Prediction of Pregnancy Risk: The Amniotic Fluid miRNome Study

Research overview

Second trimester sampling of amniotic fluid by amniocentesis is a common procedure used to screen for fetal genetic abnormalities. In this project we are attempting to measure the presence and concentrations of microRNAs – small fragments of genetic material that are secreted from cells and tissues – and identify particular profiles that predicts one of the main pregnancy complications; preterm birth, preeclampsia and intrauterine growth restriction.

Research highlights

We are making use of a technology called PCR Array to measure hundreds of microRNAs in each amniotic fluid sample. The RNA material is first extracted from the samples then loaded individually into a plastic plate containing 384 wells. The plates are then loaded into a special machine which detects the presence of hundreds of different types of microRNAs. The results are then scrutinised and filtered to remove false positives before the final cleaned data are analysed.

After many months of careful screening and filtering, the data are now almost ready for analysis to determine whether a pattern of microRNAs can be used as a tell-tale sign of an impending pregnancy problem. If this proof-of-principle study generates useful results, a much larger number of amniotic fluid samples will be screened for a small number of microRNAs to see if the test has clinical utility.

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