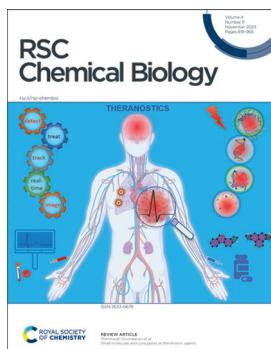


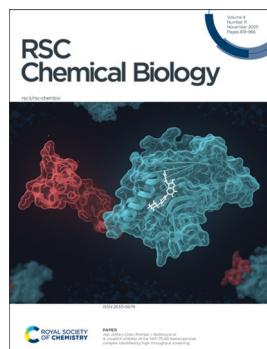
## IN THIS ISSUE

ISSN 2633-0679 CODEN RCBSAO 4(11) 819–966 (2023)



### Cover

See Thimmaiah Govindaraju *et al.*, pp. 826–849.  
Image reproduced by permission of Thimmaiah Govindaraju and Sumon Pratihar from *RSC Chem. Biol.*, 2023, 4, 826.



### Inside cover

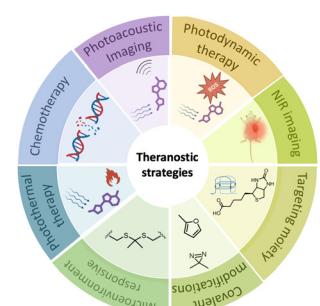
See Jian Jeffery Chen, Michael J. Bollong *et al.*, pp. 894–905.  
Image reproduced by permission of Kayla Nutsch from *RSC Chem. Biol.*, 2023, 4, 894.

## REVIEWS

826

### Small molecules and conjugates as theranostic agents

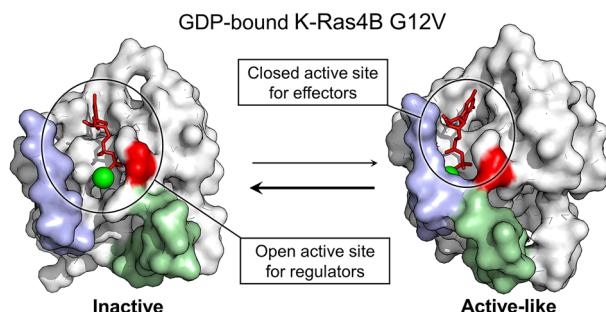
Sumon Pratihar, Krithi K. Bhagavath and Thimmaiah Govindaraju\*



850

### Protein conformational ensembles in function: roles and mechanisms

Ruth Nussinov,\* Yonglan Liu, Wengang Zhang and Hyunbum Jang



**Executive Editor**  
Anna Rulka

**Deputy Editor**  
Audra Taylor

**Editorial Production Manager**  
Viktoria Titmus

**Assistant Editors**  
Shwetha Krishna, Angelica-Jane Onyekwere, Michael Whitelaw,  
Alexander Whiteside

**Editorial Assistant**  
Samantha Campos

**Publishing Assistant**  
Brittany Hanlon

**Publisher**  
Neil Hammond

For queries about submitted papers, please contact  
Viktoria Titmus, Editorial Production Manager in the first  
instance. E-mail: [chembio@rsc.org](mailto:chembio@rsc.org)

For pre-submission queries please contact  
Anna Rulka, Executive Editor. Email: [chembio-rsc@rsc.org](mailto:chembio-rsc@rsc.org)

RSC Chemical Biology (electronic: ISSN 2633-0679)  
is published 12 times a year by the Royal Society of Chemistry,  
Thomas Graham House, Science Park, Milton Road,  
Cambridge, UK CB4 0WF.

RSC Chemical Biology is a Gold Open Access journal and all  
articles are free to read. Please email [orders@rsc.org](mailto:orders@rsc.org) to register  
your interest or contact Royal Society of Chemistry Order  
Department, Royal Society of Chemistry,  
Thomas Graham House, Science Park, Milton Road,  
Cambridge, CB4 0WF, UK Tel +44 (0)1223 432398;  
E-mail: [orders@rsc.org](mailto:orders@rsc.org)

Whilst this material has been produced with all due care, the  
Royal Society of Chemistry cannot be held responsible or liable  
for its accuracy and completeness, nor for any consequences  
arising from any errors or the use of the information contained  
in this publication. The publication of advertisements does  
not constitute any endorsement by the Royal Society of  
Chemistry or Authors of any products advertised. The views  
and opinions advanced by contributors do not necessarily  
reflect those of the Royal Society of Chemistry which shall not  
be liable for any resulting loss or damage arising as a result of  
reliance upon this material. The Royal Society of Chemistry is  
a charity, registered in England and Wales, Number 207890,  
and a company incorporated in England by Royal Charter  
(Registered No. RC000524), registered office:  
Burlington House, Piccadilly, London W1J 0BA, UK,  
Telephone: +44 (0) 207 4378 6556.

**Advertisement sales:**  
Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;  
E-mail [advertising@rsc.org](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal,  
contact [marketing@rsc.org](mailto:marketing@rsc.org)

# RSC Chemical Biology

[rsc.li/rsc-chembio](http://rsc.li/rsc-chembio)

*RSC Chemical Biology* publishes exceptionally significant findings in chemical biology

## Editorial Board

### Chair

Hiroaki Suga, The University of Tokyo, Japan

### Associate Editors

Claudia Höbartner, University of Würzburg,  
Germany  
Zaneta Nikolovska-Coleska, University of  
Michigan, USA

Andrea Rentmeister, University of Münster,  
Germany  
Roderich Süssmuth, Technical University of  
Berlin, Germany  
Cai-Guang Yang, Shanghai Institute of  
Materia Medica, China

### Members

Michelle Arkin, University of California  
San Francisco, USA  
Jennifer Heemstra, Washington University,  
St Louis, USA  
Ali Tavassoli, University of Southampton, UK

## Advisory Board

Christopher Chang, University of California,  
Berkeley, USA  
Dorothea Fiedler, FMP Berlin, Germany  
Christian Hackenberger, FMP Berlin,  
Germany  
Maja Köhn, University of Freiburg, Germany  
Yamuna Krishnan, University of Chicago,  
USA  
Jennifer Prescher, University of California,  
Irvine, USA  
Christopher Schofield, University of Oxford,  
UK  
Pamela Silver, Harvard Medical School, USA

Kira Weissman, University of Lorraine,  
France  
Christopher Schofield, University of Oxford,  
UK  
Peng Chen, Peking University, China  
Hermen Overkleeft, Leiden University,  
Netherlands  
Xiu-Jie Wang, Bayes Business School  
London, UK  
Don Hilvert, ETH Zürich, Switzerland  
Jin Zhang, University of California San  
Diego, USA  
Laura Kiessling, MIT, USA

Giulio Superti-Furga, Medical University of  
Vienna, Austria  
Luc Brusveld, Eindhoven University of  
Technology, Netherlands  
May Khanna, University of Arizona, USA  
Paul Joseph Dyson, Swiss Federal Institute of  
Technology Lausanne, Switzerland  
Lei Liu, Tsinghua University, China  
Guifang Jia, Peking University, China  
Chudi Ndubaku, ORIC Pharmaceuticals,  
USA

## Information for Authors

Full details on how to submit material for publication in RSC Chemical Biology are given in the Instructions for Authors

(available from <http://www.rsc.org/authors>). Submissions should be made via the journal's homepage: [rsc.li/rsc-chembio](http://rsc.li/rsc-chembio)

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)– Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.  
Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

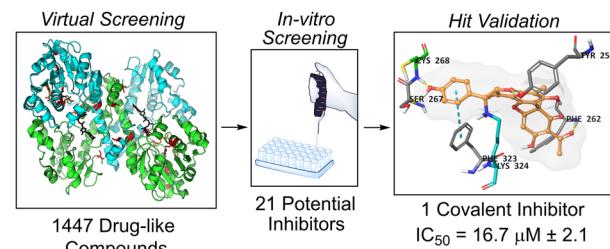


## COMMUNICATIONS

865

**Virtual screening, identification and *in vitro* validation of small molecule GDP-mannose dehydrogenase inhibitors**

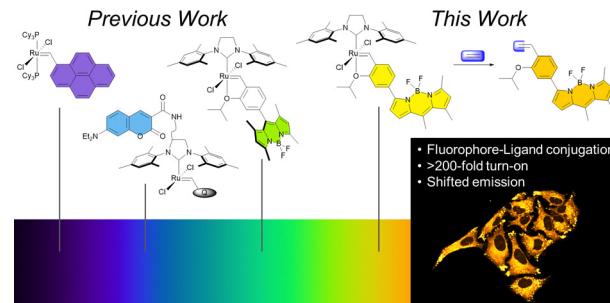
Jonathan P. Dolan, Sanaz Ahmadipour, Alice J. C. Wahart, Aisling Ní Cheallaigh, Suat Sari, Chatchakorn Eurtivong, Marcelo A. Lima, Mark A. Skidmore, Konstantin P. Volcho, Jóhannes Reynisson, Robert A. Field and Gavin J. Miller\*



871

**Red-shifted activity-based sensors for ethylene via direct conjugation of fluorophore to metal–carbene**

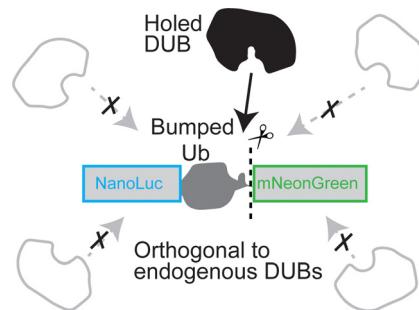
Nicholas J. Dacon, Nathan B. Wu and Brian W. Michel\*



879

**A strategy for orthogonal deubiquitination using a bump-and-hole approach**

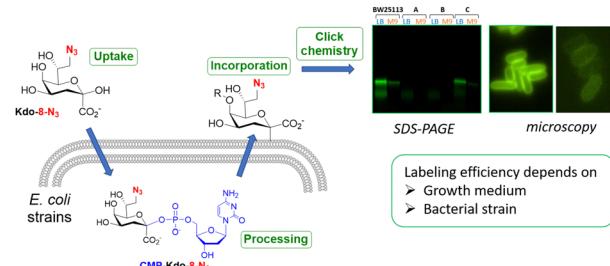
Takumi Suzuki, Yuki Utsugi, Satoshi Yamanaka, Hirotaka Takahashi, Yusuke Sato, Tatsuya Sawasaki and Yusaku Miyamae\*



884

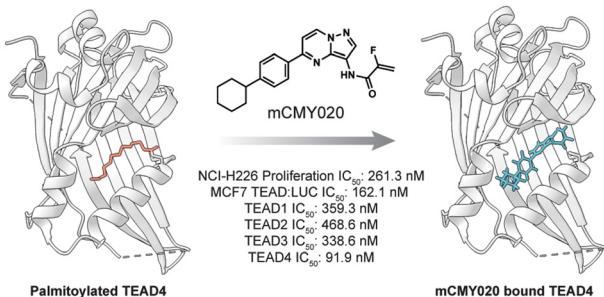
**Evaluation of Kdo-8-N<sub>3</sub> incorporation into lipopolysaccharides of various *Escherichia coli* strains**

Zeynep Su Zylan, Geert-Jan de Putter, Meike Roelofs, Jan Maarten van Dijl, Dirk-Jan Scheffers and Marthe T. C. Walvoort\*



## PAPERS

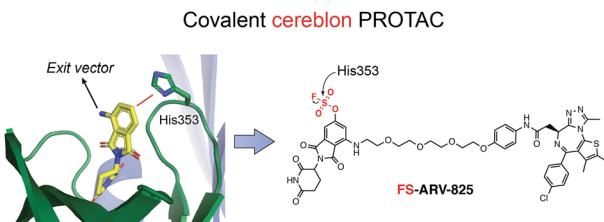
894



### A covalent inhibitor of the YAP–TEAD transcriptional complex identified by high-throughput screening

Kayla Nutsch, Lirui Song, Emily Chen, Mitchell Hull, Arnab K. Chatterjee, Jian Jeffery Chen\* and Michael J. Bollong\*

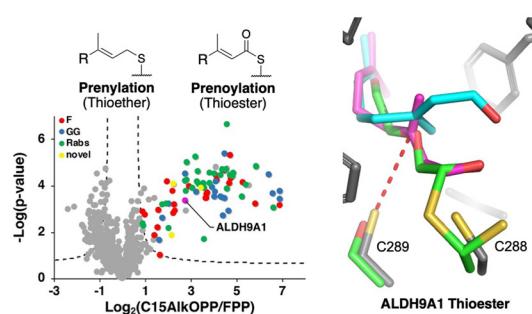
906



### Development of a covalent cereblon-based PROTAC employing a fluorosulfate warhead

Radostaw P. Nowak,\* Leah Ragosta, Fidel Huerta, Hu Liu, Scott B. Ficarro, Justin T. Cruite, Rebecca J. Metivier, Katherine A. Donovan, Jarrod A. Marto, Eric S. Fischer, Breanna L. Zerfas and Lyn H. Jones\*

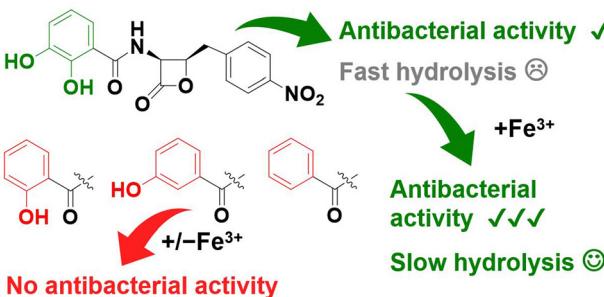
913



### Thinking outside the CaaX-box: an unusual reversible prenylation on ALDH9A1

Kiall F. Suazo, Jakub Bělčík, Garrett L. Schey, Shelby A. Auger, Alexandru M. Petre, Ling Li, Katarzyna M. Błażewska, David Kopečný and Mark D. Distefano\*

926



### The catechol moiety of obafluorin is essential for antibacterial activity

Sibyl F. D. Batey, Melissa J. Davie, Edward S. Hems, Jonathon D. Liston, Thomas A. Scott, Silke Alt, Christopher S. Francklyn and Barrie Wilkinson\*

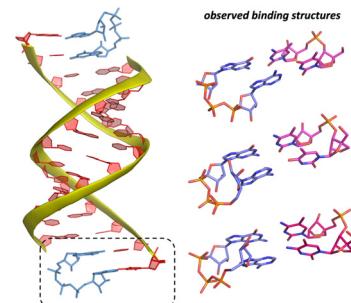


## PAPERS

942

**Insight into the structures of unusual base pairs in RNA complexes containing a primer/template/adenosine ligand**

Yuliya Dantsu, Ying Zhang and Wen Zhang\*



952

**Advantages and challenges associated with bisulfite-assisted nanopore direct RNA sequencing for modifications**

Aaron M. Fleming,\* Judy Zhu, Vilhelmina K. Done and Cynthia J. Burrows\*

