

Tobias Madl

Key Researcher

Division Medicinal Chemistry
Medical University of Graz

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SCIENTIFIC & ACADEMIC CAREER

since 2023	Full Professor (§98) and Head of Division Medicinal Chemistry, Medical University of Graz, Austria Speaker of the PhD program Molecular Medicine, Medical University of Graz, Austria
since 2022	Member of Senate, Medical University of Graz, Austria Speaker of the curriculum committee doctoral studies, Medical University of Graz, Austria Member and vice speaker of the working group habilitation, Medical University of Graz, Austria Head Research Unit Integrative Structural Biology, Medical University of Graz, Austria
since 2021	Speaker of the research field Metabolism and Circulation, Medical University of Graz, Austria Speaker of the PhD program BioMolStruct (FWF doc.fund)
since 2019	Coordinator of the Integrative Structural Biology Initiative Graz, Medical University of Graz, Austria
since 2016	Full Member of BioTechMed-Graz Faculty Member PhD Program Molecular Medicine, Medical University of Graz, Austria Head of the Integrative Metabolism Research Center <i>Venia docendi</i> (lecture qualification) in Molecular Biology
since 2015	Faculty Member Doctoral School Metabolic and Cardiovascular Diseases Visiting Professor, Fujian Institute of Research on the Structure of Matter (FJIRSM), Chinese Academy of Sciences, Xiamen, China
2021-2023	Full Professor (§99/4) in Integrative Structural Biology and Metabolomics, Medical University of Graz, Austria
2019-2021	Member of the research promotion committee, Medical University of Graz, Austria
2018-2023	Member of the strategy committee of the Gottfried Schatz Research Center, Medical University of Graz, Austria Coordinator of the Next Generation BioXray research infrastructure project
2015-2021	Associate Professor, Medical University of Graz, Austria
2014-2016	Member of the CIPSM excellence cluster, Munich, Germany
2013-2016	Member of the Junior Scientist Program (Tenure-Track position), Helmholtz Zentrum Munich, Germany
2012-2016	Emmy Noether research group leader, Helmholtz Zentrum Munich

2012	BioSysNet research group leader & TUM Junior Fellow, TU Munich APART fellow at Utrecht University, The Netherlands and University Graz, Austria
2010-2011	PostDoc with Prof. Rolf Boelens at Utrecht University, The Netherlands
2006	Visiting scientist at Bruker Biospin, Karlsruhe, Germany
2007-2010	PostDoc with Prof. Michael Sattler, Helmholtz Zentrum and TU Munich
2007	PostDoc with Prof. Klaus Zangger, University Graz, Austria
2006-2007	Industrial research for Sanochemia Pharmazeutika AG, Graz, Austria.
2003-2007	(Grant funded) industrial research for Biodiesel International Ltd., Graz, Austria.
2001-2004	Research assistant with Prof. Martin Mittelbach, University of Graz
1999-2000	Laboratory assistant, "Blocklabor II", Landeskrankenhaus Graz (hospital), Austria
2004-2007	PhD thesis, University of Graz, Austria
1998-2004	Studies of Chemistry, Physics and History (teachership), University of Graz, Austria

MAIN AREA OF RESEARCH

Tobias Madl is Professor and Head of Division Medicinal Chemistry at the Otto Loewi Research Center at the Medical University of Graz with broad expertise in integrative structural biology and metabolomics. In MetAGE the Madl lab will investigate the links between ageing and metabolism using cutting-edge targeted and untargeted NMR-based metabolomics. At the Integrative Metabolism Research Center (founded by T. Madl), T. Madl and his team established untargeted NMR-based metabolomics for a plethora of biological systems ranging from cell-based assays to in vivo model systems and patients, including, but not limited to, IVDr-SOPs, multivariate statistical analysis, identification of unknown compounds, and stable isotope tracing. Noteworthy, the Madl lab has recently studied age-related changes in metabolism and arginine methylation in mice and was able to identify a metabolite biomarker panel for ageing in a plethora of mouse tissues and plasm. In sum, this will allow the MetAGE consortium to connect molecular details of metabolic (dys)regulation in ageing with cellular metabolism, metabolism in animal models, and human metabolism.

ADDITIONAL RESEARCH ACTIVITIES (*10 most important*)

2005-present	Acquisition of more than 20 competitive third-party funded research grants (€ > 7 Mio)
Patents	WO/2023/180570 Phosphorylation of P53 as a prognostic or diagnostic marker for the treatment of senescent cells in a mammal
	WO/2021/165538 Improved anti-senescence compounds and uses thereof

Selected Presentations (*last 3 years*)

2023	Central European NMR Symposium (Prague, Czech Republic)
	13 th NMR a tool for Biology (Paris, France)
	Pregl lecture at National Institute of Chemistry (Kemijski inštitut), (Ljubljana, Slovenia)
2022	Symposium: Cellular mechanisms driven by phase separation (Heidelberg, Germany)
2021	Euromar (online)
	Protein Arginine Methylation: Recent advances in basic and translational studies (online)

Honors & Awards

2020	Outstanding performer at Medical University of Graz
2017	Research Prize of the Styrian Government
2015	President's International Fellowship of the Chinese Academy of Sciences (CAS) The Research Fellowship for International Young Scientists of the National Natural Science Foundation of China (NSFC)
2012	Science Award of the Austrian Chemical Society APART fellowship of the Austrian Academy of Sciences (ÖAW)
2008	PhD Prize of the Austrian Chemical Society EMBO Long Term Fellowship (LTF) Schrödinger Fellowship of the Austrian Science Fund (FWF)

10 MOST IMPORTANT PUBLICATIONS

1. Zhang F, Bischof H, Burgstaller S, Bourgeois BMR, Malli R, Madl T. Genetically encoded fluorescent sensor to monitor intracellular arginine methylation. **J Photochem Photobiol B**. 2024 Feb 15;252:112867. doi: 10.1016/j.jphotobiol.2024.112867.
2. Zhang F, Rakhimbekova A, Lashley T, Madl T. Brain regions show different metabolic and protein arginine methylation phenotypes in frontotemporal dementias and Alzheimer's disease. **Prog Neurobiol**. 2023 Feb;221:102400. doi: 10.1016/j.pneurobio.2022.102400.
3. Zhou Q, Kerbl-Knapp J, Zhang F, Korbelius M, Kuentzel KB, Vujić N, Akhmetshina A, Hörl G, Paar M, Steyrer E, Kratky D, Madl T. Metabolomic Profiles of Mouse Tissues Reveal an Interplay between Aging and Energy Metabolism. **Metabolites**. 2021 Dec 26;12(1):17. doi: 10.3390/metabo12010017.
4. Zhang F, Kerbl-Knapp J, Rodriguez Colman MJ, Meinitzer A, Macher T, Vujić N, Fasching S, Jany-Luig E, Korbelius M, Kuentzel KB, Mack M, Akhmetshina A, Pirchheim A, Paar M, Rinner B, Hörl G, Steyrer E, Stelzl U, Burgering B, Eisenberg T, Pertschy B, Kratky D, Madl T. Global analysis of protein arginine methylation. **Cell Reports Methods**. 2021 doi: 10.1016/j.crmeth.2021.100016
5. Bourgeois B, Gui T, Hoogeboom D, Hocking H, Richter G, Spreitzer E, Viertler M, Richter K, Madl T (lead corresponding author), Burgering BMT. Multiple regulatory intrinsically disordered motifs control FOXO4 transcription factor binding and function. **Cell Rep**. 2021 Jul 27;36(4):109446. doi: 10.1016/j.celrep.2021.109446. PMID: 34320339.
6. Bourgeois B, Hutten S, Gottschalk B, Hofweber M, Richter G, Sternat J, Abou-Ajram C, Göbl C, Leitinger G, Graier WF, Dormann D, Madl T. Nonclassical nuclear localization signals mediate nuclear import of CIRBP. **Proc Natl Acad Sci U S A**. 2020 Apr 14;117(15):8503-8514. doi: 10.1073/pnas.1918944117.
7. Göbl C, Morris VK, van Dam L, Visscher M, Polderman PE, Hartlmüller C, de Ruiter H, Hora M, Liesinger L, Birner-Gruenberger R, Vos HR, Reif B, Madl T (co-corresponding author), Dansen TB. Cysteine oxidation triggers amyloid fibril formation of the tumor suppressor p16INK4A. **Redox Biol**. 2020 Jan;28:101316. doi: 10.1016/j.redox.2019.101316.
8. Hartlmüller C, Göbl C, Madl T. Prediction of Protein Structure Using Surface Accessibility Data. **Angew Chem Int Ed Engl**. 2016 Sep 19;55(39):11970-4. doi: 10.1002/anie.201604788.

9. Lorenz OR, Freiburger L, Rutz DA, Krause M, Zierer BK, Alvira S, Cuéllar J, Valpuesta JM, Madl T (co-corresponding author), Sattler M, Buchner J. Modulation of the Hsp90 chaperone cycle by a stringent client protein. **Mol Cell**. 2014 Mar 20;53(6):941-53. doi: 10.1016/j.molcel.2014.02.003.
10. Karagöz GE, Duarte AM, Akoury E, Ippel H, Biernat J, Morán Luengo T, Radli M, Didenko T, Nordhues BA, Veprintsev DB, Dickey CA, Mandelkow E, Zweckstetter M, Boelens R, Madl T (co-corresponding author), Rüdiger SG. Hsp90-Tau complex reveals molecular basis for specificity in chaperone action. **Cell**. 2014 Feb 27;156(5):963-74. doi: 10.1016/j.cell.2014.01.037.