Advances in Experimental Medicine and Biology

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The 41st ISOTT Conference President, Harold M. Swartz, would like to dedicate this volume in memory of David Maguire.

David James Maguire (1945–2012) leaves behind a legacy of discovery, service, and friendship. The consummate scientist, artist, sailor, and community servant, David was truly beloved by those he touched. His unparalleled kindness, generosity of spirit, and genuine openness to all that life offers led him to live an enviable existence of adventure and camaraderie. Forever and forever, farewell David. If we do meet again, why we shall smile. If not, why then this parting was well made.
Preface

This volume consists of papers submitted, reviewed, and accepted from presentations at the 41st Annual Meeting of ISOTT that was held on June 22–26, 2013 at Dartmouth College in Hanover, NH, USA. 210 scientists from 14 countries attended the meeting. A major focus of the meeting was to discuss the clinical aspects of oxygen and methods related to its measurement, and the presentation format was planned to facilitate and promote discussions, with extensive discussion time allocated for oral presentations. There were more than 180 lectures on a variety of topics. The conference featured 2 days with a clinical focus with presentations of clinical relevance related to tissue oxygenation in cancer, cerebral, cardiovascular, muscular, and renal pathophysiology and treatment.

There were several special features at this meeting, including an emphasis on the “Wisdom of ISOTT” in which special invitations and speaking opportunities were extended to members who have had a prominent role in the development of the society and the field. The contributions from these members are featured in the first ten articles in this volume. Another special feature was a conference on the application of Electron Paramagnetic Resonance (EPR) with an emphasis on oxygen measurements in both preclinical and clinical settings and which was held in concert with the ISOTT meeting. Finally, a special feature was a tribute to David Maguire, a former President of ISOTT, who prematurely passed away prior to the meeting.

The scientific communications were enhanced by a schedule that included brief oral presentations of the highlights of every poster presentation, participation by young scholars in co-chairing most sessions, and a social program that kept the participants together for all meals while enjoying the traditional ample drink, food, and entertainment each evening that is a hallmark of the ISOTT conferences.

All articles in this volume were derived from presentations at ISOTT-2013 and were subject to rigorous review by a minimum of two knowledgeable referees and the editors. Virtually all articles required at least one revision and several of the submissions were not able to meet the criteria for inclusion. As a result the articles in this volume should have a high degree of scientific validity.
This book is dedicated to the senior members of ISOTT who continue to guide us, including those who have passed away but whose scientific contributions continue to illuminate and lead us. In particular we dedicate this book to David Maguire, whose last publication is the first article in this book.

Lebanon, NH, USA

Harold M. Swartz
Acknowledgements

As President of the 2013 Meeting of the International Society on Oxygen Transport to Tissue, held from June 22–26, 2013 in Hanover, New Hampshire, USA, I would like to gratefully acknowledge the support of our sponsors:

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The Melvin H. Knisely Award

The Melvin H. Knisely Award was established in 1983 to honor Dr. Knisely’s accomplishments in the field of the transport of oxygen and other metabolites and anabolites in the human body. Over the years, he has inspired many young investigators and this award is to honor his enthusiasm for assisting and encouraging young scientists and engineers in various disciplines. The award is to acknowledge outstanding young investigators. This award was first presented during the banquet of the 1983 annual conference of ISOTT in Ruston, Louisiana. The award includes a Melvin H. Knisely plaque and a cash prize.

Melvin H. Knisely Award Recipients

1983  Antal G. Hudetz (Hungary)  
1984  Andras Eke (Hungary)  
1985  Nathan A. Bush (USA)  
1986  Karlfried Groebe (Germany)  
1987  Isumi Shibuya (Japan)  
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1992  Hans Degens (The Netherlands)  
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1995  Clare E. Elwell (UK)  
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The Dietrich W. Lübbers Award

The Dietrich W. Lübbers Award was established in honor of Professor Lübbers’s long-standing commitment, interest, and contributions to the problems of oxygen transport to tissue and to the society. This award was first presented in 1994 during the annual conference of ISOTT in Istanbul, Turkey.

Dietrich W. Lübbers Award Recipients

1994  Michael Dubina (Russia)
1995  Philip E. James (UK/USA)
1996  Resit Demit (Germany)
1997  Juan Carlos Chavez (Peru)
1998  Nathan A. Davis (UK)
1999  Paola Pichiule (USA)
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2007  Helga Blockx (Belgium)
2008  Joke Vanderhaegen (Belgium)
2009  Matthew Bell (UK)
The Britton Chance Award

The Britton Chance Award was established in honor of Professor Chance’s long-standing commitment, interest, and contributions to the science and engineering aspects of oxygen transport to tissue and to the society. This award was first presented in 2004 during the annual conference of ISOTT in Bari, Italy.

Britton Chance Award Recipients

2004 Derek Brown (Switzerland)
2005 James Lee (USA)
2006 Hanzhu Jin (China/USA)
2007 Eric Mellon (USA)
2008 Jianting Wang (USA)
2009 Jessica Spires (USA)
2010 Ivo Trajkovic (Switzerland)
2011 Alexander Caicedo Dorado (Belgium)
2012 Felix Scholkmann (Switzerland)
2013 Tharindi Hapuarachchi (UK)

The Duane F. Bruley Travel Awards

The Duane F. Bruley Travel Awards were established in 2003 and first presented by ISOTT at the 2004 annual conference in Bari, Italy. This award was created to provide travel funds for student researchers in all aspects of areas of oxygen transport to tissue. The awards signify Dr. Bruley’s interest in encouraging and supporting young researchers to maintain the image and quality of research associated with the society. As a co-founder of ISOTT in 1973, Dr. Bruley emphasizes cross-disciplinary research among basic scientists, engineers, medical scientists, and clinicians. His pioneering work constructing mathematical models for oxygen and other anabolite/metabolite transport in the microcirculation, employing computer solutions, was the first to consider system nonlinearities, time dependence, including multidimensional diffusion, convection, and reaction kinetics. It is hoped that receiving the Duane F. Bruley Travel Award will inspire students to excel in their research and will assist in securing future leadership for ISOTT.
Duane F. Bruley Award Recipients

2004  Helga Blocks (Belgium), Jennifer Caddick (UK), Charlotte Ives (UK), Nicholas Lintell (Australia), Leonardo Mottola (Italy), Samin Rezania (USA/Iran), Ilias Tachtsidis (UK), Liang Tang (USA/China), Iyichi Sonoro (Japan), Antonio Franco (Italy)
2005  Robert Bradley (UK), Harald Oey (Australia), Kathy Hsieh (Australia), Jan Shah (Australia)
2006  Ben Gooch (UK), Ulf Jensen (Germany), Smruta Koppaka (USA), Daya Singh (UK), Martin Tisdall (UK), Bin Wong (USA), and Kui Xu (USA)
2007  Dominique De Smet (Belgium), Thomas Ingram (UK), Nicola Lai (USA), Andrew Pinder (UK), Joke Vanderhaegen (Belgium)
2008  Sebastiano Chicco (Italy)
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The Kovach Lecture is presented periodically to honor a career dedicated to oxygenation research. Arisztid Kovach was a world-renowned cardiovascular physiologist and one of the early leaders of ISOTT. This lecture is dedicated to his remarkable scientific and teaching career.

Kovach Lecture Recipients

2011  John Severinghaus
2012  Peter Vaupel
2013  No recipient
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