Mission Statement
The Shared University Research Facilities (SuRF @ Little France) is an amalgamation of complementary units that provide a large range of expert biomedical research services. We have a shared ethos of providing research support throughout the University and beyond. Our mission is to provide excellence in technical support, academic guidance and technical troubleshooting. We offer access to a very wide range of equipment platforms as well as fully assisted expert support. Many of the units (Shared Research Facilities) work on a full cost recovery basis, which ensures that we can maintain state-of-the-art equipment in best working order, to enhance our equipment infrastructure, and to continuously adapt it to changing customer requirements.

We will carry out work requests to the highest quality standards in a timely manner in order to facilitate and speed up your research activities. The delivery of services and the use of equipment is organised to provide research facilities in an atmosphere of mutual respect and optimised to generate cutting-edge support to biomedical sciences in the University of Edinburgh and beyond.

We hope that you will use our services to enhance your research and we look forward to working with you.

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Edinburgh Reproductive Tissue Biobank

Edinburgh Reproductive Tissue Biobank, http://www.crh.ed.ac.uk/biobank, offers high quality tissue samples and matched anonymised medical data. This unique resource is available to all and provides unparalleled access to collections and datasets.

List of Tissues and Samples

- Saliva
- Buccal smear
- Maternal urine
- Neonatal urine
- Cervical brush biopsy
- Cervical biopsy
- High vaginal swab
- Blood plasma
- Blood serum
- Cord blood
- Placental biopsy
- Fetal membrane biopsy
- Amniotic fluid
- Subcutaneous fat
- Visceral fat
- Muscle biopsy
- Decidua
- Ovarian tissue
- Myometrium

Using the Biobank

All samples are tissues from pregnant women and are donated to aid scientific research into improving the health, diagnosis and treatment of women and their unborn infants. Anyone wishing to access these materials should first contact Simon Riley e-mail: Simon.C.Riley@ed.ac.uk to discuss availability of tissue, governance and ethics issues. The applicant will also be asked to sign a material transfer agreement authorizing release of tissue and anonymised data. All materials are charged for, to cover collection costs and administration and upkeep of the Biobank and examples of the research benefits can be viewed at: http://www.crh.ed.ac.uk/biobank/outputs/
Our mission is to deliver high quality tissue processing, sectioning and special stains for the research community delivered by highly skilled and experienced staff. All requests are accommodated whether routine or specialised to your specific requirements.

Service
We deliver high quality tissue processing, paraffin sectioning, cryostat sectioning and special empirical staining techniques for a diverse range of research requirements.

Experience
Melanie and her highly experienced team provide high quality tissue processing, sectioning and staining within a well equipped laboratory with automated slide printing, tissue processing and staining machines to keep costs for end users as low as possible. We can accommodate special requests for end users such as tissue microarray production (TMA), decalcification of tissues or the production of sections under RNAse free conditions for in-situ hybridisation and PALM laser capture microdissection.

Flexible
We operate an opt-in opt-out system where we can work with researchers to provide assisted or unassisted activities, for example we can process tissue samples for self-cutting and staining if desired.

Accredited standards
Capable of handling high volume, quick turnaround tissue based studies to GCLP standards.
Our mission is to deliver publication quality immunohistochemical, immunofluorescent and multiplex staining of fixed cells and tissues to GCLP standards. Using robotic staining platforms and highly experienced staff we deliver the following key services.

- **Primary antibody optimisation**
- **High throughput immunohistochemistry and immunofluorescence**
- **Multiplex protein detection (Colourimetric or Fluorescent)**
- **Custom multiplex detection (e.g. mRNA and protein)**
- **RNAscope (mRNA detection)**
- **Functional assays, such as TUNEL (apoptosis)**

**Resources**

We have a wide range of microscopes and imaging platforms primarily designed for histological and fluorescence imaging and image analysis. This includes laser-scanning confocal microscopes, wide-field microscopes, stereomicroscopes, PALM laser capture microdissection, Media Cybernetics Image-Pro Plus, Image-Pro Premier and stereology workstations equipped with motorised stages for tiling, photomicroscopy and image processing software (e.g. Velocity and Huygens).

**Support**

We appreciate that immunostaining is an essential part of the process of obtaining publication quality research data and we work closely with our partners in SuRF@QMRI to ensure that all samples are prepared to a high standard, suitable for downstream applications e.g. imaging or molecular analysis. Enabling infrastructure includes Tissue Biobanking, antibody database and resource, on-line reservation system, billing, request forms and web site.

**Engagement**

We are keen to engage with you to help design experiments, troubleshoot, cost grants and provide training on microscopes and imaging workstations. **Please come and speak to us it could save you time and money.**

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**Head of Facility**

**Mike Millar**

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www.surf.ed.ac.uk
Biomolecular Core can revolutionize your research by providing access to state-of-the-art techniques and procedures. We are experts in:

- Quantitative real-time PCR
- Manipulation of lentiviral vectors including overexpression and knockdown of gene expression
- Fluorescence scanning

**Biomolecular Core Facility** offers customized production of viral vectors [http://www.surf.ed.ac.uk/biomolecular-core/viral-vectors](http://www.surf.ed.ac.uk/biomolecular-core/viral-vectors) and fully accessible bookable equipment that can be reserved online [https://system.crh.ed.ac.uk/booking/day.php](https://system.crh.ed.ac.uk/booking/day.php).

**Bookable equipment**

- Applied Biosystem 7900HT Fast real-time PCR x 5
- Fuji Film FLA 5100 fluorescence scanner imaging system
- LI-COR Odyssey
- BioRad Bio-Plex 200 HTF multiplex assay system
- BMG Labtech FLUOstar OPTIMA & NOVOstar microplate readers
- NanoDrop

**Lentiviral vectors**

Lentiviral vectors are highly versatile cargo delivery vehicles that can manipulate gene expression and fluorescently mark cells in vitro and in vivo. We hold in house trial stocks of lentiviral and adenoviral vectors that can be tested in your experimental system before customizing to your individual project requirements. Our methods and approach are backed up by proven expertise evidenced by years of experience and publications [http://www.surf.ed.ac.uk/biomolecular-core/biomolecular-core-publications](http://www.surf.ed.ac.uk/biomolecular-core/biomolecular-core-publications) and we can offer a choice of numerous fluorescent tags, different expression systems, including a choice of promoter and inducibility and either over expression of your gene of interest or knock-down.

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**Head of Facility**

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[www.surf.ed.ac.uk/biomedical-core](http://www.surf.ed.ac.uk/biomedical-core)
Complementing the other SuRF units, the CALM facility aspires to provide a dedicated service for fluorescence-based multi-dimensional optical imaging. Specialising in live specimen imaging, we provide expert advice, help with experimental design, training and access to a large range of state-of-the-art light microscopy platforms.

With expertise in a wide range of imaging techniques such as time lapse imaging, confocal and multi-photon-based scanning microscopy, image deconvolution and image data analysis, the CALM facility offers access to high-end light microscopy platforms for multi-dimensional imaging. Practical instrument assistance is given by a team of experienced imaging experts. Advanced imaging techniques such as fluorescence lifetime measurements (FLIM), laser-based optical specimen manipulation, fast 4D imaging, label-free vibrational recordings (e.g. SHG, THG, CARS) are also offered as well as the assisted use of these technologies.

In addition, Rolly Wiegand, as the Head and academic lead of the CALM facility provides consultancy on microscope infrastructure, the operation of imaging facilities, imaging-based grant applications and image data analysis. We also teach twice a year a highly respected course and workshop about the basics of optics and light microscopy by subscription, and, on demand, topic-based workshops are on offer to keep interested users at the cutting edge of optical imaging.

Facility key technologies:
- Fluorescence widefield microscopy and image deconvolution
- Multi-dimensional confocal laser scanning microscopy
- Live cell imaging
- Multi-photon excitation-based scanning microscopy for deep penetration imaging
- Vibrational imaging
- Fluorescence lifetime imaging
- Spinning disk confocal microscopy and photo-manipulation of samples
- Image data restoration, processing and quantitation

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The Queen’s Medical Research Institute Flow Cytometry Facility provides a comprehensive service to all researchers requiring the use of flow cytometry technology and its many associated techniques. The facility allows researchers access to advanced cell sorting instrumentation and flow cytometry analysers, and is fully supported by highly trained facility staff.

Flow Cytometry
Flow cytometry is a technology that allows multi-parametric analysis of cells. Cells can be analysed at a rate of thousands per second thus allowing identification of complex cell populations. We have expert knowledge of many flow cytometry applications including the following: cell phenotyping, cell cycle and apoptosis analysis, functional assays (e.g. cell adhesion and phagocytosis), cell signalling (e.g. calcium responses), and cytokine production.

Equipment
The core facility currently accommodates a high specification 5 laser, 15 colour FACSAria llu cell sorter and LSRFortessa analyser with matched configurations. The arrangement of lasers and the flexibility of the filter layout make possible a vast array of experimental panel designs using a variety of antibody/fluorochrome combinations. There are 4 further cell analysers available; FACSCanto II, FACSCalibur, FACSArray and FACScan.

We are ever aware of emerging technologies and strive to keep our facility equipment at the cutting edge. We are also in the process of acquiring an additional sorter with a Class II containment hood allowing improved biosafety standards. All equipment is fully calibrated and logged to ensure consistent data collection. Instruments can be booked via our online booking system once appropriate training has been given. Charging information can be found on our website.

Staffing
Facility staff are available to provide understanding of the principles behind the technology, training in the use of the equipment and relevant software and, troubleshooting of the instruments. As well as all aspects of technical assistance, we are able to advise researchers on experimental design, sample preparation and data analysis.

Cell Sorting
A very popular service whereby the researcher is able to bring their cells to the facility and cell populations of interest can be physically separated from contaminating populations and used for further functional studies. The sorter is only operated by facility staff and is capable of separating up to 4 populations simultaneously, sorting on to slides and single cell deposition into various multi-well plates. Researchers are encouraged to discuss the full scope of their experiments with the operator in advance so that sorting procedures can be fully optimised.

Please contact us if you are interested in using the QMRI Flow Cytometry Facility to benefit your research or if you have any questions relating to this technology.

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Academic Lead
Professor Ian Dransfield
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The MRC Centre for Reproductive Health incorporates a specialist assay service to researchers and clinicians at the Little France University QMRI site under the guidance of Dr Forbes Howie.

With over thirty years of experience working in diagnostic laboratories, Dr Howie is able to give expert advice on sample collection, volumes required for analysis, quality control and interpretation of the results.

**Types of samples analysed**

Human, sheep, mouse and rat serum, urine and saliva have been routinely analysed, also homogenised tissue or cell culture media measurements are possible for some tests.

**Tests Available**

This is not a complete list but serves as examples. Please enquire if there is a method described in the literature you are interested in, it may well be able to be adapted for automation.

**Reproductive Hormones:**

Gonadotrophins (LH and FSH) and steroids (P4, T4, E1, E2, E3)

**Kidney Function:**

Serum: Urea and Creatinine, Urine: Urea, Creatinine, Albumin, Calcium and Phosphate.

**Liver Function:**

Bilirubin, ALT, AST, ALP and Albumin

**Cardiovascular Parameters:**

Creatine Kinase, Triglyceride, Cholesterol, Non-Esterified Fatty Acids, various lipoproteins, and Angiotensin Converting Enzyme

**Others:**

Total Protein, Serum T4 and T3, Cell Myeloperoxidase, Lactate dehydrogenase, Amylase.

If there is a commercial ELISA available for your analyte of interest, the assay lab should be able to perform it.

**Project costs:**

Can be estimated with the service operating on a cost recovery basis. There is £5 handling charge for each sample. Test charges start at 50p per test.

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**Head of Facility**

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www.surf.ed.ac.uk/specialist-assay-service
SuRF @ SCRM

SURF is fully committed to underpinning research throughout the University of Edinburgh, and locally throughout the Little France campus. As part of this commitment Histology and Immunodetection operate a fully equipped satellite laboratory located within the SCRM building. The Biomolecular Core Facility also engages with SCRM researchers offering a bespoke viral vector service with on site advice and experimental design.

Resources

The SCRM histology lab is fully equipped for processing and sectioning both paraffin and resin embedded cell and tissue samples. The plastic microtome is complimented by a glass knife making facility and diamond knives are available for publication-quality work. There are cryostats for sectioning frozen tissues including the capability for sectioning harder tissues and bone samples using tungsten knives. The laboratory also has a vibratome for cutting thick sections of fresh or fixed agar embedded samples for live tissue studies or 3D imaging applications. Additional resources can be accessed at the QMRI.

Facility with a dedicated facility manager supporting final imaging of samples.

Biomolecular Core Facility viral vector service offers off-the-shelf ready made trial aliquots of virus. These can be used for small low cost enabling experiments with minimal financial outlay. Once experimental conditions have been optimized we also offer a customized bespoke tailored viral vector cloning and packaging service that can accommodate specific research needs and requirements, including a choice of fluorescent markers to compliment on site imaging capabilities, inducible gene expression, cell specific promoters, and over expression and knock-down of gene expression.

Support

The Histology laboratory operates in both a self-service and fully assisted capacity. Dedicated staff are on site on Monday, Wednesday and Friday and at additional times upon request, and can operate a drop off and collection service to access complimentary histology, immuno-staining and RNAscope services.

Engagement

We are keen to engage with you to help design experiments, troubleshoot, cost grants and provide training on histology equipment and provide advice on immuno-staining experiments.

Biomolecular Core Facility provides costing for grants, advice and guidance on experiments. Off-site we also offer fully accessible bookable equipment located in the QMRI, which is open to all University staff and can be accessed via an online booking system

https://system.crh.ed.ac.uk/booking/day.php

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Thank you to our sponsors for supporting the publication of this material.

- **Local contact**
  - **Clinical Research Imaging Centre**
  - **Queen’s Medical Research Institute**
  - **Chancellor’s Building**
  - **Anne Rowling Regenerative Neurology Clinic**
  - **Scottish Centre for Regenerative Medicine**

1. Clinical Research Imaging Centre
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