Medical Immunology Campus Erlangen

An Interdisciplinary Center
of the Friedrich-Alexander-Universität
Erlangen-Nürnberg

Newsletter *Fall 2017*

CONTENT

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

EDITORIAL

Dear colleagues and friends,

On July 25, 2017, Prof. Martin Stratmann (President of the Max-Planck-Society), Prof. Joachim Hornegger (President of the FAU), Prof. Heinrich Iro (Medical Director of the Universitätsklinikum Erlangen) and Dr. Albrecht Bender (Commercial Director of the Universitätsklinikum Erlangen) signed the cooperation contract for a joint new *Center for Physics and Medicine* (ZPM). The signature ceremony took place in the Max Planck Institute (MPI) for the Science of Light in the presence of Ilse Aigner (Bavarian Minister for Economics, Media, Energy and Technology), Prof. Jürgen Schüttler (Dean of the Medical Faculty), and Dr. Florian Janik (Mayor of Erlangen), as well as Prof. Vahid Sandoghdar, Prof. Florian Marquardt and Prof. Philip Russell (Directors at the MPI). The ZPM, the establishment of which will be supported by the Bavarian Government with 60 Million €, will be built in close vicinity to the central campus of the Universitätsklinikum Erlangen. It will offer unique possibilities for joint research projects between physicists, biomathematicians, life science researchers and medical doctors to gain entirely new insights into disease pathogenesis including acute and chronic inflammatory processes.

As you all know, Georg Schett, Vahid Sandoghdar and I myself had prepared and submitted a preproposal for a Cluster of Excellence focusing on immunophysical determinants of disease chronification. Unfortunately, the international reviewing panel did not invite us to submit a full proposal, although the prior scientific achievements of the principal investigators, the infrastructure and program for promoting young and female scientists and the overall scientific environment here in Erlangen were much appreciated. The reviewers also acknowledged our highly innovative immunophysical approach, but wondered why it will be mainly used to address a rather conventional question. While we agree that disease chronification is a well-known immunological and clinical problem, it is still unresolved and therefore needs to be studied with new *in situ* methodologies in order to understand when and why acute inflammatory processes become chronic. Thus, we will enthusiastically pursue this line of research. The already established cooperation between various immunological research groups and the department of Vahid Sandoghdar at the MPI as well as the newly approved ZPM will form an excellent basis for continuous conceptual and technological advances and future successes.

From September 12 to 15, Erlangen was host of the 47th Annual Meeting of The German Society of Immunology (DGFI) on the occasion of the 50th anniversary of this society. The meeting was a great success, both in terms of the number of participants as well as the quality of the scientific contributions. I would like to particularly thank Hans-Martin Jäck for his initiative to have this meeting in Erlangen and his great efforts as chief organizer. You will find his detailed report on the meeting at the end of this newsletter.

Christian Bogdan

Prof. Christian Bogdan

SCIENTIFIC HIGHLIGHTS

Nanoparticles as B-cell targeting vaccines

Tailoring of humoral immune responses by nanoparticles functionalized with TLR-ligands

VLADIMIR TEMCHURA
INSTITUTE FOR CLINICAL AND MOLECULAR VIROLOGY, FAU ERLANGEN-NÜRNBERG, UNIVERSITÄTSKLINIKUM ERLANGEN

Despite great progress in the field of vaccine development, outbreaks of emerging pathogens and insufficient immunogenicity of some existing licensed and experimental vaccines are calling for novel technologies to tailor antibody responses. Biodegradable calcium phosphate nanoparticles (CaP-NP) have several advantages in safety, feasibility and costs compared to biological and polymer-based nanoparticles.

We recently observed that Cap-NP coated with proteins efficiently targeted and activated naïve antigen-specific B-cells *in vitro*. Immunization of mice with CaP-NP initiated primary proliferation of cognate B-cells in the draining lymph nodes and induced stronger immune responses than immunization with monovalent antigen. Further functionalization of the CaP-NP with various toll-like-receptor (TLR) ligands modulated both strength and quality (systemic IgG subtypes and mucosal IgA) of the humoral immune response. The properties of CaP-NP (size and shape; surface repetitive antigenic structures; biocompatibility, etc.) render them a competitor of virus-like particles (VLP) - nanoparticles of biological origin. In mice, CpG-containing CaP-NP were as immunogenic as lentiviral VLPs.

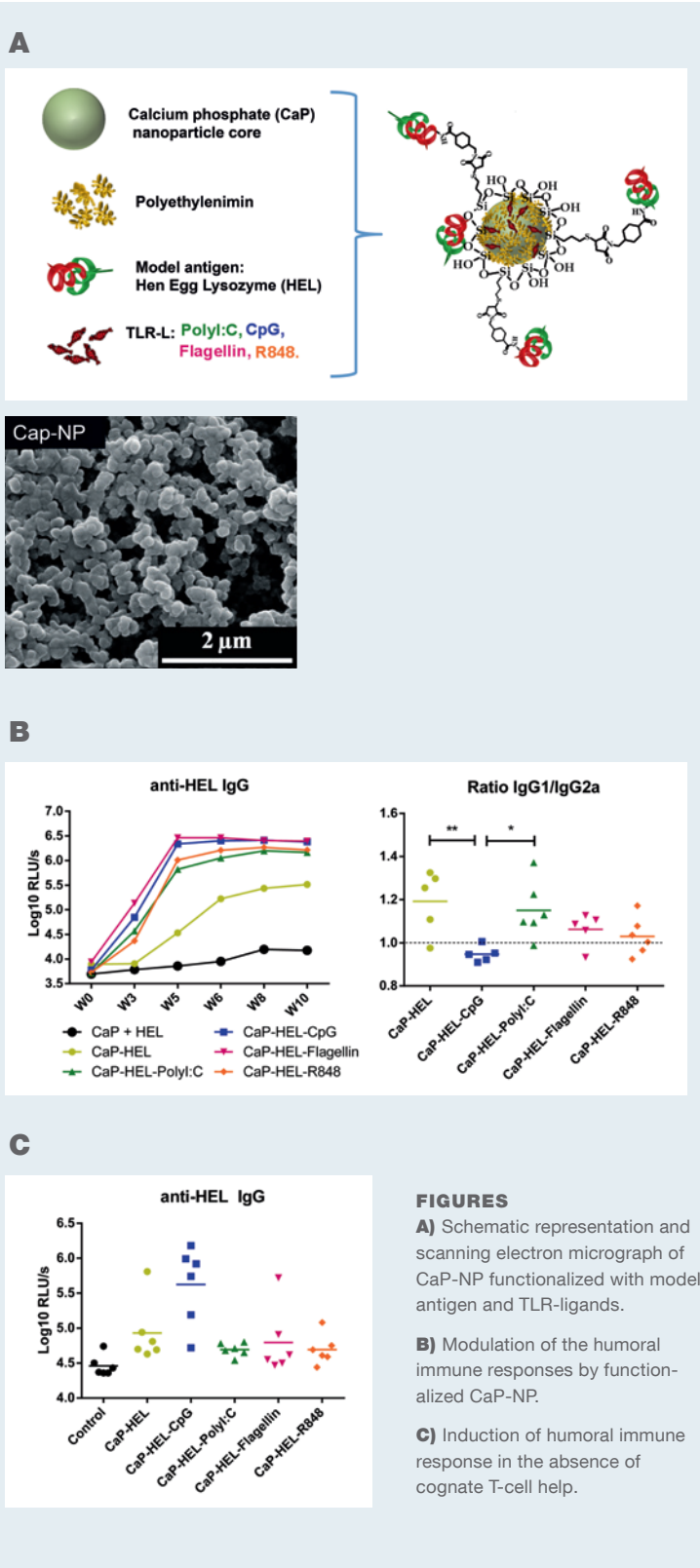
In the situation of impaired T-cell immunity, it may be critical to induce antibody response without cognate CD4+ T-cell help. Functionalization of CaP-NP with CpG also allowed overcoming lack of T-cell help and resulted in the induction of humoral responses.

Thus, our results indicate that CaP-NP B-cell targeting vaccines functionalized with TLR-ligands serve as a versatile platform for efficient induction and modulation of humoral immune responses on demand.

This work was done in cooperation with the lab of Mathias Epple (Inorganic Chemistry, University of Duisburg-Essen) and was supported by the DFG through TRR60.

Temchura VV., Kozlova D., Sokolova V., Uberla K. and Epple M. 2014. Targeting and activation of antigen-specific B-cells by calcium phosphate nanoparticles loaded with protein antigen. Biomaterials. 35:6098-6105.

Zilker C., Kozlova D., Sokolova V., Yan H., Epple M., Überla K. and Temchura V. 2017. Nanoparticle-based B-cell targeting vaccines: Tailoring of humoral immune responses by functionalization with different TLR-ligands. Nanomedicine. 13:173-182.



FIGURES

A) Schematic representation and scanning electron micrograph of CaP-NP functionalized with model antigen and TLR-ligands.

B) Modulation of the humoral immune responses by functionalized CaP-NP.

C) Induction of humoral immune response in the absence of cognate T-cell help.

SCIENTIFIC HIGHLIGHTS

Guards of the human immune system unraveled

Human lymphoid organ dendritic cell identity is predominantly dictated by ontogeny, not tissue microenvironment

GORDON HEIDKAMP, CHRISTIAN LEHMANN, LUKAS HEGER, DIANA DUDZIAK
LABORATORY OF DENDRITIC CELL BIOLOGY, DEPARTMENT OF DERMATOLOGY, FAU ERLANGEN-NÜRNBERG, UNIVERSITÄTSKLINIKUM ERLANGEN

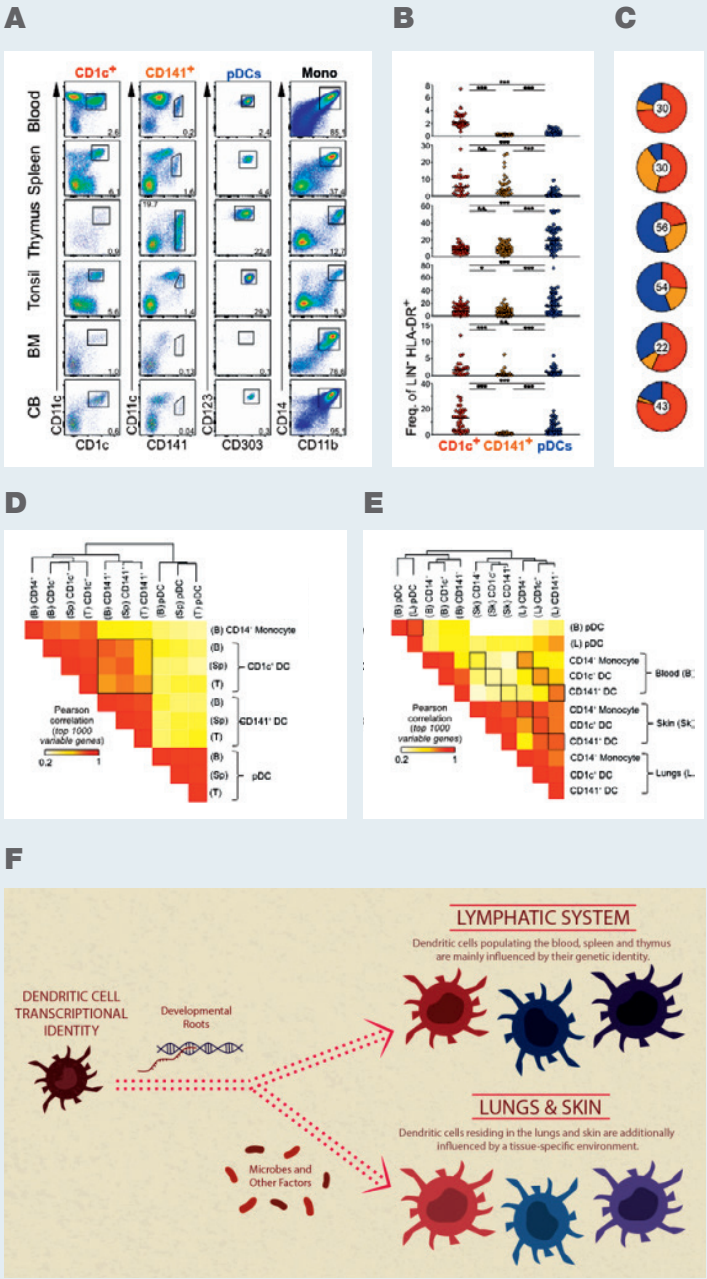
Dendritic cells (DCs), which are the most important professional antigen-presenting cells of the immune system, populate most parts of the human body. They act as guards by recognizing, engulfing, and processing foreign pathogens. Afterwards, DCs migrate to nearby lymph-nodes, where they interact with other immune cells to trigger a pathogen-specific immune response. In contrast, DCs are also involved in the maintenance of peripheral tolerance. Consequently, DCs play a fundamental role within the immune system.

In recent years, it became evident that mouse DCs are composed of different subtypes, which differ in function and distribution across the body. In contrast, less was known about the corresponding situation in humans.

In our work, we performed a global study, which, for the first time, systematically characterized DCs in multiple human organs. By using 16-color flow cytometry, we detected different DC subtypes, determined their distribution across the various organs and identified important cell surface proteins. Additionally, we isolated DCs from human blood, spleen, and thymus for microarray analyses. Together with Jil Sander and Joachim Schultze (Limes Institute, Bonn) we were able to demonstrate that the different subtypes share a constant profile, regardless of their initial location. Strikingly, our data further demonstrate that within non-lymphatic organs such as lungs and skin, tissue-specific signals have a higher impact on the transcriptional output of the DCs.

We expect that due to the importance of DCs these new data will have substantial impact on the therapy of immune diseases as well as on the development of new approaches to treat tumors.

Heidkamp G.F. · Sander J. · Lehmann C.H.K. · Heger L. · Eissing N. Baranska A. · Lühr J.J. · Hoffmann A. · Reimer K.C. · Lux A. · Söder S. Hartmann A. · Zenk J. · Ulas T. · McGovern N. · Alexiou C. · Sprie-wald B. · Mackensen A. · Schuler G. · Schauf B. · Forster A. · Repp R. Fasching P.A. · Purbojo A. · Cesnjevar R. · Ullrich E. · Ginhoux F. Schlitzer A. · Nimmerjahn F. · Schultze J.L. and Dudziak D. 2016. Human lymphoid organ dendritic cell identity is predominantly dictated by ontogeny, not tissue microenvironment. Sci Immunol. 10.1126/sciimmunol.aai7677.



FIGURES

A–C) Different frequencies of human DC subpopulations in different human tissues.

D–E) DCs are highly correlated between different human lymphoid tissues. In contrast, non-lymphoid tissue DCs, e.g. in the skin or lungs, are under a stronger control of tissue-derived factors.

F) Overview: DCs in lymphatic tissues are mainly influenced by their genetic identity, while in lungs and skin DCs are additionally affected by tissue-specific factors.

SCIENTIFIC HIGHLIGHTS

Neuroprotection in multiple sclerosis

Nimodipine fosters remyelination in a mouse model of multiple sclerosis and acts via a calcium channel-independent pathway on microglia

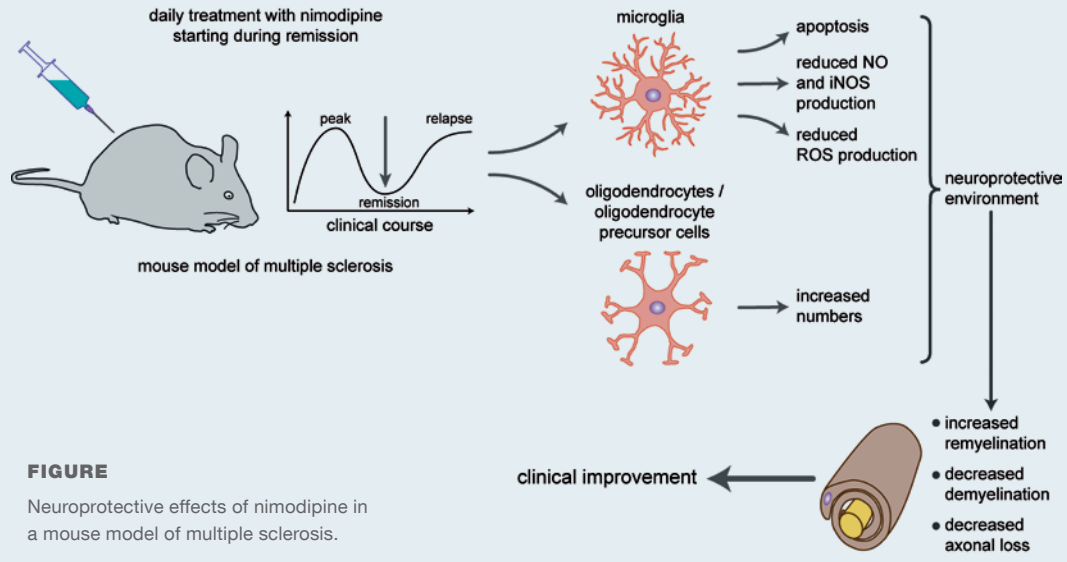
STEFANIE KÜRTEN[1] · RALF A. LINKER[2]

[1] INSTITUTE OF ANATOMY AND CELL BIOLOGY, FAU ERLANGEN-NÜRNBERG
[2] DEPARTMENT OF NEUROLOGY, FAU ERLANGEN-NÜRNBERG, UNIVERSITÄTSKLINIKUM ERLANGEN

Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system (CNS) and the most frequent neurological disease that leads to premature retirement in young adults. The focus of MS research has mainly been on modulating the immune response. While current therapeutic strategies are effective in reducing the relapse rate and attenuating clinical symptoms, they cannot cure the disease. Yet, the option to minimize neurodegeneration and trigger neuroregeneration will be a key in preventing progressive MS and brain atrophy. We used experimental autoimmune encephalomyelitis as a relapsing-remitting mouse model of MS to study the effects of the L-type calcium channel antagonist nimodipine on spinal cord degeneration. Our data demonstrate that nimodipine attenuated both the clinical course of the disease and the severity of relapses. This clinical improvement was associated with decreased demyelination and axonal loss, while the number of remyelinated nerve fibers was increased. Mechanistically, nimodipine induced microglia-specific apoptosis and inhibited the production of neurotoxic molecules such as nitric oxide (NO) generated by inducible NO synthase (iNOS) and reactive oxygen species (ROS). In addition, the numbers of mature oligodendrocytes and oligodendrocyte precursor cells were increased after nimodipine application. These data raise hopes that nimodipine may serve as the first treatment option for MS patients that promotes neuroregeneration, while also having immune modulatory capacities in the absence of severe side effects.

The work was performed by Andrea Schampel, a former PhD student in the lab of Stefanie Kürten. She is now postdoc at the Institute of Anatomy, University of Lübeck.

Schampel, A. · O. Volovitch · T. Koeniger · C.J. Scholz · S. Jorg R.A. Linker · E. Wischmeyer · M. Wunsch · J.W. Hell · S. Ergun and S. Kuerten. 2017. Nimodipine fosters remyelination in a mouse model of multiple sclerosis and induces microglia-specific apoptosis. Proc Nat Acad Sci USA 114:E3295-E3304.



FIGURE

Neuroprotective effects of nimodipine in a mouse model of multiple sclerosis.

SCIENTIFIC HIGHLIGHTS

Macrophage activation at the network level

Systems biology elucidates macrophage regulation from high-throughput data

MARTIN EBERHARDT · FLORIAN DREYER · MARTINA CANTONE · JULIO VERA
LABORATORY OF SYSTEMS TUMOR IMMUNOLOGY, FAU ERLANGEN-NÜRNBERG, UNIVERSITÄTSKLINIKUM ERLANGEN

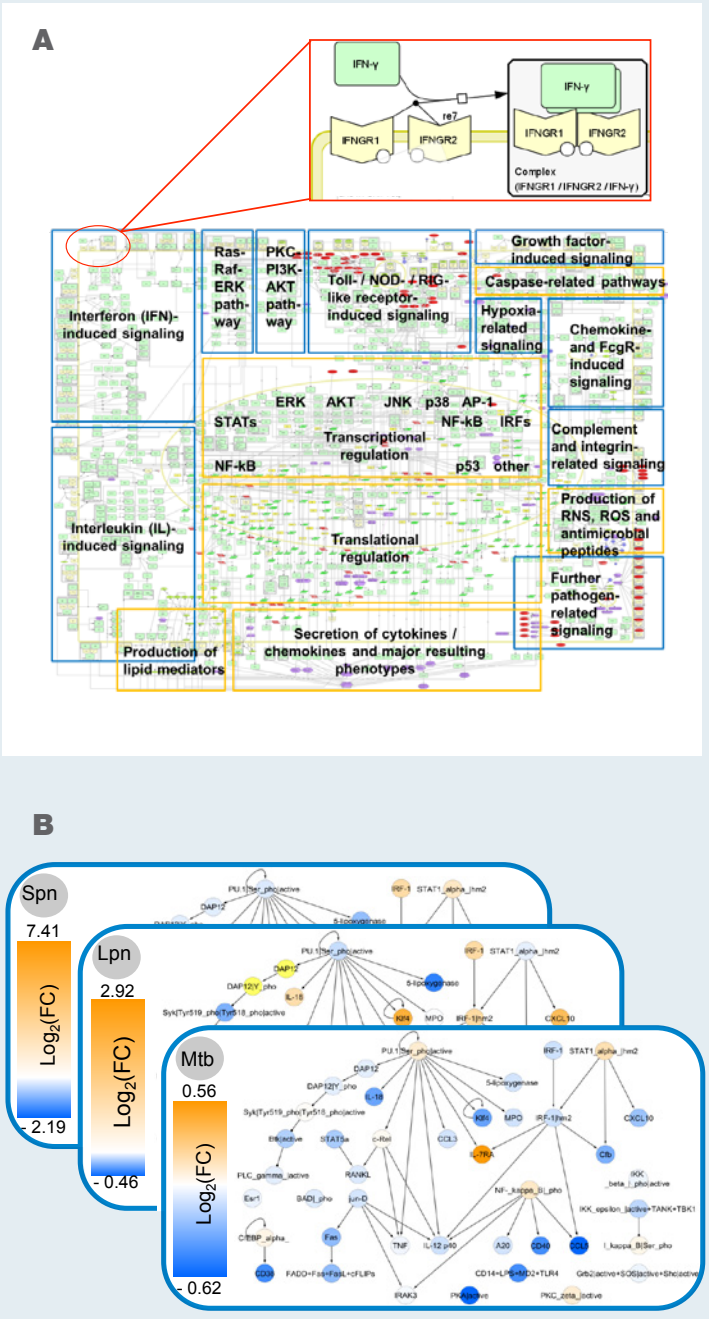
The phenotypic response of every immune cell type is controlled by a distinctive, highly interlinked regulatory network composed of molecules such as cytokines, receptors, signaling mediators, transcription factors and non-coding RNAs. To understand the behavior of this complex network, high-throughput data, advanced computational approaches and bioinformatics tools are indispensable.

In our work, we reconstructed and curated a comprehensive network accounting for the signal transduction pathways and crosstalks triggered in inflammatory macrophages (Mϕ). The network is provided as web-based tool designed to facilitate the visualization, exploration and analysis of high-throughput data on Mϕ stimulation. It comes in two confidence levels: a high-confidence, manually curated core containing approximately 1000 interactors, and a lower-confidence computational expansion conceived for supporting hypothesis derivation and the designing of experiments. The platform comes preloaded with 44 data sets taken from the recent literature.

In a case study, we employed the expanded network to investigate therapeutic opportunities against lung infections with three common pathogens – *Streptococcus pneumoniae, Legionella pneumophila* and *Mycobacterium tuberculosis*. We isolated a differentially regulated network of 41 factors, including TNF, CCL5, CXCL10, IL-18, and IL-12 p40, and identified 140 drugs targeting sixteen of them. Among those, the estrogen receptor featured prominently as a multi-drug target whose potential in pneumonia therapy warrants further study.

The networks and the web tool are freely available at: https://vcells.net/macrophage.

Wentker P. · Eberhardt M. · Dreyer F.S. · Bertrams W. · Cantone M. Griss K. · Schmeck B. · Vera J. 2017. An Interactive Macrophage Signal Transduction Map Facilitates Comparative Analyses of High-Throughput Data. J Immunol 198(5):2191-2201.



FIGURE

A Signaling network controlling inflammatory macrophage activation.

B Core differentially regulated network after macrophage infection by *S. pneumoniae, L. pneumophila* and *M. tuberculosis*

SCIENTIFIC HIGHLIGHTS

Resolution of inflammation by interleukin-9-producing type 2 innate lymphoid cells

Interleukin 9 triggers resolution of inflammation via ILC2-T_{reg} axis

SIMON RAUBER · GEORG SCHETT · JÖRG H.W. DISTLER · ANDREAS RAMMING
DEPARTMENT OF INTERNAL MEDICINE 3, FAU ERLANGEN-NÜRNBERG, UNIVERSITÄTSKLINIKUM ERLANGEN

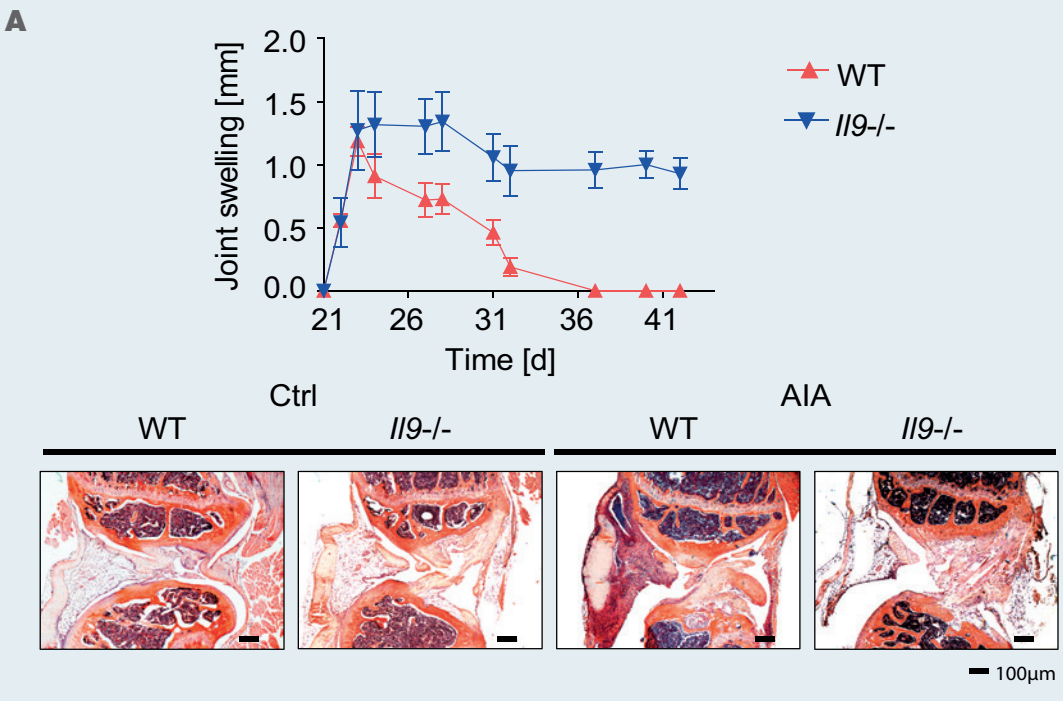
Arthritis is one of the most chronic forms of inflammatory disease in humans. Current cytokine-targeting strategies exclusively suppress the activation pathways rather than foster resolution of disease. We provide evidence for a new concept in inflammatory medicine by modifying cytokine pathways relevant for resolution of inflammation.

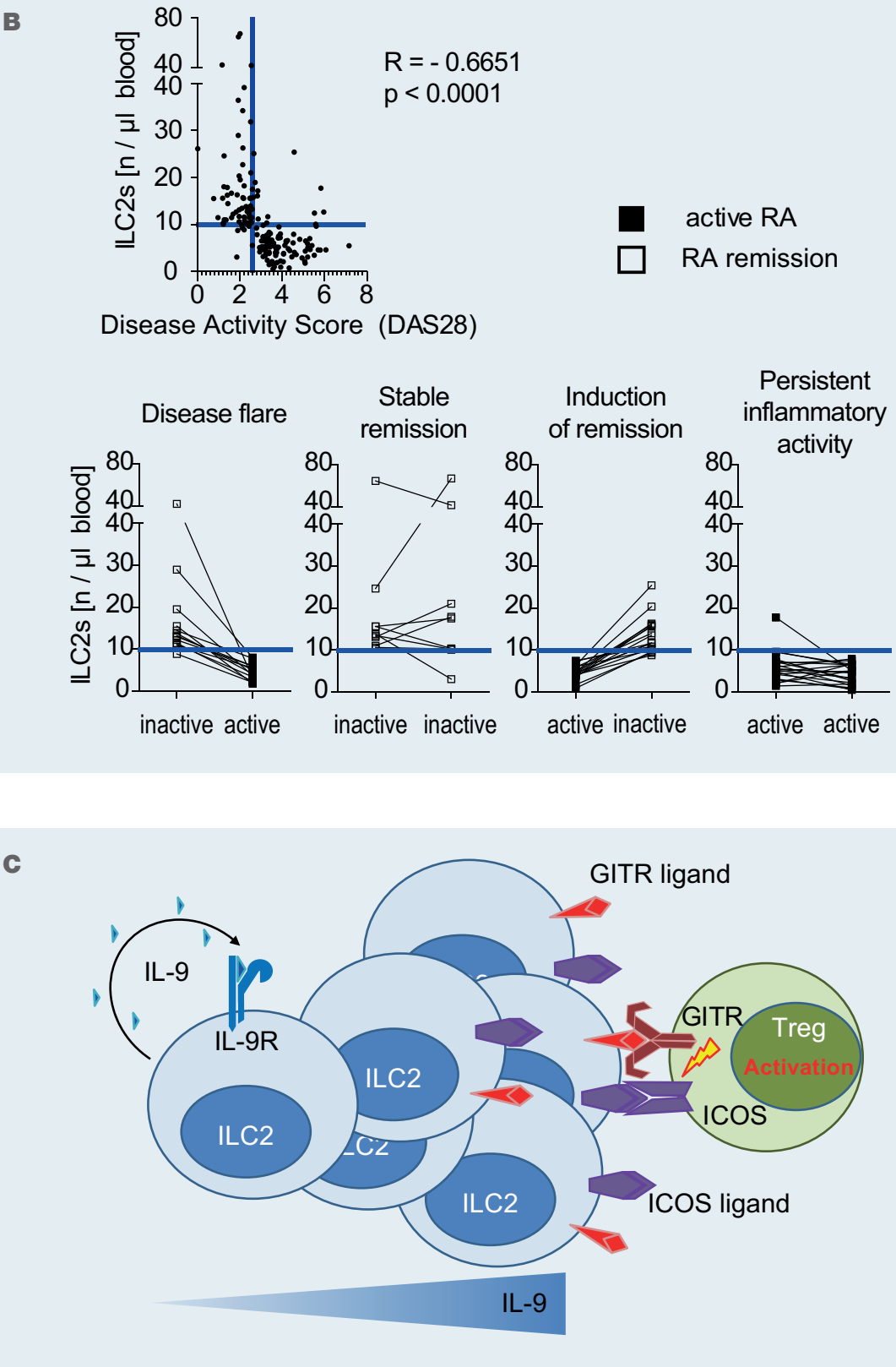
Interleukin (IL)-9 induces resolution of inflammation by induction of type 2 innate lymphoid cells (ILC2s) in an autocrine loop with subsequent ILC2-driven activation of regulatory T cells (T_{regs}). The effect of ILC2s on T_{regs} requires a direct interaction between these cell types. IL-9 upregulates inducible T cell co-stimulator ligand (ICOS-L) and glucocorticoid-induced tumour necrosis factor-related ligand (GITR-L) on ILC2s, which bind to the receptors ICOS and GITR, respectively, on T_{regs} to promote T_{reg} cell activity.

IL-9 thereby acts as a natural breakpoint in limiting arthritis. Lack of IL-9 led to a persistent arthritis and failure to resolve this process, while approaches enhancing IL-9 allowed rapid resolution of disease. IL-9 also prevented the detrimental link between inflammation and bone destruction in arthritis. In humans, low numbers of IL-9^+ ILC2s were found in the joints of patients with active rheumatoid arthritis, whereas individuals in clinical remission had a high number of these cells.

Improving the resolution of inflammation is relevant to numerous immune disorders. IL-9 driven activation of ILC2s might thus provide a novel therapeutic anchor to induce resolution of chronic inflammatory disease and to restore immune homeostasis.

Rauber S. · Luber M. · Weber, S. · Maul L. · Soare A. · Wohlfahrt T. Lin N-Y. · Dietel K. · Bozec A. · Herrmann M. · Kaplan M.H. · Weigmann B. Zaiss M.M. · Fearon U. · Veale D.J. · Cañete J.D. · Distler O. · Rivellese F. Pitzalis C. · Neurath M.F. · McKenzie A.N.J. · Wirtz S. · Schett G. Distler J.H.W. · Ramming A. 2017. Resolution of inflammation by interleukin-9-producing type 2 innate lymphoid cells. Nature Medicine 23(8):938-944.





LEGEND

A) IL-9 deficiency provokes chronification of antigen-induced arthritis (AIA).

B) Number of ILC2s correlates with disease activity in patients with rheumatoid arthritis. Longitudinal observations of peripheral blood ILC2 counts in RA patients revealed an inverse relation between ILC2s and disease activity (measured by the standardized disease activity score 28 (DAS28)) over time.

C) IL-9-induced autocrine activation of ILC2s up-regulates ICOS-L/GITR-L expression and induces T_{reg} activation via ICOS and GITR.

PEOPLE

Introducing our new members

Welcome Prof. Dr. Stefanie Kürten

Prof. Stefanie Kürten is the new Head of the Institute of Anatomy and Cell Biology

The *Medical Immunology Campus Erlangen* cordially welcomes its new member Prof. Stefanie Kürten, who, as of April 2017, is the new Director of the Institute of Anatomy and Cell Biology, FAU Erlangen-Nürnberg. The young scientist, born in 1984, studied medicine and obtained her M.D. degree (*summa cum laude*) at the University of Cologne after several research stays at the Louis Stokes VA Medical Center in Cleveland, Oh, USA. At the age of 29, Prof. Kürten was appointed W2 Professor for Anatomy and Cell Biology at the University of Würzburg, where she spent four more years before becoming the Head of the Institute of Anatomy and Cell Biology in Erlangen. For the past eleven years, Stefanie Kürten has devoted her research to the immunopathogenesis of multiple sclerosis (MS) with a special focus on the role of autoreactive B cells as well as neuroprotective therapy. Prof. Kürten has shown that the presence of brain antigen-reactive B cells in the blood of MS patients can predict the therapeutic benefit of a MS drug and therefore hold promising potential as a biomarker.

Prof. Stefanie Kürten

Prof. Matthias Tenbusch

Welcome Prof. Dr. Matthias Tenbusch

Prof. Matthias Tenbusch joins the Virology Institute as a new W2 Professor for Gene-based Immunizations

Prof. Tenbusch studied Biochemistry and obtained his Ph.D. at the Ruhr-University of Bochum (RUB). During his Post-Doc research period, he spent three months as a guest scientist in the laboratory of Prof. Ralph Steinman at the Rockefeller University in New York, USA. Before joining the Institute for Molecular and Clinical Virology at the Universitätsklinikum Erlangen as W2 Professor for Gene-based Immunizations in February 2017, Prof. Tenbusch served as interim head of the Department of Molecular and Medical Virology at the RUB for two years.

After discovering that an adenoviral vector vaccine containing viral antigens from Influenza A and Respiratory Syncytial Virus was most effective when applied via the mucosal route, part of Prof. Tenbusch's research focuses on the interaction between mucosal and systemic immune cells. Another research interest of Prof. Tenbusch is dedicated to the therapeutic immunization in the allergen-induced asthma model using adenoviral vectors encoding DC-targeted antigens.

PEOPLE

Prof. Dr. Dimitrios Mougiakakos

Appointment as W2 Professor for Tumor Immunology at the Department of Medicine 5

Dimitrios Mougiakakos was appointed W2 Professor for Tumor Immunology at the Department of Medicine 5, Universitätsklinikum Erlangen in January 2017. Prof. Mougiakakos' research interest is on tumor metabolism as a therapeutic target. It is known that our immune system is closely connected to our metabolism. Prof. Mougiakakos and others have shown that the breakdown of certain amino acids or the excessive release of oxygen radicals by tumor cells leads to immune cell disruptions or even apoptosis. Decoding the underlying (metabolic) strategies should help to optimize the intrinsic immune responses as well as the efficiency of immunotherapeutic approaches.

SOURCE: Dimitrios Mougiakakos

Prof. Dimitrios Mougiakakos

After studying medicine in Hannover, Prof. Mougiakakos continued his research and medical activities at the Universities of Freiburg and Regensburg. Having spent three years as Post-Doc at the Karolinska Institute in Stockholm, Sweden, he joined the Universitätsklinikum Erlangen in 2011 as Head of the Translational Transplantation and Tumor Immunology Research Group. In 2016, Dimitrios Mougiakakos succeeded in obtaining the renowned Excellence Scholarship of the Else-Kröner-Fresenius Foundation worth 300.000 € for the duration of two years.

Prof. Dr. Reinhold Eckstein

SOURCE: Stadt Erlangen

Dr. Joachim Herrmann, Minister of Interior Affairs of the State of Bavaria (left) with Prof. Dr. Reinhold Eckstein (right).

Prof. Dr. Reinhold Eckstein received the Cross of the Order of Merit of the Federal Republic of Germany

Reinhold Eckstein, Head of the Department of Transfusion Medicine and Haemostaseology at the Universitätsklinikum Erlangen, was honored with the Cross of the Order of Merit of the Federal Republic of Germany (Bundesverdienstkreuz am Bande) for his outstanding achievements in the area of transfusion medicine. Prof. Eckstein has shown extraordinary dedication and commitment in numerous transfusion medicine-related associations and societies on a local and national level (e. g. »Lebensbank Universitätsklinikum Erlangen«, a non-profit organization providing a database for umbilical cord stem cell transplants). The Order of Merit is the highest decoration in Germany and is conferred to raise public attention for excellent accomplishments serving the public welfare.

Industrial exhibition and participants

NEWS AND UPDATES

47th Annual Meeting of the German Society for Immunology (DGfI)

September 12 –15, 2017

Heinrich-Lades-Halle, Erlangen
www.immunology-conference.de

The German Society for Immunology e.V. (DGfI), which was founded on July 7, 1967, celebrated its 50th anniversary with more than 1000 participants from 27 different countries at its recent annual meeting in Erlangen. The decision of the DGfI council to have this jubilee meeting take place in Erlangen was not only due to the fact that Erlangen had never hosted a DGfI annual conference, but also reflected the appreciation of the internationally recognized immunology research at the FAU and the Universitätsklinikum.

In three plenary sessions, 12 main symposia, 25 workshops and four satellite symposia more than 200 scientific lectures discussed the latest achievements in basic and clinical immunology, complemented by almost 500 posters. Junior scientists had the opportunity to give short talks on their research work in front of a large audience in the "Young Immunologists' Session", and outstanding young researchers received various prestigious prizes that are anually awarded by the DGfI. Furthermore, a total of 59 exhibitors presented the latest innovative products and developments for research and diagnostics.

During the opening ceremony of the conference, which was chaired by the conference president Prof. Hans-Martin Jäck, Prof. Christian Bogdan gave an overview on the city of Erlangen and the development of the field of immunology at the Universitätsklinikum and the FAU. A particular highlight was the lecture by Prof. Fritz Melchers (Berlin) on the discovery of antibodies. In his keynote lecture during the President's symposium, Prof. Tak Mak (Toronto), one of the worldwide leading immunologists, gave a personal overview on some of his milestone discoveries and on the fruitful work with a long list of German postdocs during the past decades.

Exciting results relevant for immunotherapy were presented by several renowned scientists. To name just a few: Prof. Klaus Rajewsky (Berlin), one of the founders of the DGfI, reported on new findings on therapies for B cell tumors. Prof. Georg Schett (Erlangen) talked about novel approaches to treat inflammatory diseases of the joints, Prof. Dirk Haller (Freising) reviewed unexpected observations on the role of the microbiome in health and disease, and Prof. Ugur Sahin (Mainz) showed how the analysis of the mutanome of cancer cells will pave the way for the development of new and powerful anti-cancer drugs. Prof. Stefan H. E. Kaufmann (Berlin) summarized his pioneering work on the development of a new vaccine against tuberculosis, and Prof. Schuler (Erlangen) presented the latest data on the outcome of his clinical trials on DC therapy for melanoma.

Pictures © Jacqueline Hirscher

FROM LEFT TO RIGHT: Fritz Melchers, Hans-Martin Jäck, Michael Lohoff and Christian Bogdan during the opening ceremony of the 47th Annual Meeting

Other clinically oriented lectures covered new therapies to treat, for example, hematological tumors by checkpoint antibodies and CARs (chimeric antigen receptor). The CAR technique represents a new cancer immunotherapy, in which T cells from e.g. a patient with acute lymphatic leukemia are modified outside the body by gene transfer. A few weeks ago, this first individualized gene tumor therapy was approved for clinical use in the USA. Further current research in the field of infectious diseases and immunodeficiency was presented. The latest findings on a new type of HIV vaccination were particularly exciting. Prof. Michael Lohoff, current president of the DGfI, emphasized the high priority of basic research, which precedes the successful translation into immunotherapies.

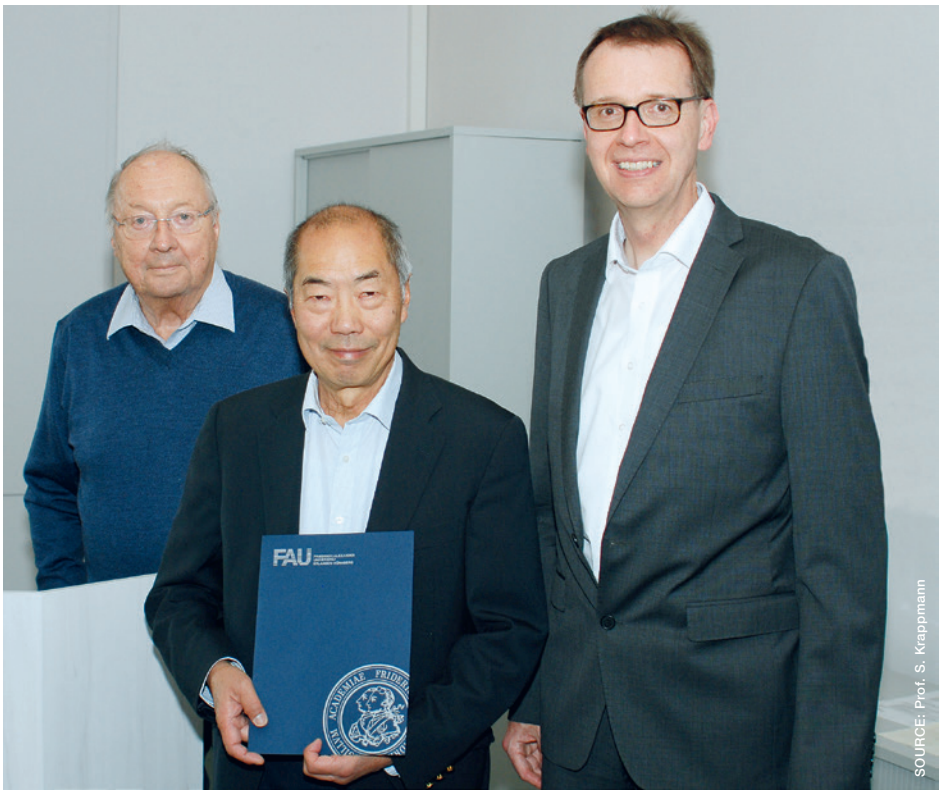
The annual meeting was accompanied by the exciting poster exhibition "The Birth of Immunology" and a comprehensive commemorative Festschrift on the history of immunology in Germany. The DGfI has also used the birthday celebration to prepare together with Trillium Publishing the inaugural issue of a new society magazine ("Trillium Immunologie"), which intends to bring immunology closer to a broad readership in Germany. The meeting closed with a lively birthday party attended by 400 guests who celebrated until early morning.

The organizers would like to thank all participants for their scientific contribution and for making this conference an enjoyable, memorable and scientifically rewarding occasion.

NEWS AND UPDATES

Joachim Kalden Lecture 2017

The *Medical Immunology Campus Erlangen* honors Prof. Dr. Tak Wah Mak



From left: Prof. Joachim Kalden (former Director of the Department of Medicine III), Prof. Tak Wah Mak holding the certificate of the Joachim Kalden Lecture and Prof. Christian Bogdan (spokesman of the *Medical Immunology Campus Erlangen* and Director of the Institute of Clinical Microbiology, Immunology and Hygiene).

Prof. Tak Mak, Director of the Campbell Family Institute for Breast Cancer Research at Princess Margaret Cancer Centre in Toronto, Canada, presented this year's Joachim Kalden Lecture of the *Medical Immunology Campus Erlangen*, which took place on September 11, 2017. Dr. Mak's widespread research interests include the development, activation and differentiation of T cells, the regulation of apoptosis as well as the search and identification of genes involved in the pathogenesis of cancer. Prof. Tak Mak's most renowned research finding was the cloning of a human T cell receptor gene in the year 1984. In 1995, his team discovered that CTLA4 is a negative regulator of T cell activation in mice, paving the way for the development of CTLA4-agonists and anti-CTLA4-antibodies now in clinical use for the treatment of autoimmune diseases or cancer, respectively. Dr. Mak's lab also made major contributions to defining the functions of PTEN as well as the relationship between the breast cancer susceptibility genes BRCA1 and BRCA2 and defects in DNA repair.
Tak Mak, who is one of the most cited immunologists in the world, contributed to over 700 papers and holds Honorary Doctoral Degrees from numerous universities in North America and Europe. He is an Officer of the Order of Canada and has won international recognition in the form of various scientific distinctions such as the Emil von Behring Prize, the King Faisal Prize for Medicine as well as the Paul Ehrlich and Ludwig Darmstaedter Prize.

In his captivating lecture about »The Four Horsemen of Apocalypse«, Prof. Mak talked about (a) mutations of the isocitrate dehydrogenase genes 1 and 2 and their role in T cell lymphomas and leukemias, (b) the function of glutamate cysteine ligase in T cell activation and autoimmune diseases, (c) the importance of acetylcholine derived from T lymphocytes for protective adaptive immune responses against viruses (d) and the discovery and clinical impact of checkpoint inhibitors in anti-tumor responses.

UPCOMING EVENTS

Immunological Colloquium of the Medical Immunology Campus Erlangen – Winter 2017 Tuesdays, 5.15 pm

28. 11. 2017
Dr. Antigoni Triantafyllopoulou
University Medical Center Freiburg, Department of Rheumatology and Clinical Immunology
DNA damage signals instruct macrophage differentiation in granulomatous diseases

05. 12. 2017
Prof. Steffen Jung
Weizmann Institute of Science, Rehovot, Israel
Macrophage strategies in gut and brain

12. 12. 2017
Prof. Andrew Mellor
Institute of Cellular Medicine, Newcastle University, UK
Exploiting DNA as an immune adjuvant to treat cancer & autoimmune syndromes

19. 12. 2017
Dr. Gerald Wirnsberger
IMBA – Institut für Molekulare Biotechnologie GmbH, Wien, Österreich
Genetics and regulation of anti-fungal immune responses – towards immunotherapy for an infectious disease?

09. 01. 2018
Prof. Séverine Vermeire
Department of Gastroenterology, University hospitals Leuven, Belgien
Genetics and regulation of anti-fungal immune responses – towards immunotherapy for an infectious disease?

16. 01. 2018
Prof. Ivan Dikic
Institut für Biochemie II, Universtitätsklinikum Frankfurt
Catalysis and Inhibition of Phosphoribosyl-dependent Ubiquitination

23. 01. 2018
Prof. Burkhard Ludewig
Institut für Immunbiologie, Kantonspital St. Gallen, Schweiz
Stromal cell – innate lymphoid cell interaction

06. 02. 2018
Prof. Uwe Ködel
Neurologische Klinik und Poliklinik, Klinikum der Universität, München
Mechanisms of pathogen recognition and immune activation in pneumococcal meningitis

27. 02. 2018
Prof. Dirk Brenner
Luxembourg Institute of Health, Luxembourg
Metabolism during T cell responses

Conferences and Events of Interest

February 19 – 21, 2018
70th Annual Meeting of the German Society of Hygiene and Microbiology
Bochum http://www.dghm-kongress.de/

March 7 – 9, 2018
Symposium »Infektion und Immunabwehr«, Fachgruppe Infektionsimmunologie der DGFI und DGHM
Burg Rothenfels

March 14 – 17, 2018
28th Annual Meeting of the Society for Virology
Würzburg http://www.virology-meeting.de/

September 2 – 5, 2018
5th European Congress of Immunology
Amsterdam https://www.eci2018.org/home/

September 27 – 29, 2018
32th Annual Conference of the European Macrophage and Dendritic Cell Society
Verona http://www.emdsverona2018.com/

Medical Immunology Campus Erlangen

An Interdisciplinary Center of the Friedrich-Alexander-Universität Erlangen-Nürnberg

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We are looking forward to suggestions for the next MICE newsletter.
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