

One Health at the University of Edinburgh



Achieving global impact through world leading research and training

Open to a world of possibilities

- Exploring complex relationships between human, animal and environmental health
- Committed to multidisciplinary working in world leading Global Academies and research centres
- Collaborating to deliver research that influences global policy and contributes to saving lives
- Providing training in skills needed to respond to existing and emerging One Health challenges

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For more info:
<https://www.ed.ac.uk/c/one-health>

One Health Initiatives

- Baillie Gifford Pandemic Science Hub
 - Global Academy of Agriculture and Food Systems
 - Edinburgh Earth Initiative
 - Roslin Institute
 - AMR surveillance and diagnostics
 - Ion Bru – Scottish Nanopore sequencing group
 - Comparative models of disease
 - Blue Health
 - EPIC: One Health approach to disease outbreaks
 - One Health networks
 - Multidisciplinary training

Edinburgh Infectious Diseases

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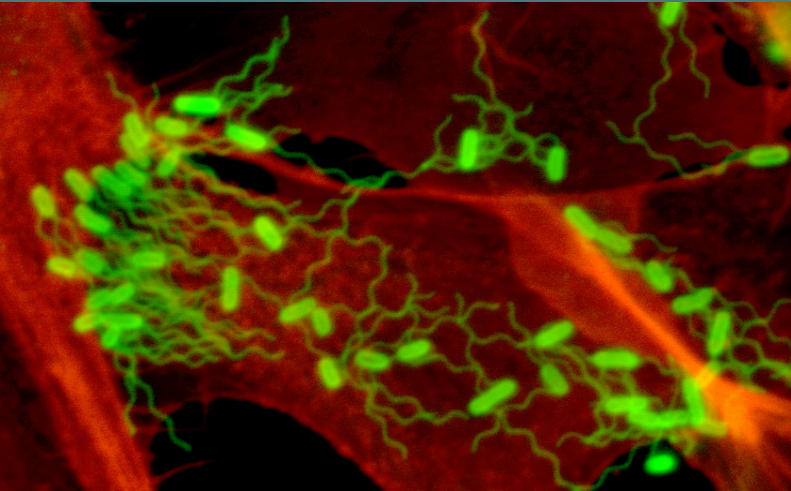
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Edinburgh Infectious Diseases



Transdisciplinary network of >900 scientists, clinical, social and behavioural researchers

Mission

- Represent the strengths of infectious disease science in Edinburgh
- Maintain a strategic overview of infectious disease research in Edinburgh
- Maximise synergy between established activities
- Promote innovation and translation
- Foster infectious disease teaching and training at all levels within the University

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www.ed.ac.uk/edinburgh-infectious-diseases

Baillie Gifford Pandemic Science Hub



Using genetics to find
new therapies, fast

Our aims

Bold in ambition to transform the speed of therapeutic innovation through inter-disciplinary collaboration:

- ✓ Genetics-fuelled discovery of effective drugs
- ✓ Rapid, efficient testing for efficacy in lungs
- ✓ Find effective treatments that make things better for patients

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For more info contact psh@ed.ac.uk
www.psh.ac.uk

A Lens on Food Systems



Research, education and policy
in the Global Academy of
Agriculture and Food Systems

OH challenges in food systems

- Conversion of natural habitats to farmland is a major driver of biodiversity loss
- Exploitation of wildlife and intensification of livestock production increase the risks of the emergence of zoonotic diseases
- Malnutrition and associated health challenges are widespread
- Risks of anti-microbial resistance arising from AM use in agriculture
- Food-borne pathogens are a common source of zoonotic disease

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For more info visit GAAFS:
<https://www.ed.ac.uk/global-agriculture-food-systems>

Edinburgh Earth Initiative



A world where our partnerships make a positive change in the communities most impacted by the global climate emergency

EEI Activities

Key focus of activities addressing **Health in a Warming World**

- Research
- Philanthropy
- Student and staff experience – Earth fellows
- Enterprise and Innovation
- Events and workshops
- Health and Climate action Panel

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www.earth.ed.ac.uk
earth@ed.ac.uk

One Health Genomics Edinburgh



Harnessing genome
knowledge for global health
of humans, animals, plants
and ecosystems

OHGE

- Community of >400 genomics researchers at UoE
- Cross-species, multi-disciplinary, multi-'omics
- Genomes, epigenomes, single-cell and spatial transcriptomes
- Massive compute and AI
- Industry collaborations with biotech and pharma
- Early Career Researcher programmes in Precision Medicine, Biomedical AI, Genome Analysis
- Addressing major societal challenges

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For more info please contact
genomics_network@ed.ac.uk

Rapid whole genome sequencing



ION-BRU – the Scottish Nanopore sequencing user group

Aims

- **Networking**
 - Our biannual meetings bring together scientists from across Scotland
- **One health**
 - Our meetings expose members to research on a wide variety of species and encourage collaboration
- **Method development**
 - Our members share ideas and troubleshoot DNA extraction and sequencing methodology for a broad range of applications

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For more info contact Amanda Warr
Amanda.warr@roslin.ed.ac.uk

Blue Health



Sustainable growth of the ‘blue economy’ has potential to feed the growing human population well

Sustainable food

- Scotland has a rapidly growing aquaculture sector – it is the third-largest salmon farming sector worldwide
- Finfish and shellfish have high nutritional value, high resource use efficiency, and a relatively low carbon footprint
- Work at the Roslin Institute contributes to:
 - Genetic, genomic and gene editing technologies for disease resistance and productivity
 - Fish health and welfare
 - Promoting the role of aquaculture in human nutrition
 - Promoting responsible innovation and regulatory systems.

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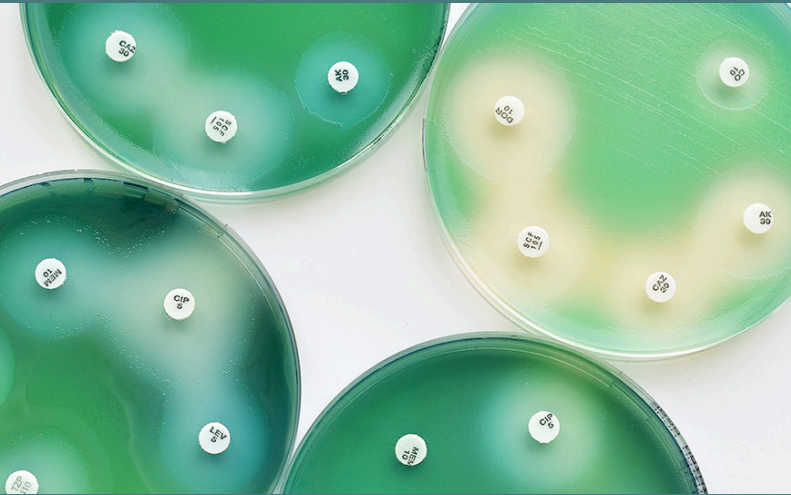
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<https://www.ed.ac.uk/roslin>

<https://www.ed.ac.uk/global-agriculture-food-systems>

Global Challenges: Antimicrobial Resistance



The Edinburgh AMR Forum:
Connecting researchers and
clinicians across Edinburgh

Key expertise

The Edinburgh AMR Forum
brings together a vibrant
community of over 200
researchers tackling AMR

- Global and local epidemiology of AMR
- Rapid diagnostics of more effective use of antibiotics
- Mechanisms of biology, evolution and physics underpinning antibiotic resistance
- Antibiotic alternatives and vaccine development
- Antimicrobial resistance in fungi
- Antimicrobial governance and stewardship

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One AMR
Network



For more info:

www.ed.ac.uk/edinburgh-infectious-diseases/

One Health AMR surveillance



Supporting the development and testing of blueprints for a unified AMR surveillance in Uganda and Malawi

Fleming Fund Fellowships

Mission

To support the implementation and evaluation of National Action Plans through equitable training and research

Partners



Uganda



Kenya



Malawi



Zambia

Targets to 2025

1. 59 Fellows trained
2. 4 country-tailored OH surveillance plans
3. 12 AMR policy briefs
4. 8 peer reviewed publications

Funding



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For more information scan



EPIC: A One Health approach to animal disease outbreaks



The Scottish Government's
Centre of Expertise on Animal
Disease Outbreaks

Key activities

- Interdisciplinary consortium across seven Scottish research institutions
- Well-established links with decision-makers
- Providing an evidence base for decision-making in “peacetime” (preparedness) and emergency (response) times:
 - Genetic analysis to track the spread of infectious disease
 - Mathematical modelling of disease outbreaks
 - Knowledge brokering between science and decision-makers e.g. risk assessment
 - Research at the wildlife-livestock interface (e.g. Avian Influenza)
 - Social research to understand human behaviour

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For more info visit <https://www.epicScotland.org/>

Centre for Biomedicine, Self and Society



Spearheading interdisciplinary research in bioethics, social aspects of medicine, and the medical humanities

Mission

- **Support** research in the social sciences of medicine and health humanities
- **Develop** innovative approaches to collaboration, stakeholder, and policy and public engagement related to biomedical practice, ethics, regulation and policy
- **Generate** rapid, insightful, and practicable analyses of current and emerging concerns in biomedicine and health
- **Engage** communities in thoughtful conversations about transformations in healthcare, biomedicine, and the social sciences and humanities

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<https://www.ed.ac.uk/usher/biomedicine-self-society>

One Health and Society Network



Remaking One Health:
Decolonial Approaches to Street Dogs and Rabies Prevention in India.

Special Issue Paper

Zoonotic diseases: New directions in human-animal pathology


Robin Bendrey¹ | Debra Martin²

Abstract

Zoonotic disease-human diseases of animal origin—represent one of the world's greatest health challenges, both today and in the past. Since the Neolithic, zoonotic diseases have been one of the major factors shaping and influencing human adaptation. Archaeology is ideally situated to provide the long view on human-animal pathogen relationships, through combining cultural, environmental and biological datasets, yet long-term studies of linked human and animal records have often been overlooked and underutilised. The seven papers in this special issue 'Zoonotic diseases, new directions in human-animal pathogen' cover a range of diseases caused by bacterial, viral, and parasitic pathogens, from case studies drawn from across Europe, Asia, Africa and the Americas. They speak to the diversity of human-animal-environment interactions that shaped disease emergence and transmission. They also review methodological advancements relating to disease identification and interpretation and discuss interdisciplinary approaches to effectively investigate these complex processes in the past. This introduction highlights their key themes and outcomes and identifies research activities moving forward.

Future Organisms

Synthetic genomics and responsible innovation in the UK, the USA and Japan



Bringing critical expertise, insights and perspectives

People and society

- Unique range of expertise: over 40 scholars from across the social sciences, arts and humanities disciplines with an interest in One Health challenges
- In depth knowledge on more than 20 countries in the Global North and South
- Experience of a wide range of innovative quantitative and qualitative research methods

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EDCMA
SOMA



Contact – Dr Rebecca Marsland
(r.marsland@ed.ac.uk)

One Health Field Network



Uniting diverse and multidisciplinary expertise to enhance preparedness to risks to human, animal, and environmental health in complex contexts

Enhancing preparedness in fragile contexts

The **FIELD SONGS** project highlights the intangible cultural heritage of Syrian refugees, aiming for sustainable development in the Middle East.

The **Türkiye-Syria Earthquake Rapid Needs Assessment** evaluates the impacts on human, animal, and environmental health resulting from the 2023 earthquake in Northwest Syria and Türkiye.

The **Aesthetics of Food Security** project investigates the aesthetic values, practices, and patterns that shape emotional responses to conflict and food insecurity in Syria.

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Academic
Expertise
for Sustainable
Development



Achieving One Health
through Food Security

دوران الثقافة وفن
Douzan Art & Culture



Contact: Professor Lisa Boden (lisa.boden@ed.ac.uk)
www.onehealthfieldnetwork.com

One Health and wildlife



The health of wildlife and recovery of biodiversity must be part of One Health frameworks

Healthy ecosystems

- Wildlife can be reservoirs of important domestic animal or human diseases
- Domestic animal and human diseases are an important conservation threat to many wildlife species
- Disease emergence and spread is being driven by wider processes such as habitat loss, agricultural intensification, climate change, wildlife trade and persecution
 - Avian influenza virus in seabirds
 - Leprosy in red squirrels
 - Disease dynamics at the wildlife–livestock interface: Trypanosomiasis
 - Pathogen transmission between scimitar-horned oryx *Oryx dammah* and domestic ungulates

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<https://www.ed.ac.uk/c/one-health>

Zoonotic disease: Rabies



Taking interdisciplinary
approaches to disease
management

Treating a killer

- Rabies is a zoonotic disease that kills ~ 60,000 people annually
- > 99% of human deaths are from canine rabies, 95% of which occur in Asia and Africa and mostly affect those in poverty
- Free-roaming dogs can transmit **zoonotic disease**
- Canine vaccination reduces human disease
- Working with in-country partners University of Edinburgh help develop new solutions, including:
 - Data capture tools
 - Rabies surveillance and in-country genomic sequencing
 - New vaccination approaches
 - Testing and evaluating dog population management strategies

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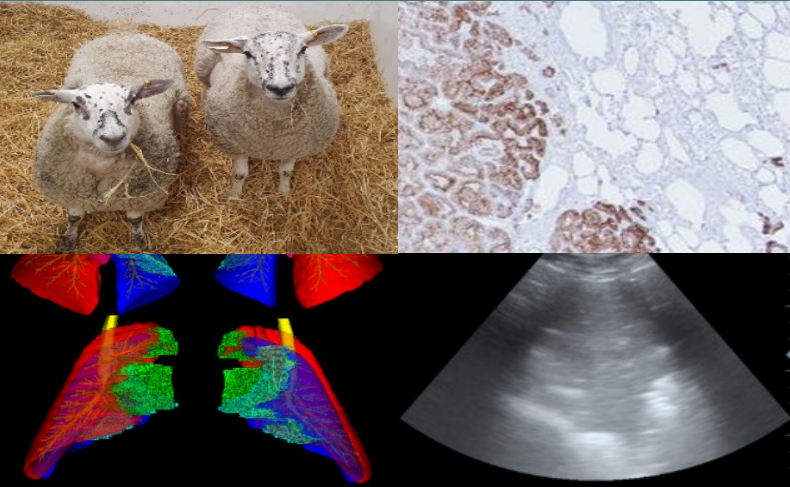


INTERNATIONAL
RABIES TASKFORCE



Helen Fielding, The Roslin Institute (helen.fielding@ed.ac.uk)
Fred Lohr, Mission Rabies (fred@wvs.org.uk)

Developing comparative models of disease



Ovine Pulmonary Adenocarcinoma and human lung cancer

Disease management

- **Ovine Pulmonary Adenocarcinoma (OPA)** is an infectious and fatal lung cancer affecting sheep
- OPA causes significant animal welfare and economic challenges throughout the world
- Many similarities between OPA and human lung cancer
- Development of a reliable pre-clinical OPA diagnostic test is a significant challenge
- Using the OPA model for human lung cancer studies has allowed:
 - Testing anti-cancer agents
 - Assessing novel imaging techniques
 - Development of new procedures

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For more info contact Dr Mark Gray
mgray34@ed.ac.uk; Roslin Institute

Multidisciplinary training in One Health



Teaching and training provide the foundation for the implementation of One Health

Education and training

- One Health workforce required to protect and sustain the health and well-being of life on earth
- Requires training in inter- and trans- disciplinary and systems thinking
 - values and attitudes
 - skills
 - knowledge and awareness
- Innovative educational programmes across the natural and social sciences, arts and humanities
 - Undergraduate
 - Postgraduate
 - Professional development

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Doctoral Training in One Health



Interdisciplinary PhD programmes build expertise across fundamental, clinical, social and behavioural sciences to effectively address One Health

Integrated learning

Interdisciplinary PhD programmes:

- Hosts, Pathogens and Global Health
- One Health Models of Disease – Science, Ethics and Society
- Integrative One Health Solutions – joint with Leiden University Medical Centre

Una Europa – Igniting a University of the Future

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HP Hosts, Pathogens
GH & Global Health
Four year PhD Programme



One Health
Models of Disease
Science, Ethics and Society
Four year PhD Programme



For more info:

<https://www.ed.ac.uk/c/one-health>

Edinburgh One Health and Una Europa



Universiteit Leiden



An alliance of eleven leading European research universities with global reputation and reach

Una Europa

Una Europa aims to draw on collective strengths to create a truly European inter-university environment.

- Opportunities for students and staff to study, collaborate and research
- **6 key focus areas**
 - One Health
 - Data Science and Artificial Intelligence
 - Sustainability
 - Future Materials
 - Europe and the World
 - Cultural Heritage
- Leading inputs of **One Health** Self Steering Committee by University of Edinburgh

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More information

www.ed.ac.uk/global/partnerships/networks-alliances/

Postgraduate Taught programmes



The University of Edinburgh offers wide range of on-campus and online courses in One Health that reach a global audience

Topics

- Global Health
- Infectious Diseases
- Animal health and wellbeing
- Wildlife and conservation
- Environmental health
- Sustainability
- Food security and nutrition
- One Health



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MSc in One Health: Dissertation projects



Examples of recent projects

Projects

At risk and vulnerable: The hidden costs weighing on veterinarians dealing with ethically challenging situations

Navigating turbulent waters: Exploring the conversation surrounding Scottish salmon farming

At the periphery: Applying One Health to explore joint provision of human and animal healthcare in marginalised communities

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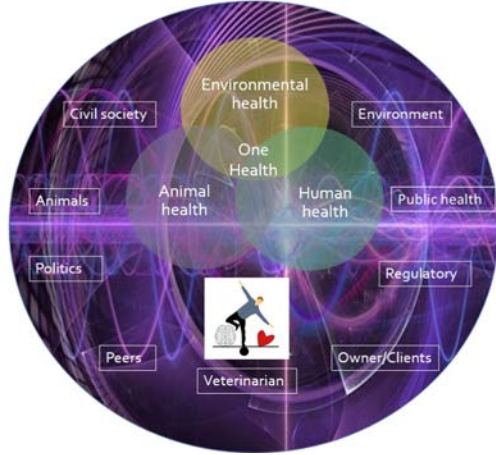
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MSc in One Health: Dissertation project



At risk and vulnerable:
The hidden costs weighing on
veterinarians dealing with
ethically challenging situations

Key Findings

- Ethically challenging situations are common and stressful
- Violence is a potential hazard of veterinary work
- Secondary traumatic stress, burnout and PTSD occur in vets
- Hard to find balance in a world of competing demands and shifting responsibilities
- Vets value peer support and welcome training in veterinary ethics

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MSc in One Health: Dissertation project



Navigating Turbulent Waters:
exploring the conversation
surrounding Scottish salmon
farming

Key Findings

- Narratives in the Scottish salmon sector on fish health and welfare, environmental impact and sustainability are highly contentious
- Stakeholder narratives are built through multiple fluid stories and lived experiences.
- Emotions, tensions and beliefs underpin individual narratives.
- Willingness to change is enacted through individual interpretation of the future, interpretation of power and the ability to influence and collaborate.
- Building a shared vision for the future of the sector rests not on the differences between narratives, but on how stakeholders understand and navigate each other's perspectives.

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MSc in One Health: Dissertation project



At the Periphery: Applying One Health to explore joint provision of human and animal healthcare in marginalised communities

Key Findings

- Up to 20% of people who are homeless have animals
- Animals can facilitate engagement with professionals

Community healthcare needs:

- Building trust
- Dealing with trauma
- Meeting needs of animals
- Maintain human-animal bond

Healthcare challenges:

- Stigmatisation
- Inconsistent support
- Incorporating third-sector
- Animals as barriers to accessing healthcare
- Collaboration of professionals is key to joint healthcare success

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