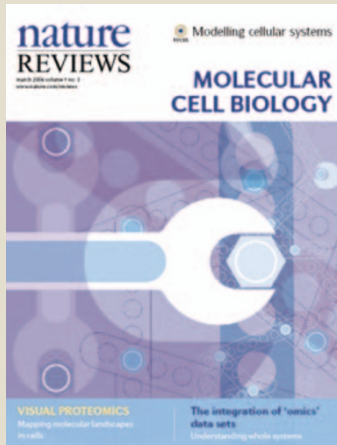




nature publishing group



► **COVER:** "Constructing models" by Vicky Askew; inspired by this month's Focus on Modelling Cellular Systems



ARIANNE HEINRICHS



KATRIN BUSSELL



RACHEL SMALLRIDGE



EKAT KRITIKOU

**H**igh-throughput technologies enable the study of various cellular systems — from subcellular systems such as signalling networks, multiprotein complexes and organelles to cells, tissues and even entire organisms. These systems can be modelled using a combination of high-throughput experimental data and computational and mathematical approaches, as illustrated in this month's Focus on Modelling Cellular Systems.

Information on the different signalling components and their interactions and properties is required for the modelling of signalling networks. On page 165, Boris N. Kholodenko describes how computational models can elucidate the spatial and temporal dynamics of signalling pathways. Large-scale signalling-component discovery and the reconstruction of signalling pathways can also be achieved through RNA-interference-mediated gene knockdown in mammalian systems, as reviewed by Jason Moffat and David M. Sabatini on page 177.

Moving from signalling networks to structure, Patrick Aloy and Robert B. Russell (page 188) explore how structural data can be used to turn rather abstract protein-interaction networks into more realistic models of protein interactions at atomic-level detail. High-resolution cryo-electron tomograms can extend such models by producing a complete whole-cell framework that can be used to create a proteome atlas, as described by Wolfgang Baumeister and colleagues on page 225.

These and other Focus articles will hopefully demystify the modelling approaches that can be used in cell biology. Finally, we would like to thank the sponsors of this Focus issue and accompanying Web Focus (<http://www.nature.com/nrm/modelling>) — Keio University, the Okinawa Institute of Science and Technology and the Systems Biology Institute (SBI).

**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:** Arianne Heinrichs

**SENIOR EDITORS:**

Katrin Bussell, Rachel Smallridge

**ASSOCIATE EDITOR:** Ekaterina Kritikou

**ASSISTANT EDITOR:** Sharon Ahmad

**COPY EDITOR:** Lesley Cunliffe

**SENIOR COPY EDITORS:**

Meg Fitzpatrick, Annie Tremp

**ART CONTROLLER:** Claudia Bentley

**SENIOR ART EDITORS:**

Vicky Askew, Susanne Harris

**CARTOONIST:** Neil Smith

**MANAGING PRODUCTION EDITOR:**

Judith Shadwell

**DEPUTY PRODUCTION EDITOR:** Simon Fenwick

**PRODUCTION CONTROLLER:** Natalie Smith

**EDITORIAL ASSISTANTS:**

Mary Aboukhalil, Elliann Fairbairn

**WEB PRODUCTION EDITORS:**

Catherine Alexander, Angela Bird, June Lim,  
Nadia Younus

**DEPUTY WEB PRODUCTION MANAGER:**

Alexander Thurrell

**MARKETING MANAGERS:**

Anna Duguid, Kellie Lane

**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:** Sheryl Ocampo

**PUBLISHER:** Hugh Blackbourn

**MANAGING DIRECTOR:** Annette Thomas

**EDITOR-IN-CHIEF, NATURE PUBLICATIONS:**

Philip Campbell

**ASSOCIATE DIRECTORS:**

Jenny Henderson, Tony Rudland

**EDITORIAL PRODUCTION DIRECTOR:**

James McQuat

**PRODUCTION MANAGER:** Yvonne Strong

**WEB PRODUCTION MANAGER, UK:**

Amanda Ward

**ASSOCIATE DIRECTOR, WEB PUBLISHING:**

Timo Hannay

**HEAD OF WEB PRODUCTION:**

Jeremy Macdonald

**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

**DIRECTOR OF NEW TECHNOLOGY:**

Greg Suprock

**HEAD OF WEB SERVICES:** Anthony Barrera

**NATUREJOBS PUBLISHER:** Ben Crowe

**HEAD OF NATURE RESEARCH & REVIEWS**

**MARKETING:** Sara Girard

**TOKYO** nature@naturejpn.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 © 2006 Nature Publishing Group

Printed in Wales by Cambrian Printers

on acid-free paper