

WORLD MITOCHONDRIA SOCIETY

12th World Congress on

TARGETING MITOCHONDRIA



Interactive Programme

OCTOBER 27-29, 2021 - ONLINE CONGRESS

www.targeting-mitochondria.com



12th World Congress on Targeting Mitochondria

October 27-29, 2021 – Interactive Online Congress

Welcome Note

On behalf of the Scientific Committee of the World Mitochondria Society (WMS) I am excited to announce the 12th Conference on Targeting Mitochondria for October 27-29, 2021. We would like to inform you that the congress will be held as an Interactive Online Meeting with live slots where many discussions and networking will unite all speakers, presenters and attendees.

On this occasion I would like to state frankly that the success of our virtual congress exceeded my expectations. From the numerous feedbacks we have received I can conclude that COVID19 was unable to diminish our enthusiasm for the cell organelle we all revere so much. Even more, the special online format we chose seemed to have provided some unexpected benefits. For example, there was no Session Chair who had to enforce any schedule, which allowed for more extensive discussion sections as appreciated by many of us. Further, the availability of all conference contributions for an extended period of time was certainly also a very valuable feature of our 11th conference. Nevertheless, one of the most important aspects of any scientific meeting was missing, which is the personal interaction with colleagues from around the world, be it in the lecture hall, or during the coffee break or last but not least during our conference dinner. Therefore, we all are very much looking forward to the next, the 12th edition of our conference series.

Independent on its format, any conference can only be as good as its speakers and its organizers. Knowing that the Organizing Committee under Prof. Marvin Edeas' leadership will again excel in setting up the next conference, and knowing that the Scientific Committee will again invite key players in the field of Mitochondrial Medicine I assure anyone who is going to join us during the Interactive Online Congress in October 2021 that you won't be disappointed, again excellent speakers and again an excellent organization!

While we have just started working on the outline of our next conference edition, I believe that the overarching themes of our 12th World Congress on Targeting Mitochondria will not significantly deviate from topics discussed at preceding editions of our conference series. Again, we will focus on three major areas, which are first the role of mitochondrial dysfunction in etiology and pathogenesis of chronic diseases including aging, second how to assess and above all quantify mitochondrial dysfunction in vitro and in vivo and finally, third, how to target and manipulate mitochondrial function in order to develop future mitochondria-based therapies. However, we will also try to further extend the profile and scope of our conference by inviting researchers who have never participated in our meeting before, established and new investigators alike.

Basic scientists working at the bench in the laboratory, physicians treating patients suffering from mitochondrial disorders as well as representatives of companies working on the commercialization of mitochondria-targeted therapies are all welcome to our conference. We strongly believe that our 12th World Congress on Targeting Mitochondria will be at least as exciting and as successful as our virtual 11th conference. Please feel free to contact us at any time for further information and with questions you might have.

All our warmest regards.



Prof. Volkmar Weissig
President of the World Mitochondria Society
Midwestern University, US



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SPEAKERS 2021



Introduction Note
Volkmar Weissig,
President of the World Mitochondria Society, Midwestern University, USA



Welcome Note
Marvin Ideas,
Founder & Chairman of The Scientific Committee, University de Paris, INSERM 1016, Institute Cochin, France



Big Change from Small Player - Mitochondria Alter Body Metabolism and Gene Expression
Scott Ballinger,
University of Alabama at Birmingham, USA



Mitochondrial Transplantation Therapy, the Recent Advances and Perspective
James McCully,
Harvard Medical School, Boston Children's Hospital, USA



Comprehensive Multi-Omics Analysis Reveals Mitochondrial Stress as a Central Biological Hub for Spaceflight Impact
Afshin Beheshti,
NASA Ames Research Center, Moffett Field, USA



Nuclear-Mitochondrial Interactions and Their Effect on Longevity and Health: Introduction
Miria Ricchetti,
Institut Pasteur, France



Regulation of Physiological Mitophagy
Thomas G. McWilliams,
University of Helsinki, Finland



Extracellular Mitochondria for Therapy and Diagnosis in Stroke
Kazuhide Hayakawa,
Harvard Medical School / Massachusetts General Hospital, USA



Impact of Mitochondrial Dynamics on Stem Cell Function: Insights from Physiology, Diseases and Aging
Mireille Khacho,
University of Ottawa, Canada



Mitochondrial DNA in Cancer: The Overlooked Oncogenome
Payam A. Gamage,
CRUK Beatson Institute, United Kingdom



Mitochondrial Arginase-2 is Essential for IL-10 Metabolic Reprogramming of Inflammatory Macrophages
Claire McCoy,
Royal College of Surgeons in Ireland, Ireland



Circulating Mitochondrial DNA as an Early Indicator of Severe Lung Disease
Andrew E. Gelman,
Washington University School of Medicine, USA



Optimization of Energy Homeostasis in old age by SIRT6
Haim Cohen,
Bar-Ilan University, Israel



Patient-Specific Brain Organoids for Modeling Mitochondrial Diseases
Alessandro Prigione,
Heinrich Heine University (HHU), Germany



Nuclear Sensing of Breaks in Mitochondrial DNA Enhances Immune Surveillance
Agnel Sfeir,
Memorial Sloan Kettering Cancer Center, USA



The Bioenergetics Consequences of Winter Cold in Small Birds
Andreas Nord,
Lund University, Sweden



Cardiorespiratory Fitness and Mitochondrial Health as Modulators of COVID-19
Johannes Burtscher,
University of Lausanne, Switzerland



Coordination of Metal Center Biogenesis in Human Cytochrome c Oxidase
Antoni Barrientos,
University of Miami Miller School of Medicine, USA



A Mitochondria-targeted Caffeic Acid Derivative Reverts Cellular and Mitochondrial Defects in Human Skin Fibroblasts
Paulo J. Oliveira,
University of Coimbra, Portugal



Age-Related Mitochondrial Dysfunction as a Key Factor in COVID-19 Disease
Guillermo López-Lluch,
Universidad Pablo de Olavide-CSIC, Spain



Deciphering Strategic Interactions between Mitochondrial and Nuclear Genome
José Antonio Enríquez,
Centro Nacional de Investigaciones Cardiovasculares Carlos III, Spain



Exercise-induced, Mitochondrial-Mediated Cell Death in Arrhythmogenic Cardiomyopathy
Stephen Chelko,
Florida State University, USA



Clinical Application of Antioxidants to Improve Human Oocyte Mitochondrial Function: Advances and Perspective
Cristina Rodríguez-Varela,
Medical Research Institute Hospital La Fe, Spain



Glucose Metabolism Control of T Cell Immunity
Ming Li,
Memorial Sloan Kettering Cancer Center, USA



Dysregulation of Mitochondria-Lysosome Contacts by GBA1 Dysfunction in Dopaminergic Neuronal Models of Parkinson's Disease
Dimitri Krainc,
The Northwestern University Feinberg School of Medicine, USA



The One-Carbon Pool Controls Mitochondrial Energy Metabolism via Complex I and Iron-Sulfur Clusters
Anna Wredenberg,
Max Planck Institute Biology of Ageing-Karolinska Institutet Laboratory, Sweden



Introduction Remarks: Past, Present and Future
Egbert Mik,
University Medical Center Rotterdam, The Netherlands



Programmable Synthetic Gene Switches for Mitochondrial Gene Modulation
Ganesh Pandian Namasivayam,
Kyoto University Institute for Advanced Study, Japan



A Potential Mitochondrial Link Between Life Stress and the Reversibility of Hair Greying in Humans
Martin Picard,
Columbia University Vagelos College of Physicians and Surgeons, USA



The Mitochondriotropic DecylTPP Group Lowers Mitochondrial OXPHOS Supercomplex Levels and Induces a Glycolytic Switch
Werner Koopman,
Radboud Institute for Molecular Life Sciences, The Netherlands

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Scientific Agenda

Wednesday, October 27, 2021

Dedicated to Live Online Workshop

13h20 – 18h30

Mitochondria Workshop 2021: How to Evaluate Mitochondria Function?

Part 1: Bioenergetics. Metabolism, mitochondrial respiration rates, ATP synthesis, mitochondrial membrane potential and respiratory chain activities

Part 2: Mitochondrial biogenesis, dynamics and mitophagy

Part 3: Biochemical diagnosis of mitochondrial diseases



Dr. Naïg Gueguen, Mitovasc Institute, Mitolab team, INSERM 1083, CNRS 6215, Centre Hospitalier Universitaire d'Angers, Angers, France

For full agenda, registration, and information, please follow this link

MITOCHONDRIA
WORKSHOP

18h15 Paris time

Interactive Live Discussion of the
Workshop



12th World Congress on Targeting Mitochondria

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Scientific Agenda

– Day One –

Thursday, October 28, 2021



09:00 am **Welcome Note of Targeting Mitochondria 2021**

Volkmar Weissig, President of the World Mitochondria Society, Midwestern University, USA



Marvin Edeas, Founder & Chairman of The Scientific Committee, University de Paris, INSERM 1016, Institute Cochin, France

Session 1: Recent Advances on Mitochondrial Dysfunctions and Dynamics in Chronic Diseases

Chairmen: Marvin Edeas, Volkmar Weissig, Martin Bergö, Vladimir Gogvadze, Hans Zischka

09:15 am
Recorded



Big Change from Small Player - Mitochondria Alter Body Metabolism and Gene Expression

Scott Ballinger, University of Alabama at Birmingham, USA

09:40 am
Recorded



Circulating Mitochondrial DNA as an Early Indicator of Severe Lung Disease

Andrew E. Gelman, Washington University School of Medicine, USA

10:05 am
Recorded



Regulation of Physiological Mitophagy

Thomas G. McWilliams, University of Helsinki, Finland

10:30 am
Recorded



Comprehensive Multi-Omics Analysis Reveals Mitochondrial Stress as a Central Biological Hub for Spaceflight Impact

Afshin Beheshti, NASA Ames Research Center, Moffett Field, USA

10:55 am

Coffee Break

11:05 am



Exercise-Induced, Mitochondrial-Mediated Cell Death in Arrhythmogenic Cardiomyopathy

Stephen Chelko, Florida State University, USA

11:25 am
Live



Impact of Mitochondrial Dynamics on Stem Cell Function: Insights from Physiology, Diseases and Ageing

Mireille Khacho, University of Ottawa, Canada



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11:50 am

Lunch Break

12:05 pm
Recorded



Mitochondrial Arginase-2 is Essential for IL-10 Metabolic Reprogramming of Inflammatory Macrophages

Claire McCoy, Royal College of Surgeons in Ireland, Ireland

12:30 pm
Recorded



The One-Carbon Pool Controls Mitochondrial Energy Metabolism via Complex I and Iron-Sulfur Clusters

Anna Wredenberg, Max Planck Institute Biology of Ageing–Karolinska Institutet Laboratory, Sweden

12:55 pm
Recorded



Glucose Metabolism Control of T Cell Immunity

Ming Li, Immunology Program, Memorial Sloan Kettering Cancer Center, USA

01:15 pm
Recorded



Coordination of Metal Center Biogenesis in Human Cytochrome c Oxidase

Antoni Barrientos, University of Miami Miller School of Medicine, USA

01:40 pm
Recorded



Dysregulation of Mitochondria-Lysosome Contacts by GBA1 Dysfunction in Dopaminergic Neuronal Models of Parkinson's Disease

Dimitri Krainc, Northwestern University Feinberg, USA

02:05 pm
Live



The Bioenergetics Consequences of Winter Cold in Small Birds

Andreas Nord, Lund University, Sweden

Mitochondria & COVID-19: Recent Advances

Chairman: Martin Bergö

02:30 pm
Recorded



Age-Related Mitochondrial Dysfunction as a Key Factor in COVID-19 Disease

Guillermo López-Lluch, Universidad Pablo de Olavide-CSIC, Spain

02:55 pm
Recorded



Cardiorespiratory Fitness and Mitochondrial Health as Modulators of COVID-19

Johannes Burtcher, University of Lausanne, Switzerland

03:20 pm

Coffee Break



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Session 2: Mitochondria and Strategic Role in Intracellular Communication: Targeting mtDNA-Containing Exosomes

Chairmen: Vladimir Gogvadze, Hans Zischka

03:30 pm
Recorded



Mitochondrial DNA in Cancer: The Overlooked Oncogenome
Payam A. Gammage, CRUK Beatson Institute, United Kingdom

03:55 pm
Live



Nuclear Sensing of Breaks in Mitochondrial DNA Enhances Immune Surveillance
Agnel Sfeir, Memorial Sloan Kettering Cancer Center, USA

04:20 pm – 06:40 pm

Recorded Short Oral Presentations of Day 1

Differential Expression of Mitochondrial Transcriptome in Equine Melanoma
Eric Barrey, INRAE, France

Drp1 Regulates Nucleoid Segregation by Modulating the Endoplasmic Reticulum Structure
Hema Saranya Ilamathi, University of Quebec in Trois-Rivieres, Canada

Mitophagy Mitigates Fatty Acid B-Oxidation (FAO) Deficient Cardiomyopathy
Nuo Sun, The Ohio State University, USA

Fumarylacetoacetate Hydrolase Domain Containing Protein 1 (FAHD1) Acts as a Regulatory Enzyme in the TCA Cycle, and Genetic Inactivation of FAHD1 Induces Mitochondrial Dysfunction
Alexander K.H. Weiss, University of Innsbruck, Research Institute for Biomedical Aging Research, Austria

cGAS-STING-Dependent Interferon Signaling in a Mitochondrial Disease
Alice Lepelley, Institut Imagine, France

MRE11-Dependent Instability in Mitochondrial DNA Fork Protection Activates a cGAS Immune Signaling Pathway
Katharina Schlacher, UT MD Anderson Cancer Center, USA

Evidence of Nuclear Expression of Mitochondrial Protease Lonp1 in Colorectal Cancer
Marcello Pinti, University of Modena and Reggio Emilia, Italy

Mitochondrial Metabolic Profiles of Lymphoblasts Obtained from ALS Patients with or without Known SOD1 Mutations
Teresa Cunha-Oliveira, CNC, Center for Neuroscience and Cell Biology, Portugal

Cross Talk of Mitochondrial Calcification and Inflammation in Human Skeletal Muscle Cells: Implications for Calcinosis
Bhargavi Duvvuri, University of Washington, USA



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A New Mitochondrial MRGE Receptor Mediates ACE2/ Ang1-7 Effects in Dopaminergic Neurons

Rita Valenzuela, University of Santiago de Compostela, Spain

The Balance Between Mitophagy and Mitochondrial Biogenesis is Required for Neuroprotection Induced by Ischemic Brain Preconditioning

Maria Josè Sisalli, University of Naples "Federico II", Italy

Impaired Assembly of Mitochondrial Complex III and Combined Respiratory-Chain Disturbances in Patient with Novel Homozygous Mutation P. Gly222Ala in UQCRC2

Daniela Burska, Charles University; General University Hospital, Czech Republic

Novel Cytotoxic Compounds Targeting Mitochondria

Alaa Al Assi, Université Grenoble Alpes, France

Live Metabolic Profile Analysis as a Tool to Assess Changes in Mitochondrial Bioenergetics Associated with Oocyte Aging

Giovanna Di Emidio, University of L'Aquila, Italy

Poster Presentations

All poster presentations will be available on the platform on October 27 & 28

Effect of Mutations in the TBC1D24 Protein Associated with Doors Syndrome on Mitochondrial Dynamics

Sara Benhamouda, University of Quebec at Trois-Rivières, Canada

Near Infrared Low-Level Light Improves Quality of Platelets In Vitro

Ido Bontekoe, Sanquin Blood Bank, The Netherlands

Functional Platelet-Derived Mitochondria Induce the Release of Neutrophil Microparticles

Luc Boudreau, Université de Moncton, Canada

Beneficial Effects of the Ketogenic Diet on Cardiac and Hepatic Mitochondrial Functions in Obese Mice Model

Anouk Lina Charlot, University of Strasbourg, France

Sub-Population of Human Monocytes with Reduced Mitochondrial Membrane Potential is Associated with Presence of Atherosclerotic Plaques

Egor Chegodaev, Institute of General Pathology and Pathophysiology, Russian Federation

The Mitochondrial Network is Altered in Friedreich's Ataxia Cardiomyopathy

Bojjibabu Chidipi, University of South Florida, United States of America

Actin Polymerization Regulates Cancer Stem Cell Metabolism and Mitochondrial Dynamics

Priya Gatti, Université du Québec à Trois-Rivières Québec, Canada

Prenatal Factors Influencing Long-Term Bioenergetics in Children with Autism

Julia Eleonora Ghering, University of Arizona, USA

Disease Causing-MFN2 Mutations Alter Mitochondrial Fusion and Fission Dynamics in Mouse Embryonic Fibroblast

Daniel Lagos, Pontificia Universidad Católica de Chile, Chile



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OPA1 Disease-Causing Mutants Alter Mitochondrial Nucleoid Dynamics

Josefa Macuada, Pontificia Universidad Católica de Chile, Chile

Studying the Relationship of Parameters Associated with the Development of Atherosclerosis and the Presence of Mutations in the Mitochondria of Monocytes Isolated from Patients with Overweight

Yuliya Markina, Institute of General Pathology and Pathophysiology, Russia

Effect of Nicotinamide Mononucleotide Preconditioning and Melatonin Postconditioning on the Expression of Proteins Regulating Mitochondrial Dynamics in Myocardial Ischemia/Reperfusion Injury of Aged Rats

Behnaz Mokhtari, Tabriz University of Medical Sciences, Iran

The Role of MDR-1 and Sirtuins in Maintaining Oocyte Quality and Mitochondrial Physiology

Dalileh Nabi, Charité, Germany

Pro-Inflammatory State of Atherosclerotic Patients Monocytes is Associated with Increased Intracellular Cholesterol Level and Mitochondrial Activity

Nikita Nikiforov, Institute of General Pathology and Pathophysiology, Russia

Using Polypeptide-Based Nanoconjugates as Mitochondrially-Targeted Drug Delivery Platforms

Camilla Pegoraro, Centro de Investigacion Principe Felipe, Spain

The Mitochondrial NME6 Protein is Enzymatically Inactive but Interacts with RCC1L (WBSCR16) in the Matrix Space

Bastien Proust, Ruder Boskovic Institute, Croatia

Morphological Profiling of Small Molecules Identifies Mitochondria-Related Phenotype

Soheila Rezaei Adariani, Max Planck Institute of Molecular Physiology, Germany

Functional Characterization of Platelet-Derived Mitochondria-Containing Microparticles in Breast Cancer

Vanessa Veilleux, Université de Moncton, Canada

Presence of mtDNA Mutations in THP1-Based Cybrid Cells is Associated with Dramatical Changes in the Formation of LPS-Induced Immune Tolerance

Alexandr Dmitrievich Zhuravlev, Institute of General Pathology and Pathophysiology, Russian Federation

5:00 pm – 7:00 pm Paris time

Interactive Live Discussion & Networking of Day 1

Dedicated to Questions & Networking with All Speakers

End of the First Day



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– Day Two –

Friday, October 29, 2021

Session 3 – The Challenge of Qualitative and Quantitative Assessment of Mitochondrial Function

Chairwoman: Carole Nicco

09:00 am
Recorded



Introduction Remarks: Mitochondria Function 2021 - Past, Present and Future
Egbert Mik, University Medical Center Rotterdam, The Netherlands

Session 4 – Nuclear-Mitochondrial Interactions and their Effect on Longevity and Health

Chairpersons: Carole Nicco, Charareh Pourzand, Carsten Culmsee

09:30 am
Live



Introduction & Presentation of Session
Miria Ricchetti, Team Stability of Nuclear and Mitochondrial DNA, Institut Pasteur, France

09:55 am
Recorded



Deciphering Strategic Interactions between Mitochondrial and Nuclear Genome
José Antonio Enriquez, Centro Nacional de Investigaciones Cardiovasculares Carlos III, Spain

10:20 am



Optimization of Energy Homeostasis in Old Age by SIRT6
Haim Cohen, Head of the Molecular Mechanism of Aging Laboratory at Bar-Ilan University, Israel

10:45 am
Live



The Mitochondriotropic DecylITPP Group Lowers Mitochondrial OXPHOS Supercomplex Levels and Induces a Glycolytic Switch
Werner Koopman, Radboud University Medical Center, The Netherlands

11:10 am
Recorded



A Potential Mitochondrial Link Between Life Stress and the Reversibility of Hair Greying in Humans
Martin Picard, Associate Professor of Behavioral Medicine at Columbia University Vagelos College of Physicians and Surgeons, USA



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Session 5 – Strategies to Target Mitochondria: Clinical Trials and Potential Mitochondria-based Therapies

Chairman: *Alessandro Prigione*

11:35 am
Live



Patient-Specific Brain Organoids for Modeling Mitochondrial Diseases
Alessandro Prigione, Heinrich Heine University, Germany

12:00 pm
Recorded



The Extracellular Mitochondria for Therapy and Diagnosis in Stroke
Kazuhide Hayakawa, Assistant Professor at Harvard Medical School/ Massachusetts General Hospital, USA

12:25 pm

Lunch Break

12:40 pm
Recorded



Mitochondrial Transplantation Therapy, the Recent Advances and Perspective
James McCully, Harvard Medical School Department of Cardiac Surgery Boston Children's Hospital, USA

01:05 pm
Live



Programmable Synthetic Gene Switches for Mitochondrial Gene Modulation
Ganesh Pandian Namasivayam, Kyoto University, Institute for Advanced Study, Japan

01:30 pm
Recorded



A Mitochondria-Targeted Caffeic Acid Derivative Reverts Cellular and Mitochondrial Defects in Human Skin Fibroblasts from Male Sporadic Parkinson's Disease Patients
Paulo J. Oliveira, University of Coimbra, Portugal

01:55 pm
Recorded



Clinical Application of Antioxidants to Improve Human Oocyte Mitochondrial Function: Advances and Perspective
Cristina Rodríguez-Varela, Medical Research Institute Hospital La Fe (IIS La Fe) in Valencia, Spain

02:20 pm

Coffee Break



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02:30 pm – 04:00 pm

Recorded Short Oral Presentations of Day 2

The Neuroprotective Potential of Novel Mitochondria-Targeted Iron Chelators Against Oxidative Cell Death in a Cell Model of Parkinson's Disease

Charareh Pourzand, University of Bath, United Kingdom

Transplantation of Muscle Stem Cell-Derived Mitochondria Rejuvenates the Bioenergetic Function of Aged Host Muscle

Young Charles Jang, Georgia Institute of Technology, USA

Urolithin A Improves Muscle Strength and Impacts on Biomarkers of Mitochondrial Health in Humans

Davide D'amico, Amazentis SA, Switzerland

Novel Method for Evaluating Cardiolipin as a Potential Molecular Drug Target and its Quantitative Analysis

Pavels Dimitrijevs, Latvian Institute of Organic Synthesis, Latvia

Plasma Mitochondrial Complex I Activity and Outcome of Rats with Blast TBI and Pyruvate Treatment

Pushpa Sharma, Uniformed Services University, USA

Protein Replacement Therapy for Mitochondrial Genetic Diseases

Haya Lorberboum-Galski, Hebrew University of Jerusalem, Israel

Mitochondrial Quality Check: Secretion of Mitochondrial Derived Vesicles as a Novel Mechanism of Chemoresistance

Flora Guerra, University of Salento, Italy

Mitochondrial RNA 5-Methylcytosine Drives Metabolic Reprogramming Required for Metastasis

Sylvain Delaunay, German Cancer Research Center, Germany

Impact on Mitochondrial Function by Increased Levels of Mitochondrial RNA Polymerase

Inge Kuhl, Université Paris-Saclay, France

5:00 pm – 7:00 pm Paris time

Interactive Live Discussion & Networking of Day 2

Dedicated to Questions & Networking with All Speakers

Concluding Remarks and Scientific & Innovations Awards

End of Targeting Mitochondria 2021