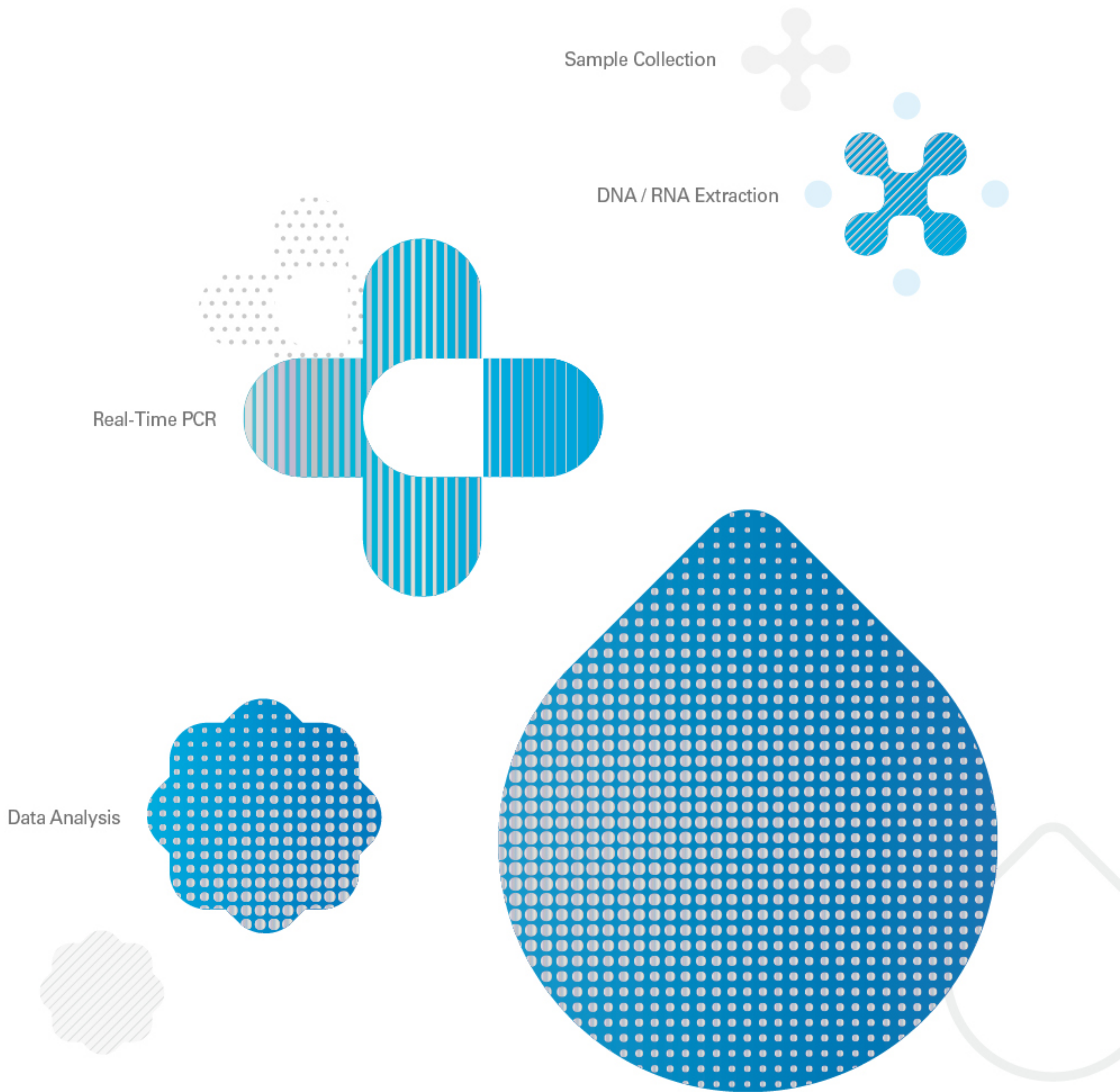


# Animal Molecular Diagnostic Products



# Animal Molecular Diagnostic Products

## ■ Swine

Cat no.	Product Name	Product Description (Bacteria)	No. of Certificate
SWBS-001	Opti APP-qPCR kit	Actinobacillus pleuropneumoniae real-time PCR detection kit	Research Use Only (RUO)
SWBS-002	Opti AS-qPCR kit	Actinobacillus suis real-time PCR detection kit	RUO
SWBS-003	Opti BB-qPCR kit	Bordetella bronchiseptica real-time PCR detection kit	RUO
SWBS-004	Opti BH-qPCR kit	Brachyspira hyodysenteriae real-time PCR detection kit	RUO
SWBS-005	Opti BP-qPCR kit	Brachyspira pilosicoli real-time PCR detection kit	RUO
SWBS-006	Opti CP-qPCR kit	Clostridium perfringens real-time PCR detection kit	RUO
SWBS-007	Opti ER-qPCR kit	Erysipelothrix rhusiopathiae real-time PCR detection kit	RUO
SWBS-008	Opti HP-qPCR kit	Haemophilus parasuis real-time PCR detection kit	RUO
SWBS-009	Opti Law-qPCR kit	Lawsonia intracellularis real-time PCR detection kit	RUO
SWBS-010	Opti MH-qPCR kit	Mycoplasma hyopneumoniae real-time PCR detection kit	RUO
SWBS-011	Opti MHR-qPCR kit	Mycoplasma hyorhinis real-time PCR detection kit	RUO
SWBS-012	Opti MHS-qPCR kit	Mycoplasma hyosynoviae real-time PCR detection kit	RUO
SWBS-013	Opti MS-qPCR kit	Mycoplasma suis real-time PCR detection kit	RUO
SWBS-014	Opti PM-qPCR kit	Pasteurella multocida real-time PCR detection kit	RUO
SWBS-015	Opti Sal-qPCR kit	Salmonella spp. real-time PCR detection kit	RUO
SWBS-016	Opti SS-qPCR kit	Streptococcus suis real-time PCR detection kit	RUO
SWBS-017	Opti LM-qPCR kit	Listeria monocytogenes real-time PCR detection kit	RUO
SWBS-018	Opti Lep-qPCR kit	Leptospira spp. real-time PCR detection kit	RUO
SWBM-020	Opti PM/HP/APP/MH Multi-qPCR Kit	P. multocida, H. parasuis, A. pleuropneumoniae, M. hyopneumoniae Multiplex real-time PCR detection kit	No. 238 - 008 (Certificate of Free Sales)
SWBM-021	Opti SLBB Multi-qPCR Kit	Salmonella spp., L. intracellularis, B. hyodysenteriae, B. pilosicoli Multiplex real-time PCR detection kit	No. 238 - 012 (Certificate of Free Sales)

Cat no.	Product Name	Product Description (Parasite)	No. of Certificate
SWPS-001	Opti IS-qPCR kit	Isospora suis real-time PCR detection kit	RUO
SWPS-002	Opti Ei-qPCR kit	Eimeria spp. real-time PCR detection kit	RUO
SWPM-003	Opti Swine coccidiosis Multi-qPCR Kit	Isospora suis, Eimeria spp. Multiplex real-time PCR detection kit	Np. 238-013 (Certificate of Free Sales)

Cat no.	Product Name	Product Description (Virus)	No. of Certificate
IA-01	Opti ASFV-qPCR kit	African swine fever virus real-time PCR detection kit	No. 238 - 002 (APQA approved)
IP-01	Opti PCMV-qPCR kit	Porcine cytomegalovirus real-time PCR detection kit	No. 238 - 003 (APQA approved)
SWVS-003	Opti PCV2-qPCR kit	Porcine circovirus type 2 real-time PCR detection kit	RUO
SWVS-004	Opti PCV3-qPCR kit	Porcine circovirus type 3 real-time PCR detection kit	RUO
SWVS-005	Opti PPV-qPCR kit	Porcine parvovirus real-time PCR detection kit	RUO
SWVS-006	Opti ADV-qPCR kit	Aujeszky's disease virus (Pseudorabies virus) real-time PCR detection kit	RUO
SWVS-007	Opti PRRSV (NA/EU)-qPCR kit	Porcine reproductive and respiratory syndrome virus real-time PCR detection kit	RUO
SWVS-008	Opti PEDV-qPCR kit	Porcine epidemic diarrhea virus real-time PCR detection kit	RUO
SWVM-009	Opti Rotavirus A/B/C Multi-qPCR kit	Rotavirus A, B, C Multiplex real-time PCR detection kit	RUO
SWVS-010	Opti TGEV-qPCR kit	Transmissible gastroenteritis virus real-time PCR detection kit	RUO
SWVS-011	Opti SIV-qPCR kit	Porcine influenza A virus real-time PCR detection kit	RUO
SWVS-012	Opti JEV-qPCR kit	Japanese encephalitis virus real-time PCR detection kit	RUO
SWVM-013	Opti PRRSV/PCV2 Multi-qPCR Kit	PRRSV (NA/EU), PCV2 Multiplex real-time PCR detection kit	No. 238 - 010 (Certificate of Free Sales)
SWVM-014	Opti PEDV/TGEV/RVA Multi-qPCR Kit	PEDV, TGEV, Rotavirus A Multiplex real-time PCR detection kit	RUO
SWVM-015	Opti PEDV/TGEV/RVA/RVC Multi-qPCR Kit	PEDV, TGEV, Rotavirus A, C Multiplex real-time PCR detection kit	No. 238 - 007 (Certificate of Free Sales)
SWVS-016	Opti EMCV-qPCR kit	Encephalomyocarditis virus real-time PCR detection kit	RUO
SWVS-017	Opti CSFV-qPCR kit	Classical swine fever virus real-time PCR detection kit	RUO
SWVS-018	Opti Nipah-qPCR kit	Nipah virus real-time PCR detection kit	RUO
SWVS-019	Opti Hendra-qPCR kit	Hendra virus real-time PCR detection kit	RUO
SWVM-020	Opti PCV2 Genotyping Multi-qPCR Kit	PCV2 genotyping Multiplex real-time PCR detection kit	No. 238 - 006 (Certificate of Free Sales)
SWVM-021	Opti SIV/JEV/EMCV Multi-qPCR Kit	SIV, JEV, EMCV Multiplex real-time PCR detection kit	No. 238 - 011 (Certificate of Free Sales)
SWVM-022	Opti PPV/PCMV/ADV Multi-qPCR Kit	PPV, PCMV, ADV Multiplex real-time PCR detection kit	No. 238 - 009 (Certificate of Free Sales)
SWVM-023	Opti HP-PRRSV/PCV2 Multi-qPCR Kit	HP-PRRSV (NA/EU), PCV2 Multiplex real-time PCR detection kit	No. 238 - 005 (Certificate of Free Sales)
SWVM-024	Opti SIV/PCMV/CSFV Multi-qPCR Kit	SIV, PCMV, CSFV Multiplex real-time PCR detection kit	RUO

## ■ Avian

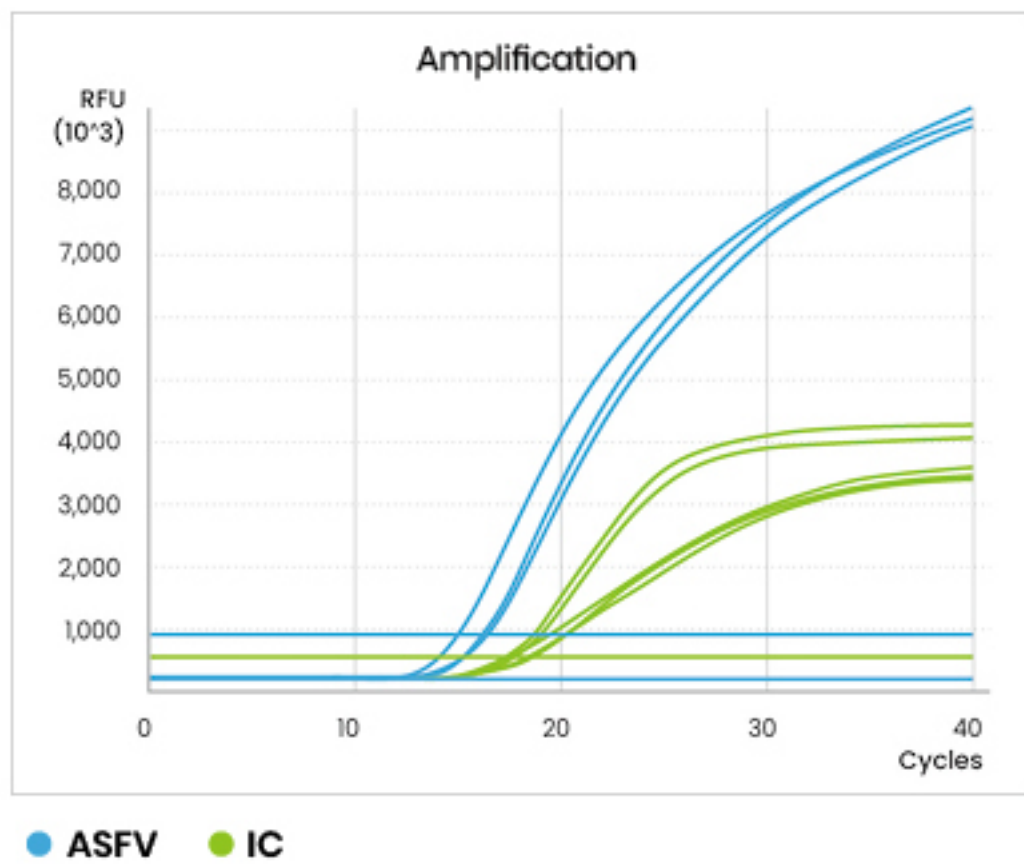
Cat no.	Product Name	Product Description (Bacteria)	No. of Certificate
AVBS-001	Opti SG-qPCR kit	Salmonella gallinarum real-time PCR detection kit	Research use only (RUO)
AVBS-002	Opti MG-qPCR kit	Mycoplasma gallisepticum real-time PCR detection kit	RUO
AVBS-003	Opti MS-qPCR kit	Mycoplasma synoviae real-time PCR detection kit	RUO
AVBS-004	Opti Sta-qPCR	Staphylococcus spp. real-time PCR detection kit	RUO
AVBS-005	Opti Ent-qPCR	Enterococcus spp. real-time PCR detection kit	RUO
AVBS-006	Opti CC-qPCR	Clostridium colinum real-time PCR detection kit	RUO
AVBS-007	Opti Eco-qPCR	Escherichia coli real-time PCR detection kit	RUO
AVBM-008	Opti SG/SP Multi-qPCR kit	Salmonella gallinarum, Salmonella pullorum Multiplex real-time PCR detection kit	RUO
AVBM-009	Opti Sal/Ent/Sta/MS Multi-qPCR	Salmonella spp., Enterococcus spp., Staphylococcus spp., Mycoplasma synoviae Multiplex real-time PCR detection kit	RUO
AVBM-010	Opti CP/CC/Sal/Eco Multi-qPCR	Clostridium perfringens, Clostridium colinum, Salmonella spp., Escherichia coli Multiplex real-time PCR detection kit	RUO
AVBM-011	Opti Sal/PM/Eco/CC Multi-qPCR	Salmonella spp., Pasteurella multocida, Escherichia coli, Clostridium colinum Multiplex real-time PCR detection kit	RUO
AVBM-012	Opti Infectious Coryza/ABC Multi-qPCR kit	Infectious coryza (Avibacterium paragallinarum), serotype A, B, C Multiplex real-time PCR detection kit	RUO
AVBM-013	Opti Salmonella-4plex Multi-qPCR	Salmonella spp., Salmonella gallinarum, Salmonella pullorum, Salmonella enteritidis Multiplex real-time PCR detection kit	RUO

Cat no.	Product Name	Product Description (Parasite)	No. of Certificate
AVPS-001	Opti EN-qPCR kit	Eimeria necatrix real-time PCR detection kit	RUO
AVPS-002	Opti ET-qPCR kit	Eimeria tenella real-time PCR detection kit	RUO
AVPS-003	Opti EM-qPCR kit	Eimeria maxima real-time PCR detection kit	RUO
AVPS-004	Opti EB-qPCR kit	Eimeria brunetti real-time PCR detection kit	RUO
AVPM-005	Opti Avian coccidiosis Multi-qPCR Kit	E. maxima, E. necatrix, E. brunetti, E. tenella Multiplex real-time PCR detection kit	RUO

Cat no.	Product Name	Product Description (Virus)	No. of Certificate
AVVS-001	Opti AIV-qPCR kit	Avian influenza virus real-time PCR detection kit	No. 238 - 004 (Certificate of Free Sales)
AVVS-002	Opti IBV-qPCR	Infectious bronchitis virus real-time PCR detection kit	RUO
AVVS-003	Opti NDV-qPCR	Newcastle disease virus real-time PCR detection kit	RUO
AVVS-004	Opti FPV-qPCR	Fowl poxvirus real-time PCR detection kit	RUO
AVVS-005	Opti ILTV-qPCR	Infectious laryngotracheitis virus real-time PCR detection kit	RUO
AVVS-006	Opti FAdV-qPCR	Fowl adenovirus real-time PCR detection kit	RUO
AVVM-007	Opti AIV/NDV/IBV/APV(AB) Multi-qPCR	Avian influenza virus, Newcastle disease virus, infectious bronchitis virus, Avian metapneumovirus A, B Multiplex real-time PCR detection kit	RUO
AVVM-008	Opti AIV-H5/7/9 Multi-qPCR	Avian influenza virus, H5, H7, H9 Multiplex real-time PCR detection kit	RUO
AVVM-009	Opti APV Multi-qPCR	Avian metapneumovirus A, B, C, D Multiplex real-time PCR detection kit	RUO
AVVM-010	Opti FAdV 4/8b/11 Multi-qPCR	Fowl adenovirus, serotype 4, 8b, 11 Multiplex real-time PCR detection kit	RUO
AVVM-011	Opti FPV/ILTV Multi-qPCR	Fowl poxvirus, Infectious laryngotracheitis virus Multiplex real-time PCR detection kit	RUO
AVVM-012	Opti IBV-typing Multi-qPCR	IBV QX, K2, B4 Multiplex real-time PCR detection kit	RUO
AVVM-013	Opti AIV-H5/7 Multi-qPCR	Avian influenza virus, H5, H7 Multiplex real-time PCR detection kit	RUO



# Opti ASFV-qPCR Kit™



## Cat no. IA01

- Approved by the APQA\*(License No. 238-002)
- Validated by the Vietnam national University of Agriculture
- Store at -20°C
- Delivers results within 1 hour of DNA preparation
- Compatible with **Bio-Rad CFX96**, **Thermofisher QuantStudio 5, 3**, **ABI 7500 (Fast)**, **Bioneer Exicycler 96**, **Stratagene Mx3005P**, **Cepheid Smart Cycler II** \*Roche, not recommended

\*APQA : Animal and Plant Quarantine Agency

## ■ African Swine Fever (ASF)

- Deadly viral hemorrhagic swine infectious disease with a lethality approaching 100%
- No vaccines or treatments worldwide

### Acute subacute forms of ASF

Fever, Lethargy, Anorexia, Skin hemorrhages, Circulatory, Respiratory, Digestive, Nervous disorders



Ref. : Korea Animal and Plant Quarantine Agency, 2020

## ■ Situation of ASF in Asia

2018. 08 : **China**

2019. 01 : **Mongolia**

2019. 02 : **Vietnam**

2019. 03 : **Cambodia**

2019. 05 : **North Korea**

2019. 06 : **Laos**

2019. 07 : **Philippines**

2019. 08 : **Myanmar**

2019. 09 : **Indonesia,**

**East Timor, Korea**

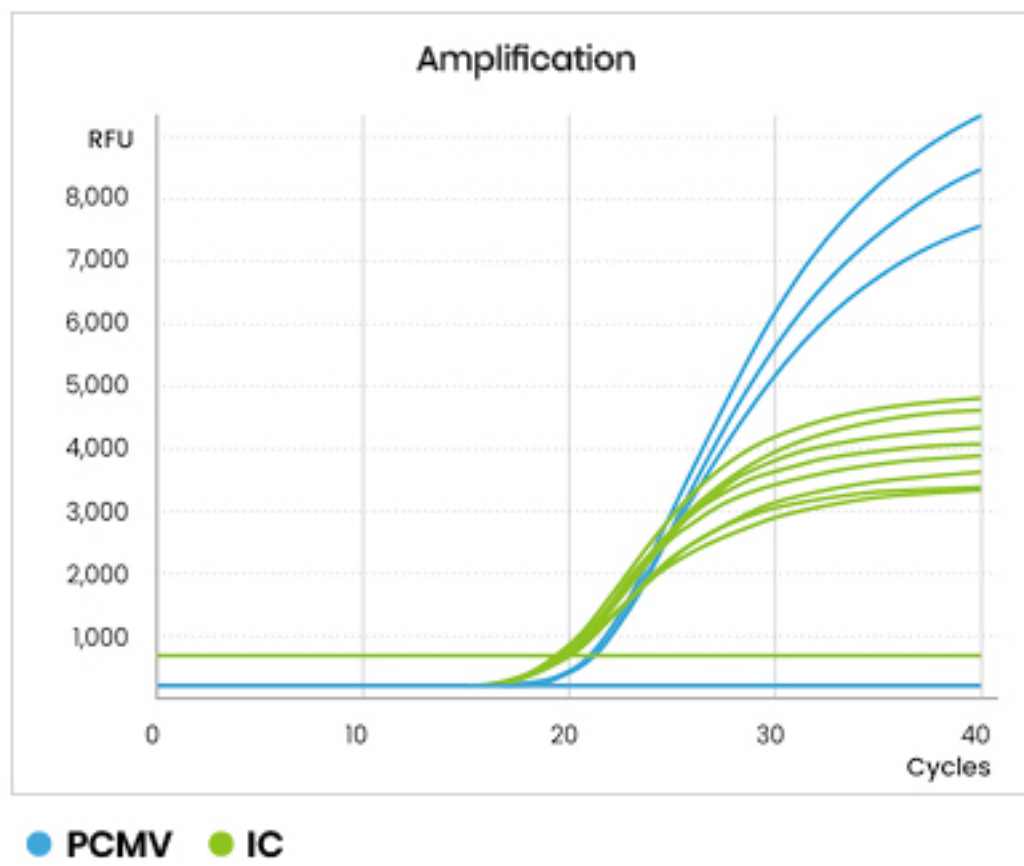
# Opti PCMV-qPCR Kit™



Sensitivity



Specificity



## Cat no. IP01

- Approved by the APQA\* (License No. 238-003)
- Delivers results within 1 hour of DNA preparation
- Store at -20°C

\*APQA : Animal and Plant Quarantine Agency

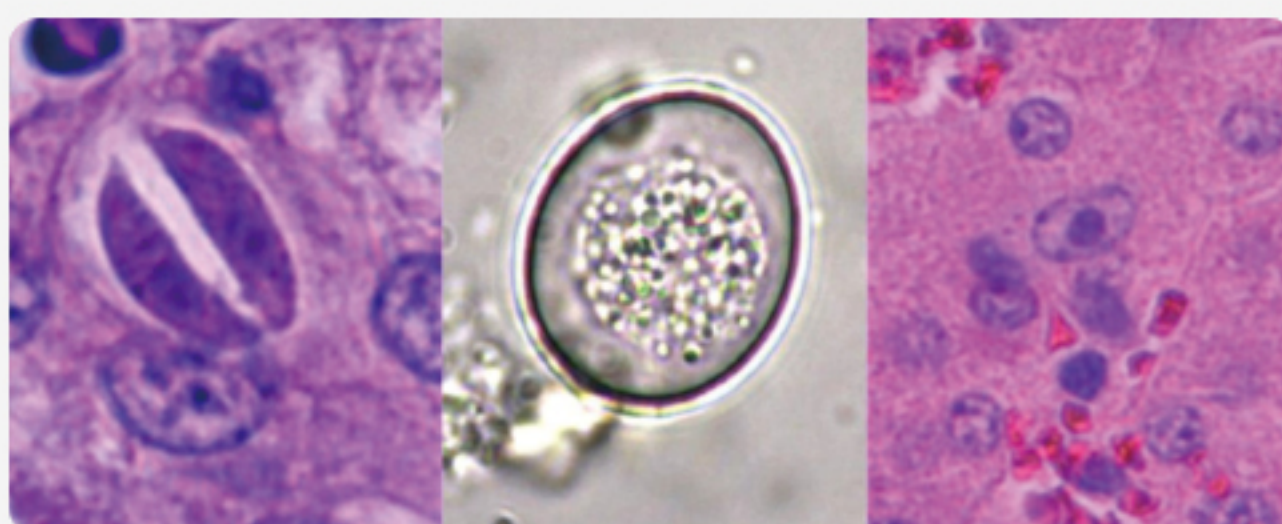
\*Reference : Front Vet Sci. 2020 Oct 28;7:586045.

## ■ Porcine Cytomegalo Virus

- Viruses that cause inclusion body rhinitis (IBR) or cytomegalic inclusion disease
- Occurs in only in pigs although similar infections with other species including people

## ■ Opti PCMV-qPCR Kit™

- The first product approved for PCMV detection by Korea Animal and Plant Quarantine Agency (APQA)
- It was reported that transmission of PCMV has been observed in several cases of transplantation of pig organs into non-human primates and this was associated with reduced transplant survival (Viruses 2018, 10 (2), 66)
- This PCMV diagnostic kit could be essential item for xenotransplantation research and contribute to vitalization of the xenotransplantation research group in the world.

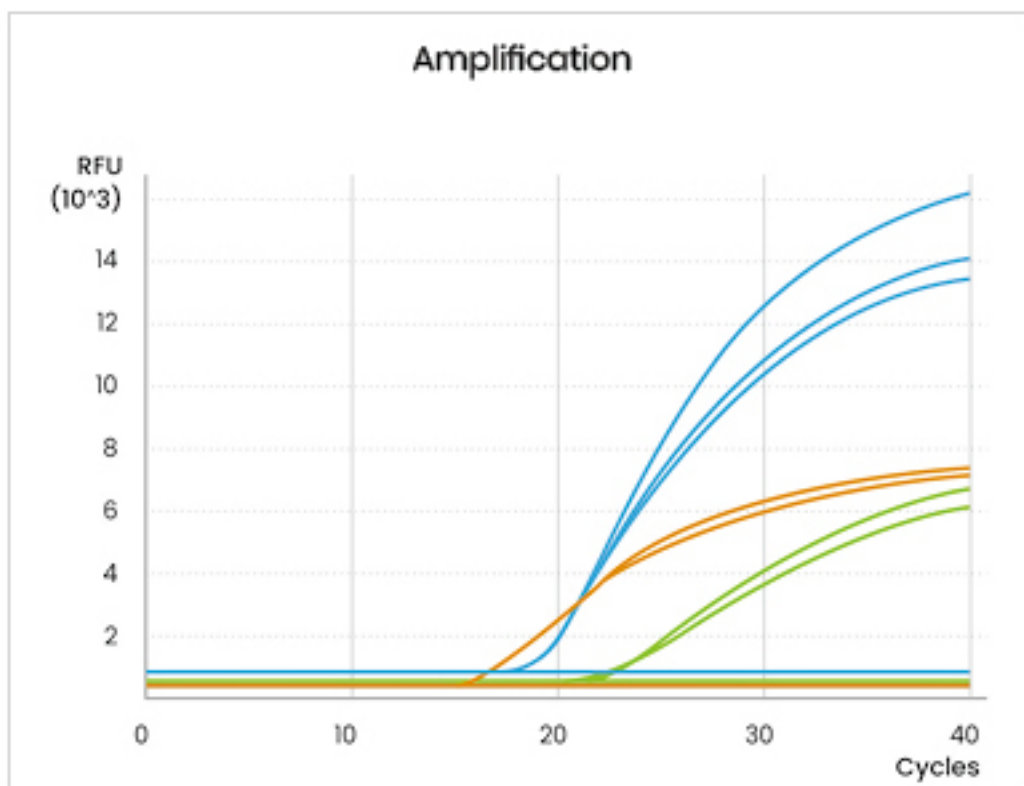


Ref : Parasitology International 2017, Volume 66, Issue 6, December 806-809



Ref : Viruses2018, 10(2), 66

# Opti PRRSV/PCV2 Multi-qPCR Kit™

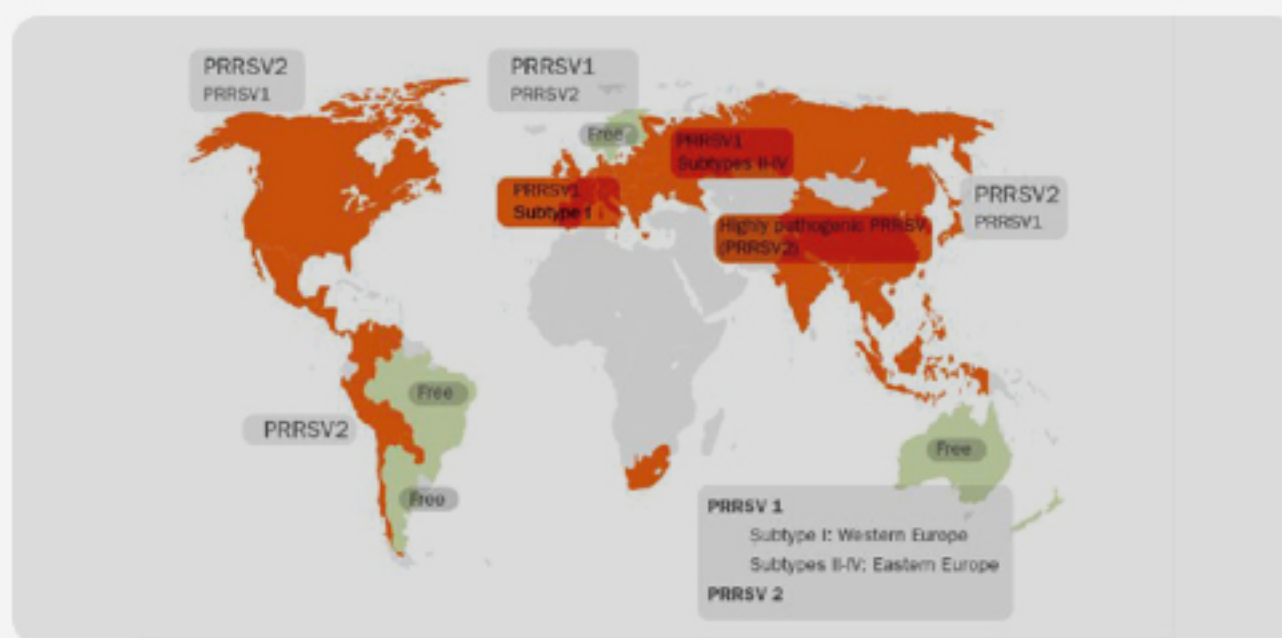


Cat no. SWVM-013

- Delivers results within 1 h 10 min of RNA preparation
- Store at -20°C

## ■ Porcine reproductive and respiratory syndrome virus (PRRSV)

Viral porcine disease leading to reproductive failure (abortions, infertility) and causes pneumonia and increased mortality in young animals

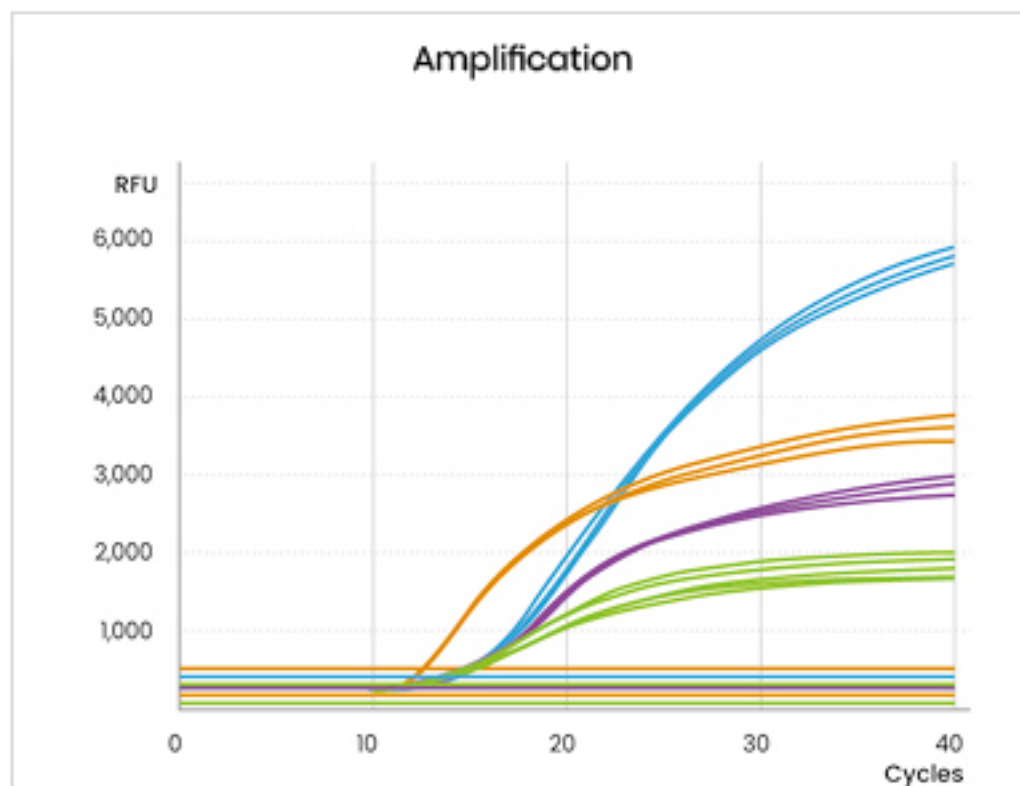


Ref : HIPRA, 2016

## ■ Porcine circovirus 2 (PCV2)

- Porcine circovirus 2 (PCV2) is the main etiological agent for porcine circovirus diseases
- Vaccination against the virus appears to keep PCV2-associated disease (PCVAD) manifestations in check
- Nevertheless, PCV2 has not been eliminated
- PCV2-infection is widespread and essentially all pig herds are infected with PCV2 but relatively few have PCVAD which includes severe systemic PCV2 infection, PCV2-associated pneumonia, PCV2-associated enteritis, PCV2-associated reproductive failure, and Porcine Dermatitis and Nephropathy Syndrome (PDNS)

# Opti PEDV/TGEV/RVA/ RVC Multi-qPCR Kit™



Cat no. SWVM-015

- Delivers results within 1 h 10 min of RNA preparation
- Store at -20°C

## ■ Rotavirus A, C

- There are no specific treatments for rotavirus infections
- Provide antibiotic therapy either by injection, by oral feeding, to control secondary infections such as E.coli

## ■ Porcine Epidemic Diarrhea virus (PEDV) Transmissible Gastroenteritis virus (TGEV)

- Major agents in viral enteric diseases of piglets
- As the clinical signs of these diseases are similar, including watery diarrhea, differential detection is required for etiologic diagnosis

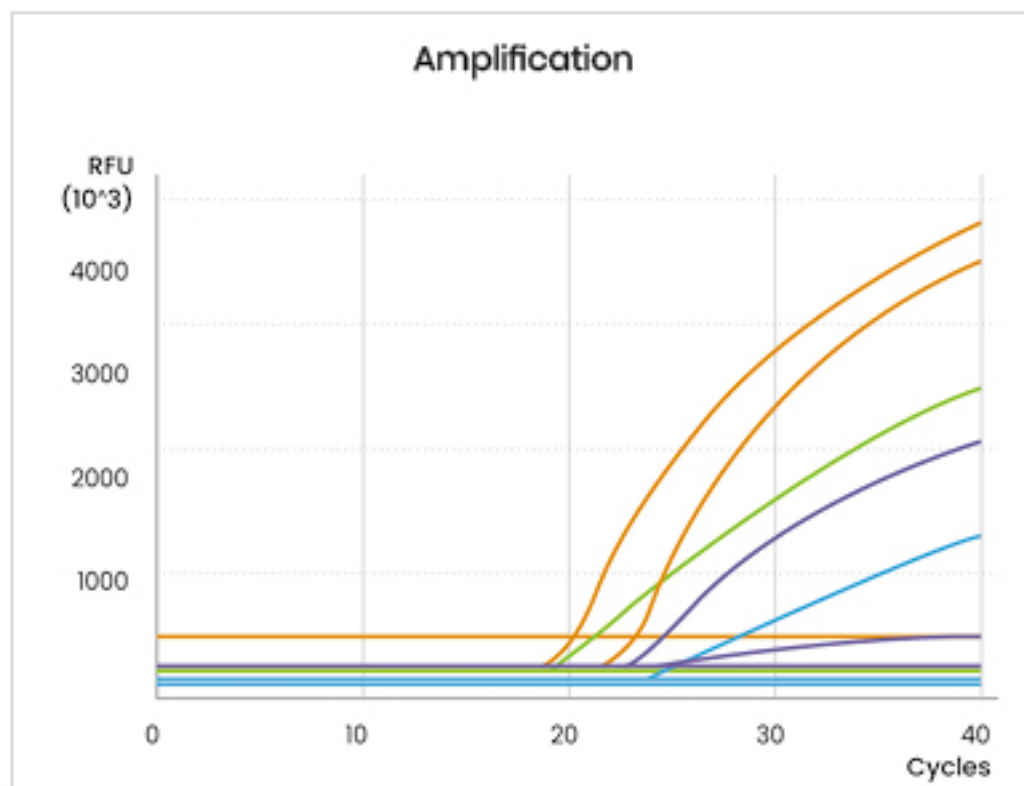


Ref : PIG PROGRESS



Ref : Carthage Innovative Swine Solutions, 2016

# Opti PCV2 Genotyping Multi-qPCR Kit™



Cat no. SWVM-020

- Delivers results within 1 hour of DNA preparation preparation
- Store at -20°C

● PCV2a  
● PCV2d  
● PCV2e  
● PCV2b

## ■ Porcine circovirus 2 (PCV2)

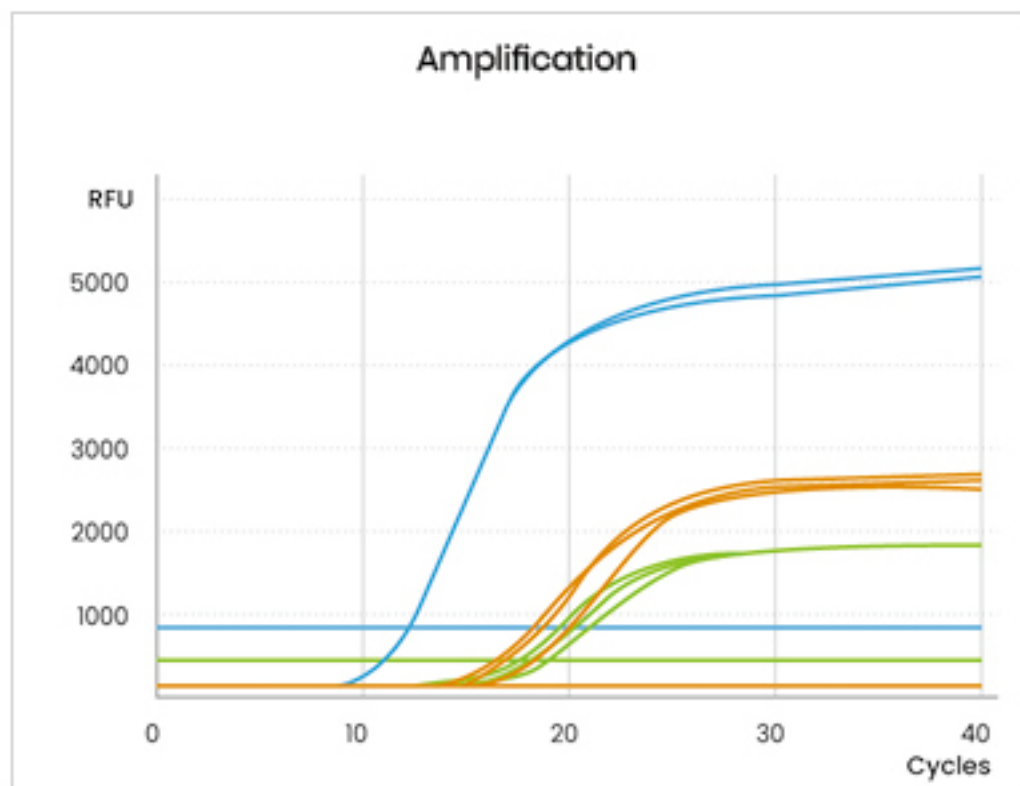
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- PCV2-infection is widespread and essentially all pig herds are infected with PCV2 but relatively few have PCVAD which includes severe systemic PCV2 infection, PCV2-associated pneumonia, PCV2-associated enteritis, PCV2-associated reproductive failure, and Porcine Dermatitis and Nephropathy Syndrome (PDNS)



Ref : Iowa State University



# Opti SIV/JEV/EMCV Multi-qPCR Kit™



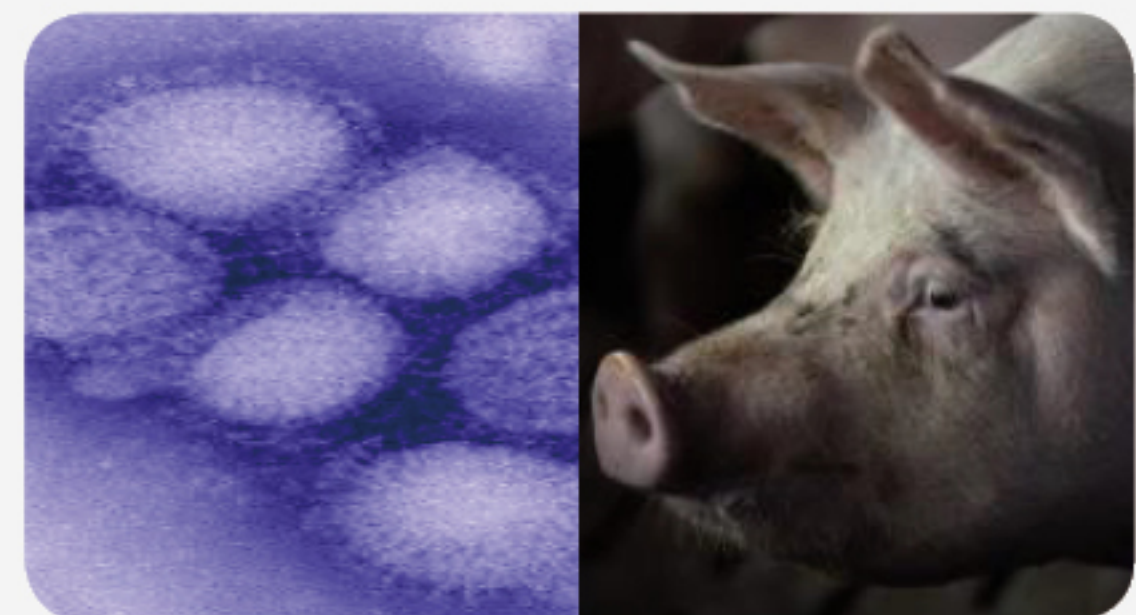
Cat no. SWVM-021

- Delivers results within 1 h 10 min of RNA preparation
- Store at -20°C

● SIV  
● EMCV  
● JEV

## ■ Swine Influenza Virus (SIV)

- A noticeable sign of SIV-infected pigs is a harsh, barking cough followed by flu-like symptoms
- Pigs lose their appetite, become lethargic, huddle and pile on one another
- A herpes virus found in the tissues throughout the body including the nose of newborn piglets where it causes inflammation (rhinitis)



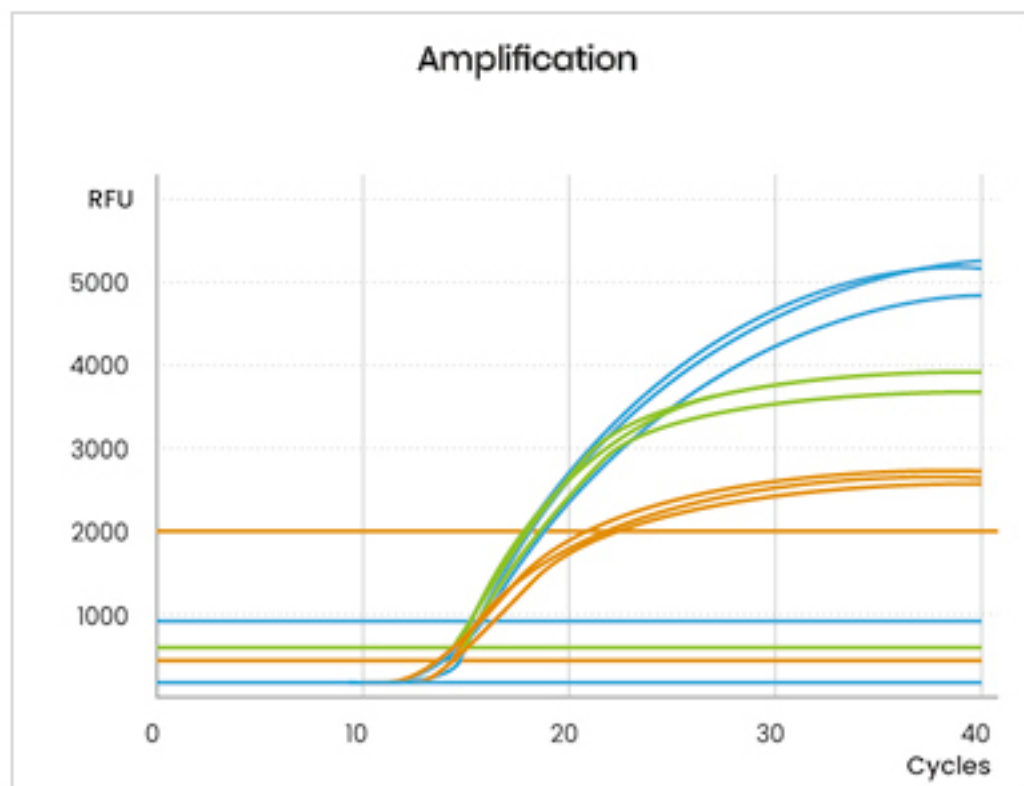
## ■ Japanese Encephalitis Virus (JEV)

- Japanese encephalitis virus (JEV) is a flavivirus related to dengue, yellow fever, and West Nile viruses, and is spread by mosquitoes
- In the endemic Asia-Pacific region, enzootic transmission cycles of JEV are maintained among amplification hosts such as swine and avian species

## ■ Encephalomyocarditis Virus (EMCV)

- The condition is caused by the encephalomyocarditis (EMC) virus, a picornavirus of rodents assigned to the cardiovirus group
- Sudden death is common, particularly in piglets.
- Pigs with sub-lethal infections may show signs of fever to 41°C (105°F), cyanosis (blue colour) of the extremities, depression, staggering or difficulty in breathing

# Opti PPV/PCMV/ADV Multi-qPCR Kit™



Cat no. SWVM-022

- Delivers results within 1 hour of DNA preparation
- Store at -20°C

● PCMV  
● PPV  
● ADV

## ■ Porcine Parvovirus (PPV)

- The most common and important cause of infectious infertility in swine throughout the world
- Porcine parvovirus is a fairly tough virus that multiplies normally in the intestine of the pig without causing clinical signs

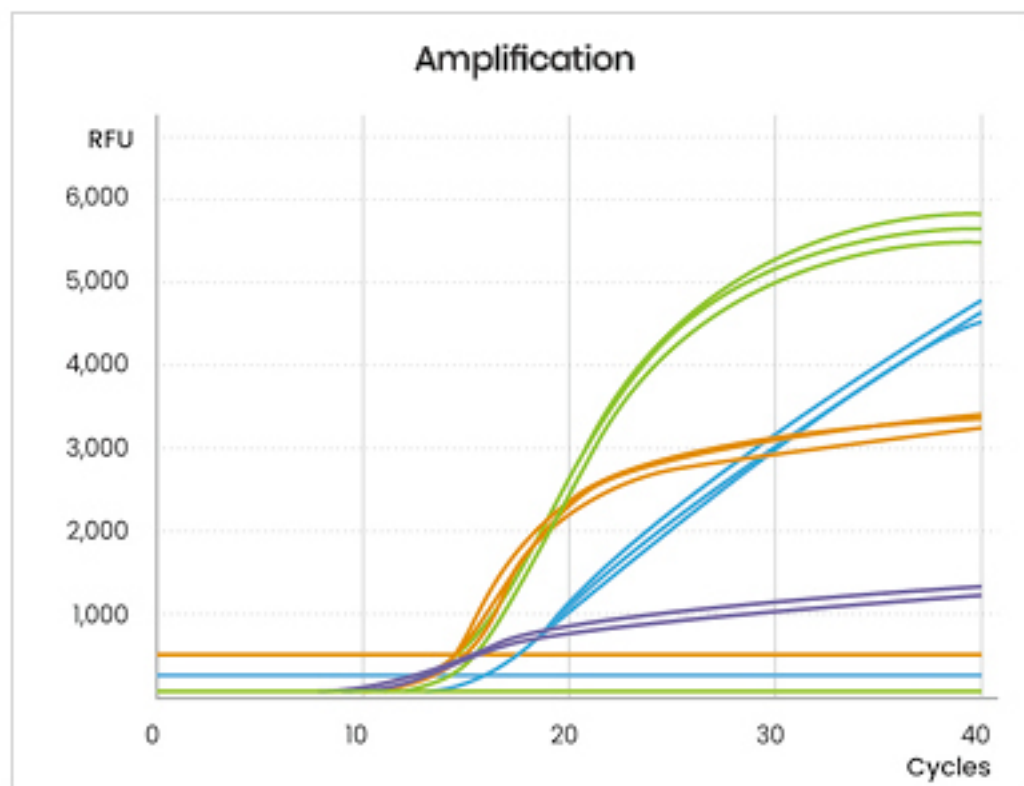
## ■ Porcine Cytomegalovirus (PCMV)

- Cytomegalovirus is a herpes virus found in all body tissue including the snout of newborn piglets which produces inflammation
- Most infections are subclinical and clinical disease is rare
- Rhinitis in newborn piglets can be severe enough to cause nasal hemorrhage

## ■ Aujeszky's Disease Virus (ADV)

- AD specific lesions and changes are often absent or minimal
- Gross lesions may occur in non-neural tissues, including lymphoid organs, and respiratory, digestive, and reproductive tracts
- Typically, exudative keratoconjunctivitis, serous to fibrinonecrotic rhinitis, laryngitis, tracheitis, and necrotizing tonsillitis may be present

# Opti PM/HP/APP/MH Multi-qPCR Kit™



Cat no. SWBM-020

- Delivers results within 1 hour of DNA preparation
- Store at -20°C

● MH  
● HP  
● PM  
● APP

## ■ *Pasteurella Multocida* (PM)

- Exposure can lead to rapidly progressing soft tissue, respiratory, or other serious invasive infections
- Coughing, sneezing, and abdominal breathing also called “thumping” is seen in infected pigs

## ■ *Haemophilus Parasuis* (HP)

- *Haemophilus parasuis* typically causes Glässer’s disease, a peracute to acute disease of 2-to 16-week-old pigs characterized by a serofibrinous polyserositis, polyarthritis and meningitis
- In some cases, acute septicemia results in death before typical lesions

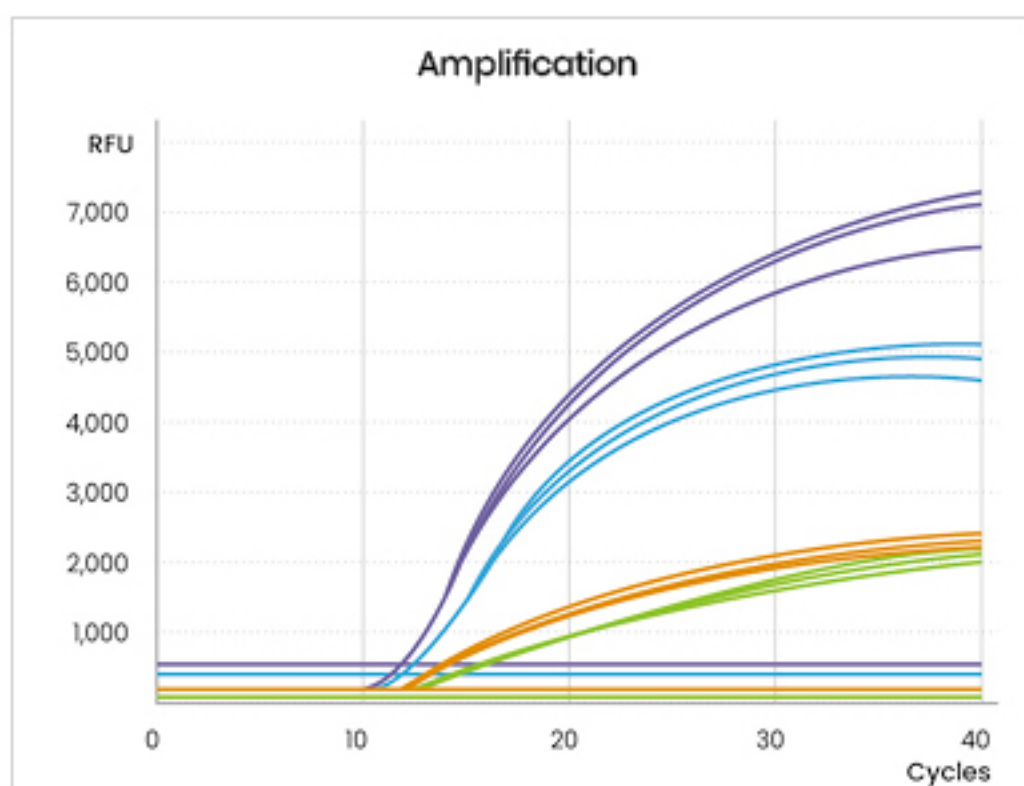
## ■ *Actinobacillus Pleuropneumoniae* (APP)

- This disease primarily affects pigs of 8 to 16 weeks
- The key clinical signs include heavy breathing difficulties; blueing of the ears; sudden death with haemorrhage from the nose

## ■ *Mycoplasma Hyopneumoniae* (MH)

- A widespread, chronic respiratory disease of swine characterized by coughing, growth retardation and reduced feed efficiency

# Opti SLBB Multi-qPCR Kit™



Cat no. SWBM-021

- Delivers results within 1 hour of DNA preparation
- Store at -20°C

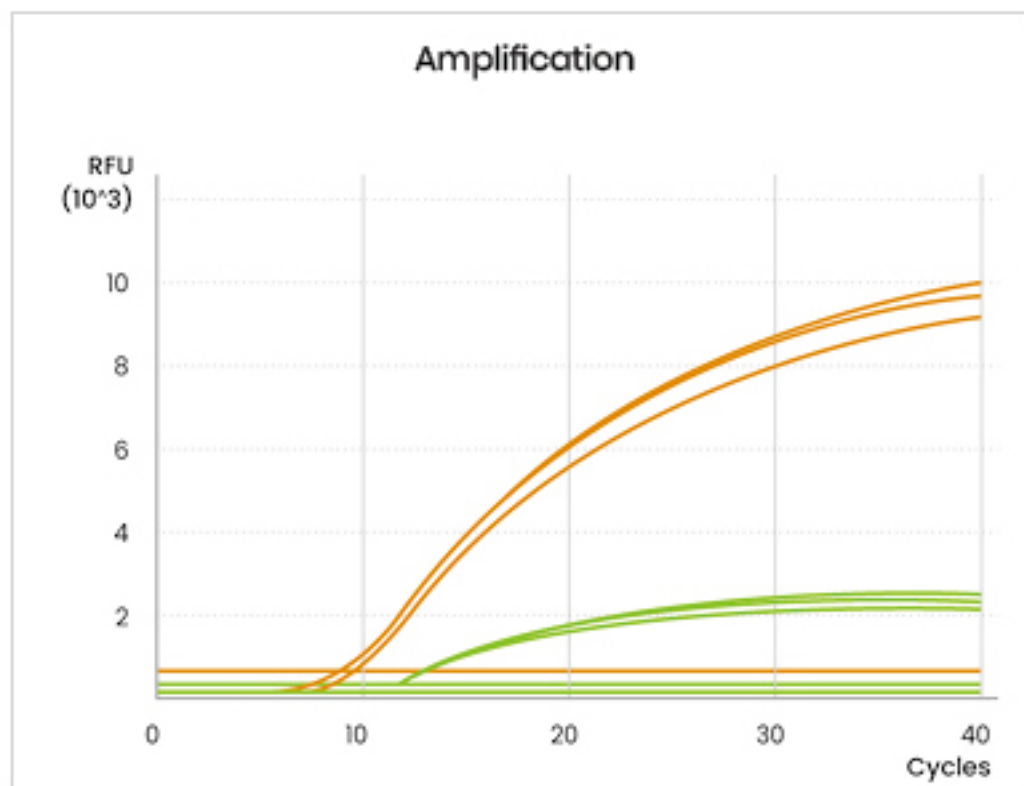
● Salmonella Spp.  
● B. hyodysenteriae  
● B. pilosicoli  
● L. intracellularis

## ■ Salmonella spp., Lawsonia intracellularis, Brachyspira hyodysenteriae, and B. pilosicoli (SLBB)

- **Salmonella spp.** : Enteropathogenic salmonellae cause inflammation and necrosis of the small and large intestines, resulting in diarrhea that may be accompanied by generalized sepsis.  
All ages are susceptible, but the disease is most common in weaned and growing - finishing pigs.
- **Lawsonia intracellularis** : Clinical signs characterized by soft feces and watery diarrhea occurred only in challenged pigs.
- **Brachyspira hyodysenteriae** is an important worldwide problem for the pig industry. Outbreaks with mortality rates of up to 50% occur in naive herds.  
The infection is a true dysentery, causing inflammatory and hemorrhagic disease of the colon.
- **Brachyspira pilosicoli** is an anaerobic spirochaete that can colonizes the large intestine of many host species. Infection is particularly problematic in pigs and adult poultry, causing colitis and diarrhea, but it is also known to result in clinical problems in human beings.



# Opti Swine Coccidiosis Multi-qPCR Kit™



Cat no. SWPM-003

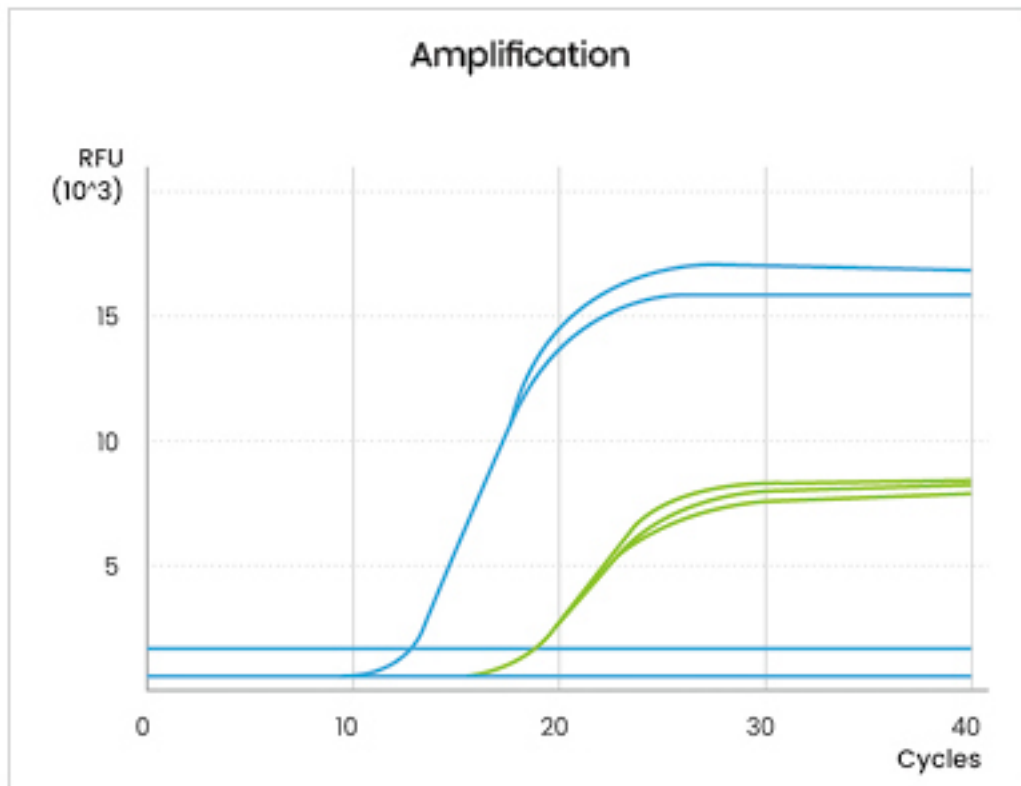
- Delivers results within 1 hour of DNA preparation
- Store at -20°C

## ■ Swine Coccidiosis

- A disease characterized by diarrhea in suckling and recently weaned pigs.
- The disease is usually caused by ***Iso*spora suis** but occasionally by other ***Eimeria* spp.**
- The impact of the disease is mainly related to the slow growth of the infected piglets and poor quality of the piglets at weaning.
- The symptoms of coccidiosis in pigs are similar to those of the bacterial infection *E. coli*.



# Opti AIV-qPCR Kit™

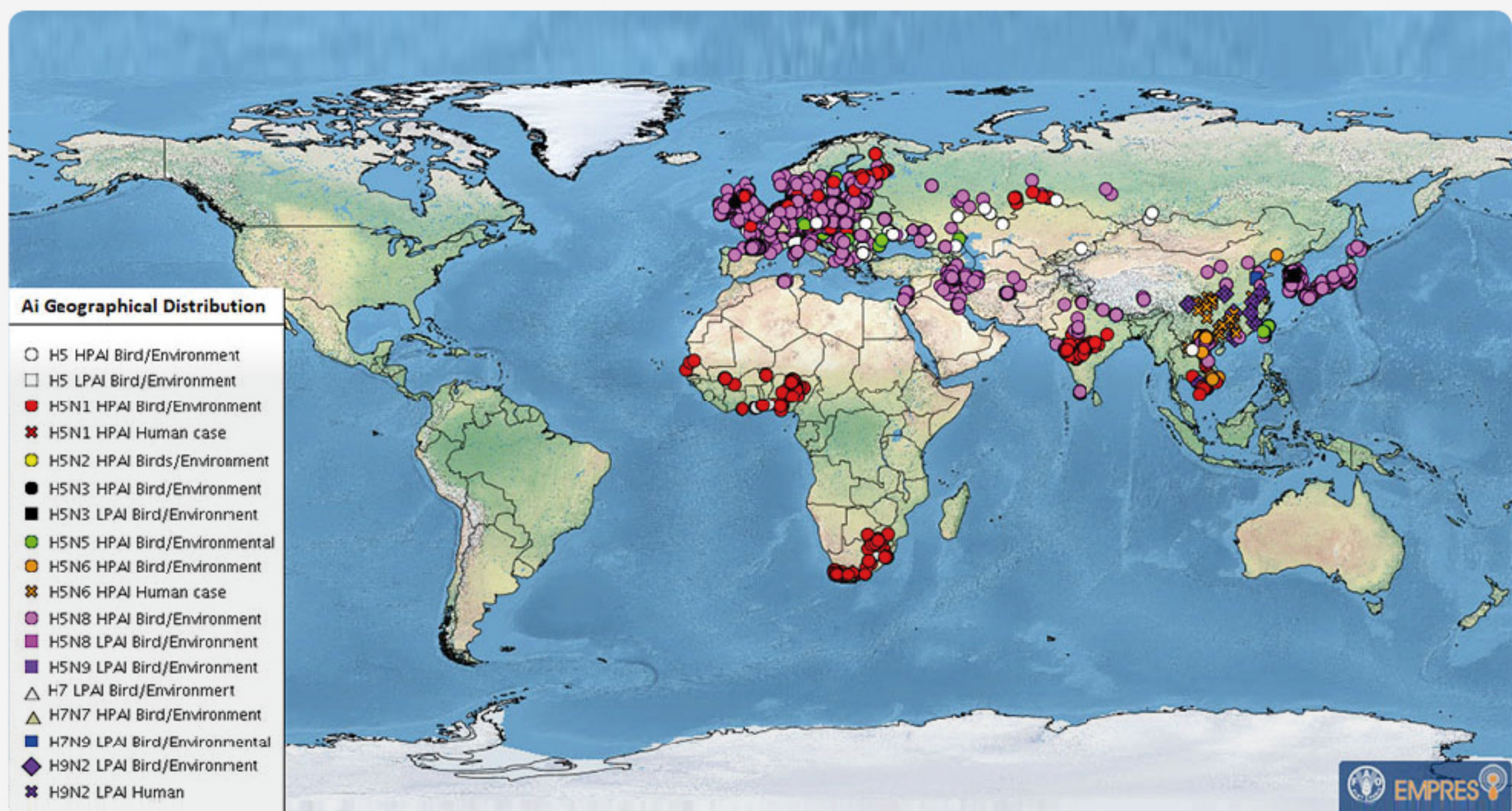


Cat no. AVVS-001

- Delivers results within 1 h 10 min of RNA preparation
- Store at -20°C

## ■ Avian influenza virus (AIV)

Avian influenza (AI) is caused by an influenza type A virus which can infect poultry (Such as chickens, turkeys, domestic ducks, and geese)



Ref : <http://www.fao.org>, 2021

**OPTIPHARM**

# ANIMAL HEALTH MONITORING

## PROCESS & REACTION TIME



**Sample Collection**

Samples collection according to sample type



**DNA / RNA Extraction**

Auto extraction method or manual method



**Real-Time PCR**

1 hour



**Data Analysis**

Use of software for each instrument

- Optipharm Co. Ltd. has been certified by the Animal and Plant Quarantine Agency as a specialized institution for animal disease diagnosis centers.
- Over 60% market share in Korean industrial animal diagnostic market.

# OPTIPHARM

From Animal Science to  
Human Healthcare



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