

# CURRICULUM VITAE

## PERSONAL DATA

Title: Priv.-Doz. Dr. med. (M.D.)  
 Name: Humrich  
 Surname: Jens Henner Peter Yorck  
 Date of birth: 18<sup>th</sup> of March 1974  
 Place of birth: Bayreuth, Germany  
 Status/children: married, two children, \*2011 and 2013

## CURRENT POSITION

- Since 10/2015: Senior Physician (Consultant) at the Department of Rheumatology and Clinical Immunology of the University Medical Center Schleswig-Holstein, Campus Lübeck, Germany
- Since 06/2019: Senior Clinician Scientist (Cluster of Excellence, PMI)
- Since 01/2022: Senior Research Group Leader at the Department of Rheumatology and Clinical Immunology of the University Medical Center Schleswig-Holstein, Campus Lübeck, Germany

## EDUCATION, TRAINING, POSITIONS

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
University of Bayreuth	-	1995-1996	Philosophy
University of Erlangen-Nürnberg, Medical School	M.D.	1996-2003	Human Medicine
University of Erlangen-Nürnberg, Department of Dermatology	Dr. med.	2001-2003 2010	Doctoral thesis: Viral vectors, dendritic cells, chemokines, tumor immunology
Charité University Medicine Berlin, Department of Rheumatology and Clinical Immunology	Internship	2003-2004	Internal Medicine
	Approbation	2004	
	Internist	2004-2012	Residency: Internal Medicine / Rheumatology
	Staff physician / clinical fellow	2012 2012-2015	Specialization in Internal Medicine Rheumatology and Clinical Immunology
German Arthritis Research Center (DRFZ) Berlin	Rheumatologist	2014	Specialization in Rheumatology
	Postdoctoral fellow/Scientist	2004-2015	T cell immunology, autoimmune diseases, immunoregulation, regulatory
University of Lübeck	Group Leader	2015	T cells, interleukin-2
	Habilitation	07/2023	Immune dysregulation in autoimmune diseases, translational immunology

## SCIENTIFIC FOCUS AND EXPERTISE

- T cell immunology focusing on regulatory T cells and IL-2 in the pathogenesis and treatment of SLE and other systemic autoimmune diseases
- Development and clinical translation of low-dose IL-2 therapy in SLE and other autoimmune diseases; mechanisms of action of low-dose IL-2 therapy at a cellular and molecular level
- Immunoregulation and mechanisms of tolerance breach in autoimmunity
- Experimental and translational immunology and rheumatology
- Clinical and immunological aspects of SLE and other connective tissue diseases

## AWARDS

- Nils-Ilja-Richter Prize 2021/2022 of the German Autoimmunity Foundation for the development and clinical translation of low-dose IL-2 therapy in SLE
- Poster award at the annual meeting of the German Society of Rheumatology (DGRh), 2015, Bremen, Germany
- Poster award at the 30th European Workshop for Rheumatology Research, 2010, Bamberg, Germany

## MEMBERSHIPS

Member of the German Society of Rheumatology (DGRh) since 2006

Member of the European Lupus Society (SLEuro) since 2018

Member of the Cluster of Excellence of the Universities of Lübeck and Kiel (EXC 2167; PMI) since 2019

## EXPERIENCE IN CLINICAL TRIALS

- **pre-clinical development and clinical translation of low-dose IL-2 therapy in SLE**, including study design, protocol development and application procedures
- 10/2013-10/2018: **clinical investigator, study coordinator and deputy principal investigator** of a phase I/IIa study (IIT) with low-dose IL-2 therapy in patients with refractory **SLE** (PRO-IMMUN); EudraCT-Nr.: 2013-001599-40
- 11/2015-01/2017: **deputy principal investigator** of a phase II study with RTX/Belimumab in patients with primary Sjögren's syndrome (GSK 201842); EudraCT-Nr.: 2015-000400-26
- 03/2016-06/2019: **principal investigator** of a phase II study with BI 655064 (blocking anti-CD40 mAB) in patients with active **lupus nephritis** (BI 1293.10); EudraCT-Nr.:2015-001750-15
- 04/2016-10/2017: **deputy principal investigator** of a phase III study with Nintedanib in patients with SSc-ILD (SENSCIS); EudraCT-Nr.:2015-000392-28
- 04/2016-07/2019: **principal investigator (LKP)** of a phase II study with low-dose IL-2 therapy in patients with active **SLE** (LUPIL-2); EudraCT-Nr.:2016-000488-17
- 04/2020-04/2023: **principal investigator (LKP)** of a phase IIb study with the JAK-inhibitor PF06700841 in patients with active **SLE** (B7931028); EudraCT-Nr.: 2018-004175-12
- since 03/2022: **deputy principal investigator** of a phase III study with MT-7117 in patients with diffuse-cutaneous systemic sclerosis (MT-7117-G02); EudraCT-Nr.:2020-000134-17
- since 11/2023: **principal investigator** of a phase III study with the TYK2-inhibitor Deucravacitinib in patients with active **SLE** (IM011-246); EU CT-Nr.: 2022-500699-76
- since 01/2024: **study coordinator and principal investigator** of a phase II basket trial (IIT) with low-dose IL-2 therapy in four autoimmune diseases (IL-2-ID); EU CT-Nr.: 2023-510297-14

## REVIEWER ACTIVITY

Nature Reviews Rheumatology, Nature Communications, Annals of the Rheumatic Diseases, Science Translational Medicine, JCI Insight, iScience, European Journal of Immunology, Frontiers in Medicine (Review Editor), Frontiers in Lupus (Review Editor), International Immunology, Journal of Rheumatology, Journal of Clinical Medicine, Cells, Clinical and Experimental Immunology, Zeitschrift für Rheumatologie (and other Journals).

## PUBLICATIONS (in total: 52 publications; h-index: 24)

Rosenberger S, Undeutsch R, Akbarzadeh R, Ohmes J, Enghard P, Riemekasten G, **Humrich JY**. Regulatory T cells inhibit autoantigen-specific CD4+ T cell responses in lupus-prone NZB/W F1 mice. *Front Immunol.* **2023;14:1254176**.

Müller FS, Aherrahrou Z, Grasshoff H, Heidorn MW, **Humrich JY**, Johanson L, Aherrahrou R, Reinberger T, Schulz A, Ten Cate V, Robles AP, Koeck T, Rapp S, Lange T, Brachaczek L, Luebber F, Erdmann J, Heidecke H, Schulze-Forster K, Dechend R, Lackner KJ, Pfeiffer N, Ghaemi Kerahrodi J, Tüscher O, Schwarting A, Strauch K, Münzel T, Prochaska JH, Riemekasten G, Wild PS. Autoantibodies against the chemokine receptor 3 predict cardiovascular risk. *Eur Heart J.* **2023 Nov 6: ehad666**.

Akbarzadeh R, Müller A, **Humrich JY**, Riemekasten G. When natural antibodies become pathogenic: autoantibodies targeted against G protein-coupled receptors in the pathogenesis of systemic sclerosis. *Front Immunol.* **2023; 8;14:1213804**.

Akbarzadeh R, Riemekasten G, **Humrich JY**. Low-dose interleukin-2 therapy: a promising targeted therapeutic approach for systemic lupus erythematosus. *Curr Opin Rheumatol.* **2023; 35(2):98-106**.

Bieber K, Hundt JE, Yu X, Ehlers M, Petersen F, Karsten CM, Köhl J, Kridin K, Kalies K, Kasprick A, Goletz S, **Humrich JY**, Manz RA, Künstner A, Hammers CM, Akbarzadeh R, Busch H, Sadik CD, Lange T, Grasshoff H, Hackel AM, Erdmann J, König I, Raasch W, Becker M, Kerstein-Stähle A, Lamprecht P, Riemekasten G, Schmidt E, Ludwig RJ. Autoimmune pre-disease. *Autoimmun Rev.* **2023;22(2):103236**

Tran F, Harris DMM, Scharmacher A, Graßhoff H, Sterner K, Schinke S, Käding N, **Humrich JY**, Cabral-Marques O, Bernardes JP, Mishra N, Bahmer T, Franzenburg J, Hoyer BF, Glück A, Guggeis M, Ossysek A, Küller A, Frank D, Lange C, Rupp J, Heyckendorf J, Gaede KI, Amital H, Rosenstiel P, Shoenfeld Y, Halpert G, Rosenberg AZ, Schulze-Forster K, Heidecke H, Riemekasten G, Schreiber S. Increased protease-activated receptor 1 autoantibodies are associated with severe COVID-19. *ERJ Open Res.* **2022;8(4):00379-2022**.

Ohmes J, Comdühr S, Akbarzadeh R, Riemekasten G, **Humrich JY**. Dysregulation and chronicity of pathogenic T cell responses in the pre-diseased stage of lupus. *Front Immunol.* **2022;13:1007078**.

**Humrich JY**, Cacoub P, Rosenzweig M, Pitoiset F, Pham HP, Guidoux J, Leroux D, Vazquez T, Riemekasten G, Smolen JS, Tsokos G, Klatzmann D. Low-dose interleukin-2 therapy in active systemic lupus erythematosus (LUPIL-2): a multicentre, double-blind, randomised and placebo-controlled phase II trial. *Ann Rheum Dis* **2022;81(12):1685-1694**.

Jendrek ST, Glatzel M, Pauli D, Schinke S, **Humrich JY**, Lamprecht P, Riemekasten G. The unusual mimicker of a polymyositis. *Z Rheumatol* **2022;81(8):682-685**

Cabral-Marques O, Halpert G, Schimke LF, Ostrinski Y, Vojdani A, Baiocchi GC, Freire PP, Filgueiras IS, Zyskind I, Lattin MT, Tran F, Schreiber S, Marques AHC, Praça DR, Fonseca DLM, **Humrich JY**, Müller A, Giil LM, Graßhoff H, Schumann A, Hackel A, Junker J, Meyer C, Ochs HD, Lavi YB, Scheibenbogen C, Dechend R, Jurisica I, Schulze-Forster K, Silverberg JI, Amital H, Zimmerman J, Heidecke H, Rosenberg AZ, Riemekasten G, Shoenfeld Y. Autoantibodies targeting GPCRs and RAS-related molecules associate with COVID-19 severity. *Nat Commun.* **2022; 13(1): 1220**

Graßhoff H, Sailer VW, **Humrich J**, Riemekasten G, Lamprecht P. Clinical Vignette: A patient with acute-onset hemorrhagic necroses and bullae of the legs. *Rheumatology (Oxford).* **2021;60(11):5476-5477**.

Graßhoff H, Comdühr S, Monne LR, Müller A, Lamprecht P, Riemekasten G, **Humrich JY**. Low-Dose IL-2 Therapy in Autoimmune and Rheumatic Diseases. *Front Immunol.* **2021;12:648408**.

Abdirama D, Tesch S, Griebßbach AS, von Spee-Mayer C, **Humrich JY**, Stervbo U, Babel N, Meisel C, Alexander T, Biesen R, Bacher P, Scheffold A, Eckardt KU, Hiepe F, Radbruch A, Burmester GR, Riemekasten G, Enghard P. Nuclear antigen-reactive CD4 + T cells expand in active systemic lupus erythematosus, produce effector cytokines, and invade the kidneys. *Kidney Int.* **2021;99(1):238-246**.

Arnold S, Deja M, Nitschke M, Bohnet S, Wallis S, **Humrich JY**, Riemekasten G, Steinhoff J, Lamprecht P. Extracorporeal membrane oxygenation in ANCA-associated vasculitis. *Autoimmun Rev.* **2021;20(1):102702**.

**Humrich JY**, Bernardes JP, Ludwig RJ, Klatzmann D, Scheffold A. Phenotyping of Adaptive Immune Responses in Inflammatory Diseases. *Front Immunol.* **2020;11:604464**.

Tesch S, Abdirama D, Griebßbach AS, Brand HA, Goerlich N, **Humrich JY**, Bacher P, Hiepe F, Riemekasten G, Enghard P. Identification and characterization of antigen-specific CD4 + T cells targeting renally expressed antigens in human lupus nephritis with two independent methods. *Sci Rep.* **2020;10(1):21312**.

**Humrich JY**, Riemekasten G. Low-dose IL-2 for patients with systemic lupus erythematosus – Authors' reply. *Lancet Rheumatol.* **2019;1(4):e203–e204**

**Humrich JY**, von Spee-Mayer C, Siegert E, Bertolo M, Rose A, Abdirama D, Enghard P, Stuhlmüller B, Sawitzki B, Huscher D, Hiepe F, Alexander T, Feist E, Radbruch A, Burmester GR, Riemekasten G. Low-dose interleukin-2 therapy in refractory systemic lupus erythematosus: an investigator-initiated, single-centre phase 1 and 2a clinical trial. *Lancet Rheumatol.* **2019;1(1):e44–e54**.

Rose A, von Spee-Mayer C, Kloke L, Wu K, Kühl A, Enghard P, Burmester GR, Riemekasten G, **Humrich JY**. IL-2 Therapy Diminishes Renal Inflammation and the Activity of Kidney-Infiltrating CD4+ T Cells in Murine Lupus Nephritis. *Cells*. 2019;11;8(10).

Ranjbar M, Rothe M, Klapa S, Lange T, Prasuhn M, Grisanti S, Riemekasten G, **Humrich JY**. Evaluation of choroidal substructure perfusion in patients affected by systemic sclerosis: an optical coherence tomography angiography study. *Scand J Rheumatol*. 2019;17:1-5.

Rothe M, Rommel F, Klapa S, **Humrich JY**, Nieberding R, Lange T, Sochurek JAM, Plöttner P, Grisanti S, Riemekasten G, Ranjbar M. Evaluation of retinal microvascular perfusion in systemic sclerosis: a case-control study. *Ann Rheum Dis*. 2019;78(6):857-858.

**Humrich JY**, Riemekasten G. Low-dose interleukin-2 therapy for the treatment of systemic lupus erythematosus. *Curr Opin Rheumatol*. 2019;31(2):208-212.

Cabral-Marques O, Marques A, Giil LM, De Vito R, Rademacher J, Günther J, Lange T, **Humrich JY**, Klapa S, Schinke S, Schimke LF, Marschner G, Pitann S, Adler S, Dechend R, Müller DN, Braicu I, Sehoul J, Schulze-Forster K, Trippel T, Scheibenbogen C, Staff A, Mertens PR, Löbel M, Mastroianni J, Plattfaut C, Gieseler F, Dragun D, Engelhardt BE, Fernandez-Cabezudo MJ, Ochs HD, Al-Ramadi BK, Lamprecht P, Mueller A, Heidecke H, Riemekasten G. GPCR-specific autoantibody signatures are associated with physiological and pathological immune homeostasis. *Nat Commun*. 2018;9(1):5224.

Lamprecht P, Kerstein A, Klapa S, Schinke S, Karsten CM, Yu X, Ehlers M, Epplen JT, Holl-Ulrich K, Wiech T, Kalies K, Lange T, Laudien M, Laskay T, Gemoll T, Schumacher U, Ullrich S, Busch H, Ibrahim S, Fischer N, Hasselbacher K, Pries R, Petersen F, Weppner G, Manz R, **Humrich JY**, Nieberding R, Riemekasten G, Müller A. Pathogenetic and Clinical Aspects of Anti-Neutrophil Cytoplasmic Autoantibody-Associated Vasculitides. *Front Immunol*. 2018;9:680.

Özden F, Schinke S, Thorns C, Eckey T, Dalhoff K, Münte TF, Tronnier V, **Humrich JY**, Riemekasten G, Lamprecht P. Detection of anti-neutrophil cytoplasmic and antinuclear autoantibodies favouring misdiagnoses in 5 cases of Erdheim-Chester disease. *Clin Exp Rheumatol*. 2018;36 Suppl 111(2):176.

Lamprecht P, **Humrich JY**, Diebold I, Riemekasten G. Diagnosis of deficiency of adenosine deaminase 2 with early onset polyarteritis nodosa in an adult patient with a novel compound heterozygous CECR1 mutation. *Clin Exp Rheumatol*. 2018;36 Suppl 111(2):177.

**Humrich JY**, Riemekasten G. Low-dose IL-2 therapy - a complex scenario that remains to be further explored. *Nat Rev Rheumatol*. 2017;13(6):386.

Klocke J, Kopetschke K, Griebach AS, Langhans V, **Humrich JY**, Biesen R, Dragun D, Radbruch A, Burmester GR, Riemekasten G, Enghard P. Mapping urinary chemokines in human lupus nephritis: Potentially redundant pathways recruit CD4+ and CD8+ T cells and macrophages. *Eur J Immunol*. 2017; 47(1):180-192.

**Humrich JY**, Riemekasten G. Clinical trials: The rise of IL-2 therapy - a novel biologic treatment for SLE. *Nat Rev Rheumatol*. 2016; 12(12): 695-696.

**Humrich JY**, Riemekasten G. Restoring regulation - IL-2 therapy in systemic lupus erythematosus. *Expert Rev Clin Immunol*. 2016; 12 (11): 1153-1160.

**Humrich JY**, Riemekasten G. IL-2-Therapy in SLE - Selective reconstitution of immunological tolerance. *Z Rheumatol*. 2016; 75(5):490-2.

von Spee-Mayer C, Siegert E, Abdirama D, Rose A, Klaus A, Alexander T, Enghard P, Sawitzki B, Hiepe F, Radbruch A, Burmester GR, Riemekasten G, **Humrich JY**. Low-dose interleukin-2 selectively corrects regulatory T cell defects in patients with systemic lupus erythematosus. *Ann Rheum Dis*. 2016; 75(7):1407-15.

Kopetschke K, Klocke J, Griebach AS, **Humrich JY**, Biesen R, Dragun D, Burmester GR, Enghard P, Riemekasten G. The cellular signature of urinary immune cells in Lupus nephritis: new insights into potential biomarkers. *Arthritis Res Ther*. 2015; 17(1):94.

**Humrich JY**, Kamradt T, Riemekasten G. Regulatory T cells and rheumatic diseases. *Z Rheumatol*. 2015;74(1):26-32.

**Humrich JY**, von Spee C, Riemekasten G. Stärkung der regulatorischen T-Zellen durch Interleukin-2 Therapie. *Drug Res (Stuttg)*. 2015; 65 Suppl 1:S23

**Humrich JY**, von Spee-Mayer C, Siegert E, Alexander T, Hiepe F, Radbruch A, Burmester GR, Riemekasten G. Rapid induction of clinical remission by low-dose interleukin-2 in a patient with refractory SLE. *Ann Rheum Dis*. 2015; 74(4):791-2.

Enghard P, Rieder C, Kopetschke K, Klocke JR, Undeutsch R, Biesen R, Dragun D, Gollasch M, Schneider U, Aupperle K, **Humrich JY**, Hiepe F, Backhaus M, Radbruch AH, Burmester GR, Riemekasten G. Urinary CD4 T cells identify SLE patients with proliferative lupus nephritis and can be used to monitor treatment response. *Ann Rheum Dis*. 2014; 73(1):277-83.

Weigert O, von Spee C, Undeutsch R, Kloke L, **Humrich JY\***, Riemekasten G\*. CD4+Foxp3+ regulatory T cells prolong drug-induced disease remission in (NZBxNZW) F1 lupus-prone mice. *Arthritis Res Ther*. 2013; 15(1):R35; \* equal contribution

Moser K, Kalies K, Szyska M, **Humrich JY**, Amann K, Manz RA. CXCR3 promotes the production of IgG1 (auto)antibodies but is not essential for the development of lupus nephritis in NZB/W mice. *Arthritis Rheum*. 2012; 64:1237-46.

Engler JB, Undeutsch R, Kloke L, Rosenberger S, Backhaus M, Schneider U, Egerer K, Dragun D, Hofmann J, Huscher D, Burmester GR, **Humrich JY**, Enghard P, Riemekasten G. Unmasking of autoreactive CD4 T cells by depletion of CD25 regulatory T cells in systemic lupus erythematosus. *Ann Rheum Dis*. 2011; 70:2176-83.

Becker MO., Brückner C, Scherer HU, Wassermann N, **Humrich JY**, Hanitsch LG, Schneider U, Kawald A, Hanke K, Burmester GR, Riemekasten G. The monoclonal anti-CD25 antibody basiliximab for the treatment of progressive systemic sclerosis: an open-label study. *Ann Rheum Dis*. 2010; 70:1340-1.

Enghard P, **Humrich JY**, Chu VT, Grussie E, Hiepe F, Burmester GR, Radbruch A, Berek C, Riemekasten G. Class switching and consecutive loss of dsDNA-reactive B1a B cells from the peritoneal cavity during murine lupus development. *Eur J Immunol*. 2010; 40: 1809-18.

**Humrich JY**, Morbach H, Undeutsch R, Enghard P, Rosenberger S, Weigert O, Kloke L, Gaber T, Heimann J, Brandenburg S, Scheffold A, Huehn J, Radbruch A, Burmester GR, Riemekasten G. Homeostatic imbalance of regulatory and effector T cells due to IL-2 deprivation amplifies murine lupus. *Proc Natl Acad Sci USA*. 2010; 107: 204-9.

Enghard P, **Humrich JY**, Rudolph B, Rosenberger S, Biesen R, Kuhn A, Manz R, Hiepe F, Radbruch A, Burmester GR, Riemekasten G. CXCR3+CD4+ T cells are enriched in inflamed kidneys and urine and provide a new biomarker for acute nephritis flares in SLE patients. *Arthritis Rheum*. 2009; 60:199-206.

Niesner U, Albrecht I, Janke M, Doebis C, Loddenkemper C, Lexberg MH, Eulenburg K, Kreher S, Koeck J, Baumgrass R, Bonhagen K, Kamradt T, Enghard P, **Humrich JY**, Rutz S, Schulze-Toppfhoff U, Aktas O, Bartfeld S, Radbruch H, Hegazy AN, Löhning M, Baumgart DC, Duchmann R, Rudwaleit M, Häupl T, Gitelman I, Krenn V, Gruen J, Sieper J, Zeitz M, Wiedenmann B, Zipp F, Hamann A, Janitz M, Scheffold A, Burmester GR, Chang HD, Radbruch A. Autoregulation of Th1-mediated inflammation by twist1. *J Exp Med*. 2008; 205:1889-901.

**Humrich JY**, Thumann P, Greiner S, Humrich JH, Averbek M, Schwank C, Kämpgen E, Schuler G, Jenne L. Vaccinia virus impairs directional migration and chemokine receptor switch of human dendritic cells. *Eur J Immunol*. 2007; 37:954-65.

**Humrich J**, Riemekasten G. Regulatory T cells in rheumatic diseases. *Dtsch Med Wochenschr*. 2006; 131:2288-91.

Greiner S, **Humrich JY**, Thuman P, Sauter B, Schuler G, Jenne L. The highly attenuated Vaccinia virus strain MVA induces apoptosis in melanoma cells and allows bystander DC to generate a potent anti-tumoral immunity. *Clin Exp Immunol*. 2006; 146:344-53.

**Humrich JY**, Humrich JH, Averbek M, Thumann P, Termeer C, Kämpgen E, Schuler G, Jenne L. Mature monocyte-derived dendritic cells respond more strongly to CCL19 than to CXCL12: consequences for directional migration. *Immunology*. 2006; 117:238-47.

Riemekasten G, Langnickel D, Enghard P, Undeutsch R, **Humrich J**, Ebling FM, Hocher B, Humaljoki T, Neumayer H, Burmester GR, Hahn BH, Radbruch A, Hiepe F. Intravenous injection of a D1 protein of the Smith proteins postpones murine lupus and induces type 1 regulatory T cells. *J Immunol*. 2004; 173:5835-5842.

Thumann P, Moc I, Humrich J, Berger TG, Schultz ES, Schuler G, Jenne L. Antigen loading of dendritic cells with whole tumor cell preparations. *J Immunol Methods*. 2003; 277:1-16.

**Humrich J**, Jenne L. Viral vectors for dendritic cell-based immunotherapy. *Curr Top Microbiol Immunol*. 2003; 276:241-259.

## BOOKS

Riemekasten G, **Humrich JY**, Hiepe F. Chapter 28: Antibodies Against ENA (Sm, RNP, SSA, SSB). *Dubois' Lupus Erythematosus and Related Syndromes. 9th Edition. Published: 18th October 2018. Elsevier. ISBN: 9780323479271.*

**Humrich J**. Kapitel E8: Immunologische Erkrankungen. *Klinische Akut- und Notfallmedizin. A. Gries, A. Seekamp, M. Christ, C. Dodt (Hrsg.). 2020. MWV Berlin. ISBN 978-3-95466-469-6.*

Lübeck, 15.02.2024

  
Dr. Jens Humrich