Biosketch

Assoc.-Prof. Priv. Doz. Gregor Gorkiewicz, M.D.

Position in CoE: Key Researcher

Personal Details

Place of birth	Graz, Austria
Nationality	Austrian
Children	5 (1992, 1998, 2001, 2005, 2010)
Affiliation:	Medical University of Graz
E-Mail	gregor.gorkiewicz@medunigraz.at
Profile	ResearcherID: ABF-1602-2021
List of publications	ORCID: 0000-0003-1149-4782
Academic age	22 years since MD

Academic Career and Positions Held

I studied **human medicine** at the **Karl-Franzens University** of Graz (KFUG) and graduated in **1999**. Thereafter, I worked as a **PostDoc** in the **Inst. of Molecular Biology** (KFUG) establishing an independent **research group** focused on bacterial pathogens and was appointed **visiting professor** at KFUG. After a specialist training in **medical microbiology** and **internal medicine**, I completed my residency/**fellowship in pathology** and received my **board certification** in 2010. From 2011 to 2014, I was appointed **assistant professor** (tenure track) at the Medical University Graz (MUG) and 2014 I received my **habilitation** in pathology. 2015-2020 I was appointed **professor** for **Medical Microbiome Research** (research professor, temporary). During this period, I also spent a **scientific sabbatical** at the **Dept. of Microbiome Research and Applied Bioinformatics** at the Univ. of Hohenheim, Stuttgart, Germany. Since 2018, I am **vice chair** of the diagnostic center of the **Inst. of Pathology**, and hold an **associate professorship** (tenured) for **Medical Microbiome Research** research since 2021. Since 2016, I serve also as the **work group chair** for infectious diseases pathology in the *European Society of Pathology* and I am co-chair for the research field „*Microbiome & Infection*“ at MUG.

Scientific Achievements and Scientific Contribution to the CoE

Scientific Achievements. My main research interest is to understand the contribution of the microbiome to human **health and disease**. My work on virulence mechanisms of GI pathogens has led to the identification of ***Klebsiella oxytoca*** as new agent of antibiotic-associated colitis, which was published in the renown *New England Journal of Medicine*. As a clinical service, I established **diagnostic microbiome analysis** at MUG, which is a **unique resource** used by institutions in Austria and abroad. A major topic is to understand microbiome modulation by **fecal microbiota transplantation (FMT)**. Together with my clinical partners, we received international recognition by performing FMTs and currently, we try to define its „active ingredients“ to develop new **biotherapeutics** to replace FMT in future. During the pandemic, I also started investigating **COVID-19**. Supported by a unique *BSL-3 autopsy facility* and „omics“ technology we gained deep insights into SARS-CoV-2 infection. These findings were also extensively covered in public printed media and on TV.

Scientific Contribution to the CoE. As a **trained pathologist** I will provide my expertise in the **analysis of tissues (histopathology)**, complemented with **spatial transcriptomics** techniques and **high- resolution microscopy** will us allow to gain deep insights into pathogenetic mechanisms. The **extensive sample collection** associated with our FMT studies will serve as a valuable resource to define the principles of **microbiome modification** and to advance its therapeutic application.

10 Most Important Publications (*relevant for the CoE)

# Denotes equal contribution

1. *Kienesberger, S; Cosic, A: Kitsera, M; Raffl, S; Hiesinger, M; Schild, S; Leitner, E; Halwachs, B; **Gorkiewicz, G.**; Glabonjat, RA; Raber, G; Lembacher-Fadum, C; Breinbauer, R; Zechner, EL. Enterotoxin tilimycin from gut-resident Klebsiella promotes mutational evolution and antibiotic resistance in mice. *Nature Microbiol.* **2022**, in press.
2. *Zacharias, M.; Kashofer, K.; (22 authors); **Gorkiewicz, G.** Host and Microbiome Features of Secondary Infections in Lethal Covid-19. *iScience* **2022**, *25* (9), 104926. *https://doi.org/10.1016/j.isci.2022.104926*.
3. *Podlesny, D.; Durdevic, M.; Paramsothy, S.; Kaakoush, N. O.; Högenauer, C.; **Gorkiewicz, G.**; Walter, J.; Fricke, W. F. Identification of Clinical and Ecological Determinants of Strain Engraftment after Fecal Microbiota Transplantation Using Metagenomics. *Cell Reports Medicine* **2022**, *3* (8), 100711. *https://doi.org/10.1016/j.xcrm.2022.100711*.
4. *Spindelboeck, W.; Halwachs, B.; Bayer, N.; Huber-Krassnitzer, B.; Schulz, E.; Uhl, B.; Gaksch, L.; Hatzl, S.; Bachmayr, V.; Kleissl, L.; Kump, P.; Deutsch, A.; Stary, G.; Greinix, H.; **Gorkiewicz, G.**; Högenauer, C.; Neumeister, P. Antibiotic Use and Ileocolonic Immune Cells in Patients Receiving Fecal Microbiota Transplantation for Refractory Intestinal GvHD: A Prospective Cohort Study. *Therapeutic Advances in Hematology* **2021**, *12*, 204062072110583. *https://doi.org/10.1177/20406207211058333*.
5. *Madhusudhan, N.; Pausan, M. R.; Halwachs, B.; Durdević, M.; Windisch, M.; Kehrmann, J.; Patra, V.; Wolf, P.; Boukamp, P.; Moissl-Eichinger, C.; Cerroni, L.; Becker, J. C.; **Gorkiewicz, G.** Molecular Profiling of Keratinocyte Skin Tumors Links Staphylococcus Aureus Overabundance and Increased Human β-Defensin-2 Expression to Growth Promotion of Squamous Cell Carcinoma. *Cancers* **2020**, *12* (3), 541. *https://doi.org/10.3390/cancers12030541*.
6. *Wurm, P.; Dörner, E.; Kremer, C.; Spranger, J.; Maddox, C.; Halwachs, B.; Harrison, U.; Blanchard, T.; Haas, R.; Högenauer, C.; **Gorkiewicz, G.**[#]; Fricke, W. F[#]. Qualitative and Quantitative DNA- and RNA-Based Analysis of the Bacterial Stomach Microbiota in Humans, Mice, and Gerbils. *mSystems* **2018**, *3* (6), e00262-18. *https://doi.org/10.1128/mSystems.00262-18*.
7. *Kump, P.; Wurm, P.; Gröchenig, H. P.; Wenzl, H.; Petritsch, W.; Halwachs, B.; Wagner, M.; Stadlbauer, V.; Eherer, A.; Hoffmann, K. M.; Deutschmann, A.; Reicht, G.; Reiter, L.; Slawitsch, P.; **Gorkiewicz, G.**[#]; Högenauer, C[#]. The Taxonomic Composition of the Donor Intestinal Microbiota Is a Major Factor Influencing the Efficacy of Faecal Microbiota Transplantation in Therapy Refractory Ulcerative Colitis. *Aliment Pharmacol Ther* **2018**, *47* (1), 67–77. *https://doi.org/10.1111/apt.14387*.
8. *Halwachs, B.; Madhusudhan, N.; Krause, R.; Nilsson, R. H.; Moissl-Eichinger, C.; Högenauer, C.; Thallinger, G. G.; **Gorkiewicz, G.** Critical Issues in Mycobiota Analysis. *Front. Microbiol.* **2017**, *8*. *https://doi.org/10.3389/fmicb.2017.00180*.
9. *Fröhlich, E. E.; Farzi, A.; Mayerhofer, R.; Reichmann, F.; Jačan, A.; Wagner, B.; Zinser, E.; Bordag, N.; Magnes, C.; Fröhlich, E.; Kashofer, K.; **Gorkiewicz, G.**; Holzer, P. Cognitive Impairment by Antibiotic-Induced Gut Dysbiosis: Analysis of Gut Microbiota-Brain Communication. *Brain, Behavior, and Immunity* **2016**, *56*, 140–155. *https://doi.org/10.1016/j.bbi.2016.02.020*.
10. *Kienesberger, S.; Cox, L. M.; Livanos, A.; Zhang, X.-S.; Chung, J.; Perez-Perez, G. I.; **Gorkiewicz, G.**; Zechner, E. L.; Blaser, M. J. Gastric Helicobacter Pylori Infection Affects Local and Distant Microbial Populations and Host Responses. *Cell Reports* **2016**, *14* (6), 1395–1407. *https://doi.org/10.1016/j.celrep.2016.01.017*.