



# CRC/TRR241 Newsletter

July 2021 – Issue 9

## New TRR 241 First and Senior Author Publications

**Britta Siegmund (B01)** together with **Raja Atreya (C02/C03/INF)** published the review **Location is important: differentiation between ileal and colonic Crohn's disease** in the journal **Nature Reviews Gastroenterology & Hepatology**.

**Andreas Radbruch** and **Hyun-Dong Chang (B03)** published the review **Immunological memory in rheumatic inflammation – a roadblock to tolerance induction** in the journal **Nature Reviews Rheumatology**.

**Martin Herrmann** and **Moritz Leppkes (B04)** together with **Michael Stürzl (A06)** published the review **Patients with COVID-19: in the dark-NETs of neutrophils** in the journal **Cell Death and Differentiation**.

**Britta Siegmund (B01)** with the support of **Michael Schumann (C03)**, **Andrey Kruglov (A04)** and **Anja Kühl (INF)** published the article **Level of Tumor Necrosis Factor Production by Stimulated Blood Mononuclear Cells can be used to predict response of patients with inflammatory bowel diseases to Infliximab** in the journal **Clinical Gastroenterology & Hepatology**.

**Raja Atreya (C02/C03/INF)** and **Markus Neurath (C04)** published together the review **Role of the IL23/IL17 Pathway in Crohn's Disease** in the journal **Frontiers in Immunology**.

**Sebastian Zundler**, **Carolin Bosch-Voskens** and **Markus Neurath (C04)** joint published the review **Targeting Immune Cell Trafficking – Insights from research models and implications for future IBD therapy** in the journal **Frontiers in Immunology**.

**Raja Atreya (C02/C03/INF)** published with the support of **Markus F. Neurath (C04)** the article **Can Serum Proteomic Profiling Annunciate Individual Disease Progression in Newly Diagnosed Inflammatory Bowel Disease Patients** in the journal **Journal of Crohns & Colitis**.

**Clemens Neufert** and **Kai Hildner (A08)** published with the support of **Sebastian Zundler (C04)** and **Markus F. Neurath (C04)** the article **Dynamic Imaging of IEL-IEC Co-Cultures Allows for Quantification of CD103-Dependent T Cell Migration** in the journal **International Journal of Molecular Sciences**.

**Sebastian Zundler**, **Carolin Bosch-Voskens** and **Markus F. Neurath (C04)** published the review **Intestinal Mucosal Wound Healing and Barrier Integrity in IBD-Crosstalk and Trafficking of Cellular Players** in the journal **Frontiers in Medicine**.

**Imke Atreya (A07)** published with the support of **Stefan Wirtz (A03)** and **Markus F. Neurath (C04)** the review **Innate Lymphoid Cells as Regulators of Epithelial Integrity: Therapeutic Implications for Inflammatory Bowel Diseases** in the journal **Frontiers in Medicine**.

**Michael Schumann (B05)** published with the support of **Susanne Krug (C03)** and **Britta Siegmund (B01)** the article **Reprogramming Intestinal Epithelial Cell Polarity by Interleukin-22** in the journal **Frontiers in Medicine**.

**Claudia Günther (A02)** and **Markus F. Neurath (C04)** published the article **An IFN-STAT Axis Augments Tissue Damage and Inflammation in a mouse model of Crohn's Disease** in the journal **Frontiers in Medicine**.



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**Andrey Kruglov (A04)** published the article **Interplay between Microbiota, Toll-Like Receptors and Cytokines for the Maintenance of Epithelial Barrier Integrity** in the journal **Frontiers in Medicine**.

**Christoph Becker (A03/B05)** published with the support of **Jay Patankar (B05)**, **Stefan Wirtz (A03)**, **Britta Siegmund (B01)** and **Markus F. Neurath (C04)** the article **Comparative Transcriptomics of IBD Patients Indicates Induction of Type 2 Immunity Irrespective of the Disease Ideotype** in the journal **Frontiers in Medicine**.

**Claudia Günther (A02)** and **Markus F. Neurath (C04)** published the article **Interferons at the crossroad of cell death pathways during gastrointestinal inflammation and infection** in the journal **International Journal of Medical Microbiology**.

**Susanne Krug** and **Jörg-Dieter Schulzke (B06)** published with the support of **Christian Bojarski (C02)** the article **Expression of tricellular tight junction proteins and the paracellular macromolecule barrier are recovered in remission of ulcerative colitis** in the journal **BMC Gastroenterology**.

**Imke Atreya (A07)** published with the support of **Stefan Wirtz (A03)** and **Markus F. Neurath (C04)** the review **Functional Contribution and Targeting Migration of Group-2 Innate Lymphoid Cells in Inflammatory Lung Diseases: Being at the Right Place at the Right Time** in the journal **Frontiers in Immunology**

**Christoph Becker (A03/B05)** and **Jay Patankar (B05)** published together with **Claudia Günther (A02)**, **Moritz Leppkes (B04)**, **Stefan Wirtz (A03)**, **Clemens Neufert (A08)**, **Anja Kühl (INF)**, **Raja Atreya (C02/C03/INF)** and **Markus F. Neurath (C04)** the article **E-type prostanoid receptor 4 drives resolution of intestinal inflammation by blocking epithelial necroptosis** in the journal **Nature Cell Biology**.

## TRR241 re-evaluation 2022

This year, we have to submit our proposal for a second funding period of our TRR241 (July 2022 to June 2026). The review is scheduled to take place on the **7<sup>th</sup> and 8<sup>th</sup> of February 2022**.

Please save this date!!!

Whether the review will take place on site or virtually will be decided in September. The DFG is expecting our final proposal on the 08<sup>th</sup> of December 2021 at the latest.

## iRTG Student Retreat 2021

The next PhD Student Retreat will take place via Zoom at the 23<sup>rd</sup> and 24<sup>th</sup> of September 2021. More information will follow soon.

## Congratulations!

**Dr. med. Carl Weidinger received the DACED future prize 2021.**

The prize of 7500€ is sponsored by Ferring Arzneimittel GmbH, Kiel and is awarded annually for scientifically outstanding experimental or clinical-scientific work in the field of inflammatory bowel diseases.



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## Vision 2030: Changing Paradigms in Inflammatory Bowel Diseases

Due to the Covid-19 pandemic our international Symposium “**Vision 2030**” has taken place Online on **2021, June 10<sup>th</sup>-11<sup>th</sup>**. Many international guest speakers with interesting presentations were invited and we could welcome about 400 spectators. Congratulations to Marilena Letizia & Lucas Kreiß who won the poster awards!



**Vision 2030**  
Changing Paradigms  
in IBD

### The role of adipose tissue in the regulation of intestinal autoimmunity

Carl Weidinger<sup>1,2</sup>

<sup>1</sup>Department of Gastroenterology, Infectious Disease, Rheumatology, Charité -  
Universitätsmedizin Berlin

<sup>2</sup>Berlin Institute of Health, BIH, Clinician Scientist Program

no conflict of interests

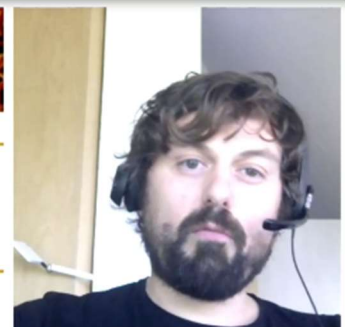


**FAU**

FRIEDRICH-ALEXANDER  
UNIVERSITÄT  
ERLANGEN-NÜRNBERG

**CHARITÉ**  
UNIVERSITÄT  
BERLIN

**DRFZ**   
Deutsches Rheuma-Forschungszentrum  
Ein Institut der Leibniz-Gemeinschaft



**Carl Weidinger**  
Berlin, DE







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THURSDAY, 10<sup>TH</sup> JUNE, 2021 (CEST)

10:00 – 10:30 **Welcome and Introduction**  
(Britta Siegmund & Christoph Becker)

### SESSION I – COMMUNICATION ACROSS THE EPITHELIAL BARRIER CHAIR: MAGDALENA PRÜB

10:30 – 11:00 **Matteo Villa, Freiburg, DE**  
"Metabolic adaptation of T cells to the intestinal microenvironment"

11:00 – 11:30 **Claudia Günther, Erlangen, DE**  
"Role of extracellular vesicles as biological shuttle system for inter-kingdom communication and organ crosstalk"

11:30 – 12:00 **Carl Weidinger, Berlin, DE**  
"The role of adipose tissue in the regulation of intestinal autoimmunity"

12:00 – 12:30 **Dirk Haller, München, DE**  
"Functional relevance of microbiome signatures – from cohorts to models"

### LUNCH BREAK

### SHORT TALKS – PHD STUDENTS OF THE TRANSREGIO 241 CHAIR: MORITZ LEPPKES

13:30 – 13:45 **Lucas Kreiß, Erlangen, DE**  
"Label-free multiphoton imaging in Inflammatory Bowel Disease"

13:45 – 14:00 **Mariela Letizia, Berlin, DE**  
"Mass cytometry reveals effects of store-operated calcium entry pathway in human intestinal inflammation"

14:00 – 14:15 **Emily Becker, Erlangen, DE**  
"Residual homing of αβ7-expressing β1+PI16+ regulatory T cells with potent suppressive activity correlates with exposure-efficacy of vedolizumab"

14:15 – 14:30 **Victoria v. Götze, Berlin, DE**  
"Induction of TGF-β receptor signaling by the intestinal microbiota and subsequent modulation of intestinal immune response"

### COFFEE BREAK

### SESSION II – LUMINAL FACTORS INFLUENCING INTESTINAL INFLAMMATION AND BEYOND CHAIR: SUSANNE KRUG

15:00 – 15:30 **Petra Bacher, Kiel, DE**  
"Antigen-specific modulation of human CD4+ T cell responses by intestinal microbes"

15:30 – 16:00 **Till Strowig, Braunschweig, DE**  
"Microbial immunoregulation in the gut – the curious case of Prevotella –"

16:00 – 16:30 **Sebastian Winter, Dallas, US**  
"Microbiota metabolism in the inflamed intestine"

16:30 – 17:00 **Melanie Schirmer, Freising, DE**  
"Elucidating host-microbial interactions in Inflammatory Bowel Disease"

17:00 – 17:30 **Daniel Mucida, New York, US**  
"Neuro-immune interactions in the gut"

FRIDAY, 11<sup>TH</sup> JUNE, 2021 (CEST)

### SESSION III – INTESTINAL INFLAMMATION – KEY PATHWAYS CHAIR: BRITTA SIEGMUND

09:00 – 09:30 **Arthur Kaser, Cambridge, GB**  
"Expect the unexpected: core purine metabolism in Crohn's disease"

09:30 – 10:00 **James Lee, Cambridge, GB**  
"Lessons from genetics: identifying new disease biology in IBD"

10:00 – 10:30 **Fiona Powrie, Oxford, GB**  
TBD

10:30 – 11:00 **Holm Uhlig, Oxford, GB**  
"Antimicrobial immunity – pathogenic mechanisms and therapeutic opportunities?"

11:00 – 11:30 **Chiara Romagnani, Berlin, DE**  
"Transcription factor network in innate lymphoid cells regulates lymph node formation and intestinal homeostasis"

### COFFEE BREAK

### POSTER SESSION

### LUNCH BREAK

MORE INFORMATION ABOUT THE TRR241:  
[www.transregio241.de](http://www.transregio241.de)

FRIDAY, 11<sup>TH</sup> JUNE, 2021 (CEST)

### SESSION IV – INTESTINAL INFLAMMATION: UNEXPECTED PLAYERS CHAIR: AHMED HEGAZY

14:00 – 14:30 **Alison Simmons, Oxford, GB**  
"Cellular remodeling and determinants of barrier breakdown in Inflammatory Bowel Disease"

14:30 – 15:00 **Fanny Matheis, New York, US**  
"Interactions between the microbiota, nervous and immune system in the control of intestinal inflammation"

15:00 – 15:30 **Christoph Klose, Berlin, DE**  
"Regulation of intestinal inflammation by innate lymphoid cells and the enteric nervous system"

15:30 – 16:00 **Iliyan Iliev, New York, US**  
"Fungal microbiota in Immunity and Inflammatory Bowel Disease"

16:00 – 16:30 **Natalie Britzen-Laurent, Erlangen, DE**  
"Role of the inflamed intestinal vasculature in IBD"

### COFFEE BREAK

### SESSION V – TACKLING IBD WITH SYSTEMS BIOLOGY CHAIR: MAXIMILIAN WALDNER

17:00 – 17:30 **Severine Vermeire, Leuven, BE**  
"Integrating the IBD trinity of genetics, microbiome and immunity"

17:30 – 18:00 **Rinse Weersma, Groningen, NL**  
"The 1000 IBD project: Multi-omics approaches in IBD"

18:00 – 18:30 **Raja Atreya, Erlangen, DE**  
"The TRR241 IBDome: Strategies towards individualized therapy in IBD"

### CLOSING REMARKS

The TRR241 is a joint research initiative of researchers in Erlangen, Berlin, Kiel and Innsbruck supported by the German Research Foundation (DFG). The goal of TRR241 is to better understand the molecular and cellular processes that lead to the development of Inflammatory Bowel Diseases (Crohn's disease and ulcerative colitis). The driving hypothesis of our initiative is that a dysregulated signal exchange between the gut epithelium and immune cells and the consequences are key drivers in the pathogenesis of IBD. Our research network brings together a group of highly experienced gastroenterologists, immunologists and cellular and molecular biologists with expertise in experimental, translational and clinically-oriented research to ensure the realization of our goals. The research program of our consortium has been designed to advance not only basic concepts of IBD development, but also to provide an outstanding platform for translational studies and pre-clinical and clinical testing.



TRR 241  
IEC in IBD

VISION 2030  
CHANGING PARADIGMS  
IN INFLAMMATORY  
BOWEL DISEASES

JUNE 10-11 2021

virtual  
meeting

registration  
is free

REGISTRATION:  
<https://roellmedia-streams.de/vision2030>

FAU  
FRIEDRICH-ALEXANDER  
UNIVERSITÄT  
ERLANGEN-NÜRNBERG

CHARITÉ  
UNIVERSITÄT  
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DRFZ  
Deutsches Research Forum für  
Zelluläre und Molekulare  
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We proudly present the PhD students of the TRR241



My name is **Jeeshan Singh** and I am a doctoral candidate in the group of Prof. Herrmann since November 2019. I did my bachelors in biotechnology in India shortly after which I pursued my master studies in pharmaceutical and industrial biotechnology at the Martin Luther Universität of Halle-Wittenberg. In my research project, we are investigating the function of neutrophil and neutrophil extracellular traps (NETs) in IBD and various other diseases.

My name is **Marvin Bubeck** and I am a new doctoral student at AG Becker in the Department of Medicine 1, University Hospital Erlangen. I did my Bachelor's and Master's degree in Technical Biology at the University of Stuttgart. For my Master thesis, I was able to work in the field of Organ-o-a-Chip systems at the Fraunhofer Institute for Interfacial Engineering and Biotechnology Stuttgart. Since May 2021, I investigate the interactions of the enteric nervous system with the epithelium and immune system during inflammation and wound healing in the context of inflammatory bowel diseases.

