

Prof. Gunther Hartmann, MD

Institute of Clinical Chemistry and Clinical Pharmacology



Rheinische Friedrich-Wilhelms-Universität Bonn

Institute of Clinical Chemistry and Clinical Pharmacology,
Director

E-Mail: gunther.hartmann@uni-bonn.de

Research Expertise

For over 20 years, Prof Hartmann's research focus has been nucleic acid sensing in the broader context of nucleic acid immunity, and he has made fundamental contributions to the ligand characterization and immunobiology of TLR7, TLR8, TLR9, RIG-I, STING and cGAS. In their recent work, he and his group have discovered a pivotal mechanism by which RIG-I discriminates between foreign and self RNA, characterized the role of NLRP3 in NK-cell memory, discovered cyclic [G(2',5')pA(3',5')p] (cGAMP), the metazoan second messenger in the cGAS- STING pathway, and identified Y-form DNA as a minimal ligand for cGAS which is crucial for early HIV detection.

Education / Training

University of Munich, Germany, Experimental Pharmacology and Toxicology Degree, 2006

University of Munich, Germany, Clinical Pharmacology, Degree, 2003

University of Munich, Germany, Clinical Pharmacology, Habilitation, 2001

University of Ulm, Germany, Clinical Genetics, MD thesis, 1994

University of Ulm, Germany, Clinical Medicine, MD, 1993

Appointments / Positions Held

2014 Founder Rigontec GmbH, Rigontec GmbH, Bonn, Germany

2013 - present Vice Speaker of DZIF Bonn-Cologne, University of Bonn, Germany

2012 - present Speaker of the DFG-ImmunoSensation Cluster of Excellence, University of Bonn, Germany

2008 - present Head of Research Committee BONFOR, University of Bonn, Germany

2007 - present Full Professor and Chair, Institute of Clinical Chemistry and Clinical Pharmacology with the Central Laboratory of the University Hospital, University of Bonn, Germany

2006 - present Member of the Steering Committee, Comprehensive Cancer Center Köln-Bonn (CCO), University of Bonn,

2005 Full Professor and Head, Division of Clinical Pharmacology, University of Bonn, Germany

2002 Assistant Professor, Division of Clinical Pharmacology, University of Munich, Germany

1999 - 2005 Research group: Therapeutic Oligonucleotides, University of Munich, Germany

1998 - 1999 Postdoctoral Fellow, Department of Internal Medicine, University of Iowa, USA

1995 Research Fellow, Division of Clinical Pharmacology, University of Munich, Germany

1994 Research Fellow, Department of Internal Medicine, University of Munich, Germany

Honors / Awards

2014 - present Elected Member of the German Academy of Sciences Leopoldina

2012 Gottfried-Wilhelm Leibniz-Preis

2011 - 2012 Elected President of the Oligonucleotide Therapeutics Society (OTS)

2011 Dr.-Friedrich-Sasse-Preis, Berliner Medizinische Gesellschaft/ GoBio-Award of the Federal Ministry for Education and Research (BMBF)

2010 Elected Vice Speaker of the SFB 670

2009 Elected member of the committee Krebsforschung und Prävention of the German Cancer Aid (Deutsche Krebshilfe)

2007 Wilhelm-Vaillant-Award for Medical Sciences

2004 Ludwig-Heilmeyer-Award (Ludwig-Heilmeyer Society, Internal Medicine, Germany) / Biofuture Award, of the Federal Ministry for Education and Research (BMBF) / Georg-Heberer Award, Chiles Foundation, Portland

2000 Paul-Martini-Award / Award "Young Master" of the German Society for Hematology and Oncology

10 Most Relevant Publications for Prof. Gunther Hartmann

1. Herzner-AM, Hagmann CA, Goldeck M, Keßels S, Kübler K, Wittmann S, Gramberg T, Andreeva L, Hopfner KP, Mertens C, Zillinger T, Jin T, Xiao TS, Bartok E, Coch C, Ackermann D, Hornung V, Ludwig J, Barchet W, **Hartmann G*** and Schlee M*. Sequence-specific activation of cGAS by Y-form DNA structures as found in primary HIV-1 cDNA. *Nat Immunol* 2015 Oct; 16(10): 1025-33.
2. Schuberth-Wagner C, Ludwig J, Bruder AK, Herzner AM, Zillinger T, Goldeck M, Schmidt T, Schmid-Burgk JL, Kerber R, Wolter S, Stümpel JP, Roth A, Bartok E, Drosten C, Coch C, Hornung V, Barchet W, Kümmerer BM, **Hartmann G*** and Schlee M*. A conserved histidine in RIG-I controls immune tolerance to N1-2'O-methylated self RNA. *Immunity*, 2015 Jul 21;43(1):41-51.
3. Goubau D, Schlee M, Deddouche S, Pruijssers AJ, Zillinger T, Goldeck M, Schuberth C, Van der Veen AG, Fujimura T, Rehwinkel J, Iskarpatyoti JA, Barchet W, Ludwig J, Dermody TS, **Hartmann G**, Reis e Sousa C. Antiviral immunity via RIG-I-mediated recognition of RNA bearing 5'-diphosphates. *Nature*. 2014 Oct 16;514(7522):372-5
4. Gehrke N, Mertens C, Zillinger T, Wenzel J, Bald T, Zahn S, Tüting T, **Hartmann G**, Barchet W. Oxidative damage of DNA confers resistance to cytosolic nuclease TREX1 degradation and potentiates STING-dependent immune sensing. *Immunity* 2013 Sep 19;39(3):482-95.
5. Gao P, Ascano M, Wu Y, Barchet W, Gaffney BL, Zillinger T, Serganov AA, Liu Y, Jones RA, **Hartmann G**, Tuschl T, Patel DJ. Cyclic [G(2',5')pA(3',5')p] Is the Metazoan Second Messenger Produced by DNA-Activated Cyclic GMP-AMP Synthase. *Cell* 2013 May 23;153:1094-107.
6. Wang Y, Ludwig J, Schuberth C, Goldeck M, Schlee M, Li H, Juraneck S, Sheng G, Micura R, Tuschl T*, **Hartmann G***, Patel DJ*. 2010. Structural and functional insights into 5'-ppp RNA pattern recognition by the innate immune receptor RIG-I. *Nat Struct Mol Biol* 17:781-7.
7. Schlee M, Roth A, Hornung V, Hagmann CA, Wimmenauer V, Barchet W, Coch C, Janke M, Mihailovic A, Wardle G, Juraneck S, Kato H, Kawai T, Poeck H, Fitzgerald KA, Takeuchi O, Akira S, Tuschl T, Latz E, Ludwig J, **Hartmann G**. 2009. Recognition of 5' triphosphate by RIG-I helicase requires short blunt double-stranded RNA as contained in panhandle of negative-strand virus. *Immunity* 31: 25-34.
8. Poeck H, Besch R, Maihoefer C, Renn M, Tormo D, Morskaya SS, Kirschnek S, Gaffal E, Landsberg J, Hellmuth J, Schmidt A, Anz D, Bscheider M, Schwerdt T, Berking C, Bourquin C, Kalinke U, Kremmer E, Kato H, Akira S, Meyers R, Hacker G, Neuenhahn M, Busch D, Ruland J, Rothenfusser S, Prinz M, Hornung V, Endres S, Tüting T, **Hartmann G**. 2008. 5'-Triphosphate-siRNA: turning gene silencing and RIG-I activation against melanoma. *Nat Med* 14: 1256-63.
9. Hornung V, Ellegast J, Kim S, Brzozka K, Jung A, Kato H, Poeck H, Akira S, Conzelmann KK, Schlee M, Endres S, **Hartmann G**. 2006. 5'-Triphosphate RNA is the ligand for RIG-I. *Science* 314: 994-7.
10. Hornung V, Guenther-Biller M, Bourquin C, Ablasser A, Schlee M, Uematsu S, Noronha A, Manoharan M, Akira S, de Fougerolles A, Endres S, **Hartmann G**. 2005. Sequence-specific potent induction of IFN-alpha by short interfering RNA in plasmacytoid dendritic cells through TLR7. *Nat Med* 11: 263-70.

* These authors contributed equally