

Curriculum vitae

Personal Information:

Name: **Andras T. MESZAROS, MD, PhD**
Place and date of birth: Budapest, Hungary, 22.11.1987
Institutional address: Oroboros Instruments
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Occupation:

12.2017-: **Chief Research Officer** (Oroboros Instruments, Innsbruck, Austria)
04.2017-: **Postdoctoral Researcher** (Oroboros Instruments, Innsbruck, Austria)
2016-: **Assistant professor** (University of Szeged, Faculty of Medicine, Institute of Surgical Research)
2015-2016: **Assistant research fellow** (University of Szeged, Faculty of Medicine, Institute of Surgical Research)
2012-2015: **PhD student** (University of Szeged, Faculty of Medicine, Institute of Surgical Research)

Education:

2012-2017: **PhD** ("summa cum laude")
University of Szeged, Faculty of Medicine, Doctoral School of Multidisciplinary Medical Sciences
Thesis: "Methane bioactivity and interactions with other biological gases"
Supervisors: Prof. Mihaly Boros, Szeged, Hungary
Prof. Andrey V. Kozlov, Vienna, Austria
2006-2012: **MD** (medical doctor, "cum laude")
University of Szeged, Faculty of Medicine

Research activities:

04.2017-: **Postdoctoral researcher**
Oroboros Instruments, Innsbruck, Austria (Prof. Erich Gnaiger)
Topic: - Closed-chamber oxygen kinetics in isolated mitochondria and small cells
- Effects of small gaseous molecules (NO, CH₄) on mitochondria
- Research and development: software and hardware applications
- Inter-laboratory proficiency test development in respirometry
2012-2017: **PhD thesis**
University of Szeged, Institute of Surgical Research, Laboratory of Circulation Research (Prof. Mihaly Boros)
Topic: - Mitochondrial dysfunction during hypoxia and reoxygenation
- Endomicroscopic characterization of small intestinal epithelial injury
- Non-occlusive mesenteric ischemia

2014-: **Collaboration projects during the PhD (visiting scientist)**
Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, research group: Molecular basis of organ failure (Prof. Andrey V. Kozlov)

Topic: - Systemic inflammatory response syndrome
- Mitochondria targeted antioxidant treatment
- Reactive oxygen and nitrogen species – electron paramagnetic resonance spectroscopy

2008-2012: **Student researcher**
University of Szeged, Institute of Surgical Research, Laboratory of Circulation Research (Prof. Jozsef Kaszaki)

Topic: - Endothelin-A antagonist treatment in peritoneal sepsis in rats
- Effects of methane treatment after mesenteric ischemia-reperfusion injury in rats

Experimental skills:

FELASA (Federation of European Laboratory Animal Science Associations) level “C” certificate

Animal models:

Mouse (cecal ligation and puncture)

Rat (occlusive and non-occlusive mesenteric ischemia, endotoxin model of SIRS)

Vietnamese minipig (surgical procedures: GI system, tracheostomy, etc.)

Assessment of mitochondrial function:

High-Resolution Fluorespirometry, closed-chamber oxygen kinetics

Assessment of reactive oxygen and nitrogen species measurement by means of fluorescent and non-fluorescent methods

Membrane potential and swelling measurements

Macrohemodynamics - monitoring

Microcirculation measurements (laser doppler, intravital videomicroscopy)

EPR spectroscopy (room temperature and liquid nitrogen measurements of cells, tissue samples with and without various spin traps)

In vivo and ex vivo histopathology (fluorescent laser scanning endomicroscopy, micrographs)

In vivo small intestinal epithelial permeability measurements

Microsurgical procedures (end-to-end and end-to-side anastomosis, nerve suture)

Teaching experience:

2017- Co-supervision of one PhD student (Marie Skłodowska-Curie action TRANSMIT, Oroboros Instruments)

2016- Tutor at IOC courses on High-Resolution Fluorespirometry

2014- (1x per year) Organizer and tutor: Laparoscopy training course at the conferences of Young Surgeons in Hungary

2012- Supervisor of student researchers (8 students),

2012- High-fidelity endoscopic simulators (teaching and demonstration for medical students)

2012- Tutor at the 4-week compulsory training for residents in surgery

2012- Tutor: *Surgical techniques, Basic and advanced surgical skills* for medical students and dentistry students

2010-2012 Student tutor: *Surgical techniques, Basic and advanced surgical skills* for medical students

Study trips, one-semester study programs, short courses:

21-18.11.2016	COST Action MitoEAGLE, Short-term scientific mission Oroboros Instruments, Innsbruck, Austria
04.2014-06.2015	Campus Hungary Research Grants in Austria
09-14.10.2013	IOC80 80 th OROBOROS O2k-Workshop on HRR and O2k-Fluorometry., Schröcken, Austria
19-23.09.2013	IOC79 O2k-Workshop on High-Resolution Respirometry: O2k-Fluorometry, Oberurgl, Austria
08-09.2013 (2 weeks)	Department of Immunology, Nagoya City University, Nagoya, Japan
06.2013 (2 weeks)	Faculty of Medicine, RTWH Aachen University, Aachen, Germany
11.2011-02.2012 (4 months)	ERASMUS LLP clinical practice Medical University of Innsbruck, Austria University Hospital for Visceral, Transplant and Thoracic Surgery University Hospital for Internal Medicine I
12-15.10.2011	29 th International Practical Seminar in Microsurgery of Vessels and Nerves, Timisoara, Romania
2011.02-04 (4 months)	ERASMUS LLP one semester Medical University of Vienna, Austria
2010.10 (2 weeks)	Medical University of Göttingen, Germany Friedrich Schiller University Jena, Germany
2008.10 (1 week)	Friedrich Schiller University Jena, Germany

Language skills:

Hungarian (mother language)
German (proficient user)
English (proficient user)

Society memberships:

European Shock Society
European Society for Free Radical Research
Mitochondrial Physiology Society
Hungarian Surgical Society
Hungarian Physiological Society
Hungarian Hemorheological Society

National and international collaborations (selected):

Andrey V. Kozlov (Vienna, Austria) – see under “Research activities”
Marcin F. Osuchowski (Vienna, Austria) – small animal models of sepsis research
Peter Dungal (Vienna, Austria) – effects of methane on human blood cells
Lars Gille (Vienna, Austria) – membrane fluidity measurements with EPR spectroscopy
Kalman Toth (Pecs, Hungary) – effects of methane on microrheological parameters of human erythrocytes
Laszlo Tretter (Budapest, Hungary) – mitochondrial function in enterocytes
Christos Chinopoulos (Budapest, Hungary) – ATP production and ANT activity measurement
Anthony L. Moore (Brighton, United Kingdom) – oxygen kinetics of alternative oxidases

Organisational work and successful grant applications:

Vienna-Szeged-Innsbruck meetings (2016 Vienna, 2018 Szeged)

Symposium: "Mitochondria and Reactive Oxygen Species in Health and Disease" (79th Meeting of the Hungarian Physiological Society 2015, Szeged)

Campus Hungary grants for PhD students

National Research Development and Innovation Office NFKI 120232 (2016-2020 for Mihaly Boros)

OeAD-TET Hungary (2017-2019 for Marcin F. Osuchowski and Jozsef Kaszaki)

Awards (selected):

Hungarian Medical Association of America Hungary Chapter, 4th Balatonfüred Meeting, Balatonfüred, Hungary, 2011. I. prize: The best presentation in Pulmonology, Anesthesiology and Intensive Care

Hungarian Physiological Society, Young Scientists Session Award. Debrecen, Hungary, 2012.

Hungarian Medical Association of America Hungary Chapter, 5th Balatonfüred Meeting, Balatonfüred, Hungary, 2012. I. prize: Excellence in Surgery-Anesthesiology-Pathology-Oncology-Otorhinolaryngology Award

ET-13 Travel Grant; Thirteenth International Conference On Endothelin, Tokyo, Japan, 2013

Best Poster Award, XVI. Congress of the European Shock Society, Cologne, Germany, 2015

Young Scientist Award, 39. Seminar der Österreichischen Gesellschaft für Chirurgische Forschung, Wagrain, Austria, 2015

Publications:

Book chapters:

1. Eszter Tuboly*, **András Mészáros***, Mihály Boros: Nonbacterial biotic methanogenesis, possible mechanisms and significance. *In: Methanogenesis: Biochemistry, Ecological Functions, Natural and Engineered Environments*. Badalians G.G. (ed.). Nova Science Publishers, Inc. NY, USA 2014, Chapter 2, pp. 19-49. ISBN 978-1-63321-567-2. ***equal contribution**
2. Carolina Doerrier, Luiz F. Garcia-Souza, Gerhard Krumschnabel, Yvonne Wohlfarter, **András T. Mészáros**, Erich Gnaiger: High-Resolution Fluorescence Respirometry and OXPHOS Protocols for Human Cells, Permeabilized Fibres from Small Biopsies of Muscle and Isolated Mitochondria. *In: Mitochondrial bioenergetics: methods and protocols*. Palmeira C. and Moreno A. (eds.) in press (2018)

Full papers published in peer-reviewed journals:

1. **Mészáros AT**, Büki T, Fazekas B, Tuboly E, Horváth K, Poles MZ, Szűcs Sz, Varga G, Kaszaki J, Boros M: Methane inhalation preserves the epithelial barrier during ischemia and reperfusion in the rat small intestine. *Surgery*, 2017 Jun;161(6):1696-1709. **IF: 3.904**
2. **Mészáros AT**, Szilágyi ÁL, Juhász L, Tuboly E, Érces D, Varga G, Hartmann P: Mitochondria As Sources and Targets of Methane. *Front Med (Lausanne)*, 2017 Nov 13;4:195.
3. Dumitrescu SD*, **Meszaros AT***, Puchner S, Weidinger A, Boros M, Redl H, Kozlov AV: EPR analysis of extra- and intracellular nitric oxide in liver biopsies. *Magn Res Med*, 2017 Jun;77(6):2372-2380. *** Equal contribution IF: 3.782**
4. Poles MZ, Bódi N, Bagyánszki M, Fekete É, Mészáros AT, Varga G, Szűcs Sz, Nászai A, Kiss L, Kozlov AV, Boros M, Kaszaki J: Reduction of nitrosative stress by methane: Neuroprotection through xanthine oxidoreductase inhibition in a rat model of mesenteric ischemia-reperfusion. *Free Rad Biol*

Med, in press. **IF: 5.606**

5. Tuboly E, Molnár R, Tókécs T, Turányi RN, Hartmann P, **Mészáros AT**, Strifler G, Földesi I, Siska A, Szabó A, Mohácsi Á, Szabó G, Boros M: Excessive alcohol consumption induces methane production in humans and rats. *Sci Rep*, 2017 Aug 4;7(1):7329 **IF: 4.259**
6. Kozlov AV, Lancaster JR Jr, **Meszaros AT**, Weidinger A: Mitochondria-mediated pathways of organ failure upon inflammation. *Redox Biol*, 2017 Oct;13:170-181. **IF: 6.337**
7. Rademann P, Weidinger A, Drechsler S, **Meszaros A**, Zipperle J, Jafarmadar M, Dumitrescu S, Hacobian A, Ungelenk L, Röstel F, Kaszaki J, Szabo A, Skulachev VP, Bauer M, Bahrami S, Weis S, Kozlov AV, Osuchowski MF: Mitochondria-Targeted Antioxidants SkQ1 and MitoTEMPO Failed to Exert a Long-Term Beneficial Effect in Murine Polymicrobial Sepsis. *Oxid Med Cell Longev*, 2017; 2017:6412682. **IF: 4.593**
8. Boros M, Tuboly E, **Mészáros A**, Amann A: The role of methane in mammalian physiology – is it a gasotransmitter? *J Breath Res*, 2015; 9: 014001 **IF: 4.177**
9. Strifler G, Tuboly E, Szél E, Kaszonyi E, Cao C, Kaszaki J, **Mészáros A**, Boros M, Hartmann P Inhaled methane limits the mitochondrial electron transport chain dysfunction during experimental liver ischemia - reperfusion injury. *PLoS One*, 2016;11(1):e0146363 **IF: 3.057**
10. Érces D, Nógrády M, Varga G, Szűcs S, **Mészáros AT**, Fischer-Szatmári T, Cao C, Okada N, Okada H, Boros M, Kaszaki J. Complement C5a inhibition improves late hemodynamic and inflammatory changes in a rat model of *non-occlusive* mesenteric ischemia. *Surgery*, 2016;159(3):960-71 **IF: 3.904**

> 60 conference presentations

2018-03-16