

Curriculum Vitae

Name: Prof. Dr. rer. nat. Petra Bacher
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Date of birth: 12. Juni 1984
Place of birth: Augsburg, Germany
Nationality: German

Since June 2018 **Junior Professorship (W1)** for Immunology und Immunogenetics, Christian-Albrechts-Universität zu Kiel, Germany

Oct. 2014 – June 2018 **Postdoc** at the Department of Cellular Immunology, Clinic for Rheumatology and Clinical Immunology Charité – Universitätsmedizin Berlin, Germany
Supervisor: Prof. Dr. Alexander Scheffold, Berlin

Feb. 2009 – Sep. 2014 **Promotion**, Dr. rer. nat., „summa cum laude (1,0)“
till August 2013: as external student at Miltenyi Biotec GmbH, Bergisch Gladbach, Germany;
since August 2013: at the Department of Cellular Immunology, Clinic for Rheumatology and Clinical Immunology Charité – University Medicine Berlin, Germany
Supervisors: Prof. Dr. Alexander Scheffold, Berlin; Prof. Dr. Axel A. Brakhage, Jena
Title: *Characterization of fungus-specific human T helper cell responses*

Sep. 2007 – Sep. 2008 **Diploma thesis**
Institute of Pharmacology, University of Cologne, Germany
Supervisor: Prof. Dr. Dirk Gründemann, Cologne
Title: *Untersuchung der Substratselektivität des humanen Ergothionein-Transporters (SLC22A4): Umwandlung in einen Transporter für Carnitin durch gerichtete Mutagenese*

Oct. 2003 – Sep. 2008 **Studies of Biology**, Diploma, final grade: 1.0
University of Cologne, Germany;
Main subjects: Genetics, Biochemistry, Pharmacology

Prizes

- 2019 Oskar Medicine Award** of the Oskar-Helene-Heim Foundation
- 2019 Research Award** of the German Society for Allergology and Clinical Immunology (DGAKI)
- 2017 Fritz-und-Ursula-Melchers-Postdoc Award** of the German Society for Immunology (DGFI).
- 2015 Christiane Herzog Award** of the Christiane Herzog Stiftung „Antigen-spezifische CD4+ T Zellen als spezifische diagnostische Sensoren zur hochauflösenden Pathogen-Diagnostik in CF Patienten“.
- 2013 Klaus-Goerttler Award** of the German Society for Cytometry for the „Development of a flow cytometric assay for high sensitivity detection of rare antigen-specific CD4+ T cells“.

Publication list

I. Peer Reviewed Articles

Bacher P, Hohnstein T, Beerbaum E, Röcker M, Blango MG, Kaufmann S, Röhmel J, Eschenhagen P, Grehn C, Seidel K, Rickerts V, Lozza L, Stervbo U, Nienen M, Babel N, Milleck J, Assenmacher A, Cornely OA, Ziegler M, Wisplinghoff H, Heine G, Worm M, Siegmund B, Maul J, Creutz P, Tabeling C, Ruwwe-Glösenkamp C, Sander LE, Knosalla C, Brunke S, Hube B, Kniemeyer O, Brakhage AA, Schwarz C, Scheffold A. Human anti-fungal Th17 immunity and pathology rely on cross-reactivity against *Candida albicans*. *Cell*. 2019 Mar 7;176(6):1340-1355.e15. (Impact factor 36.216)

Steinbach A, Cornely OA, Wisplinghoff H, Schauss AC, Vehreschild JJ, Rybniker J, Hamprecht A, Richter A, **Bacher P**, Scheffold A, Koehler P. Mould-reactive T cells for the diagnosis of invasive mould infection-A prospective study. *Mycoses*. 2019 Jul;62(7):562-569. (Impact factor 3.065)

Voltersen V, Blango MG, Herrmann S, Schmidt F, Heinekamp T, Strassburger M, Krüger T, **Bacher P**, Lothar J, Weiss E, Hünninger K, Liu H, Hortschansky P, Scheffold A, Löffler J, Krappmann S, Nietzsche S, Kurzai O, Einsele H, Kniemeyer O, Filler SG, Reichard U, Brakhage AA. Proteome Analysis Reveals the Conidial Surface Protein CcpA Essential for Virulence of the Pathogenic Fungus *Aspergillus fumigatus*. *MBio*. 2018 Oct 2;9(5). (Impact factor 6.689)

Koehler FC, Cornely OA, Wisplinghoff H, Schauss AC, Salmanton-Garcia J, Ostermann H, Ziegler M, **Bacher P**, Scheffold A, Alex R, Richter A, and Koehler P. Candida-Reactive T cells for the Diagnosis of Invasive Candida Infection – A Prospective Pilot Study. *Front. Microbiol*. 2018 June 7;9:1381. (Impact factor 4.019)

Nowak A, Lock D, **Bacher P**, Hohnstein T, Vogt K, Gottfreund J, Giehr P, Polansky JK, Sawitzki B, Kaiser A, Walter J, Scheffold A. CD137+CD154- Expression As a Regulatory T Cell (Treg)-Specific Activation Signature for Identification and Sorting of Stable Human Tregs from In Vitro Expansion Cultures. *Front Immunol*. 2018 Feb 7;9:199. (Impact factor 5.511)

Ekmekci I, von Klitzing E, Neumann C, **Bacher P**, Scheffold A, Bereswill S, Heimesaat MM. Fecal Microbiota Transplantation, Commensal *Escherichia coli* and *Lactobacillus johnsonii* Strains Differentially Restore Intestinal and Systemic Adaptive Immune Cell Populations Following Broad-spectrum Antibiotic Treatment. *Front Microbiol*. 2017 Dec 11;8:2430. (Impact factor 4.019)

Ekmekci I, von Klitzing E, Fiebiger U, Neumann C, **Bacher P**, Scheffold A, Bereswill S, Heimesaat MM. The Probiotic Compound VSL#3 Modulates Mucosal, Peripheral, and Systemic Immunity Following Murine Broad-Spectrum Antibiotic Treatment. *Front Cell Infect Microbiol*. 2017 May 5;7:167. (Impact factor: 4.3)

Ekmekci I, von Klitzing E, Fiebiger U, Escher U, Neumann C, **Bacher P**, Scheffold A, Kühl AA, Bereswill S, Heimesaat MM. Immune Responses to Broad-Spectrum Antibiotic Treatment and Fecal Microbiota Transplantation in Mice. *Front Immunol*. 2017 Apr 19;8:397. (Impact factor: 5.695)

Bacher P, Heinrich F, Stervbo U, Nienen M, Vahldieck M, Iwert C, Vogt K, Kollet J, Babel N, Sawitzki B, Schwarz C, Bereswill S, Heimesaat MM, Heine G, Gadermaier G, Asam C, Assenmacher M, Kniemeyer O, Brakhage AA, Ferreira F, Wallner M, Worm M, Scheffold A. Regulatory T cell specificity directs tolerance versus allergy against aeroantigens in humans. *Cell*. 2016 Nov 3;167(4):1067-1078.e16. (Impact factor: 31.398)

Bacher P, Jochheim-Richter A, Mockel-Tenbrink N, Kniemeyer O, Wingenfeld E, Alex R, Ortigao A, Karpova D, Lehrnbecher T, Ullmann AJ, Hamprecht A, Cornely O, Brakhage AA, Assenmacher M, Bonig H, Scheffold A. Clinical-scale isolation of the total *Aspergillus fumigatus*-reactive T-helper cell repertoire for adoptive transfer. *Cytotherapy*. 2015 Oct;17(10):1396-405. (Impact factor: 3.625)

Bacher P, Steinbach A, Kniemeyer O, Hamprecht A, Assenmacher A, Vehreschild MJGT, Vehreschild JJ, Brakhage AA, Cornely OA, Scheffold A. Fungus-specific CD4⁺ T cells for rapid identification of invasive pulmonary mold infection. *Am J Respir Crit Care Med*. 2015 Feb 1;191(3):348-52. (Impact factor: 13.118)

Bacher P, Kniemeyer O, Teutschbein J, Thoen M, Vödisch M, Wartenberg D, Scharf DH, Köster-Eiserfunke N, Schütte M, Dübel S, Assenmacher M, Brakhage AA, Scheffold A. Identification of immunogenic antigens from *Aspergillus fumigatus* by direct multi-parameter characterization of specific conventional and regulatory CD4⁺ T cells. *J Immunol*. 2014 Oct 1;193(7):3332-43. (Impact factor: 4.922)

Bacher P, Kniemeyer O, Schoenbrunn A, Sawitzki B, Assenmacher M, Rietschel E, Steinbach A, Cornely OA, Brakhage AA, Thiel A, Scheffold A. Antigen-specific expansion of human regulatory T cells as a major tolerance mechanism against mucosal fungi. *Mucosal Immunology*. 2014 Jul;7(4):916-28. (Impact factor: 7.374)

Bacher P, Schink C, Teutschbein J, Kniemeyer O, Assenmacher M, Brakhage AA, Scheffold A. Antigen-reactive T cell enrichment for direct, high-resolution analysis of the human naive and memory Th cell repertoire. *J Immunol*. 2013 Apr 15;190(8):3967-76. (Impact factor: 5.362)

Bacher P, Giersiefer S, Bach M, Fork C, Schömig E, Gründemann D. Substrate discrimination by ergothioneine transporter SLC22A4 and carnitine transporter SLC22A5: gain-of-function by interchange of selected amino acids. *Biochim Biophys Acta*. 2009 Dec;1788(12):2594-602. (Impact factor: 3.998)

II. Reviews (Peer Reviewed)

Cossarizza A, Chang HD, Radbruch A, Acs A, Adam D, Adam-Klages S, Agace WW, Aghaepour N, Akdis M, Allez M, Almeida LN, Alvisi G, Anderson G, Andrä I, Annunziato F, Anselmo A, **Bacher P**, [...], Zychlinsky A. Guidelines for the use of flow cytometry and cell sorting in immunological studies (second edition). *Eur J Immunol*. 2019 Oct;49(10):1457-1973. (Impact factor: 4.695)

Bacher P, Scheffold A. The effect of regulatory T cells on tolerance to airborne allergens and allergen immunotherapy. *J Allergy Clin Immunol*. 2018 Dec;142(6):1697-1709. (Impact factor: 13.258)

Bacher P, Scheffold A. Antigen-specific regulatory T cell responses against aeroantigens and their role in allergy. *Mucosal Immunology*. 2018 Nov;11(6):1537-1550. (Impact factor: 7.36)

Scheffold A, Schwarz C, **Bacher P**. Fungus-Specific CD4 T Cells as Specific Sensors for Identification of Pulmonary Fungal Infections. *Mycopathologia*. 2018 Feb;183(1):213-226. (Impact factor: 1.476)

Bacher P. Gaps in the regulatory T cell shield generate immunopathologies. *Z Rheumatol*. 2018 Dec;77(10):923-927. (Impact factor 0.697)

Cossarizza A, Chang HD, Radbruch A, Akdis M, Andrä I, Annunziato F, **Bacher P**, [...], Zimmermann J. Guidelines for the use of flow cytometry and cell sorting in immunological studies. *Eur J Immunol*. 2017 Oct;47(10):1584-1797. (Impact factor: 4.248)

Kniemeyer O, Ebel F, Krüger T, **Bacher P**, Scheffold A, Luo T, Strassburger M, Brakhage AA. Immunoproteomics of *Aspergillus* for the development of biomarkers and immunotherapies. *Proteomics Clin Appl*. 2016 Oct;10(9-10):910-921. (Impact factor: 3.814)

Bacher P, Scheffold A. New technologies for monitoring human antigen-specific T cells and regulatory T cells by flow-cytometry. *Curr Opin Pharmacol*. 2015 Aug;23:17-24. (Impact factor: 4.769)

Bacher P & Scheffold A. Flow-cytometric analysis of rare antigen-specific T cells. *Cytometry A*. 2013 Aug; 83(8):692-701. (Impact factor: 3.066)

III. Articles (non-peer reviewed), Book chapters

Scheffold A, **Bacher P**, Kern F. Zelluläre Diagnostik und Therapie, Chapter Durchflusszytometrische Analysen zur Detektion antigenspezifischer T-Zellen. Hrsg. v. Sack, Ulrich DE GRUYTER, 2015 Dez.

Koehler D, **Bacher P**, Scheffold A, Assenmacher M, Herber M. Anreicherung und durchflusszytometrischer Nachweis sehr seltener Zelltypen. *BIOspektrum*. 2012 18(3):297-299

IV. Patent applications

Meisel C, Meyer T, Mantei A, Volk HD, **Bacher P**, Scheffold A. 2018. Verfahren für die Analyse einer Blutprobe eines Menschen auf eine Tuberkuloseerkrankung. Deutsche Patentanmeldung Nr. 102018131696.8

Scheffold A, **Bacher P**, Kniemeyer O, Teutschbein J, Brakhage AA. 2014. Immunogenic antigens from *Aspergillus fumigatus*. European Patent Application EP14181113.3

Scheffold A & **Bacher P**. A method for the quantitative and qualitative characterization of antigen-specific T cells recognizing a specific antigen. EP2518504A1, US20120276557.