LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

SFB 1054 International Symposium

CELLULAR AND MOLECULAR REGULATION OF IMMUNITY IN BARRIER ORGANS

Friday 27th November 2015, Munich

SFB 1054 Control and Plasticity of Cell-Fate Decisions in the Immune System

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Dear SFB members, dear guests,

I would like to welcome you to the symposium „Cellular and molecular regulation of immunity in barrier organs" organized by our Collaborative Research Center (SFB 1054). Immune cells in epithelial barrier organs, such as skin, lung and intestine are constantly exposed to microbial and environmental factors, which shape their development and function in a tissue-specific manner. Dendritic cells, macrophages, innate lymphoid cells and T cells are critically involved in tissue homeostasis and immune defense in these organs. High-throughput siRNA and CRISPR/Cas9 technologies have opened the door to discovery of molecules with previously unknown function which play central roles in the development and activity of these immune cell types in their specific tissue environment.

For this symposium, which is financed by the German Research Foundation gender equality funds, we invited six accomplished female immunologists, who are leading researchers in this field. Our aim is to encourage our female PhD students and postdocs to further pursue a scientific career and to increase the number of women in leading positions in Immunology. Universities and other research institutions face the challenge to attract and retain more women in science. Recent studies identify measures, which may help to achieve this goal. The speakers will share their own experiences and discuss these issues with SFB members.

Anne Krug *(SFB 1054)*

Program

10:00 – 12:00	**Round table discussion**	**Lecture Hall F 1.20**
	Gender Equality and Science *(moderation by CLPM, LMU)*	
	12:00 – 13:00 Lunch	**Room D 0.30**

Session 1	**Chair: Thomas Brocker**	**Lecture Hall F 1.08**
13:00 – 13:15	**Anne Krug** *(SFB 1054)* – **Welcome adress** **Barbara Conradt** *(LMU vice president)* – **Welcome adress**	
13:15 – 13:45	■ **Irmgard Förster** *Life & Medical Sciences (LIMES) Institute, University of Bonn* **Environmental regulation of immune responses through the AhR/AhRR sensory system**	
13:45 – 14:15	■ **Claudia Jakubzick** *Dept. of Pediatrics, National Jewish Health and Dept. of Immunology and Microbiology, University of Colorado* **Double-edged sword: Self-acquiring Batf3-dendritic cells are required for anti-tumor immunity and graft rejection**	
14:15 – 14:45	■ **Muzlifah Haniffa** *Institute of Cellular Medicine, Newcastle University* **Functional heterogeneity of human mononuclear phagocytes in health and inflammation**	
14:45 – 15:15	■ **Lisa Horvath** *Chair of Research and Science Management,Technical University Munich* **Attracting and retaining women in science**	
	15:30 – 16:00 Coffee Break	**Room D 0.30**

Session 2	**Chair: Anne Krug**	**Lecture Hall F 1.08**
16:00 – 16:30	■ **Christina Zielinski** *Institute of Medical Microbiology, Immunology and Hygiene, Technical University Munich* **Regulation of pro- and anti-inflammatory human T cell properties in health and inflammation**	
16:30 – 17:00	■ **Chiara Romagnani** *Deutsches Rheuma Forschungszentrum, Berlin* **Activation and differentiation of human innate lymphoid cells**	
17:00 – 17:30	■ **Sonia Sharma** *Division of Cellular Biology, La Jolla Institute for Allergy & Immunology, Division of Cellular Biology, RNAi Center* **A systematic dissection of type I Interferon signaling using a high-throughput functional genomics approach**	
	19:30 Speaker's dinner	

Round table discussion 10:00

Gender Equality and Science

Moderation: **Irmgard Mausz, LMU Center for Leadership and People Management**

Even though conditions for women working in science have greatly improved, many female scientists are still deterred from pursuing a career in science at the highest levels. In the round table discussion the speakers will discuss about gender equality and careers in science and share their own experiences.

Session 1

Welcome adress: **Anne Krug, Barbara Conradt** 13:00

Session 1

Irmgard Förster, *University of Bonn, Germany* 13:15

Environmental regulation of immune responses through the AhR/AhRR sensory system

The aryl hydrocarbon receptor (AhR) is a ligand-activated transcription factor, which senses environmental chemicals. Besides its important role in xenobiotic metabolism, the AhR has been identified as a potent immune regulator. AhR activity is regulated by feedback inhibition through the AhR Repressor (AhRR). Using AhRR-EGFP reporter mice we could show, that the AhRR is mainly expressed in immune cells of the intestine and skin in response to AhR stimulation. AhRR-deficient mice are protected from LPS-induced septic shock, producing strongly reduced levels of proinflammatory cytokines. In contrast, AhRR deficiency imposes enhanced sensitivity to dextran sulfate induced colitis similar to that seen in AhR-deficient mice. We propose that constant stimulation of the AhR/AhRR pathway in response to dietary, microbial and environmental factors is essential for an adequate balance of barrier immunity.

Claudia Jakubzick, *University of Colorado, USA* 13:45

Double-edged sword: Self-acquiring Batf3-dendritic cells are required for anti-tumor immunity and graft rejection

The first half of the talk will illustrate how TLR3 and TLR7 ligands selectively activate pulmonary dendritic cells (DCs) to induce a cytotoxic T cell response (CTL) and when the DC is correctly matched: tumor antigen + TLR adjuvant an efficacious anti-tumor response occurs, whereas the second part of the talk will highlight the detrimental contribution of Batf3-dependent DCs (CD103+ and CD8+ DCs) for minor-antigen mismatched grafts.

Part 1: DCs are required for the induction of CTL. In most tissues, including the lung, the resident DCs fall into two types expressing the integrin markers CD103 and CD11b. The current supposition is that DC function is predetermined by lineage, designating the CD103+ DC as the major cross-presenting DC able to induce CTL. We found that Poly I:C (TLR3 agonist) or R848 (TLR7 agonist) do not activate all endogenous DCs. CD11b+ DCs can orchestrate a CTL response in vivo in the presence of a TLR7 agonist but not a TLR3 agonist, whereas CD103+ DCs require ligation of TLR3 for this purpose. This selectivity does not extend to antigen cross-presentation for T-cell proliferation but is required for induction of cytotoxicity. Thus, demonstrating the ability of DCs to induce functional CTLs is specific to the nature of the pathogen-associated molecular pattern (PAMP) encountered by endogenous DC.

Part 2: In transplantation, a major obstacle for graft acceptance in major histocompatibility complex (MHC) matched individuals is the mismatch of minor histocompatibility antigens. Minor H antigens are peptides derived from polymorphic proteins that can be presented by antigen-presenting cells (APC) on MHC molecules. The APC subtype uniquely responsible for the rejection of minor antigen-mismatched grafts had not yet been identified. Using three graft rejection models, we demonstrated that Batf3-dependent DCs are the APCs required for rejection of cells and grafts expressing mismatched minor antigens. The implication of our findings for clinical transplantation is significant, as minor antigen reactivity is strongly implicated in the pathogenesis of multiple allograft tissues. The ability to specifically target minor antigen reactivity in transplant recipients has the potential to dramatically improve transplant outcomes.

Muzlifah Haniffa, *Newcastle University, UK* 14:15

Functional heterogeneity of human mononuclear phagocytes in health and inflammation

Dendritic cells (DCs), monocytes and macrophages are a heterogeneous population of mononuclear phagocytes that are involved in antigen processing and presentation to initiate and regulate immune responses to pathogens, vaccines, tumour and tolerance to self. In addition to their afferent sentinel function, DCs and macrophages are also critical as effectors and coordinators of inflammation and homeostasis in peripheral tissues. Harnessing DCs and macrophages for therapy has major implications for a wide range of clinical applications. There has been a paradigm shift in our understanding of the development and function of mononuclear phagocytes. Significant progress has been made in both human and mouse mononuclear phagocyte biology. This progress has been accelerated by comparative biology analysis between mouse and human, which has proved to be an exceptionally fruitful strategy to harmonise findings across species. Such analyses have provided unexpected insights and facilitated productive reciprocal and iterative processes to inform our understanding of human and mouse mononuclear phagocytes. In this seminar, I will discuss the strategies, power and utility of comparative biology approaches to integrate recent advances in human and mouse

mononuclear phagocyte biology and its potential to drive forward clinical translation of this knowledge. I will also present a functional framework on the parallel organisation of human and mouse mononuclear phagocyte networks.

Lisa Horvath, *Technical University Munich, Germany* 14:45

Attracting and Retaining Women in Science

Although women earn roughly 50% of university degrees in Germany, they are still under-represented in higher levels in science such as professorships. The present talk presents recent research findings on how to attract more women to scientific careers and how to keep them on the academic track. For instance, female students were more willing to apply for scholarships when communal job requirements (e.g., collaborative, helpful) were used in the advertisement compared to agentic requirements (e.g., determined, analytical). In recruitment processes for professorships, female academics were rated as more favorable when they had more single authorships than first-authorships with multiple co-authors, or when the vacant position was advertised with a gender-fair title instead of a masculine title. Research findings are discussed with regard to practical implications.

Session 2

Christina Zielinski, *Technical University Munich, Germany* 16:00

Regulation of pro- and anti-inflammatory human T cell properties in health and inflammation

Inflammation needs to be tightly regulated and restricted to injurious stimuli because it will otherwise lead to bystander tissue damage, release of self-antigens and thus potentially to the development of autoimmune diseases. We have recently demonstrated that human Th17 cells, which have so far been considered crucial drivers of auto-reactive tissue damage, can have anti-inflammatory properties. By up-regulating IL-10 after the peak of the immune response, they initiate a self-regulatory feedback loop that terminates Th17 cell responses after antigen clearance. These self-regulatory Th17 cell subsets differ from their pro-inflammatory counterparts by distinct microbial TCR specificities and differential cytokine priming requirements. We also demonstrate that dietary metabolites that accumulate in human skin promote the generation of anti-inflammatory Th17 cell functionalities with implications for cutaneous tolerance mechanisms. Our discovery of GM-CSF-only producing T helper cells further adds to the growing complexity of T helper cell subsets with specialized functions in distinct tissues.

Chiara Romagnani, *Deutsches Rheuma Forschungszentrum, Berlin, Germany* 16:30

Activation and differentiation of human ILCs

Innate lymphoid cells (ILCs) are an emerging family of innate effectors preferentially enriched in tissues and mucosal surfaces which contribute to the defense against pathogens as well as to regulate inflammation and tissue homeostasis. ILCs comprise of three main groups of cells, namely group 1 ILCs, including cytotoxic Natural Killer (NK) cells and the IFN-γ producing ILC1; ILC2 producing IL-13/IL-5; and ILC3 secreting IL-22/IL-17, thus largely resembling the heterogeneity of effector programs already described for T helper (Th) cells. While the signals driving the polarization and activation of different Th subsets are well described, the cytokines, environmental cues and innate receptors instructing the differentiation and execution of distinct effector programs in ILCs remain largely unknown. Here we will discuss activating signals, cytokines and environmental cues driving activation and differentiation of distinct human ILC subsets.

Sonia Sharma, *La Jolla Institute for Allergy & Immunology, USA* 17:00

A systematic dissection of type I Interferon signaling using a high-throughput functional genomics approach

Innate type I Interferons are powerfully immuno-modulatory cytokines that modulate immunity to pathogens and the pathobiology of inflammatory diseases. Key molecules regulating induction of IFNs by immuno-stimulatory, cell-free DNA antigens have recently been identified, however, a comprehensive understanding of the pathway is lacking. We used genome-scale RNAi and CRISPR/Cas9 analyses to dissect innate DNA sensing, systematically perturbing 18,175 genes in primary human (non-immune) cells. These studies identified 133 genes that are essential for DNA-induced activation of the innate transcription factor IRF3, which transactivates the type I IFNb gene promoter. The IRF3 regulators, most of which have not been previously associated with innate immunity or type I IFN induction, are molecular targets for modulating global and tissue-specific IFN signaling during infection and inflammation. ■

Irmgard Förster

Function: Chair, Immunology and Environment, LIMES Institute
Affiliation: University of Bonn, Germany
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SHORT CV

since 2012 | Full Professor (W3), Immunology and Environment, Life & Medical Sciences (LIMES) Institute, University of Bonn

2004 – 2012 | Professor (C3) of Molecular Immunology, IUF – Leibniz Research Institute of Environmental Medicine, Düsseldorf

1998 – 2004 | Professor (C3) of Mucosal Immunology, Institute for Medical Microbiol., Immunol. and Hygiene, TU Munich

1993 – 1998 | Group Leader, Institute for Genetics, University of Cologne

1990 – 1993 | Postdoc, University of California at San Francisco, USA

1988 – 1990 | Postdoc, Institute for Genetics, University of Cologne, Germany

1985 – 1988 | PhD student, Institute for Genetics, University of Cologne, Germany

1980 – 1985 | Studies of Human Biology, University of Marburg, Germany

RESEARCH INTERESTS AND ACHIEVEMENTS

Prof. Förster has special expertise in the functional characterization of macrophages and dendritic cells. Her group developed the LysMCre mouse strain, which is widely used for myeloid cell-specific gene targeting. A major topic of her research has been the functional characterization of the chemokine CCL17, playing a major role in development of allergic and inflammatory diseases. Furthermore, CCL17-expressing cells often show activation of the aryl hydrocarbon receptor (AhR), a sensor of small environmental chemicals. Current research addresses the regulation of AhR activity in the context of local responses to environmental stimuli.

SELECTED PUBLICATIONS

- **Globisch T, Steiner N, Fülle L, Lukacs-Kornek V, Degrandi D, Dresing P, Alferink J, Lang, Pfeffer K, Beyer M, Weighardt H, Kurts C, Ulas T, Schultze JL and Förster I.** 2014. Cytokine-dependent regulation of denditic cell differentiation in the splenic microenvironment. *Eur J Immunol, 44, 500-510.*
- **Stutte S, Quast T, Gerbitzki N, Savinko T, Novak N, Reifenberger J, Homey B, Kolanus W, Alenius H and Förster I.** 2010. Requirement of CCL17 for CCR7- and CXCR4-dependent migration of cutaneous dendritic cells. *Proc Natl Acad Sci USA 107: 8736-41.*
- **Takeda, K*, Clausen BE*, Kaisho T, Tsujimura T, Terada N, Förster I* and Akira S***. 1999. Enhanced Th1 activity and development of chronic enterocolitis in mice devoid of Stat3 in macrophages and neutrophils. *Immunity 10, 39-49. *Equal contribution*

Claudia Jakubzick

Function: Assistant Professor
Affiliation: National Jewish Health and University of Colorado, USA
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SHORT CV

since 2010 | Pediatrics and Immunology Positions and Employment, National Jewish Health, Assistant Professor
2008 – 2009 | Genetic and Cellular Medicine (Dr.Gwendalyn Randolph), Mount Sinai School of Medicine, Instructor
2004 – 2008 | Genetic and Cellular Medicine (Dr.Gwendalyn Randolph), Mount Sinai School of Medicine, Postdoc
1999 – 2003 | Immunology (Drs. S. Kunkel and C. Hogaboam), University of Michigan, Ph.D.
1995 – 1998 | Microbiology, University of Florida, B.S.

POSITIONS AND EMPLOYMENT

since 2014 | Assistant Professor Track I, NJ Health and University of Colorado
2010 – 2013 | Assistant Professor Track II, NJ Health and University of Colorado
2009 | Instructor, Mount Sinai School of Medicine, NY
2004 – 2008 | Postdoctoral Researcher, Mount Sinai School of Medicine, NY
2002 | Teaching Assistant, Microbiology and Immunology, Univ. of Michigan, MI
1999 – 2003 | Graduate Student, University of Michigan, MI
1998 – 1999 | Research Assistant, University of Pennsylvania, PA
1998 | Biomedical Graduate Internship, University of Pennsylvania, PA
1997 | BMB Research Internship, PSU, State College, PA.

RESEARCH INTERESTS AND ACHIEVEMENTS

My laboratory is located at National Jewish Health, Denver, Colorado an institution known for its strengths in pulmonary disease and immunology. My current research focuses on understanding the functional role of all mononuclear phagocytes in the lung: macrophages, monocytes and dendritic cells. However for the SFB1054 International Symposium my research presentation will focus on antigen acquiring distinction and differential functional roles of pulmonary dendritic cell (DC) subtypes. DCs acquire and present foreign antigen to the immune system and, therefore, are critical components of normal host responses in the respiratory tract as well as playing a role in many pulmonary diseases, including cancer, infections, asthma, COPD, interstitial lung diseases. Accordingly important elements in their function are pattern recognition receptors and mechanisms of immune regulation that appear to be different amongst DC migratory populations. There are currently no known effective therapies that specifically target pulmonary DC subtypes. The differential roles played by these cells may offer the most promising leverage point to date in shaping the immune response towards tolerance or immunity.

SELECTED PUBLICATIONS

- **Desch AN, Gibbings SL, Clambey ET, Janssen WJ, Slansky JE, Kedl RM, Henson PM, Jakubzick C.** Dendritic cell subsets require cis-activation for cytotoxic CD8 T-cell induction, *Nature Commun. 2014, 5:4674*
- **Jakubzick C, Gautier E, Gibbings SL, Sojka DK, Schlitzer A, Johnson TE, Ivanov S, Duan Q, Bala S, Condon T, van Rooijen N, Grainger JR, Belkaid Y, Ma'ayan A, Riches DW, Yokoyama WM, Ginhoux F, Henson PM, and Randolph GJ.** Minimal differentiation of classical monocytes as they survey steady state tissues and transport antigen to lymph nodes. *Immunity 2013, 39:599-610*
- **Desch AN, Randolph GJ, Murphy K, Gautier EL, Kedl RM, Lahoud MH, Caminschi I, Shortman K, Henson PM, and Jakubzick C.** CD103+ pulmonary dendritic cells preferentially acquire and present apoptotic cell-associated antigen. *J Exp Med. 2011, 208:1798-97*

Muzlifah Haniffa

Function: Principal Investigator, Wellcome Trust Intermediate Clinical Fellow
Affiliation: Newcastle University, UK
E-Mail: m.a.haniffa@ncl.ac.uk

SHORT CV

2010 | Certificate of Completion of Training in Dermatology
2009 | PhD, Newcastle University
2007 | Diploma in Epidemiology, London School of Hygiene and Tropical Medicine
2002 | MRCP, Royal College of Physicians London
1999 | BSc. (First Class Hons), MBBCh (Hons), University of Wales College of Medicine

RESEARCH INTERESTS AND ACHIEVEMENTS

My research program is focused on understanding the functional heterogeneity of human mononuclear phagocytes (dendritic cells, monocytes and macrophages) which orchestrate immune responses to pathogens, vaccines, tumours and tolerance to self. I have used functional genomics and comparative biology to align the human and mouse mononuclear phagocyte networks. This has facilitated the translation of murine findings to human mononuclear phagocyte biology and provided further insights into the development and function of human mononuclear phagocytes in vivo. My goal is to understand how mononuclear phagocytes regulate local tissue immune homeostasis and immunity during pathogenic challenge and disease. This knowledge is essential for the development of new strategies to manipulate host immune response to improve vaccination strategies and for clinical therapy.

2013 European Society for Dermatology Research LEO Pharma Silver Prize
2012 British Society for Investigative Dermatology Young Investigator Award
2009 Sue McCarthy Prize (runner-up) for the UK Medical Research Society
1999 Cardiff Medical Society Prize in Medicine

SELECTED PUBLICATIONS

- **Pallett LJ, Gill US, Quaglia A, Sinclair L, Jover-Cobos M, Schurich A, Singh K, Thomas N, Das A, Chen A, Fusai G, Bertoletti A, Cantrell D, Kennedy PT, Davies N, Haniffa M, Maini MK.** Arginase-dependent metabolic regulation of hepatic immunopathology by myeloid-derived suppressor cells. *Nat Med. 2015; 21(6):591-600.*
- **McGovern N, Schlitzer A, Gunawan M, Jardine L, Shin A, Poyner E, Green K, Dickinson R, Wang XN, Low D, Best K, Covins S, Milne P, Pagan S, Aljefri K, Windebank M, Saavedra DM, Larbi A, Wasan PS, Duan K, Poidinger M, Bigley V, Ginhoux F, Collin M, Haniffa M.** Human Dermal CD14(+) Cells Are a Transient Population of Monocyte-Derived Macrophages. *Immunity. 2014 Sep 18;41(3):465-77.*
- **Wang XN, McGovern N, Richardson C, WIndebank M, Siah TW, Fink K, Lim HW, Li JLY, Ng LG, Ginhoux F, Angeli V, Collin M and Haniffa M.** A three dimensional atlas of the human dermis. *J Invest Dermatol. 2014; 134(4): 965-74.*
- **Schlitzer A*, McGovern N*, Teo P, Zelante T, Atarashi K, Low D, Ho AWS, See P, Shin A, Wasan PS, Hoeffel G, Malleret B, Heiseke A, Chew S, Jardine L, Purvis HA, Hilkens CMU, Tam J, Poidinger M, Stanley ER, Krug AB, Renia L, Sivasankar B, Ng LG, Collin M, Ricciardi-Castagnoli P, Honda K, Haniffa M, Ginhoux F.** IRF4 transcription factor-dependent CD11b+ dendritic cells in human and mouse control mucosal IL-17 cytokine responses. *Immunity. 2013; 38(5):970-83.*
- **Haniffa M, Shin A, Bigley V, McGovern N, Teo P, See P, Wasan PS, Wang XN, Malinarich F, Malleret B, Larbi A, Tan P, Zhao H, Poidinger M, Pagan S, Cookson S, Dickinson R, Dimmick I, Jarrett RF, Renia L, Tam J, Song C, Connolly J, Chan JK, Gehring A, Bertoletti A, Collin M, Ginhoux F.** Human tissues contain CD141hidendritic cells with functional homology to mouse CD103+ nonlymphoid dendritic cells. *Immunity 2012; 37(1): 60-73*

Lisa Horvath

Function: Postdoctoral Fellow
Affiliation: Chair of Research and Science Management, Technical University Munich, Germany
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SHORT CV

since 2014	PostDoc at the Chair or Research and Science Management, Technical Universit Munich
2014	PostDoc at the Chair of Personnel and Organizational Psychology, RWTH Aachen University
2014	Degree Doctor phil. in Psychology PhD-Studies at the Department of Social Psychology, University of Bern
2012 – 2013	Research Assistant at the Department of Organizational Behavior, University of Lausanne
2012	Visiting Scholar at the Department of Social Psychology, New York University
2010 – 2012	Marie-Curie Fellow & PhD-Studies at the University of Bern
2007 – 2009	Research Assistant at the Department of Social Psychology, University of Graz
2008	Degree Magistra rer.nat. (Master of Science) in Psychology, University of Graz

RESEARCH INTERESTS AND ACHIEVEMENTS

Lisa Horvath's research interests lie in the fields of a) gender stereotypes in leadership and science and b) transition to parenthood and career management. By means of experimental and field research, Lisa Horvath aims at identifying how women's and men's career progress can be facilitated without any prejudicial barriers from the perspectives of women and men themselves, from the perspective of decision makers and the organization. With these research aims, Lisa was awarded a postdoctoral fellowship by the Technical University of Munich.

SELECTED PUBLICATIONS

- **Horvath, L. K., & Sczesny, S.** (2015). Reducing the lack of fit for women with leadership? Effects of the wording of job advertisements. *Manuscript in press in the European Journal of Work and Organizational Psychology. doi: 10.1080/1359432X.2015.1067611.*
- **Horvath, L. K.** (2015). Gender-fair language in the context of recruiting and evaluating leaders. Manuscript accepted for publication in I. M. Welpe, P. Brosi, L. Ritzenhöfer, & T. Schwarzmüller (Eds.), Auswahl und Beurteilung von Frauen und Männern als Führungskräfte in der Wirtschaft – Herausforderungen, Chancen und Lösungen. *Freiburg: Haufe.*
- **Hentschel, T., & Horvath, L. K.** (2015). Passende Talente ansprechen – Rekrutierung und Gestaltung von Stellenanzeigen. *In C. Peus, S. Braun, T. Hentschel & D. Frey (Eds.), Personalauswahl in der Wissenschaft – Evidenzbasierte Methoden und Impulse für die Praxis (pp. 65 - 82). Heidelberg: Springer*

Christina Zielinski

Function: Assistant Professor
Affiliation: Technical University Munich, Germany
E-Mail: christina.zielinski@tum.de

SHORT CV

since 2015 | Assistant Professorship at the Department of Medical Microbiology, Immunology and Hygiene, Technical University München
03/2015 | Board certification in Dermatology
2011 – 2015 | Clinical specialization in Dermatology, Charité-Universitätsmedizin Berlin
| Research group leader (Cellular Immuno-regulation lab) at the Department of Dermatology, Charité-Universitätsmedizin Berlin
2008 – 2011 | Postdoctoral fellowship (DFG) at the Institute for Research in Biomedicine, Bellinzona, Switzerland (Federica Sallusto, PhD)
2006 – 2008 | Clinical training in Dermatology, University of Tübingen
1999 – 2006 | Medical School Heidelberg, Harvard Medical School, Duke Medical School
2001 – 2002 | MD Thesis, Department of Immunobiology, Yale Medical School, USA

RESEARCH INTERESTS AND ACHIEVEMENTS

The major focus of our laboratory is to investigate the regulation of human T cells in health and disease. We are in particular interested in the mechanisms by which a tissue resident immunological memory is generated and maintained in the skin. The reciprocal interactions of T cells with the tissue micromilieu including the microbiota as well as with metabolites are of particular interest. They shape the functionality of the skin resident memory T cell compartment and represent interesting targets for novel immunomodulatory therapies in settings of autoimmunity, cancer and chronic infections.
We could previously demonstrate that C. albicans and S. aureus are able to induce Th17 cells with either pro- or anti-inflammatory functionalities, respectively, due to their differential ability to induce IL-1β production by innate cells. IL-1β therefore acts as a molecular switch that could be targeted therapeutically to shift pro-and anti-inflammatory Th17 cell functions. This is of clinical relevance in autoinflammatory syndromes.

SELECTED PUBLICATIONS

- **Noster R, Riedel R, Mashreghi MF, Radbruch H, Harms L, Haftmann C, Chang HD, Radbruch A, Zielinski CE.** IL-17 and GM-CSF expression are antagonistically regulated by human T helper cells. *Sci Transl Med. 2014 Jun 18;6(241):241ra80.,*
- **Zielinski CE, Mele F, Aschenbrenner D, Jarrossay D, Ronchi F, Gattorno M, Monticelli S, Lanzavecchia A, and Sallusto F.** Pathogen-induced Th17 cells produce IFN-γ or IL-10 and are regulated by IL-1β. *Nature. 2012 Apr; 484:514-8*

Chiara Romagnani

Function: Principal Investigator
Affiliation: Deutsches Rheuma Forschungszentrum (DRFZ) Berlin, Germany
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SHORT CV

ACADEMIC RECORD

2003 – 2006 | University of Genoa, Italy, Immunology, PhD
1998 – 2003 | National Cancer Institute, Genoa, Italy, Oncology, Medical specialty
1991 – 1998 | University of Florence, Italy, Medicine, MD

RESEARCH RECORD

since 2009 | DRFZ, Berlin, Germany, Innate Immunity, Group Leader
2007 – 2009 | Institute of Immunology (Charité CBF) and DRFZ, Berlin, Germany, Immunology, Post-Doc
2005 – 2007 | Deutsche Rheumaforschungszentrum (DRFZ), Berlin, Germany, Immunology, EMBO fellowship
1993 | Brigham & Women's Hospital and Department of Pathology, Harvard Medical School, Boston, MA (Lab of Prof. AK Abbas), Immunology, Lab work

RESEARCH INTERESTS AND ACHIEVEMENTS

Dr. Chiara Romagnani has studied Medicine at the University of Florence, Italy and trained as an Oncologist at the National Cancer Institute in Genova (Italy). During this time, she was associated to the Lab of Prof. Lorenzo Moretta, where she performed original studies in the field of innate properties of T cells and identified for the first time CD8+ T cells specific for the non classical molecule HLA-E (*PNAS 2003, PNAS 2002, Trends Immunol 2003*).
She joined a 3 year-PhD program in Immunology at the University of Genova and achieved her PhD degree discussing a thesis on "NK cell modulation and differentiation mediated by dendritic cells and cytokines". She first visited the DRFZ during her PhD and then successfully applied for a European Molecular Biology Organization (EMBO) fellowship to perform a post-doc at the Institute. Since then, she has performed research on NK cells, investigating their differentiation and heterogeneity in humans and their cross-talk with T cells and dendritic cells (*Eur J Immunol 2005, Blood 2006, J Immunol 2007, Eur J Immunol 2009, Blood 2010*).
She became group leader in "Innate Immunity" at the DRFZ in 2009 and established her research focus in Innate Lymphoid Cells (ILCs), identifying the signals driving the acquisition and the activation of inflammatory programs in different ILC subsets (*Immunity 2014, Immunity 2013*). Moreover, she has continued her research interest in NK cells (*Eur J Immunol 2014a, Eur J Immunol 2014b*), with a particular focus on NK cell subsets displaying adaptive features (*PloS Pathogens, 2014*).

SELECTED PUBLICATIONS

- **Montaldo E, Teixeira-Alves LG, Glatzer T, Hamann W, Babic M, Paclik D, Stölzel K, Gröne J, Lozza L, Juelke K, Matzmohr N, Loiacono F, Petronelli P, Huntington ND, Moretta L, Mingari MC and Romagnani C.** Human RORγt+ CD34+ cells are lineage-specified progenitors of group 3 RORγt+ innate lymphoid cells. *Immunity. 2014* Dec 18;41(6):988-1000.
- **Luetke-Eversloh M, Hammer Q, Durek P, Nordström K, Gasparoni G, Pink M, Hamann A, Walter J, Chang HD, Dong J and Romagnani C.** Human Cytomegalovirus Drives Epigenetic Imprinting of the IFNG Locus in NKG2C^{hi} Natural Killer Cells. *PLoS Pathog.* 2014 Oct 16;10(10):e1004441.
- **Glatzer T, Killig M, Meisig J, Ommert I, Luetke-Eversloh M, Babic M, Paclik D, Blüthgen N, Seidl R, Seifarth C, Gröne J, Lenarz M, Stölzel K, Fugmann D, Porgador A, Hauser A, Karlas A, Romagnani C.** RORγt+ innate lymphoid cells acquire a proinflammatory program upon engagement of the activating receptor NKp44. *Immunity.* 2013 Jun 27;38(6):1223-35.

Sonia Sharma

Function: Assistant Professor, Division of Cellular Biology;
Director, The Functional Genomics Center at LJI
Affiliation: La Jolla Institute for Allergy & Immunology, USA
E-Mail: soniasharma@lji.org

SHORT CV

since 2013	Assistant Professor, Division of Cellular Biology, LJI
since 2011	Director, The Functional Genomics Center; La Jolla Institute for Allergy & Immunology (LJI)
2010 – 2011	Instructor in Pediatrics, IDI, Harvard Medical School
2004 – 2010	Post-Doctoral Fellow, Immune Disease Institute (IDI), Harvard Medical School
2002 – 2004	Ph.D. Student, McGill University
1999 – 2002	Masters Student, McGill University
1998 – 1999	Undergraduate Honors Student, McGill University

RESEARCH INTERESTS AND ACHIEVEMENTS

Dr. Sharma obtained her Ph.D at McGill University in the lab of John Hiscott, focused on characterizing key signaling molecules and pathways in the immune innate type I Interferon response to virus infection. Her post-doctoral work in the National Academy lab of Anjana Rao at Harvard Medical School focused on developing methods for large-scale RNA interference (RNAi) screening. As Assistant Professor at La Jolla Institute for Allergy & Immunology, Dr. Sharma's research focuses on using functional genomics to systematically dissect key signaling networks, pathways and molecules involved in mounting effective immunity to bacteria, viruses and neoplastic cells.

SELECTED PUBLICATIONS

- **Sharma S., Quintana A., Findlay G., Mettlen M., Baust B., Jain M., Nilsson R., Hogan P.G., Rao A.** A genome-wide siRNA screen for NFAT activation identifies septin proteins as essential modulators of store-operated Ca2+ entry. *Nature 2013, 499:238-42.*
- **Sharma S. and Rao A.** RNAi screening: tips and techniques. *Nature Immunology, 2009, 10:799-804.*
- **Sharma S., tenOever B.R., Grandvaux N., Zhou G.P., Lin R., Hiscott J.** Triggering the interferon antiviral response through an IKK-related pathway, *Science 2003, 300:1148-51.*

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