

PhD Project Description

School/Department:	Department of Obstetrics and Gynaecology, Erasmus MC
Supervisor information:	<p>Dr. S. Schoenmakers (s.schoenmakers@erasmusmc.nl) Prof. Dr. R. P.M. Steegers-Theunissen (r.steegers@erasmusmc.nl)</p> <p>Selected Publications:</p> <ol style="list-style-type: none"> 1. Faas M. Liu Y et al. Microbiota induced changes in the immune response in the pregnant mice. Front Immunol. 2020 Jan 9;10:2976. doi: 10.3389/fimmu.2019.02976 . eCollection 2019 . 2. Schoenmakers S. Steegers-Theunissen, R.P.M., Faas MM. The matter of reproductive microbiome. Obstetric Medicine. 2018. https://doi.org/10.1177/1753495X18775899 . 3. Steegers-Theunissen RP, Verheijden-Paulissen JJ, van Uiter EM, et al. Cohort profile: the Rotterdam periconceptional cohort (Predict Study). Int J Epidemiol 2016;45:374-381. 4. Steegers-Theunissen RPM, Twigt J, Pestinger V, Sinclair KD. The periconceptional period, reproduction and long-term health of offspring: the importance of one-carbon metabolism. Hum Reprod Update 2013;19:640-655.
Project Title:	<i>Obesity during pregnancy: the mechanistic role of the gut microbiome in maternal pregnancy course and fetal outcome</i>
Abstract:	<p>In the Netherlands, obesity affects more than 30% of women in reproductive age. In 30-50% of their pregnancies, complications occur with subsequent long-term health consequences for mothers and children. Therefore, better patient care of maternal obesity (MOB) before and during pregnancy will improve health and reduce the burden of related health care and societal costs.</p> <p>The microbiome, including the virome, is an important environmental factor and modifier in health and disease. A healthy microbial profile (symbiosis) plays a significant role in maintaining immune responses and a balanced nutrient dependent one-carbon metabolism. As obesity, independent of pregnancy, is associated with a deranged microbial profile, it is our <u>aim</u> to get more insight into the role of the microbiome before and during pregnancy in obese women on immune responses and one-carbon metabolism. The objectives of the current project are to investigate in experimental obese mice and obese women the effects of pre- and probiotic treatment on the gut microbiome profile, and maternal, fetal and placental immune responses in relation to the one-carbon metabolism. The project is a close collaboration between the Erasmus MC and UMC Groningen, The Netherlands and will exploit new understandings to promote efficient disease prevention and potential personalized therapeutic interventions to overcome adverse disease pathways, before, during and after pregnancy.</p> <p>The applicant will work in our multidisciplinary project on the investigation of obese women and the impact of the microbiome in the preconceptional period, during pregnancy and at birth on underlying pathways of embryonic, fetal and newborn health. This study will be embedded in our ongoing Rotterdam Periconceptional Cohort (Predict study). Features of embryonic, fetal and newborn health will be investigated longitudinally using state-of-the-art imaging techniques like three-dimensional ultrasound and virtual reality techniques, and microbiome dynamics.</p>
Requirements of candidate:	<ul style="list-style-type: none"> • We are looking for a highly motivated and talented student to join and enrich our international team. • The candidate preferably has a Master in molecular biology, microbiology or MD, a fair scholarship that covers subsistence allowance and international air plane ticket, good communication skills • The student should be fluent in English (English speaking countries & Netherlands: no requirement; Other countries: IELTS 7.0 (min 6.0 for all subs), TOEFL 100 (min 20 for all subs).

Application requirements & Deadlines:

<https://www.eur.nl/en/about-eur/erasmus-university-china-centre/csc-scholarship>

Erasmus MC, ranked world

* No.32 for Clinical Medicine US News 2020:

<https://www.usnews.com/education/best-global-universities/clinical-medicine?page=3>

* No. 30 Nature Index for Biomedical Sciences 2019:

<https://www.natureindex.com/supplements/nature-index-2019-biomedical-sciences/tables/healthcare>