

## NEWS



### ZIKA RAPID RESPONSE INITIATIVE SUCCESS

HPRU members were granted 7 of the 26 awards made by the Zika Rapid Response Initiative which was established by the Medical Research Council (MRC) with support from the Newton Fund and the Wellcome Trust. The initiative was established to fund short-term projects to provide novel, critical and timely insights into the nature of the risk posed by the Zika virus and/or potential avenues for its management or prevention. The initiative received a total of 103 proposals, of which funding was awarded to 26 projects, with a combined value of £3.2m.

The projects involve collaboration with colleagues in affected countries and include investigating the link between Zika virus infection and neurological disease, improving diagnostics to test for the virus, and looking at the susceptibility of South American and European mosquito vectors to infection. The HPRU member projects are:

- A prospective case-control study to examine the role of Zika virus in Guillain-Barré syndrome in Brazil, led by **Tom Solomon**, University of Liverpool
- Susceptibility of South American and European vectors to ZIKV infection, and influence of temperature, led by **Matthew Baylis**, University of Liverpool
- Improved diagnostics for Zika virus infection in South America through an established laboratory partnership between Brazil, Colombia and the UK, led by **Mike Griffiths**, University of Liverpool
- Investigating the link between Zika virus infection and neurological disease in ex vivo and in vivo models, led by **Lisa Ng**, University of Liverpool
- Zika: a safe recombinant vaccine with proof of efficacy in rodents, led by **Tom Blanchard**, University of Manchester
- Novel point-of-care molecular diagnostics for the simultaneous diagnosis of Zika, chikungunya and dengue infections in Latin America, led by **Luis Cuevas**, Liverpool School of Tropical Medicine
- Zika: Harnessing plant power for rational design of immunogens for use in diagnostic assays, led by **Janet Daly**, University of Nottingham.

For further information please visit [here](#).



### MINION PAPER PUBLISHED IN NATURE

A paper published in the journal Nature highlights how a portable device called MinION that offers on-the-spot data to allow rapid characterisation of the Ebola virus in the field was used during the Ebola virus epidemic. HPRU members including **Miles Carroll, Julian Hiscox, Natasha Rickett** and **Georgios Pollakis** supported the development of the device during the epidemic and co-authored the paper 'Real-time, portable genome sequencing for Ebola surveillance', which can be read [here](#).



### LANCET INFECTIOUS DISEASES ZIKA ARTICLE

Writing in a comment article for Lancet Infectious Diseases, **Tom Solomon** and **Matthew Baylis**, who are currently working on Zika research projects as part of the HPRU EZI, highlight what is known, and more importantly unknown, about the neurological effects of the virus and consider the approaches needed to tackle the outbreak. 'Zika virus and neurological disease - approaches to the unknown' has been published in Lancet Infectious Diseases in collaboration with David Brown from Public Health England and the Oswaldo Cruz Institute, Brazil. Read the article [here](#).



### HOUSE OF COMMONS SCIENCE AND TECHNOLOGY COMMITTEE REPORT

The Lancet has published an editorial on 'Ebola's legacy: UK deficits and their global lessons', focussing on the devastating report on the UK's lessons from Ebola published by the House of Commons Science and Technology Committee, which the NIHR Health Protection Research Unit in Emerging and Zoonotic Infections, and Public Health England, among others, submitted evidence to.

The Lancet editorial is available [here](#), with the House of Commons Science and Technology Committee's 'Science in emergencies: UK lessons from Ebola' report available [here](#).



### HEALTH AND CLIMATE CHANGE IMPACTS

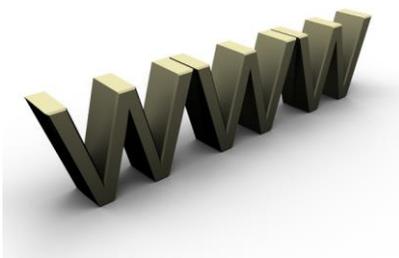
**Mathew Baylis** has contributed to a technical paper on Emerging Diseases for the Living with Environmental Change consortium's report card on the Health Impacts of Climate Change.

The full report card is available [here](#).



### ST PIRAN'S CRAB

HPRU EZI PhD student **John Tulloch** has named a species of hermit crab thought to be extinct on UK shores which has been rediscovered in Cornwall. The *Clibanarius erythropus* (Latin for 'soldier clad in armour with red legs') had virtually disappeared from mainland Britain following the Torrey Canyon oil spill in 1967. The BBC's Springwatch Programme recently ran a competition to name the ten-legged crustacean, which John entered, suggesting the name 'St Piran's Crab'. After being shortlisted the name was announced as the winner on 9 June 2016. St Piran is one of Cornwall's patron saints and according to legend was a 5th-century abbot and hermit who lived for 200 years. Congratulations John!



### HPRU EZI WEBSITE & TWITTER

Our website address is [www.hpruezi.nihr.ac.uk](http://www.hpruezi.nihr.ac.uk) and Twitter name is [@HPRUezi](https://twitter.com/HPRUezi). Please don't forget to let us know about any news items, public engagement events, or anything similar, for the website, Twitter and next edition of this newsletter.

## EVENTS

### Writing for 'The Conversation'

**12.00 pm - 2.00 pm, Wednesday 29 June 2016, Life Sciences Lecture Theatre 1, University of Liverpool**

Staff and postgraduate students are invited to learn more about writing for the independent news website, [The Conversation](http://TheConversation.com), at an event led by Health Editor, Stephen Harris.

The Conversation, which attracts a readership of more than 30 million, publishes news, opinion pieces and the latest research from the academic community. The site is managed by trained journalists, but writers are all commissioned from the academic community. Anyone, from a PhD student to a Professor, can write for The Conversation, which provides an innovative way to communicate with academic peers and with the public.

Articles published by Liverpool researchers for The Conversation have also been republished in the Guardian, Independent, BBC News, Washington Post, and CNN amongst others. Stephen will outline what The Conversation is; the writing process and the benefits and impacts that writing for The Conversation can have.

The presentation will be followed by a Q&A session and attendees will have the opportunity to talk to Stephen about specific ideas they have. Refreshments will be available.

Please reserve your place at <http://writingforconversation.eventbrite.co.uk>

## **North West Zoonoses Group (NWZG) Annual Conference 'Emerging Themes in Zoonoses'**

**10.00 am - 3.30 pm, Wednesday 6 July 2016, Sherrington Lecture Theatre, University of Liverpool, Ashton Street, Liverpool, L69 3GE**

The 2016 NWZG Annual Conference will take place on 6 July at the Sherrington Building on the main University of Liverpool campus. Emerging themes include Antimicrobial Resistance, Emerging Risk Assessment, and Risk Based Policy. The programme for the day is in the final stages of development.

Cost: £25 including lunch and refreshments (students free).

**Bookings for the event can be made via <http://tinyurl.com/NWZG2016>**

Bookings can also be made by purchase order; if required please contact Marie McIntyre at [k.m.mcintyre@liverpool.ac.uk](mailto:k.m.mcintyre@liverpool.ac.uk)

This event is supported by the NIHR HPRU in Emerging and Zoonotic Infections and the NIHR HPRU in Gastrointestinal Infections.

## **Mathematical Modelling Workshop at Public Health England Annual Conference 2016**

**12 September 2016, University of Warwick**

The aim of this workshop is to provide an overview of current analytical work within PHE and by key partners under NIHR funding. If you are interested in the breadth of modelling work done at PHE, or by the NIHR HPRU in Modelling Methodology at Imperial College London or the NIHR HPRU in Emergency Preparedness and Response, this workshop may be useful for you.

**To attend, please register on the website <http://bit.ly/24kTkLa>, say 'no' to attending the Tuesday and Wednesday (i.e. the main event that one needs to pay for) and pick the relevant workshop on the Monday.**

## **Public Health England Annual Conference 2016 'Evidence into action'**

**13-14 September 2016, University of Warwick**

The Public Health England Annual Conference 2016 will bring together over 1,400 participants from a wide range of organisations, to learn, network and share knowledge and experience.

The theme of this year's conference is 'Evidence into action', and the conference will promote and showcase the application and translation of science and research, to support effective local and national action to improve public health. The conference will be of interest to representatives from across the health and social care system interested in applied prevention research, programmes and policy.

It is now possible to book to attend one or both days of the conference, and there is also an option to join the pre-conference workshops. Please note that in previous years places have been greatly oversubscribed, and so booking early is advised.

**For full details of how to register, please visit the conference website at <http://bit.ly/24kTkLa>.**

## Vector-Borne Diseases in the UK Biennial Conference

**29-30 November 2016, Foresight Centre, University of Liverpool**

The third meeting on 'Vector-Borne Diseases in the UK' will take place at the Foresight Centre, University of Liverpool on Tuesday 29 and Wednesday 30 November 2016, with an informal dinner for delegates at The Liner Hotel in Liverpool on the night of 29 November. This meeting is supported through the Vector Biology and Climate Modelling Theme of the NIHR Health Protection Research Unit in Emerging and Zoonotic Infections. As previously, the purpose of the meeting is to bring together members of the major UK research groups who have an interest in vectors or vector-borne diseases which could be a threat to the UK, groups with wider but related areas of interest, members of key UK Government Departments and their Agencies, and representatives of European organisations with an interest in this topic. Thus it is intended that the meeting will not only provide a valuable forum for researchers to meet and exchange information and ideas, but also assist UK Government Departments and their Agencies to assess accurately the risks posed by both new and emerging disease agents, set policies which mitigate these risks and avoid activities and policies which increase them.

### Registration Fees for two-day meeting

Full Registration Fee: £120.00 / Early Bird Rate for first thirty registered PhD Students: £50.00

Dinner at The Liner Hotel on Tuesday 29 November 2016: £25.00

**To register for the meeting please visit**

[http://payments.liv.ac.uk/browse/extra\\_info.asp?compid=1&modid=2&catid=115&prodid=1466](http://payments.liv.ac.uk/browse/extra_info.asp?compid=1&modid=2&catid=115&prodid=1466)

For further information regarding this meeting, including the draft programme, please contact the meeting organisers at [livvec@liverpool.ac.uk](mailto:livvec@liverpool.ac.uk)

## Save the Date: HPRU EZI Annual Conference

**Tuesday 13 December 2016, Liverpool (venue TBC)**

This Annual Conference for the HPRU EZI will give the opportunity to hear from key investigators about the exciting research being undertaken and the future aims for the Unit. Further details will follow in due course.

## STAFF UPDATES

We would like to welcome **Clarissa Oeser** who started with us in January 2016 as a Clinical Fellow, based at PHE Colindale, and **Fernando Sánchez-Vizcaíno Buendía** who joined us in May 2016 on a Veterinary Research Fellowship in Emerging and Zoonotic Infections, based at the Farr Institute at the University of Liverpool. Welcome also to **Cyril Caminade**, who has joined us as a Tenure Track Fellow based at the Farr Institute at the University of Liverpool, and **Ravi Mehta**, who started with us as a Zika Clinical Research Fellow in May 2016, and is based currently in Brazil.

## STUDENT NEWS



**Charlotte Robin** and **Liz McGinley** presented their work at the 'One Health for the Real World: zoonoses, ecosystems and wellbeing' international symposium, which took place at the Zoological Society of London on 17-18 March 2016. The symposium was organised by the Dynamic Drivers of Disease in Africa Consortium and Zoological Society of London, with support from the Royal Society. Charlotte did a short talk publicising her poster 'Pets, pests and pestilence: understanding social aspects of zoonotic disease transmission' and Liz did a short talk publicising her poster 'Tick bite risk and pathogens - climate, ecology and social dynamics'.



**Ellen Murphy** and **Charlotte Robin** presented their research at the 10<sup>th</sup> International Conference on HFRS, HPS and Hantaviruses, which was held at Colorado State University, Fort Collins, USA from 31 May until 3 June 2016. Ellen presented a poster 'Hantavirus screening of peri-domestic rodents in the United Kingdom', and Charlotte gave an oral presentation 'Pets, pests and pestilence: understanding social aspects of zoonotic disease transmission'.



Congratulations to **Charlotte Robin** who won the IGH Poster Prize at the University of Liverpool's 2016 Health and Life Sciences Poster Day on 10 June 2016.



**Raquel Medialdea Carrera** has been awarded a Newton Bhabha PhD Placement by the British Council in collaboration with the Department of Biotechnology in India. Raquel will spend 3-6 months at the National Institute of Mental Health and Neurosciences in India in the Virology Department. Her research will focus on the characterization of the epidemiology of patients with central nervous system infection in South India and diagnostic biomarker discovery.



**Natasha Rickett** gave a presentation 'Differential gene expression analysis of acute Ebola virus patients with fatal or non-fatal infections' on 23 March 2016 at the Microbiology Society's 2016 Annual Conference in Liverpool.



**Stephanie Begemann** presented her work on 'interdisciplinary' controversies in antimicrobial resistance in the UK at Lancaster University's 6th Annual Postgraduate Science and Technology Studies (STS) Conference on 23 March 2016. Stephanie also presented her work at 'Technologies of Prediction. An international workshop on risk, uncertainty and the management of future health' held at the University of Salento, Lecce, Italy on 20 April 2016.



#### **PhD Student Profile: Sören Metelmann**

Sören started a PhD studentship in the HPRU EZI Vector Biology and Climate Modelling Theme with the title 'Development of climate-driven models for mosquito-borne disease risk in the UK' in December 2015. His supervisors are Andy Morse and Matthew Baylis of the University of Liverpool, and Jolyon Medlock of Public Health England. Sören has studied biology and mathematics in Germany and has worked on several topics, including population and infection dynamics of insects. After work, he enjoys dancing Argentine tango, and he recently joined the Mersey Rowing Club.



#### **PhD Student Profile: Jordana Muñoz Basagoiti**

Jordana is a BSc graduate in Microbiology and has an MSc in Medical Research. Her interest in molecular biology, infectious diseases and enthusiasm to live in another country made her pack her bags and relocate to Liverpool to join the HPRU EZI and Julian Hiscox's group in order to start a PhD on 'The role of host cell proteins in the replication of Ebolavirus'. She loves both reading a good book with a nice mug of coffee and hanging out with her friends in the vibrant city of Liverpool.



#### **PhD Student Profile: Kimberley Steeds**

Kimberley is a first year PhD student based at Public Health England (PHE) Porton Down, and supported by the Institute of Infection and Global Health at the University of Liverpool (UoL). The title of her project is 'Antibody correlates of protection for Ebola virus (EBOV) infection: Effects of mutations within the viral glycoprotein on virus cell entry and immune escape', with supervisors Miles Carroll and Roger Hewson of PHE, and Julian Hiscox and Georgios Pollakis of UoL. Kimberley was awarded a BSc degree in Applied Biology with first-class honours from the University of Bath, where she then worked as a laboratory technician for two years. She has since worked at Porton Down for over eight years, gaining experience in infectious disease research and immunology. Various deployments to West Africa during the recent EBOV outbreak, including work within an EBOV diagnostic laboratory, and collecting immunological samples for an Ebola vaccine trial, encouraged her decision to undertake a doctorate degree within this particular area of research.

#### **New HPRU EZI PhD Students**

Welcome to **Liana Kafetzopoulou**, **John Tulloch**, **George Lock** and **Maya Holding**, who have joined us on HPRU EZI PhD studentships. Their studies will be featured in a future newsletter.

## **PUBLIC INVOLVEMENT AND ENGAGEMENT**

The NIHR expects that all HPRU researchers are involved in public involvement and engagement. There are numerous ways in which researchers can get involved as below - please contact [hpruezi@liverpool.ac.uk](mailto:hpruezi@liverpool.ac.uk) for further information.



### Public Involvement Panel

Our Public Involvement Panel (PIP), established jointly by the HPRU EZI and the University of Liverpool's Institute of Infection and Global Health (IGH) in 2015, is a diverse, active and engaged panel of patients and other research users. The PIP held three meetings in 2015-16, and several HPRU researchers have presented proposed projects for review by the panel. The panel is still in its infancy but feedback so far, from both panel members and researchers alike, has been overwhelmingly positive. The panel consists of approximately 20 public volunteers and 5 HPRU EZI/IGH members. The panel is a convenient way for HPRU EZI members to access the input of patients, public, farmers, pet owners etc, to have their unique input to your research. Most health research funders including the NIHR now require some form of public involvement/engagement. If you would like to present your research to the Panel, please contact **Fiona McGill** at [fmcgill@liverpool.ac.uk](mailto:fmcgill@liverpool.ac.uk)



### Meet The Scientists Events at World Museum Liverpool

A series of weekend family-friendly events focused on key topics researched within the University of Liverpool's Faculty of Health and Life Sciences, including the HPRU EZI. Events provide an opportunity for visitors to meet real scientists and to find out about the latest research happening at the HPRU, in an informal, interactive and enjoyable way. Further event dates will be advertised shortly.



On 19 March 2016 we held fun workshops for children and their families during the 'Healthy Lives' Meet The Scientists event. Children learnt about the importance of DNA by extracting DNA from strawberries and bananas. Participants explored why studying DNA is fundamental for understanding infections and preventing us from getting ill, played various games exploring various types of infections, and used a handmade Smart Phone Microscope to take pictures of bugs with their own phones. Our 'Pets or Pests?' stall had a range of activities, including posters, crafts, quizzes, a hand-washing test and a video. Members of the public were challenged to think about their perception of rats and the different roles of rats in society, including as pets, pests and as sources of infection, and were able to vote on whether they believed rats were pets or pests.



[www.liv.ac.uk/health-and-life-sciences/meet-the-scientists/](http://www.liv.ac.uk/health-and-life-sciences/meet-the-scientists/)



### HPRU 'Infectious Science' Event

The first in a series of HPRU 'Infectious Science' events was held on 3 March 2016 at The Vines public house in Liverpool. This free-of-charge evening event, attended by 60 members of the public, featured six fast-paced scientific TEDx-style talks from HPRU researchers on topics such as tick bites and Zika virus. The objective of the event is to encourage people from all ages and backgrounds to take an interest in infections, and



the event provides an opportunity for HPRU researchers to develop their public engagement skills.

The event had presentations from the following HPRU researchers:

**Matthew Baylis** on 'From cannibals to cows - a short history of prion diseases'

**Liz McGinley** on 'Tick Bites and Pathogens'

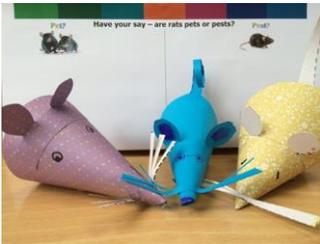
**Marcus Blagrove** on 'Zika Virus'.

The date of the next Infectious Science event will be advertised shortly. Please contact Raquel Medialdea Carrera at [raquelmc@liverpool.ac.uk](mailto:raquelmc@liverpool.ac.uk) if you would like to present your research at a future event.



### **Ness Botanic Gardens Family Science Fair**

We had a 'Pets or Pests?' exhibit at the Ness Botanic Gardens Family Science Fair on 12 March 2016 as part of British Science Week, to highlight the work of HPRU EZI PhD students **Charlotte Robin** and **Ellen Murphy** on the risk of infections from rats versus our relationship with them, their role as pests in a food context, and where rats feature within our history. We ran activities for children such as making rat finger puppets, and displayed posters and information on what infections rats can carry which can affect livestock and people. In addition, we had a voting system to see if people thought rats were pets or pests. The objectives of this event were to educate the public on actual infectious risks and to highlight the type of work we are doing to study the risks and our perception of rats, from being seen as dirty pests to a very popular pet.



### **British Science Week**

On 15, 16 and 17 March 2016, during British Science Week, HPRU EZI PhD students **Raquel Medialdea Carrera** and **George Lock** organised three workshops at the University of Liverpool for school children aged 13 and 14. During the workshops the pupils learnt about infectious bugs, and why studying DNA is important for life and in particular to fight infections. All children had an opportunity to extract DNA from strawberries and bananas, as well as prepare slides and observe through a microscope their own cheek cells and mosquitos that can transmit infections.



## **GETTING INVOLVED**

### **Science Festivals**

A variety of science festivals take place across the country. Calls are put out at various times during the year. Full details can be found at [http://sciencecentres.org.uk/events/science\\_festivals.html](http://sciencecentres.org.uk/events/science_festivals.html).

## **Big Bang Fair**

National Fair - 15-18 March 2017 at the NEC, Birmingham [www.thebigbangfair.co.uk/Activities/](http://www.thebigbangfair.co.uk/Activities/)

The Big Bang North West - 5 July 2016, Exhibition Centre Liverpool. HPRU EZI took part in the 2015 event. [https://nearme.thebigbangfair.co.uk/North\\_West/](https://nearme.thebigbangfair.co.uk/North_West/)

Please contact Jo Robinson at [jfr@liverpool.ac.uk](mailto:jfr@liverpool.ac.uk) if you would like to get involved in this event.

## **Science Festival at The World Museum, Liverpool**

This event on 6 July 2016 is specifically for schoolchildren.

Please contact Jo Robinson at [jfr@liverpool.ac.uk](mailto:jfr@liverpool.ac.uk) if you would like to get involved in this event.

## **Institute of Infection and Global Health (IGH) Summer School - 11-15 July 2016, University of Liverpool**

12 students will be hosted by IGH for a week - please contact Jo Robinson at [jfr@liverpool.ac.uk](mailto:jfr@liverpool.ac.uk) if you would like to get involved in this event.

## **Famelab**

Calling all scientists and engineers with a passion for public engagement to participate in FameLab 2017!

FameLab is inviting scientists, mathematicians and engineers across the globe to take part in its flagship science communications competition. Contestants have just 3 minutes to convey a scientific concept of their choice. They will be judged by leading researchers, media personalities and science policy makers on the content, clarity and charisma of their presentation. Each national winner goes on to compete against over 25 other contestants from around the world at [The Times Cheltenham Science Festival](#) in June 2017. Please note that applications for FameLab UK will open again in October 2016. Follow us on [Twitter](#) or [Facebook](#) for more information on the 2016/17 season.

## **Science Writing**

### **IGH Blog**

Anyone is free to contribute to the Institute of Infection and Global Health's blog The Centrifuge [www.thecentrifugeblog.com](http://www.thecentrifugeblog.com). Blogs should be around 800 words, be written for a lay reader, include some good quality photographs, and can be on any topic as long as it's relevant to your work or IGH in general.

### **The Conversation**

The Conversation is a collaboration between editors and academics to provide informed news analysis and commentary that's free to read and republish. The University of Liverpool is a founding partner and academics can sign up to write articles <https://theconversation.com/uk>

## **University of Liverpool - Widening Participation and Outreach**

This team at the University of Liverpool aim to inspire, engage and enable all those who would not traditionally consider higher education, to fulfil their potential by raising their awareness, challenging barriers and providing opportunities. They are involved in a variety of projects and initiatives which are targeted at young people in primary schools through to secondary and post-16 [www.liv.ac.uk/widening-participation/](http://www.liv.ac.uk/widening-participation/)

## STEM Ambassador Scheme

Across the UK, STEM Ambassadors volunteer their time and support to promote STEM subjects to young learners in a vast range of original, creative, practical and engaging ways. They are an invaluable and free resource for teachers, helping to deliver the STEM curriculum and raise awareness of STEM careers, by revealing how essential STEM is throughout the world. Researchers are encouraged to sign up to the scheme which also provides you with a DBS check, public liability coverage and training opportunities [www.stemnet.org.uk/](http://www.stemnet.org.uk/)

## Science Live

Science Live has been established to help more people throughout the UK arrange and discover events, leading to many more people engaging with, understanding and enjoying science. If you wish to organise an event in your local area, speak at a public event about your research, or volunteer at an event in your area, please visit [www.sciencelive.net/](http://www.sciencelive.net/)

## I'm a Scientist, Get me out of Here!

An online public engagement event that gets scientists talking to school students all over the UK. Scientists put up a profile on this site, answer students' questions about science, their research, the universe and beyond. They engage directly with students in live text-based chats. Students vote for their favourite scientist to win £500 to spend on further public engagement. Scientists develop their communication skills, gain a fresh perspective on their work, and find out what young people think about science and the role of scientists <http://imascientist.org.uk/scientists>

**If you are involved in any relevant activities, please inform the HPRU EZI Administration Team at [hpruezi@liverpool.ac.uk](mailto:hpruezi@liverpool.ac.uk). Please provide the activity title, brief description, date, audience (schools, public, etc), audience numbers, and any photographs or additional relevant information.**

## IMPACT AND KNOWLEDGE EXCHANGE

HPRU EZI Director **Tom Solomon** presented at the 17<sup>th</sup> International Congress on Infectious Diseases (ICID) held in Hyderabad, India on 2-5 March 2016, on Flavivirus Encephalitis and Other Neurological Syndromes (Japanese Encephalitis, WNV, Tick Borne Encephalitis Virus, Dengue and Zika Virus), and Zika Virus, What you Need to Know. On 18 April 2016, Tom gave a seminar at the School of Public Health at the Universidad del Valle in Cali, Columbia on the Neurological manifestations of Zika, Dengue and other Arboviruses. He gave a presentation on the Neurological Complications of Flaviviruses at the International Zika Summit held at the Institut Pasteur, Paris on 25-26 April 2016. Tom, with Laura Rodrigues and Annette Rid, has contributed to a Wellcome Trust Blog on 'What we need to find out about Zika and pregnancy', available at <http://bit.ly/1TsGYQ0>.

Tom joined a preliminary 'SAGE' (Scientific Advisory Group for Emergencies) group on Zika, which was established to ensure that the UK Government is aware of all of the latest evidence and scientific expertise relevant to Zika.

Tom also joined the World Health Organization expert group developing the Interim Guidance on the identification and management of Guillain-Barré syndrome in the context of Zika virus, and then the Full Guidance.

**Jon Read** presented HPRU EZI Ebola flight risk related work to the World-Wide Human Geography Data Working Group (WWHGD WG), as a webinar on Data and Mapping for Infectious Diseases with three other speakers from the CDC, HealthMap, and NASA on 2 June 2016.

**Cyril Caminade** was invited speaker at the 'European Round Table on Climate' at the Cervantes Institute, held in Manchester on 14 April 2016. The event was co-organised by the Cervantes Institute, the Alliance Française and the Dante Alighieri Society [www.afmanchester.org/table-ronde-europeenne-sur-le-climat](http://www.afmanchester.org/table-ronde-europeenne-sur-le-climat)

Cyril was also invited to talk about the impact of climate change and health on the radio show 'Planète terre', on national French radio channel France Culture on 4 May 2016. The podcast (in French) is available at [www.franceculture.fr/emissions/planete-terre/quel-impact-du-changement-climatique-sur-la-sante-mondiale](http://www.franceculture.fr/emissions/planete-terre/quel-impact-du-changement-climatique-sur-la-sante-mondiale)

## NIHR COMMUNICATIONS

### NIHR SUPPORT FOR COMPLEX REVIEWS

A new service offering specialist expert advice for those producing complex systematic reviews is now available. It can provide advice on methodological fields such as Diagnostic Test Accuracy, Economic Evaluations or Network Meta-Analysis. The Complex Review Support Unit has been set up by the NIHR Systematic Reviews Programme and is a collaboration between London School of Hygiene and Tropical Medicine, University of Leicester and University of Glasgow, which is the lead.

To find out more and to access support, please visit [www.nets.nihr.ac.uk/programmes/sr/support-for-complex-reviews](http://www.nets.nihr.ac.uk/programmes/sr/support-for-complex-reviews).

### IDENTIFYING WITH THE NIHR HPRU

Below is a summary of how to identify yourself with and acknowledge the NIHR HPRU.

Although we are geographically spread across England we are all One NIHR HPRU, so if you receive funding and support from the HPRU you should adhere to this branding when representing the HPRU.

The full 100 page NIHR Identity Guidelines document on how to use the NIHR logo and design, templates and acknowledgements is available at

[https://drive.google.com/folderview?id=0B2\\_bA2G8KlwiUFd4ZWZVZndfSjg&usp=drive\\_web&tid=0B2\\_bA2G8KlwieElMdztU2tLMm8](https://drive.google.com/folderview?id=0B2_bA2G8KlwiUFd4ZWZVZndfSjg&usp=drive_web&tid=0B2_bA2G8KlwieElMdztU2tLMm8)

### 1) Dissemination of Results: Acknowledgments and Approval

#### Acknowledging NIHR HPRU in Publications

Acknowledging the NIHR HPRU is vital as we need to capture all your relevant work. If it says HPRU in the address it can be counted as an output for the Unit.

Anything HPRU related that is published by any HPRU in Emerging and Zoonotic Infections researcher should have the following included as an address, in addition to your usual address:

- NIHR Health Protection Research Unit in Emerging and Zoonotic Infections, University of Liverpool, UK
- NIHR Health Protection Research Unit in Emerging and Zoonotic Infections, Liverpool School of Tropical Medicine, UK
- NIHR Health Protection Research Unit in Emerging and Zoonotic Infections, Public Health England, Porton Down, UK
- NIHR Health Protection Research Unit in Emerging and Zoonotic Infections, Public Health England, Colindale, UK

Where a publication is a result of work directly funded by the HPRU this too needs to be acknowledged.

#### **Disclaimer and funding acknowledgment for work directly funded by the NIHR**

**UPDATED VERSION:** The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Emerging and Zoonotic Infections at the University of Liverpool in partnership with Public Health England (PHE), and in collaboration with Liverpool School of Tropical Medicine (LSTM). [Name of researcher] is based at [Collaborator]. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR, the Department of Health or Public Health England.

#### **Disclaimer for work not directly funded by the NIHR but where they have been acknowledged in the address**

The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR, the Department of Health or Public Health England.

**Submission:** A draft of research papers should be submitted to NIHR at the same time as submission for publication or at least 28 days before the date intended for publication, whichever is earlier.

**UPDATED SUBMISSION INSTRUCTIONS:** Please submit your paper directly to [chiara.gasparini@nhr.ac.uk](mailto:chiara.gasparini@nhr.ac.uk) copying in [hpruezi@liverpool.ac.uk](mailto:hpruezi@liverpool.ac.uk) to the email so that a record of outputs can be maintained. Please include details of the publication/journal the article is to be submitted to. When the article is accepted for publication, please send a copy of the final article to [hpruezi@liverpool.ac.uk](mailto:hpruezi@liverpool.ac.uk)

**UPDATE: DISSEMINATION OF RESULTS:** The NIHR would now like sight of when the results of HPRU research are being disseminated (book chapters, abstracts from congress participation or poster presentations for example) to ensure the correct acknowledgments are being used, since these too are deemed to be research outputs. Again please submit these directly to [chiara.gasparini@nhr.ac.uk](mailto:chiara.gasparini@nhr.ac.uk) copying in [hpruezi@liverpool.ac.uk](mailto:hpruezi@liverpool.ac.uk) to the email.

## **2) Email Signature**

Please ensure your affiliation to the NIHR HPRU is clear and includes the website and Twitter address.

For example:

Mr Tom Jones

**PhD Student**

**National Institute for Health Research**

## Health Protection Research Unit in Emerging and Zoonotic Infections

The University of Liverpool

Address etc

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### Contacts

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**New templates for HPRU presentations and posters will be circulated shortly.**

## THEME SPECIFIC ZIKA PUMP PRIMING RESEARCH FUNDING CALL

In response to the World Health Organization declaring the Zika outbreak to be a global health emergency, a theme specific pump priming funding call to support research into the Zika virus was launched. Applications were invited which would enable researchers to develop research ideas, generate pilot data or undertake pilot studies to support the development of external funding applications in relation to the Zika virus.

The following projects were selected and began on 1 April 2016.

Investigators	Research Project Title
Marcus Blagrove, Matthew Baylis, Jolyon Medlock, Steve Torr	Development of a UoL/LSTM ZIKV-mosquito infection system
Lance Turtle, Tom Solomon, Tim Brooks	Cross-reactive immune responses between Zika virus and other flaviviruses
Alistair Darby, Gareth Weedall	Region-focused genomic analysis of South American Aedes aegypti vectors towards better genomic tools for vector control and surveillance in the region of the Zika virus outbreak
Jen Cornick, Amy Cain, Daniel Bailey, Dean Everett	Optimisation of a RT-PCR for Zika virus surveillance in Sub-Saharan Africa
Roger Hewson, Ana Bispo de Filippis, Tom Solomon, Andres Paez Martinez, David Brown, Mike Griffiths, Miles Carroll	Diagnostic support to the ZIKV outbreak through developed links with Columbia and Brazil
Georgios Pollakis, Bill Paxton	Development of ZIKA virus neutralisation assay
Mark Ellul, Tom Solomon, David Brown, Fernando Bozza	Pilot work for a prospective case-control study examining the role of Zika virus in Guillain-Barré syndrome in Brazil
Lisa Ng, Julian Hiscox, Laurent Renia	Investigation of Zika virus in primary cell models to elucidate the molecular pathogenesis of the virus and provide baseline data relevant patient samples

## PUBLICATIONS

**Congratulations to the following who have published in recent months.**

Quick J, Loman NJ, Duraffour S, Simpson JT, Severi E, Cowley L, et al. **Real-time, portable genome sequencing for Ebola surveillance.** Nature. 2016 Feb 11;530(7589):228-32. doi: 10.1038/nature16996. Epub 2016 Feb 3.

Available from: <http://www.nature.com/nature/journal/v530/n7589/full/nature16996.html>

Leedale J, Jones AE, Caminade C, Morse AP. **A dynamic, climate-driven model of Rift Valley fever.** Geospatial Health. 2016 Mar 31;11(1 Suppl):394. doi: 10.4081/gh.2016.394.

Available from: <http://www.geospatialhealth.net/index.php/gh/article/view/394>

Leedale J, Tompkins AM, Caminade C, Jones AE, Nikulin G, Morse AP. **Projecting malaria hazard from climate change in eastern Africa using large ensembles to estimate uncertainty**. *Geospatial Health*. 2016 Mar 31;11(1 Suppl):393. doi: 10.4081/gh.2016.393.

Available from: <http://www.geospatialhealth.net/index.php/gh/article/view/393>

Murray AG, Wardeh M, McIntyre KM. **Using the H-index to assess disease priorities for salmon aquaculture**. *Preventive Veterinary Medicine*. 2016 Apr 1;126:199-207. doi: 10.1016/j.prevetmed.2016.02.007. Epub 2016 Feb 27.

Available from: <http://www.sciencedirect.com/science/article/pii/S016758771630071X>

England ME, Phipps P, Medlock JM, Atkinson PM, Atkinson B, Hewson R, Gale P. ***Hyalomma* ticks on northward migrating birds in southern Spain: Implications for the risk of entry of Crimean-Congo haemorrhagic fever virus to Great Britain**. *Journal of Vector Ecology*. 2016 Jun;41(1):128-34. doi: 10.1111/jvec.12204.

Available from: <http://onlinelibrary.wiley.com/doi/10.1111/jvec.12204/abstract>

Newitt S, Elliot AJ, Morbey R, Durnall H, Pietzsch ME, Medlock JM, Leach S, Smith GE. **The use of syndromic surveillance to monitor the incidence of arthropod bites requiring healthcare in England, 2000-2013: a retrospective ecological study**. *Epidemiology and Infection*. 2016 Apr 12:1-9. [Epub ahead of print]. Available from:

<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=10277044&fileId=S0950268816000686>

Hansford KM, Medlock JM, Swainsbury C, Phipps LP, Marco Mdel M, Hernández-Triana LM, Johnson N, Fooks AR. ***Babesia canis* infection in ticks in Essex**. *Veterinary Record*. 2016 Mar 26;178(13):323. doi: 10.1136/vr.i1690.

Available from: <http://veterinaryrecord.bmj.com/content/178/13/323.1.long>

Duscher GG, Hodžić A, Weiler M, Vaux AG, Rudolf I, Sixl W, Medlock JM, Versteirt V, Hubálek Z. **First report of *Rickettsia raoultii* in field collected *Dermacentor reticulatus* ticks from Austria**. *Ticks and Tick-borne Diseases*. 2016 Mar 2. pii: S1877-959X(16)30036-X. doi: 10.1016/j.ttbdis.2016.02.022. [Epub ahead of print].

Available from: <http://www.sciencedirect.com/science/article/pii/S1877959X1630036X>

Phipps LP, Del Mar Fernandez De Marco M, Hernández-Triana LM, Johnson N, Swainsbury C, Medlock JM, Hansford K, Mitchell S. ***Babesia canis* detected in dogs and associated ticks from Essex**. *Veterinary Record*. 2016 Mar 5;178(10):243-4. doi: 10.1136/vr.i1265.

Available from: <http://veterinaryrecord.bmj.com/content/178/10/243.3.long>

Lee KH, Medlock JM, Yun Y, Cho NH. **In Response**. *American Journal of Tropical Medicine and Hygiene*. 2015 Dec;93(6):1393. doi: 10.4269/ajtmh.15-0524b. Available from: <http://www.ajtmh.org/content/93/6/1393.long>

Alten B, Ozbel Y, Ergunay K, Kasap OE, Cull B, Antoniou M, Velo E, Prudhomme J, Molina R, Bañuls AL, Schaffner F, Hendrickx G, Van Bortel W, Medlock JM. **Sampling strategies for phlebotomine sand flies (Diptera: Psychodidae) in**

**Europe.** Bulletin of Entomological Research. 2015 Dec;105(6):664-78. doi: 10.1017/S0007485315000127. Epub 2015 Aug 14. Available from:

<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=10028887&fileId=S0007485315000127>

van Griensven J, Edwards T, de Lamballerie X, Semple MG, Gallian P, Baize S, et al. **Evaluation of Convalescent Plasma for Ebola Virus Disease in Guinea.** New England Journal of Medicine. 2016 Jan 7;374(1):33-42. doi: 10.1056/NEJMoa1511812.

Available from: <http://www.nejm.org/doi/full/10.1056/NEJMoa1511812>

Edwards T, Semple MG, De Weggheleire A, Claeys Y, De Crop M, Menten J, et al. **Design and analysis considerations in the Ebola\_Tx trial evaluating convalescent plasma in the treatment of Ebola virus disease in Guinea during the 2014-2015 outbreak.** Clinical Trials. 2016 Feb;13(1):13-21. doi: 10.1177/1740774515621056. Epub 2016 Jan 14.

Available from: <http://ctj.sagepub.com/content/13/1/13.long>

Scott JT, Sesay FR, Massaquoi TA, Idriss BR, Sahr F, Semple MG. **Post-Ebola Syndrome, Sierra Leone.** Emerging Infectious Diseases. 2016 Apr;22(4):641-6. doi: 10.3201/eid2204.151302.

Available from: [http://wwwnc.cdc.gov/eid/article/22/4/15-1302\\_article](http://wwwnc.cdc.gov/eid/article/22/4/15-1302_article)

Brasil P, Sequeira PC, Freitas AD, Zogbi HE, Calvet GA, de Souza RV, Siqueira AM, de Mendonca MC, Nogueira RM, de Filippis AM, Solomon T. **Guillain-Barré syndrome associated with Zika virus infection.** The Lancet. 2016 Apr 2;387(10026):1482. doi: 10.1016/S0140-6736(16)30058-7.

Available from: <http://www.sciencedirect.com/science/article/pii/S0140673616300587>

Mansfield KL, Johnson N, Banyard AC, Núñez A, Baylis M, Solomon T, Fooks AR. **Innate and adaptive immune responses to tick-borne flavivirus infection in sheep.** Veterinary Microbiology. 2016 Mar 15;185:20-8. doi: 10.1016/j.vetmic.2016.01.015. Epub 2016 Jan 22.

Available from: <http://www.sciencedirect.com/science/article/pii/S0378113516300153>

Solomon T, Baylis M, Brown D. **Zika virus and neurological disease - approaches to the unknown.** The Lancet Infectious Diseases. 2016 Apr;16(4):402-4. doi: 10.1016/S1473-3099(16)00125-0. Epub 2016 Feb 26.

Available from: <http://www.sciencedirect.com/science/article/pii/S1473309916001250>

**NB If you have published, but it has not been listed here, please let us know about it!**

## GRANT SUCCESS

HPRU members have been successful in obtaining the following research funding.

Name	Details	Funder	Award
Matthew Baylis, Andy Morse, Cyril Caminade	Impact of El Niño on malaria vector dynamics in Tanzania: observation, improvement and unleashing forecasting potential	NERC	£291,098
Matthew Baylis	Susceptibility of South American and European vectors to ZIKV infection, and influence of temperature	MRC	£145,769
Matthew Baylis	Vector-borne diseases in the UK & US: common threats and shared solutions BBSRC US Partnering Award	BBSRC	£50,000
Matthew Baylis	Big Data approaches to host-pathogen mapping: EID2 - an open-access, taxonomically- and spatially-referenced database of pathogens and their hosts	BBSRC	£186,795
Mike Griffiths	Improved diagnostics for Zika virus infection in South America through an established laboratory partnership between Brazil, Colombia and the UK	MRC	£80,633.60
Julian Hiscox	EVIDENT - High throughput analysis of samples from the West African Ebola outbreak	European Commission	£43,741.50
Marie McIntyre	Modelling the spatial distribution of Chikungunya in Europe and North America using presence-data	University of Liverpool Internal Interdisciplinary Network Fund	£4,003
Lisa Ng	Investigating the link between Zika virus infection and neurological disease in ex vivo and in vivo models	MRC	£104,560
Alan Radford	Infectious disease outbreak detection and characterization using a combination of real time disease surveillance and modern sequencing technologies: a pilot study	Pet Plan Charitable Trust	£9,653
Alan Radford	Small Animal Veterinary Surveillance Network	BBSRC	£730,460.80

Hilary Ranson	DD for new AIs	Innovative Vector Control Consortium	£389,961
Hilary Ranson	LLIN failure in Burkina	Wellcome Trust	£1,704,931
Hilary Ranson	Mosquito control by disrupting the ecdysone pathway	Harvard University	£74,440.37
Dr Jon Read	Development of New Mathematical Sciences Capabilities for Healthcare Technologies	Engineering & Physical Sciences Research Council	£1,811,025.95
Tom Solomon	A prospective case-control study to examine the role of Zika virus in Guillain-Barré syndrome in Brazil	MRC	£147,288
Tom Solomon	Interaction of Japanese Encephalitis Virus with cells of the Blood Brain Barrier - an in vitro model (Chitra Pattabiraman)	Department for Business, Innovation and Skills (UK)	£99,000
Tom Solomon, Mike Griffiths, Raquel Medialdea Carrera	Improving the Diagnosis of CNS Emergent Infections	Newton	£2,300

## NEW MEMBERS

- **Dr Richard Amlôt**, Scientific Programme Leader, Behavioural Science Team, Public Health England
- **Dr Daniel Bailey**, Lead Specialist (Molecular), Public Health England
- **Graham Bailey**, PhD Student, University of Nottingham
- **Professor Malcolm Bennett**, Professor of Zoonotic and Emerging Disease, University of Nottingham
- **Dr Tom Blanchard**, Consultant in Infectious Diseases, The Royal Liverpool and Broadgreen University Hospitals NHS Trust
- **Professor Ray Borrow**, Head of Vaccine Evaluation Unit/Consultant Clinical Scientist, Public Health England
- **Dr Amy Cain**, Molecular Lab Manager/Postdoctoral Researcher, Malawi-Liverpool-Wellcome Trust Centre, Liverpool School of Tropical Medicine
- **Dr Simon Carpenter**, Group Leader, Entomology, Epidemiology, Virology, The Pirbright Institute
- **Dr Climent Casals-Pascual**, HPRU in Healthcare Associated Infection and Antimicrobial Resistance, Nuffield Department of Medicine, University of Oxford
- **Dr Meera Chand**, Consultant Microbiologist, Public Health England
- **Dr Julian Chantrey**, Senior Lecturer in Zoo and Wild Animal Pathology, University of Liverpool
- **Dr Jen Cornick**, Senior Lead Post-Doctoral Scientist, University of Liverpool/Malawi-Liverpool-Wellcome Trust Clinical Research Programme
- **Professor Luis E. Cuevas**, Professor of International Public Health and Epidemiology, Head of Department of Clinical Sciences, Liverpool School of Tropical Medicine

- **Dr Janet Daly**, Associate Professor in Emergent Viruses, University of Nottingham
- **Dr Alistair Darby**, Senior Lecturer, Department of Functional & Comparative Genomics, Institute of Integrative Biology, University of Liverpool
- **Dr Sylviane Defres**, Clinical Research Fellow, Liverpool Brain Infections Group, University of Liverpool
- **Dr Stuart Dowall**, Project Team Leader, Virology & Pathogenesis Group, Public Health England
- **Dr Jake Dunning**, Consultant in Infectious Diseases, Public Health England; Deputy Director, High Consequence Infectious Diseases Programme, NHS England; Honorary Senior Clinical Lecturer, National Heart and Lung Institute
- **Dr Mark Ellul**, NIHR Academic Clinical Fellow in Neurology, University of Liverpool
- **Dr Rachel Floyd**, Research Fellow, Kidney Research UK, Department of Cellular and Molecular Physiology, University of Liverpool
- **Dr Melissa Gladstone**, Senior Lecturer in Neurodevelopmental Paediatrics, University of Liverpool
- **Dr Ian Hall**, Principal Mathematical Modeller, Emergency Response Department, Public Health England
- **Dr John Hartley**, Consultant Microbiologist, Great Ormond Street Hospital
- **Dr Deborah Hemming**, Scientific Manager, Climate Impacts Analysis Team, Met Office, UK
- **Dr Luis M. Hernandez-Triana**, Research Entomologist, Virology Department, Animal and Plant Health Agency
- **Dan Hungerford**, Epidemiology Research Fellow, Department of Clinical Infection, Microbiology and Immunology, University of Liverpool
- **Dr Emma Jones**, Research Fellow, Behavioural Science Team, Public Health England
- **Dr Hilary Kirkbride**, Consultant Epidemiologist, Public Health England
- **Professor Steve Leach**, Scientific Programme Head, Emergency Response Department, Science & Technology, Public Health England
- **Dr Meredith Lloyd-Evans MRCVS**, Managing Director, BioBridge Ltd
- **Dr Nick Loman**, MRC Research Fellow, School of Biosciences, University of Birmingham / NIHR Surgical Reconstruction and Microbiology Research Centre
- **Sarah Lumley**, PhD Student, Public Health England/Animal and Plant Health Agency/University of Surrey
- **Professor Peter Openshaw**, Professor of Experimental Medicine, Faculty of Medicine, National Heart & Lung Institute, Imperial College London
- **Professor Liz Perkins**, William Rathbone VI Chair of Community Nursing, University of Liverpool
- **Maaike Pietzsch**, Senior Public Health Scientist, Public Health England
- **Thanalai Poonsiri**, PhD Student, Institute of Infection and Global Health, University of Liverpool
- **Dr V Ravi**, Head of Neurovirology, NIMHANS, Bangalore, India
- **Professor Robert Read**, Head of Academic Unit - Clinical and Experimental Science, Professor of Infectious Diseases, Honorary Consultant Physician to Southampton University Hospitals and University of Southampton
- **Dr Paul Richardson**, Consultant Hepatologist, The Royal Liverpool and Broadgreen University Hospitals NHS

Trust

- **Dr Christophe Sarran**, Health Research Scientist, Met Office
- **Dr Miriam Taegtmeier**, Senior Clinical Lecturer, Liverpool School of Tropical Medicine
- **Dr Richard Urbanowicz**, Post-Doctoral Fellow, Immunology and Virus Research Group, University of Nottingham
- **Dr Francine Watkins**, Senior Lecturer and Director of MPH Programmes, Institute of Psychology, Health & Society, University of Liverpool
- **Dr Gareth Weedall**, Postdoctoral Researcher, Vector Biology Department, Liverpool School of Tropical Medicine

## SUBMIT YOUR NEWS

If you have any items for inclusion in the next newsletter please send them to [hpruezi@liverpool.ac.uk](mailto:hpruezi@liverpool.ac.uk)

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