

# BIOMOLECULAR CONCEPTS

**EXECUTIVE EDITOR-IN-CHIEF**  
*Pierre Jolles*, Paris, France

**EDITOR-IN-CHIEF**  
*Isabelle Mansuy*, Zurich, Switzerland

## EDITORIAL BOARD

*Jesús Avila*, Madrid, Spain  
*Mathieu Bollen*, Leuven, Belgium  
*Valentina Bonetto*, Milan, Italy  
*Enrico Di Cera*, St Louis, USA  
*Hans Jörnvall*, Stockholm, Sweden  
*Eric Jorgensen*, Salt Lake City, USA  
*Eric Lagasse*, Pittsburgh, USA  
*Robert I. Norman*, Leicester, United Kingdom  
*Lorenzo A. Pinna*, Padua, Italy  
*K. Vijay Raghavan*, Bangalore, India  
*Pál Venetianer*, Szeged, Hungary  
*Walter Wahli*, Lausanne, Switzerland

**DE GRUYTER**

**ABSTRACTED/INDEXED IN** Chemical Abstracts and the CAS databases; EBSCO - Academic Search; Scopus.

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 or 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 1868-5021 · e-ISSN 1868-503X · CODEN BCIOB8

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at <http://www.degruyter.com/biomolcon>.

**RESPONSIBLE EDITORS** Professor Dr. Pierre Jolles, Museum National d'Histoire Naturelle, MCAM, CP54, 63, rue Buffon, F-75005 Paris, France, Email: [Pierre.jolles@wanadoo.fr](mailto:Pierre.jolles@wanadoo.fr); [jolles.pierre@bluewin.ch](mailto:jolles.pierre@bluewin.ch)  
Professor Dr. Isabelle Mansuy, Brain Research Institute, University of Zürich, Swiss Federal Institute of Technology Zürich, Winterthurerstrasse 190, CH-8057 Zürich, Switzerland, Email: [mansuy@hifo.uzh.ch](mailto:mansuy@hifo.uzh.ch)

**JOURNAL MANAGER** Dr. Torsten Krüger, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05 – 176, Fax: +49 (0)30 260 05 – 298, Email: [biomol.concepts.editorial@degruyter.com](mailto:biomol.concepts.editorial@degruyter.com)

**RESPONSIBLE FOR ADVERTISEMENTS** Heiko Schulze, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany.  
Tel.: +49 (0)30 260 05-358, Fax: +49 (0)30 260 05-264, Email: [anzeigen@degruyter.com](mailto:anzeigen@degruyter.com)

© 2015 Walter de Gruyter GmbH, Berlin/Boston

**TYPESETTING** Compuscript Ltd., Shannon, Ireland

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



Offenlegung der Inhaber und Beteiligungsverhältnisse gem. § 7a Abs. 1 Ziff. 1, Abs. 2 Ziff. 3 des Berliner Pressegesetzes: Die Gesellschafter der Walter de Gruyter GmbH sind: Cram, Gisela, Rentnerin, Berlin; Cram, Elsbeth, Pensionärin, Rosengarten-Alvesen; Cram, Margret, Studienrätin i.R., Berlin; Cram, Dr. Georg-Martin, Unternehmens-Systemberater, Stadtbergen; Cram, Maike, Berlin; Cram, Jens, Mannheim; Cram, Ingrid, Betriebsleiterin, Tuxpan / Michoacan (Mexiko); Cram, Sabina, Mexico, DF (Mexiko); Cram, Silke, Wissenschaftlerin, Mexico DF (Mexiko); Cram, Björn, Aachen; Cram, Ella Anita, Rentnerin, Berlin; Cram, Berit, Greifswald; Cram-Gomez, Susanne, Mexico DF (Mexiko); Cram-Heydrich, Walter, Mexico DF (Mexico); Cram-Heydrich, Kurt, Angestellter, Mexico DF (Mexico); Duvenbeck, Brigitta, Oberstudienrätin i.R., Bad Homburg; Fund, Dr. Sven, Berlin; Gädeke, Gudula, M.A., Atemtherapeutin/Lehrerin, Tübingen; Gädeke, Martin, Einzelunternehmer, Würzburg; Lubasch, Dr. Annette, Ärztin, Berlin; Schütz, Dr. Christa, Ärztin, Mannheim; Schütz, Sonja, Berlin; Schütz, Juliane, Berlin; Schütz, Antje, Berlin; Schütz, Valentin, Berlin; Seils, Dorothee, Apothekerin, Stuttgart; Seils, Gabriele, Journalistin, Berlin; Seils, Dr. Clara-Eugenie, Oberstudienrätin i.R., Reppenstedt; Seils, Christoph, Journalist, Berlin; Siebert, John-Walter, Pfarrer, Oberstenfeld.

## Contents

### Reviews

Kazuyuki Ohbo and Shin-ichi Tomizawa  
**Epigenetic regulation in stem cell development, cell fate conversion, and reprogramming** — 1

Khue Vu Nguyen  
**The human β-amyloid precursor protein: biomolecular and epigenetic aspects** — 11

James R. Arndt, Maxmore Chaibva and Justin Legleiter  
**The emerging role of the first 17 amino acids of huntingtin in Huntington's disease** — 33

Deborah J.G. Mackay, Thomas Eggemann, Karin Buiting, Intza Garin, Irène Netchine, Agnès Linglart and Guiomar Perez de Nanclares  
**Multilocus methylation defects in imprinting disorders** — 47

Jianbo Wang, Zhenqing Ye, Tim H.-M. Huang, Huidong Shi and Victor Jin  
**A survey of computational methods in transcriptome-wide alternative splicing analysis** — 59

### Short Conceptual Overviews

Yuichi Ichikawa, Yoshifumi Nishimura, Hitoshi Kurumizaka and Mitsuhiro Shimizu  
**Nucleosome organization and chromatin dynamics in telomeres** — 67

Chang-En Yu and Jessica Foraker  
**Epigenetic considerations of the *AOPE* gene** — 77

### Erratum

Sonali Joshi and Leonidas C. Platanias  
**Mnk kinases in cytokine signaling and regulation of cytokine responses** — 85