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# REVIEWS

november 2013 volume 13 no. 11

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## IMMUNOLOGY



### RESISTING COLONIZATION

Microbiota-mediated protection  
against pathogens

### Doing it the T-bet way

Transcriptional regulation of type 1  
immune responses





T-bet: bridging innate and adaptive immunity p777

# CONTENTS

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## REVIEWS

### 777 T-bet: a bridge between innate and adaptive immunity

*Vanja Lazarevic, Laurie H. Glimcher and Graham M. Lord*

The transcription factor T-bet is best known to immunologists as a master regulator of T helper 1 cell differentiation. However, it is becoming apparent that T-bet has important functions in other leukocyte populations, including memory CD8<sup>+</sup> T cells, B cells, innate lymphoid cells, dendritic cells and natural killer cells. This Review discusses these emerging immunological roles for T-bet.

### 790 **Microbiota-mediated colonization resistance against antibiotic-resistant intestinal pathogens**

*Charlie G. Buffie and Eric G. Pamer*

Colonization resistance — protection from exogenous pathogens by commensal bacteria — can be mediated by direct antagonism and by indirect effects on the host immune response. This Review outlines our current knowledge of immune-mediated colonization resistance against clinically relevant, antibiotic-resistant intestinal pathogens and how insights into commensal bacterial species and their mechanisms might be therapeutically used to restore resistance.

FEATURED ARTICLE

### 802 Immunological functions of the neuropilins and plexins as receptors for semaphorins

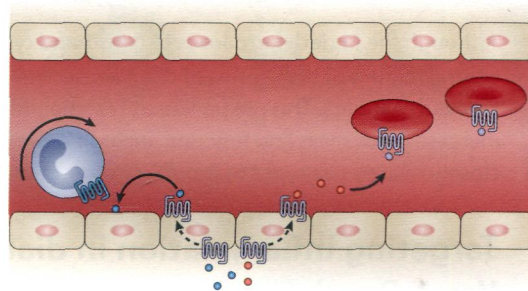
*Atsushi Kumanogoh and Hitoshi Kikutani*

Semaphorins and their primary receptors, the neuropilins and plexins, participate in a wide range of innate and adaptive immune responses, which has implications for immune disorders such as multiple sclerosis, rheumatoid arthritis and allergy.

### 815 Immune regulation by atypical chemokine receptors

*Robert J. B. Nibbs and Gerard J. Graham*

Chemokines control key immunological processes by signalling through G protein-coupled receptors. In addition, chemokines can be bound by atypical chemokine receptors (ACKRs), which are structurally related to conventional chemokine receptors, but which do not mediate classical signalling responses. This Review describes the biological functions of ACKRs and introduces the new nomenclature that has been proposed for this family.



815

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#### Advance online publication

We operate an advance online publication (AOP) service for authors and readers to view the latest articles published online ahead of print.

#### Forthcoming articles:

Age-dependent dysregulation of innate immunity  
*Albert C. Shaw, Daniel R. Goldstein and Ruth R. Montgomery*

Studying immunity to zoonotic diseases in the natural host — keeping it real  
*Andrew G. D. Bean, Michelle L. Baker, Cameron R. Stewart, Christopher Cowled, Celine Deffrasnes, Lin-Fa Wang and John W. Lowenthal*

#### 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.

#### E-alert table of contents

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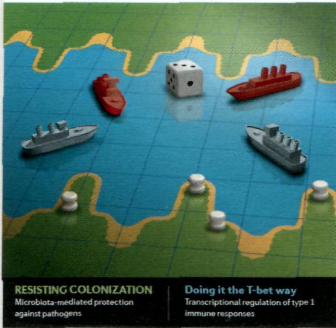


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**IMMUNOLOGY**



**RESISTING COLONIZATION**  
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Transcriptional regulation of type 1  
immune responses

► **COVER: 'Gut risk'** by Simon Bradbrook, inspired by the Review on p790.

**RESEARCH HIGHLIGHTS**

- 771 IMMUNOGENETICS SNPing at *FOXO3* to limit inflammation
- 772 INFLAMMASOMES When LPS sneaks into the cell
- HAEMATOPOIESIS Two versions of the Ikaros tale
- 773 ANTIBODIES Want to neutralize HIV? Get help!
- 774 IMMUNOTHERAPY Cancer immunotherapy for the elderly
- TOLERANCE The dual mucus defence
- IMMUNOMETABOLISM Keeping eosinophils on time — ILC2 it!
- 775 IN BRIEF Macrophages | Mucosal immunology | Macrophages

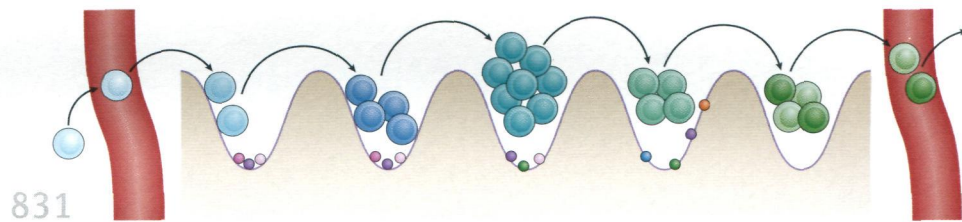
**PERSPECTIVES**

OPINION

- 831 **Thymus involution and regeneration: two sides of the same coin?**

*Thomas Boehm and Jeremy B. Swann*

The age-related involution of the thymus is associated with impaired cellular immunity and it is possible that restoring the thymopoietic activity of the thymus could have medical benefits. In this Opinion article, the authors discuss the development, involution and regeneration of the thymus and highlight the major gaps that still remain in our understanding of these processes.



831

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