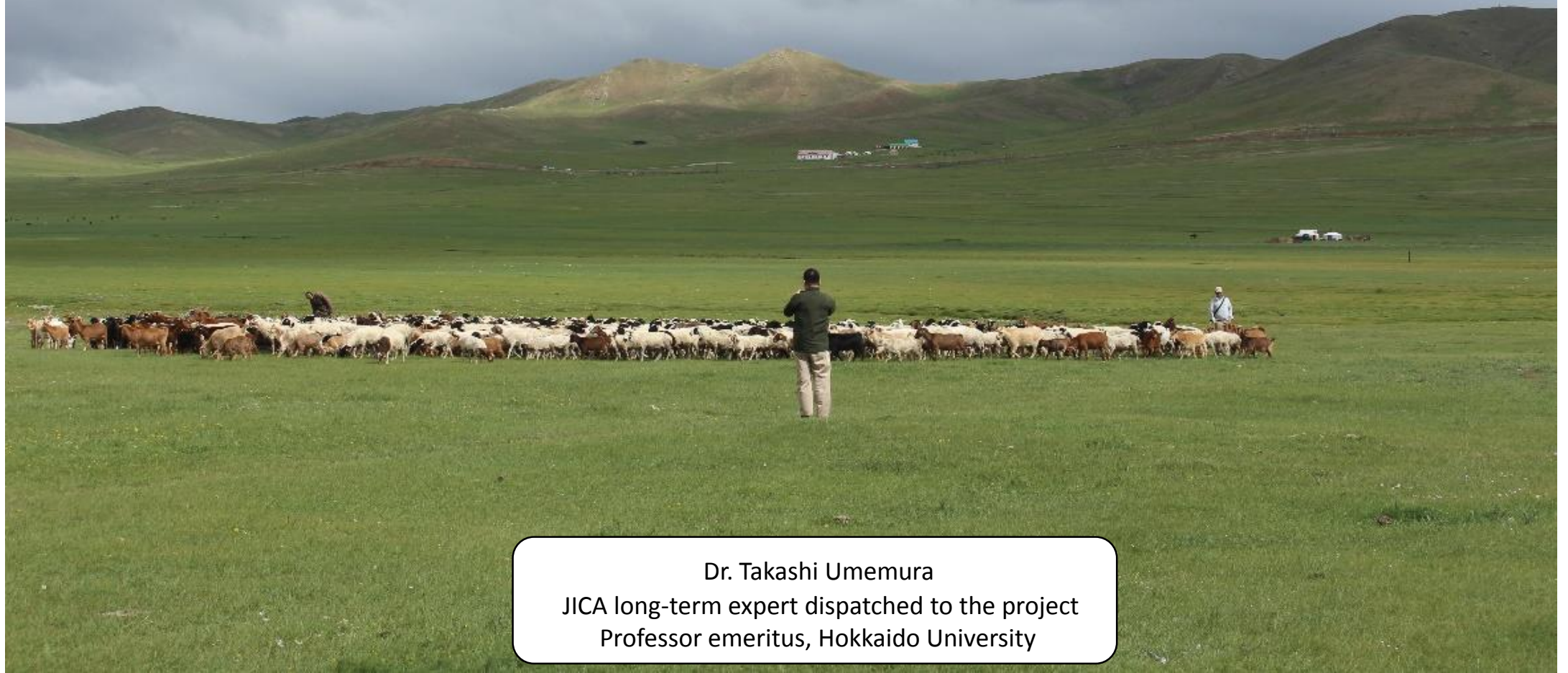


Activities of the JICA project (2014-2019) and OIE twinning program (2017-2019)



Dr. Takashi Umemura
JICA long-term expert dispatched to the project
Professor emeritus, Hokkaido University



Mongolia

1. Population: 3.15 million. Approximately a half of them resides in the capital city of Ulaanbaatar.
2. Area: 1.56 million square km which is roughly 4-times wider than Japan
3. Major industries: Mining and animal husbandry
4. Nomadic people: Approximately 30% of the total population
5. Number of livestock: More than 60 million (sheep, goat, horse, cattle and camel)
6. Major veterinary issues which should be addressed urgently: **Transboundary and zoonotic infectious diseases (FMD, PPR, sheep pox, classical swine fever, rabies, brucellosis, glanders), heavy metal pollution, emergence of drug-resistant bacteria, antibiotic residue in meat and milk, preservation of wild life, modernization of veterinary practice**

JICA Project (2014-2019)

1. Background and aims of JICA veterinary education project in Mongolia

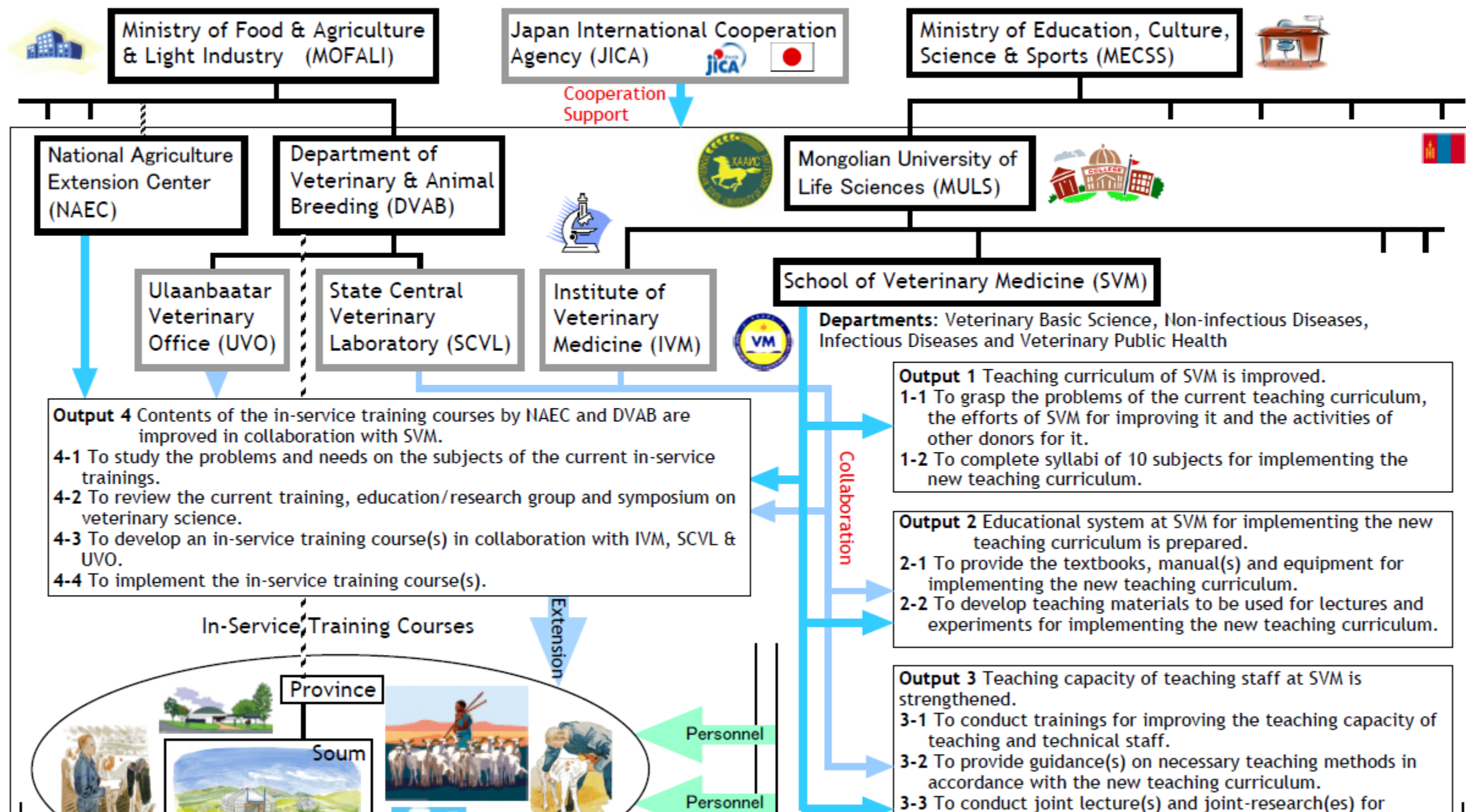
- 1) The **veterinary issues** mentioned in the previous slide are serious in Mongolia and impedes poverty reduction by livestock industry promotion, maintenance of food safety and environment conservation.
- 2) In 2007, **the Government of Mongolia requested** to the Government of Japan for a veterinary technical cooperation aiming the eradication of infectious diseases of live stocks in Mongolia.
- 3) In response to the request, the **Japan International Cooperation Agency (JICA)** launched the present **5-year project in April 2014**, and in the first two years of operation had focused on the strengthening the teaching capacities of **SVM of MULS** by the training of teachers and support staff in Japan, the dispatch of Japanese experts (mostly staff from Hokkaido University) to MULS, the provision of equipment.
- 4) From the 3rd year, the project also commenced the support for research activities of the other **3 veterinary institutions in Ulaanbaatar**.



Project office members

Project for Strengthening the Capacity for Human Resource Development in the Field of Veterinary and Animal Husbandry

Project Purpose: Educational and training capacity of SVM of MULS and MOFALI is strengthened.



2. Main objectives of project activity

2014-2015

- Strengthen educational capacity of SVM/MULS

2016-2018

- Strengthen educational and research activities of SVM/MULS, SCVL, IVM and UVO for establishing core body of postgraduate education to field veterinarians

2019-

- Capacity building of field veterinarians especially working in central areas (Ulaanbaatar city and Tuv aimag) of Mongolia
- Extension of the wave of capacity building from central to rural areas of Mongolia

3. Provision of equipment and consumables

2014

- Equipment, consumables and textbooks of total **\$500,000** were provided to SVM.

2015 and 2016

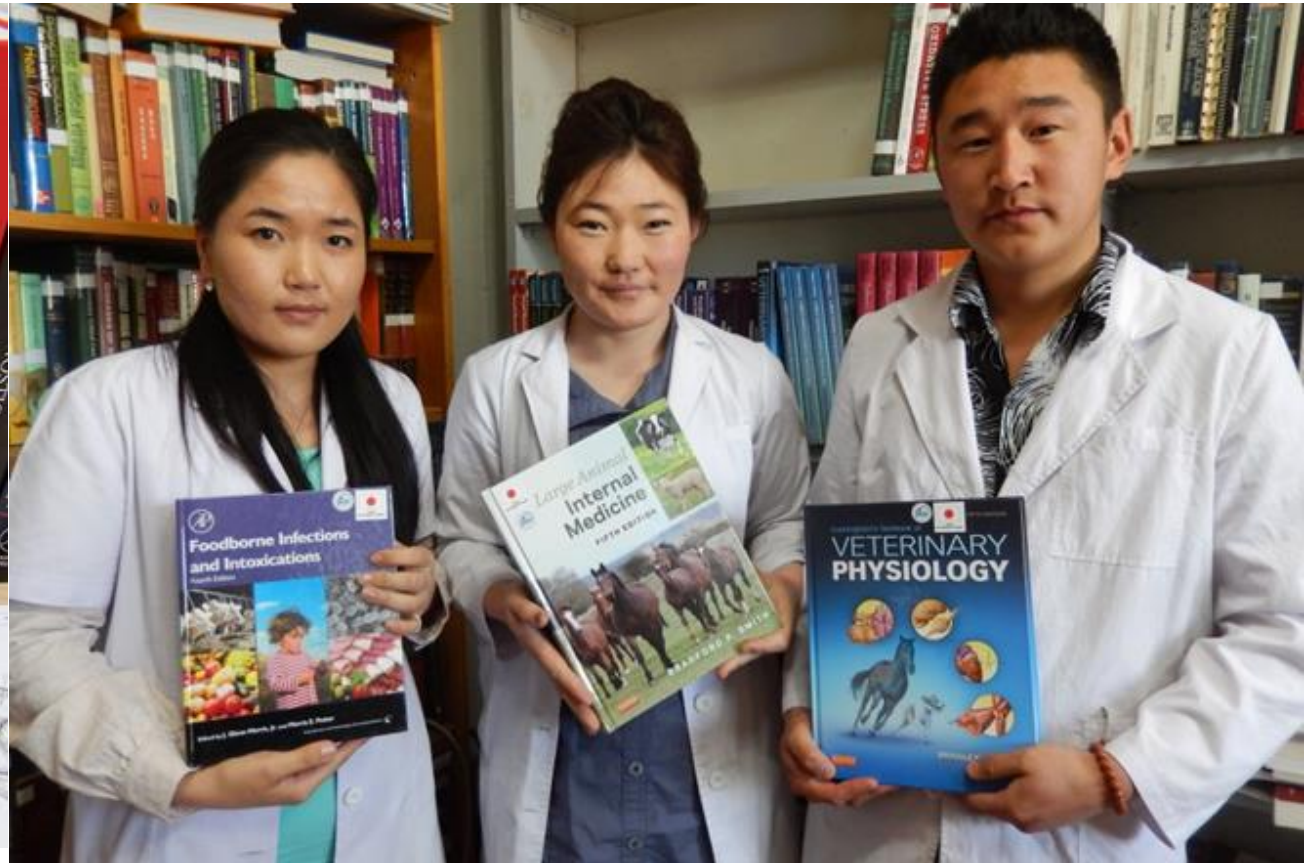
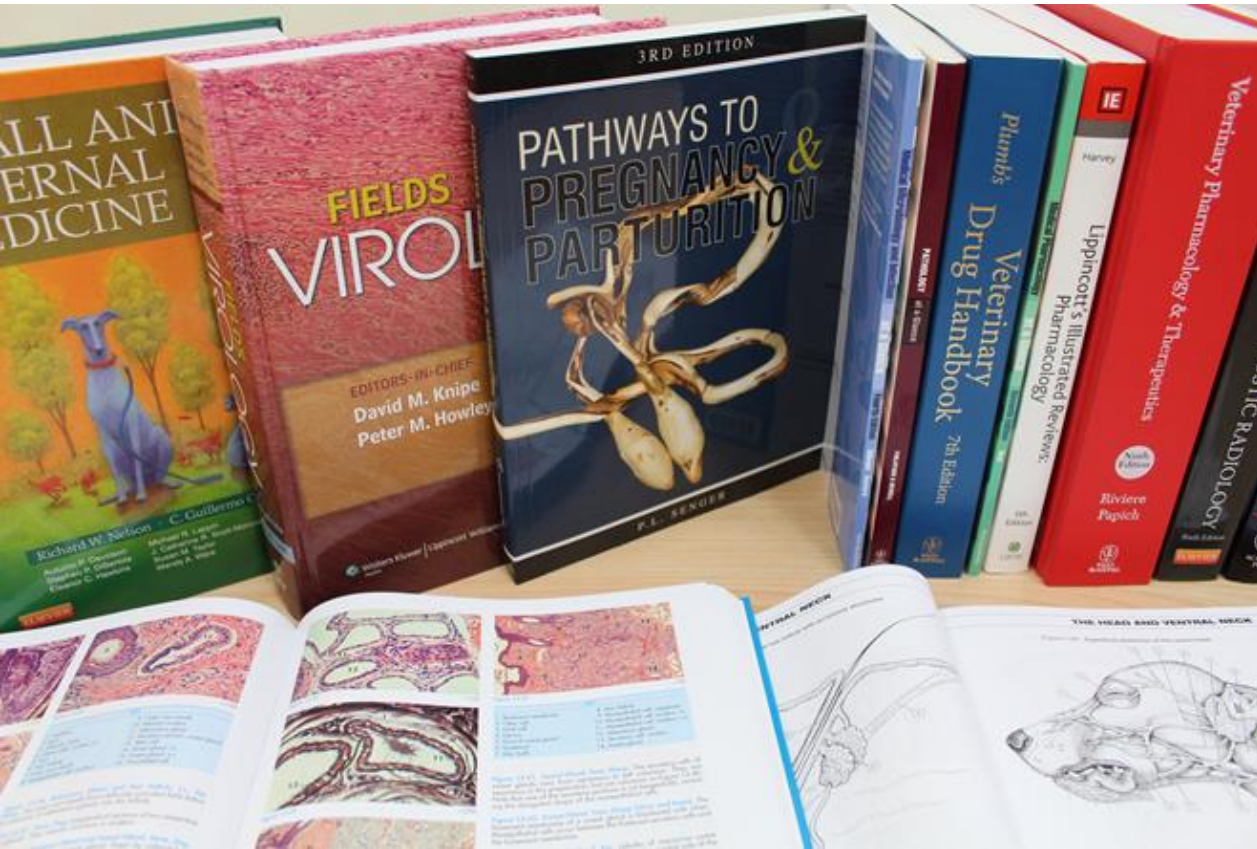
- Equipment and consumables of total **\$650,000** were provided to SVM.
- Equipment and consumables of total **\$200,000** were provided to 8 education/research groups

2017

- Equipment and consumables of **\$70,000** were provided to SVM.
- Equipment and consumables of **\$70,000** were provided to 8 education/research groups.

2018 Equipment and consumables of **\$40,000** were provided to SVM and other institutions.

Provision of textbooks in 2014



565 textbooks of 44 kinds were provided in 2014

Edition and provision of Mongol-English-Japanese veterinary terminology dictionary



2,500 copies were provided to students and teachers of SVM

4. Dispatch of Mongolian teachers, supporting staffs and researchers to Hokkaido University

A total of **55** Mongolian teachers, researchers and technical staffs were invited to Japan, mostly to Hokkaido University, for individual training. Thirty-seven of the 55 trainees were from School of Veterinary Medicine (SVM), 8 from State Central Veterinary Laboratory (SCVL), 4 from Institute of Veterinary Medicine (IVM) and 6 from Ulaanbaatar Veterinary Office (UVO).

2014 (15 trainees): 15 senior teachers of SVM

2015 (11 trainees): 11 young teachers and supporting staffs of SVM

2016 (12 trainees): 8 young teachers and supporting staffs of SVM, 2 young researches of SCVL, 2 young researches of UVO

2017 (11 trainees): 2 young teachers of SVM, 4 young researchers from SCVL, 3 from IVM and 2 from UVO.

2018 (6 trainees): 1 young teacher form SVM, 2 young researchers from SCVL), 1 researcher form IVM and 2 young researchers from UVO.

5. Invitation of Japanese short-term experts

A total of **39 short-term experts** (a total of **128 occasions**) were dispatched to the project site.

2014: 16 experts from Hokkaido University

2015: 28 experts from Hokkaido University

2016: 26 experts from Hokkaido University, , Obihiro University of Agriculture and Veterinary Medicine, Rakunogakuen University, Hokkaido Prefectural Government

2017: 32 experts from Hokkaido University, Obihiro University of Agriculture and Veterinary Medicine, Japan Racing Association

2018: 26 experts from Hokkaido University, Obihiro University of Agriculture and Veterinary Medicine, Rakunogakuen University, Japan Racing Association, Hokkaido Prefectural Government

6. Education/Research groups (2016-2017)

1. Studies on improvement of prevention and control strategy of **classical swine fever** in Mongolia
Group leader: Dr. Batchuluun D (SCVL)
2. Study of **heavy metal** levels in Tuul river basin and their effects on animals
Group leader: Dr. Lkhamjav G (SVM)
3. Prevalence of **PCR skills** in technicians in veterinary laboratory and serological study on anthrax vaccine immunity
Group leader: Dr. Enkhtuya J (IVM)
4. Possibilities for improving the veterinary services provided for intensified **cattle farming**
Group leader: Dr. Ganbat S (SVM)
5. Differential diagnosis and treatment of **equine leg diseases** training for veterinarian
Group leader: Dr. Alimaa D (SVM)
6. Strengthening the capacity for human resource on the detection and molecular characterization of **foodborne pathogenic bacteria**, through advanced research
Group leader: Dr. Narantuya A (UVO)
7. Assessment of **mare's milk quality** and hygiene
Group leader: Dr. Nyam-Osor P (SVM)
8. Improvement of horse **glanders** diagnosis and capacity building of local veterinarians
Group leader: Dr. Tungalag C (SVM)

5. Education/Research groups (2018)

1. Differential diagnosis and treatment of **equine leg diseases** training for veterinarian
Group leader: Dr. Alimaa D (SVM)
2. Assessment of **mare's milk** quality and hygiene
Group leader: Dr. Nyam-Osor P (SVM)
3. Study of **heavy metal** levels in Tuul river basin and their effects on animals
Group leader: Dr. Lkhamjav G (SVM)
4. Examination of **drug residues** in the animal food products
Group leader: Bolormaa P (SVM)
5. Strengthening the capacity for human resource on the detection and molecular characterization of **foodborne pathogenic bacteria**, through advanced research
Group leader: Dr. Narantuya A (UVO)
6. Strengthening of the laboratory diagnostic capability of an equine **glanders** through applied research and training
Group leader: Dr. Erdenebaatar J (IVM)
7. Prevalence of **PCR skills** in technicians in veterinary laboratory and serological study on anthrax vaccine immunity
Group leader: Dr. Enkhtuya J (IVM)
8. Studies on improvement of prevention and control strategy of **classical swine fever** in Mongolia
Group leader: Dr. Ganzorig B (SCVL)

Achievement presentation meeting of Education/Research groups on Oct. 12, 2017



7. Postgraduate education courses supported by the JICA project

No.	Subject	Institution in charge	Date of course implementation
1	Classical swine fever	SCVL	25 Mar. 16, 3 Jun. 16, 5-16 Jun. 16, 19-30 Jun. 17
2	Anthrax	IVM	12-17 Aug. 16, 12-17 Oct. 16, 6-13 Apr. 17
3	Bacterial food-borne diseases and antimicrobial resistance (AMR)	UVO	13 May 15, 23 Sep 15, 11 Nov. 15, 25-26 Apr. 16, 3-10 Mar. 17
4	Heavy metal pollution	SVM	14 Dev. 15, 18 Dec. 15, 18-20 May 16 19 May 17, 14 Oct.17, 20 Sep. 18
5	Sanitary management on horse milk	SVM	1 Nov. 15, 30 May-3 Jun. 16 2-6 Aug. 16, 24 Apr. 17, 22-26 Jan. 16, 19 May 18
6	Surgery	SVM	2-19 Mar. 14, 29 Jun.-2 Jul. 16, 9-10 Dec. 16, 17-19 May 17
7	Microbiology	SVM	8 Oct. 14, 30 May-3 Jun. 16, 2-6 Aug. 16, 17-18 May 17, 12 Oct. 17
8	Therigenology	SVM	28 Jan.-3Feb. 17, 16-17 Aug. 17
9	Glanders	IVM	Not organized yet
10	Antibiotic residuals	SVM	5-6 Jul. 18, 10 Sep. 18
11	Disease diagnosis	SVM	1-2 Mar. 15, 18 May 16, 24 Jul. 18

6. Postgraduate education supported by the JICA project

(1) Microbiology symposium on Oct. 10, 2017



6. Postgraduate education supported by the JICA project

(2) Toxicology symposium on Oct. 14, 2017



8. Others

(1) Enrollment of young Mongolian teachers and researchers into PhD courses of Japanese Veterinary Schools

1. Dr. Delgermurun D (SVM, Pharmacology in HU) 2012.10.01-2016.09.30
Returned SVM on 2016.10.01 after getting PhD degree and assumed chairman of the department
2. Dr. Ochirkhuu N (SVM, Epidemiology in HU) 2013.10.01-2017.09.30
Returned SVM on 2017.10.01 after getting PhD degree and assumed vice-dean
3. Dr. Tsogbadrakh M (SVM, Surgery in HU) 2015.10.01-
4. Dr. Dagvajamst B (SVM, Theriogenology in HU) 2016. 04.01-
5. Dr. Ochbayar E (SVM, Pathology in HU) 2016.10.01-
6. Ms. Bazarrhagchaa E (SCVL, Microbiology in HU) 2017.10.01-
7. Dr. Munkhtuul T (SVM, Physiology in OU) 2017.10.01-
8. Dr. Otgontuya G (SVM, Immunology in HU) 2018.04.01-
9. Ms. Tsuvshinzaya Z (IVM, Infection and Immunity in HU) 2018.04.01-
10. Dr. Tsolmon C (SVM, Anatomy in HU) 2019.04.01-

8. Others

(2) JICA internship and volunteer programs by university collaboration

JICA Internship Program

1. Dr. Hirai Y (PhD student of Hokkaido University) to Department of Public Health of SVM/MULS: 2/11-3/11, 2016
2. Dr. Fujiki J (PhD student of Hokkaido University) to Departments of Public Health and Infectious Disease & Parasitology of SVM: 2/16-3/10, 2017

JICA Volunteer Program by University Collaboration

1. Dr. Akamatsu R (PhD student of Hokkaido University) to IVM: 3/29-5/1, 2017
2. Dr. Hirai Y (PhD student of Hokkaido University) to Department of Public Health of SVM/MULS: 6/11-7/11, 2017
3. Dr. Tsukuda T (Research student of Hokkaido University) to Department of Theriogenology of SVM: 10/1, 2017-9/30, 2018

8. Others

(3) Application for new project beginning from 2020

APPLICATION FORM FOR JAPAN'S TECHNICAL COOPERATION

1. **Date of Entry:** Day 16_ Month 6 Year 2017
2. **Applicant:** The Government of Mongolia
1. **Technical Cooperation (T/C) Title:** Project for Strengthening the Practical Capacity of public and private Veterinarians
2. **Type of the T/C** ※Select only one scheme.
☒ Technical Cooperation Project / Technical Cooperation for Development Planning
☐ Science and Technology Research Partnership for Sustainable Development (SATREPS)
☐ Individual Expert ☐ Individual Training ☐ Equipment
5. **Contact Point (Implementing Agency):** Ministry of Food, Agriculture and Light Industry, Implementing Agency, Department of Veterinary and Breeding Service, State Central Veterinary Laboratory
Address: State Central Veterinary Laboratory, Zaisan, Khan-Uul district, P.O.B-53/03, Ulaanbaatar-17024
Contact Person: B. Ganzorig, S. Tserenchimed
Tel. No.: +976-98110669, 90072009 Fax No. 70111050 6.

Background of the T/C

Mongolia has a population of 3.06 million, GDP per capita is \$ 4,320 (2014, World Bank), the main industry is mining (21.7% of GDP) and livestock husbandry (13%). However, the ratio of labor force in these sectors are 12.3% and 33%, respectively. The ratio of livestock breeders is higher and considering that 70% of the total territory of 1.56 million km² (4 time larger than Japan) represent pastures, the livestock sector is an important industry in Mongolia. About 350,000 herders account for about 30 percent of the economically active population.

In February 2016, the Government of Mongolia adopted the MONGOLIA'S SUSTAINABLE DEVELOPMENT VISION 2030 which is the guideline for the Government of Mongolia. In this regard, to develop the agricultural sector measures to reduce animal infectious diseases (Chapter 2.1.1), strengthening veterinary education (Chapter 2.1.1), improving animal husbandry technology (Chapter 2.1.1), food security (Section 2.1.3) and environmental protection (Chapter 2.3) are highlighted.

The Mongolian livestock population was around 35 million in 2010 and by the end of December 2016 have been increased up to 61 million heads and created a number of problems threatening public health of Mongolia that should be settled by national veterinarians. Those are include, as follow:

Outbreaks of animal infectious diseases: foot and mouth disease of ruminant animals are spreading out every year. In 2015, by the distribution of outbreaks the country was divided into disease prone eastern and safer western districts, the FMD has been detected in Tuv Province, and in April 2017 was continuously detected in eastern Mongolia. In addition, outbreaks of classical swine fever registered since 2014, sheep pox have been prevalent since 2015 and PPR have been for the first time registered in 2016 and caused huge losses both in domestic and wild animals.

Outbreaks of Zoonotic Disease: Mongolia is one of the most brucellosis countries in the world along with Syria, and, in addition, such high-risk zoonoses, including anthrax, glanders and rabies are continue to grow.

Food Security: In Mongolia, antibiotics can be freely purchased without the prescription of veterinarians and medical doctors, this may facilitate spread of antibiotics-resistant microbes, and up to now the researchers in this area are already reported information on drug resistance in both the medical and veterinary sector. The drug resistant microbes were found in milk and meat that is sold in the city market. Furthermore, food safety is problematic because of the insufficient and weak inspection system of the medicines and antibiotic residues in food products.

Environmental pollution caused by heavy metal: Mongolia is rich in mineral resources, which is an important source of financial incomes in the country and is actively exploring today. Social media is reported that mining is caused environmental pollution by heavy metal, such as uranium, lead, cadmium, and mercury. However, such information is lacking scientific evidence, because wide-range and precise research has not yet been made.

The technological level of veterinary and animal husbandry technology is weak:

Administratively, Mongolia divided into 21 Provinces and 329 Soums. Each Province and Soum has a veterinary office. A Soum has three veterinarians which are responsible for animal health and breeding. Livestock vaccination using state-provided vaccines is the main work and accordingly income source of local veterinarians and their ability of diagnostic and artificial insemination technology is very low. Moreover, young veterinarians do not want to work in the countryside; herders are have more hope on yourselves than on local veterinarians and apparently disappointed with the lack of confidence in veterinary skills.

Herders use dogs to protect their livestock from wolves, and ordinary families are increasingly nourishing pets, mostly dogs. Although a number of pet clinics in Ulaanbaatar is opened, those performance does not meet the needs of urban clients due to the lack of veterinary staff, outdated diagnostics and therapeutic equipment and technology.

Mongolia is composed of Ulaanbaatar city, 21 Provinces and 329 Soums. In Mongolia (including para-vets), there are approximately 2,448 veterinarians (1584 veterinarians and 864 para-vets). Of these, 1,527 veterinarians are work privately and 329 veterinarians work in Soum veterinary units. In research, educational and administrative organisations of Ulaanbaatar city and Provinces are work 592 veterinarians. Now, there are 247 veterinarians working in the state and private sector in Tuv Province and Ulaanbaatar (as of 2017). In addition, of the 61 million heads of livestock in Mongolia, total of 5.5 million head of livestock is in this area, and Tuv Province has the highest number of horses, cattle and sheep in the country. The Project for Strengthening the Capacity for Human Resource Development in the Field of Veterinary and Animal Husbandry was started from April 30, 2014 to improve veterinary educational and practical capacity of School of Veterinary Medicine and other veterinary organisations of Ulaanbaatar city (State Central Veterinary Laboratory, Institute of Veterinary Medicine, and Ulaanbaatar Veterinary Office).

Therefore, beginning from May 2019, the new Technical Cooperation Project is aimed to strengthening the practical capacity of public and private veterinarians work in Ulaanbaatar city and Tuv Province. Implementation of the new technical cooperation project would be based on technical and human capacity

8. Others

(4) Application for SATREPS project from 2019

APPLICATION FORM FOR JAPAN'S TECHNICAL COOPERATION

1. Date of Entry: Day 25 Month 9 Year 2017

2. Applicant: The Government of Mongolia

3. Technical Cooperation (T/C) Title Control of zoonoses and drug-resistant bacteria in Mongolia

4. Type of T/C: SATREPS

5. Contact Point (Implementing Agency): Institute of Veterinary Medicine

Address: Zaisan 17024, Ulaanbaatar, Mongolia

Contact Person: Boldbaatar Bazartseren

Tel. No. 976-95963305

Fax. No. 976-70141553

E-Mail boldoomglvet@yahoo.com

6. Background of the T/C

World Organisation for Animal Health (OIE) proposed “One World, One Health” concept (<http://www.oie.int/en/for-the-media/editorials/detail/article/one-world-one-health/>) in 2009 to secure human society from environmental and food safety issues such as zoonoses and drug-resistant bacteria. Veterinarians are one of the specialties assuming responsibility to those global issues. Japan International Cooperation Agency (JICA) implements 5-year project namely “Project for strengthening the Capacity for Human Resource Development in the Field of Veterinary and Animal Husbandry” from 2014 to enforce veterinary education in Mongolian veterinary school and expertise of veterinarians in Mongolia, since many zoonotic diseases and drug-resistant bacteria threatening the country. Since then, many Mongolian veterinary researchers/teachers were trained and were provided with equipment/consumables for their research by the JICA project. Based on the background, veterinary and medical researchers of Mongolian will collaborate and tackle those global issues in the T/C. The project will be conducted in collaboration with veterinary and medical researchers of Mongol Office of Food and Agriculture Organization of the United Nations (FAO), Hokkaido University Graduate School of Veterinary Medicine and Research Center for Zoonosis Control, Research Institute of Tuberculosis in Japan. The T/C also collaborate with corresponding organs of Mongolian government (Ministry of Food, Agriculture and Light Industry, Ministry of Education, Culture, Science and Sports and Ministry of Health) to reflect the research results and recommendations in governmental policies of Mongolia.

7. Outline of the T/C

(1) Overall Goal

Mongolia is one of the countries where brucellosis and tuberculosis flourish most seriously in the

instance, research group of equine glanders develops early diagnosis method to identify carrier horse of *Burkholderia mallei* and eliminate them from the herd to eradicate the disease.

Control of drug-resistant bacteria: food poisoning bacteria will be collected from commercially available meat and milk, rearing facility of domestic animals and human patients suffering from food intoxication. The isolates will be identified and analyzed for the drug resistance. Then, antibiotics administration protocol which have used in the farms with drug-resistant bacteria will be improved.

(4) T/C Site

The proposed T/C aims to control zoonotic diseases and drug-resistant bacteria in a country-wide levels.

(5) T/C Activities

Eradication of zoonotic diseases:

Glanders: It has been recognized that Mongolian domestic horses do not show apparent clinical symptoms after infection with *Burkholderia mallei*, a causative agent of glanders. Current diagnostic methods (i.e. complement fixation test, mallein reaction) are not able to identify all horses latently or chronically infected with *B. mallei*. The aim of T/C is unveiling the pathology of glanders in Mongolia and development of novel diagnostic method which enable Mongolian people to identify the latently infected horses.

Tuberculosis: Little is known about the epidemiology of tuberculosis in animals in Mongolia. In this T/C, we plan to analyze the drug-resistance and genetics of mycobacteria isolated from human and animals. The data will be useful for conducting risk assessment of the transmission of Mycobacteria between humans and animals.

Anthrax: Anthrax has been increased in domestic animals in Mongolia, mainly due to the unavailability of diagnostic tools and techniques in country side. The aim of T/C is to develop novel PCR and serological tests for *Bacillus anthracis*, and to spread them not only to the large cities but also to the local veterinary offices.

Rabies: Spreading of rabies into new geographic regions has become a problem in Mongolia. Molecular epidemiology of rabies in domestic and wild animals, which is important to understand its transmission dynamics, are critical for forecasting the emergence of rabies and risk assessment.

Studies on drug-resistant bacteria: Antibiotics abuse in animal husbandry has become a potential serious effect on human health in Mongolia. In this T/C, food poisoning-causing bacteria (i.e. *Salmonella*, *Campylobacter*, *Listeria*) will be isolated from farm animals, commercially available meat and milk, and human patients who suffered unknown food poisoning. Analysis of drug resistance, in combination with molecular genetics of the isolates clarify the contributing factors to the development of antibiotic resistance. We then measure the effect of appropriate antibiotic use in farms severely

OIE Twinning Program (2017-2019)

CONTRACT FOR AN OIE-ENDORSED VETERINARY EDUCATION TWINNING PROJECT

Parent Establishment		Beneficiary Establishment	
Graduate School of Veterinary Medicine and Research Centers for Zoonosis Control, Hokkaido University, Japan		School of Veterinary Medicine, Mongolian University of Life Sciences, Mongolia	
Represented by:	Dr. Motohiro Horiuchi (Dean, Graduate School of Veterinary Medicine) and Dr. Yasuhiko Suzuki (Director, Centers for Zoonosis Control)	Represented by:	Dr. Gombojav Altangerel (Dean, School of Veterinary Medicine)
Project leader:	Dr. Takashi Umemura (Chief advisor of JICA project)	Project leader:	Dr. Otgontugs Bat (Lecturer, School of Veterinary Medicine)
Address:	N18 W9, Kita-ku, Sapporo, Japan	Address:	Zaisan, Kha-Uul district, 11 khoroo, Ulaanbaatar 17024, Mongolia
E-mail address:	umemura@vetmed.hokudai.ac.jp	E-mail address:	bat.otgontugs@mul.s.edu.mn
Telephone number:	+976-94157581	Telephone number:	+976-99287734

Project title:	Enhancement of practical education at the School of Veterinary Medicine, Mongolian University of Life Sciences		
Start Date:	2017. 11. 30	Completion Date:	2019. 11. 29
First Payment	Nil	Total Budget Approved	Nil

Why we applied for OIE Twinning Program?

1. The twinning project aims to move forward the JICA project by **enhancing the practical education** of the veterinary students, which is crucial for the attainment of the OIE recommended 'Day 1 Competencies'.
2. SVM/MULS, HU and JICA project wish to get the **warrant of international organs such as OIE** regarding our collaborative work to improve veterinary education in Mongolia.

Work Plan for Project Year 1 (2017-2018) and Project Year 2 (2018-2019)

Subject	Project Year 1: 2017-2018	Project Year 2: 2018-2019
Anatomy	Macroanatomy of locomotor system	Macroanatomy of digestive system
Histology	Histology using glass slides and microscope	Preparation of histology slides
Pathology	Histopathology using glass slides and microscope	Necropsy and sample preparation for histopathology
Parasitology	Faecal examination for parasites	Skin scrapings for mange diagnosis
Physiology	Blood and blood electrolytes analysis	Urine analysis
Pharmacology	Detection of antibiotic residue in food	Biological assay of histamine and effects of anti-allergic drugs
Toxicology	Sample preparation process for heavy metal analysis by AAS	Preparation of standard solutions for heavy metal analysis and making a calibration curve
Bacteriology	Medium preparation and gram staining	Bacterial isolation
Virology	Immunofluorescence assay	Cell culture
Immunology	Rose Bengal Test (RBT)	Hemagglutination test
Animal Hygiene	Hygienic requirements for animal housing	Disinfection of animal housing
Public Health	Basics of isolation and identification of foodborne pathogens	Milk quality test
Internal Medicine	General examination and treatment	Ultrasound diagnosis
Surgery	General examination of equine leg diseases	Diagnosis of equine leg diseases using ultrasound and X-ray
Theriogenology	Artificial insemination	Diagnosis and treatment of mastitis

3. Pathology: Histopathology using glass slides and microscope

1. Teachers responsible for the Practice:
ALTANCHIMEG, PhD
2. Japanese counterpart:
UMEMURA, PhD, Prof
KIMURA, PhD, Prof
3. Subject: Pathology
4. Practical education targeted:
Histopathology of digestive system
5. Number of student and class participated in the practical education:
130 students, 3rd year
6. Grade progress on a scale of 5 levels: 5 being excellent attainment and 1 being poor attainment and in need of extensive improvement.



3

7. Reasons for the grading
 - (1) **Students are not so active at practice.**
 - (2) Some students do not understand the contents, because they forget previous subjects regarding histopathology.
 - (3) Too many students are packed in one group.
8. How can you improve the score in next academic year?
 - (1) Let them have interests in the subject.
 - (2) Give a chance to work on slide glass and handle microscope.
 - (3) Require reading English books of histopathology.
9. Do you have any comments or wills for the OIE Twinning Program being implemented from Nov. 2017 to Nov. 2019?

We can see improvements with practical education gradually. It needed to prepare enough materials, for example, slide glass of appropriate disease and teach together with well experienced professors and lecturers.

8. Bacteriology: Medium preparation and gram staining

1. Teachers responsible for the Practice:
UYANGAA Temuujin, PhD
2. Japanese counterpart:
Sakoda Yoshihiro, PhD, Prof.
3. Subject: Bacteriology
4. Practical education targeted:
Medium preparation and gram staining
5. Number of student and class participated in the practical education:
180 students, 3rd year
6. Grade progress on a scale of 5 levels: 5 being excellent attainment and 1 being poor attainment and in need of extensive improvement.

4

7. Reasons for the grading
Excellent understanding of students, medium and staining solution is enough, but we have only one microscope. It takes too many hours for observation.
8. How can you improve the score in next academic year?
Need financial budget for microscope including 100X objective lense.
9. Do you have any comments or wills for the OIE Twinning Program being implemented from Nov. 2017 to Nov. 2019?
Might need small budget for basic equipment of practical classes for developing countries.



10. Immunology: Rose Bengal test

- 1. Teachers responsible for the Practice:
TUMENJARGAL Sh, PhD
CHIMEDTSEREN B, PhD
- 2. Japanese counterpart:
- 3. Subject: Immunology
- 4. Practical education targeted:
Serological test
- 5. Number of student and class participated in the practical education:
180 students, 3rd year
- 6. Grade progress on a scale of 5 levels: 5 being excellent attainment and 1 being poor attainment and in need of extensive improvement.
1
- 7. Reasons for the grading
Not enough automatic pipettes, centrifuge for isolating of blood serum
- 8. How can you improve the score in next academic year?
Need financial budget for centrifuges, automatic pipettes
- 9. Do you have any comments or wills for the OIE Twinning Program being implemented from Nov. 2017 to Nov. 2019?
Might be needed small budget for basic equipment of practical classes for developing countries

15. Theriogenology: Artificial insemination

1. Teachers responsible for the Practice:

OTGONJARGAL, MSc

2. Japanese counterpart:

Seiji Katagiri, PhD, Prof.

3. Subject; Theriogenology

4. Practical education targeted:

Artificial insemination

5. Number of student and class participated in the practical education:

120 students, 3rd year

6. Grade progress on a scale of 5 levels: 5 being excellent attainment and 1 being poor attainment and in need of extensive improvement.

4

7. Reasons for the grading

(1) We taught breeding technique to each student.

(2) We have all equipment and drugs necessary for artificial insemination.

8. How can you improve the score in next academic year?

We will organize extramural study about breeding technique every year.



Thank you for your attention

