

Reproduction, Genes and Development



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Research in Reproduction, Genes and Development falls under the research themes of **Genetics and Development** (<http://www.birmingham.ac.uk/research/activity/mds/domains/genetics-development/index.aspx>) and **Hormones, Metabolism and Reproduction** (<http://www.birmingham.ac.uk/research/activity/mds/domains/hormones-metabolism-reproduction/index.aspx>).

Human life is fashioned from human gametes, containing the genome of the individual. There are more than 6,000 rare diseases and most are inherited disorders. Women's health is important as it influences ultimately long term reproduction. Fetal development is dependent upon maternal influences, both in health and disease. In-utero growth and development effect long-term outcome in child hood and adult life through prenatal programming. Prematurity and fetal disease increases risks to children.

Covering obstetrics, gynaecology and paediatrics as well as a significant portfolio of clinical genetics, activity in this Section reflects three broad areas of research, education and clinical activity: Obstetrics and Gynaecology; Paediatrics and Child Health; and Medical and Molecular Genetics. The complementary interests of each of these areas enable the theme to make a unique contribution through its research and teaching, to the healthcare of mothers and children in the whole of the West Midlands region. Multidisciplinary reviews and trials on numerous aspects of care (both diagnostic and therapeutic) have been undertaken in aspects of Reproduction, Genes & Development. The School is home to the WHO Collaborating Centre for Reproductive Health, the only centre of its kind in the UK. In addition, translational research is performed within the Wellcome-funded Clinical Research Facility within the University Hospitals Birmingham NHS Foundation Trust and the Paediatric Clinical Research Facility within the Birmingham Children's Hospital, the first of its kind in the UK. With around 60 staff and over £12 million of live funding, particular highlights of activity include critical appraisal of the evidence and the initiation of clinical trials in areas as diverse as dysfunctional uterine bleeding, the detection of Group B streptococcus in pregnancy, the management of intractable pelvic pain in women, diagnostic tests in predicting hypertensive disease of pregnancy and intrauterine growth restriction and in-utero fetal therapy.

Children make up 25% of the UK population and care encompasses normal and abnormal growth and development, acute infectious disease, rare inherited disorders, and chronic disorders shared by the adult population. Advances in the human genome project, immunisations and biologics therapies are transforming the management of each of these areas, and beginning to transform the lives of affected children. The future holds the hope for targeted therapies for well phenotyped cohorts of children with specific disorders.

The Birmingham Trials Units is a key player in the pursuit of trials in Pregnancy and Women's Health. There is a large portfolio of NIHR studies and close collaborations with the School of Population and Primary care and the **Wellcome Trust Clinical Research Facility** (</facilities/crf/index.aspx>) at UHB. This is in areas as diverse as assisted conception, fetal development and therapy, obstetric disease and safe delivery of babies. In addition, several large trials investigate quality of life and women's health.

In Paediatric and Children Health, translational research occurs in a dedicated Wellcome Trust funded paediatric Clinical Research Facility. This offers facilities for detailed clinical investigation of children including body composition, cardio-metabolic, biochemical and genetic studies. Currently there are over 60 studies supported with around 2,000 children participating in Birmingham each year.

There is also an established **Centre for Rare Diseases and Personalised Medicine** (</research/activity/mds/centres/rare-diseases/index.aspx>) which allows cross School and indeed cross College collaboration and research.