



# Edinburgh Infectious Diseases

## Summary of Activities 2019/2020

*Prof Ross Fitzgerald and Dr Hilary Snaitth*  
*December 2020*

Edinburgh  
Infectious  
Diseases



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## Director's message

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The past nine months have seen huge global societal challenges and Edinburgh Infectious Diseases has adapted its activities in response to the COVID-19 pandemic, supporting the leading role that the EID community has played in tackling this extraordinary situation. In particular, EID has taken an active role in helping to coordinate the COVID-19 research response, identify volunteers for diagnostic and vaccination studies, organization of regular workshop/webinars for sharing COVID research findings, and communication of key Edinburgh research outputs globally.

Alongside these new priority activities, we have continued to deliver on our ongoing commitments such as leadership and delivery of UoE PhD programmes, capacity building projects in Anti-Microbial Resistance (AMR) in LMIC countries through the Fleming Fund, and crucially, continuing to foster the community represented by our large network of 800 infectious disease researchers across the University of Edinburgh and partner organisations.

In spite of the imposed limitations on research activities, in the financial year 2019/20 EID members were awarded £74M in competitive funding and in 2019 alone published over 530 papers demonstrating continued depth and diversity of infectious disease research activity. Importantly, EID itself has successfully led external funding bids for a new Wellcome Trust (WT) PhD programme (One Health Models of Disease) worth £5.3 M, in addition to the Fleming Fund fellowship scheme worth £1.2 M to the University of Edinburgh to date. In addition, the existing WT-funded PhD programme on Hosts, Pathogens and Global Health administered by EID was renewed last year to the value of £5.5 M. Finally, we have just received a £10k grant from the BBSRC Innovation Accelerator Account (IAA) for analysis of market opportunities for Industry-Academia partnering in AMR Diagnostics.

In relation to *One Health*, EID is involved in an array of important initiatives including PhD partnerships (with Leiden University Medical School and University of Glasgow) and the nascent One Health partnership with University College Dublin. Furthermore, EID was a partner organization and centrally involved in the World One Health Congress that was delivered recently to 1800 online delegates, and is part of the management group developing the bilateral One Health Center with Shanghai Jiao Tong University Medical School particularly in the area of Global Health Security and zoonoses. The 'One Health' approach is an important strategic priority for the UoE and EID is well placed to continue its leading role in promoting One Health initiatives, especially in the light of increased global awareness and opportunities that will arise post-COVID.

In 2021, we plan to have a strategic review of EID, its structure, funding and future role. In addition, we have just started a review of our AMR strategy (launched in 2017) led by Till Bachmann in his new role as AMR strategy lead. The pandemic has had a huge impact on research into infectious diseases and funding priorities are currently being reevaluated across the major funding bodies. We believe that EID is well placed to build on recent successes and to harness

the world-leading expertise that exists in Edinburgh to make the most of new opportunities for national and international impact.

We look forward with optimism to 2021, to an improved global public health environment, with new opportunities for the EID community to take the lead in addressing the ongoing and rapidly evolving challenge of infectious diseases.

With all best wishes for a restful Christmas holiday.

A handwritten signature in black ink that reads 'Ross Fitzgerald'.

Ross Fitzgerald  
Director EID

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## Summary

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- ◇ Targeted response to the Covid-19 crisis
- ◇ Award of £74M grant funding to Edinburgh Infectious Diseases members in 2019
- ◇ Over 530 papers published by Edinburgh Infectious Diseases members in 2019, and over 350 in first 7 months of 2020
- ◇ External funding of £10.9m from Wellcome Trust for Edinburgh Infectious Diseases-led PhD programmes and £1.2 M from Fleming Fund Fellowship Schemes in Uganda and Malawi
- ◇ Development of One Health partnerships with Shanghai Jiao Tong University Medical School and Hainan University
- ◇ Coordination of 6<sup>th</sup> World One Health Congress local and global organising committees, and major contribution to scientific content
- ◇ Leading industrial engagement through BBSRC-Impact Accelerator Account award for Analysis of Market Opportunities for Industry-Academia partnering in Antimicrobial Resistance Diagnostics
- ◇ Capacity building in Low-and-Middle-Income Countries for surveillance of Antimicrobial Resistance through role as Host institution for Fleming Fund Fellowship schemes in Uganda and Malawi
- ◇ Prof Till Bachmann appointed as Antimicrobial Resistance Strategy Lead, as part of review of Edinburgh AMR strategy
- ◇ Delivery of postgraduate training programmes including the Wellcome Trust-funded PhD Programme in Hosts, Pathogens & Global Health and Programme with Integrated Study in One Health Models of Disease – Sciences, Ethics and Society
- ◇ Development and delivery of the “Parasites: Battle for Survival” exhibition highlighting Scottish research into neglected tropical diseases at the National Museum of Scotland
- ◇ Ker Memorial Lectures by Professor Sharon Peacock (University of Cambridge) and Professor Ron Fouchier (Erasmus MC)

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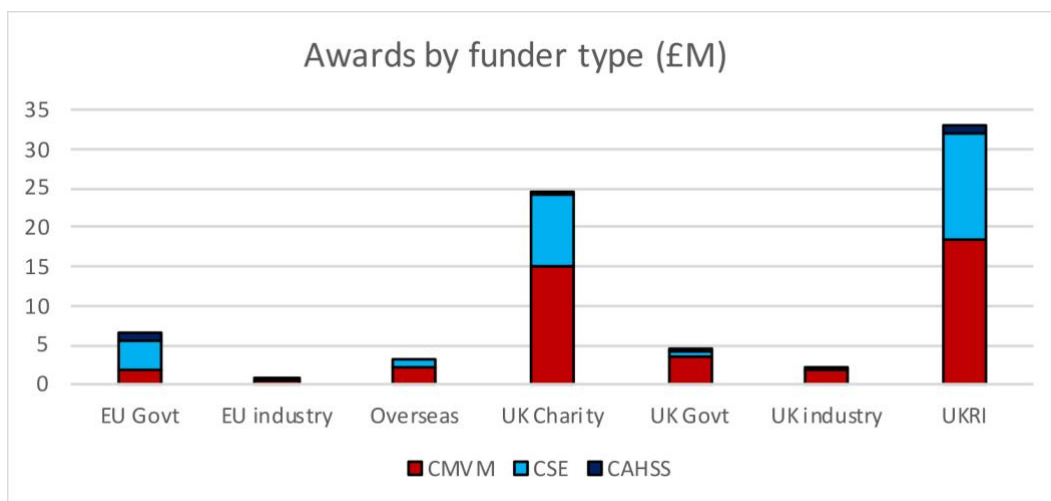
## Academic outputs

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The Edinburgh Infectious Diseases community has over 190 research groups and 800 members. In 2019 our members published over 530 peer reviewed papers, and over 350 in the first 7 month of 2020.

In 2019 our members were highly successful in competing for funding, and received £74M in research grants. UKRI remains the largest funding body supporting our work, with significant contributions also made by UK charities including the Wellcome Trust and Royal Society, and the EU.

Edinburgh Infectious Diseases continues to promote industrial engagement and was recently awarded funds from the BBSRC-Impact Accelerator Account to support “Analysis of Market Opportunities for Industry-Academia partnering in Antimicrobial Resistance Diagnostics”.



Funding awards to Edinburgh Infectious Disease members in 2019

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## Responding to Covid-19

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A year ago no-one could have foreseen the enormous impact that the whole world has felt from the Covid-19 pandemic.

Edinburgh Infectious Diseases undertook a number of activities to respond to the situation:

- Several members have prominent roles advising UK and Scottish governments, and other key policy bodies on the response to Covid-19

- Workshops highlighting the Edinburgh research response to the pandemic – 250-300 people attending each event
  - Edinburgh Coronavirus Workshop, 25 March 2020
  - Edinburgh Coronavirus Workshop – 3 months on, 23 June 2020
- Presentations given at the March workshop were translated into 26 languages by members of the Edinburgh Infectious Diseases community to provide accessible and scientifically accurate information to a global public audience
- Biweekly webinar series in April to June 2020 focusing on Edinburgh research response to Covid-19
- Development of mini-website to highlight activities in Edinburgh Infectious Diseases addressing Covid-19 and provide a simple portal for information about funding opportunities
- Coordination of recruitment of volunteers for NHS testing hub at IGMM by Hilary Snaith (EID Executive Manager)
- Coordination of COVID-19 research response (EID executive members of CMVM COVID committee: David Dockrell (Chair), Ross Fitzgerald, and Till Bachmann)

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## Development of postgraduate training

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In July 2019 Edinburgh Infectious Diseases was successfully awarded two flagship four-year PhD programmes by the Wellcome Trust. Both programmes will recruit six students per year over the next five years, with one student per cohort supported by the University of Edinburgh.

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## Hosts, Pathogens and Global Health

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The Hosts, Pathogens and Global Health programme is based in the School of Biological Sciences, and is directed by Profs Keith Matthews (School of Biological Sciences) and Mark Woolhouse (Usher Institute).

The £5.5M award is a renewal of the programme that started in October 2016. We recruited our 5<sup>th</sup> cohort of students in October 2020, all of whom are now working on campus.

In the first year of study students carry out a Masters by Research degree before progressing to their main PhD project in years two to four.

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## One Health Models of Disease – Science, Ethics and Society

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This second programme, One Health Models of Disease – Science, Ethics and Society, was awarded £5.3M, and is entirely new. It is based at the Easter Bush Campus and is directed by Profs Ross Fitzgerald (Roslin Institute) and Martyn Pickersgill (Usher Institute).

The programme takes a very broad approach to the study of disease models and draws together colleagues from Colleges of Medicine & Veterinary Medicine and Arts, Humanities & Social Science. We recruited our first cohort of six students who successfully started their studies in October 2020.

The programme is structured as a PhD with Integrated Study, and will give students a wide range of opportunities for training alongside their main PhD project, including University elective courses and Student-Led Individually-Created Courses.

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## University of Edinburgh-Leiden PhD programme

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The PhD Programme in Integrated One Health Solutions, is jointly support by the University of Edinburgh and Leiden University Medical Centre, led by Profs David Dockrell, Ross Fitzgerald and Mark Stevens in Edinburgh.

Four students have now been recruited each to site and the students are getting underway with their projects.

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## Joint PhD programme in One Health between the Universities of Edinburgh and Glasgow

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The joint One Health programme at the University of Edinburgh and Glasgow led by Prof Ross Fitzgerald on the UoE side has now run successfully for two years, with two students being appointed at each university in both 2019 and 2020. The programme is currently paused for new intake due to Covid-19.

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## Fleming Fund Fellowship Schemes in Uganda and Malawi

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The Fleming Fund is a £265M UK Government initiative to support capacity building for surveillance of antimicrobial resistance and antibiotic use in Low-and-Middle-Income-Countries. In 2018 Edinburgh Infectious Diseases applied on behalf of the University of Edinburgh to be a host institution for the Fleming Fund Fellowship Scheme.

At the start of 2019 academic mentors from Edinburgh Infectious Diseases started working with six professional fellows in Uganda. Each fellowship lasts 18-months and brings £80K to the University. The fellows have visited Edinburgh twice for training and mentoring activities, and



have carried out a collaborative project in Uganda to pilot a One Health Approach to AMR Surveillance.

In mid-2020 six further professional fellows were appointed from Malawi, and are due to complete their training in early 2022. In autumn 2020 the Fleming Fund initiated a 2<sup>nd</sup> cohort of fellowships in Uganda, for Policy and Professional fellows who will start their training in Edinburgh in 2021.

## Events for Edinburgh Infectious Diseases members and wider community

Edinburgh Infectious Diseases organised, or contributed to, a number of events in 2019/20 that connected researchers both in the network, and also reached wide public audiences.

Due to the Covid-19 pandemic all of our activities shifted online from March 2020, but this allowed us to reach some audiences who would otherwise not have been able to attend in-person events.

When	Event	Where
5 June 2019	8 <sup>th</sup> Annual Edinburgh Infectious Diseases Symposium	Royal College of Physicians, Edinburgh
19 November 2020	Annual Winter Lecture 2019 given by Prof Liz Sockett FRS, University of Nottingham - Can predatory bacteria become human allies against antibiotic-resistant pathogenic infections?	Playfair Library, University of Edinburgh
5 December 2019 to 17 March 2020	Parasite: Battle for Survival Exhibition*	National Museum of Scotland
25 March 2020	Edinburgh Coronavirus Workshop	Online
April – June 2020	Edinburgh responds to Covid-19 webinar series	Online
23 June 2020	Edinburgh Coronavirus Workshop – 3 months on	Online
30 October – 3 November 2020	World One Health Congress*	Online
10/11 November 2020	9 <sup>th</sup> Annual Edinburgh Infectious Diseases Symposium	Online
25 November 2020	Dr Kenneth Baillie, Roslin Institute, University of Edinburgh and Department of Critical Care, Royal Infirmary of Edinburgh – 9 months of discovery: how we found out why people die from Covid-19	Online

\*members of EID executive committee Co-Chaired or were on the organizing committee

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## Parasites: Battle for Survival exhibition

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This exhibition was co-produced with colleagues at the National Museum of Scotland, and partners in the Wellcome Trust Centres for Molecular Parasitology at the University of Glasgow and Anti-Infectives Research at the University of Dundee.

It focused on research on neglected tropical diseases, and featured the work of Edinburgh Infectious Diseases members, Profs Sarah Reece and Francisca Mutapi.

The exhibition was visited by almost 37000 people during the 3 months it was open and reached a wide target audience.

One visitor said

*"[the exhibition] was a fantastic insight into the world of parasites, the diseases caused by them and the preventative measures taken. I have learned a great deal during my visit and would 100% recommend [it]"*.

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## Ker Memorial Prizes

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Edinburgh Infectious Diseases is very fortunate to have the continued generous support for Miss Aileen Ker, whose endowment allows us to host the prestigious Ker Memorial Lecture and award the Ker Memorial Prize at our annual symposium.

In 2019 the Ker Memorial Lecture was given by **Prof Sharon Peacock** (Public Health England) on "Genomic evidence for transmission of human pathogens: a tale of two halves". The Ker Memorial Prize winner was **Dr William Powell** (Obbard Lab, School of Biological Sciences) for his thesis "Evolution and genetics of antiviral immunity in *Drosophila*"

In 2020 the Ker Memorial Lecturer was **Prof Ron Fouchier** (Erasmus MC, Rotterdam), who spoke on "Emergence of respiratory viruses in humans, with focus on influenza". The Ker Memorial Prize winner was **Dr You Li** (Campbell and Nair groups, Usher Institute) for his thesis on "Global seasonality of respiratory viruses and the association between viral acute respiratory infection and subsequent pneumococcal disease".



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## Publications by Edinburgh Infectious Diseases Members in 2019

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3. Acosta H, Burchmore R, Naula C, Gualdrón-Lopez M, Quintero-Troconis E, Caceres AJ, Michels PAM, Concepcion JL, Quinones W (2019) Proteomic analysis of glycosomes from *Trypanosoma cruzi* epimastigotes. *Mol Biochem Parasitol* 229: 62-74
4. Agarwal D, Hanafi NS, Chippagiri S, Brakema EA, Pinnock H, Khoo EM, Sheikh A, Liew SM, Ng CW, Isaac R *et al* (2019) Systematic scoping review protocol of methodologies of chronic respiratory disease surveys in low/middle-income countries. *NPJ primary care respiratory medicine* 29: 17
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