Review the status of African swine fever (ASF) laboratory diagnostic capacities

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Presentation Outline

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Introduction

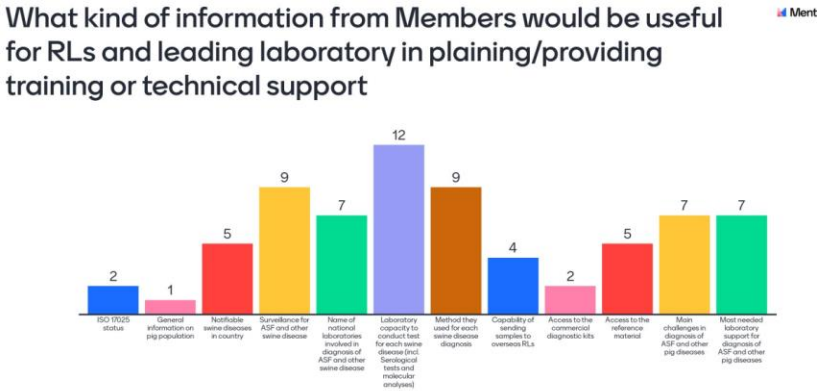
- The SGE-ASF for Asia Pacific identified several priority topics related to ASF.
- Laboratory diagnostic capacity development was one of the identified priorities.
- Much work has been done across the South-East Asia region to build capacity over the past years, there is still a need to:
  - further enhance the laboratory and the field diagnostic capacity;
  - harmonize laboratory diagnostic techniques;
  - facilitate the sharing of information and coordinate laboratory activities amongst national and reference Laboratories.
- The third ASF coordination meeting will:
  - provide platform to share experiences and challenges in ASF diagnosis;
  - assess laboratory capacity of the member countries;
  - discuss measures to enhance laboratory diagnostic capacity; and
  - coordinate laboratory activities to strengthen ASF control.

Introduction

- Objective of the survey
  - to understand the existing laboratory activities and diagnostic tests used by the countries for ASF diagnosis;
  - to understand the challenges faced by countries in ASF diagnosis;
  - to understand the areas of support required by the member countries to enhance ASF diagnosis from OIE/FAO/other partners/ RLs;
  - to seek recommendations to enhance diagnostic capacity of the members and to strengthen ASF control in the region.

Survey Methodology

- Questionnaire preparation
  - recommendations of the first meeting of the Regional Laboratory Expert on ASF and other pig diseases in Asia and the Pacific on 24 June 2021
  - Further improved during the preparatory meeting of the Third ASF Coordination meeting on 10 August 2021.
- Questionnaire was shared to MCs in MS Form to submit their response virtually
- Members (13 countries) completed online questionnaire
- Analysis and reporting – 4 countries have BSL3 facility
  - Descriptive analysis performed
  - Report status and situation at the regional level



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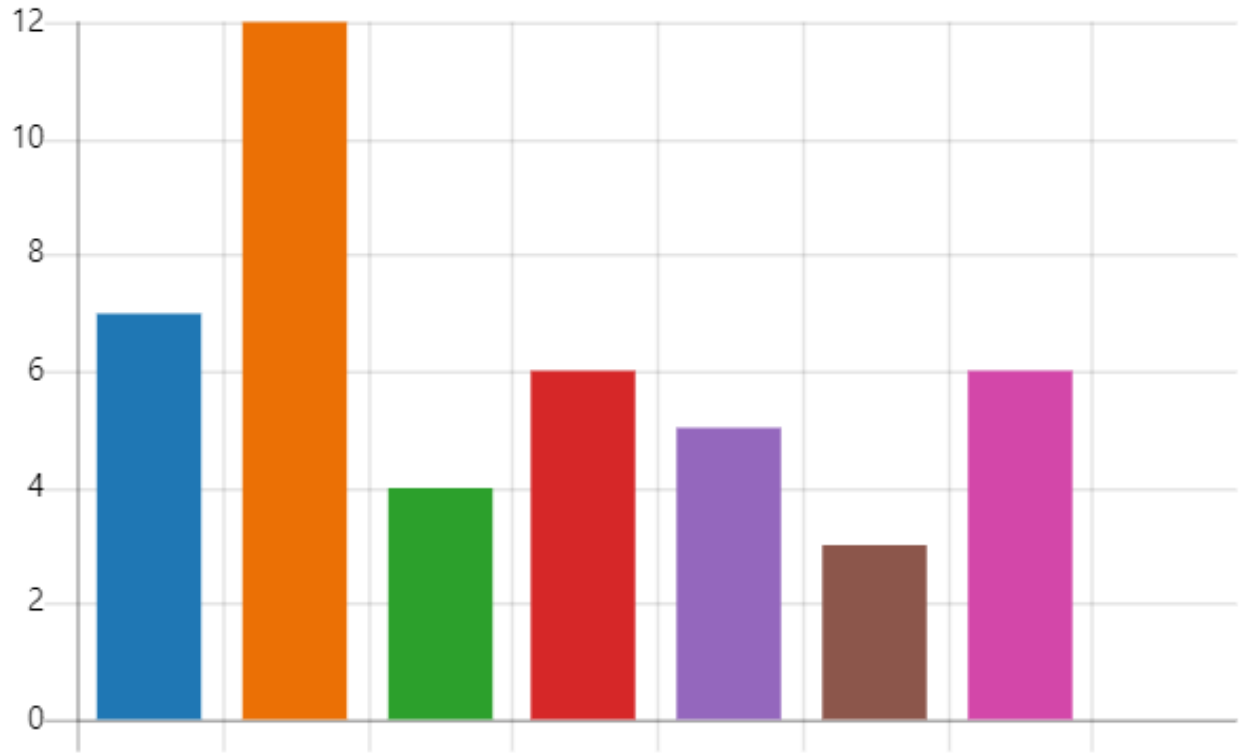
ASF Diagnostic tests – agent identification

Does your country have the capacity to conduct the following laboratory tests for (ASF Virological or molecular) agent identification?

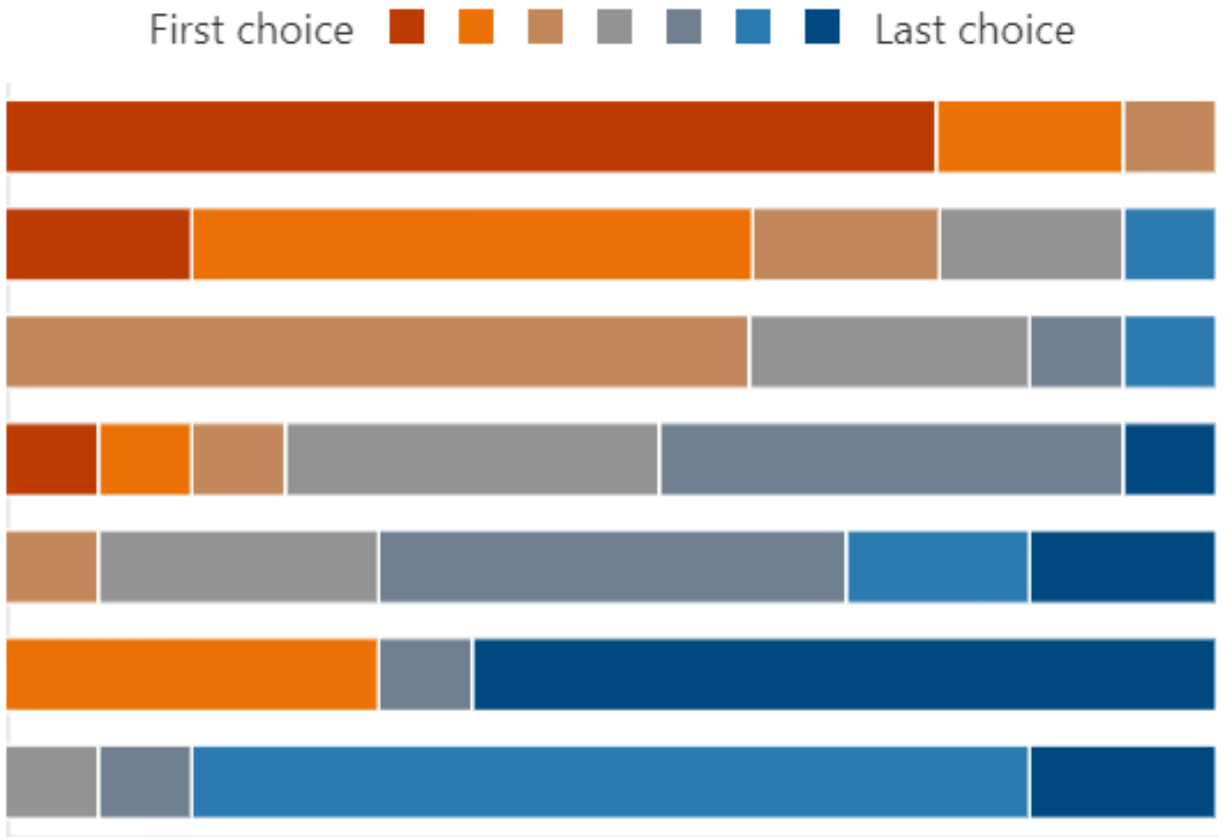
Conventional PCR	7
Real-time PCR	12
Virus isolation/ HAD test (Hae...	4
Antigen ELISA	6
Sequencing	5
Florescent antibody test	3
Field test	6
None	0



ASF Diagnostic tests – agent identification

Rank these tests as per usage/ frequency of use? *One with maximum use should be on the top and the one with minimum use should be last.*

Rank	Options
1	Real-time PCR
2	Conventional PCR
3	Virus isolation/ HAD test (Hae...
4	Antigen ELISA
5	Sequencing (Indicate platform)
6	Field test
7	Florescent antibody test



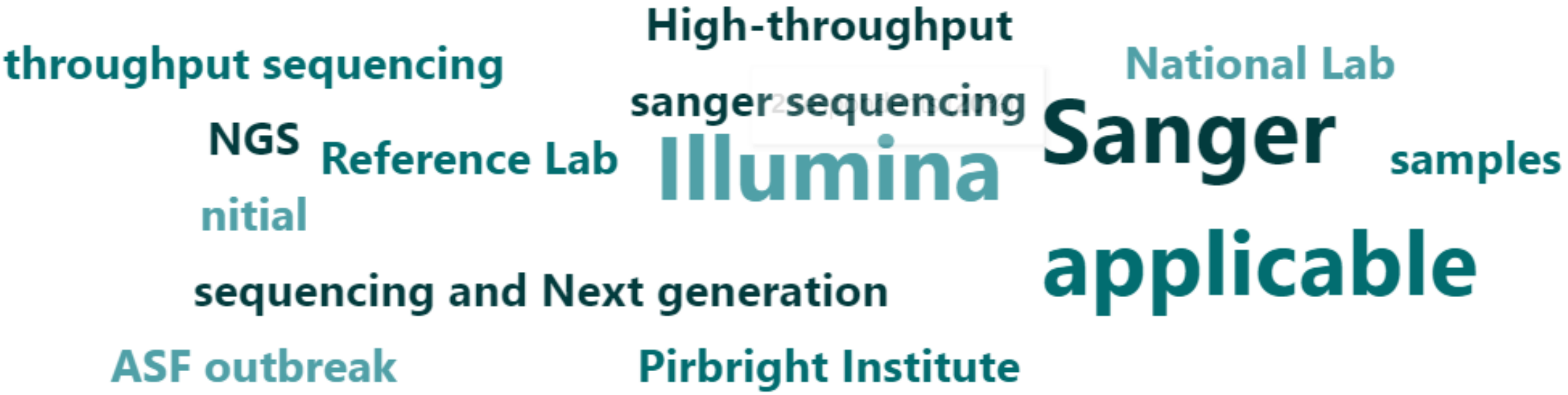
ASF Diagnostic tests – agent identification

If your laboratory is using Antigen ELISA, indicate whether it is in-house test or commercial test kits (with brand name)?

One country is using inhouse Ag ELISA

ASF Diagnostic tests – agent identification

If your laboratory is using sequencing, indicate platform?



ASF Diagnostic tests – agent identification

If your laboratory/ country is using field tests, indicate platform/ device?

ASF Diagnostic tests – agent identification

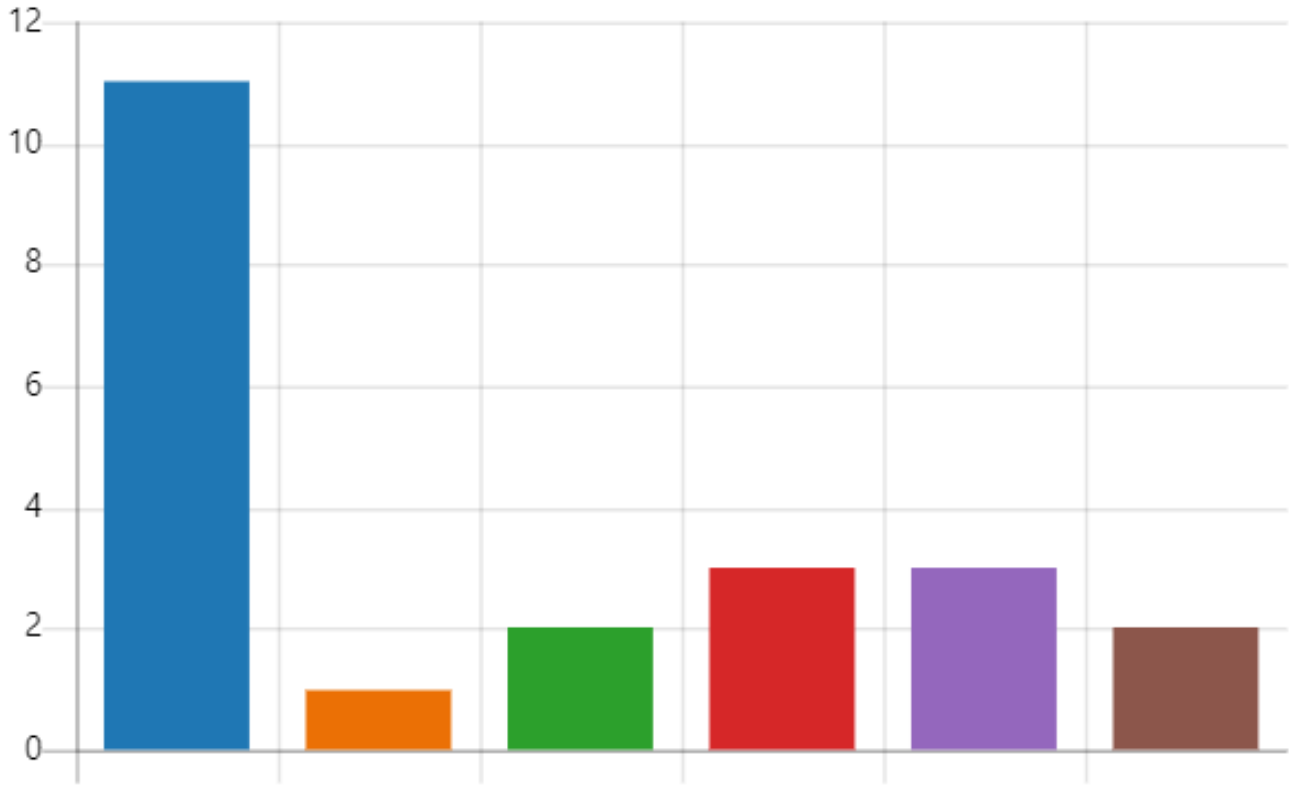
Do you extract DNA from field samples manually or using automatic nucleic acid extraction machine?

Extract manually	5
Extract using automatic nuclei...	5
Other	3

ASF Diagnostic tests – immune response

Does your country/territory have the capacity to conduct the following laboratory tests for (ASF serological tests) detection of immune response?

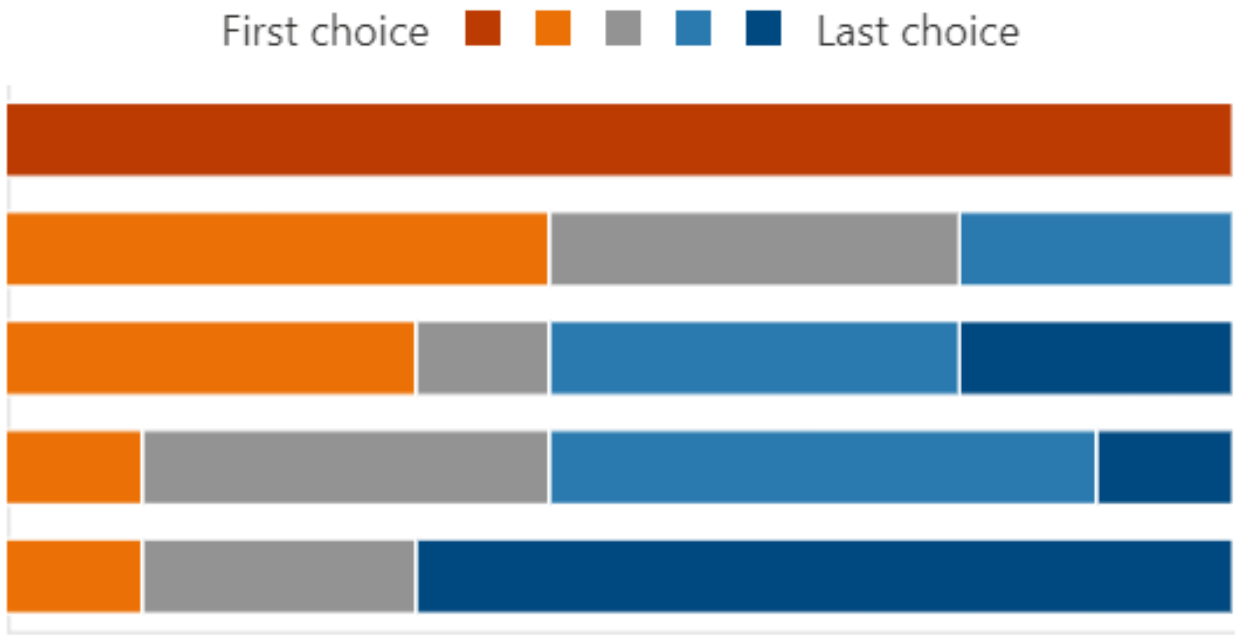
Antibody ELISA	11
Immunoblotting test (IBT)	1
Immunoperoxidase test (IPT)	2
Indirect fluorescent antibody t...	3
Lateral flow device (antibody)	3
None	2



ASF Diagnostic tests – immune response

Rank these tests for detection of immune response as per usage/ frequency of use? *One with maximum use should be on the top and the one with minimum use should be last*

Rank	Options
1	Antibody ELISA
2	Immunoblotting test (IBT)
3	Indirect fluorescent antibody t...
4	Immunoperoxidase test (IPT)
5	Lateral flow device (antibody)



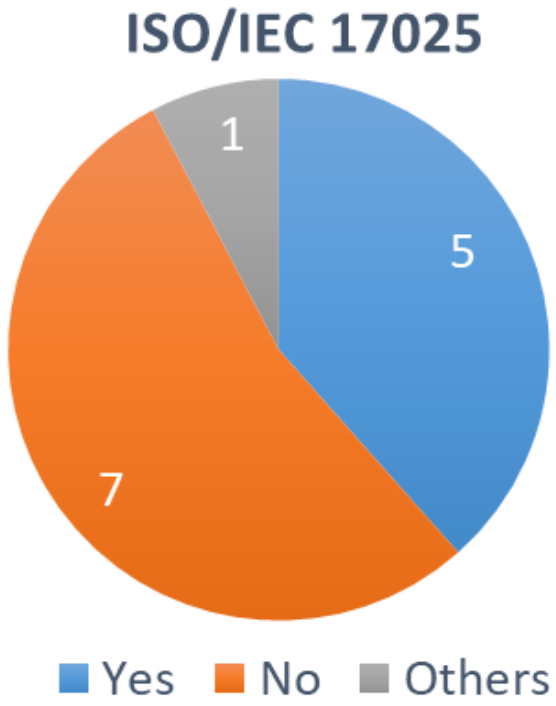
ASF Diagnostic tests – immune response

If your laboratory is using Antibody ELISA, indicate whether it is in-house test or commercial test kits (with brand name)?

Non of the country is using inhouse Ab ELISA

Laboratory tests accreditation

Lists the tests (for ASF diagnosis) in your laboratory that are accredited to ISO/IEC 17025?



- RT-PCR – 3
- PCR – 1
- RT-qPCR – 1
- Ab-ELISA – 2
- ELISA -1

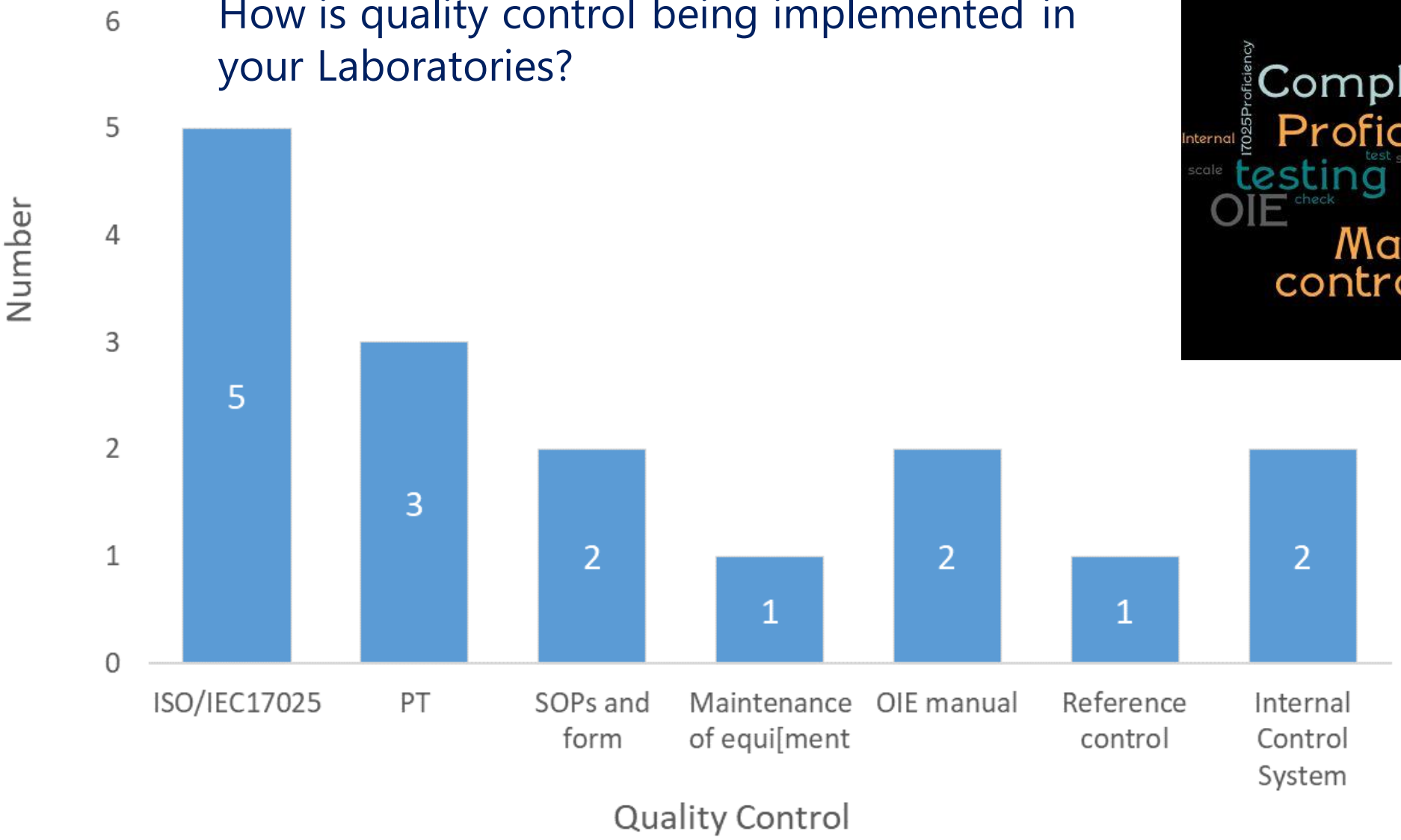
Biocontainment classification of the Laboratory

What is the biocontainment classification of the laboratory where you perform routine diagnosis for ASF?

Test type	Biocontainment classification	Number of countries
Molecular tests	BSL2	6
Virus isolation	BSL3	5
Serological tests	BSL2	6
	BSL 2plus	2
	BSL2	1
	Biosafety cabinet	2

Quality Control in the Laboratory

How is quality control being implemented in your Laboratories?



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Logistics and challenges

Does your country have successful experience in shipping samples to overseas OIE Reference Laboratories for ASF?

Yes	4
Yes, but it took very long time	3
No	6

Logistics and challenges

For ASF infected country, how did you deal with surge of samples due to increased ASF outbreaks?

- Laboratory network partnership
- Mobile lab and portable qPCR
- RT-PCR – staff rotation
- Inter laboratory partnership
- Enhance Capacity of provincial laboratories
- Govt proclamation of State of emergency
- Project support
- Confirmation
  First – National Lab
  Subsequent - PL
- Pooling of samples
- Shift system and overtime payment

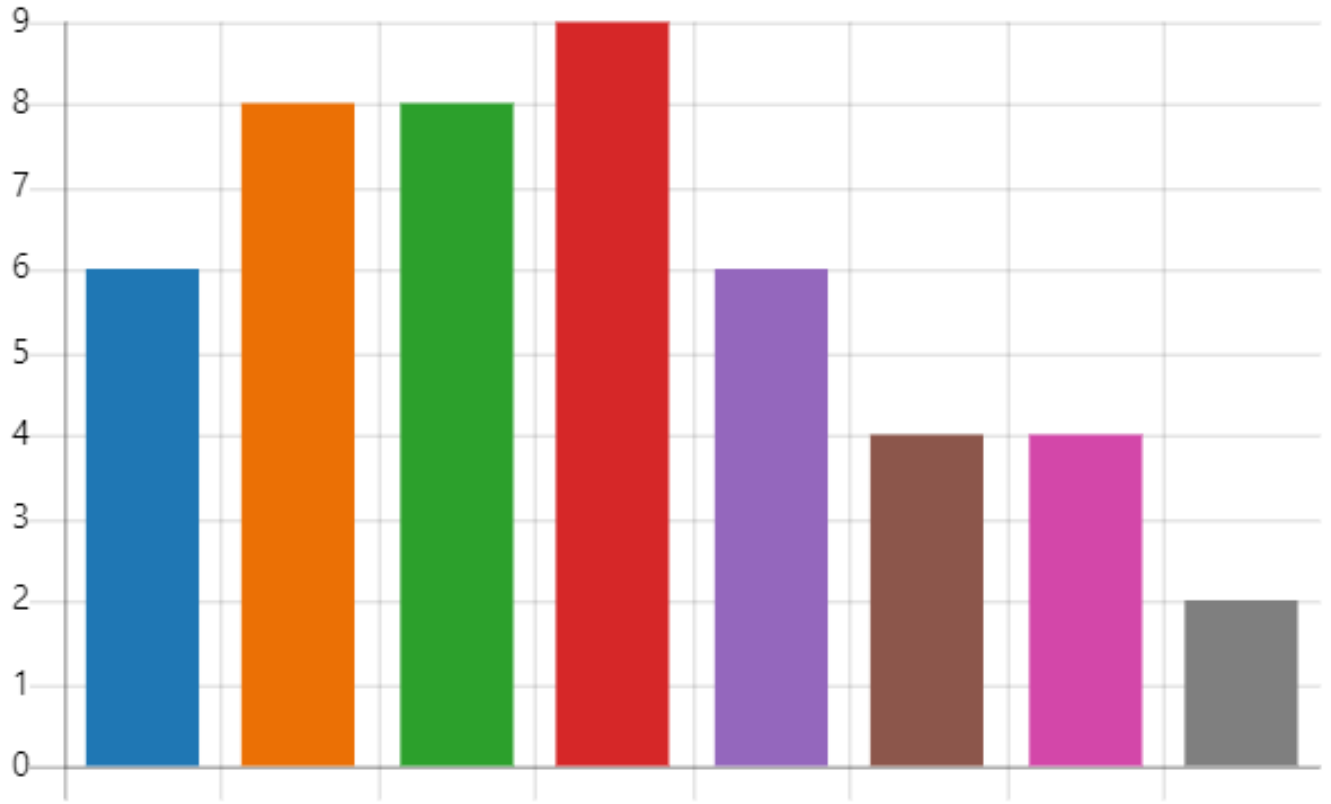
For ASF free country

- Laboratory network partnership
- Contingency Plan in place
- Laboratory capacity building

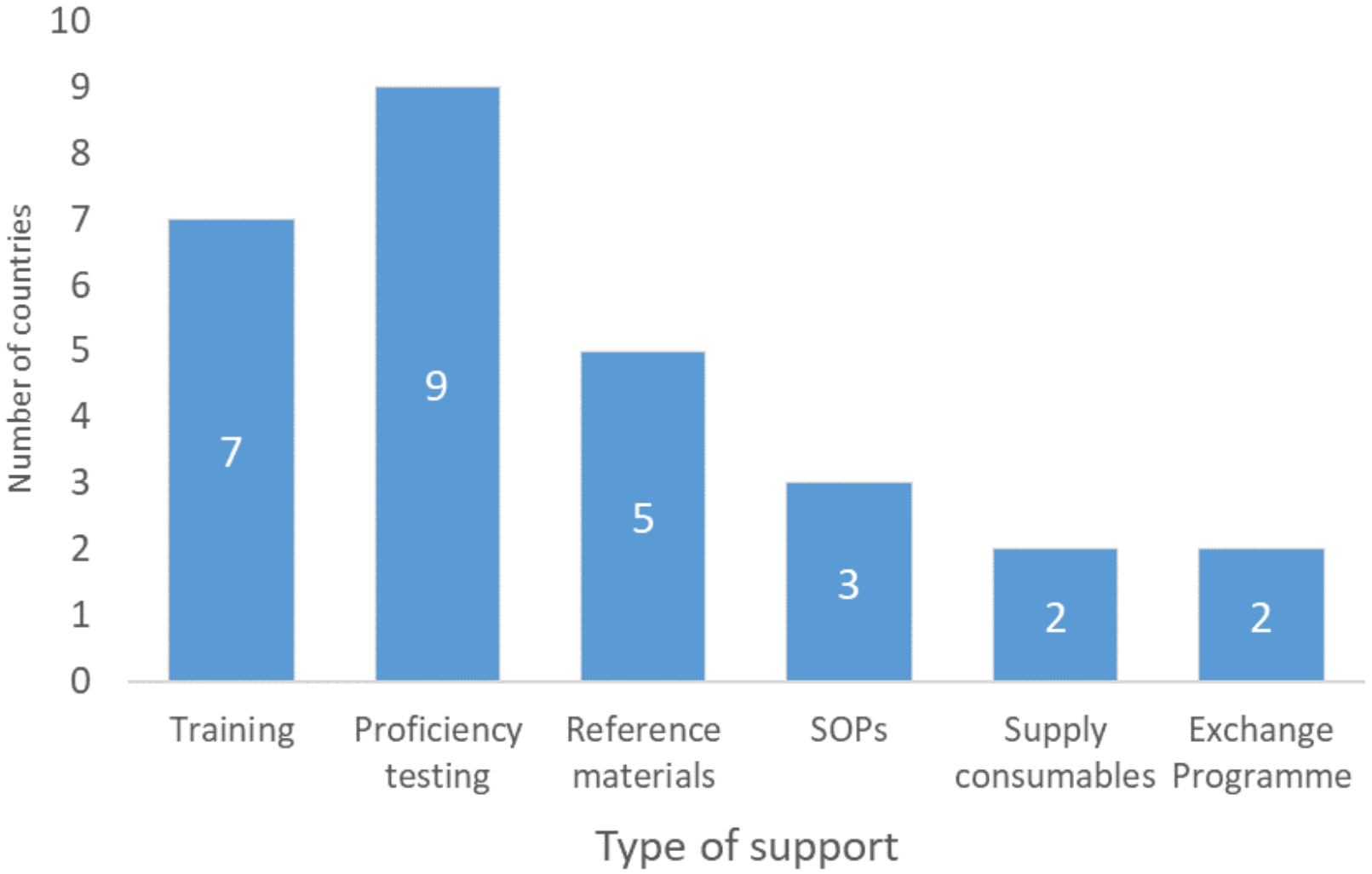
Logistics and challenges

What are the main challenges in your country in the diagnosis of ASF and other pig diseases? *Select relevant challenges faced by your country.*

Lack of human resources	6
Lack of fund	8
Availability of diagnostic kits a...	8
Availability of reference materi...	9
Lack of technical capacity	6
Poor laboratory infrastructure/...	4
Poor reporting and submissio...	4
Other	2

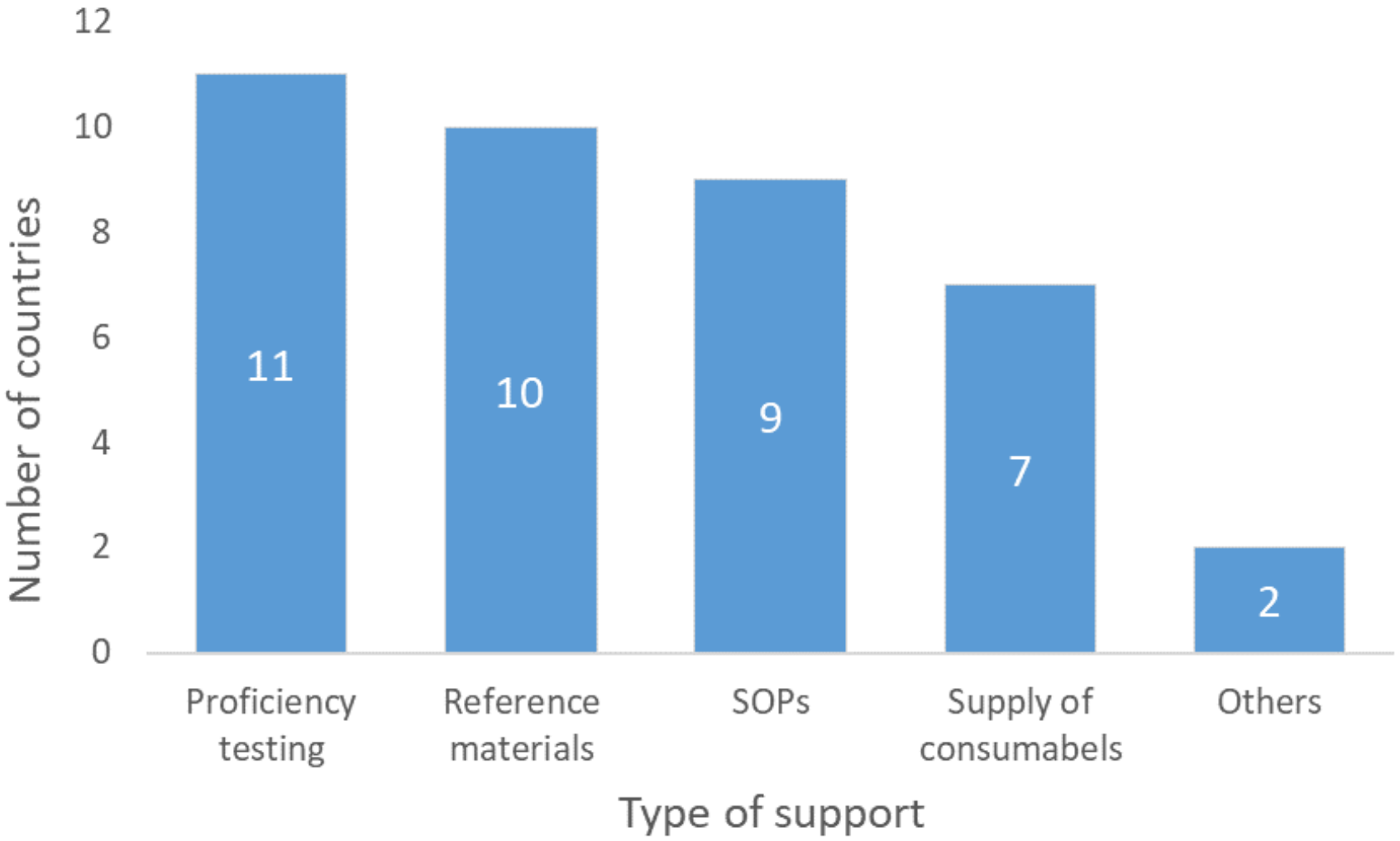


Technical support received from Reference Laboratories



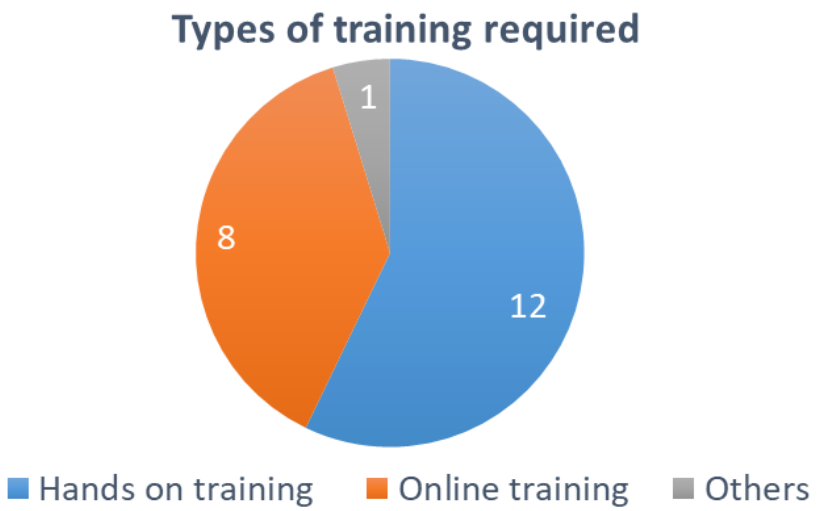
12 countries received technical support from Reference Laboratories

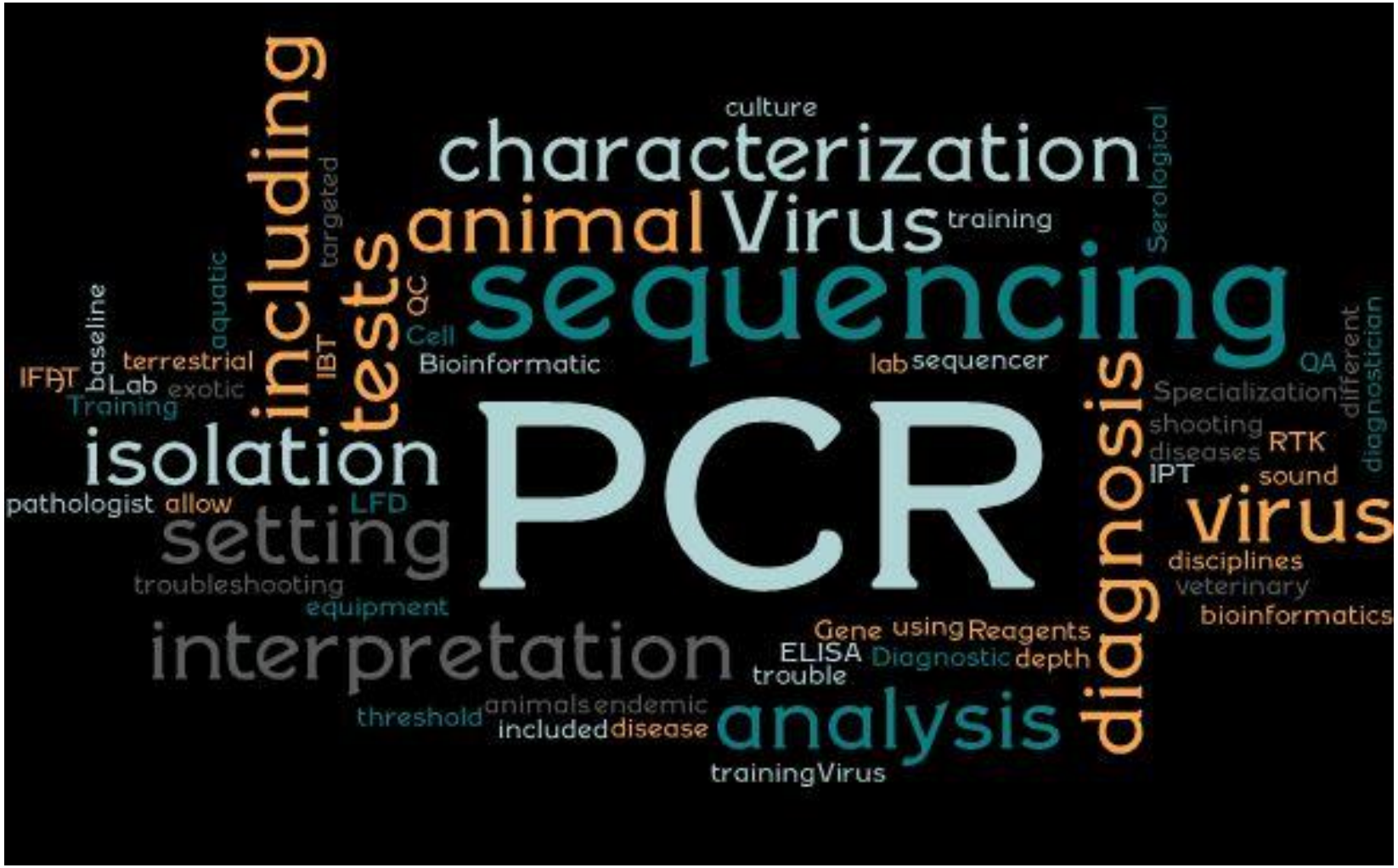
Technical support expected from OIE/FAO/Partners & RL



11 countries expected technical support

Laboratory training support expected from OIE/FAO/Partners & RL





Any other comments

- Awareness and reporting
- Training on disease recognition, sample collection and submission
- Technical support – PT, Ref materials, SOPs
- Support in providing supplies – automatic DNA extraction machine, PCR machine, thermocycler, refrigerated centrifuge
- Lab biosafety and biosecurity
- Test validation

Conclusion

- Survey provides useful information on:
  - Type of tests used by the Member countries
  - Biocontainment facilities
  - Biosafety and quality control
  - Main challenges faced by MC
  - Technical support received from Reference Laboratories
  - Expected support from OIE/FAO/ Partners and RL
- Way forward
  - Detail analysis and produce report with recommendations

Thank you for your attention

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