

WOAH Collaborative Centre Reports Activities 2025

This report has been submitted: 28 janvier 2026 01:13

CENTRE INFORMATION

*Title of WOA Collaborating Centre	Surveillance and Control of Animal Protozoan Diseases
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TOR 1 AND 2: SERVICES PROVIDED

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

Category	Title of activity	Scope
Disease control (true)	<ol style="list-style-type: none"> 1. Identification and evaluation of anti-protozoan compounds 2. Vector biology and control 3. Understanding Molecular and cellular mechanisms of protozoan infection and host responses 	<ol style="list-style-type: none"> 1. Novel chemotherapeutic candidates against protozoan parasites were evaluated. Nitazoxanide derivatives, isatinylhydantoin compounds, arylidene analogues of glitazone, nitroindole-rhodanine conjugates, sesquiterpenoids from <i>Artemisia adamsii</i>, and other synthetic compounds were assessed for antiparasitic activity against <i>Babesia</i>, <i>Theileria</i>, <i>Leishmania</i>, trypanosomatids, and malaria parasites. Cipargamin was characterised as a promising antibabesial drug candidate, and tafenoquine efficacy was evaluated against <i>Babesia gibsoni</i> in infected dogs. 2. Acaricidal activity of diatomaceous earth against <i>Haemaphysalis longicornis</i> was evaluated under laboratory condition. Functional genomic analysis of midgut genes in <i>Dermacentor nuttalli</i> was conducted. The role of vitellogenin in regulation of <i>Babesia ovata</i> migration in <i>Haemaphysalis longicornis</i> was investigated. 3. Key molecular determinants of protozoan pathogenesis were investigated. Expression of ves1α genes was identified as the major factor mediating cytoadhesion of <i>Babesia bovis</i>-infected erythrocytes. Translationally controlled tumor protein (TCTP) and enolase of <i>B. bovis</i> were characterized as important antigens associated with acute infection. Secretory protein distribution of <i>Neospora caninum</i> in mouse and calf brains was elucidated, and protective efficacy of an NcGRA7-deficient <i>N. caninum</i> strain as a live attenuated vaccine was evaluated in mice. <i>Toxoplasma</i> GRA15-mediated suppression of B-cell differentiation was characterized, and mechanisms of retinal ferroptosis induced by intraocular silicone oil were investigated. Evolutionary loss of the ATG12 autophagy-related system in a lineage of Apicomplexa was discovered.
		<ol style="list-style-type: none"> 1. Large-scale epidemiological surveys were conducted across multiple regions. Prevalence and genetic diversity of <i>Theileria</i>, <i>Babesia</i>, <i>Anaplasma</i> in cattle in Paraguay were determined.

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Epidemiology, surveillance, risk assessment, (true)	1. Surveillance and molecular epidemiology of protozoan parasites 2. Vector surveillance	Molecular epidemiological surveys of equine piroplasmosis in Malawi and piroplasma diversity in rodents and ticks in Japan were conducted. 2. Entomological studies were undertaken to understand vector ecology and distribution. Species and density of Stomoxys flies in South Africa and temporal prevalence of horse flies in Hokkaido, Japan, were investigated. Seasonal activity and veterinary importance of Haemaphysalis mageshimaensis ticks in Okinawa were characterized. The first record of Haemaphysalis concinna in Eastern Mongolia was documented.
Training, capacity building (true)	Training on diagnosis, surveillance, and control of animal protozoan diseases	Scientists from Ghana, Kyrgyzstan, China, Japan, Malawi, Sri Lanka, Nigeria, India, Uganda, Kenya, Philippines, South Africa, and Democratic Republic of the Congo were trained on diagnosis, surveillance, and control of animal protozoan diseases via technical visits, seminars, and internships.
Zoonoses (true)	Surveillance	Seroprevalence of Toxoplasma gondii among pregnant women in Nepal was investigated.
Diagnosis, biotechnology and laboratory (true)	Development of a nanoparticle-based gene silencing system	A novel nanoparticle-based gene silencing system using preassembled Ago2-ssRNA complexes was developed for Babesia microti as a platform for functional studies and therapeutic development.
Vaccines (true)	Identification of protozoan antigens and vaccine candidates	Vaccine-related research focused on antigen discovery and protective efficacy. Babesia bovis enolase and TCTP were characterized as novel antigens containing neutralizing B-cell epitopes. Protective efficacy of NcGRA7-deficient Neospora caninum parasites as a live attenuated vaccine was demonstrated in murine models.

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Standardized molecular surveillance of protozoan parasites	Development and application of PCR-based survey protocols for detection and genetic characterisation of protozoan parasites.	Health Management
Recombinant antigen-based immunodiagnostic procedures	Evaluation of recombinant parasite antigens and laboratory procedures for development of serological diagnostic assays.	Health Management
Standardised platforms for evaluation of antiparasitic interventions	Reproducible in vitro and in vivo experimental systems for assessing drug, vaccine, and acaricide efficacy against protozoan parasites and tick vectors.	Health Management

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOA?

No

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

Yes

Name of WOA CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
RL for Dourine Dr. Laurent Hebert ANSES France; RL for Surra Dr. Nick Van Reet Institute of			To create awareness on NTTAT as high impact neglected veterinary diseases To develop tools that enhance countries' capacity for surveillance of the NTTAT in view of improved disease

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<p>Tropical Medicine Antwerp; RL for Surra Prof. Noboru Inoue National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine, Japan; RL for trypanosomoses (tsetse-transmitted) Dr. Marc DESQUESNES CIRAD-IRD, France.</p>	<p>France, Belgium, and Japan</p>	<p>Asia y el Pacifico Europa</p>	<p>reporting To foster collaborative research on identified topics To respond to needs for scientific evidence as expressed by endemic countries and/or organizations engaged in NTTAT control To fill gaps in knowledge on disease epidemiology, pathogenesis, drug efficacy, vaccines, modes of transmission, reservoir hosts and vector control.</p>
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TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOA Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOA CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Centro de Diagnóstico Veterinario, San Lorenzo	Paraguay	Americas	Molecular epidemiology of Babesia, Theileria and Anaplasma in cattle.
Faculty of Veterinary Medicine, Tribhuvan University	Nepal	Asia and Pacific	Seroprevalence of Toxoplasma gondii in pregnant women and canine parasitic disease surveillance.
Unit for Environmental Sciences and Management, North-West University	South Africa	Africa	Studies on Stomoxys fly ecology and evaluation of anti-kinetoplastid and antiprotozoal compounds.
Faculty of Veterinary Medicine, Kasetsart University	Thailand	Asia and Pacific	Studies on tick biology, Babesia-vector interactions, and disease diagnostics.
State Key Laboratory of Plateau Ecology and Agriculture, Qinghai University	China	Asia and Pacific	Functional genomics of ticks and Babesia-vector interaction studies.
College of Veterinary Medicine, Huazhong Agricultural University	China	Asia and Pacific	Molecular and cellular studies on Babesia bovis pathogenesis and gene expression.
Faculty of Veterinary Medicine, University of Selcuk	Türkiye	Europe	Collaborative molecular parasitology and vector-borne pathogen studies.
Faculty of Science, University of South Bohemia in České Budějovice	Czech Republic	Europe	Advanced molecular biology and functional genomics studies of protozoan parasites.
Faculty of Veterinary Medicine, Lilongwe University of Agriculture and Natural Resources,	Malawi	Africa	Epidemiological survey of equine piroplasmosis in horses and donkeys

Lilongwe			
Department of Zoology, University of the Free State	South Africa	Africa	Anti-trypanosomal and anti-leishmanial compound evaluation.
Faculty of Science, University of South Bohemia	Czech Republic	Europe	Advanced molecular biology and functional genomics studies of protozoan parasites.
Institute of Veterinary Medicine, Mongolian University of Life Science	Mongolia	Asia and Pacific	Vector surveillance

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOA?H?

No

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes

1. Provision of confirmatory diagnostic services

Horse samples from USA, UK, Malawi, Sri Lanka, Singapore, Germany, and Argentina were tested for equine piroplasmosis. Cattle samples from Sri Lanka, Japan, and Paraguay were tested for Babesia and Theileria infections. Samples from Japan were tested for Neospora caninum antibodies. Horse samples from Mongolia and water buffalo samples from Philippines were tested for Trypanosoma.

2. Supply of diagnostic and research materials

Theileria equi and Babesia caballi IFAT slides were supplied to institutions in USA, Argentina, Australia, France, Japan, and China. Theileria equi and Babesia caballi DNA samples were provided to institutions in Australia, Portugal, and China. Serum samples from Theileria equi- and Babesia caballi-infected horses were provided to an institution in Japan. DNA samples of bovine Babesia species were provided to an institution in Thailand. Toxoplasma gondii strains and recombinant antigens were provided to institutions in Japan. Institutes in Institutions in Japan were provided with tick colonies.

3. Expert advice on the diagnosis of protozoan diseases and vectors

Expert advice on the diagnosis and control of animal protozoan diseases was provided to institutions in Argentina, Sri Lanka, Kyrgyzstan, Philippines, Thailand, Singapore, Japan, China, Australia, the Netherlands, France, Portugal, UK, Italy, USA, Chile, Turkey, and Ghana. Expert advice on morphological identification of ticks was provided to institutions in Japan.

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOA, to personnel from WOA Members?

Yes

a) Technical visit : 14

b) Seminars : 360

c) Hands-on training courses: 11

d) Internships (>1 month) : 2

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	Surveillance and genetic diversity of hemoprotozoan parasites	Ghana	1
A	Survey of bovine and equine piroplasmosis	Kyrgyzstan	2
A	In vitro cultivation of equine piroplasms	China	1
A	Molecular and serological diagnosis of bovine and equine piroplasmosis	Japan	6

A	Diagnosis and management of trypanosomosis	China	2
A	Collaborative research on trypanosomosis management	South Africa	1
A	Diagnosis of animal trypanosomosis	Japan	1
B	Laboratory biorisk management	Uzbekistan	10
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	China	2
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Japan	10
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Kyrgyzstan	2
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Malawi	1
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Sri Lanka	1
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Nigeria	1
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Ghana	1
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	India	2
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Uganda	1
B	Managing bovine babesiosis and equine piroplasmosis in endemic regions	Kenya	2
B	An overview and management of equine piroplasmosis	Philippines	10
B	Epidemiology and management of tick-borne diseases of veterinary and public health importance	China	130

B	Management of bovine tick-borne diseases	Japan	187
C	Training on diagnosis of trypanosomosis	Palestine	1
C	Diagnosis of equine piroplasmosis using WOAHP recommended diagnostic assays	Japan	5
C	Diagnosis of equine piroplasmosis using WOAHP recommended diagnostic assays	Kenya	2
C	Diagnosis of equine piroplasmosis using WOAHP recommended diagnostic assays	DRC, Congo	1
C	Diagnosis of equine piroplasmosis using WOAHP recommended diagnostic assays	China	1
C	Diagnosis of equine piroplasmosis using WOAHP recommended diagnostic assays	Kyrgyzstan	1
D	Laboratory diagnosis of clinical bovine babesiosis	Kyrgyzstan	1
D	In vitro cultivation of equine piroplasms	China	1

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAHP?

No

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAHP that may be useful to Members of WOAHP

a) Articles published in peer-reviewed journals:

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1. Keamogetswe Sechoaro, Janine Aucamp, Christina Kannigadu, Helena D Janse van Rensburg, Keisuke Suganuma, David D N'Da, Investigation of novel isatinylhydantoin derivatives as potential anti-kinetoplastid agents., *ChemMedChem*, 2025 Jan 2;20(1):e202400533. doi: 10.1002/cmdc.202400533. Epub 2024 Nov 8.
2. Yuka Matsuda, Misuzu Okajima, Yuji Fujii, Fumiki Izumi, Maho R Takahashi, Yuki Iwatake, Kyoko Saito, Yasuyo Terashi, Junji Moribe, Yasuhiro Takashima, Naoto Ito, Tatsunori Masatani, Diversity of piroplasma species in small rodents and ticks captured in suburbs of Gifu City, central Japan., *Journal of Veterinary Medical Science*, 2025 Jan 1;87(1):43-51. doi: 10.1292/jvms.24-0398. Epub 2024 Nov 18.
3. Yuki Nakayama, Fumiaki Ihara, Daisuke Okuzaki, Yoshifumi Nishikawa, Miwa Sasaki, Masahiro Yamamoto, Toxoplasma GRA15 expression on dendritic cells inhibits B cell differentiation and antibody production., *Parasitology International*, 2025 Apr;105:102995. doi: 10.1016/j.parint.2024.102995. Epub 2024 Nov 17.
4. Shima A E-S El-Sayed, Mohamed A Rizk, Hang Li, Uday Kumar Mohanta, Iqra Zafar, Shengwei Ji, Zhuowei Ma, Thom Do, Yongcang Hang Li, Daisuke Kondoh, Xuenan Xuan, Preassembled complexes of hAgo2 and ssRNA delivered by nanoparticles: A novel silencing gene expression approach overcoming the absence of the canonical pathway of siRNA processing in the apicomplexan parasite Babesia microti, blood parasite of veterinary and zoonotic importance., *Emerging microbes & infections*, 2025 Dec;14(1):2438658. doi: 10.1080/22221751.2024.2438658. Epub 2025 Jan 6.
5. Adrian Miki C Macalanda, Eloiza May S Galon, John Carlo T Hipolito, Nikki S Simo, Gideon F Gayares, Rezin C Bahia, Vernadyn A Morillo, Emmanuel R Mago, Cherry R Alvarez, Morphological identification and first molecular characterization of Lobothonax typus (Isopoda: Cymothoidae) parasitizing Trichiurus lepturus (Scombriformes: Trichiuridae) in the Philippines., *Journal of Veterinary Medical Science*, 2025 Feb 4;87(2):189-193. doi: 10.1292/jvms.24-0388. Epub 2024 Dec 18.
6. Hideyuki Shimizu, Hiroshi Tanaka, Akira Tazaki, Kazuhisa Yamada, Ayana Suzumura, Junya Ota, Nanako Ushio-Watanabe, Hao Zheng, Keiko Kataoka, Hideaki Hara, Yoshifumi Nishikawa, Tsutomu Yasukawa, Kiyoshi Suzuma, Hiroko Terasaki, Koji M Nishiguchi, Masashi Kato, Shinya Toyokuni, Hiroki Kaneko, Silicone oil, an intraocular surgical adjuvant, induces retinal ferroptosis., *Free radical biology & medicine*, 2025 Feb 16;228:33-43. doi: 10.1016/j.freeradbiomed.2024.12.039. Epub 2024 Dec 18.
7. Nanang R Ariefita, Koichi Narita, Toshihiro Murata, Yoshifumi Nishikawa, Study of the naturally occurring lignan brachangobinan A as antiplasmodial agent: synthesis, biological evaluation, and in silico prediction., *Chemico-Biological Interactions*, 2025 Jan 25;406:111362. doi: 10.1016/j.cbi.2024.111362. Epub 2024 Dec 20.
8. Jose Ma M Angeles, Katrina Theresa M Balboa, Frances Paula L Miaral, Klyde Irene M Ligot, Kevin Austin L Ona, Maria Luz B Belleza, Elena A Villacorte, Pilarita T Rivera, Shin-Ichiro Kawazu, Aya Yajima, Epidemiological Study on Humans, Animals and Snails for Schistosomiasis in Two Endemic Municipalities Nearing Elimination in Bohol, the Philippines., *Acta Parasitologica*, 2025 Jan 4;70(1):4. doi: 10.1007/s11686-024-00973-1.

9. Satoko Nakao, Thillaiampalam Sivakumar, Yuko Takakuwa, Hajime Suzuki, Keiichi Ohta, Keiko Nakamura, Osamu Tsuha, Yuzuru Ikehara, Sanae Ikehara, Syota Ohki, Mizue Inumaru, Yukiko Higa, Rika Umemiya-Shirafuji, Naoaki Yokoyama, Seasonal activities, morphological characteristics, and veterinary importance of *Haemaphysalis mageshimaensis* in Ishigaki and Yonaguni, Okinawa, Japan., *Ticks and Tick-borne Diseases*, 2025 Jan;16(1):102440. doi: 10.1016/j.ttbdis.2025.102440. Epub 2025 Jan 16.
10. Buyanmandakh Buyankhishig, Toshihiro Murata, Koichi Narita, Chinbat Delgermaa, Yoshifumi Nishikawa, Nanang R Arieftha, Baasandorj Gantumur, Tseesuren Byambajav, Yoshinobu Ishikawa, Bekh-Ochir Davaapurev, Kenroh Sasaki, Javzan Batkhuu, Isolation of Antiplasmodial Oxazoles and Isoflavonoids from the Roots of *Oxytropis trichophylla* and Total Synthesis of Oxazole-type Alkaloids., *Journal of Natural Products*, 2025 Feb 28;88(2):448-457. doi: 10.1021/acs.jnatprod.4c01254. Epub 2025 Jan 18.
11. Xiaoxia X Lin, Yun D Bai, Sichang T Wang, Akira Nozawa, Tatsuya Sawasaki, Tatsunori Masatani, Kenji Hikosaka, Masahito Asada, Hirokazu Sakamoto, Discovery of Evolutionary Loss of the Ubiquitin-like Autophagy-Related ATG12 System in a Lineage of Apicomplexa., *Cells*, 2025 Jan 15;14(2):121. doi: 10.3390/cells14020121.
12. Claudia Esther Silvera Rojas, Thillaiampalam Sivakumar, Ngigi Noel Muthoni Mumbi, Believe Ahedor, Maria Fátima Rodríguez Valinotti, Tomás Javier Acosta, Naoaki Yokoyama, Molecular epidemiological survey of *Babesia* species infecting cattle in Paraguay., *Veterinary Parasitology: Regional Studies and Reports*, 2025 Jan;57:101162. doi: 10.1016/j.vprsr.2024.101162. Epub 2024 Nov 18.
13. Mahmoud AboutLaila, Maram Mahmoud, Heba Wheeb, Makoto Igarashi, Ahmed Elkhtam, Soad Menshaw, Prevalence and molecular characterization of *Ascaridia galli* in chickens from Minoufiya Governorate, Egypt., *Veterinary Parasitology: Regional Studies and Reports*, 2025 Jan;57:101170. doi: 10.1016/j.vprsr.2024.101170. Epub 2024 Nov 23.
14. Makoto Hirai, Meiji Arai, Soki Hayamichi, Ayako Uchida, Megumi Sudo, Rie Kubota, Naoaki Shinzawa, Toshihiro Mita, Deletion of the chloroquine resistance transporter gene confers reduced piperazine susceptibility to the rodent malaria parasite *Plasmodium berghei*., *Antimicrobial Agents and Chemotherapy*, 2025 Apr 2;69(4):e0158924. doi: 10.1128/aac.01589-24. Epub 2025 Feb 24.
15. Emce Badenhorst, Janine Aucamp, Christina Kannigadu, Helena D Janse van Rensburg, Keisuke Sukanuma, David D N'Da, Synthesis and in vitro antitrypanosomatid activity of novel 5-nitroindole-rhodanine conjugates., *Future Medicinal Chemistry*, 2025 Mar;17(5):557-573. doi: 10.1080/17568919.2025.2470110. Epub 2025 Feb 24.
16. Dong-Fang Li, Sen Wang, Carlos E Suarez, Xuenan Xuan, Lan He, Jun-Long Zhao, Pushing the frontiers of babesiosis research: in vitro culture and gene editing., *Trends in Parasitology*, 2025 Apr;41(4):317-329. doi: 10.1016/j.pt.2025.02.008. Epub 2025 Mar 14.
17. Ahmed M Abdou, Yoshifumi Nishikawa, Protective efficacy of the NcGRA7-deficient parasite as a live attenuated vaccine against *Neospora caninum* infection in mice., *Journal of Veterinary Medical Science*, 2025 May 1;87(5):472-480. doi: 10.1292/jvms.24-0460. Epub 2025 Mar 20.
18. Aiko Iguchi, Yukako Mochiduki, Hitoshi Akiyama, Hisashi Kamiya, Xuenan Xuan, Efficacy of tafenoquine in dogs naturally infected with *Babesia gibsoni*., *Journal of Veterinary Medical Science*, 2025 May 15;87(5):532-535. doi: 10.1292/jvms.24-0443. Epub 2025 Apr 4.
19. Jose Ma M Angeles, Yasuyuki Goto, Minh-Anh Dang-Trinh, Pilarita T Rivera, Elena A Villacorte, Shin-Ichiro Kawazu, Diagnostic potentials of whole and fragmented major egg protein for human schistosomiasis., *Parasitology International*, 2025 Oct;108:103076. doi: 10.1016/j.parint.2025.103076. Epub 2025 Apr 7.
20. Nariko Sato, Rika Umemiya-Shirafuji, Midgut-specific vitellogenin-1 is involved in the negative regulation of *Babesia ovata* migration or proliferation in *Haemaphysalis longicornis* tissues., *Ticks and Tick-borne Diseases*, 2025 May;16(3):102480. doi: 10.1016/j.ttbdis.2025.102480. Epub 2025 Apr 18.
21. Rachana Bhusal, Tulsi Ram Gombo, Tatsuki Sugi, Masahito Asada, Kishor Pandey, Canine Demodicosis in Rupandehi Nepal's Street Dogs: Prevalence, Clinical Signs, and Hematology., *Veterinary Sciences*, 2025 Mar 3;12(3):238. doi: 10.3390/vetsci12030238.
22. Ankhbayar Jambaldorj, Bayarmagnai Davganyam, Altangerel Tsogetsaikhan Dursahinhan, Fukumoto Shinya, Munkhjargal Tserendorj, First molecular detection of *Dirofilaria immitis* in dogs from Mongolia., *Veterinary Parasitology: Regional Studies and Reports*, 2025 May;60:101241. doi: 10.1016/j.vprsr.2025.101241. Epub 2025 Mar 13.
23. Hassan Hakimi, Junya Yamagishi, Miako Sakaguchi, Atefeh Fathi, Jae Seung Lee, Guilherme G Verocai, Shin-Ichiro Kawazu, Masahito Asada, ves1 α genes expression is the major determinant of *Babesia bovis*-infected erythrocytes cytoadhesion to endothelial cells., *PLOS Pathogens*, 2025 Apr 28;21(4):e1012583. doi: 10.1371/journal.ppat.1012583. eCollection 2025 Apr.
24. Hejia Ma, Lijun Jia, Jian Feng, Tianshuai Li, Chao Li, Jixu Li, Xuenan Xuan, Yali Sun, Functional annotation and analysis of the hard tick *Dermacentor nuttalli* midgut genes., *Parasitology Research*, 2025 May 15;124(5):52. doi: 10.1007/s00436-025-08480-6.
25. Stipan Nurbyek, Toshihiro Murata, Keisuke Sukanuma, Yoshimi Ichimaru, Nanami Kurosawa, Yoshinobu Ishikawa, Buyanmandakh Buyankhishig, Bekh-Ochir Davaapurev, Tseesuren Byambajav, Punsantsogvoo Otgonsugar, Kenroh Sasaki, Javzan Batkhuu, Isolation of Sesquiterpenoids and Trypanocidal Constituents from *Artemisia adamsii*., *ACS Omega*, 2025 May 9;10(19):19665-19674. doi: 10.1021/acsomega.5c00591. eCollection 2025 May 20.
26. Chyntia Pérez-Almeida, Diego Josimar Hernández-Silva, Edwin Esaú Hernández-Arvizu, Masahito Asada, Shin-Ichiro Kawazu, Massaro W Ueti, José Guadalupe Gomez-Soto, Urso Martín Dávila-Montero, Carlos A Vega Y Murguía, Juan Mosqueda, The Translationally Controlled Tumor Protein (TCTP), a Novel Antigen of *Babesia bovis*, Participates in the Establishment of Acute Infection and Contains Neutralizing B-Cell Epitopes., *Pathogens*, 2025 May 20;14(5):502. doi: 10.3390/pathogens14050502.
27. Hang Li, Shengwei Ji, Nanang R Arieftha, Eloiza May S Galon, Shimaa A E S El-Sayed, Thom Do, Lijun Jia, Miako Sakaguchi, Masahito Asada, Yoshifumi Nishikawa, Xin Qin, Mingming Liu, Xuenan Xuan, Efficacy and mechanism of action of cipargamin as an antibabesial drug candidate., *eLife*, 2025 Jun 19;13:RP101128. doi: 10.7554/eLife.101128.
28. Naomi Nakagata, Satoshi Nakao, Nobuyuki Mikoda, Katsuma Yamaga, Hiroshi Suzuki, Toru Takeo, Birth of offspring derived from cryopreserved rat sperm after shipment in a Styrofoam box at -80°C., *Experimental Animals*, 2025 Oct 8;74(4):483-490. doi: 10.1538/expanim.25-0041. Epub 2025 Jun 26. --2025 Jun 26. doi: 10.1538/expanim.25-0041. Online ahead of print.
29. Ngigi Noel Muthoni Mumbi, Claudia Esther Silvera Rojas, Believe Ahedor, Yihong Ma, Maria Fátima Rodríguez Valinotti, Tomás Javier Acosta, Thillaiampalam Sivakumar, Naoaki Yokoyama, Prevalence and genetic diversity of *Theileria* and *Anaplasma* species infecting cattle in Paraguay., *Parasitology International*, 2025 Dec;109:103116. doi: 10.1016/j.parint.2025.103116. Epub 2025 Jul 9. --2025 Jul 9:109:103116. doi: 10.1016/j.parint.2025.103116. Online ahead of print.
30. Janine Aucamp, Helena D Janse van Rensburg, Simon S Mnyakeni-Moleele, Keisuke Sukanuma, David D N'Da, In Vitro Leishmanicidal Efficacy of Synthesized Arylidene Analogues of Glitazone., *Drug development research*, 2025 Aug;86(5):e70125. doi: 10.1002/ddr.70125.
31. Banzragch Battur, Batsaikhan Enkhtaivan, Davaajav Otgonsuren, Batbold Davkharbayar, Dalantai Munkhgerel, Tovuu Amgalanbaatar, Sandagdorj Narantsatsral, Batdorj Davaasuren, Myagmar Zoljargal, Punsantsogvoo Myagmarsuren, Orkhon Banzragchgarav, Noboru Inoue, Naoaki Yokoyama, Jinlin Zhou, Miroslav Bobek, Badgar Battsetseg, First record of *Haemaphysalis concinna* (Acari: Ixodidae) tick in the Khalkh Numrug basin of Eastern Mongolia., *Ticks and Tick-borne Diseases*, 2025 Sep;16(5):102521. doi: 10.1016/j.ttbdis.2025.102521. Epub 2025 Jul 18. --2025 Jul 18;16(5):102521. doi: 10.1016/j.ttbdis.2025.102521.
32. Kevin Austin L Ona, Jose Ma M Angeles, Elena A Villacorte, Katrina Theresa M Balboa, Atcharaphan Wanlop, Adrian Miki C Macalanda, Pilarita T Rivera, Shin-Ichiro Kawazu, Preliminary evaluation of the recombinant Sj14-3-3 protein as an immunodiagnostic antigen for schistosomiasis., *Experimental Parasitology*, 2025 Sep;276:109000. doi: 10.1016/j.exppara.2025.109000. Epub 2025 Aug 9. --2025 Aug 9:276:109000. doi: 10.1016/j.exppara.2025.109000. Online ahead of print.
33. Elisha Chatanga, Believe Ahedor, Berdikulov Atabek, Henson Kainga, Thoko Kapalamula, Tinotenda Razemba, Ryo Nakao, Nariaki Nonaka, Thillaiampalam Sivakumar, Naoaki Yokoyama, An epidemiological survey of equine piroplasmiasis in donkeys and horses in Malawi., *Veterinary Parasitology: Regional Studies and Reports*, 2025 Aug;63:101315. doi: 10.1016/j.vprsr.2025.101315. Epub 2025 Jul 11.
34. Liang Dong, Oriol Thekisoe, Tsepo Ramatla, Noboru Inoue, Rika Umemiya-Shirafuji, Acaricidal effects of diatomaceous earth on *Haemaphysalis longicornis* under laboratory conditions., *Experimental and Applied Acarology*, 2025 Aug 19;95(3):30. doi: 10.1007/s10493-025-01054-2.
35. Alma Cárdenas-Flores, Minerva Camacho-Nuez, Massaro W Ueti, Mario Hidalgo-Ruiz, Angelina Rodríguez-Torres, Diego Josimar Hernández-Silva, José Guadalupe Gómez-Soto, Masahito Asada, Shin-Ichiro Kawazu, Alma R Tamayo-Sosa, Rocío Alejandra Ruiz-Manzano, Juan Mosqueda, *Babesia bovis* Enolase Is Expressed in Intracellular Merozoites and Contains B-Cell Epitopes That Induce Neutralizing Antibodies In Vitro., *Vaccines*, 2025 Jul 31;13(8):818. doi: 10.3390/vaccines13080818.
36. Mahmoud Saleh, Momen M Thabet, Jyothi Kumari, Yaser A Mostafa, Dharmarajan Srimam, Keisuke Sukanuma, Mahmoud Kandeel, Hajjah H M Abdu-Allah, Design, Synthesis, Biological Evaluation, and In Silico Studies of New Nitazoxanide Derivatives: Toward Broad-Spectrum Antimicrobial Agents., *Archiv der Pharmazie*, 2025 Sep;358(9):e70091. doi: 10.1002/ardp.70091.
37. Keisuke Sukanuma, Yuta Okuno, Mitsunori Kayano, Tomás J Acosta, Takeo Yamauchi, Adrian Miki C Macalanda, Maria Angenica F Regilme, Frances Paula L Miaral, Yrjö T Gröhn, Yuma Ohari, Shin-Ichiro Kawazu, Noboru Inoue, A temporal analysis of horse fly prevalence in Tokachi, Hokkaido, Japan, based on a 3-year entomological survey., *Journal of Medical Entomology*, 2025 Nov 1;62(6):1520-1529. doi: 10.1093/jme/tjaf121. --2025 Sep 24:tjaf121. doi: 10.1093/jme/tjaf121. Online ahead of print.
38. Nanako Ushio-Watanabe, Rio Fujihara, Kenichi Watanabe, Manabu Yamada, Yoshiyasu Kobayashi, Yoshifumi Nishikawa, The Distribution of *Neospora caninum* Secretory Proteins in Mouse and Calf Brains., *Microorganisms*, 2025 Aug 22;13(9):1970. doi: 10.3390/microorganisms13091970.
39. Mamata Thapa, Tulsi Ram Gombo, Tatsuki Sugi, Masahito Asada, Hiroaki Arima, Kishor Pandey, Seroprevalence and associated behavioral factors of *Toxoplasma gondii* infection among pregnant women in Pokhara Valley, Nepal., *Tropical Medicine and Health*, 2025 Sep 30;53(1):128. doi: 10.1186/s41182-025-00803-8.
40. Percy Moyaba, Serero Abiot Modise, Johan Esterhuizen, Keisuke Sukanuma, Noboru Inoue, Oriol Thekisoe, Moeti Oriol Taioe, *Stomoxys* Species Richness and Apparent Densities at Different Land-Use

Setups in North-Eastern KwaZulu-Natal Province, South Africa., *Insects*, 2025 Oct 15;16(10):1049. doi: 10.3390/insects16101049.

41. Onur Ceylan, Ferda Sevinc, Abdoul Bhasit Bonkougou, Ceylan Ceylan, Harun Yonar, Malak Najmalden Ghaibullah, Shinuo Cao, Xuenan Xuan, Nationwide enzooticity of ovine toxoplasmosis and neosporosis in Türkiye., *BMC microbiology*, 2025 Nov 27;25(1):783. doi: 10.1186/s12866-025-04534-y.
42. Yongchang Li, Zeyun Cui, Jianlong Li, Yang Zhang, Iqra Zafar, Mohamed Abdo Rizk, Hang Li, Shima Abd El-Salam El-Sayed, Naoaki Yokoyama, Qingyong Guo, Xuenan Xuan, Bayin Chahan, Leveraging topoisomerase II-mediated DNA damage: repurposing etoposide as a lead compound for apicomplexan parasite control., *Frontiers in Veterinary Science*, 2025 Nov 19:12:1689833. doi: 10.3389/fvets.2025.1689833. eCollection 2025.
43. Yu Chen, Naomi Shimoda, Coh-Ichi Nihei, Ryuichi Sawa, Yuko Takahashi, Mitsuhiro Nishigori, Shu Nakamura, Jingwei Liu, Takumi Koshiba, Nanako Ushio-Watanabe, Yoshifumi Nishikawa, Mitochondrial damage and IL-1 β production in monocytes caused by *Neospora caninum* infection are mediated by dense granule protein 7 and prohibitins., *Frontiers in immunology*, 2025 Nov 20:16:1408992. doi: 10.3389/fimmu.2025.1408992. eCollection 2025.
44. Satoko Nakao, Thillaampalam Sivakumar, Akiko Ohno, Yuko Takakuwa, Hajime Suzuki, Keiko Nakamura, Keiichiro Ohta, Osamu Tsuha, Rika Umemiya-Shirafuji, Naoaki Yokoyama, Prevalence, risk factors, and clinical impact of *Theileria orientalis* infection in Japanese Black cattle in Okinawa, Japan., *Tropical animal health and production*, 2025 Dec 12:57(9):539. doi: 10.1007/s11250-025-04795-9.

b) International conferences:

3

1. Kunluang S., Ohari Y., Angeles JMM., and Kawazu S. Asian zoonotic schistosomiasis in the Philippines: One health approaches in animal and human parasitic disease control. The 1st Asia-Pacific Association of Veterinary Parasitology Congress, Kuala Lumpur, Malaysia.
2. Hasegawa K., Arayasukul N., Ohari Y., Lee J.S., Suganuma K., Asada M., and Kawazu S. Uncovering gametocyte-specific genes in *Babesia ovata*: toward the development of a transmission-blocking vaccine. The 1st Asia-Pacific Association of Veterinary Parasitology Congress, Kuala Lumpur, Malaysia.
3. Kunluang S., Ohari Y., Wanlop A., Regilme MAF., Macalanda AMC., Angeles JMM., Villacorte E., Balboa KTM., Petalcorin KMR., Suganuma K., Inoue N., and Kawazu S. Population structure analysis of *Schistosoma japonicum* distributed in communities in Leyte and Oriental Mindoro provinces of the Philippines. The 1st Asia-Pacific Association of Veterinary Parasitology Congress, Kuala Lumpur, Malaysia.

c) National conferences:

18

1. Suganuma K, Okuno Y, Kayano M, Yamauchi T, Inoue N, Acosta T. Seasonal prevalence of horseflies (Diptera: Tabanidae) in livestock farms in Tokachi, Hokkaido. The 77th Annual Meeting of the Japan Society of Medical Entomology and Zoology, Nagasaki, Japan.
2. Keisuke Suganuma, A temporal analysis of horse fly prevalence in Tokachi, Hokkaido, Japan, based on a 3-year entomological survey and development for their control, Ofu, The 4th Rising star retreat meeting, Aichi, Japan
3. 2. Keisuke Suganuma, Kennedy Mochabo, Megumi Ito, Yasuko Araki, Kotaro Ito, Shin-ichiro Kawazu, Noboru Inoue, Kiyoshi Kita, Ascofuranone antibiotic is a promising trypanocidal drug for nagana, The 94th Annual Meeting of Japan Society of Parasitology, Osaka, Osaka, Japan
4. Maria Angenica F. Regilme, Keisuke Suganuma, Yuma Ohari, Noboru Inoue, Shin-ichiro Kawazu. Population Genetic Structure of Horsefly, *Tabanus nipponicus* in Tokachi Region, Hokkaido, Japan. The 77th Annual Meeting of the Japan Society of Medical Entomology and Zoology, Nagasaki, Japan.
5. Nishikawa Y. Intracellular protozoan parasite, *Toxoplasma gondii*, manipulates brain function of host animals by the parasite-derived effector molecules. The 12th Wolbachia Conference, Okinawa, Japan.
6. Nishikawa Y. Study of Molecular Mechanisms of Host Behavior Manipulation by *Toxoplasma gondii*. 3rd Area Meeting on Co-evolutionary Extended Phenotype, Grant-in-Aid for Transformative Research Areas (A), Kyoto, Japan.
7. Ngigi Noel Muthoni Mumbi, Claudia Esther Silvera Rojas, Believe Ahedora, Yihong Ma, Maria Fátima Rodríguez Valinotti, Tomás Javier Acosta, Thillaampalam Sivakumar, Naoaki Yokoyama. Prevalence and genetic diversity of *Theileria* and *Anaplasma* species infecting cattle in Paraguay. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
8. Thillaampalam Sivakumar, Wettam PPSI Perera, Ngigi NM Mumbi, Naoaki Yokoyama. Investigation of host cell transformation-related genes in *Theileria* sp. Yokoyama. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
9. Yihong Ma, Thillaampalam Sivakumar, Ngigi Noel Muthoni Mumbi, Rika Umemiya-Shirafuji, Naoaki Yokoyama. Epidemiological survey of zoonotic *Babesia* species in questing ticks in Hokkaido, Japan. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
10. Jingwei Liu, Nanang Rudianto Ariefita, Yoshifumi Nishikawa. Evaluation of inhibition efficacy of HSP90 inhibitors on *Toxoplasma gondii* tachyzoite and bradyzoite. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
11. Yu Chen, Mitsuhiro Nishigori, Nanako Ushio-Watanabe, Naomi Shimoda, Jingwei Liu, Tatsunori Masatani, Takumi Koshiba, Yoshifumi Nishikawa. Contribution of the *Toxoplasma gondii* dense granule protein GRA25 to the morphology of the parasitophorous vacuole membrane and the lytic cycle of the parasites. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
12. Rie Kubota, Megumi Igusa, Yoshifumi Nishikawa. Establishment of antiprotozoal drug evaluation system using luciferase-expressing *Cryptosporidium parvum* in vitro. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
13. Harukio Hassan, Junya Yamagishi, Miako Sakaguchi, Fathi Atefeh, Jae Seung Lee, Verocai G Guilherme, Shinichiro Kawazu, Masahito Asada. *Babesia bovis* VESA1a determines the adhesiveness of protozoan-infected red blood cells to bovine vascular endothelial cells. The 168th Annual Meeting of the Japanese Society of Veterinary Medicine, Miyazaki, Japan.
14. Shu Nakamura, Akari Nishida, Yoshifumi Nishikawa. Enhancement of host cell apoptosis and inflammatory responses via NF- κ B signaling by *Toxoplasma gondii* Programmed Cell Death. The 23rd Awaji International Forum on Infection and Immunity, Awaji, Japan.
15. Nanako Ushio-Watanabe, Fumiaki Ihara, Yoshifumi Nishikawa. Mechanisms underlying impaired fear memory formation in mice with chronic *Toxoplasma gondii* infection. The 23rd Awaji International Forum on Infection and Immunity, Awaji, Japan.
16. Liang Dong, Oriol Thekisoe, Tsepo Ramatla, Noboru Inoue, Rika Umemiya-Shirafuji. Acaricidal effects of diatomaceous earth on the hard tick *Haemaphysalis longicornis* under laboratory conditions. 34th Annual Meeting of the Japanese Acarological Society, Tokyo, Japan.
17. Nanako Watanabe, Yoshifumi Nishikawa. Mechanisms Underlying Impairment of Host Memory Formation by *Toxoplasma* Infection. 71st Joint Meeting of the Japanese Society of Parasitology and the Japanese Society of Medical Entomology and Zoology, Northern Japan Branch, Towada, Japan.
18. Rie Kubota, H.O. Hernández, Makoto Igarashi, Yoshifumi Nishikawa. Discovery of Novel Drug Candidates for *Coccidia*. 71st Joint Meeting of the Japanese Society of Parasitology and the Japanese Society of Medical Entomology and Zoology, Northern Japan Branch, Towada, Japan.

d) Other (Provide website address or link to appropriate information):

1

<https://www.obihiro.ac.jp/facility/protozoa/en/woah-reference-centres>

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

Through our international collaborative networks, we carried out molecular surveillance of protozoan diseases in several WOA member countries and generated epidemiological data for risk assessment and control. We also improved diagnostics by standardizing recombinant antigen-based serological assays and molecular detection methods, and by organizing proficiency testing for laboratory diagnosis of protozoan diseases. In addition, we conducted studies on pathogenesis of protozoan diseases and host-parasite interactions to support the development of disease control tools. Moreover, we strengthened human resources in partner countries through training and technical guidance.

12. Additional comments regarding your report:

None