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Infektionsmedicin
Molekylär patogenes
epIgG
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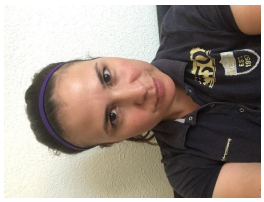

Forskning

After my PhD studies in Germany, I moved to Sweden for a 2-year postdoc in the group of Prof. Dr. Heiko Herwald. I worked independently on a project studying **mechanisms underlying NET formation**.
In my current position in the group of Prof. Lars Björck (**Molecular Pathogenesis**), I aim to **unveil the interplay of human host proteins with Gram-positive cocci** during infection.
Infections with group A streptococci (GAS) and 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.
The **streptococcal inhibitor of complement (SIC)** has been reported to bind and inactivates host defence proteins, being implicated in serious disease progression. Similar to GAS, 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), my research aims to **provide novel and crucial information needed to target GAS and GPAC infections**, thus promoting the development of potential preventive and therapeutic strategies.

Anställning

Biträdande forskare
Infektionsmedicin
Lunds universitet
Lund, Sverige
2015 sep 21 → present

Forskningsprojektdeltagare
Molekylär patogenes
Lunds universitet
Lund, Sverige
2018 jan 25 → present

Forskningsprojektdeltagare
epIgG
Lunds universitet
Sverige

2018 mar 15 → present

Forskningsoutput

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

Extracellular traps: An ancient weapon of multiple kingdoms
Neumann, A., Brogden, G. & von Köckritz-Blickwede, M., 2020, I: 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, I: 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, I: Nature Communications. 10, 1, s. 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, I: Frontiers in Immunology. 9, FEB, s. 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, I: Journal of Innate Immunity. 10, 1, s. 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, I: Thrombosis Research. 161, s. 36-42 7 s.

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, I: Journal of Biological Chemistry. 293, 35, s. 13578-13591 14 s.

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, I: 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 , I: 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, I: 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, I: Bioinformatics. 31, 14, s. 2364-70 7 s.

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, I: Microbiology. 161, s. 838-50 13 s.

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, I: The Biochemical journal. 464, 1, s. 3-11 9 s.

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, I: European Journal of Cell Biology. 93, 8-9, s. 347-54 8 s.

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, I: Microbiology. 160, s. 385-95 11 s.

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, I: Journal of Innate Immunity. 6, 6, s. 860-868

Priser och utmärkelser

Best Poster award
Neumann, Ariane (Mottagare), 2016 maj

Gerhard-Domagk-Preis für Biowissenschaften
Neumann, Ariane (Mottagare), 2015 jun 12

Travel Awardee
Neumann, Ariane (Mottagare), 2014 apr

Travel Awardee
Neumann, Ariane (Mottagare), 2017 sep

Travel Awardee
Neumann, Ariane (Mottagare), 2018 maj

Young Scientist Award for best oral presentation
Neumann, Ariane (Mottagare), 2014 maj

Forskningsmedel