Animal & Plant Health Agency

Science Newsletter

Issue 6, October 2020

Welcome

By Dr Kath Webster
APHA SCIENCE DIRECTOR

Welcome to the sixth edition of the APHA Science Newsletter.

I'm sure you will agree these are unprecedented times with the whole world dealing with the Coronavirus pandemic. Our science staff have adapted admirably whether it be working from home or working in our labs on a rota basis to continue statutory testing. We have also helped in the national response by providing testing centres with scientists and specialist equipment, working with the University of Southampton on a testing pilot and most recently NHS COVID-19 testing at Weybridge. I am very proud to head such a dedicated directorate.

We have given our quarterly newsletter a facelift which we hope you will find an engaging read. The newsletter is not the only thing that has had a revamp: as you will read in the 'highlighting our science' article, we have refreshed our science homepage on GOV.UK. This now includes the annual science review, more information on our international science work and APHA Scientific.

In this edition, we have highlighted a selection of blogs published since issue 5 which we hope you find interesting. Our science blog subscribers are steadily growing and we are working hard to share newsworthy stories more frequently on our social media platforms namely Facebook, Twitter and LinkedIn. You can find links to our official accounts below and at the very end of this newsletter.

We've featured the Surveillance Intelligence Unit this quarter, headed by Fin Twomey. Read about the importance of APHA's scanning surveillance programme for detecting diseases of livestock and wildlife.

We are proud of the number of scientific publications we produce. See details in the publication list (pages 6-14) and on gov.uk.

Highlighting our science

The APHA Annual Science Review is primarily produced for the APHA Scientific Advisory Board (SAB) to give an overview of our main scientific achievements during the last year and is then published on GOV.UK for wider public awareness.

Our latest review covering 2019 is now available to view on our 'Research at APHA' GOV.UK page. This web page gives a brief introduction to our research and scientific activities with additional links to:

- APHA Science Strategy 2015-20
- Information on our published scientific papers
- APHA Science blogs

Grouped around the science portfolios and scientific disciplines working across the APHA, the Science Review shows the range of expertise within the Agency and the scale of work we have been involved in to protect animal, bee and plant health and support the delivery of APHA's Science Strategy 2015-20. We are currently developing our 2021 – 26 Science Strategy.

Some of the many achievements highlighted across the portfolios include:

- The International Reference Laboratory for avian and swine influenza and Newcastle disease. Protecting the UK from new threats through maintaining the function for the UK National Reference Laboratory for Avian Virology and Mammalian Influenza, and expanding our strategic growth in outreach, capitalising on scientific opportunities, as these viral hazards continue to transit worldwide.
- APHA continued to be part of a landmark One Health partnership (European Joint Programme) between 38 institutes (veterinary, medical, environment and food) in 19 countries to increase action on foodborne zoonoses, antibiotic resistance and emerging threats.
- The International Development team have enhanced the international influence of APHA, led the science delivery for a range of EU Exit projects for day 1 readiness and ensured that the work of the Science Directorate supports future UK global trade deals. In addition, we have secured ODA funding for the first time to grow our international outreach and influence.
- In early 2019, the United Nations (UN) Food and Agriculture Organization (FAO) awarded official designation to the UK International Reference Centre for AMR.
- The OIE Collaborating Centre for Risk and Modelling (jointly by APHA and RVC) was established in May 2019.
- The APHA Science Directorate published 24 science blogs and 233 peer reviewed papers across all our science portfolios in 2019.

APHA's Professor Ian Brown receives OBE and takes up new role

Professor Ian Brown

We are pleased to announce that Professor Ian Brown, Head of Virology at APHA, has been awarded an OBE for this services to animal health and welfare. This award comes after a long career in and contribution to the scientific study of viruses and animal influenzas and the control and prevention of avian influenza.

Congratulations Ian!

Additionally, Ian has recently taken up the role of Deputy Director of Scientific Services . This post has been created while Kath Webster, APHA Science Director, sets up and chairs the Design Authority for the National Science Centre for Animal Health. Ian will take responsibility for the delivery of scientific services within APHA. Tony Fooks will take up the post of Head of Virology during this initial four month period.

Blog activity

Over the past few months, we have published a number of blogs you may be interested in reading - a selection of which are listed below. We aim to highlight the range wide of work we are involved in at APHA. Click on each heading to find out more or visit our blog site to view our full blog catalogue.

- **World Rabies Day 2020**: To mark the 14th World Rabies Day Lorraine McElhinney, APHA's Disease Consultant for Rabies and Tony Fooks, Head of Virology, talk about how APHA is contributing to the UK Government's commitment to eliminate dog associated human rabies by 2030.
- **The threat of the Asian hornet**: Asian hornets are a non-native invasive predator, posing a serious threat to our native pollinators. To mark Asian Hornet week (7th-13th September), we wrote this blog about the work APHA do in controlling this threat and what you should do if you spot one.
- A **series of blogs** focussing on how APHA is taking a One Health approach with partners/collaborators to tackle the challenges associated with the national and global threats posed by zoonotic diseases and antimicrobial resistance.
- **Fighting the challenge of antimicrobial resistance in Ghana**: Rod Card explains how APHA, in conjunction with other Defra Agencies, is helping other countries to address the threat from AMR.
- **Inspiring a new generation of female scientists**: Tuesday 11 February 2020, marked the fifth International Day of Women and Girls in Science. In this blog, Flavie Vial, Lead Scientist for Wildlife at the time of publication, explains more about the day and asked some of our female scientists to share their personal experiences and offer advice to school-aged girls interested in STEM careers.
- **Government budget announces investment in APHA's science**: The government recently confirmed investment of £1.4bn over the next 10 years to redevelop our specialist research facility at Weybridge.
- A **series of blogs** about our involvement in the national COVID-19 testing effort.

Further Science Highlights

Second round of funding for projects funded by the European Joint Programme

APHA has been awarded funding through the Horizon 2020 programme, issued by the One Health European Joint Programme (EJP) for 10 joint integrative projects and two PhD studentships.

The OHEJP is a landmark partnership, led by the French Agency for Food, Environmental and Occupational Health & Safety (ANSES), with 38 partners of acclaimed food, veterinary and medical laboratories/institutes across Europe.

APHA has already been working on six projects since 2017 focussed on antimicrobial resistance, food-borne zoonoses and emerging threats, which are due to be completed and reported on this year. In January, we started another ten projects and hosted a kick off meeting for the HARMONY CAP project led by SSI.

Manal Abu Oun is leading the FARMED integrative action project and our scientists are involved in another eight projects: BeOne, ADONIS, BIOPIGEE, DISCoVeR, IDEMBRU, FULL-FORCE, MATRIX and CARE. There are two PhD projects called WilBr and UdoFRiC.

'Paper of the Moment' winners announced

Dr Kate Palphramand (Wildlife Department), Dr Rebecca Strong (Virology Department), Susanna Williamson and Arthur Otter were commended as winners of our 'Paper of the Moment' initiative, which recognises the scientific publication achievements of staff.

- Kate's paper 'Field evaluation of candidate baits for oral delivery of BCG vaccine to European badgers, *Meles meles*' was published in Vaccine.
- Rebecca's paper 'Establishment of a Bovine Viral Diarrhea Virus Type 2 Intranasal Challenge Model for Assessing Vaccine Efficacy' was published in Frontiers in Veterinary Science.
- Susanna's paper 'Investigation of negated notifiable disease report cases in pigs, 2017–2019' was published in Veterinary Record.
- Arthur's paper 'Cattle abortions update' was published in Veterinary Record.

Eligible papers for the Science Paper of the Moment awards are sourced via staff publications received by the Library. These papers are scored by the Lead Scientists against an agreed criteria and a winner is selected.

Congratulations to all. Please be sure to look out in future editions for our next winners.

Lead Scientist changes

There have been a few changes to our lead scientist team:

Fin Twomey has taken up a permanent role as Lead Scientist for Surveillance. Fin had previously been filling this post temporarily.

Phil Hogarth has moved from his role in the Animal and Plant Health and Welfare Directorate as R&D manager in the Defra TB Programme to take up the role of Lead Scientist for TB.

Graham Smith has returned to his role as Lead Scientist for Wildlife. Thanks to Flavie Vial who covered the Wildlife Lead Scientist role.

More recently, Timm Konold has temporarily moved into the role as Lead Scientist for TSEs while Yvonne Spencer has taken up a four month position on promotion within the new Design Authority at Weybridge as Science Transformation Director.

Supporting the national COVID-19 response

Our Science Directorate have supported the national COVID-19 response by direct input into diagnostics, vaccine development, risk assessment, modelling and epidemiology by repurposing specialist science capability in a rapid and innovative manner. We have also provided a rapid science incident management structure to maintain business critical activities and keep all staff connected and informed.

We rapidly deployed specialist equipment and 26 scientists to UK testing hubs at Milton Keynes and Cambridge. They set up equipment and established protocols to run thousands of tests smoothly, working long shifts away from home. APHA experts made up 40% of the resource for getting the facility up and running. These skilled scientists were then used as trainers of new volunteers from other institutes and acted as team leaders.

We have also worked in collaboration with the academic community to assess new and better diagnostic models. You may have seen the news article broadcast on the BBC on Friday 7th July detailing our community-wide surveillance programme that is trialling an alternative COVID-19 testing approach using saliva rather than swabs with the University of Southampton. If you missed the feature, you can read in an article by Fergus Walsh on the BBC website.

More recently, we have signed a contract with the Department for Health and Social Care (DHSC) to begin COVID-19 testing at Weybridge. This testing will allow the diagnostic and pathology service at the Berkshire and Surrey Pathology Service to return to a more normal service, allowing them to start planning and working towards getting the NHS 'back to normal', including booking elective surgeries, cancer care, cancer treatment and outpatient work.

Despite all the changes for lots of our staff, we have kept all APHA Science sites open and operational, worked to prioritise the most important parts of our work around disease response, protecting the food chain and animal welfare.

Changes to our Discipline Champions

Our Science Strategy Group have reviewed our specialisms to match ongoing APHA scientific needs. The emphasis and direction of the Discipline Champions has therefore changed slightly to reflect this. Our Discipline Champion positions are not permanent but an additional responsibility for appointed individuals who perform this role in addition to their usual work. These specialist posts are appointed for three year terms in line with the spending review period.

In March 2020, we run an internal campaign to appoint staff into these reviewed posts. As of 1st April 2020, these are our Discipline Champions:

Animal sciences: Timm Konold

Bacteriology: Adrian Whatmore

Data sciences: Adam Brouwer

Epidemiology: Rachelle Avigad

Molecular biology: Richard Ellis

Parasitology: Sian Mitchell

Pathology: Alex Nunez

TB: Phil Hogarth

Vector borne diseases: Luis Hernandez-Triana and Suzanna Bell

Virology: Tony Fooks

Subscribe to our blog

To keep up-to-date with the latest scientific work at APHA, why not join our email mailing list to be notified as soon as new blogs are published?

Spotlight on the Surveillance Intelligence Unit

In this edition, we cast our attention to the Surveillance Intelligence Unit (SIU), headed by Lead Scientist Fin Twomey.

The purpose of scanning surveillance (also called passive surveillance) is to provide early detection of new and re-emerging disease threats. APHA delivers veterinary scanning surveillance for livestock and wildlife in England and Wales by monitoring disease trends in these species.

New and re-emerging threats include notifiable diseases; new diseases, pathogens or strains of micro-organisms; changing patterns and trends of endemic diseases; resistance to veterinary medicines; and diseases or infections in animals which can affect human health, such as zoonoses and toxicities. Therefore, they are significant for animal health, public health and in the case of wildlife, they have an impact on biodiversity.

It is therefore vital to have a robust surveillance system in place to detect and evaluate these disease threats, and share information with others who can make decisions about mitigating the impact of these threats for animal health, public health and biodiversity.

How do we deliver veterinary scanning surveillance?

APHA offers a diagnostic service across the whole of England and Wales, which includes a network of Veterinary Investigation Centres (VICs), laboratories and our partner post-mortem service providers. Scanning surveillance is delivered through a dedicated team of Veterinary Investigation Officers (VIOs) and other scientists. VIOs undertake disease investigations, including post mortem examinations, on carcasses and other samples. They are also available to give advice, drawing on the specialist knowledge and expertise that exists across APHA.

This diagnostic service is supported by APHA's Surveillance Intelligence Unit, which includes our Species Expert Groups, which cover the main livestock species and wildlife. APHA also has a network of experts across several scientific disciplines, including pathology, parasitology, bacteriology, virology, toxicology, antimicrobial resistance, zoonoses, epidemiology and risk analysis.

Critical to the success of scanning surveillance in livestock is the contribution made by private veterinary surgeons. Early detection and monitoring of animal disease threats is vital to protect our livestock and we can only do this when we are alerted to issues at source. Vets in practice are the 'eyes and ears' for scanning surveillance as they are on farms on a daily basis monitoring herd and flock health and welfare, submitting diagnostic samples to the scanning surveillance network and alerting our VIOs to threats through conversations, all of which we consider, and value as, a key contribution to scanning surveillance.

Likewise for wildlife, we rely on reports by wildlife groups and members of the public to notify us of potential disease issues in these species, and we work with other organisations under the Great Britain Wildlife Disease Surveillance Partnership to monitor trends in wildlife diseases.

Find out more about APHA's surveillance

APHA publishes a range of regular reports to share our data and analysis with the veterinary profession and with wider audiences.

- **Monthly surveillance reports in the Veterinary Record which review recent and interesting cases of interest**
- **Focus articles which highlight important, timely disease issues**
- **Quarterly reports which review trends and emerging threats in livestock species and wildlife**

We have also developed interactive GB-wide disease surveillance dashboards which allow you to view diagnostic data based on species, location, time, and disease diagnosis; and we publish GB-wide data in our Veterinary Investigation Diagnosis Analysis (VIDA) annual reports.

APHA brings together all these resources in our dedicated Surveillance and Diagnostic webpages, which also include contact details for our scanning surveillance network, and information on our diagnostic services, our Species Expert Groups and our specialist expertise, which include disease information notes and sampling guidance.

Publications

Since our last edition, we have published a number of papers across our scientific portfolios. Please note that full access to some articles require payment per article or a journal subscription however, we may be able to accommodate requests for copies of papers once an 'acknowledgement of a Copyright declaration' has been received by the Defra library. Please direct enquiries to LibraryEnquiries@defra.gov.uk.

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