

OIE Collaborating Centres Reports Activities

Activities in 2016

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Title of collaborating centre:	Surveillance, Control of Animal Protozoan Diseases
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Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):	Prof. Ikuo IGARASHI, DVM, PhD
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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

Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
Survey of bovine babesiosis and theileriosis	A total of 329, 196, 814 and 301 bovine blood samples from Thailand, Turkey, Sri Lanka and Egypt, respectively, were analyzed for detection of Babesia spp and Theileria spp by PCR or ELISA.
Survey of canine babesiosis and anaplasmosis	A total of 186 canine blood samples from Thailand were analyzed for detection of Babesia spp and Anaplasma spp by PCR.
Survey of canine toxoplasmosis	A total of 2039 canine serum samples from Turkey, 304 blood and brain samples of chickens, 111 sheep, 94 goat and 146 donkey blood samples from Egypt, respectively, were analyzed for detection of antibodies to Toxoplasma gondii by ELISA.
Survey of neosporosis	A total of 2039 canine serum samples from Turkey and 301 bovine blood samples from southern Egypt, respectively, were analyzed for detection of antibodies to Neospora caninum by ELISA.
Survey of Cryptosporidium parvum:	A total of 301 bovine blood samples from southern Egypt were analyzed for detection of specific antibodies by ELISA.
Survey of Trypanosoma evansi:	A total of 301 bovine blood samples from southern Egypt were analyzed for detection of specific antibodies by ELISA.
Training, capacity building	
Title of activity	Scope
Capacity build for researchers of protozoan disease	Fourteen postdoctoral fellows, 6 researchers, 26 graduate students, 19 undergraduate students had research training for advances 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

Proposal title	Scope/Content	Applicable area
Development of ICT for protozoan diseases	Establishment of novel pen-side serological tests for toxoplasmosis, babesiosis and trypanosomiasis	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Development of LAMP for protozoan diseases	Establishment of novel pen-side molecular tests for toxoplasmosis, babesiosis and trypanosomiasis	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

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

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Institut of Tropical Medicine	Antwerp, Belgium	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Evaluation of LAMP and ICT for trypanosomiasis
Canadian Food Inspection Agency	Canada	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	apply and development of diagnosis for equine piroplasmiasis

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

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
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Research Center for zoonoses	Hokkaido, Japan	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Epidemiological survey on animal trypanosomiasis
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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: 1
- b) Seminars: 1
- c) Hands-on training courses: 2
- d) Internships (>1 month): 0

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
Diagnostic methods	Development of molecular diagnostic for trypanosomiasis	Japan	2
Diagnostic methods	Development of molecular diagnostic for babesiosis	Japan	1

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?

No

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: 79

1. Serological Survey and Factors Associated with *Toxoplasma gondii* Infection in Domestic Goats in Myanmar. Saw Bawm, Wint Yi Maung, Myat Yee Win, May June Thu, Hla Myet Chel, Tin Aye Khaing, Soe Soe Wai, Lat Lat Htun, Tin Tin Myaing, Saruda Tiwananthagorn, Makoto Igarashi and Ken Katakura, *Scientifica*. Volume 2016 (2016), Article ID 4794318, p4

2. Emergence of multi-acaricide resistant *Rhipicephalus* ticks and its implication on chemical tick control in Uganda. Vudriko Patrick, Okwee-Acai James, Tayebwa Dickson Stuart, Byaruhanga Joseph, Kakooza Steven, Wampande Edward, Omara Robert, Muhindo Jeanne Bukeka, Tweyongyere Robert, Owiny David Okello, Hatta Takeshi, Tsuji Naotoshi, Umemiya-Shirafuji Rika, Xuan Xuenan, Kanameda Masaharu, Fujisaki Kozo, Suzuki Hiroshi., *Parasites & Vectors*. 2016 Jan 4;9(1):4.

3. Depletion of phagocytic cells during nonlethal *Plasmodium yoelii* infection causes severe malaria characterized by acute renal failure in mice. Terkawi Mohamad Alaa, Nishimura Maki, Furuoka Hidefumi, Nishikawa Yoshifumi., *Infection and Immunity*. 2016 Jan 11;84(3):p845-855.

4. Impaired cellular immune response to injected bacteria after knockdown of ferritin genes in the hard tick *Haemaphysalis longicornis*. Remil Linggatong Galay, Rie Takechi, Rika Umemiya-Shirafuji, Melbourne Rio Talactac, Hiroki Maeda, Kodai Kusakisako, Masami Mochizuki, Kozo Fujisaki, Tetsuya Tanaka., *Parasitology International*. 2016 Jan 12;65(3):251-257.

5. *Babesia gibsoni* internal transcribed spacer 1 region is highly conserved amongst isolates from dogs across Japan. Mingming Liu, Shinuo Cao, Patrick Vudriko, Hiroshi Suzuki, Takehisa Soma, Xuenan Xuan., *Journal of Veterinary Medical Science*. 2016 Jun 1;78(5):863-5.

6. Molecular epidemiological analyses of *Cryptosporidium parvum* virus 1 (CSpV1), a symbiotic virus of *Cryptosporidium parvum*, in Japan. Fumi Murakoshi, Madoka Ichikawa-Seki, Junya Aita, Seiko Yaita, Aiko Kinami, Katsuhisa Fujimoto, Yoshifumi Nishikawa, Shin Murakami, Taisuke Horimoto, Kentaro Kato ., *Virus Research*. Volume 211, 4 January 2016, Pages 69-72

7. The epidemiological survey for atovaquone resistant related gene of *Babesia gibsoni* in Japan. Iguchi Aiko, Soma Takehisa, Suzuki Hiroshi, Xuan Xuenan., *Journal of Veterinary Medical Science*. Jan 26, 2016 Registered articles: 8,425

8. Molecular epidemiology of bovine *Babesia* spp. and *Theileria orientalis* parasites in beef cattle from northern and northeastern Thailand. Charoonluk Jirapattharasate, Paul Franck Adjou Moumouni, Shinuo Cao, Aiko Iguchi, Mingming Liu, Guanbo Wang, Mo Zhou, Patrick Vudriko, Tanasak Changbunjong, Sivapong Sungpradit, Parntep Ratanakorn, Walasinee Moonarmart, Poonyapat Sedwisai, Thekhawet Weluwanarak, Witsanu Wongsawang, Hiroshi Suzuki, Xuenan Xuan ., *Parasitology International*. 2016 Feb ; 65(1):p.62-69.

9. Molecular detection and genetic identification of *Babesia bigemina*, *Theileria annulata*, *Theileria orientalis* and *Anaplasma marginale* in Turkey. Mo Zhou, Shinuo Cao, Ferda Sevinc, Mutlu Sevinc, Onur Ceylan, Paul Franck Adjou Moumouni, Charoonluk Jirapattharasate, Mingming Liu, Guanbo Wang, Aiko Iguchi, Patrick Vudriko, Hiroshi Suzuki, Xuenan Xuan., *Ticks and Tick-Borne Diseases*. 2016 Feb ; 7(1) : p.126-134.

10. Detection and molecular characterization of *Cryptosporidium* and *Eimeria* species in Philippine bats. Fumi Murakoshi, Frances C. Recuenco, Tsutomu Omatsu, Kaori Sano, Satoshi Taniguchi, Joseph S. Masangkay, Philip Alviola, Eduardo Eres, Edison Cosico, James Alvarez, Yumi Une, Shigeru Kyuwa, Yuki Sugiura, Kentaro Kato., *Parasitology Research* May 2016, Volume 115, Issue 5, pp 1863-1869

11. Evaluation of in vitro inhibitory effect of enoxacin on *Babesia* and *Theileria* parasites. Omar Mosaab A, Salama Akram, Elsify Ahmed, Rizk Mohamed Abdo, Al-Aboody Mohammad Saleh, Aboulaila Mahmoud, El-Sayed Shima Abd El-Salam, Igarashi Ikuo., *Experimental Parasitology*. 2016 Feb;161:p62-67.

12. Characterization of a recombinant Akabane mutant virus with knockout of a nonstructural protein NSs in a pregnant goat model. Akiko Takenaka-Uema, Norasuthi Bangphoomi, Chieko Shioda, Kazuyuki Uchida, Fumihiro Gen, Kentaro Kato, Takeshi Haga, Shin Murakami, Hiroomi Akashi, Taisuke Horimoto, *Virologica Sinica*. June 2016, Volume 31, Issue 3, pp 274-277
13. A synchronization method using heparin for the in vitro culture of *Plasmodium falciparum*. Kobayashi Kyouosuke, Kato Kentaro., *Parasitology International*. 2016 Mar 2. pii: S1383-5769(16)30017-4.
14. Dextran sulfate inhibits acute *Toxoplasma gondii* infection in pigs. Kentaro Kato, Yuho Murata, Noriyuki Horiuchi, Atsuko Inomata, Mohamad Alaa Terkawi, Akiko Ishiwa, Yohsuke Ogawa, Shinya Fukumoto, Fumikazu Matsuhisa and Kenji Koyama., *Parasites & Vectors*. December 2016, 9:134
15. Clofazimine inhibits the growth of *Babesia* and *Theileria* parasites in vitro and in vivo. Bumduuren Tuvshintulga, Mahmoud AbouLaila, Batdorj Davaasuren, Aki Ishiyama, Thillaiampalam Sivakumar, Naoaki Yokoyama, Masato Iwatsuki, Kazuhiko Ootoguro, Satoshi Omura and Ikuo Igarashi, *Antimicrobial Agents and Chemotherapy*. 2016 Feb 16. pii: AAC.01614-15. [Epub ahead of print]
16. Changes in neurotransmitter levels and expression of immediate early genes in brain of mice infected with *Neospora caninum*. Fumiaki Ihara, Maki Nishimura, Yoshikage Muroi, Hidefumi Furuoka, Naoaki Yokoyama, Yoshifumi Nishikawa. *Scientific Reports*. 2016; 6: 23052.
17. Development of an improved reverse genetics system for Akabane bunyavirus. Akiko Takenaka-Uema, Keita Sugiura, Norasuthi Bangphoomi, Chieko Shioda, Kazuyuki Uchida, Kentaro Kato, Takeshi Haga, Shin Murakami, Hiroomi Akashi, Taisuke Horimoto., *Journal of Virological Methods*. Volume 232, June 2016, Pages 16-20.
18. Molecular and biochemical characterization of methionine aminopeptidase of *Babesia bovis* as a potent drug target. Tserendorj Munkhjargal, Takahiro Ishizaki, Azirwan Guswanto, Hitoshi Takemae, Naoaki Yokoyama, Ikuo Igarashi., *Veterinary Parasitology*. Volume 221, 15 May 2016, p14-23.
19. A novel C-type lectin with triple carbohydrate recognition domains has critical roles for the hard tick *Haemaphysalis longicornis* against Gram-negative bacteria. Hiroki Maeda, Takeshi Miyata, Kodai Kusakisako, Remil Linggatong Galay, Melbourne Rio Talactac, Rika Umemiya-Shirafuji, Masami Mochizuki, Kozo Fujisaki, Tetsuya Tanaka., *Developmental And Comparative Immunology*. Volume 57, April 2016, Pages 38-47
20. Effect of anti-hyperlipidemia drugs on the alpha-tocopherol concentration and their potential for murine malaria infection. Aiko Kume, Maria Shirley Herbas, Mototada Shichiri, Noriko Ishida, Hiroshi Suzuki., *Parasitology Research*. Jan 2016 ;115(1), p 69-75.
21. Type-specific PCR assays for *Babesia bovis* msa-1 genotypes in Asia: Revisiting the genetic diversity in Sri Lanka, Mongolia, and Vietnam. Nilukshi Liyanagunawardena, Thillaiampalam Sivakumar, Hemal Kothalawala, Seekkuge Susil Priyantha Silva, Badgar Battsetseg, Dinh Thi Bich Lan, Noboru Inoue, Ikuo Igarashi, Naoaki Yokoyama., *Infection Genetics and Evolution*. Volume 37, January 2016, Pages 64-69.
22. Induction of depression-related behaviors by reactivation of chronic *Toxoplasma gondii* infection in mice. Motamed Elsayed Mahmoud, Fumiaki Ihara, Ragab M. Fereig, Maki Nishimura, Yoshifumi Nishikawa., *Behavioural Brain Research*. 2016 Feb 1;298(Pt B):p.125-133.
23. Genetic variations of four immunodominant antigens of *Babesia gibsoni* isolated from dogs in southwest Japan. Mingming Liu, Shinuo Cao, Mo Zhou, Guanbo Wang, Charoonluk Jirapattharasate, Paul Franck Adjou Moumouni, Aiko Iguchi, Patrick Vudriko, Hiroshi Suzuki, Takehisa Soma, Xuenan Xuan., *Ticks and Tick Borne Diseases*. Volume 7, Issue 2, March 2016, Pages 298-305.
24. Isolation and co-cultivation of human macrophages and neutrophils with *Plasmodium falciparum*-parasitized erythrocytes: an optimized system to study the phagocytic activity to malarial parasites. Mohamad Alaa Terkawi, Ryo Takano, Kentaro Kato., *Parasitology International*. 2016 Mar 12. pii: S1383-5769(16)30025-3.
25. Ungulate malaria parasites. Thomas J. Templeton, Masahito Asada, Montakan Jiratanh, Sohta A. Ishikawa, Sonthaya Tiawsirisup, Thillaiampalam Sivakumar, Boniface Namangala, Mika Takeda, Kingdao Mohkaew, Supawan Ngamjituea, Noboru Inoue, Chihiro Sugimoto, Yuji Inagaki, Yasuhiko Suzuki, Naoaki Yokoyama, Morakot Kaewthamasorn and Osamu Kaneko, *Scientific Reports*. 2016; 6: 23230. Published online 2016 Mar 21. doi: 10.1038/srep23230

26. Guidelines for the use and interpretation of assays for monitoring autophagy (3rd edition). Daniel J Klionsky, Rika Umemiya-Shirafuji (2,467-2,145). *Autophagy* 2016; 12(1): 1-222.
27. RBC Invasion and invasion-inhibition assays using free merozoites isolated after cold treatment of *Babesia bovis* in vitro culture. Takahiro Ishizaki, Thillaiampalam Sivakumar, Kyoko Hayashida, Bumduuren Tuvshintulga, Ikuo Igarashi, Naoaki Yokoyama., *Experimental Parasitology*. Volume 166, July 2016, Pages 10-15
28. Identification and characterization of profilin antigen among *Babesia* species as a common vaccine candidate against babesiosis. Tserendorj Munkhjargal, Gabriel Oluga Aboge, Akio Ueno, Mahmoud Aboulaila, Naoaki Yokoyama, Ikuo Igarashi., *Experimental Parasitology* Volume 166, July 2016, Pages 29-36
29. Establishment of transient and stable transfection systems for *Babesia ovata*. Hassan Hakimi, Junya Yamagishi, Yuto Kegawa, Osamu Kaneko, Shin-ichiro Kawazu and Masahito Asada., *Parasites & Vectors*. 2016.9:171.
30. In Vitro and In Vivo Effects of the phytohormone inhibitor fluridone against *Neospora caninum* infection. Rochelle Haidee D. Ybañez, Arpron Leesombun, Maki Nishimura, Ryuma Matsubara, Mikiko Kojima, Hitoshi Sakakibara, Kisaburo Nagamune, Yoshifumi Nishikawa., *Parasitology International*. Volume 65, Issue 4, August 2016, Pages 319-322
31. Induction of gene silencing in *Haemaphysalis longicornis* ticks through immersion in double-stranded RNA. Remil Linggatong Galay, Emmanuel Pacia Hernandez, Melbourne Rio Talactac, Hiroki Maeda, Kodai Kusakisako, Rika Umemiya-Shirafuji, Masami Mochizuki, Kozo Fujisaki, Tetsuya Tanaka., *Ticks and Tick-borne Diseases*. Volume 7, Issue 5, July 2016, Pages 813-816
32. Towards a Preventive Strategy for Toxoplasmosis: Current Trends, Challenges, and Future Perspectives for Vaccine Development. Ragab M. Fereig, Yoshifumi Nishikawa., *Vaccine Design*. Volume 1404 of the series *Methods in Molecular Biology* pp 153-164
33. Host Immunization with Recombinant Proteins to Screen Antigens for Tick Control. Remil Linggatong Galay, Takeshi Miyata, Rika Umemiya-Shirafuji, Masami Mochizuki, Kozo Fujisaki, Tetsuya Tanaka., *Vaccine Design*. Volume 1404 of the series *Methods in Molecular Biology* pp 261-273
34. Molecular detection of spotted fever group rickettsiae in *Amblyomma variegatum* ticks from Benin. Paul Franck Adjou Moumouni, Mohamad Alaa Terkawi, Charoonluk Jirapattharasate, Shinuo Cao, Mingming Liu, Ryo Nakao, Rika Umemiya-Shirafuji, Naoaki Yokoyama, Chihiro Sugimoto, Kozo Fujisaki, Hiroshi Suzuki, Xuenan Xuan., *Ticks and Tick-borne Diseases*. Volume 7, Issue 5, July 2016, Pages 828-833
35. Identification and functional analysis of a novel mitochondria-localized 2-Cys peroxiredoxin, BbTPx-2, from *Babesia bovis*. Tatsunori Masatani, Masahito Asada, Hassan Hakimi, Kei Hayashi, Junya Yamagishi, Shin-ichiro Kawazu, Xuenan Xuan., *Parasitology Research*, pp 1-7 First online: 19 April 2016
36. Genetic diversity and antigenicity variation of *Babesia bovis* merozoite surface antigen-1 (MSA-1) in Thailand. Muncharee Tattiyapong, Thillaiampalam Sivakumar, Hitoshi Takemae, Pacharathon Simking, Sathaporn Jittapalapong, Ikuo Igarashi, Naoaki Yokoyama., *Infection, Genetics and Evolution*. Available online 19 April 2016
37. Development of a *Plasmodium berghei* transgenic parasite expressing the full-length *Plasmodium vivax* circumsporozoite VK247 protein for testing vaccine efficacy in a murine model. Masanori Mizutani, Shinya Fukumoto, Adam Patrice Soubeiga, Akira Soga, Mitsuhiro Iyori and Shigeto Yoshida., *Malaria Journal*. 2016 Apr 30;15(1):251.
38. Mycophenolic Acid and Its Derivatives as Potential Chemotherapeutic Agents Targeting Inosine Monophosphate Dehydrogenase in *Trypanosoma congolense*. Keisuke Suganuma, Albertus Eka Yudistira Sarwono, Shinya Mitsuhashi, Marcin Jąkalski, Tadashi Okada, Molefe Nthatisi, Junya Yamagishi, Makoto Ubukata and Noboru Inoue., *Antimicrobial Agents and Chemotherapy*. 2016 May 2. pii: AAC.02816-15. [Epub ahead of print]
39. Molecular identification and antigenic characterization of a merozoite surface antigen and a secreted antigen of *Babesia canis* (BcMSA1 and BcSA1). Mo Zhou, Shinuo Cao, Yuzi Luo, Mingming Liu, Guanbo Wang, Paul Franck Adjou Moumouni, Charoonluk Jirapattharasate, Aiko Iguchi, Patrick Vudriko, Mohamad Alaa Terkawi, Mario Löwenstein, Angela Kern, Yoshifumi Nishikawa, Hiroshi Suzuki, Ikuo Igarashi and Xuenan Xuan., *Parasites & Vectors*. 2016 May 3;9(1):257. doi:10.1186/ s13071 -016-1518-1.

40. Molecular survey of canine vector-borne diseases in stray dogs in Thailand. Mingming Liu, Ngasaman Ruttayaporn, Vannarat Saechan, Charoonluk Jirapatthasate, Patrick Vudriko, Paul Franck Adjou Moumouni, Shinuo Cao, Tawin Inpankaew, Adrian P. Ybañez, Hiroshi Suzuki, Xuenan Xuan., *Parasitology International*. Available online 30 April 2016
41. Epidemiology of bovine hemoprotozoa parasites in cattle and water buffalo in Vietnam. Gayani Weerasooriya, Thillaiampalam Sivakumar, Dinh Thi Bich Lan, Phung Thang Long, Hitoshi Takemae, Ikuo Igarashi, Noboru Inoue, Naoaki Yokoyama., *Journal of Veterinary Medical Science*. 2016 Apr 28. [Epub ahead of print]
42. An improved method for introducing site-directed point mutation into the *Toxoplasma gondii* genome using CRISPR/Cas9. Tatsuki Sugi, Kentaro Kato, Louis M. Weiss., *Parasitology International*. 2016 May 7. pii: S1383-5769(16)30109-X.
43. Seroprevalence and epidemiology of *Toxoplasma gondii* in farm animals in different regions of Egypt. Ragab M. Fereig, Hassan Y.A.H. Mahmoud, Samy G.A. Mohamed, Mahmoud Rezk AbouLaila, Azza Abdel-Wahab, Salama Ahmed Osman, Sherif Abdallah Zidan, Sabry A. El-Khodary, Adel Elsayed Ahmed Mohamed, Yoshifumi Nishikawa., *Veterinary Parasitology : Regional Studies and Reports* Available online 11 May 2016
44. Characterization of an epimastigote-stage-specific hemoglobin receptor of *Trypanosoma congolense*. Shino Yamasaki, Keisuke Suganuma, Junya Yamagishi, Masahito Asada, Naoaki Yokoyama, Shin-ichiro Kawazu and Noboru Inoue., *Parasites & Vectors*. 2016 May 23 ; 9(1) : 299.
45. Akabane virus nonstructural protein NSm regulates viral growth and pathogenicity in a mouse model. Yukari Ishihara, Chieko Shioda, Norasuthi Bangphoomi, Keita Sugiura, Kohei Saeki, Shumpei Tsuda, Tatsuya Iwanaga, Akiko Takenaka-Uema, Kentaro Kato, Shin Murakami, Kazuyuki Uchida, Hiroomi Akashi, Taisuke Horimoto., *Journal of Veterinary Medical Science*. Article ID: 16-0140 [Advance Publication] Released 2016/05/16
46. Prevalence of Tick-borne Hemolytic Microbes in Free-living Sika Deer (*Cervus nippon*) Captured in a Deer-overcrowded Area. Yusaku Watanabe, Shinya Fukumoto, Ryô Harasawa., *Japanese Journal of Zoo and Wildlife Medicine*. Vol. 21 (2016) No. 1 p. 17-27
47. Effects of Extracts from Thai Piperaceae Plants against Infection with *Toxoplasma gondii*. Arpron Leesombun, Sookruetai Boonmasawai, Naomi Shimoda, Yoshifumi Nishikawa., *PLoS One*. 2016 May 23;11(5):e0156116.
48. Incidence of Apoptotic Cells After Vitrification in Canine Ovarian Tissues. Madoka Hariya and Hiroshi Suzuki., *Journal of Mammalian Ova Research*. 33(1):69-75. May 2016
49. Optimization of a fluorescence-based assay for mass drug screening against *Babesia* and *Theileria*. M.A. Rizk, S.A. El-Sayd, N. Yokoyama, I. Igarashi., *Journal of Equine Veterinary Science*. April 2016 Volume 39, Supplement, Page S106
50. *Toxoplasma gondii* Cyclic AMP-Dependent Protein Kinase Subunit 3 Is Involved in the Switch from Tachyzoite to Bradyzoite Development. Tatsuki Sugi, Yan Fen Ma, Tadakimi Tomita, Fumi Murakoshi, Michael S. Eaton, Rama Yakubu, Bing Han, Vincent Tu, Kentaro Kato, Shin-ichiro Kawazu, Nishith Gupta, Elena S. Suvorova, Michael W. White, Kami Kim, Louis M. Weiss., *MBio*. 2016 May 31;7(3). pii: e00755-16. doi: 10.1128/mBio.00755-16.
51. Molecular characterization and phylogenetic analysis of *Fasciola gigantica* from western Java, Indonesia. Kei Hayashi, Madoka Ichikawa-Seki, Puttik Allamanda, Putut Eko Wibowo, Uday Kumar Mohanta, Sodirun, Azirwan Guswanto, Yoshifumi Nishikawa., *Parasitology International*. Volume 65, Issue 5, Part A, October 2016, Pages 424-427
52. Recombinant methionine aminopeptidase protein of *Babesia microti*: immunobiochemical characterization as a vaccine candidate against human babesiosis. Tserendorj Munkhjargal, Naoaki Yokoyama, Ikuo Igarashi., *Parasitology Research*. September 2016, Volume 115, Issue 9, pp 3669-3676
53. Novel methods for the molecular discrimination of *Fasciola* spp. on the basis of nuclear protein-coding genes. Takuya Shoriki, Madoka Ichikawa-Seki, Keisuke Suganuma, Ikunori Naito, Kei Hayashi, Minoru Nakao, Junya Aita, Uday Kumar Mohanta, Noboru Inoue, Kenji Murakami, Tadashi Itagaki., *Parasitology International*. Volume 65, Issue 3, June 2016, Pages 180-183
54. Immunological Adjuvant Activity of Pectinioside A, the Steroidal Saponin from the Starfish *Patiria pectinifera*. Osamu Kawase, Osamu Ohno, Kiyotake Suenaga, Xuenan Xuan, *Nat Prod Commun*. 2016 May;11(5):605-6.

55. Serological detection and epidemiology of *Neospora caninum* and *Cryptosporidium parvum* antibodies in cattle in southern Egypt. Ragab M. Fereig, Mahmoud Rezk AbouLaila, Samy G.A. Mohamed, Hassan Y.A.H. Mahmoud, Alsagher O. Ali, Asmaa F. Ali, Mosaad Hilali, Anis Zaid, Adel Elsayed Ahmed Mohamed, Yoshifumi Nishikawa., *Acta Tropica*. Volume 162, October 2016, Pages 206-211
56. Prevalence of *Toxoplasma gondii* in Chicken samples from delta of Egypt using ELISA, histopathology and immunohistochemistry. Hany M. Ibrahim, Fathy Abdel-Ghaffar, Gamalat Y Osman, Safinaz H. El-Shourbagy, Yoshifumi Nishikawa, Reham A. Khattab., *Journal of Parasitic Diseases*. June 2016, Volume 40, Issue 2, pp 485-490
57. Primary *Babesia rodhaini* infection followed by recovery confers protective immunity against *B. rodhaini* reinfection and *B. microti* challenge infection in mice. Guanbo Wang, Artemis Efstratiou, Paul Franck Adjou Moumouni, Mingming Liu, Charoonluk Jirapattharasate, Huanping Guo, Yang Gao, Shinuo Cao, Mo Zhou, Hiroshi Suzuki, Ikuo Igarashi, Xuenan Xuan., *Experimental Parasitology*. Volume 169, October 2016, Pages 6-12
58. Evaluation of the enzyme activity of protozoan protein kinases by using an in vitro kinase assay. Kentaro Kato., *Parasitology International*. Volume 65, Issue 5, Part B, October 2016, Pages 510-513
59. Characterization of a *Toxoplasma gondii* calcium calmodulin-dependent protein kinase homolog. Kentaro Kato, Tatsuki Sugi, Hitoshi Takemae, Ryo Takano, Haiyan Gong, Akiko Ishiwa, Taisuke Horimoto and Hiroomi Akashi., *Parasites & Vectors*. 2016 Jul 21;9(1):405. DOI: 10.1186/s13071-016-1676-1
60. *Toxoplasma gondii* Infection in Mice Impairs Long-Term Fear Memory Consolidation Through Dysfunction of the Cortex and Amygdala. Fumiaki Ihara, Maki Nishimura, Yoshikage Muroi, Motamed Elsayed Mahmoud, Naoaki Yokoyama, Kisaburo Nagamune and Yoshifumi Nishikawa., *Infection and Immunity*. October 2016 vol. 84 no. 10 2861-2870
61. Open Source Drug Discovery with the Malaria Box Compound Collection for Neglected Diseases and Beyond. Van Voorhis WC, Adams JH, Adelfio R, Ah Yong V, Akabas MH, Alano P, Alday A, Alemán Resto Y, Alsibae A, Alzualde A, Andrews KT, Avery SV, Avery VM, Ayong L, Baker M, Baker S, Ben Mamoun C, Bhatia S, Bickle Q, Bounaadja L, Bowling T, Bosch J, Boucher LE, Boyom FF, Brea J, Brennan M, Burton A, Caffrey CR, Camarda G, Carrasquilla M, Carter D, Belen Cassera M, Chih-Chien Cheng K, Chindaudomsate W, Chubb A, Colon BL, Colón-López DD, Corbett Y, Crowther GJ, Cowan N, D'Alessandro S, Le Dang N, Delves M, DeRisi JL, Du AY, Duffy S, Abd El-Salam El-Sayed S, Ferdig MT, Fernández Robledo JA, Fidock DA, Florent I, Fokou PV, Galstian A, Gamo FJ, Gokool S, Gold B, Golub T, Goldgor GM, Guha R, Guiguemde WA, Gural N, Guy RK, Hansen MA, Hanson KK, Hemphill A, Hooft van Huijsduijnen R, Horii T, Horrocks P, Hughes TB, Huston C, Igarashi I, Ingram-Sieber K, Itoe MA, Jadhav A, Naranuntarat Jensen A, Jensen LT, Jiang RH, Kaiser A, Keiser J, Ketan T, Kicka S, Kim S, Kirk K, Kumar VP, Kyle DE, Lafuente MJ, Landfear S, Lee N, Lee S, Lehane AM, Li F, Little D, Liu L, Llinás M, Loza MI, Lubar A, Lucantoni L, Lucet I, Maes L, Mancama D, Mansour NR, March S, McGowan S, Medina Vera I, Meister S, Mercer L, Mestres J, Mfopa AN, Misra RN, Moon S, Moore JP, Morais Rodrigues da Costa F, Müller J, Muriana A, Nakazawa Hewitt S, Nare B, Nathan C, Narraido N, Nawaratna S, Ojo KK, Ortiz D, Panic G, Papadatos G, Parapini S, Patra K, Pham N, Prats S, Plouffe DM, Poulsen SA, Pradhan A, Quevedo C, Quinn RJ, Rice CA, Abdo Rizk M, Ruecker A, St Onge R, Salgado Ferreira R, Samra J, Robinett NG, Schlecht U, Schmitt M, Silva Villela F, Silvestrini F, Sinden R, Smith DA, Soldati T, Spitzmüller A, Stamm SM, Sullivan DJ, Sullivan W, Suresh S, Suzuki BM, Suzuki Y, Swamidass SJ, Taramelli D, Tchokouaha LR, Theron A, Thomas D, Tonissen KF, Townson S, Tripathi AK, Trofimov V, Udenze KO, Ullah I, Vallieres C, Vigil E, Vinetz JM, Voong Vinh P, Vu H, Watanabe NA, Weatherby K, White PM, Wilks AF, Winzeler EA, Wojcik E, Wree M, Wu W, Yokoyama N, Zollo PH, Abia N, Blasco B, Burrows J, Laleu B, Leroy D, Spangenberg T, Wells T, Willis PA., *PLoS Pathogens*. 2016 Jul 28;12(7):e1005763. doi: 10.1371/journal.ppat.1005763. eCollection 2016.
62. Large-scale drug screening against *Babesia divergens* parasite using a fluorescence-based high-throughput screening assay. Mohamed Abdo Rizk, Shima Abd El-Salam El-Sayed, Mahmoud AbouLaila, Bumduuren Tuvshintulga, Naoaki Yokoyama, Ikuo Igarashi, *Veterinary Parasitology*. Volume 227, 30 August 2016, Pages 93-97
63. Enzyme-linked immunosorbent assays using recombinant TgSAG2 and NcSAG1 to detect *Toxoplasma gondii* and *Neospora caninum*-specific antibodies in domestic animals in Turkey. Mo Zhou, Shinuo Cao, Ferda Sevinc, Mutlu Sevinc, Onur Ceylan, Mingming Liu, Guanbo Wang, Paul Franck Adjou Moumouni, Charoonluk Jirapattharasate, Hiroshi Suzuki, Yoshifumi Nishikawa, Xuenan Xuan, *Journal of Veterinary Medical Science*. 2016 Aug 15. [Epub ahead of print]

64. 2-Cys peroxiredoxin is required in successful blood-feeding, reproduction, and antioxidant response in the hard tick *Haemaphysalis longicornis*. Kodai Kusakisako, Remil Linggatong Galay, Rika Umemiya-Shirafuji, Emmanuel Pacia Hernandez, Hiroki Maeda, Melbourne Rio Talactac, Naotoshi Tsuji, Masami Mochizuki, Kojo Fujisaki and Tetsuya Tanaka, *Parasit Vectors*. 2016 Aug 19;9(1):457.
65. Isolation, cultivation and molecular characterization of a new *Trypanosoma equiperdum* strain in Mongolia. Keisuke Suganuma, Sandagdorj Narantsatsral, Banzragch Battur, Shino Yamasaki, Davaajav Otgonsuren, Simon Peter Musinguzi, Batdorj Davaasuren, Badgar Battsetseg and Noboru Inoue, *Parasites & Vectors*. 2016 Aug 31;9:481. doi:
66. Pull-down method to access the cell surface receptor for *Toxoplasma gondii*. Haiyan Gong, Kyousuke Kobayashi, Tatsuki Sugi, Hitoshi Takemae, Taisuke Horimoto, Xuenan Xuan, Hiroomi Akashi, Kentaro Kato, *Parasitology International*. Volume 65, Issue 5, Part B, October 2016, Pages 514-515 100
67. Evaluating the use of heparin for synchronization of in vitro culture of *Plasmodium falciparum*. Kyousuke Kobayashi, Kentaro Kato, *Parasitology International*. Volume 65, Issue 5, Part B, October 2016, Pages 549-551
68. A PCR-based survey of animal African trypanosomiasis and selected piroplasm parasites of cattle and goats in Zambia. Simon Peter Musinguzi, Keisuke Suganuma, Masahito Asada, Dusit Laohasinnarong, Thillaiampalam Sivakumar, Naoaki Yokoyama, Boniface Namangala, Chihiro Sugimoto, Yasuhiko Suzuki, Xuenan Xuan, Noboru Inoue, *Journal of Veterinary Medical Science*. ONLINE ISSN: 1347-7439 PRINT ISSN: 0916-7250 (As of September 13, 2016) Registered articles: 8,841
69. Probucol dramatically enhances dihydroartemisinin effect in murine malaria. Aiko Kume, Dang Trinh Minh Anh, Mototada Shichiri, Noriko Ishida and Hiroshi Suzuki, *Malaria Journal*. 2016 Sep 15;15:472. doi: 10.1186/s12936-016-1532-y.
70. Peroxiredoxin 3 promotes IL-12 production from macrophages and partially protects mice against infection with *Toxoplasma gondii*. Ragab M. Fereig, Yoshifumi Nishikawa, *Parasitology International*. Volume 65, Issue 6, Part A, December 2016, Pages 741-748
71. First report on *Babesia vogeli* infection in dogs in the Philippines. Adrian P. Ybañez, Rochelle Haidee D. Ybañez, MaxFrancis G. Talle, Mingming Liu, Paul Franck Adjou Moumouni, Xuenan Xuan, *Parasitology International*. 2016 Oct 3. pii: S1383-5769 (16)30166-0. doi: 10.1016/j.parint.2016.10.001. [Epub ahead of print]
72. *Babesia ovata*: Taxonomy, phylogeny and epidemiology. Thillaiampalam Sivakumar, Ikuo Igarashi, Naoaki Yokoyama, *Veterinary Parasitology*. Volume 229, 15 October 2016, Pages 99-106
73. Trypanocidal Activity of 2,5-Diphenyloxazoles Isolated from the Roots of *Oxytropis lanata*. Orkhon Banzragchgarav, Toshihiro Murata, Gendaram Odontuya, Buyanmandakh Buyankhishig, Keisuke Suganuma, Bekh-Ochir Davaasuren, Noboru Inoue, Javzan Batkhuu, and Kenroh Sasaki, *Journal of Natural Products*. 2016, 79 (11), pp 2933-2940, 2016 Oct 31. [Epub ahead of print]
74. First report on *Babesia canis vogeli* infection in dogs in the Philippines. Adrian P. Ybañez, Rochelle Haidee D. Ybañez, MaxFrancis G. Talle, Mingming Liud, Paul Franck Adjou Moumouni, Xuenan Xuan, *Parasitology International*. 2016 Nov 1. pii: S1383-5769(16)30045-9. doi: 10.1016/j.parint.2016.10.023.
75. Establishment of a novel tick-*Babesia* experimental infection model. Hiroki Maeda, Takeshi Hatta, M Abdul Alim, Daigo Tsubokawa, Fusako Mikami, Makoto Matsubayashi, Takeharu Miyoshi, Rika Umemiya-Shirafuji, Shin-ichiro Kawazu, Ikuo Igarashi, Masami Mochizuki, Naotoshi Tsuji & Tetsuya Tanaka, *Scientific Reports*. 2016 Nov 14;6:37039. doi: 10.1038/srep37039.
76. Molecular detection and genetic characterization of *Babesia*, *Theileria* and *Anaplasma* amongst apparently healthy sheep and goats in the central region of Turkey. Mo Zhou, Shinuo Cao, Ferda Sevinc, Mutlu Sevinc, Onur Ceylan, Sepil Ekici, Charoonluk Jirapatharasate, Paul Franck Adjou Moumouni, Mingming Liu, Guanbo Wang, Aiko Iguchi, Patrick Vudriko, Hiroshi Suzuki, Xuenan Xuan, *Ticks and Tick-borne Diseases*. Available online 16 November 2016
77. Prevalence of gastrointestinal helminth parasites of zoonotic significance in dogs and cats in lower Northern Thailand. Wilawan Pumidonming, Doaa Salman, Dulyatad Gronsang, Abdelbaset E. Abdelbaset, Khamphon Sangkhae, Shin-ichiro Kawazu, Makoto Igarashi, *Journal of Veterinary Medical Science*. Article ID: 16-0293 Language: Previous Article | Next Article <http://doi.org/10.1292/jvms.16-0293> Advance Publication

[Advance Publication] Released 2016/08/27

78. A longitudinal study of Babesia and Theileria infections in cattle in Sri Lanka. Thillaiampalam Sivakumar, Hemal Kothalawala, Gayani Weerasooriya, Seekkuge Susil Priyantha Silva, Sumathy Puvanendiran, Tserendorj Munkhjargal, Ikuo Igarashi, Naoaki Yokoyama, Veterinary Parasitology: Regional Studies and Reports. Volume 6, December 2016, Pages 20-27

79. vAnti-infective and cytotoxic activities of marine fungi derived from Philippine macroalgae and seagrasses. Israel Notarte K, Nakao Y, Yaguchi T, Suganuma K, Edison Dela Cruz T., Planta Med. 2016 Dec;81(S 01):S1-S381. Epub 2016 Dec 14.

b) International conferences: 7

1. M. A. Rizk, S. A. El-Sayd, N. Yokoyama, I. Igarashi. Optimization of a fluorescence-based assay for mass drug screening against equine Babesia and Theileria. The 10th International Equine Infectious Diseases Conference, April 4-8, 1206, Buenos Aires, Argentina.

2. Naoaki Yokoyama et al. Effect of plasma-treatment on the in vitro growth of Trypanosoma brucei. 6th international conference of plasma medicine. September 5-9, Bratislava, Slovakia.

3. Tuvshintulga B, AbouLaila M, Davaasuren B, Ishiyama A, Sivakumar T, Yokoyama N, Iwatsuki M, Otaguro K, Ōmura S, Igarashi I. Clotrimazole Inhibits the Growth of Babesia and Theileria Parasites In Vitro and In Vivo. The 12th of International Conference for Tropical Medicine and Malaria. September 18-22, Brisbane, Australia.

4. Angeles JMA., Goto Y., Leonardo L., Moendeg KJ., Dang TMA., Rivera PT., Villacorte E., Kirinoki M., Chigusa Y., Houghton R., and Kawazu S. Fragmentation improved the diagnostic potentials of major egg protein Sjp40 for human. Schistosomiasis. American Society of Tropical Medicine and Hygiene 65th Annual Meeting, November 13-17, Atlanta, Georgia, USA.

5. Rizk MA, El-Sayed SA, AbouLaila M, Tuvshintulga B, Yokoyama N, Igarashi I. Large-scale drug screening against Babesia divergens parasite using a fluorescence-based high-throughput screening assay. American Society of Tropical Medicine and Hygiene 65th Annual Meeting, November 13-17, Atlanta, Georgia, USA.

6. Yoshifumi Nishikawa et al. Brain manipulation by intracellular parasite, Toxoplasma gondii, Joint International Tropical Medicine Meeting 2016, December 7-9. 2016, Bangkok, Thailand.

7. Keisuke Suganuma, Ikuo Igarashi, Narantsatsral Sandagdorj, Battur Banzragch, Shino Yamasaki, Otgonsuren Davaajav, Musinguzi Simon Peter, Davaasuren Batdorj, c, Battsetseg Badgar, Noboru Inoue. Isolation, cultivation and molecular characterization of a new Trypanosoma equiperdum strain in Mongolia. 1st International Conference on Non Tsetse Transmitted Animal Trypanosomosis, December 15,16, 2016, Paris, France.

c) National conferences: 11

1. Tserendorj Munkhjargal, Naoaki Yokoyama, and Ikuo Igarashi. Profilin is a common antigen among Babesia parasites and its immunogenicity and protective properties against human babesiosis. The 85th of Annual Meeting of Japanese Society of Parasitology, March 20, 2016, Miyazaki,

2. Azirwan Guswanto, Naoaki Yokoyama, and Ikuo Igarashi. Serological prevalence of bovine babesiosis in Western Java, Indonesia. The 85th of Annual Meeting of Japanese Society of Parasitology, March 20, 2016, Miyazaki,

3. Tserendorj Munkhjargal, Naoaki Yokoyama, and Ikuo Igarashi. Recombinant methionine aminopeptidase protein of Babesia microti: immunobiochemical characterization as a vaccine candidate against human babesiosis. The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

4. Yoshifumi Nishikawa. Study on pathogenesis and immunity of neosporosis. The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

5. Azirwan Guswanto, Noaki Yokoyama, Ikuo Igarashi.. Diminazene aceturate-based drug combinations against babesiosis. The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

6. Ehab Mossaad, Bashir Salim, Keisuke Suganuma, Musinguzi Simon Peter, Mohammed Adam Hassan, Elgailani Elamin, Galal-Eldin Elazhary, Amel Bakhiet, Rawan Satti, Xuenan Xuan, Noboru Inoue. Epidemiology of Trypanosoma evansi and Trypanosoma vivax in dromedary camels in East Nile and West Nile areas in the Sudan.

The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

7. Molefe Nthati Innocentia, Sukanuma Keisuke, Xuan Xuan and Inoue Noboru. Development of new control measures against animal trypanosomes. The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

8. Simon Peter Musinguzi, Keisuke Sukanuma, Masahito Asada, Dusit, Laohasinnarong, Thillaiampalam Sivakumar, Naoaki Yokoyama, Boniface Namangala, Chihiro Sugimoto, Yasuhiko Suzuki, Xuan Xuan and Noboru Inoue. A PCR based survey of animal African trypanosomes and selected piroplasm parasites of cattle and goats in Zambia. The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

9. Tuvshintulga B, AbouLaila M, Davaasuren B. et al. Interaction and chemotherapeutic activity of clofazimine and diminazene aceturate against piroplasm parasites, The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

10. Ehab Mossaad, Bashir Salim, Keisuke Sukanuma, Musinguzi Simon Peter, Mohammed Adam Hassan, Elgailani Elamin, Galal-Eldin Elazhary, Amel Bakhiet, Rawan Satti, Xuan Xuan, Noboru Inoue. Epidemiology of *Trypanosoma evansi* and *Trypanosoma vivax* in dromedary camels in East Nile and West Nile areas in the Sudan. The 159th Meeting of Japanese Society of Veterinary Science, Fijusawa, September 6-8, 2016.

11. Tayebwa Dicson, Tuvshintulga B, Guswanto A, Rizk MA, Yokoyama N, Igarashi I. In vitro screening of nitidine chloride against *Babesia* and *Theileria* parasites. The 57th Annual Meeting for Japanese Society of Tropical Medicine, Tokyo, November 5-6, 2016.

d) Other

(Provide website address or link to appropriate information): 0