Curriculum Vitae

Univ.-Prof. Dr. med. univ. Alexander R. Moschen, PhD

Position in CoE: Member of the Board of Directors

Personal Details

Place of birth	Innsbruck, Austria
Nationality	Austrian
Children	3 (2009, 2010, 2013)
Affiliation:	Kepler University Hospital, Johannes Kepler University Linz
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Profile	ReseacherID: ABF-2267-2021
List of publications	ORCID: 0000-0003-3598-7848
Academic age	15 years since PhD

Research Institution

I am member of **the Faculty of Medicine at the Johannes Kepler University Linz**. Although primarily focused on gastroenterology and hepatology, my **Division of Internal Medicine** comprises four specializations, including **gastroenterology and hepatology, endocrinology and metabolism, rheumatology and nephrology**. The Division holds two wards with 61 beds, a large outpatient center, a dialysis center, and functional area for internal and interventional ultrasound. Relevant to this CoE, our Division hosts the Clinical Dietology and an interdisciplinary endoscopy center offering state-of-the-art endoscopy, integrating a **comprehensive and prospective human biobank** of host and microbial samples. Basic research is performed at the Center for Medical Sciences which also hosts my **Christian Doppler Laboratory for Mucosal Immunology**. Recently, I have been appointed as a **member of the Ethical Commission** of the Faculty of Medicine.

Academic Career and Positions Held

I **graduated in 2004** from the **Medical University Innsbruck**, Austria, with an intercalated MD thesis on the RANK/RANKL/OPG system in inflammatory bowel diseases. Three years of **postdoctoral training** were received in Professor Tilg's **Gastroenterology Research Laboratory** in Innsbruck. Subject of my PhD thesis was the impact of adipose tissue-derived mediators (adipocytokines) on inflammation and leukocyte biology. I completed my clinical training in Internal Medicine at the University Hospital Innsbruck. After my board exams, I accepted a 12 month employment as **Senior Clinical Fellow** in January 2012 at the **Department of Medicine of the Addenbrooke's Hospital**, **University of Cambridge** (UK). Returning to Innsbruck in 2013, I completed my **specialty training in Gastroenterology and Hepatology** and started my **own research group** and became head of the newly founded **Christian Doppler Laboratory for Mucosal Immunology** in January 2017. We are investigating mechanisms that underlie **inflammation** at the **intestinal mucosal surface** and particularly pathways that maintain a mutualistic relationship between the microbiota and the intestinal immune system. Since 2019 I am a member of the Competence Centre for Excellent Technologies (COMET) VASCage lead by Professor Dr. S. Kiechl where we are studying the impact of the gut microbiome on vascular health. Since 2018 I am **Head** of the working group for **Inflammatory Bowel Diseases of the Austrian Society of Gastroenterology and Hepatology**. Furthermore, I am First National Representative of the European Crohn's and Colitis Foundation. In 2020 I was appointed as **full professor** of **Internal Medicine** and Head of the Division of Internal Medicine 2 at Kepler University Hospital and Johannes Kepler University in Linz. The Kepler University Hospital is Austria's the second largest hospital.

Main Research Areas and Most Important Research Achievement

Main Research Areas. My training and professional life has always had two major complementary emphases, namely my **clinical activities** as specialist in internal medicine with a focus on gastroenterology and hepatology and **basic research** that has always been in informed and motivated by my special interest in inflammatory bowel diseases, mucosal immunology, and the gut microbiome. Thus, it spans a variety of topics including specific aspects of immunometabolism namely the NAD+ salvage pathway with the rate-limiting enzyme nicotinamide phosphoribosyl transferase (NAMPT). We also have a longstanding interest in mucosal lipocalin 2 (Lcn2). In 2016, we showed that mucosal Lcn2 interferes with luminal iron homeostasis during chronic intestinal inflammation. Deletion of Lcn2 results in an atypical dysbiosis during chronic inflammation, aggravation of intestinal inflammation, and increased cancerogenesis driven by specific bacteria such as Alistipes spp and Robinsoniella. A few years ago, we started to plan and to execute clinical study protocols aiming at studying short- and long-term impacts of nutritional and pharmacological factors including dietary soluble fiber, plant-derived polyphenols and anthocyanins, or combinations of antibiotics on the human gut microbiome and metabolome.

Scientific achievements. Since 2004, I have authored **121 publications** in leading medical and basic research journals. My articles have been **cited > 20,000 times** and my **h-factor is 56** (Google Scholar). My research has been mainly funded by **third party money** and I have raised numerous grants from the **Christian Doppler Research Society**, the **Österreichische Nationalbank**, the **Austria Research Promotion Agency**, and the **pharmaceutical industry** contributing for more than 1.5 million € for the research group. I received **numerous research prices** including the UEG rising star award (2014), the Paracelsus award (2016), the Otto-Kraupp-Award for Austria's prime professural thesis in medicine (habilitation, 2013), the Sanofi-Aventis Award (2011), the Scientific Award of the Capital City Innsbruck (2009), and the Falk award from the Austrian Society of Gastroenterology and Hepatology (Graz, Austria, 2005).

Contributions to CoE. I will contribute to this cluster with my expertise in **experimental and human microbiome** research. Specifically, we have access and are able to sample and **process luminal, mucosa-associated microbial and human samples** from the **small and large bowel**. Furthermore, we are experienced to conceptualize, to bring to **ethical approval**, and to execute human microbiome pilot studies. I will collaborate in several joint projects with other cluster members. These projects are related to: (i) The Small Intestine: an Underexplored Habitat with Implication for Human Health (lead: C. Moissl-Eichinger), (ii) Impact of Drugs on Microbiomes in Humans and Wastewater Treatment (lead: M. Wagner), (iii) Microbiome Modification by Fecal Microbiota Transplantation (lead: G. Gorkiewicz).

10 Most Important Publications (*relevant for the CoE)

1. *Texler, B.; Zollner, A.; Reinstadler, V.; Reider, S. J.; Macheiner, S.; Jelusic, B.; Pfister, A.; Watschinger, C.; Przysiecki, N.; Tilg, H.; Oberacher, H.; **Moschen, A. R.** Tofacitinib-Induced Modulation of Intestinal Adaptive and Innate Immunity and Factors Driving Cellular and Systemic Pharmacokinetics. *Cellular and Molecular Gastroenterology and Hepatology* **2022**, *13* (2), 383–404. *https://doi.org/10.1016/j.jcmgh.2021.09.004*.
2. Zollner, A.; Watschinger, C.; Rössler, A.; Farcet, M. R.; Penner, A.; Böhm, V.; Kiechl, S. J.; Stampfel, G.; Hintenberger, R.; Tilg, H.; Koch, R.; Antlanger, M.; Kreil, T. R.; Kimpel, J.; **Moschen, A. R.** B and T Cell Response to SARS-CoV-2 Vaccination in Health Care Professionals with and without Previous COVID-19. *EBioMedicine* **2021**, *70*, 103539. *https://doi.org/10.1016/j.ebiom.2021.103539*.
3. *Reider, S. J.; Moosmang, S.; Tragust, J.; Trgovec-Greif, L.; Tragust, S.; Perschy, L.; Przysiecki, N.; Sturm, S.; Tilg, H.; Stuppner, H.; Rattei, T.; **Moschen, A. R.** Prebiotic Effects of Partially Hydrolyzed Guar Gum on the Composition and Function of the Human Microbiota—Results from the PAGODA Trial. *Nutrients* **2020**, *12* (5), 1257. *https://doi.org/10.3390/nu12051257*.
4. *Gerner, R. R.; Klepsch, V.; Macheiner, S.; Arnhard, K.; Adolph, T. E.; Grander, C.; Wieser, V.; Pfister, A.; Moser, P.; Hermann-Kleiter, N.; Baier, G.; Oberacher, H.; Tilg, H.; **Moschen, A. R.** NAD Metabolism Fuels Human and Mouse Intestinal Inflammation. *Gut* **2018**, *67* (10), 1813–1823. *https://doi.org/10.1136/gutjnl-2017-314241*.
5. ***Moschen, A. R.**; Gerner, R. R.; Wang, J.; Klepsch, V.; Adolph, T. E.; Reider, S. J.; Hackl, H.; Pfister, A.; Schilling, J.; Moser, P. L.; Kempster, S. L.; Swidsinski, A.; Orth−Höller, D.; Weiss, G.; Baines, J. F.; Kaser, A.; Tilg, H. Lipocalin 2 Protects from Inflammation and Tumorigenesis Associated with Gut Microbiota Alterations. *Cell Host & Microbe* **2016**, *19* (4), 455–469. *https://doi.org/10.1016/j.chom.2016.03.007*.
6. *Ballak, D. B.; van Diepen, J. A.; **Moschen, A. R.**; Jansen, H. J.; Hijmans, A.; Groenhof, G.-J.; Leenders, F.; Bufler, P.; Boekschoten, M. V.; Müller, M.; Kersten, S.; Li, S.; Kim, S.; Eini, H.; Lewis, E. C.; Joosten, L. A. B.; Tilg, H.; Netea, M. G.; Tack, C. J.; Dinarello, C. A.; Stienstra, R. IL-37 Protects against Obesity-Induced Inflammation and Insulin Resistance. *Nat Commun* **2014**, *5* (1), 4711. *https://doi.org/10.1038/ncomms5711*.
7. ***Moschen, A. R.**; Molnar, C.; Geiger, S.; Graziadei, I.; Ebenbichler, C. F.; Weiss, H.; Kaser, S.; Kaser, A.; Tilg, H. Anti-Inflammatory Effects of Excessive Weight Loss: Potent Suppression of Adipose Interleukin 6 and Tumour Necrosis Factor Expression. *Gut* **2010**, *59* (9), 1259–1264. *https://doi.org/10.1136/gut.2010.214577*.
8. ***Moschen, A. R.**; Gerner, R.; Schroll, A.; Fritz, T.; Kaser, A.; Tilg, H. A Key Role for Pre-B Cell Colony-Enhancing Factor in Experimental Hepatitis. *Hepatology* **2011**, *54* (2), 675–686. *https://doi.org/10.1002/hep.24416*.
9. *Nairz, M.; Schroll, A.; **Moschen, A. R.**; Sonnweber, T.; Theurl, M.; Theurl, I.; Taub, N.; Jamnig, C.; Neurauter, D.; Huber, L. A.; Tilg, H.; Moser, P. L.; Weiss, G. Erythropoietin Contrastingly Affects Bacterial Infection and Experimental Colitis by Inhibiting Nuclear Factor-KB-Inducible Immune Pathways. *Immunity* **2011**, *34* (1), 61–74. *https://doi.org/10.1016/j.immuni.2011.01.002*.
10. ***Moschen, A. R.**; Kaser, A.; Enrich, B.; Mosheimer, B.; Theurl, M.; Niederegger, H.; Tilg, H. Visfatin, an Adipocytokine with Proinflammatory and Immunomodulating Properties. *J Immunol* **2007**, *178* (3), 1748–1758. *https://doi.org/10.4049/jimmunol.178.3.1748*.