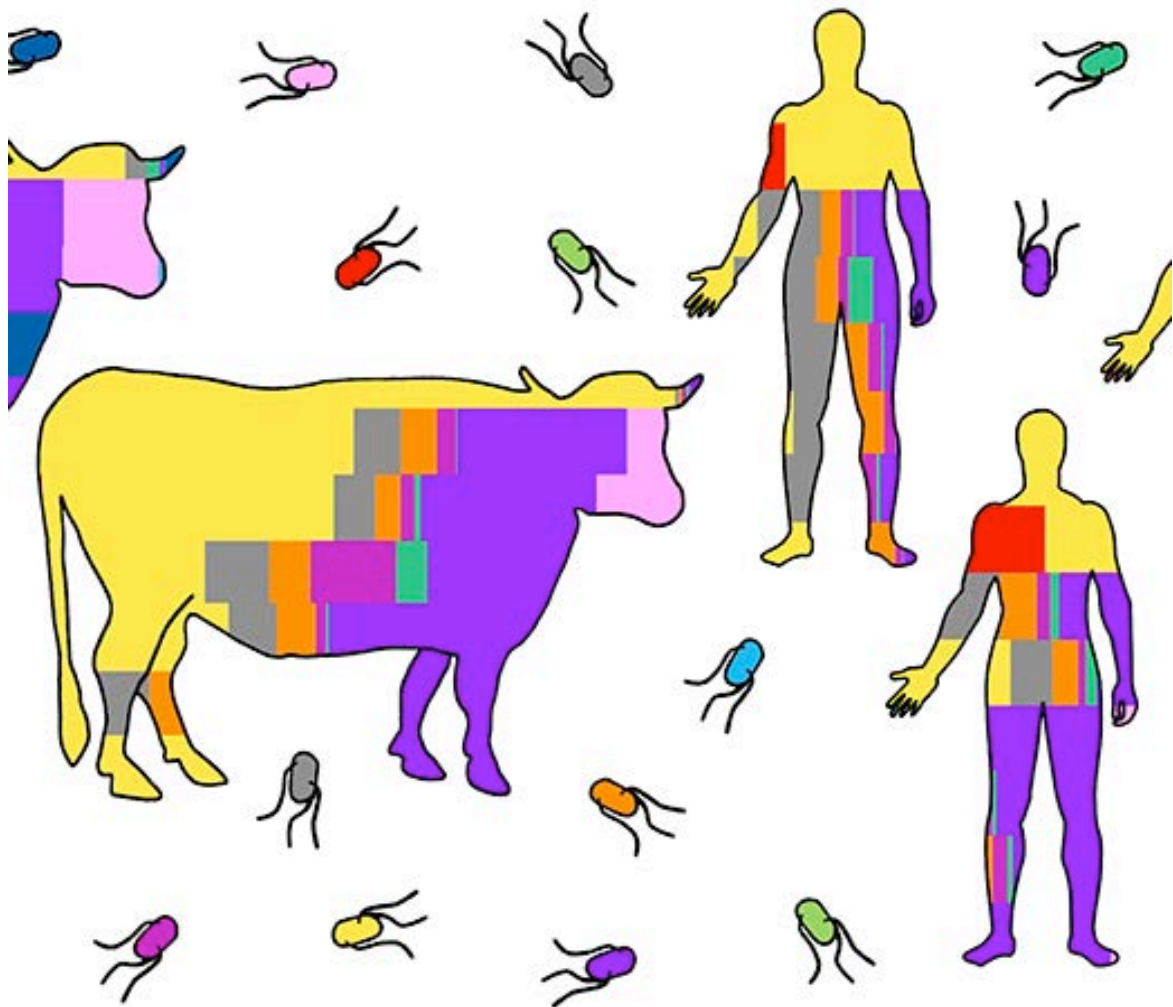


# **Edinburgh *Infectious Diseases***

Leading infectious disease research and training



Annual Report 2017/18



## Contents

<b>EXECUTIVE SUMMARY</b>	<b>5</b>
<b>WHAT IS EDINBURGH INFECTIOUS DISEASES</b>	<b>5</b>
<b>THE AIMS OF EDINBURGH INFECTIOUS DISEASES</b>	<b>5</b>
<b>OUR MAJOR ACTIVITIES AND ACHIEVEMENTS IN 2017/18</b>	<b>5</b>
<b>DIRECTOR'S STATEMENT</b>	<b>6</b>
<b>BUILDING AN EFFECTIVE NETWORK</b>	<b>6</b>
<b>SELECTED ACTIVITIES</b>	<b>6</b>
<b>NEW FUNDING SOURCES</b>	<b>6</b>
<b>LOOKING FORWARD</b>	<b>7</b>
<b>ORGANISATION AND MEMBERSHIP OF EDINBURGH INFECTIOUS DISEASES</b>	<b>8</b>
<b>EDINBURGH INFECTIOUS DISEASES EXECUTIVE COMMITTEE</b>	<b>8</b>
<b>EXPANDING MEMBERSHIP</b>	<b>8</b>
<b>FUNDING AWARDS</b>	<b>10</b>
<b>PUBLICATIONS</b>	<b>13</b>
<b>BUILDING CONNECTIONS</b>	<b>15</b>
<b>NETWORK EVENTS</b>	<b>15</b>
2017 ANNUAL SYMPOSIUM	15
TOPIC-FOCUSED EVENTS	16
PUBLIC WINTER LECTURE	17
<b>COMMUNICATIONS</b>	<b>17</b>
<b>TEACHING AND TRAINING IN INFECTIOUS DISEASES</b>	<b>19</b>
<b>SUPPORTING POSTGRADUATE TRAINING</b>	<b>19</b>
WELLCOME TRUST 4-YEAR PHD PROGRAMME IN HOSTS, PATHOGENS AND GLOBAL HEALTH	19
DEVELOPMENT OF NEW DOCTORAL TRAINING PROGRAMMES	20
<b>ADDING VALUE TO UNDERGRADUATE TEACHING AND TRAINING</b>	<b>21</b>
UNDERGRADUATE STUDYING INFECTIOUS DISEASES	21
COORDINATION OF UNDERGRADUATE TEACHING IN INFECTIOUS DISEASES	22
UNDERGRADUATE SUMMER PLACEMENTS	22

<b>APPENDIX 1</b>	<b>24</b>
<b>TABLE OF ALL GRANTS AWARDED TO <i>EDINBURGH INFECTIOUS DISEASES</i> MEMBERS AT THE UNIVERSITY OF EDINBURGH IN FY2016/17</b>	<b>24</b>
<b>APPENDIX 2</b>	<b>31</b>
<b>TABLE OF ALL GRANTS AWARDED TO <i>EDINBURGH INFECTIOUS DISEASES</i> MEMBERS AT THE UNIVERSITY OF EDINBURGH IN FIRST 6 MONTHS FY2017/18</b>	<b>31</b>
<b>APPENDIX 3</b>	<b>34</b>
<b>PUBLICATIONS FROM <i>EDINBURGH INFECTIOUS DISEASES</i> MEMBERS IN 2017</b>	<b>34</b>
<b>APPENDIX 4</b>	<b>63</b>
<b>NEWS STORIES PUBLISHED BY <i>EDINBURGH INFECTIOUS DISEASES</i> IN 2017/18</b>	<b>63</b>

*COVER ARTWORK: SALMONELLA INFECTION IN CATTLE AND HUMAN*

*COURTESY OF DR PRERNA VOHRA, ROSLIN INSTITUTE*

## Executive summary

### What is Edinburgh Infectious Diseases

We are the Network of researchers across the University of Edinburgh and neighbouring organisations with an interest in infectious diseases.

### The aims of Edinburgh Infectious Diseases

1. Represent the strengths of infectious disease science in Edinburgh through our symposia, workshops, outreach activity and internet profile;
2. Maintain a strategic overview of infectious disease research in Edinburgh, to maximise synergy between established activities and promote new avenues for investigation;
3. Foster infectious disease teaching and training at all levels within the University, including the development of new postgraduate initiatives.

### Our major activities and achievements in 2017/18

- We have launched a new website and newsletter to ensure we are effectively connected to both our members within Edinburgh, and to our global audience.
- We have seen continued expansion of membership of *Edinburgh Infectious Diseases* to over 180 principal investigators.
- Our members were awarded over £85.5M supporting infectious disease research in FY 2016/17, including £50.3M of the Roslin Institute Strategic Programme.
- We have published over 400 research papers in 2017.
- *Edinburgh Infectious Diseases* has led the development and coordination of major funding applications, including as Fleming Fund Fellowship Host Institution for African Fellows, and a new doctoral training programme linking Artificial Intelligence and Infection Biology.
- We have supported the continued development of the Wellcome Trust Four Year PhD Programme in Hosts, Pathogens and Global Health.
- We continue to facilitate increased communication and collaboration between social scientists and basic and clinical researchers, contributing to other University Initiatives such as Edinburgh Acute Care.
- We have facilitated productive discussions between the Biology and Biomedical Teaching Organisations to help coordinate infectious diseases teaching and improve the experience of our students.

## Director's statement

### Building an effective network

We have had another busy year through our various events and activities supporting our expanding community of infectious disease (ID) scientists in Edinburgh. Our membership has continued to increase and we must now rank among the largest communities of infectious disease scientists and clinicians in the UK and Europe. It is most encouraging to see the increased engagement with *Edinburgh Infectious Diseases* activities. This has certainly been enhanced by our newly developed website which provides a more intuitive and well laid out framework to communicate our various research and training activities to the world. In addition, we have developed an improved weekly newsletter template and structure that provides a clear overview of weekly ID-related activities for the Edinburgh community to select from and Hilary Snaith deserves much of the credit for making this happen.

### Selected activities

Over the last year, a particular emphasis has been on encouraging research and training in big data and infection medicine/biology with several workshops held to promote activities in this area. *Edinburgh Infectious Diseases*-led discussions have led to the development of a doctoral training program concept in the area of Artificial intelligence (AI) involving application of AI in infection medicine. We are continuing to develop another DTP concept on One Health Models of Infectious Diseases and plan to hold a workshop in the Autumn to engage the current expertise in this area across colleges, before defining the programme in detail. In undergraduate teaching we are pleased to have facilitated talks between teaching organisations in different Colleges toward improved accessibility for Honours students on different Infectious Disease-related degree courses.

### New funding sources

*Edinburgh Infectious Diseases* has also applied to the Fleming Fund to establish the University of Edinburgh as a host institute for Fleming fellowships (outcome unknown as yet). These fellowships are designed to provide training for scientists in low and middle income countries in AMR surveillance and will involve training visits and collaborative research projects. If successful, we can compete for up to 30 such fellowships. With its cross-College structure, *Edinburgh Infectious Diseases* is extremely well placed to lead on the application and delivery of multi-disciplinary initiatives such as this and the NIHR-funded TIBA project that we helped with successful application. We would anticipate taking a leading role in other such initiatives in the future. In addition, we are keen to seek additional external funding to support *Edinburgh Infectious Diseases* activities. For

example, we will charge a small registration fee for our annual symposium for the first time this year to support costs. In addition, we are seeking external funds to support the continuation of our summer placement scheme with Leiden University Medical Centre.

### Looking forward

In the next year we are excited about the potential in Edinburgh to build on existing research expertise in genomics, genome-editing and informatics, bolstered by the City Deal investment to help establish world-leading research and training initiatives. In particular, we are well placed to utilize the clear One Health strengths in Edinburgh, and we seek to further develop our research strengths in Infection Medicine and AMR. Of note, we welcome the establishment of a new Acute Care Unit led by Tim Walsh and Alasdair Gray and we look forward to providing input relevant to the opportunities for collaboration with EID scientists and clinicians.

Overall, there is much to be excited about over the coming months and we look forward to continuing to drive Edinburgh's development as a world-leading centre for infectious disease science.



Professor Ross Fitzgerald  
Chair of Molecular Bacteriology, Roslin Institute, University of Edinburgh

April 2018

## Organisation and membership of *Edinburgh Infectious Diseases*

### Edinburgh Infectious Diseases executive committee

*Edinburgh Infectious Diseases* is coordinated by Director (Professor Ross Fitzgerald) and Executive Manager (Dr. Hilary Snaith), and supported by an administrative assistant (Jennifer Hurst). The Network has regular input from an Executive Committee, which meets once a month.

**Table 1: Current members of the *Edinburgh Infectious Diseases* executive committee**

Member	Affiliation
Dr Till Bachmann	Division of Infection and Pathway Medicine, Royal Infirmary of Edinburgh, Little France
Dr Amy Buck	Institute of Immunology & Infection Research, Ashworth Laboratories, King's Buildings
Mrs Catherine Burns	University of Edinburgh Research Support Office
Prof Harry Campbell	Usher Institute of Population Health Sciences and Informatics, Teviot Place
Prof David Dockrell	Centre for Inflammation Research, Queen's Medical Research Institute, Little France
Prof Bernadette Dutia	The Roslin Institute, Easter Bush
Prof Gary Entrican	The Moredun Research Institute
Prof Ross Fitzgerald	The Roslin Institute, Easter Bush
Dr Denise Hodge	Edinburgh Innovations, Kings Buildings
Prof Clifford Leen	Department of Infectious Diseases, Western General Hospital
Prof Keith Matthews	Institute of Immunology & Infection Research, Ashworth Laboratories, King's Buildings
Prof Harish Nair	Usher Institute of Population Health Sciences and Informatics, Teviot Place
Prof Jürgen Schwarze	Centre for Inflammation Research, Queen's Medical Research Institute, Little France
Dr Hilary Snaith	<i>Edinburgh Infectious Diseases</i> , Ashworth Laboratories, King's Buildings
Prof Mark Stevens	The Roslin Institute, Easter Bush
Dr Alice Street	School of Social and Political Science, George Square
Dr Kate Templeton	Royal Infirmary of Edinburgh, Little France
Prof Sue Welburn	Division of Infection and Pathway Medicine, Royal Infirmary of Edinburgh, Little France
Prof Mark Woolhouse	Usher Institute of Population Health Sciences and Informatics, Teviot Place

### Expanding membership

Over the past year membership of *Edinburgh Infectious Diseases* has grown to over 840 members including 191 academics, >300 postdocs and research assistants, and over 200 PhD students, and other technologists drawn from the University of Edinburgh, Heriot Watt and Edinburgh Napier Universities, NHS Lothian and associated Institutes, including the Moredun Research Institute and



Scotland's Rural College. The Roslin Institute and the School of Biological Studies continue to have the highest numbers of infectious disease researchers, but there are significant concentrations located at the Little France site, both in the Queen's Medical Research Institute and in the Chancellor's Building (see graph below right).

Among our new members, we were very pleased to welcome immunologists Nisha Philip and Jenny Regan to the School of Biological Sciences, alongside Calum Bain who was awarded a Chancellor's Fellowship in the Centre for Inflammation Research. We have also expanded our membership at the Moredun Research Institute, engaging with Nuno Silva, Francesca Chianini, Mara Rocchi and Philip Skuce. We are also pleased to be engaging with more members of the College of Arts, Humanities and Social Sciences and reaching further into the Schools of Informatics and Physics & Astronomy as part of our aim to foster interdisciplinary approaches in infectious disease research.

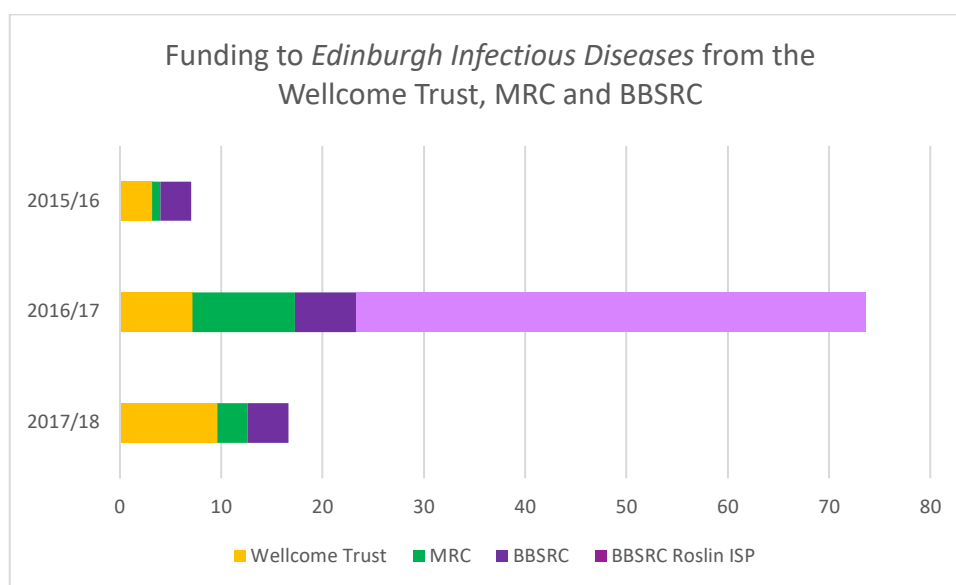
Another significant development has been the arrival of Professor Eleanor Riley as Director of the Roslin Institute. Her previous role was as Professor of Immunology and Head of the Department of Immunology and Infection at the London School of Hygiene and Tropical Medicine, University of London. Eleanor has a long-standing interest in anti-malarial immunity, genetic susceptibility to infection, the biology of natural killer cells and immunological evaluation of vaccines. She is a member of MRC council and previously as deputy chair of MRC Infections and Immunity Board. And as Committee and Strategy Panel chair at BBSRC. A full listing of our members is on our website<sup>1</sup>.

---

<sup>1</sup> <http://www.ed.ac.uk/edinburgh-infectious-diseases/about/members>

## Funding awards

Members of Edinburgh Infectious Disease have been highly successful in funding awards over the past 18 months. Analysis of figures produced by the University's Research Support Office<sup>2</sup> shows a total of **£85.3M** was awarded to Edinburgh Infectious Diseases members at the University of Edinburgh in FY2016/17 and a further £20.3 in first six months of 2017/18. The total for FY2016/7 includes £56.3M awarded by the BBSRC: £50.3M was part of the quinquennial Roslin Institute Strategic Funding, supporting research in the Control of Infectious Diseases Programme. Significant funding has also been received from the Wellcome Trust (£7.1M) and the Medical Research Council (£11.1M).



The annual total for FY2016/17 compares with a total of £364.5M to the University of Edinburgh overall. These numbers compare favourably with data from previous years (see graph above). A summary of all grants over £0.5M is presented in Table 2.

**Table 2: Grants over £500K awarded in FY2016/17**

PI Name	Sponsor	Project Title	Award
David Gally	BBSRC	Machine-learning to predict and understand the zoonotic threat of <i>E. coli</i> 0157 isolates	£535,103
Ann Bruce	ESRC	Diagnostic innovation and livestock (DIAL): towards more effective and sustainable applications of antibiotics in livestock farming	£550,836
David Dockrell	MRC	Optimising Innate Host Defence to Combat Antimicrobial Resistance	£597,265
Harish Nair	Sanofi Pasteur MSD Limited	Nasopharyngeal pneumococcal carriage study in South Asian infants	£655,128

<sup>2</sup> <https://www.edweb.ed.ac.uk/research-support-office/key-performance-stats>

Christine Tait-Burkard	BBSRC	Understanding the CD163 - PRRS virus interaction to improve genetic engineering for resistance	£664,039
Robert Dalziel	BBSRC	Host cell determinants of BoHV-1 pathogenesis: a genome wide analysis.	£682,857
Juergen Haas	MRC	Control of type III interferon expression and Herpes simplex virus type 1 replication by miR-200	£690,239
David Hume	BBSRC	The role of interleukin-10 (IL-10) in the regulation of innate immunity in the domestic chicken.	£801,119
Alice Street	European Commission	Investigating the Design and Use of Diagnostic Devices in Global Health (DiaDev)	£830,288
David Hume	BBSRC	Research support diseases	£843,045
David Hume	BBSRC	Global Challenges Research Fund: Data and Resources opportunity for BBSRC Institutes	£946,340
Meriem El Karoui	Wellcome Trust	DNA repair and genetic stability: elucidating the effects of cell physiology in Escherichia coli	£955,487
Mark Stevens	BBSRC	Glycoengineering of Veterinary Vaccines	£1,372,834
Sarah Reece	Wellcome Trust	Parasite offence or host defence? The roles of biological rhythms in malaria infection	£1,527,986
Harish Nair	European Commission	REspiratory Syncytial virus Consortium in EUrope	£1,770,250
Tim Connelley	MRC	International Veterinary Vaccinology Network	£2,113,339
Rose Zamoyska	Wellcome Trust	Mechanisms and consequences of T cell antigen receptor signalling for normal immune homeostasis and the development of autoimmune disease	£2,348,453
Mark Woolhouse	NIHR	Tackling Infections to Benefit Africa, the TIBA Centre	£6,602,629

Several major collaborative awards are of particular note including the University of Edinburgh-led NIHR Global Health Unit Tackling Infection to Benefit Africa (TIBA), to Mark Woolhouse in the Centre for Global Health Research; the International Veterinary Vaccinology Network funded by the MRC and led by Tim Connelley of the Roslin Institute; and the DiaDev network Investigating the Design and Use of Diagnostic Devices in Global Health, led by Alice Street in the School of Social and Political Science and funded by the EU Commission.

Already in FY2017/18 several major grants have been awarded: £674K to Christine Tait-Burkard (Roslin Institute) for work to combat Porcine Reproductive and Syndrome Virus; £1.7M to Andrew Rambaut (School of Biological Sciences) for genomic surveillance of viral epidemics and £2.4M to Sander Granneman (School of Biological Sciences) to study of post-transcriptional regulatory networks in pathogenic *S. aureus* (Table 3).

**Table 3: Grants over £500K awarded in first half FY2017/18**

PI Name	Sponsor	Project Title	Award
Ross Houston	BBSRC	Improving resistance to infectious salmon anaemia using genome editing: Novel approaches to tackling viral disease in aquaculture	£566,191
Adam Balic	BBSRC	Exploitation of new technologies to advance understanding of avian dendritic cell biology	£589,932
Eleanor Riley	MRC	The relationship between malarial anaemia, neutrophil function and susceptibility to invasive bacterial disease	£595,737

Jean Manson	Department of Health	Strain typing of vCJD cases	£631,126
Christine Tait-Burkard	BBSRC	Understanding the CD163 - PRRS virus interaction to improve genetic engineering for resistance	£674,353
Christine Tait-Burkard	BBSRC	A strategic approach to identifying and combating porcine reproductive and respiratory syndrome virus outbreaks and other porcine viral diseases	£983,771
Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global health – Main award	£1,685,740
Andrew Rambaut	Wellcome Trust	Putting genomic surveillance at the heart of viral epidemic response.	£1,721,712
Keith Matthews	Wellcome Trust	Challenging trypanosome antigenic variation paradigms using natural systems	£2,021,766
Sander Granneman	MRC	Unravelling post-transcriptional regulatory networks in pathogenic <i>S. aureus</i>	£2,366,064
Moira Whyte	Wellcome Trust	The Edinburgh Clinical Academic Track (ECAT)-Plus Programme	£5,135,377

A list of grants awarded to University of Edinburgh members in 2016/17 and the first half of FY2017/18 is given in Appendices 1 and 2.

## Publications

A key output of research is publication in respected peer-reviewed journals. In 2017 *Edinburgh Infectious Diseases* members published more than **460 papers**, demonstrating continued extensive research output. Of these, there were four papers in *Nature*; one paper in *Science*; two in the *Lancet* and *Lancet Global Health*; eight in *Proc. National Academy of Sciences* and 26 in PLoS journals, including nine papers in *PLoS Pathogens* and three in *PLoS Neglected Tropical Diseases*. Highlights of these papers are listed below, and a list of all publications is given in Appendix 3

- Abkallo HM, Martinelli A, Inoue M, Ramaprasad A, Xangsayarath P, Gitaka J, Tang J, Yahata K, Zoungrana A, Mitaka H, et al.: **Rapid identification of genes controlling virulence and immunity in malaria parasites.** *PLoS Pathog* 2017, **13**:e1006447.
- Clinton C, Sridhar D: **Who pays for cooperation in global health? A comparative analysis of WHO, the World Bank, the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria, and Gavi, the Vaccine Alliance.** *Lancet* 2017, **390**:324-332.
- Dudas G, Carvalho LM, Bedford T, Tatem AJ, Baele G, Faria NR, Park DJ, Ladner JT, Arias A, Asogun D, et al.: **Virus genomes reveal factors that spread and sustained the Ebola epidemic.** *Nature* 2017, **544**:309-315.
- Grubaugh ND, Ladner JT, Kraemer MUG, Dudas G, Tan AL, Gangavarapu K, Wiley MR, White S, Theze J, Magnani DM, et al.: **Genomic epidemiology reveals multiple introductions of Zika virus into the United States.** *Nature* 2017, **546**:401-405.
- Hamilton CA, Mahan S, Bell CR, Villarreal-Ramos B, Charleston B, Entrican G, Hope JC: **Frequency and phenotype of natural killer cells and natural killer cell subsets in bovine lymphoid compartments and blood.** *Immunology* 2017, **151**:89-97.
- Kamidi CM, Saarman NP, Dion K, Mireji PO, Ouma C, Murilla G, Aksoy S, Schnauffer A, Caccone A: **Multiple evolutionary origins of *Trypanosoma evansi* in Kenya.** *PLoS Negl Trop Dis* 2017, **11**:e0005895.
- Langat P, Raghwani J, Dudas G, Bowden TA, Edwards S, Gall A, Bedford T, Rambaut A, Daniels RS, Russell CA, et al.: **Genome-wide evolutionary dynamics of influenza B viruses on a global scale.** *PLoS Pathog* 2017, **13**:e1006749.
- Lin YT, Prendergast J, Grey F: **The host ubiquitin-dependent segregase VCP/p97 is required for the onset of human cytomegalovirus replication.** *PLoS Pathog* 2017, **13**:e1006329.





## Building connections

### Network events

One of the key aims of *Edinburgh Infectious Diseases* is to maximise the synergy between researchers across disciplines in infectious disease. We have undertaken a variety of activities over the past year to help build and cement connections within the network.

#### 2017 Annual Symposium

Our annual symposium remains a highlight of our activities during the year. As such it is greatly valued by our members as an excellent opportunity to reflect upon the enormous diversity of research within our community and the potential it presents for the development of multidisciplinary collaborations.

The 2017 Symposium was held in June at the John McIntyre Conference Centre at Pollock Halls. We welcomed over 200 attendees to a full day of talks covering the full range of infectious disease research from the social traits of bacteria to the roles of biological rhythms in malaria infection.



Left: Clifford Leen and Ross Fitzgerald presenting Eleanor Silvester with the 2017 Ker Memorial Prize. Centre: Ker Memorial lecturer Prof Peter Openshaw, Right: Poster prize winners Maria Contreras (L) and Laura McCulloch (R).

The 2017 Ker Memorial Prize for the Best PhD Thesis in Infectious Diseases was won by Dr Eleanor Silvester from Keith Matthew's lab who presented her thesis work on *Conservation of quorum-sensing signal responses and cross-species interactions between T. brucei and T. congolense*. We were delighted to host Prof Peter Openshaw from Imperial College London as the Ker Memorial Lecturer, and he closed the symposium with an excellent discussion of the pathogenesis of viral lung disease.

We also attracted over 40 poster presentations – many congratulations went to Laura McCulloch from the Roslin Institute, whose poster "*Stroke increases infection risk via dysregulation of innate-like marginal zone B cell function*" was the worthy winner of the Postdoc Poster Prize, and to Maria Contreras (left) from the Roslin and Moredun Research Institutes, whose poster "*The role of microRNAs in ovine pulmonary adenocarcinoma*" won the prize for the best student poster.





The annual symposium 2017 enjoyed lively and well attended poster sessions

### Topic-focused events

Of the course of the year we have run a number of events, aimed at fostering effective interactions across the network in research topics of strategic importance or timeliness. In March 2017 we launched our **Strategy to Combat Antimicrobial Resistance**; we hosted a **Showcase of Social Science and Infectious Disease workshop** in April, **Quantitative Approaches to Infectious Disease** in mid-November and the **Big Data and Infection** workshop in at the end of November. All of these events brought together between 40 – 60 researchers and clinicians and provided excellent opportunities for information sharing, open-discussion, networking and development of future collaborations.

There have been a number of positive outcomes from these events. These include a new initiative to develop an EPSRC Centre for Doctoral Training in the Applications and Implications of Artificial Intelligence and a joint funding application to the Fleming Fund as a Host Institution for Fellows in Antimicrobial Resistance, with colleagues across the University.

Upcoming workshops are focussed on **Vesicles, Extracellular RNA and Infectious Disease**, **Diagnostics for Respiratory Tract Infections**, and **One Health approaches in Diagnostics** (see Table below).

When	Event
2017	
9 Feb	Workshop: Metabolic modelling and data science for infectious disease
7 Mar	Infectious Diseases Honours students lecture by David Dockrell
22 Mar	Symposium: Launch of Edinburgh Strategy to Combat Antimicrobial Resistance
24 Apr	Symposium: Global Challenges in Infectious Disease – Showcasing Social Science in Edinburgh
2 Jun	Edinburgh Infectious Diseases 6 <sup>th</sup> Annual Symposium
15 Nov	Workshop: Quantitative Approaches to Infectious Disease
21 Nov	Winter Lecture: Prof Neil Gow, FRS, University of Aberdeen – Killer Fungi
29 Nov	Workshop: Big Data and Infection
2018	
9 May	Workshop: Vesicles, Extracellular RNA and Infectious Disease
23 May	Edinburgh Infectious Diseases 7 <sup>th</sup> Annual Symposium



12 Sep	Workshop: Diagnostics for Lower Respiratory Tract Infections
13 Nov	Winter Lecture: Prof Tom Kariuki, Alliance for Accelerating Excellence in Science in Africa
14 Nov	Workshop: One Health Approaches in Diagnostics

## Public winter lecture

Our annual public winter lecture continues to be a popular event, attracting a broad range of attendees from the University of Edinburgh and the wider community. In On 21 November 2017 we were pleased to host Professor Neil Gow FRS, from the University of Aberdeen for a fascinating insight into Killer Fungi.



In November 2018 will be hosting Prof Tom Kariuki, Director of the Alliance for Accelerating Excellence in Science in Africa to give the 2018 Winter lecture. Prof Kariuki's visit will be co-hosted by the NIHR Global Health Unit Tackling Infection to Benefit Africa (TIBA) and will provide further opportunity to build key relationships between Edinburgh and institutions in Africa.

## Communications

We have continued to develop ways of communication with both our internal and external audiences.

An important aspect of our communication strategy it to provide information about all our activities via our website. The website serves both our audience here in Edinburgh, providing them with ready access to information about events, facilities and researcher details, and also act as a portal to showcase our research outputs to a global audience.

In 2017 our pages had over 78000 views: analytics data show our visitors came from almost every country in the world demonstrating the truly global audience for our work (see map).

With much of our research having impact in developing countries, it is encouraging that eight out of the top 20 nations with the highest visitor numbers are Low and Middle-Income Countries, including Nigeria, Kenya, Ghana and India.



Following a review carried out in 2016, we initiated a project during 2017 to redevelop our website and bring it into the University of Edinburgh EdWeb programme. The EdWeb platform presents advantages in presentation and page management over the previous site, and provides a better browsing experience for visitors. The new website<sup>3</sup> launched in February 2018 and has been very well received. During the first 6 weeks the pages had already been viewed over 12000 times, with information about our research and events being accessed the most frequently. We are continuing to monitor visitor hits on the site and will update and amend our pages to improve reader navigation in the coming months.



We are also continuing to expand our social media communications and have built up a world-wide following of ~2800 followers on Twitter<sup>4</sup>. In particular this year We have sought to generate increased profile for recently-published papers and news with regular features highlighting achievements within the network. We also initiated a #BornOnThisDay tag marking the birth of notable scientists and clinicians in infectious disease. Details of the news covered is presented in Appendix 4.

One of the activities our members have told us they value the most is the weekly newsletter that is sent every Monday morning to over 700 recipients each week. We provide details of recent news from across the network, all relevant seminars and lectures, and other events both in Edinburgh and further afield. During the year we have redeveloped the newsletter into a more professional format<sup>5</sup> that is more easily accessed on different online platforms. The new format also provides detailed tracking of reader visits to links in the newsletter, which will us to better tune content to our audience.

---

<sup>3</sup> <http://www.ed.ac.uk/edinburgh-infectious-diseases>

<sup>4</sup> [http://www.twitter.com/edin\\_eid](http://www.twitter.com/edin_eid)

<sup>5</sup> <https://dmtrk.net/2MPO-17VQR-B77VAS336F/cr.aspx>

## Teaching and training in infectious diseases

### Supporting postgraduate training

Wellcome Trust 4-year PhD programme in Hosts, Pathogens and Global Health

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

*Edinburgh Infectious Diseases* continues to support existing programmes for postgraduate training. The Wellcome Trust 4-year PhD programme in Hosts, Pathogens and Global Health<sup>6</sup> has just recruited its third cohort of students who will start their studies here in October 2018.

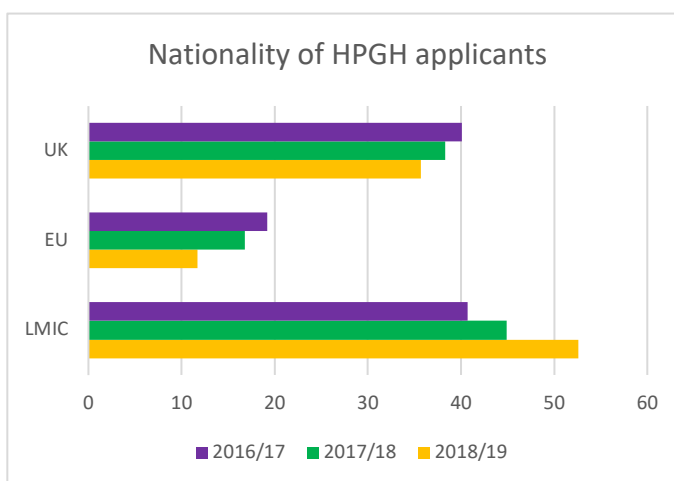
The total number of students applying to the Programme in 2017/18 was reduced in comparison with previous years: 156 in 2017/18 in comparisons with 200 in 2016/17. In particular there was a marked reduction in the number of applicants from EU-member nations, 12% in 2017/18, down from 16% in 2016/17 and 19% in 2015/16. Alongside the fall in EU applicants there has been a steady increase in students applying from Low and Middle-Income Countries. It will be of interest to follow this trend in future years, as the impact of Brexit becomes more widely felt.

The second cohort of students began in Edinburgh in October 2017 and have made robust starts to their studies. We were very pleased that four out of the six students in the first cohort were awarded an MSc by

Research in Hosts, Pathogens and Global Health with Distinction after their first year, and the final two received their degrees with Merit. These students are now well-established on their PhD projects, working with supervisors in the School of Biological Sciences and the Roslin Institute.

A key aspect of the Hosts, Pathogens and Global Health PhD programme is the connections made amongst students in each annual cohort, between cohorts and also with students on other Wellcome Trust-funded programmes at the University of Edinburgh.

In June 2017 the students organised a two-day retreat for members of the programme's supervisory team and the Centre for Immunity, Infection and Evolution, at the Dunkeld House Hotel. This event provided a relaxed opportunity to build connections between programme



<sup>6</sup> <http://www.ed.ac.uk/biology/hosts-pathogens-global-health>

members, with presentations from programme supervisors and first year students, as well as from two external speakers, Eva Frickel (Crick Institute) and Michael Worobey (University of Arizona).

In October 2017, *Edinburgh Infectious Diseases* also facilitated co-development of a workshop at the Midlothian Science Festival run by students from cohort one alongside colleagues on the Translational Neuroscience and Tissue Repair programmes.

## Development of new doctoral training programmes

*Edinburgh Infectious Diseases* is supporting the developing concepts for novel doctoral training schemes.

### One Health Models of Infectious Diseases

One Health is a key area in which Edinburgh has considerable depth of expertise and we are now investigating how best we can further support world-leading multidisciplinary research in this area through targeted doctoral training. In Edinburgh, we have cutting-edge expertise in genome editing of large animals eg sheep, goats, and genome-wide editing of human, bovine, porcine and chicken primary and secondary cell lines for understanding host-pathogen interactions. In addition, there is expertise in comparative immunology and pathology and leading medical, and vet schools and world class animal sciences institute working closely together within same College structure. Accordingly, we are well placed to establish a DTP in the area to support the training of PG students in cutting edge technologies applied to the application of infection models relevant for both human and animal health.

During the first three months of 2018 we carried out a review of all biomedicine PhD projects currently underway across the University of Edinburgh to identify those projects with a focus on developing One Health animal models of infectious disease. This investigation highlighted students (n=~40) and PIs (n=~25) working on research projects related to the DTP theme. We are planning to bring this group of students together as a cohort to help augment their existing training and enhance cross-University networks. We are also exploring how a new One Health doctoral training programme can align with the opportunities coming online in the Large Animal Imaging Facility at Easter Bush to train the next generation of researchers with specific skills that fill current knowledge gaps. Currently, we are awaiting the outcome of the Wellcome Trust review into postgraduate training before deciding on the best approach for funding the DTP scheme.

### Data science and infection

There are a wealth of new research opportunities opening up through interaction of data science with infection biology and medicine. The University of Edinburgh is benefitting from new funding streams made available through the Scottish Government-funded City Deal. The £1.1bn investment should establish Edinburgh and the South-East Scotland City region as the data capital of Europe, attracting investment, fueling entrepreneurship and delivering inclusive growth<sup>7</sup>. The two workshops we ran in November 2017 – Quantitative Approaches to Tackling Infection, and Big Data & Infection – addressed

---

<sup>7</sup> <https://www.ed.ac.uk/local/city-region-deal>

some of the relevant issues, and brought colleagues together to discuss possible responses to these opportunities.

One clear output of these initial workshops has been the development and submission of a bid to the EPSRC call for Centres of Doctoral Training addressing the Applications and Implications of Artificial Intelligence (AI). This is a collaboration led by Guido Sanguinetti (School of Informatics) and EID member Meriem El Karoui (School of Biological Sciences) involving over 60 group leaders from the Schools of Biology and Informatics, and the College of Medicine and Veterinary Medicine. AI techniques hold huge promise to provide an integrative framework for extracting knowledge from data, with a high potential for fundamental and clinical breakthroughs with significant impact on public health.

The aim of this proposal is to train a cohort of highly skilled interdisciplinary scientists who will spearhead the development and deployment of AI techniques in the biomedical sector, including infection control. The new programme will not only train students in the key methodological skills required, but also provide them with a keen awareness of the societal, legal and ethical dimension of their research to allow them to anticipate and engage with the potential issues arising from deploying AI technology in the biomedical sector.

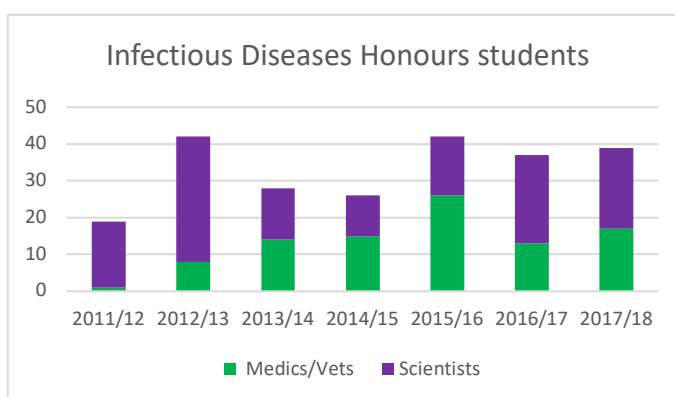
## Adding value to undergraduate teaching and training

### Undergraduate studying infectious diseases

The numbers of students choosing the Infectious Diseases Honours programme continues to hold steady. Approximately half of the 2017/18 class are scientists, and the other half are medical or veterinary students taking an intercalated B.MedSci or B.VetSci degree. The number of medical students will rise further over coming years as all MBChB students in Edinburgh are required to take an academic year of full-time, research-based study in Year 3.

Undergraduate Infectious Diseases Honours students are kept informed of activities within *Edinburgh Infectious Diseases* through a number of channels. The Executive Manager of

*Edinburgh Infectious Diseases* gave an introduction to the network and its activities during the programme induction sessions at the start of the academic year, the students receive the weekly newsletter with details of seminars and events. They are also encouraged to engage with public engagement opportunities facilitated by *Edinburgh Infectious Diseases* and to attend relevant



workshops. In March 2017 the Infectious Diseases students hosted a seminar given by Prof David Dockrell, gaining valuable experience in fielding questions and facilitating discussion.

### Coordination of undergraduate teaching in infectious diseases

The cross-College structure of *Edinburgh Infectious Diseases* means it is well placed to provide oversight on the breadth and accessibility of Infectious Diseases undergraduate teaching. The bulk of Infectious Diseases-related material is taught as major components of two undergraduate programmes at Honours level – Infectious Diseases, and Immunology, respectively.

Responsibility for these Programmes is split between Biomedical Teaching Organisation (BMTO) – Infectious Diseases – and the Biology Teaching Organisation (BTO) – Immunology – in the Deanery of Biomedical Sciences and the School of Biological Sciences respectively.

The credit structures of the Honours year for the Infectious Diseases and Immunology programmes differ and current timetabling is such that there is limited scope for final year students on either programme to mix courses across the programmes. This impacts on student choice and *Edinburgh Infectious Diseases* has been keen to find ways to integrate the programmes more closely.

Over the past two years discussions initiated by *Edinburgh Infectious Diseases*, led by *Edinburgh Infectious Diseases* executive committee member Bernadette Dutia between the two Teaching Organisations have led to considerable progress.

Before the end of the current academic year (2017/18), final year students on both programmes will be surveyed to find out if there are courses that they would have liked to take but could not due to the timetabling and credit issues. The resulting information will be used in planning changes.



The respective teaching organisations have also made a number of suggestions as to how the student choice could be increased. Options include adjusting timetables to allow more flexibility as well as more substantive changes such as offering BTO students the option of taking the second semester BMTO core course or changing BTO requirements so that Immunology students can take 20 credit courses from the Infectious Diseases programme.

These possibilities should provide opportunities for greater integration of the programmes and more flexibility for students.

### Undergraduate summer placements

Over the past four years *Edinburgh Infectious Diseases* has built strong links with colleagues at Leiden University Medical Center (LUMC) in the Netherlands. This has enabled us to support two

undergraduates who are moving into their Honours year to undertake eight-week summer placements in labs at the LUMC.

This year Lora Downes from the Infectious Diseases Programme, studied the mechanisms by which soluble egg antigens from *Schistosoma mansoni* helminths increase glucose uptake in skeletal muscle, and Andrew McIntyre from the Immunology Programme, studied the tertiary structure of the GBV-B *Pegivirus*.

*“Thank you for this amazing opportunity – it was not only a fun experience but really has helped me with determining the kind of direction I would like my career to go in after university”.* Andrew McIntyre

*“I can’t thank Edinburgh Infectious Diseases enough for such a great opportunity. It was a fantastic to spend my summer in the Netherlands, being able to combine invaluable lab experience with exploring a new country”.* Lora Downes

Year on year this exchange programme has had transformational effects on students, inspiring and equipping them to continue on to careers in research. Due to funding constraints it has not been possible to run the exchanges this year. However we are currently exploring alternative funding options which will allow development of this, and similar schemes, to promote the mobility and interaction of talented researchers across the EU.



## Appendix 1

Table of all grants awarded to *Edinburgh Infectious Diseases* members at the University of Edinburgh in FY2016/17

PI Name	Sponsor	Project Title	Award
Bruce Whitelaw	BBSRC	CCG 2017/22-Core Capability Grant	£15,456,563
Helen Sang	BBSRC	Control of development and reproductive traits	£9,120,699
David Gally	BBSRC	Innate immunity and endemic diseases in livestock species	£7,835,516
Mark Woolhouse	NIHR	Tackling Infections to Benefit Africa, the TIBA Centre	£6,602,629
David Gally	BBSRC	ISP 2017/22-Salaries-Programme 2	£5,613,249
Bruce Whitelaw	BBSRC	CAP 2017/22-IAE Capital Grant	£4,533,893
Paul Digard	BBSRC	Pathogenesis and resistance in viral diseases of livestock	£3,513,343
David Dockrell	MRC	Optimising Innate Host Defence to Combat Antimicrobial Resistance	£2,631,981
Rose Zamoyska	Wellcome Trust	Mechanisms and consequences of T cell antigen receptor signalling for normal immune homeostasis and the development of autoimmune disease	£2,348,453
Tim Connelley	MRC	International Veterinary Vaccinology Network	£2,113,339
Harish Nair	European Commission	REspiratory Syncytial virus Consortium in EUrope	£1,770,250
Sarah Reece	Wellcome Trust	Parasite offence or host defence? The roles of biological rhythms in malaria infection	£1,527,986
Mark Stevens	BBSRC	Glycoengineering of Veterinary Vaccines	£1,372,834
Moira Whyte	MRC	The role of HMGB1 in liver injury and repair - mechanisms and therapeutic interventions	£1,313,221
Calum Bain	Royal Society, Wellcome Trust	Investigating the role of TGF $\beta$ 2 in the functional imprinting of pulmonary macrophages in health and disease	£1,061,297
Meriem El Karoui	Wellcome Trust	DNA repair and genetic stability: elucidating the effects of cell physiology in Escherichia coli	£955,487
David Hume	BBSRC	Global Challenges research Fund: Data and Resources opportunity for BBSRC Institutes	£946,340
David Hume	BBSRC	Research support diseases	£843,045
Alice Street	European Commission	Investigating the Design and Use of Diagnostic Devices in Global Health	£830,288
David Hume	BBSRC	The role of interleukin-10 (IL-10) in the regulation of innate immunity in the domestic chicken.	£801,119
Julia Dorin	MRC	Beta-defensins in the prevention of obesity	£797,172
Anura Rambukkana	MRC	Role of Mycobacterium leprae proteins and RNAs in initiating neuropathy	£790,762
Christopher Lucas	Wellcome Trust	Macrophage-epithelial communication promotes lung repair after injury	£770,023
Juergen Haas	MRC	Control of type III interferon expression and Herpes simplex virus type 1 replication by miR-200	£690,239
Robert Dalziel	BBSRC	Host cell determinants of BoHV-1 pathogenesis: a genome wide analysis.	£682,857



Christine Tait-Burkard	BBSRC	Understanding the CD163 - PRRS virus interaction to improve genetic engineering for resistance	£664,039
Emily Gwyer Findlay	Royal Society	Cathelicidin is Critical for Pathogenic T cell Development in Multiple Sclerosis	£662,276
Harish Nair	Sanofi Pasteur MSD Limited	Nasopharyngeal pneumococcal carriage study in South Asian infants	£655,128
David Dockrell	MRC	Optimising Innate Host Defence to Combat Antimicrobial Resistance	£597,265
David Gally	BBSRC	Machine-learning to predict and understand the zoonotic threat of E. coli 0157 isolates	£535,103
Helen Sang	BBSRC	Control of development and reproductive traits	£483,112
Mark Blaxter	BBSRC	Blobtoolkit: Identification and analysis of non-target organisms in all Eukaryotic genome projects	£442,660
Bruce Whitelaw	BBSRC	OAG 2017/22-Open Access Grant	£437,500
Adrian Muwonge	BBSRC	The dynamics of antimicrobial resistance genes of the pig and human gut microbiome in Uganda	£381,107
Mark Woolhouse	MRC	Selection and Transmission of Antimicrobial Resistance in Complex Systems	£381,035
David Dockrell	MRC	Optimising Innate Host Defence to Combat Antimicrobial Resistance	£363,430
Francisca Mutapi	Oak Foundation	Novel intervention for African patients suffering from pathogen-induced immune disorders	£349,997
Keith Matthews	Innovate-UK	A novel livestock vaccination platform to prevent zoonotic emerging infections	£327,239
Jurgen Schwarze	Wellcome Trust	Pulmonary epithelial barrier and immunological functions at birth and in early life – key determinants of the development of asthma	£297,097
David Gally	BBSRC	Innate immunity and endemic diseases in livestock species	£295,792
Mark Stevens	European Commission	REVeterinary biocontained facility network for excellence in animal infectiology research and experimentation	£282,513
Clare Blackburn	European Commission	THYMISTEM: Development of Stem Cell Based Therapy for Thymic Regeneration	£262,090
Rose Zamoyska	Cancer Research UK	Genetic manipulation of Human T cells for use in adoptive T cell therapy	£260,894
Ross Houston	NERC	Application of genetic markers to improve resistance to herpes virus in commercial oyster populations	£252,816
Devi Sridhar	Wellcome Trust	The Economic Gaze. The World Banks Influence on Global Public Health	£246,964
Thamarai Dorai-Schneiders	MRC	An integrated approach to understand the emergence and spread of extensively resistant Gram-negative bacteria in China	£235,747
Andrew Rambaut	European Commission	The evolutionary dynamics of pathogen emergence and establishment: from Reservoir Detection to Outbreak Control	£233,465
David Hume	BBSRC	Research support immunity programme 12 - unfunded element	£232,572
Adam Hill	Chief Scientist Office	Immunoglobulin replacement therapy for immunoglobulin G subclass 2 deficient patients with bronchiectasis	£221,851
Andrew Horne	Wellbeing of Women	Novel repurposing of anticancer drugs to treat endometriosis	£198,864
Susan Welburn	BBSRC	BBSRC Global Challenge Research Fund Impact Acceleration Account Award	£187,500

Paul Sharp	BBSRC	Global threats from Phytophthora spp.; understanding drivers of emergence and opportunities for mitigation through nursery best practice	£183,304
Gary Loake	Biological Process Science and Technology Co., LTD	Transformation and gene editing of Hirsutella sinensis	£180,000
Elizabeth Grant	Commonwealth Scholarships	Commonwealth Distance Learning Scholarships 2016/17	£158,577
Amy Buck	Human Frontier Science Program Organization	An Extracellular RNAi pathway as a mechanism of parasite-host communication	£155,607
Malcolm Walkinshaw	Wellcome Trust	Optimisation of series of hits against trypanosome phosphofruktokinase to give a lead for treatment of the neglected disease Human African Trypanosomiasis	£150,500
Andrew Free	Scottish Funding Council	Smart carbon additive CreChar® to support bioprocesses	£145,260
Liam Morrison	Wellcome Trust	A trypanosome small RNA as a diagnostic for Human and Animal African Trypanosomiasis	£129,709
Mark Blaxter	NERC	544MBXNBAF Budget 16-17	£125,000
Mark Blaxter	NERC	NBAF 17/18	£125,000
Bruce Whitelaw	National Institute of Food and Agriculture	Generation of zoonotic influenza resistant pigs via site-directed technology	£120,000
Keith Matthews	Wellcome Trust	Wellcome Trust Four-Year PhD Studentship	£119,290
Keith Matthews	Wellcome Trust	Wellcome Trust Four-Year PhD Studentship	£119,290
Keith Matthews	Wellcome Trust	Wellcome Trust Four-Year PhD Studentship	£119,290
Keith Matthews	Wellcome Trust	Wellcome Trust Four-Year PhD Studentship	£119,290
Keith Matthews	Wellcome Trust	Wellcome Trust Four-Year PhD Studentship	£119,290
Keith Matthews		Development of a non pathogenic trypanosomatid of sheep as a sustained vaccine delivery vehicle for ovine infections in the developing world	£117,261
Elizabeth Grant	Tropical Health and Education Trust (THET)	Zambia UK Health Workforce Alliance - Situational Analysis	£111,890
Anura Rambukkana	MRC	Role of Mycobacterium leprae proteins and RNAs in initiating neuropathy	£111,043
Rosalind Allen	Royal Society	DNA-coated colloids as a novel, cheap and robust approach to AMR diagnostics	£106,323
Ross Houston	Hendrix Genetics	Genome editing for resistance to IPNV in salmon	£100,892
Garry Blakely	Hyaltech Ltd	A Synthetic Biology Strategy to Enhance Precursor Flux and Improve Production of Hyaluronic Acid	£100,000
Kevin Dhaliwal	CARB-X	Proteus Participation in CARB-X	£96,907
Tanja Opriessnig	BBSRC	Understanding the impact of Lawsonia intracellularis infection and vaccination on gut health integrity and the microbiome	£96,696
Ross Houston	Royal Society	Identification of genes underpinning resistance to amoebic gill disease in Atlantic salmon	£96,501
Andrea Wilson	US Department of Agriculture	Genetic and biological determinants of avian tumor virus pathogenicity transmission and evolution	£95,272
Ross Fitzgerald	Zoetis	Zoetis extension funding	£92,973

Paul Digard	ECO Animal Health	Tylvalosin as a porcine antiviral compound	£90,833
Adriano Rossi	NC3R	Investigation of key inflammatory cells & mediators in zebrafish larval tailfin & heart repair/regeneration following resolution of inflammation	£90,000
Baojun Wang	Defence Science and Technology Laboratory	Nanoscale engineering of anti-glinc materials using synthetic biology and protein design	£83,706
Teuta Pilizota	Human Frontier Science Program Organization	Revealing bacterial free energy dynamics during loss of viability	£81,000
Susan Welburn	BBSRC	BBSRC Global Challenge Research Fund Impact Acceleration Account Award	£79,900
Tim Connelley	National Institute of Food and Agriculture	Role of the T cell receptor in interacting with WC1 for bovine gamma delta T cell activation	£75,613
Mark Blaxter	European Commission	Edinburgh Genomics contract linked to EBiSC	£75,000
Bernadette Dutia	BBSRC	ISP 2017/22-Dutia Bernadette	£71,436
Andrew Free	Scottish Funding Council	Smart carbon additive CreChar <sup>®</sup> to support bioprocesses	£67,240
Helen Sang	BBSRC	ISP 2017/22-Sang Helen	£64,514
Andreas Lengeling	BBSRC	ISP 2017/22-Lengeling Andreas	£64,298
Paul Digard	BBSRC	ISP 2017/22-Digard Paul	£64,219
David Gally	BBSRC	ISP 2017/22-Gally David	£63,000
Harish Nair	Sanofi US	Review of meningococcal and pneumococcal disease	£62,802
Liam Morrison	BBSRC	ISP 2017/22-Morrison Liam	£62,410
Ivan Morrison	BBSRC	ISP 2017/22-Morrison Ivan	£62,407
Mark Stevens	BBSRC	ISP 2017/22-Stevens Mark	£61,327
Bruce Whitelaw	BBSRC	ISP 2017/22-Whitelaw Bruce	£60,000
Christine Tait-Burkard	BBSRC	ISP 2017/22-Burkard Christine	£60,000
David Hume	BBSRC	ISP 2017/22-Hume David	£60,000
Elizabeth Glass	BBSRC	ISP 2017/22-Glass Liz	£60,000
Finn Grey	BBSRC	ISP 2017/22-Grey Finn	£60,000
Jo Stevens	BBSRC	ISP 2017/22-Stevens Joanne	£60,000
Jose Vazquez-Boland	BBSRC	ISP 2017/22-Vazquez-Boland Jose	£60,000
Kenneth Baillie	BBSRC	ISP 2017/22-Baillie Ken	£60,000
MARK Bronsvoot	BBSRC	ISP 2017/22-Bronsvoot Mark	£60,000
Neil Mabbott	BBSRC	ISP 2017/22-Mabbott Neil	£60,000
Robert Dalziel	BBSRC	ISP 2017/22-Dalziel Bob	£60,000
Ross Fitzgerald	BBSRC	ISP 2017/22-Fitzgerald Ross	£60,000
Ross Houston	BBSRC	ISP 2017/22-Houston Ross	£60,000
Tanja Opriessnig	BBSRC	ISP 2017/22-Opriessnig Tanja	£60,000
Wilfred Goldmann	BBSRC	ISP 2017/22-Goldmann Wilfred	£60,000
MARK Bronsvoot	BBSRC	Capacity building and mentoring the next generation of research professionals	£53,439
Paul Digard	BBSRC	Control of development and reproductive traits	£52,386

Jurgen Schwarze	Wellcome Trust	Pulmonary epithelial barrier and immunological functions at birth and in early life – key determinants of the development of asthma	£51,646
Bruce Whitelaw	Genus plc	Genus Master Agreement: Genus Chair Funds	£50,000
Till Bachmann	MRC	AMR RAPID DIAGNOSTIC TESTS - AMR-RDT	£45,206
Daniel Nussey	BBSRC	Measurements of telomere length at different life stages as predictive biomarkers of health, reproduction and longevity in dairy cattle	£42,109
Liam Morrison	GALVmed	A new drug discovery pipeline for animal African trypanosomiasis	£41,502
Mark Woolhouse	NIHR	Tackling Infections to Benefit Africa, the TIBA Centre	£37,718
Amy Buck	Wellcome Trust	Tipping the balance: pathogen manipulation of microRNA regulatory pathways	£37,482
Mark Woolhouse	Bill and Melinda Gates Foundation	A novel approach to protect cattle against East Coast fever through immunization with a related parasite species	£34,483
Clare Blackburn	Daphne Jackson Trust	Fellowship for Dominique Meunier	£34,446
Harish Nair	Sanofi Pasteur MSD Limited	Global review of meningococcal surveillance systems	£32,290
Tahar Ait-Ali	Merck Inc	Evaluation of the impact of Porcillus Ileitis vaccine on mucosal integrity in pigs	£28,576
Ann Bruce	University of Alberta	GE3LS. - University of Alberta lead	£27,500
Elizabeth Glass	BBSRC	USDA Collaboration: Reassembly of cattle immune gene complexes for quantitative analysis	£27,346
A. Leigh-Brown	NIHR	Modelling Epidemic Infectious Diseases Using Sequence Analysis	£26,247
Rose Zamoyska	Wellcome Trust	Mechanisms that regulate T cell responses and their failure in autoimmunity	£23,915
Julia Dorin	MRC	Beta-defensins in the prevention of obesity	£23,746
Till Bachmann	Chief Scientist Office	Towards liquid biopsies to monitor kidney diseases at point of care	£23,542
Alex Rowe	European Commission	Development of Effective Vaccines against Multiple Lifecycle Stages of Plasmodium vivax malaria	£23,077
Andrea Wilson	Department for Environment, Food and Rural Affairs	Development and testing of Operational Models of Bovine Tuberculosis in British Cattle and Badgers	£22,454
Tanja Opriessnig	Boehringer Ingelheim GmbH	Characterizing and contrasting the humoral responses against PCV2a and PCV2d	£20,652
Teuta Pilizota	INEOS Manufacturing Scotland	Engineering bacterial hosts cells for robust growth at high external osmolarities	£20,000
Meghan Perry	Academy of Medical Sciences	The use of metagenomics of hospital sewage as an AMR surveillance tool	£18,743
Tim Connelley	BBSRC	ISP 2017/22-Connelley Tim-Zambia	£18,000
Susan Welburn	British Council	Newton Fund Researcher Links: Workshop (Mitigating Emerging Infection Challenges for Public Security and Justice)	£16,900

Andrew Free	US Army Research Laboratory	Nutrient-cycling microbial ecosystems: assembly, function and targeted design	£15,919
Andrea Wilson	Genome Alberta	Improving Canadian pork industry profits and export potential by developing genomic tools to enhance health, performance and disease resilience in wean to finish pigs	£15,789
Deborah Hoyle	Wellcome Trust	Prevalence and diversity of Shiga-toxin and non-O157 Escherichia coli carriage in cattle	£15,372
Moira Whyte	Wellcome Trust	PhD Training Fellowship for Clinicians, The Edinburgh Clinical Academic Track (ECAT) programme	£14,500
Alex Nading	National Science Foundation	A political Ecology of Value- The Environmentalization of Urban Social Policy in Nicaragua	£14,203
Maurice Gallagher	International Paint Ltd	Biofilm Bead Assay	£13,544
Andrea Wilson	BBSRC	ISP 2017/22-Doeschl-Wilson Andrea	£12,500
Samantha Lycett	BBSRC	ISP 2017/22-Lycett Sam	£12,500
Adam Hill	MRC	BRONCH-UK a multicentre and multidisciplinary partnership grant tackling unmet needs in bronchiectasis	£12,439
Pip Beard	BBSRC	ISP 2017/22-Beard Pip	£12,000
Emily Gwyer Findlay	Tenovus Scotland	Determination of T cell signalling pathway alterations induced by the neutrophil peptide LL-37	£11,800
Ann Bruce	NERC	KNOWLEDGE EXCHANGE FELLOWSHIP: ENGAGING WITH THE AGRI-FOOD BUSINESS SECTOR	£10,977
Andrew Horne	NIHR	MifeMiso: A randomised placebo-controlled trial of mifepristone and misoprostol versus misoprostol alone in the medical management of missed miscarriage	£10,077
Harish Nair	WHO	Optimal use of clinical signs for diagnosis and prognosis of childhood pneumonia	£10,000
Christopher Lucas	Welsh Thoracic Society	Scadding Morrison-Davies Fellowship	£10,000
Kenneth Amaeshi	University of Strathclyde	PC Reuse at the University of Edinburgh	£9,988
Anne Astier	British Skin Foundation	Characterization of the immune population after phototherapy in AD patients	£9,600
Richard Sloan	Royal Society	IFITM dependent control of retroviral infection in vivo	£8,312
Harish Nair	Johns Hopkins University	Investigating Validity of Maternal Recall of Care-seeking Location (India)	£8,203
Adriano Rossi	NC3R	Developing Alternative Models to Evaluate the Impact of Nanomaterials on Neutrophils during the Stimulation and Resolution of Inflammation	£6,334
Mark Bradley	Novartis Foundation	240Knotted Peptides for Inhibiting Protein-Protein Interactions	£5,600
Adam Hill	European Commission	Inhaled Antibiotics in Bronchiectasis and Cystic Fibrosis	£4,615
Gavin Paterson	SfAM	Investigating the emergence and epidemiology of mecC MRSA in Great Britain	£3,408
Gavin Paterson	Royal Society	Investigation of a novel iron uptake system in the human pathogen, Streptococcus pneumoniae	£3,057
Achim Schnauffer	Medical Research Scotland	Identification of genes are required for kDNA maintenance and function in trypanosomastid parasites	£3,000

Neil Mabbott	BBSRC	UK-Japan partnership to explore the role of subepithelial mesenchymal stromal cells in M cell-development and homeostasis	£2,340
Adam Hill	Medical Research Scotland	Role of Lipoxin A4 in Bronchiectasis	£2,000
Keith Matthews	Wellcome Trust	Interspecies competition in coinfections of African trypanosome parasites	£2,000
Paul Digard	Wellcome Trust	Mechanisms of antiviral drug resistance in influenza A virus	£2,000
Sarah Reece	Medical Research Scotland	Do Malaria Parasites alter their sequestration behaviour during host anaemia	£1,750
Andrew Horne	Medical Research Scotland	Inhibition of macrophage colony-stimulating factor- 1 (CSF-1) and CSF-1 receptor signalling as a novel medical treatment for tubal ectopic pregnancy	£1,500
Till Bachmann	British Council	Developing a novel, target amplification-free biosensor for sensitive miRNA detection	£830

## Appendix 2

Table of all grants awarded to *Edinburgh Infectious Diseases* members at the University of Edinburgh in first 6 months FY2017/18

PI Name	Sponsor	Project Title	Award
Moira Whyte	Wellcome Trust	The Edinburgh Clinical Academic Track (ECAT)-Plus Programme	£5,135,377
Sander Granneman	MRC	Unravelling post-transcriptional regulatory networks in pathogenic <i>S. aureus</i>	£2,366,064
Keith Matthews	Wellcome Trust	Challenging trypanosome antigenic variation paradigms using natural systems	£2,021,766
Andrew Rambaut	Wellcome Trust	Putting genomic surveillance at the heart of viral epidemic response.	£1,721,712
Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global health - MAIN AWARD	£1,685,740
Christine Tait-Burkard	BBSRC	A strategic approach to identifying and combating porcine reproductive and respiratory syndrome virus outbreaks and other porcine viral diseases	£983,771
Christine Tait-Burkard	BBSRC	Understanding the CD163 - PRRS virus interaction to improve genetic engineering for resistance	£674,353
Jean Manson	Department of Health	Strain typing of vCJD cases	£631,126
Eleanor Riley	MRC	The relationship between malarial anaemia, neutrophil function and susceptibility to invasive bacterial disease	£595,737
Adam Balic	BBSRC	Exploitation of new technologies to advance understanding of avian dendritic cell biology	£589,932
Ross Houston	BBSRC	Improving resistance to infectious salmon anaemia using genome editing: Novel approaches to tackling viral disease in aquaculture	£566,191
Ann Bruce	ESRC	Diagnostic innovation and livestock (DIAL): towards more effective and sustainable applications of antibiotics in livestock farming	£550,836
Mark Woolhouse	Novo Nordisk Foundation, The	Antibiotic resistance and alternative antibiotics	£476,584
Ann Bruce	BBSRC	The role of livestock in food system resilience in remote, upland regions	£476,404
Mark Bronsvort	Scottish Government	Centre of Expertise in Exotic Diseases	£341,240
Francisca Mutapi	British Academy	Providing the evidence base and tools for prioritising and implementing paediatric schistosomiasis control to enhance early childhood development	£319,754
Ross Houston	Scottish Funding Council	Genomic breeding for gill health and lice resistance in salmon: Towards a step improvement in accuracy and affordability	£314,771
Rowland Kao	BBSRC	Joint estimation of epidemiological and genetic processes for <i>Mycobacterium bovis</i> transmission dynamics in cattle and badgers	£302,174
Mark Stevens	Scottish Government	A systems-wide approach to the control of <i>Campylobacter</i> in the food chain: exploiting genetic variation	£148,744
Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global Health - STUDENTSHIP 2	£145,852
Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global Health - STUDENTSHIP 4	£145,852
Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global Health - STUDENTSHIP 5	£145,852

Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global Health - STUDENTSHIP 1	£145,852
Keith Matthews	Wellcome Trust	Wellcome Trust PhD Programme Hosts, Pathogens & Global Health - STUDENTSHIP 3	£145,852
Rowland Kao	BBSRC	US-UK Collab: Mycobacterial Transmission Dynamics in Agricultural Systems: Integrating Phylogenetics, Epidemiology, Ecology and Economics	£137,328
Henry McSorley	Lung Foundation Netherlands	A World Without Asthma:Nature's approach to prevent Asthma by Targeting barrier, immUnity and micRobEs	£123,077
Elizabeth Grant	Tropical Health and Education Trust (THET)	Development of Palliative Care Leaders in Uganda	£119,910
Jayne Hope	BBSRC	SAVE: Single-Administration Vaccine Enhancement	£112,963
Emily Gwyer Findlay	Royal Society	Cathelicidin is critical for pathogenic T cell development in Multiple Sclerosis	£108,626
Andrea Wilson	Scottish Government	Inferring genetic and other individual variation in population and dynamic models	£108,000
Eleanor Riley	BBSRC	RILEY UKRI Innovation Fellowships: BBSRC RFLXIBLE TALENT MOBILITY ACCOUNTS	£101,000
Paul Digard	Roslin Foundation Ltd	17/18 studentship award	£100,000
Appolinaire Djikeng	BBSRC	Increasing research skills and capacity to support the implementation of national livestock development plans in sub-Saharan Africa	£100,000
Teuta Pilizota	Human Frontier Science Program Organization	Revealing bacterial free energy dynamics during loss of viability	£90,623
Susan Welburn	BBSRC	Invited extension to 3681866: BBSRC Global Challenge Research Fund Impact Acceleration Account Award	£80,000
Tim Connelley	National Institute of Food and Agriculture	Role of the T cell receptor in interacting with WC1 for bovine gamma delta T cell activation	£75,612
Andrew Rambaut	Royal Society	A phylo-epidemic analysis of a rural hyper-epidemic HIV setting in South Africa in an era of widespread use of antiretroviral therapy	£73,434
Debby Bogaert	Wellcome Trust	Immunogenicity Of Intranasal Live Attenuated Influenza Vaccination (LAIV) And Bidirectional Interactions With The Host Microbiome	£60,000
Debby Bogaert	Wellcome Trust	Immunogenicity Of Intranasal Live Attenuated Influenza Vaccination (LAIV) And Bidirectional Interactions With The Host Microbiome	£59,998
Andrew Leigh-Brown	National Institutes of Health	Modelling Epidemic Infectious Diseases Using Sequence Analysis	£57,813
Christine Tait-Burkard	Genus plc	PRRSV study at Moredun	£48,812
Anna Molesworth	Department of Health	Enhanced Creutzfeldt-Jakob Disease Surveillance in the Older Population	£39,181
Steve Jenkins	Trust	Tissue Repair PhD Programme	£36,000
Amy Buck	Wellcome Trust	Tipping the balance: pathogen manipulation of microRNA regulatory pathways	£34,144
Baojun Wang	Microsoft Research Ltd	Programmable single-cell biocomputers with scalable signal processing capacity	£30,450
Baojun Wang	Defence Science and Technology Laboratory	A New Approach to Nanoscale Engineering of Anti-Glint Materials using Synthetic Biology and Protein Design	£27,800
Bob Will	European Centre for Disease Prevention and Control	Framework Agreement ECDC/2017/011	£27,034



Ross Houston	NERC	Vaccines for chronic viral pathogens in salmon- generation of interferon attenuated cell lines	£26,843
Lonneke Vervelde	Intervet International BV	Chicken Intestinal Organoids: A Novel In Vitro System To Study Mucosal Vaccine Targeting	£24,000
Ann Bruce	BBSRC	The role of livestock in food system resilience in remote, upland regions	£22,559
Harish Nair	World Health Organisation	Influenza Disease burden Estimation in Children with the comparison to RSV Burden	£22,440
Bruce Whitelaw	Genus plc	Preparation of reagents for vectorisation of RNA decoy vector into lentivirus vector	£22,126
Susan Welburn	BBSRC	Invited extension to 3681866: Additional funding for sharing good practice	£20,000
Liam Morrison	Bill and Melinda Gates Foundation	Exploring the capacity of a novel subset of bovine antibodies to recognise conserved antigens on the surface of pathogenic African trypanosomes	£18,750
Alex Nading	National Science Foundation	A political Ecology of Value- The Environmentalization of Urban Social Policy in Nicaragua	£12,206
Sinead Collins	Royal Society	Mapping allowable trait space for evolution in high carbon dioxide environments	£10,000
Donald Davidson	Beltane Public Engagement Network	Beltane Fellowship	£1,000



10. Armstrong GM, Maybin JA, Murray AA, Nicol M, Walker C, Saunders PTK, Rossi AG, Critchley HOD: **Endometrial apoptosis and neutrophil infiltration during menstruation exhibits spatial and temporal dynamics that are recapitulated in a mouse model.** *Sci Rep* 2017, **7**:17416.
11. Audzevich T, Bashford-Rogers R, Mabbott NA, Frampton D, Freeman TC, Potocnik A, Kellam P, Gilroy DW: **Pre/pro-B cells generate macrophage populations during homeostasis and inflammation.** *Proc Natl Acad Sci U S A* 2017, **114**:E3954-E3963.
12. Auffret MD, Dewhurst RJ, Duthie CA, Rooke JA, John Wallace R, Freeman TC, Stewart R, Watson M, Roehe R: **The rumen microbiome as a reservoir of antimicrobial resistance and pathogenicity genes is directly affected by diet in beef cattle.** *Microbiome* 2017, **5**:159.
13. Auffret MD, Stewart R, Dewhurst RJ, Duthie CA, Rooke JA, Wallace RJ, Freeman TC, Snelling TJ, Watson M, Roehe R: **Identification, Comparison, and Validation of Robust Rumen Microbial Biomarkers for Methane Emissions Using Diverse Bos Taurus Breeds and Basal Diets.** *Front Microbiol* 2017, **8**:2642.
14. Bacigalupe R, Lindsay D, Edwards G, Fitzgerald JR: **Population Genomics of Legionella longbeachae and Hidden Complexities of Infection Source Attribution.** *Emerg Infect Dis* 2017, **23**:750-757.
15. Baele G, Suchard MA, Rambaut A, Lemey P: **Emerging Concepts of Data Integration in Pathogen Phylodynamics.** *Syst Biol* 2017, **66**:e47-e65.
16. Bah SY, Dickinson P, Forster T, Kampmann B, Ghazal P: **Immune oxysterols: Role in mycobacterial infection and inflammation.** *J Steroid Biochem Mol Biol* 2017, **169**:152-163.
17. Baillie JK, Arner E, Daub C, De Hoon M, Itoh M, Kawaji H, Lassmann T, Carninci P, Forrest AR, Hayashizaki Y, et al.: **Analysis of the human monocyte-derived macrophage transcriptome and response to lipopolysaccharide provides new insights into genetic aetiology of inflammatory bowel disease.** *PLoS Genet* 2017, **13**:e1006641.
18. Ballingall KT, Lantier I, Todd H, Lantier F, Rocchi M: **Structural and functional diversity arising from intra- and inter-haplotype combinations of duplicated DQA and B loci within the ovine MHC.** *Immunogenetics* 2017.
19. Balogun EO, Inaoka DK, Shiba T, Tokuoka SM, Tokumasu F, Sakamoto K, Kido Y, Michels PAM, Watanabe YI, Harada S, et al.: **Glycerol kinase of African trypanosomes possesses an intrinsic phosphatase activity.** *Biochim Biophys Acta* 2017, **1861**:2830-2842.
20. Balsells E, Guillot L, Nair H, Kyaw MH: **Serotype distribution of Streptococcus pneumoniae causing invasive disease in children in the post-PCV era: A systematic review and meta-analysis.** *PLoS One* 2017, **12**:e0177113.
21. Banos G, Bramis G, Bush SJ, Clark EL, McCulloch MEB, Smith J, Schulze G, Arsenos G, Hume DA, Psifidi A: **The genomic architecture of mastitis resistance in dairy sheep.** *BMC Genomics* 2017, **18**:624.
22. Banos G, Winters M, Mrode R, Mitchell AP, Bishop SC, Woolliams JA, Coffey MP: **Genetic evaluation for bovine tuberculosis resistance in dairy cattle.** *J Dairy Sci* 2017, **100**:1272-1281.
23. Barbian HJ, Jackson-Jewett R, Brown CS, Bibollet-Ruche F, Learn GH, Decker T, Kreider EF, Li Y, Denny TN, Sharp PM, et al.: **Effective treatment of SIVcpz-induced immunodeficiency in a captive western chimpanzee.** *Retrovirology* 2017, **14**:35.
24. Bardosh KL, Scoones JC, Grace D, Kalema-Zikusoka G, Jones KE, de Balogh K, Waltner-Toews D, Bett B, Welburn SC, Mumford E, et al.: **Engaging research with policy and action: what are the challenges of responding to zoonotic disease in Africa?** *Philos Trans R Soc Lond B Biol Sci* 2017, **372**.
25. Barfoot J, Doherty K, Blackburn CC: **EuroStemCell: A European infrastructure for communication and engagement with stem cell research.** *Semin Cell Dev Biol* 2017, **70**:26-37.
26. Barfoot J, Rosemann A, Blackburn CC: **Special focus issue on regenerative medicine in society: interdisciplinary perspectives (part II) - Foreword.** *Regen Med* 2017, **12**:733-736.

27. Barnett KN, Weller D, Smith S, Orbell S, Vedsted P, Steele RJC, Melia JW, Moss SM, Patnick J, Campbell C: **Understanding of a negative bowel screening result and potential impact on future symptom appraisal and help-seeking behaviour: a focus group study.** *Health Expect* 2017, **20**:584-592.
28. Barth ND, Marwick JA, Vendrell M, Rossi AG, Dransfield I: **The "Phagocytic Synapse" and Clearance of Apoptotic Cells.** *Front Immunol* 2017, **8**:1708.
29. Bartley K, Turnbull F, Wright HW, Huntley JF, Palarea-Albaladejo J, Nath M, Nisbet AJ: **Field evaluation of poultry red mite (*Dermanyssus gallinae*) native and recombinant prototype vaccines.** *Vet Parasitol* 2017, **244**:25-34.
30. Bartley PM, Wilson C, Innes EA, Katzer F: **Detection of Babesia DNA in blood and spleen samples from Eurasian badgers (*Meles meles*) in Scotland.** *Parasitology* 2017, **144**:1203-1210.
31. Benson H, Watterson S, Sharman J, Mpamhanga C, Parton A, Southan C, Harmar A, Ghazal P: **Is systems pharmacology ready to impact upon therapy development? A study on the cholesterol biosynthesis pathway.** *Br J Pharmacol* 2017, **174**:4362-4382.
32. Berto A, Anh PH, Carrique-Mas JJ, Simmonds P, Van Cuong N, Tue NT, Van Dung N, Woolhouse ME, Smith I, Marsh GA, et al.: **Detection of potentially novel paramyxovirus and coronavirus viral RNA in bats and rats in the Mekong Delta region of southern Viet Nam.** *Zoonoses Public Health* 2017, **65**:30-42.
33. Bewley MA, Preston JA, Mohasin M, Marriott HM, Budd RC, Swales J, Collini P, Greaves DR, Craig RW, Brightling CE, et al.: **Impaired Mitochondrial Microbicidal Responses in Chronic Obstructive Pulmonary Disease Macrophages.** *Am J Respir Crit Care Med* 2017, **196**:845-855.
34. Birget PLG, Repton C, O'Donnell AJ, Schneider P, Reece SE: **Phenotypic plasticity in reproductive effort: malaria parasites respond to resource availability.** *Proc Biol Sci* 2017, **284**.
35. Blake RR, Shaw DJ, Culshaw GJ, Martinez-Pereira Y: **Poincare plots as a measure of heart rate variability in healthy dogs.** *J Vet Cardiol* 2017, **S1760-2734**(30149-30142).
36. Borger JG, Morrison VL, Filby A, Garcia C, Uotila LM, Simbari F, Fagerholm SC, Zamoyska R: **Caveolin-1 Influences LFA-1 Redistribution upon TCR Stimulation in CD8 T Cells.** *J Immunol* 2017, **199**:874-884.
37. Borges AH, Hoy J, Florence E, Sedlacek D, Stellbrink HJ, Uzdaviniene V, Tomazic J, Gargalianos-Kakolyris P, Schmid P, Orkin C, et al.: **Antiretrovirals, Fractures, and Osteonecrosis in a Large International HIV Cohort.** *Clin Infect Dis* 2017, **64**:1413-1421.
38. Bosch A, de Steenhuijsen Piters WAA, van Houten MA, Chu M, Biesbroek G, Kool J, Pernet P, de Groot PCM, Eijkemans MJC, Keijsers BJF, et al.: **Maturation of the Infant Respiratory Microbiota, Environmental Drivers, and Health Consequences. A Prospective Cohort Study.** *Am J Respir Crit Care Med* 2017, **196**:1582-1590.
39. Boyle A, Hogan K, Manson JC, Diack AB: **Strain Typing of Prion Diseases Using In Vivo Mouse Models.** *Methods Mol Biol* 2017, **1658**:263-283.
40. Bradford BM, Reizis B, Mabbott NA: **Oral Prion Disease Pathogenesis Is Impeded in the Specific Absence of CXCR5-Expressing Dendritic Cells.** *J Virol* 2017, **91**.
41. Bradford BM, Tetlow L, Mabbott NA: **Prion disease pathogenesis in the absence of the commensal microbiota.** *J Gen Virol* 2017, **98**:1943-1952.
42. Brancucci NMB, Gerdt JP, Wang C, De Niz M, Philip N, Adapa SR, Zhang M, Hitz E, Niederwieser I, Boltryk SD, et al.: **Lysophosphatidylcholine Regulates Sexual Stage Differentiation in the Human Malaria Parasite Plasmodium falciparum.** *Cell* 2017, **171**:1532-1544.e1515.
43. Brennan GL, Colegrave N, Collins S: **Evolutionary consequences of multidriver environmental change in an aquatic primary producer.** *Proc Natl Acad Sci U S A* 2017, **114**:9930-9935.

44. Burkard C, Lillico SG, Reid E, Jackson B, Mileham AJ, Ait-Ali T, Whitelaw CB, Archibald AL: **Precision engineering for PRRSV resistance in pigs: Macrophages from genome edited pigs lacking CD163 SRCR5 domain are fully resistant to both PRRSV genotypes while maintaining biological function.** *PLoS Pathog* 2017, **13**:e1006206.
45. Burlacu E, Lackmann F, Aguilar LC, Belikov S, Nues RV, Trahan C, Hector RD, Dominelli-Whiteley N, Cockroft SL, Wieslander L, et al.: **High-throughput RNA structure probing reveals critical folding events during early 60S ribosome assembly in yeast.** *Nat Commun* 2017, **8**:714.
46. Bush SJ, McCulloch MEB, Summers KM, Hume DA, Clark EL: **Integration of quantitated expression estimates from polyA-selected and rRNA-depleted RNA-seq libraries.** *BMC Bioinformatics* 2017, **18**:301.
47. Calanzani N, Cavers D, Vojt G, Orbell S, Steele RJC, Brownlee L, Smith S, Patnick J, Weller D, Campbell C: **Is an opportunistic primary care-based intervention for non-responders to bowel screening feasible and acceptable? A mixed-methods feasibility study in Scotland.** *BMJ Open* 2017, **7**:e016307.
48. Calanzani N, Weller D, Campbell C: **The characteristics of national health initiatives promoting earlier cancer diagnosis among adult populations: a systematic review protocol.** *BMJ Open* 2017, **7**:e015922.
49. Cameron RL, Kavanagh K, Cameron Watt D, Robertson C, Cuschieri K, Ahmed S, Pollock KG: **The impact of bivalent HPV vaccine on cervical intraepithelial neoplasia by deprivation in Scotland: reducing the gap.** *J Epidemiol Community Health* 2017, **71**:954-960.
50. Campana L, Starkey Lewis PJ, Pellicoro A, Aucott RL, Man J, O'Duibhir E, Mok SE, Ferreira-Gonzalez S, Livingstone E, Greenhalgh SN, et al.: **The STAT3-IL-10-IL-6 Pathway Is a Novel Regulator of Macrophage Efferocytosis and Phenotypic Conversion in Sterile Liver Injury.** *J Immunol* 2017, **200**:1169-1187.
51. Carmona-Antonanzas G, Bekaert M, Humble JL, Boyd S, Roy W, Bassett DI, Houston RD, Gharbi K, Bron JE, Sturm A: **Maternal inheritance of deltamethrin resistance in the salmon louse *Lepeophtheirus salmonis* (Kroyer) is associated with unique mtDNA haplotypes.** *PLoS One* 2017, **12**:e0180625.
52. Carpanini SM, Wishart TM, Gillingwater TH, Manson JC, Summers KM: **Analysis of gene expression in the nervous system identifies key genes and novel candidates for health and disease.** *Neurogenetics* 2017, **18**:81-95.
53. Cartlidge MK, Hill AT: **Inhaled or nebulised ciprofloxacin for the maintenance treatment of bronchiectasis.** *Expert Opin Investig Drugs* 2017, **26**:1091-1097.
54. Carvalho I, Campo RD, Sousa M, Silva N, Carrola J, Marinho C, Santos T, Carvalho S, Novoa M, Quaresma M, et al.: **Antimicrobial-resistant *Escherichia coli* and *Enterococcus* spp. isolated from Miranda donkey (*Equus asinus*): an old problem from a new source with a different approach.** *J Med Microbiol* 2017, **66**:191-202.
55. Cassidy-Cain RL, Blackburn EA, Bell CR, Elshina E, Hope JC, Stevens MP: **Inhibition of Antigen-Specific and Nonspecific Stimulation of Bovine T and B Cells by Lymphostatin from Attaching and Effacing *Escherichia coli*.** *Infect Immun* 2017, **85**.
56. Castle AR, Gill AC: **Physiological Functions of the Cellular Prion Protein.** *Front Mol Biosci* 2017, **4**:19.
57. Castle PE, Murokora D, Perez C, Alvarez M, Quek SC, Campbell C: **Treatment of cervical intraepithelial lesions.** *Int J Gynaecol Obstet* 2017, **138 Suppl 1**:20-25.
58. Cavers D, Cunningham-Burley S, Watson E, Banks E, Campbell C: **Experience of living with cancer and comorbid illness: protocol for a qualitative systematic review.** *BMJ Open* 2017, **7**:e013383.
59. Chakraborty P, Vervelde L, Dalziel RG, Wasson PS, Nair V, Dutia BM, Kaiser P: **Marek's disease virus infection of phagocytes: a de novo in vitro infection model.** *J Gen Virol* 2017, **98**:1080-1088.
60. Chan KY, Li X, Chen W, Song P, Wong NWK, Poon AN, Jian W, Soyiri IN, Cousens S, Adedoye D, et al.: **Prevalence of chronic obstructive pulmonary disease (COPD) in China in 1990 and 2010.** *J Glob Health* 2017, **7**:020704.

61. Chan M, Park JJ, Shi T, Martinon-Torres F, Bont L, Nair H: **The burden of respiratory syncytial virus (RSV) associated acute lower respiratory infections in children with Down syndrome: A systematic review and meta-analysis.** *J Glob Health* 2017, **7**:020413.
62. Charlier C, Johannessen I, Mackintosh CL, Wilks D, Cauda R, Wolf FI, Le Jeune C: **International infectious diseases teaching to undergraduate medical students: A successful European collaborative experience.** *Med Teach* 2017, **39**:981-986.
63. Charlier J, Thamsborg SM, Bartley DJ, Skuce PJ, Kenyon F, Geurden T, Hoste H, Williams AR, Sotiraki S, Hoglund J, et al.: **Mind the gaps in research on the control of gastrointestinal nematodes of farmed ruminants and pigs.** *Transbound Emerg Dis* 2017.
64. Chen LA, Fawcett TN: **Service evaluation: A grey area of research?** *Nurs Ethics* 2017:969733017742961.
65. Chen X, Liu S, Deme B, Cristiglio V, Marquardt D, Weller R, Rao P, Wang Y, Bradshaw J: **Efficient internalization of TAT peptide in zwitterionic DOPC phospholipid membrane revealed by neutron diffraction.** *Biochim Biophys Acta* 2017, **1859**:910-916.
66. Cherif MK, Ouedraogo O, Sanou GS, Diarra A, Ouedraogo A, Tiono A, Cavanagh DR, Michael T, Konate AT, Watson NL, et al.: **Antibody responses to *P. falciparum* blood stage antigens and incidence of clinical malaria in children living in endemic area in Burkina Faso.** *BMC Res Notes* 2017, **10**:472.
67. Choudhury D, Tanner MG, McAughtrie S, Yu F, Mills B, Choudhary TR, Seth S, Craven TH, Stone JM, Mati IK, et al.: **Endoscopic sensing of alveolar pH.** *Biomed Opt Express* 2017, **8**:243-259.
68. Choudhury NR, Heikel G, Trubitsyna M, Kubik P, Nowak JS, Webb S, Granneman S, Spanos C, Rappsilber J, Castello A, et al.: **RNA-binding activity of TRIM25 is mediated by its PRY/SPRY domain and is required for ubiquitination.** *BMC Biol* 2017, **15**:105.
69. Clark EL, Bush SJ, McCulloch MEB, Farquhar IL, Young R, Lefevre L, Pridans C, Tsang HG, Wu C, Afrasiabi C, et al.: **A high resolution atlas of gene expression in the domestic sheep (*Ovis aries*).** *PLoS Genet* 2017, **13**:e1006997.
70. Clark J, Garbutt JS, McNally L, Little TJ: **Disease spread in age structured populations with maternal age effects.** *Ecol Lett* 2017, **20**:445-451.
71. Clarke F, Jordan CK, Gutierrez-Martinez E, Bibby JA, Sanchez-Blanco C, Cornish GH, Dai X, Rawlings DJ, Zamoyska R, Guernonprez P, et al.: **Protein tyrosine phosphatase PTPN22 is dispensable for dendritic cell antigen processing and promotion of T-cell activation by dendritic cells.** *PLoS One* 2017, **12**:e0186625.
72. Clavadetscher J, Indrigo E, Chankeshwara SV, Lilienkampf A, Bradley M: **In-Cell Dual Drug Synthesis by Cancer-Targeting Palladium Catalysts.** *Angew Chem Int Ed Engl* 2017, **56**:6864-6868.
73. Claycomb J, Abreu-Goodger C, Buck AH: **RNA-mediated communication between helminths and their hosts: The missing links.** *RNA Biol* 2017, **14**:436-441.
74. Clinton C, Sridhar D: **Who pays for cooperation in global health? A comparative analysis of WHO, the World Bank, the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria, and Gavi, the Vaccine Alliance.** *Lancet* 2017, **390**:324-332.
75. Coakley CM, Nestoros E, Little TJ: **Testing hypotheses for maternal effects in *Daphnia magna*.** *J Evol Biol* 2017, **31**:31(32):211-216.
76. Coakley G, McCaskill JL, Borger JG, Simbari F, Robertson E, Millar M, Harcus Y, McSorley HJ, Maizels RM, Buck AH: **Extracellular Vesicles from a Helminth Parasite Suppress Macrophage Activation and Constitute an Effective Vaccine for Protective Immunity.** *Cell Rep* 2017, **19**:1545-1557.
77. Cohrs RJ, Lee KS, Beach A, Sanford B, Baird NL, Como C, Graybill C, Jones D, Tekeste E, Ballard M, et al.: **Targeted Genome Sequencing Reveals Varicella-Zoster Virus Open Reading Frame 12 Deletion.** *J Virol* 2017, **91**.



78. Colegrave N, Ruxton GD: **Using Biological Insight and Pragmatism When Thinking about Pseudoreplication.** *Trends Ecol Evol* 2017, **33**:28-35.
79. Colegrave N, Ruxton GD: **Statistical model specification and power: recommendations on the use of test-qualified pooling in analysis of experimental data.** *Proc Biol Sci* 2017, **284**.
80. Conner WR, Blaxter ML, Anfora G, Ometto L, Rota-Stabelli O, Turelli M: **Genome comparisons indicate recent transfer of wRi-like Wolbachia between sister species *Drosophila suzukii* and *D. subpulchrella*.** *Ecol Evol* 2017, **7**:9391-9404.
81. Cook EA, de Glanville WA, Thomas LF, Kariuki S, Bronsvoort BM, Fevre EM: **Working conditions and public health risks in slaughterhouses in western Kenya.** *BMC Public Health* 2017, **17**:14.
82. Cook EA, de Glanville WA, Thomas LF, Kariuki S, Bronsvoort BM, Fevre EM: **Risk factors for leptospirosis seropositivity in slaughterhouse workers in western Kenya.** *Occup Environ Med* 2017, **74**:357-365.
83. Cook EAJ, Grossi-Soyster EN, de Glanville WA, Thomas LF, Kariuki S, Bronsvoort BMC, Wamae CN, LaBeaud AD, Fevre EM: **The sero-epidemiology of Rift Valley fever in people in the Lake Victoria Basin of western Kenya.** *PLoS Negl Trop Dis* 2017, **11**:e0005731.
84. Corripio-Miyar Y, Mellanby RJ, Morrison K, McNeilly TN: **1,25-Dihydroxyvitamin D3 modulates the phenotype and function of Monocyte derived dendritic cells in cattle.** *BMC Vet Res* 2017, **13**:390.
85. Cossic BG, Adjahoutonon B, Gloaguen P, Dibanganga GL, Maganga G, Leroy P, MacLeod ET, Picozzi K: **Trypanosomiasis challenge estimation using the diminazene aceturate (Berenil) index in Zebu in Gabon.** *Trop Anim Health Prod* 2017, **49**:619-624.
86. Craven TH, Wojcik G, McCoubrey J, Brooks O, Grant E, Reilly J, Laurenson IF, Kefala K, Walsh TS: **Lack of concordance between ECDC and CDC systems for surveillance of ventilator associated pneumonia.** *Intensive Care Med* 2017.
87. Cubie HA, Morton D, Kawonga E, Mautanga M, Mwenitete I, Teakle N, Ngwira B, Walker H, Walker G, Kafwafwa S, et al.: **HPV prevalence in women attending cervical screening in rural Malawi using the cartridge-based Xpert((R)) HPV assay.** *J Clin Virol* 2017, **87**:1-4.
88. Cui J, Fan J, Gerber PF, Biernacka K, Stadejek T, Xiao CT, Opriessnig T: **First identification of porcine parvovirus 6 in Poland.** *Virus Genes* 2017, **53**:100-104.
89. Cybis GB, Sinsheimer JS, Bedford T, Rambaut A, Lemey P, Suchard MA: **Bayesian nonparametric clustering in phylogenetics: modeling antigenic evolution in influenza.** *Stat Med* 2017, **37**:195-206.
90. Dall GF, Tsang STJ, Gwynne PJ, Wilkinson AJ, Simpson A, Breusch SJB, Gallagher MP: **The dissolvable bead: A novel in vitro biofilm model for evaluating antimicrobial resistance.** *J Microbiol Methods* 2017, **142**:46-51.
91. Dantoft W, Martinez-Vicente P, Jafali J, Perez-Martinez L, Martin K, Kotzamanis K, Craigon M, Auer M, Young NT, Walsh P, et al.: **Genomic Programming of Human Neonatal Dendritic Cells in Congenital Systemic and In Vitro Cytomegalovirus Infection Reveal Plastic and Robust Immune Pathway Biology Responses.** *Front Immunol* 2017, **8**:1146.
92. Davies P, Remnant JG, Green MJ, Gascoigne E, Gibbon N, Hyde R, Porteous JR, Schubert K, Lovatt F, Corbishley A: **Quantitative analysis of antibiotic usage in British sheep flocks.** *Vet Rec* 2017, **181**:511.
93. de Almeida L, Terumi Fujimura A, Del Cistia ML, Fonseca-Santos B, Braga Imamura K, Michels PAM, Chorilli M, Graminha MAS: **Nanotechnological Strategies for Treatment of Leishmaniasis--A Review.** *J Biomed Nanotechnol* 2017, **13**:117-133.
94. De Soyza A, McDonnell MJ, Goeminne PC, Aliberti S, Lonni S, Davison J, Dupont LJ, Fardon TC, Rutherford RM, Hill AT, et al.: **Bronchiectasis Rheumatoid Overlap Syndrome Is an Independent Risk Factor for Mortality in Patients With Bronchiectasis: A Multicenter Cohort Study.** *Chest* 2017, **151**:1247-1254.

95. Denholm SJ, McNeilly TN, Banos G, Coffey MP, Russell GC, Bagnall A, Mitchell MC, Wall E: **Estimating genetic and phenotypic parameters of cellular immune-associated traits in dairy cows.** *J Dairy Sci* 2017, **100**:2850-2862.
96. Di Minno G, Navarro D, Perno CF, Canaro M, Gurtler L, Ironside JW, Eichler H, Tiede A: **Pathogen reduction/inactivation of products for the treatment of bleeding disorders: what are the processes and what should we say to patients?** *Ann Hematol* 2017, **96**:1253-1270.
97. Diack AB, Alibhai JD, Manson JC: **Gene Targeted Transgenic Mouse Models in Prion Research.** *Prog Mol Biol Transl Sci* 2017, **150**:157-179.
98. Diack AB, Will RG, Manson JC: **Public health risks from subclinical variant CJD.** *PLoS Pathog* 2017, **13**:e1006642.
99. Dickinson RS, Murphy F, Doherty C, Williams S, Mirchandani A, Willson J, Scotti JS, Preston G, Schofield CJ, Whyte MKB, et al.: **Pseudomonas expression of an oxygen sensing prolyl hydroxylase homologue regulates neutrophil host responses in vitro and in vivo.** *Wellcome Open Res* 2017, **2**:104.
100. Dockrell DH: **Facing new challenges to promote long-term health for people living with HIV.** *Curr Opin Infect Dis* 2017, **30**:1-3.
101. Donnelly MC, Imlach SN, Abravanel F, Ramalingam S, Johannessen I, Petrik J, Fraser AR, Campbell JD, Bramley P, Dalton HR, et al.: **Sofosbuvir and Daclatasvir Anti-Viral Therapy Fails to Clear HEV Viremia and Restore Reactive T Cells in a HEV/HCV Co-Infected Liver Transplant Recipient.** *Gastroenterology* 2017, **152**:300-301.
102. Dorward DA, Felton JM, Robb CT, Craven T, Kipari T, Walsh TS, Haslett C, Kefala K, Rossi AG, Lucas CD: **The cyclin-dependent kinase inhibitor AT7519 accelerates neutrophil apoptosis in sepsis-related acute respiratory distress syndrome.** *Thorax* 2017, **72**:182-185.
103. Dorward DA, Lucas CD, Doherty MK, Chapman GB, Schofield EJ, Conway Morris A, Felton JM, Kipari T, Humphries DC, Robb CT, et al.: **Novel role for endogenous mitochondrial formylated peptide-driven formyl peptide receptor 1 signalling in acute respiratory distress syndrome.** *Thorax* 2017, **72**:928-936.
104. Downing A, Morris EJ, Corrigan N, Sebag-Montefiore D, Finan PJ, Thomas JD, Chapman M, Hamilton R, Campbell H, Cameron D, et al.: **High hospital research participation and improved colorectal cancer survival outcomes: a population-based study.** *Gut* 2017, **66**:89-96.
105. Ducrotoy MJ, Revie CW, Shaw AP, Musa UB, Bertu WJ, Gusi AM, Ocholi RA, Majekodunmi AO, Welburn SC: **Wealth, household heterogeneity and livelihood diversification of Fulani pastoralists in the Kachia Grazing Reserve, northern Nigeria, during a period of social transition.** *PLoS One* 2017, **12**:e0172866.
106. Dudas G, Carvalho LM, Bedford T, Tatem AJ, Baele G, Faria NR, Park DJ, Ladner JT, Arias A, Asogun D, et al.: **Virus genomes reveal factors that spread and sustained the Ebola epidemic.** *Nature* 2017, **544**:309-315.
107. Edwards MR, Saglani S, Schwarze J, Skevaki C, Smith JA, Ainsworth B, Almond M, Andreakos E, Belvisi MG, Chung KF, et al.: **Addressing unmet needs in understanding asthma mechanisms: From the European Asthma Research and Innovation Partnership (EARIP) Work Package (WP)2 collaborators.** *Eur Respir J* 2017, **49**.
108. Ekstrom AG, Kelly V, Marles-Wright J, Cockroft SL, Campopiano DJ: **Structural evidence for the covalent modification of FabH by 4,5-dichloro-1,2-dithiol-3-one (HR45).** *Org Biomol Chem* 2017, **15**:6310-6313.
109. El Tawil S, Chohan G, Mackenzie J, Rowe A, Weller B, Will RG, Knight R: **Isolated language impairment as the primary presentation of sporadic Creutzfeldt Jakob Disease.** *Acta Neurol Scand* 2017, **135**:316-323.
110. Erana H, Fernandez-Borges N, Elezgarai SR, Harrathi C, Charco JM, Chianini F, Dagleish MP, Ortega G, Millet O, Castilla J: **In Vitro Approach To Identify Key Amino Acids in Low Susceptibility of Rabbit Prion Protein to Misfolding.** *J Virol* 2017, **91**.
111. Ercan A, Kohrt WM, Cui J, Deane KD, Pezer M, Yu EW, Hausmann JS, Campbell H, Kaiser UB, Rudd PM, et al.: **Estrogens regulate glycosylation of IgG in women and men.** *JCI Insight* 2017, **2**:e89703.



112. Esteban-Ballesteros M, Rojo-Vazquez FA, Skuce PJ, Melville L, Gonzalez-Lanza C, Martinez-Valladares M: **Quantification of resistant alleles in the beta-tubulin gene of field strains of gastrointestinal nematodes and their relation with the faecal egg count reduction test.** *BMC Vet Res* 2017, **13**:71.
113. Eze P, Balsells E, Kyaw MH, Nair H: **Risk factors for Clostridium difficile infections - an overview of the evidence base and challenges in data synthesis.** *J Glob Health* 2017, **7**:010417.
114. Faluyi OO, Fitch P, Howie SEM: **An increased CD25-positive intestinal regulatory T-lymphocyte population is dependent on Cox-2 activity in the Apc Min/+ model.** *Clin Exp Immunol* 2017, **191**:32-41.
115. Fancy NN, Bahlmann AK, Loake GJ: **Nitric oxide function in plant abiotic stress.** *Plant Cell Environ* 2017, **40**:462-472.
116. Faria NR, Quick J, Claro IM, Theze J, de Jesus JG, Giovanetti M, Kraemer MUG, Hill SC, Black A, da Costa AC, et al.: **Establishment and cryptic transmission of Zika virus in Brazil and the Americas.** *Nature* 2017, **546**:406-410.
117. Farrell FD, Gralka M, Hallatschek O, Waclaw B: **Mechanical interactions in bacterial colonies and the surfing probability of beneficial mutations.** *J R Soc Interface* 2017, **14**.
118. Farro G, Stakenborg M, Gomez-Pinilla PJ, Labeeuw E, Goverse G, Giovangiulio MD, Stakenborg N, Meroni E, D'Errico F, Elkrim Y, et al.: **CCR2-dependent monocyte-derived macrophages resolve inflammation and restore gut motility in postoperative ileus.** *Gut* 2017, **66**:2098-2109.
119. Fast C, Goldmann W, Berthon P, Tauscher K, Andreoletti O, Lantier I, Rossignol C, Bossers A, Jacobs JG, Hunter N, et al.: **Protecting effect of PrP codons M142 and K222 in goats orally challenged with bovine spongiform encephalopathy prions.** *Vet Res* 2017, **48**:52.
120. Fawcett T: **Further study opens up career opportunities.** *Nurs Stand* 2017, **31**:38-39.
121. Fell DB, Azziz-Baumgartner E, Baker MG, Batra M, Beaute J, Beutels P, Bhat N, Bhutta ZA, Cohen C, De Mucio B, et al.: **Influenza epidemiology and immunization during pregnancy: Final report of a World Health Organization working group.** *Vaccine* 2017, **35**:5738-5750.
122. Feng X, Wang G, Neumann K, Yao W, Ding L, Li S, Sheng Y, Jiang Y, Bradley M, Zhang R: **Synthesis and characterization of biodegradable poly(ether-ester) urethane acrylates for controlled drug release.** *Mater Sci Eng C Mater Biol Appl* 2017, **74**:270-278.
123. Fernandez N, Cordiner RA, Young RS, Hug N, Macias S, Caceres JF: **Genetic variation and RNA structure regulate microRNA biogenesis.** *Nat Commun* 2017, **8**:15114.
124. Fevre EM, de Glanville WA, Thomas LF, Cook EAJ, Kariuki S, Wamae CN: **An integrated study of human and animal infectious disease in the Lake Victoria crescent small-holder crop-livestock production system, Kenya.** *BMC Infect Dis* 2017, **17**:457.
125. Fiegna C, Clarke CL, Shaw DJ, Baily JL, Clare FC, Gray A, Garner TW, Meredith AL: **Pathological and phylogenetic characterization of Amphibiothecum sp. infection in an isolated amphibian (Lissotriton helveticus) population on the island of Rum (Scotland).** *Parasitology* 2017, **144**:484-496.
126. Fontanella E, Ma Z, Zhang Y, de Castro AM, Shen H, Halbur PG, Opriessnig T: **An interferon inducing porcine reproductive and respiratory syndrome virus vaccine candidate elicits protection against challenge with the heterologous virulent type 2 strain VR-2385 in pigs.** *Vaccine* 2017, **35**:125-131.
127. Froy H, Bird EJ, Wilbourn RV, Fairlie J, Underwood SL, Salvo-Chirnside E, Pilkington JG, Berenos C, Pemberton JM, Nussey DH: **No evidence for parental age effects on offspring leukocyte telomere length in free-living Soay sheep.** *Sci Rep* 2017, **7**:9991.
128. Froy H, Lewis S, Nussey DH, Wood AG, Phillips RA: **Contrasting drivers of reproductive ageing in albatrosses.** *J Anim Ecol* 2017, **86**:1022-1032.
129. Frungillo L, Spoel SH: **Modulating the Modulator: Regulation of Protein Methylation by Nitric Oxide.** *Mol Cell* 2017, **67**:535-537.

130. Fyfe J, Picozzi K, Waiswa C, Bardosh KL, Welburn SC: **Impact of mass chemotherapy in domestic livestock for control of zoonotic *T. b. rhodesiense* human African trypanosomiasis in Eastern Uganda.** *Acta Trop* 2017, **165**:216-229.
131. Gally DL, Stevens MP: **Microbe Profile: Escherichia coli O157 : H7 - notorious relative of the microbiologist's workhorse.** *Microbiology* 2017, **163**:1-3.
132. Garcia JL, Burrells A, Bartley PM, Bartley K, Innes EA, Katzer F: **The use of ELISA, nPCR and qPCR for diagnosis of ocular toxoplasmosis in experimentally infected pigs.** *Res Vet Sci* 2017, **115**:490-495.
133. Garnier R, Bento AI, Hansen C, Pilkington JG, Pemberton JM, Graham AL: **Physiological proteins in resource-limited herbivores experiencing a population die-off.** *Naturwissenschaften* 2017, **104**:68.
134. Garnier R, Cheung CK, Watt KA, Pilkington JG, Pemberton JM, Graham AL: **Joint associations of blood plasma proteins with overwinter survival of a large mammal.** *Ecol Lett* 2017, **20**:175-183.
135. Georgiou C, McNae I, Wear M, Ioannidis H, Michel J, Walkinshaw M: **Pushing the Limits of Detection of Weak Binding Using Fragment-Based Drug Discovery: Identification of New Cyclophilin Binders.** *J Mol Biol* 2017, **429**:2556-2570.
136. Gerber PF, Dawson L, Strugnell B, Burgess R, Brown H, Opriessnig T: **Using oral fluids samples for indirect influenza A virus surveillance in farmed UK pigs.** *Vet Med Sci* 2017, **3**:3-12.
137. Giakoumelou S, Wheelhouse N, Brown J, Wade J, Simitsidellis I, Gibson D, Saunders PTK, Horner P, Entrican G, Howie SEM, et al.: **Chlamydia trachomatis infection of human endometrial stromal cells induces defective decidualisation and chemokine release.** *Sci Rep* 2017, **7**:2001.
138. Gillan V, Maitland K, Laing R, Gu H, Marks ND, Winter AD, Bartley D, Morrison A, Skuce PJ, Rezansoff AM, et al.: **Increased Expression of a MicroRNA Correlates with Anthelmintic Resistance in Parasitic Nematodes.** *Front Cell Infect Microbiol* 2017, **7**:452.
139. Giotti B, Joshi A, Freeman TC: **Meta-analysis reveals conserved cell cycle transcriptional network across multiple human cell types.** *BMC Genomics* 2017, **18**:30.
140. Glendinning L, Wright S, Tennant P, Gill AC, Collie D, McLachlan G: **Microbiota in Exhaled Breath Condensate and the Lung.** *Appl Environ Microbiol* 2017, **83**.
141. Goodman G, Meredith A, Girling S, Rosell F, Campbell-Palmer R: **Outcomes of a 'One Health' Monitoring Approach to a Five-Year Beaver (Castor fiber) Reintroduction Trial in Scotland.** *Ecohealth* 2017, **14**:139-143.
142. Gossner A, Watkins C, Chianini F, Hopkins J: **Pathways and Genes Associated with Immune Dysfunction in Sheep Paratuberculosis.** *Sci Rep* 2017, **7**:46695.
143. Graff M, Scott RA, Justice AE, Young KL, Feitosa MF, Barata L, Winkler TW, Chu AY, Mahajan A, Hadley D, et al.: **Genome-wide physical activity interactions in adiposity - A meta-analysis of 200,452 adults.** *PLoS Genet* 2017, **13**:e1006528.
144. Graham H, Tosif S, Gray A, Qazi S, Campbell H, Peel D, McPake B, Duke T: **Providing oxygen to children in hospitals: a realist review.** *Bull World Health Organ* 2017, **95**:288-302.
145. Granroth-Wilding HM, Daunt F, Cunningham EJ, Burthe SJ: **Between-individual variation in nematode burden among juveniles in a wild host.** *Parasitology* 2017, **144**:248-258.
146. Grant L, Downing J, Luyirika E, Murphy M, Namukwaya L, Kiyange F, Atieno M, Kemigisha-Ssali E, Hunt J, Snell K, et al.: **Integrating palliative care into national health systems in Africa: a multi-country intervention study.** *J Glob Health* 2017, **7**:010419.
147. Gray GA, Gray NK: **A tail of translational regulation.** *Elife* 2017, **6**.
148. Greaves E, Critchley HOD, Horne AW, Saunders PTK: **Relevant human tissue resources and laboratory models for use in endometriosis research.** *Acta Obstet Gynecol Scand* 2017, **96**:644-658.

149. Greaves E, Horne AW, Jerina H, Mikolajczak M, Hilferty L, Mitchell R, Fleetwood-Walker SM, Saunders PT: **EP2 receptor antagonism reduces peripheral and central hyperalgesia in a preclinical mouse model of endometriosis.** *Sci Rep* 2017, **7**:44169.
150. Gripper LB, Welburn SC: **Neurocysticercosis infection and disease-A review.** *Acta Trop* 2017, **166**:218-224.
151. Gripper LB, Welburn SC: **The causal relationship between neurocysticercosis infection and the development of epilepsy - a systematic review.** *Infect Dis Poverty* 2017, **6**:31.
152. Grubaugh ND, Ladner JT, Kraemer MUG, Dudas G, Tan AL, Gangavarapu K, Wiley MR, White S, Theze J, Magnani DM, et al.: **Genomic epidemiology reveals multiple introductions of Zika virus into the United States.** *Nature* 2017, **546**:401-405.
153. Gu HY, Marks ND, Winter AD, Weir W, Tzelos T, McNeilly TN, Britton C, Devaney E: **Conservation of a microRNA cluster in parasitic nematodes and profiling of miRNAs in excretory-secretory products and microvesicles of Haemonchus contortus.** *PLoS Negl Trop Dis* 2017, **11**:e0006056.
154. Gual I, Bartley PM, Katzer F, Innes EA, Canton GJ, Moore DP: **Molecular confirmation of Sarcocystis gigantea in a naturally infected sheep in Argentina: A case report.** *Vet Parasitol* 2017, **248**:25-27.
155. Gupta N, Noel R, Goudet A, Hinsinger K, Michau A, Pons V, Abdelkafi H, Secher T, Shima A, Shtanko O, et al.: **Inhibitors of retrograde trafficking active against ricin and Shiga toxins also protect cells from several viruses, Leishmania and Chlamydiales.** *Chem Biol Interact* 2017, **267**:96-103.
156. Gupta V, Stewart CO, Rund SSC, Monteith K, Vale PF: **Costs and benefits of sublethal Drosophila C virus infection.** *J Evol Biol* 2017, **30**:1325-1335.
157. Gupta V, Vale PF: **Nonlinear disease tolerance curves reveal distinct components of host responses to viral infection.** *R Soc Open Sci* 2017, **4**:170342.
158. Gupta V, Vasanthakrishnan RB, Siva-Jothy J, Monteith KM, Brown SP, Vale PF: **The route of infection determines Wolbachia antibacterial protection in Drosophila.** *Proc Biol Sci* 2017, **284**.
159. Gutierrez AP, Turner F, Gharbi K, Talbot R, Lowe NR, Penaloza C, McCullough M, Prodohl PA, Bean TP, Houston RD: **Development of a Medium Density Combined-Species SNP Array for Pacific and European Oysters (Crassostrea gigas and Ostrea edulis).** *G3 (Bethesda)* 2017, **7**:2209-2218.
160. Guzniczak E, Mohammad Zadeh M, Dempsey F, Jimenez M, Bock H, Whyte G, Willoughby N, Bridle H: **High-throughput assessment of mechanical properties of stem cell derived red blood cells, toward cellular downstream processing.** *Sci Rep* 2017, **7**:14457.
161. Haanstra JR, Gerding A, Dolga AM, Sorgdrager FJ, Buist-Homan M, du Toit F, Faber KN, Holzhutter HG, Szoor B, Matthews KR, et al.: **Targeting pathogen metabolism without collateral damage to the host.** *Sci Rep* 2017, **7**:40406.
162. Haertle S, Alzuheir I, Busalt F, Waters V, Kaiser P, Kaufer BB: **Identification of the Receptor and Cellular Ortholog of the Marek's Disease Virus (MDV) CXC Chemokine.** *Front Microbiol* 2017, **8**:2543.
163. Hamill L, Picozzi K, Fyfe J, von Wissmann B, Wastling S, Wardrop N, Selby R, Acup CA, Bardosh KL, Muhanguzi D, et al.: **Evaluating the impact of targeting livestock for the prevention of human and animal trypanosomiasis, at village level, in districts newly affected with T. b. rhodesiense in Uganda.** *Infect Dis Poverty* 2017, **6**:16.
164. Hamilton CA, Mahan S, Bell CR, Villarreal-Ramos B, Charleston B, Entrican G, Hope JC: **Frequency and phenotype of natural killer cells and natural killer cell subsets in bovine lymphoid compartments and blood.** *Immunology* 2017, **151**:89-97.
165. Hamilton CM, Kelly PJ, Boey K, Corey TM, Huynh H, Metzler D, Villena I, Su C, Innes EA, Katzer F: **Predominance of atypical genotypes of Toxoplasma gondii in free-roaming chickens in St. Kitts, West Indies.** *Parasit Vectors* 2017, **10**:104.

166. Hanlon P, Daines L, Campbell C, McKinsty B, Weller D, Pinnock H: **Telehealth Interventions to Support Self-Management of Long-Term Conditions: A Systematic Metareview of Diabetes, Heart Failure, Asthma, Chronic Obstructive Pulmonary Disease, and Cancer.** *J Med Internet Res* 2017, **19**:e172.
167. Harijan RK, Kiema TR, Syed SM, Qadir I, Mazet M, Bringaud F, Michels PAM, Wierenga RK: **Crystallographic substrate binding studies of Leishmania mexicana SCP2-thiolase (type-2): unique features of oxyanion hole-1.** *Protein Eng Des Sel* 2017, **30**:225-233.
168. Haworth CS, Banks J, Capstick T, Fisher AJ, Gorsuch T, Laurenson IF, Leitch A, Loebinger MR, Milburn HJ, Nightingale M, et al.: **British Thoracic Society guidelines for the management of non-tuberculous mycobacterial pulmonary disease (NTM-PD).** *Thorax* 2017, **72**:ii1-ii64.
169. Hayward A, Pemberton JM, Berenos C, Wilson AJ, Pilkington JG, Kruuk LEB: **Evidence for Selection-by-Environment but Not Genotype-by-Environment Interactions for Fitness-Related Traits in a Wild Mammal Population.** *Genetics* 2017, **208**:349-364.
170. Hayward AD, Moorad J, Regan CE, Berenos C, Pilkington JG, Pemberton JM, Nussey DH: **Corrigendum to "asynchrony of senescence among phenotypic traits in a wild mammal population" [Exp. Gerontol. 71 (2015) 56-68].** *Exp Gerontol* 2017, **96**:162-163.
171. Heath SE, Knox K, Vale PF, Collins S: **Virus Resistance Is Not Costly in a Marine Alga Evolving under Multiple Environmental Stressors.** *Viruses* 2017, **9**.
172. Hendry M, Pasterfield D, Gollins S, Adams R, Evans M, Fiander A, Robling M, Campbell C, Bekkers MJ, Hiscock J, et al.: **Talking about human papillomavirus and cancer: development of consultation guides through lay and professional stakeholder coproduction using qualitative, quantitative and secondary data.** *BMJ Open* 2017, **7**:e015413.
173. Henricot B, Perez-Sierra A, Armstrong AC, Sharp PM, Green S: **Morphological and Genetic Analyses of the Invasive Forest Pathogen Phytophthora austrocedri Reveal that Two Clonal Lineages Colonized Britain and Argentina from a Common Ancestral Population.** *Phytopathology* 2017, **107**:1532-1540.
174. Henry MK, Tongue SC, Evans J, Webster C, Mc KI, Morgan M, Willett A, Reeves A, Humphry RW, Gally DL, et al.: **British Escherichia coli O157 in Cattle Study (BECS): to determine the prevalence of E. coli O157 in herds with cattle destined for the food chain.** *Epidemiol Infect* 2017, **145**:3168-3179.
175. Hill AT, Haworth CS, Aliberti S, Barker A, Blasi F, Boersma W, Chalmers JD, De Soyza A, Dimakou K, Elborn JS, et al.: **Pulmonary exacerbation in adults with bronchiectasis: a consensus definition for clinical research.** *Eur Respir J* 2017, **49**.
176. Ho GT, Aird RE, Liu B, Boyapati RK, Kennedy NA, Dorward DA, Noble CL, Shimizu T, Carter RN, Chew ET, et al.: **MDR1 deficiency impairs mitochondrial homeostasis and promotes intestinal inflammation.** *Mucosal Immunol* 2017, **11**:120-130.
177. Høltedahl K, Vedsted P, Borgquist L, Donker GA, Buntinx F, Weller D, Braaten T, Hjertholm P, Mansson J, Strandberg EL, et al.: **Abdominal symptoms in general practice: Frequency, cancer suspicions raised, and actions taken by GPs in six European countries. Cohort study with prospective registration of cancer.** *Heliyon* 2017, **3**:e00328.
178. Hooper KM, Barlow PG, Stevens C, Henderson P: **Inflammatory Bowel Disease Drugs: A Focus on Autophagy.** *J Crohns Colitis* 2017, **11**:118-127.
179. Horne AW, Vincent K, Clegg R, Daniels J: **Is gabapentin effective for women with unexplained chronic pelvic pain?** *Bmj* 2017, **358**:j3520.
180. Horton B, Katzer F, Desmulliez MPY, Bridle HL: **Towards enhanced automated elution systems for waterborne protozoa using megasonic energy.** *J Microbiol Methods* 2017, **145**:28-36.
181. Houdijk JGM, Tolkamp BJ, Rooke JA, Hutchings MR: **Animal health and greenhouse gas intensity: the paradox of periparturient parasitism.** *Int J Parasitol* 2017, **47**:633-641.

182. Hume DA, Wollscheid-Lengeling E, Rojo R, Pridans C: **The evolution of the macrophage-specific enhancer (Fms intronic regulatory element) within the CSF1R locus of vertebrates.** *Sci Rep* 2017, **7**:17115.
183. Huor A, Douet JY, Lacroux C, Lugan S, Tillier C, Aron N, Cassard H, Arnold M, Torres JM, Ironside JW, et al.: **Infectivity in bone marrow from sporadic CJD patients.** *J Pathol* 2017, **243**:273-278.
184. Indrigo E, Clavadetscher J, Chankeshwara SV, Megia-Fernandez A, Lilienkampf A, Bradley M: **Intracellular delivery of a catalytic organometallic complex.** *Chem Commun (Camb)* 2017, **53**:6712-6715.
185. Innes H, McDonald S, Hayes P, Dillon JF, Allen S, Goldberg D, Mills PR, Barclay ST, Wilks D, Valerio H, et al.: **Mortality in hepatitis C patients who achieve a sustained viral response compared to the general population.** *J Hepatol* 2017, **66**:19-27.
186. Ironside JW, Ritchie DL, Head MW: **Prion diseases.** *Handb Clin Neurol* 2017, **145**:393-403.
187. Iyer SS, Bibollet-Ruche F, Sherrill-Mix S, Learn GH, Plenderleith L, Smith AG, Barbian HJ, Russell RM, Gondim MV, Bahari CY, et al.: **Resistance to type 1 interferons is a major determinant of HIV-1 transmission fitness.** *Proc Natl Acad Sci U S A* 2017, **114**:E590-e599.
188. Jack C, Hotchkiss E, Sargison ND, Toma L, Milne C, Bartley DJ: **A quantitative analysis of attitudes and behaviours concerning sustainable parasite control practices from Scottish sheep farmers.** *Prev Vet Med* 2017, **139**:134-145.
189. Jackson-Jones LH, Benezech C: **Control of innate-like B cell location for compartmentalised IgM production.** *Curr Opin Immunol* 2017, **50**:9-13.
190. Jensen K, Gallagher IJ, Johnston N, Welsh M, Skuce R, Williams JL, Glass EJ: **Variation in the early host-pathogen interaction of bovine macrophages with divergent UK Mycobacterium bovis strains.** *Infect Immun* 2017.
191. Johannessen I, Danial J, Smith DB, Richards J, Imrie L, Rankin A, Willlocks LJ, Evans C, Leen C, Gibson P, et al.: **Molecular and Epidemiological Evidence of Patient-to-Patient Hepatitis C virus Transmission in a Scottish Emergency Department.** *J Hosp Infect* 2017.
192. Johansen MV, Welburn SC, Dorny P, Brattig NW: **Control of neglected zoonotic diseases.** *Acta Trop* 2017, **165**:1-2.
193. Johnston CJC, Smyth DJ, Kodali RB, White MPJ, Harcus Y, Filbey KJ, Hewitson JP, Hinck CS, Ivens A, Kemter AM, et al.: **A structurally distinct TGF-beta mimic from an intestinal helminth parasite potently induces regulatory T cells.** *Nat Commun* 2017, **8**:1741.
194. Johnston HJ, Verdon R, Gillies S, Brown DM, Fernandes TF, Henry TB, Rossi AG, Tran L, Tucker C, Tyler CR, et al.: **Adoption of in vitro systems and zebrafish embryos as alternative models for reducing rodent use in assessments of immunological and oxidative stress responses to nanomaterials.** *Crit Rev Toxicol* 2017, **48**:252-271.
195. Joshi PK, Pirastu N, Kentistou KA, Fischer K, Hofer E, Schraut KE, Clark DW, Nutile T, Barnes CLK, Timmers P, et al.: **Genome-wide meta-analysis associates HLA-DQA1/DRB1 and LPA and lifestyle factors with human longevity.** *Nat Commun* 2017, **8**:910.
196. Jubb AW, Boyle S, Hume DA, Bickmore WA: **Glucocorticoid Receptor Binding Induces Rapid and Prolonged Large-Scale Chromatin Decompaction at Multiple Target Loci.** *Cell Rep* 2017, **21**:3022-3031.
197. Kamidi CM, Saarman NP, Dion K, Mireji PO, Ouma C, Murilla G, Aksoy S, Schnauffer A, Caccone A: **Multiple evolutionary origins of Trypanosoma evansi in Kenya.** *PLoS Negl Trop Dis* 2017, **11**:e0005895.
198. Kanguru L, Bikker A, Cavers D, Barnett K, Brewster DH, Weller D, Campbell C: **Pathways to diagnosis of a second primary cancer: protocol for a mixed-methods systematic review.** *BMJ Open* 2017, **7**:e017929.
199. Kannan A, Bhurke A, Sitruk-Ware R, Lalitkumar PG, Gemzell-Danielsson K, Williams ARW, Taylor RN, Bagchi MK, Bagchi IC: **Characterization of Molecular Changes in Endometrium Associated With Chronic Use of Progesterone Receptor Modulators: Ulipristal Acetate Versus Mifepristone.** *Reprod Sci* 2017:1933719117746764.



200. Karagianni AE, Kapetanovic R, Summers KM, McGorum BC, Hume DA, Pirie RS: **Comparative transcriptome analysis of equine alveolar macrophages.** *Equine Vet J* 2017, **49**:375-382.
201. Karuppanan AK, Opriessnig T: **Porcine Circovirus Type 2 (PCV2) Vaccines in the Context of Current Molecular Epidemiology.** *Viruses* 2017, **9**.
202. Kast JI, McFarlane AJ, Globinska A, Sokolowska M, Wawrzyniak P, Sanak M, Schwarze J, Akdis CA, Wanke K: **Respiratory syncytial virus infection influences tight junction integrity.** *Clin Exp Immunol* 2017, **190**:351-359.
203. Kaur S, Raggatt LJ, Batoon L, Hume DA, Levesque JP, Pettit AR: **Role of bone marrow macrophages in controlling homeostasis and repair in bone and bone marrow niches.** *Semin Cell Dev Biol* 2017, **61**:12-21.
204. Kavanagh K, Pollock KG, Cuschieri K, Palmer T, Cameron RL, Watt C, Bhatia R, Moore C, Cubie H, Cruickshank M, et al.: **Changes in the prevalence of human papillomavirus following a national bivalent human papillomavirus vaccination programme in Scotland: a 7-year cross-sectional study.** *Lancet Infect Dis* 2017, **17**:1293-1302.
205. Kelly S, Ivens A, Mott GA, O'Neill E, Emms D, Macleod O, Voorheis P, Tyler K, Clark M, Matthews J, et al.: **An Alternative Strategy for Trypanosome Survival in the Mammalian Bloodstream Revealed through Genome and Transcriptome Analysis of the Ubiquitous Bovine Parasite Trypanosoma (Megatrypanum) theileri.** *Genome Biol Evol* 2017, **9**:2093-2109.
206. Keogh MJ, Wei W, Wilson I, Coxhead J, Ryan S, Rollinson S, Griffin H, Kurzawa-Akanbi M, Santibanez-Koref M, Talbot K, et al.: **Genetic compendium of 1511 human brains available through the UK Medical Research Council Brain Banks Network Resource.** *Genome Res* 2017, **27**:165-173.
207. Kerrin A, Fitch P, Errington C, Kerr D, Waxman L, Riding K, McCormack J, Mehendele F, McSorley H, MacKenzie K, et al.: **Differential lower airway dendritic cell patterns may reveal distinct endotypes of RSV bronchiolitis.** *Thorax* 2017, **72**:620-627.
208. Keser T, Gornik I, Vuckovic F, Selak N, Pavic T, Lukic E, Gudelj I, Gasparovic H, Biocina B, Tilin T, et al.: **Increased plasma N-glycome complexity is associated with higher risk of type 2 diabetes.** *Diabetologia* 2017, **60**:2352-2360.
209. Keuss SE, Ironside JW, O'Riordan J: **Gerstmann-Straussler-Scheinker disease with atypical presentation.** *BMJ Case Rep* 2017, **2017**.
210. Kirin M, Nagy R, MacGillivray TJ, Polasek O, Hayward C, Rudan I, Campbell H, Wild S, Wright AF, Wilson JF, et al.: **Determinants of retinal microvascular features and their relationships in two European populations.** *J Hypertens* 2017, **35**:1646-1659.
211. Kneeshaw S, Keyani R, Delorme-Hinoux V, Imrie L, Loake GJ, Le Bihan T, Reichheld JP, Spoel SH: **Nucleoredoxin guards against oxidative stress by protecting antioxidant enzymes.** *Proc Natl Acad Sci U S A* 2017.
212. Kolbjornsen O, Bergsjo B, Sveen J, Opriessnig T: **Erysipelothrix rhusiopathiae serotype 5-associated metritis in a Norwegian Red heifer.** *Apmis* 2017.
213. Kolte SW, Larcombe SD, Jadhao SG, Magar SP, Warthi G, Kurkure NV, Glass EJ, Shiels BR: **PCR diagnosis of tick-borne pathogens in Maharashtra state, India indicates fitness cost associated with carrier infections is greater for crossbreed than native cattle breeds.** *PLoS One* 2017, **12**:e0174595.
214. Kontaxi C, Piccardo P, Gill AC: **Lysine-Directed Post-translational Modifications of Tau Protein in Alzheimer's Disease and Related Tauopathies.** *Front Mol Biosci* 2017, **4**:56.
215. Koop G, Vrieling M, Storisteanu DM, Lok LS, Monie T, van Wigcheren G, Raisen C, Ba X, Gleadall N, Hadjirin N, et al.: **Identification of LukPQ, a novel, equid-adapted leukocidin of Staphylococcus aureus.** *Sci Rep* 2017, **7**:40660.
216. Kortekaas Krohn I, Shikhagaie MM, Golebski K, Bernink JHJ, Breynaert C, Creyngs B, Diamant Z, Fokkens WJ, Gevaert P, Hellings P, et al.: **Emerging roles of innate lymphoid cells in inflammatory diseases: clinical implications.** *Allergy* 2017.

217. Kozielowicz P, Alomar H, Yusof S, Grafton G, Cooper AJ, Curnow SJ, Ironside JW, Pall H, Barnes NM: **N-glycosylation and expression in human tissues of the orphan GPR61 receptor.** *FEBS Open Bio* 2017, **7**:1982-1993.
218. Kraemer S, Bondel KB, Ness RW, Keightley PD, Colegrave N: **Fitness change in relation to mutation number in spontaneous mutation accumulation lines of *Chlamydomonas reinhardtii*.** *Evolution* 2017, **71**:2918-2929.
219. Krejciova Z, Alibhai J, Zhao C, Krencik R, Rzechorzek NM, Ullian EM, Manson J, Ironside JW, Head MW, Chandran S: **Human stem cell-derived astrocytes replicate human prions in a PRNP genotype-dependent manner.** *J Exp Med* 2017, **214**:3481-3495.
220. Kronholm I, Bassett A, Baulcombe D, Collins S: **Epigenetic and Genetic Contributions to Adaptation in *Chlamydomonas*.** *Mol Biol Evol* 2017, **34**:2285-2306.
221. Kuls N, Blissitt KJ, Shaw DJ, Schoffmann G, Clutton RE: **Thermography as an early predictive measurement for evaluating epidural and femoral-sciatic block success in dogs.** *Vet Anaesth Analg* 2017, **44**:1198-1207.
222. Kuo RI, Tseng E, Eory L, Paton IR, Archibald AL, Burt DW: **Normalized long read RNA sequencing in chicken reveals transcriptome complexity similar to human.** *BMC Genomics* 2017, **18**:323.
223. Lachapelle J, Colegrave N, Bell G: **The effect of selection history on extinction risk during severe environmental change.** *J Evol Biol* 2017, **30**:1872-1883.
224. Laetsch DR, Blaxter ML: **KinFin: Software for Taxon-Aware Analysis of Clustered Protein Sequences.** *G3 (Bethesda)* 2017, **7**:3349-3357.
225. Lagger S, Connelly JC, Schweikert G, Webb S, Selfridge J, Ramsahoye BH, Yu M, He C, Sanguinetti G, Sowers LC, et al.: **MeCP2 recognizes cytosine methylated tri-nucleotide and di-nucleotide sequences to tune transcription in the mammalian brain.** *PLoS Genet* 2017, **13**:e1006793.
226. Langat P, Raghwani J, Dudas G, Bowden TA, Edwards S, Gall A, Bedford T, Rambaut A, Daniels RS, Russell CA, et al.: **Genome-wide evolutionary dynamics of influenza B viruses on a global scale.** *PLoS Pathog* 2017, **13**:e1006749.
227. Larralde O, Petrik J: **Phage-displayed peptides that mimic epitopes of hepatitis E virus capsid.** *Med Microbiol Immunol* 2017, **206**:301-309.
228. Lathe R, Haas JG: **Distribution of cellular HSV-1 receptor expression in human brain.** *J Neurovirol* 2017, **23**:376-384.
229. Lauder SN, Tyrrell VJ, Allen-Redpath K, Aldrovandi M, Gray D, Collins P, Jones SA, Taylor PR, O'Donnell V: **Myeloid 12/15-LOX regulates B cell numbers and innate immune antibody levels in vivo.** *Wellcome Open Res* 2017, **2**:1.
230. Le Pendu J, Abrantes J, Bertagnoli S, Guitton JS, Le Gall-Recule G, Lopes AM, Marchandeu S, Alda F, Almeida T, Celio AP, et al.: **Proposal for a unified classification system and nomenclature of lagoviruses.** *J Gen Virol* 2017, **98**:1658-1666.
231. Lee AM, Wolfe A, Cassidy JP, Mc VMILL, Moriarty JP, O'Neill R, Fahy C, Connaghan E, Cousens C, Dagleish MP, et al.: **First confirmation by PCR of Jaagsiekte sheep retrovirus in Ireland and prevalence of ovine pulmonary adenocarcinoma in adult sheep at slaughter.** *Ir Vet J* 2017, **70**:33.
232. Lemmers RFH, Vilaj M, Urda D, Agakov F, Simurina M, Klaric L, Rudan I, Campbell H, Hayward C, Wilson JF, et al.: **IgG glycan patterns are associated with type 2 diabetes in independent European populations.** *Biochim Biophys Acta* 2017, **1861**:2240-2249.
233. Lempereur L, Larcombe SD, Durrani Z, Karagenc T, Bilgic HB, Bakirci S, Hacilarlioglu S, Kinnaird J, Thompson J, Weir W, et al.: **Identification of candidate transmission-blocking antigen genes in *Theileria annulata* and related vector-borne apicomplexan parasites.** *BMC Genomics* 2017, **18**:438.
234. Lepore T, Bartley PM, Chianini F, Macrae AI, Innes EA, Katzer F: **Molecular detection of *Sarcocystis lutrae* in the European badger (*Meles meles*) in Scotland.** *Parasitology* 2017, **144**:1426-1432.





246. Lu L, Leigh Brown AJ, Lycett SJ: **Quantifying predictors for the spatial diffusion of avian influenza virus in China.** *BMC Evol Biol* 2017, **17**:16.
247. Luo SX, Fan JH, Opriessnig T, Di JM, Liu BJ, Zuo YZ: **Development and application of a recombinant M protein-based indirect ELISA for the detection of porcine deltacoronavirus IgG antibodies.** *J Virol Methods* 2017, **249**:76-78.
248. Lupolova N, Dallman TJ, Holden NJ, Gally DL: **Patchy promiscuity: machine learning applied to predict the host specificity of Salmonella enterica and Escherichia coli.** *Microb Genom* 2017, **3**:e000135.
249. Ma Z, Yu Y, Xiao Y, Opriessnig T, Wang R, Yang L, Nan Y, Samal SK, Halbur PG, Zhang YJ: **The middle half genome of interferon-inducing porcine reproductive and respiratory syndrome virus strain A2MC2 is essential for interferon induction.** *J Gen Virol* 2017, **98**:1720-1729.
250. Mabbott NA: **Immunology of Prion Protein and Prions.** *Prog Mol Biol Transl Sci* 2017, **150**:203-240.
251. Mabbott NA: **How do PrP(Sc) Prions Spread between Host Species, and within Hosts?** *Pathogens* 2017, **6**.
252. Maboni G, Davenport R, Sessford K, Baiker K, Jensen TK, Blanchard AM, Wattedgedera S, Entrican G, Totemeyer S: **A Novel 3D Skin Explant Model to Study Anaerobic Bacterial Infection.** *Front Cell Infect Microbiol* 2017, **7**:404.
253. MacArthur I, Anastasi E, Alvarez S, Scotti M, Vazquez-Boland JA: **Comparative Genomics of Rhodococcus equi Virulence Plasmids Indicates Host-Driven Evolution of the vap Pathogenicity Island.** *Genome Biol Evol* 2017, **9**:1241-1247.
254. MacDonald F, Zaiss DMW: **The Immune System's Contribution to the Clinical Efficacy of EGFR Antagonist Treatment.** *Front Pharmacol* 2017, **8**:575.
255. Macdonald SE, Nolan MJ, Harman K, Boulton K, Hume DA, Tomley FM, Stabler RA, Blake DP: **Effects of Eimeria tenella infection on chicken caecal microbiome diversity, exploring variation associated with severity of pathology.** *PLoS One* 2017, **12**:e0184890.
256. Macedo CAB, Macedo M, Miura AC, Taroda A, Cardim ST, Innes EA, Katzer F, Canton GJ, Chianini F, Headley SA, et al.: **Occurrence of abortions induced by Neospora caninum in dairy cattle from Santa Catarina, southern Brazil.** *Rev Bras Parasitol Vet* 2017, **26**:292-298.
257. Macqueen DJ, Primmer CR, Houston RD, Nowak BF, Bernatchez L, Bergseth S, Davidson WS, Gallardo-Escarate C, Goldammer T, Guiguen Y, et al.: **Functional Annotation of All Salmonid Genomes (FAASG): an international initiative supporting future salmonid research, conservation and aquaculture.** *BMC Genomics* 2017, **18**:484.
258. Majekodunmi AO, Dongkum C, Langs T, Shaw APM, Welburn SC: **Shifting livelihood strategies in northern Nigeria - extensified production and livelihood diversification amongst Fulani pastoralists.** *Pastoralism* 2017, **7**:19.
259. Man WH, de Steenhuijsen Piters WA, Bogaert D: **The microbiota of the respiratory tract: gatekeeper to respiratory health.** *Nat Rev Microbiol* 2017, **15**:259-270.
260. Mateescu B, Kowal EJ, van Balkom BW, Bartel S, Bhattacharyya SN, Buzas EI, Buck AH, de Candia P, Chow FW, Das S, et al.: **Obstacles and opportunities in the functional analysis of extracellular vesicle RNA - an ISEV position paper.** *J Extracell Vesicles* 2017, **6**:1286095.
261. Matthews PC, Sharp C, Simmonds P, Klennerman P: **Human parvovirus 4 'PARV4' remains elusive despite a decade of study.** *F1000Res* 2017, **6**:82.
262. Maury MM, Chenal-Francois V, Bracq-Dieye H, Han L, Leclercq A, Vales G, Moura A, Gouin E, Scotti M, Disson O, et al.: **Spontaneous Loss of Virulence in Natural Populations of Listeria monocytogenes.** *Infect Immun* 2017, **85**.
263. May-Wilson S, Sud A, Law PJ, Palin K, Tuupainen S, Gylfe A, Hanninen UA, Cajuso T, Tanskanen T, Kondelin J, et al.: **Pro-inflammatory fatty acid profile and colorectal cancer risk: A Mendelian randomisation analysis.** *Eur J Cancer* 2017, **84**:228-238.

264. Mazeri S, Rydevik G, Handel I, Bronsvort BMD, Sargison N: **Estimation of the impact of Fasciola hepatica infection on time taken for UK beef cattle to reach slaughter weight.** *Sci Rep* 2017, **7**:7319.
265. McCaskill JL, Ressel S, Alber A, Redford J, Power UF, Schwarze J, Dutia BM, Buck AH: **Broad-Spectrum Inhibition of Respiratory Virus Infection by MicroRNA Mimics Targeting p38 MAPK Signaling.** *Mol Ther Nucleic Acids* 2017, **7**:256-266.
266. McFarlane AJ, McSorley HJ, Davidson DJ, Fitch PM, Errington C, Mackenzie KJ, Gollwitzer ES, Johnston CJC, MacDonald AS, Edwards MR, et al.: **Enteric helminth-induced type I interferon signaling protects against pulmonary virus infection through interaction with the microbiota.** *J Allergy Clin Immunol* 2017, **140**:1068-1078.e1066.
267. McGlasson SL, Semple F, MacPherson H, Gray M, Davidson DJ, Dorin JR: **Human beta-defensin 3 increases the TLR9-dependent response to bacterial DNA.** *Eur J Immunol* 2017, **47**:658-664.
268. McGrath JS, Honrado C, Spencer D, Horton B, Bridle HL, Morgan H: **Analysis of Parasitic Protozoa at the Single-cell Level using Microfluidic Impedance Cytometry.** *Sci Rep* 2017, **7**:2601.
269. McHugh MP, Wu AHB, Chevaliez S, Pawlowsky JM, Hallin M, Templeton KE: **Multicenter Evaluation of the Cepheid Xpert Hepatitis C Virus Viral Load Assay.** *J Clin Microbiol* 2017, **55**:1550-1556.
270. McLean CJ, Marles-Wright J, Custodio R, Lowther J, Kennedy AJ, Pollock J, Clarke DJ, Brown AR, Campopiano DJ: **Characterization of homologous sphingosine-1-phosphate lyase isoforms in the bacterial pathogen Burkholderia pseudomallei.** *J Lipid Res* 2017, **58**:137-150.
271. McNeil M, Gerber PF, Thomson J, Williamson S, Opriessnig T: **Serotypes and Spa types of Erysipelothrix rhusiopathiae isolates from British pigs (1987 to 2015).** *Vet J* 2017, **225**:13-15.
272. McNeilly TN: **Global food security via efficient livestock production: targeting poor animal husbandry.** *Vet Rec* 2017, **180**:276-277.
273. McNeilly TN, Frew D, Burgess STG, Wright H, Bartley DJ, Bartley Y, Nisbet AJ: **Niche-specific gene expression in a parasitic nematode; increased expression of immunomodulators in Teladorsagia circumcincta larvae derived from host mucosa.** *Sci Rep* 2017, **7**:7214.
274. McQueen J, Ryan TJ, McKay S, Marwick K, Baxter P, Carpanini SM, Wishart TM, Gillingwater TH, Manson JC, Wyllie DJA, et al.: **Pro-death NMDA receptor signaling is promoted by the GluN2B C-terminus independently of Dapk1.** *Elife* 2017, **6**.
275. Mduluzi T, Mutapi F: **Putting the treatment of paediatric schistosomiasis into context.** *Infect Dis Poverty* 2017, **6**:85.
276. Megia-Fernandez A, Mills B, Michels C, Chankeshwara SV, Dhaliwal K, Bradley M: **Highly selective and rapidly activatable fluorogenic Thrombin sensors and application in human lung tissue.** *Org Biomol Chem* 2017, **15**:4344-4350.
277. Mehrotra R, Renganaath K, Kanodia H, Loake GJ, Mehrotra S: **Towards combinatorial transcriptional engineering.** *Biotechnol Adv* 2017, **35**:390-405.
278. Meng LS, Wang YB, Loake GJ, Jiang JH: **Corrigendum: Seed Embryo Development Is Regulated via an AN3-MINI3 Gene Cascade.** *Front Plant Sci* 2017, **8**:1073.
279. Metsky HC, Matranga CB, Wohl S, Schaffner SF, Freije CA, Winnicki SM, West K, Qu J, Baniecki ML, Gladden-Young A, et al.: **Zika virus evolution and spread in the Americas.** *Nature* 2017, **546**:411-415.
280. Miles K, Simpson J, Brown S, Cowan G, Gray D, Gray M: **Immune Tolerance to Apoptotic Self Is Mediated Primarily by Regulatory B1a Cells.** *Front Immunol* 2017, **8**:1952.
281. Millar M, Foster A, Mitchell G, Skuce P, Wessels J, Elena VR, Rachael C, Heather S: **Rumen fluke in South American camelids in Great Britain.** *Vet Rec* 2017, **181**:123-124.

282. Mills B, Akram AR, Scholefield E, Bradley M, Dhaliwal K: **Optical Screening of Novel Bacteria-specific Probes on Ex Vivo Human Lung Tissue by Confocal Laser Endomicroscopy.** *J Vis Exp* 2017.
283. Minutti CM, Drube S, Blair N, Schwartz C, McCrae JC, McKenzie AN, Kamradt T, Mokry M, Coffey PJ, Sibilio M, et al.: **Epidermal Growth Factor Receptor Expression Licenses Type-2 Helper T Cells to Function in a T Cell Receptor-Independent Fashion.** *Immunity* 2017, **47**:710-722.e716.
284. Minutti CM, Jackson-Jones LH, Garcia-Fojeda B, Knipper JA, Sutherland TE, Logan N, Ringqvist E, Guillaumat-Prats R, Ferenbach DA, Artigas A, et al.: **Local amplifiers of IL-4/alpha-mediated macrophage activation promote repair in lung and liver.** *Science* 2017, **356**:1076-1080.
285. Minutti CM, Knipper JA, Allen JE, Zaiss DM: **Tissue-specific contribution of macrophages to wound healing.** *Semin Cell Dev Biol* 2017, **61**:3-11.
286. Mitchell G, Cuthill G, Haine A, Zadoks R, Chaudhry U, Skuce P, Sargison N: **Evaluation of molecular methods for the field study of the natural history of *Dicrocoelium dendriticum*.** *Vet Parasitol* 2017, **235**:100-105.
287. Mohamad F, Tanner MG, Choudhury D, Choudhary TR, Wood HAC, Harrington K, Bradley M: **Controlled core-to-core photo-polymerisation - fabrication of an optical fibre-based pH sensor.** *Analyst* 2017, **142**:3569-3572.
288. Moon S, Leigh J, Woskie L, Checchi F, Dzau V, Fallah M, Fitzgerald G, Garrett L, Gostin L, Heymann DL, et al.: **Post-Ebola reforms: ample analysis, inadequate action.** *Bmj* 2017, **356**:j280.
289. Muangsombut V, Withatanung P, Srinon V, Chantratita N, Stevens MP, Blackwell JM, Korbsrisate S: **Burkholderia pseudomallei Evades Nramp1 (Slc11a1)- and NADPH Oxidase-Mediated Killing in Macrophages and Exhibits Nramp1-Dependent Virulence Gene Expression.** *Front Cell Infect Microbiol* 2017, **7**:350.
290. Muhleip AW, Dewar CE, Schnauffer A, Kuhlbrandt W, Davies KM: **In situ structure of trypanosomal ATP synthase dimer reveals a unique arrangement of catalytic subunits.** *Proc Natl Acad Sci U S A* 2017, **114**:992-997.
291. Murray AD, Turner K, Archibald D, Schiphorst C, Griffin SA, Scott H, Hawkes R, Kelly P, Grant L, Mutrie N: **An observational study of spectators' step counts and reasons for attending a professional golf tournament in Scotland.** *BMJ Open Sport Exerc Med* 2017, **3**:e000244.
292. Murray S, Pascoe B, Meric G, Mageiros L, Yahara K, Hitchings MD, Friedmann Y, Wilkinson TS, Gormley FJ, Mack D, et al.: **Recombination-Mediated Host Adaptation by Avian *Staphylococcus aureus*.** *Genome Biol Evol* 2017, **9**:830-842.
293. Mutapi F, Maizels R, Fenwick A, Woolhouse M: **Human schistosomiasis in the post mass drug administration era.** *Lancet Infect Dis* 2017, **17**:e42-e48.
294. Mwiinde AM, Simuunza M, Namangala B, Chama-Chiliba CM, Machila N, Anderson N, Shaw A, Welburn SC: **Estimating the economic and social consequences for patients diagnosed with human African trypanosomiasis in Muchinga, Lusaka and Eastern Provinces of Zambia (2004-2014).** *Infect Dis Poverty* 2017, **6**:150.
295. Nading AM: **Local Biologies, Leaky Things, and the Chemical Infrastructure of Global Health.** *Med Anthropol* 2017, **36**:141-156.
296. Nair H: **Simplified antibiotic regimens for community management of neonatal sepsis.** *Lancet Glob Health* 2017, **5**:e118-e120.
297. Nausch N, Mutapi F: **Group 2 ILCs: a way of enhancing immune protection against human helminths?** *Parasite Immunol* 2017, **40**.
298. Naylor AD, Girling SJ, Brown D, Crompton CG, Pizzi R: **Plasma protein electrophoresis as a prognostic indicator in *Aspergillus* species-infected Gentoo penguins (*Pygoscelis papua papua*).** *Vet Clin Pathol* 2017, **46**:605-614.
299. Neely AH, Nading AM: **Global health from the outside: The promise of place-based research.** *Health Place* 2017, **45**:55-63.

300. Neumann K, Jain S, Gambardella A, Walker SE, Valero E, Lilienkamp A, Bradley M: **Tetrazine-Responsive Self-immolative Linkers**. *ChemBiochem* 2017, **18**:91-95.
301. Newmark H, Dantoft W, Ghazal P: **Evolutionary Origin of the Interferon-Immune Metabolic Axis: The Sterol-Vitamin D Link**. *Front Immunol* 2017, **8**:62.
302. Ni Choileain S, Hay J, Thomas J, Williams A, Vermeren MM, Benezech C, Gomez-Salazar M, Hugues OR, Vermeren S, Howie SEM, et al.: **TCR-stimulated changes in cell surface CD46 expression generate type 1 regulatory T cells**. *Sci Signal* 2017, **10**.
303. Nijhuis RH, Guerendiain D, Claas EC, Templeton KE: **Comparison of the ePlex(R) Respiratory Pathogen Panel with Laboratory Developed Real-Time PCR for the Detection of Respiratory Pathogens**. *J Clin Microbiol* 2017, **55**:1938-1945.
304. Nijhuis RHT, Guerendiain D, Claas ECJ, Templeton KE: **Comparison of ePlex Respiratory Pathogen Panel with Laboratory-Developed Real-Time PCR Assays for Detection of Respiratory Pathogens**. *J Clin Microbiol* 2017, **55**:1938-1945.
305. Nilsson L, Brockow K, Alm J, Cardona V, Caubet JC, Gomes E, Jenmalm MC, Lau S, Netterlid E, Schwarze J, et al.: **Vaccination and allergy: EAACI position paper, practical aspects**. *Pediatr Allergy Immunol* 2017, **28**:628-640.
306. Noguchi S, Arakawa T, Fukuda S, Furuno M, Hasegawa A, Hori F, Ishikawa-Kato S, Kaida K, Kaiho A, Kanamori-Katayama M, et al.: **FANTOM5 CAGE profiles of human and mouse samples**. *Sci Data* 2017, **4**:170112.
307. Nowak MA, Waclaw B: **Genes, environment, and "bad luck"**. *Science* 2017, **355**:1266-1267.
308. Olukosi OA, Kasprzak MM, Kightley S, Carre P, Wiseman J, Houdijk JGM: **Investigations of the nutritive value of meals of double-low rapeseed and its influence on growth performance of broiler chickens**. *Poult Sci* 2017, **96**:3338-3350.
309. Onzere CK, Bastos AD, Okoth EA, Lichoti JK, Bochere EN, Owido MG, Ndambuki G, Bronsvort M, Bishop RP: **Multi-locus sequence typing of African swine fever viruses from endemic regions of Kenya and Eastern Uganda (2011-2013) reveals rapid B602L central variable region evolution**. *Virus Genes* 2017.
310. Opiessnig T, Gerber PF, Matzinger SR, Meng XJ, Halbur PG: **Markedly different immune responses and virus kinetics in littermates infected with porcine circovirus type 2 or porcine parvovirus type 1**. *Vet Immunol Immunopathol* 2017, **191**:51-59.
311. Opiessnig T, Gerber PF, Shen H, de Castro A, Zhang J, Chen Q, Halbur P: **Evaluation of the efficacy of a commercial inactivated genogroup 2b-based porcine epidemic diarrhea virus (PEDV) vaccine and experimental live genogroup 1b exposure against 2b challenge**. *Vet Res* 2017, **48**:69.
312. Opiessnig T, Xiao CT, Halbur PG, Gerber PF, Matzinger SR, Meng XJ: **A commercial porcine circovirus (PCV) type 2a-based vaccine reduces PCV2d viremia and shedding and prevents PCV2d transmission to naive pigs under experimental conditions**. *Vaccine* 2017, **35**:248-254.
313. Orru CD, Yuan J, Appleby BS, Li B, Li Y, Winner D, Wang Z, Zhan YA, Rodgers M, Rarick J, et al.: **Prion seeding activity and infectivity in skin samples from patients with sporadic Creutzfeldt-Jakob disease**. *Sci Transl Med* 2017, **9**.
314. Osbourn M, Soares DC, Vacca F, Cohen ES, Scott IC, Gregory WF, Smyth DJ, Toivakka M, Kemter AM, le Bihan T, et al.: **HpARI Protein Secreted by a Helminth Parasite Suppresses Interleukin-33**. *Immunity* 2017, **47**:739-751.e735.
315. Pagaling E, Vassileva K, Mills CG, Bush T, Blythe RA, Schwarz-Linek J, Strathdee F, Allen RJ, Free A: **Assembly of microbial communities in replicate nutrient-cycling model ecosystems follows divergent trajectories, leading to alternate stable states**. *Environ Microbiol* 2017, **19**:3374-3386.
316. Parcell BJ, Jarchow-MacDonald AA, Seagar AL, Laurenson IF, Prescott GJ, Lockhart M: **Three year evaluation of Xpert MTB/RIF in a low prevalence tuberculosis setting: A Scottish perspective**. *J Infect* 2017, **74**:466-472.

317. Partridge FA, Brown AE, Buckingham SD, Willis NJ, Wynne GM, Forman R, Else KJ, Morrison AA, Matthews JB, Russell AJ, et al.: **An automated high-throughput system for phenotypic screening of chemical libraries on *C. elegans* and parasitic nematodes.** *Int J Parasitol Drugs Drug Resist* 2017, **8**:8-21.
318. Pattle SB, Utjesanovic N, Togo A, Wells L, Conn B, Monaghan H, Junor E, Johannessen I, Cuschieri K, Talbot S: **Copy number gain of 11q13.3 genes associates with pathological stage in hypopharyngeal squamous cell carcinoma.** *Genes Chromosomes Cancer* 2017, **56**:185-198.
319. Paulsson J, El Karoui M, Lindell M, Hughes D: **The processive kinetics of gene conversion in bacteria.** *Mol Microbiol* 2017, **104**:752-760.
320. Pavelin J, McCormick D, Chiweshe S, Ramachandran S, Lin YT, Grey F: **Cellular v-ATPase is required for virion assembly compartment formation in human cytomegalovirus infection.** *Open Biol* 2017, **7**.
321. Peachey LE, Pinchbeck GL, Matthews JB, Burden FA, Lespine A, von Samson-Himmelstjerna G, Krucken J, Hodgkinson JE: **P-glycoproteins play a role in ivermectin resistance in cyathostomins.** *Int J Parasitol Drugs Drug Resist* 2017, **7**:388-398.
322. Pemberton JM, Ellis PE, Pilkington JG, Berenos C: **Inbreeding depression by environment interactions in a free-living mammal population.** *Heredity (Edinb)* 2017, **118**:64-77.
323. Pereira CF, Read EKC, Wise HM, Amorim MJ, Digard P: **Influenza A Virus NS1 Protein Promotes Efficient Nuclear Export of Unspliced Viral M1 mRNA.** *J Virol* 2017, **91**.
324. Platteel ACM, Henri S, Zaiss DM, Sijts A: **Dissecting antigen processing and presentation routes in dermal vaccination strategies.** *Vaccine* 2017, **30**:7057-7063.
325. Ploeger HW, Ankum L, Moll L, van Doorn DCK, Mitchell G, Skuce PJ, Zadoks RN, Holzhauer M: **Presence and species identity of rumen flukes in cattle and sheep in the Netherlands.** *Vet Parasitol* 2017, **243**:42-46.
326. Polak ME, Ung CY, Masapust J, Freeman TC, Ardern-Jones MR: **Petri Net computational modelling of Langerhans cell Interferon Regulatory Factor Network predicts their role in T cell activation.** *Sci Rep* 2017, **7**:668.
327. Polverino E, Goeminne PC, McDonnell MJ, Aliberti S, Marshall SE, Loebinger MR, Murriss M, Canton R, Torres A, Dimakou K, et al.: **European Respiratory Society guidelines for the management of adult bronchiectasis.** *Eur Respir J* 2017, **50**.
328. Porphyre T, Correia-Gomes C, Chase-Topping ME, Gamado K, Auty HK, Hutchinson I, Reeves A, Gunn GJ, Woolhouse ME: **Vulnerability of the British swine industry to classical swine fever.** *Sci Rep* 2017, **7**:42992.
329. Prentice JC, Marion G, Hutchings MR, McNeilly TN, Matthews L: **Complex responses to movement-based disease control: when livestock trading helps.** *J R Soc Interface* 2017, **14**.
330. Pridans C, Sauter KA, Irvine KM, Davis GM, Lefevre L, Raper A, Rojo R, Nirmal AJ, Beard P, Cheeseman M, et al.: **Macrophage colony stimulating factor increases hepatic macrophage content, liver growth and lipid accumulation in neonatal rats.** *Am J Physiol Gastrointest Liver Physiol* 2017.
331. Prince LR, Prosseda SD, Higgins K, Carling J, Prestwich EC, Ogryzko NV, Rahman A, Basran A, Falciani F, Taylor P, et al.: **NR4A orphan nuclear receptor family members, NR4A2 and NR4A3, regulate neutrophil number and survival.** *Blood* 2017, **130**:1014-1025.
332. Pritchard TC, Coffey MP, Bond KS, Hutchings MR, Wall E: **Phenotypic effects of subclinical paratuberculosis (Johne's disease) in dairy cattle.** *J Dairy Sci* 2017, **100**:679-690.
333. Quintana JF, Babayan SA, Buck AH: **Small RNAs and extracellular vesicles in filarial nematodes: From nematode development to diagnostics.** *Parasite Immunol* 2017, **39**.
334. Rainard P, Foucras G, Fitzgerald JR, Watts JL, Koop G, Middleton JR: **Knowledge gaps and research priorities in *Staphylococcus aureus* mastitis control.** *Transbound Emerg Dis* 2017.



335. Rainger J, Williamson KA, Soares DC, Truch J, Kurian D, Gillessen-Kaesbach G, Seawright A, Prendergast J, Halachev M, Wheeler A, et al.: **A recurrent de novo mutation in ACTG1 causes isolated ocular coloboma.** *Hum Mutat* 2017, **38**:942-946.
336. Raphaka K, Matika O, Sanchez-Molano E, Mrode R, Coffey MP, Riggio V, Glass EJ, Woolliams JA, Bishop SC, Banos G: **Genomic regions underlying susceptibility to bovine tuberculosis in Holstein-Friesian cattle.** *BMC Genet* 2017, **18**:27.
337. Rasanathan K, Bennett S, Atkins V, Beschel R, Carrasquilla G, Charles J, Dasgupta R, Emerson K, Glandon D, Kanchanachitra C, et al.: **Governing multisectoral action for health in low- and middle-income countries.** *PLoS Med* 2017, **14**:e1002285.
338. Ratmann O, Hodcroft EB, Pickles M, Cori A, Hall M, Lycett S, Colijn C, Dearlove B, Didelot X, Frost S, et al.: **Phylogenetic Tools for Generalized HIV-1 Epidemics: Findings from the PANGEA-HIV Methods Comparison.** *Mol Biol Evol* 2017, **34**:185-203.
339. Reece SE, Prior KF, Mideo N: **The Life and Times of Parasites: Rhythms in Strategies for Within-host Survival and Between-host Transmission.** *J Biol Rhythms* 2017, **32**:516-533.
340. Regan CE, Pilkington JG, Berenos C, Pemberton JM, Smiseth PT, Wilson AJ: **Accounting for female space sharing in St. Kilda Soay sheep (*Ovis aries*) results in little change in heritability estimates.** *J Evol Biol* 2017, **30**:96-111.
341. Reichert S, Froy H, Boner W, Burg TM, Daunt F, Gillespie R, Griffiths K, Lewis S, Phillips RA, Nussey DH, et al.: **Telomere length measurement by qPCR in birds is affected by storage method of blood samples.** *Oecologia* 2017, **184**:341-350.
342. Richards JA, Wigmore SJ, Anderton SM, Howie SEM: **NKT cells are important mediators of hepatic ischemia-reperfusion injury.** *Transpl Immunol* 2017, **45**:15-21.
343. Rico E, Ivens A, Glover L, Horn D, Matthews KR: **Genome-wide RNAi selection identifies a regulator of transmission stage-enriched gene families and cell-type differentiation in *Trypanosoma brucei*.** *PLoS Pathog* 2017, **13**:e1006279.
344. Rinaldi SF, Makieva S, Saunders PT, Rossi AG, Norman JE: **Immune cell and transcriptomic analysis of the human decidua in term and preterm parturition.** *Mol Hum Reprod* 2017, **23**:708-724.
345. Ritchie DL, Barria MA, Peden AH, Yull HM, Kirkpatrick J, Adlard P, Ironside JW, Head MW: **UK Iatrogenic Creutzfeldt-Jakob disease: investigating human prion transmission across genotypic barriers using human tissue-based and molecular approaches.** *Acta Neuropathol* 2017, **133**:579-595.
346. Ritchie DL, Ironside JW: **Neuropathology of Human Prion Diseases.** *Prog Mol Biol Transl Sci* 2017, **150**:319-339.
347. Robb CT, McSorley HJ, Lee J, Aoki T, Yu C, Crittenden S, Astier A, Felton JM, Parkinson N, Ayele A, et al.: **Prostaglandin E2 stimulates adaptive IL-22 production and promotes allergic contact dermatitis.** *J Allergy Clin Immunol* 2017, **141**:152-162.
348. Rodriguez-Broadbent H, Law PJ, Sud A, Palin K, Tuupainen S, Gylfe A, Hanninen UA, Cajuso T, Tanskanen T, Kondelin J, et al.: **Mendelian randomisation implicates hyperlipidaemia as a risk factor for colorectal cancer.** *Int J Cancer* 2017, **140**:2701-2708.
349. Roeber F, Hassan EB, Skuce P, Morrison A, Claerebout E, Casaert S, Homer DR, Firestone S, Stevenson M, Smith L, et al.: **An automated, multiplex-tandem PCR platform for the diagnosis of gastrointestinal nematode infections in cattle: An Australian-European validation study.** *Vet Parasitol* 2017, **239**:62-75.
350. Roeber F, Morrison A, Casaert S, Smith L, Claerebout E, Skuce P: **Multiplexed-tandem PCR for the specific diagnosis of gastrointestinal nematode infections in sheep: an European validation study.** *Parasit Vectors* 2017, **10**:226.
351. Rogers PA, Adamson GD, Al-Jefout M, Becker CM, D'Hooghe TM, Dunselman GA, Fazleabas A, Giudice LC, Horne AW, Hull ML, et al.: **Research Priorities for Endometriosis.** *Reprod Sci* 2017, **24**:202-226.

352. Roguski A, Gill AC: **The Role of the Mammalian Prion Protein in the Control of Sleep.** *Pathogens* 2017, **6**.
353. Rojas-Pirela M, Rigden DJ, Michels PA, Caceres AJ, Concepcion JL, Quinones W: **Structure and function of Per-ARNT-Sim domains and their possible role in the life-cycle biology of Trypanosoma cruzi.** *Mol Biochem Parasitol* 2017, **219**:52-66.
354. Rojo R, Pridans C, Langlais D, Hume DA: **Transcriptional mechanisms that control expression of the macrophage colony-stimulating factor receptor locus.** *Clin Sci (Lond)* 2017, **131**:2161-2182.
355. Rosko J, Martinez VA, Poon WCK, Pilizota T: **Osmotaxis in Escherichia coli through changes in motor speed.** *Proc Natl Acad Sci U S A* 2017, **114**:E7969-E7976.
356. Ross-Elliott TJ, Jensen KH, Haaning KS, Wager BM, Knoblauch J, Howell AH, Mullendore DL, Monteith AG, Paultre D, Yan D, et al.: **Phloem unloading in Arabidopsis roots is convective and regulated by the phloem-pole pericycle.** *Elife* 2017, **6**.
357. Ruckerl D, Campbell SM, Duncan S, Sutherland TE, Jenkins SJ, Hewitson JP, Barr TA, Jackson-Jones LH, Maizels RM, Allen JE: **Macrophage origin limits functional plasticity in helminth-bacterial co-infection.** *PLoS Pathog* 2017, **13**:e1006233.
358. Rudan I, Yoshida S, Chan KY, Sridhar D, Wazny K, Nair H, Sheikh A, Tomlinson M, Lawn JE, Bhutta ZA, et al.: **Setting health research priorities using the CHNRI method: VII. A review of the first 50 applications of the CHNRI method.** *J Glob Health* 2017, **7**:011004.
359. Russell AC, Simurina M, Garcia MT, Novokmet M, Wang Y, Rudan I, Campbell H, Lauc G, Thomas MG, Wang W: **The N-glycosylation of immunoglobulin G as a novel biomarker of Parkinson's disease.** *Glycobiology* 2017, **27**:501-510.
360. Russell CD, Unger SA, Walton M, Schwarze J: **The Human Immune Response to Respiratory Syncytial Virus Infection.** *Clin Microbiol Rev* 2017, **30**:481-502.
361. Russell GC, Grant DM, Lycett S, Bachofen C, Caldow GL, Burr PD, Davie K, Ambrose N, Gunn GJ, Zadoks RN: **Analysis of bovine viral diarrhoea virus: Biobank and sequence database to support eradication in Scotland.** *Vet Rec* 2017, **180**:447.
362. Sadeghi M, Kapusinszky B, Yugo DM, Phan TG, Deng X, Kanevsky I, Opriessnig T, Woolums AR, Hurley DJ, Meng XJ, et al.: **Virome of US bovine calf serum.** *Biologicals* 2017, **46**:64-67.
363. Sadiku P, Willson JA, Dickinson RS, Murphy F, Harris AJ, Lewis A, Sammut D, Mirchandani AS, Ryan E, Watts ER, et al.: **Prolyl hydroxylase 2 inactivation enhances glycogen storage and promotes excessive neutrophilic responses.** *J Clin Invest* 2017, **127**:3407-3420.
364. Salazar SV, Gallardo C, Kaufman AC, Herber CS, Haas LT, Robinson S, Manson JC, Lee MK, Strittmatter SM: **Conditional Deletion of Prnp Rescues Behavioral and Synaptic Deficits after Disease Onset in Transgenic Alzheimer's Disease.** *J Neurosci* 2017, **37**:9207-9221.
365. Sanderson PA, Critchley HO, Williams AR, Arends MJ, Saunders PT: **New concepts for an old problem: the diagnosis of endometrial hyperplasia.** *Hum Reprod Update* 2017, **23**:232-254.
366. Saraswat L, Ayansina D, Cooper KG, Bhattacharya S, Horne AW, Bhattacharya S: **Impact of endometriosis on risk of further gynaecological surgery and cancer: a national cohort study.** *Bjog* 2017, **125**:64-72.
367. Sargison ND, Ivil SA, Abraham J, Abubaker SP, Hopker AM, Mazeri S, Otter IA, Otter N: **Investigation of productivity in a south Indian Malabari goat herd shows opportunities for planned animal health management to improve food security.** *Vet Rec* 2017, **180**:278.
368. Sargison ND, Redman E, Morrison AA, Bartley DJ, Jackson F, Naghra-van Gijzel H, Holroyd N, Berriman M, Cotton JA, Gilleard JS: **A method for single pair mating in an obligate parasitic nematode.** *Int J Parasitol* 2017, **48**:159-165.

369. Scheltema NM, Gentile A, Lucion F, Nokes DJ, Munywoki PK, Madhi SA, Groome MJ, Cohen C, Moyes J, Thorburn K, et al.: **Global respiratory syncytial virus-associated mortality in young children (RSV GOLD): a retrospective case series.** *Lancet Glob Health* 2017, **5**:e984-e991.
370. Schwarze J, Openshaw P, Jha A, Del Giacco SR, Firinu D, Tsilochristou O, Roberts G, Selby A, Akdis C, Agache I, et al.: **Influenza burden, prevention and treatment in asthma - a scoping review by the EAACI Influenza in Asthma Task Force.** *Allergy* 2017.
371. Scoones I, Dzingirai V, Anderson N, MacLeod E, Mangwanya L, Matawa F, Murwira A, Nyakupinda L, Shereni W, Welburn SC: **People, Patches, and Parasites: The Case of Trypanosomiasis in Zimbabwe.** *Hum Ecol Interdiscip J* 2017, **45**:643-654.
372. Sehgal A, Kobayashi A, Donaldson DS, Mabbott NA: **c-Rel is dispensable for the differentiation and functional maturation of M cells in the follicle-associated epithelium.** *Immunobiology* 2017, **222**:316-326.
373. Selega A, Sirocchi C, Iosub I, Granneman S, Sanguinetti G: **Robust statistical modeling improves sensitivity of high-throughput RNA structure probing experiments.** *Nat Methods* 2017, **14**:83-89.
374. Seroussi E, Pitel F, Leroux S, Morisson M, Bornelov S, Miyara S, Yosefi S, Cogburn LA, Burt DW, Anderson L, et al.: **Mapping of leptin and its syntenic genes to chicken chromosome 1p.** *BMC Genet* 2017, **18**:77.
375. Serrels B, McGivern N, Canel M, Byron A, Johnson SC, McSorley HJ, Quinn N, Taggart D, Von Kreigsheim A, Anderton SM, et al.: **IL-33 and ST2 mediate FAK-dependent antitumor immune evasion through transcriptional networks.** *Sci Signal* 2017, **10**.
376. Sharma JR, Harper I, Adhikari R, Smith P, Thapa D, Chand OB, Malata A: **Comment - WHO outsourcing dilemma: for whose benefit, at whose expense?** *BMJ Glob Health* 2017, **2**:i3-i4.
377. Sharma S, Yang J, van Nues R, Watzinger P, Kotter P, Lafontaine DLJ, Granneman S, Entian KD: **Specialized box C/D snoRNPs act as antisense guides to target RNA base acetylation.** *PLoS Genet* 2017, **13**:e1006804.
378. Sharma V, Kaur T, Bridle H, Ghosh M: **Antimicrobial efficacy and safety of mucoadhesive exopolymer produced by Acinetobacter haemolyticus.** *Int J Biol Macromol* 2017, **94**:187-193.
379. Sharp CP, Gregory WF, Hattingh L, Malik A, Adland E, Daniels S, van Zyl A, Carlson JM, Wareing S, Ogwu A, et al.: **PARV4 prevalence, phylogeny, immunology and coinfection with HIV, HBV and HCV in a multicentre African cohort.** *Wellcome Open Res* 2017, **2**:26.
380. Shi T, McAllister DA, O'Brien KL, Simoes EAF, Madhi SA, Gessner BD, Polack FP, Balsells E, Acacio S, Aguayo C, et al.: **Global, regional, and national disease burden estimates of acute lower respiratory infections due to respiratory syncytial virus in young children in 2015: a systematic review and modelling study.** *Lancet* 2017, **S0140-6736**:30938-30938.
381. Shih BB, Nirmal AJ, Headon DJ, Akbar AN, Mabbott NA, Freeman TC: **Derivation of marker gene signatures from human skin and their use in the interpretation of the transcriptional changes associated with dermatological disorders.** *J Pathol* 2017, **241**:600-613.
382. Silva N, Sousa M: **Is marbofloxacin a good candidate for treating pigs in Europe?** *Vet Rec* 2017, **180**:588-590.
383. Silvester E, McWilliam KR, Matthews KR: **The Cytological Events and Molecular Control of Life Cycle Development of Trypanosoma brucei in the Mammalian Bloodstream.** *Pathogens* 2017, **6**.
384. Silvester E, Young J, Ivens A, Matthews KR: **Interspecies quorum sensing in co-infections can manipulate trypanosome transmission potential.** *Nat Microbiol* 2017, **2**:1471-1479.
385. Simpson CR, Lone NI, Kavanagh K, Robertson C, McMenamin J, von Wissmann B, Vasileiou E, Butler C, Ritchie LD, Gunson R, et al.: **Evaluating the effectiveness, impact and safety of live attenuated and seasonal inactivated influenza vaccination: protocol for the Seasonal Influenza Vaccination Effectiveness II (SIVE II) study.** *BMJ Open* 2017, **7**:e014200.



386. Smith JO, Tayton ER, Khan F, Aarvold A, Cook RB, Goodship A, Bradley M, Oreffo RO: **Large animal in vivo evaluation of a binary blend polymer scaffold for skeletal tissue-engineering strategies; translational issues.** *J Tissue Eng Regen Med* 2017, **11**:1065-1076.
387. Smith RWP, Anderson RC, Larralde O, Smith JWS, Gorgoni B, Richardson WA, Malik P, Graham SV, Gray NK: **Viral and cellular mRNA-specific activators harness PABP and eIF4G to promote translation initiation downstream of cap binding.** *Proc Natl Acad Sci U S A* 2017, **114**:6310-6315.
388. Sousa M, Silva N, Manageiro V, Ramos S, Coelho A, Goncalves D, Canica M, Torres C, Igrejas G, Poeta P: **First report on MRSA CC398 recovered from wild boars in the north of Portugal. Are we facing a problem?** *Sci Total Environ* 2017, **596-597**:26-31.
389. Spiller F, Medina-Pritchard B, Abad MA, Wear MA, Molina O, Earnshaw WC, Jeyaprakash AA: **Molecular basis for Cdk1-regulated timing of Mis18 complex assembly and CENP-A deposition.** *EMBO Rep* 2017, **18**:894-905.
390. Staderini M, Megia-Fernandez A, Dhaliwal K, Bradley M: **Peptides for optical medical imaging and steps towards therapy.** *Bioorg Med Chem* 2017, **S0968-0896**:31409-31408.
391. Stanczuk GA, Baxter GJ, Currie H, Forson W, Lawrence JR, Cuschieri K, Wilson A, Patterson L, Govan L, Black J, et al.: **Defining Optimal Triage Strategies for hrHPV Screen-Positive Women-An Evaluation of HPV 16/18 Genotyping, Cytology, and p16/Ki-67 Cytoimmunochemistry.** *Cancer Epidemiol Biomarkers Prev* 2017, **26**:1629-1635.
392. Subiros-Funosas R, Mendive-Tapia L, Sot J, Pound JD, Barth N, Varela Y, Goni FM, Paterson M, Gregory CD, Albericio F, et al.: **A Trp-BODIPY cyclic peptide for fluorescence labelling of apoptotic bodies.** *Chem Commun (Camb)* 2017, **53**:945-948.
393. Subramaniam S, Cao D, Tian D, Cao QM, Overend C, Yugo DM, Matzinger SR, Rogers AJ, Heffron CL, Catanzaro N, et al.: **Efficient priming of CD4 T cells by Langerin-expressing dendritic cells targeted with porcine epidemic diarrhea virus spike protein domains in pigs.** *Virus Res* 2017, **227**:212-219.
394. Summers KM, Hume DA: **Identification of the macrophage-specific promoter signature in FANTOM5 mouse embryo developmental time course data.** *J Leukoc Biol* 2017, **102**:1081-1092.
395. Surve SV, Jensen BC, Heestand M, Mazet M, Smith TK, Bringaud F, Parsons M, Schnauffer A: **NADH dehydrogenase of Trypanosoma brucei is important for efficient acetate production in bloodstream forms.** *Mol Biochem Parasitol* 2017, **211**:57-61.
396. Swann OV, Harrison EM, Opi DH, Nyatichi E, Macharia A, Uyoga S, Williams TN, Rowe JA: **No Evidence that Knops Blood Group Polymorphisms Affect Complement Receptor 1 Clustering on Erythrocytes.** *Sci Rep* 2017, **7**:17825.
397. Szitenberg A, Salazar-Jaramillo L, Blok VC, Laetsch DR, Joseph S, Williamson VM, Blaxter ML, Lunt DH: **Comparative genomics of apomictic root-knot nematodes: hybridization, ploidy, and dynamic genome change.** *Genome Biol Evol* 2017, **9**:2844-2861.
398. Tahoun A, Jensen K, Corripio-Miyar Y, McAteer S, Smith DGE, McNeilly TN, Gally DL, Glass EJ: **Host species adaptation of TLR5 signalling and flagellin recognition.** *Sci Rep* 2017, **7**:17677.
399. Tai YL, Chiu NC, Chi H, Bachmann TT, Huang FY, Lin CY: **Woman With Swelling of the Left Breast.** *Ann Emerg Med* 2017, **70**:621-647.
400. Tan TCJ, Knight J, Sbarrato T, Dudek K, Willis AE, Zamojska R: **Suboptimal T-cell receptor signaling compromises protein translation, ribosome biogenesis, and proliferation of mouse CD8 T cells.** *Proc Natl Acad Sci U S A* 2017, **114**:E6117-E6126.
401. Tanner MG, Choudhary TR, Craven TH, Mills B, Bradley M, Henderson RK, Dhaliwal K, Thomson RR: **Ballistic and snake photon imaging for locating optical endomicroscopy fibres.** *Biomed Opt Express* 2017, **8**:4077-4095.

402. Tanskanen T, van den Berg L, Valimaki N, Aavikko M, Ness-Jensen E, Hveem K, Wettergren Y, Bexé Lindskog E, Tonisson N, Metspalu A, et al.: **Genome-wide association study and meta-analysis in Northern European populations replicate multiple colorectal cancer risk loci.** *Int J Cancer* 2017, **142**:540-546.
403. Thamsborg SM, Ketzis J, Horii Y, Matthews JB: **Strongyloides spp. infections of veterinary importance.** *Parasitology* 2017, **144**:274-284.
404. Thevaranjan N, Puchta A, Schulz C, Naidoo A, Szamosi JC, Verschoor CP, Loukov D, Schenck LP, Jury J, Foley KP, et al.: **Age-Associated Microbial Dysbiosis Promotes Intestinal Permeability, Systemic Inflammation, and Macrophage Dysfunction.** *Cell Host Microbe* 2017, **21**:455-466.e454.
405. Thomson S, Hamilton CA, Hope JC, Katzer F, Mabbott NA, Morrison LJ, Innes EA: **Bovine cryptosporidiosis: impact, host-parasite interaction and control strategies.** *Vet Res* 2017, **48**:42.
406. Tian D, Cao D, Lynn Heffron C, Yugo DM, Rogers AJ, Overend C, Matzinger SR, Subramaniam S, Opriessnig T, LeRoith T, et al.: **Enhancing heterologous protection in pigs vaccinated with chimeric porcine reproductive and respiratory syndrome virus containing the full-length sequences of shuffled structural genes of multiple heterologous strains.** *Vaccine* 2017, **35**:2427-2434.
407. Tian D, Sooryanarain H, Matzinger SR, Gauger PC, Karuppanan AK, Elankumaran S, Opriessnig T, Meng XI: **Protective efficacy of a virus-vectored multi-component vaccine against porcine reproductive and respiratory syndrome virus, porcine circovirus type 2 and swine influenza virus.** *J Gen Virol* 2017, **98**:3026-3036.
408. Trub M, Barr TA, Morrison VL, Brown S, Caserta S, Rixon J, Ivens A, Gray D: **Heterogeneity of Phenotype and Function Reflects the Multistage Development of T Follicular Helper Cells.** *Front Immunol* 2017, **8**:489.
409. Tsai HY, Matika O, Edwards SM, Antolin-Sanchez R, Hamilton A, Guy DR, Tinch AE, Gharbi K, Stear MJ, Taggart JB, et al.: **Genotype Imputation To Improve the Cost-Efficiency of Genomic Selection in Farmed Atlantic Salmon.** *G3 (Bethesda)* 2017, **7**:1377-1383.
410. Tuffs SW, James DBA, Bestebroer J, Richards AC, Goncheva MI, O'Shea M, Wee BA, Seo KS, Schlievert PM, Lengeling A, et al.: **The Staphylococcus aureus superantigen SEIX is a bifunctional toxin that inhibits neutrophil function.** *PLoS Pathog* 2017, **13**:e1006461.
411. Turner VM, Mabbott NA: **Ageing adversely affects the migration and function of marginal zone B cells.** *Immunology* 2017, **151**:349-362.
412. Turner VM, Mabbott NA: **Structural and functional changes to lymph nodes in ageing mice.** *Immunology* 2017, **151**:239-247.
413. Turner VM, Mabbott NA: **Influence of ageing on the microarchitecture of the spleen and lymph nodes.** *Biogerontology* 2017, **18**:723-738.
414. Tzelos T, Barbeito JS, Nielsen MK, Morgan ER, Hodgkinson JE, Matthews JB: **Strongyle egg reappearance period after moxidectin treatment and its relationship with management factors in UK equine populations.** *Vet Parasitol* 2017, **237**:70-76.
415. Ugrina I, Campbell H, Vuckovic F: **Laboratory Experimental Design for a Glycomic Study.** *Methods Mol Biol* 2017, **1503**:13-19.
416. Uhlemann AC, McAdam PR, Sullivan SB, Knox JR, Khiabani H, Rabadan R, Davies PR, Fitzgerald JR, Lowy FD: **Evolutionary Dynamics of Pandemic Methicillin-Sensitive Staphylococcus aureus ST398 and Its International Spread via Routes of Human Migration.** *MBio* 2017, **8**.
417. Unger SA, Bogaert D: **The respiratory microbiome and respiratory infections.** *J Infect* 2017, **74 Suppl 1**:S84-s88.
418. Vale PF, Jardine MD: **Infection avoidance behavior: Viral exposure reduces the motivation to forage in female Drosophila melanogaster.** *Fly (Austin)* 2017, **11**:3-9.

419. van Boeckel SR, Davidson DJ, Norman JE, Stock SJ: **Cell-free Fetal DNA and Spontaneous Preterm Birth**. *Reproduction* 2017.
420. van Bunnik BAD, Woolhouse MEJ: **Modelling the impact of curtailing antibiotic usage in food animals on antibiotic resistance in humans**. *R Soc Open Sci* 2017, **4**:161067.
421. Van de Pas R, Hill PS, Hammonds R, Ooms G, Forman L, Waris A, Brolan CE, McKee M, Sridhar D: **Global health governance in the sustainable development goals: Is it grounded in the right to health?** *Global Chall* 2017, **1**:47-60.
422. van Nues R, Schweikert G, de Leau E, Selega A, Langford A, Franklin R, Iosub I, Wadsworth P, Sanguinetti G, Granneman S: **Kinetic CRAC uncovers a role for Nab3 in determining gene expression profiles during stress**. *Nat Commun* 2017, **8**:12.
423. Vander Broek CW, Stevens JM: **Type III Secretion in the Melioidosis Pathogen Burkholderia pseudomallei**. *Front Cell Infect Microbiol* 2017, **7**:255.
424. Vander Broek CW, Zainal Abidin N, Stevens JM: **BipC, a Predicted Burkholderia pseudomallei Type 3 Secretion System Translocator Protein with Actin Binding Activity**. *Front Cell Infect Microbiol* 2017, **7**:333.
425. Vanni S, Moda F, Zattoni M, Bistaffa E, De Cecco E, Rossi M, Giaccone G, Tagliavini F, Haik S, Deslys JP, et al.: **Differential overexpression of SERPINA3 in human prion diseases**. *Sci Rep* 2017, **7**:15637.
426. Vasileiou E, Sheikh A, Butler C, El Ferkh K, von Wissmann B, McMenamin J, Ritchie L, Schwarze J, Papadopoulos NG, Johnston SL, et al.: **Effectiveness of influenza vaccines in asthma: a systematic review and meta-analysis**. *Clin Infect Dis* 2017, **65**:1388-1395.
427. Vaughan-Shaw PG, O'Sullivan F, Farrington SM, Theodoratou E, Campbell H, Dunlop MG, Zgaga L: **The impact of vitamin D pathway genetic variation and circulating 25-hydroxyvitamin D on cancer outcome: systematic review and meta-analysis**. *Br J Cancer* 2017, **116**:1092-1110.
428. Vazquez-Boland JA, Kryptou E, Scortti M: **Listeria Placental Infection**. *MBio* 2017, **8**.
429. Vohra P, Bugarel M, Turner F, Loneragan GH, Hope JC, Hopkins J, Stevens MP: **Quantifying the Survival of Multiple Salmonella enterica Serovars in vivo using Massively-parallel Whole Genome Sequencing to Predict Zoonotic Risk**. *Appl Environ Microbiol* 2017.
430. Voss JJ, Ford CA, Petrova S, Melville L, Paterson M, Pound JD, Holland P, Giotti B, Freeman TC, Gregory CD: **Modulation of macrophage antitumor potential by apoptotic lymphoma cells**. *Cell Death Differ* 2017, **24**:971-983.
431. Vukmanovic-Stejic M, Chambers ES, Farinas MS, Sandhu D, Fuentes-Duculan J, Patel N, Agius E, Lacy KE, Turner CT, Larbi A, et al.: **Enhancement of cutaneous immunity during ageing by blocking p38 MAPkinase induced inflammation**. *J Allergy Clin Immunol* 2017, **S0091-6749**:31766-31769.
432. Wagner S, Lupolova N, Gally DL, Argyle SA: **Convergence of plasmid architectures drives emergence of multi-drug resistance in a clonally diverse Escherichia coli population from a veterinary clinical care setting**. *Vet Microbiol* 2017, **211**:6-14.
433. Wakeham K, Kavanagh K, Cuschieri K, Millan D, Pollock KG, Bell S, Burton K, Reed NS, Graham SV: **HPV status and favourable outcome in vulvar squamous cancer**. *Int J Cancer* 2017, **140**:1134-1146.
434. Walker D, Gregory WF, Turnbull D, Rocchi M, Meredith AL, Philbey AW, Sharp CP: **Novel adenoviruses detected in British mustelids, including a unique Aviadenovirus in the tissues of pine martens (Martes martes)**. *J Med Microbiol* 2017.
435. Walmsley SR, Rupp J: **Hypoxia and host pathogen responses**. *Microbes Infect* 2017, **19**:143.
436. Wang B, McHugh BJ, Qureshi A, Campopiano DJ, Clarke DJ, Fitzgerald JR, Dorin JR, Weller R, Davidson DJ: **IL-1beta-Induced Protection of Keratinocytes against Staphylococcus aureus-Secreted Proteases Is Mediated by Human beta-Defensin 2**. *J Invest Dermatol* 2017, **137**:95-105.

437. Wang M, Moynie L, Harrison PJ, Kelly V, Piper A, Naismith JH, Campopiano DJ: **Using the pimeloyl-CoA synthetase adenylation fold to synthesize fatty acid thioesters.** *Nat Chem Biol* 2017, **13**:660-667.
438. Wang-Kan X, Blair JMA, Chirullo B, Betts J, La Ragione RM, Ivens A, Ricci V, Opperman TJ, Piddock LJV: **Lack of AcrB Efflux Function Confers Loss of Virulence on Salmonella enterica Serovar Typhimurium.** *MBio* 2017, **8**.
439. Warren WC, Hillier LW, Tomlinson C, Minx P, Kremitzki M, Graves T, Markovic C, Bouk N, Pruitt KD, Thibaud-Nissen F, et al.: **A New Chicken Genome Assembly Provides Insight into Avian Genome Structure.** *G3 (Bethesda)* 2017, **7**:109-117.
440. Warren-Gash C, Childs K, Thornton A, Bhagani S, Demma S, Srivastava A, Leen C, Agarwal K, Rodger AJ, Sabin CA: **Cirrhosis and liver transplantation in patients co-infected with HIV and hepatitis B or C: an observational cohort study.** *Infection* 2017, **45**:215-220.
441. Waters SA, McAteer SP, Kudla G, Pang I, Deshpande NP, Amos TG, Leong KW, Wilkins MR, Strugnell R, Gally DL, et al.: **Small RNA interactome of pathogenic E. coli revealed through crosslinking of RNase E.** *Embo j* 2017, **36**:374-387.
442. Watson RL, Bird EJ, Underwood S, Wilbourn RV, Fairlie J, Watt K, Salvo-Chirnside E, Pilkington JG, Pemberton JM, McNeilly TN, et al.: **Sex differences in leucocyte telomere length in a free-living mammal.** *Mol Ecol* 2017, **26**:3230-3240.
443. Wattedegera SR, Corripio-Miyar Y, Pang Y, Frew D, McNeilly TN, Palarea-Albaladejo J, McInnes CJ, Hope JC, Glass EJ, Entrican G: **Enhancing the toolbox to study IL-17A in cattle and sheep.** *Vet Res* 2017, **48**:20.
444. Wear MA, Nowicki MW, Blackburn EA, McNae IW, Walkinshaw MD: **Thermo-kinetic analysis space expansion for cyclophilin-ligand interactions - identification of a new nonpeptide inhibitor using Biacore T200.** *FEBS Open Bio* 2017, **7**:533-549.
445. Wei W, Keogh MJ, Wilson I, Coxhead J, Ryan S, Rollinson S, Griffin H, Kurzawa-Akinibi M, Santibanez-Koref M, Talbot K, et al.: **Mitochondrial DNA point mutations and relative copy number in 1363 disease and control human brains.** *Acta Neuropathol Commun* 2017, **5**:13.
446. Welburn SC, Coleman PG, Zinsstag J: **Rabies Control: Could Innovative Financing Break the Deadlock?** *Front Vet Sci* 2017, **4**:32.
447. Wheeler E, Leong A, Liu CT, Hivert MF, Strawbridge RJ, Podmore C, Li M, Yao J, Sim X, Hong J, et al.: **Impact of common genetic determinants of Hemoglobin A1c on type 2 diabetes risk and diagnosis in ancestrally diverse populations: A transethnic genome-wide meta-analysis.** *PLoS Med* 2017, **14**:e1002383.
448. Whitaker LH, Murray AA, Matthews R, Shaw G, Williams AR, Saunders PT, Critchley HO: **Selective progesterone receptor modulator (SPRM) ulipristal acetate (UPA) and its effects on the human endometrium.** *Hum Reprod* 2017, **32**:531-543.
449. Wilbourn RV, Froy H, McManus MC, Cheynel L, Gaillard JM, Gilot-Fromont E, Regis C, Rey B, Pellerin M, Lemaitre JF, et al.: **Age-dependent associations between telomere length and environmental conditions in roe deer.** *Biol Lett* 2017, **13**.
450. Wilcox MH, Gerding DN, Poxton IR, Kelly C, Nathan R, Birch T, Cornely OA, Rahav G, Bouza E, Lee C, et al.: **Bezlotoxumab for Prevention of Recurrent Clostridium difficile Infection.** *N Engl J Med* 2017, **376**:305-317.
451. Wilkie H, Riggio V, Matika O, Nicol L, Watt KA, Sinclair R, Sparks AM, Nussey DH, Pemberton JM, Houston RD, et al.: **A candidate gene approach to study nematode resistance traits in naturally infected sheep.** *Vet Parasitol* 2017, **243**:71-74.
452. Wilkinson S, Bishop SC, Allen AR, McBride SH, Skuce RA, Bermingham M, Woolliams JA, Glass EJ: **Fine-mapping host genetic variation underlying outcomes to Mycobacterium bovis infection in dairy cows.** *BMC Genomics* 2017, **18**:477.
453. Will RG, Ironside JW: **Sporadic and Infectious Human Prion Diseases.** *Cold Spring Harb Perspect Med* 2017, **7**.



465. Zhong W, Cui L, Goh BC, Cai Q, Ho P, Chionh YH, Yuan M, Sahili AE, Fothergill-Gilmore LA, Walkinshaw MD, et al.: **Allosteric pyruvate kinase-based "logic gate" synergistically senses energy and sugar levels in *Mycobacterium tuberculosis***. *Nat Commun* 2017, **8**:1986.
466. Zikova A, Verner Z, Nenarokova A, Michels PAM, Lukes J: **A paradigm shift: The mitoproteomes of procyclic and bloodstream *Trypanosoma brucei* are comparably complex**. *PLoS Pathog* 2017, **13**:e1006679.



## Appendix 4

### News stories published by Edinburgh Infectious Diseases in 2017/18

- Meal times may be key to managing malaria, parasite study shows
- DNA study of cow stomachs could aid meat and dairy production
- New insight into how the body 'gobbles up' asthma-inducing cells
- Surgical infections linked to drug-resistant bugs, study suggests



People having surgery in low income countries are more likely to develop an infection than those in wealthier nations.

- Novel sequencing approach to study Salmonella survival in cattle
- Breeding quirks of head lice offer insight into effective treatments
- New funding to help detect redworm parasites in horses
- Flu study seeks volunteers in hunt for genes linked to severe cases
- Pesticide poisoning focus for \$1.3m bid to cut rural suicides
- £3.8m investment brings pioneering lung imaging devices closer to clinic
- Gene experts set to tackle pest control
- A roadmap to revitalise research and innovation in Zimbabwe

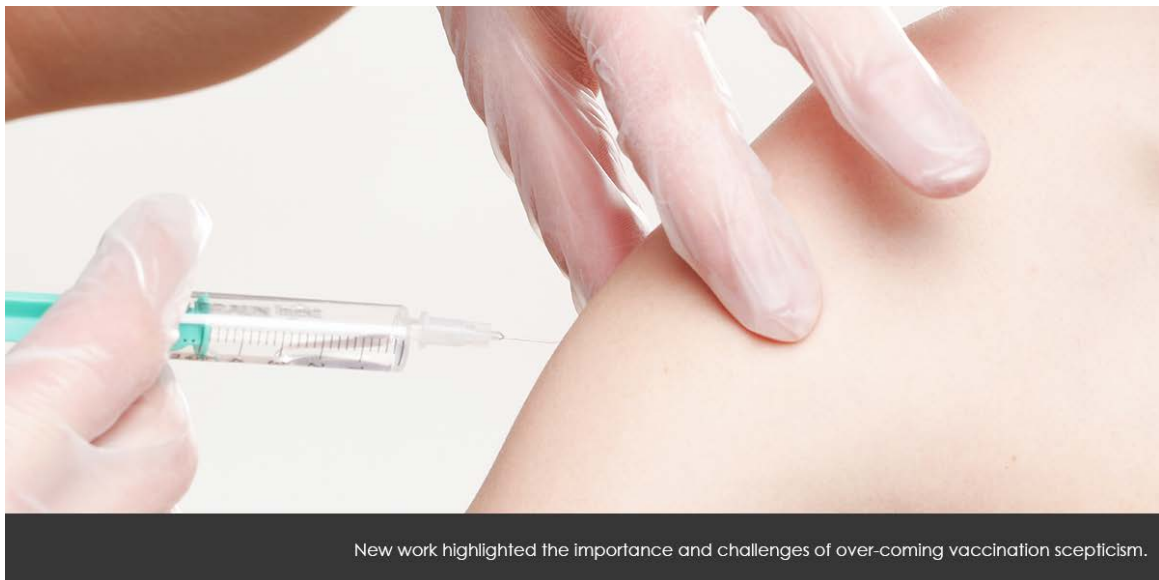


- Many congratulations to winners of the 2017 University of Edinburgh Chancellor's Awards
- New approaches for breeding resistance to Infectious Salmon Anaemia virus
- New immune defence mechanism could pave new way to treat allergies
- Edinburgh researchers lead quest in worms to find asthma therapies
- Launch of new Africa-led research unit Tackling Infection to Benefit Africa – TIBA
- UK-China alliance with University of Edinburgh creates \$1bn biomedical campus
- The first ever global Zoonotic TB roadmap launched with input from Edinburgh researcher
- Parasite study paves way for therapies to tackle deadly infections
- Researchers in Edinburgh part of £2 million award to tackle widespread African cattle disease
- Study shows sleeping sickness parasite ‘social behaviour’ may affect disease spread
- £5.5m initiative bids to boost farm livestock health in Africa
- New immune study points to new ways of treating inflammatory lung disease
- Researchers at Edinburgh Napier University have found pollution can make you prone to infection
- Psychologists shows pro-vaccine messages can boost belief in MMR myths
- New study shows babies’ colds can be prevented by ‘friendly’ bacteria
- Garfield Weston Foundation to support researching tackling antibiotic resistance



£2M collaborative grant to combat Trypanosomiasis in cattle is one of several addressing economic hardship in Africa.

- Large study of Bovine tuberculosis reveals extensive disease diversity in Cameroon
- Experts at Edinburgh University urge action to cut child deaths from Respiratory Syncytial Virus
- Impact of protective bacteria linked to infection route, finds new study from the University of Edinburgh
- Oyster farming to benefit from new genetic screening tool developed at the Roslin Institute
- New study points to new therapies for life-threatening lung disease ARD
- £10m investment in Roslin Technologies set to boost impact of animal science innovations
- Members of Moredun Research Institute help launch the SEFARI Centre for Knowledge Exchange & Impact



- Work from the Roslin Institute shows gut macrophage dysregulation key to Inflammatory Bowel Disease
- New musical theatre show to spread message about antimicrobial resistance in schools
- Meriem El Karoui wins £955K from The Wellcome Trust to study how antibiotic resistance emerges
- Gene-edited pigs produced at the Roslin Institute show signs of resistance to major viral disease