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Research

I currently aim to **unveil the interplay of human host proteins with Gram-positive anaerobic cocci** during infection. Infections with Gram-positive anaerobic cocci (GPAC) can cause mild diseases as well as severe invasive conditions, such as sepsis and necrotizing fasciitis. Reduced susceptibility towards certain antibiotics alongside existing comorbidities amplify the risk of detrimental outcome for the host. Interactions between host and bacterial proteins are highly significant for pathogenesis and virulence.Virulence factors of GPAC species *F. magna,* such as ***F. magna* adhesion factor (FAF)** and **Protein L** have been associated with binding to host proteins and induction of clinical infection. Applying a range of molecular, cellular and biophysical methods (e.g. Infection assays, Circular Dichroism, Fluorescence Spectroscopy, Surface Plasmon Resonance, Flow cytometry, Mass Spectrometry), my research aims to **provide novel and crucial information needed to target GPAC infections**, thus promoting the development of potential preventive and therapeutic strategies.

Employment

Associate researcher
Infection Medicine (BMC)
Lund University
Lund, Sweden
2015 Sept 21 → present

epIgG
Lund University
Sweden
2018 Mar 15 → present

Translational infection medicine
Lund University
Sweden
2023 Sept 28 → present

Research outputs

Commensal Peptoniphilus harei induce activation of monocytes via TLR2/CD14 signalling in whole blood
Schmidt, T., Frick, I. M., Happonen, L. & Neumann, A., 2025 Dec, In: Medical microbiology and immunology. 214, 52.

Streptococcus pyogenes nuclease A interferes with host complement functions
A. Bennig, I., Ströbaek, J., Mamede, R., Neumann, A., Friães, A., Ramirez, M., Hall, M., Collin, M., Malmström, L., Ekström, S., Frick, I.-M., Björck, L. & Happonen, L. J., 2025 Aug 25, bioRxiv, p. 1-16.

Anti-SARS-CoV-2 nucleocapsid antibodies to detect exposure to SARS-CoV-2: results from a prospective cohort study on COVID-19 vaccination
Rasmussen, M., Neumann, A., Moghaddassi, M., Inghammar, M., Björk, J., Malmqvist, U. & Kahn, F., 2025 Mar 18, In: Infectious Diseases. 57, 8, p. 782-792 11 p.

Blood levels of Mycobacterium tuberculosis (Mtb)antigen-triggered immune markers in people exposed to tuberculosis with regard to Mtb infection status and receipt of tuberculosis preventive therapy
Holmberg, P., Janoušková, M., Schmidt, T., Neumann, A., Olsson, O., Isberg, P. E., Reimann, M., Riesbeck, K., Skogmar, S. & Björkman, P., 2025 Mar, In: Tuberculosis. 151, 102595.

Binding to thrive: Decoding Atopobium spp. interactions with host proteins and immune cells
Frick, I. M. & Neumann, A., 2025, In: Anaerobe. 96, 102998.

The role of extracellular vesicle fusion with target cells in triggering systemic inflammation
Papareddy, P., Tapken, I., Kroh, K., Varma Bhongir, R. K., Rahman, M., Baumgarten, M., Cim, E. I., Györffy, L., Smeds, E., Neumann, A., Veerla, S., Olinder, J., Thorlacus, H., Ryden, C., Bartakova, E., Holub, M. & Herwald, H., 2024 Feb 7, In: Nature Communications. 15, 1150.

Analysis of Neutrophil and Monocyte Inflammation Markers in Response to Gram-Positive Anaerobic Cocci
Schmidt, T. & Neumann, A., 2023, *Methods in Molecular Biology*. Humana Press, p. 211-220 10 p. (Methods in Molecular Biology; vol. 2674).

Host Defense Peptides LL-37 and Lactoferrin Trigger ET Release from Blood-Derived Circulating Monocytes
Schwäbe, F. V., Happonen, L., Ekestubbe, S. & Neumann, A., 2022, In: Biomedicines. 10, 2, 469.

Rapid release of sepsis markers heparin-binding protein and calprotectin triggered by anaerobic cocci poses an underestimated threat
Neumann, A., 2022, In: Anaerobe. 75, 102584.

Streptococcal protein SIC activates monocytes and induces inflammation
Neumann, A., Happonen, L., Karlsson, C., Bahnan, W., Frick, I. M. & Björck, L., 2021 Apr 23, In: iScience. 24, 4, 102339.

Extracellular traps: An ancient weapon of multiple kingdoms
Neumann, A., Brogden, G. & von Köckritz-Blickwede, M., 2020, In: Biology. 9, 2, 34.

Finegoldia magna, an Anaerobic Gram-Positive Bacterium of the Normal Human Microbiota, Induces Inflammation by Activating Neutrophils
Neumann, A., Björck, L. & Frick, I. M., 2020, In: Frontiers in Microbiology. 11, 65.

Neutrophil extracellular traps in the central nervous system hinder bacterial clearance during pneumococcal meningitis
Mohanty, T., Fisher, J., Bakochi, A., Neumann, A., Cardoso, J. F. P., Karlsson, C. A. Q., Pavan, C., Lundgaard, I., Nilson, B., Reinstrup, P., Bonnevier, J., Cederberg, D., Malmström, J., Bentzer, P. & Linder, A., 2019 Apr 10, In: Nature Communications. 10, 1, p. 1667

Protein SIC secreted from Streptococcus pyogenes forms complexes with extracellular histones that boost cytokine production
Westman, J., Chakrakodi, B., Snäll, J., Mörgelin, M., Madsen, M. B., Hyldegaard, O., Neumann, A., Frick, I. M., Norrby-Teglund, A., Björck, L. & Herwald, H., 2018 Feb 22, In: Frontiers in Immunology. 9, FEB, p. 1-14 236.

Immunoregulation of Neutrophil Extracellular Trap Formation by Endothelial-Derived p33 (gC1q Receptor)
Neumann, A., Papareddy, P., Westman, J., Hyldegaard, O., Snäll, J., Norrby-Teglund, A. & Herwald, H., 2018, In: Journal of Innate Immunity. 10, 1, p. 30-43

Interaction of factor VII activating protease (FSAP) with neutrophil extracellular traps (NETs)
Grasso, S., Neumann, A., Lang, I. M., Etscheid, M., von Köckritz-Blickwede, M. & Kanse, S. M., 2018, In: Thrombosis Research. 161, p. 36-42 7 p.

Streptococcal inhibitor of complement (SIC) modulates fibrinolysis and enhances bacterial survival within fibrin clots
Frick, I. M., Shannon, O., Neumann, A., Karlsson, C., Wikström, M. & Björck, L., 2018, In: Journal of Biological Chemistry. 293, 35, p. 13578-13591 14 p.

Methods to study lipid alterations in neutrophils and the subsequent formation of neutrophil extracellular traps
Brogden, G., Neumann, A., Husein, D. M., Reuner, F., Naim, H. Y. & Von Köckritz-Blickwede, M., 2017 Mar 29, In: Journal of Visualized Experiments. 2017, 121, e54667.

Neutrophil extracellular trap formation in the Streptococcus suis-infected cerebrospinal fluid compartment
de Buhr, N., Reuner, F., Neumann, A., Stump-Guthier, C., Tenenbaum, T., Schroten, H., Ishikawa, H., Müller, K., Beineke, A., Hennig-Pauka, I., Gutsmann, T., Valentin-Weigand, P., Baums, C. G. & von Köckritz-Blickwede, M., 2017 Feb, In: Cellular Microbiology. 19, 2, e12649.

Yersinia enterocolitica-mediated degradation of neutrophil extracellular traps (NETs)
Möllerherm, H., Neumann, A., Schilcher, K., Blodkamp, S., Zeitouni, N. E., Dersch, P., Lüthje, P., Naim, H. Y., Zinkernagel, A. S. & von Köckritz-Blickwede, M., 2015 Dec, In: FEMS Microbiology Letters. 362, 23, fnv192.

Automatic determination of NET (neutrophil extracellular traps) coverage in fluorescent microscopy images
Coelho, L. P., Pato, C., Friães, A., Neumann, A., von Köckritz-Blickwede, M., Ramirez, M. & Carriço, J. A., 2015 Jul 15, In: Bioinformatics. 31, 14, p. 2364-70 7 p.

Identification of a novel DNase of Streptococcus suis (EndAsuis) important for neutrophil extracellular trap degradation during exponential growth
de Buhr, N., Stehr, M., Neumann, A., Naim, H. Y., Valentin-Weigand, P., von Köckritz-Blickwede, M. & Baums, C. G., 2015 Apr, In: Microbiology. 161, p. 838-50 13 p.

The antimicrobial peptide LL-37 facilitates the formation of neutrophil extracellular traps
Neumann, A., Berends, E. T. M., Nerlich, A., Molhoek, E. M., Gallo, R. L., Meerloo, T., Nizet, V., Naim, H. Y. & von Köckritz-Blickwede, M., 2014 Nov 15, In: The Biochemical journal. 464, 1, p. 3-11 9 p.

Lipid alterations in human blood-derived neutrophils lead to formation of neutrophil extracellular traps
Neumann, A., Brogden, G., Jerjomiceva, N., Brodesser, S., Naim, H. Y. & von Köckritz-Blickwede, M., 2014 Aug 31, In: European Journal of Cell Biology. 93, 8-9, p. 347-54 8 p.

Streptococcus suis DNase SsnA contributes to degradation of neutrophil extracellular traps (NETs) and evasion of NET-mediated antimicrobial activity
de Buhr, N., Neumann, A., Jerjomiceva, N., von Köckritz-Blickwede, M. & Baums, C. G., 2014 Feb, In: Microbiology. 160, p. 385-95 11 p.

Novel Role of the Antimicrobial Peptide LL-37 in the Protection of Neutrophil Extracellular Traps against Degradation by Bacterial Nucleases
Neumann, A., Voellger, L., Berends, E. T. M., Molhoek, E. M., Stapels, D. A. C., Midon, M., Friaes, A., Pingoud, A., Rooijakkers, S. H. M., Gallo, R. L., Mörgelin, M., Nizet, V., Naim, H. Y. & von Koeckritz-Blickwede, M., 2014, In: Journal of Innate Immunity. 6, 6, p. 860-868

Prizes and Distinctions

Best Poster award
Neumann, A. (Recipient), 2016 May

Gerhard-Domagk-Preis für Biowissenschaften
Neumann, A. (Recipient), 2015 Jun 12

Travel Awardee
Neumann, A. (Recipient), 2014 Apr

Travel Awardee
Neumann, A. (Recipient), 2017 Sept

Travel Awardee
Neumann, A. (Recipient), 2018 May

Young Scientist Award for best oral presentation
Neumann, A. (Recipient), 2014 May

Awards

Are Gram-positive anaerobic cocci underestimated confounders in infections?
Neumann, A. (PI)
Alfred Österlunds stiftelse: SEK65,000.00
2024/01/01 → 2024/12/31