



DEFEND NEWSLETTER #5

February 2021

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, 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

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Welcome to our fifth DEFEND newsletter!

It's safe to say that 2020 was far more challenging for all of us due to the COVID-19 pandemic. I extend my gratitude to the DEFEND Partners for their perseverance and ingenuity as they adapted to new ways of working. For example, in this newsletter we explain how we redesigned our 2020 DEFEND annual consortium meeting to take place virtually rather than in-person and DEFEND partner ID-VET describe how they have employed their expertise in the fight against COVID-19 by developing diagnostic tests for veterinary and human use.

Thanks to a combination of flexibility, imagination, patience, and hard work all DEFEND work packages have continued to execute their research plans during 2020, discovering new knowledge about ASFV and LSDV. Our recent publications (listed on page 6) provide a snapshot of our outputs, including research that reveals the importance of active surveillance of wild boar carcasses in order to detect and track ASFV, and new techniques to study LSDV in the laboratory.

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NEWS

Defend conquers consortium video conferencing!

One of the biggest challenges for DEFEND this year has been how to hold our annual consortium meeting. With the COVID-19 pandemic severely impacting travel, we couldn't hold our meeting in North Macedonia, as we planned. We had to put on our thinking caps, get back to basics and create a new and innovative way to hold our consortium meeting without co-location, all whilst making sure we still achieved our high level of collaboration!

So, how do 40+ people best discuss their thoughts and ideas when they are not together? And how do you connect people across multiple time zones and countries?



The Defend team hard at work.

In one word, video conference.

Prior to the start of 2020 the word teleconference was probably rarely used. Not many people used this type of service in their day-to-day life, except possibly for the odd meeting. However, teleconferencing has exploded since March 2020, developing in ways most people would not have dreamed. Thankfully when researching and planning for our 2020 virtual annual meeting, the meteoric rise of the teleconference was the answer to our biggest problems.

Lifesize

After careful research and deliberation, we decided that using Lifesize teleconference software best met our needs. The software allowed up to 300 people to attend a single meeting which was far more than we needed. It had great moderation functions which meant no feedback or background noise and full control for the moderator. It also had a function for people to indicate when they had a question, avoiding the awkward situation of people talking over each other. We were very impressed with the security of Lifesize and, simply put, this was the dream software for our meeting!

The plan

From experience, we knew that discussion and collaboration between participants was a challenge with teleconferencing. We wanted to maximise our discussions and the collaboration between our participants, so we had to change our focus. Presentations were recorded and sent out to the attendees to watch in the week ahead of the meeting date. This did have a homework feel about it but left the meeting days for the participants to share their thoughts, ideas, and knowledge.

The meeting

After months of careful planning the meeting days arrived, and we can confidently say it was a resounding success! The discussion produced interesting and thoughtful viewpoints, and valuable feedback to everyone who attended. The spirit of support and collaboration was in full flow and it was almost like being all together.

Some may feel that teleconference is no substitute for a physical meeting, and whilst we agree that there is nothing quite like getting into a room with your colleagues to thrash out new ideas and come up with solutions, given the current circumstances we felt that teleconference was the next best thing.

Our top tips:

If you are planning a teleconference for a large number of attendees, our top tips are:

- Have a test run of the software for participants prior to the meeting to solve any glitches the participants might have.
- Have an IT team available to assist if necessary (we had our Pirbright IT team on standby, to give us peace of mind).
- Don't under-estimate how much time the organisation will take. It is similar to a face-to-face conference!



- Incorporate break-out sessions with a smaller number of participants – these were well received by our attendees.

The thanks

A huge thank you to Gemma Woolford, our Project Administrator, who came up with the plan for our virtual teleconference and made it happen!
Thanks to our Pirbright IT support team, and Petra Fay and Najith Wijesiriwardana for their adept monitoring, moderation and minute taking skills!
And a big thank you to the consortium for their enthusiasm and willingness to try something new and come with us on this journey into the new world of teleconferencing!

DEFEND Integrated Knowledge Transfer Awards 2020

In October 2020, the DEFEND project held its second Integrated Knowledge Transfer (IKT) Awards. The awards form part of the Defend IKT plan, a key part of DEFEND, which focuses on guaranteeing impact by ensuring the knowledge that is gained during the project is shared and utilised to its fullest extent.



What is Integrated Knowledge Transfer?

IKT is an ongoing dynamic, two-way interaction between the DEFEND partners and knowledge users. IKT is often described as 'partnerships between those who produce research and those who use it'.

IKT Awards 2020

Consortium partners were invited to apply for the 2020 award, which included up to €500 to put toward an IKT activity, focusing on one or more of the following criteria.

- Ensuring relevance of the DEFEND research.
- Facilitating the use of DEFEND knowledge.
- Assessing barriers to using DEFEND knowledge.
- Monitoring DEFEND knowledge use.

This year, in light of the pandemic, we challenged applicants to come up with creative and innovative ways to use the €500 award fund.

The DEFEND Project Support Team was delighted to receive several applications from partners for the awards. The applications were assessed by the DEFEND Steering Committee against a specific set of criteria and were ranked to give the overall winner.

Successful application

Azerbaijan Food Safety Agency (RVL) were selected as the winner for their plan to use the award money for an ASF and LSD awareness training course for field veterinarians with a specific emphasis on the importance of early detection.



We will be receiving an update on how this training went, so look out for this in the next edition of the DEFEND newsletter!

ARTICLES

In a new feature, in each newsletter we will be asking one of our DEFEND partners to give us an update on the work that they are currently undertaking.

In this edition, our industry partner, **IDvet / Innovative Diagnostics** give us an update on their efforts to combat COVID-19.



'COVID-19: a "one health" approach... and commitment.'

[IDvet / Innovative Diagnostics](#) is a member of the DEFEND consortium. We are delighted to be part of this project, working on new diagnostic tools for ASF and LSD.

Our company has always been acting for "One Health": as veterinary diagnostics specialists, we know that the health of people is intimately connected to the health of animals and the environment, especially in this age of globalisation. In addition, our product range includes tests for zoonotic diseases such as Rift Valley Fever, West Nile Fever, Q Fever and Crimean Congo Haemorrhagic Fever.

"One Health" has taken on new meaning during the COVID-19 pandemic, and we have contributed to the fight against COVID-19 by developing tests not only for veterinary use, but also for humans.

This is our "One Health" commitment with regards to COVID-19, made possible thanks to the unwavering support and cohesive force of our teams.

Key facts about IDvet / Innovative Diagnostics

- Created in **2004**
- **Diagnostic solutions for more than 50 veterinary diseases** including ASF and LSD, but also zoonotic diseases like CCHF, Q Fever, West Nile Fever, Rift Valley Fever... and now COVID-19.
- **4000 m² laboratory facilities** located near Montpellier, France.
- Offices in Brazil, India, China, and a production facility in the United States
- **120 employees**
- **Independent and 100% self-financed company**: our own R&D activities and state-of-the art, automated production line, allow us to react immediately to sanitary emergencies.

Reacting to the COVID-19 emergency

As COVID-19 emerged, the veterinary sector, with extensive experience in combatting zoonotic diseases, was ready to participate in the fight against the novel coronavirus.

As of February 2020, we decided to mobilise our expertise and resources to **develop serological tests** for the detection of SARS-CoV-2 in humans.

Our sister company [ID-Solutions](#), specialized in circulating DNA diagnostics in human oncology, was also rapidly mobilised to **develop SARS-CoV-2 PCR tests** for humans.



Work being carried out at IDvet/ Innovative Diagnostics.



IDvet / Innovative Diagnostics rapid antigen test

In January 2021, our new performant **rapid antigen test** was also launched.

Our expertise in ELISA and PCR tests, our knowledge of zoonoses and our previous experience in developing new tools for veterinary emerging diseases* allowed us to start working on COVID-19 diagnostic tests for humans.

*In 2011, we were the first team in the world to develop and produce an ELISA test to detect antibodies against the Schmallenberg virus (SBV), only a few months after the first outbreak.



Getting organised in the context of a pandemic

As of March 2020, COVID-19 reached the level of a pandemic. **Our first SARS-COV-2 ELISA and PCR tests for humans were ready** and their excellent performance recognized by the renowned Montpellier University Hospital (CHU Montpellier).

We mobilized additional resources, allowing us to **supply millions of tests rapidly**: we dedicated an important part of our human resources, infrastructure, and production apparatus to our COVID-19 activities.

From March to May 2020, France and many other countries worldwide were under lockdown. Despite confinement measures, **our production team worked 7 days a week** in an effort to meet both the need for COVID-19 tests and the continued demand worldwide for our veterinary tests.

In June 2020, we launched a **veterinary serological test** allowing for the detection of anti-SARS-CoV-2 antibodies in multiple species. At the same time, a study was published by a team from ANSES, France, in the scientific journal *Transboundary Diseases*, which successfully demonstrated the presence of anti-SARS-CoV-2 antibodies in a cat sample, using our serological test (1).



Work being carried out at IDvet/
innovative Diagnostics.

Tests available and validated in January 2021

At IDvet / Innovative Diagnostics and ID-Solutions, we continue our commitment in the fight against COVID-19. In January 2021, 10 PCR and ELISA assays have been developed, with additional projects in the pipeline. To keep up to date about our COVID-19 tests: <https://www.innovative-diagnostics.com/covid-19-diagnostics/>

Moving forward

To reflect this commitment, **Innovative Diagnostics has become the legal name of IDvet** as of December 2020. IDvet (Innovative Diagnostics vet) will remain the name of the veterinary range, and we will continue to develop diagnostic tools for both zoonotic and production diseases of farm animals. We will, however, focus more closely on emerging zoonotic diseases, and work to validate tests for human use.

References:

[1] Corinne Sailleau, Marine Dumarest, Jessica Vanhomwegen, et al. **First detection and genome sequencing of SARS-CoV-2 in an infected cat in France**. Authorea. May 19, 2020. DOI: 10.22541/au.158990358.89168563

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**



OUTPUTS

As the DEFEND project moves through 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.

Below are the recent outputs from the project, we are proud to share these with you and hope that you find them both interesting and informative.



Publications

Type of publication	Title	Authors	Link to the publication
Article in journal	Evaluation of the Efficiency of Active and Passive Surveillance in the Detection of African Swine Fever in Wild Boar	Vincenzo Gervasi, Andrea Marcon, Silvia Bellini, Vittorio Guberti	Vet. Sci. 2020, 7(1), 5; https://doi.org/10.3390/vetsci7010005 - 30 Dec 2019
Article in journal	R0 Estimation for the African Swine Fever Epidemics in Wild Boar of Czech Republic and Belgium	Andrea Marcon, Annick Linden, Petr Satran, Vincenzo Gervasi, Alain Licoppe and Vittorio Guberti	Vet. Sci. 2020, 7(1), 2; https://doi.org/10.3390/vetsci7010002 - 27 Dec 2019
Article in journal	Madin-Darby bovine kidney (MDBK) cells are a suitable cell line for the propagation and study of the bovine poxvirus lumpy skin disease virus	Petra C. Fay, Charlotte G. Cook, Najith Wijesiriwardana, Gessica Tore, Loic Comtet, Alix Carpentier, Barbara Shih, Graham Freimanis, Ismar R. Haga, Philippa M. Beard.	https://doi.org/10.1016/j.jviromet.2020.113943

Activities

Activity	Description
Communication (e.g. Radio, TV)	Interview for ABC Radio's 'Country Hour' (Australia) about ASF subunit vaccines on 27 May 2020. https://www.abc.net.au/radio/programs/sa-country-hour/sa-country-hour/12279038 .
Seminar	Talk on ASF and ASF vaccines to Tamil Nadu Veterinary and Animal Services University as part of the Transboundary Animal Diseases - Emerging Threats to India seminar series on 28 October 2020.
Workshop	Presentation at EU Reference Laboratory- Capripox workshop on 6 October 2020.



Look out for further outputs in the next edition of the DEFEND newsletter!

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 partners from **Germany & Bulgaria**

Partner: KLIFOVET AG

Country: Germany



Description of Organisation

Regulatory Consultancy and Contract Research Organisation

Description of research / area of expertise

Klifovet is a leader in development of veterinary medicinal products and feed additives involving strategic regulatory advice, regulatory affairs services, pharmacovigilance, conduct of pre-clinical and clinical studies in target animals, data management and quality assurance. Registering new veterinary medicinal products and feed additives requires a solid product development strategy. Klifovet promises to deliver that by using our extensive experience.

Role in DEFEND

- **WP-13:** Guaranteeing impact
- **WP-14:** Management and coordination

Key people working on DEFEND

- **Dr. Sabine Richter**
- **Dr. Cornelia Huettinger**
- **Dr. Klaus Hellmann**

Partner: Risk Assessment Center on Food Chain (RACFC)

Country: Bulgaria



Prof Georgi Georgiev

Description of Organisation

Risk Assessment Centre on Food Chain

Description of research / area of expertise

Veterinary expertise on vector-borne infectious diseases including lumpy skin disease. Their contribution to DEFEND is a study of antibody responses to concurrent lumpy skin disease and bluetongue vaccinations.

Role in DEFEND

- **WP-3:** Conflict, migration and virus spread
- **WP-4:** Transmission of LSDV
- **WP-9:** Optimising LSD vaccine strategies
- **WP-10:** Host determinants of LSD resistance
- **WP-14:** Management and coordination

Key people working on DEFEND

- **Prof. Georgi Georgiev**