Neurological disorders affect 1 in 4 individuals in the UK\(^1\), yet their aetiology remains elusive. We explore whether their origins arise at early, critical stages of foetal development in the womb. We propose that an individual’s genetics in conjunction with a maternal exposure to an environmental insult\(^2\), such as low oxygen\(^3\) abundance, alters the ability of the placenta to support foetal neurodevelopment, having long-lasting repercussions into adulthood\(^4\).

### Introduction

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### Theory

The research project postulates that microRNAs play an integral role in foetal programming, acting as signaling molecules released from the placenta upon an insult of low oxygen levels during critical stages of embryonic development, which have the potential to cause perturbations in foetal neurodevelopment.

### Methodology

Exposure to Environmental Insult over time

![Image](http://example.com)

Outcomes

1. Hypoxia (2%) and Hypoxia-Reperfusion (2-12%) exposure to the placental barrier causes an increase in miRNA secretions into the foetal circulation.
2. Application of a treatment drug to the barrier reduced the concentration of miRNAs released from the barrier upon an exposure of low oxygen.
3. Differentially expressed miRNAs from barriers exposed to low oxygen have been shown to be associated in neurodevelopmental pathological settings.

### References