

Prof. Percy Knolle, MD

Institute of Molecular Immunology



Technische Universität München (TU)

Institute for Molecular Immunology, Director
Rheinische Friedrich-Wilhelms-Universität Bonn

Institute of Molecular Medicine, Director (until 2012)

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Research Expertise

The focus of Prof. Knolle's research group is on the molecular and cellular mechanisms governing local immune control in tissues. In his laboratory the relevance of local antigen presentation by organ-resident liver cells was demonstrated for induction of immune tolerance in naïve CD4 and CD8 T cells. The development of novel cell separation techniques allowed to study the mechanisms and functional relevance of different liver cell populations at a new level of resolution and to compare the immune function of these non-professional antigen presenting cells with myeloid professional antigen presenting cells such as dendritic cells or macrophages. His group has discovered novel stimulatory pathways that are initiated by unique immune sensory mechanisms in liver-resident antigen presenting cells that trigger local T cell immunity in the liver. The lab has developed an interest in local mechanisms determining regulation of CD4 T cell differentiation with particular reference to the impact of nuclear receptors that also impact on the metabolic state of T cells.

Education / Training

University of Mainz, Germany, Internal Medicine Specialist, 1997

German Cancer Research Centre, Heidelberg, Applied Immunology, MD thesis, 1990

Universities of Frankfurt, Paris, Birmingham (UK), Strasbourg, and Geneva, Medicine, MD, 1988

Appointments / Positions Held

2013 - present

Director Institute of Molecular Immunology, TU Munich

2013 - 2017

coopted Medical Faculty, University of Bonn, Germany

2006 - 2012

Vice-speaker of the SFB 704, University of Bonn, Germany

2002 - 2012

Director Institute of Molecular Medicine, University of Bonn, Germany

2002

Professor of Molecular Medicine and Immunology, University of Bonn, Germany

1997 - 2002

Independent Group Leader, Center of Molecular Biology Heidelberg (ZMBH), University of Heidelberg, Germany

1991 - 1997

Physician at the 1st Medical Department, University of Mainz, Germany

1990 - 1991

Postdoctoral Fellow, BASF Bioresearch, Corporation, Cambridge, USA

Honors / Awards

2001

Award by the Volkswagen Foundation (1.5 Million €)

10 Most Relevant Publications for Prof. Percy Knolle

1. Beyer M, Abdullah Z, Chemnitz JM, Maisel D, Sander J, Lehmann C, Thabet Y, Shinde PV, Schmidleithner L, Kohne M, Trebicka J, Schierwagen R, Hofmann A, Popov A, Lang KS, Oxenius A, Buch T, Kurts C, Heikenwalder M, Fatkenheuer G, Lang PA, Hartmann P, **Knolle PA***, Schultze JL*. Tumor-necrosis factor impairs CD4(+) T cell-mediated immunological control in chronic viral infection. *Nat Immunol* 2016;17:593-603.
2. Böttcher JP, Beyer M, Meissner F, Abdullah Z, Sander J, Hochst B, Eickhoff S, Rieckmann JC, Russo C, Bauer T, Flecken T, Giesen D, Engel D, Jung S, Busch DH, Protzer U, Thimme R, Mann M, Kurts C, Schultze JL, Kastenmuller W, **Knolle PA**. Functional classification of memory CD8(+) T cells by CX3CR1 expression. *Nat Commun* 2015;6:8306.
3. **Knolle PA**, Thimme R. Hepatic Immune Regulation and its Involvement in Viral Hepatitis Infection. *Gastroenterology* 2014, 146: 1193-207
4. Wolf MJ, Adili A, Piotrowitz K, Abdullah Z, Boege Y, Stemmer K, Ringelhan M, Simonavicius N, Egger M, Wohlleber D, Lorentzen A, Einer C, Schulz S, Clavel T, Protzer U, Thiele C, Zischka H, Moch H, Tschop M, Tumanov AV, Haller D, Unger K, Karin M, Kopf M, **Knolle PA***, Weber A*, Heikenwalder M*. Metabolic Activation of Intrahepatic CD8(+) T Cells and NKT Cells Causes Nonalcoholic Steatohepatitis and Liver Cancer via Cross-Talk with Hepatocytes. *Cancer Cell* 2014;26:549-64.
5. Böttcher JP, Schanz O, Garbers C, Zaremba A, Hegenbarth S, Kurts C, Beyer M, Schultze JL, Kastenmuller W, Rose-John S, **Knolle PA**. IL-6 trans-Signaling-Dependent Rapid Development of Cytotoxic CD8(+) T Cell Function. *Cell Reports* 2014;8:1318-27
6. Huang LR, Wohlleber D, Reisinger F, Jenne CN, Cheng RL, Abdullah Z, Schildberg FA, Odenthal M, Dienes HP, van Rooijen N, Schmitt E, Garbi N, Croft M, Kurts C, Kubers P, Protzer U, Heikenwalder M, **Knolle PA**. Intrahepatic myeloid-cell aggregates enable local proliferation of CD8(+) T cells and successful immunotherapy against chronic viral liver infection. *Nat Immunol* 2013;14:574-83.
7. Böttcher JP, Schanz O, Wohlleber D, Abdullah Z, Debey-Pascher S, Staratschek-Jox A, Hochst B, Hegenbarth S, Grell J, Limmer A, Atreya I, Neurath MF, Busch DH, Schmitt E, van Ender P, Kolanus W, Kurts C, Schultze JL, Diehl L, **Knolle PA**. Liver-Primed Memory T Cells Generated under Noninflammatory Conditions Provide Anti-infectious Immunity. *Cell Reports* 2013;3:779-95.
8. Abdullah Z, Schlee M, Roth S, Mraheil MA, Barchet W, Böttcher J, Hain T, Geiger S, Hayakawa Y, Fritz JH, Civril F, Hopfner KP, Kurts C, Ruland J, Hartmann G, Chakraborty T, **Knolle PA**. RIG-I detects infection with live Listeria by sensing secreted bacterial nucleic acids. *EMBO J* 2012;31:4153-64.
9. Wohlleber D, Kashkar H, Gartner K, Frings MK, Odenthal M, Hegenbarth S, Borner C, Arnold B, Hammerling G, Nieswandt B, van Rooijen N, Limmer A, Cederbrant K, Heikenwalder M, Pasparakis M, Protzer U, Dienes HP, Kurts C, Kronke M, **Knolle PA**. TNF-Induced Target Cell Killing by CTL Activated through Cross-Presentation. *Cell Reports* 2012;2:478-87.
10. Protzer U, Maini MK, **Knolle PA**. Living in the liver: hepatic infections. *Nat Rev Immunol* 2012;12:201-13.