



The goal of our twinning project
(including introducing the Asian
proficiency test)

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Animal Health Research Institute



• Twinning

- a **formal** and **substantive** collaboration between two organizations

• Benefits of Twinning

– Capacity building

- strengthen the organizations involved through a transfer of skills and knowledge.

– Exchange of best practices

- provides opportunities to identify policies, techniques and interventions that have worked and to spread the word about them.

– Effectiveness

- collaborating on a specific initiative results in stronger and more effective programmes.

– Relationship building

– Networking

- contribute to greater networking through the snowball effect
- i.e. both organization involved in the twinning project are exposed to each other's existing (mostly local) networks.

– Solidarity

- Twinning helps to create a feeling of belonging to a larger community. Organization involved in twinning are often inspired by the work of their partners.

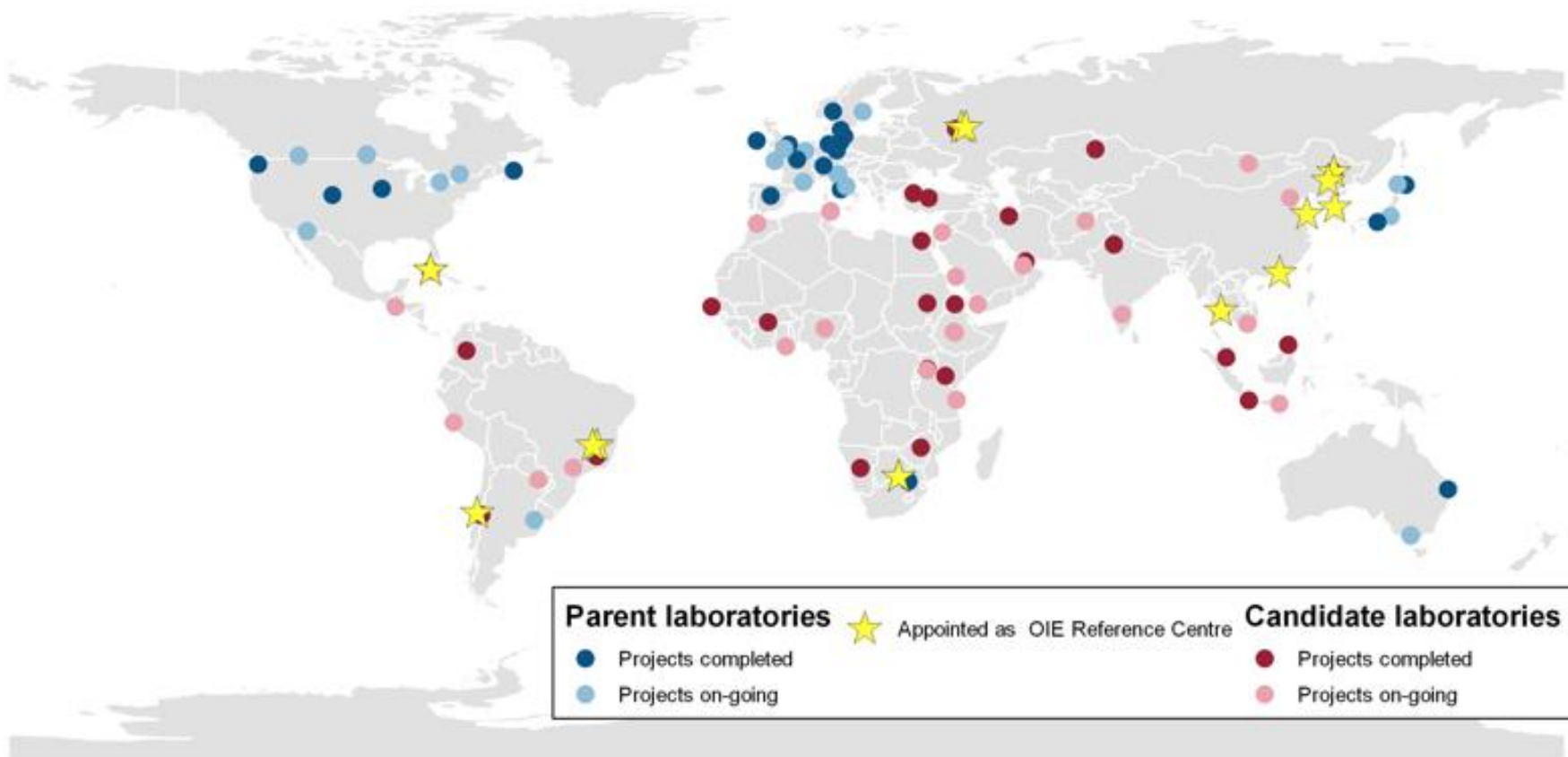


- OIE Twinning Project

- In the scope of animal diseases and zoonoses
- benefiting the whole international community
 - advancing the global capacity for disease prevention, detection, and control, as well as leading in more well-distributed expertise
 - strengthening global disease surveillance networks through better veterinary governance and service
- The benefits brought up by the OIE Twinning Project need to be sustained
- The Candidate getting growth needs to actively take part in the affairs of international scientific community



OIE Laboratory Twinning Projects





2018 LAUNCHING MEETING OF OIE TWINNING PROJECT FOR RABIES BETWEEN ANSES-NANCY AND AHRI



- 協辦單位: OIE, ANSES, 行政院農委會
- 主辦單位: 家畜衛生試驗所
- 協辦單位: 行政院農業委員會動物防疫檢疫局, 國立臺灣大學





Nancy Laboratory for Rabies and Wildlife



AHRI 行政院農業委員會家畜衛生試驗所
Animal Health Research Institute, CIA, IT

Objectives of our twinning project

	Mission subjective of Work package	Partner / stakeholders	Goal
1	Improving quality management of rabies diagnosis/serological tests in compliance with OIE Standards and International Standards	OIE, Anses-Nancy/AHRI, BAPHIQ, Global border control, Diagnosis clients	<ul style="list-style-type: none"> Increasing the quality of diagnosis procedure Accreditation of ISO17025
2	Strengthening surveillance capacity of AHRI for rabies control	Anses-Nancy/AHRI, BAPHIQ, Public, Veterinary service,	<ul style="list-style-type: none"> Facilitating the transparency of rabies epidemics in Taiwan
3	Elucidations on pathogenicity of Formosan ferret badger rabies virus	Anses-Nancy/AHRI, BAPHIQ	<ul style="list-style-type: none"> Evaluating the possibility of cross-species infection
4	Development of proficiency testing organization for rabies diagnosis in Asia region	OIE, Anses-Nancy/AHRI, Asian network	<ul style="list-style-type: none"> Offering service sustainably to improve rabies diagnosis regionally



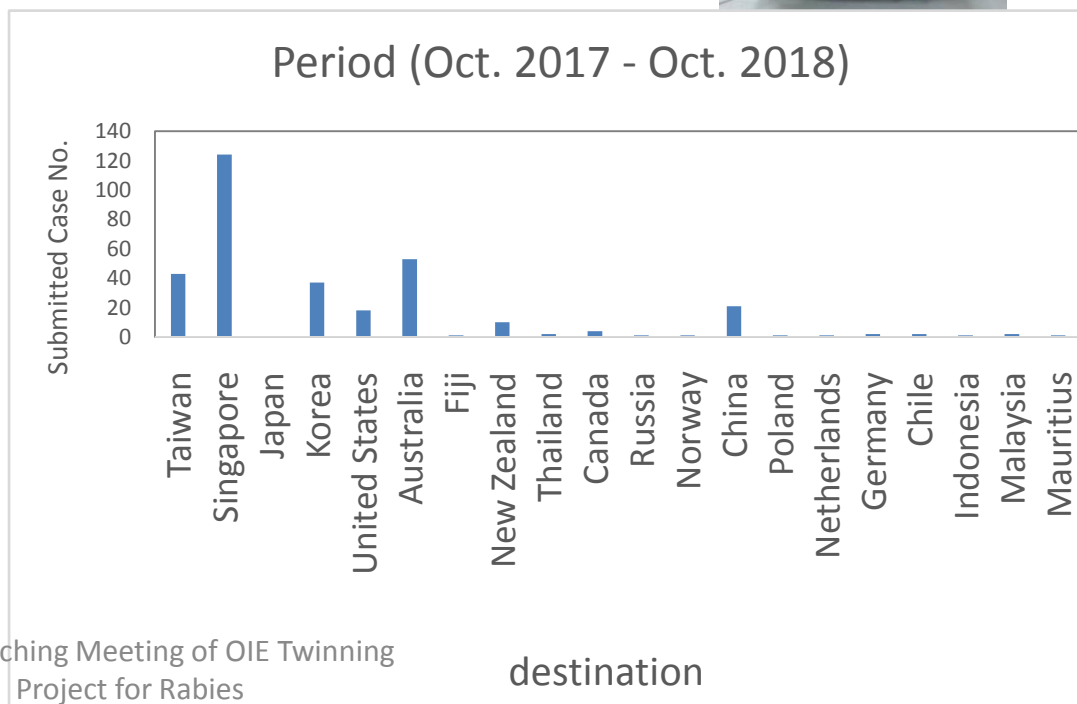


Work package 1– Improving quality management of rabies/rabies serology diagnosis



Work package 1– Improving quality management of rabies/rabies serology diagnosis

- European Union approved rabies serology laboratory: Feb. 2017
- Serology testing service to public: Sep. 2017
 - Accumulated in more than 300 cases
- Perfecting quality management
 - For pets imported to Japan
 - For providing high quality service sustainably

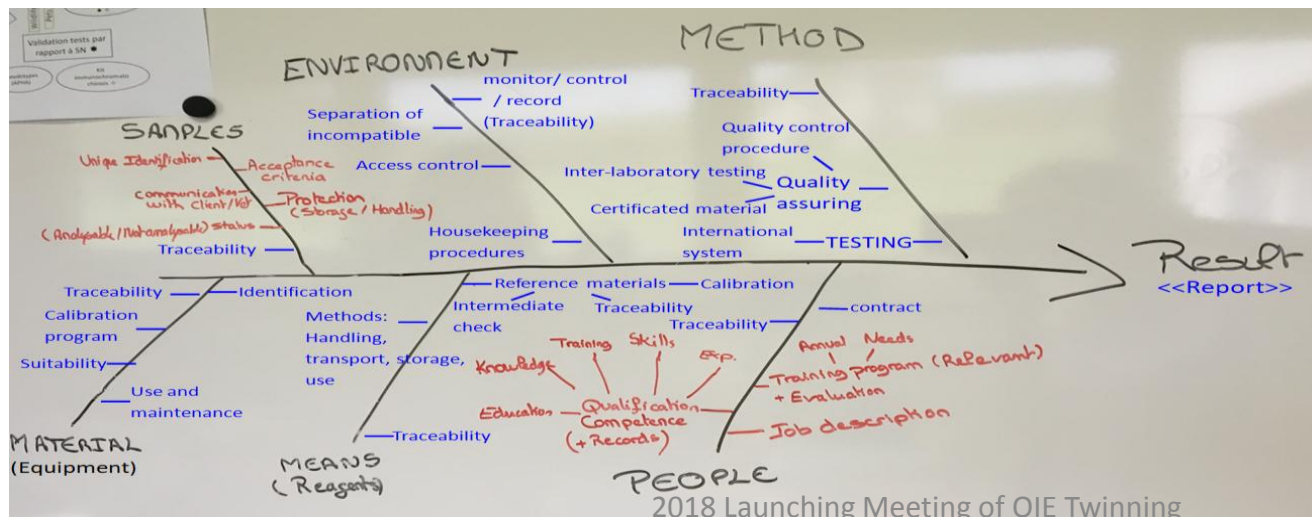




Work package 1– Improving quality management of rabies/rabies serology diagnosis

• Strategy

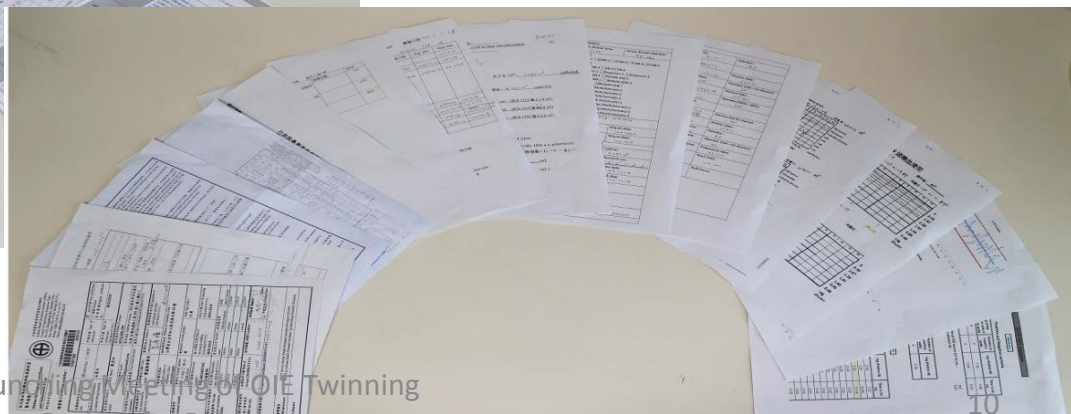
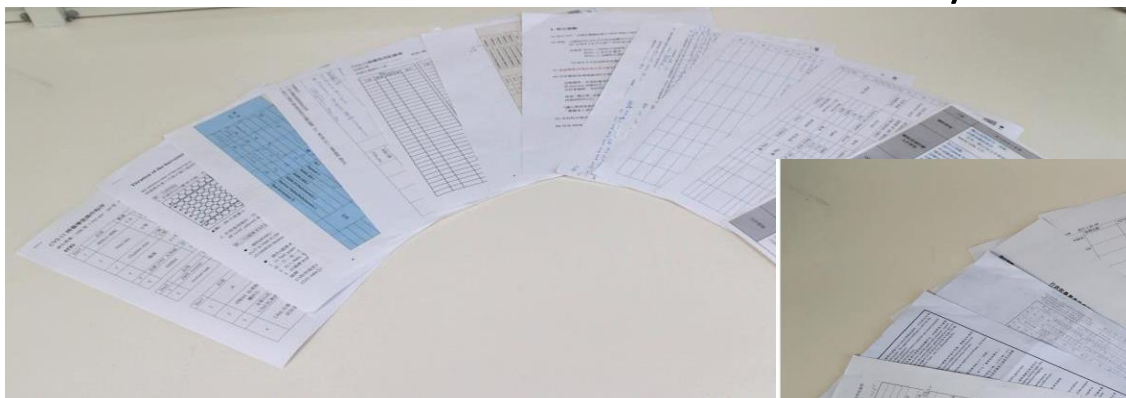
- **Accepting training of quality management procedures in Anses-Nancy**
- Setting up quality management system by AHRI as per Anses-Nancy template
- Accreditation of ISO17025
- Establishment of electronic laboratory information management system





Work package 1– Improving quality management of rabies/rabies serology diagnosis

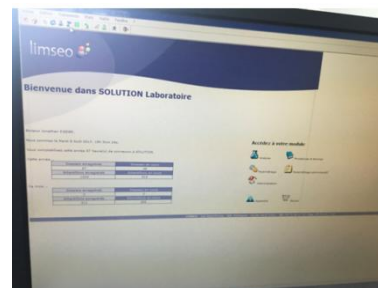
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Work package 1– Improving quality management of rabies/rabies serology diagnosis

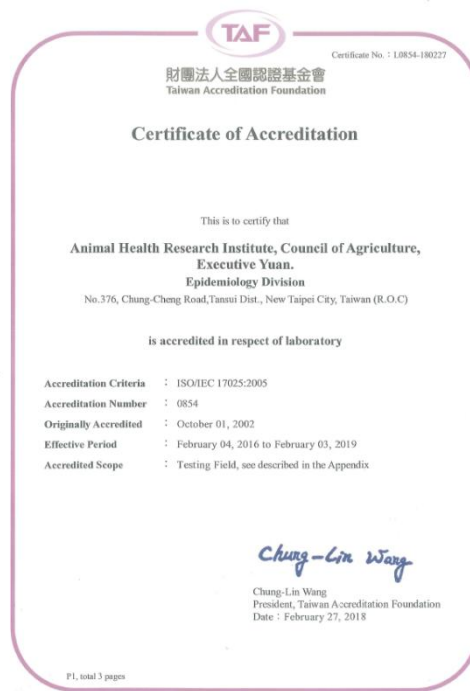
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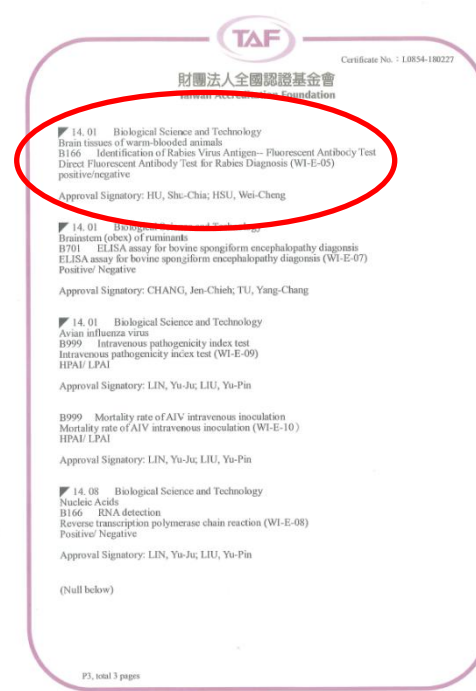


Work package 1– Improving quality management of rabies/rabies serology diagnosis

- Rabies diagnosis procedures
 - FAT has been accredited by ISO 17025
 - Other procedures are going to be as well



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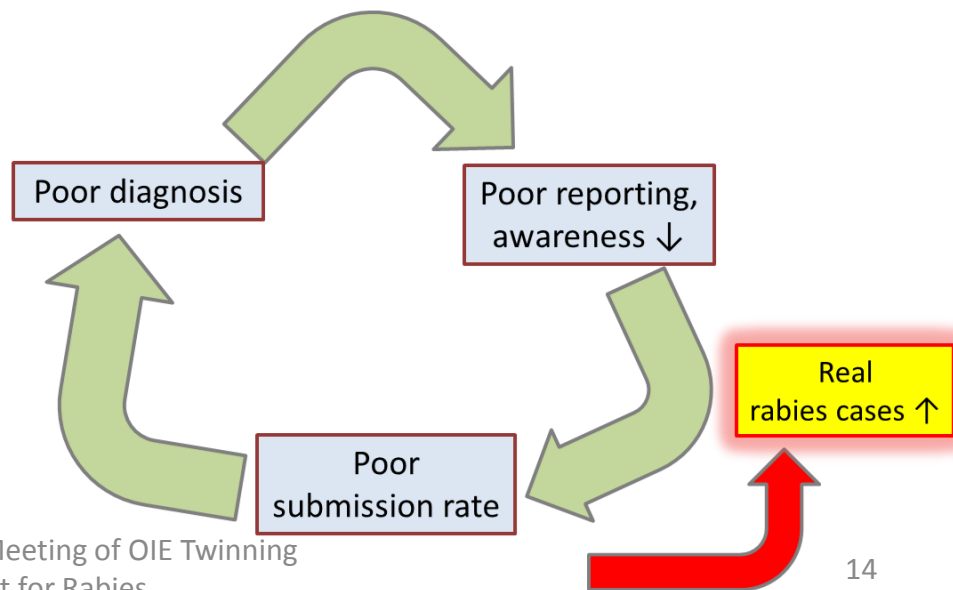


Work package 2– Strengthening surveillance capacity for rabies control



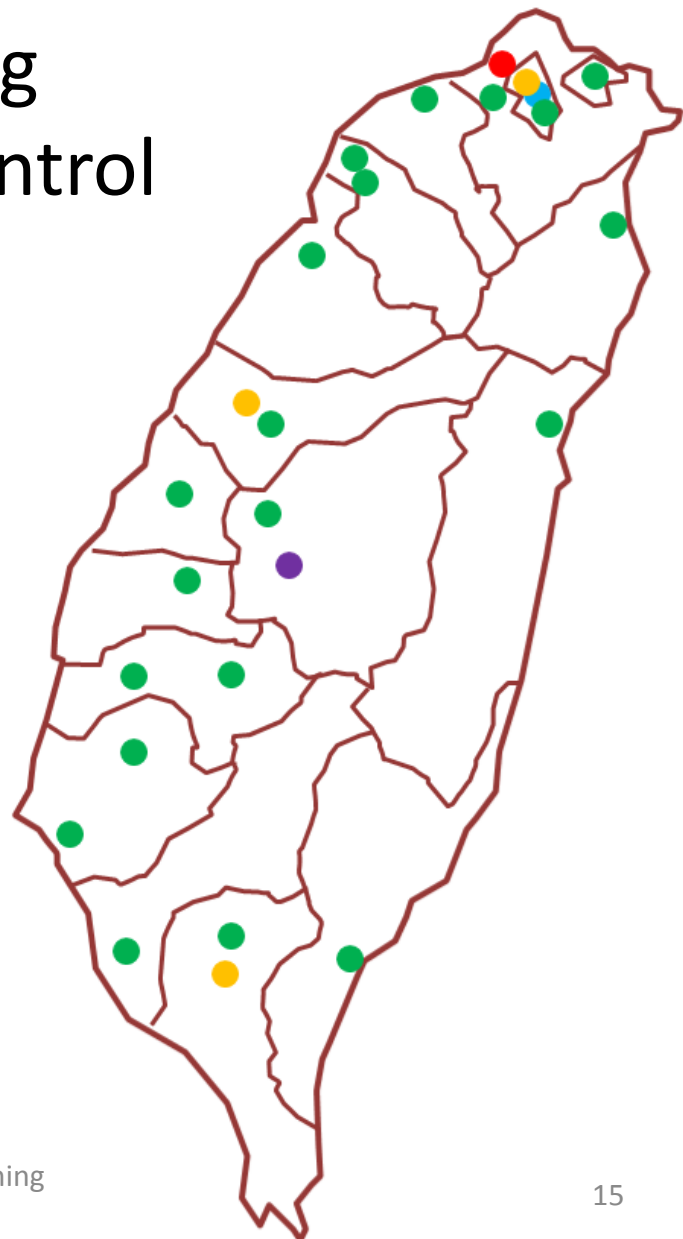
Work package 2– strengthening surveillance capacity for rabies control

- **Transparency in epidemics of animal diseases worldwide**
 - The OIE’s Member Countries to declare cases, [WAHIS](#)
 - Rapid and accurate rabies diagnosis
 - Sound surveillance system
- **Revealing rabies cases and breaking the ‘circle of neglect’**
- **Surveillance facilitates ‘making good decisions with limited data’.**
 - the timing and distribution of rabies
 - practical steps for management, control or elimination of rabies; true burden





Work package 2– strengthening surveillance capacity for rabies control



Role in surveillance	Contributor	Symbol
Specimen collection	The public & NGOs for roadkill	Whole Taiwan
Specimen submission	Local animal disease control centers	●
	ESRI	●
Diagnosis & reporting	AHRI	●
	Screening labs	●
Data-integration / sharing	BAPHIQ	●



Work package 2– strengthening surveillance capacity for rabies control

- Developing the case study model
 - A copy of teaching material
 - Joint workshop with guidance of Anses-Nancy, BAPHIQ, CDC
- Anses-Nancy listed 15 questions into 4 categories
 - Some Definitions
 - Rabies Surveillance Method
 - Communication, Network management
 - How to improve the surveillance system?



Work package 2– strengthening surveillance capacity for rabies control

- The workshop was held in **Nov., 2017**; in **middle Taiwan**
- Lecture session: 49 participants
 - Rabies Surveillance and Control: EU Experience
 - Introduction of Rabies Surveillance System and Plan in Taiwan
 - Epidemiology of Ferret-badger Rabies in Taiwan
 - Ecology of Formosan ferret-badger and Sympatric Carnivores
 - Pathogenicity and Future Control of Ferret-badger Rabies in Taiwan

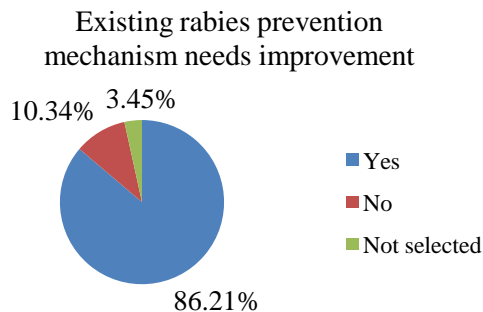
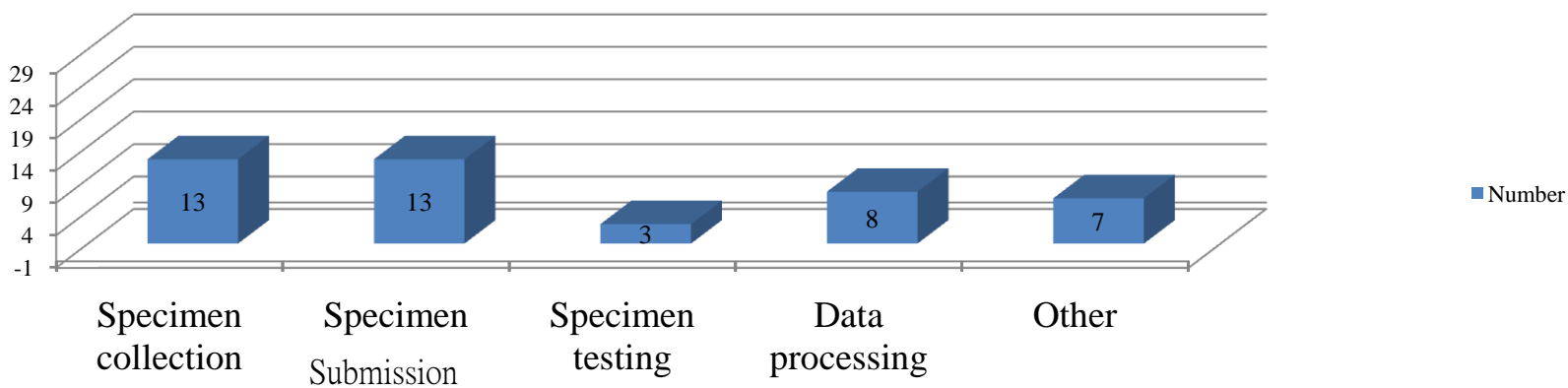




Work package 2– strengthening surveillance capacity for rabies control

- Discussion based on case study: 45 participants

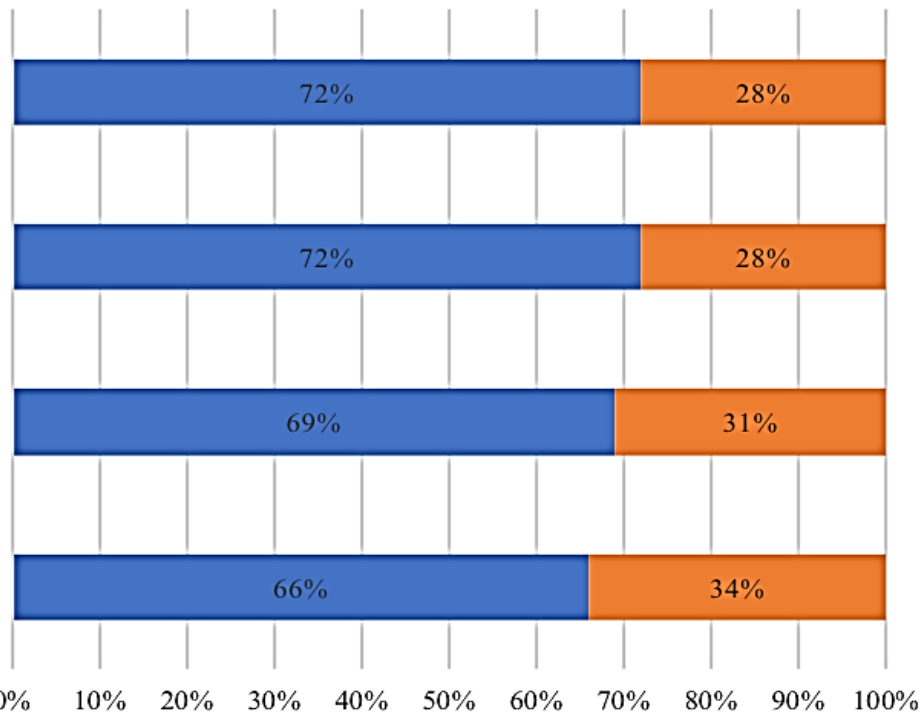
Roles in the rabies surveillance system (multiple selections)





Work package 2– strengthening surveillance capacity for rabies control

- A discussion-based course provided you a full understanding of rabies surveillance measures in Taiwan



Continue to attend rabies-related courses in the future

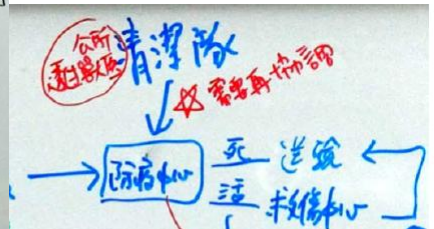
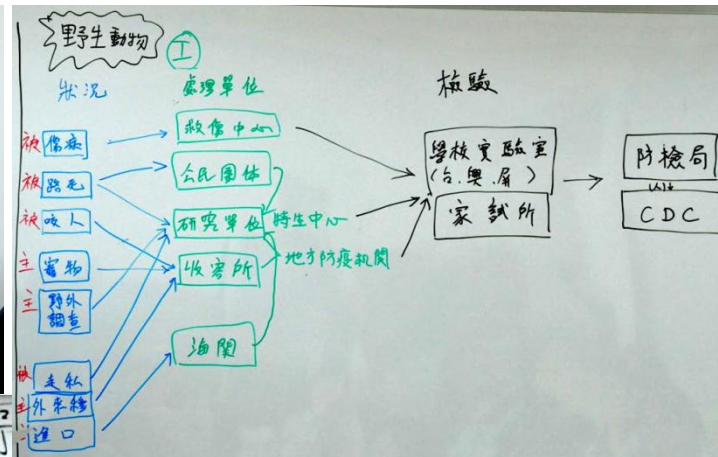
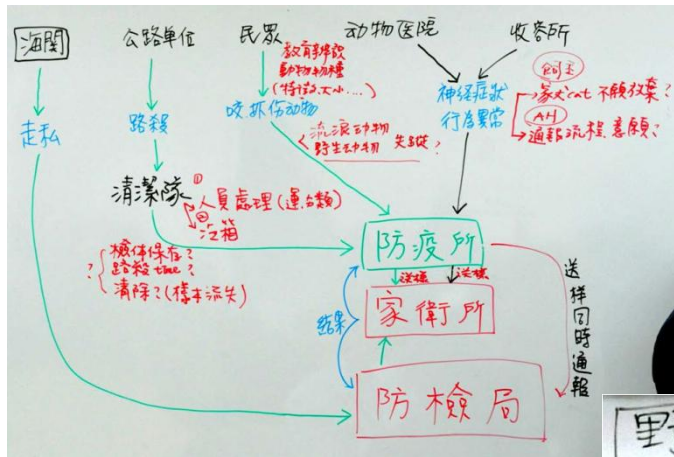


■ Agree (5)
 ■ Partially agree (4)
 ■ Neutral (3)
 ■ Partially disagree (2)
 ■ Disagree (1)



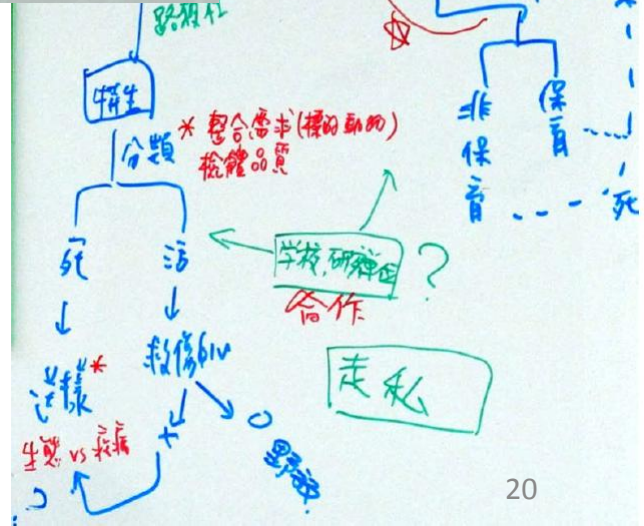


Work package 2– strengthening surveillance capacity for rabies control



林務局, 民眾, 公路局, 動物相關社團協會
生態研究單位, 原住民等
↓
檢到, 捕捉到
↓
通報防疫機關
相關單位
↓
分類後送到
淡水家衛所
or
初篩實驗室
↓
送到人, 老鼠, 夜巴的雞, 地鼠等
↓
通知檢驗結果

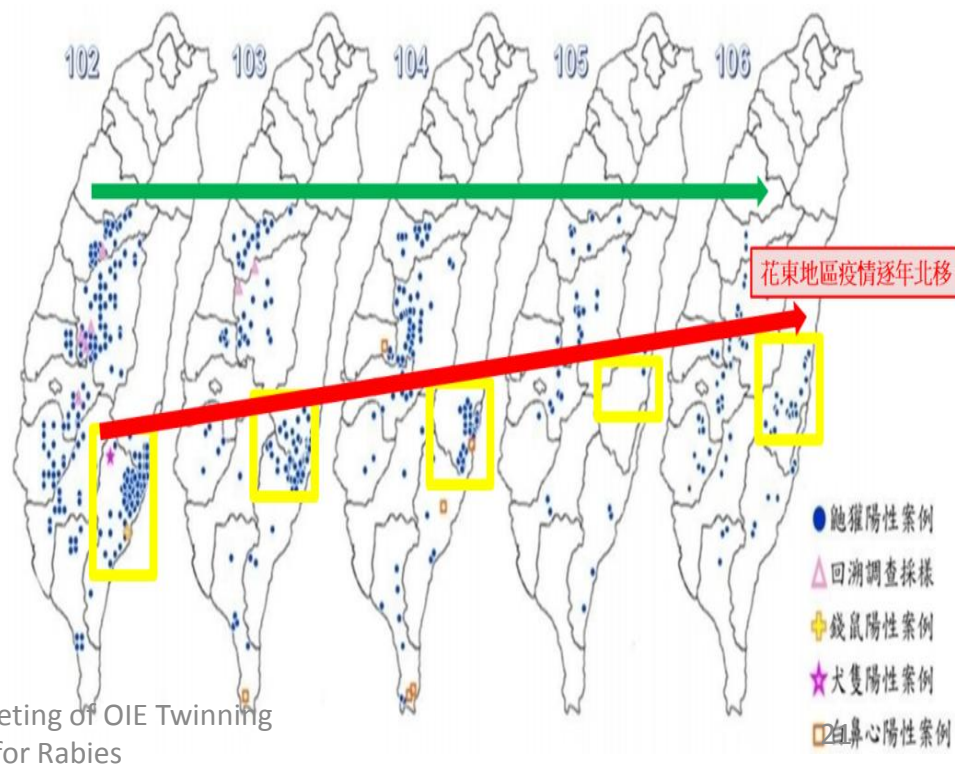
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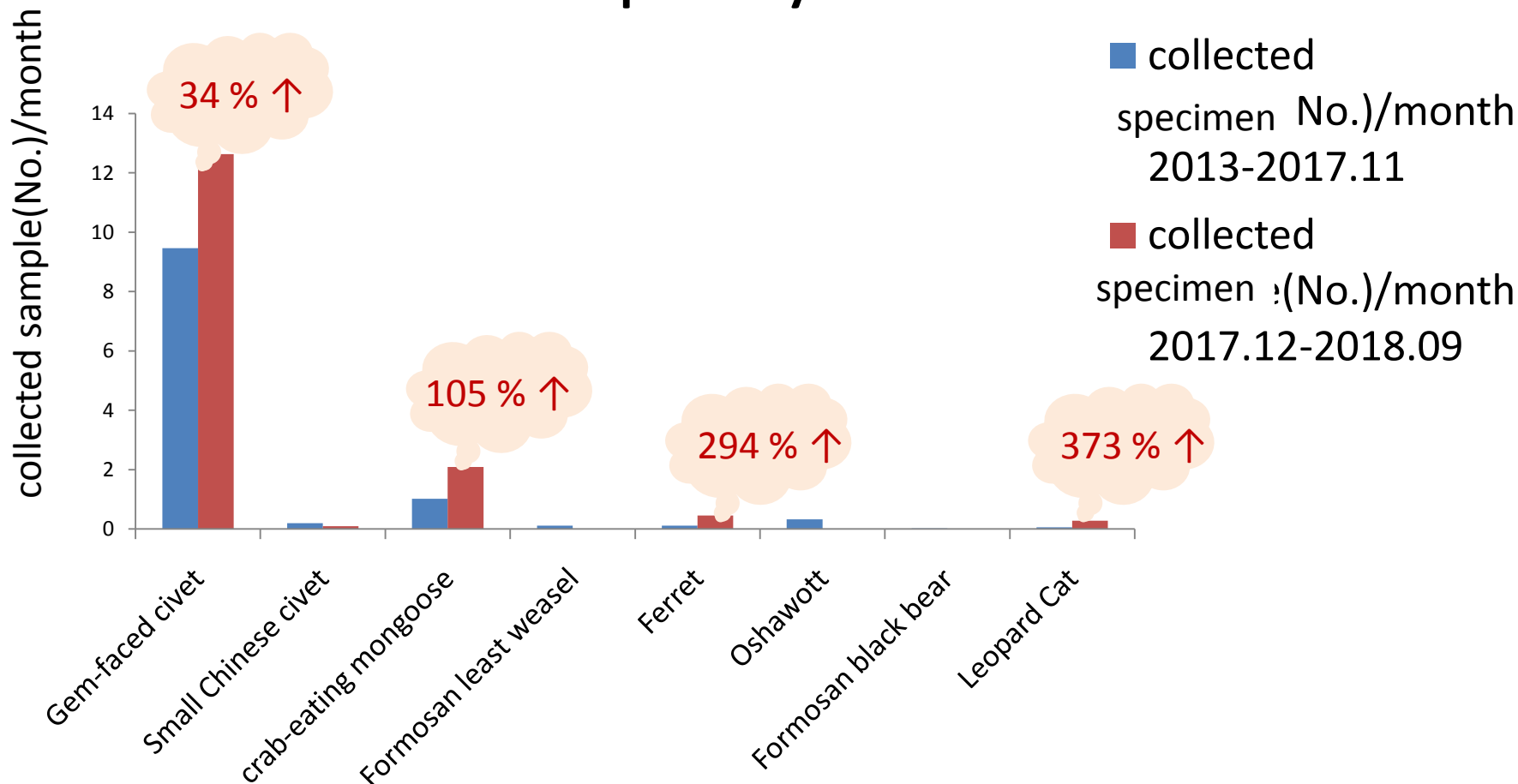
Work package 2– strengthening surveillance capacity for rabies control

- The recommendations derived from the surveillance workshop
 - 73% submitted specimen of carnivores are ferret badgers, so local veterinarians are encouraged to increase the of diversity on submitted animal species
 - Aboriginal people have the traditional culture of capturing and eating wild animals→the target of promoting rabies prevention awareness.
 - The epidemics trend in northward spreading and deficient specimen
 - input into surveillance chain in eastern Taiwan should be addressed







Work package 2– strengthening surveillance capacity for rabies control





Work package 2– strengthening surveillance capacity for rabies control

- A good progress on specimen collections in eastern Taiwan this year, thank to
 - BAPHIQ 
 - Animal and plant disease control center of Hualien 
 - Wildlife scientist, Dr. Chen-Chih Chen

Year	the number of submitted samples
Submission	26
2014	23
2015	29
2016	5
2017	31
2018 (calculated to August)	48



Work package 2– strengthening of surveillance capacity for rabies control

- A surveillance workshop in eastern Taiwan: 20th Oct (this Sat.)
 - With guidance of Anses-Nancy
 - To both local veterinary officers engaging sample collection/submission and aboriginal public



Nancy Laboratory for Rabies and Wildlife

2018 RABIES 狂犬病教育訓練 (花蓮場)

2018 | 五 | 13:00-17:15

>1019 | 花蓮縣萬榮鄉衛生所 會議廳 (花蓮縣萬榮鄉萬榮村123號)

時間	活動內容
13:00 – 13:30	防疫所及鄉鎮公所歡賓報到
13:30 – 13:45	貴賓致詞
13:45 – 15:30	狂犬病監測教育訓練
15:30 – 15:50	總結及合照
15:50 – 16:10	茶點
16:10 – 16:40	狂犬病教育訓練(民眾)
16:40 – 17:15	頒獎證書
17:15 –	總結及賦歸

AHRI 行政院農業委員會動物衛生研究所

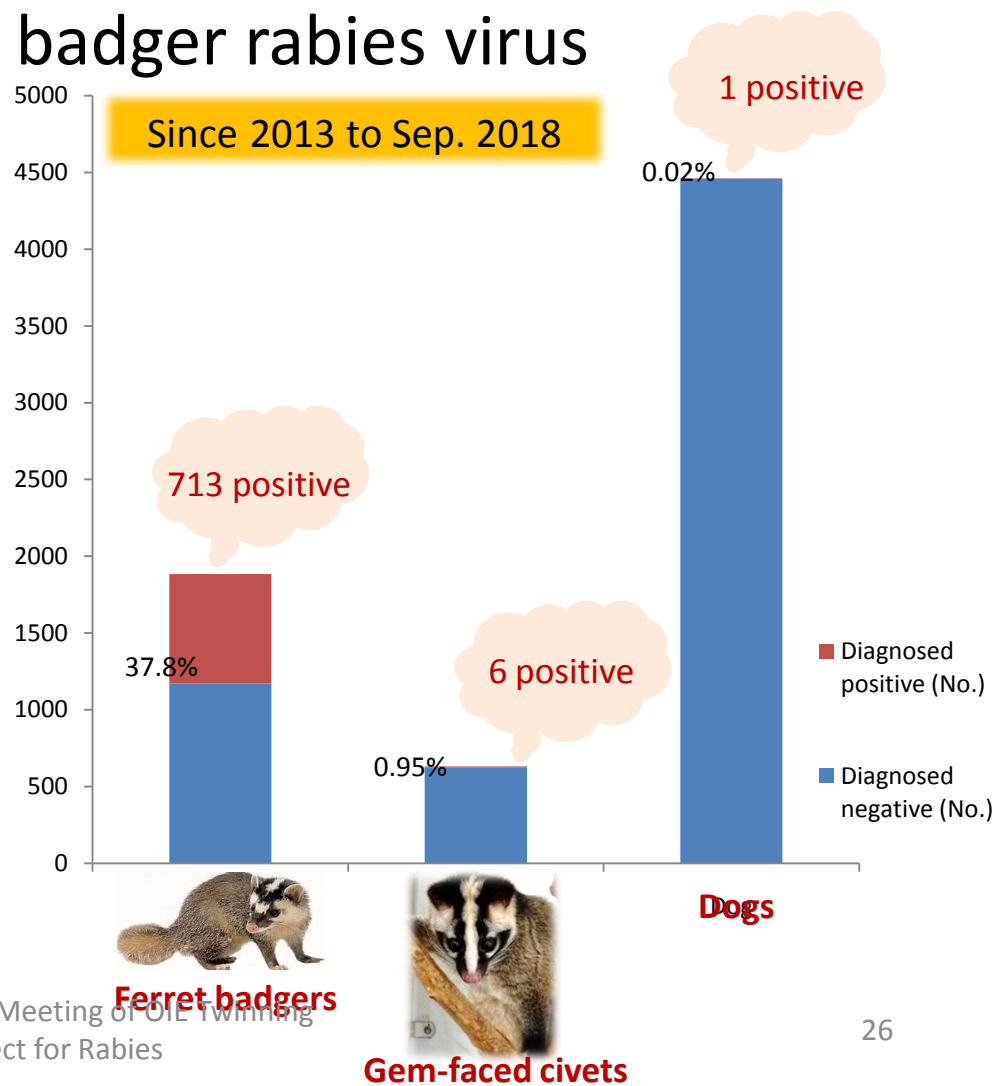


Work package 3– Elucidations on pathogenicity of Formosan ferret badger rabies virus



Work package 3— Elucidations on pathogenicity of Formosan ferret badger rabies virus

- Since 2013 to Sep. 2018
 - 4,461 dog specimens were examined: 1 positive
 - 262 cat specimens were examined: 0 positive
 - 2,643 wild carnivore specimens were examined: 719 positive
 - 457 other wild animal were examined: 1 positive
- Among total positive animals of 489
 - Ferret badgers: 713/721 (98.89%)
 - Gem-faced civets: 6/721 (0.83%)
 - Shrews: 1/721
 - Dogs: 1/721
 - 1.5 month-old puppy bitten by a rabid ferret badger





Work package 3– Elucidations on pathogenicity of Formosan ferret badger rabies virus

- Titrate Taiwan ferret badgers rabies virus on Formosan ferret badgers and gem-faced civets
 - Compare the discrepancy of lethal dosage
 - Compare the discrepancy of virus load excreted in the saliva
 - Compare the discrepancy of death delay (the period time from inoculation to death)
 - Analyze the differences of virus genomic sequence isolated from both animals



2018 Launching Meeting of OIE Twinning
Project for Rabies





Work package 4– Proficiency testing service for Asian partners





Work package 4–Proficiency testing service for Asian partners

- Interlaboratory test comparisons
 - Checking or certifying the performance of individual operators
 - Checking or certifying the calibration of instrumentation
 - Harmonising existing test methods
 - Evaluating new test methods
 - Assigning values and ranges to standard materials
 - Resolving interlaboratory differences
 - Determining a laboratory's capability to conduct specific diagnostic tests → **Proficiency testing**
- In EU: responsibilities and tasks of the EURL for Rabies
 - the Commission Regulation (EU) No 415/2013 of 6 May 2013
 - amending Regulation (EC) No 737/2008



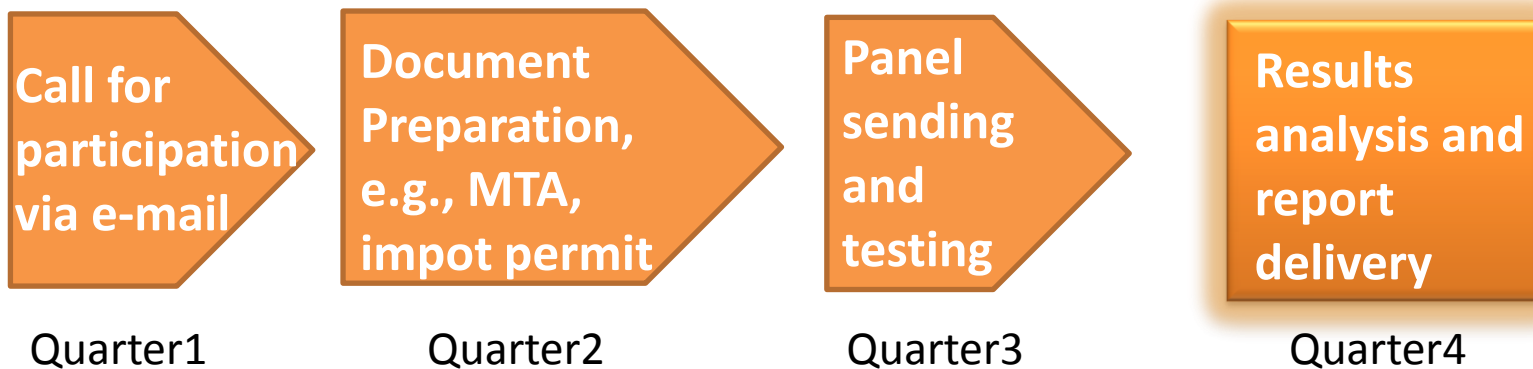


Benefits for participants

- ISO 17025 accreditation
 - interlaboratory comparison/ proficiency testing
- Enrich the diagnosis experiences
 - Diagnosing the viruses abroad
 - Building confidence by succeeding the testing
 - Optimizing diagnosis procedures through comparing inconsistency with other participants revealed in the report
- The only expense afforded by the participants is international shipping cost



Program & schedule planed for PT





Program & schedule planed for PT

Call for participation via e-mail

Quarter1

Document Preparation, e.g., MTA, impot permit

Quarter2

Panel sending and testing

Quarter3

ISO17025 accreditation

Quarter4

- IACUC application
- Mice inoculation
- Emulsion preparation
- Panel lyophilization
- Stability and homogeneity evaluation



Preparation of antigen for the test of rabies diagnosis

Inoculate the mice with seed virus



Collect brain tissues



Homogenization



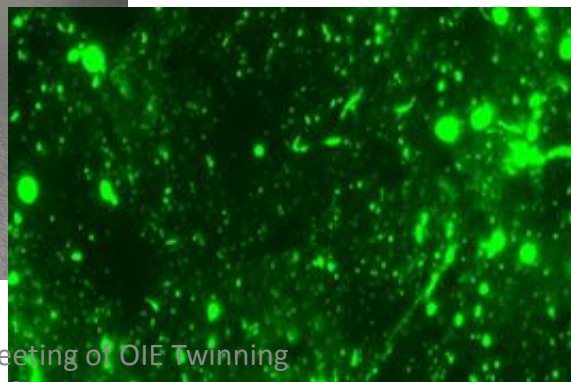
Freeze-dry



Product of RAV antigen



Stability test of freeze-dried



Deliver to participating laboratories



Confirmation tests before panel delivery

- Homogeneity of the panel: 5 vials (≤ 100 vials/batch)
- Stability of the panel:

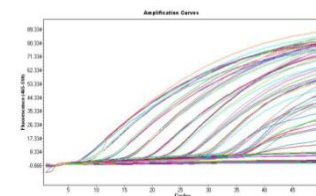
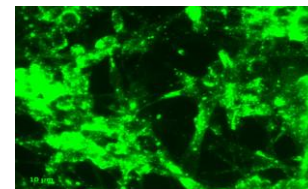
Storage conditions for tests	Detection techniques
Room temperature for 7 days	FAT, RTCIT, RT-PCR
Room temperature for 14 days	FAT, RTCIT, RT-PCR
Room temperature for 7 days then followed by 4°C for 3 weeks	FAT, RTCIT, RT-PCR





Indications for the participants

- Conduct with your procedures of **routine analysis**.
- Methods in compliance with **test referenced by the OIE**.
 - Fluorescent Antibody Test (FAT)
 - Rabies Tissue Culture Infection test (RTCIT)
 - Conventional and the Real Time RT-PCR
- **6-8 testing samples** constitute a panel.
 - Homogenate of brain tissues
- **Positive/Negative: one** discordant results, failing the test.
- **Participants are coded** during the whole program
 - No revealing success/failure with participants' information in the report.
- **Voluntary:**
 - lack of participation
 - failure in the proficiency testing
 - Above two points should **NOT** prevent a laboratory from conducting diagnostic tests or its diagnosis report being recognized for international affairs.





Mice for virus production

- Source: National Laboratory Animal Center
 - Accreditation
 - **AAALACi** (Association for Assessment and Accreditation of Laboratory Animal Care International)
 - **ISO 17025**
 - **ISO 9001**: for companies and organizations to ensure the quality of their products and services
 - **ISO 27001**
 - The material cost for a panel: USD 350, afforded by AHRI



Shipping condition and indication

Item	Content
Shipping condition	<ul style="list-style-type: none">• At 4°C temperature
Package	<ul style="list-style-type: none">• Package under UN2814
Receiving	<ul style="list-style-type: none">• Received within 2-3
Recommendation	<ul style="list-style-type: none">• Store the panel at 4°C as soon as received.



Estimated shipping fare

(from AHRI to every international port)

Country	Shipping fare (USD)
Australia	1200
Cambodia	1500
Japan	1100
Korea	1100
Malaysia	1100
Philippines	1300
Singapore	1100
Thailand	1200
Vietnam	1100



Calling for virus transfer to enrich testing panel

ID	Batch name	Passage on	Species	Country
1	CVS-11	Mouse	RABV	France
2	Taiwan ferret badger rabies virus	Mouse	RABV	Taiwan
3	Dog-mediated human rabies virus	Mouse	RABV	Taiwan (Hualien Tzu Chi Hospital) <u>*Human case imported from China</u>
4	Canine rabies virus	Mouse	RABV	Kingdom of Cambodia



Material transfer agreement(MTA) for virus transfer

- The procedures for virus transfer
 - In compliance with Nagoya Protocol of the Convention on Biological Diversity
- Contract the MTA
 - For fair and equitable sharing of benefits
 - With virus providers
 - All the property right (even if there is the derivative in any situations) always belonged to providers
 - The only application is for PT
 - With program participants
 - Limiting the use only to PT
 - If there is any request for application besides of PT, the consent of the original virus provider should be obtained



Continuous improvement of the PT program

- **ISO 17043 accreditation**
 - Competent provider for PT mentioned in ISO 17025
- **Enriching testing panel**
 - To increase regional diagnoses experiences by enriching diversity of testing panel
- **Holding the meetings with PT participants to discuss**
 - Improving the procedures of the program?
 - Surveillance improved after the PTs?
- **Continuously discuss with and learn from Anese-Nancy**
 - Follow the improvement steps of the PT programs held by EURL for Rabies



Conclusion

- The collaboration and twinning with Anses-Nancy
 - Anses-Nancy's profound experience, professional expertise, and high scientific impact
 - Accelerate the development of diversified capabilities of AHRI
 - On rabies
 - Research
 - Control and management program
 - To be align the international standards
 - Developing elimination strategies
 - On generally scientific performance
 - To be more efficient and professional
 - To address problems with different approaches
 - To deliver better results
 - AHRI clearly benefits from this twinning project, and would like to extend to Asian partners



Thank you for your attention