Biophotonics and Immune Responses XIII

Wei R. Chen Editor

29 January 2018 San Francisco, California, United States

Sponsored and Published by SPIE

Volume 10495

Proceedings of SPIE 1605-7422, V. 10495

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Biophotonics and Immune Responses XIII, edited by Wei R. Chen, Proc. of SPIE Vol. 10495, 1049501 · © 2018 SPIE · CCC code: 1605-7422/18/\$18 · doi: 10.1117/12.2323042

Proc. of SPIE Vol. 10495 1049501-1

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings: Author(s), "Title of Paper," in *Biophotonics and Immune Responses XIII*, edited by Wei R. Chen, Proceedings of SPIE Vol. 10495 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

ISSN: 1605-7422 ISSN: 1996-756X (electronic)

ISBN: 9781510614758 ISBN: 9781510614765 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445 SPIE.org Copyright © 2018, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/18/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

• The first five digits correspond to the SPIE volume number.

• The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

- v Authors
- vii Conference Committee

IN VIVO DETECTION OF IMMUNE RESPONSE

10495 08 Monitoring circulating prostate tumor cells after tumor resection by in vivo flow cytometry (Invited Paper) [10495-7]

NANO-IMMUNOTHERAPY

104950D Novel liposomal technology applied in esophageal cancer treatment (Invited Paper) [10495-12]

NOVEL DETECTION TECHNOLOGY

- 10495 01 Fluorescence lifetime imaging and its applications in cellular microenvironment measurement and auxiliary diagnosis (Invited Paper) [10495-17]
- 10495 0J The interaction between the meningeal lymphatics and blood-brain barrier (Invited Paper) [10495-18]
- 10495 0K Assessing the performance of quantitative image features on early stage prediction of treatment effectiveness for ovary cancer patients: a preliminary investigation [10495-19]
- 10495 0M Potential of phase contrast x-ray imaging for detecting tumors in dense breast: initial phantom studies [10495-21]

POSTERS SESSION

- 10495 00 RGD peptide-targeted polyethylenimine-entrapped gold nanoparticles for targeted CT imaging of an orthotopic model of human hepatocellular carcinoma [10495-23]
- 10495 OP Simulation of temperature distribution in tumor photothermal treatment [10495-24]
- 10495 0Q Real-time, in situ monitoring of nanoporation using electric field-induced acoustic signal [10495-25]
- 10495 OR Fluorescence lifetime imaging of microviscosity changes during ER autophagy in live cells [10495-26]
- 10495 0T Label-free counting of circulating cells by in vivo photoacoustic flow cytometry [10495-28]

- 10495 0U Improving label-free detection of circulating melanoma cells by photoacoustic flow cytometry [10495-29]
- 10495 0V A sensor array for detection proteins using lanthanide-doped nanoparticles [10495-30]
- 10495 0X The inflammation markers in serum of tumor-bearing rats after plasmonic photothermal therapy [10495-32]
- 10495 10 The role and mechanics of dendritic cells in tumor antigen acquisition and presentation following laser immunotherapy [10495-35]
- 10495 12 Novel liposomal combination treatments using dual genes knockdown in oral cancer treatment [10495-37]
- 10495 13 Conventional and phase contrast x-ray imaging techniques and ultrasound imaging method in breast tumor detection: initial comparison studies using phantom [10495-38]
- 10495 15 Low- and high-dose laser irradiation effects on cell migration and destruction [10495-40]
- 10495 18 Effect of near infrared lasers and glycated chitosan on myofibroblast differentiation and contraction [10495-43]
- 10495 19 Integrated oxide graphene based device for laser inactivation of pathogenic microorganisms [10495-44]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abdurashitov, A., OJ Afanasyev, Mikhail, 19 Afanasyeva, Galina A, 0X Bashkatov, Alexey N., OX Boyce, Kari E., OM Bucharskava, Alla B., OJ, OX Chen, Wei R., 00, 0V, 10, 15, 18 Dawkins, Bryan A., 10 Ding, Nan, 08 Doan, Khue Tu, 18 Du, Yue, OK Dubrovsky, A., 0J Faiz, Rowzat, OQ Gallagher, Kyra A., 15 Genina, Elina A., 0X Ghani, Muhammad U., 0M, 13 Gong, Wanjun, OR Grishkanich, Alexsandr, 19 Gunderson, Camille C., 0K Guo, Yuran, OM, 13 Hafizov, Nail, 19 He, Hao, OT, OU He, Ying, OR Hsieh, Yei-San, OD Hsu, Yih-Chih, 0D, 12 Huang, Leaf, 0D, 12 Khlebtsov, Boris N., OX Khlebtsov, Nikolai G., 0X Kurths, J., OJ Laverty, Sean M., 10 Layton, Elivia, 15, 18 Levchenko, Svitlana M., Ol Li, Hui, OP Li, Yuhua, 0M, 13 Li, Zhifang, OP Liu, Hong, 0K, 0M, 13, 15 Liu, Liwei, Ol Liu, Wufan, OR Luo, Teng, Ol Mannel, Robert S., OK Maslyakova, Galina N., 0J, 0X Moore, Kathleen, OK Navolokin, Nikita A., OJ, OX Obioma, Christiana C., 18 Omoumi, Farid H., OM, 13 Paklinov, Nikita, 19 Pan, Wenhui, OR Pang, Kai, OT, OU Pavlov, A., OJ

Peng, Xiao, Ol Pliss, Artem, Ol Prasad, Paras N., Ol Qiu, Shaoping, OP Qiu, Yuchen, 0K Qu, Junle, 01, 00, 0R, 0V Ruzankina, Julia, 19 Samant, Pratik, OQ Samanta, Soham, OR Semyachkina-Glushkovskaya, O., 0J Shushunova, N., OJ Song, Jun, 00 Stevens, Brianna, 15 Suo, Yuanzhen, 08 Terentyuk, Georgy S., OX Thai, Theresa C., OK Tuchin, Valery V., 0J, 0X Vaughan, Melville B., 18 Wang, Meng, 00, 0V Wang, Qiyan, OT, OU Wei, Dan, 08 Wei, Xunbin, 08, 0T, 0U Wong, Molly Donovan, 13 Wu, Di, 0M, 13 Wu, Jyun-Sian, 12 Wu, Shulian, OP Xiang, Liangzhong, OQ Xie, Chengying, 08 Xu, Gang, 18 Yan, Wei, Ol Yang, Pei-wen, OD Yang, Ping, OT, OU Yang, Zhangru, 08 Yang, Zhigang, OR Yeh, Chia-Hsien, 0D, 12 Zakharova, Natalia B., OX Zarafshani, Ali, 0Q Zargari, Abolfazl, OK Zhang, Xiyang, OP Zheng, Bin, 0K, 0Q, 13 Zhou, Benqing, 00, 0V Zhou, Feifan, 00, 0V, 15, 18 Zhou, Huan, OU Zhou, Hui, OT Zhou, Quanyu, OT, OU Zhu, Xi, 08 Zukerman, Sara, 15

Conference Committee

Symposium Chairs

James G. Fujimoto, Massachusetts Institute of Technology (United States)

R. Rox Anderson, Wellman Center for Photomedicine, Massachusetts General Hospital (United States) and Harvard Medical School (United States)

Program Track Chair

Steven L. Jacques, Tufts University (United States)

Conference Chair

Wei R. Chen, University of Central Oklahoma (United States)

Conference Program Committee

Sandra O. Gollnick, Roswell Park Cancer Institute (United States) Michael R. Hamblin, Wellman Center for Photomedicine (United States) Tomas Hode, Immunophotonics, Inc. (United States) Yih-Chih Hsu, Chung Yuan Christian University (Taiwan) **Zheng Huang**, University of Colorado Denver (United States) Vyacheslav Kalchenko, Weizmann Institute of Science (Israel) Mladen Korbelik, BC Cancer Research Center (Canada) Mark F. Naylor, Dermatology Associates of San Antonio (United States) Junle Qu, Shenzhen University (China) Karl-Goran Tranberg, CLS Ltd. (Sweden) Valery V. Tuchin, N.G. Chernyshevsky Saratov National Research State University (Russian Federation) and National Research Tomsk State University (Russian Federation) and Institute of Precision Mechanics and Control RAS (Russian Federation) Xunbin Wei, Shanghai Jiao Tong University (China) Da Xing, South China Normal University (China) Zhihong Zhang, Huazhong University of Science and Technology (China) Vladimir P. Zharov, University of Arkansas for Medical Sciences (United States) Feifan Zhou, University of Central Oklahoma (United States)

Session Chairs

- Photoimmunotherapy and Immune Response
 Mladen Korbelik, BC Cancer Research Center (Canada)
 Michael R. Hamblin, Wellman Center for Photomedicine (United States)
- In vivo Detection of Immune Response
 Zhihong Zhang, Huazhong University of Science and Technology (China)
 Xunbin Wei, Shanghai Jiao Tong University (China)
- Nano-immunotherapy
 Yih-Chih Hsu, Chung Yuan Christian University (Taiwan)
 Feifan Zhou, University of Central Oklahoma (United States)
- 4 Novel Detection Technology
 Ekaterina I. Galanzha, University of Arkansas for Medical Sciences (United States)
 Yichen Qiu, University of Central Oklahoma (United States)