



Dr. Anna C. Aschenbrenner

AFFILIATION

Systems Medicine | German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany

CURRENT POSITION

Senior Group Leader | Prevention, Aging and Systems Immunology | Systems Medicine, DZNE

RESEARCH EXPERTISE

Dr. Aschenbrenner earned her PhD in developmental biology after studying Molecular Biomedicine at the University of Bonn and the University of Pennsylvania. She then strategically transitioned to systems immunology, leveraging her extensive expertise in genetic models, molecular biology, signalling and physiology to understand immune cells in health and disease. Her research places particular emphasis on integrating advanced genomics technologies with state-of-the-art bioinformatic approaches. As a group leader at the DZNE, she drives projects at the intersection of human immunology, translational clinical research, and data science, fostering cross-disciplinary collaborations. Her work focuses on patient stratification, disease endotyping, biomarker discovery, and the prediction of therapy outcomes, employing national and European data protection-compliant analytical frameworks and assisted learning methods.

SHORT CV

Name Anna C. Aschenbrenner, Dr. rer. nat
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 Systems Medicine
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Academic education and degrees

2014 Doctorate in Molecular Biomedicine, University of Bonn
 2008 Diploma in Molecular Biomedicine, University of Bonn

Scientific career

since 12/2021 Research group leader, Prevention, Aging and Systems Immunology
 Systems Medicine, Deutsches Zentrum für Neurodegenerative Krankheiten
 (DZNE), Bonn, Germany [W2 equivalent, tenured]
 since 2024 Team member of the DZNE Swarm Learning Hub, DZNE, Bonn, Germany
 2020 – 2021 Team leader Clinical Single Cell Omics, Systems Medicine, DZNE & University of
 Bonn, Germany
 2021 Helmholtz Information & Data Science Academy (HIDA) Fellowship, Institute of
 Computational Biology, Helmholtz Center Munich
 2019 Proxy for W3 professorship, Genomics and Immunoregulation
 Life & Medical Sciences (LIMES) Institute, University of Bonn, Germany
 2017 – 2021 Visiting Researcher, Department of Internal Medicine, Radboud University Medical
 Center, Nijmegen, The Netherlands
 2016 – 2020 Postdoc, Genomics and Immunoregulation, LIMES Institute, University of Bonn,
 Germany
 2014 – 2016 Postdoc, Molecular Developmental Biology, LIMES Institute, University of Bonn,
 Germany
 2006 Visiting researcher, Abramsom Family Cancer Research Institute, University of
 Pennsylvania, Philadelphia, USA

Honours

2025 Tobias Welte Prize, German Sepsis Society
 2014 PhD summa cum laude
 2008 PhD stipend by the NRW International Graduate School “LIMES Chemical
 Biology”
 2008 Diploma with distinction
 2006 Research stipend by the Heinrich Hertz foundation & DAAD travel grant

Selected publications

*shared first authorship / *shared second authorship / #shared last authorship / §corresponding author

Kröger, C*, Müller S*, Leidner J*, Kröber T, Warnat-Herresthal S, Spintge JB, Zajac T, Neubauer A, Frolov
 A, Carraro C, DELCODE Study Group, Jessen F, Puccio S, **Aschenbrenner AC**, Schultze JL, Pecht T,
 Beyer MD, Bonaguro L. [Unveiling the power of high-dimensional cytometry data with cyCONDOR](#). *Nat*
Commun. 2024 Dec 19;15(1):10702. doi: 10.1038/s41467-024-55179-w. PMID: 39702306

Knoll R*, Helbig ET*, Dahm K, Bolaji O, Hamm F, Dietrich O, van Uelft M, Müller S, Bonaguro L, Schulte-
 Schrepping J, Petrov L, Krämer B, Kraut M, Stubbemann P, Thibeault C, Brumhard S, Theis H, Hack G, De
 Domenico E, Nattermann J, Becker M, Beyer MD, Hillus D, Georg P, Loers C, Tiedemann J, Tober-Lau P,
 Lippert L, Millet Pascual-Leone B, Tacke F, Rohde G, Suttrop N, Witzenrath M; CAPNETZ Study Group; Pa-

COVID-19 Study Group; Saliba AE, Ulas T, Polansky JK, Sawitzki B, Sander LE[#], Schultze JL[#], **Aschenbrenner AC**^{*,§}, Kurth F[#]. [The life-saving benefit of dexamethasone in severe COVID-19 is linked to a reversal of monocyte dysregulation.](#) *Cell*. 2024 Aug 8;187(16):4318-4335.e20. doi: 10.1016/j.cell.2024.06.014. Epub 2024 Jul 3. PMID: 38964327

Knoll R, Bonaguro L, Dos Santos JC, Warnat-Herresthal S, Jacobs-Cleophas MCP, Blümel E, Reusch N, Horne A, Herbert M, Nuesch-Germano M, Otten T, van der Heijden WA, van de Wijer L, Shalek AK, Händler K, Becker M, Beyer MD, Netea MG, Joosten LAB, van der Ven AJAM, Schultze JL[#], **Aschenbrenner AC**^{*,§}. [Identification of drug candidates targeting monocyte reprogramming in people living with HIV.](#) *Front Immunol*. 2023 Nov 20;14:1275136. doi: 10.3389/fimmu.2023.1275136. PMID: 38077315

Bonaguro L, Schulte-Schrepping J, Carraro C, Sun LL, Reiz B, Gemünd I, Saglam A, Rahmouni S, Georges M, Arts P, Hoischen A, Joosten LAB, van de Veerdonk FL, Netea MG, Händler K, Mukherjee S, Ulas T, Schultze JL[#], **Aschenbrenner AC**^{*,§}. [Human variation in population-wide gene expression data predicts gene function and phenotype.](#) *iScience*. 2022 Oct 12;25(11):105328. doi: 10.1016/j.isci.2022.105328. PMID: 36310583

Krämer B*, Knoll R*, Bonaguro L*, Baßler K*, ToVinh M*, Raabe J*, Astaburuaga-García R, Schulte-Schrepping J, Kaiser KM, Rieke GJ, Bischoff J, Monin MB, Hoffmeister C, Schlabe S, De Domenico E, Reusch N, Händler K, Reynolds G, Blüthgen N, Hack G, Finnemann C, Nischalke HD, Strassburg CP, Stephenson E, Su Y, Gardner L, Yuan D, Chen D, Goldman J, Rosenstiel P, Schmidt SV, Latz E, Hrusovsky K, Ball AJ, Johnson JM, Koenig PA, Schmidt FI, Haniffa M, Heath JR, Kümmerer BM, Keitel V, Jensen B, Stubbemann P, Kurth F, Sander LE, Sawitzki B, Deutsche COVID-19 OMICS Initiative (DeCOI), **Aschenbrenner AC**[#], Schultze JL[#], Nattermann J[#]. [Early IFN-α signatures and persistent dysfunction are distinguishing features of NK cells in severe COVID-19.](#) *Immunity*. 2021 Nov 9;54(11):2650-2669.e14. doi: 10.1016/j.immuni.2021.09.002. Epub 2021 Sep 4. PMID: 34592166

Warnat-Herresthal S*, Schultze H*, Shastry KL*, Manamohan S, Mukherjee S, Garg V, Sarveswara R, Händler K, Pickkers P, Aziz NA, Ktena S, Tran F, Bitzer M, Ossowski S, Casadei N, Herr C, Petersheim D, Behrends U, Kern F, Fehlmann T, Schommers P, Lehmann C, Augustin M, Rybníček JP, Krämer B, Bonaguro L, Schulte-Schrepping J, De Domenico E, Siever C, Kraut M, Desai M, Monnet B, Saridaki M, Siegel CM, Drews A, Nuesch-Germano M, Theis H, Heyckendorf J, Schreiber S, Kim-Hellmuth S; COVID-19 Aachen Study (COVAS), Nattermann J, Skowasch D, Kurth I, Keller A, Bals R, Nürnberg P, Rieß O, Rosenstiel P, Netea MG, Theis FJ, Mukherjee S, Backes M, **Aschenbrenner AC**, Ulas T, Deutsche COVID-19 Omics Initiative (DeCOI), Breteler MMB[#], Giamarellos-Bourboulis EJ[#], Kox M[#], Becker M[#], Cheran S[#], Woodacre MS[#], Goh EL[#], Schultze JL[#], German COVID-19 OMICS Initiative (DeCOI). [Swarm Learning for decentralized and confidential clinical machine learning.](#) *Nature*. 2021 Jun;594(7862):265-270. doi: 10.1038/s41568-021-03583-3. Epub 2021 May 26. PMID: 34040261

Schultze JL, **Aschenbrenner AC**. [COVID-19 and the human innate immune system.](#) *Cell*. 2021 Apr 1;184(7):1671-1692. doi: 10.1016/j.cell.2021.02.029. Epub 2021 Feb 16. PMID: 33743212

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Machleidt F, Uhrig A, Bosquillon de Jarcy L, Jürgens L, Stegemann M, Glösenkamp CR, Volk HD, Goffinet C, Landthaler M, Wyler E, Georg P, Schneider M, Dang-Heine C, Neuwinger N, Kappert K, Tauber R, Corman V, Raabe J, Kaiser KM, Vinh MT, Rieke G, Meisel C, Ulas T, Becker M, Geffers R, Witzentrath M, Drosten C, Suttrop N, von Kalle C, Kurth F, Händler K, Schultze JL[#], **Aschenbrenner AC[#]**, Li Y[#], Nattermann J[#], Sawitzki B[#], Saliba AE[#], Sander LE[#]; Deutsche COVID-19 OMICS Initiative (DeCOI). [Severe COVID-19 Is Marked by a Dysregulated Myeloid Cell Compartment](#). *Cell*. 2020 Aug 5:S0092-8674(20)30992-2. doi: 10.1016/j.cell.2020.08.001. PMID: 32810438