



BC MAGAZINE

Q3 2024 Issue

- Interview with Jacob Kucharski, DanHatch Poland
- Spotlight on aMPV
- PRRS in Focus

 **BioChek**
SMART VETERINARY DIAGNOSTICS

BioChek's extensive portfolio of veterinary diagnostics is used worldwide to detect a wide range of poultry and swine diseases.

Our head office is based in the Netherlands, and we have an R&D department and production facility in the UK, a USDA-licensed facility in the USA, a regional office in South Africa, regional and local sales teams, and numerous distributors.

Since 1997, BioChek has been supporting the poultry and swine industries to help improve livestock productivity and promote animal health.



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 **BioChek**
SMART VETERINARY DIAGNOSTICS



WELCOME

A MESSAGE FROM OUR CEO

Welcome to the very first edition of BC Magazine in 2024, BioChek's seasonal magazine! In this and future issues, we will share various company news on our portfolio of products and services and corporate milestones.

We are halfway through 2024, and I am proud of what we have achieved so far this year.

At BioChek, we deeply understand our customers' vision and values, the connected needs of our customers, and their trust in us. This understanding is the driving force behind our dedicated customer service excellence strategy and product development.

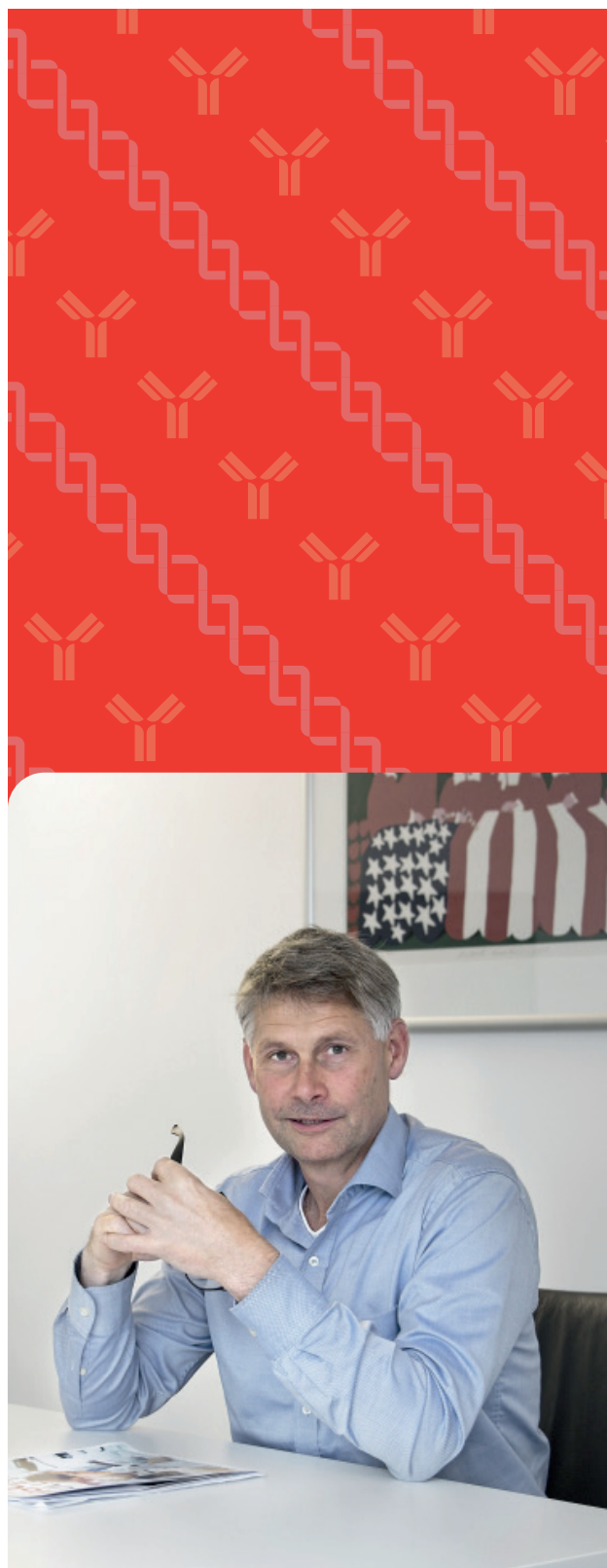
We are committed to adding value to our product portfolio; in this issue we'll inform you about our latest software update with a dashboard reporting system, a new reference control and our extraction solutions.

I am pleased to share that we always continue to assess how our products and services meet our customers' needs, identify where we need to improve and determine how quickly we can make those improvements.

We hope you will enjoy reading this 2024 Q3 issue of BC Magazine.

Until next season!

Barend van Dam



Adding value to test results

BioChek offers a reliable and easy-to-use animal health monitoring system to help you identify trends in immune status, allow for corrective action, identify the presence of unwanted organisms, and generate reproducible and accurate test results.

BioChek Animal Health Monitoring System

- Diagnostic test kits: ELISA & PCR
- MagBead Extraction Kit I for DNA & RNA
- Reference controls (ELISA)
- Standards (PCR)
- Easy-to-use software allowing 24/7 data access
- BioChek ELISA Assay Robot (BEAR)
- RoboPrep nucleic acid extraction robot
- Equipment such as washers and readers
- Strong technical support
- Dedicated logistics support



FEATURED IN THIS ISSUE

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picture of DanHatch Poland premises

AN INTERVIEW WITH JAKUB KUCHARSKI

VETASSURE - REVOLUTIONIZING HATCHERY BIOSECURITY STANDARDS

DanHatch Poland (DHP) stands as the foremost independent producer of one-day-old broiler chicks in Poland, with a steadfast dedication to productivity, animal health, and welfare, the company operates within the esteemed DanHatch Group.

Renowned for its relentless pursuit of excellent performance, DHP continually refines its methodologies and procedures, elevating every facet of hatching egg production and hatchery operations. Positioned as a leading entity in Europe, the company exemplifies efficiency and innovation, setting benchmarks within the industry landscape.

In March 2023, DHP embarked on a strategic initiative to fortify its biosecurity control program through the adoption of ATP Surface Testing. Leveraging VetAssure™ ATP surface swabs and EnSure® Touch luminometer, this new approach has strengthened the company's routine biosecurity procedures related to hygiene and sanitation.

Jakub Kucharski, a seasoned veterinarian overseeing comprehensive biosecurity procedures within the hatchery and across farms, sheds light on the rationale behind introducing this cutting-edge system and its practical benefits.

Safeguarding Quality

One of the paramount strengths of DHP lies in its products' consistent and creditable quality. This directly results from strict process control measures implemented throughout rearing and production farms and within the hatchery environment.

One key aspect of their control framework is the concept of biosecurity, which includes a range of proactive measures aimed at averting disease-related challenges.

By continuously refining their biosecurity measures, DHP ensures the maintenance of optimal conditions advantageous to prime product quality.

Kucharski stated that the motivation behind adopting the VetAssure system came from a pressing need for a rapid and efficient cleanliness assessment tool within their daily operational framework. Their existing biosecurity verification methods (e.g., bacterial counts) did not provide immediate access to reliable and quantifiable results; therefore, timely corrective measures could not be applied. Additionally, the existing methods made proper data storage and analysis complicated, which led further to a delayed gathering of valuable insights.



Jakub Kucharski

VetAssure emerged as the solution tailored to Kucharski's specific requirements. With its ease of use and swiftness in results the VetAssure testing system stands out as a primary solution for verifying hatchery hygiene.

Redefining Biosecurity Standards

The VetAssure ATP testing system is pivotal in verifying and tracking the successful implementation of hygiene and sanitation measures as part of DHP's biosecurity plan. Through the generation of immediate results, DHP can take timely corrective measures where needed and minimize potential quality risks to their operations.

Making use of the associated software package for data storage and analysis is crucial for advancing procedural enhancements sustainably. The software streamlines the analysis of extensive datasets, eliminating the need for tedious manual data entry and processing. Furthermore, it enables pinpointing areas that require improvement, as well as tracking progress across various fronts, ensuring continuous enhancement of procedures.

A practical example of VetAssure's application lies in enhancing the hatchery testing plan, enabling more precise oversight of plant hygiene.



Photo 1: Sampling the surface of a transport crate with the VetAssure ATP Surface Test

Presently, the test results conducted prior to production dictate whether operations proceed or require supplementary cleaning and disinfection measures beforehand. Similarly, the loading of chicks onto transport trucks is contingent upon the vehicle passing the VetAssure cleanliness assessment.

Kucharski endorses VetAssure ATP testing for any hatchery committed to high standards of biosecurity and continuous quality enhancement in their operations and products. The VetAssure system enables real-time and routine cleanliness monitoring across the entire operation and facilitates more robust data analysis and informed decision-making.

Embracing VetAssure not only simplified cleanliness verification but also raised the bar to new and higher biosecurity standards in the hatchery industry.



Photo 2: Running a VetAssure ATP Surface Test on the Ensure Touch luminometer

SPOTLIGHT ON aMPV

MONITOR YOUR FLOCKS WITH BIOCHEK ART ELISA

- Detection of antibodies against aMPV subtypes A, B and C
- High specificity and sensitivity
- Suitable for testing turkey and chicken sera
- No cross-reactivity observed with other poultry pathogens

Avian Metapneumovirus (aMPV) is a major respiratory pathogen, affecting poultry, primarily turkeys and chickens, and leading to considerable economic losses in the poultry industry. Since its first description in the late 1970s in South Africa, aMPV has been reported in most poultry producing areas worldwide.

Four subtypes have been described: A, B, C, and D. However, the global distribution of the distinct subtypes varies. Subtype A and B are the most widespread and are prevalent in Africa, Asia, Europe, and South America, with subtype B being the most prevalent subtype.

More recently, end of 2023 – early 2024, subtypes A and B have also emerged for the first time in the United States with multiple cases reported in turkey -, broiler breeder -, layer -, and broiler flocks across several states.

Until then, subtype C was the only subtype involved in previous aMPV outbreaks in the US. Apart from the US, subtype C has also been identified in a limited number of countries in Asia and Europe. Subtype D was detected in commercial turkey in 1985 in France but have never been reported since.

Transmission occurs principally through direct contact with infected birds or exposure to contaminated materials. Birds of any age can be infected. Clinical signs include respiratory distress, such as coughing, sneezing, and nasal discharge. Decreased egg production and egg quality may be observed in laying birds. These symptoms can be exacerbated by secondary infections.

To prevent and control the introduction and spread of aMPV, live and/or inactivated vaccines (where locally available) can be applied together with strict biosecurity measures. Diagnostic testing is required to diagnose aMPV. PCR and virus isolation are used to detect the presence of the virus. However, the window for virus detection is very short. Therefore, ELISA testing is often used in the diagnosis, measuring the serological response to aMPV. Furthermore, BioChek ART ELISA is an excellent tool to monitor and evaluate the flock's immune response after vaccination.

Key Benefits of BioChek ART ELISA:

- Detection of antibodies against aMPV subtypes A, B and C
- High specificity and sensitivity
- Suitable for testing turkey and chicken sera
- No cross-reactivity observed with other poultry pathogens

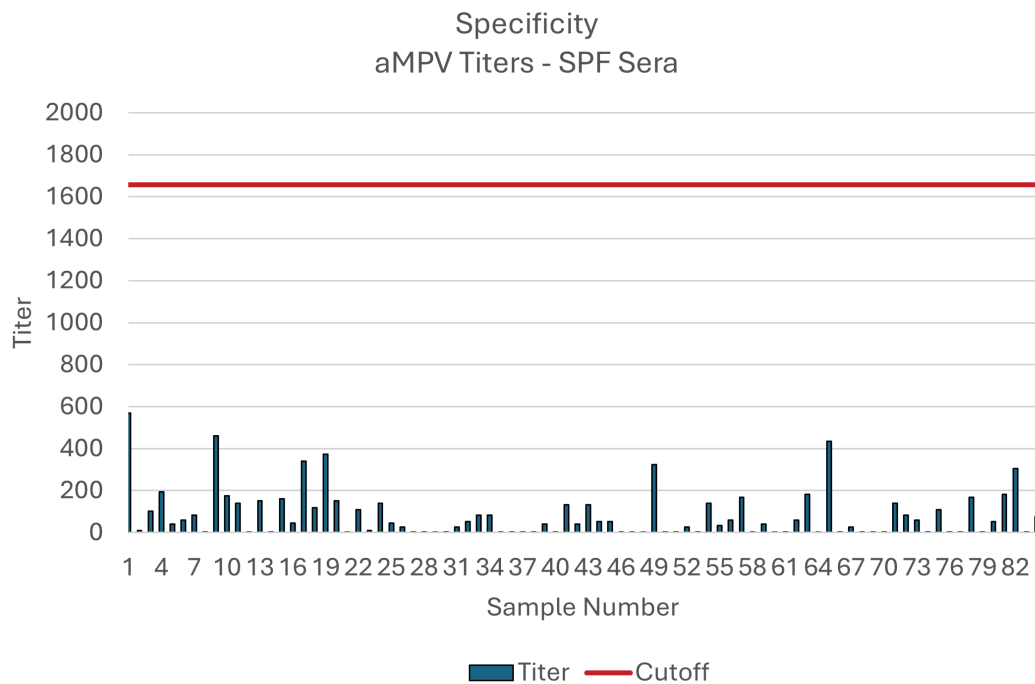


aMPV subtypes: The BioChek ART ELISA kit can detect antibodies, induced by vaccination or field challenge, against aMPV subtypes A, B, and C.

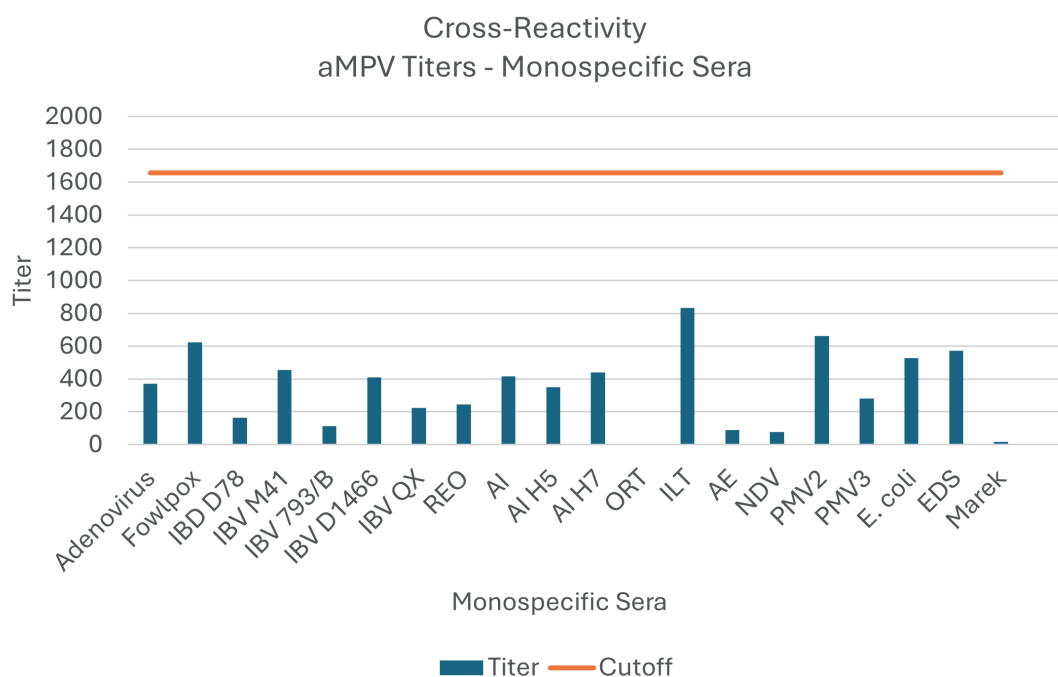
Sample Description	Titer
Nemovac PL21 B type - 21 days post vaccination	17.571
Field strain aMPV - 28 days post infection	19.625
RTV 8544 A type - 55 days post vaccination	20.293
Nemovac PL21 B type - 48 days post vaccination	6.600
aMPV C type AG-980 - 45 days post infections	2.891
aMPV C type - UN MN - Infected turkeys	17.789

TEST RESULTS BIOCHEK ART ELISA

Specificity: 84 SPF samples were tested on the BioChek ART ELISA. No false positives were observed.



Cross-Reactivity: 20 monospecific serum samples for various poultry pathogens were tested on the BioChek ART ELISA. All samples tested negative, and no cross-reactivity was observed.



REFERENCE CONTROL PORTFOLIO

AN OVERVIEW OF CR100-RF19 AND CR100-RF22 PRE-DILUTED REFERENCE CONTROL

Reference Control CR100-batch RF22 was introduced in Q2 of this year to complement CR100-RF19 and complete BioChek's portfolio of reference controls.

Assays covered in the pre-diluted Reference Control CR100-RF22:

- CAV
- EDS
- Salm Gp B/D/BD
- ORT
- CAsTV
- NDV-F

Expanding our portfolio with the CR100-RF22 Reference Control enables our customers to now also confidently validate runs and report test results on an even wider range of main assays.

When ordering, please ensure to clearly state if you require CR100-RF19 or CR100-RF22 pre-diluted Reference Control.

Avian Kit	Reference Controls	
	CR100-RF19	CR100-RF22
AE	x	
AI (ag)		
AI	x	
ALV (ag)		
InfA Multi		
ART	x	
BLS		
CAsTV		x
CAV		x
EDS		x
FAdV	x	
IBD	x	
IBV	x	
ILT	x	
Mg	x	
Ms	x	
Mg/Ms	x	
Mm		
NDV	x	
NDV-F		x
ORT		x
REO	x	
REV	x	
Salm D		x
Salm B		x
Salm B/D		x

PRRS IN FOCUS

VETPROOF® PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME VIRUS (PRRSv) qPCR KIT

Porcine Reproductive and Respiratory Syndrome virus (PRRSv) remains one of the most prevalent and economically important pathogens affecting swine populations.

Accurate, sensitive, easy-to-use assays are crucial in the management of PRRS as the genetic diversity and complexity of PRRSv are still causing increasing challenges for the swine industry such as the emergence of the highly pathogenic genotype II strain in Asia, high losses in Mexico and the Rosalia strain in Spain.

BioChek launched the new **vetproof®** PRRSv qPCR Kit earlier this year, in June, to address these issues.

The new **vetproof®** PRRSv qPCR Kit is designed to solve diagnostic problems and offers the following advantages:

- Excellent strain coverage and reliable detection and differentiation between PRRSV Type I (EU), PRRSv Type II (NA), and subtype HP (highly pathogenic NA strains).
- Suitable for all relevant matrices.
- Great sensitivity and a low limit of detection (10 copies per reaction) allow for high-throughput screening in pools of up to 10 serum samples.

Proper monitoring of PRRSv in conventional herds can greatly decrease the production losses associated with the disease.

Under-standing the status of the herd, infection timepoints, optimal vaccination moment and vaccination success allows the veterinarian to implement the best suited PRRS prevention strategy.



UNDERSTANDING THE VALUE THAT BIOCHEK'S PRRS XR ANTIBODY ELISA ADDS TO YOUR TEST RESULTS COMPARED TO FREQUENTLY USED PRRS ELISA

BioChek PRRS XR (=eXtended dynamic Range) Antibody ELISA clearly differentiates between low, moderate and high titres, giving users a better picture of the PRRS status in all production groups.

When comparing the BioChek PRRS XR Antibody ELISA with another frequently used PRRS ELISA the added value of the extended range becomes clear. The detection of the antibody response is rapid and well defined and as is seen in the field cases described below.

Suspected field virus contact in a PRRS stable population.

BioChek PRRS XR Antibody ELISA responds earlier and more defined to a field virus contact, confirmed by PCR (typed as field virus strain), at the end of the nursery phase.

The difference in sow titres and in titres of the infected groups are notable and would allow the veterinarian to formulate an appropriate intervention plan. The other ELISA indicates a much higher antibody level in the sow population, suggestive of an recent infection, compared to BioChek PRRS XR Antibody ELISA although PCR confirms no active infection at this stage. The other ELISA profile also indicates a late infection at the end of finishing while the PCR results shows a clear increase in Cq value. Field infections are detected, and an estimation of the infection moment is possible with BioChek PRRS XR Antibody ELISA.

PCR including typing was performed to check and confirm the conclusion from of the serological profiles.

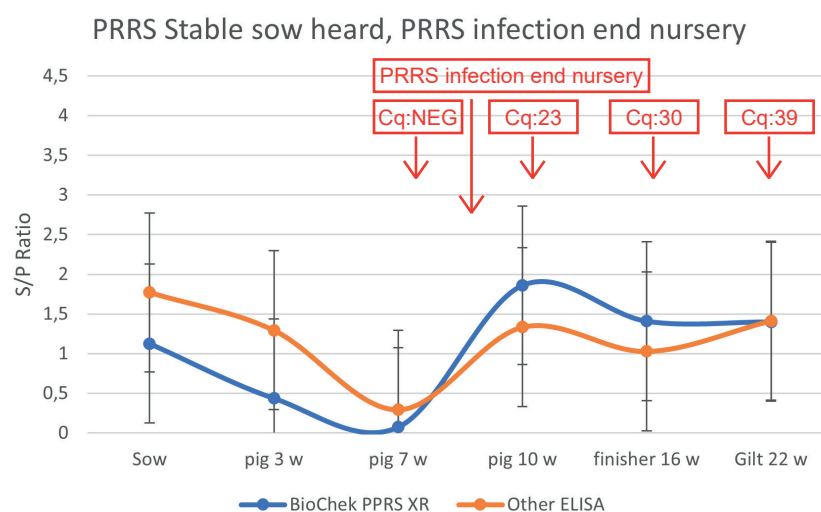


Fig 1. Suspected field virus contact in a PRRS stable population

Vaccination of piglets at 3 weeks of age with no field virus contact.

BioChek PRRS XR Antibody ELISA detects the antibodies formed against the vaccination rapidly and decreases over time in the absence of field virus contact as expected. The other ELISA detects the vaccination much later which would suggest poor vaccination response and a later field virus contact which is not reflected in the confirmatory PCR result (typed as vaccine strain) and not reflective of the situation on the farm.

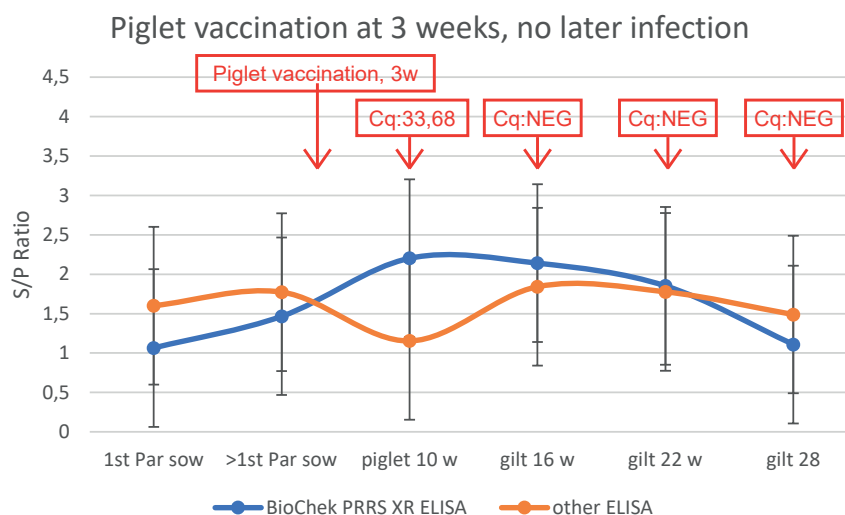


Fig 2. Vaccination of piglets at 3 weeks of age with no field virus contact

Vaccinated piglets/gilts with suspected field infection.

In the case below BioChek PRRS XR Antibody ELISA detects the increase in antibodies formed against the vaccination at 3 weeks, and a clear increase (boostering) in titres after the field virus contact. Once the infection clears, as confirmed by the PCR (typed as field virus strain) the titre levels start to decrease as expected. The other ELISA detects the vaccination but shows lower titres and does not detect the antibodies formed against the field virus until much later. The titres increase despite no infection present as confirmed by the PCR at 28 weeks.

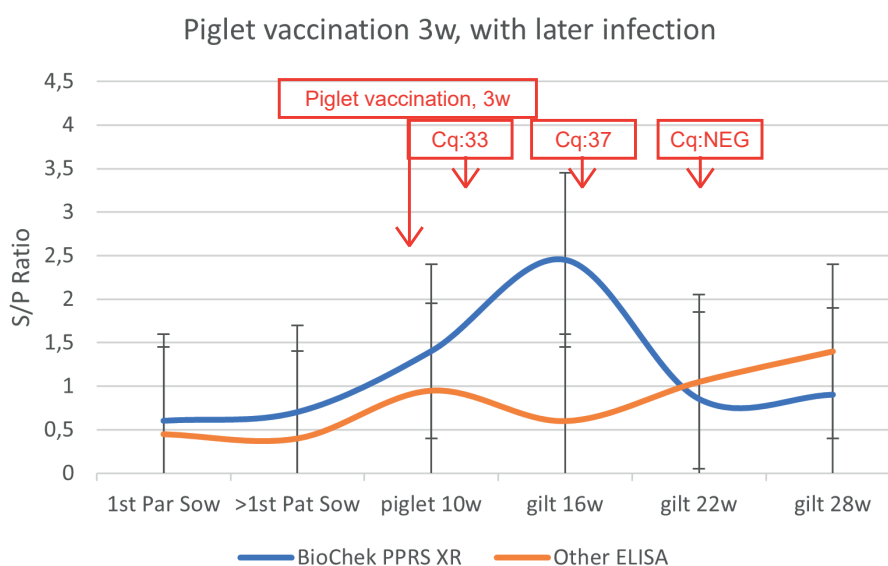


Fig 3. Vaccinated piglets/gilts with suspected field infection

Investigation of PPRS stable herd without active infection.

BioChek PPRS XR Antibody ELISA detected low levels of antibodies with decreases over time as expected. The other ELISA indicated high sow tires which does not reflect the actual situation of a PPRS stable sow herd.

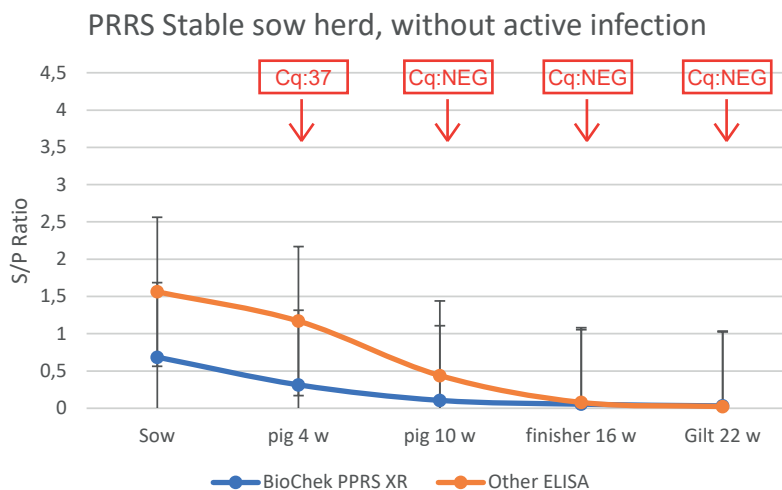


Fig 4. Investigation of PPRS stable herd without active infection

End point titration of a high positive PPRS sample (Fig5)

BioChek PPRS XR Antibody ELISA shows distinct differentiation between low, medium and High positive samples enabling the user to detect infection, estimate infection moment and allow for proper vaccination success monitoring vs the flatter curve demonstrated by the other ELISA.

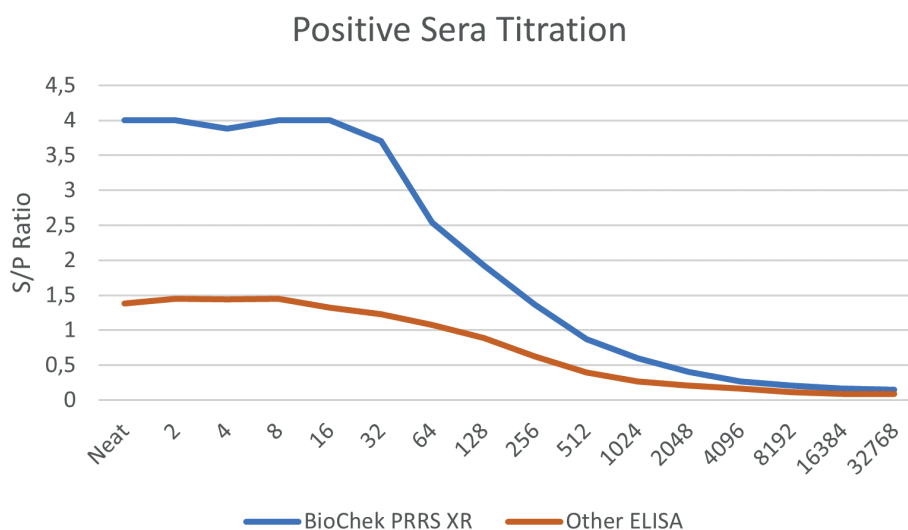


Fig 5. End point titration of a high positive PPRS sample

From the field cases explained above, taking the clinical findings and PCR results into consideration, it is apparent that the BioChek PRRS XR Antibody ELISA has excellent sensitivity and specificity and gives results that reflects the real situation accurately in different scenarios typically encountered on the conventional farm. Compared to other PRRS ELISA the extended range of BioChek PRRS XR Antibody ELISA is of great value to the veterinarian in assessing the moment of infection, timing of vaccination and monitoring of vaccination success which avoids incorrect conclusions regarding the disease status when the pigs are marketed.

The excellent specificity (DSp >99%) also makes BioChek PRRS XR Antibody ELISA a useful tool to monitor the infection status on SPF farms as shown in Fig 6.

Country	# samples	%
Russia	600	99,7
Poland	140	99,3
Canada	46	100
Mexico	208	99,9
USA	498	99,6
Average		99,7

Fig 6. Specificity Results

With the launch of the new **vetproof**® PRRSv qPCR Kit, BioChek now offers all the diagnostic tools to assist you with your PRRS approach: ranging from virus detection, viral extraction solutions, serology, software to simplify your workflow, biosecurity verification tools, and an easy-to-understand dashboard - adding value to test results.

Following the launch of the new **vetproof**® PRRSv qPCR Kit in June, Victor Geurts, Head of Swine Business, presented a poster related to PRRS at the IPVS last June: "Assessment of a Possible Relation Between Hygiene Protocols Measured by Bioluminescence and the Viral Load: An Orientational Study" whereby the possible relation between the amount of ATP- measured and the viral load of PRRSv was investigated, using VetAssure™ Swabs.

Victor further presented to a large, very interested audience on the topic of PRRS at the LVI Congreso Nacional AMVEC (Asociación Mexicana de Veterinarios Especialistas en Cerdos A.C) in July, sharing outcomes of PRRS and Mycoplasma hyophneumiae ELISA testing.



SOFTWARE UPDATE

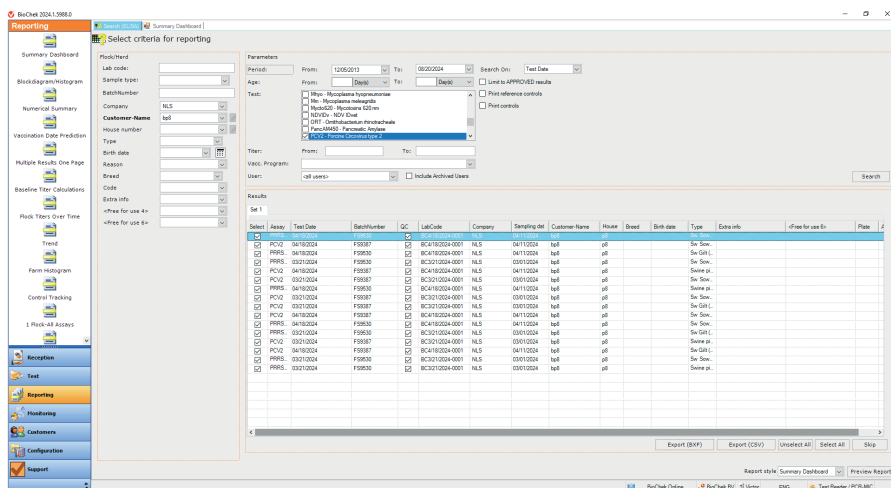
BIOCHEK II SOFTWARE VERSION 2023.2

BioChek II Software version 2023.2 was launched last month, offering general improvements, compatibility with the Tecan Sunrise ELISA reader, and the Summary Dashboard: a new data analysis tool. Tecan Sunrise reader is now connected and supported by the BioChek II software, for an even more convenient, faster, and easier data retrieval by Tecan Sunrise reader users.

The Summary Dashboard helps to analyze results of the latest submission and can also connect them with previous results.

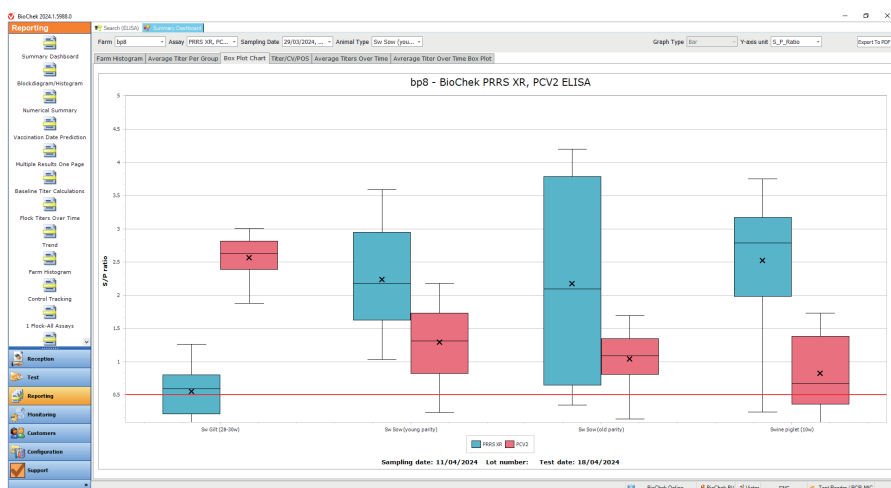
Features of the Summary Dashboard:

- Compare ELISA data, adding valuable information to your monitoring system
- Serological profile of an infection between the animal groups of a farm
- Serological overview of multiple infections between animal groups to assess primary and secondary causes of a clinical problem
- Vaccine responses
- Monitor and benchmark vaccine take and compliance in and over farms
- Benchmark infection status of all farms or animal groups of your integration or veterinary practice



REPORTING Criteria & Analytics Filter selection, e.g.:

- Company
- Infection(s)
- Flock/Herd
- Period



REPORTING Dashboard & Charts Additional selection, e.g.:

- Sampling dates (submissions)
- Animal groups
- Infection(s)
- Type of graph(s)

MAGBEAD & ROBOPREP

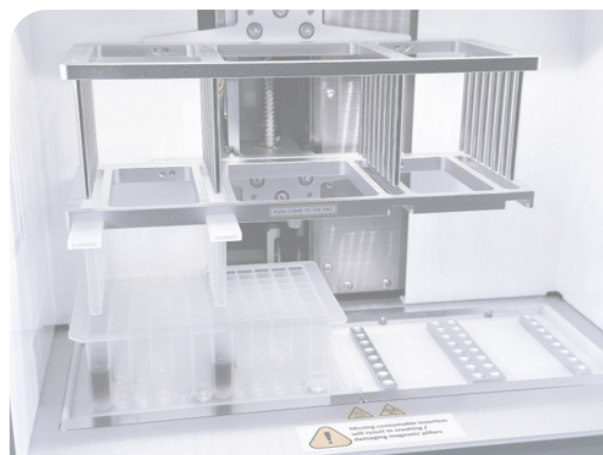
OPTIMIZE YOUR MOLECULAR WORKFLOW WITH THE ROBOPREP AND VETPROOF MAGBEAD EXTRACTION KIT I

Real-time PCR is quickly gaining popularity in the veterinary industry. It has become one of the most widely used methods in the field of molecular diagnostics, providing excellent sensitivity and specificity, immediate results, and quantification.

PCR Extraction is a critical step in the PCR process. BioChek's automated extraction solution, consisting of the RoboPrep and the vetproof Magbead Extraction Kit I, brings labs up to speed and combined with the vetproof PCR kits and BioChek Software offering a high-quality full workflow solution to any PCR lab.

BioChek's Automated Extraction Solution

- Optimization
- High yields & purity of nucleic acids
- Higher sample throughput
- Reduces hands-on time
- Minimizes operator's error
- Less risk for cross-contamination

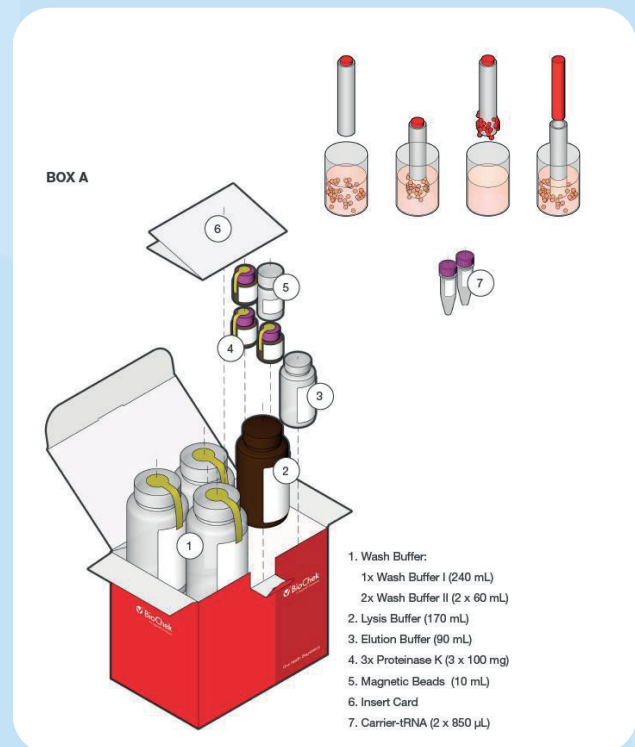


Findings

- **vetproof®** MagBead Extraction Kit I works seamlessly with Roboprep®32/96 magnetic particle processors
 - Complete extraction workflow solution applicable to any molecular lab.
 - Offering convenience, efficiency, quality, precision & confidence.
- **vetproof®** MagBead Extraction Kit I shows excellent performance in side-by-side comparisons vs competitor kits.
- **vetproof®** MagBead Extraction Kit I is proven suitable for purification of pathogen DNA/ RNA from difficult matrices and effectively removes PCR inhibitors.

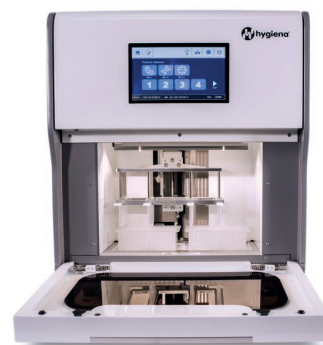
vetproof® MagBead Extraction Kit I

- Universal sample extraction solution
- Magnetic bead technology
- Automated purification of nucleic acids (DNA/RNA)
- From viruses and easy-to-lyse bacteria
- A broad range of sample matrices
- High yields of highly purified DNA/RNA
- Effective removal of PCR inhibitors



RoboPrep® 32/96

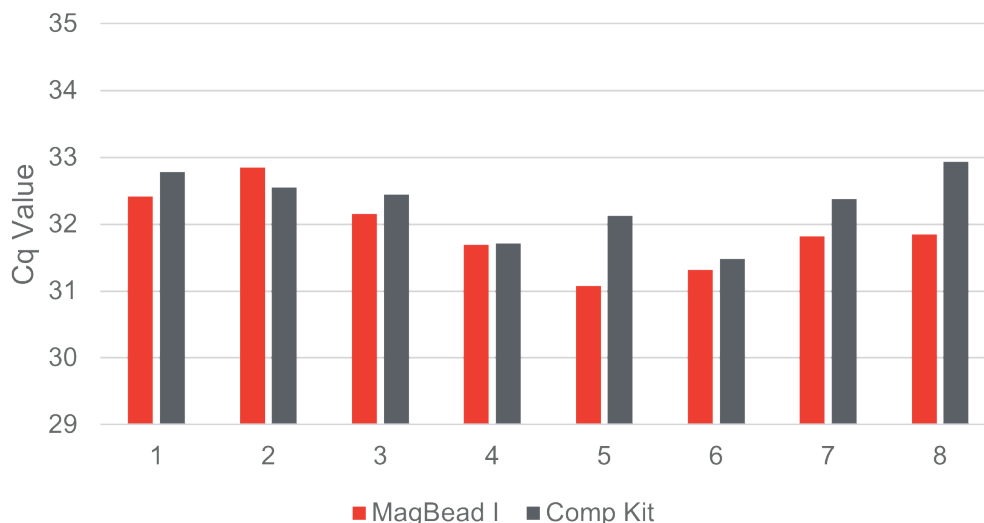
- Fully automated purification of nucleic acids
- Magnetic bead technology
- Low/Medium -High throughput
- Integrated UV light -Decontamination
- User-friendly interface & touchscreen
- Open platform -Flexibility
- Pre-programmed protocols



MAGBEAD & ROBOPREP

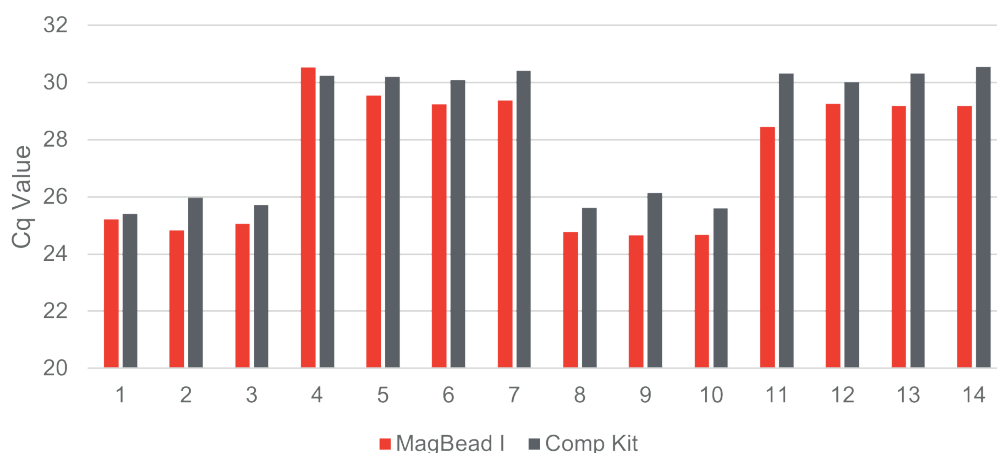
PERFORMANCE OF ROBOPREP® + VETPROOF® MAGBEAD EXTRACTION KIT I

IBV - Tracheal/Cloacal Swabs



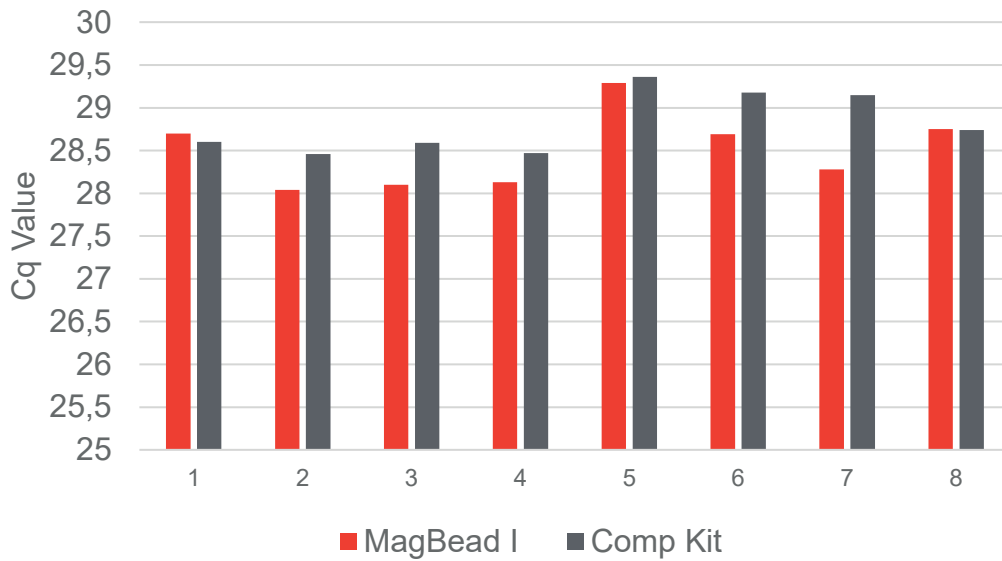
Performance of the **vetproof®** MagBead Extraction Kit I & RoboPrep
vs. a Competitor Column Kit
Samples 1-4 Tracheal Swabs – Samples 5-8 Cloacal Swabs

NDV - Tracheal/Cloacal Swabs



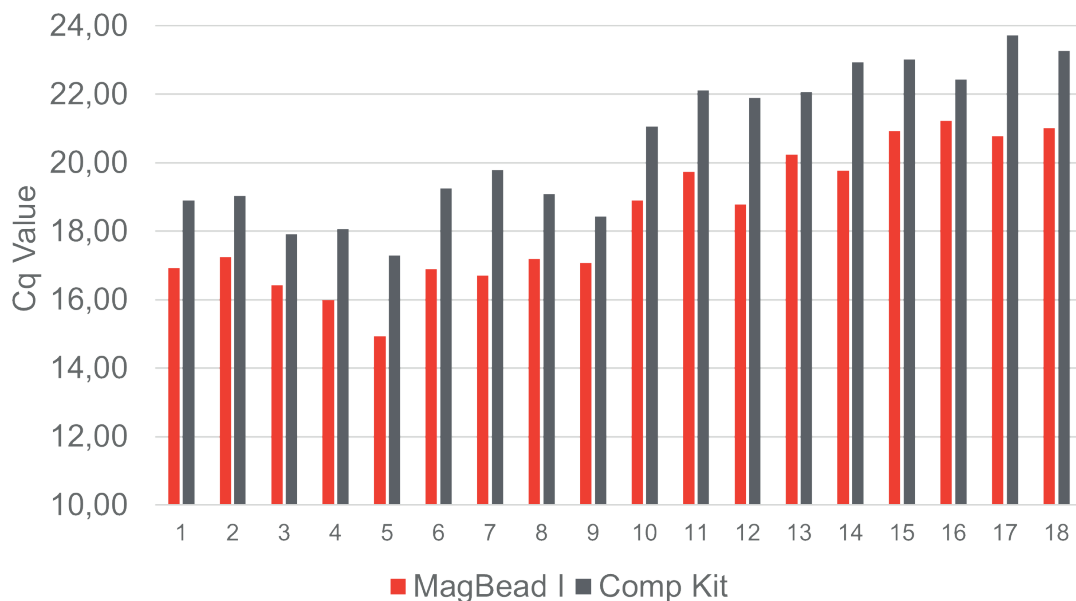
Performance of the **vetproof®** MagBead Extraction Kit I & RoboPrep
vs. a Competitor Column Kit
Samples 1-7 Tracheal Swabs – Samples 8-14 Cloacal Swabs

Influenza A - Tissue Samples



Performance of the **vetproof®** MagBead Extraction Kit I & RoboPrep vs. a Competitor Column Kit

Salmonella – Meat Samples BPW Enrichment



Performance of the **vetproof®** MagBead Extraction Kit I & RoboPrep vs. a Competitor Magnetic Bead Extraction kit specific for bacteria & competitor extraction robot

UPCOMING EVENTS 2024

WE LOOK FORWARD TO MEETING UP AT ONE OF THESE UPCOMING EVENTS.

September

WEEK 37

SUN	MON	TUE	WED	THU	FRI	SAT
8	9	10	11	12	13	14

AVID Tagung

13 Sep: Presentation Jantina De Vylder
"Reliable Mg/Ms Detection: What to consider when implementing a PCR solution?"

Badstaffelstein, Germany

WEEK 38

SUN	MON	TUE	WED	THU	FRI	SAT
15	16	17	18	19	20	21

Customer Lab Training

The training is designed to equip laboratory technicians using BioChek ELISA and qPCR kits with a theoretical understanding of methodologies and equipment, the practical application of the BioChek ELISA and qPCR tests, and an understanding of the BioChek Software, the BioChek ELISA Assay Robot (B.E.A.R.) and the RoboPrep.

Reeuwijk, the Netherlands

November

WEEK 46

SUN	MON	TUE	WED	THU	FRI	SAT
10	11	12	13	14	15	16

EuroTier 2024

Visit the BioChek Team at our booth in hall 21 and learn more about the latest developments in our portfolio, new products or ask for a demonstration of our software.

Hanover, Germany

WEEK 46

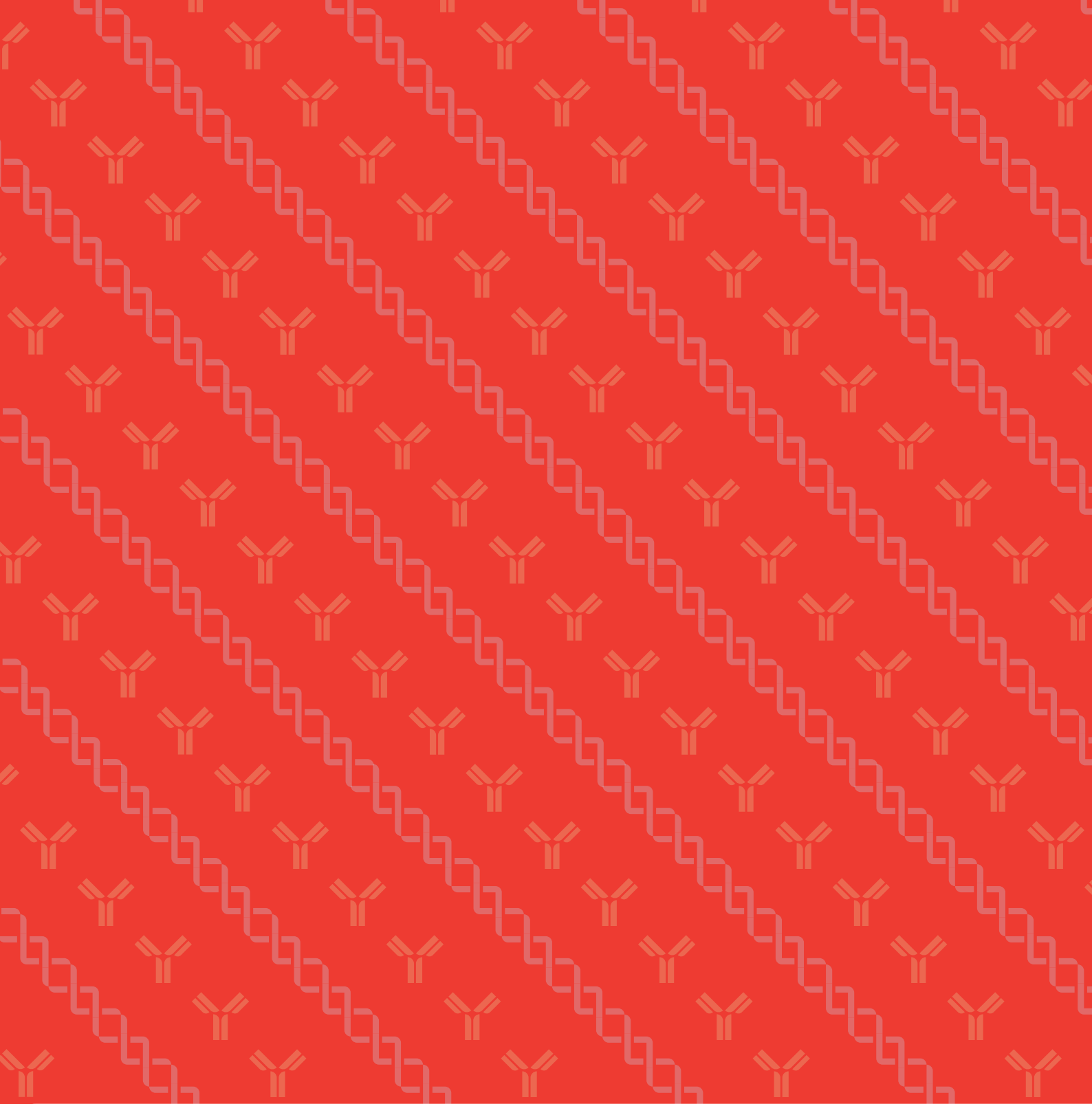
SUN	MON	TUE	WED	THU	FRI	SAT
10	11	12	13	14	15	16

OVUM

(Congreso Latinoamericano de Avicultura OVUM 2024)

Join us at OVUM 2024 and visit our booth **D45** in the main hall to catch up with the team and learn more about the latest developments in our portfolio.

Punta del Este, Uruguay



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