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To the Olav Thon Foundation

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Report letter for the project "Born in the Twilight of Antibiotics: Fighting antimicrobial resistance in preterm infants"

We would like once again to thank for the support we have received to advance research focusing on antimicrobial resistance in preterm infants. The treatment and survival of premature babies rely heavily on access to effective antibiotics, thus highlighting the need for understanding colonization by resistant microorganisms and finding new strategies to treat infections.

The kick off meeting for the project was held at the University of Oslo on the 12th of March 2018, and counted with presentations and discussions by the project partners in Norway, Denmark and Sweden. The group has since then kept 2 to 4 monthly meetings connected to work-packages 1, 2, and 4. The two postdocs connected to the project were recruited in 2018, one starting in October 2018, and the second one in April 2019. Under WP1-2, the group worked in 2018 and 2019 on detailed protocols that have been approved by the Regional Ethical Committee in Norway (REK Sør-Øst 2018/1381), and by the Ethical Committee in Denmark. The group has also worked to create standard operational procedures for sample collection, transportation, maintenance, extraction procedures, and sequencing analysis. In this longitudinal study, samples will be collected from preterm babies born in the period between 2019 and early 2021. The protocols will be refined and updated as new results are analyzed. Under WP3, we are working on the establishment of a model that aims to reproduce the microbiome of the respiratory tract of preterm babies in the laboratory. This model will enable using the samples from the babies to test antibiotics alone or in combination with antimicrobials found in breast milk, for their effects on the microbiome. The first samples are currently been sequenced at the Norwegian Sequencing Center. Under WP4, the group has established the methodology to perform functional metagenomics, which together with shotgun sequencing will enable the identification of new and functional antibiotic resistance genes in the the preterm babies. In addition, we are working on the design of ResistoNett, an analytical and visualization tool that will be used in the project for characterization of the microbiomes and resistomes. ResistoNett is also intended to benefit the entire scientific community by launching it as an online tool that can be accessed by all for better surveillance, monitoring and decision making for antibiotic usage and understanding of resistome development.

Sincerely

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