



DEFEND NEWSLETTER #4

August 2020

DEFEND is a consortium of 30 scientific partners from academia, industry and government working together to halt the emergence of two viral pathogens of livestock into Europe and neighbouring countries – **African swine fever virus (ASFV) and lumpy skin disease virus (LSDV)**.

The aim of DEFEND is to control ASFV and LSDV by understanding the drivers behind their emergence, and by generating research outputs which underpin novel diagnostic tools and vaccines and authenticate appropriate and rapid responses by decision-makers.

DEFEND Key Facts

Start date: June 2018

Duration: 5 years

Budget: 5.6 million EUR

Coordinator: Dr Pip Beard

Website: www.defend2020.eu

Email: defend@pirbright.ac.uk

Twitter: @defend2020

Facebook: Defend2020

Welcome to our fourth DEFEND newsletter!

It seems a very long time ago that I wrote the introduction to the previous DEFEND newsletter in February 2020. The world is now a different place with the global emergence of SARS-CoV2 and COVID-19. The last viral pandemic of this magnitude was in 1918, so this is a new situation for everyone.

In this issue we have an update on the 18-month project review which took place in March, just prior to the start of the pandemic, articles looking at COVID-19 and its impact on DEFEND and the first article in a two-part series, introducing our DEFEND leaders.

This pandemic is far from over and its impact on our lives far from finished. However, every day scientists learn more about the virus and the disease it causes, and how we can treat, control and prevent it. The importance of research and innovation has never been so clearly portrayed.

Pip

In this issue:

Welcome and Key Facts	1
News	2
Articles	4
Outputs	8
Partner focus	9

NEWS

1. Successful 18-month project review for DEFEND

DEFEND reached its first official review point at 18 months (November 2019). As part of the review process, we prepared a detailed report for the European Commission (EC) providing information on our progress on the work packages and spend so far. It was a complex report to prepare, requiring input from all our partners, and we were so very proud of how the consortium pulled together to get the report submitted on time!

Project review meeting

In early March, we travelled to the EC Research Executive Agency offices in Brussels for our 'Project review meeting', to discuss the report and our progress. The meeting was attended by our EC Project Officer, Research Policy Officer, and two independent expert reviewers, as well as our DEFEND consortium leads, work package leaders and project manager. The feedback from the meeting was very positive, with the expert reviewers congratulating us on our achievements and our EC Project Officer describing the report as "very very good".

The day ended with a policy session, which facilitated discussion about the direction and impact of DEFEND research. The session was also attended by members of the PALE-Blu project consortium (<https://www.paleblu.eu/>) and it was interesting to hear about the work being carried out on another EU research project looking at animal viral diseases.



EC Research Executive Agency offices in Brussels

Reflections

Reflecting on the 18-month review process, we were so lucky the project review meeting took place at the beginning of March – we didn't know it at the time, but only a couple of short weeks later most of Europe would be in lock down!

We would like to thank all our partners for their amazing contributions, as well as our EC Project Officer and Research Policy Officer and the expert reviewers for their positive comments and suggestions.

We are looking forward to the next 18 months of DEFEND 😊

2. COVID-19 and DEFEND by Dr Pip Beard



Image of COVID-19 virus

COVID-19 is the disease of humans caused by infection with SARS-CoV2. SARS-CoV2 is widely believed to have resulted from a zoonotic event in the city of Wuhan in China, most likely a coronavirus of bats being transmitted either directly or indirectly to a human. The virus spread worldwide within months, aided by rapid and interconnected international travel. The most effective means to control the virus was to "shutdown" society, encouraging the population to stay at home and isolate. This has had severe consequences for the global economy.

The impact on DEFEND

All DEFEND partners have been impacted by the pandemic caused by COVID-19. Some have been shut down, some have been restricted to essential work only, and many have been repurposed to support the response to SARS-CoV2.



Our researchers have been working from home and often combining their DEFEND activities with caring responsibilities. Our Project Support Team have been changing the 2020 DEFEND annual consortium meeting from the traditional face-to-face format to a virtual platform and our work package leaders are continuing to monitor the impact of the pandemic on the DEFEND research tasks and redesigning the work and timelines as necessary.

Pandemic information

There is a lot of information on the web enabling us to keep up with the latest news and research on the pandemic. In this article I thought I would share with you some of my top SARS-CoV2 sites. My selection criteria for these websites are that they are up to date, evidence based, and have interesting images (I am often attracted by good graphics!).

- <https://www.biorxiv.org/>

The “preprint server for biology”, this site is operated by Cold Spring Harbour Laboratory, a not-for-profit research and educational institution. Biorxiv archives and distributes life science manuscripts prior to their acceptance and publication by scientific journals. In short it has all the latest SARS-CoV2 science, handily organised so you can access a list of all COVID-19 SARS-CoV-2 preprints, arranged in date order, directly from the title page.

- <https://www.ecdc.europa.eu/en/novel-coronavirus/facts>

Very simply, this website provides the facts. Authored by the European Centre for Disease Prevention and Control, it includes webinars, infographics, videos and articles. The information is Euro-centric, as you would expect, but still relevant to a broad audience.

- <https://coronavirus.jhu.edu/map.html>

The Centre for Systems Science and Engineering (CSSE) at Johns Hopkins University curates this COVID-19 map. It covers 188 countries / regions providing up-to-date details (“map data is updated in near real-time throughout the day”) on confirmed cumulative cases, deaths, hospitalisation rate, and more. I particularly like the graphical representation of cases over time in any country / region selected.

- <https://www.immunology.org/coronavirus/connect-coronavirus-public-engagement-resources>

Finally, the British Society for Immunology has drawn together a list of resources for all ages and abilities explaining what COVID-19 and SARS-CoV2 are all about. I love their “colour-in-coronavirus” images that can be printed and coloured in the traditional fashion or downloaded to be coloured in using Paint for those at home with no access to a printer!

Keep up to date

*If you would like to keep up to date with our work on DEFEND, you can register as a **DEFEND Stakeholder**, by emailing the DEFEND mailbox (defend@pirbright.ac.uk).*

*You can also follow us on **Twitter and Facebook @defend2020***



ARTICLES

1.DEFEND during the pandemic – daily life and virtual meetings

We are almost half way through the year and 2020 has turned out to be a little different from the way we all thought it would look. The world has changed. Spring flew by in a rush of social distancing, staying at home and generally working out how to keep everyone safe. Working from home has suddenly become the 'norm' and although we hope that there is light at the end of the tunnel and we can all safely return to the work place, what has it been like for those of us working on DEFEND?

As Pip has stated in her COVID-19 update, almost all the lab-based science has temporarily been suspended to ensure the safety of the scientists and researchers. Those of us able to continue with our administrative based tasks have made the most of this time, continuing with all the essential tasks and getting to grips with tasks that always seem to slip down the priority list, but what does life look like for researchers and scientists during a pandemic?

Daily life of the DEFEND team

We asked the DEFEND team to share with us an insight into their daily lives during the pandemic;

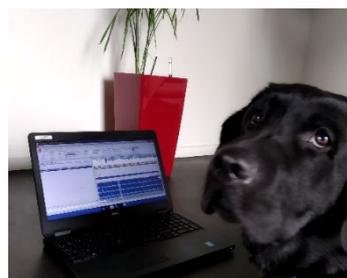
Dr Carola Sauter- Louis, Friedrich Loeffler Institute (FLI), Germany

'COVID-19 has only indirectly affected my working life, seeing as we only work at our desk, not in the laboratory. We were and are still allowed to come into the office (if you are lucky and have an office on your own). The only noticeable thing is, that my co-workers see me now much more frequently (with distance) because I am not travelling anymore. However, due to the fact, that the children could not go to school, this meant I started really early in the morning and then left in the afternoon (or tried to leave in the afternoon) to work with the kids on their school work.'



Carola at her desk at FLI.

Dr Steven Van Borm, Sciensano, Belgium



Pepper assisting Steven with Poxvirus genome assemblies.

'Laboratory work to generate LSDV sequence data has been shut down for weeks but we are currently phasing it in, as the confinement regulations are progressively becoming less strict. Thanks to remote access, a lot of bioinformatics work can be done from home. This allows us to prepare whole genome assembly strategies on available data and be ready to go full speed ahead once the lab work can resume. However, I noticed that my dog Pepper is not really interested in sniffing out Poxvirus genome assemblies 😊.'

Dr Tamas Petrovic, Scientific Veterinary Institute Novi Sad (NIV-NS), Serbia

'We (researchers from Virology department of NIV-NS, Serbia) were included in SARS-CoV2 testing of the human swab samples from 29 March and are still involved with this, as part of the national network of labs included in COVID-19 diagnostic in Serbia. We have tested about 9000 samples from Vojvodina Province - northern part of Serbia. Testing was done each day and we worked in 2 shifts.'



Image of the team at NIV-NS working on SARS-CoV2 (COVID-19) testing.

Dr Corina Ancuceanu, Institute for Diagnosis and Animal Health (IDAH), Romania



Image of the team at IDAH working on COVID-19

'The major challenge during the recent pandemic was to support the public health sector response to COVID-19 through testing of human diagnostic specimens. As our Director Dr Florica Barbuceanu said in a recent interview in Transylvania Business magazine, "our involvement in conducting molecular biology tests to identify SARS-CoV2 is a gesture of responsibility, unity and team spirit" under the One Health approach.'

Dr Shalala Zeynalova – Ministry of Agriculture, Azerbaijan

'We have still been able to carry out surveillance for animal diseases around the country. In June, I visited Bilesuvar, Djelilabad and Massali regions and collected blood samples from animals, as well as collecting ticks and Culicoides midges from cattle.'



Shalala collecting samples in the 'field'.

Consortium meeting

For the DEFEND Project Support Team, we are carrying on with our tasks almost as normal. One of our biggest challenges is the yearly consortium meeting. With travel severely impacted, what's the best way to hold a consortium meeting of over 60 people, so that everyone can share their work and discuss thoughts on what is to come?

Organising a teleconference

Thankfully we live in age where virtual meetings are ever increasing and now with the rise in home working, it has become an invaluable resource. It goes without saying that we would rather be in a lovely venue in Ohrid (a UNESCO world heritage site) being hosted by our North Macedonia partner, Ss Cyril and Methodius University, but we are saving this privilege for 2021, when we hope everything will have settled enough for travel to be allowed. We know that Igor Djadjovski and his team at the Faculty of Veterinary Medicine in Skopje have a wonderful itinerary planned and we can't wait to be boarding our flights. But what awaits us for our 2020 meeting?

For 2020, we will be holding the DEFEND annual conference virtually using Lifesize software. The principle behind a teleconference is to connect people for a meeting without having to travel to be physically present. Such a simple but exceptionally effective concept for a method of communication, especially given our current situation. However, when you have potentially 60 participants attending a meeting, there are still challenges that you face. How do you control a discussion of 60 people so that everyone is heard? When discussing an entire project, how do you keep the content succinct to keep the participants engaged? How do you assist with any technical issues for the participants, when you are not in the same physical location?

All these issues have come to light in the last few months and we have tried our best to address them. Presentations will be available for participants to view before the meeting, so that we can maximise the time available on the days for discussion, we are utilising a moderator and software to assist us, and have set up technical support prior to and on the days of the meeting, so we can have a functional and productive consortium meeting this year. There will be many other challenges that we come across prior to the meeting in September, but we hope with innovative thinking we will be able to account for most of them.

We are looking forward to holding the 2020 consortium meeting and know that good, bad or somewhere in between, it will be a great learning experience.



Look out for our follow up article on the annual meeting in our next edition!



2. Introducing our DEFEND Project Leaders – Part 1

The DEFEND project is just starting its third year and has created a hub of new ideas, research and strategies on how to tackle the emergence of African swine fever (ASF) and lumpy skin disease (LSD) in European livestock and beyond. But who leads the consortium, overseeing the vast programme of work that is being undertaken? And in a project that strives to promote Gender Equality, what are their views on women in Science, Technology, Engineering and Mathematics (STEM)?

The DEFEND project is very fortunate to have two exceptionally talented scientists at its core. Dr Pip Beard, the project coordinator, from The Pirbright Institute and Dr Kris de Clercq, the project co-lead, from Sciensano.

Between the two of them, they spear head the much-needed research on ASF and LSD with the aim of controlling the epidemics that these diseases cause.

In this first article of a two-part series, we introduce our project coordinator, Dr Pip Beard, looking at her career to date and her views on women in STEM.

Dr Pip Beard – The Pirbright Institute, UK

Dr Pip Beard is a veterinarian, pathologist and virologist specialising in a unique group of DNA viruses which replicate in the cytoplasm of a host cell. This group includes poxviruses and African swine fever virus (ASFV).

Pip obtained her veterinary degree from the University of Sydney, and PhD from University of Edinburgh. She has worked at Cornell University, Imperial College London, and the State Central Veterinary Laboratory in Mongolia. She currently holds a dual position as a Group Leader at The Roslin Institute in Edinburgh and The Pirbright Institute near London, where she leads the Large DNA Virus research group. She currently heads projects including analysis of the role of small non-coding RNAs in the life cycle of ASFV, studying mechanisms of transmission of lumpy skin disease virus (LSDV), identifying and characterising virulence factors of capripoxviruses, and researching the immune response to LSDV infection.



Dr Pip Beard
DEFEND Project Coordinator

Our project coordinator brings a wealth of knowledge to the DEFEND project. To understand her a little more, we have asked her to answer a few questions to find out her views on her current role, career path and women in STEM.

What do you enjoy most about your work on the DEFEND project?

'Working together with fantastic colleagues from so many different institutes and countries. I have seen very clearly how collaboration between different partners produces progress that wouldn't otherwise have been possible, it's really powerful.'

What would you be doing, if you hadn't chosen your current career path? and would it have been STEM related?

'Almost definitely STEM related, as I've always been interested in how things work. My first choice when I went to university was veterinary science and my second was electrical engineering.'

Who or what would you say has been your inspiration in your career so far?

'I'm inspired by loads and loads of different people, it's impossible to pick out one in particular. I am driven by learning new knowledge, so everyone who strives to increase our understanding of the world is an inspiration to me.'



It is well documented that there is a continuous loss of women in STEM roles as they move through their careers. What do you think deters women from staying in or taking up a STEM career?

'This is a very complex problem, as many factors affect opportunities for women to enter and or progress in different STEM careers. For my particular area – life science – women are over-represented at undergraduate and post graduate level but are then lost as their careers progress. As a result, there are very few women at the top level of life science research – this phenomenon is often referred to as the “leaky pipeline”. There has been some really good research carried out into this issue, so we know quite well which factors prevent women from progressing in their life science careers. They include stereotypes, lack of role models, cultural expectations, gender-biased recruitment, exclusion from networks, work-family conflicts, lack of access to information, lack of institutional support, and biased research evaluation procedures.'



Pearl the cat helping Pip with DEFEND administrative tasks while she works from home

What advice would you give someone thinking about starting out in a STEM career?

'Do it !!

I'd recommend a STEM career for anyone who is inquisitive and loves solving problems. The current COVID-19 pandemic has highlighted the importance of innovation and knowledge, and the key role scientists play in our society in a local, national and global sense. My practical advice would be to always remember the breadth of careers in STEM. Regardless of your initial training, there will be many many different careers open to you.'

What are the top 3 things you would tell your younger self with regards to starting out in your career?

- 1) Don't worry too much about long term career planning, because opportunities you never expect always come up!
- 2) Take the choice that looks like it's going to be the most fun!
- 3) Family and friends are always more important than work

More information on factors that affect women in STEM roles, including how it can be tackled, can be found at:

- <https://www.grantfinder.co.uk/media/1415/gender-equality-in-research.pdf>
- <https://www.rse.org.uk/inquiries/womeninstem-2018/>
- https://ec.europa.eu/research/science-society/document_library/pdf_06/structural-changes-final-report_en.pdf



Look out for the second part in this series, featuring Dr Kris de Clercq, in our next edition!



DEFEND OUTPUTS

As the DEFEND project moves throughout its five-year term, we will be producing numerous outputs. Our outputs will focus on the scientific work being carried out on the project and will showcase our results and findings. We will be keeping you up to date with all these outputs, including our latest one, which can be seen below.

1. DEFEND Practice abstracts

What are Practice abstracts?

Practice abstracts are short summaries of 1000-1500 characters describing the main information, recommendations or practices from a work package, which can serve an end user in their daily practices.

For Horizon 2020 multi-actor projects such as DEFEND, these practice abstracts use a EIP-AGRI common format to enhance knowledge exchange and contribute to building a unique repository of practical information across the EU via the EIP-AGRI [project database](#).



What is the Practice abstract target for DEFEND?

Here on DEFEND, we believe in being ambitious!

We have set ourselves the target of producing fifteen practice abstracts by the end of the project in 2023 and are confident that this is achievable, given the wonderful work we are carrying out.

How many Practice abstracts does DEFEND currently have published?

We are very pleased to announce that we now have three published practice abstracts. These are available to view on the EIP-AGRI website and we have a further two that we hope to have published in early 2021.

The published practice abstracts are for;

[WP 1](#) - Risk Assessment Framework for Lumpy Skin Disease and African Swine Fever

[WP 3](#) - Beyond borders: the role of conflicts and insecurity in animal disease spreading

[WP 6](#) - African swine fever prevention and management

Full information on the DEFEND practice abstracts can be found at;

<https://ec.europa.eu/eip/agriculture/en/find-connect/projects/addressing-dual-emerging-threats-african-swine>

EIP-AGRI Newsletter

We would like to thank EIP-AGRI as we have also just featured in their July 2020 newsletter, this can be found at:

<https://mailchi.mp/eip-agri/newsletter-on-agriculture-innovation-edition-83-july-en>



Make sure you look out for future outputs – more will be coming soon!

PARTNER FOCUS

In each newsletter we ask a partner to describe their organisation, research and role in DEFEND. In this edition we have focused on our partner from **Turkey**.

Partner: Istanbul University-Cerrahpasa (IUC)

Country: Turkey

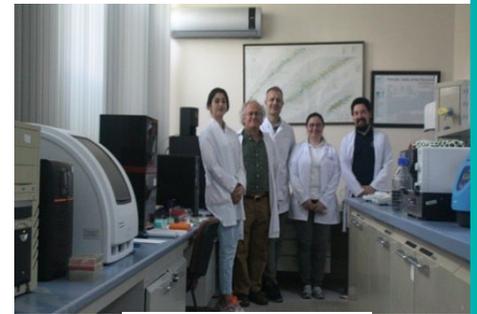


Description of Organisation

The Department of Virology in the Veterinary Faculty of Istanbul University-Cerrahpasa (Istanbul, Turkey) is a leading organisation in virology, working on viral diseases in animals, as well as zoonotic viruses.

Description of research / area of expertise

The Department of Virology is focused on virus isolation, molecular detection, sequencing and phylogenetic analyses, surveillance and research on major and emerging viral diseases in animals, such as bovine Influenza, bovine viral diarrhoea, Schmallenberg disease, lumpy skin disease, canine distemper avian and feline coronaviruses, Gumboro and Marek's disease as well as zoonotic diseases such as influenza, West Nile fever and SARS-Cov2. We are also involved in vector borne diseases.



Team at IUC

We carry out innovative research which can be applied in the field to solve problems related to poultry viruses and zoonotic viruses like SARS CoV-2. We have recently produced the recombinant S protein of SARS-CoV2 to develop a diagnostic antibody ELISA and potential vaccine candidate.

Role in DEFEND

- **WP-3:** Conflict, migrations and virus spread
- **WP-14:** Management and coordination

Key people working on DEFEND

- **Professor Huseyin Yilmaz**
- **Professor Nuri Turan**
- **Associate Professor Aysun Yilmaz**