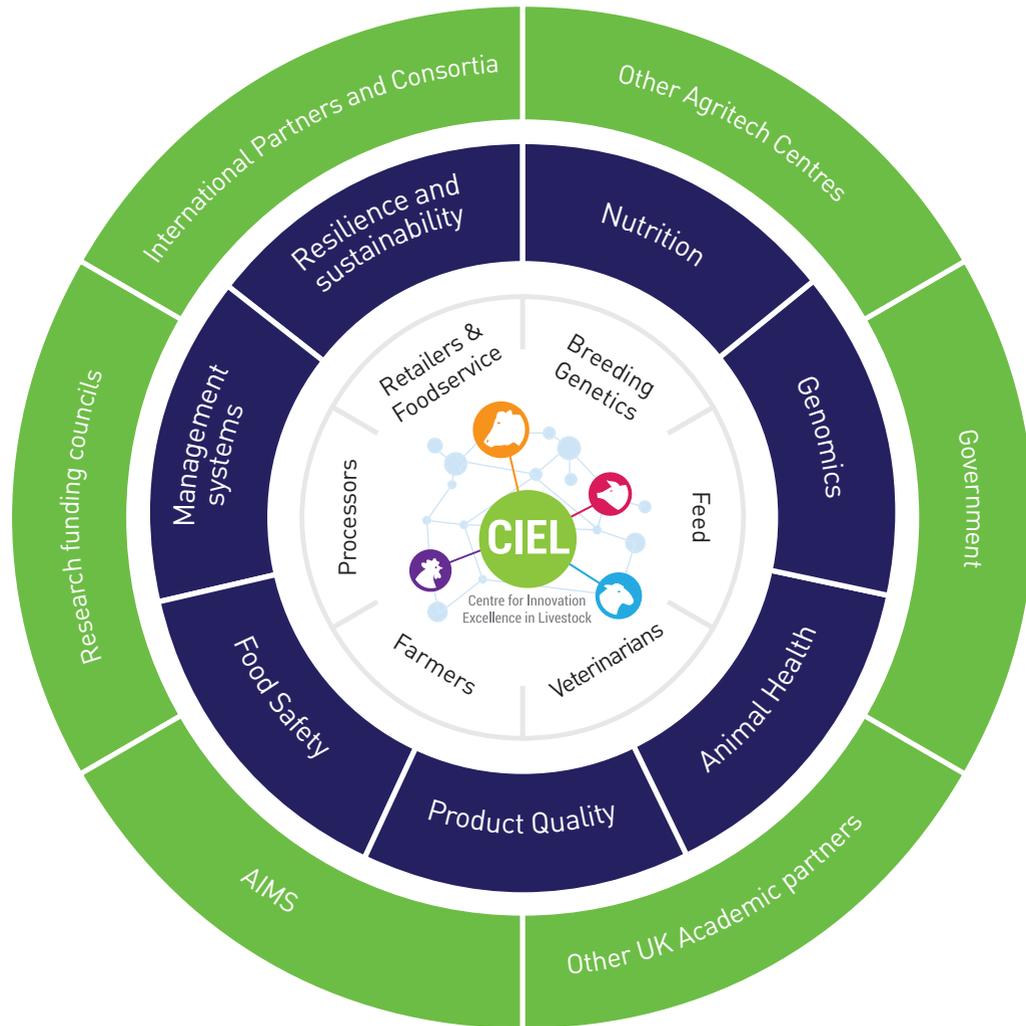




**World-class research.  
Game-changing results.**

# A Gateway to World-class research



The Centre for Innovation Excellence in Livestock is a £70million collaboration between Government, the agri-food industry and academic research institutions that will transform the efficiency and productivity of the livestock sector and benefit the wider food supply chain.

The 'hub and spoke' illustration (opposite) demonstrates perfectly how CIEL works in partnership to provide a focused gateway to world-class research facilities, harnessing industry-guided expertise to deliver leading global livestock production and product quality research. In addition to bringing together world-class research institutes to drive transformation change, CIEL's capability extends to commercial trial farms to ensure measurable results.

## Industry members

The agri-food organisations and businesses currently in membership with CIEL span the whole of the livestock supply chain and include: feed companies, allied industry suppliers, vets, animal health companies, processors, multiple retailers and levy bodies. To see the current list of CIEL members, scan the QR Code below.



## Our research institute partners:

- AFBI
- Duchy College
- Fera Science Ltd.
- Harper Adams University
- Queens University Belfast
- Roslin
- Rothamsted
- SRUC (Scotland's Rural College)
- Aberystwyth University
- Bristol University
- Leeds University
- Newcastle University
- Nottingham University



## The Dairy Sector

The CIEL Dairy Science Group focuses on nutrition, production efficiency and the environmental impact of dairy cows and other ruminants. Its specific areas of expertise include:

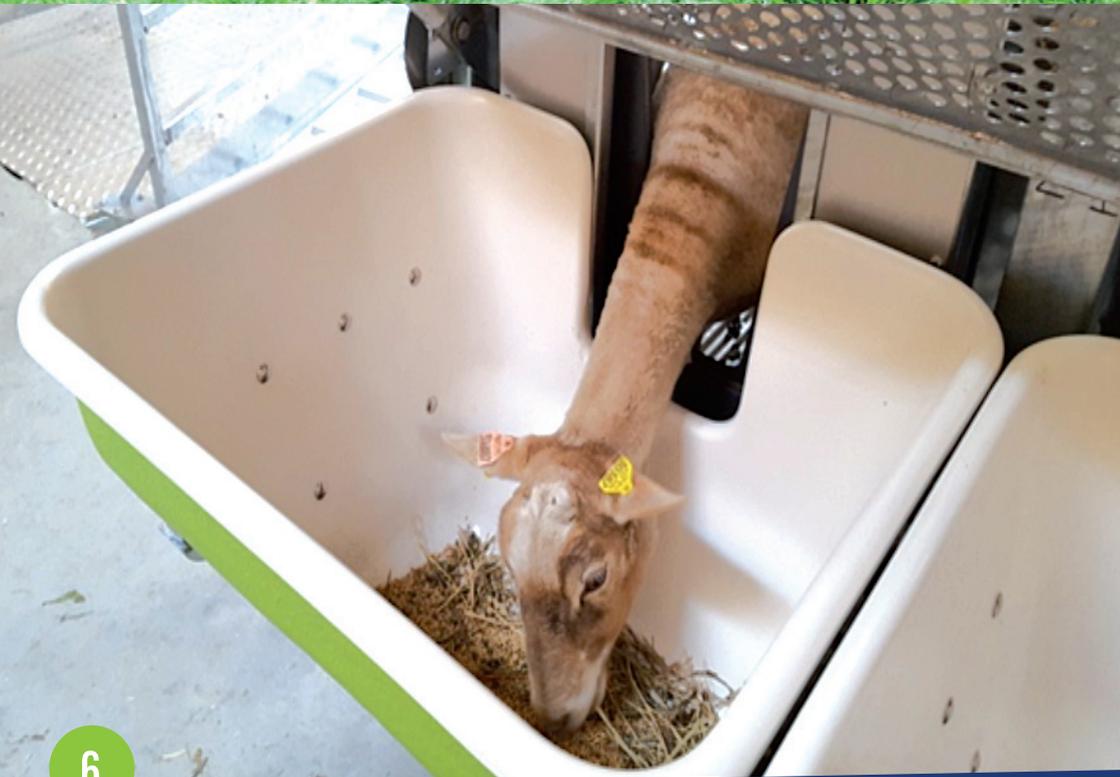
- Interactions between nutrition, genetics, metabolism, milk yield and composition, fertility and methane emissions, including mathematical modelling;
- Rumen function and digestive efficiency in relation to dietary inputs, the rumen microbiome and the cow genome;
- Precision management through use of sensors to monitor cow behaviour, methane emissions and health.

**The pioneering nature of CIEL work can be seen in two of the most recent additions to our facilities.**

The Health and Welfare Unit can rightly be described as state-of-the-art with totally interchangeable housing units where floors and cubicles can be moved and rearranged together with bedding, loafing and penning facilities. With a capacity of 100 cows, the unit conducts research on the interactions between environmental/genotype/animal physiology/welfare with a view to maximise animal health, welfare and comfort and to improve productivity and labour efficiency.

The Nutrition Unit is a cutting-edge facility for 100 high-yielding milking cows. Each animal is individually fed and a continuous record is kept of feed intake, milk yield, live weight, activity and rumination which are all linked to detailed measurements of cow metabolism and physiology.





# The Beef and Sheep Sector

## Expertise in this sector includes:

- Soil, water quality and ecosystem services;
- Grazing research and farm system based analysis;
- Nutrition data used with sheep and beef energy/protein rationing equations;
- Energy metabolism within ruminants based on metabolism chamber studies;
- Grassland farming, ruminant metabolism, food science;
- Virology/immunology/vaccinology and bioinformatics.

The access to leading edge facilities in the beef and sheep sector which CIEL enjoys is truly remarkable – from hydrologically sealed grassland paddocks with associated nutrient/flow sensors (containing more than 4,000 grass/clover trial plots) to the wide range of precision nutrient application equipment using GPD technology. Well-resourced bioinformatics and economics teams are capable of software development, integrating big datasets and exploiting GIS data.

## Among the most recent developments in this sector are:

- Investment in modern beef production research platforms, with both group and individual feed/water intake capacity for suckler and dairy beef production. These are housed within buildings designed with leading edge environment technology to deliver high quality healthy rearing facilities.
- New sheep research facilities with automated group and individual feed and water intake and behaviour recording systems.
- Upland and lowland grazing facilities with automated livestock weight recording and feed dispensing systems, coupled with additional GPS activity monitoring equipment.
- A study of feed intake and feed conversion efficiency of grazing ruminants allowing accurate and rapid animal phenotyping of new forage varieties.
- A novel small ruminant platform to address a UK-wide lack of capacity to undertake detailed metabolic studies in pre-ruminants and ruminants.
- A mobile CT scanning unit for sheep and other livestock breeding programmes



## The Pig Sector

CIEL partnerships in the pig sector deliver world-class expertise in production systems with our work embracing nutrition, gut function and metabolism and reproductive physiology.

Our capability also includes experimental design and data analysis while a dedicated training centre caters for training and development at all levels from manual skills through to degree level courses.

### Among the latest facility developments are:

- New production-scale indoor and outdoor pig facilities with start-of-the-art instrumentation allowing monitoring of individual feed intake, feed efficiency, physiological, environmental, health, behaviour, and welfare parameters;
- SPF (specific pathogen-free) pig production facility and expanded capacity for improved welfare;
- Development of production systems for new genotypes.

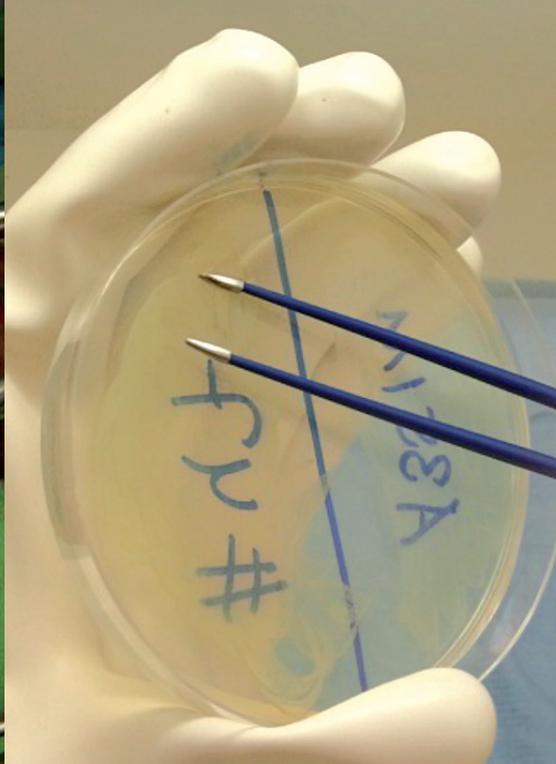
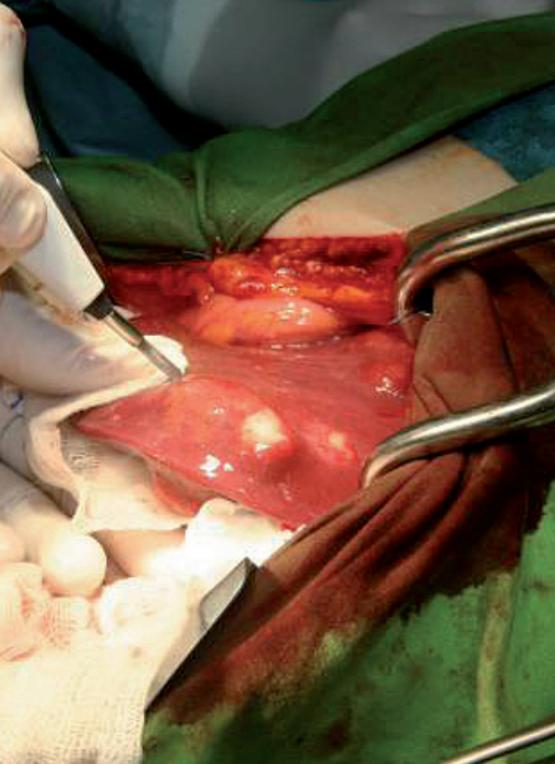


## The Poultry Sector

Existing facilities dedicated to CIEL's work in the poultry sector include a new veterinary school as well as both the conventional and world-leading pathogen-free facilities of the UK National Avian Research Facility (NARF). These provide access to a network of research farms.

### Our latest project work in this sector includes a production-scale experimental facility with:

- Upgraded layer facilities;
- A bespoke 8-room rearing/laying facility with separate environmental control;
- An experimental hatchery allowing for the individual monitoring of group-housed birds.



## Genetics and the digital revolution

The major focus of CIEL's work in the field of genetics is in veterinary infectious disease research and livestock vaccine development.

This is carried out in collaboration with Edinburgh Genomics, which boasts the largest DNA sequencing facility in the UK. The company's purchase of the latest state-of-the-art sequencing platforms - a UK first - will enable CIEL to establish an Agrigenomics Centre.

Further collaboration with Edinburgh's UK Advanced Computing Facility will provide support for CIEL's Livestock Informatics Hub, developed to support genomics and informatics and to harness the opportunities from the genome revolution right across the whole supply chain.

CIEL has also established a new Demonstration Centre for Digital Technologies which will provide a test bed for this rapidly growing area to improve the efficiency of management production.

## Imaging and Analysis

With partners providing world-leading food science expertise and facilities, CIEL has access to the latest analytical tools to study nutritional, safety and quality of products. We also have access to robust data to identify and quantify improvements in sustainable livestock production.

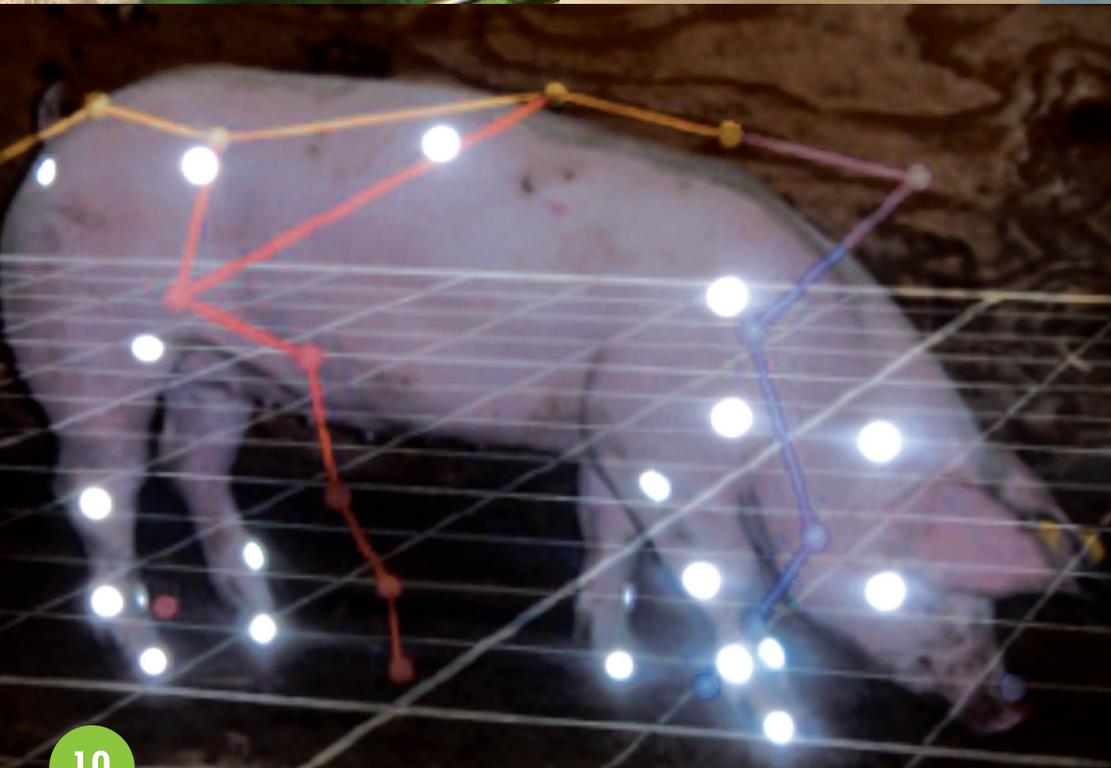
Recently introduced is a state-of-the-art Large Animal Research and Imaging Facility with extended CAT3 capacity and controlled environment rooms, surgeries and novel whole animal imaging capacity.

## Farm platforms

Access to the network of farms via our veterinary and industry partners provides CIEL with commercial farm units that are currently enabling us to:

- Deliver state-of-the-art sheep and dairy housing facilities;

- Invest in landscape emission analysis;
- Research the impact of sheep, beef and dairy production from contrasting grazing systems.





From cell to system, CIEL delivers global leading livestock production and product quality research to deliver improved food quality and farming systems

We are able to provide a focused gateway to a core of 12 world-class research institutes including veterinary schools, researchers and facilities to develop new industry-needed solutions as well as commercial trial farms for real world results.

**“Devenish Nutrition owes its success to research and innovation conducted in collaboration with leading UK academics and we look forward to CIEL contributing to the future development of Devenish Nutrition. I am confident that CIEL will uplift the productivity and profitability of the UK’s livestock industry as a whole through the unique relationship it offers between our leading academics and diversity of industry partners which have committed to CIEL.”**

## **YOUR ORGANISATION SHOULD CONSIDER MEMBERSHIP OF CIEL IF IT:**

- is interested in knowing about the latest developments and keeping in touch with the forward thinking innovators of today and tomorrow
- covets privileged access to an Informatics Hub, which will assemble data on inputs, processes and systems across the UK livestock industry
  - conducts research on any of the livestock species in any discipline
- wants to be involved in formulating future strategic direction of livestock research
  - would benefit from being involved in ‘pre competitive’ research programmes addressing big issues such as antimicrobial resistance, farm efficiency, animal health, food safety and security
- needs assistance to develop, validate, translate and implement products and services for the livestock industry
- would benefit from access to a collaborative multi-species, multi-disciplinary research organisation
- wants to increase the cost-effectiveness of its research investments

**CIEL**

To find out more about becoming a member or if you have a project you would like to discuss, please contact **W**) [www.CIELivestock.co.uk](http://www.CIELivestock.co.uk) **T**) 01234 56789  
**E**) [enquiries@CIELivestock.co.uk](mailto:enquiries@CIELivestock.co.uk)