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► **COVER:** 'Islands in the stream' by Philip Patenall, inspired by the Reviews on p541 and p552.



CHRISTIAAN VAN OOIJ



SHEILAGH MOLLOY



ANDREW JERMY



RACHEL DAVID

Horizontal gene transfer has been a major driving force in bacterial evolution and involves the transfer of mobile genetic elements through transformation, transduction or conjugation. Two articles in this issue look at specific classes of mobile genetic elements. Chromosomal islands are discrete chromosomal segments that have been acquired by horizontal transfer and which, for the most part, are no longer mobile. One highly mobile exception is a class of elements known as phage-related chromosomal islands (PRCIs), which are found in Gram-positive bacteria. These elements hijack the reproductive cycle of helper phages for their transduction. On [page 541](#), Novick, Christie and Penadés discuss the molecular genetics of PRCIs, focusing on the life cycle, regulation and mobility of the prototypical class, the *Staphylococcus aureus* pathogenicity islands (SaPIs). On [page 552](#), Wozniak and Waldor look at integrative and conjugative elements (ICEs), which are found in a diverse array of Gram-positive and Gram-negative species. In contrast to SaPIs, ICEs are self-transmissible and encode the machinery necessary for excision from the chromosome and for conjugative transfer. Wozniak and Waldor review the key steps in the ICE life cycle, including integration, excision and conjugation.

This issue also includes the second article in our series on Applied and Industrial Microbiology. On [page 578](#), Bernd Rehm reviews the progress that has been made in the field of bacterial biopolymers. An increased understanding of the pathways that bacteria use to synthesize polymers such as polysaccharides and polyamides should pave the way for the rational engineering of bacteria to produce tailor-made polymers.

EDITORIAL OFFICES

LONDON NatureReviews@nature.com
The Macmillan Building,
4 Crinan Street,
London N1 9XW, UK
Tel: +44 (0)20 7843 3620;
Fax: +44 (0)20 7843 3629
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MANAGEMENT OFFICES

LONDON nature@nature.com
The Macmillan Building, 4 Crinan Street,
London N1 9XW, UK
Tel: +44 (0)20 7833 4000;
Fax: +44 (0)20 7843 4596/7
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NEW YORK nature@natureny.com

Nature Publishing Group,
75 Varick Street, 9th floor, New York,
NY 10013-1917, USA
Tel: +1 212 726 9200;
Fax: +1 212 696 9006

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Tel: +81 3 3267 8751; Fax: +81 3 3267 8746

ASIA-PACIFIC PUBLISHER: Antoine E Bocquet**MANAGER:** Koichi Nakamura**ASIA-PACIFIC SALES DIRECTOR:**

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INDIA SA/12 Ansari Road, Daryaganj,

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Tel/Fax: +91 11 2324 4186

SALES AND MARKETING MANAGER, INDIA:

Harpal Singh Gill

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