

Photobiomodulation: An Accepted Therapeutic Modality?

Heidi Abrahamse PhD

It is almost 10 years ago, 2006 to be precise and approximately 3 years after initiating my research on the effect of low intensity laser irradiation on biological tissue, when I attended my first World Association for Laser Therapy conference in Cyprus. I was a novice to this treatment modality, the guru's in the field and the politics surrounding the different personalities and countries. I met magnificent scientists, kind critics and generous mentors at that conference. While my usual demeanor is to silently stand and observe at conferences, this time I unexpectedly found myself presenting a bid to host the next WALT conference in South Africa and the rest is history. That event solidified my association with the research field but also introduced me to the journal *Photomedicine and Laser Surgery*.

Over the last 10 years our group has contributed a number of publications to the journal and established itself as a major contributor to the area of photobiomodulation and photodynamic therapy research. I was delighted to have our research accepted for publication in this journal and even more proud when I was requested to act as reviewer. Once again my role developed over the years to senior editor and I was honored and proud when approached to act as co-editor in chief. I hope to introduce a number of new interventions for the journal with the aim of increasing its readership and improving the impact factor which have now become such an important measure of the value of one's contribution to science. I wish to thank and acknowledge Prof Chukuka Enwemeka both for his significant contribution to the field and journal but also for his role in introducing me to the photobiomodulation as a science and therapy.

I would now like to turn to issues with which we have all struggled and that has contributed to both successes but also controversies in phototherapy. *Photobiomodulation* – I used to find it quite appropriate to start a manuscript introduction with the phrase “Despite significant progress in the field of low intensity laser irradiation as a therapeutic modality and the fact that this treatment has been studied and clinically applied for more than 40 years, controversy still remains as to its’ “effectiveness”. Currently I prefer the following introduction: “Photobiomodulation is the application of low intensity laser irradiation to biological tissue with the aim to stimulate cellular processes enhancing the activation of biochemical mechanisms which induce activation of specific factors that contribute to healing, pain relief, reduction of inflammation and tissue regeneration”. Despite poor reporting and research design, I am of opinion that the research produced and reported over the last 10 years, both basic and clinical, have cemented photobiomodulation as a scientifically proven stimulant to activate biological pathways and cascades that introduce significant changes in biological organisms.

Laser parameters – In 2008 Prof Enwemeka published an editorial stating that less than 20% of published reports in the literature had sufficient dose-related data to permit statistical meta-analysis. In addition it is well recognised that parameters used in laboratory studies cannot be directly translated into clinical application. Poor reporting remains a major contributing factor to rejection of manuscripts and controversy surrounding effectiveness of treatments due to insufficient inference of parameters used and reported on and subsequent practice in clinical environments. Treatment parameters reported in publications should include: irradiance / power density; energy density or fluence; duration of each treatment session; frequency of treatment and cumulative dose. This requirement should remain compulsory for all publications accepted in PMLS [1].

ISBN (print): none
ISBN (on-line): 978-94-6252-215-9

The 2016 International Conference on Biomedical and Biological Engineering (BBE2016) will be held in Shanghai, China, on July 15th-17th, 2016. Experts from different areas and countries will be invited to give specific speeches. We warmly welcome you to BBE 2016! Biomedical and Biological Engineering is a highly comprehensive interdisciplinary which synthesizes the theories and methods of Engineering, Biology and Medicine. It researches the changes of state of the human body systems at every level, and it applies the way of engineering technology to control this kind of changes. Its purpose is to solve the relevant problems in the field of medicine, to guarantee the health of human, to serve the prevention, diagnosis, remedy and recovery of disease.

The International Conference on Biomedical and Biological Engineering (BBE 2016) will be the most comprehensive conference which focuses on the various situations of Biomedical and Biological Engineering. It will cover different types of topics such as biological engineering, biomedical, healthcare technologies, and medical and clinical applications. The conference program will consist of invited plenary lectures, symposia, workshops, invited sessions and oral and poster sessions of unsolicited contributions.

In addition to the attractive and interesting conference, you can also take a short trip to Shanghai, China. It is not only the largest city in China, but also a famous tourist city. There are many places in Shanghai which are worth going to. You could also take a short trip after participating in the attractive and interesting conference.

Please click [here](#) for the conference website.

Preface

The 2016 International Conference on Biomedical and Biological Engineering (BBE 2016) is to provide a platform for researchers, engineers, scholars as well as industrial professionals from all over the world to present their research results and development activities about Biomedical and Biological Engineering. The conference will be held in Shanghai, China, on July 15th-17th, 2016. Specialists from different countries and territories will be invited to give specific speech for every important section of the conference. BBE 2016 aims to bring researchers, engineers, and students to the areas of Biomedical and Biological Engineering. BBE 2016 features unique mixed topics of Biological Engineering, Biomaterials, Biomedical Engineering, and Bio-Medical Materials and application.

We received 135 papers in total, and accepted 77 papers (55.5 percent). The Technical Program Committee worked very hard to have all papers reviewed before the review deadlines. There are seven keynote speeches. All the keynote speakers are internationally recognized leading experts in their research fields, who have demonstrated outstanding proficiency and have achieved distinction in their profession. All the papers accepted by BBE2016 will be published by Atlantis Press and submitted to EI and CPCI index by the publisher. Every submitted paper went through a rigorous review process. Therefore, we are not able to include many fine papers in the technical program. Our apology goes to those authors.

As General Chair, I have many people to thank. I would like to express my sincere gratitude to all the members of Technical Program Committee and organizers for their enthusiasm, time, and expertise. My deep thanks also go to many volunteers and staffs for the long hours and hard work they have generously given to BBE2016. Finally, I would like to thank all the authors, speakers, and participants of this conference for their contributions to BBE2016.

Prof. Congo Tak Shing Ching
BBE2016 General Chair

The International Conference on Biomedical and Biological Engineering was organised by the following people:

General Chair: • C.T.S. Ching, National Chi Nan University, Taiwan

Honor Chair: • P. Ray, The University of New South Wales, Australia
• H.C. Slavkin, University of Southern California, USA

Co-Chair: • T. Gong, Donghua University, China
• G. Yang, Donghua University, China
• T. Zhang, Yanshan University, China

Technical Program Committees: • W.S. Li, Soochow University, China
• H.M. Cui, Yangzhou University, China
• Y. Zhang, National University of Singapore, Singapore
• D.F. Wang, Department of Imaging and Interventional Radiology, CUHK, Hong Kong, China
• Y.C. Li, School of Engineering, RMIT University, Australia
• X.L. Wang, Agricultural University of Hebei, Baoding, China
• J. Xia, The Chinese University of Hong Kong, Hong Kong, China
• Q. Li, The University of Sydney, Australia
• K. Li, Shandong University, China
• Q.L. Rao, Instrumental Analysis Center of SJTU, China
• A.A. Ciucu, University of Bucharest, Romania
• H. Icil, Eastern Mediterranean University, Turkey
• C.N. Ling, University Putra Malaysia, Malaysia
• K.Y. To, Agricultural Biotechnology Research Center, Academia Sinica, Taiwan
• L. Rao, Baylor College of Medicine, U.S.
• Z.Y. Zhu, Sichuan Medical University, China
• Y. Yang, Northeast Petroleum University, China
• W. Zhen, Nanjing Medical University, China
• H.D. Zhang, Zhejiang A & F University, China
• Z. Zhu, Sichuan Agricultural University, China
• L.N. Zhao, Wuhan Bioengineering Institute, China
• H.J. Lu, Tianjin Polytechnic University, China
• X.Y. Sun, Wuhan Bioengineering Institute, China
• C.Y. Li, Wuchang Institute of Technology, China
• J.P. Lu, Zhengzhou Institute of Aeronautical Industry Management, China
• E. Bruce, Stockholm School of Economics, Sweden
• Y.C. Li, Wuhan Institute Of Technology, China
• W.B. Sun, Anhui Agricultural University, China
• C.H. Fan, Nanjing Forestry University, China
• Y.T. Zhen, Sichuan Medical University, China
• Y.F. Wu, Tianjin Polytechnic University, China
• Y.Y. Qian, Anhui Medical University, China
• J.H. Chen, Guangdong Ocean University, China
• H. Zhen, Zhengzhou Institute of Aeronautical Industry Management, China
• L. Yang, Northeast Petroleum University, China
• J.P. Wang, Henan Agricultural University, China



Publishing information

Indexing

All articles of these proceedings are submitted for indexing in CPCI, EI/Compendex and Scholar Google.

Note that in case you need information about the indexing of these proceedings, please check with the organisers of the conference as we cannot reply to messages received from participants.

Free access

In order to increase the visibility of its conference and of the papers of its participants, bbe-16 has chosen to sponsor the on-line publication of the conference papers. Therefore, all conference papers can be read and downloaded for free, no subscription or other payment is required.

Copyright

Atlantis Press adheres to the principles of Creative Commons, meaning that we do not claim copyright of the work we publish. We only ask people using one of our publications to respect the integrity of the work and to refer to the original location, title and author(s).

Below follows the bibliographic information for this publication:

title:	Proceedings of the 2016 International Conference on Biomedical and Biological Engineering
Editors:	Prof. Congo Tak Shing Chang, Department of Electrical Engineering, National Chi Nan University, Taiwan
ISBN:	ISBN (on-line): 978-94-6252-216-9 ISBN (print): none
ISSN:	part of the series ABEP, ISSN 2352-3351, volume 2.

DOI

All articles have a digital object identifier (DOI). DOIs are standardised digital identities used across all major scientific publishers and are managed by CrossRef. DOIs guarantee a permanent Web-address of the article, no matter where it is physically stored. So, when referring to an article you can either use the traditional reference information (name of publication, volume, issue, etc.), or use the DOI. Many people now use both notations. For more information on DOIs, please see [here](#).

Print

In case you wish to have a print copy of the proceedings and no print version is available at Atlantis Press (ISBN print = none in the above box), then you can order one directly at our partner Curran Associates.



home

preface

the people

AP PREMIUM Proceedings

search

proceedings

author index

sessions

publishing/
indexing

contact

In case of questions, suggestions or comments regarding the contents of this site, please contact us at:

contact@atlantis-press.com

We will get back to you in 24 hours.

Or by surface mail:

in the Netherlands
Atlantis Press (BV)
Amstelskade 144-3
1078 AV Amsterdam

or in France:
Atlantis Press (sarl)
29 avenue Laumière
75019 Paris - France

The Atlantis Press web site team.