



# XVII International Magnesium Symposium

## MAGNESIUM IN HEALTH AND DISEASE



Grottaferrata (Roma, Italy) – Park Hotel Villa Grazioli  
5-6 September 2024

### SCIENTIFIC PROGRAM

(Central European Time)

## Thursday, September 5<sup>th</sup>, 2024

08:30 – 08:45 Registration / Connection

### 08:45 - 09:00 Welcome Remarks

**Federica I Wolf**

*UniCamillus International Medical School, Rome, Italy*

09:00 - 09:20

### INTRODUCTORY LECTURE

**Cannabinoids inhibit TRPM7 and protect from kidney fibrosis**

**Andrea Fleig - online presentation**

*University of Hawaii, Cancer Center, Honolulu, Hawaii, USA*

**09:20 - 11:10**

### SESSION 1 Magnesium measurements and requirements

Chairmen:

**Stefano Iotti** (Bologna, Italy)

**Andrzej Mazur** (Clermont-Ferrand, France)

09:20 - 09:40

**Essential role of Mg<sup>2+</sup> and TRPM7 for pre-implantation embryo development in the mouse**

**Rafael Fissore**

*Veterinary Department, University of Massachusetts, NJ, USA*

09:40 - 10:00

**Aza-crown Fluorescent Derivatives: the Royal Family for Total Magnesium Detection**

**Giovanna Farruggia**

*Department of Biotechnological Sciences, University of Bologna, Italy*

10:00 - 10:30

### Oral Communications

10:00 - 10:10

**OC01**

**From Mirage to Reality: an Improved Mg Assay to Assess Magnesium Modulation in Young and Senescent Bone Marrow Mesenchymal Stem Cells**

**Lorenzo Anconelli<sup>1</sup>, Isabella Zafferi<sup>2</sup>**

*<sup>1</sup>Department of Pharmacy and Biotechnology, University of Bologna, Italy*

*<sup>2</sup>Department of Biomedical and Clinical Sciences, University of Milano, Italy*

**Chair:** Federica I Wolf (Roma, Italy)

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**10:10 - 10:20**                    **OC02**  
**Deciphering the Physiological Repartition of Magnesium Forms across a Large Patient Cohort**  
**Guillaume Grzych**  
*CHU Lille, Service d'Endocrinologie, Métabolisme, Nutrition, Oncologie, Lille, France*

**10:20 - 10:30**                    **OC03**  
**Evaluation of Magnesium Absorption: a Novel Experimental Model to Test Absorption of Magnesium Containing Compounds**  
**Isabelle Guinobert - *online presentation***  
*PiLeJe Laboratoire, Paris, France*

**10:30 - 10:50**                    *Coffee / Tea Break*

**10:50 - 11:10**                    **New approach to Magnesium Measurements**  
**Daniela Buccella - *online presentation***  
*Biomedical Chemistry Institute New York University, NY, USA*

## **11:10 – 12:40**                    **SESSION 2: Magnesium Transporters**

**Chairmen:**                    **Vladimir Chubanov** (*Munich, Germany*)  
**Valentina Trapani** (*Rome, Italy*)

**11:10 - 11:30**                    **Regulatory mechanisms of TRPM7**  
**Vladimir Chubanov**  
*Pharmacology & Toxicology Dept., Ludwig Maximilians University, Munich, Germany*

**11:30 - 11:50**                    **Cellular Regulators of the TRPM7 Channel**  
**Loren Runnels**  
*Dept. of Pharmacology, Rutgers Robert Wood Johnson Medical School, Piscataway, NJ, USA*

**11:50 - 12:10**                    **TRPM6 and TRPM7 kinases**  
**Alexej G Ryazanov**  
*Dept. of Pharmacology, Rutgers Robert Wood Johnson Medical School, Piscataway, NJ, USA*

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**12:10 - 12:50 Oral Communications**

**12:10 - 12:20**

**OC04**

**Voltage-Dependent and Independent Inhibitors of TRPM7: Recent Findings**

**J. Ashot Kozak - *online presentation***

*Department of Neuroscience, Cell Biology and Physiology, Boonshoft School of Medicine, Wright State University, Dayton, OH, USA*

**12:20 - 12:30**

**OC05**

**Regulatory Mechanisms of TRPM7**

**Leonor Correia, Alexey Shalygin**

*Walther-Straub Institute of Pharmacology and Toxicology, LMU Munich, Munich, Germany*

**12:30 - 12:40**

**OC06**

**TRPM7 kinase domain regulates pancreatic cancer cell migration and *in vivo* tumor growth**

**Mathieu Gautier**

*Université de Picardie Jules Verne, UR-UPJV 4667, Amiens, France*

**12:40 - 12:50**

**OC07**

**ERMA (TMEM94) is a P-type ATPase Transporter for Mg<sup>2+</sup> Uptake in the Endoplasmic Reticulum**

**Madesh Muniswamy - *online presentation***

*Department of Medicine, Center for Mitochondrial Medicine, University of Texas Health San Antonio, San Antonio, USA*

**12:50 - 13:50**

*Lunch Break*

**13:50 - 14:50**

**SESSION 3 Magnesium Translational Research**

**Chairmen:**

**Jeanette AM Maier (Milano, Italy)**

**Federica I Wolf (Rome, Italy)**

**13:50 - 14:10**

**The role of claudins in paracellular transport of magnesium in the kidney**

**Pascal Houillier**

*Centre de Recherche des Cordeliers, INSERM, Université Paris Cité, Paris, France*

**14:10 - 14:30**

**Exploring the Therapeutic Role of Magnesium Transporter CNNM4 in Regulating the Repair Activity of Protein-L-Isoaspartyl-O-Methyltransferase in Alcohol-Induced Liver Injury**

**Malu Martinez Chantar**

*Liver Disease Lab, Center for Cooperative Research in Biosciences, Basque Research and Technology Alliance, Derio, Spain*

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- 14:30 - 14:50**      **Role of Magnesium and TRPM Channels in Pancreatic Islets**  
**Thomas Gudermann**  
*Walther Straub Inst. of Pharmacology & Toxicology, Faculty of Medicine, Munich, Germany*
- 14:50 – 15:20**      **Oral Communications**
- 14:50 - 15:00**      **OC08**  
**The SGLT2 Inhibitor Dapagliflozin Increases Magnesium Transport in an in Vitro-Generated Intestinal Barrier**  
**Elisabetta Turci**  
*Department of Biomedical and Clinical Sciences, Università di Milano, Milano, Italy*
- 15:00 - 15:10**      **OC09**  
**A New In Vitro Human BBB-Brain Organoids Model to Study the Role of Mg In Brain Development**  
**Giorgia Fedele**  
*Department of Biomedical and Clinical Sciences, University of Milan, Italy*
- 15:10 - 15:20**      **OC10**  
**Low Level Hyperexcitability Induced by Chronic Magnesium Deficiency**  
**Marija Stanojević**  
*University of Belgrade, Faculty of Medicine, Institute for Pathological Physiology „Ljubodrag Buba Mihailović”, Belgrade, Serbia*
- 15:20 - 15:40**      *Coffee / Tea Break*
- 15:40 - 17:00**      **SESSION 4 Magnesium time: from the origin of life to circadian rhythm and metabolism regulation**
- Chairmen:**      ***Stefano Iotti*** (Rome, Italy)  
***Jeanette AM Maier*** (Milano, Italy)
- 15:40 - 16:00**      **A Return to the Regulation of Mammalian Mg<sup>++</sup> Circadian Rhythm Levels by the PTP4A2 Protein and its Partners**  
**Michel L. Tremblay - *online presentation***  
*Dept. of Biochemistry, Rosalind and Morris Goodman Cancer Research Centre - McGill University, Montreal, QC, Canada*
- 16:00 - 16:20**      **The Regulation and Functional Consequences of Circadian Magnesium Rhythms in a Minimal Eukaryotic Model Cell**  
**Gerben van Ooijen**  
*School of Biological Sciences, University of Edinburgh, UK*

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- 16:20 - 16:40**      **Magnesium: the Joker of Metabolism**  
**Roberta Cazzola**  
*Department of Biomedical and Clinical Sciences, University of Milano, Italy*
- 16:40 – 17:00**      **Mg another Brick in the Wall of Life**  
**Stefano Iotti**  
*Department of Pharmacy and Biotechnology, University of Bologna, Italy*
- 17:00 - 17:20**      **HOT TOPIC**  
**Retrospective Association Studies: Benefits and Limitations**  
**Qi Dai**  
*Cancer Center Vanderbilt University, Nashville, NJ, USA*
- 19:00**                **Social Dinner (Villa Grazioli)**

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# Friday, September 6<sup>th</sup>, 2024

## 09:00 - 12:50 **SESSION 5 Magnesium in clinical setting – PART I**

Chairmen: **Jeroen de Baaij** (Nijmegen, NL)  
**Qi Dai** (Nashville, USA)

09:00 - 09:20 **The Vascular Biology of Mg and TRPM7 in Health and Disease**  
**Rhian M Touyz**  
*Research Institute of the McGill University Health Centre (RI-MUHC),  
Montréal, Québec, Canada*

09:20 - 09:40 **Mg, Mitochondria, and Heart Disease**  
**Samuel Dudley**  
*Lillelei Heart Institute, Minneapolis, MN, USA*

09:40 - 10:00 **The Role of MUC1 in Mg Homeostasis**  
**Evan Ray**  
*Renal-Electrolyte Div., University of Pittsburgh, PA, USA*

## 10:00 - 10:30 **Oral Communications**

10:00 - 10:10 **OC11**  
**Mucin 1 Stimulates TRPM6 Single Channel Activity and TRPM6 Cell Surface Abundance by Impairing Dynamin Dependent TRPM6 Endocytosis**  
**Matthias T.F. Wolf**  
*Department of Pediatrics, Pediatric Nephrology, UT Southwestern Medical Center, Dallas, TX, USA*  
*Department of Pediatrics, Pediatric Nephrology, University of Michigan, Ann Arbor, MI, USA*

10:10 - 10:20 **OC12**  
**Low Magnesium Induces Significant Metabolic Alterations in C2C12-derived Myotubes**  
**Sara Castiglioni**  
*Department of Biomedical and Clinical Sciences, Università di Milano, Milano, Italy*

10:20 - 10:30 **OC13**  
**Heat Stress Alters Mitochondrial Mg<sup>2+</sup> and Ca<sup>2+</sup> Levels in Mouse Myoblasts and Skeletal Muscle**  
**Yifan Chen – online presentation**  
*Department of Military and Emergency Medicine, Uniformed Services University, USA*

10:30 - 11:00 *Coffee / Tea Break*

**Chair:** **Federica I Wolf** (Roma, Italy)

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**Chairmen:** *Thomas Gudermann* (Munich, Germany)  
*Rhian Touyz* (Montreal, Canada)

**11:00 - 11:20** **Novel Genetic Causes of Hypomagnesemia**  
**Jeroen De Baaij**  
*Radboud Institute for molecular life sciences, Nijmegen, the Netherlands*

**11:20 - 11:30** **Oral Communication**  
**OC14**  
**“Hipofam: from the hypomagnesemic patient’s voice”**  
**Antonio and Susana Cabrera Cantero**  
*Hipofam Association, Barcelona, Spain*

**11:30 - 11:50** **Sodium-Glucose Cotransporter 2 Inhibition, Epidermal Growth Factor, and Magnesium Homeostasis: is there a Link?**  
**Chintan V. Shah**  
*University of Florida – College of Medicine, Gainesville FL, USA*

**11:50 - 12:10** **The Missing Puzzle Piece: Insulin Receptor Substrate 4 Mediates the Insulin Effect on TRPM6**  
**Matthias Wolf**  
*University of California, San Francisco, USA*

**12:10 - 12:30** **The Pharmacologist Point of View**  
**Giorgio Minotti**  
*Campus Biomedico University, Rome, Italy*

**12:30 - 13:30** *Lunch Break*

## **13:30 - 15:00** **SESSION 6 Magnesium in clinical setting - Part II**

**Chairmen:** *Valentina Trapani* (Rome, Italy)  
*Federica I Wolf* (Rome, Italy)

**13:30 - 13:50** **Magnesium Intake and Pregnancy Outcomes: Findings from the nuMoM2b Study**  
**Ka Kahe - online presentation**  
*Department of Obstetrics and Gynecology and Department of Epidemiology, Columbia University, USA*

**13:50 - 14:10** **Intestinal Barrier: a Breach in the Wall**  
**Valentina Petito**  
*Department of Translational Medicine and Surgery, Università Cattolica del Sacro Cuore, Roma, Italy*

**Chair:** *Federica I Wolf* (Roma, Italy)

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- 14:10 - 14:30**      **Mg<sup>2+</sup> Supplementation Treats Secretory Diarrhea in Mice by Activating Calcium-sensing Receptor in Intestinal Epithelial Cell**  
**Onur Cil - *online presentation***  
*Department of Pediatrics, UCSF, San Francisco, California, USA*
- 14:30 - 15:20**      **Oral Communications**
- 14:30 - 14:40**      **OC15**  
**Magnesium Content and Release from Nationally Representative Adult and Children's Calcium ± Vitamin D Dietary Supplements (DS)**  
**Pavel A. Gusev - *online presentation***  
*Methods and Application of Food Composition Laboratory (MAFCL), USDA, Beltsville, USA*
- 14:40 - 14:50**      **OC16**  
**Hypomagnesaemia In High Serum Triglycerides Patients May Determine An Increase of some Atherosclerosis Risk Factors and Inflammation in Cardiovascular Disease**  
**Ioan Axente Gutiu**  
*Carol Davila University of Medicine and Pharmacy-Bucharest, Romania*
- 14:50 - 15:00**      **OC17**  
**New Data on Ionized Magnesium**  
**Klaus Kisters**  
*Med. University Policlinic, Münster, Operasan Dialysis Centre, Herne, Society for Magnesium Research, Tutzing, Germany*
- 15:00 - 15:10**      **OC18**  
**Magnesium in Oncology – Update 2024**  
**Oliver Micke**  
*Dept of Radiotherapy, Radiation Oncology, Franziskus Hosp., Bielefeld, Germany*
- 15:10 - 15:20**      **OC19**  
**Absence of Allergic Manifestations after Oral Magnesium Supplementation in Patients with Essential Hypertension**  
**Nikolina Banjanin**  
*University of Belgrade, Faculty of Medicine, Institute of Hygiene and Medical Ecology, Belgrade, Serbia*
- 15:20 - 15:30**      *Coffee / Tea Break*

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## **15:30 - 16:30**      **SESSION 7 Magnesium in alloys**

**Chairmen:**            ***Jeanette AM Maier*** (Milano, Italy)  
***Andrzej Mazur*** (Clermont, France)

**15:30 – 15:50**            **The Role Magnesium Plays as an Implant Material and how we might use it in the Future to Tailor Tissue Regeneration after Accident or Surgery**  
**Regine Willumeit – Roemer**  
*Helmholtz-Zentrum hereon GmbH, Geesthacht, **Germany***

**15:50 - 16:10**            **TITLE TBD**  
**Frank Witte**  
*Institute for Biomechanics and Musculoskeletal Regeneration at Charité – Universitätsmedizin Berlin, **Germany***

## **16:10 - 16:30**      **Award Nomination and Closing Ceremony**

**Chairmen:**            ***Andrzej Mazur*** (Clermont-Ferrand, France)  
***Federica I Wolf*** (Rome, Italy)

**Chair:** ***Federica I Wolf*** (Roma, Italy)

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