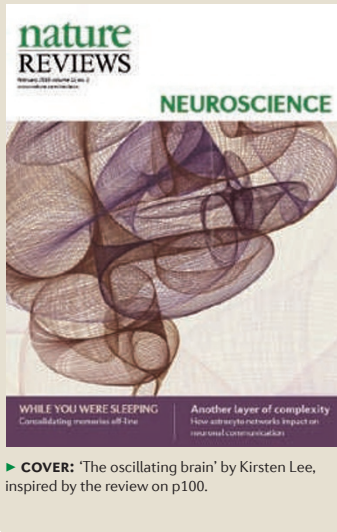




nature publishing group



CLAUDIA WIEDEMANN



KATHERINE WHALLEY



LEONIE WELBERG



MONICA HOYOS FLIGHT

In order to maintain proper brain function, neural activity often needs to be tightly coordinated within neuronal ensembles and across different brain regions. In this issue, three articles highlight new concepts that help to explain the functional importance of this coordination and how it is achieved.

In recent years, it has been shown that astrocytes, like neurons, are organized into networks. On page 87, Giaume and colleagues discuss the organization of astroglial networks, the rules that govern their intercellular communication through gap junction channels and the effects of such networks on coordinated neuronal activity.

Sleep has been shown to be important for the consolidation of memory. In an authoritative Review on page 114, Diekelmann and Born discuss how coordinated patterns of activity in different brain regions during slow wave sleep underlie the re-activation and redistribution of memory traces from the hippocampus to the neocortex.

Recently, schizophrenia has been associated with alterations in coordinated oscillatory activity in neurons. In the Review on page 100, Uhlhaas and Singer discuss the mechanisms that could lead to these deficits and how impaired oscillations might contribute to schizophrenia.

In summary, these articles highlight the importance of the coordination of neural activity across neuronal networks for brain function.

Finally, several theories have attempted to describe the principles by which the nervous system interacts with the world. In a Review on page 127 Karl Friston considers a number of global brain theories and discusses how the free-energy principle can unify these different perspectives on brain function.

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
CHIEF EDITOR: Claudia Wiedemann
SENIOR EDITORS: Katherine Whalley,
Leonie Welberg
ASSOCIATE EDITOR: Monica Hoyos Flight
SENIOR COPY EDITOR (NRN): Craig Nicholson
SENIOR COPY EDITOR: Man Tsuey Tse
ART EDITOR: Kirsten Lee
ART CONTROLLER: Susanne Harris
SENIOR ART EDITORS: Vicky Summersby,
Patrick Morgan
MANAGING PRODUCTION EDITOR:
Judith Shadwell
SENIOR PRODUCTION EDITOR:
Simon Fenwick
PRODUCTION CONTROLLER:
Natalie Smith

EDITORIAL ASSISTANTS: Jacques Smit,
Laura Corns
WEB PRODUCTION MANAGER:
Deborah Anthony
MARKETING MANAGERS: Tim Redding,
Leah Rodriguez

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
OFFICE MANAGER: Laura Firman
PUBLISHER: Stephanie Diment
MANAGING DIRECTOR: Steven Inchcoombe
EDITOR-IN-CHIEF, NATURE PUBLICATIONS:
Philip Campbell
ASSOCIATE DIRECTORS:
Jenny Henderson, Tony Rudland
EDITORIAL PRODUCTION DIRECTOR:
James McQuat
PRODUCTION DIRECTOR: Yvonne Strong

DIRECTOR, WEB PUBLISHING: Timo Hannay
HEAD OF WEB PRODUCTION:
Alexander Thurrell

NATUREJOBS PUBLISHER: Della Sar

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

CHIEF TECHNOLOGY OFFICER:
Howard Ratner

HEAD OF INTERNAL SYSTEMS DEVELOPMENT:
Anthony Barrera

HEAD OF SOFTWARE SERVICES:
Luigi Squillante

HEAD OF GLOBAL ADVERTISING, SALES AND

SPONSORSHIP: Dean Sanderson

HEAD OF NATURE RESEARCH & REVIEWS

MARKETING: Sara Girard

BUSINESS DEVELOPMENT EXECUTIVE:

David Bagshaw

TOKYO nature@natureasia.com
Chiyoda Building 5F, 2-37-1 Ichigayatamachi,
Shinjuku-ku, Tokyo 162-0843, Japan
Tel: +81 3 3267 8751; Fax: +81 3 3267 8746
ASIA-PACIFIC PUBLISHER: Antoine E Bocquet
MANAGER: Koichi Nakamura
ASIA-PACIFIC SALES DIRECTOR:
Kate Yoneyama
SENIOR MARKETING MANAGER:
Peter Yoshihara
MARKETING/PRODUCTION MANAGER:
Takesh Murakami
INDIA 5A/12 Ansari Road, Daryaganj,
New Delhi 110 002, India
Tel/Fax: +91 11 2324 4186
SALES AND MARKETING MANAGER, INDIA:
Harpal Singh Gill

Copyright © 2010 Nature Publishing Group
Research Highlight images courtesy of
Getty Images unless otherwise credited.
Printed in Wales by Cambrian Printers
on acid-free paper