



# Large Animal Research and Imaging Facility (LARIF)





## Unparalleled animal research, imaging, and facilities

The University of Edinburgh's Large Animal Research and Imaging Facility (LARIF) allows users to benefit from unparalleled facilities alongside a wide range of expertise in farm animal production, health and welfare – including infectious diseases and zoonoses, vaccines, genetics and genome editing, imaging, radiology, medicine, surgery and critical care.

### A One Health approach

Research within the LARIF supports the One Health framework, recognising the link between human, animal and environmental health. It offers exceptional specialist facilities for in-depth studies of all major farmed livestock, including: containment areas for work involving infectious pathogens; facilities to produce genetically altered animals; environmentally controlled units suitable for behaviour and welfare studies; imaging, surgical and critical care facilities for large animal models of disease; and development of medical technology that will benefit both humans and animals.

### Welfare

A Culture of Care is central to the function of the LARIF and animal welfare is of utmost priority. All work is undertaken in line with UK Home Office Guidelines and licencing requirements and is overseen by a team of dedicated Named Veterinary Surgeons who are independent from the work carried out within the facility. Behaviour and welfare studies are supported by environmentally controlled units with CCTV and can take advantage of the imaging and surgical facilities as required.



### Surgical

The LARIF has two operating theatres equipped for anaesthetising and conducting surgery on large animals.

Each theatre has an associated preparation room so that both may be used concurrently. Each is supported by separate laboratories allowing clinical investigation, sample collection and a limited degree of sample processing. Mobile imaging, i.e. fluoroscopy, radiography and ultrasonography, is available for use during surgery.

Anaesthesia and post-operative recovery are managed and/or supervised by the same team of specialised veterinary anaesthetists responsible for the Critical Care Unit.

### Genetic Modification

Within the LARIF, and in cooperation with partners, genetically modified farm animals can be produced, reared and studied.

Facilities include an embryology laboratory with micro-injection and electroporation capabilities, dedicated surgical suites and environmentally controlled animal rooms. Animals are maintained in a bio-secure environment, from implantation of engineered zygotes through to the rearing of breeding populations.

### Critical Care Unit (CCU)

The LARIF Critical Care Unit enables up to six anaesthetised animals to be studied simultaneously using the full array of physiological monitors found in a typical human intensive care unit. Its location, immediately adjacent to the imaging suites, allows easy access to advanced imaging (CT, MRI).

Animals in the Critical Care Unit are looked after continuously by veterinary anaesthetists who are Specialists in Veterinary Anaesthesia and Analgesia as recognised by the European Board of Veterinary Specialities and the Royal College of Veterinary Surgeons.

### Imaging

The LARIF provides cutting-edge medical imaging facilities, including:

- Computed tomography (64-slice scanner)
- Magnetic resonance imaging (3 tesla (3T) MRI scanner)
- C-arm fluoroscopic X-ray system
- Ultrasound

Mobile PET-CT imaging is also available on request, and radiotracers can be supplied from the local Edinburgh Imaging Radiochemistry Facility (QMRI)

### Infectious Diseases

A Containment Unit (CU) within the LARIF provides specialist animal holding areas and dedicated procedure rooms, allowing controlled experimental challenge of farm animals with infectious pathogens, e.g. to test the effectiveness of novel vaccines or other therapies.

The CU holds multiple species of large animals, with particular expertise in cattle, sheep and pigs. The CU also accommodates poultry, and users benefit from unique avian lines and resources from the National Avian Research Facility (NARF) on campus.

### Location and resource

The LARIF is based on the University of Edinburgh's Easter Bush Campus, which is a major national focus for animal research and provides ready access to a broad range of expertise and additional facilities, including:

- Farm facilities including holding areas for cattle, sheep and pigs of all ages
- Veterinary facilities and services at the Royal (Dick) School of Veterinary Studies
- Expertise in farm animal genetics, health and production from the Roslin Institute
- Specialist pathology services via Easter Bush Pathology
- Aquaculture facilities
- Global Academy of Agriculture and Food Security
- National Avian Research Facility for poultry
- Centre for Tropical Livestock Genetics and Health
- Scotland's Rural College (SRUC)
- Edinburgh Imaging

### Contact

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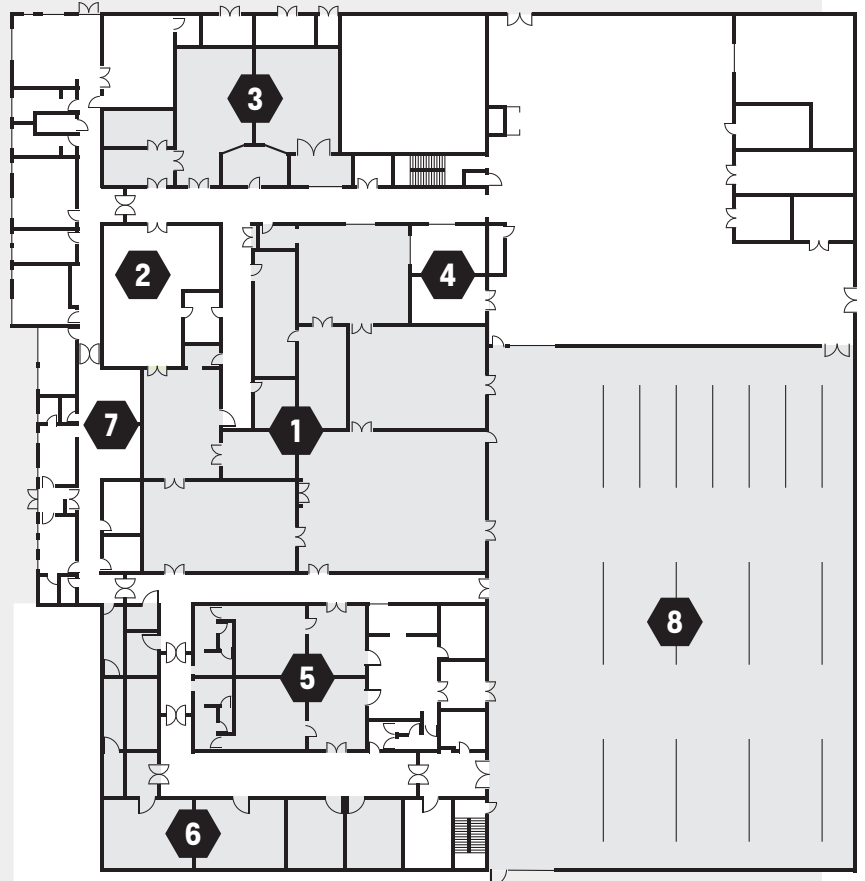
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## Schematic layout

### > Large Animal Research and Imaging Facility (LARIF)

- 1 Surgery including animal holding and recovery
- 2 Critical Care Unit
- 3 Imaging
- 4 Horse drop box
- 5 Containment
- 6 Environment Control Areas
- 7 Labs for visitors
- 8 Outside barn



Plan for illustrative purposes only



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