This report has been submitted: 2018-01-12 11:09:45

<table>
<thead>
<tr>
<th><strong>Title of collaborating centre:</strong></th>
<th>Surveillance, Control of Animal Protozoan Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Address of Collaborating Centre:</strong></td>
<td>National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine Nishi 2-13, Inada-cho Obihiro, Hokkaido 080-8555 JAPAN</td>
</tr>
<tr>
<td><strong>Tel.:</strong></td>
<td>+81-155 49-5641</td>
</tr>
<tr>
<td><strong>Fax:</strong></td>
<td>+81-155- 49-5643</td>
</tr>
<tr>
<td><strong>E-mail address:</strong></td>
<td><a href="mailto:protozoa@obihiro.ac.jp">protozoa@obihiro.ac.jp</a></td>
</tr>
<tr>
<td><strong>Website:</strong></td>
<td><a href="http://www.obihiro.ac.jp/~protozoa/eng/index-eng.html">http://www.obihiro.ac.jp/~protozoa/eng/index-eng.html</a></td>
</tr>
<tr>
<td><strong>Name of Director of Institute (Responsible Official):</strong></td>
<td>Prof. Xuenan XUAN</td>
</tr>
<tr>
<td><strong>Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):</strong></td>
<td>Prof. Ikuo Igarashi</td>
</tr>
<tr>
<td><strong>Name of writer:</strong></td>
<td>Prof. Ikuo Igarashi</td>
</tr>
</tbody>
</table>
ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by the OIE

<table>
<thead>
<tr>
<th>Title of activity</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of trypanosomosis</td>
<td>A total of 285, 3,855 and 1,230 samples from Thailand, Mongolia and Sudan, respectively, were analyzed for detection of Trypanozoon trypanosomes by PCR or specific antibodies by ELISA.</td>
</tr>
<tr>
<td>Survey of neosporosis</td>
<td>A clinical case of neosporosis in a 4-week-old holstein friesian calf which developed hindlimb paresis postnatally. Diagnosis by ELISA, IHC.</td>
</tr>
<tr>
<td>Survey of toxoplasmosis</td>
<td>Serum samples from 856 human and 310 pigs in North Sulawesi, Indonesia were examined for the detection of Toxoplasma gondii by latex agglutination test.</td>
</tr>
<tr>
<td>Survey of blood protozoa</td>
<td>Serum samples from 301 cattle in northern Egypt were examined for the detection of Babesia bovis, B. bigemina, Trypanosoma evansi, and Anaplasma marginale antibodies by ELISA.</td>
</tr>
<tr>
<td>Survey of canine tick-borne pathogens</td>
<td>A total of 162 canine blood samples from China were analyzed for detection of Babesia spp and other tick-borne pathogens by PCR.</td>
</tr>
<tr>
<td>Survey of ovine babesiosis, theileriosis and anaplasmosis</td>
<td>A total of 343 ovine blood samples from Turkey were analyzed for detection of Babesia spp, Theileria spp, and Anaplasma spp by PCR.</td>
</tr>
<tr>
<td>Survey of ovine babesiosis, theileriosis and anaplasmosis</td>
<td>A total of 91 ovine blood samples from South Africa were analyzed for detection of Babesia spp, Theileria spp, and Anaplasma spp by PCR.</td>
</tr>
<tr>
<td>Survey of bovine babesiosis and anaplasmosis</td>
<td>A total of 279 bovine blood samples from Thailand were analyzed for detection of Babesia spp, Theileria spp and Anaplasma spp by PCR.</td>
</tr>
<tr>
<td>Serological and molecular surveys of babesiosis</td>
<td>Blood samples from 156 cattle in Vietnam were examined for detection of Babesia bovis and Babesia bigemina by ELISA and PCR.</td>
</tr>
<tr>
<td>Risk assessment of bovine theileriosis</td>
<td>Blood samples from 192 cattle in Japan were examined to demonstrate the dynamics of erythrocyte indices in relation to anemia development in Theileria orientalis-infected animals.</td>
</tr>
</tbody>
</table>

Training, capacity building

<table>
<thead>
<tr>
<th>Title of activity</th>
<th>Scope</th>
</tr>
</thead>
</table>
Training course for protozoan disease  
Six trainees had research training for advanced knowledge and techniques.

**ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty**

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

<table>
<thead>
<tr>
<th>Proposal title</th>
<th>Scope/Content</th>
<th>Applicable area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of ICT for trypanosomosis</td>
<td>Establishment of novel pen-side serological tests for trypanosomosis</td>
<td>□Surveillance and control of animal diseases □Food safety □Animal welfare</td>
</tr>
</tbody>
</table>

**ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines**

**ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations**

3. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

<table>
<thead>
<tr>
<th>Name of OIE CC/RL/other organisation(s)</th>
<th>Location</th>
<th>Region of networking Centre</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institute of Tropical Medicine</td>
<td>Antwerp, Belgium</td>
<td>□Africa □Americas □Asia and Pacific □Europe □Middle East</td>
<td>Evaluation of ICT for trypanosomosis</td>
</tr>
<tr>
<td>Canadian Food Inspection Agency</td>
<td>Saskatoon, Canada</td>
<td>□Africa □Americas □Asia and Pacific □Europe □Middle East</td>
<td>Supply of IFAT slides and evaluation of it’s efficacy.</td>
</tr>
</tbody>
</table>
### 4. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

<table>
<thead>
<tr>
<th>Name of OIE CC/RL/other organisation(s)</th>
<th>Location</th>
<th>Region of networking Centre</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Center for Zoonoses</td>
<td>Hokkaido, Japan</td>
<td>Africa, Americas, Asia and Pacific, Europe, Middle East</td>
<td>Epidemiological survey on animal trypanosomiasis</td>
</tr>
</tbody>
</table>

**ToR:** To place expert consultants at the disposal of the OIE.

### 5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?

No

**ToR:** To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries

### 6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?

Yes

a) Technical visits: 2
b) Seminars: 2
c) Hands-on training courses: 5
d) Internships (>1 month): 0

<table>
<thead>
<tr>
<th>Type of technical training provided (a, b, c or d)</th>
<th>Content</th>
<th>Country of origin of the expert(s) provided with training</th>
<th>No. participants from the corresponding country</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Supply the information on the diagnostics of equine piroplasmosis</td>
<td>Japan</td>
<td>3</td>
</tr>
</tbody>
</table>

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OIE Collaborating Centres Reports Activities, 2017
<table>
<thead>
<tr>
<th></th>
<th>Supply the technical advice on piroplasmosis</th>
<th>Vietnam</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Mexico</td>
<td>1</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Mongolia</td>
<td>3</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Sri Lanka</td>
<td>3</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Indonesia</td>
<td>3</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Vietnam</td>
<td>2</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Kyrgyz</td>
<td>1</td>
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<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Argentina</td>
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<tr>
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<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Brazil</td>
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<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Kenya</td>
<td>2</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Burkina Faso</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Title of event</td>
<td>Co-organiser</td>
<td>Date (mm/yy)</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------</td>
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</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Tanzania</td>
<td>1</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Thailand</td>
<td>3</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>China</td>
<td>6</td>
</tr>
<tr>
<td>b</td>
<td>Invitation Program to Japan for International Animal Health measures by Obihiro University of Agriculture and Veterinary Medicine</td>
<td>Uganda</td>
<td>2</td>
</tr>
<tr>
<td>b</td>
<td>The first International Japan-Mongolia Joint Symposium on Protozoan Diseases Prevention</td>
<td>Mongolia</td>
<td>16</td>
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<tr>
<td>c</td>
<td>Molecular Survey on piroplasmosis</td>
<td>Kyrgyz</td>
<td>1</td>
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<tr>
<td>c</td>
<td>Molecular Survey on piroplasmosis</td>
<td>Sri Lanka</td>
<td>1</td>
</tr>
<tr>
<td>c</td>
<td>Molecular Survey on piroplasmosis</td>
<td>Mongolia</td>
<td>2</td>
</tr>
<tr>
<td>c</td>
<td>Diagnostic methods for equine piroplasmosis</td>
<td>India</td>
<td>2</td>
</tr>
<tr>
<td>c</td>
<td>Diagnostic methods for equine piroplasmosis</td>
<td>Japan</td>
<td>3</td>
</tr>
</tbody>
</table>

**ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE**

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

Yes
ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 63


52. Bumdruureen Tuvsintulga, Mahmoud AbouLaila, Thillaiampalam Sivakumar, Dickson Stuart Tayebwa, Sambuu Gantuya, Khandsuren Naranbaatar, Aki Ishiyama, Masato Iwatsuki, Kazuhiro Otaguro, Satoshi Oi, Mohamad Alaa Terkawi, Azirwan Guswanto, Mohamed Abd El Rizk, Naoko Yokoyama & Ikuo Igarashi. 2017. Chemotherapeutic efficacies of a clofazimine and diminazene aceturate combination against piroplasm parasites and their AT-rich DNA-binding activity on Babesia bovis. Scientific Reports. 7: 13888.


4. Keisuke Suganuma, Naranatsatsral Sandagdorj, Davaasuren Bandaltsag, Daiki Mizushima, M Abdul Alim, Makoto Matsubayashi, Rika Umemiya-Shirafuji, Kozo Fujisaki, Tetsuya Tanaka. Peroxiredoxins are important for blood feeding and reproduction through the regulation of vitellogenin receptor in growing oocytes in parthenogenetic Haemaphysalis longicornis ticks. 9th Tick and Tick-borne Pathogen Conference & 1st Asia Pacific Rickettsia Conference, Cairns, Australia, August 27-September 1, 2017.


11. Ikuo Igarashi. Efficacy of combination chemotherapy with clofazimine and diminazene aceturate against Babesia and Theileria infections. 4th International Conference on Parasitology, Courtyard by Marriott Prague Airport, Prague, Czechoslovakia, September 1, 2017.


3. Yuho Murata, Ryo Takano, Makoto Igarashi, Tatsuki Sugi, Kentaro Kato. Chitinase Like Protein 1 is required for parasite transition in filarial parasites Dirofilaria immitis. 26th International Conference of the Worl Association for Advancement of Veterinary Parasitology, Kuala Lumpur Convention Centre, Malaysia, September 8, 2017.


7. Motamed E. Mahmoud, Ragab Fereig, Yoshifumi Nishikawa. Involvement of host defense mechanisms against Toxoplasma gondii infection in depression-like behaviors in mice. The 86th Annual Meeting of American Society of Tropical Medicine and Hygiene, Baltimore, USA, November 6-9, 2017.


c) National conferences: 52


7. Shinya Fukumoto, Aya Yoshimura, Hirotaka Kanoka. Thermoregulation controls the developmental host transition in filarial parasites Dirofilaria immitis. 26th International Conference of the Worl Association for Advancement of Veterinary Parasitology, Kuala Lumpur Convention Centre, Malaysia, September 8, 2017.


40. Eiki Yamazaki, Akiko Kusumoto, Shintaro Shichinohara, Shinya Fukumoto, Keisuke Saganuma, Naokaki Yokoyama, Ikuo Igarashi, Xuan Xuan, Hisao Kurazono, Toshiaki Ishii, Fumiki Morimatsu. Efforts to Acquire ISO / IEC 17025 Certification at Universities. The 38th Annual Meeting of Food Microbiology, Tokushima, Japan, October 6, 2017.


44. Huanping Guo, Yang Gao, Honglin Jia and Xuan Xuan. Functional analysis of Toxoplasma gondii dense granule protein 9. The 63rd Joint Annual Meeting of Northern Branches of the Japanese Society of Parasitology and the Japan Society of Medical Entomology and Zoology, Sapporo, Japan, October 21, 2017

45. Yang Gao, Huanping Guo, Honglin Jia and Xuan Xuan. Knockout of SAG1-related sequence 2 (SRS2) in Toxoplasma gondii using CRISPR/Cas9. The 63rd Joint Annual Meeting of Northern Branches of the Japanese Society of Parasitology and the Japan Society of Medical Entomology and Zoology, Sapporo, Japan, October 21, 2017

46. Maki Nishimura, Takashi Goyama, Souhei Tomikawa, Motomichi Matsuzaki, Kisaburo Nagamune, Kobayashi Yoshisu, Yoshifumi Nishikawa. Outbreak of toxoplasmosis in squirrel monkeys (Saimiri sciureus) and genome analysis of the isolated parasite. The 63rd Joint Annual Meeting of Northern Branches of the Japanese Society of Parasitology and the Japan Society of Medical Entomology and Zoology, Sapporo, Japan, October 21, 2017

47. Kousuke Umeda, Fumiki Ishii, Yoshifumi Nishikawa. Roles of Toxoplasma gondii cyclophilin 18 in host-parasite interaction. The 63rd Joint Annual Meeting of Northern Branches of the Japanese Society of Parasitology and the Japan Society of Medical Entomology and Zoology, Sapporo, Japan, October 21, 2017

48. Yu Himori, Fumiki Ishii, Kousuke Umeda, Yoshifumi Nishikawa. Toxoplasma gondii dense granule protein 7 (GRA7) regulates intracellular response of host cell. The 63rd Joint Annual Meeting of Northern Branches of the Japanese Society of Parasitology and the Japan Society of Medical Entomology and Zoology, Sapporo, Japan, October 21, 2017


(Provide website address or link to appropriate information): 1
http://www.obihiro.ac.jp/~protozoa/eng/index-eng.html