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**ANATOMY RESEARCH DEVELOPMENT AWARD**

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**Project Resume Form 2023/24**

**(1st October 2023 -30th September 2024)**

**at the start of the project for publicity**

**Brief Résumé of your Project for the Society’s Website**:

*The title of your project and a brief 200-250 word description of the project. The description should include sufficient detail to be of general interest to a broad readership including scientists and non-specialists. Please also try to include 1-2 graphical images (minimum 75dpi) of can be included on the site next to your abstract. Colourful, impressive graphics will further enhance the site.*

*NB: Authors should NOT include sensitive material or data that they do not want disclosed at this time.*

|  |  |  |  |
| --- | --- | --- | --- |
| Title:  **Investigation of effects of folate-depletion on human trophoblast stem cell regulation**  Description  Dietary folic acid supplementation is recommended for the periconception period. Folate metabolism is critically important for highly proliferative cells undergoing lineage specification and differentiation. The folate cycle provides 1-carbon groups required for DNA, RNA and amino acid synthesis as well as methylation reactions involved in epigenetic regulation of gene expression. While it is recognised that maternal dietary folate deficiency increases the risk of neural tube defects, it is less well known that folate deficiency also associates with pregnancy complications including fetal growth restriction and preeclampsia. Moreover, women with mutations in genes encoding enzymes required for folate metabolism have increased risk of recurrent miscarriages.  Previous studies using mouse trophoblast stem cells as an in vitro model for placenta development, have demonstrated that folate depletion impacts mouse placental trophoblast differentiation potential with implications for placenta development. However, a molecular role for folate metabolism in human placenta has not yet been studied. Here we will explore how folate availability regulates human placental trophoblast using human trophoblast stem cells in vitro. We will examine the effect on folate depletion on stem cell identity and differentiation potential. This research will deepen our understanding of the molecular pathways required for normal placenta development and providing preclinical insights into the impact of maternal folate deficiency on placental and fetal health.  A close-up of a microscope  Description automatically generated  This image shows immunofluorescence analysis of human trophoblast stem cells that have been stained for cytokeratin 18 (yellow), a trophoblast stem cell marker called TP63 (magenta). Human trophoblast stem cells provide an in vitro model for studying trophoblast biology in human placenta development and function. In this project we will use trophoblast stem cells to examine the effect of folate depletion on stem cell function in the placenta. | | | |
| Data Protection/GDPR: I consent to the data included in this submission being collected, processed, and stored by the Anatomical Society. Answer YES or NO in the Box below | | | |
| Yes | | | |
| Graphical Images: If you include graphical images you must obtain consent from people appearing in any photos and confirm that you have consent. A consent statement from you must accompany each report if relevant. A short narrative should accompany the image. Answer N/A not applicable, YES or NO in the box below | | | |
| N/A | | | |
| Copyright: If you submit images you must either own the copyright to the image or have gained the explicit permission of the copyright holder for the image to be submitted as part of the report for upload to the Society’s website, Newsletter, social media and so forth. A copyright statement must accompany each report if relevant. Answer N/A not applicable, YES or NO in the box below | | | |
| Yes | | | |
| SIGNATURE | Dr Nora Fogarty | DATE | 2nd Oct 2024 |

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