

Publications

Heilig L, Fariha N, Trinks N, Aimanianda V, Wong SSW, Fontaine T, Terpitz U, Strobel L, Lemauff F, Sheppard D, Schaeuble S, Kurzai O, Hünninger K, Weiss E, Vargas M, Howell PL, Panagiotou G, Wurster S, Einsele H, Löffler J (2024) CD56-mediated activation of human natural killer cells is triggered by *Aspergillus fumigatus* galactosaminogalactan. *PLoS Pathog* 20(6), e1012315.

Häder A[#], Schäuble S[#], Gehlen J, Thielemann N, Buerfent BC, Schüller V, Hess T, Wolf T, Schröder J, Weber M, Hünninger K, Löffler J, Vylkova S, Panagiotou G, Schumacher J, Kurzai O (2023) Pathogen-specific innate immune response patterns are distinctly affected by genetic diversity. *Nat Commun* 14(1), 3239.

Belyaev I^{*}, Marolda A^{*}, Praetorius JP, Sarkar A, Medyukhina A, Hünninger K, Kurzai O, Figge MT (2022) Automated characterisation of neutrophil activation phenotypes in *ex vivo* human *Candida* blood infections. *Comput Struct Biotechnol J* 20, 2297-2308.

Seif M, Kakoschke TK, Ebel F, Bellet MM, Trinks N, Renga G, Pariano M, Romani L, Tappe B, Espie D, Donnadiou E, Hünninger K, Häder A, Sauer M, Damotte D, Alifano M, White PL, Backx M, Nerreter T, Machwirth M, Kurzai O, Prommersberger S, Einsele H, Hudecek M, Löffler J (2022) CAR T cells targeting *Aspergillus fumigatus* are effective at treating invasive pulmonary aspergillosis in preclinical models. *Sci Transl Med* 14(664), eabh1209.

Tappe B, Lauruschkat C, Strobel L, Kurzai O, Rebhan S, Kraus S, Lauruschkat C, Garcia JP, Bussemer L, Possler L, Held M, Huenniger K, Kniemeyer O, Schäuble S, Brakhage AA, Panagiotou G, White L, Einsele H, Löffler J, Wurster S (2022) COVID-19 patients share common, corticosteroid-independent features of impaired host immunity to pathogenic molds. *Front Immunol* 13, 954985.

Lehnert T, Prauße MTE, Hünninger K, Praetorius JP, Kurzai O, Figge MT (2021) Comparative assessment of immune evasion mechanisms in human whole-blood infection assays by a systems biology approach. *PLoS One* 16(4), e0249372.

Lehnert T^{*}, Leonhardt I^{*}, Timme S, Thomas-Rüddel D, Bloos F, Sponholz C, Kurzai O, Figge MT[#], Hünninger K[#] (2021) *Ex vivo* immune profiling in patient blood enables quantification of innate immune effector functions. *Sci Rep* 11(1), 12039.

Machata S, Sreekantapuram S, Hünninger K, Kurzai O, Dunker C, Schubert K, Krüger W, Schulze-Richter B, Speth C, Rambach G, Jacobsen ID (2021) Significant differences in host-pathogen interactions between murine and human whole blood. *Front Immunol* 11, 565869.

Mottola A, Ramírez-Zavala B, Hünninger K, Kurzai O, Morschhäuser J (2021) The zinc cluster transcription factor Gzf1 regulates cell wall architecture and integrity in *Candida albicans*. *Mol Microbiol* 116(2), 483-497.

Kämmer P, McNamara S^{*}, Wolf T, Conrad T, Allert S, Gerwien F, Hünninger K, Kurzai O, Guthke R, Hube B, Linde J, Brunke S (2020) Survival strategies of pathogenic *Candida* species in human blood show independent and specific adaptations. *mBio* 11(5), e02435-20.

Marolda A, Hünninger K, Böttcher S, Vivas W, Löffler J, Figge MT, Kurzai O (2020) *Candida* species-dependent release of IL-12 by dendritic cells induces different levels of NK cell stimulation. *J Infect Dis* 221(12), 2060-2071.

Ruben S, Garbe E, Mogavero S, Albrecht-Eckardt D, Hellwig D, Häder A, Krüger T, Gerth K, Jacobsen ID, Elshafee O, Brunke S, Hünninger K, Kniemeyer O, Brakhage AA, Morschhäuser J, Hube B, Vylkova S, Kurzai O, Martin R (2020) Ahr1 and Tup1 contribute to the transcriptional control of virulence-associated genes in *Candida albicans*. *mBio* 11(2), e00206-20.

Weiss E, Schlegel J, Terpitz U, Weber M, Linde J, Schmitt AL, Hünninger K, Marischen L, Gamon F, Bauer J, Löffler C, Kurzai O, Morton CO, Sauer M, Einsele H, Loeffler J (2020) Reconstituting NK cells after allogeneic stem cell transplantation show impaired response to the fungal pathogen *Aspergillus fumigatus*. *Front Immunol* 11, 2117.

Al-Zaben N*, Medyukhina A*, Dietrich S, Marolda A, Hünninger K, Kurzai O, Figge MT; * authors contributed equally (2019) Automated tracking of label-free cells with enhanced recognition of whole tracks. *Sci Rep* 9(1), 3317.

Vivas W, Leonhardt I, Hünninger K, Häder A, Marolda A, Kurzai O (2019) Multiple signaling pathways involved in human dendritic cell maturation are affected by the fungal quorum-sensing molecule farnesol. *J Immunol* 203(11), 2959-2969.

Zoran T, Weber M, Springer J, White PL, Bauer J, Schober A, Löffler C, Seelbinder B, Hünninger K, Kurzai O, Scherag A, Schäuble S, Morton CO, Einsele H, Linde J, Löffler J (2019) Treatment with etanercept and low monocyte concentration contribute to the risk of invasive aspergillosis in patients post allogeneic stem cell transplantation. *Sci Rep* 9(1), 17231.

Hünninger K, Kurzai O (2018) Phagocytes as central players in the defence against invasive fungal infection. *Semin Cell Dev Biol* 89, 3-15. (Review)

Morton CO, Wurster S, Fliesser M, Ebel F, Page L, Hünninger K, Kurzai O, Schmitt AL, Michel D, Springer J, Einsele H, Loeffler J (2018) Validation of a simplified *in vitro* Transwell® model of the alveolar surface to assess host immunity induced by different morphotypes of *Aspergillus fumigatus*. *Int J Med Microbiol* 308(8), 1009-1017.

Praube MTE, Lehnert T, Timme S, Hünninger K, Leonhardt I, Kurzai O, Figge MT (2018) Predictive virtual infection modeling of fungal immune evasion in human whole blood. *Front Immunol* 9, 560.

Timme S, Lehnert T, Praube MTE, Hünninger K, Leonhardt I, Kurzai O, Figge MT (2018) Quantitative simulations predict treatment strategies against fungal infections in virtual neutropenic patients. *Front Immunol* 9, 667.

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, Loeffler J, Krappmann S, Nietzsche S, Kurzai O, Einsele H, Kniemeyer O, Filler S, Reichard U, Brakhage AA (2018) Proteome analysis reveals the conidial surface protein CcpA essential for virulence of the pathogenic fungus *Aspergillus fumigatus*. *mBio* 9(5), e01557-18.

Weiss E, Ziegler S, Fliesser M, Schmitt AL, Hünninger K, Kurzai O, Morton CO, Einsele H, Loeffler J (2018) First insights in NK-DC cross-talk and the importance of soluble factors during infection with *Aspergillus fumigatus*. *Front Cell Infect Microbiol* 8, 288.

Brandes S, Dietrich S, Hünninger K, Kurzai O, Figge MT (2017) Migration and interaction tracking for quantitative analysis of phagocyte-pathogen confrontation assays. *Medical Image Analysis* 36, 172-183.

Fischer M, Müller JP, Spies-Weisshart B, Gräfe C, Kurzai O, Hünninger K, Hochhaus A, Scholl S, Schnetzke U (2017) Isoform localization of Dectin-1 regulates the signaling quality of anti-fungal immunity. *Eur J Immunol* 47(5), 848-859.

Beitzen-Heineke A, Bouzani M, Schmitt AL, Kurzai O, Hünninger K, Einsele H, Loeffler J (2016) Human Invariant Natural Killer T cells possess immune-modulating functions during *Aspergillus* infection. *Med Mycol* 54(2), 169-176.

Blaurock N, Schmerler D, Hünninger K, Kurzai O, Ludewig K, Baier M, Brunkhorst FM, Imhof D, Kiehntopf M (2016) C-Terminal Alpha-1 Antitrypsin Peptide: A New Sepsis Biomarker with Immunomodulatory Function. *Mediators Inflamm* 2016, 6129437.

Böhringer M, Pohlers S, Schulze S, Albrecht-Eckardt D, Piegsa J, Weber M, Martin R, Hünninger K, Linde J, Guthke R, Kurzai O (2016) *Candida albicans* infection leads to barrier breakdown and a MAPK/NF- κ B mediated stress response in the intestinal epithelial cell line C2BBE1. *Cellular Microbiology* 18(7), 889-904.

Hellwig D, Voigt J, Bouzani M, Löffler J, Albrecht-Eckardt D, Weber M, Brunke S, Martin R, Kurzai O, Hünninger K (2016) *Candida albicans* induces metabolic reprogramming in human NK cells and responds to perforin with a Zinc depletion response. *Front Microbiol* 7, 750.

Janhsen WK, Arnold C, Hentschel J, Lehmann T, Pfister W, Baier M, Böer K, Hünninger K, Kurzai O, Hippler UC, Mainz JG (2016) Colonization of CF patients' upper airways with *S. aureus* contributes more decisively to upper airway inflammation than *P. aeruginosa*. *Med Microbiol Immunol* 205(5), 485-500.

Brandes S, Mokhtari Z, Essig F, Hünninger K, Kurzai O, Figge MT (2015) Automated segmentation and tracking of non-rigid objects in time-lapse microscopy videos of polymorphonuclear neutrophils. *Medical Image Analysis* 20(1), 34-51.

Dix A, Hünninger K, Weber M, Guthke R, Kurzai O, Linde J (2015) Biomarker-based classification of bacterial and fungal whole-blood infections in a genome-wide expression study. *Front Microbiol* 6, 171.

Duggan S, Essig F, Hünninger K, Mokhtari Z, Bauer L, Lehnert T, Brandes S, Häder A, Jacobsen ID, Martin R, Figge MT, Kurzai O (2015) Neutrophil activation by *Candida glabrata* but not *Candida albicans* promotes fungal uptake by monocytes. *Cell Microbiol* 17(9), 1259-1276.

Duggan S, Leonhardt I, Hünninger K, Kurzai O (2015) Host response to *Candida albicans* bloodstream infection and sepsis. *Virulence*, 1-11. (Review)

Fliesser M, Morton CO, Bonin M, Ebel F, Hünninger K, Kurzai O, Einsele H, Löffler J (2015) Hypoxia-inducible factor 1 α modulates metabolic activity and cytokine release in anti-*Aspergillus fumigatus* immune responses initiated by human dendritic cells. *Int J Med Microbiol*,

Hünninger K, Bieber K, Martin R, Lehnert T, Figge MT, Löffler J, Guo R, Riedemann N, Kurzai O (2015) A second stimulus required for enhanced antifungal activity of human neutrophils in blood is provided by anaphylatoxin C5a. *The Journal of Immunology* 194(3), 1199-1210.

Lehnert T*, Timme S*, Pollmächer J, Hünninger K, Kurzai O, Figge MT (2015) Bottom-up modeling approach for the quantitative estimation of parameters in pathogen-host interactions. *Frontiers in Microbiology* 6(608), *authors contributed equally.

Leonhardt I, Spielberg S, Weber M, Albrecht-Eckardt D, Bläss M, Claus R, Barz D, Scherlach K, Hertweck C, Löffler J, Hünninger K, Kurzai O (2015) The fungal quorum-sensing molecule farnesol activates innate immune cells but suppresses cellular adaptive immunity. *MBio* 6(2), e00143.

Das Gupta M, Fliesser M, Springer J, Breitschopf T, Schlossnagel H, Schmitt AL, Kurzai O, Hünninger K, Einsele H, Löffler J (2014) *Aspergillus fumigatus* induces microRNA-132 in human monocytes and dendritic cells. *Int J Med Microbiol* 304(5-6), 592-596.

Hentschel J, Müller U, Doht F, Fischer N, Böer K, Sonnemann J, Hipler C, Hünninger K, Kurzai O, Markert UR, Mainz JG (2014) Influences of nasal lavage collection-, processing- and storage methods on inflammatory markers--evaluation of a method for non-invasive sampling of epithelial lining fluid in cystic fibrosis and other respiratory diseases. *J Immunol Methods* 404, 41-51.

Hünninger K^{*}, Lehnert T^{*}, Bieber K, Martin R, Figge MT⁺, Kurzai O⁺ (2014) A virtual infection model quantifies innate effector mechanisms and *Candida albicans* immune escape in human blood. *PLOS Comput Biol* 10(2), e1003479, ^{*/+}authors contributed equally.

Voigt J, Hünninger K, Bouzani M, Jacobsen ID, Barz D, Hube B, Löffler J, Kurzai O (2014) Human natural killer cells acting as phagocytes against *Candida albicans* and mounting an inflammatory response that modulates neutrophil antifungal activity. *J Infect Dis* 209(4), 616-626.

Martin R, Albrecht-Eckardt D, Brunke S, Hube B, Hünninger K, Kurzai O (2013) A core filamentation response network in *Candida albicans* is restricted to eight genes. *PLOS One* 8(3), e58613.

^{*}equal contribution [#]corresponding author