

# Targeting Mitochondria 2012

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*3<sup>rd</sup> World Congress on*

## **Targeting Mitochondria**

**Strategies, Innovations & Clinical Applications**



*November 8-9, 2012 - Hotel Ritz-Carlton*

*Berlin, Germany*

[www.targeting-mitochondria.com](http://www.targeting-mitochondria.com)

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After the success of the two first editions held in 2010 & 2011, the Scientific Committee of the International Society of Antioxidants in Nutrition and Health (**ISANH**) decided to organize the **3<sup>rd</sup> World Congress on Targeting Mitochondria** which will be held in **Berlin in November 8-9, 2012**.

Mitochondrial dysfunction has been associated with the aging process and a variety of human disorders, such as cardiovascular and neurodegenerative diseases, cancer, migraine, infertility, kidney and liver diseases, toxicity of HIV drugs... It is well recognized that the (patho)physiological role of mitochondria widely exceeds that of solely being the biochemical power plant of our cells.

### *Targeting Mitochondria: Strategies, Innovations and Challenges*

Over recent years, mitochondria have become an interesting target for drug therapy, and the research field aimed at "Targeting Mitochondria" is active and expanding as witnessed by this already third edition of the world congress on this topic. It is becoming a necessity and an urge to know why and how to target mitochondria with bioactive molecules and drugs in order **to treat and prevent** these pathologies and chronic diseases.

This 3<sup>rd</sup> World Congress on **Targeting Mitochondria** will cover a variety of new strategies and innovations as well as clinical applications in Mitochondrial Medicine. Just as for the two previous editions of "Targeting Mitochondria", the scientific committee has again succeeded in inviting an outstanding panel of speakers; each one of which a leader in their particular field. Different sessions will be held:

- *Mitochondrial dysfunctions in chronic diseases: recent advances and conclusions*
- *Devices, Methods & Mitochondria: Innovations & New Opportunities*
- *The Mitochondria Engineering concept: Challenges & Limits*
- *Strategies to target mitochondria : Recent Clinical data and potential Therapeutic Studies*

The Scientific Committee has selected **two hot topics** for this year. The first topic involves Mito-Devices, which are novel tools for probing mitochondrial function under physiological and pathological conditions. The second topic focuses on Mito-Engineering, i.e. novel strategies and means towards manipulations of mitochondrial function. Strategies that restore mitochondrial function could potentially offset key aspects of mitochondrial-related diseases. Mito-devices and Mito-engineering are essential for making mitochondria-targeted therapeutics clinical feasible, therefore clinical applications are the underlying theme of the 3<sup>rd</sup> edition of Targeting Mitochondria.

With this exciting program, we look forward to welcoming you in Berlin for this particular event.

**Pr Marvin Edeas - Pr Volkmar Weissig**

Chairmen of the Scientific Committee

**ISANH Targeting Mitochondria 2012**

November 8-9, 2012 – Berlin

# Targeting Mitochondria 2012

## Scientific Committee:

**Marvin Edeas**, *President of International Society of Antioxidants in Nutrition and Health, Paris, France*

**Douglas Wallace**, *Center of Mitochondrial and Epigenomic Medicine, Philadelphia, USA*

**Volkmar Weissig**, *Midwestern University College of Pharmacy Glendale, USA*



## Among Speakers:

**Daniela Arduíno**, *Center for Neurosciences and Cell Biology, University of Coimbra, Coimbra, Portugal*

**Thomas Becker**, *Institute for Biochemistry and Molecular Biology, Freiburg, Germany*

**Shanta Dhar**, *University of Georgia, Athens, USA*

**Richard Hartley**, *University of Glasgow, Glasgow, United Kingdom*

**Mary Herbert**, *Institute for Ageing and Health, Newcastle, UK*

**Rejko Krüger**, *University of Tuebingen, Tuebingen, Germany*

**Afshan Malik**, *King's College London, Diabetes research Group, School of Medicine, London, UK*

**Meagan McManus**, *Center of Mitochondrial and Epigenomic Medicine, Philadelphia, USA*

**Paulo Oliveira**, *University of Coimbra, Coimbra, Portugal*

**Brendan Payne**, *Institute of Genetic Medicine, Newcastle University, Newcastle, UK*

**Alessandro Prigione**, *Max-Planck Institute for Molecular Genetics, Berlin, Germany*

**Vladimir Skulachev**, *Moscow State University, Russia*

**Yuma Yamada**, *Faculty of Pharmaceutical Sciences, Hokkaido, Japan*

**Antonio Zorzano**, *Institute for Research in Biomedicine, Barcelona, Spain*



# Targeting Mitochondria 2012

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## Targeting Mitochondria

**Strategies, Innovations & Clinical Applications**

**Day 1 - November 8, 2012**

*9:00 – 12:30*

**8:00 Registration**

**9:00 Welcome Note**

*Marvin Edeas, President of International Society of Antioxidants in Nutrition and Health, Paris, France  
Volkmar Weissig, Midwestern University College of Pharmacy Glendale, USA*

**9:05 General Introduction of Targeting Mitochondria 2012: Mitochondria: Huge Steps to New Medicine**

*Douglas Wallace, Center of Mitochondrial and Epigenomic Medicine, Philadelphia, USA  
Meagan McManus, Representing D. Wallace, Center for Mitochondrial and Epigenomics Medicine, Philadelphia, USA*

### **Session 1: Mitochondrial Dysfunctions in Chronic Diseases and Pathologies: Recent Advances & Conclusions**

**9:30 Mitochondria as a Perfect Drug Target in Health and Disease**

*Paulo Oliveira, University of Coimbra, Coimbra, Portugal*

**9:55 Mitochondria & HIV Infection: Mitochondria Aging is Accelerated by Anti-Retroviral Therapy through the Clonal Expansion of mtDNA Mutations**

*Brendan Payne, Institute of Genetic Medicine, Newcastle University, Newcastle, United Kingdom*

**10:20 Break & Posters Session**

**10:50 Diabetes and Mitochondria Alteration: Mitofusin 2 as a Potential Target for the Treatment of Diabetes Type 2**

*Antonio Zorzano, Institute for Research in Biomedicine, Barcelona, Spain*

**11:15 Mitochondrial DNA Content and Metabolic/Hyperglycaemic Memory: Is there a Connection?**

*Afshan Malik, King's College London, Diabetes research Group, School of Medicine, London, United Kingdom*

**11:40 A Comparative Genomics Approach to Mitochondrial Physiology: 50-year Search for Calcium Channel Ends**

*Fabiana Perocchi, Ludwig-Maximilians-Universität, Munich, Germany*

**11:50 The Mitochondrial Gas Pedal: Cytosolic Calcium Regulates Energization of Neuronal Mitochondria by Formation of Pyruvate through the Malate Aspartate Shuttle. Physiological and Pathophysiological Consequences**

*Franck N. Gellerich, Leibniz Institute for Neurobiology, Magdeburg, Germany*

**12:00 Decreased Mitochondrial Function in Skeletal Muscle from Simvastatin treated Patients**

*Dela Flemming, University of Copenhagen, Denmark*

**12:10 Abnormalities in Mitochondrial Function in Human Neural Cells differentiated from Hair Follicle-derived induced Pluripotent Stem Cells (iPSC) in Schizophrenia**

*Dorit Ben-Shachar, Faculty of Medicine, Technion, Haifa, Israel*

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**12:20 Nicotine Pretreatment prevents Carbonyl Cyanide M-chlorophenol-hydrozone (CCCP)-induced Mitochondrial Fragmentation and Mitophagy via nAChR Independent Mechanisms in a Human Neuronal-like Cell Line**  
*Lori Buhlman, College of Health Sciences, Midwestern University, Glendale, USA*

**12:30 Emerging Connections between the Evolution of Mitochondrial Dynamics and the Aging Process**  
*Axel Kowald, Institute for Ageing and Health, Newcastle University, United Kingdom*

## 12:40 Lunch Break & Posters Session

**14:00 Potential Micro-Compartmentalization of Mitochondrial Thymidine Salvage, a new Dimension in Mitochondrial Thymidine Metabolism**  
*Edward McKee, College of Medicine, Central Michigan University, Mount Pleasant, Michigan, USA*

**14:10 Apoptosis of Tumor Cells Induced by Inhibition of Mitochondrial KV1.X Channels**  
*Mario Zoratti, CNR Institute of Neuroscience, Padua, Italy*

**14:20 A Brain Study of Lithium-treated Mice and Knockout Mice with Lithium-like Behavior Reveals a common Effect on Mitochondrial Function**  
*Galila Agam, Ben-Gurion University of the Negev, Beer-Sheva, Israel*

**14:30 Functional Expression of Green Fluorescent Protein in Mitochondria of Rat Cells Following Liposome-Mediated Delivery of a Linear DNA Construct**  
*Gerard D'Souza, Massachusetts College of Pharmacy and Health Sciences, Boston, USA*

**14:40 Organelle Targeting of Catalytic RNAs for Reverse Genetics in Higher Plant Mitochondria**  
*Daria Mileshina, CNRS, Strasbourg University, Strasbourg, France*

## Session 2: Mitochondria into Practice - Devices & Methods for Mitochondria Evaluation

**14:50 General Overview: Innovations, Contradictions and Perspectives**  
*Egbert Mik, Erasmus MC, University Medical Center, Rotterdam, The Netherlands*

**15:05 "In Vivo" Respirometry in Sepsis**  
*Floor Harms, Erasmus MC, University Medical Center, Rotterdam, The Netherlands*

**15:15 C. Elegans as a Model System to study Drug-induced Mitochondrial Dysfunction**  
*Reuben Smith, University of Amsterdam, Amsterdam, The Netherlands*

**15:25 A Multiparametric Assay on Isolated Mitochondria to Predict Human Liver Injury Induced by Chemicals**  
*Annie Borgne-Sanchez, Mitologics SAS, Paris, France*

## 15:35 Break & Posters Session

**16:05 Exploration of the Infrared Radiation-induced Mitochondrial Oxidative Stress understanding Pathways to better Prevent**  
*Emilie Cornille-Robert, ICDD, Meyreuil, France*

**16:15 In Vitro Assessment of an Active Bioenergising Cosmetic and Cell Protector against Oxidative Stress**  
*Aurora Garre, R+D Area Laboratorios Cinfa, Huarte Pamplona, Spain*

**16:25 Optical and Electrochemical Microarrays for Large Scale Studies of Single Mitochondria Metabolic Responses**  
*Stéphane Arbault, Institute of Molecular Sciences, University of Bordeaux, Pessac, France*

**16:35 Measuring Mitochondrial Function Using the Seahorse XF Flux Analyzer under Physiologic Oxygen Concentrations**  
*Per Bo Jensen, Seahorses Biosciences, Copenhagen, Denmark*

**17:00 End of the First Day**  
**19:45 Speakers' Dinner**

# Targeting Mitochondria 2012

**Day 2 - November 9, 2012**

## Session 3: Mito-Engineering 2012

### The Mitochondria Engineering Concept: Challenges & Limits

- 9:00 **Correcting Human Mitochondrial Mutations with Targeted RNA Import: Recent Advances and Perspectives for Mitochondria Medicine**  
*Michael Teitell, David Geffen School of Medicine at UCLA, Los Angeles, USA*
- 9:25 **Mitochondria Gene Replacement & Engineering Mitochondria: New Options and Perspectives for Prevention of Mitochondrial Diseases**  
*Mary Herbert, Institute for Ageing and Health, Newcastle, United Kingdom*
- 9:50 **Mitochondria Modeling of Mammalian Development and Human Disease**  
*Carl Pinkert, Auburn University, Auburn, USA*

### Session 4: Strategies to Target Mitochondria: Recent Scientific Data and Potential Applications

- 10:15 **Targeting Mitochondria by "Magic Molecules": Strategic Role of Chemistry**  
*Richard Hartley, University of Glasgow, Glasgow, United Kingdom*

10:40 **Break & Posters Session**

- 11:05 **Importing Mitochondrial Proteins: Lessons & Perspectives to Target Mitochondria**  
*Thomas Becker, Institute for Biochemistry and Molecular Biology, Freiburg, Germany*
- 11:30 **Mitochondria Targeted Nanocarriers for Delivery of Contrast Agents and Therapeutics**  
*Shanta Dhar, University of Georgia, Athens, USA*
- 11:55 **Mitochondrial Delivery of Nucleic Acids by DF-MITO-Porter toward Mitochondrial Gene Therapy**  
*Yuma Yamada, Faculty of Pharmaceutical Sciences, Hokkaido University, Japan*
- 12:20 **BPM 31510: A Novel Mitochondrial Sensitizer for Treatment of Cancer**  
*Rangaprasad Sarangarajan, Berg Pharma, Natick, USA*
- 12:30 **Maximizing the Therapeutic Window of an Antimicrobial Drug by Imparting Mitochondrial Sequestration in Human Cells using Mitochondria Penetrating Peptides**  
*Mark Pereira, Department of Biochemistry and Pharmaceutical Sciences, University of Toronto, Toronto, Canada*

12:40 **Lunch Break & Posters Session**

- 14:00 **Mitochondria, Protein Homeostasis and Microtubule Networks in Parkinson's Disease: When the Tracks Get Patchy**  
*Daniela Arduíno, Center for Neurosciences and Cell Biology, University of Coimbra, Coimbra, Portugal*
- 14:25 **Mitochondrial Reprogramming in Human Induced Pluripotent Stem (iPS) Cells**  
*iPS Cells and Mitochondrial Rejuvenation: Fact or Fiction?*  
*Alessandro Prigione, Max-Planck Institute for Molecular Genetics, Berlin, Germany*
- 14:50 **Targeting Mitochondrial Dynamics as Therapeutic Approach: New Perspectives for Neurodegeneration in Parkinson's disease**  
*Rejko Krüger, University of Tuebingen, Tuebingen, Germany*
- 15:15 **Cationic derivative of plastoquinone (Visomitin), the first mitochondria-targeted medicine available in drugstores**  
*Vladimir Skulachev, Moscow State University, Russia*
- 15:25 **Inhibition of the Malate-Aspartate Shuttle during Early Reperfusion Preserves Mitochondrial Function and Attenuates Reactive Oxygen Species Production in Ischemia/Reperfusion Injured Heart**  
*Takashi Yokota, University of Copenhagen, Copenhagen, Denmark*

# Targeting Mitochondria 2012

**15:35** **Bezafibrate improves Mitochondrial Function in the CNS of a Mouse Model of Mitochondrial Encephalopathy**  
*Tina Wenz, University of Cologne, Cologne, Germany*

**15:45** **Therapeutic Manipulation of Mitochondrio-active Regions from Bcl-2 Family Proteins**  
*Romain Jugé, ENS Lyon, Lyon, France*

**15:55** **Multiple Large Deletions In The Mt DNA Of Human Embryonic Stem Cells**  
*Lindsey Van Haute, Vrije Universiteit Brussel, Brussels, Belgium*

**16:05** **Break & Posters Session**

**16:20** **Targeting Mitochondrial Dysfunction in the Treatment of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) – A Cohort Audit**  
*Norman E Booth, University of Oxford, Oxford UK*

**16:30** **Bridging the Gap between Nature and Antioxidant Setbacks: Delivering Hydroxycinnamic Acids to Mitochondria**  
*José Teixeira, University of Porto, Porto, Portugal*

**15:40** **Mitochondriotropic Resveratrol Derivatives: Cytotoxicity Mechanisms**  
*Lucia Biasutto, CNR Institute of Neuroscience, Dept. Biomedical Sciences, University of Padova, Italy*

**16:50** **General Discussion and Conclusion of Targeting Mitochondria 2012**

**17:15** **Scientific Contribution Awards & Targeting Mitochondria Awards 2012**

**17:30** **End of the Conference**

**Drinks & Snacks Meeting for Network Session and B to B Contacts  
Posters Session**

**Targeting Mitochondria Attendees, Academics and Industrials, are invited to a warm-up networking session over drinks and snacks.**

## *Practical Information*

**For all information related to Programme, Abstract Submission & Timing, please contact the Scientific Secretary:**  
[isanh@isanh.com](mailto:isanh@isanh.com)

**For Supporting & Devices Display:**  
[mitochondria@targeting-mitochondria.com](mailto:mitochondria@targeting-mitochondria.com)

### **Conference Venue**

**The Ritz-Carlton, Berlin**

Potsdamer Platz 3 - 10785 Berlin, Germany

For more information about access and hotel, please visit

[www.ritzcarlton.de](http://www.ritzcarlton.de)



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ISANH Targeting Mitochondria 2012  
November 8-9, 2012 – Berlin

# Targeting Mitochondria 2012

## Registration Form - November 8-9, 2012 – Berlin, Germany

Registration Form to return by Mail, Fax or Email:

Targeting Mitochondria 2012 Conference / ISANH - 15 Rue de la Paix - 75002 Paris

Tel: +33 1 55 04 77 55 - Fax: +33 9 72 16 84 14 - [mitochondria@targeting-mitochondria.com](mailto:mitochondria@targeting-mitochondria.com)

- I would like to register to **Targeting Mitochondria 2011** on November 8-9, 2012
- Industrials**
- After September 17<sup>th</sup> 895 €
- Academics**
- After September 17<sup>th</sup> 495 €

*Registration includes conference entrance, two lunches and one abstracts book.*

- I would like to subscribe to ISANH  
(Subscription available one year since reception of payment) 135€
- I cannot attend the conference and I would like to order **Supplementary Abstracts Book**  
(Unitary Price) 125 €
- I would like attend the Speakers' Dinner on November 8 80€
- I would like to support the conference Contact us

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