**Sutton Bonington Campus**

![Campus Image]

**School of Veterinary Medicine & Science**

- **Academic Staff**: 85
- **Research and Support staff**: ~43
- **Research income**: ~£14.3 M

**Teaching**

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**Research Philosophy**

To discover and apply new knowledge relevant to veterinary sciences for the improvement of:

- Livestock and companion animal and human health and nutrition
- Environmental sustainability
- Food security
- Economic efficiency

**Infrastructure and key facilities**

- Large and small animal accommodation at CL2
- Robotic Dairy Unit (<240 cows)
- Post-genomic, imaging and ultrasound facilities
- Systems Biology Centre
- Centre for Evidence Based Veterinary Medicine
- A network of clinical associates

**Five Research Themes**

- Basic, strategic and applied research, including clinical research informing veterinary education and stakeholders.

**School of Veterinary Medicine & Science**

- First veterinary school in the UK for 50 years
- Unique curriculum
- Research project integral part of the curriculum
- Strategic approach to staff recruitment
- Increasing networking with key institutions (VLA, Sanger)

**University of Nottingham - Sutton Bonington Campus**

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Animal Infection and Immunity

- Host-pathogen interactions (control of animal disease and food-borne pathogens)
- Immunity, immunomodulation and novel approaches to infection control
- Epidemiology and modelling
- Novartis-funded Evidence Based Centre for Veterinary Medicine (Cochrane)
- Largest group of bovine specialists in the UK
- Largest group of bacteriophage biologists worldwide

Major topics:
1. Virulence determinants of Salmonella, Campylobacter, C. difficile, E. coli O157, S. abada
2. Immune responses (adaptive and innate) to enteric bacteria, Mycobacteria (TB), and equine and bovine herpes viruses and to AE
3. Immunomodulation of innate and adaptive responses
   a. Stimulation of innate response (emergency vaccination)
   b. Modulation of Th2/Th1 responses to eliminate carrier state
4. Survival of prions (BSE) in environment
5. Use of array technology for disease surveillance (EU)
6. Epidemiology and evolution of zoonotic RNA viruses (West Nile, Encephalitis)
7. Early responses to parasites (Fasciola, Neospora and others)
8. Mixed bacterial and parasitic infections
9. Microbial evolution using genomic comparisons

Population Health and Welfare:
1. Bovine mastitis - molecular and cow level disease modelling, cost effective prevention strategies, national disease control scheme.
2. Bovine lameness - farm level risk factors and preventive measures, process of development and sequelae of hock lesions, mobility scoring to monitor lameness.
3. Bovine and exotic animal nutrition - development and use of nutritional diagnostics to improve health and welfare.
4. Development of an Evidence-Based Veterinary Medicine Centre - remit includes collection of baseline data on incidence and prevalence of companion animal disease, provision of data to inform evidence based medicine and veterinary decision making in major disease processes.

School of Veterinary Medicine and Science

Bovine Mastitis
Current Research Interests and Collaborators
- Intra-mammary infections during the dry period
  - Interactions of cow, environment and management factors
  - Optimizing individual farm decision making
- Molecular epidemiology of S. uberis and E. coli
  - Associations between pathogen phenotypic behaviour, and genomic / post-genomic characteristics
- Faecal shedding of mastitis pathogens
  - Impact of diet on levels of faecal shedding

Contrasting host response to avian influenza virus infection

- Death by ‘cytokine storm’

Reproductive Biology:
1. Fertility in dairy cows and dogs
2. Environmental and nutritional effects on fertility
3. Ovarian and uterine function
4. Angiogenesis
Comparative medicine:
1. Muscular development and wasting and meat quality
2. Foetal programming
3. Aquaporins and membrane fluidity/transport
4. Ocular development and degeneration
5. Neurological degeneration
6. Effects of diet on behaviour
7. Regulation of stem cells in health and disease
8. Comparative oncology
9. Cardio-vascular disease in dogs and horses

Education & Development
- Examining success of curriculum reform
- Comparing outcomes
- Outstanding student feedback

Opportunities
- Internationalisation in veterinary science - strong links with Chinese & Indian Vet Schools - Pfizer funding for International Veterinary Public Health Centre in China
- A dedicated UK Centre for experimental large animal biology

Sutton Bonington Campus - the major integrated UK Centre for Animal Health Research and Teaching