAS) proteins and cyclic GMP-AMP synthase (cGAS) are enzymes that detect this danger and promote antiviral immunity. Recent structural studies reveal that these enzymes have a common mechanism of action and probably the same evolutionary origin.

On the web www.nature.com/reviews/immunol

Advance online publication

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Forthcoming articles:

Natural killer T cells: drivers or passengers in preventing human disease?
Stuart P. Berzins and David S. Ritchie

Interactions between innate and adaptive lymphocytes
Georg Gasteiger and Alexander Y. Rudensky

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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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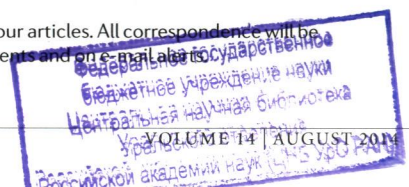
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PERSPECTIVES

OPINION

- 571 **Dendritic cells, monocytes and macrophages: a unified nomenclature based on ontogeny**

Martin Guillems, Florent Ginhoux, Claudia Jakubzick, Shalin H. Naik, Nobuyuki Onai, Barbara U. Schraml, Elodie Segura, Roxane Tussiwand and Simon Yona

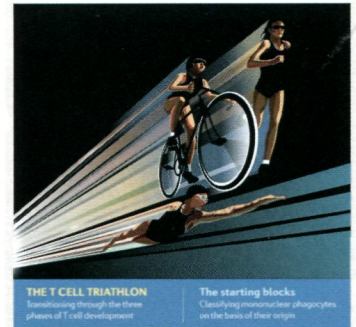
Cells of the mononuclear phagocyte system (MPS) are usually defined by particular functional or phenotypical characteristics. However, this has led to confusion in the field, as many of the criteria that are used to define a particular cell population may actually be shared with other cell types. In this Opinion article, the authors propose that a new nomenclature that is based on cell ontogeny could enable a more robust classification of MPS cells.

- 578 **Consortium biology in immunology: the perspective from the Immunological Genome Project (corrigendum)**

Christophe Benoist, Lewis Lanier, Miriam Merad, Diane Mathis and the Immunological Genome Project

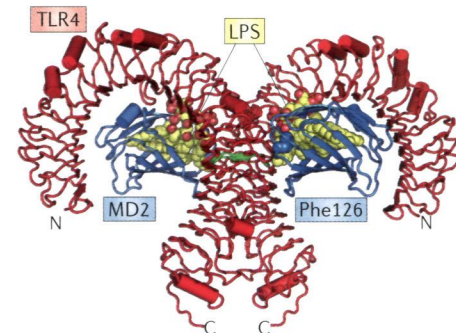
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► **COVER:** 'T cell triathlon' by Simon Bradbrook, inspired by the Review on p529.

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Tel: +44 (0)20 7843 3620
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www.nature.com/reviews/immunol

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EDITORS



OLIVE LEAVY



LUCY BIRD



KIRSTY MINTON



YVONNE BORDON



ELISABETH KUGELBERG