

# BC MAGAZINE

Q4 2024 Issue

Swine Edition

- BioChek PCV2 solutions
  - Software update
  - Event calendar

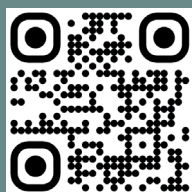
 **BioChek**  
SMART VETERINARY DIAGNOSTICS

# Keeping your swine in check. The smart way.



## BioChek Animal Health Monitoring System

- ✓ ELISA and PCR diagnostic test kits
- ✓ Reference controls (ELISA)
- ✓ Extraction solutions and standards (PCR)
- ✓ BioChek Monitoring Software
- ✓ BioChek ELISA Assay Robot (BEAR)
- ✓ RoboPrep nucleic acid extraction robot



[www.biochek.com](http://www.biochek.com) | since 1997

 **BioChek**  
SMART VETERINARY DIAGNOSTICS



**WELCOME**

# A MESSAGE FROM OUR CEO

As we are approaching the end of 2024, we look back on an exciting year in which we launched various new diagnostic test kits

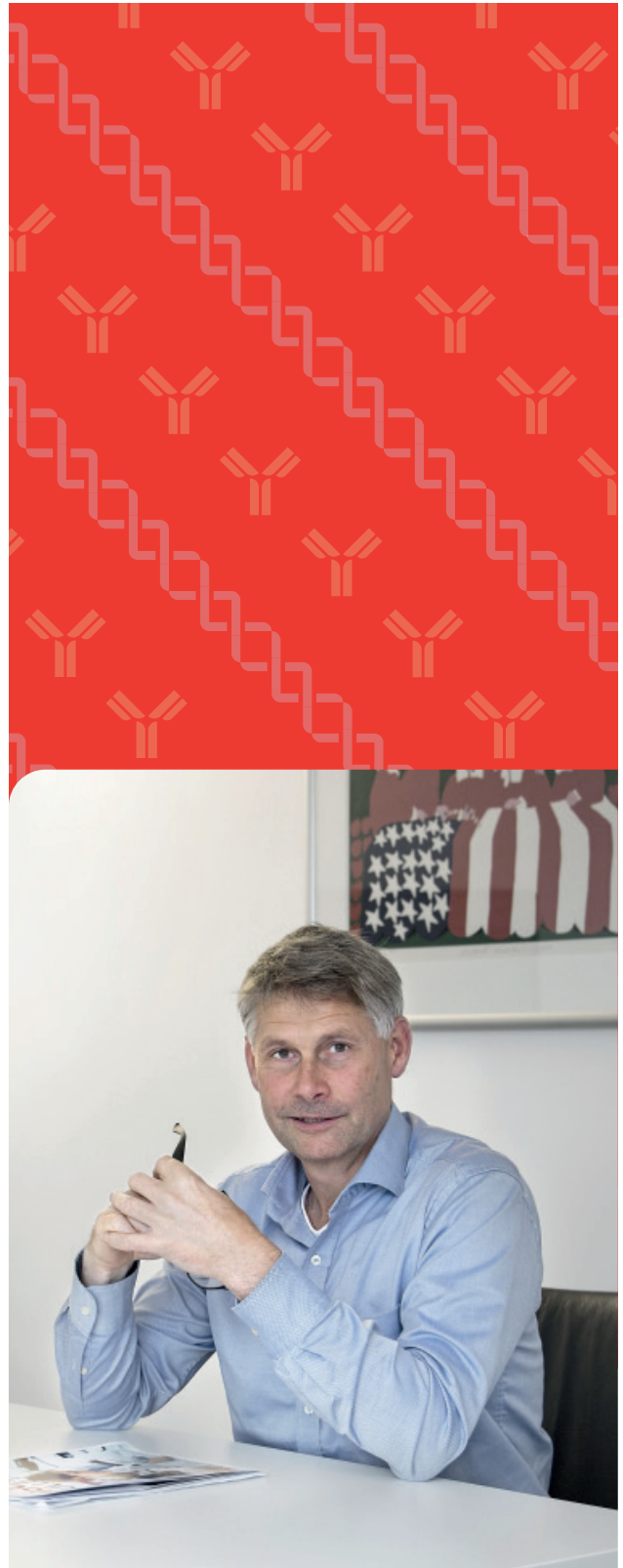
We also entered a new partnership with Bio-X, further solidifying our portfolio offering with several new products to be launched over the next year.

We continue updating and improving our BioChek Monitoring Software, and just this month, we launched our new website.

We hope you will enjoy reading this second issue of our BC Magazine - special Swine edition, featuring an insight into BioChek PCV2 diagnostic solutions, monitoring software updates, a recap of the events in the past few months, and a preview of next year.

We take this opportunity to thank you for your trust and wish you 12 months of happiness, 52 weeks of joy, and 365 days of success for 2025!

***Barend van Dam***



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

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, as well as numerous distributors.



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 **BioChek**  
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## BIOCHEK PCV2 SOLUTIONS

# ENSURING PROPER CLINICAL DIAGNOSE AND IMPLEMENTATION OF SUCCESSFUL VACCINATION STRATEGIES

### **BioChek PCV2 diagnostic solutions: PCV2 clinical and genotype development and diagnostic consequences.**

Porcine Circovirus Diseases (PCVD), in North America referred to as Porcine Circovirus Associated Diseases, can be subdivided into various clinical presentations. These include subclinical infection (PCV2-SI) and systemic disease (PCV2-SD).

At a herd level, these can be distinguished by determining the severity of clinical symptoms and the viral load level in serum and/or tissues using qPCR.

PCV2 virus has also been described as a (co-)factor of reproductive disorders such as stillbirth, embryonic death, mummification and infertility<sup>1</sup>. PCVD-RD (Reproductive Disease) can be diagnosed by detecting fibrous to necrotizing myocarditis of foetuses accompanied by the presence of PCV2 virus in the foetal heart.

### **About vaccination timing**

Because of its relevance and its presence in virtually all farms worldwide, vaccination against porcine circovirus type 2 is very widely used in commercial swine farms, to reduce disease and associated economic losses.

Vaccines are generally considered to be very effective. However, the return on investment for these vaccines can sometimes be increased further by optimizing the timing of vaccination, on farms where Maternally Derived Antibody (MDA) interference is occurring.

As described by Segales and his team<sup>2</sup>, three factors need to be considered here.

The first factor is the MDA level which can interfere with the vaccination response. Interference can be expected at log<sub>2</sub> IPMA titres above 10, which corresponds to a titre above 3000 in the BioChek PCV2 ELISA.

Antibody levels measured with this ELISA strongly correlate with the IPMA titres ( $R^2$ : 0.88).

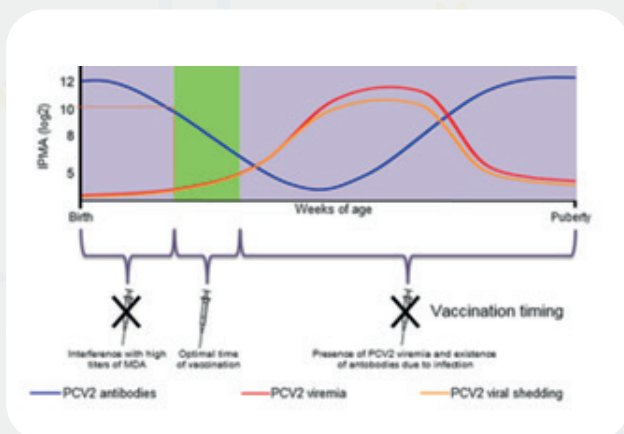
Secondly, the age of the animal is important. After 2 to 3 weeks of life the immune system of the piglet is mature.

The third factor is avoiding vaccination during a PCV2 infection (see graphs 1 and 2 on next page).

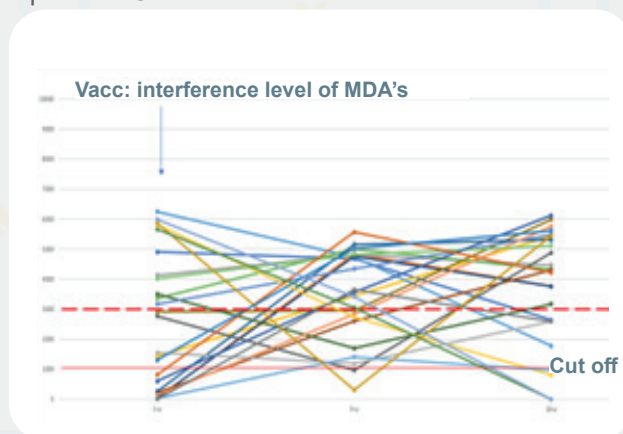




Graph 1: Proper timing PCV2 vaccination



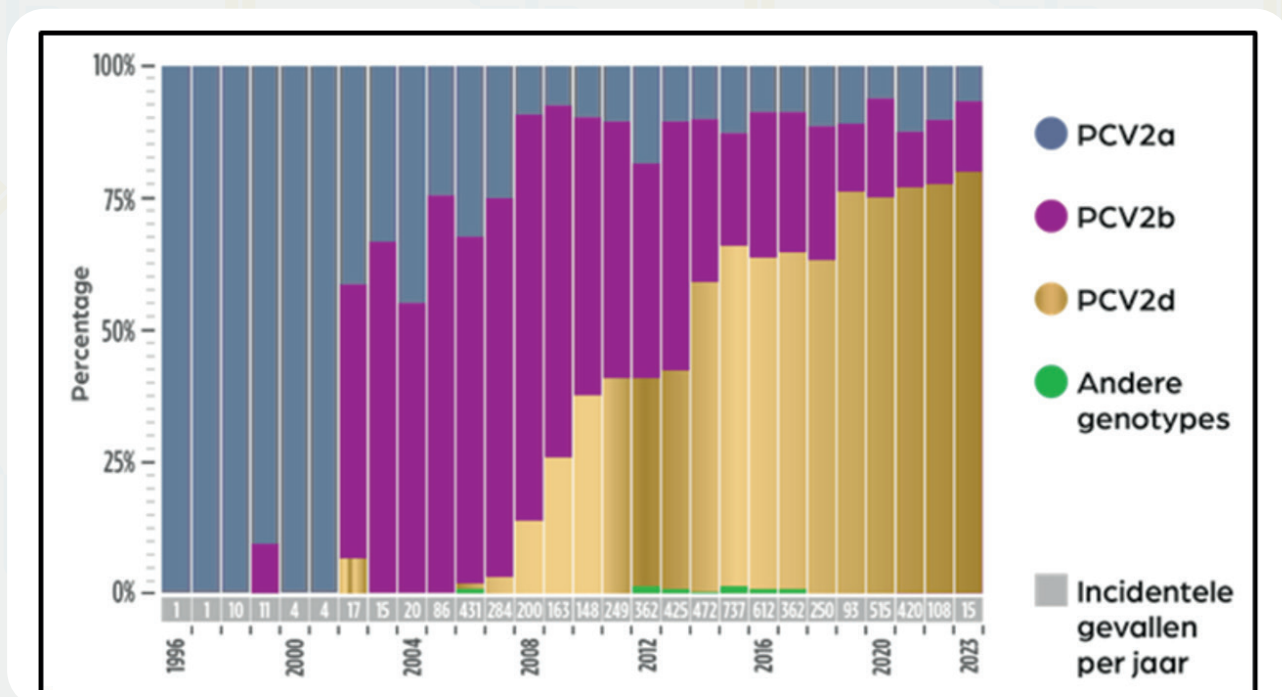
Graph 2: Example of MDA interference level on a specific PCV vaccination.



### Genotype influence on ELISA sensitivity

The PCV2 virus is a DNA virus with one of the highest mutation rates of swine DNA viruses. When the disease was initially described, PCV2a was the dominant serotype. This situation changed: PCV2d has been the most prevalent genotype for the last 10 years.

Graph 3: PCV2 genotype prevalence

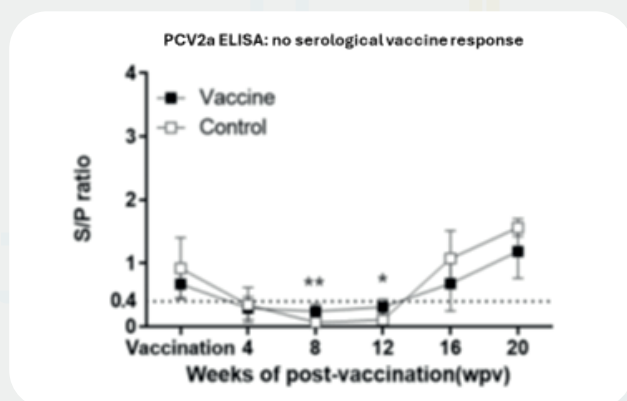


Consequently, PCV2a-based ELISAs might show reduced sensitivity when detecting antibodies induced by field infections. Lanjeoung Ju et al.<sup>3</sup> demonstrated a similar phenomenon. He compared a commercial PCV2a-based ELISA with a PCV2d-based ELISA for its ability to detect a PCV2d-based vaccination response.

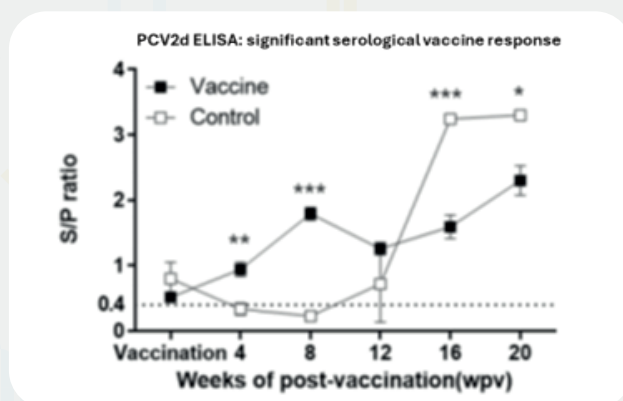


Graphs 4 and 5 (below) show that the commercial PCV2a-based ELISA struggled to detect that PCV2d serological vaccine response while the PCV2d ELISA did not.

Graph 4: PCV2a ELISA: no serologic vaccine response



Graph: PCV2d ELISA: significant serological vaccine response



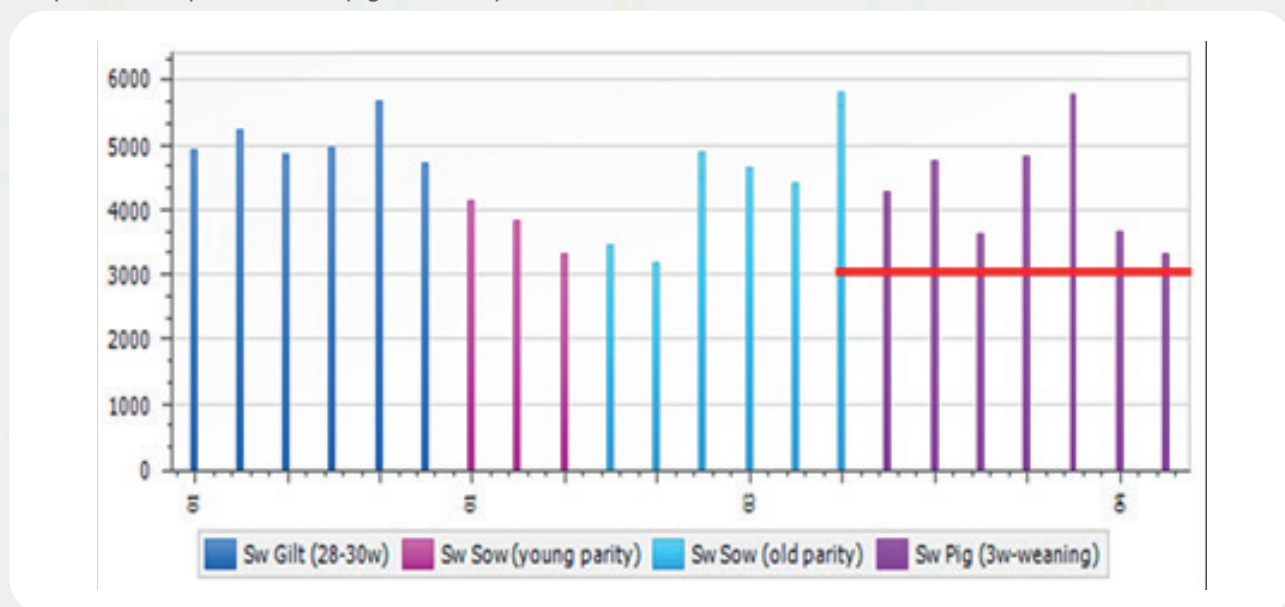
### BioChek PCV2 ELISA

BioChek PCV2 ELISA is based on the full PCV2d virus, providing the best fit with the current epidemiological situation. Antibody levels can increase because of both PCV2 field infections and vaccination and tend to slowly decrease over time in the absence of those. ELISA can detect vaccination responses to both 2a and 2d-based PCV2 vaccinations.

To properly determine the optimal timepoint for a piglet vaccination one needs to assess the serological profile of the herd. This profile can be obtained by sampling sows of different parities and piglets in the farrowing unit and determining serum antibody levels using the BioChek PCV2 ELISA.

Additionally, the BioChek PCV2 qPCR can be used on the pooled piglet samples to assess viral load at the suspected time of infection. This provides all the necessary information according to the vaccination timing recommendations. Once you know the piglet titre levels, you can assess the optimal age of vaccination for a specific herd by reducing MDA interference.

Graph 6: Example sow and piglet PCV2 profile out of the BioChek software

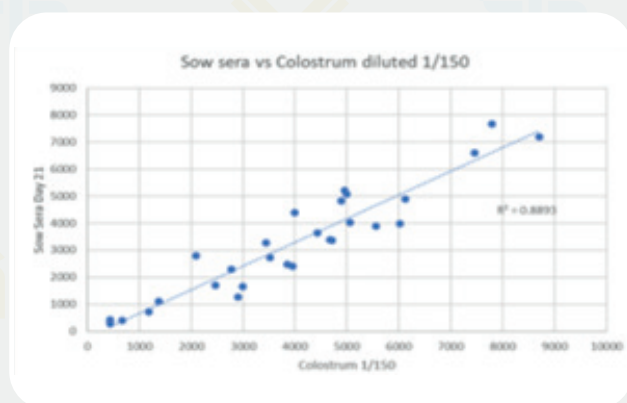


## BioChek PCV2 ELISA on Colostrum

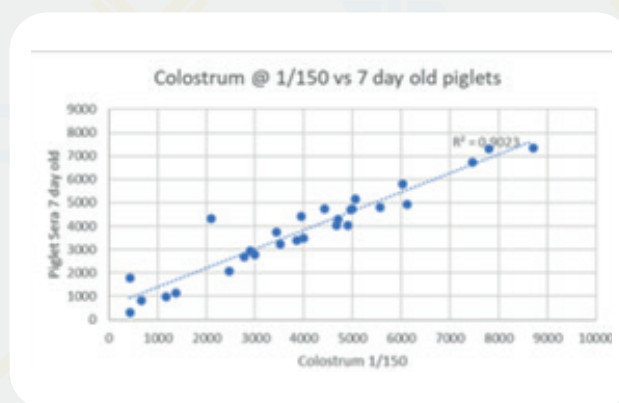
Serum samples are typically obtained by veterinarians, who are not always present on farms. To easily assess the serological sow levels, the BioChek PCV2 ELISA is, via an adjusted protocol, also suitable for detecting PCV2 antibody levels in the colostrum.

There is a very strong correlation between the colostrum titres and the serum titres of the sow ( $R^2$ : 0.89). This strong correlation also applies to piglet titres at 7 days of age, provided colostrum intake is normal ( $R^2$ : 0.90). The colostrum test provides almost all the info you need for a successful PCV2 approach on farms. Graphs 7 and 8 below show the correlation between PCV2 colostrum titres and serum titre sows and piglet farrowing unit.

Graph 7: Sow - Colostrum vs Serum Titre



Graph 8: Piglet 7 day - Sera vs Colstrum Titre  $R^2$  0.949901



## Conclusion

The BioChek PCV2 ELISA and qPCR test system isn't affected by the PCV2 clinical dynamics and genotype shift, ensuring a proper clinical diagnose and implementation of successful vaccination strategies. Due to the antigen design of the BioChek PCV2 ELISA, accurate titre levels of sows and piglets can be assessed to correctly time and monitor the take of PCV2 vaccinations.

The test can also be performed on colostrum, providing info on sow titre levels, including an assessment of the optimal age of piglet PCV2 vaccination. The BioChek PCV2 qPCR is a reliable tool for the clinical diagnosis of PCVD-SD, PCVD-SI and PCVD-RD due to its optimized primer design and the availability of qPCR standards to quantify the PCV2 viral load.

## References

1. Segalés, J. (2012). Porcine circovirus type 2 (PCV2) infections: Clinical signs, pathology and laboratory diagnosis. *Virus Research*, Volume 164, pp 10-19.
2. Segalés, Oliver, Lopez, Sibila: 8-9-2015, *Pig* 333.com
3. Ju, L. et al (2023). A field efficacy trial of recombinant porcine circovirus type 2d vaccine in three herds. *Vaccines*, 11(9), 1497. <https://doi.org/10.3390/vaccines11091497>.

## SOFTWARE UPDATES

# BIOCHEK II MONITORING SOFTWARE UPDATES IN Q4 2024

Earlier this year, we launched a new version of the BioChek Monitoring Software, introducing compatibility with the Tecan Sunrise ELISA reader and the Summary Dashboard. Since then, we have continued to further develop and improve both the software and the dashboard.

### Software Update | version 2024.2

Release date: 24 Sep 2024

BioChek Monitoring Software release version 2024.2 features

- A new and improved qPCR quantification tool
- Software can now calculate the pathogen load in the original liquid sample. The use of standards is required for this feature, and the result will automatically show up on the report.
- Dashboard suitable for poultry
- Various other improvements and enhancements

### Software Update version 2024.3

Release date: 17 Dec 2024

BioChek Monitoring Software release version 2024.3 features

- Compatibility with the new BioChek PCR assays that contain either ExC or EnC controls, such as the new vetproof ASF PCR kit, the new vetproof MgMs PCR kit and the new vetproof PRRS PCR kit
- New EnC and ExC PCR assay reports
- Various other improvements and enhancements



***Adding value to test results***

Users of BioChek Monitoring Software will receive a system notification to install the new version. A working internet connection is required to implement updates.

For any questions relating to our software, please contact [support@biochek.com](mailto:support@biochek.com).

### 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



## BIOCHEK ACADEMY - LAB TRAINING

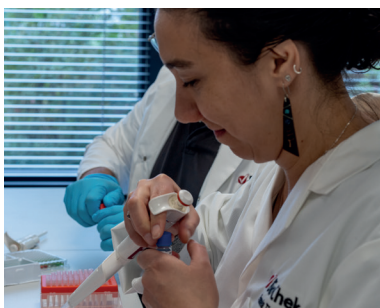
# EQUIPING LAB TECHNICIANS WITH CLINICAL, TECHNICAL AND PRACTICAL SKILLS

BioChek organises Open Lab Training throughout the year at the BioChek Academy facilities in Reeuwijk, The Netherlands.

This immersive 2,5 day course provides theoretical understanding of methodologies and equipment, and is designed to equip laboratory technicians with the clinical, technical and practical application of the BioChek ELISA and qPCR tests, methodologies and equipment.

The training combines theoretical with interactive and hands-on sessions. It further provides an introduction and understanding of the BioChek II Monitoring Software and the BioChek ELISA Assay Robot (BEAR).

Participants of the Lab can also enjoy social activities such as a boat trip or a walk along the canals of Gouda, and even some traditional Dutch 'kegelen'. Upon successfully completing the training, participants receive a **Certificate of Achievement**.





## BIOCHEK SOUTH AFRICA LAB TRAINING

The BioChek South Africa lab training session, held on 29th and 30th October 2024 at the Birchwood Hotel and conference centre, provided a comprehensive overview of key aspects of ELISA testing. The session covered several important areas, including:

- Kit Handling and preparation
- BioChek ELISA protocol
- Using reference controls
- ELISA equipment and maintenance
- Troubleshooting common ELISA issues

The training consisted of both theoretical presentations and hands-on practical session on the BioChek ELISA testing, allowing attendees to apply what they learned. Participants came from across Sub-Saharan Africa, including South Africa, Kenya, Zambia, Zimbabwe, Botswana, and Namibia.

Feedback from the customers in attendance was overwhelmingly positive. Attendees reported gaining valuable skills in ELISA testing, which will enhance their capabilities in diagnostic work.

Overall, the session was a success, providing practical knowledge and fostering greater confidence in using BioChek's ELISA systems.

**Interested in attending an Open BioChek Lab Training or a customized session for your lab technicians?**

**Contact us at [labtraining@biochek.com](mailto:labtraining@biochek.com) for more information and to sign up.**



## LOOKING BACK AT Q4 2024

# A RECAP OF Q4 2024 INDUSTRY EVENTS

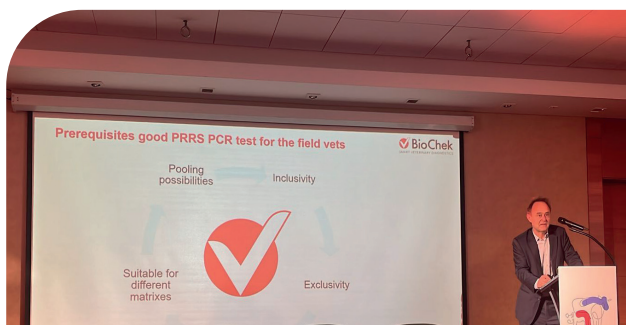
November was a busy month for BioChek. Not only did some of the team visit and present at events, but we also participated in 4 congresses with booths and sponsorship. Some focus on Swine, other events on Poultry, whereas events like EuroTier a leading trade fair for animal farming and livestock management. BioChek was sponsor of the Conference for Veterinary Practitioners in Swine and Cattle Diseases Echoes of Congresses of pigs diseases and cattle diseases.

Mark Mombarg DVM MSc presented on the topic of how “Smart Diagnostics Enhance Health and Productivity” that attracted much attention and interest from the delegates.

Annual congress of the Poultry Group of the South African Veterinary Association (SAVA) bringing together veterinarians, poultry industry professionals, and researchers.

BioChek's SSA team members Natasha Swanepoel and Yegeshini Naidoo represented BioChek and engaged in discussions on the latest developments in poultry health, production, biosecurity, genetics, and welfare.

### ECHOES 5-6 Nov 2024 Łlawa, Poland



picture above - Mark Mombard presenting  
picture below - opening plenary session



### SAVA 6-8 Nov 2024 Muldersdrift, South Africa



picture above - stand BioChek  
picture below - BioChek delegates



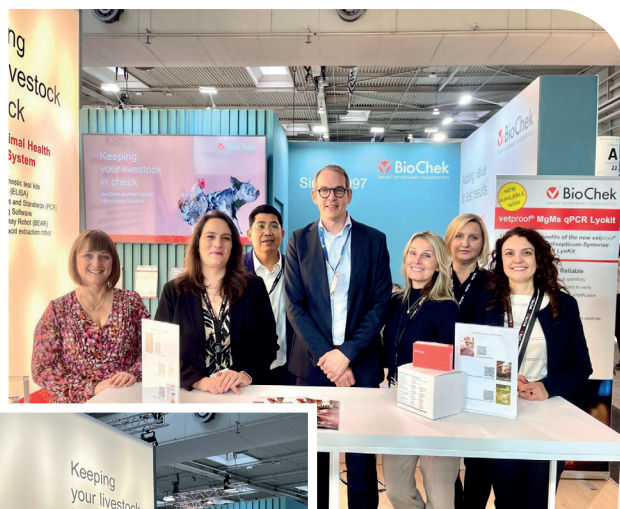
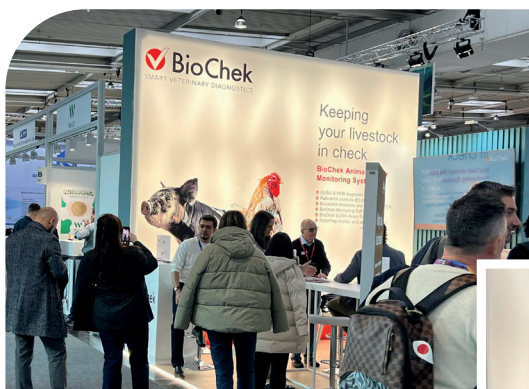


In the second week of November, BioChek participated simultaneously in two large industry events, one in South America and one in Europe with the new corporate booth designs. Both events were a great success for the BioChek team to catch up with customers, launch the new product MgMs (see article on page 9 in this issue) and share developments in our portfolio.

## EUROTIER 12-15 Nov 2024

### Hannover, Germany

BioChek booth # A22 in hall 21



## OVUM 12-15 Nov 2024

### Punta del Este, Uruguay

booth D45 in the main hall

OVUM - Congreso Latinoamericano de Avicultura - is an important poultry-focused event for South America.

We presented our AI and NDV ELISA, the only WOAHC-certified ELISA for the detection of antibodies against viruses in the market.



## UPCOMING EVENTS Q1 2025

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

### February 2025

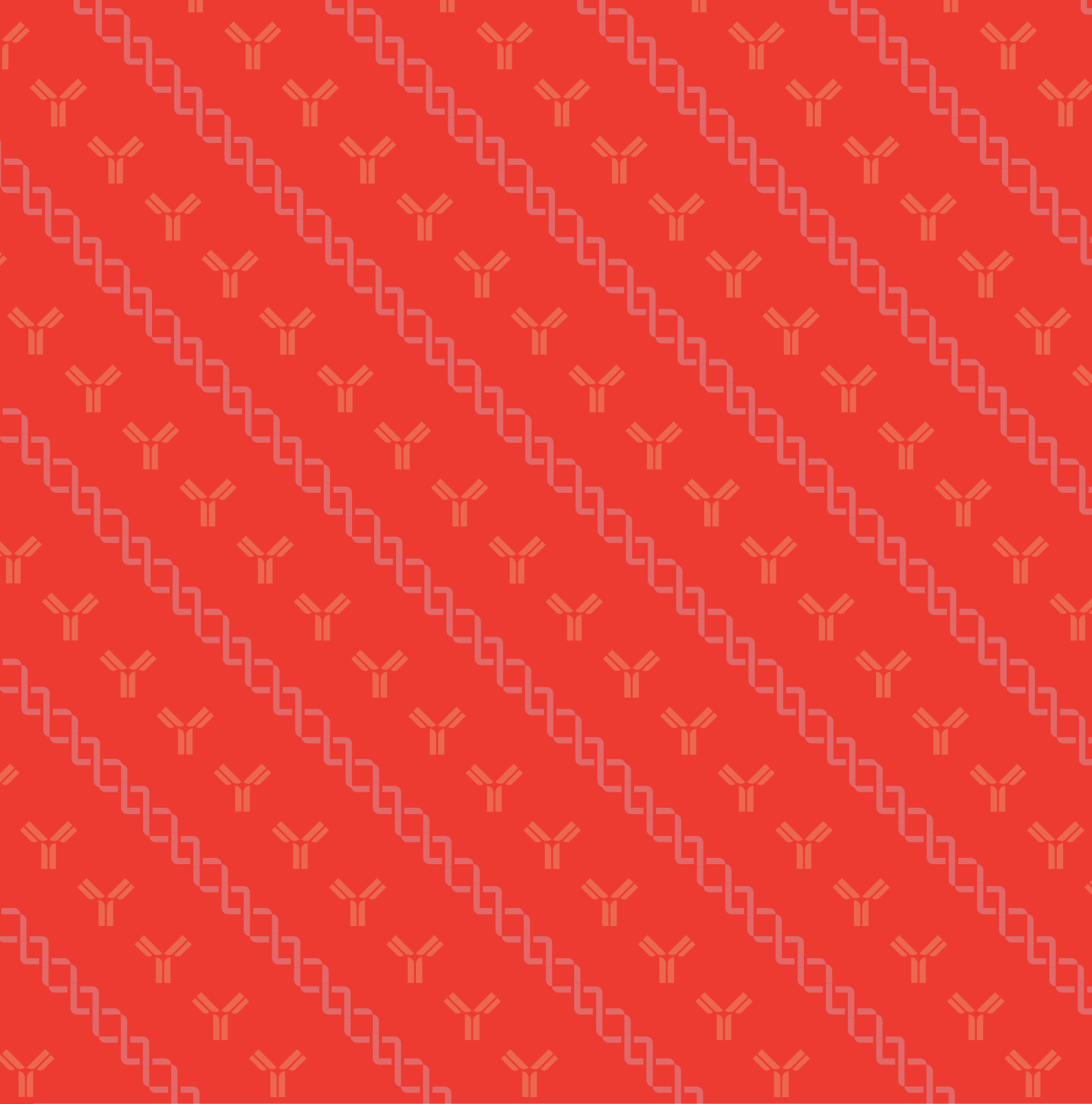
week 5

SUN	MON	TUE	WED	THU	FRI	SAT
2	3	4	5	6	7	8
<b>PORCIFORUM</b> <b>International Congress for Pork</b>  BioChek is a GOLD sponsor of the 2025 PorciForum and we look forward to meeting up at our <b>booth #26</b> in the main hall of the Palacio de Congresos la Llotja.  Lleida, Spain						

### March 2025

week 11

SUN	MON	TUE	WED	THU	FRI	SAT
9	10	11	12	13	14	15
<b>VIV Asia</b> <b>Event for Livestock Production and Animal Husbandry</b>  We look forward to meeting you at our <b>booth No. 3-4521</b> during VIV Asia 2025 anytime on 12-15 March 2025 where we will share the latest developments and new products in our portfolio. Leading up to VIV Asia, BioChek is hosting a distributors meeting from 8-10 March.  Bangkok, Thailand						



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