１．ミニッツ（合同評価報告書を含む）

MINUTES OF MEETING BETWEEN
THE JAPANESE FINAL EVALUATION TEAM
AND
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF MONGOLIA
ON JAPANESE TECHNICAL COOPERATION
FOR
THE PROJECT FOR IMPROVEMENT OF TECHNOLOGY
ON DIAGNOSIS OF ANIMAL INFECTIOUS DISEASES IN MONGLIA

The Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Final Evaluation Team, headed by Mr. Kazuo NAKAGAWA, to Mongolia from March 3 to 12, 2002, for the purpose of conducting the joint final evaluation for the Project for Improvement of Technology on Diagnosis of Animal Infectious Diseases in Mongolia (hereinafter referred to as "the Project").

The Joint Evaluation Committee, which consists of members from JICA and members from the Government of Mongolia, was jointly organized for the purpose of conducting the final evaluation and preparations of necessary recommendations to the respective governments.

After intensive study and analysis of the achievements of the Project, the Joint Evaluation Committee prepared the Final Evaluation Report (hereinafter referred to as "the Report") and presented it to the Joint Coordinating Committee.

The Joint Coordinating Committee discussed the major issues pointed out in the Report, and agreed to recommend to the respective governments the matters attached hereto.

Ulaanbaatar, April 11, 2002

Mr. Kazuo NAKAGAWA
Leader
Final Evaluation Team, JICA

Dr. A. BAKEY
Vice Rector
Mongolian State University of Agriculture

Mr. M. BAASANJAV
Director, Department of Science and Higher Education, Ministry of Science Technology, Education, and Culture

Witnessed by

Mr. Kh..AMARSAIKHAN
Director General
Department of Economic Cooperation Management
And Coordination
Ministry of Finance and Economy

Witnessed by

Mr. I. KHANIMKHAN
Deputy Director
Strategic Planning and Policy Department
Head of External Relations and Cooperation Division
Ministry of Food and Agriculture

ATTACHMENT

1. The Joint Evaluation Committee, which was jointly organized by JICA and the Government of Mongolia, has presented the Report to the Joint Coordinating Committee.

2. The Joint Coordinating Committee has accepted the Report and taken note of its recommendations for successfully sustaining and extending the achievements of the Project.

3. It is confirmed that Immunological Research Center (IRC) is responsible for proper use and management of equipment provided by JICA. It is agreed that the Mongolian side should consult with JICA in advance when the equipment is transferred to other places or organizations following the change of status and structure of IRC.

4. To sustain and further develop the achievement of the Project, the Japanese side recommended the Mongolian side to establish a committee composed of related organizations to formulate a strategic framework for the development of livestock sector. The Mongolian side, namely, Ministry of Food and Agriculture and Mongolian State University of Agriculture, agreed the necessity of such strategic framework. Japanese side will consider the necessary measures within the framework of Japanese Official Development Assistance, such as a dispatch of expert, to support the formulation of strategic framework as well as to monitor the achievement of the Project, including the proper use and management of the equipment. It is agreed that the Mongolian side will consider the necessity of such assistance and make necessary arrangement by the end of May, 2002, in consultation with JICA office.

LIST OF PARTICIPANTS IN THE

JOINT COORDINATING COMMITTEE MEETING

1. JAPANESE SIDE

1) Mr. K. NAKAGAWA, Leader of the JICA Evaluation Team

2) Dr. A. ARAKAWA, Member of the JICA Evaluation Team

3) Dr. T.MIKAMI, Member of the JICA Evaluation Team

4) Ms. K. TORII, Member of the JICA Evaluation Team

5) Mr. K. HOSHINO, Member of the JICA Evaluation Team

6) Dr. Y. TADA, Chief Advisor, JICA Expert Team

7) Mr. A. FUJITA, Coordinator, JICA Expert Team

8) Dr. N. TAKISHIMA, JICA Expert Team

9) Dr. H.UEKI, JICA Expert Team

10) Mr. A. SHIMIZU, Assistant Resident Representative, JICA Mongolia Office

2. MONGOLIAN SIDE

1) Prof. A. BAKEY, Vice Rector, Mongolian State University of Agriculture (chairman of the JCC Meeting)

2) Prof. B.BYAMBAA, Director of the Institute of Veterinary Medicine (Vice-Chairman)

3) Prof. R. SANJAATOGTOKH, Member of the Mongolian Evaluation Team

4) Dr. R. SODNOMDARJAA, Member of the Mongolian Evaluation Team

5) Dr. L. ODSUREN, Member of the Mongolian Evaluation Team

6) Mr. D.BUUDAIHUU, Member of the Mongolian Evaluation Team

7) Prof. M.TUMURJAV, Director, Immunological Research Center (Project Manager)

8) Prof. A.MAGASH, Vice Dean of the Faculty of Veterinary Medicine, Mongolian State University of Agriculture

9) Dr. Z.BATSUKH, Project Coordinator

10) Dr. B.PUREVTSEREN, Chief Researcher, Virology Section

11) Prof. A.YONDONDORJ, Chief Researcher, Bacteriology Section

12) Dr. G.BATTSETSEG, Chief Researcher, Protozoology Section

13) Dr. A.KHUKHUU, Chief Researcher, Pathology Section

14) Mr. M.BAASANJAV, Director, Department of Science and Higher Education, Ministry of Culture, Science and Education

15) Mr. I.KHANIMKHAN, Deputy Director, Strategic Planning and Policy Department, Head of External Relations and Cooperation Division, Ministry of Food and Agriculture

16) Mr. Kh.AMARSAIKHAN, Director General, Department of Economic Cooperation Management and Coordination, Ministry of Finance and Economy

17) Mr. L. CHULUUN, Department of Economic Cooperation Management and Coordination, Ministry of Finance and Economy

Attached Document

JOINT EVALUATION REPORT ON THE PROJECT FOR IMPROVEMENT OF TECHNOLOGY ON DIAGNOSIS OF ANIMAL INFECTIOUS DISEASES IN MONGOLIA

Ulaanbaatrar, April 11, 2002

Mr. Kazuo NAKAGAWA
Leader
The Japanese Evaluation Team
Japan International Cooperation Agency

Prof. R.Sanjaatogtokh D.Sc. DVM
Leader
The Mongolian Evaluation Team

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1. Evaluation of the Project

1-1 Objectives of the Evaluation

Evaluation study was conducted with the purposes of:

(1)Evaluating the overall achievement of the Project based on the R/D, TDIP, and PDM,

(2)Evaluating the Project in terms of the five criteria that are shown below,

(3)Identifying remaining problems and recommending necessary measures to be taken after the termination of the Project to the respective governments, and

(4)Considering the lessons drawn from the Project activities in order to reflect them on future projects in the interest of making them more effective and efficient.

1-2 Methodology of Evaluation

The Project was evaluated by the Joint Evaluation Team, which was composed of the Japanese Evaluation Team and the Mongolian Evaluation Team, in accordance with the R/D, TDIP, and the Project Design Matrix (PDM).

(1) The PDM for evaluation (hereinafter referred to as "PDMe") was formulated for logical evaluation of the Project, revising the PDM which had been agreed upon during the Mid-term Evaluation of the Project in August 15, 2000. Accordingly, the objectively verifiable indicators and important assumptions made clear.

(2) The degree of achievement of the Project Plan was assessed, using the Achievement Grid, which was attached in ANNEX 2, and Attainment of Activities, which was attached in ANNEX 10.

(3) Analysis was made for the Five Evaluation criteria described below, based on the Evaluation Grid attached in ANNEX 9.

a) Relevance

Relevance refers to the validity of the Project purpose and the overall goal in connection with the development policy of the Mongolian government as well as the needs of beneficiaries.

b) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned, and examines if the benefit was brought about as a result

of the Project (not of external factors).

c) Efficiency

Efficiency refers to the productivity of the implementation process, examining if the input of the Project was efficiently convert into the output.

d) Impact

Impact refers to direct and indirect, positive and negative impacts caused by implementing the Project, including the extent to which the overall goal has been attained.

e) Sustainability

Sustainability refers to the extent to which the Project can be further developed by the recipient country, and the benefits generated by the Project can be sustained under the recipient country's policies, technology, systems, and financial state.

1-3 Members and Schedule of the Joint Evaluation Committee

1-3-1 Japanese Evaluation Team

(1) Leader (chairman of Joint Evaluation Committee)

Mr. Kazuo NAKAGAWA

Managing Director of Agricultural Development Cooperation Department, JICA

(2) Veterinary Diagnosis and Extension

Dr. Akira ARAKAWA

Professor Emeritus, Osaka Prefecture University

Guest Professor, Mongolian State University of Agriculture

(3) Veterinary Diagnosis Research and Development

Dr. Takeshi MIKAMI

Professor, Laboratory of Veterinary Public Health, College of Bioresource Science, Nihon University

(4) Evaluation of Project Planning

Ms. Kayo TORII

Livestock and Horticulture Division,

Agricultural Development Cooperation Department, JICA

(5) PCM Evaluation

Mr. Kanji HOSHINO

Senior Consultant, SOWA Consultants Inc.

(6) Interpreter

Ms. Makiko KATO

Japan International Cooperation Center

1-3-2 Mongolian Evaluation Team

(1) Project Planning (Co-chairman of Joint Evaluation Committee)

Mr. R. Sanjaatogtokh D. Sc. DVM

Director, Veterinary Department, Ministry of Food and Agriculture

(2) Project Management

Mr. R. Sodonomdarjaa Ph.D. DVM

Director, State Central Veterinary Sanitary Diagnostic Laboratory

President, Mongolian Veterinary Association

(3) Veterinary Diagnosis and Extension

Mr. B. Batsuuri MSc DVM

Chief, State Food Safety and Agricultural Inspection Agency, Ministry of Food and Agriculture

(4) Veterinary Diagnosis and Development

Mr. L. Odsuren, Ph.D., Manager for Education, School of Veterinary Science and Biotechnology, Mongolian State University of Agriculture

(5) Technology Development and International Cooperation

Mr. Buudaihuu

Senior Officer, Department of Science and Technology and Higher Education, Ministry of Science Technology, Education and Culture

1-3-3 The Schedule of the Evaluation

Date & Time		Activities	Japanese Eva. Team	Mongolian Eva. Team
Apr. 3 (Wed)	17:35	Arrive at Ulaanbaatar Airport		
Apr. 4 (Thu)	10:00	Courtesy Call to Japanese Embassy	○	
	11:00	JICA Office	○	
	14:00	Courtesy Call to Ministry of Food and Agriculture	○	
	15:30	Courtesy Call to Minister of Science, Education and Culture	○	
	16:30	Courtesy Call to Mongolian State University of Agriculture	○	
	17:30	Courtesy Call to Institute of Veterinary Medicine	○	
Apr. 5 (Fri)	09:30	Joint Evaluation Team Meeting	○	○
	11:00	Interview with Counterpart (Virology)	○	○
	14:15	Interview with Counterpart (Microbiology)	○	○
	15:30	Interview with Counterpart (Protozoology)	○	○
	17:00	Interview with Counterpart (Clinicopathology)	○	○
Apr. 6 (Sat)	10:00	Field Survey (Central Aimag Veterinary Service Center)	○	
Apr. 7 (Sun)		Report Writing	○	
Apr. 8 (Mon)	09:30	Interview with Counterpart (Project Management)	○	○
	14:00	Interview with Mongolian State Univ. of Agriculture	○	
	16:00	Interview with Ministry of Food and Agriculture	○	
Apr. 9 (Tue)	09:30	Joint Evaluation Team Meeting	○	○
	15:00	Courtesy Call to Minister of Food and Agriculture	○	
	16:30	Meeting with Counterpart	○	○
Apr.10 (Wed)	15:00	Visit Central Lab	○	
	17:00	Meeting with Japanese Experts and Project Manager	○	
Apr.11 (Thu)	09:30	Joint Coordinating Committee Meeting	○	
	11:00	Report to Japanese Embassy	○	○
	14:00	Report to Ministry of Finance	○	
	15:00	Report to JICA office	○	
Apr.12 (Fri)	09:35	Leave Ulaanbaatar (OM903)		

2. Outline of the Project

2-1 Background of the Project

Agriculture in Mongolia depended on petroleum, agricultural machinery and spare parts supplied by then USSR and Eastern European Countries under the COMECON,

and science technologies and information also relied on their support. However, since mid-1980's, when the Mongolian economy was influenced by COMECON's sluggish economic development, Mongolia reformed its economic system, and then in 1990 started the transition to a market economy.

Stagnation of Mongolian economy and lack of the latest scientific information form outside world brought about difficulties in developing technology for animal diseases and in providing services for animal health, resulting in a possible emergency of considerable epidemic diseases in domestic animals and endangering the national plan for increasing animal products.

Under these circumstances, in January 1996, the government of Mongolia requested the government of Japan for technical cooperation to improve technology for diagnosis of animal infectious diseases. JICA dispatched a study team to examine the possibility and feasibility of the cooperation project. As a result of discussions between the study team and the Mongolian authorities concerned, both sides agreed to launch the five-year project starting in July, 1997.

2-2 Summary of the Project

The design of the Project is stipulated as follows in the R/D signed in June 20, 1997.

(1) Objectives of the Project

Overall goal of the Project:

The livestock industry is developed through the improvement of the technology on diagnosis of animal infectious diseases.

Project Purpose:

The immunological and immunopathological research in the diagnosis of animal infectious diseases in reinforced through basic and applied research activities at Immunological Research Center (hereinafter referred to as "IRC"), Monogolian State University of Agriculture.

(2) Activities and Outputs of the Project

Six major fields of activities were set, namely 1) general research activities for immunological diagnosis, 2) basic research activities for immunological diagnosis for viral, bacterial and protozoan diseases, 3) basic research activities of clinicopathology, 4) immunological/biochemical research activities with laboratory animals, 5) host-

pathophysiological and pathomorphological research activities, and 6) overall technique for the advanced research of diagnosis on serious infectious diseases.

Thorough the above activities, the Project is designed to achieve that the researchers of the IRC, Institute of Veterinary Medicine (hereinafter referred to as "IVM") and the faculty members of Veterinary Medicine will acquire basic and applied research techniques for immunological diagnosis of animal infectious diseases.

3 Preparation of PDMe (Project Design Matrix for Evaluation)

As the result of discussion, the Project Design Matrix that had formulated during the mid-term evaluation was modified for evaluation into PDMe. The PDMe is attached as the ANNEX 1. Verifiable indicator as well as important assumptions were clarified.

(1) The Objectively Verifiable Indicators

The Objectively Verifiable Indicators of Overall Goal, Project Purpose and Outputs in the original PDM were vague and found to be not suitable for the evaluation. In order to clarify the purpose of the Project, which is strengthening of research activities rather than extension of diagnostic techniques, objectively verifiable indicators need to be those shown in PDMe.

(2) Important Assumption

Important Assumption of Project Purpose and Outputs in the original PDM were modified since important factors that affect the achievement of the Project Purpose and Overall Goal were not clearly described in the original PDM.

4 Achievement of the Plan

Achievement of the Project plan was examined in accordance with the Achievement Grid (ANNEX 2) prepared by the Team. The summary of the results is as follows.

4-1 Achievement of Inputs

4-1-1 Input from the Japanese Side

(1) Dispatch of Experts

A total of 10 long-term experts and a total of 38 short-term experts have been dispatched. The long-term experts for immunohematology and pathophamacology were not dispatched and long-term experts for bacteriology and protozoology were

not dispatched in second half of the project period. The long-term expert for virology was not dispatched in 5th year. 38 short-term experts have been dispatched to compliment the absence of long-term experts and produced a satisfactory result. However, it would be more efficient if the long-term experts were dispatched as planned.

The list of the experts is attached in ANNEX 3.

(2) Provision of Equipment, Machinery and Materials

To strengthen laboratories, the Japanese side bore the cost for renovation of laboratories and installation of major equipment in the first year. Major equipment, machinery and materials were provided to carry out the activities effectively as shown in ANNEX 4. In addition, many consumables, such as grass ware and reagent, were also provided to maintain the laboratory activities. Equipment and materials are effectively utilized for the project activities and contribute to strengthening of the research activities of IRC.

(3) Training of Mongolian Personnel in Japan

A total of 22 counterparts have visited Japan to participate in technical training. Two to three counterparts participated 10 months training program every year. Counterpart training were well coordinated with the dispatch of short-term experts and effectively promoted the transfer of technology. However, the counterparts from the Veterinary Faculty did not participate the project even after having training in Japan. The list of trained personnel is attached in ANNEX 5.

(4) Supplementary Funds to Cover Local Cost

The Japanese side bore a part of the project local cost that the Mongolian side could not provide due to budgetary constraints. The supplementary fund made by the Japanese side is shown in ANNEX 6.

4-1-2 Input from the Mongolian Side

(1) Provision of Land, Buildings and Facilities

IVM provided facilities for the laboratories as well as project offices, while the Japanese side bore the cost for total renovation of those laboratories and installation

of equipment.

(2) Assignment of Counterparts

Staffs of IVM were assigned as counterparts of the Project and some staffs from the Veterinary Faculty were assigned as well at the beginning. However, they did not join the project activities after the IVM and Faculty was separated in 1997 and this caused stagnation of the pathological activities in the first half of the Project. Since the salaries of the counterparts have been paid by contract research, some counterparts had to carry out research subjects in addition to the research activities of the Project. The support staff such as a driver and an engineer for maintenance of equipment has not been allocated by the Mongolian side and the Japanese side frequently covers these works.

The list of assigned counterparts is attached in ANNEX 7.

(3) Allocation of Budget

The Mongolian side bore expenses for electricity, heating, water, and some laboratory reagents. In addition, the Mongolian side provided cost for some repair of laboratories and staff rooms. Small animal house was renovated by counterpart fund of The Increase of Food Production (2KR). However, disbursement of counterpart fund was not sufficient enough to maintain equipment and provide reagent necessary for project activities, and the Japanese side provided cost for procurement of locally available laboratory materials and fuels. Fee for custom clearance had not been paid for 2 years.

The list of input by Mongolian side is attached in ANNEX 8.

4-2 Achievement of Activities

Attainment of Activities by TDIP is attached in ANNEX 10.

4-2-1 General research activities for immunological diagnosis of animal infectious diseases.

All items were completed as scheduled.

4-2-2 Basic research activities for immunological diagnosis of infectious diseases.

(1) Viral diseases

Regarding development of immunological diagnostic methods for equine viral abortion (Equine herpes virus, EHV1) , all items will be completed as scheduled.

High-titer viruses obtained from EHV1-infected EHK line cells were used as antigen and tested on horse serum samples obtained from 3 imags. Positive rate by AGID and neutralization tests was 78.1% and 80%, respectively.

Serum samples from 1,400 aborted mare were tested for EHV1. However,cause of abortion was unknown; virus, salmonella, cold, malnutrition or any other causes might be considered. Equine abortion takes place every 2 to 3 years. Monitoring of serum titer on regular bases, particularly pre- and post-abortion titers, may lead to find close relationship between level of titers and outbreak of abortion.

Virus recovery from various organs of an aborted horse was attempted, through a series of tissue culture, but no virus was isolated. Isolation of EHV1 from aborted horse could lead to development of vaccines.

Preparation of mAb for EHV1 is in progress. At present, 5 to 6 hybridomas positive for EHV1 by ELISA were being cultured. Hybridomas of high titre are expected to be harvested.

Purification of rabbit anti-horse IgG and HRPO conjugate are in progress. Purification of EHV1 for ELISA test was completed.

AGID method was filed to the Ministry of Food and Agriculture as a national standard test for EHV1 infection. It will soon approved and registered. Patent right of new diagnostic methds generated at the Immunological Research Center was discussed. It is suggested that beneficiaries of the patent are IRC, for example, and patent income can be used as a financial source of research activities of IRC in future.

Applicability of acquired methods to other viral diseases, as supplemented by the mid-term evaluation study, was tested for rabies, bovine leukosis, and eqine infectious anemia. AGID tests were found to be an effective tool to diagnose bovine leukosis and equine infectious anemia. Progress in rabies is expected.

(2) Bacterial diseases

In bacteriology section, all items were completed as scheduled.

Preparation of mAb against Salmonella abortus equi (S.a-e) to be used in immuno-

histopathology is being progress in bacteriology section. Outer mambrane of S.a-e was used as antigen. Six hybridomas were obtained and antibody produced is being measured.

Applicability of acquired methods to other bacterial diseases, as supplemented by the mid-term evaluation study, was tested for purification of antigens of glanders and tuberculosis. Comparing antigenic fractions of Yersinia and Brucella, there found one fraction in Yersinia but absent in Brucella. This fraction can be used to differentiate between the two.

As for keeping a colony of BALB/c mouse, forty-five mice and sterilized feed were provided by JICA. As the mice used for preparation of mAb, breeding was accelerated. Of a total of 280 mice bred, 206 mice were used for mAb preparation. Production of mAb as diagnostic tool could become a source of financial income for sustainability in future, and therefore the colony should be maintained. It is also hoped that a successor of current leader should be selected.

(3) Protozoan diseases

Prevalence of Sarcocystis infection in sheep was completed. Bradyzoites of S. tenella were obtained from muscle of sheep experimentally infected with sporocysts from experimentally infected puppy. Purification of antigen was made from bradyzoites and preparation of mAb was completed with this antigen. Serum negative for S. tenella was obtained from newly born sheep and IgG was prepared.

Research attention has been gradually shifted to bovine sarcocystis that is zoonotic nature.

Application of acquired methods to other bacterial diseases, as supplemented by the mid-term evaluation study, has been made in equine babesiosis and toxoplasmosis. By the methods already acquired, purification of antigen and development of ELISA are in progress.

4-2-3 Basic research activities of clinicopathology of infectious diseases S.a-e infection

Experimental infection of pregnant mice and pregnant mare with S.a-e was completed and histochemical pathology was completed, except immuno-histochemical observation where preparation of mAb to S. a-e is in progress. It is expected that this will be completed by the end of the Project.

4-2-4 Immunological/biochemical research activities with laboratory animals.

All items were completed as scheduled.

4-2-5 Host pathophysiological and pathomorphological research activities.

Mid-term evaluation study dictated to collect blood and tissue samples of aborted fetus from local veterinary diagnostic laboratories, and also samples from slaughter houses and field. However, there were difficulties in obtaining aborted samples from diagnostic laboratories and field. On the other hand, many samples were collected by visiting slaughter houses and field and provided for pathological study. A color atlas of histopathology prepared by expert and counterparts facilitated to learn more about basics of histopathological lesions of various degree of involvement. Training and experience are important for developing better pathologists.

4-2-6 Overall technique for the advanced research of diagnosis on serious infectious diseases

Overall technique for the advanced research of diagnosis on serious infectious diseases were transferred to counterparts.

4-3 Achievement of Outputs

Output: The researchers of the Institute of Veterinary Medicine (IVM) and the faculty members of Veterinary Medicine acquire basic and applied research techniques for immunological diagnosis of animal infectious diseases.

Indicators:

1) Counterparts have had technical competence through the project activities and will be able to continue research by themselves. Number of qualified research staff developed through the Project is listed in ANNEX 7.
2) Laboratory manuals were prepared and placed by laboratory instruments to ensure appropriate use of laboratory equipment. Some manuals were kept by an individual who was involved in a specific technical work. A series of color atlas of histopathology of various organs of animals acquired at slaughter houses and field veterinary service stations was prepared jointly by Japanese expert and counterparts.

3) Established research techniques on diagnosis of animal infectious diseases includes culture of pathogen, preparation and purification of cultured pathogen, preparation of antigenic substances, preparation of poly-clonal and mono-clonal antibodies, and immunological diagnostic techniques for viral, bacterial and protozoan infections were introduced and established.
4) These immunological techniques developed in laboratories were tested on various samples obtained from fields to test its applicability.

4-4 Achievement of Project Purpose

Project Purpose: The immunological and immunopathological research for the diagnosis of infectious diseases is reinforced through basic and applied research activities.

Indicators:

1) Many immunological and histopathological diagnostic techniques were developed and established at Immunological Research Center for viral, bacterial and protozoan infections.
2) Level, quality and appropriateness of ongoing research activities were internationally acceptable.
3) Number and quality of research publications are also in high quality. List of research publications is shown in ANNEX 11.
4) Results of various immunological diagnostic techniques applied to field samples were satisfactory due to reliability and accuracy of methods.

4-5 Prospect for Achieving the Overall Goal

Overall Goal: The livestock industry is developed through the improvement of the technology on diagnosis of animal infectious diseases.

There is a big gap between the Project Purpose and Overall Goal and there are many other issues to be tackled to pursue the Overall Goal. Reinforced diagnosis techniques itself will not lead to the development of the livestock industry if other issues, such as those shown in Important Assumption in PDMe, are not solved.

To achieve the Overall Goal, it is critical to establish a functional veterinary service system from central to rural level to extend diagnosis techniques on animal infectious diseases. So far, the project outputs are rather remained within the IRC and IVM. The necessary measures should be taken to strengthen interface between research and practical disease control activities in the fields.

In order to pursue the Overall Goal, it is equally important for the Mongolian government to formulate a policy or strategic framework to instruct how to promote livestock industry under the current system of market economy while keeping a traditional nomadic style.

5 Results of the Evaluation with Five Criteria

Based on the survey results regarding the achievement of the Project Plan, the Project was evaluated in terms of the five criteria as follows. Details of each evaluation result can be referred to in the Evaluation Grid attached in ANNEX 9.

5-1 Relevance

In Mongolia, livestock sector is most important in economy and most of population heavily depends on the livestock production and related industries. The Mongolian government has a policy to promote export of livestock products and thus a disease control system with improved diagnostic techniques is required. In this context, the project purpose is highly relevant to the policy of Mongolian government as well as JICA's assistance strategy to Mongolia.

On the other hand, the Committee considers that the Project framework itself lacks pertinence. Firstly, without proper mechanism to coordinate/cooperate with related institutions of the Ministry of Food and Agriculture, the project outputs cannot lead to improvement of practical disease control activities and thus lead to the Overall Goal. Project framework did not include activities to promote such coordination/cooperation mechanism. Secondly, to pursue the Overall Goal, some other implementing organizations could also be considered. Thirdly, careful examination of financial and managerial aspects of Immunological Research Center did not seem sufficient. IRC was newly established for the Project, and it has become clear in the course of the Project that the IRC does not have its own staff and budget. Counterparts were assigned by and budget was allocated from IVM. This implementation structure seems to have posed

constraints for the management of the Project. In other words, it is fair to say that the Project framework was formulated with too much attention to technological aspect of project activities and less consideration was made for managerial aspect.

It should be noted, however, that the Project could achieve the expected outputs because of the sincere efforts of Japanese experts and counterparts even under the difficult condition described above.

5-2 Effectiveness

Indicators of achievement show that the Project Purpose is almost achieved. Supplementary surveys conducted by the evaluation team revealed that counterpart training and equipment as well as support of Japanese experts are attributed to the effect of the Project. IRC was newly established for the Project and necessary equipment was provided to conduct the research activities. Counterpart training program have provided opportunities for many counterparts to strengthen their knowledge and skills and to built a network with Japanese academician. There has been no other major donor-funded project in IRC. Therefore, it is fair to say that the Project Purpose has achieved by the project activities rather than some other factors, and the Project was effective enough in this sense.

5-3 Efficiency

Necessary inputs have been made by Japanese side, although long-term experts were not dispatched as planned. Short-term experts greatly contributed to cover the absence of long-term experts and to achieve the outputs, however, it could be more efficient if the long-term experts were dispatched as planed.

Some delay and change of contents have occurred in Mongolian sides as seen in the dependency on the Japanese side for procurement of laboratory materials, consumables and maintenance of equipment as well as lack of participation from the Veterinary Faculty. Although the above inputs have not been fully achieved, most part of the expected outputs have been achieved with the efforts of experts and counterparts. In addition, supplementary interviews/ surveys revealed that neither particular input nor activity was thought to be unnecessary. Thus, the project is thought as efficient in the sense that inputs have been fully utilized at their utmost potentials.

5-4 Impact

Technical impact is seen in related organizations such as Veterinary Faculty, Mongolian State University of Agriculture and State Veterinary Department, Ministry of Food and Agriculture, as they are planning to introduce diagnostics techniques developed by the Project. International Symposium on diagnosis technology for animal infectious diseases held in 2001 was regarded to give impact on researchers in the country. In addition, through the Project activities, interest and knowledge on immunological diagnostic techniques were promoted in local veterinary centers and veterinarians. As for institutional, economic, and socio-cultural impact, project output are mostly remained in IVM and IRC, and no clear indication, both positive and negative, can be seen so far.

5-5 Sustainability

5-5-1 Institutional Aspect

IRC was newly founded in 1996 as the implementing organization of the Project. However, IRC does not have its own staff and budget as well as buildings, and IVM, in which the IRC was accommodated, assigned researchers for counterparts, allocate budget, and provide laboratories and office space for the Project. IRC neither have its own management staff. Given this weak structure, institutional sustainability of IRC is very uncertain.

However, the Mongolian authorities concerned, namely, Ministry of Science, Education and Culture, Mongolian State University of Agriculture, and Ministry of Food and Agriculture, are currently planning to consider the future status of IRC. Possible options, such as making IRC as an independent national center and integrating IRC with other related institutions, would be discussed. The Committee expects that IRC will have its own budget and staff to continue their activities in coordination with other related organizations, so that the inputs and achievement of the Project will be maintained.

5-5-2 Financial Aspect

IRC has heavily depended on the Japanese side for the cost of consumables and maintenance of equipment. In addition, some research techniques introduced by the Project require the relatively expensive reagent and maintenance cost for equipment. Given the budgetary constraints, financial sustainability is one of the major concerns,

and so far, the prospect is very uncertain.

It should be noted that the Government of Mongolia has recently decided to double the budget for scientific research activities, and it could be of help. However, given the financial constraints of the government, it is highly recommended that IRC should consider the ways to secure its own income sources.

5-5-3 Technical Aspect

The project focused on the development of technology of monoclonal antibody preparation and its technique has been successfully transferred to Mongolian counterparts. This method can be applied to various purposes including determination of diagnosis where conventional methods can not differentiate. It is essential for a nation to have an institution to provide this modern technology when needed. It is hoped that budget is allocated to maintain the technology of international level. Besides, it is reminded that BALB/c mouse has to be bred, raised and used in special pathogen free condition of internationally acceptable level.

As seen in the achievement of activities, the Project has successfully developed the capability of counterparts and there are enough number of capable researchers in IRC and IVM. Therefore, it can be said that the sustainability of the Project in terms of technical competence of the counterparts has been confirmed. Future sustainability depends on proper management including staff assignment and promotion as well as budget allocation to sustain the activities of counterparts.

5-5-4 Others

Many sophisticated equipment were provided for the project activities, and the Mongolian side have been dependent on the Japanese side for its maintenance in spite of the several recommendations made by the past evaluation study team and consultative study team as well as Japanese experts. After the termination of the project period, equipment would be out of order unless Mongolian side takes charge of necessary maintenance. The Mongolian side is now planning to employ an engineer for the maintenance of equipment. The Committee would recommend IRC to employ the engineer as soon as possible and prepare before the end of the Project. Moreover, the Mongolian side should prepare for budget for future replacement of the spare parts and equipment.

6 Conclusion

The improved technology on diagnosis of animal infectious diseases has been successfully transferred to the Mongolian counterparts. In conclusion, based on the series of discussions with concerned officials and counterparts, it can be said that the Project have achieved outputs and project purposes set by R/D and remaining problems being within the competence of the trained counterparts with utilizing the academic network strengthened during the Project. Therefore, the Committee concludes that the Project is to be terminated as planned in the R/D.

7 Recommendations

To sustain and further develop the achievement of the Project, the Committee recommends the following.

(1) IRC should fully utilize the last three months to accomplish the remaining task and prepare the termination of the Project. This includes the employment of a maintenance engineer and establishment of system for proper maintenance of equipment.

(2) The Committee expects that the Mongolian side take necessary measures as soon as possible to decide the future status of IRC in order to sustain and develop the achievement of the Project. In doing so, the role and function of IRC and collaboration with other related institutions as well as measures to secure its own income source need to be thoroughly examined. In addition, close communication with Japanese experts and JICA Mongolian office will be required regarding the future status of IRC.

(3) To continue research activities in IRC after the termination of the Project, it is critical to allocate budget for the maintenance of equipment and procurement of necessary reagent. It is expected for IRC to make full use of government fund that is to be doubled for research activities.

(4) IRC is responsible for proper use and management of equipment provided by the Project. To sustain and further develop the achievement of the Project, equipment provided by JICA should not be transferred to other places or other organizations without consultation with JICA.

(5) To extend improved techniques on diagnosis of animal infectious diseases to the fields, it is essential to collaborate with related institutions of the Ministry of Food and Agriculture. The Committee would recommend the Mongolian side to formulate a concrete plan for extension through a working group composed of the related institutions.

(6) To achieve the Overall Goal, there are many remaining issues to be addressed. The Committee recommends the Mongolian side to establish a committee composed of related organizations and formulate a strategic framework for the development of livestock sector.

8 Lessons learned from the Project

(1) In designing a project framework, careful consideration on institutional, financial, and managerial aspect of implementing organization has a critical importance.

(2) In case of a research oriented project, allocation of full-time counterparts seems important for effective technology transfer.

(3) Well-organized counterpart training greatly contributed to achieving the Project Purpose. Selection of counterparts, course contents, and coordination with short-term experts were contributing factors.

(4) The gap between Project Purpose and Overall Goal in the PDM was too big and Overall Goal of the Project was vague. Realistic goal should have been set to clarify the future direction of the Project.

(5) For the research oriented project, consideration should be made on the issue of intellectual property developed through the research activities of the Project.

Project Design Matrix for Evaluation (PDMe)

ANNEX 1

Project Title: The Project for the Improvement of Technology on Diagnosis of Animal Infectious Diseases in Mongolia

Duration: July 1, 1997 ～ June 30, 2002

Target Group: Researchers of the Institute of Veterinary Medicine and the faculty members of Veterinary Medicine

Revised on April 4, 2002

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
〔Overall Goal〕 The livestock industry is developed through the improvement of the technology on diagnosis of animal infectious diseases.	Production of good quality livestock products is increased.	Statistics from the Ministry of Food and Agriculture	There is no change of policy of the Government of Mongolia on livestock industry.
〔Project Purpose〕 The immunological and immunopathological research for the diagnosis of infectious diseases is reinforced through basic and applied research activities.	1. Established diagnostic techniques at Immunological Research Center 2. Level, quality and appropriateness of ongoing research topics 3. Number and quality of research publications 4. Results of field application test on immunological diagnostic techniques	Annual report of IVM Report of the technical guidance Report of the Project Report of JICA study team	1. Appropriate policies to promote livestock industry under market economy are formulated and implemented. 2. There are established central and rural organizations for the extension of acquired diagnosis techniques on animal infectious diseases. 3. Veterinary service system from central to rural level is working.
〔Outputs〕 The researchers of the Institute of Veterinary Medicine (IVM) and the faculty members of Veterinary Medicine acquire basic and applied research techniques for immunological diagnosis of animal infectious diseases.	1. Number of qualified research staff developed through the Project 2. Number of laboratory manuals, monographs, posters and texts. 3. Established research techniques on diagnosis of animal infectious diseases. 4. Domestic techniques applied for the field tests.	Annual report of IVM Report of the technical guidance Report of the Project Report of JICA study team	1. Close coordination and cooperation for joint research activities with other educational institutes and animal health laboratories are maintained. 2. Research promotion policy is maintained by the government.

[Project Activities] 1. General research for immunological diagnosis are enhanced. 2. Basic research activities for immunological diagnosis are enhanced on the following infectious diseases. 1) Viral diseases 2) Bacterial diseases 3) Protozoan diseases 3. Basic research activities of clinicopathology are enhanced on infectious diseases. 4. Immunological/biochemical research activities with laboratory animals are enhanced on infectious diseases. 5. Host-patophysiological and pathomorphological research activities are enhanced on infectious diseases. 6. Overall technique is applied for the advanced research of diagnosis on serious infectious diseases.	[Input] I. Japanese side 1. Dispatch of Japanese experts 1) Long-term experts 2) Short-term experts 2. Provision of machinery and equipment 1) Experiment and research equipment 2) Vehicle 3) Office Facilities 3. Training of Mongolian personnel in Japan II. Mongolian side 1. Arrangement of counterpart personnel 1) Project Director 2)Project Manager 3)Project Coordinator 4)Researchers in the necessary field 5)Other necessary supporting staff 2. Provision of land and facilities for the Project 3. Expenditure of local cost of the Project 4. Establishment of Joint Coordinating Committee	Counterpart personnel remain in the Project during the time of Cooperation (Preconditions) There are no protesters against the Project in the Mongolian State University of Agriculture.

ANNEX 2

Achievement Grid

Project for Improvement of Diagnostic Technology of Animal Infectious Diseases

Category	Indicators	Source of Information	Method	Evaluation
1. Input	J-1. Japanese Experts	Project Documents and Questionnaire.	To confirm dispatched number, field of specialty, assignment and timing are appropriate and achieved the outputs of the project.	10 long term (172.5 M/M) and 38 short term experts (64.0 M/M) have been dispatched during the project period. Long term experts for some field were not dispatched as planned due to difficulties in recruiting experts. However, short term experts complemented the absence of the short term experts.
	J-2. Provision of equipment and facilities	Project documents, questionnaire and interview.	To confirm items , number, quality, amount and provided timing. In addition to examine how much they were utilized during the project.	The items , quality, number and amount are considered to be appropriate and fully utilized for the achievement of the outputs of the project. The research activities during the first year have been started using the equipment which were taken with the experts, because the necessary equipment have not been arrived at the beginning of the project. The maintenance of the equipment has been undertaken by the Japanese side.
	j-3. Counterparts training in Japan	Project documents	To confirm whether the training of counterparts in Japan was implemented as initially planned.	The total of the 22 counterparts were trained in Japan. The subjects, curriculum and methods have been appropriate to upgrade their knowledge and skills to achieve the expected outputs. However, three counterparts who were allocated from the Faculty of Veterinary of the State University of Agriculture did not participated in the activities of the project after having training.
	J-4. Local costs support	Project documents	To confirm how much local costs support was made.	The costs for laboratory material, reagents, fuel of the vehicles and custom clearance fee have been supported by the Japanese side. Besides, the costs for the extension activities and seminar were born by the Japanese side.(Approx. ¥5.4 million)
	(Mongolian side)			
	M-1. Land. building and facilities	Project documents	To confirm the inputs of building facilities for the project.	The lab space. 14 rooms. 170.00 sqm in total, was provided by the Mongolian side within IVM building. However total renovation of laboratories and installation of major equipment was done by the Japanese side. (¥40.7 million). It resulted delay of the project activities at the first year.
	M-2. Allocation of C/P (Counterparts)	Project documents	To confirm number, and activities of the counterpart and assignment record.	Forty one (41) counterparts have been allocated by the Mongolian side. from IVM and Faculty of Veterinary of the State University of Agriculture. Three counterparts from the university did not actively participate in the Project. after having training in Japan, and it caused delayed in the pathological research. The IRC has had difficulty to employ a person who undertakes maintenance of the modern equipment. IRC is going to employ one engineer as a maintenance staff.

	M-3. Provision of Equipment and materials	Project documents.	To confirm the input record of the project.	There is no provision of equipment by the Mongolian side.
	M-4. Expenditure of local costs	Project documents	To confirm expense of Mongolian side.	The Mongolian side provided salary of the counterparts, some laboratory reagents, electricity, water and heating.
2. Activities	1.General Research activities for immunological diagnosis.	Project documents and interview	To confirm how is the basic research achieved the goals.	All the items of general research activities for immunological diagnosis of animal infectious diseases were completed.
	2. Basic research activities for immunological diagnosis on the following infectious diseases ; 2-1. Viral diseases 2-2. Bacterial diseases 2-3.) Protozoan diseases	Project documents and interview	To confirm the progress of the research activities.	2-1. Development of immuinological diagnostic methods for equire viral abortion is expected to be accomplished by the termination of the project. 2-2. All the research items in bacteriology section have been completed as initial schedule 2-3. Prevalence of Sarcocystis infection in sheep was completed. Research attention has been gradually shifted to bovine Sarcocysis which is zoological nature.
	3. Basic research activities of clinicopathology of infectious diseases.	Project documents and interview	To confirm the accomplishment of the clinicopathological research.	3-1. S.a-e infection Experimental infection of pregnant mice and pregnant mare with S.a-e was completed and histochemical pathology was completed. except immunohistochemical observation where preparation of mAb to S.a-e is in progress. It is expected to completed by the end of the project. 3-2. Pathology of infectious diseases. Suggestion of the mid-term evaluation to collect blood and tissue samples aborted fetus were difficult in obtaining samples from diagnostic laboratories and field. Thus they were collected in slaughter house and provided for the pathological study of the counterparts.
	4. Immunological / biochemical research activities with laboratory animals on infectious diseases.	Project documents and interview.	To confirm reinforcement of immunological / biochemical research activities with laboratory animals.	Immunologica / biochemical research activities with laboratory animals were reimforced and BALB/c mouse colony was maintained and produced.
	5. Host-pathophysiological and pathomorphological research activities on infectious diseases.	Project documents and interview	To confirm the reinforcement of the research of hostpathopysiological and pathomorphological research.	Host-phatophysiology and pathomorphological research activities were enhanced. Pathophysiological study on erxperimental infectyion on S.a-e was progressed. The data and information on the occurrence of animal diseases are collected through the field and abattoir samples.

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	3. Number and quality of research publications.	Experts and project manager	To confirm the umber of published Reports which are officially submitted to the domestic and international conference. Number of lectures of immunological diagnosis.	1. Eighteen (18) reports for the domestic and international symposium and 3 for veterinary Journal of bacterial Section. 2. Six (6) reports for journals and 6 for symposium of protozoan section. 3. One (1) report for journal and 6 reports for symposium of virology section. 4. Four (4) reports for the domestic and international symposium of pathology section. 5. Twenty five (25) lectures and demonstrations held for the staff of regional research labs and local veterinary services.
	4. Results of the field application tests on immunological diagnostic techniques.	Project documents.	To confirm whether the field tests is considered to be applicable and what are the remaining tasks.	1.Vviral infectious disease AGID test with FLK strain has been established and used for the control trial. 2. Bacterial infectious diseases 2-1.The test of glanders was applicable and 157 of 1,120 samples of (14%) were positive for glanders. 2-2. AGID test shows that the immunized cattle were negative with bacterial suspension and positive ni-serum for AGID test. 2-3. The study on diagnosis for Yersiniasis in on going. 3. Protozoan infectious diseases tests are at present on going.
5. Important Assumptions	1. The counterparts remain in the project during the time of cooperation.	Initial counterpart list and project manager.	To confirm most of the trained counterparts remain in the project and contributing to achievement of the project purpose.	There are 3 counterparts who dropped from the project. two from Faculty of Veterinary of the State University of Agriculture However other counterparts remain in the Project.
	2. Close cooperation and coordination for joint research activities with other educational institutes and animal health laboratories are maintained.	Project manager and team leder.	To examine whether the close coordination and cooperation among the related organizations are implemented.	There are some technical cooperation and exchange of information with the Central lab. of the Ministry of Food and Agriculture. such as testing. participation in lectures and seminars. However, those cooperation are carried out on the individual bases so that the programs for coordination and cooperation should be established among the related organizations.
	3. Research promotion policy is maintained by the government.	Project manager	To examine the policies of the government to maintain the research activities.	There is a n effective resolution to promote the research activities. that is National Program for Animal Health and the Project on Reinforcement of Laboratory of Serious Animal Infectious Diseases.

	4. Appropriate policies to promote livestock industry under market economy are formulated and implemented.	Ministry of Food and Agriculture.	To confirm whether the government has policies to promote livestock industry under the market economy.	There is an effective resolutions to promote livestock industry. namely Improvement of Quality of Livestock Products, , Export of Meat Products and White Revolution.
	5. There are established central and rural organizations for extension of acquired diagnosis techniques on animal infectious diseases.	Ministry of food and agriculture	To confirm whether the government has the established organizations for promotion of the immunological diagnostic techniques to the central and regional organizations.	There is a national veterinary service network of the Ministry of Food and Agriculture to promote the diagnostic technology to the rural veterinary service stations. However it has difficulties in functioning due to budgetary constraints. For this purpose, close and good communication among the related organizations are needed.
	6. Veterinary services system from central to rural levels is working.	Ministry of food and agriculture	To confirm the functions of veterinary services in the central and regional area.	Since the sudden privatization of veterinary services at som level. rural veterinary services have faced difficulties due to lack of income and manpower. A cooperation project for improvement of veterinary service is being conducted in 4 aimags by GTZ.
6. Others	1. Problems encountered during the implementation of the project. such as communication among the related organizations and personnel.	Japanese experts. project manager of Mongol side.	To confirm the problems and miscommunication which occurred during the implementation of the project and study the improvement for the next similar project.	Some misunderstanding between IVM and the experts happened on the early stage. because of insufficient communication due to language.
	2. Level of technology transfer to the counterparts.	Japanese experts and chief of counterparts.	To conduct interview survey to the Japanese experts and the counterparts and confirm the level of technology transfer by the project.	Most of the counterparts are enough capable of conducting research activities and expect to acquired the transferred technology by the end of the project. Their strong initiatives will make a chances to take over the project and continue the improvement of research and diagnostic techniques
	3. Any obstacles to progress the project.	Japanese experts and counterparts.	To identify preventive factors to obstruct the progress of the project.	Dual organizational structure. absence of financial and administrative background of IRC have been obstacles to promote the project activities.
	4. Any promotional factors to have accelerated the progress of the project.	Japanese experts and counterparts	To identify the promotional factors to accelerate the progress of the project.	1) Capability of the counterparts, 2) training in Japan, 3) Support and cooperation of staff of Mongolian government . 4) Network of the research staff of Mongolia and Japan, promoted the project to achieve the outputs and project purpose

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	5. Actions taken for the recommendations provided by the last mid-term evaluation study.	Project manager	To confirm the items, period and effects of the actions taken for recommendations.	1. The developed immunological diagnostic techniques such as AGID test for zEHV1 infection and brucellousis are examined for their practical value and reliability using field samples. 2. The IRC has still no own budget and heavily depends on the support of IVM and JICA. 3. The counterparts still heavily depend on the JICA experts for operation management such as maintenance of equipment, documentation, procurement of equipment and materials. 4. Improvement of administrative structure including staff development and promotion, job conditions and properly designed research policy, well organized research subjects and appropriate staff assignment are necessary. 5. Anti cattle , goat, horse and sheep IgG pAb has been prepared. Anti-cammel IgG pAb is under preparation. 6. Research subjects assigned to the individual counterparts from the IVM and IRC have been unified. 7. The project extends its activities to some prefectural labs through seminar, demonstration and field sampling. However any close collaboration with the faculty and central veterinary lab which locate neighboring place and similar technical needs cannot be seen obviously. 8. Some of the senior staff are the advisory members for the national programs related livestock and animal health. Also, some are the members of Scientific technical committee of the Government.

ANNEX 3 Assignment of Japanese Experts

Name	field of expert	duration	Post/Former Post
<Long-Term Expert>			
H.GOTO	Chief Adviser,Virology	1997.10.25-1998.11.24	Obihiro Univ.
T.OYAMA	Coordinator	1997.08.09-1999.08.08	
F.MATSUSHITA	Protozoology	1998.04.10-2000.0409	Obihiro Univ.
T.NAGABAYASHI	Bacteriology	1998.05.13-2000.05.12	
H.YOSHIKAWA	Chief Adviser,Pathology	1998.07.01-1999.06.30	Kitazato Univ.
A.ARAKAWA	Chief Adviser,Pathology	1999.06.16-2001.07.15	Osaka Pref. Univ.
A.FUJITA	Coordinator	1999.07.14-2001.08.13	
I.TAKATORI	Virology	2000.05.20-2001.06.19	
H.UEKI	Immunopathology	2001.05.16-2002.06.30	Kitazato Univ.
Y.TADA	Chief Adviser	2001.06.22-2002.06.30	JICA
<Short-Term Expert>			
K.NARITA	Supervision of Facility of Rehabilitation	1997.09.27-1997.10.04	Obihiro Univ.
A.IINO	Supervision of Facility of Rehabilitation	1997.12.19-1997.12.26	Obihiro Univ.
T.YOSHIKAWA	Pathology	1998.01.09-1998.01.23	Kitazato Univ.
T.YOSHIKAWA	Pathology	1998.11.13-1999.01.15	Kitasato Univ.
K.FUJISAKI	Purification of Antigen (Protozoan)	1998.05.13-1998.06.17	Obihiro Univ.
T.ISHIHARA	Experimental Animal (Handling)	1998.07.17-1998.08.05	Rakuno Gakuen Univ.
T.ISHIHARA	Experimental Animal (Handling)	1998.11.20-1998.11.27	Rakuno Gakuen Univ.
K.FURUYA	Purification of Antigen (Bacteria and Virus)	1998.10.14-1999.01.13	Hokkaido Health Inst.
T.HIRUTA	Installation of equipment	1998.11.20-1998.12.11	
I.IGARASHI	Purification of Pathogen (Protozoan)	1999.06.16-1999.07.14	Obihro Univ
T.OYAMADA	Immunopathology	1999.06.25-2000.03.26	Kitazato Univ.
T.OYAMADA	Immunopathology	2000.11.05-2000.11.24	Kitazato Univ.
T.MIKAMI	Protozoology	1999.07.28-2000.08.07	Obihiro Univ.
T.MIKAMI	Protozoology	2000.05.03-2000.05.17	Obihiro Univ.
B.SYUTO	Purification of Antigen	1999.08.04-1999.08.28	Iwate Univ.
A.TAKADA	Preparation of Monoclonal Antibody	1999.08.21-1999.09.18	Hokkaido Univ.
N.HIRANO	Virology	1999.10.02-1999.10.27	Iwate Univ.
N.HIRANO	Virology	2000.03.17-2000.04.14	Iwate Univ.
H.SENTSUI	Virology	1999.10.31-1999.11.26	NIAH
T.YAMASHITA	Virology(Preparation of Monoclonal Antibody)	2000.07.19-2000.08.19	Aichi Health Inst.
H.YOSHIKAWA	Immunopathology	2000.07.22-2000.08.05	Kitazato Univ.
T.MATSUI	Immunopathology	2000.08.19-2000.09.16	Obihiro Univ.
E.KAWAMOTO	Bacteriology	2000.09.02-2000.10.07	Tokyo Med. Univ.
H.NAGASAWA	Isolation and Purification of Protozan	2001.01.05-2001.02.02	Obihiro Univ.
S.MAKINO	Differential immunological diagnosis of Brucella and Yersinia inffectiou	2001.06.27-2001.07.21	Obihiro Univ.
T.SANEKATA	Virology	2001.07.04-2001.09.28	Tottori Univ.
T.OYAMADA	Diagnosis by Immunohistopathology on Salmonella Infection of horse	2001.07.20-2001.08.03	kitazato Univ.
M.HORIUCHI	Preparation of Monoclonal Antibody	2001.08.22-2001.09.19	Obihiro Univ.
N.TAKISHIMA	Protozoology	2001.07.28-2001.11.30	Dairy Pro. Assoc.,Ibaraki
H.NAGASAWA	Protozoology	2001.08.24-2001.09.20	Obihiro Univ.
I.IGARASHI	Protozoology	2001.09.03-2001.09.21	Obihiro Univ.
T.OYAMADA	Immunopathology	2001.09.01-2001.09.15	kitazato Univ.
A.ARAKAWA	Seminar of Technology on diagnosis of Animal Infectious diseases	2001.09.02-2001.09.22	
T.MIKAMI	Seminar of Technology on diagnosis of Animal Infectious diseases	2001.08.29-2001.09.12	Nippon Univ.
K.FUJISAKI	Protozoology	2001.11.23-2001.12.15	Obihiro Univ.
T.MATSUI	Immunopathology	2001.12.12-2002.01.18	Obihiro Univ.
T.YOSHIKAWA	Immunopathology	2002.02.27-2002.3.11	kitazato Univ.
N. TAKISHIMA	Protozoology	2002.2.20-2002.6.30	Dairy Pro. Assoc.,Ibaraki

ANNEX 4

Provision of machinery and equipment　　Japanese yen over￥1,600,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	utilization	room	Section	reason of no operation	remark
A-01	1997.12.	Distribution Board	MEIKO SANGYO Co.LTD	unit	1	8,660,909	8,660,909	A				
A-02	1998/8/24	Car	Toyota Land Cruiser	unit	2	2,554,000	5,108,000	A	garage	jica		
A-03	1998/10/14	Hige Speed Refrigrated Centrifuge	HITACHI CR21E	set	1	2,925,000	2,925,000	A	125	virus		
A-04	2000/3/24	Ultra Low Temperature Freezer	revco ULT-1786-9-RC	set	1	3,000,600	3,000,600	B	222	common		
A-05	2000/3/24	Freeze Dryer	tokyo rika FD-1 119428	set	1	1,609,000	1,609,000	B	212	bact		
A00-1	2000/9/6	Ultra Low Temperature Freezer	SANYO MDF-1155AT	set	1	2,250,000	2,250,000	B	222	common		
A00-2	2000/12/5	Tissue Embedding center	EG1160	set	1	1,850,000	1,850,000	A	123	paht		
A00-3	2000/12/5	Incubator shaker	BR-3000LF	set	1	1,728,600	1,728,600	A	212	bact		
A00-4	2000/12/5	Steam Sterilizer	TH-HR-3	set	1	6,276,000	6,276,000	E	Animal house	common	Under construction work on animal house	with cast,door gasket

Utilization:

A: Frequent use(daily)

B: Often use (one to three time par week)

C: Use at prorate season

D: Not use frequeht (three to eleven times par year)

E: Not use by special reason

Provision of machinery and equipment　　Japanese yen ¥1,600,000～¥100,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	utili-zation	Room	Section	reason of no operation	remarks
B-001	1997/8/12	PERSONAL COMPUTER	POWER BOOK 1400CS/133	set	1	328,000	328,000	C	219	jica	short-term EXP use	
B-002	1998/1/14	INVERTED MICROSCOPE	CK-2-BI P-1	pcs	1	238,000	238,000	A	218	Bact		
B-003	1998/4/20	MICROSCOPE	NIKON SMZ-1B-3	pcs	1	187,200	187,200	A	111	protz		
B-004	1998/4/20	DOUBLE ARM FIBER LIGHTING LAMP	NIKON	pcs	1	122,400	122,400	A	111	protz		
B-005	1998/4/20	CENTRIFUGE	DESK TOP MODEL 2010	pcs	1	103,200	103,200	A	111	protz		
B-006	1998/6/12	PERSONAL COMPUTER	POWER BOOK 1400CS/166	set	1	270,000	270,000	C	219	jica	short-term EXP use	
B-007	1998/7/21	VIDEO TAPES	実験動物用 3本入り	set	1	121,500	121,500	A	222	common		
B-008	1998/8/3	SLEDGE MICROTOME	NS-31BF160E	set	1	433,500	433,500	A	123	path		
B-009	1998/8/24	Bracket Cage for Mouse	CLEA JAPAN CL-5413	set	4	665,000	2,660,000	A	126	common		
B-010	1998/8/24	Blower Unit with Spare parts	CLEA JAPAN CL-5433-1 (Spare parts:8set)	set	1	1,363,000	1,832,000	A	126	common		
B-011	1998/8/24	Bracket Unit	CLEA JAPAN CL-571-3	set	2	105,000	210,000	A	126	common		
B-012	1998/8/24	Vacuum Cleaner	HITACHI CL-4801	set	1	164,000	164,000	A	122	common		
B-013	1998/8/24	Working Table	Model:SKM-180Z	set	4	544,000	2,176,000	A	221,218 126,123	common		
B-014	1998/8/24	Incubator	ADVANTEC CV-600	set	1	346,000	346,000	A	221	bct		
B-015	1998/8/24	Shaking Water Bath	Yamato Scientific BF400/BW200	set	1	321,000	321,000	A	218	bct		
B-016	1998/8/24	Liquid Nitrogen Refrigerator	DIA REIKI Co.Ltd SR-29A	set	1	147,000	147,000	A	222	bct		
B-017	1998/8/24	Storage Cabinet for Reagent	Model:ULA2-185PZ	set	1	147,000	147,000	A	215	bct		
B-018	1998/8/24	Drying Sterilizer	ADVANTEC SP650	set	2	233,000	466,000	A	122,212	bct,ptz		
B-019	1998/8/24	Ultrasonic Cleaner	SHARF Model:UT-55	set	2	225,000	450,000	A	122,111	common		
B-020	1998/8/24	Electronic Balance	A&D FP-12k	set	2	112,000	224,000	A	126	common		
B-021	1998/9/23	Safety Cabinet	HITACHI KOKI SCV-1303ECII	set	1	1,209,000	1,209,000	A	218	common		
B-022	1998/9/23	CO2 Incubator	SANYO MCO-175	set	1	583,000	583,000	A	218	bct		
B-023	1998/9/23	Water Circulatbr	TOKYO RIKA Co.Ltd HS-1	set	1	181,000	181,000	A	218	bct		
B-024	1998/9/23	Ultra LowTemprature Freezer	SANYO MDF-392AT(-80℃)	set	1	932,000	1,067,000	A	222	bct		
B-025	1998/9/23	Medical Freezer	SANYO MDF-U536(-30℃)	set	1	203,000	203,000	A	218	bct		
B-026	1998/9/23	Pharmaceutical Refrigerator	SANYO MPR-511(4℃)	set	1	321,000	323,000	A	221	bct		
B-027	1998/9/23	Chromatochamber	TITEC M-600F	set	1	677,000	677,000	A	122	bct		
B-028	1998/9/23	Autoclave	TOMY SS-325	set	1	390,000	393,000	A	218	bct		
B-029	1998/9/23	High Speed Micro Centrifuge	HITACHI KOKI CF15D2	set	1	821,000	821,000	A	218	bct		

Provision of machinery and equipment　　Japanese yen ¥1,600,000～¥100,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	Vol	@	AMOUNT	utili-zation	Room	Section	reason of no operation	remarks
B-030	1998/9/23	Refrigerated Centrifuge	HITACHI KOKI CF7D2	set	1	720,000	720,000	A	218	bct		
B-031	1998/9/23	Electrophoreis Apparatus	ATTO AEP-452A Mini Slab Electro	set	1	259,000	259,000	A	221	bct		
B-032	1998/9/23	Pressure liquid Chromatograph	ATTO ACC-102RA	set	1	1,166,000	1,166,000	A	221	bct		
B-033	1999/3/9	Liquid Nitrogeh Refrigerator	DIA REIKI SR-29A	set	1	198,000	198,000	A	222	bct		
B-034	1999/3/9	Electrophoreis Apparatus	ATO AEP-451A Mini Slab Electro	set	1	295,000	295,000	A	111	bct		
B-035	1999/3/9	MICROSCOPE	NIKON TMS-2A	set	1	346,000	346,000	A	111	bct		
B-036	1999/3/9	Monochrome enlarger/Goods for film development HANZA		set	1	674,550	674,550	B	127	path		
B-037	1999/3/9	Microplate reader	MODEL550	set	1	676,900	690,800	B	221	bct		
B-038	1999/3/9	Microplate washer	SANKO AMW-2	set	1	906,950	906,950	B	221	bct		
B-039	1999/3/9	Ultrafiltration pump	MILLIPORE XXKT 090 OP	set	1	345,000	385,000	B	126	bct		
B-040	1999/3/9	DISPENSER(ﾎﾓｼﾞﾅｲｻﾞｰ?)	126-63-53-11	set	1	574,000	574,000	A	111	ptz		
B-041	1999/4/5	Paraffin spreading apparatus	SAKURA PS-52C	set	1	193,500	193,500	A	123	path		
B-042	1999/4/5	Paraffin oven	SAKURA PM-401-I	set	1	356,400	356,400	A	123	path		
B-043	1999/7/16	Transsblot cell Western blot appsratus	ATTO AE6677p	pcs	1	100,000	100,000	A	221	bct		
B-044	1999/8/16	BIO-FREEZER	IKEMOTO No.GSS3165F3	set	2	252,000	504,000	A	221,111	bct,ptz		
B-045	1999/8/16	MULTI-channel pipete	50～300μL L-4510030	pcs	1	113,000	113,000	A	221	bct		
B-046	1999/8/16	Photomicrographic system	Nikon U-III 35-PL1	set	1	657,850	657,850	A	126	path		
B-047	1999/8/16	Culture Incubator	150L,IUCHI CI-600SM ,No.11-4187-02	pcs	2	216,900	433,800	A	215,111	bct,ptz		
B-048	1999/8/16	Paraffin Melting Oven	sakura PS-25WH	pc	1	152,790	152,790	A	123	path		
B-049	1999/08/26	Microscope teaching set	Nikon F-F	set	1	269,000	269,000	A	123	path		
B-050	1999/10/31	PowerBook G3	g3/333(M7304J/A)	set	1	335,000	335,000	A	219	jica		
B-051	1999/12/29	Hot plate	HP-3000 with Transformer	set	1	105,000	105,000	A	123	path		
B-052	1999/12/29	Slide warmer	sakura PS-25WH	set	1	158,000	158,000	A	123	path		
B-053	1999/12/29	High pressure steam strilizer	sakura ASV-3023	set	2	493,000	986,000	A	122,101	ptz,vrs		
B-054	2000/1/25	Incubarter	ITD-60KH	pcs	3	145,000	435,000	B	218,212 123	bct,ptz pat		
B-055	2000/1/25	Portable Centrifuge	H-1200B	pcs	1	190,000	190,000	B	108	protz		
B-056	2000/1/25	Sample Block warm	sakura SMB-1	pcs	1	135,000	135,000	B	123	path		

Provision of machinery and equipment　　Japanese yen ¥1,600,000～¥100,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	utili-zation	Room	Section	reason of no operation	remarks
B-057	2000/1/31	Electric Furnace	FG-1000	pcs	1	690,000	690,000	B	122	common		
B-058	2000/3/14	Culture Incubator	CI-600SM with Transformer	pcs	2	424,000	848,000	B	221/126	bct		
B-059	2000/3/24	Clean Room	KCR-4-2030C	set	3	1,325,000	3,975,000	B	212/109 118	common		
B-060	2000/3/24	Refrigerated Centrifuge	1720	set	1	722,000	722,000	B	125	common		
B-061	2000/3/24	50ml Angle Rotor	RA-200J with 1720	pcs	1	167,000	167,000	B	125	common		
B-062	2000/3/24	38ml Angle Rotor	RA-228J with 1720	pcs	1	167,000	167,000	B	125	common		
B-063	2000/3/24	Spectrophotometer	V530	pcs	1	537,000	537,000	B	111	bact		
B-064	2000/3/24	Intelligent Remoto Mbdule	IRM-559 with V530	pcs	1	122,000	122,000	B	111	bact		
B-065	2000/3/24	Ice Maker	FM-120D	set	1	602,000	602,000	A	212	bact		
B-066	2000/3/24	Compact Clean Bench	BH-1200	set	1	633,000	633,000	B	215	bact		
B-067	2000/3/24	Microscbpe	Nikon E600	set	1	912,000	912,000	A	123	Virus		
B-068	2000/3/24	Microscbpe	Nikon E400	set	3	431,000	1,293,000	A	221/215 111	bact		
B-069	2000/3/24	Homogenizer	HF-91F	pcs	1	336,000	336,000	B	221	bact		
B-070	2000/3/24	Electronic Balance	PB602-S	pcs	2	123,900	247,800	B	215,126	bact		
B-071	2000/3/24	Vacuum Pump	VR16LP	set	1	398,000	398,000	B	126	bact		
B-072	2000/3/24	Vacuum/Pressure Pump	XX55 20 50	set	4	146,000	584,000	B	218,221 126,Virs	bact		
B-073	2000/3/24	Gel Dryer	KS-8520	set	1	187,000	187,000	B	221	bact		
B-074	2000/3/24	Power supply(EF)	MP-7864	set	1	159,000	159,000	B	221	bact		
B-075	2000/3/24	Rotator for Gel	KS-6330	set	1	155,000	155,000	B	221	bact		
B-076	2000/3/24	Hot Dry Bath	HF-21	set	1	126,500	126,500	A	221	bact		
B00-1	2000/8/5	Micro Centrifuge	IWAKI CFM-1300	set	1	26,000	26,000	A	221	bact		
B00-2	2000/9/6	Microplate Reader	Model 550	set	1	702,000	702,000	A	221	bact		
B00-3	2000/9/6	Multi purpose Horizontal Electrophoresis Kit	AE-3235C	set	1	225,000	225,000	A	221	bact		
B00-4	2000/9/6	Photomicrographic system	U-III-35-PL1	set	1	582,000	582,000	A	126	bact		
B00-5	2000/9/6	Microscope,Trinocular type	TS100-F	set	1	594,000	594,000	A	126	bact		
B00-6	2000/9/6	Spectrophotometer	V-550	set	1	1,220,800	1,220,800	A	221	bact		
B00-7	2000/9/6	Digital Densitometer	DM-303	set	1	1,350,000	1,350,000	A	221	bact		
B00-8	2000/9/6	filter kit	XXKT-14200	set	1	441,000	441,000	A	126	Virus		
B00-9	2000/9/13	Mini whole gel eluter	165-1261	set	1	245,000	245,000	A	221	bact		

Provision of machinery and equipment　　Japanese yen ¥1,600,000～¥100,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	utili-zation	Room	Section	reason of no operation	remarks
B00-10	2000/9/29	Water Distillation Apparatus	WS-80 sibata	set	2	384,000	768,000	A	122,111	vrs,ptz		
B00-11	2000/12/5	clture incubater	CCI-600S	pcs	1	380,000	380,000	A	213	bact		
B00-12	2000/12/5	Sink	E-9	pcs	1	120,000	120,000	A	122	path		
B00-13	2000/12/5	Medical cabindt	N-515G,515D,515B	set	2	126,000	252,000	A	123/111	pat/ptz		
300-14	2000/12/5	Ultra Pure water maker	Milli-Q Biocel	set	1	940,000	940,000	B	126	Virus		
B01-1	2001/8/27	Microscope CCD camera	CCD-S2 shimadazu with D/C	set	1	126,500	126,500	A	123	Path		
B01-2	2001/8/30	Microscope	Nikon SMZ645 -3	set	1	237,000	237,000	A	111	Protz		
B01-3	2001/10/2	SWING ROTOR	9024280K S55S	pec	1	590,000	590,000	A	125	Virus		
B01-4	2001/10/2	Electrophoresis Apparat Jenokenser	AE-6145	set	1	111,000	111,000	A	221	Bact		
B01-5	2001/10/2	Power supply 3000	AE-8800	set	1	307,000	307,000	A	221	Bact		
B01-6	2001/10/2	Ultra sonic homogenaizer	UH-50	set	1	315,000	315,000	A	215	Protz		
B01-7	2001/10/2	LocaterJR liquid Nitrogen	50L dewar flask	set	1	325,000	325,000	A	222	Bact		

Provision of machinery and equipment　　Japanese yen ¥100,000～¥20,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	UNIT	VOL	@	AMOUNT	utili-zation	Room	Section	reason of no operattion	remark
C-001	1997/08/12	SOFT WARE	MS OFFICE 4.2	set	1	55,000	55,000	A	223	jica	install soft ware	
C-002	1997/08/12	AUTOMATIC VOLTAGE REGULAT(	SVC-1500ND	pcs	1	35,000	35,000	A	219	jica		
C-003	1997/08/12	PRINTER	Color Style Writer 2500	pcs	1	35,000	35,000	A	219	jica		
C-004	19971O/29	PIPETMAN	P-200	pcs	1	25,200	25,200	A	218	bct		
C-005	1998/04/20	SWING ROTER	RS-240	pcs	1	28,000	28,000	A	125	common		
C-006	1998/04/20	BACKET	for15cc	set	1	23,600	23,600	A	125	common		
C-007	1998/06/12	SOFT WARE	WINDOWS 95FD	set	1	23,000	23,000	A	223	jica	install soft ware	
C-008	1998/06/12	SOFT WARE	MS-OFFICE 97 standard for WINDOWS	set	1	51,000	51,000	A	223	jica	install soft ware	
C-009	1998/06/12	SOFT WARE	FILE MAKER Pro Ver 4.0	set	1	41,500	41,500	A	223	jica	install soft ware	
C-010	1998/06/12	SOFT WARE	CHINESE LANGUAGE KIT	set	1	25,000	25,000	D	223	jica	install soft ware	
C-011	1998/06/12	FAX MODEM	D F3314ES	set	1	22,700	22,700	D	223	jica	mac1400 use	
C-012	1998/06/12	MO DRIVE	MOBILESHURRLE S640MO	set	1	56,000	56,000	A	223	jica		
C-013	1998/06/12	BATTERY KIT	For SD711	set	1	25,500	25,500	A	223	jica		
C-014	1998/07/21	MOUSE CAGE	CLEAN S (PC8-10)	pcs	10	20,000	200,000	A	126	bct		
C-015	1998/08/24	Bracket Cage for Rabbit	CLEA JAPAN CL-0431-2	set	15	37,000	555,000	A	126	bct		
C-016	1998/08/24	Fixer for Rabbit	CLEA JAPAN CL-4520	set	1	33,000	33,000	A	126	bct		
C-017	1998/08/24	Atomizer (Jet Fog II)	CLEA JAPAN CL-4112	set	1	64,000	64,000	A	126	bct		
C-018	1998/08/24	Magnetic Stirrer	ADVANTEC SR-500	set	1	35,000	35,000	A	111	ptz		
C-019	1998/08/24	Driving Shelf	IKEDA RIKA KOGYO DS-C	set	1	53,000	53,000	A	122	ptz		
C-020	1998/08/24	Microwave Oven	TOSHIBA ER-FX2	set	1	69,000	69,000	E	215	bct	brbken	
C-021	1998/08/24	Car Spare Parts	for TOYOTA Landcruiser	set	2	255,400	510,800	E	126	jica	Spare Parts	
C-022	1998/11/23	TOOL SET	S-73 HOZAN	set	1	55,000	55,000	B	219	jica		
C-023	1998/11/23	TOOL SET	SK382M KTC	set	1	31,000	31,000	B	219	jica		
C-024	1999/03/9	Microplate mixer	SANKO MX-5	set	1	78,000	78,000	A	111	ptz		
C-025	1999/03/9	Mixer	MODEL G-560	set	1	38,500	38,500	A	126	bct		
C-026	1999/03/9	Micro pipet	NOCHIRYO NP-20	set	2	21,500	43,000	A	218	bct		
C-027	1999/03/9	Micro pipet	NICHIRYO NP-100	set	2	21,500	43,000	A	218	bct		
C-028	1999/03/9	Micro pipet	NP-200	set	2	21,500	43,000	A	218	bct		
C-029	1999/03/9	Multi pipet	7000-8L	set	2	74,600	149,200	A	218	bct		
C-030	1999/04/5	processing/embedding cassette	SAKURA 4187 1500PCS/SET	set	1	35,100	35,100	消耗品	123	path	consumption	
C-031	1999/04/5	Cold plate	SAKURA 4650 6PCS/SET	set	1	21,150	21,150	B	123	path		

Provision of machinery and equipment　　Japanese yen ￥100,000～￥20,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	UNIT	VOL	@	AMOUNT	utili-zation	Room	Section	reason of no operattion	remark
C-032	1999/06/25	Copy Stand	M-2	pcs	1	35,500	35,500	B	127	path		
C-033	1999/06/25	Transformer	MF-2000E	pcs	1	31,500	31,500	A	127	path		
C-034	1999/06/25	Polaroid Camera	Auto Processor	pcs	1	23,400	23,400	B	127	path		
C-035	1999/06/25	CAMERA	α-SWEET	pcs	1	47,000	47,000	B	127	path		
C-036	1999/06/25	LENS	50mm F3.2	pcs	1	21,000	21,000	B	127	path		
C-037	1999/06/25	FLASH	1200AF	pcs	1	29,000	29,000	B	127	path		
C-038	1999/06/25	Holder set	130C-S	set	1	53,400	53,400	B	123	path		
C-039	1999/08/16	PIPETMAN	2～20μL GILSON P-20	pcs	2	26,900	53,800	A	108	protz		
C-040	1999/08/16	PIPETMAN	50～200μL GILSON P-200	pcs	2	26,900	53,800	A	108	protz		
C-041	1999/08/16	Repeating Dispenser	Eppendorf ～5.0ml	pcs	1	33,900	33,900	B	108	protz		
C-042	1999/08/16	Blood Cell Counting Plate	TATAI E-type No.38-22	pcs	2	60,900	121,800	B	218	bct		
C-043	1999/08/16	Camera	NIKON F70 W/ACC W/CASE	pc	1	87,400	87,400	B	219	jica		
C-044	1999/08/16	AF Micronikor Lens	60mm F2.8D	pc	1	49,500	49,500	B	219	jica		
C-045	1999/08/16	Specimen Sterilzer for Fluoescence Antibody Vibrator	SAKURA VF-5 (VIBRATING STERILIZER)	pc	1	71,700	71,700	B	123	path		
C-046	1999/08/16	SPC Filter Holder	Haed Glass IUCHI No.22-257-0	set	1	27,400	27,400	B	221	bact		
C-047	1999/08/16	Laboratory Burner	Hoseless type IUCHI APT-L No,56-492-02	pcs	5	23,900	119,500	B	218	bact virus		
C-048	1999/08/20	BM PIPETTE	5-50μl BM-50	pcs	1	20,400	20,400	A	218	bact		
C-049	1999/08/20	BM PIPETTE	50-200ml BM-200	pcs	1	20,400	20,400	A	218	bact		
C-050	1999/08/20	BM PIPETTE	50-250ml BM-8-250H	pcs	1	62,200	62,200	A	218	bact		
C-051	1999/10/31	SOFT WARE	MS-office98 for MAC	pcs	1	66,000	66,000	D	219	jica	install soft ware	
C-052	1999/12/29	Electric Balance	simazu BL-620S	set	2	84,500	169,000	B	111/123	ptz/pat		
C-053	1999/7/21	Pipet aid XP	Pipet aid XP and charger	pcs	2	29,400	58,800	A	218	vrs/bct	one charger broken	
C-054	1998/11/2	refractometer	FM-410 (1624-3000)　FHK	pcs	1	21,000	21,000		221	Bact	99/12 be Lost	
C-055	2000/03/24	printer	with V530	set	1	58,000	58,000	B	111	ptz		
C-056	2000/03/24	Quartu Cell	1103-W002　with V530	set	1	65,000	65,000	B	221	Bact		
C-057	2000/03/24	Deuterium Lamp	5330-0094　with V530	pcs	1	46,000	46,000	消耗品	111	Bact	consumption	
C-058	2000/03/24	Micro-Plate Mixer	SJ106-97 MX-5	set	2	72,000	144,000	B	221/111	Bact		
C-059	2000/03/24	ph Meter	16-7005-02	set	4	71,200	284,800	A	221/126 123	Bact path		

Provision of machinery and equipment　　Japanese yen ¥100,000～¥20,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	UNIT	VOL	@	AMOUNT	utili-zation	Room	Section	reason of no operattion	remark
C-060	2000/03/24	Test Tube Mixer	MT-51with trans	set	3	78,000	234,000	B	221/111 212	Bact		
C-061	2000/03/24	System Cabinet	33-5024-01	set	3	93,500	280,500	A	221/126 212	Bact		
C00-1	2000/08/5	Portable Pipet	FALCON 357590	pcs	2	26,000	52,000	A	218	Bact		
C00-2	2000/08/5	Pipertman	GILSON P-20	pcs	1	26,500	26,500	A	218	Bact		
C00-3	2000/08/5	Pipertman	GILSON P-200	pcs	2	26,500	53,000	A	218	Bact		
C00-4	2000/08/5	Pipertman	GILSON P-1000	pcs	2	26,500	53,000	B	218	Bact		
C00-5	2000/08/23	Plate Washer	PW-2 with Vinyl Hose	pcs	1	34,000	34,000	A	221	Bact		
C00-6	2000/08/23	Ultraviolet Rays Sterilizer	GSM-151M	pcs	1	54,000	54,000	B	126	Virus		
C00-7	2000/09/6	Liquid carbon dioxide cylinder	for MDF-1155AT	pcs	1	76,000	76,000	B	222	Bact		
C00-8	2000/09/6	Ultraviolet Rays Sterilizer	GSM-151M with trans	set	1	39,300	39,300	B	215	Bact		
C00-9	2000/09/6	Plate Washer	SJ106-61	pcs	1	32,400	32,400	B	221	Bact		
C00-10	2000/09/6	Handy Aspireter	WP-25	pcs	1	97,600	97,600	B	221	Bact		
C00-11	2000/09/6	Immuno Vie Box	KV-2	pcs	1	53,000	53,000	B	221	Bact		
C00-12	2000/09/6	Filter 510mm	for Microplate reader 550	pcs	1	56,000	56,000	B	221	Bact		
C00-13	2000/09/6	Filter 590mm	for Microplate reader 550	pcs	1	56,000	56,000	B	221	Bact		
C00-14	2000/09/6	Dual Mini Slab Kit	AE-6400	set	1	37,800	37,800	B	221	Bact		
C00-15	2000/09/6	Single Channel Perlstsatic Pump High Flow rate version	SJ-1211H	set	1	52,500	52,500	B	221	Bact		
C00-16	2000/09/6	Single Channel Perlstsatic Pump Low Flow rate version	SJ-1211L	set	1	66,000	66,000	B	221	Bact		
C00-17	2000/09/29	Water Feed Conversion Kit	5314-101 with WA-80	set	2	24,000	48,000	B	122/111	Bct,ptz		
C00-18	2000/10/28	Hemacytomiter	ikemotorika 38-21	set	1	59,300	59,300	B	212	Virus		
C00-19	2000/12/5	Micro pipet	NPV-S	pcs	1	21,000	21,000	A	221	Bact		
C00-20	2000/12/5	Micro pipet	NPV-M	pcs	1	21,000	21,000	A	221	Bact		
C00-21	2000/12/5	Micro pipet	NPV-L	pcs	1	21,000	21,000	A	221	Bact		
C00-22	2000/12/5	Magnetic Stirrer	HS-50DT with trans	set	1	40,000	40,000	B	218	Bact		
C00-23	2000/12/5	Light Box	8W	pcs	1	24,000	24,000	B	122	Bact		
C00-24	2000/12/5	Electronic Balance	EK-1200G	set	1	62,000	62,000	A	221	Bact		
C00-25	2000/12/5	Weight(1kg)	AD-1600-1K	pcs	1	29,000	29,000	B	215	Bact		

Provision of machinery and equipment　　apanese yen ￥100,000～￥20,000

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	UNIT	VOL	@	AMOUNT	utili-zation	Room	Section	reason of no operattion	remark
C01-1	2001/08/27	Sony Color TV	KV-14MF1(H) 14'	pcs	1	27,500	27,500	A	123	Path		
C01-2	2001/08/30	Physician bag	NFM25 Handgrip Type	pcs	1	29,000	29,000	A	111	Protz		
C01-3	2001/09/24	Hot stirrer	Iuchi HS-5BH	pcs	1	56,600	56,600	A	123	Path		
C01-4	2001/09/24	Bone Forceps	220mm	pcs	1	20,900	20,900	A	123	Path		
C01-5	2001/10/2	CUVET	C8425 1ml	pcs	2	40,000	80,000	B	221	Bact		
C01-6	2001/10/2	CUVET	C5428 0.5ml	pcs	2	40,000	80,000	B	221	Bact		
C01-7	2001/10/2	Electrophoresis Blotting Apparat	AE-6677P	set	1	81,000	81,000	A	221	Bact		
C01-8	2001/10/2	Electrophoresis Apparat Complete	EP-12F	set	1	39,500	39,500	B	221	Bact		
C01-9	2001/10/2	Homogenizer	T-8	pcs	1	60,000	60,000	B	108	Protz		
C01-10	2001/10/2	Shaft generater	S8-N-5G	pcs	1	70,000	70,000	B	108	Protz		
C01-11	2001/10/2	Titanium tip	DIA 2mm for UH-50	pcs	1	75,000	75,000	B	108	Protz		
C01-12	2001/10/2	Titanium tip	DIA 5mm for UH-50	pcs	1	50,000	50,000	B	108	Protz		

Provision of machinery and equipment over US$1,500

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	utili-zation	Rroom	Section	reason of no operattion	remarks
E-001	1997/12/29	COMPUTER	Acer Entra 500 Pentium166M	set	1	1,570.00	1,570.00	A	219	jica		
E-002	1998/1/2	COPYING MACHINE	CANON NP1215	pcs	1	2,165.00	2,165.00	A	219	jica		
E-003	1998/6/25	COMPUTER	Acer Entra 3100 Intel Pentium-166	set	1	1,861.00	1,861.00	A	201	common use		
E-004	1998/10/14	Analytical High-Speed Centrifugds	Hitachi Koki CS120GX	set	1	63,817.00	63,817.00	A	125	common use		
E-005	1998/11/2	Medical Freezer(-30'c)	Sanyo MDF-U536 (-30℃)	set	1	3,926.00	3,926.00	A	126	Bact		
E-006	1998/11/2	Medical Refrigerator(4'c)	Sanyo MPR511 (4℃)	set	1	5,077.00	5,077.00	A	126	Bact		
E-007	1998/11/2	High Speed Micro Centrifuge	Hitachi Koki CF15D2 (ﾄﾗﾝｽ付)	set	1	12,778.00	12,778.00	A	125	common use		
E-008	1998/11/2	Refrigerated Centrifuge	Hitachi Koki CF7D2	set	1	12,841.00	12,841.00	A	125	common use		
E-009	1998/11/2	Cryostat (Freezing Microtome)	Sakura Finetechnical CM-502	set	1	29,818.00	29,818.00	A	123	path		
E-010	1998/11/2	Safety Cabinet	Hitachi Koki SCV-1303ECIIA	set	1	18,244.00	18,244.00	A	126	common use		
E-011	1998/11/2	CO2 Incubator	Yamato Scientific IT63	set	1	10,152.00	10,152.00	A	126	common use		
E-012	1998/11/2	Thermostatic Water Circulator	Yamato Sciehtific BF500/BY200	set	2	1,452.00	2,904.00	A	221 126	common use		
E-013	1998/11/2	Shaking Water Bath (20-80'C)	Yamato Scientific BF400/BW200	set	1	3,324.00	3,324.00	A	111	protz		
E-014	1998/11/2	Autoclave	Yamato Scientific SP510	set	1	6,432.00	6,432.00	A	212	bact		
E-015	1998/11/2	Thermostatic Dryer for Glassware	Yamato Scientific DK810	set	1	5,077.00	5,077.00	A	122	bact		
E-016	1998/11/2	Ultrasonic-Homogenizer for Cells	Sonics&Materials Inc.VCX-600	set	1	7,586.00	7,586.00	A	126	bact		
E-017	1998/11/2	Ultrasonic Washer	Yamato Scientific 8510J-DTH	set	1	4,913.00	4,913.00	A	122	common use		
E-018	1998/11/2	Pure Water Products	Nihon Millipore LTD. EQB-10S System	set	1	29,995.00	29,995.00	A	126	common use		
E-019	1998/11/2	Inverted Microscope	Nikon TMS-2A	set	1	3,620.00	3,620.00	A	126	common use		
E-020	1998/11/2	Biological Microscope	Nikon E6F-21-1	set	1	8,672.00	8,672.00	A	123	path		

Provision of machinery and equipment over US$1,500

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	utili-zation	Rroom	Section	reason of no operattion	remarks
E-021	1998/11/2	Fluorescent Microscope	Nikon E6F-RFL-1	set	1	23,963.00	23,963.00	A	126	common use		
E-022	1998/11/2	Multi-Shaker	Yamato Scientific MK200D	set	2	2,724.00	5,448.00	A	218 111	common use		
E-023	1998/11/2	pH Meters	Horiba F-22	set	2	2,100.00	4,200.00	A	215 111	common use		
E-024	1998/11/2	Basic Analytical Balance	Mettler-Toleda AG AB204	set	1	2,076.00	2,076.00	A	215	common use		
E-025	1999/1/6	Automatic distiller	Ymato Scientific WA-33	set	1	6,997.00	6,997.00	A	122	common use		
E-026	2000/1/10	Slide Projector	Kodak EKTALITE 1500	set	1	3,200.00	3,200.00	A	221	common use		
E00-1	2000/7/28	carrier for car	TOYOTA	set	1	1,500.00	1,500.00	A	car	car		
E00-2	2000/7/31	Personal Computer	CPU700MHz,pentium3 HDD10.2GB	set	1	2,190.00	2,190.00	A	Batsukh	Batsukh		
E00-3	2000/10/20	Microscope	XSZ-BK1201	pcs	3	1,500.00	4,500.00	A	123/208	path		

Provision of machinery and equipment US$1,500.00~150.00

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	use	Room	Section	reason by not use	remarks
F-001	1997/11/5	REFRIGERATOR	Supra 695	pcs	1	220.00	220.00	A	219	JICA		
F-002	1997/11/5	OFFICE DESK	CSD1275	pcs	2	180.00	360.00	A	219	JICA		
F-003	1997/11/5	SIDE TABLE	CSS1145	pcs	1	150.00	150.00	A	219	JICA		
F-004	1997/11/5	CHAIR for Office work	UP500E (blue)	pcs	1	175.00	175.00	A	219	JICA		
F-005	1997/11/5	BOOKSHELF(UPSIDE)	C801H	pcs	1	175.00	175.00	A	216	JICA		
F-006	1997/11/5	BOOKSHELF(DOWNSIDE)	C801L	pcs	1	170.00	170.00	A	216	JICA		
F-007	1997/11/13	FAX MACHINE	Panasonic 1000	pcs	1	499.25	499.25	A	219	JICA		
F-008	1997/12/	GENERATOR	made in CHINA	set	1	709.00	709.00		IVM	IVM	transfer to IVM	
F-009	1997/12/29	PRINTER	HP Laser Jet 6L	pcs	1	640.00	640.00	A	219	JICA		
F-010	1997/12/29	OFFICE DESK	CSD1275	pcs	2	180.00	360.00	A	219	JICA		
F-011	1998/1/12	UPS1000W	APC UPS-1000 VA	pcs	1	650.00	650.00	A	219	JICA		
F-012	1998/1/12	CD-ROM UNIT	23×CD	pcs	1	154.00	154.00	A	219	JICA		
F-013	1998/1/30	OFFICE DESK	CSD1275	pcs	3	180.00	540.00	A	219	JICA		
F-014	1998/1/30	BOOKSHELF(UPSIDE)	HST 5221	pcs	1	170.00	170.00	A	219	JICA		
F-015	1998/1/30	BOOKSHELF(DOWNSIDE)	HST 5221	pcs	1	160.00	160.00	A	219	JICA		
F-016	1998/2/19	BOOKSHELF	made-to-order (BRIDGE Company)	pcs	4	250.00	1,000.00	A	111 223	protz JICA		
F-017	1998/3/27	LP Gas cylinder	20kg made in Hungary	pcs	3	34.19	102.56	A	126	JICA		
F-018	1998/3/30	SINK for DARKROOM	made in CHINA	set	1	360.00	360.00	A	127	JICA		
F-019	1998/3/30	Carbonic Acid Gas BOTTLE	made in CHINA	pcs	4	240.00	960.00	A	126	JICA		
F-020	1998/3/30	SINK for Washing	Stainless steel	set	1	640.00	640.00	A	122	JICA		
F-021	1998/5/28	MEDICINE CABINET	made of wood	pcs	1	150.00	150.00	A	117	protz		
F-022	1998/5/29	STERILIZE SINK	Plastic	pcs	1	157.04	157.04	A	124	Virrs		
F-023	1998/5/29	MICRO-PIPET		pcs	1	194.96	194.96	A	111	protz		
F-024	1998/5/29	MICRO-PIPET		pcs	1	189.64	189.64	A	111	protz		
F-025	1998/6/2	REFRIGERATOR	SHARP	pcs	1	672.20	672.20	A	111	protz		
F-026	1998/6/25	PRINTER	HP Laser Jet 6L	pcs	1	530.00	530.00	A	201	comm use		
F-027	1998/6/25	UPS1000W	APC UPS-1000 VA	pcs	1	638.00	638.00	A	201	comm use		
F-028	1998/7/1	CENTRAL EXPERIMENT TABLE	with Stainless sink	set	3	1,155.00	3,465.00	A	218/221 126	comm use		
F-029	1998/7/1	SIDE EXPERIMENT TABLE	made of wood	pcs	10	405.50	4,055.00	A	lab etc.	comm use		

Provision of machinery and equipment US$1,500.00~150.00

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	use	Room	Section	reason by not use	remarks
F-030	1998/7/1	SIDE EXPERIMENT TABLE	for MICROSCOPE	pcs	2	467.00	934.00	A	218/221	bact		
F-031	1998/7/1	STORAGE CABINET for REAGENT	5 DAN made of wood	pcs	1	347.00	347.00	A	123	Path		
F-032	1998/10/6	STORAGE CABINET for REAGENT	made of stainless steel	set	1	307.01	307.01	A	108	protoz		
F-033	1998/10/22	ELECTRIC COOKER	with 4 cooker	pcs	1	295.14	295.14	A	122	comm use		
F-034	1998/11/2	Professional Level Balance	Mettler-Toledo AG PB602	set	1	1,172.00	1,172.00	A	215	Bact		
F-035	1998/11/2	Magnetic Stirrer	Yamato Scientific MC800	set	1	849.00	849.00	A	221	Bact		
F-036	1998/11/2	Glassware Drying Shelf	Yamato Scientific DS-C	set	1	796.00	796.00	A	221	Bact		
F-037	1998/12/29	REFRIGERATOR	SHARP V39	pcs	1	722.00	722.00	A	123	path		
F-038	1999/3/11	BOOK SHELF	up/downside with basePB Serious	set	1	352.00	352.00	A	219	JICA		
F-039	1999/3/11	WASHING MACHINE	SHARP 700	pcs	1	356.76	356.76	A	215	virus		
F-040	1999/3/12	Strage Cabinet for Reagent	made of stainless steel	pcs	1	350.00	350.00	A	221	Bact		
F-041	1999/3/17	Microwave oven	SHARP 758	pcs	1	249.00	249.00	A	221	Bact		
F-042	1999/3/18	Mobi Com TELEPHONE	NOKIA 5110	pcs	1	288.70	288.70	A	219	jica		
F-043	1999/3/18	Strage Cabinet for Reagent	made of stainless steel	pcs	1	350.00	350.00	A	111	protz		
F-044	1999/4/19	Over head projector	ELMO HP-A11DX	pcs	1	443.00	443.00	A	223	jica		
F-045	1999/9/13	Accujet pipet		pcs	1	414.33	414.33	A	111	protz		
F-046	1999/10/8	iMac 333MHz/160MB	6GB MacOS8.6	pcs	1	1,460.00	1,460.00	A	219	jica		
F-047	1999/10/8	SuperDisk Drive120MB	IMATION USBport	pcs	1	170.00	170.00	A	219	jica		
F-048	1999/12/21	REFRIGERATOR	SHARP SJ—39	pcs	1	754.11	754.11	A	111	protz		
F-049	2000/2/15	cabinet up	L-30A	pcs	1	186.00	186.00	A	111	protz		
F-050	2000/2/15	cabinet down	L-31A	pcs	1	178.00	178.00	A	111	protz		
F-051	2000/3/8	REFRIGERATOR	SHARP 51H	pcs	1	658.49	658.49	A	221	Bact		
F-052	2000/3/9	cabinet up	L-30A	pcs	2	186.00	372.00	A	221/123	bct/path		
F-053	2000/3/9	cabinet down	L-31A	pcs	2	178.00	356.00	A	221/123	bct/path		
F-054	2000/3/15	Balance	MS-500	pcs	1	256.88	256.88	B	125	comm use		
F-055	2000/3/20	carrier	トヨタ純正 toyata	pcs	1	1,493.86	1,493.86	A	car	car		
F-056	2000/1/10	Slide Projecter Lens	100-150mm f3.5	pcs	1	825.00	825.00	C	223	JICA	in seminer	
F-057	2000/1/10	Slide Projecter Case		pcs	1	300.00	300.00	C	223	JICA	in seminer	

Provision of machinery and equipment U$$1,500.00~150.00

Situation of utilization

No.	DATE	NAME	MODEL,TYPE	unit	vol	@	AMOUNT	use	Room	Section	reason by not use	remarks
F-058	2000/1/10	Slide Projecter table		pcs	1	400.00	400.00	C	223	JICA	in seminer	
F-059	2000/1/26	White board	OS-803 with foot足付き	pcs	2	200.00	400.00	C	201/225	JICA	in seminer	
F-060	2000/3/10	cabinet	T2SBK	pcs	1	300.00	300.00	A	223	JICA		
F-061	2000/3/30	TV 25inch	TC-25P22R	pcs	1	642.16	642.16	C	223	JICA	in seminer	
F-062	2000/3/30	Video	SLV-ED40PS	pcs	1	201.79	201.79	C	223	JICA	in seminer	
F-063	2000/3/30	TV stand	still	pcs	1	689.00	689.00	C	223	JICA	in seminer	
F00-1	2000/6/30	Safe Box	SJD-530	pcs	1	289.00	289.00	A	219	JICA		
F00-2	2000/7/31	Printer	HP Laser Jet 1100	pcs	1	465.00	465.00	A	batsukh	batsukh		
F00-3	2000/9/8	table for Lab	1500×750×800	pcs	1	305.00	305.00	A	221	Bact		
F00-4	2000/9/8	table for darkroom	1200×700×700	pcs	1	204.00	204.00	A	122	Path		
F00-5	2000/9/8	table for Lab	2400×1020×800	pcs	1	489.00	489.00	A	123	Path		
F00-6	2000/9/8	table for Pathology Lab	1000×750×650	pcs	1	204.00	204.00	A	123	Path		
F00-7	2000/11/6	Balance.	MS-500	pcs	1	262.00	262.00	A	218	comm use		
F00-8	2001/1/18	Book cabinet	still	pcs	2	340.00	680.00	A	209	Narandra		
F00-9	2001/1/24	UP$1000W	APC UPS-1000 PRO	pcs	1	504.00	504.00	A	126	Bact		
F00-10	2001/1/24	UP$1000W	APC UPS-1000 SMART	pcs	1	708.00	708.00	A	batsukh	batsukh		
F00-11	2001/1/30	UP$1000W	APC UPS-1000 PRO	pcs	1	500.00	500.00	A	111	protz		
F00-12	2001/1/30	UP$1000W	APC UPS-1000 PRO	pcs	1	500.00	500.00	A	111	protz		
F00-13	2001/2/3	UP$1400W	APC UPS-1400 PRO	pcs	1	720.00	720.00	A	215	bact		
F00-14	2001/2/3	UP$1400W	APC UPS-1400 PRO	pcs	1	720.00	720.00	A	123	path		
F00-15	2001/2/6	UP$1000W	APC UPS-1000 PRO	pcs	1	500.00	500.00	A	123	path		

ANNEX 5 Acceptance of Counterparts for Training in Japan

Fisal year	1.Name	2.training course	3.Duration	4.training place	5.Belong
1997	J.Erdenebaatar	Bacteriology	1997.09.26-1998.06.27	Obihiro Univ.	IRC,IVM
	T.Batbayar	Pathology	1997.09.26-1998.06.27	Kitazato Univ.	VMF
1998	O.Pagamjav	Virology	1998.06.27-1999.04.29	Gifu Univ.	IRC,IVM
	Z.Batsukh	Protozoology	1998.06.27-1999.04.29	Obihiro Univ.	IRC,IVM
	D.Davaadorj	Tissue Pathology	1998.06.27-1999.04.29	Kitazato Univ.	IRC,VMF
	B.Byambaa	Immunological study plan	1998.06.06-1998.06.20	Gifu,Obihiro,Kitazato Univ. and National Institute of Animal Health	IRC,Director of IVM
	A.Yondondorj	Immuno Diagnostic study pian	1999.02.05-1999.02.27	Gifu,Obihiro,Kitazato Univ. and National Institute of Animal Health	IRC,IVM
1999	B.Enkhermaa	Bacteriology	1999.04.05-2000.02.02	Gifu Univ.	IRC,IVM
	Z.Galmandakh	Virology	1999.04.05-2000.02.02	Gifu Univ.	IRC,IVM
	S.Sugar	Bacteriology	1999.09.21-2000.07.04	Iwate Univ.	IRC,IVM
	Da.Ganbold	Mnagment of Immunological study project	1999.10.14-1999.10.31	Gifu,Obihiro,Kitazato Univ. and National Institute of Animal Health	Rector of Mongolian state University of Agriculture
	S.Andrei	Histopathology	1999.10.07-1999.10.31	Gifu,Obihiro,Kitazato Univ. and National Institute of Animal Health etc.	VMF
2000	D.Boldbaatar	Protozon Disease	2000.04.01-2001.02.01	Obihiro Univ.	IRC,IVM
	T.Buyannemekh	Virus Infections	2000.04.01-2001.02.01	Gifu Univ.	IRC,IVM
	D.Buyandelger	Immuno Pathological Diagnosis	2000.04.01-2001.02.01	Kitazato Univ.	IRC,IVM
	B.Sarantuya	Bacteriology	2000.05.29-2001.03.19	Iwate Univ.	IRC,IVM
	B.Purevtseren	Reserrch Pianning for Immunological Diagnosis of Animal infectious Diseases	2000.11.08-2000.11.28	Gifu,Obihiro,Kitazato Univ. and National Institute of Animal Health etc.	IRC,IVM
2001	B.Battur	Protozoan Disease	2001.04.23-2002.02.23	Obihiro Univ.	IRC,IVM
	B.Bayarsaihan	Immnological Diagnosis	2001.04.23-2002.02.23	Obihiro Univ.	IRC,IVM
	J.Erdenebaatar	Bacteriology	2001.10.01-	Obihiro Univ.	IRC,IVM
	O. Janchiv	Research Planning for Immunological Diagnosis	2002. (undecided)	Obihiro Univ.etc.	Veterinary. Service, Sukhbaatar Aimag
	M. Ravjaa	Research Planning for Immunological Diagnosis	2002. (undecided)	Obihiro univ. etc.	Veterinary service, Tuv Aimag

IVM:Institute of Veterinary Medicine

IRC:Immunological Research Center

VMF: Veterinary Medicine Faculty

ANNEX 6

Assistance of Local cost (by Japanese side)

(US$)

Input \ Fisal year	1997(H9) 97.7~98.3	1998 (H10) 98.4~99.3	1999(H11) 99.4~00.3	2000(H12) 00.4~01.3	2001(H13)* 01.4~02.3	2002(H14)* 02.4~02.6	total
(1)General Local Cost	20,188.76	32,753.36	44,307.44	47,960.86	28,142.00		173,352.42
(2)Cost for Basic repairment of buildings and facilities	334,511.50				41,322.31		375,833.81
(3)Cost for Enlightment Activities			15,000.00	15,202.73	3,300.00		33,502.73
(4)Cost for Special Seminar Activities					11,000.00		11,000.00
total	354,700.26	32,753.36	59,307.44	63,163.59	83,764.31		593,688.96

*undecided

ANNEX 7 Allocation of Counterparts

	Fiscal year / Name of C/P	1997(H9) 7 10 1	1998(H10) 4 7 10 1	1999(H11) 4 7 10 1	2000(H12) 4 7 10 1	2001(H13) 4 7 10 1	2002(H14) 4 7	
Management of the Project	Ch. Sodnomtseren	○○○○○○○○○	○○○○○○○○○○○○○					Mnister of Agriculture Industry
	Da.Ganbold			○○○○○○○●○○○○○	○○○○○○○○○○			Recter of MSA,Project Director
	N. Altansukh				○○	○○○○○○○○○○○○		Recter of MSA,Project Director
	M.Tumurjav	○○○○○○○○○	○○○○○○○○○○○○○	○○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		Director of IRC,Project Manager
	J.Erdenebaatar		○○○○○○○○○	○○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○		Vice Director of IVM,Project Coordinator
	Z. Batsukh					○○○○○○○		Vice Director of IVM,Project Coordinator
Virology	B.Purevtseren	○○○○○○	○○○○○○○○○○○○○	○○○○○○○○○○○○○	○○○○○○○●○○○○	○○○○○○○○○○○○		
	O.Pagamjav	○○○○○○	○○●●●●●●●●●●●	●○○○○○○○○○○○○	●●●●●●●●●●●●	●●●●●●●●●●●●		00.4～Japanese Government (Monbusho)Scholarship
	Z.Galmandakh		○○○○○○○	●●●●●●●●●●●○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	T.Buyannemekh		○○○○○○○	○○○○○○○○○○○○	●●●●●●●●●●○○	○○○○○○○○○○○○		
	B. Batzorig				○○○○○○○○	○○○○○○○○○○○○		
	J. Munkhzaya				○○○○○○○○	○○○○○○○○○○○○		
Bacteriology	A.Yondondorj		○○○○○○○○○○○●○	○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	J.Erdenebaatar	●●●●●●●	●●●○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○●●●●●●		01.10～ JICA Long term Training
	S.Sugar		○○○○○○○○○○○○	○○○○○●●●●●●●	●●●○○○○○○○○○	○○○○○○○○○○○○		
	B.Sarantuya		○○○○○○○○○○○○	○○○○○○○○○○○○	○○●●●●●●●●●	○○○○○○○○○○○○		
	B.Byarsaikhan		○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○	●●●●●●●●●●○○		
	B.Enkhermaa		○○○○○○○○○○○○	●●●●●●●●●●●○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	D.Damdin		○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	J.Enkhtuya			○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	B. Narangerel				○○○○○○○○○○○○	○○○○○○○○○○○○		
	Batbaatar				○○○○○	○○○○○○○○○○○○		
	Erdenetsogt					○○○○○○○		
Protozoology	B.Byambaa	○○○○○○○○○	○●○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	G.Battsetseg		○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	Z.Batsukh		●●●●●●●●●●●	●○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	B.Battsetseg		○○○○○○○○○	●●●●●●●●●●●●	●●●●●●●●●●●●	●●●●●●●●●●●●		99.4～Japanese Government (Monbusho)Scholarship
	Ya.Anirmaa		○○○○○○○○○	○○○○○○○○○○○○	○○			Retired
	D.Boldbaatar			○○○○○○○○○○○○	●●●●●●●●●●○○	○○○○○○○○○○○○		
	B. Battur	○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○	○○○○○○○○○○○○	●●●●●●●●●●○		
Pathology	R.Sodnomdarjaa	○○○	○○○○○○○○○○○○	○○○○○○○○○○				Retired, Central Vet. Lab.
	A.Khokhoo			○	○○○○○○○○○○○	○○○○○○○○○○○		
	S.Andrei		○○○○○○	○○○○○○●○				FVM
	T.Batbayar	●●●●●●●	●●●○○○○○○○○○					FVM
	D.Davaadorj		○○●●●●●●●●●●●	●○○○○○○○○○○○	○○			FVM
	D.Ganbold		○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○	○○○○○○○○○○○○		
	Da.Ganbold	○○○○○○○○○	○○○○○○○○○○○○					Prof. SUA
	D.Buyandelger			○○○○○○○○○○○○	●●●●●●●●●○○	○○○○○○○○○○○○		
	S.Tserenchimed			○○	○○○○○○○○○○○	○○○○○○○○○○○○		
	Serjmyadag				○○○○○○○○	○○○○○○○○○○○○		
	Altanchimeg				○○○○○○	○○○○○○○○○○○○		

●Training in Japan

ANNEX 6

Input by Mongolian side (1997- 2001)

(thousand tugric)

Item	Details	1997	1998	1999	2000	2001	2002
Input from MSAU				237.9		2205.1	
Input from IVM	for the electricity	518.0	687.0	982.0	1872.1	2580.0	
	for the heating	1136.0	1623.0	2318.0	3186.0	3891.0	
	for the salary of the staffs (+5%)	315.0	712.0	800.0	910.0	910.0	
	for the reagents	175.5	-		238.0	781.0	
Total by Tugric		2144.5	3022.0	4337.9	7158.1	10776.1	

(thousand tugric)

N	Activities	Sum spent for (tug)
1	Repairment of laboratory of Clinical Pathology	700.0
2	Repairment of photo laboratory	450 .0
3	Repairment of laboratory of Protozoology	375 .0
4	Repairment of staff rooms in Protozoology laboratory	6 200 .0.
5	Repairment of Preparation room	1 150 .0
6	Repairment of garage	3 634 .8
7	Renovation of the small animal house	108 000.0 (KR2)
	Total (by Mongolian tug)	120 509 .8

ANNEX 9

Evaluation Grid

Project for Improvement of Diagnostic Technology of Animal Infectious Diseases

Criteria	Indicators	Source of Information	Method	Evaluation
1. Relevance	1. Relevance with Overall Goal	Development policy and strategy of the Government of livestock industry in Mongoliania	To confirm that the development of the livestock industry is the most important economic development strategy of the Mongolianian Government.	The reform of the industry to the market economy and promotion of the export of products are the most important economic policy of Mongoliania. And the development of the livestock industry is depends on the upgrade of productivity of the safe livestock products. Thus, improvement of diagnostic techniques are required for the national livestock industry.
	2.Relevance with the needs of beneficiaries'.	Interview with the ministry of food and agriculture and state university of agricukture	To confirm that the improvement of the diagnostic technique of animal infections diseases is enhance the life of people by the upgrade of safety and productivity of livestock products.	It is confirmed that the livestock industry is the most important economic sector in Mongolia and the national economy and life of the people is deeply depending on the livestock. Therefore, it could contribute to the needs of beneficiaries if the technology is extended to the field.
	3.Relevance with JICA's policy for international cooperation.	JICA Officers	To confirm as to project purpose and overall goal are relevant with JICA's policy.	According to the agreement of the General Economic Cooperation Survey Team and the Mongolianisan government in October 2000, livestock sector is one of the four urgent four main sector for economic cooperation of both governments.
	4. Impacts by other relevant cooperation projects.	Hearing to the Ministry of Foreign Affairs and Ministry of Food and Agriculture.	To confirm as to on going and completed cooperation projects for the livestock and relevant fields in Mongoliania.	There are one livestock improvement on going project by GTZ for four major aimags. However there is no direct coordination with the projects.
2. Efficiency	1 Accomplishment of Inputs.	Achievement Grid	To confirm with the Achievement Grid.	Most of the necessary inputs by the Japanese side have been implemented as initially planned except an long term expert of Virology in the 3rd year of the project period. However it was covered by the coordination of dispatch of short term experts. There was no delay of provision of equipment. The training of counterparts in Japan was implemented as initially scheduled and contributed to promote the achievement of outputs of the project. Some delay and change of contents have occurred in Mongolian side.
	2. Accomplishment of outputs.	Achievement Grid	To confirm with the Achievement Grid	Most of the expected outputs have come out by the implementation of activities which were initially planned. The remaining outputs will be fulfilled by the termination of the project.
	3.Efficiency 3-1 Comparison output with input	Comparison of inputs with outputs	To confirm whether the accomplished level of outputs can be sufficiently justified the level of inputs. To measure as to how efficient the input turned into outputs.	Although there were some absence of the long-term experts, expected outputs will be achieved by the end of the project period. Therefore it is considered as efficient that inputs have been fully utilized for achievement of outputs.

	3-2. Comparison with other projects	JICA staff	To confirm whether the quantity and quality of inputs can be justified in comparison with other similar projects ever conducted before.	Comparing to other similar type of project, it is not regular manners to bare custom clearance fee and local operation costs such as research materials, vehicles, fuel and consuming material. This is caused by lack of own budget of IRC.
	3-3. Combination with inputs	Questionnaire to the experts and counterparts.	To ask whether the Inputs level are appropriate for accomplishment of the outputs for the experts and counterparts.	All the counterparts responded that the inputs level are appropriate and sufficient to achieve the outputs of the project. However some project staff express concern on financial background of Mongolian side to maintain the equipment and provision of spare parts and reagents.
	3-4. Combination with activities.	Experts and Counterparts.	To ask to project manager whether the activities are appropriate for the achievement of the outputs of the project or not.	Input level was appropriate and nothing was unnecessary. The items and quantity and quality were appropriate to achieve the outputs.
	3-5.Any other projects which promote the efficiency of this project.	Experts and Counterparts.	To study any grant and technical cooperation projects which are conducted by JICA and other donors.	There are two Dzud prevention and water resource development projects by JICA and some projects on livestock sector by GTZ and UNDP. But there is no direct linkage with this project up to present.

3. Effectiveness	1.Establishment of implementation body of the project.	Interview to the Japanese experts and counterparts.	To check the establishment of organization, systems and policy to reinforce the implementation of the project.	IRC was newly established for the project to conduct basic and applied research of immunological and immunopathological diagnosis technique for animal infectious diseases.
	2.Acievement of the Project Purpose.	Achievement Grid	To conclude whether the project purpose is thoroughly achieved or not.	Indicators of the project purpose shows that the project purpose will be achieved by the end of the project.
	3.Cause of improvement of the diagnostic technology in Mongolia	Achievement Grid. Interview to Japanese experts and counterparts.	To examine whether the immunological diagnosis method are accomplished in ICR and transferred to outside of IRC.	1. The immunological and immunopathological research for the diagnosis of infectious diseases will be reinforced in IRC. However the established imunological diagnostic techniques are not yet extended
	4.Comparison with other medical scheme for animal health.	Documents of International Cooperation	To check any relating projects with animal health which are not covered by the project.	There some cooperation projects for animal health by GTZ on line with national economic policy. However, this projects has no duplication nor linkage with other projects.
	5.Important assumptions and other external factors which will affect the achievement of the project purpose.	Question to the experts and counterparts.	To examine the important assumptions and analyze the affects to the project.	The ministry of Food and Agriculture has seven agricultural development projects for the central region. And this project is included as one of the seven projects.

4. Impacts	1.The socio-economic impacts by the project	Interview to IRC, IVM and State University of Agriculture.	To examine by the interview with the relevant organizations and ask what sorts of impacts the project generated to the socio-economic environment in Mongolia.	The project is still remaining in the laboratory and the immunological diagnosis is not extended to the field.. However once the results of the study is extended to the field, it is expected to contribute to the food hygiene and human health as well.

	2. Possibility to accomplish the Overall Goal of the project	Interview with Japanese experts. counterparts and university.	To conduct interview survey to relevant persons and confirm the impacts which affected to the project and whether the Overall Goal will be accomplished by the project. and if not. what are the obstructions.	There is a gap between the Project Purpose and Overall Goal. and there are many issues to be tackled to pursue Overall Goal.
	3. The impacts by the research of the project to other research institutions in order to achieve the Overall Goal.	Japanese experts and counterparts. State University of Agriculture and Ministry of Food and Agriculture.	To conduct interview survey to relevant persons and examine whether the diagnosis techniques in IRC is informed and demonstrated to other Veterinary laboratories and educational institutions.	Immunological and immunopathological diagnosis techniques are informed to rural laboratories and veterinary stations through lecture. seminars and demonstration for upgrade of the diagnosis techniques of animal infectious and non infectious diseases.

5. Sustainability	1. Institutional 1-1.Future continuity of the organizational structure, such as IVM and support of veterinary Department of the University.	Management staff, of IRC. IVM ministry of Food and Agriculture and the Japanese experts.	To conduct interview survey to relevant persons in charge of the project and animal health to confirm their mind to continue the support for organization and research activities.	The IRC is unlikely to be continued by the Mongolian side without any follow up or reorganization, because the all the counterparts and staff are sent from IVM. Its budget, staff and necessary costs are born IVM. It is discussed to make IRC independent from the university as a national center
	2.Financial 2-1.Financial condition of IRC.	Management staff of the IRC. IVM university, and ministry of Food and Agriculture	To examine the financial resources and capability of Mongolian side in order to continue their supports for the necessary costs of research of immunological and immunopathological diagnosis technology in IRC. Question of self financing system will be included in the interview.	All the necessary operating costs are provided by IVM and there is no guarantee in terms of financial background of IRC. Therefore financial sustainability is uncertain at present.
	2-2 Financial source to promote immunological and immunopathological research and diagnosis activities.	ditto	To examine the current financial structure in which support research activities for immunological diagnosis in IRC. And study self financing by the Mongolian side.	IRC has no financial resources. The self financing system of IRC should be studied.
	3.Technological 3-1.Acquired technological level of the counterparts by the project.	Counterparts. Japanese experts and professors of the university.	To confirm if the counterparts in IRC and staff of Faculty of Veterinary Medicine of the university acquired sufficient level of the technology of immunological diagnosis from the project.	The counterparts of IRC have acquired all the basic and applied technology for immunological diagnosis by the end of the project.

	3-2.Continuity of employment of the Counterparts in IRC.	Japanese experts and counterparts.	To question if the counterparts remain in IVM and continue the work using acquired technology by the project.	The gap of the income level between the public and private sector and it will generate leak of the trained skilled counterparts. However it is fortunately that the there is no other laboratories which have higher technology than IRC and few private companies which appreciate their higher knowledge and skills at present. Thus the most of the trained counterparts are likely remain in IRC for some period.
	3- 3.Transferred technology and acquired level of knowledge and skills	Japanese experts and counterparts. Questionnaire.	To question if the counterparts regard themselves that they acquired sufficient knowledge and skills to continue and achieve the output of the project after the end of the project.	Most of the counterparts, 24 of 25, who responded to the questionnaire said that they have acquired the knowledge and skills of the project sufficiently. Therefore, the project will be sustainable in terms of the technology, if the sufficient financial support will be established.
	4.Risks against sustainability	Japanese experts and counterparts	To conduct interview and analyze what are the most likely risk to obstruct the sustainability of the project.	There are potential risks aganst sustainability as stated above , such as ; 1) Organizational risks stems from current structure of IRC. 2) Financial risks, come from lack of sufficient budget.

ANNEX 10

ATTAINMENT OF ACTIVITIES by TDIP

1. General Research Activities for Immunological Diagnosis of Animal Infectious Diseases.

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
1. General research active- ties for immunological diagnosis of animal infectious diseases.						
a. Establishment of technical method in preparationfor γ-globulin of various animals.	a. Purification of γ-globulinfrom normal or immune serum of animals using the method of Ammonium Sulphate precipitation, Ion exchange chromatography and Gel filtration chromato- graphy.	a. Standardization of purification method of γ-globulin and anti γ-globulin(IgG) of animal.	a. Sera from cattle, horse and sheep were purified for IgG using the method of Ammonium sulphate precipitation, Ionexchange and Gel filtration chromatography. Anti-cattle, anti-goat, anti-horse, and anti-sheep rabbit IgG were prepared.	4		Preparation of anti-camel, and anti-mouse rabbit IgG is planned.
b. Establishment of technical method in preparation for purification of pathogens.	b. Purification of virus, bacteria and protozoan.	b. Standardization of purification method antigenic substance from various pathogens.	b. Method of purification of poly-saccharide from B.abortus were established and standardized Percoll-gradient method of purification of Bradyzoites from muscle were estab-lished.Virus purification method was established.	4		Further improvement of method for purification of antigenic protein from B.abortus, S. a-e. and EHV1 virus is planned.
c. Establishment of technical method in preparation for polyclonal anti-body and anti- γ- globulin (α-IgG) serum.	c. Inoculation of purified IgG or various pathogen to rabbit or goat.	c & d. Standardization of preparation method of hyper-Immune serum and monoclonal antibody in experimental animals.	c & d. Rabbits were Immuni zed with S.abortus equi and purified IgG was obtained. Anti-brucella and anti-EHV1 polyclonal antibody were prepared. Technical method for preparation of polyclonal antibody and anti- γ- globulin were established.	4		Preparation of anti-brucella and anti-EHV1 virus polyclonal antibody and anti-γ- globulin serum is planned.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
d. Establishment of technical method in preparation for monoclonal antibody.	d. Immunization of mice with purified virus, bacteria and protozoan,fusion of myeloma cells and spleen cells, screening of positive cells, and collection of peritoneal fluid in the mice.		d. Technical method for preparation of mAb were established and acquired by staff.	4		Preparation of anti-EHV1 virus mAb is planned.
e. Establishment of technical method in preparation for labeling with fluores-cein isothiocyeante (FITC) and horseradish peroxi-date (HRPO)	e-1. Conjugation of FITC to γ- globulin and IgG e-2. Conjugation of HRPO to γ- globulin and IgG	e. Standardization of conjugation methods of FITC and HRPO to γ- globulin and IgG	e. The method of conjugation of FITC and HRPO to IgG was established and anti Sal.abortus equi rabbit IgG was labeled with FITC. Anti-horse, anti-cattle and anti-sheep IgG were conjugated to HRPO	4		To be continued
f. Establishment of technical method in preparation for fluorescent antibody techniques (FAT).	f-1. Determination of opti-mal condition of each reagent in reaction. f-2. Determination of time and temperation of staining.	f & g. Standardization of FAT and ELISA.	f. Method for detecting S.abortus equi and S.tenella by FAT was established and standardized.	3	ELISA for practical diagnoses of target diseases of vairal and bacterial infections has not been established.	Establishment of method for diagnosis of EHV1 virus infection by FAT is planned.
g. Establishment of technical method in preparation for enzyme linked immuno-serbent assay (ELISA).	g-1. Determination of optimal potency of each reagent in reaction. g-2. Determination of optimal time and temperature in reaction.		g. Optimal condition for ELISA using S.tenella sonicated antigen was established.			Establishment of technical method for diagnosis of brucellosis and EHV1 virus infection by ELISA is planned.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
h. Advanced research of immunological diagnosis on serious infectious diseases.	h. The above-mentioned technique applys to immunological diagnosis to other infectious diseases.	h. Application of the standardized immunological methods to other infectious diseases.	h. The techniques are applying for Toxoplasmosis, Babesiosis, glanders, tuberculosis.	3	The applications for other targeted diseases such as rabies, bovine leucosis, equine infectious anemia are delayed.	All the above-mentioned techniques will be applied to immunological diagnosis of other infectious diseases.
i. Guidance of the improved diagnosis techniques to veterinary staff concerned with the project.	i. Transfer of the improved techniques to the veterinary staff at the immunological Research Center (IRC) and Veterinary Research Institute (VRI)	i. Improve of the basic and applied techniques for research on Immunological diagnosis of animal infectious diseases.	i. Japanese experts are transferring to Mongolian counterparts the improved techniques for immu-nological diagnosis of animal infectious diseases	4		To be continued

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

1. Basic Research Activities for Immunological Diagnosis : Improvement and Development of Immunological Techniques for Diagnosis

2-a. Viral Diseases

Work Plan		Expected Attainment	Prograss and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Actoivities					
2-a. Basic research activities for immunological diagnosis of equine viral abortion	2-a. Effective transferring the basic viral research techniques	2-a. Improve on the basic and applied techniques for research on immunological diagnosis of equine viral abortion.				
i. Establishment of technical method in preparation for growing of equine herpes virus (EHV1) in tissue cultured cells.	i. Selection of culture cells for growing of ER virus.	i. Standardization of assortment of culture cells and ER virus in high virus titer.	i. Cell lines of Vero and MDBK, and RK were compared for the growing of EHV1. EHV1 has the highest titer of $10^{9.0}$ TCID 50/ml in EHK cell line.	4		To be continued
ii. Establishment of technical method in preparation for antiviral polyclonal antibody (pAb) and mAb.	ii-1. Purification of EHV1.	ii. Standardization of preparation method of purified antigen, and pAb and mAb in experimental animals	ii. Virus cultures in MDBK were purified by combination of low centrifuge, ultra-high centrifuge and sucrose density gradient. Purified and concentrated virus was suspended in each different disruption solution for AGID and ELISA antigens.	3	Effective mAb has not yet been prepared, though techniques and procedures have been established.	To be continued
		Examination of prepared antigen's activity for AGID test and ELISA	More than 100 serum samples were collected from three aimags and examined by AGID test and virus neutralization test. 78.1% of all samples were positive by AGID test. 100 serum samples were tested by virus neutralization test. 80% of them were positive.			To be continued
	ii-2. Inoculation of purified ER virus to rabbit (pAb) and mice (mAb) ii-3. Preparation of pAb and mAb.		ii-2. 3. Rabbit was immunized by EHV1 and polyclonal serum was taken. Titer of the serum was 1:8 by AGID and 1:128 by virus neutralization test. Purified antigen was inoculated to mice and mAb is being prepared.			Inoculation of purified EHV1 virus to rabbit (pAb) and mice (mAb) is continued. Preparation of pAb and mAb is continued

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
iii. Establishment of technical method in preparation for FAT	iii-1. Conjugation of FITC to IgG of pAb and mAb. iii-2. Determination of optimal condition of all reagents in the reaction.	iii. & iv. Standardization of technical method of FAT and ELISA for EHV1 virus infection in horses.	iii. & iv. Conjugate of FITC to rabbit pAb was prepared. Preparation for mAb is in progress.	3	Approaching the final step of checking tha obtained pAb, mAb, IgG and conjugates.	To be continued.
iv. Establishment of technical method in preparation for ELISA	iv-1. Conjugation of HRPO to IgG of pAb and mAb. iv-2.Determination of optimal condition of all reagents in the reaction		iv-1. Rabbit was immunized by horse IgG fractionated from normal horse serum then, rabbit IgG was obtained from immunized rabbit serum and conjugated with HRPO. iv-2. Titer of obtained pAb, mAb and conjugates are being checked.	3		To be continued

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

2-b. Bacterial Diseases

Work Plan		Expected Attainment	Prograss and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Actoivities					
2-b. Improvement and development of immuno-logical techniques for diagnosis of bacterial diseases.	2-b. Brucellosis is focused as the disease to be enhan -ced research activities					
i. Purification of antigen	i. Selection of rough and smooth strains of B.abor-tus. extraction of S-LPS and poly saccharide-B	i. Purification and extraction procedure of antigen for brucella spp, will be standardized and applied for other bacteria spp.	i. B.abortus S-19 was cultivated and 3 lots of totally 1200 ml poly-B antigen for AGID was extracted. This antigen was used for comparative assay of AGID with the RBT,. SAT and CFT on serum samples from 678 cattle, 149 sheep, 9 goat, 10 men of which vaccinated 21 cattle, 8 sheep and 8 goats collected from different brucellosis- suspected areas. AGIDT revealed 33 positive cattle, 46 sheep, 6 goats, 2 men for brucellosis whereas vaccinated with S-19 and Rev-1 vaccines, cattle and sheep after 3 months were negative. Poly-B antigen for AGID was standardized with using box titration method.	4		Extraction of poly saccharide -B from virulent strain of B.abortus is planned
ii. Production of antibodies ii-1. Preparation of rabbit anti IgG antibodies,	ii-1. Purification of gamma globulin of mouse, cattle, sheep, goat, horse (and camel). Immunization of rabbit with purified gamma globulin, harvesting of anti-IgG sera and fractionation of gamma globulin.	ii. Each procedure in this part should be standardized as a fundamental technique for immunological research activity in the institute. Self-supporting and self-sustaining capability of substances prepared in this part will be established	ii-1. Normal sera from sheep, goat, cattle and horse were collected and. IgG fraction was purified (cattle 44mg, sheep 48 mg, goat 26mg, horse 54mg and camel 38mg). With using this, Rabbit anti-cattle IgG, anti-sheep, anti-goat and anti-horse IgG sera were prepared	4		To be continued
ii-2. Preparation of anti-brucella polyclonal anti-bodies	ii-2. Immunization of rabbit with extracted Brucella antigen, harvesting of anti-Brucella sera and fractio-nation of gamma globulin		ii-2. 40 ml Anti-brucella polyclonal antibody was obtained from two immunized rabbits and its ELISA titer was 100,000.	4		To be continued.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
ii-3. Preparation of monoclonal antibodies	ii-3. Immunization of mouse with purified Brucella antigen, harvesting of spleen cell, preparing and cloning of hydridoma and preparing of monoclonal antibodies.		ii-3. 3 BALB/c mice were immunized with brucella poly- B antigen. Then the spleen cells were fused with myeloma (Sp 2/0) cells. Three hybridomwere positive by ELISA were stocked in liquid nitrogen. 4 BALB/c mice were immunized with IgG of cattle, sheep,goat and horse. Spleen cells from them wre fused with myeloma cells NS-1 and hibridoma with high titer to horse and goat IgG were obtained although hybridoma for sheep and cattle IgG show no titer.	4		This experiment will be repeated.
iii. Development of immuno-logical diagnostic procedures. iii-1. Improvement of immunodiffusion techniques iii-2. Conjugation of FITC iii-3. Conjugation of HRPO iii-4. Development of ELISA	iii-1. Improving of gel diffusion test with purified SLPS and Poly B. iii-2. Conjugation of FITC to gamma globulin. iii-3. Conjugation of HRPO to gamma globulin. iii-4. Development of ELISA	iii. Procedures of conjugation should be popularized, gel diffusion (including other serologic technique like as RHAT) will be employed as presumptive diagnostic method in field site and ELISA will be used as confirmative test in the laboratory.	iii. Sera from cattle, horse and sheep were purified by Sodium sulfate ammonium. Hyper immunized and fractionated anti-cattle rabbit serum, anti-horse rabbit serum, and anti-sheep rabbit serum were prepared. Anti-cattle rabbit serum was conjugated with HRPO and used for ELISA. -Using S.abortus equi local strain, rabbits were immunized and two lots of purified IgG was prepared, and first lot of 8ml have no titer but second one of 10 ml had titer with 1:32 – 1:64. This IgG was conjugated with FITC and used for diagnoses of Equine salmonellosis. To obtain specific antigen of S. a-e., 5 lots of membrane protein were prepared and purified by DEAE culumn chromatography. The fractions formed specific precipitation with the anti-serum. The specificity of the antigen fractions are being evaluated by DIDT and Western Blotting.	4		This experiment will be continued and were planned to prepare specific surface protein from *Sal. abortus equi*.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
iv. Extensive application of the techniques.	iv. Techniques are applied to prepare antigens for other diseases t	iv. Increase of number of infectious diseases which can be diagnosed immunologically.	iv. Antigen preparation is in progress. See 6.-b.	4		Experiment will be continued.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

2-c. **Protozoan Diseases**

Work Plan		Expected Attainment	Prograss and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Actoivities					
2.c. Protozoan diseases. i. Prevalence. i-1 Detection of Sarcocystis spp. by means of Microscope. i-2. Morphological classification of Sarcocystis spp.	i-1,2. The direct method to detect Sarcocysts and isolation. And morphological observation is done on the size and construction of the cyst wall by means of micros-cope. The serum samples are collected from various places in Mongolia for seroimmunological studies.	i-1. Simple and reliable method to detect Sarcocysts from meat sample is acquired. i-2. Different structure of cyst wall will be observed by light and electron mycroscopies.	i. Of 1163 samples investigated sheep, 95% out of all investigated sheeep were infected with S.tenella.. Only 1 muscle sample was infected with S.arieticanis, confirmed by Light and electron micros-copy.	4		
ii. Experimental inoculation of Sarcocystis spp.	ii.Experimental oral inoculation into puppies (Definitive host) with Sarcocysts in meats which collected from Markets And sporocysts are isolated with each prepatent period of Sarcocystis sp. from feces. Experimental oral inoculation into lambs (intermediate Host) with isolated and identified sporocysts from the puppies.	ii. Definitive host and prepatent periods of *Sarcocystis tenella* was confirmed. Methods and techniques of experimental inoculation and isolation of sporocysts by floating method , were aquired.	ii. Prepatent period of S.tenella was identified in dogs. The Sporocysts of S.tenella were collected from feces of puppies. *S. tenella* cyst wall was confirmed.	4		

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
iii. Immunological studies and diagnosis iii-1. Purification of antigen. iii-2. Monoclonal antibody (mAb) preparation.	iii. Inoculated lambs meat is used for purification of antigen.	iii-1. Suitable methods of purification of antigen will be examined. iii-2. The mAb will be prepared to avoid any non-specific reactions. All techniques and methods will be acquired by staff.	iii-1. percoll density gradient was used for purification of Bradyzoites from cysts in muscle was established. iii-2. Positive colonies of hybridoma were selected and cloned.	4		To be continued. Subclasses of Ig-s of mAb will be identified using mouse mAb identification kit.
iii-3. Sero-Immunological studies (ELISA, FAT, Agar gel diffusion)	iii-3. Sero-immuno-logical diagnostic methods for ovine sarcosystosis using pAb and mAb will be studied.	iii-3. Suitable methods to diagnose *Sarcocystis tenella* infection will be developed and used for regular examination at the immunology Research Center.	iii-3. Antigen slides for IFAT were prepared and serum samples were checked by IFAT.. Optimal conditions for AGID and ELISA using sonicated bradyzoite antigen are being checked.	3	It is difficult to obtain the negatve serum samples because of very high infection with Sarcosystis.	Optimal conditions of ELISA, IFAT and AGID using mAb will be studied and applied for diagnosis of ovine sarcosystosis.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

3. Basic Research Activities of **Clinicopathology** of Infectious Diseases

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities					
a. Establishment of immunopathological techniques for *Salmonella* abortusequi (*S.a-e*) infection	a-i. Preparation of antibody against for S.a-e with purified bacterial antigen.	Obtain specific antibody against for S.a-e.	a-i-i. FITC conjugated anti-S.a-e polyclonal serum and polyclonal anti-S.a-e rabbit serum were obtained.	4		
			a-i-ii. The intensive efforts are continued to obtaine the better purified antigen of outer membrane and to prepare better specific monoclonal antibody.	3	It is difficult to obtain the specific antigen of S.a-e surface protein.	Antigen preparation will be continued.
	a-ii. Establishment of immunohistochemical methods (FA and ABC).	To acquire immunohistochemical methods (FA, ABC).	Direct fluorescent antibody (FA) technique was carried out with frozen sections, and indirect avidin biotin complex (ABC) methods was done with paraffin embedded sections. The staff acquired the theory and practical techniques of them completely.	4		
b. Immunopathological research in equine Sa-e infection.	b. Immunopathological detection of S.a-e in the frozen and paraffin embedded specimens.	Prove S.a-e on tissue sections by the immunohistochemical techniques using purified antibody.	Pregnant mice and mares that had been experimentally inoculated with S-form S.a-e have aborted. Organisms in tissue sections taken from them and their fetuses showed specific positive reaction with anti-S.a-e serum by both FA and ABC methods.	4		

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

4. Immunological /Biochemical Research Activities on Infectious Diseases with **Laboratory Animals**

Work Plan		Expected Attainment	Prograss and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Actoivities					
a. Breeding of the strains of mice i. Method for breeding, keeping and records ii. Method for genetic monitoring, how to read the results	a. Lectures and practices for breeding of the laboratory animals: record keeping and usu of records for animal production.	a. Breeding techniques and theories for laboratory animals are aquired	a. BALB/c mice were introduced and reproduced. The colony has been grown to enough number for current experimental purposes in the Immunological Research Center.	4		
b. Control for the microbial conditions of mice i. restriction and control of traffic flow of animals and materials in the area. ii. Cleaning, sanitation, sterilization of equipment and materials iii. Monitoring of mice for the infection with antibody check, isolation, histopathological examination and diagnosis	b. Lectures and practices for the control of infections. i. Methods for determining the level of bacterial and viral infection control of mice. ii. Methods for cleaning, sanitation and sterilization. iii. Methods of antibody check, isolation and histopathological examination.	b. Techniques and theories for control of microbial contamination are aquired.	b. Healthy mouse colony is maintained.	4		
c. Maintenance of facilities for laboratory animals. Calculation of expences	c. Lectures for the basic consideration about the planning of building and rooms for animal experiments	c. Techniques and theories on the maintenance of laboratory animal facility are aquired.	c. Laboratory animal facility has been renovated and equipped.	4		

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

5. Research Activities of **Clinico-Pathology** Relevant to Infectious Diseases.

(Supplemented by the Mid-Term Evaluation Study in August 2000)

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities					
a. Collection of blood and tissue samples of aborted fetus from local veterinary diagnostic laboratories.		Equine paratyphoid can be diagnosed immunohistochemically.	Three aborted fetuses were collected. Detailed pathological examination revealed them not to have been caused by infectious agents such as S.a-e or EHV-1 infection.	2-3	It is difficult to obtain the naturally aborted fetuses, because of the seasonal and field conditions.	To be continued. Apply purified antibody to natural occurring equine salmonellosis.
b. Collection of samples from slaughterhouses and field.	Slaughterhouses or field visits were regularly conducted for the sample collection from affected animals. After gross observation at post-mortem examination, samples are fixed in formalin, embedded in paraffin, sectioned by microtome and stained with haematoxylin and eosin. Finally, diagnose them microscopically what kind of diseases have animals been affected.	The technique and knowledge of veterinary pathology; necropsy, tissue processing and microscopic observation are acquired and improved The diseases which can be pathologically diagnosed increase.	Various interesting and valuable finding on animal diseases in Mongolia have been obtained through the pathological investigation of the collected samples. Total 142 samples (animals) were collected; 46 horses, 40 sheep, 38 cattle, 7 rats, 5 camels, 1 goat and 1 dog. All of them were diagnosed by microscopical observation. Interesting cases are as follows: hog cholera, canine parvovirus infection, actinomycosis in sheep and cattle, pulmonary nematodiasis in sheep. Basically, animals brought to slaughterhouses were normal. However, sarcocysts were encountered in striated myofibers in the tongue, esophagus, diaphragm and heart of almost all of the animal species. Organized or calcified nodules caused by parasites migration were also encountered in parenchymal organs of horses, sheep and cattle.	3-4	The primary purpose of this subject has been achieved successfully. Because, Fundamental technique has been well established and significant skill-up of the staff to diagnose the verious pathological lesions has been achieved.	Acccording to the nature of pathology, more experience and practice have more scientific and practical value in individual researchers. The regular sample examination and accumulation of the experience should be continued.

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

6. General and Applied Research Activities for Diagnosis of Important Animal Infectious Diseases in Mongolia.

(Supplemented by the Mid-Term Evaluation Study in August 2000)

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities					
a. Field application and improvement of diagnostic methods of **viral** infectious diseases	- Research on diagnoses of Equine viral abortion (to be continued from 1,2,3 years)	See 2-a.				
	- Rsearch on Diagnoses of Rabies (pathological examination from diseased animal)	To collect the samples and examined by IFA test and virus isolation. To prepare the anti-serum for diagnosis by IFA.	It is difficult to obtain the field samples. Basic techniques of IFA has been established although anti-serum has not been produced at the project.	3		
	- Research on diagnoses of Bovine leukosis. -	To prepare the antigen for AGID test. To conduct the control tral by diagnoses-isolation strategy in selected farms.	AGID test with FLK strain has been established and used for the control trial.	4		
	- Research on diagnoses of Equine Infectious Anemia. -	To prepare the antigen for EIA. To collect the field samples and examined by AGID.	Both fild strain and laboratory strain of the virus has not been obtained.	2		

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
b. Field application and improvement of diagnostic methods of **bacterial** infectious diseases	- Research on diagnoses of Brucellosis (to be continued from 1,2,3 years)	See 2-b.				
	- Research on diagnoses of Glanders	To develop the appropriate immunological diagnostic methods.	3 lots of LpS fraction were extracted from P. malei and they were used as antigen to diagnose equine glanders by AGID test. A total of 1120 horse serum samples were collected from the different areas of the country and investigated by AGID test with LpS antigen. As a result, 157 samples (14%) were positive for glandes.	3		
	- Research on diagnoses of Tuberculosis.	To develop the appropriate immunological diagnostic methods.	Two rabbit were immunized with bacteria suspension and positive nti-serum for AGID test was obtained. Three lots of protein antigen of M. bovis were extracted. Using this protein antigen, 37 cattle serum samples collected from different districts and 24 men's serum collected from tuberculosis patents were tested. Result of AGID test showed that 37 cattle were negative and 7 out of 24 men's samples were positive.	3		
	- Research on diagnoses of Yersiniasis.	To develop the appropriate immunological diagnostic methods.	Study on improved specific diagnostic methods is ongoing.	2		

Deg. : Degree of Achievement
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Work Plan		Expected Attainment	Progress and Achievement	Deg.	Reason of Delay	Next Plan
Subject	Activities.					
c. Field application and improvement of diagnostic methods of **protozoan** infectious diseases	- Research on diagnoses of Sarcocystosis (to be continued from 1,2,3 years)	See 2-c.	A total of 320 cattle serum samples were collected for serological examination. Heart muscle of cattle were examined by means of microscopy and systs of Sarcocystis spp. was detected.	4		
	- Research on diagnoses of horse Babesiosis.	To develop suitable diagnostic methods and its field application.	75 blood smears were examined. investigation and sampling plans are prepared. Suitable diagnostic methods are discussed and taught to the staff.	3		
	- Research on diagnoses of Toxoplasmosis.	To develop suitable diagnostic methods and its field application.	500 serum samples of different animals were collected for sero-surveillance. Serum samples of the patients with mental diseases were collected and tested by ELISA. In-vitro culture of RH strain using HS 68 cell culture was established. Antigen slides for IFAT and lysate antigen were prepared.	3		

Deg. : Degree of Achievement
4: Completed 3: Will be completed 2: Will not be completed 1: No activity

ANNEX 11

List of publications of counterparts of the Project for the Improvement of Technology on Diagnosis of Animal Infectious Diseases

Bacteriology section			
	Name of articles, reports and authors.	Autors	Date publications and number journals.
1	Contribution to diagnosis of experimental Salmonellosis in mice using immunohistochemical technique.	(Buaundelger D, Davaadorj D, Ganbold B, Saranruya B and T. Oyamada)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-9.
2	Contribution to diagnosis of experimental Salmonellosis in Mares using immunohistochemical technique.	(Davaadorj D, Buaundelger D, Ganbold B, Sarantuya B and T. Oyamada)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-9.
3	Evaluation of agar gel immunodiffusion test (AGID) with polysaccharide antigen of Brucella abortus for differentiating naturally infected from vaccinated domestic animals.	(Yondondorj A, Sugar S, Erdenebaatar J, Sarantuya B, Bayarsaikhan B, Damdin D, Narangerel B, Tungalag B, Tsend-Ayush L, Enkhelmaa B, Enkhtuya J, T.Nagabayashi and B.Shuto)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-10.
4	Some result of obtaining and evaluation antigen for agar gel immunodiffusion (AGID) test on diagnose of Equine glanders.	(Bayarsaikhan B and Yondondorj A)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-11.
5	Establishment of self-sustainable techniques for preparing direct and indirect ELISA diagnostic procedures to differentiate naturally Brucella infected from vaccinated domestic animals.	(Sarantuya B, Sugar S, Pagmajav O, Yondondorj A, T.Nagabayashi and B.Shuto)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-12.
6	Preliminary experiment for preparing monoclonal antibody with polysaccharide antigen of Brucella abortus.	(Sarantuya B, Pagmajav O, Yondondorj A, T.Nagabayashi and A. Takada)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-13.
7	Development of indirect ELISA procedure with self-prepared materials for diagnosis of equine herpes virus infection.	(Purevtseren B, Pagmajav O, Galmandakh Z, Sarantuya B, T.Nagabayashi and H.Sentsui)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-14.

8	Some results of AGID test on examination sensitivity of the Poly-B antigen with the using of brucellosis Rose Bengal test positive serum animals.	(Sugar S, Yondondorj A, Erdenebaatar J. T.Nagabayashi)	Second Joint Symposium of Research Activities in The Immunological Research Center and Institute of Veterinary Medicine in Mongolia. April 27, 2001. Page-12.
9	The reactivies AntiCell-Wall-Whole-protein sera of B. abortus to brucella and yersinia whole cell.	(Enkhelmaa B, N. Fukushi , K. Hirai)	Second Joint Symposium of Research Activities in The Immunological Research Center and Institute of Veterinary Medicine in Mongolia. April 27, 2001. Page-13.
10	Determination and purification of specific protein from salmonella spp.	(Sarantuya B)	Second Joint Symposium of Research Activities in The Immunological Research Center and Institute of Veterinary Medicine in Mongolia. April 27, 2001. Page-13.
11	Histopathology of Experimental Infection with salmonella abortus equi in Mice.	(Buyandelger D, Davaadorj D, Ganbold D, Sarantuya B, T. Oyamada)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-6.
12	IgG purification of horse and immunization of rabbits	(Galmandakh Z, Sugar S)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-7.
13	Preparation and purification of Immunoglobulin G (IgG) from camel serum.	(Sugar S, Yondondorj A, Erdenebaatar J, B.Suto)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-7.
14	Evaluation of Agar gel immunodiffusion (AGID) test for diagnosis of Brucellosis of sheep and goat.	(Sugar S, Yondondorj A, Erdenebaatar J. T.Nagabayashi)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-16.
15	The preparation of monoclonal antibody against poly-B antigen of Brucella abortus.	(Enkhelmaa B, Enkhtuya J, Yondondorj A, T. Yamashita)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-17.
16	Some results of check antigen of bovine tuberculosis with the AGID test.	(Damdin D, Yondondorj A)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-31.
17	The result of study local strain of salmonella from swine.	(Narangerel B)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-35.
18	Result of investigation on oil injection of streptomycin.	(Erdenebileg O, Sugar S, Dorjderem P)	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page-48.
19	Results obtaining MAB against B. abortus Poly-B antigen.	(Enkhelmaa B, Enkhtuya J, Yondondorj A, T. Yamashita)	Journal of Mongolian Veterinary. February 28, 2001. Page-16.
20	Some data of examination antigen of AGID test on diagnose of bovine tuberculosis.	(Damdin D, Yondondorj A)	Journal of Mongolian Veterinary. February 28, 2001. Page-24.

21	Some new information of brucellosis.	(Yondondorj A)	Journal of Mongolian Veterinary. February 28, 2001. Page-33.
		Protozoan section	
22	Expression of SAG-I *Toxoplasma gondii* in transgenic mice	S.Seng Z.Batsukh C.Lim .Nagasawa.H I.Igarashi. K.Fujisaki X.Xuen. N.Inoue N.Suzuki. T.Mikami T.Toyoda	J. Parasitology Research, 2000, p. 436/0148/I-7
23	Non-invasive method of Identification of SAG-I transgenic mice by PCR analysis of oral wash cells	S.Seng Z.Batsukh C.Lim R,Brau Nagasawa.H I.Igarashi. K.Fujisaki X.Xuen. N.Inoue N.Suzuki. T.Mikami T.Toyoda	J. Protozoology Research, 9, 10-16 (1999)
24	Detection of *Babesia caballi* and *Babesia equi* in *Dermacentor nuttalli* adult ticks	Badgar Battsetseg Xuenan Xuan Hiromi Ikadai Jose Bautista Badarch Byambaa Damdinsuren Boldbaatar Banzragch Battur Gonchigoo Battsetseg Zayat Batsukh Ikuo Igarashi Hideyuki Nagasawa Kozo Fujisaki Takeshi Mikami	International Journal for Parasitology, 31, 2001, 384-386
25	Detection of antibodies *Hypoderma lineatum* in cattle by Western blotting with recombinant hypodermin C antigen	D.Boldbaatar Xuenan Xuan Elikira Kimbita Xiaohong Huang Ikuo Igarashi Badarch Byambaa Badgar Battsetseg Banzragch Battur Gonchigoo Battsetseg Zayat Batsukh Hideyuki Nagasawa Kozo Fujisaki Takeshi Mikami	J. Veterinary parasitology, 2001, 147-154
26	Рекомбинант гиподермин С эсрэг төрөгч ашиглан иммуоблотын урвалаар үхрийн цусны ийлдсэнд	Д.Болдбаатар Г.Ген И.Игараши Б.Бямбаа	МЭХ-ийн бүтээл №6. УБ. 2001. х. 83 – 86.

	Hypoderma lineatum-ын эсрэг бием илрүүлсэн нь	Б.Батцэцэг Б.Баттер Г.Батцэцэг З.Батсүх Х.Нагасава К.Фужисаки Т.Миками	
27	*Babeshia caballi, Babeshia equi* –г *Dermacentor nuttalli* хачигт илрүүлсэн нь	Б.Батцэцэг Г.Ген Х.Икадай Б.Бямбаа Д.Болдбаатар Б.Баттер Г.Батцэцэг З.Батсүх И.Игараши Х.Нагасава Т.Миками К.Фужисаки	МЭХ-ийн бүтээл №6. УБ. 2001. х. 87 – 89.
28	Ген шилжүүлсэн *Neospora caninum* паразит *Toxoplasma gondii*-ийн р30 болон р22 эсрэг биемийг ялгаруулах нь	Г.Ген Ж.Мугиша Б.Бямбаа Б.Батцэцэг Б.Баттер З.Батсүх Г.Батцэцэг И.Игараши Т.Миками	Second Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. 2001. page . 96-106
29	Cloning and expression hypodermin C *Hypoderma lineatum* and potential use of the recombinant antigen in immunological assays	Г.Ген Б.Бямбаа Б.Батцэцэг Б.Баттер З.Батсүх Г.Батцэцэг И.Игараши Т.Миками	
30	ESTABLISHMENT OF INDIRECT. FLUORESCENT ANTIBODY TEST FOR DIAGNOSE OF OVINE SARCOCYSTOSIS BY USING S. *TENELLA* ANTIGEN	G.BATTSETSEG, Z.BATSUKH, B.BATTUR, D.BOLDBAATAR, B.BYAMBAA and F.MATSUSHITA	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. 2000. page 6-12.
31	CASE REPORT. OUTBREAK OF *BABESIA CABALLI* INFECTION OF TAKHI	G.BATTSETSEG, Z.BATSUKH, *N.BANDI, *A.MAGASH, **M.FUKUYO, **H. YOSHIKAWA, T .OY AMADA	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. page 13-19
32	Prevalence of ovine Sarcocystosis in Mongolia	G.Battsetseg, Z.Batsukh, F.Matsushita, B.Battur, D.Boldbaatar, B.Byambaa	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page

33	Characterization of monoclonal antibodies against *S.tenella* antigens	Z.Batsukh, G.Batttsetseg, D.Boldbaatar B.Battur F.Matsushita A.Arakawa,B.Byambaa	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001. Page
	Virology section		
34	Rhinopneumonia of horses	B.Purevtseren	J.Vet.Medicine Mongolia, N3, p33-348 1998
35	Development of indirect ELISA procedure with self-prepared materials for diagnosis of equine herpes virus infection.	(Purevtseren B, Pagmajav O, Galmandakh Z, Sarantuya B, T.Nagabayashi and H.Sentsui)	First Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-14.
36	Agar gel immunodiffusion test (AGID) for diagnosis of equine herpes virus infection	(Purevtseren B, Pagmajav O, Galmandakh Z, T.Nagabayashi and H.Sentsui)	First Joint Symposium of Research Activities in T Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-14.
37	Cross reaction of recombinant equine infectious anemia virus antigen to heterologous strains and application for serological survey among horses in the field	H.Sentsui, Y.Inoshima, K.Murakami, H.Akashi, B.Purebtseren, O.Pagmajav and T.Suguira	Microbiol. Immunology 45(1) 45-50., 2001
38	Antigen preparation of AGID test	Z.Galmandakh, T.Suguira	Second Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia. March 22, 2000. Page-14.
39	Results experimentally infected of local breed animals	Ts.Bazartseren	Second Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia.
40	IgG purification of horse serum and immunization of horses	Z.Galmandakh, S.Sugar	Asian Symposium on animal Infectious Diseases, Nomads, Environments and Zoonoses. September 5-8, 2001.
41	Newcastle diseases and its diagnosis by use of modern technology	T.Buyannemekh T.Yamaguchi, H.Fukushi K.Hirai	Second Joint Symposium of Research Activities in The Immunological Research Center and Veterinary Research Institute in Mongolia.
	Pathology section		
42	Contribution to diagnosis of Experimental Salmonellosis in mice using immunohistochemical technique	Buyandelger.D, Davaadorj.D, Ganbold.D, Sarantuya. B, T. Oyamada	First Joint Symposium of Research Activities in the Immunological Research Center and Veterinary Research Institute in Mongolii. N°9 2000-03-22
43	Contribution to diagnosis of Experimental Salmonellosis in Mare using	Davaadorj.D, Buyandelger.D, Ganbold.D,	First Joint Symposium of Research Activities in the Immunological Research Center and Veterinary Research Institute in

	immunohistochemical technique	Sarantuya. B, T. Oyamada	Mongolii. N° 10 2000-03-22
44	Histopathology of Experimental Infection with *Salmonella* abortusequi in Mice	Buyandelger.D, Davaadorj.D, Ganbold.D, Sarantuya. B, T. Oyamada	Asian Symposium on animal infectious diseases, nomads, environments and zoonoses. page 6 2001-09-06
45	Immunohistochemical Technique for Diagnosis of Experimental Salmonellosis in Pregnant Mare.	Davaadorj.D, Buyandelger.D, Ganbold.D, Sarantuya. B, T. Oyamada	Asian Symposium on animal infectious diseases, nomads, environments and zoonoses. page 6-7 2001-09-06

List of lectures and demonstrations held in country side
for the staffs of regional research laboratories and local veterinary services

Name of laboratory	Presentator	Name of presentation	Prefecture	Date
Laboratory of Infectious disease and Immunology	J. Erdenebaatar	Evaluation of agar gel immunodiffusion test for differential diagnosis of naturally infection of Brucellosis from post vaccine reaction	Khovd	2000
	J. Erdenebaatar	Evaluation of agar gel immunodiffusion test for differential diagnosis of naturally infection of Brucellosis from post vaccine reaction	Zavkhan	2000
	J. Erdenebaatar	Evaluation of agar gel immunodiffusion test for differential diagnosis of naturally infection of Brucellosis from post vaccine reaction	Sukhbaatar	2000
	J. Erdenebaatar	Conjugation of purified cattle IgG	Khuvsgul	2001
	S. Sugar	Conjugation of purified cattle IgG	Dundgovi	2001
	S. Sugar	Evaluation of agar gel immunodiffusion test for differential diagnosis of naturally infection of Brucellosis from post vaccine reaction - Demonstration of AGID	Arkhangai	2001
	B. Enkhelmaa	Preparation of the Monoclonal antibody against poly-B antigen of *Brucella abortus*	Umnugovi	2001
	B. Enkhelmaa	Some basic methods of immunology - Demonstration of ELISA	Umnugovi	2001
Laboratory of Virology	B. Purevtseren	Equine herpes virus infection	Zavkhan	2000
	B. Purevtseren	Equine herpes virus infection	Khovd	2000

	B. Purevtseren	Equine herpes virus infection	Khuvsgul	2001
	Z. Galmandakh	Equine herpes virus infection	Umnugovi	2001
	Z. Galmandakh	Equine herpes virus infection	Dundgovi	2001
	T. Buyannemekh	Equine herpes virus infection - Demonstration of ELISA	Arkhangai	2001
Laboratory of Pathology	D. Ganbold	Pathological changes of mice and mares experimentally infected with Salmonella abortus equi	Sukhbaatar	2000
	D. Ganbold	Pathological changes of mice and mares experimentally infected with Salmonella abortus equi.	Dundgovi	2001
	D. Davaadorj	Pathological changes of mice and mares experimentally infected with Salmonella abortus equi	Zavkhan	2000
	D. Davaadorj	Pathological changes of mice and mares experimentally infected with Salmonella abortus equi	Arkhangai	2001
	D. Buyandelger	Pathological changes of mice and mares experimentally infected with Salmonella abortus equi.	Umnugovi	2001
Laboratory of Protozoology	Z. Batsukh	Ovine sarcocystosis and Babesiasis of Takhi Demonstration of SDS PAGE and ELISA	Khovd	2000
	B. Battur	Ovine sarcocystosis and Babesiasis of Takhi	Zavkhan	2000
	B. Battur	Ovine sarcocystosis and Babesiasis of Takhi	Sukhbaatar	2000
	D. Boldbaatar	Ovine sarcocystosis and Babesiasis of Takhi	Umnugovi	2001
	Z.Batsukh	- Ovine sarcocystosis and Babesiasis of Takhi ~~- Demonstration of SDS PAGE and ELISA~~	Arkhangai	2001
	D. Boldbaatar	- Ovine sarcocystosis and Babesiasis of Takhi - Demonstration of SDS PAGE	Khuvsgul	2001