

BIOSCIENCES

ZEITSCHRIFT FÜR NATURFORSCHUNG C

EDITOR-IN-CHIEF

J. Seibel, Würzburg

ADVISORY BOARD

A. Aigner, Leipzig

W. Boland, Jena

U. Bornscheuer, Greifswald

K. H. Hoffmann, Bayreuth

EDITORIAL BOARD

D. Berkowitz, Lincoln, NE, USA

H. Budzikiewicz, Köln

B. Dräger, Leipzig

M. González-Teuber, Santiago, Chile

T. Opatz, Mainz

E. Rösch, Pforzheim

K.-D. Spindler, Ulm

D. Strack, Halle

DE GRUYTER

ABSTRACTED/INDEXED IN Chemical Abstracts Service (CAS) – SciFinder; Elsevier SCOPUS; Medline; PubMed; SCImago (SJR); Thomson Reuters: BIOSIS Previews, Current Contents/Life Sciences, Journal Citation Reports/Science Edition, Science Citation Index, Science Citation Index Expanded.

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions of liability for the results obtained from use of the information, or parts thereof, contained in this work.

The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

ISSN 0939-5075 · e-ISSN 1865-7125

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/journals/znc.

RESPONSIBLE EDITOR Prof. Dr. Juergen Seibel, Universitaet Wuerzburg, Institut fuer Organische Chemie, Am Hubland, 97074 Wuerzburg, Germany

JOURNAL MANAGER Ulrike Kitzing, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30 260 05-344, Email: ulrike.kitzing@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Claudia Neumann, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30 260 05-226, Fax: +49 (0)30 260 05-264, Email: anzeigen@degruyter.com

© 2017 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING Compuscript Ltd., Shannon, Ireland

PRINTING Franz X. Stücker Druck und Verlag e. K., Ettenheim
Printed in Germany

COVER ILLUSTRATION Detail of the structure of bryostatin 1. The structure of bryostatin 1 was determined in 1982. To date 20 different bryostatins have been isolated. Bryostatins are potent modulators of protein kinase C. They are currently under investigation as anti-cancer agents, as anti-AIDS/HIV agents and as a memory-enhancing agent.



Contents

Special Issue: Insect Biotechnology

Editor: Klaus H. Hoffmann

Editorial

Klaus H. Hoffmann

Insect biotechnology – a major challenge in the 21st century — 335

Research Articles

Thorben Grau, Andreas Vilcinskas and Gerrit Joop

Sustainable farming of the mealworm *Tenebrio molitor* for the production of food and feed — 337

Ariane Müller, Diana Wolf and Herwig O. Gutzeit

The black soldier fly, *Hermetia illucens* – a promising source for sustainable production of proteins, lipids and bioactive substances — 351

Heike M. Herold and Thomas Scheibel

Applicability of biotechnologically produced insect silks — 365

Michal Tupec, Aleš Buček, Irena Valterová and Iva Pichová

Biotechnological potential of insect fatty acid-modifying enzymes — 387

Lea Talmann, Jochen Wiesner and Andreas Vilcinskas

Strategies for the construction of insect P450 fusion enzymes — 405

Antje Burse and Wilhelm Boland

Deciphering the route to cyclic monoterpenes in *Chrysomelina* leaf beetles: source of new biocatalysts for industrial application? — 417

Tobias Weidner, Damir Druzinec, Martina Mühlmann, Rainer Buchholz and Peter Czermak

The components of shear stress affecting insect cells used with the baculovirus expression vector system — 429

Abstracts

1st Gießen Symposium of Insect Biotechnology, October 9–10, 2017 (published online) — e1