Curriculum vitae

Family name, first name: **Haller, Dirk**
Researcher unique identifier(s): **Scopus Author ID: 7103258107**, **ORCID: 0000-0002-6977-4085**
Date of birth: **May 22, 1968**
Nationality: **German**
Website: www.nutrition-immunology.de

EDUCATION AND TRAINING

2003 – 2006	DFG **Emmy Noether Research Group**, School of Life Sciences, Technical University of Munich
2001 – 2002	DFG **Emmy Noether Fellow**, University of North Carolina, Department of Medicine, Microbiology & Immunology, Chapel Hill, USA
2000 – 2001	**Research Fellow**, Immunology, Nestlé Research Center, Lausanne Switzerland
1997 – 2000	PhD in the Department of Nutrition and Food Sciences, Microbiology & Immunology University of Hohenheim, Germany
1991 – 1997	Degree (Diplom) in Food Science, University of Hohenheim, Germany
1991 – 1996	Degree (Diplom) in Nutrition Science, University of Hohenheim, Germany

CURRENT AND PAST POSITIONS

2014 – present	**Director of Corporate Research Institute,** Food & Health (ZIEL), Technical University of Munich, Germany
2008 – present	**Full Professor and Chair** Nutrition and Immunology, School of Life Sciences, (co-affiliation with Faculty of Medicine), Technical University of Munich, Germany
2006 – 2008	**Associate Professor** Experimental Nutritional Medicine, Technical University of Munich, Germany

AWARDS

2024	**Highly Cited Researcher** - Institute for Scientific Information at Clarivate
2021	Distinguished **Research Prize of the United European Gastroenterology** Association
2020	**Heinz Maier-Leibnitz Medal** awarded for Scientific Excellence in Nutrition and Microbiome by the Technical University of Munich
2015	**Main Award of the German Society of Medical Microbiology and Hygiene** (DGHM)
2007 - 2009	**German American Frontiers of Science,** National Acadamy of Sciences of America and Humboldt Foundation
2001 – 2006	**Emmy Noether Career Award**, German Research Foundation (DFG)

SCIENTIFIC LEADERSHIP

2018 – present	**Collaborative Research Center (CRC1371)**, **Coordinator**, Microbiome Signatures – Functional Relevance in the Digestive Tract, German Research Foundation (DFG)
2016 – 2019	**European Joint Programming Initiative** (JPI), Coordinator, Diet-induced Arrangement of the Gut Microbiome
2013 – 2019	**Priority Programme (SPP1656)**, **Coordinator**, Intestinal Microbiota, German Research Foundation (DFG)
2011 – 2017	**Research Training Group (RTG1482)**, **Coordinator**, Interface Function of the Intestine, German Research Foundation (DFG)
2010	**Scientific Chair of the European Science Foundation** (ESF), Forward Look initiative, Gene environment interaction in chronic disease

INSTITUTIONAL RESPONSIBILITIES AND PROFESSIONAL ACTIVITIES

2021 – present	**TUM Asia** Faculty Member and **TUM Create** Research Program, Proteins for Singapore (P4S)
2021 – present	**Vice-Dean Research & Innovation**, School of Life Science, Technical University of Munich, Germany
2020 – present	European **Joint Programming Initiative** "A healthy diet for a healthy life" Scientific Advisory Board
2020 – present	**Permanent Senate Commission on Food Safety**, German Research Foundation (DFG)
2020 – present	Associate Editor of ***Mucosal Immunology***
2019	**UK Research and Innovation**, Biotechnology and Biological Research Council (BBSRC) Institute Evaluation, UK
2018 – present	Litwin IBD Pioneer and Senior Research Program of the **Crohn's and Colitis Foundation of Amerika**
2018 – present	**Science and Innovation Advisory Committee**, Quadram Institute Bioscience, UK
2018 – present	**ICREA Catalan Institution for Research and Advanced Studies**, Life & Medical Science Senior Call Evaluator (2018, 2020, 2022)
2017 – present	Associate Editor ***Inflammatory Bowel Disease***
2017 – present	Scientific Board of the **German Society of Nutrition** (DGE)
2015 – 2019	**European Research Council (ERC)**, Panel Head, Consolidator Grants (2015, 2017, 2019)
2007 – 2011	Founding **Section Head of the German Society of Hygiene and Microbiology** (DGHM), Microbiota, Probiotics and Host
2007 – 2016	Head of Department, School of Life Sciences, Technical University of Munich

TRACK RECORD AND ACHIEVEMENT SUMMARY

The overarching theme of my whole scientific career has been to develop a fundamental understanding of how the community of intestinal microbes contributes to tissue homeostasis and inflammatory disease susceptibility in the digestive tract (**Metwaly, 2022**). Nutrition is a key environmental factor in the aetiology of complex disorders of the industrialized world strongly affecting the intestinal milieu. I pioneered the idea that non-pathogenic bacteria trigger a regulated circuit of intestinal epithelial cell activation (**Haller, 2000 Gut; Haller, 2002 J. Biol. Chem.**), indicative of a changing paradigm of how the host senses the non-infectious bacterial environment. Over the last decade, my team and I identified protective and pro-inflammatory molecular structures of commensal bacteria (**Steck, 2011 Gastroenterology; von Schillde, 2012 Cell Host & Microbe; Ozvirk, 2015 PLOS Pathogens**), and applied Koch's postulates to confirm a causal role of bacteria and bacterial metabolites in shaping active disease phenotypes in germ-free mouse models for inflammatory bowel diseases (IBD) (**Schaubeck, 2016 Gut; Metwaly, 2020 Nature Commun.**). Two patents were awarded based on the identification of protective bacterial components (EP2953484, EP2533803B1). In recent years, we started to employ clinical and population studies to the role of nutrition and metabolic alterations in shaping microbiome-related human health (**Heppner, 2024 Cell Host & Microbe; Reitmeier, 2020 Cell Host & Microbe; Khaloian, 2020 Gut; Bazanella, 2018 Am. J. Clin. Nutrition; Lee, 2017 Gut**), thereby broadening the breadth of our research towards human translation. Identifying microbiome signatures relevant in diagnostic and therapeutic application is an important aspect in my research programme (**Metwaly, 2022 Nat. Rev. Gastroenterol. Hepatol.**) Parallel to understanding microbe-host interactions, we started to explore the intriguing idea that disruption of metabolic homeostasis in the intestinal epithelium contributes to aberrant tissue responses and the risk of developing chronic inflammation (**Rath, 2011 Gut; Rath, 2018 Nat. Rev. Gastroenterol. Hepatol.**). My team and I developed novel mouse models for mitochondrial dysfunction and chronic activation of organelle stress in intestine and liver (**Berger, 2016 Nature Commun.; Yan, 2017 Cancer Cell; Coleman, 2018 Gastroenterology; Khaloian, 2020 Gut**) and, in doing so, coined the **concept of metabolic injury** in tissue pathology (**Urbauer, 2024 Cell Host & Microbe**).

Over the past decade, I established a multidisciplinary scientific programme and key infrastructure at TUM to study the interplay of nutrition and the intestinal microbiome in human health and disease (*www.sfb1371.tum.de; www.ziel.tum.de*). I co-initiated an international *forward look* to address the complex role of environmental triggers in the pathogenesis of chronic disorders (**Renz, 2011 Nature Immunol.**) and established collaborative programmes for microbiome research in Germany (*www.intestinal-microbiota.d*e). Receiving the distinguished **Research Prize of the United European Gastroenterology** Association in **2021** underlines my international recognition as basic scientist in medicine.

ORGANISATION OF MAJOR SCIENTIFIC MEETINGS

2013 – 2020	Gut Microbiota for Health Summit, American Gastroenterology Society (AGA) and European Society of Neurogastroenterology & Motility (ESNM)
2015/2016	Digestive Disease Week (DDW), American Gastroenterology Association (AGA), Scientific Programme Board
2014	Herrenhäuser Conference, Beyond the Intestinal Microbiome – From Signatures to Function, Chair, Volkswagenstiftung (https://www.volkswagenstiftung.de/en/node/1717)
2011	European Science Foundation (ESF), Forward Look, Gene-Environment Interaction in Chronic Disease, Chair (Genesis; http://archives.esf.org/publications/forward-looks)
2008 – 2018	Seeon Conference, Microbiota and Host in Health and Disease, German Society of Medical Microbiology and Hygiene (DGHM) (https://www.intestinal-microbiota.de/events/)

SELECTED PUBLICATIONS

**Corresponding author*

A complete list of publications is retrievable at http://orcid.org/0000-0002-6977-4085 (Scopus: N=246, h-index 72, Citations 16793; Google Scholar: h-index 81, Citations 24434).

Urbauer E, Aguanno D, Mindermann N, Omer H, Metwaly A, Krammel T, Faro T, Remke M, Reitmeier S, Bärthel S, Kersting J, Huang Z, Xian F, Schmidt M, Saur D, Huber S, Stecher B, List M, Gómez-Varela D, Steiger K, Allez M, Rath E, **Haller D***. Mitochondrial perturbation in the intestine causes microbiota-dependent injury and gene signatures discriminative of inflammatory disease. **Cell Host & Microbe 2024** Jul 10 doi: 10.1016/j.chom.2024.06.013

Heppner N, Reitmeier S, Heddes M, Vig Merino M, Schwartz L, Dietrich A, List M, Gigl M, Meng C, R van der Veen D, Schirmer M, Kleigrewe K, Omer H, Kiessling S, **Haller D*.** Diurnal rhythmicity of fecal microbiota and metabolite profiles in the first year of life: a randomized controlled interventional trial with infant formula. **Cell Host & Microbe** 2024 April 10.

Winogrodzki T, Metwaly A, Grodziecki A, Liang W, Klinger B, Flisikowska T, Fischer K, Flisikowski K, Steiger K, **Haller D*,** Schnieke A*. TFF DARE pigs: A translational Crohn's diease model. **J Crohns Colitis** 2023 Jul 5;17(7):1128-1138.

Metwaly A, Reitmeier S, **Haller D***. Microbiome risk profiles as disease biomarkers for inflammatory and metabolic disorders. **Nat Rev Gastroenterol Hepatol** 2022;19(6):383-397**.**

Metwaly A, Dunkel A, Waldschmitt N, Chakravarthy Durai Raj A, Lagkouvardos I, Corraliza AM, Mayorgas A, Martinez-Medina M, Reiter S, Schloter M, Hofmann T, Allez M, Panes J, Salas A, **Haller D***. Integrated microbiota and metabolite profiles link Crohn's disease to sulfur metabolism. **Nature Commun**. 2020 Aug 28;11(1):4322.

Reitmeier S, Kiessling S, Clavel T, List M, Almeida EL, Ghosh TS, Neuhaus K, Grallert H, Linseisen J, Skurk T, Brandl B, Breuninger TA, Troll M, Rathmann W, Linkohr B, Hauner H, Laudes M, Franke A, Le Roy CI, Bell JT, Spector T, Baumbach J, O'Toole PW, Peters A, **Haller D***. Arrhythmic Gut Microbiome Signatures Predict Risk of Type 2 Diabetes. **Cell Host & Microbe**. 2020 Jun 29:1931-3128(20)30343-7.

Khaloian S, Rath E, Hammoudi N, Gleisinger E, Blutke A, Giesbertz P, Berger E, Metwaly A, Waldschmitt N, Allez M, **Haller D***. Mitochondrial impairment drives intestinal stem cell transition into dysfunctional Paneth cells predicting Crohn's disease recurrence. **Gut**. 2020 Nov;69(11):1939-1951.

Coleman OI, Lobner EM, Bierwirth S, Sorbie A, Waldschmitt N, Rath E, Berger E, Lagkouvardos I, Clavel T, McCoy KD, Weber A, Heikenwalder M, Janssen KP, **Haller D***. Activated ATF6 Induces Intestinal Dysbiosis and Innate Immune Response to Promote Colorectal Tumorigenesis. **Gastroenterology** 2018 Nov;155(5):1539-1552. **[IF 33; FWCI 2.92]**

Rath E, Moschetta A, **Haller D***. Mitochondrial function – gatekeeper of intestinal epithelial cell homeostasis. **Nat Rev Gastroenterol Hepatol**. 2018 Aug;15(8):497-516.

Bazanella M, Maier TV, Clavel T, Lagkouvardos I, Lucio M, Maldonado-Gòmez MX, Autran C, Walter J, Bode L, Schmitt-Kopplin P, **Haller D**. Randomized controlled trial on the impact of early-life intervention with bifidobacteria on the healthy infant fecal microbiota and metabolome. **Am J Clin Nutr.** 2017 Nov;106(5):1274-1286. **[IF 8; FWCI 5.37]**

Yuan D, Huang S, Berger E, (…), **Haller D***, Heikenwalder M*. Kupffer Cell-Derived Tnf Triggers Cholangiocellular Tumorigenesis through JNK due to Chronic Mitochondrial Dysfunction and ROS. **Cancer Cell** 2017;31:771-789.

Lee T, Clavel T, Smirnov K, Schmidt A, Lagkouvardos I, Walker A, Lucio M, Michalke B, Schmitt-Kopplin P, Fedorak R, **Haller D**. Oral versus intravenous iron replacement therapy distinctly alters the gut microbiota and metabolome in patients with IBD. **Gut** 2017;66:863-871.

Schaubeck M, Clavel T, Calasan J, Lagkouvardos I, Haange SB, Jehmlich N, Basic M, Dupont A, Hornef M, von Bergen M, Bleich A, **Haller D***. Dysbiotic gut microbiota causes transmissible Crohn's disease-like ileitis independent of failure in antimicrobial defence. **Gut** 2016;65:225-37.

Berger E, Rath E, Yuan D, Waldschmitt N, Khaloian S, Allgauer M, Staszewski O, Lobner EM, Schottl T, Giesbertz P, Coleman OI, Prinz M, Weber A, Gerhard M, Klingenspor M, Janssen KP, Heikenwalder M, **Haller D***. Mitochondrial function controls intestinal epithelial stemness and proliferation. **Nature Commun**. 2016;7:13171.

von Schillde MA, Hormannsperger G, Weiher M, Alpert CA, Hahne H, Bauerl C, van Huynegem K, Steidler L, Hrncir T, Perez-Martinez G, Kuster B, **Haller D***. Lactocepin secreted by *Lactobacillus* exerts anti-inflammatory effects by selectively degrading proinflammatory chemokines. **Cell Host & Microbe**. 2012;11:387-96.

Werner T, Wagner S, Martinez I, Walter J, Chang JS, Clavel T, Kisling S, Schuemann K, **Haller D**. Depletion of luminal iron alters the gut microbiota and prevents Crohn´s disease-like ileitis. **Gut** 2011;60(3):325-33.

Steck N, Hoffmann M, Sava IG, Kim SC, Hahne H, Tonkonogy SL, Mair K, Krueger D, Pruteanu M, Shanahan F, Vogelmann R, Schemann M, Kuster B, Sartor RB, **Haller D***. *Enterococcus faecalis* metalloprotease compromises epithelial barrier and contributes to intestinal inflammation. **Gastroenterology** 2011;141:959-71.

Shkoda A, Ruiz PA, Daniel H, Kim SC, Rogler G, Sartor RB, Haller D. IL-10 blocked endoplasmatic reticulum stress in the intestinal epithelium: impact on chronic inflammation. Gastroenterology 2007;132(1):190-207.

Haller D, Russo MP, Sartor RB, Jobin C. IKKß and PI3K/Akt participate in non-pathogenic Gram-negative enteric bacteria-induced RelA phosphorylation and NF-kB activation in both primary and intestinal epithelial cell lines. J. Biol. Chem. 2002; 277:38168-38178.

Haller D, Bode C, Hammes WP, Pfeifer AMA, Schiffrin EJ, Blum S. Non-pathogenic bacteria elicit a differential cytokine response by intestinal epithelial cell/leukocyte co-cultures. Gut 2000;47:79-87.