Vol. 289

JOURNAL OF CONTROLLED RELEASE

10 NOVEMBER 2018

VOLUME 289, 10 NOVEMBER 2018

CONTENTS

Cited in: BIOSIS/Biological Abstracts; CAB Abstracts; Chemical Abstracts Services; Current Contents (Life Sciences); EMBASE/Excerpta Medica; International Pharmaceutical Abstracts; PUBMED/MEDLINE/Index Medicus; Polymer Contents; Science Citation Index. Also covered in the abstract and citation database Scopus[®]. Full text available in ScienceDirect[®]

COVER STORY

171-171

Multi-functional peptide-modified liposomes for treatment of glioma

Kinam Park

Purdue University, Biomedical Engineering and Pharmaceutics, West Lafayette, IN 47907, USA

REVIEWS

56-69

Extracellular vesicles: intelligent delivery strategies for therapeutic applications

Alice Pinheiro^{a,b,c}, Andreia M. Silva^{a,b,d}, José H. Teixeira^{a,b,d}, Raquel M. Gonçalves^{a,b,d}, Maria I. Almeida^{a,b}, Mário A. Barbosa^{a,b,d}, Susana G. Santos^{a,b}

^ai3S – Instituto de Investigação e Inovação em Saúde da Universidade do Porto, Rua Alfredo Allen 208, 4200-135 Porto, Portugal ^bINEB – Instituto de Engenharia Biomédica, Universidade do Porto, Rua Alfredo Allen 208, 4200-135 Porto, Portugal ^cFEUP – Faculdade de Engenharia da Universidade do Porto, Rua Dr. Roberto Frias s/n, 4200-465 Porto, Portugal dICBAS – Instituto de Ciências Biomédicas Abel Salazar,

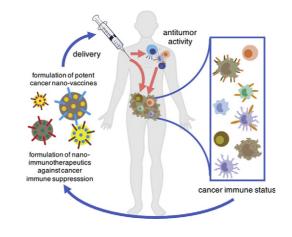
Universidade do Porto, Rua Jorge de Viterbo Ferreira 228, 4050-313 Porto, Portugal

125-145

Immunoengineering through cancer vaccines - A personalized and multi-step vaccine approach towards precise cancer immunity

Lien Lybaert^{a,b}, Karim Vermaelen^{b,c}, Bruno G. De Geest^{a,b}, Lutz Nuhn^d

^aDepartment of Pharmaceutics, Ghent University, Ghent, Belgium ^bCancer Research Institute Ghent (CRIG), Ghent University, Ghent, Belgium ^cDepartment Pulmonary Medicine, Tumor Immunology Laboratory, Ghent University, Ghent, Belgium ^dMax-Planck-Institute for Polymer Research, Mainz, Germany



EV in

Pentein PAA

(Contents continued on inside back cover)

Ø Additional material available online.



289 (2018) σ 1-172

ELSEVIER

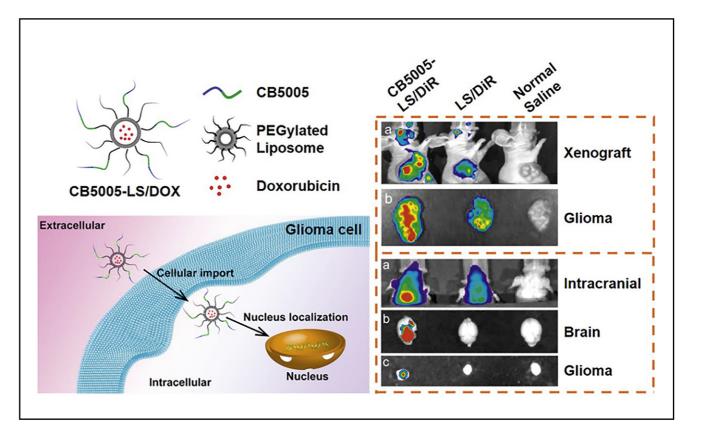
289

JOURNAL

ę

CONTROLLED

RELEASE





COVER STORY



0168-3659(20181110)289:c;1-c

Available online at www.sciencedirect.com

ScienceDirect

iournal of controlled release

OFFICIAL JOURNAL OF THE CONTROLLED RELEASE SOCIETY AND THE JAPANESE SOCIETY OF DRUG DELIVERY SYSTEM

Multi-functional peptide-modified liposomes for treatment of glioma

The Journal of Controlled Release (JCR) publishes high-quality research articles in the broad field of delivery science and technology. This includes drug delivery systems and all aspects of formulations, such as physicochemical and biological properties of drugs, design and characterization of dosage forms, release mechanisms, in vivo testing, and formulation research and development in the disciplines of pharmaceutical, diagnostic, agricultural, environmental, cosmetic, and food industries. Manuscripts that advance fundamental understanding of principles and/or demonstrate advantages of novel technologies in safety and efficacy over current clinical standards will be given priority. Each issue has the cover story highlighting the significance of a selected article published in the issue. At the end of each quarter, the JCR editors select "The Editors' Choice" from the published research articles.

© 2018 Elsevier B.V. All rights reserved.

This journal and the individual contributions contained in it are protected under copyright by Elsevier B.V., and the following terms and conditions apply to their use:

Photocopying

Single photocopies of single articles may be made for personal use as allowed by national copyright laws. Permission of the Publisher and payment of a fee is required for all other photocopying, including multiple or systematic copying, copying for advertising or promotional purposes, resale, and all forms of document delivery. Special rates are available for educational institutions that wish to make photocopies for non-profit educational classroom use.

For information on how to seek permission visit www.elsevier.com/ permissions or call (+44) 1865 843830 (UK) / (+1) 215 239 3804 (USA).

Derivative Works

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution

Permission of the Publisher is required for all other derivative works. including compilations and translations (please consult www.elsevier. com/permissions).

Electronic Storage or Usage

Permission of the Publisher is required to store or use electronically any material contained in this journal, including any article or part of an article (please consult www.elsevier.com/permissions).

Except as outlined above, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the Publisher.

Author inquiries

You can track your submitted article at http://www.elsevier.com/tracksubmission. You can track your accepted article at http://www.elsevier. com/trackarticle. You are also welcome to contact Customer Support via http://service.elsevier.com

Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop http://webshop.elsevier.com/languageediting/ or visit our customer support site http://service.elsevier.com for more information

Illustration services

Elsevier's WebShop (http://webshop.elsevier.com/illustrationservices) offers Illustration Services to authors preparing to submit a manuscript but concerned about the quality of the images accompanying their article. Elsevier's expert illustrators can produce scientific, technical and medical-style images, as well as a full range of charts, tables and graphs. Image 'polishing' is also available, where our illustrators take your image(s) and improve them to a professional standard. Please visit the website to find out more.

Publication information: Journal of Controlled Release (ISSN 0168-3659). For 2018, volumes 269-292 are scheduled for publication. Subscription prices are available upon request from the Publisher or from the Elsevier Customer Service Department nearest you or from this journal's website (http://www.elsevier.com/locate/jconrel). Further information is available on this journal and other Elsevier products through Elsevier's website (http://www.elsevier.com). Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent by standard mail (surface within Europe, air delivery outside Europe). Priority rates are available upon request. Claims for missing issues should be made within six months of the date of dispatch.

Orders, claims, and journal inquiries: please contact the Elsevier Customer Service Department nearest you:

St. Louis: Elsevier Customer Service Department, 3251 Riverport Lane, Maryland Heights, MO 63043, USA; phone: (877) 8397126 [toll free within the USA]; (+1) (314) 4478878 [outside the USA]; fax: (+1) (314) 4478077; e-mail: JournalCustomerService-usa@elsevier.com

Oxford: Elsevier Customer Service Department, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK; phone: (+44) (1865) 843434; fax: (+44) (1865) 843970; e-mail:JournalsCustomerServiceEM FA@elsevier.com

Tokyo: Elsevier Customer Service Department, 4F Higashi-Azabu, 1-Chome Bldg, 1-9-15 Higashi-Azabu, MInato-ku, Tokyo 106-0044, Japan; phone: (+81) (3) 5561 5037; fax: (+81) (3) 5561 5047; e-mail: JournalsCustomerServiceJapan@elsevier.com

The Philippines: Elsevier Customer Service Department, 2nd Floor, Building H, UP-Ayalaland Technohub, Commonwealth Avenue, Diliman, Quezon City, Philippines 1101; phone: (+65) 63490222; fax: (+63) 2 352 1394; e-mail: JournalsCustomerServiceAPAC@elsevier.com

Sponsored Supplements and/or Commercial Reprints: For more information please contact Elsevier Life Sciences Commercial Sales, Radarweg 29, 1043 NX Amsterdam, The Netherlands; phone: (+31) (20) 485 2939 / 2059; e-mail: LSCS@elsevier.com

Advertising information: If you are interested in advertising or other commercial opportunities please e-mail Commercialsales@ elsevier. com and your enquiry will be passed to the correct person who will respond to you within 48 hours.

USA mailing notice: Journal of Controlled Release (ISSN 0168-3659) is published semimonthly by Elsevier B.V., Radarweg 29, 1043 NX Amsterdam, The Netherlands. Periodicals postage paid at Jamaica, NY 11431 and additional mailing offices.

USA POSTMASTER: Send change of address to Journal of Controlled Release, Elsevier Customer Service Department, 3251 Riverport Lane, Maryland Heights, MO 63043, USA.

AIRFREIGHT AND MAILING in USA by Air Business Ltd., c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA

Notice

No responsibility is assumed by the Publisher or the Controlled Release Society for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made.

Although all advertising material is expected to conform to ethical (medical) standards, inclusion in this publication does not constitute a guarantee or endorsement of the quality or value of such product or of the claims made of it by its manufacturer.

© The paper used in this publication meets the requirements of ANSI/ NISO Z39.48-1992 (Permanence of Paper)

> For a full and complete Guide for Authors, please go to http://www.elsevier.com/locate/jconrel

(contents continued from outside back cover)

158-170

Exosomes: natural nanoparticles as bio shuttles for RNAi delivery

Saber Ghazizadeh Darband^a, Mohammad Mirza-Aghazadeh-Attari^{b,c}, Mojtaba Kaviani^d, Ainaz Mihanfar^e, Shirin Sadighparvar^f, Bahman Yousefi^{g,h}, Maryam Majidinia^{i,j,1}

^aDanesh Pey Hadi Co., Health Technology Development Center, Urmia University of Medical Sciences, Urmia, Iran

^bStudent Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran ^cAging Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran ^dSchool of Nutrition and Dietetics, Acadia University, Wolfville, Nova Scotia, Canada eDepartment of Biochemistry, Faculty of Medicine, Urmia University of Medical Sciences, Urmia Iran

^fNeurophysiology Research Center, Urmia University of Medical Sciences, Urmia, Iran ^gMolecular Medicine Research Center, Tabriz University of Medical Sciences, Tabriz, Iran ^hImmunology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran ⁱSolid Tumor Research Center, Urmia University of Medical Sciences, Urmia, Iran ^jStudent Research Committee, Urmia University of Medical Sciences, Urmia, Iran

RESEARCH PAPERS

14-22

A filter-free blood-brain barrier model to quantitatively study transendothelial delivery of nanoparticles by fluorescence spectroscopy

Edwin De Jonga, David S. Williamsb,c, Loai K.E.A. Abdelmohsenb, Jan C.M. Van Hestb,

Inge S. Zuhorna.

^aUniversity of Groningen, University Medical Center Groningen, Department of Biomedical Engineering, Antonius Deusinglaan 1, 9713, AV,

Groningen, the Netherlands

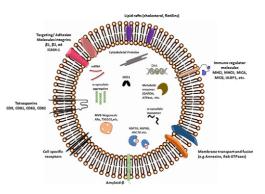
^bDepartment of Biomedical Engineering, Department of Chemical Engineering and Chemistry, ^Eindhoven University of Technology, P.O. Box 513, 5600, MB, Eindhoven, the Netherlands ^cDepartment of Chemistry, Swansea University, Swansea SA2 8PP, United Kingdom

23-34

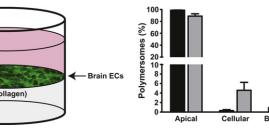
Delivering all in one: Antigen-nanocapsule loaded with dual adjuvant vields superadditive effects by DC-directed T cell stimulation

David Paßlick^{a,b}, Keti Piradashvili^b, Denise Bamberger^c, Mengyi Li^b, Shuai Jiang^b Dennis Strand^d, Peter R. Wich^c, Katharina Landfester^b, Matthias Bros^a, Stephan Grabbe^a, Volker Mailänder^{a,b}

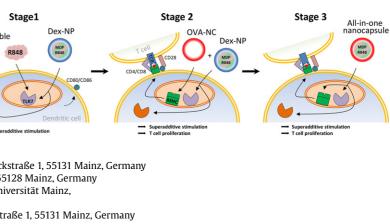
^aDermatology Clinic, University Medical Center Mainz, Langenbeckstraße 1, 55131 Mainz, Germany ^bMax Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany ^cInstitute of Pharmacy and Biochemistry, Johannes Gutenberg-Universität Mainz, Staudingerweg 5, 55128 Mainz, Germany ^dI. Medical Clinic, University Medical Center Mainz, Langenbeckstraße 1, 55131 Mainz, Germany



polymersomes G23-polymersomes







(Contents continued on last page of this issue)