Title: Detection and function of glycosaminoglycan subunits in pre-eclampsia.

Keywords: Glycosaminoglycan, placenta, preeclampsia, mass spectrometry, biomarker

Brief Description:
Glycosaminoglycans are long sugar polymers present in circulation and in membrane-bound forms. We have shown they are important in various biological processes important for placental development (1). In other systems this activity depends on the structure of the disaccharide subunits from which these polymers are based (2). We have shown that levels of glycosaminoglycans are decreased in preeclampsia: a common and debilitating disease of pregnancy (3). Currently, there is no biomarker to detect preeclampsia before clinical symptoms manifest (20 weeks gestation) and there is no treatment except for delivery of the baby. This project will utilise our mass spectrometry facility to determine whether quantification of specific disaccharide subunits may be used for the early detection of this disease. Secondly, we will use our existing 3 dimensional placental tissue model to determine whether these specific subunits affect the function of placental cells in vitro. This will underpin future clinical trials for the use of glycosaminoglycans for the treatment of preeclampsia. We have a well characterised tissue collection from collaborations (Imperial College London and Chinese University, Hong Kong). The molecules have also been implicated in other diseases such as cancers. This methodology can be readily translated to the investigation of these disorders.

Relevant Publications:


Further Details:
Frank Hills f.hills@mdx.ac.uk x15726
Ajit Shah a.j.shah@mdx.ac.uk x14586
Darshna Yagnik d.yagnik@mdx.ac.uk x14876