2025

GARA Newsletter

OUR VISION:

A coordinated global research alliance enabling the progressive control and eradication of ASF.

OUR MISSION:

To establish and sustain global research partnerships that will generate scientific knowledge and tools to contribute to the successful prevention, control and where feasible eradication of African Swine Fever (ASF).

In This Issue:

Global African Swine Fever Research Alliance

Welcome from the GARA Executive Committee

This newsletter focuses on the 6th Scientific Meeting of GARA that was held in Rome from 28-30 April 2025. The meeting was hosted by the Food and Agriculture Organization of the United Nations (FAO) at their headquarters in Rome, which provided an excellent venue for the approximately 200 participants from Africa, the Americas, the Asia-Pacific region and Europe, all of which are currently experiencing African swine fever to a greater or lesser extent. Although three years have elapsed since the 5th Scientific Meeting held in Punta Cana, Dominican Republic in May 2022, members of the GARA family were able to interact at Gap Analysis meetings for Africa in Kampala, Uganda in February 2023 and for Asia in Manila, Philippines in November 2023. Both of those meetings provided excellent opportunities for interaction on ASF research. Furthermore, we were brought closer together by the formation of the GARA Africa Chapter (GAC) during the Kampala meeting and by an emergency evacuation from our 8th floor venue in Manila due to an earthquake! The GAC is growing and providing a platform for closer cooperation and learning opportunities amongst ASF researchers on our vast continent, and the hotel in Manila stood firm after a period of rather alarming swaying, emphasized by the movements of the venue's huge and magnificent chandeliers.

GARA Executive Committee

GARA President, FAO Assistant Director General, and FAO Animal Health Officer

The FAO headquarters in Rome are in a reassuringly stable area, even though surrounded by some of the most famous ruins in that ancient city, including the Circus Maximus and the Colosseum. In spite of repairs to the usual entrance to FAO being under way, access was smooth and efficient. The labyrinthine building offers opportunities to get hopelessly lost, but maps and directions provided ahead of the meeting by FAO colleagues ensured smooth transitions between the entrance, the Green Room where the meeting was held, and the places where refreshments were available.

The warm welcome by the Assistant Director General of FAO, the valuable scientific contributions by FAO staff, participation by regional FAO delegates and continuous support from FAO staff throughout the meeting highlighted the importance of FAO as a valued GARA partner. In turn, GARA provides an invaluable research arm to support the shared goals of achieving a better world through sustainable agriculture and animal disease management of partners like FAO and WOAH.

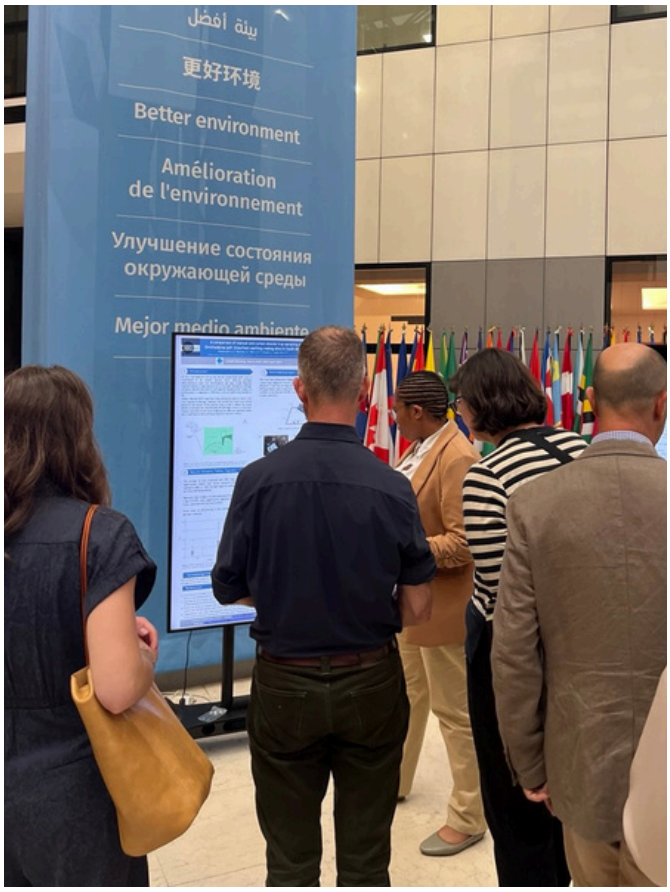
Review of the GARA 6th Scientific Meeting

The meeting comprised of two and a half days of oral presentations interspersed with poster sessions that covered a wide range of topics highly relevant to the overall aim and strategic goals of GARA. The first day was dedicated to ASF epidemiology, with presentations that ranged from the ancient sylvatic cycle in Africa to the challenges posed by the incursion into mainland Italy in 2021 even as Sardinia achieved eradication after more than 40 years. The second day, devoted to ASF virology, immunology and vaccinology, was introduced by a beautifully illustrated keynote presentation by long-time expert Linda Dixon. Research on the virus itself and on vaccine development increased exponentially after the arrival of ASF in Asia in 2018, home to more than half of the world's pigs. The final morning highlighted innovative developments in diagnostic tools alternative samples and simplified sampling techniques, as well as important contributions to ASF knowledge and management from FAO and the World Organisation for Animal Health (WOAH). For various reasons some of the presenters were unable to attend the meeting in person and three pre-recorded presentations were included in the programme.

Materials from the GARA Scientific Meeting, including the abstract book, poster presentations, and detailed agenda, can be found on the meeting website.

Poster Sessions

The large number of informative posters were displayed digitally on totems that enabled 10-minute presentations by the authors during dedicated poster sessions. This approach required a major adaptation by the audience, but once everyone had grasped the idea and the remote control was firmly in the hands of the presenter, it proved to be very successful. As the world moves towards reducing paper usage, this could be the future of posters, sparing the authors the expense of producing a hard copy and the awkward business of transporting it, usually by air, to a distant venue.



Epidemiology

The Epidemiology section received the largest number of abstracts, resulting in 15 oral presentations and 33 posters. The theme of the opening keynote presentation, intriguingly entitled “Veterinary Anthropology?...”, provided insight into the importance of understanding behavioural and cultural practices associated with anthropogenic drivers of diseases and their management in animals. The examples used related to hunting of wild boars, but are equally applicable to how and why people keep and manage domestic pigs in ways that influence the management of diseases like ASF.

The remaining keynote presentations provided an overview of the ASF situation from the perspective of the European Food Safety Authority (EFSA) and insights into ASF in Papua New Guinea in the Pacific, Philippines in Asia and Dominican Republic in the Caribbean. All of these are island nations recently infected with ASF. While Papua New Guinea has succeeded in containing ASF within the highlands provinces, where it continues to circulate, Philippines and Dominican Republic continue to face challenges with widespread ASF.

The oral presentations and posters covered a wide range of topics relevant to ASF. These are grouped into 2 main themes: (1) transmission, spread and control in sylvatic cycles involving soft ticks, feral or wild pig populations, and other possible vectors; (2) transmission, spread and control in domestic cycles.

Epidemiology Keynote Presenter, Ludek Broz

Several oral presentations and posters emphasized the central role of human behaviour and activities in the spread and persistence of ASFV circulation in both wild and domestic pigs.

Transmission, spread and control of ASFV in soft tick, wild and feral pig populations

The continued circulation of ASF in Eurasian wild boar populations in many European countries was the topic of several presentations and posters, in particular from Italy, where the situation remains challenging, specifically in the northern provinces with a high level of commercial pig production. There was a strong focus on improving surveillance and control in wild boar populations, involving both traditional approaches to prevent spread, such as barriers and demarcation of zones, and innovative approaches to improve detection, such as bio-loggers. The role of stakeholders, in particular hunters but also other actors from a number of other sectors was recognized in several oral and poster presentations, and there was an emphasis on the need for excellent communication. In the reporting countries, commercial pig farms that usually have excellent biosecurity have only rarely been affected. However, the risk to outdoor pig farming in areas where infection is present in wild boars was estimated to depend on the ability of wild boars to access the farm and the degree to which the farmer frequented areas contaminated by wild boars. There is no doubt that human activities play an important role in the management of ASF in wild boar populations, both by refraining from risky activities and active participation in surveillance and control. In the event of a safe and efficacious oral vaccine for wild boars becoming available, a poster described a tool that would support the development of optimal vaccination strategies for the particular situation in which the vaccine would be used. Sweden was the most recent country to report ASF in wild boars, now fortunately eradicated. This was enabled by good cooperation between the veterinary authorities and the hunting fraternity, as well as by early detection of the point of incursion in a limited area.

The role of the classic warthog-tick sylvatic cycle in eastern and southern Africa is relatively minor, but requires surveillance to monitor the limits of known endemic areas because these may change as a result of anthropogenic activities or climate change. An oral presentation on the warthog-tick cycle in South Africa described how the ASF situation has changed due to translocation of warthogs, presumably accompanied by ticks,

to a new area, as well as the spread of pig-related infections to areas where potential new tick hosts are present. Monitoring of warthog-associated Ornithodoros tick populations is challenging, but a poster described considerable success with carbon dioxide traps, pioneered in Portugal in pig pens, in warthog burrows and other warthog resting places. Ornithodoros species are found worldwide, including in southern parts of the USA, several of which have been found to be competent ASF vectors. A presentation described an initiative to update existing knowledge of the distribution of Ornithodoros turicata to identify possible areas with a risk of them becoming infected and perhaps establishing a cycle with feral pigs. The potential importance of pig-associated soft ticks was highlighted by a poster describing an outbreak of ASF in Portugal nearly six years after official eradication due to the introduction of pigs into pens inhabited by infected ticks.

Transmission, spread and control of ASFV in the domestic pig cycle

Pig production at all levels is threatened by ASF. There was a strong emphasis on risk assessment for spread and persistence in affected countries and introduction into uninfected countries. Poster presentations included risk mapping in Sweden and South Africa, spatiotemporal models to assess transmission risk in Western Europe and Uganda, and dashboard development based on network analysis in the Netherlands. Commercial farms, particularly in countries with sophisticated pig industries, have largely been spared, but a poster on outbreaks on a commercial farm with a high level of biosecurity illustrated the risk of introduction to farms that exist in highly endemic areas. Posters detailed national biosecurity plans for ASF in USA and Dominican Republic.

Smallholder and backyard pig farms have been disproportionately affected in predominantly low- and middle-income countries in Africa, Eastern Europe, Asia-Pacific and the Caribbean. The most important risk factors are low biosecurity in husbandry systems and unsafe value chains that serve them, as illustrated by presentations and posters from Serbia, Philippines, and South Africa among others. The economic impact on smallholder pig production is

often overlooked or under-estimated, but can have devastating effects on livelihoods, as illustrated by presentations from Nigeria and Uganda and posters from Philippines. Community engagement is recognized as crucially important in smallholder settings where management is often complicated not only by financial constraints but also socio-cultural issues and traditions. This was emphasized in posters relating to smallholder pig farming in Bhutan, Kosovo, Philippines and South Africa. The use of social media in dissemination of messages relating to ASF was underlined in posters from Bhutan and Philippines, as well as in a presentation by FAO representatives from Latin America and the Caribbean.

Molecular genetic studies have contributed importantly to understanding the epidemiology of ASF in different contexts, particularly in terms of tracing the possible origin of outbreaks and introductions and spread of particular genotypes of concern. More information on this topic was presented during the Virology sessions, but relevant information on the importance of whole genome sequencing in spatiotemporal tracking of outbreaks was provided in the keynote presentation on ASF in the Pacific. Other informative posters in the Epidemiology section reported on the spread of genotypes II and IX in Rwanda and Tanzania, the first occurrence of genotype II in Benin, and the possible importation of a genotype II vaccine candidate into Nigeria.

The phenomenon of innate resistance to ASF in wild and domestic pigs has generated considerable interest. This was touched on in a presentation on putative bushpig x domestic pig hybrids that proved to be unusual domestic pig phenotypes with no genetic input from bushpigs. The investigation was inspired by sporadic reports of hybridization between the two species that needed to be researched in the interests of increasing innate resistance in pigs. A poster reported on observed increased resistance in local breed pigs in Nigeria that may be preferred by pig farmers.

On an encouraging note, apart from the rapid eradication of the point ASF outbreak in wild boars in Sweden, a poster described the final eradication of ASF from Sardinia after its introduction and subsequent establishment in 1978.

Diagnostics

The Diagnostics section included 6 oral presentations and 19 posters, providing an informative platform for sharing innovative approaches to ASF detection and strategies. This section highlighted development of new diagnostic assays, the evaluation of alternative sample types, advances in molecular detection technologies, and the implementation of field-deployable diagnostic tools. These efforts are significant for enhancing early detection, supporting effective surveillance, and enabling timely control of ASF.

New Diagnostic Assays

Significant advancements were presented in the development of new diagnostic assays to improve ASF detection and differentiation. The opening oral presentation introduced a novel recombinant salivary lipocalin protein (rtTSGP1) assay, validated for detecting host exposure to Ornithodoros ticks, key ASF vectors, proving effective for surveillance in tick-endemic regions. Progress in DIVA (Differentiating Infected from Vaccinated Animals) assays were also notable, with several ASFV proteins reported such as MGF100-1L, pEP153R, and p11.5, enabling serological differentiation between wild-type ASFV infections and those involving modified strains. Among the posters, one presented a novel combo lateral flow assay for simultaneous antigen and antibody detection, significantly improving identification of infected animals, particularly wild boars, during field surveillance. Another poster introduced rapid point-of-care tests using lateral flow immunoassay and recombinase polymerase amplification, offering sensitive and timely ASF detection for field application.

Alternative Sampling Methods

Given ASF's continued spread across Asia and Europe, researchers are increasingly exploring alternative sampling approaches to strengthen surveillance efforts, especially in resource-limited settings. Non-invasive samples, including tongue exudate, nose swabs, ear punches, oral swabs, ear biopsies, and environmental samples, were assessed and found to yield diagnostic sensitivity comparable to conventional samples like spleen or blood. An oral presentation demonstrated that tongue exudate and nasal swabs from dead pigs detected ASFV with high sensitivity, supporting non-invasive surveillance compliant with EU regulations. In Nigeria, oral swabs and ear biopsies proved feasible during field outbreaks, as highlighted in another presentation. A poster from Italy confirmed that nasal and blood swabs from wild boars showed strong agreement with organ-based testing, validating their use in wildlife surveillance. Oral fluids from sub-clinical pigs, when paired with advanced concentration techniques, also showed promise for early detection, as observed in Vietnam setting.

Molecular Detection and Characterization

Advancements in molecular diagnostics improved the sensitivity and specificity of ASFV detection. New qPCR assays targeting genes like CD2v and polymerase X were developed, offering robust alternatives to the standard p72 assay, with the potential for multiplexing to differentiate strains or vaccinated animals. An oral presentation detailed a multi-gene sequencing approach, identifying diverse ASFV genetic groups in Europe and non-haemadsorbing strains with varying virulence, emphasizing the need for tools to track viral evolution. A poster introduced long-read targeted whole genome sequencing using Oxford Nanopore, achieving rapid, high-coverage genetic characterization of ASFV strains. Another poster reported the detection of recombinant genotype I and II strains in confiscated pork products in South Korea, highlighting the role of molecular detection and characterization in ASF surveillance.

Field Applications and Surveillance

Field-deployable diagnostics were also a focal point, addressing the need for rapid, accessible testing. For instance, portable qPCR platforms, as showcased in a poster, enabled on-site ASFV detection with high sensitivity across multiple genotypes. Another poster described the deployment of a mobile biocontainment laboratory in the Philippines, which provided real-time diagnostics and genome sequencing in rural areas, bridging veterinary infrastructure gaps. Rapid tests like lateral flow immunoassay, recombinase polymerase amplification, and loop-mediated isothermal amplification (LAMP) assays were highlighted for their speed and ease of use in field conditions. A poster described a LAMP-based point-of-care test with crude DNA extraction, achieving high diagnostic accuracy in under 50 minutes.

Diagnostic Validation and Performance

The reliability of diagnostic tools was rigorously validated across diverse sample types and infection stages. Assays demonstrated high sensitivity and specificity, even with complex matrices like faeces, as confirmed by a poster validating qPCR for faecal samples. Field studies, such as those in Italy and Nigeria, underscored the utility of non-invasive samples. Additionally, a poster on proficiency testing by the CSIRO Australian Centre for Disease Preparedness (ACDP) emphasized the role of reference laboratories in developing and validating diagnostic methods, enhancing global laboratory capacity through programs for ASF and other transboundary swine diseases.

Summary

The Diagnostics section highlighted significant advancements in ASF diagnostics, including novel molecular and serological assays, innovative non-invasive sampling strategies, and field-deployable tools. These approaches have the potentials to improve the timeliness and accuracy of ASF detection, thereby strengthening surveillance and control – especially in endemic regions – while also supporting prevention efforts in ASF-free countries.

Virology

The virology sessions at GARA 2025 with 6 oral and 10 poster presentations provided a comprehensive overview of African swine fever virus (ASFV) biology, its evolution, and its impact on pig health and industry. Research spanned fundamental molecular mechanisms, experimental pathogenesis, novel sequencing approaches, biosafety practices, and emerging concerns around transmission, persistence, and potential vaccine safety.

A central theme was the contrast between virulent and attenuated ASFV strains. Transcriptomic and imaging studies revealed that virulent viruses express more than twenty genes earlier than attenuated strains, tipping the balance toward immune evasion and lethal disease, while attenuated strains elicited stronger innate immune responses, including elevated interferon-stimulated genes and earlier nuclear translocation of IRF3 and STAT2 (Leroy et al.). These differences not only illuminate the basis of pathogenicity but also inform the protective potential of live attenuated vaccines.

At the genetic level, recombination emerged as a crucial driver of ASFV diversity. Ex vivo experiments with porcine alveolar macrophages demonstrated recombination frequencies exceeding 20% between distant genomic loci during co-infection, confirming the capacity for new variants, including cross-genotype recombinants (Mészáros et al.). Complementary work showed that chimeric viruses can be generated experimentally through gene complementation both in vitro and in vivo (Torresi et al.). Together, these findings underscore the virus's evolutionary plasticity and raise concerns for the stability of live vaccine strains.

Molecular surveillance highlighted the circulation of multiple ASFV lineages. Sequencing of Italian isolates during the 2022–2024 epidemic identified four genetic groups of genotype II, with one predominant strain in Italy (Torresi et al.). In Serbia, whole-genome sequencing of samples collected between 2019 and 2023 confirmed genotype II outbreaks (Pogranichniy et al.). In the Philippines applied viral metagenomics to ASFV-positive samples and uncovered frequent co-infections with other swine pathogens (Mantlo et al.).

Beyond molecular data, experimental studies shed light on disease progression and pathology. Dose–response experiments with the highly virulent Ghana2021 isolate confirmed that even low doses can trigger disease, while higher doses accelerate progression and mortality (Abworo et al.). Pathological examinations of domestic pigs in South Korea defined hallmark lesions, providing diagnostic benchmarks similar to other ASFV outbreaks (Kim et al.). Meanwhile, surveillance in Uganda revealed ASFV in carcasses that had already passed meat inspection, highlighting critical weaknesses in food safety systems (Okuni et al.).

Environmental and ecological studies emphasized ASFV's resilience and hidden transmission routes. Laboratory tests showed that both genotype I and II strains remain infectious for prolonged periods at cooler temperatures (+4°C), reinforcing concerns about environmental persistence (Scicluna et al.). Preliminary evidence suggested that blowfly larvae (Calliphora vomitoria) might serve as mechanical vectors or reservoirs, pointing to overlooked pathways of spread for ASFV (Zoppi et al.). On the host–virus interaction front, new molecular tools were created to study p32 protein functions, promising insights into viral entry mechanisms and potential antiviral targets (Giammarioli et al.).

The issue of biosafety received particular attention by the Italian National Reference Laboratory who presented its ongoing efforts to enhance containment within BSL-3 laboratories and animal facilities, underlining the importance of continuous infrastructure upgrades, strict protocols, and workforce training in managing ASFV research (Ruocco et al.).

Finally, several contributions addressed industry protection and vaccine safety. Italy's ASFree M.E.A.T. program was introduced as a proactive approach to safeguard the country's cured pork products by aligning surveillance systems with export requirements (Zoppi et al.). In Vietnam, however, a vaccine-like variant with multiple gene deletions was implicated in reproductive failure in breeding herds, raising alarm about the unintended consequences of non-registered or approved ASFV vaccine candidates making their way into the field without testing purity or efficacy (Nguyen et al.).

Across oral and poster sessions, the virology section painted ASFV as a virus of extraordinary complexity and resilience. Its capacity for rapid recombination, persistence in the environment, and transmission through unexpected routes continues to complicate control efforts. At the same time, advances in molecular characterization, sequencing, and laboratory safety are providing new tools to understand and manage the disease. The integration of these findings highlights the dual challenge: ensuring scientific innovation translates into practical safeguards for pig health, trade, and food security, while avoiding new risks introduced by the virus's own evolutionary potential.

Immunology

The second day of the GARA scientific meeting kicked off with the keynote presentation titled “Advances in African swine fever virus molecular biology and host interactions contributing to new tools for control”, presented by Dr. Linda Dixon. A concise yet insightful overview of published research on viral structure and the functional roles of key identified proteins in ASFV architecture. This was followed by a comprehensive summary of the virus-host interactions that underpin cellular infection and viral replication.

The immunology session consisted of four oral presentations and four posters. The diversity of topics presented in both oral and poster presentations underscores the different angles from which the immune response to ASFV can be studied. These ranged from investigations on the immunopathology associated to Live-Attenuated Vaccines (LAVs), correlates of protection and length of immunity, to how the virus evades the immune responses.

The first oral presentation in the session focused on the different in vitro phenotypes presented by attenuated and the parental virulent ASFV. In vitro studies revealed significant differences in growth kinetics but no differences in the seven cytokines evaluated when comparing attenuated and virulent strains.

Keynote Presenter Linda Dixon & GARA Finance Director Jeremy Salt

This presentation was followed by a very insightful talk about the role of newly identified ASFV genes that control innate immunity, specifically type-I IFN. The deletion of the newly identified ASFV genes changed the phenotype of the virus, both in vivo and in vitro, creating a more attenuated version, highlighting the importance of controlling innate immunity in ASFV virulence.

In line with this work, two posters also explore the innate immune response to the virus. One poster presented the establishment of a chip-based single-cell RNA sequencing (scRNAseq) to evaluate the immune responses after in vivo infection of susceptible suids (domestic pigs and wild boar) and resistant species (red river hog and warthogs) with a highly virulent strain, offering a high-throughput alternative to more traditional systems to evaluate immune responses. A second poster evaluated the cytokine transcriptomic profile of animals naturally infected with circulating virulent virus. The role of innate immunity and the relationship with ASFV virulence is key to understand the mechanisms of immune evasion the virus uses and a more rational design of vaccines.

Equally important is the evaluation of the adaptative immune response after vaccination. Deep understanding of the immune responses associated with protection, or conversely, to disease enhancement, is key for the success of vaccine development. The third oral presentation explored the delicate balance between protection and disease, emphasising the dual role of cytotoxic cells. Their early induction post-vaccination appears to be protective, yet their continued presence during advanced stages of infection may contribute to pathology. These findings highlight the fine balance required, eliciting a sufficiently robust immune response without triggering a harmful overactivation that can lead to disease. A poster was presented on the same lines, linking the innate and adaptive immune responses after vaccination, followed by challenge using a systems immunology approach, including a large array of assays. The level of resolution achieved by the newly adopted techniques is unprecedented in livestock immunology. On a similar note, the duration of the protective immune responses after vaccination is a critical parameter to consider for any vaccine profile. One of the presented posters evaluated the duration of immunity after immunisation with a moderately attenuated virus (Estonia 14’), concluding animals are protected for at least 6-months after vaccination to the Armenia08 highly virulent challenge.

The last oral presentation of the immunology session centred the attention on the importance of performing post-mortem evaluations to assess possible vaccination adverse effects that no other assay can detect. Pericarditis was present in vaccinated and challenged pigs, which can impact performance and make the animals more susceptible to secondary infections.

The Immunology session offered a rich panel of presentations delivering compelling data and valuable conclusions that significantly advanced our understanding of the immune parameters associated with ASF. However, the small number of presentations in the session highlights a persistent lack of funding in this area of research. Only a limited number of institutions with access to specific or targeted funding streams are currently able to pursue this line of research. As emphasised by the last STAR-IDAZ report (Global Veterinary Vaccinology Research and Innovation Landscape Survey Report), there is an urgent need to identify immune correlates and surrogates of protection to reduce the indiscriminate use of animals in vaccine efficacy trials. Establishing validated immunological markers would accelerate vaccine evaluation and encourage innovation, especially under resource-limited conditions. Closely tied to the identification of these correlates is the ongoing research into antigen screening and subunit vaccines for ASF, which offer a safer alternative to live vaccines. However, the striking absence of presentations on this topic during the meeting was palpable, a missed opportunity that might be resolved in the future scientific meetings.

Vaccines and Therapeutics

On the second day of the meeting the subject turned to ASF control through the use of vaccines, and to a lesser degree the consideration of therapeutic intervention. This was the first GARA Scientific Meeting in which significant field use experience of ASF vaccines could be presented following the transfer to commercial manufacturing of the vaccines, and their subsequent deployment in several ASF endemic countries. The sessions were split therefore between field experience and further laboratory aspects of ASF vaccines. Three posters also were presented covering additional laboratory-generated data on ASF vaccines.

The opening Keynote of the session was a comprehensive review by Doug Gladue of the ASF vaccines in use either in the field or commercialized use in south-east Asia . Classical gaps in ASF vaccine profiles were reviewed alongside ways in which different approaches might fill these gaps. Extensive profiling of five rationally-attenuated live vaccines was presented, presenting their individual pros and cons. There is evidence that there is limited cross-protection between the genotype II and the genotype I/II variant that has emerged in the field in East and SE Asia recently. The question of reversion to virulence for live, attenuated vaccines was raised. This has been reported both from the field and in recent laboratory study publications, with successful and unsuccessful studies reviewed, the differences largely due to the criteria used in the study. The Keynote ended with a suggestion that vaccine usage should match outbreak strain Biotype. However if vaccine matching is not available in the absence of universal ASF vaccines potentially based upon technologies such as subunits or saRNA, another alternative could be therapeutic interventions.

Field experiences with ASF vaccines

The subject of field experience with the commercially available live, attenuated ASF vaccines was continued in subsequent talks. Janice Garcia described the impact of the introduction of ASF in 2019 on the swine industry in The Philippines. Increased surveillance, community education, and biosecurity measures were supplemented by the controlled rollout of the NAVETCO vaccine (NAVET-ASFVAC) in 2023. To date 160,000 doses have been used as part of the ongoing product registration assessment. The use of the vaccine is conducted under the control of the appointed Advisory Committee, who will report on the field impact in due course. In similar vein, a brief update was given on the use of the same live, attenuated vaccine in 500 commercially farmed pigs in the Dominican Republic, which recorded its first case of ASF in 2021. In a non-endemic area seroconversion was demonstrated in >91% of the immunised animals, and ASFV DNA was undetectable in the bloodstream in >93% of the animals by 90 days post-immunisation. The vaccine was therefore shown to be safe and effective, and not associated with increased mortalities or reduced productivity.

In 2019 a highly virulent genotype II ASFV strain was reported to be circulating in China. In 2021 a low virulence genotype I strain was also detected. Subsequently a highly virulent strain of ASFV was detected in the field in China in 2021 which contained elements of both genotypes, and was designated genotype I/II. A very similar strain was detected in 2023 in Vietnam. Laboratory studies have indicated that the currently available genotype II live, attenuated vaccines do not offer complete protection against this genotype I/II strain. A second significant issue surrounding the use of vaccines in endemic settings was addressed by Theresa Holzum. In Europe the potential for vaccination of wild boar is a critical aspect of ASF control. Oral immunisation using baits, similar to the procedure used successfully for Classical Swine Fever vaccination, was investigated in a controlled study using four current live, attenuated ASF candidate vaccines. The study showed the potential utility of this approach through positive results in a vaccination and challenge study.

Laboratory experiences with ASF vaccines and therapeutics

In a series of short oral presentations, initially the ability of single genotype vaccines to offer x-genotype protection was reported. Ana Luisa Reis presented data from a vaccination and challenge study where a genotype II live, attenuated vaccine gave 70% protection against a virulent genotype I challenge. In contrast no protection was seen against a less closely related virulent genotype IX strain. Similarly, a second study presented by Galina Koltsova showed that a live, attenuated candidate vaccine developed from a Russian genotype II ASFV strain isolated in 2008 offered only limited protection in a genotype VIII heterologous challenge study.

Turning to safety of the live, attenuated vaccines, Daniel Pérez Núñez reported a study to investigate potential molecular mechanisms for reversion to virulence of a highly protective genotype II strain vaccine. Viral titre increases and loss of attenuation were seen upon serial passage of the strain in pigs, possibly associated with SNPs in two specific genes. An alternative approach to the live, attenuated ASF vaccines was presented by Carolyn Lee. A subunit vaccine incorporating a multiepitope ASFV protein nanoparticle was shown to induce strong B and T cell responses in naïve pigs. Further work is planned to examine clinical efficacy. Another alternative control tool was explored in the last oral presentation by Doug Gladue, who described the efficacy of a proprietary system for targeting CRISPR to cleave an ASFV gene in tissue culture. Clinical use also demonstrated a reduction in viral load post-challenge with ASFV, improved clinical outcomes and the ability to allow an effective immune response to manifest itself.

In the poster session mechanisms of reversion to virulence of live, attenuated vaccines were explored by Erwin van den Born using serial passage in pregnant sows to demonstrate this point. Creating double or greater mutations/deletions was suggested as a mitigation strategy to reduce the risk of reversion to virulence. Two other posters presented described potential improvements that could be used for ASF vaccine development. István Mészáros described an improvement in the difficult area of ASFV growth in vitro, using an immortalised porcine alveolar macrophage cell line. The second poster described an enhanced qPCR analytical methodology for analysing viral excretion in various secretion sample types in ASF challenge studies.

Poster Award Winners

Attendees at the Scientific Meeting had the opportunity to vote for up to 5 posters they believed not only showcased excellent research in ASF, but also most effectively communicated the scientific message. Below are the 5 winning researchers and their posters.

THANK YOU to our Poster Award Sponsor:

Gold Standard Diagnostics

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Poster Award Winners

Diego Rojas Morea

National Biosecurity Plan for the swine value chain in the Dominican Republic: Modernization and resilience

Read the poster **here**.

Naoki Yoshida

Establishment of a replication-restricted mutant of African swine fever virus

Alexander Schäfer

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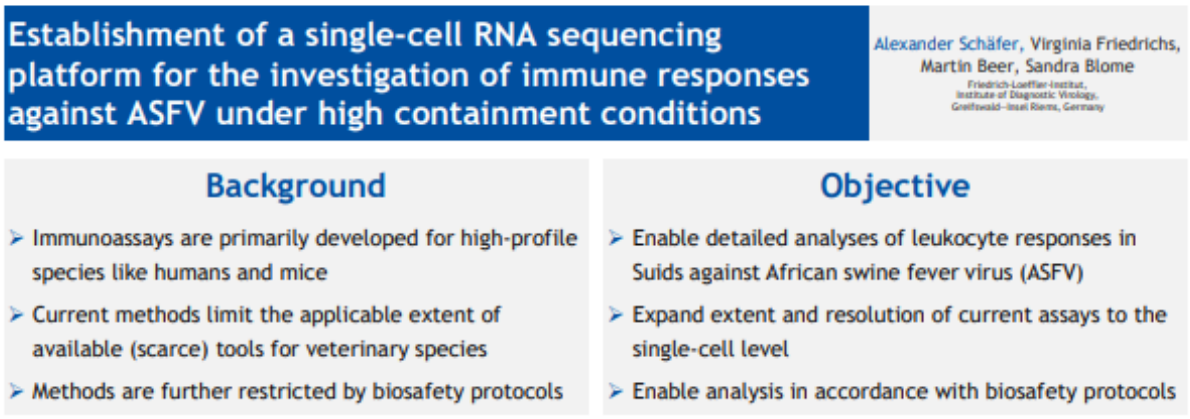

Read the poster **here**.

Oonagh Pretorius

Enhancing African swine fever control strategies in South Africa: contributions to disease introduction and spread by smallholder pig farmers

Read the poster **here**.

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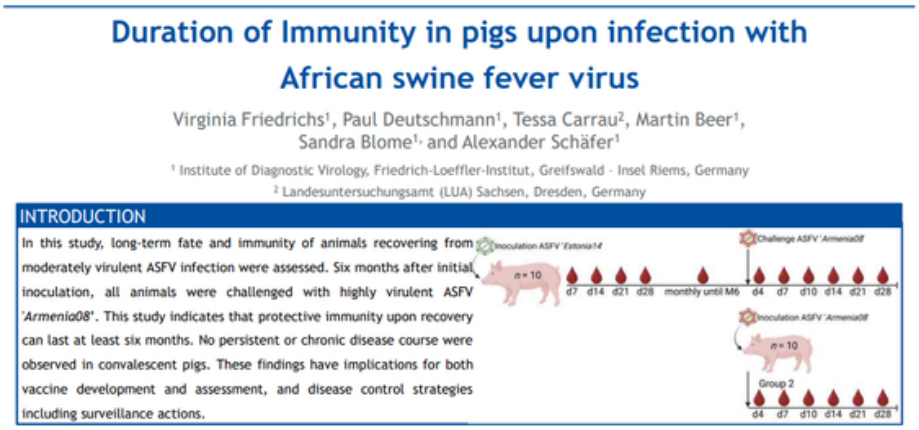

Virginia Friedrichs

Duration of immunity in pigs upon infection with African swine fever virus

Read the poster **here**.

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2025-2028

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