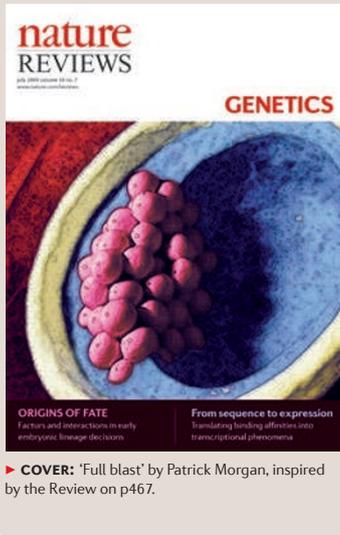




nature publishing group



LOUISA FLINTOFT



TANITA CASCI



MARY MUERS



MEERA SWAMI

Controlling the timing, location and level of gene expression is essential for the regulation of biological processes, from cellular responses to external cues to the patterning of a complete organism. Despite huge progress in dissecting transcriptional mechanisms, fundamental questions remain about the different levels at which transcription is regulated. This month, three Reviews consider a selection of these questions.

In the latest addition to our series of articles on Modelling, Segal and Widom (p443) explore how transcriptional information is encoded in DNA regulatory sequences. Protein binding to these regions has long been known to dictate how genes are expressed, but it has been difficult to move from descriptions to predictions of transcriptional output. These authors present a framework that could form the basis of future quantitative models.

To understand transcription *in vivo* we also need to look at its physical context — inside a crowded nucleus in which many genes are being transcribed at once. The observation of discrete foci of transcriptional activity has suggested that nuclear substructures might help to organize and control gene expression. But, as Bickmore and Sutherland discuss in the Review on p457, the importance of these 'transcription factories' remains a hotly debated topic.

At the level of fate decisions in embryogenesis, there is ongoing controversy over what determines the transcriptional programme. On p467, Zernicka-Goetz and colleagues weigh up models of control, which integrate transcription factors, chromatin modifications and positional signals.

This issue also includes the second of our interviews with the 2009 March of Dimes prize winners (p430); this month's interview is with Louis Kunkel.

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: Louisa Flintoft
SENIOR EDITOR: Tanita Casci
ASSOCIATE EDITOR: Mary Muers
ASSISTANT EDITOR: Meera Swami
COPY EDITOR: Elizabeth Neame
SENIOR COPY EDITORS: Craig Nicholson,
Man Tsuey Tse, Gillian Young
SENIOR ART EDITOR (NRG): Patrick Morgan
ART CONTROLLER: Susanne Harris
SENIOR ART EDITOR: Vicky Summersby
MANAGING PRODUCTION EDITOR:
Judith Shadwell
SENIOR PRODUCTION EDITOR:
Simon Fenwick
PRODUCTION CONTROLLER:
Natalie Smith

SENIOR EDITORIAL ASSISTANT: Laura Firman
EDITORIAL ASSISTANT: Jacques Smit
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: Kiersty Darnell
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 SA/12 Ansari Road, Daryaganj,
New Delhi 110 002, India
Tel/Fax: +91 11 2324 4186
SALES AND MARKETING MANAGER, INDIA:
Harpal Singh Gill

Copyright © 2009 Nature Publishing Group
Research Highlight images courtesy of
Getty Images unless otherwise credited.
Printed in Wales by Cambrian Printers
on acid-free paper