

Antimicrobial Proteins and Peptides and Neonatal Immunity

Research overview

Late-onset sepsis affects up to 50% of the most immature and vulnerable infants. There are currently no effective preventative interventions and novel treatment options are urgently needed. This research project characterises the levels of natural antibiotic substances in preterm infants (called antimicrobial proteins and peptides) and explores if these can be used to boost the preterm infants' immature immune defences.

Research highlights

Our research team, jointly led by Assoc/Prof Tobias Strunk (neonatologist) and Dr Andrew Currie (immunologist), has completed measurements of large number of antimicrobial proteins and peptides in preterm infants' blood, stool and breast milk. We found that levels of some of these natural antibiotics and regulators of inflammation were profoundly lower in infants who developed late-onset sepsis, indicating that they form part of an essential first-line defence mechanism.

Importantly, we have also shown that natural peptides and synthetic derivatives can be used in the test tube when added to preterm infant blood to kill bacteria and reduce harmful inflammation. We are currently conducting experiments in newborn mice and piglets with bacterial bloodstream infections to assess the safety of those peptides and their ability to stop bacterial growth and improve the resulting inflammation. This work is being conducted by collaborators nationally and internationally (Gothenburg, Sweden and Copenhagen, Denmark).



THE TEAM

Chief Investigator

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Sponsors

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