

# Brucellosis

## OIE Reference Laboratory Twinning Programme

ANSES, France - NIAH-DLD, Thailand



# Outline

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    - Achievement and related activities of NIAH
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- Application for designation as an OIE Reference Laboratory for Brucellosis
- Acknowledgements

# NIAH Background (1)

Started from Department of Livestock Development(DLD) in collaboration with the government of Japan through the Japan International Cooperation Agency (JICA) in 1986.

JICA project Phase I and Phase II (1986-1998)

- NAHPI (Phase I) and extension (total 7 years): Research and investigation, Development of diagnostic techniques and biological products, Research on FMD, Establishment of supporting services
- NIAH (Phase II): 5 years: Epidemiological survey and research activities to develop control programs for major animal diseases (Classical Swine Fever, **Brucellosis**, Tuberculosis, Paratuberculosis and Arthropod-borne diseases), Training and guidance for RVRDCs, Improvement of diagnostic techniques to establish appropriate diagnostic systems
- JICA Third-country Training Project on Diagnosis of Bacterial/Viral Animal Diseases (1996-2002)

## **NIAH Background (2)**

Japan-Thailand Technical Cooperation Project on Animal Disease Control in Thailand and Neighbouring Countries (JICA-ADC Project)

**Sites:** Bureau of Disease Control and Veterinary Services (BDCVS) and National Institute of Animal Health (NIAH)

**Period:** 2001-2006 and 2007-2011 (Phase I & II)

- Brucellosis activities in neighbouring countries (2004-2011):  
*Cambodia, Lao PDR, Malaysia, Myanmar, Vietnam*
- Brucellosis activity in other JICA Projects (2014): *Uganda*

**The Beginning OIE Reference Laboratory  
Twinning Programme on Brucellosis**

# Background

- The Minutes of 65<sup>th</sup> Executive Committee Meeting and the 29<sup>th</sup> Session of APHCA (25 September 2005)
  - Thailand raised the re-appearance of *Brucella melitensis* and its threat
  - Delegates supported and requested APHCA to organise a relevant workshop
- **Report of the 30<sup>th</sup> APHCA Session (Luang Prabang, Lao PDR) in session:**  
“*Brucella melitensis* in goats-diagnosis, vaccination and other trade related technical protocols” on topic  
“*Brucellosis in sheep & goats Diagnosis and Control*”  
by **B. Garin-Bastuji, c/o OIE, Wednesday, 25 October 2006**
- Minutes of the 31<sup>st</sup> Session of APHCA, 29 October -1 November 2007, Chiang Mai, Thailand, Proposed “**Diagnosis and control of *Brucella melitensis***”



# 1<sup>st</sup> FAO-APHCA/OIE Regional Workshop on Brucellosis Diagnosis and Control with Emphasis on *Brucella melitensis*

Chiang Mai and Lampang, 20-23 October 2008  
(Director: Dr Bruno Garin-Bastuji)

- 17 member countries
  - Lectures and lab practiced on serological tests
- National labs: keep same SOP according to OIE standard



# 1<sup>st</sup> FAO-APHCA/OIE Regional Workshop





# 1<sup>st</sup> FAO-APHCA/OIE Regional Workshop:

## Conclusions and Recommendations

- National laboratories should follow the same standard operating procedures
- Establishment of a Reference Laboratory for Brucellosis for the Asia and Pacific Region should be considered in order to support the strengthening of laboratory capacity and activities of Brucellosis diagnosis and surveillance, and also for national brucellosis control strategies on the short and/or long term basis in the respective countries
- Member countries: requested
  - \* Follow-up workshop/training
  - \* FAO-APHCA and OIE: continuation of capacity building of national Veterinary Services in the Asia and Pacific region

# 2<sup>nd</sup> FAO-APHCA/OIE Regional Workshop on Brucellosis Diagnosis and Control with Emphasis on *Brucella melitensis*

Khon Kaen, 8-11 June 2009  
(Director: Dr Bruno Garin-Bastuji)

- 16 member countries
- Lecture and lab. practices – Standard operating procedures (SOP) for diagnostic tests (RBT, CFT and iELISA) – based on the OIE Manual
  - RBT antigens were provided to all participants



## 2<sup>nd</sup> FAO-APHCA/OIE Regional Workshop



## **2<sup>nd</sup> FAO-APHCA/OIE Regional Workshop: Conclusions and Recommendations**

- Follow-up on capacity building of laboratory technical staff as well as of strengthening of national laboratories
- Strengthening of Regional collaboration on diagnosis and control of brucellosis
- Member countries: requested:
  - \* Quality assurance including standardisation
  - \* OIE/FAO Reference Laboratory for Brucellosis in France and National Institute of Animal Health (NIAH), DLD, Thailand collaboration should be facilitated through mechanisms of OIE Reference Laboratory Twinning Programme

# The beginning of a collaboration:

- Followed conclusions and recommendations of the 1<sup>st</sup> in Chiang Mai and Lampang, 20-23 October 2008 and the 2<sup>nd</sup> in Khon Kaen, 08-11 June 2009, First visit of the OIE expert for Brucellosis to NIAH-DLD, Bangkok
- Discussion, document preparation and submission



## Why:

*“to assist laboratories in developing or in-transition countries to build their capacity and scientific expertise with the eventual aim that some of them could become OIE Reference Laboratories in their own right”*

## How:

*“a link between an existing OIE Reference Laboratory or Collaborating Centre and another laboratory in a developing or in-transition country must be established for exchange of scientific expertise and capacity building”*

*“the twinning concept could imply a transfer of knowledge, training and expertise”*

# 3<sup>rd</sup> FAO-APHCA/OIE Regional Workshop on Brucellosis Diagnosis and Control with Emphasis on *Brucella melitensis*

Sukhothai and Phitsanulok, 21-25 November 2010

(Director: Dr Bruno Garin-Bastuji)

- 17 member countries
- Lecture: updated on Brucellosis situation in Asia and the Pacific; protocol development for the control of Brucellosis; refreshed hands-on trainings on standard laboratory tests for diagnosis of Brucellosis; and promoted collaboration on diagnosis and control of Brucellosis in the region.
  - Demonstration: *Brucella* spp. isolation, identification and typing (BSL-3)



# 3<sup>rd</sup> FAO-APHCA/OIE Regional Workshop





# 3<sup>rd</sup> FAO-APHCA/OIE Regional Workshop: Conclusions and Recommendations

- The member countries
  - utilised the knowledge and techniques
  - improved/strengthened their laboratory diagnosis capacity
- OIE Twinning Programme between the OIE/FAO Reference Laboratory for Brucellosis in France and the Thai NIAH commenced in July 2010 and will continue for 3 years
- Member countries requested
  - to provide the technical know-how and handling methods on packaging/shipping materials (including specimen containers) for diagnosis to regional or international Reference Laboratories.
  - to support on Brucellosis proficiency testing (round robin) to member countries in the region through the OIE Twinning Programme

# Frame of OIE Reference Laboratory Twinning Programme

## *Parent Laboratory*

Director General of AFSSA (ANSES): Mr. Marc MORTUREUX

Director of the Laboratory: Dr. Pascal BOIREUX

OIE Reference Lab. Expert: Dr. Bruno GARIN-BASTUJI

(Head of the Bacterial Zoonoses Unit and EU/OIE/FAO Ref. Lab. for Brucellosis)

French OIE Delegate: Dr. Jean-Luc ANGOT (CVO)

## *Candidate Laboratory*

Director of the Laboratory: Dr. Vimol JIRATHANAWAT

Laboratory Expert: Dr. Monaya EKGATAT

(Head of Immuno-serology section)

Thai OIE Delegate: Dr. Yukol LIMLAMTHONG (CVO)

# Frame of OIE Reference Laboratory Twinning Programme

Three-year project: 2010-2013 (99.000 €)

Main objectives:

- to strengthen the level of expertise in brucellosis serological diagnosis/screening & bacteriological isolation of *Brucella* by culture
- to implement reference activities
  - (i) control and standardisation of diagnostic reagents and vaccines,
  - (ii) organisation of Regional serology proficiency ring-trials and,
  - (iii) *Brucella* typing and molecular detection and identification.

# Brucellosis OIE Twinning: Work programme (1)

☞ 3 annual training sessions of 3 NIAH staff at ANSES

☞ 3 visits of ANSES (2 Experts) to NIAH

☞ Participation of NIAH to the EU/OIE proficiency RT *in order to monitor the progress in the quality of serological testing in NIAH;*

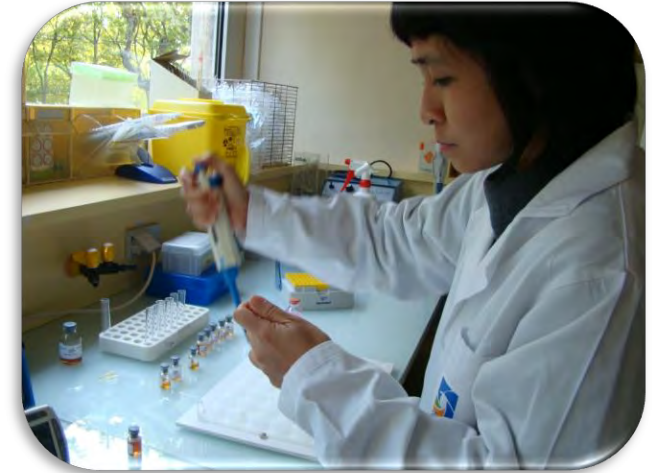
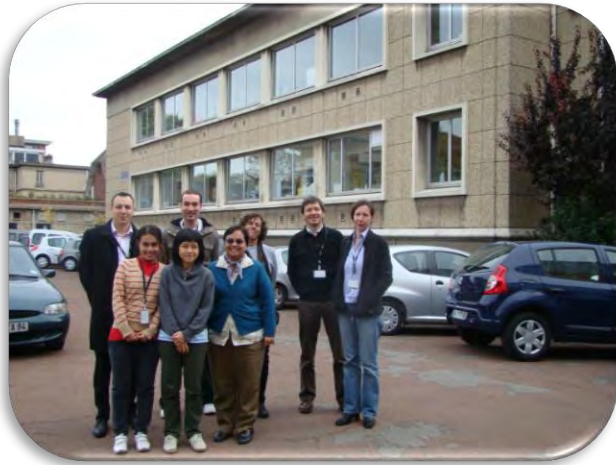
☞ Collection of large volumes of serum from positive cattle, buffaloes, sheep and goats in order to establish a common serum collection for:

- the establishment of regional secondary standard sera (standardised against the OIE international standard sera),
- further organisation of regional ring-trials and,
- quality assurance and test validation controls

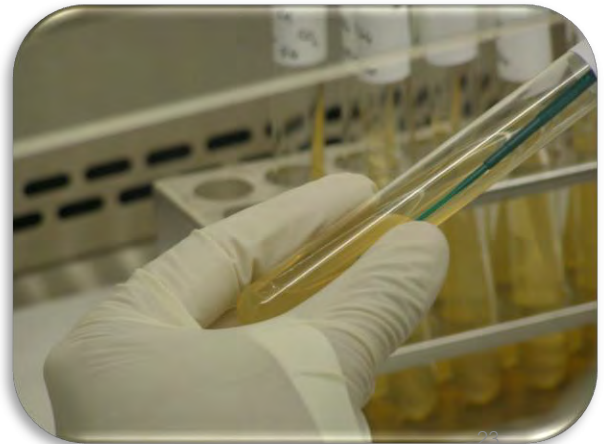
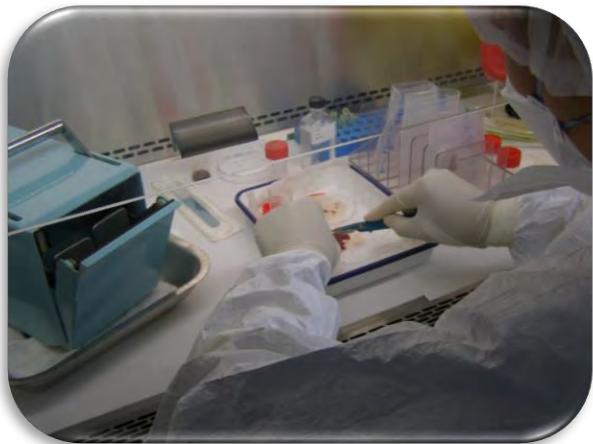
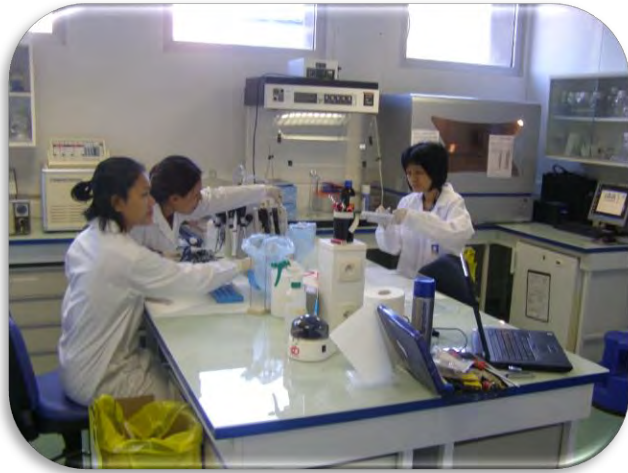
## Brucellosis OIE Twinning: Work programme (2)

- ☞ The establishment of a NIAH collection of *Brucella* strains:
  - Reference strains to be provided by AFSSA/ANSES (type strains and strains for antigen and vaccine production)
  - Field strains isolated by NIAH from infected cattle, buffaloes, sheep and goats at the regional level
- ☞ Assistance in completing the quality assurance system in place  
(*acc. ISO/IEC 17025 std.*)
- ☞ The provision of NIAH with *Brucella*-phages and monospecific sera for a rapid implementation of *Brucella* biotyping at NIAH
- ☞ Assistance in designing research activities:
  - sero-prevalence surveys (during the twinning project),
  - studies on the distribution, both, geographical and by animal species, of *Brucella* species in the region.

# 1<sup>st</sup> Brucellosis annual training session at ANSES (serological diagnosis and control of diagnostic antigens and ELISA kits): 18-29 October 2010

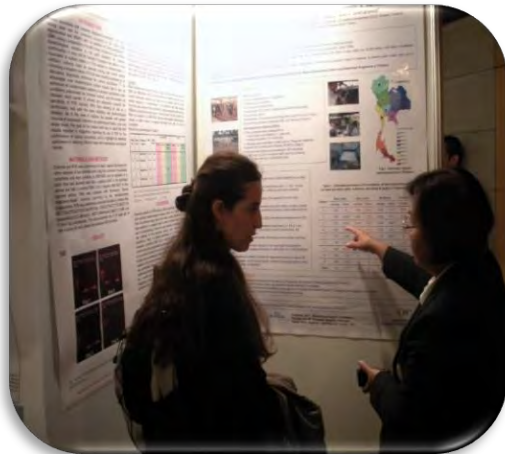


2<sup>nd</sup> Brucellosis annual training session at ANSES (bacteriological and molecular detection as well as biotyping and molecular identification):  
26 September - 7 October, 2011



# Addition activities in 2<sup>nd</sup> Brucellosis training

- Participation of both NIAH and ANSES to Brucellosis 2011 International Research Conference, Buenos Aires, Argentina, 21-23 September 2011.
- *Poster related to the Twinning project*
- NIAH director and senior veterinary officers visited the ANSES Animal Health Laboratory in order to discuss the re-organisation of the NIAH and the acquisition of the equipment and materials, with NIAH-DLD budget.





3<sup>rd</sup> Brucellosis annual training session at ANSES  
(control of *Brucella* vaccines and organisation of proficiency ring trials),  
19-30 November, 2012



## 1<sup>st</sup> visit of ANSES experts and follow-up of the Twinning programme: first audit of the organisation and work activities, 9-15 April 2011

- Lecture (*Brucellosis in Cattle, Sheep & Goats: Fundamentals of surveillance and eradication programs*) and discussion on issues as regards RBT antigen local production
- Laboratory management for serological testing, bacterial culture and molecular biology
- Preparation and standardisation of national standard sera and positive control sera



## 2<sup>nd</sup> visit of ANSES experts and follow-up of the Twinning programme, 28 May-1 June 2012

- Dr. Bruno GARIN-BASTUJI and Mr. Gilles LE CARROU, from ANSES, visited NIAH in order to audit, discuss and assist in the organisation and quality management of brucellosis activities as well as to perform the follow-up of the 2<sup>nd</sup> training session held on ANSES premises in September 2011.
- Field Trip



## 2<sup>nd</sup> visit of ANSES experts and follow-up of the Twinning programme

- NIAH invited ANSES experts to attend the “Thailand-Japan Joint Conference on Animal Health 2012: “The 25<sup>th</sup> Year Anniversary of National Institute of Animal Health”. The stay of the experts was extended accordingly, though not financed through the Twinning programme (30-31 May 2012)
- Presentation: Brucellosis OIE Twinning Laboratory Program France-Thailand



# 2<sup>nd</sup> visit of ANSES experts and follow-up of the Twinning programme

## Thailand – Japan Joint Conference on Animal Health 2012

- The brucellosis laboratory surveillance in the regions 1, 2, 3, 5, and 7 were presented as posters and an oral presentation, was held the activities under the topic “ Brucellosis OIE Laboratory Twinning programme France/Thailand”



# 3<sup>rd</sup> visit of ANSES experts and follow-up of the Twinning programme: discussion and assistance for preparation the ring trial and validation of serum samples, 13-21 July 2013

Joint organisation (ANSES and DLD-NIAH) of the first “2013 Asia-Pacific Bovine Brucellosis Interlaboratory Proficiency Test” with support of FAO-APHCA and OIE-RRAP

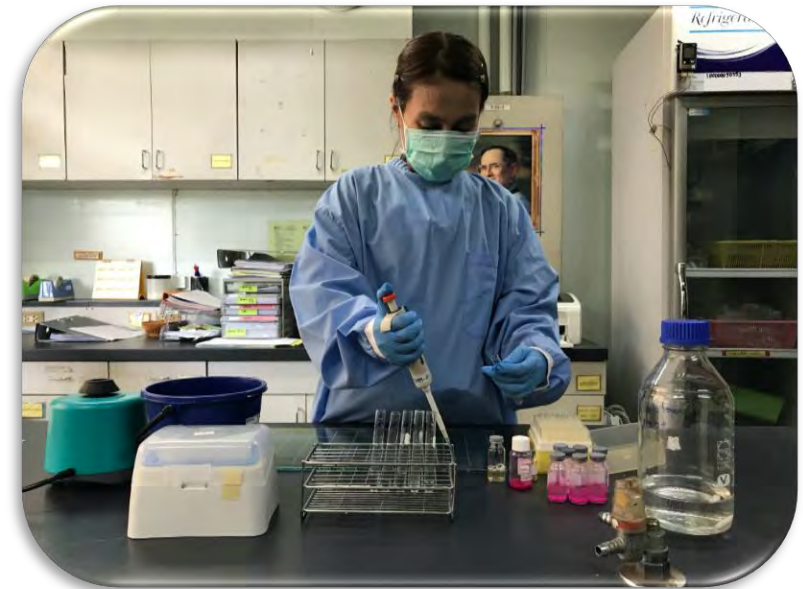


# Achievement and Related activities of NIAH (1)

- Regional secondary standard bovine serum established in NIAH

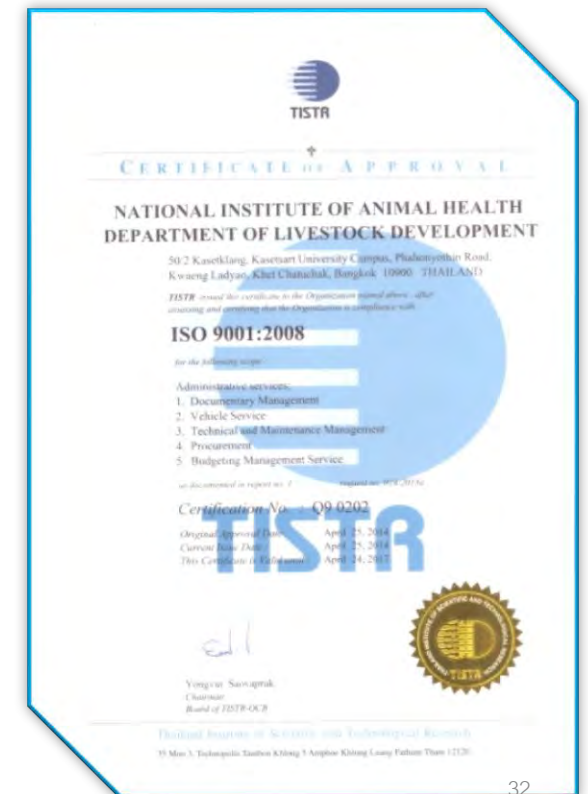


- Implementation of quality control of locally-produced RBT antigens by NIAH



# Achievement and Related activities of NIAH (2)

- **ISO/IEC 17025:2017 (2005):** NIAH & RVRDCs, Serological testing for Brucellosis was accredited for RBT and CFT by ILAC-MRA, Bureau of Laboratory Quality Standards, Department of Medical Science
- **TIS 9001-2559/ISO 9001:2015** by TISTR (Thailand Institute of Scientific and Technology Research)



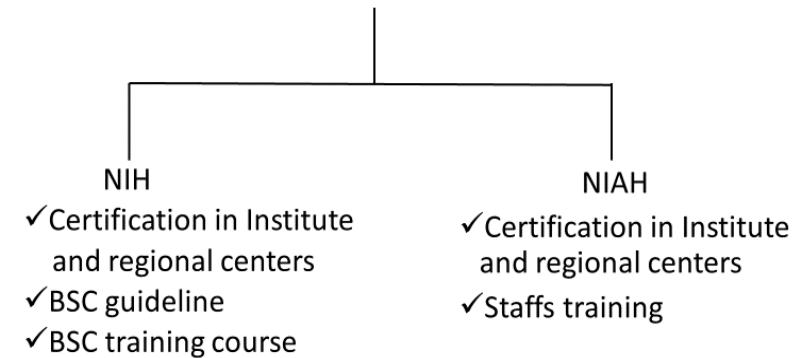


# Achievement and Related activities of NIAH (3)

- NIAH-Laboratory Biosafety and Biosecurity, supported by FAO and APHIS-USDA



## BSC capacity building in Thailand



**MORU/NIAH DLD/DTRA-CBEP: Regional Laboratory Network Training of the Trainers (ToT) Workshop on Biosafety and Laboratory Management**  
**21st August-1st September 2017, Bangkok**



## Achievement and Related activities of NIAH (4)

- Prince Mahidol Award Conference (PMAC), 28-31 January 2013, Bangkok: NIAH and ANSES attended and presented the following paper “Brucellosis diagnosis and control in Asia-Pacific Region: a joint FAO-APHCA and OIE initiative” by Dr Bruno Garin-Bastuji.
- Dr Bruno Garin-Bastuji visited NIAH Laboratory after PMAC (additional discussion on the next workshop in March 2014)



# The 4<sup>th</sup> FAO-APHCA/OIE/DLD Regional Workshop on Brucellosis Diagnosis and Control in Asia-Pacific Region – Proficiency Test and Ways Forward”

Chiang-Mai, Thailand, 19-21 March 2014  
(Director: Dr Bruno Garin-Bastuji)

- 14 member countries
- Lecture: updated on the Brucellosis situation, Quality management in veterinary testing laboratories, International shipment of biological and potentially infectious material – main requirements and ILPT management and result-analysis obtained from the participating laboratories,
- Provision of the 2<sup>nd</sup> ILPT (2014) panel and RBT antigen to all participating countries in this workshop
- Member countries requested a possibility of a refresher/updating hands-on workshop on Brucellosis diagnosis to be jointly organized by FAO-APHCA/OIE and DLD.



# Achievement and Related activities of NIAH (5)

The 4<sup>th</sup> FAO-APHCA/OIE/DLD Regional Workshop on Brucellosis Diagnosis and Control in Asia-Pacific Region – Proficiency Test and Ways Forward”, Chiang-Mai, Thailand, 19-21 March 2014;



# Achievement and Related activities of NIAH (6)

## Research Collaborations

### \* QIA-Korea and NIAH-DLD-Thailand: 2014-2016

*“The molecular epidemiological analysis of Brucella species from a variety of animals and application on diagnostics for Brucella canis in Thailand”*



### \* NIAH-Japan and NIAH-DLD-Thailand: June 2014-March 2017

*“Evaluation of milk sample for diagnosis of bovine brucellosis with Japanese-Enzyme-linked immunosorbent assay (ELISA-kit)”*



# Conclusion

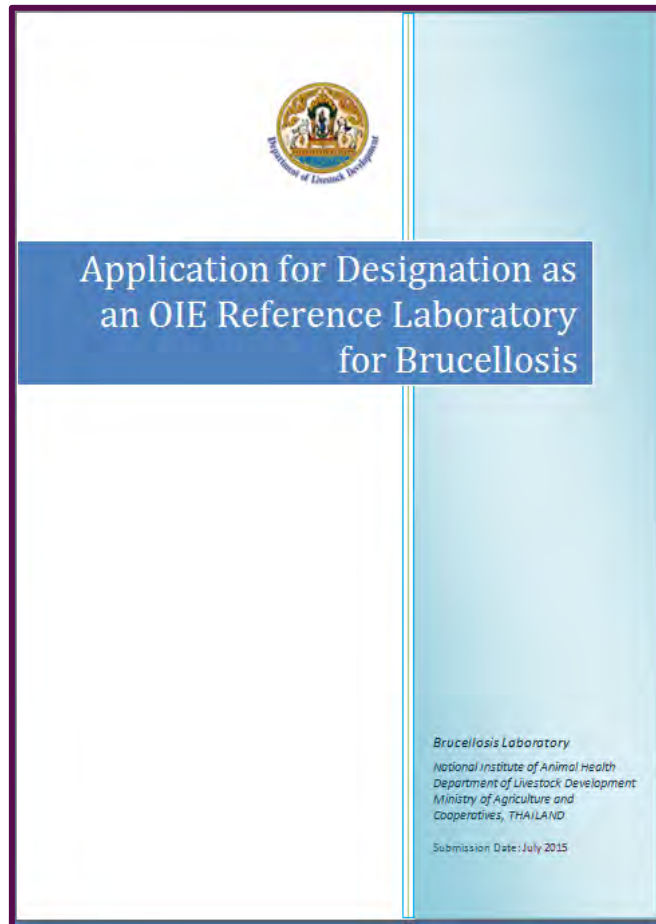
*The achievement of all project objectives are expected to:*

- strengthen the Asia Pacific impact of NIAH
- ensure its capability of implementing regional activities expected from an OIE reference laboratory
- by stimulating an active network of regional diagnostic expertise for the surveillance and control of animal brucellosis
- Additional of necessary equipment installation
  - FAO-RAP for molecular equipment
  - OIE under twinning programme for minor equipment)
- ***Application for the designation of NIAH as an OIE Brucellosis Reference Laboratory***

## **Lessons learned from OIE Reference Laboratory Twinning Programme**

- goal setting and effective communication
- collaboration between the organisations
- work as a team and solve all problems, in order to achieve this goal.
- experiences sharing
- collaboration between DLD and Public Health
- programme strongly built the network among laboratories in Asia-Pacific region.

# Application for designation as an OIE Reference Laboratory for Brucellosis



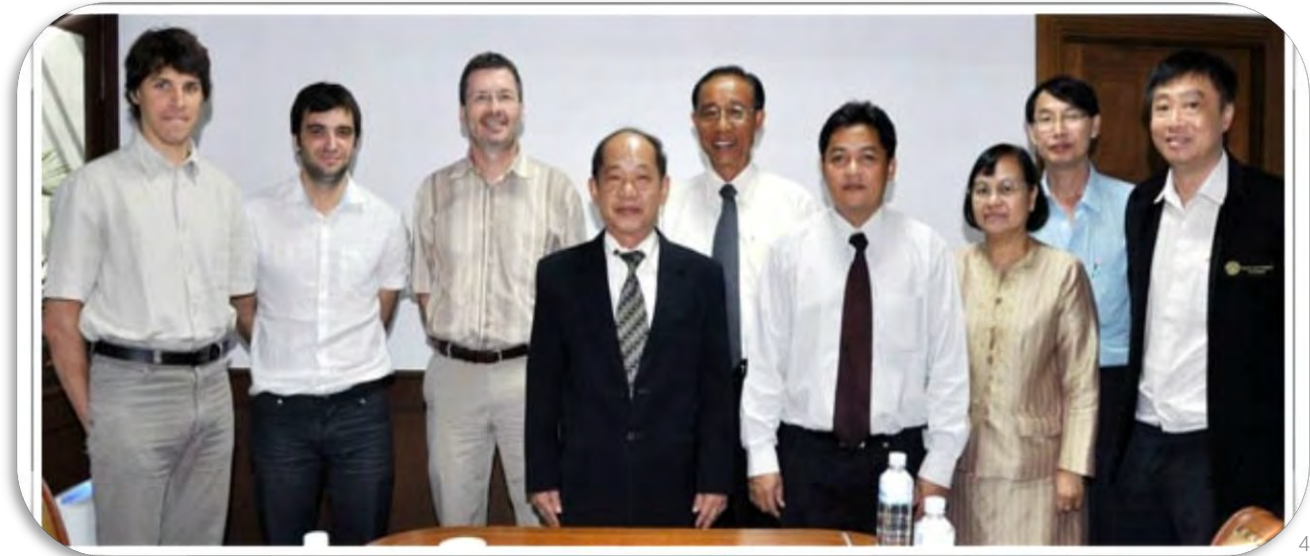


# Acknowledgements



# Acknowledgements

- ANSES
- Department of Livestock Development
- Regional Veterinary Research and Development Centers (8 Labs)
- Bureau of Disease Control and Veterinary Services, DLD.
- Bureau of Epidemiology, Department of Disease Control, MOPH
- National Institute of Animal Health





Thank you for your attention

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