Established in 1937, we have been innovating, teaching, pioneering and evolving women's health for more than 80 years. The Nuffield Department of Women’s & Reproductive Health is one of the largest and most successful academic departments in the world in its field. Led by Prof Krina Zondervan, we have over 160 members including senior academic staff, clinicians, research support staff, professional staff and graduate students carrying out research towards a higher degree.
What we do

Our department encompasses multi-disciplinary research across the full spectrum of women’s health.

Our work has four overarching themes; Cancer, Global Health, Maternal & Fetal Health and Reproductive Medicine & Genetics.

We focus on genetic studies, the dissection of molecular, biochemical and cellular mechanisms underlying normal and aberrant reproductive tissue function, clinical studies in women’s health and pregnancy and growth and development across the first 1000 days of life.
Where we work

Our clinical and laboratory-based research programmes are based in the Women’s Centre, the Weatherall Institute of Molecular Medicine (both at the John Radcliffe Hospital, Oxford) and the Institute of Reproductive Sciences (IRS) and the Big Data Institute.

The department's main offices are on level 3 of the Women’s Centre (John Radcliffe Hospital, Oxford) which is responsible for the care of over 7,000 pregnant women and over 7,500 new gynaecology patients per year.
Skills training in NDWRH

Learning and Development

Personal Development is a key part of your graduate career. In your first term, you will complete a compulsory training needs analysis (TNA) with your supervisor to monitor your progress throughout your postgraduate degree. In your first term, you will upload it with your D.

The Researcher Development Framework (RDF) is a helpful model for you to use. It describes the knowledge, behaviours and attitudes you need to develop and to identify what areas you are interested in developing (or are not). Click on the link below for further learning and development resources.

Student Development Resources

The Hub

Online training at the University

MATLAB training

MSD Skills Training Programme
The Oxford Centre for Fetal Monitoring Technologies

Group Leader: Assoc. Prof. Antoniya Georgieva

Concept & data

Routine maternity data since 1993: 100,000 labours at term

- Individual risk factors & characteristics
- Data-driven risk assessment of the fetus

First research prototype

CTG capture

DATA-DRIVEN ANALYSIS:

OUTPUT:

Individualised risk score for the fetus and recommendations

Touch screen input of clinical risk factors

Multidisciplinary Team & Methods

- Obstetrics, Midwifery & Neonatology
- Artificial Intelligence & Prognostic models
- Signal Processing
- IT & Healthcare App development

Leading internationally

3rd Signal Processing and Monitoring (SPaM) in Labour Workshop

Porto, Portugal
Mission: To improve endometriosis diagnosis & treatment
>20 PIs, postdocs, research staff, students

Computational (gen)omic studies
- Genomic discovery
- Molecular phenotyping to identify disease subtypes
- Shared genetics with comorbid traits, e.g. auto-immunity, pain, fat distribution, ‘behavioural’ traits

Many Oxford collaborators, e.g.:
Big Data Institute, Wellcome Centre Human Genetics, NDORMS, Target Discovery Institute, Dept of Sociology

Clinical studies
- Data/sample collection
- Deep clinical phenotyping
- Pain characterisation
- Pain sensitivity and ‘vulnerability’
- Functional MRI of the brain

Tissue/cellular studies
- Endometrium: functional studies
- Immune cells (macrophages) & fat tissue
- Bulk and ‘single-cell’ genomics
- Biomarkers

Translation: collaborations with Pharma & Diagnostics companies
  e.g. Bayer-Oxford Alliance, Roche Diagnostics, MDNA, Volition

PIs:
Prof Christian Becker & Prof Krina Zondervan (Co-Dirs)
Dr Karin Hellner
Prof Katy Vincent
Assisted Reproductive Technology (ART) at the Institute for Reproductive Sciences

Coward Group [kevin.coward@wrh.ox.ac.uk]

Spermatogenesis, male infertility, oocyte activation deficiency and phospholipase C zeta

Diagnostic assays/recombinant protein synthesis/patient screening/gene expression and the effects of genetic mutation

Fertility preservation in prepubertal boys with cancer

Developing optimized protocols for the cryopreservation of immature testicular tissue, investigating the effect of transport time between tissue acquisition and laboratory processing, evaluating the effect of cryopreservation/thawing on tissue viability and the development of three-dimensional bioreactors for in vivo spermatogenesis

Development of nanoparticle- and exosome-mediated delivery systems for eggs, sperm and embryos as research tools and the development of novel diagnostics and therapeutics

The application of infra-red lasers in ART

Investigating the effects of infra-red laser systems on viability and gene expression during embryogenesis and implantation
Williams Lab
Developing ovary-focused fertility preservation techniques

Cancer Patients

**Aim:** Grow human eggs from ovarian tissue in culture

Fertoprotect

**Aim:** Protect the ovary from chemotherapy

Dysfunctional ovaries

**Primary Ovarian Insufficiency (POI)**

**Ovarian Cancer**

**Aim:** Isolate and grow immature eggs from dysfunctional ovarian tissue

Dysfunctional ovaries

Mouse models of POI and ovarian cancer

Reaggregated ovaries: blue oocytes from one mouse, somatic cells from another

Age

**Aim:** Determine how age affects ovarian function

Rhino Fertility Project

**Aim:** Grow rhino eggs from rhino ovaries

Developing novel imaging techniques to improve accuracy and speed

Ovarian cortical strips

Human and mouse in vitro and in vivo

Mouse models of POI and ovarian cancer

Reaggregated ovaries

Single cell RNAseq
Genome editing – Applying CRISPR to human embryos
Understanding function of developmental genes
Investigating genetic stability during early development
Evaluating potential for correction of serious disease
Technologies for preimplantation genetic diagnosis
Gamete and embryo biology
Mitochondria
Epigenetics
Non-invasive PGT
Transcriptomics