

# WOAH Collaborative Centre Reports Activities 2023

## Activities in 2023

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### Centre Information

<b>Title of WOA Collaborating Centre</b>	School of Veterinary Medicine, Rakuno Gakuen University
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<b>Name Director of Institute (Responsible Official):</b>	Professor Yasukazu Muramatsu
<b>Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):</b>	Professor Kohei Makita
<b>Name of the writer:</b>	Professor Kohei Makita

### TOR1 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
Epidemiology, surveillance, risk assessment, (true)	Epidemiology, surveillance and risk assessment associated with safe animal production and food safety	Epidemiology, surveillance and risk assessment are key components to maintain or improve human and animal health in the context of food safety. The WOA Collaborating Centres consortium for Food Safety conducts these activities for the WOA Members and also provides training and capacity development. The Centre supports the establishment of veterinary drug use and antimicrobial resistance monitoring.
Training, capacity building (true)	Seminar, hands on training, and postdoctoral training on safe animal production and food safety	The WOA Collaborating Centres consortium for Food Safety conducts international and domestic seminars and training on safe animal production and food safety. The consortium comprises three institutes in Japan and Singapore, and joint seminars are regularly conducted inviting WOA Members in the Asia and Pacific Region. Capacity development through postdoctoral education is conducted for the WOA Members' staff using external grants.
Zoonoses (true)	Training, capacity development and research on	In collaboration with other relevant WOA Reference Centres, the WOA Collaborating Centres consortium for Food Safety conducts training,

	food-borne zoonoses	capacity development and research on food-borne zoonoses including antimicrobial drug resistant bacteria.
Aquatic animal diseases (true)	Risk assessment for antimicrobial resistant bacteria of aquatic animal origin	Risk assessment for antimicrobial resistant bacteria of aquatic animal origin has been started to develop the method.
Diagnosis, biotechnology and laboratory (true)	Development of diagnostic and measurement methods	The laboratory experts in the WOAAH Collaborating Centres consortium for Food Safety continuously develop new diagnostic and measurement methods for hazards in animals, foods and environment.
Food security (true)	Research and extension on safe animal production, and food safety	A variety of researches on food safety, such as microbiological and chemical hazards, cell-cultured food, and allergy are conducted, in addition to diagnosis, measurement, epidemiology and risk assessment. Safe animal production is achieved by transfer of on-farm techniques, and research, training and extension works are conducted involving staff of the WOAAH Members.

### TOR3: 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
International Association for Food Protection Annual Meeting	Annual Meeting IAFP 2023 was held in Toronto, Ontario, Canada at the Metro Toronto Convention Centre providing attendees with information on current and emerging food safety issues, the latest science, innovative solutions to new and recurring. The IAFP Annual Meeting is attended by more than 3,800 of the top industry, academic and governmental food safety professionals from six continents. The event was held for 4 days and topics discussed includes food toxicology, food fraud, animal safety and eggs, data sharing in digital age of food safety, Novel approaches to monitoring agricultural surface water quality and introduction of FDA-iRISK. The leading experts speaking on a variety of timely topics; or their contributions in the food safety field made the event fruitful to attend.	Laboratory expertise Training and education
Workshop on Whole Genome Sequencing	NCFS participated in a FAO workshop on "Whole Genome Sequencing (WGS) for food safety management" as trainers to guide government officials from low- and middle-income countries (LMICs) such as Bosnia and Herzegovina, Ethiopia, Ghana, Iraq, Lao People's Democratic Republic, Malaysia, Mexico, and Mongolia on implementing WGS to improve food safety.	Laboratory expertise Training and education

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

No

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

Yes

Name of WOAAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
University of Tokyo Research Center for			To organize seminar series on

Food Safety, Rakuno Gakuen University and National Centre for Food Science, Singapore	Japan and Singapore	Asia and Pasific	Food Safety in Asia-Pacific "Emerging topics in our food environment"
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## TOR4 AND 5: NETWORKING AND COLLABORATION

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

Yes

Name of WOAHO CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
IZSAM, WOAHO Reference Laboratory for Brucellosis	Italy	Europe	Contacting for brucellosis control in Africa
National Veterinary Assay Laboratory	Japan	Asia and Pasific	To deepen the analysis of antimicrobial use pattern in the field
National Institute of Animal Health, Thailand WOAHO Reference Laboratory for Brucellosis	Thailand	Asia and Pasific	Preparation for WOAHO seminar on brucellosis in Asia and Pacific

## TOR6: EXPERT CONSULTANTS

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

Yes

NAME OF EXPERT	KIND OF CONSULTANCY	SUBJECT
ISHIBASHI Tomoko	Provision of advice and coordination of discussion	WOAHO Working Group on Antimicrobial Resistance

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

*JICA Agri-Net MSc and PhD trainings on Epidemiology, Food Safety and AMR for the personnel from Thailand, Fiji, Indonesia, and Malawi at Rakuno Gakuen University.*

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

Yes

- a) Technical visit : 102
- b) Seminars : 188
- c) Hands-on training courses: 95
- d) Internships (>1 month) : 26

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	Technical Visit by FSANZ's Regional Science and Food Safety Dialogue	Singapore	9
A	Technical Visit by Bilateral Cooperation Project on Application of Technology and Innovation for Water Utilization Efficiency in Vegetable Production	Singapore	4
A	Technical Visit by SFA Foundation Programme	Singapore	35
A	Technical Visit by Food Safety Training Programme for Vietnamese Officials	Vietnam	26
A	Technical Visit by Brazil State Rep. Goias on Novel Food	Brazil	2
A	Technical Visit by Jiang Su Food & Pharmaceutical Science College	Singapore	20
A	Technical Visit by General Administration of Customs of the People's Republic of China (GACC) Vice-Minister	People's Republic of China	6
B	WOAH CCs Food Safety Seminar series titled "Emerging topics in our food environment" Webinar #1 "Production, evaluation and regulation of cultured meat"	17 Asia and Pacific countries/territories including 5 National Focal Points for Animal Production Food Safety	123
B	WOAH CCs Food Safety Seminar series titled "Emerging topics in our food environment" Webinar #2 "Understanding allergy of livestock products"	18 Asia and Pacific countries/territories including 2 National Focal Points for Animal Production Food Safety	65
C	IAEA Training Workshop	Singapore	12
C	Visitors from Promoting the Harmonisation of Food Regulations between Thailand & Singapore 2023 Workshop	Singapore, Thailand	23
C	Hands on trainings on hoof trimming techniques, reproduction, and diagnosis and treatment of cattle diseases at RGU	Japan	50
C	Hands on training on university veterinary epidemiology teaching at RGU	Japan	10
D	JICA Agri-Net MSc (1) and PhD (3) training on AMR, epidemiology and microbiological risk assessment at RGU	Thailand, Indonesia, Fiji and Malawi	4

D	Japan Veterinary Association Asian training programme	Mongolia	1
D	Internships at NCFS	Singapore	20
D	Internship on AMR at RGU	Egypt	1

## TOR8: 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 WOA?H?

Yes

NATIONAL/INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	Seminar series on Food Safety in Asia-Pacific "Emerging topics in our food environment" Webinar #1 "Production, evaluation and regulation of cultured meat"	RCFS, RGU, and NCFS joint seminar	2023-08-23	Zoom	123
International	Seminar series on Food Safety in Asia-Pacific "Emerging topics in our food environment" Webinar #2 "Understanding allergy of livestock products"	RCFS, RGU, and NCFS joint seminar	2023-10-23	Zoom	65
International	Pandemic preparedness: WOA?H workshop on risk-based analysis of spill over events in wildlife in Japan	RGU provided an expert to the workshop.	2023-12-23	Yugawara, Japan	24

## TOR9: DATA AND INFORMATION DISSEMINATION

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

a) Articles published in peer-reviewed journals:

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*Sugino S, Bugeza J, Bahame D, Byaruhanga J, Shimazaki H, Anzai M, Kayano T, Mwebembezi W, Akashaba A, Shimada T, Muramatsu Y, Makita K. Structure and milk hygiene of dairy cooperative value chains in an intensive production area of Uganda—A bottleneck of intervention. Frontiers in Sustainable Food Systems 7:1110915. 2023. DOI 10.3389/fsufs.2023.1110915*

*Ukita M, Kuwata K, Tanaka E, Matsuyama R, Isoda N, Sakoda Y, Yamamoto T, Makita K. Exploring appropriate strategies for vaccination against classical swine fever under a dynamic change in antibody titer in sows after starting vaccination in a Japanese farm setting. Transboundary and Emerging Diseases Article ID 5541976, 15 pages 2023. <https://doi.org/10.1155/2023/5541976>*

*Ozawa M, Shirakawa T, Moriya K, Furuya Y, Kawanishi M, Makita K, Sekiguchi H. Role of Plasmids in co-selection of antimicrobial resistances among Escherichia coli isolated from pigs. Foodborne Pathogens and Disease 20(10), 435-441. 2023.*

*Takeuchi H, Nakajima C, Konnai S, Maekawa N, Okagawa T, Usui M, Tamura Y, Suzuki Y, Murata S, Ohashi K. Characterization of SpsQ from Staphylococcus pseudintermedius as an affinity chromatography ligand for canine therapeutic antibodies. Plos One. 18, e0281171. 2023.*

*Usui M\*, Yoshii Y, Thiriet-Rupert S, Ghigo J M, Beloin C\*. Intermittent antibiotic treatment of bacterial biofilms favors the rapid evolution of resistance. Commun Biol. 6, 275. 2023.*

*Usui M\*, Akiyoshi M, Fukuda A, Iwano H, Kato T. 16S rRNA nanopore sequencing for rapid diagnosis of causative bacteria in bovine mastitis. Res in Vet Sci. 161. 45-49. 2023. Fukuda A, Tsunashima R, Usui M\*. Antimicrobial resistant bacteria monitoring in retail raw seafood in Japan: A pilot study focused on Vibrio and Aeromonas. Food Safety. 2023.*

*Azuma T\*, Usui M, Hayashi T. Inactivation of Antibiotic-resistant Bacteria in Hospital Wastewater by Ozone-Based Advanced Water Treatment Processes. Sci Total Environ. 906. 16743. 2023.*

*Kyoko Chisato, Takerou Yamazaki, Shunji Kayasaki, Rika Fukumori, Shin Oikawa. Epidemiological features of postpartum subclinical ketosis in dairy herds in Hokkaido,*

- Japan. *Animals*. 14. 2023. Doi: 10/3390/ani1401014.
- Mohamed Tharwat, Hazem M. El Moghazy, Shin Oikawa. Ultrasonographic verification of hepatic hydatidosis in a female dromedary camel: A case report. *J. Vet. Med. Sci*. 85(12):1286-1290. 2023. doi: 10.1292/jvms.23-0325.
- Mohamed Tharwat, Ahmed Ali, Derar Derar, Shin Oikawa and Tariq I. Almundarij. Effects of Dystocia on the Cardiac Biomarker Troponin I, Acid-Base Balance and Blood Gases Alongside the Hematobiochemical Profiles in Female Dromedary Camels. *International Journal of Veterinary Science* 13(1):115-119. 2023. Doi: 10.47278/journal.ijvs/2023.070
- Kaede Shimada, Yuya Kuzumaki, Yuto Abe, Sota Takeda, Daisuke Hakozaki, Akari Nishimura, Mizuki Kishida, Nana Kitano, Rika Fukumori, Yoshio Kiku, Takahashi Toshihiko. Evaluation of deworming efficacy against bovine gastrointestinal parasites in a public ranch and the proposal of a suitable anthelmintic program. *Japanese Journal of Clinical Bovine Parasitology* 13(1) 3-12. 2023.
- Hitomi Satoh, Rika Fukumori, Takehiko Osada, Kensuke Shimada, Shin Oikawa, Kenichi Izumi. Effects of starch content of calf starter on feed intake, growth performance, and fecal properties in dairy calves under a high plane of milk replacer feeding. *Animal Science Journal* 94(1), 2023. Doi: 10.1111/asj.13911
- Shuji Kayasaki, Kyoko Chisato, Rika Fukumori, Shin Oikawa. Death-and-culling rates of calves and associated economic losses in the first month of life on dairy farms in eastern Hokkaido, Japan. *Preventive Veterinary Medicine*, 106072, 2023. Doi: 10.1016/j.prevetmed.2023.106072
- Kosenda K, Yabashi E, Takeda S, Ohtsuka H. 2023. Effect of live yeast *Saccharomyces cerevisiae* supplementation on immune factors in Japanese Black calves during the growth periods. *J Vet Med Sci*. 85: 290-295.
- Kosenda K, Ichii O, Yamashita Y, Ohtsuka H, Fukuda S, Kon Y. Histological Characteristics of Conjunctiva-Associated Lymphoid Tissue in Young and Adult Holstein Cattle. *Animals (Basel)*. 13:3481. 2023.
- Murakami K, Fukuhara T, Kure S, Shimosakai T, Sato A, Murata R, Kosenda K, Ohtsuka H. mRNA expression of immune factors by milk somatic cells from healthy Holstein lactating cows. *Can J Vet Res*. 87:231-236. 2023.
- Mori K, Uchiumi A, Yamamoto K, Shimizu Y, Ueda R, Kosenda K, Fukuhara T, Kure S, Fukazawa H, Ohtsuka H. Effect of supplementation with *Saccharomyces boulardii* CNCM I-1079 on vaccine response to an inactivated bacterial vaccine in young Japanese Black calves: A field trial. *Can J Vet Res*. 87:237-242. 2023.
- Sato A, Sugiura T, Kosenda K, Murakami T. Preoperative protocol for right flank laparotomy affects postoperative serum cortisol concentrations in dairy cows. *J Am Vet Med Assoc*. 261:1374-1379. 2023.
- Mori K, Kato T, Kosenda K, Yokota O, Ohtsuka H. Antibody response to 1.0 and 0.5 mL doses of an inactivated bacterial vaccine against bovine respiratory disease in young Holstein calves: a field trial. *J Vet Res*. 67:315-321. 2023.
- Mukai S, Kawasaki K, Sato A, Sato Y, Kato H, Murakami T. Examination of Manual Reduction for Uterine Torsion in a Dairy Cow Using the Push-Holding Method. *J Jpn Vet Med Assoc*. 76: e5-e10. 2023.
- Ruiz-Gil T, Fujiyoshi S, Tanaka D, Noda J, Maruyama F, Acuña JJ, Jorquera M. Airborne bacterial communities associated with particulate matter in Temuco (Chile), one of the most air-polluted cities in South America, *Aerobiologia*, 2023 doi.org/10.1007/s10453-023-09803-9
- Mori T, Ogawa Y, Endo I, Matsushima K, Noda J. Growth Suppression of a Robust Bacterium *Methylobacterium extorquens* by Porous Materials with Oxygen Functional Groups. *Life* 2023, 13, 2185. doi.org/10.3390/life13112185
- Carrazana E, Ruiz-Gil T, Fujiyoshi S, Tanaka D, Noda J, Maruyama F, Jorquera M. Potential airborne human pathogens: A relevant inhabitant in built environments but not considered in indoor air quality standards. *The Science of the total environment*, 901, 165879. *Advance online publication*, 2023. doi.org/10.1016/j.scitotenv.2023.165879
- Noda J, Morimoto K, Mitarai S, Maki T. Dust and Microorganisms: Their Interactions and Health Effects. In: Al-Dousari, A., Hashmi, M.Z. (eds) *Dust and Health. Emerging Contaminants and Associated Treatment Technologies*. Springer, Cham, 2023. doi.org/10.1007/978-3-031-21209-3\_8
- Kai K, Kawai K, Ohara K, Minamoto Y, Jin Y, Maki T, Noda J, Shiina T, Davaanyam E. Mass-Extinction Conversion Factor (MECF) over the Gobi Desert by a Tethered-balloon-based OPC and a Ceilometer, *SOLA*, 19-269-273, 2023. doi.org/10.2151/sola.2023-035
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- Sakamoto N, Kakeno H, Ozaki N, Miyazaki Y, Kobayashi K, Murata T. Marker-less tracking system for multiple mice using Mask R-CNN. *Front Behav Neurosci*. 16:1086242. 2023.
- Nakamura T, Tachibana Y, Murata T. 12-HETE promotes late-phase responses in a murine model of allergic rhinitis. *Allergy*. 78(2):574-577. 2023.
- Saito H, Tachiura W, Nishimura M, Shimizu M, Sato R, Yamauchi Y. Hydroxylation site-specific and production-dependent effects of endogenous oxysterols on cholesterol homeostasis: Implications for SREBP-2 and LXR. *J Biol Chem*. 299. 102733. 2023.
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- Wan Ling Ng, Ivan Si Ming Ng, Lian Jie Bay, Haiyan Li, Peggy Chui Fong Chew, Shoo Peng Koh, Kah Meng Lee, Yuansheng Wu, and Sheot Ham Chan. Identification and Characterization of Mercury Contamination in Vegetables and Herbs Cultivated on a Commercial Vertical Indoor Farming System with Light-Emitting Diode Lighting: Unveiling an Unusual Food Safety Risk of Some Improperly Manufactured High-Density Agricultural Production Systems. *Journal of Agricultural and Food Chemistry*. 71(37): 13654-13660. 2023.
- Yanwen Wang, Emily Teo, Kung Ju Lin, Yuansheng Wu, Joanne Sheot Harn Chan, Li Kiang Tan. Quantification of Pork, Chicken, Beef, and Sheep Contents in Meat Products Using Duplex Real-Time PCR. *Foods* 12(15): 2971-2984. 2023.

- Shraddha Thakkar, William Slikker Jr, Frank Yiannas, Primal Silva, Burton Blais, Kern Rei Chng, Zhichao Liu, Alok Adholeya, Francesco Pappalardo, Mônica da Luz Carvalho Soares, Patrick E. Beeler, Maurice Whelan, Ruth Roberts, Jurgen Borkak, Martha Hugas, Carlos Torrecilla-Salinas, Philippe Girard, Matthew C. Diamond, Didier Verloo, Binay Panda, Weida Tong. *Artificial intelligence and real-world data for drug and food safety – A regulatory science perspective. Regulatory Toxicology and Pharmacology.* 140:105388-105395. 2023.
- Jia En Valerie Sin, Ping Shen, Guat Shing Teo, Lay Peng Neo, Lifei Huang, Patricia Chua, Mui Woon Tan, Yuansheng Wu, Angela Li, Jun Cheng Er, Sheot Harn Chan. *Surveillance of veterinary drug residues in food commonly consumed in Singapore and assessment of dietary exposure. Heliyon Food Science and Nutrition.*9(11): e21160-21167. 2023.
- Ker Li Lim, Wei Ching Khor, Kar Hui Ong, Lois Timothy and Kyaw Thu Aung. *Occurrence and Patterns of Enterotoxin Genes, spa Types and Antimicrobial Resistance Patterns in Staphylococcus aureus in Food and Food Contact Surfaces in Singapore. Microorganisms.* 11(7): 1785-1803. 2023.
- Siew Heng Chan, Sock Hwee Liau, Ying Jia Low, Kern Rei Chng, Yuansheng Wu, Joanne Sheot Harn Chan and Li Kiang Tan. *A Real-Time PCR Approach for Rapid Detection of Viable Salmonella Enteritidis in Shell Eggs. Microorganisms.* (11)(4): 844-853. 2023.
- Wesley Zongrong Yu, Ping Shen, Ignatius Lim, Raymond Rong Sheng Shi, Miaohua Cai, Yee Soon Chin, Ai Jin Tay, Wei Min Ang, Jun Cheng Er, Geraldine Songlen Lim, Yuansheng Wu, Angela Li, Kyaw Thu Aung and Sheot Harn Chan. *Occurrence and Dietary Exposure to Acrylamide from Foods Consumed within and outside Main Meals in Singapore. Foods.* 12(16): 3022-3036. 2023.
- Bin Li, Sew Lay Chua, Dingyi Yu, Sheot Harn Chan, Angela Li. *Determination and Characterization of Gold Nanoparticles in Liquor Using Asymmetric Flow Field-Flow Fractionation Hyphenated with Inductively Coupled Plasma Mass Spectrometry. Molecules.* 29(1): 248-263. 2023.
- Raymond Rong Sheng Shi, Ping Shen, Wesley Zongrong Yu, Miaohua Cai, Ai Jin Tay, Ignatius Lim, Yee Soon Chin, Wei Min Ang, Jun Cheng Er, Geraldine Songlen Lim, Yuansheng Wu, Angela Li, Kyaw Thu Aung, Joanne Sheot Harn Chan. *Occurrence and Dietary Exposure of 3-MCPD Esters and Glycidyl Esters in Domestically and Commercially Prepared Food in Singapore. Foods.* 12(23): 4331-4350. 2023.
- Sri Harminda Pahn Hartantyo, Renuka Selvaraj, Jiaying Ho, Jia Quan Oh, Jun Cheng Er, Angela Li, Kyaw Thu Aung. *Food Safety Controls during Bulk Food Preparation—An Observational Analysis. Foods.* 12(12): 2376-2385. 2023.
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- Renuka Selvaraj, Er Jun Cheng, Patrick Gan, Jia Quan Oh, Kyaw Thu Aung. *Microbiological Profiles of Disposable Gloves Used for Handling Ready-to-Eat Foods. Journal of Food Protection.* 86(11): 100146-101150. 2023.
- Jun Xiang Ong, Patrick Gan, Ken Kah Meng Lee, Yuansheng Wu. *An assessment of natural and artificial radionuclide content in powdered milk consumed by infants and toddlers in Singapore. Journal of Radioanalytical and Nuclear Chemistry.* 333(2): 951-959. 2023.

b) International conferences:

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- Makita K. *FAVA Strategic Plan 2021-2025 on AMR and current situation of the Members. The 22nd Federation of Asian Veterinary Associations Congress 2023.* 2023 November 3rd, Kuching, Malaysia [invited speech].  
[<https://fava2023.com/>]
- Masaru Usui, Junichiro Kimura, Hayami Kudo, Akira Fukuda, Michi Yamada, Kohei Makita, Kentaro Oka, Motomichi Takahashi, Yutaka Tamura. *Flavophospholipol as a pig feed additive to reduce antimicrobial resistant bacteria in pigs. 1st Research Conference on AMR/AMU in Food Animals in the Asia-Pacific Region. Bangkok. Thailand. Feb. 7. 2023.*
- Masaru Usui. *AMR monitoring of the food production Environment. Regional Short-term Online Training on Antimicrobial Resistance. Tokyo. Japan. Feb. 28. 2023.*
- Masaru Usui. *The development of the veterinary therapeutic guidelines for Swine in Japan. Regional Short-term Online Training on Antimicrobial Resistance. Tokyo. Japan. Feb. 28. 2023.*
- Masaru Usui. *Evidence-based development of prevention action AMR -Japan experience-. VIV Asia 2023. Bangkok. Thailand. March. 8. 2023.*
- Rika Fukumori, Kaori Hara, Yuko Hiramatsu, Atsushi Ito, Kento Arai, Shiori Ashibe, Yoshikazu Nagao, Akira Sasaki, Hirotsugu Yamamoto, Yukitoshi Otani. *Measurement of pH in the cow's rumen for high quality dairy product. 2022 TENTH INTERNATIONAL SYMPOSIUM ON COMPUTING AND NETWORKING WORKSHOPS, CANADA RW 40-43 2023. Doi: 10.1109/CANDARW57323.2022.00036*
- Imaizumi, N., Gondaira, S., Sugiura, T. and Higuchi, H. *Synergism of bovine mammary epithelial cells and bovine peripheral blood mononuclear cells enhances immunological responses to Mycoplasma bovis. 24th Biennial Congress of the International Organization for Mycoplasma (IOM), July 16th - 20th, 2023 Oral Presentation*
- Gondaira, S., Nishi, K., Imaizumi, N. and Higuchi, H. *Mycoplasma (Mycoplasma) bovis infections in veterinary medicine. 24th Biennial Congress of the International Organization for Mycoplasma (IOM), July 16th - 20th, 2023 Oral Presentation*
- Matsuyama R. 2023. *Distributive justice of scientific knowledge in One Health. Tsukuba Conference 2023. Tsukuba, Japan. Sep. 27. 2023.*
- Fujii W, Yoshioka S, Sugiura K, Naito K, Kakuta S, Kano K. *Generation of transgenic mice by zygote electroporation. Society for the Study of Reproduction 2023 Annual Meeting, Shaw Centre, Ottawa, Ontario, Canada. Jul 2023*
- Haga T, *History of animal infections in Asia. The 10th Conference of Asian Society of Veterinary Pathology, Tokyo, Japan. March 2023.*
- Nakanishi, TM. *Plenary Lecture; What has been revealed tracing trace radioactive elements after 12 years of Fukushima Nuclear accident. 6th International Conference on Environmental Radioactivity (ENVIRA), Seville, Sept. 2023.*
- Li Bin. 2023. *Smart data processing platform for non-targeted analysis to support food safety monitoring, investigations, and safety assessments of food. Joint 11th AOHUPO and 7th AOAPU Congress 2023. Poster Presentation*
- Roshini. 2023. *Identification and antibiotic-susceptibility profiling of Aeromonas spp. in seafood samples along the food chain in Singapore. World Anti-Microbial Resistance (AMR) Congress 2023 (US). Poster Presentation*
- Yu Dingyi. 2023. *Smart platforms for non-targeted analysis to support food safety monitoring, investigations and safety assessments of food. Global Agri-food Scientific Symposium 2023. Poster Presentation*
- Yu Dingyi. 2023. *Expertise Building for Micro/Nanoplastics (MPs/NPs) Testing in Food. GRS23 pre-summit workshop on Nano. Oral Presentation*
- Yu Dingyi, 2023. *Non-Targeted Analysis (NTA) Strategy: Development and Applications. Global Summit on Regulatory Science 2023. Oral Presentation*
- Benjamin Er. 2023. *Predictive Food Safety Risk Monitoring. 10th International Conference on ICT for Smart Society (ICISS) 2023. Oral Presentation*
- Benjamin Er. 2023. *Fine-Tuning Pre-Trained Language Model for Urgency Classification of Food Safety Feedback. 10th International Conference on ICT for Smart Society (ICISS) 2023. Oral Presentation*



c) National conferences:

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- Sugino Y, Bugeza J, Makita K, et al. Structure and milk hygiene level of dairy cooperative value chains in an intensive production area of Uganda. 2023 March 25, Conference of Japanese Society of Veterinary Epidemiology, Tokyo, Japan.
- Yasuda Y, Makita K. Economic losses from total condemnation due to enzootic bovine leukemia in Hokkaido, Japan. 2023 March 25, Conference of Japanese Society of Veterinary Epidemiology, Tokyo, Japan.
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- Yoshioka T, Kohara J, Matsuyama R, Makita K., et al. Differentiating bovine leukemia virus susceptible and resistant cattle by epidemiological approach. 2023 September 5-18, Conference of Japan Society of Veterinary Science, online.
- Makita K. The importance of epidemiology in One Health. 2023 December 3, Japan Veterinary Association symposium 'a bridge for One Health: an outlook of zoonosis and education in Japan and Asia', Kobe, Japan [Invited speech]. [<http://jvma2023.umin.jp/>]
- Makita K. A nation-wide interview on epidemiology in Japan. 2023 December 10, A nation-wide interview on epidemiology in Japan symposium, The 13th The Society of Farm Animal in Infectious Diseases Conference, Tokyo, Japan [invited speech].
- Kudo H, Kimura J, Fukuda A, Oka K, Takahashi M, Usui M. Decreasing the Abundance of Tetracycline-Resistant Escherichia coli in Pig Feces During Nursery Using Flavophospholipol as a Pig Feed Additive. The 56th meeting of Japanese Association of Germfree Life and Gnotobiology. Kanagawa, Japan. Jan. 22. 2023.
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- Azuma T, Usui M, Hayashi T. Application of Ozone for Advanced Treatment of Wastewater from Healthcare Facilities. The 32nd Annual Conference of the Ozone Association. Tokyo, Japan. June 22. 2023.
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- Yamaura K, Fukuda A, Yukawa S, Usui M, Survey of Microbial and Antibiotic-Resistant Bacterial Contamination in Pet Food Circulating in Japan - 2023 Hokkaido Veterinary Medical Association District Conference. Ebetsu, Japan. Sep. 1. 2023.
- Akiyoshi M, Ohashi S, Kato T, Usui M. Simplified Estimation of Mastitis-Causing Bacteria and Development of Culture Media for Drug Sensitivity Testing. 2023 Hokkaido Veterinary Medical Association District Conference. Ebetsu, Japan. Sep. 1. 2023.
- Kawabata Y, Fukuda A, Asai T, Sato R, Uruguchi K, Kouguchi Y, Usui M. Attempt at Sustainable Drug-Resistant Bacteria Monitoring in Wild Animals (Ezo Deer, Red Fox) in Hokkaido - 166th Meeting of the Japan Veterinary Medical Association. Tokyo, Japan. Sep. 8. 2023.
- Yamaura K, Fukuda A, Yukawa S, Usui M, Survey of Microbial and Antibiotic-Resistant Bacterial Contamination in Pet Food Circulating in Japan. 66th Meeting of the Japan Veterinary Medical Association. Tokyo, Japan. Sep. 8. 2023.
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- Usui M. Research on the Transmission of Drug-Resistant Bacteria/Resistance Genes in Ecosystems. 66th Meeting of the Japan Veterinary Medical Association. Tokyo, Japan. Sep. 8. 2023.
- Usui M. The Current Status and Future Prospects of Drug-Resistant Bacteria from a One Health Perspective. The 26th Annual Meeting of the Japan Society of Clinical Fecal Microbiota Transplantation. Kanagawa Japan. Sep. 4. 2023.
- Fukuda A, Tsunashima R, Usui M. Experimental Attempts at Monitoring Drug-Resistant Bacteria in Commercial Seafood - The 44th Annual Meeting of the Japan Society of Food Microbiology. Osaka, Japan. Sep. 21. 2023.
- Usui M, Elucidation of the Transmission Routes of Animal-Derived Drug-Resistant Bacteria and Their Countermeasures - The 72nd Annual Meeting of the Japan Society of Infectious Diseases Eastern Regional Conference and the 70th Annual Meeting of the Japan Society of Chemotherapy Eastern Regional Branch. Tokyo, Japan. Oct. 26. 2023.
- Usui M, Current Situation and Future Prospects of Drug-Resistant Bacteria Issues in Dairy Farming - Mastitis Prevention Measures Research Symposium. Sapporo. Japan. Nov. 28. 2023.
- Usui M. Reality and Future Outlook of Drug-Resistant Bacteria Issues in Dairy Farming - The 13th Livestock Infectious Diseases Society Meeting. Tokyo, Japan. Dec. 10. 2023.
- Uchida L., Chisato K., Narisawa A., Makita K., Efforts of meat inspection training using Virtual Reality (VR) system. The Annual Meeting of the Hokkaido Veterinary Medical Association. 31 Aug 2023.
- Uchida L., Sakurai Y., Tomihisa A., Muramatsu Y., Detection of mosquito-specific viruses in Aedes mosquitoes collected in Hokkaido, Japan. The 166th Meeting of the Japanese Society of Veterinary Science. 5 Sep 2023.
- Uchida L., Sakurai Y., Tomihisa A., Muramatsu Y., Novel mosquito-specific Flaviviruses isolated from Aedes galloisi in Hokkaido, Japan. The 29th Annual Meeting of the Society of Toga, Flavi, Pestivirus research. 25 Sep 2023.
- Takumi Honjo, Mizuki Honjo, Ryo Imaishi, Miki Ishizaka, Tomoyasu Shintani, Konami Suzuki, Yudai Sawada, Kyoko Chisato, Rika Fukumori, Shin Oikawa. The evaluation of treatment effect of oral administrations propylene glycol and sucrose on cows with high risk of subclinical ketosis during the close-up period. 1st Meeting on the health management of dairy cattle. Sep. 2, 2023.



- Kasumi Meguro, Hitomi Satoh, Kai Tomizawa, Gakuto Nakamura, Kenichi Izumi, Rika Fukumori, Kyoko Chisato, Shin Oikawa. Effects of prolonged antibodies feeding on IgG and IgA concentrations of serum, saliva, and feces in dairy calves. The 131 Annual meeting of Japanese association of Animal Science. Sep. 19, 2023.
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- Hitomi Satoh, Kai Tomizawa, Kasumi Meguro, Gakuto Nakamura, Kenichi Izumi, Rika Fukumori, Kyoko Chisato, Shin Oikawa. Weekly changes in insulin sensitivity in dairy calves. The 131 Annual meeting of Japanese association of Animal Science. Sep. 20, 2023.
- Marin Kamioka, Noriko Imaizumi, Satoshi Gondaira, Tomochika Sugiura, Hidetoshi Higuchi, Immune responses of bovine mammary epithelial cells and bovine peripheral blood mononuclear cells in mycoplasmal mastitis [Award for Excellence], Mastitis Summer Camp, September 17, 2023
- Shota Yamamoto, Noriko Imaizumi, Satoshi Gondaira, Hidetoshi Higuchi, Effect of Mycoplasma bovis biofilm on drug resistance mechanism [Grand Prize], Mastitis Summer Camp, September 17, 2023
- Ryo Murakami, Satoshi Gondaira, Noriko Imaizumi, Ayako Eguchi, Tomochika Sugiura, Hidetoshi Higuchi, Expression dynamics of amino acid transporters during inflammatory response in bovine mammary gland [Obayashi Award], Mastitis Summer Camp September 17, 2023
- N. Imaizumi, S. Gondaira, T. Sugiura, H. Higuchi, Interaction between bovine mammary epithelial cells and bovine mononuclear cells in mycoplasmal mastitis [Best Presentation Award], Japan Veterinary Medical Association, November 10, 2023
- N. Imaizumi, S. Gondaira, T. Sugiura, H. Higuchi, Inflammatory response of mammary tissue in mycoplasmal mastitis is enhanced by interaction between mammary epithelial cells and mononuclear cells [Encouragement Award], Japanese Society of Animal Health, December 8, 2023
- Imaizumi, H., S. Gondaira, T. Sugiura, T. Higuchi, H., Inflammatory response of bovine mammary epithelial cells to Mycoplasma bovis is enhanced by co-culture with bovine mononuclear cells, Mastitis Research Meeting, October 21, 2023
- Satoshi Gondaira, Noriko Imaizumi, Yosuke Sato, Yuji Tanno, Hidetoshi Higuchi, Investigation of Rapid Testing Techniques for Mycoplasma bovis Mastitis [Floor Award], Japanese Society of Animal Health, December 8, 2023
- K. Nishi, S. Gondaira, H. Higuchi, Effect of hypertonic saline solution on biofilm of causative organisms of bovine mastitis [Veterinary Science Society of Japan Award], Japan Veterinary Medical Association Meeting, December 1, 2023
- K. Nishi, S. Gondaira, H. Higuchi, Effect of hypertonic saline solution on biofilm of bovine mastitis-causing bacteria [Hokkaido Society Award], Hokkaido Veterinary Medical Association Annual Meeting, September 1, 2023
- Kojima M, Katayama M, Kutsuma M, Ishikawa T, Murakami T, Sato A. August 31, 2023. Investigation of the relationship between hoof disease occurrence and hoof moisture content in milking cow herds. Hokkaido Veterinary Medical Association.
- Nakanishi K, Murakami T, Ishikawa T, Otake A, Inamori T, Sato A. August 31, 2023. Verification of the feasibility of evaluating adult cow hoof traits using a 3D image creation application. Hokkaido Veterinary Medical Association.
- Ishikura Y, Kawaguchi S, Horiguchi M, Sato A, Abe N, Matsuyama R, Makita K, Ishikawa T, Otake A, Sunadome M, Watanabe R, Murakami T. August 31, 2023. Effect of spraying anaerobic fermentation agent on the prevention of toe dermatitis in growing dairy cows. Hokkaido Veterinary Medical Association.
- Horiguchi M, Ishikura Y, Kawaguchi S, Sato A, Ishikawa T, Otake A, Murakami T. August 31, 2023. Fetal evaluation using abdominal ultrasound in late gestation cows. Hokkaido Veterinary Medical Association.
- Sonoda I, Murakami T, Ishikawa T, Sato A. September 1, 2023. Serum amyloid A measurement in serum and joint fluid in bovine infectious arthritis. Hokkaido Veterinary Medical Association.
- Yamauchi Y, Honda M, Makino T, Zhao X, Sakurai H, Takahashi Y, Shimizu M, Sato R. Pathophysiological levels of GDF11 activate Smad2/3 signaling and induce muscle atrophy in human iPSC-derived myocytes. The 77th Annual Meeting of Japan Society of Nutrition and Food Science. 2023.
- Takahashi Y, Yamauchi Y, Sato R. Development of human intestinal organoids for application to food science. The 77th Annual Meeting of Japan Society of Nutrition and Food Science. 2023.
- Nishimura M, Saito H, Sato R, Yamauchi Y. Prostaglandin E2 regulates 25-hydroxycholesterol synthesis induced by inflammatory responses. The 96th Annual Meeting of the Japanese Biochemical Society. 2023.
- Liyang N, Zhao X, Sakurai H, Sato R, Yamauchi Y. Insufficiency of the mevalonate pathway metabolite induces muscle atrophy and selective autophagy in skeletal muscle. The 96th Annual Meeting of the Japanese Biochemical Society. 2023.
- Kakuta S. Evaluation of propolis from Tetragonula biroi Freise, a stingless bee endemic to the Philippines in mice. 43rd Honeybee Science Research Meeting. Tamagawa University, 2023.
- Uchida K. Structure and function of oxidation-induced modification signatures. 50th Annual Meeting of the Japanese Society of Toxicology, Yokohama (2023).
- Hori M. et al. Cell culture food biohazard studies 1; Gene expression analysis using mouse fibroblasts and bovine tracheal smooth muscle cells. 50th Annual Meeting of the Japanese Society of Toxicology, Yokohama, 2023.
- Fujii W. et al. Generation of Transgenic Mice by Electroporation of Fertilized Eggs. 116th Annual Society for Reproduction and Development Meeting, Kobe University, 2023.
- Fujimoto Y. et al. Association between highly pathogenic avian influenza outbreaks and weather conditions in Japan. The 166th Annual Meeting of the Japanese Society of Veterinary Science. Tokyo, 2023.
- Hanamoto S. et al. Prevalence of methicillin-resistant Staphylococcus aureus in livestock in Japan: A systematic review and meta-analysis. The 166th Annual Meeting of the Japanese Society of Veterinary Science. Tokyo, 2023.
- Hachimura S. Regulation of intestinal immune response by food via dendritic cells. 77th Annual Meeting of Japan Society of Nutrition and Food Science. Sapporo, 2023.
- Hachimura S, Nakajima-Adachi H. Reducing risk of food allergy. 25th Food Safety and Security Forum, SFSS. University of Tokyo, 2023.
- Kobayashi et al. Establishment of a machine learning method that enables long term analysis of scratching behaviour in mice. The 72th Annual Meeting of The Japanese Society of Allergology. Tokyo, 2023.
- Miyazaki Y. et al. Assessment of symptoms in murine food allergy model using imaging analysis. The 70th Annual Meeting of the Japanese Association for Laboratory Animal Science. Tsukuba, 2023.
- Kishi T. et al. Automation of Novel Object Search Behaviour Test by Applying Image Processing and Machine Learning. The 70th Annual Meeting of the Japanese Association for Laboratory Animal Science. Tsukuba, 2023.
- Minato T. et al. Automated body grooming behaviour detection using deep learning. The 70th Annual Meeting of the Japanese Association for Laboratory Animal Science. Tsukuba, 2023.
- Egami Y. et al. Automation of Novel Object Search Behavior Test by Applying Deep Learning. The 70th Annual Meeting of the Japanese Association for Laboratory Animal Science. Tsukuba, 2023.

Soga K. et al. Regulatory T cell inducing function of mesenteric lymph node dendritic cells from the inflammatory or desensitized phase of food-allergic enteropathy OVA 23-3 model mice. 19th Annual Meeting of the Japanese Association for Food Immunology, Tokyo, Nov. 2023.

Nishitsuji K. et al. Relationship of pathological condition and intestinal microbiota in food-allergic enteropathy model mice. 19th Annual Meeting of the Japanese Association for Food Immunology, Tokyo, Nov. 2023.

Tan Ke Tian. Bisphenol A in Food: Occurrence and Exposure Assessment. SFA-NUS Science Day 2023. Poster Presentation. 2023.

Valerie Sin. Surveillance of veterinary drug residues in food commonly consumed in Singapore and assessment of dietary exposure. SFA-NUS Science Day 2023. Poster Presentation. 2023.

Wong Zhi Ning. Market Monitoring Programme: an integral to Singapore's food safety system. SFA-NUS Science Day 2023. Poster Presentation. 2023.

Lim Ker Li. Integrative Data Science for One Health. SFA-NUS Science Day 2023. Poster Presentation. 2023.

Tan Hui Hiang. Prevalence and antimicrobial resistance profiles of *Campylobacter* species recovered from poultry samples across the food chain in Singapore. SFA-NUS Science Day 2023. Poster Presentation. 2023.

Emily Teo. Surveillance of Fish and Fish Products to Determine the Fish Speciation and Authenticity in Singapore. SFA-NUS Science Day 2023. Poster Presentation. 2023.

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

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Makita K. Rabies and One Health from a veterinary view. 2023 September 3, Collaboration between physicians and veterinarians -Situation and future of One Health- J-Trops (medical) and JAVS (veterinary) student event, Tokyo [invited speech].

Makita K. Countermeasure against rabies outbreak -learning from the epidemiological records during epidemic, Japan, Vietnam, and South Africa-. Training for rabies preventive vaccination practitioners. 2023 November 15, Niigata Prefecture Veterinary Association, Japan, online [invited speech].

Makita K. The application of classical swine fever vaccination age estimation model. 2023 November 17, Ishikawa Prefecture Veterinary Association Animal Health Division training program, Kanazawa, Ishikawa, Japan [invited speech].

Makita K. Control of bovine infectious leukemia. 2023 November 28, The 3rd Okinawa Prefecture Livestock Production Technology Exchange Program 2023, Okinawa, Japan [invited speech].

Uchida L., Tick-borne viral diseases in Japan. MINI SYMPOSIUM TICK-BORNE DISEASES, Les séminaires MIVEGEC, IRD. 10 Nov 2023. <https://mivegec.fr/en/seminars>.

Veterinary Herd Health website: <https://rgu-herdhealth.jp/>

8th One health lecture series: Enhance Scientific Collaboration for Healthier Society, held at RGU and online 2023, Dec, 18-19.

Book: Nakanishi, T.M., Tanoi, K. ed., Agricultural Implications of Fukushima Nuclear Accident (IV) After 10 years, Springer, (2023) open access <https://link.springer.com/book/10.1007/978-981-19-9361-9>

Article in Japanese: The development of methods to evaluate experimental animal behavior using images. Sakamoto N, Miyazaki Y, Kobayashi K, Minato T, Murata T. Nihon Yakurigaku Zasshi. 158(2):182-186. 2023.

Chapter of book in Japanese: Fujii W. Technologies and Issues Related to "Accuracy" in Producing Genome-Edited Animals. The Latest Technology of Genome Editing and its Application to Pharmaceuticals, Gene Therapy, Agriculture, Water and Livestock Products, and Production of Useful Substances. Technical Information Institute. 2023.

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

Makita K, Fukuda A, Usui M. A quantitative risk assessment framework for the use of antibiotics in fishery is being developed from a trial in Japan.

12. Additional comments regarding your report: