Director of the Research Center
Prof. Dr. med. Gerd-Rüdiger Burmester

Institution
Charité - Universitätsmedizin Berlin, CCM
Klinik für Rheumatologie und Klinische Immunologie
Charitéplatz 1
10117 Berlin
Tel.: +49 (0)30 – 450 513061
Fax: +49 (0)30 – 450 513917
E-mail: gerd.burmester@charite.de

Director of the Research Center
Prof. Dr. rer. nat. Andreas Radbruch
Scientific Director of the DRFZ and Professor of experimental rheumatology at Charité

Institution
Deutsches Rheuma-Forschungszentrum
Berlin (DRFZ)
Charitéplatz 1
10117 Berlin
Tel.: +49 (0)30 - 28460 601
Fax: +49 (0)30 - 28460 603
E-mail: radbruch@drfz.de

Members of the Center

Prof. Dr. Angela Zink
Prof. Dr. Frank Buttgereit
Prof. Dr. Falk Hiepe
Prof. Dr. Alf Hamann
Prof. Dr. Gabriela Rimekasten
Prof. Dr. Max Löhning
PD Dr. Marina Backhaus
Prof. Dr. Michael Sittinger
PD Dr. Thomas Häupl
Dr. Bruno Stuhlmüller
Dr. Jacqueline Detert
PD Dr. Eugen Feist
Dr. Paula Hoff
Dr. Jochen Ringe
Dr. Karlfried Aupperle
Dr. Cornelia Spies
Dr. Andreas Grützkau
Dr. Joachim Grün
Dr. Tobias Alexander
Dr. Hans Bastian
Dr. Bimba Hoyer
Dr. Joachim Listing
Dr. Sandra Schneider

zink@drfz.de
frank.buttgereit@charite.de
falk.hiepe@charite.de
alf.hamann@charite.de
Gabriela.riemekasten@charite.de
loehning@drfz.de
marina.backhaus@charite.de
michael.sittinger@charite.de
thomas.haeupl@charite.de
bruno.stuhlmueller@charite.de
jacqueline.detert@charite.de
eugen.feist@charite.de
paula.hoff@charite.de
jochen.ringe@charite.de
karl.aupperle@charite.de
cornelia.spies@charite.de
gruetzau@drfz.de
gruen@drfz.de
tobias.alexander@charite.de
hans.bastian@charite.de
bimba.hoyer@charite.de
listing@drfz.de
sandra.schneider@charite.de
Current Fields of Research

The central research objective is to define disease relevant marker genes and to improve therapy and therapeutic stratification in patients with chronic inflammatory rheumatic disorders. The primary focus will lie on a patient centred approach for finding new strategies in innovative therapy. Molecular and cellular disease mechanisms lead to clinical manifestations that result in a comprehensive pattern of molecular and clinical profiles, which are essential for early diagnosis. Depending on these profiles, patients will receive either standard or more innovative therapies that include early use of biologics.

A main focus of the research center is the autoreactive immunological memory that drives chronic inflammation and maintains autoimmunity. This autoreactive memory is refractory to immunosuppressive therapies. So far, it can be only eliminated by unselective immunoablative regimens followed by autologous stem cell transplantation that may lead to long-term treatment-free remissions in refractory autoimmune diseases. Therefore, the research aims to identify targets for a specific depletion of the autoreactive memory such as long-lived plasma cells.

A customized cDNA array for diagnosis, prognosis and prediction of anti-TNF therapy was generated. This array will be extended with other cell and disease specific candidate genes and transferred to a commercial test system based on oligomers. Besides custom-microarrays the application of multiparametric flow cytometry offers an attractive alternative. This technology allows the monitoring of potential candidate genes in concert with an estimation of the cellular immune status of almost all major leukocyte populations on the single cell level in peripheral blood samples.

Another focus of our current research is to develop core technologies based on multidisciplinary knowledge for cell biology, cell culture and biocompatible delivery materials. This group is primarily working with cells from mesenchymal tissues and has extensive experience in 3D cell cultures and in the translation of research into therapies. Major focus is the development of tissue engineered cartilage and bone constructs for regenerative therapies and for in vitro models of inflammatory pathomechanisms and targeted therapies.

The research of the Epidemiology Unit aims at the long-term outcome of inflammatory rheumatic diseases in adults and children, the process and outcomes of health care, and the evaluation of the safety and effectiveness of new therapies in real-life settings. The epidemiologists also participate in investigator-driven randomized clinical trials of new therapies.

Selected Publications

   IF=10,555


**Current Funding**
EU Autocure
SFB 633, 650, 760
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**WebPages**
http://rheumatologie.charite.de
http://www.drfz.de