Christoph Magnes

Associate Researcher

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SCIENTIFIC & ACADEMIC CAREER

Since 2012	Head of Research Group Bioanalytics and Metabolomics, HEALTH, Joanneum Research
2005-2012	Head of mass spectrometry unit, HEALTH, JOANNEUM RESEARCH
2001-2005	Doctoral Thesis "Development of New Analytical Methods in Diabetes Research: Application Potential of Chromatographic Separation Techniques Coupled with Mass Spectrometry" University of Graz, Austria
1993-1999	Study of Chemistry, University of Graz, Austria

DESCRIPTION OF RESEARCH CONTRIBUTION WITHIN THE CLUSTER OF EXCELLENCE METAGE

C. Magnes and his research group has nearly 20 years of experience in mass spectrometry-based analysis of low molecular weight compounds in biological samples (metabolomics). The workflow for untargeted high-resolution mass spectrometry-based metabolomics from sample preparation to data processing is established. His research group developed the worldwide used software tool IPO (Isotopologue Parameter Optimization) for untargeted metabolomics data processing. In the past several years LC-MS/MS methods targeted to metabolites of polyamine metabolism and related substances were developed. A broad expertise in targeted and untargeted metabolomics using high resolution mass spectrometry or tandem mass spectrometry coupled to hydrophilic interaction liquid chromatography or ion pair reversed phase chromatography was gained in several different research fields as for example cancer research, metabolism, gut-brain axis or flux analysis in yeast cells using U-13C-glucose. C. Magnes and his research group at JOANNEUM RESEARCH will contribute with high resolution mass spectrometry-based metabolomics and polyamine profiling in biological specimens to MetAge.

ADDITIONAL RESEARCH ACTIVITIES *(10 most important)*

2020-2025: Member of the IMI Project ImmUniverse (https://www.immuniverse.eu/), Innovative Medicines Initiative grant agreement No. 853995 with EU Horizon 2020 and EFPIA support.

2023-2026: TrisoTEE: FFG Bridge to develop new methods for total energy expenditure measurements using stable isotope tracer

2022-2024: Lead Project CrossFAT: CrossTalk Adipose Tissue / Glioblastoma (Funding Federal Ministry Republic Austria Climate Action, Environment, Energy, Moblity, Innovation and Technology)

2019-2023: PI of CBMed COMET Center K-Projekt funded project: Project 2.22B Next generation drug screening platform for precision oncology services

2019-2021: Lead Project TraceFATT-2 -Tracermethods for Investigations of Adipose Tissue Treatments (Funding Federal Ministry Republic Austria Climate Action, Environment, Energy, Moblity, Innovation and Technology)

2 granted patents

10 MOST IMPORTANT PUBLICATIONS

1. Eisenberg T, […], **Magnes C**, … Madeo F (**2016**). Cardioprotection and lifespan extension by the natural polyamine spermidine. **Nat Med**. 22(12): 1428–1438. doi: 10.1038/nm.4222.
2. **Magnes C.**, […], Eisenberg T, Madeo F, Pieber T, Sinner F (**2014**). Polyamines in biological samples: rapid and robust quantification by solid-phase extraction online-coupled to liquid chromatography-tandem mass spectrometry. **J Chromatogr A**. 28(1331): 44-51. doi: 10.1016/ j.chroma.2013.12.061.
3. Eisenberg T, […], **Magnes C,** … Madeo F (**2009**). Induction of autophagy by spermidine promotes longevity. **Nat Cell Biol**. 11(11): 1305–1314. doi: 10.1038/ncb1975.
4. Schroeder S, , […], **Magnes C,** … Madeo F **(2021)**. Dietary spermidine improves cognitive function. **Cell Rep.**35(2):108985. doi: 10.1016/j.celrep.2021.108985.
5. Stekovic S, , […], **Magnes C, …** Madeo F (**2020**). Alternate Day Fasting Improves Physiological and Molecular Markers of Aging in Healthy, Non-obese Humans. **Cell Metab.** 31(4):878-881. doi: 10.1016/j.cmet.2020.02.011.
6. Fritsch SD, […], **Magnes C,** … Weichhart T. (**2023**) Metabolic support by macrophages sustains colonic epithelial homeostasis. **Cell Metab.** 35(11):1931-1943.e8. doi: 10.1016/j.cmet.2023.09.010.
7. Vogel FCE, [...], **Magnes C, ...** Roesch A. (**2019**). Targeting the H3K4 Demethylase KDM5B Reprograms the Metabolome and Phenotype of Melanoma Cells. **J Invest Dermatol.**. 139(12): 2506–2516. doi: 10.1016/j.jid.2019.06.124.
8. Libiseller G, […], **Magnes C**. (**2015**). IPO: a tool for automated optimization of XCMS parameters **BMC Bioinformatics**. 16(118): doi: 10.1186/s12859-015-0562-8.
9. Paulus MG, Renner K, […], **Magnes C**, […] Dietl A. (2022). Tachycardiomyopathy entails a dysfunctional pattern of interrelated mitochondrial functions. **Basic Res Cadiol.** 117(1):45. doi: 10.1007/s00395-022-00949-0.
10. Zügner E, Yang H, Kotzbeck P, Boulgaropoulos B, Sourij H, Hagvall S, Elmore C, Esterline R, Moosmang S, Oscarsson J, Pieber T, Peng X, **Magnes C**. (2022), Differential In Vitro Effects of SGLT2 Inhibitors on Mitochondrial Oxidative Phosphorylation, Glucose Uptake and Cell Metabolism **Int J Mol Sci.** 23(14):7966 doi: 10.3390/ijms23147966