

WOAH Collaborating Centre Reports Activities in 2023

Title of Collaborating Centre:	Food Safety
Address of Collaborating Centre:	School of Veterinary Medicine, Rakuno Gakuen University 582 Bunkyo-dai Midorimachi, Ebetsu, Japan
Tel.:	+81-11-388-4761
Fax:	+81-11-388-4761
e-mail address:	kmakita@rakuno.ac.jp
website:	https://rakuno-woahcentre.org/en/
Name of Director of Institute (Responsible Official):	Professor Yasukazu Muramatsu
Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):	Professor Kohei Makita, Head, Preventive Veterinary Medicine Committee, School of Veterinary Medicine, Rakuno Gakuen University
Name of writer	Professor Kohei Makita On behalf of the Rakuno Gakuen University, Research Center for Food Safety, University of Tokyo, and National Centre for Food Science, Singapore

Summary of activities specifically related to the mandate of WOAH Collaborating Centres

ToR 1: To provide services to the WOA, in particular within the region, in the designated specialty, in support of the implementation of WOA policies and, where required, seek for collaboration with WOA Reference Laboratories.

ToR 2: 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 WOA

- Disease control
- Epidemiology, surveillance, risk assessment, modelling
- Training, capacity building
- Zoonoses
- Wildlife
- Avian diseases
- Aquatic-animal diseases
- Animal welfare
- Diagnosis, biotechnology and laboratory
- Veterinary medicinal products
- Vaccines
- Food safety
- Feed safety
- Other (Name the category)

CATEGORY [Safe Animal Production]	
Title of activity	Scope
<i>Pilot project of collecting veterinary drug use data on farms</i>	<i>Improve the animal health management programs and enhance the proper and prudent use of antimicrobials by monitoring quantities of antimicrobials and vaccines used in food producing animals.</i>
<i>Joint symposium "Data collection system on veterinary medicine at farm-level"</i>	<i>In collaboration with WOA RRAP, a regional hybrid symposium on how to collect AMU data at farm level and how to utilize such data was organised including an invited expert from Italy (17 Oct, 2023).</i>
<i>Education on cattle hoof trimming techniques</i>	<i>RGU conducted seminars and extension activities on hoof trimming techniques for cattle (e.g., Hokkaido cattle hoof trimming workshop, Soya Veterinary Association Farm Animal Seminar, New Veterinarian Training Session in Hokkaido Agricultural Mutual Aid Association and Hokkaido regional technical training session for livestock treatment).</i>
<i>Education on cattle reproductive techniques</i>	<i>RGU provides education on reproductive techniques such as artificial insemination, egg collection, and fertilized egg transfer (e.g., Okhotsk Veterinary Association Farm Animal Seminar, Dairy helper training session on breeding management of dairy cows and training session on cattle embryo production using OPU-IVF).</i>
<i>Extension of diagnostic and treatment methods for cattle diseases</i>	<i>RGU accepts, diagnoses and treats cattle cases from farms. Additionally, we cooperated as instructors in an educational program on bovine disease prevention, diagnosis, and treatment for veterinary students hosted by Japan Livestock Industry Association.</i>
CATEGORY [Food Safety]	

Title of activity	Scope
<p>Seminar series on Food Safety in Asia-Pacific</p> <p>#1 "Production, evaluation and regulation of cultured meat", 29 August 2023</p> <p>#2 "Understanding allergy of livestock products",</p>	<p>The consortium Collaborating Centre on food safety, namely Research Centre for Food Safety of the University of Tokyo (RCFS), Rakuno Gakuen University (RGU) and Singapore National Centre for Food Science (NCFS), Organised seminar series titled "Emerging topics in our food environment"</p> <p>NCFS organised and RCFS supported the organisation of the first seminar on cultured meat, and organised the second seminar concerning food allergy of livestock products.</p>
<p>Research project "Establish the new method for generation of transgenic mice</p>	<p>Project to develop methods to generate transgenic mice without conventional equipment, such as a micromanipulator, which accelerates the research of food safety using transgenic mouse strains.</p>
<p>Development of method for comprehensive and quantitative measurement of oxysterols</p>	<p>RCFS developed a GC-MS/MS-based method to measure a small amount of endogenously synthesized oxysterols.</p>
<p>Development of method for drug cytotoxicity screening using human intestinal organoids</p>	<p>RCFS developed a method for drug cytotoxicity screening using human intestinal organoids.</p>
<p>Maintaining a statistical package for the use in analysing consumers' preferences for food safety and other related issues</p>	<p>RCFS has developed and have been maintaining an add-on package called "DCchoice" for the open-source statistical environment R that can be used for the analysis of consumers' preferences for certain aspects of goods and services including food safety and related issues. A typical example of such an analysis is to investigate consumers' willingness to pay for animal products produced under strict control of food safety.</p>
<p>Technical Workshop "The 9th Comprehensive Allergy Workshop"</p>	<p>'Oral tolerance from the view point of oral immunotherapy' Hosted by the Japanese Society of Allergology, March 18-19, 2023</p>
<p>Technical Workshop "The 9th Comprehensive Allergy Workshop"</p>	<p>'Lipids and allergic disease' Hosted by the Japanese Society of Allergology, March 18-19, 2023</p>
<p>Research on food safety hazards and risks through pioneering investigations and studies of cell-cultured food products applying food tech.</p>	<p>MHLW Grant study Hazard analysis of model livestock and poultry cells during differentiation and proliferation</p>
<p>JICA Agri-Net capacity building for WOAHA Members</p>	<p>RGU is training one MSc and 4 PhD candidates on AMR, epidemiology and risk assessment for the personnel of WOAHA Member countries.</p>
<p>Food Safety, Training capacity building</p>	<p>NCFS assisted in the organisation of a roundtable in conjunction with Singapore International Agri-Food Week 2023 on novel food regulation focused on the sharing best practices and experiences on safety assessment and regulation of novel foods, such as cell-</p>

	<i>cultivated meat and food ingredients made using new production systems on 30th October 2023, Singapore.</i>
<i>Food Safety, Training capacity building</i>	<p><i>Training workshop provided by NCFS/Natural Toxins Team to build laboratory capabilities of local chemical outsourcing laboratories for testing of Bacteria Toxins and Marine Biotoxins (PSP) in food and marine products respectively.</i></p> <p><i>The 1-day training on 26th October 2023 & 2nd November 2023 in NCFS mainly focused on the following areas:</i></p> <ol style="list-style-type: none"> <i>1) Sample extraction</i> <i>2) Preparation of Test kit and loading of samples</i> <i>3) Setting up of ELISA reader</i> <i>4) Reading and tabulating of results</i> <i>5) Updating of results into E-services"</i>
<i>Food Safety, Training capacity building</i>	<i>NCFS/Foodborne and Natural Toxins Team organized proficiency testing from 5th June 2023 to 28th July 2023 to determine Histamine in Tuna for 14 Laboratories in NCFS.</i>
<i>Food Safety, Training capacity building, Diagnosis, biotechnology and laboratory</i>	<p><i>NCFS provided training to build laboratory capabilities for testing of veterinary drug residues in poultry meat and animal feed for Brunei Veterinary Science Laboratory (VSL) Officers from Department of Agriculture and Agrifood (DOAA), Ministry of Primary Resources and Tourism (MPRT), Brunei, on 22-25 May 2023.</i></p> <p><i>The four-day attachment training in NCFS mainly focused on the following areas:</i></p> <p><i>A. Lectures on veterinary drug residue monitoring in meat and animal feed, method validation, measurement uncertainties.</i></p> <p><i>B. Hands-on trainings:</i></p> <ol style="list-style-type: none"> <i>i) sample extraction of poultry meat and animal feed.</i> <i>ii) equipment method set-up, optimization, and troubleshooting.</i> <i>iii) data interpretation and results reporting.</i> <i>iv) calculation and report of measurement uncertainties"</i>
<i>Food Safety, Training capacity building, Diagnosis, biotechnology and laboratory</i>	<p><i>NCFS/ Drug Residue team provided training to build laboratory capabilities for testing of veterinary drug residues in poultry feed for Indonesia's DGLAHS officers, on 04-06 October 2023.</i></p> <p><i>The 2 days attachment training in NCFS mainly focused on the following areas:</i></p> <p><i>A. Hands-on trainings:</i></p> <ol style="list-style-type: none"> <i>i) sample extraction of poultry feed.</i> <i>ii) equipment method set-up.</i> <i>iii) data interpretation and results reporting.</i>

ToR 3: 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 main focus area for which you were designated

Proposal title	Scope/Content	Applicable area
<i>IAFP Annual Meeting</i>	<i>International Association for Food Protection hosts an Annual Meeting AFP 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</i>	<input checked="" type="checkbox"/> Laboratory expertise <input checked="" type="checkbox"/> Training and education <input type="checkbox"/> health management <input type="checkbox"/> Animal production <input type="checkbox"/> Veterinary products <input type="checkbox"/> Wildlife health and biodiversity
<i>Workshop on Whole Genome Sequencing</i>	<i>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</i>	<input checked="" type="checkbox"/> Laboratory expertise <input checked="" type="checkbox"/> Training and education <input type="checkbox"/> health management <input type="checkbox"/> Animal production <input type="checkbox"/> Veterinary products <input type="checkbox"/> Wildlife health and biodiversity

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOA? Please report them here: form

*Regulatory research needs = a gap in knowledge that could help in setting/updating standard(s) in the Terrestrial and Aquatic Codes and Manuals

ToR 4: To establish and maintain a network with other WOAHA Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines.

ToR 5: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations.

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

Yes

No

If the answer is yes, please provide details using the following table

Name of WOAHA CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
RCFS, RGU and NCFS	Japan Singapore	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	To organize seminar series on Food Safety in Asia-Pacific "Emerging topics in our food environment"

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

Yes

No

If the answer is yes, please provide details using the following table

Name of WOAHA CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
IZSAM, WOAHA Reference Laboratory for Brucellosis	Italy	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Contacting for brucellosis control in Africa
National Veterinary Assay Laboratory	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	To deepen the analysis of antimicrobial use pattern in the field
National Institute of Animal Health, Thailand WOAHA Reference Laboratory for Brucellosis	Thailand	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Preparation for WOAHA seminar on brucellosis in Asia and Pacific

ToR 6: To place expert consultants at the disposal of the WOAHA.

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

Yes

No

Name of expert	Kind of consultancy	Subject
ISHIBASHI Tomoko	Provision of advice and coordination of discussion	WOAH Working Group on Antimicrobial Resistance

ToR 7: To provide, within the designated specialty, scientific and technical training to personnel from WOAHA Members.

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

Yes

No

If the answer is yes, please describe the type of activity and who benefited from that advice/service

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

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

Yes

No

If the answer is yes, please provide the total number of trained persons for each of the following categories:

a) Technical visits:102

b) Seminars:188

c) Hands-on training courses:95

d) Internships (>1 month):26

Please provide details (specify the type of training provided using the letter ranked above/overleaf)

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	<i>Technical Visit by FSANZ's Regional Science and Food Safety Dialogue</i>	<i>Singapore</i>	<i>9</i>
a	<i>Technical Visit by Bilateral Cooperation Project on Application of Technology and Innovation for Water Utilization Efficiency in Vegetable Production</i>	<i>Singapore</i>	<i>4</i>
a	<i>Technical Visit by SFA Foundation Programme</i>	<i>Singapore</i>	<i>35</i>
a	<i>Technical Visit by Food Safety Training Programme for Vietnamese Officials</i>	<i>Vietnam</i>	<i>26</i>
a	<i>Technical Visit by Brazil State Rep. Goias on Novel Food</i>	<i>Brazil</i>	<i>2</i>

<i>a</i>	<i>Technical Visit by Jiang Su Food & Pharmaceutical Science College</i>	<i>Singapore</i>	<i>20</i>
<i>a</i>	<i>Technical Visit by General Administration of Customs of the People's Republic of China (GACC) Vice-Minister</i>	<i>People's Republic of China</i>	<i>6</i>
<i>b</i>	<i>WOAH CCs Food Safety Seminar series titled "Emerging topics in our food environment" Webinar #1 "Production, evaluation and regulation of cultured meat"</i>	<i>17 Asia and Pacific countries/territories including 5 National Focal Points for Animal Production Food Safety</i>	<i>123</i>
<i>b</i>	<i>WOAH CCs Food Safety Seminar series titled "Emerging topics in our food environment" Webinar #2 "Understanding allergy of livestock products"</i>	<i>18 Asia and Pacific countries/territories including 2 National Focal Points for Animal Production Food Safety</i>	<i>65</i>
<i>c</i>	<i>IAEA Training Workshop</i>	<i>Singapore</i>	<i>12</i>
<i>c</i>	<i>Visitors from Promoting the Harmonisation of Food Regulations between Thailand & Singapore 2023 Workshop</i>	<i>Singapore</i>	<i>23</i>
<i>c</i>	<i>Hands on trainings on hoof trimming techniques, reproduction, and diagnosis and treatment of cattle diseases at RGU</i>	<i>Japan</i>	<i>50</i>
<i>c</i>	<i>Hands on training on university veterinary epidemiology teaching at RGU</i>	<i>Japan</i>	<i>10</i>
<i>d</i>	<i>JICA Agri-Net MSc (1) and PhD (3) training on AMR, epidemiology and microbiological risk assessment at RGU</i>	<i>Thailand, Indonesia, Fiji and Malawi</i>	<i>Thailand (1), Indonesia (1), Fiji (1) and Malawi (1)</i>
<i>d</i>	<i>Japan Veterinary Association Asian training programme</i>	<i>Mongolia</i>	<i>1</i>
<i>d</i>	<i>Internships at NCFS</i>	<i>Singapore</i>	<i>20</i>
<i>d</i>	<i>Internship on AMR at RGU</i>	<i>Egypt</i>	<i>1</i>

ToR 8: To organise and participate in scientific meetings and other activities on behalf of the WOA.

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

Yes

No

If the answer is yes, please provide a list of scientific meetings using the appropriate table

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	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	10/23	ZOOM	65
International	Pandemic preparedness: WOAHA workshop on risk-based analysis of spill over events in wildlife in Japan	Japan	12/23	Yugawara, Japan	24
National	Forum "Designing foods for the future"	Main Organizer: Tohoku University Co-organized by RCFS, University of Tokyo and 4 other Universities	9/23	Sendai, Japan	

ToR 9: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty.

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

(Indicate in the appropriate box the number by category and list the details in the box)

Articles published in peer-reviewed journals:

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
- Nishi K, Okada J, Iwasaki T, Gondaira S, Higuchi H. Characteristics of *Mycoplasma bovis*, *Mycoplasma arginini*, and *Mycoplasma californicum* on immunological response of bovine synovial cells. *Vet Immunol Immunopathol*. 2023 Jun;260:110608. doi: 10.1016/j.vetimm.2023.110608.2023
- Rahman MJ, Rahman MM, Kakehashi M, Matsuyama R, Sarker MHR, Ali M, Promitee SK, Prihanto JB, Ahmed A, Shimpuku Y. Impact of eHealth education to reduce anemia among school-going adolescent girls in rural Bangladesh: Study protocol of a randomized controlled trial. *Journal of family medicine and primary care* 12(11): 2569-2575. 2023
- Fujii W. Generation of Knock-in Mouse by Genome Editing. *Methods Mol Biol*. 2637: 99-109. 2023
- Hayashi A, Sakamoto N, Kobayashi K, Murata T. Enhancement of prostaglandin D2-D prostanoid 1 signaling reduces intestinal permeability by stimulating mucus secretion. *Front Immunol*. 14:1276852. 2023.
- Nagata N, Suzuki T, Takenouchi S, Kobayashi K, Murata T. Alleviation of allergic conjunctivitis by (\pm)5(6)-dihydroxy-8Z,11Z,14Z,17Z-eicosatetraenoic acid in mice. *Front. Pharmacol*. 14:1217397. 2023.
- Miyazaki Y, Kobayashi K, Murata T. Behavioral changes of food allergic model mice during light and dark period. *J Pharmacol Sci*. 153:113-118. 2023.
- 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.
- Takahashi Y, Inoue Y, Sato S, Okabe T, Kojima H, Kiyono H, Shimizu M, Yamauchi Y, Sato R. Drug cytotoxicity screening using human intestinal organoids propagated with extensive cost-reduction strategies. *Scientific Reports* 13. 5407. 2023.
- Chaen T, Kurosawa T, Kishi K, Kaji N, Ikemoto-Uezumi M, Uezumi A, Hori M. Transcriptome analysis of mesenchymal stromal cells of the large and small intestinal smooth muscle layers reveals a unique gastrointestinal stromal signature. *Biochemistry and Biophysics Reports* 34, 101478. 2023.
- Kishi K, Goto M, Tsuru Y, Hori M. Noninvasive monitoring of muscle atrophy and bone metabolic disorders using dual-energy X-ray absorptiometry in diabetic mice. *Exp Animal*, 72(1):68-76. 2023.
- Hirose A., Tanoi K., Nakanishi T.M., Kobayashi N.I. Cadmium accumulation dynamics in the rice endosperm during grain filling revealed by autoradiography. *Journal of Integrative Plant Biology*, January, e562, 2024.
- 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 Harn 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 Borlak, 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.

Hong Jin, Eleonora Dupouy, Jun Cheng Er, Frank Geraghty, William K. Hallman, Marion Healy, Yifan Jiang, Elizabeth de Leon-Lim, Clare Narrod, Amy Philpott. Principles and Practices of Effective Food Safety Risk Communication – Introducing the Asia-Pacific Economic Cooperation Food Safety Risk Communication Framework. *European Journal of Nutrition & Food Safety*. 15(8): 11-27. 2023.

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.

a) International conferences:.....19

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, CANDA 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 Mycoplasmology (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 Mycoplasmology (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 AOAP0 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

b) National conferences:.....74

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.

Yoshida M, Ukita M, Matsuyama R, Tamura Y, Makita K, et al. Actual use of human and imported antimicrobial agents in companion animal clinics. 2023 March 25, Conference of Japanese Society of Veterinary Epidemiology, Tokyo, Japan.

Makita K. Economic loss due to the outbreaks of Highly Pathogenic Avian Influenza in Japan. 2023 July 1, The 97th Japan Society of Animal Hygiene Conference, online [invited speech].

[<https://cir.nii.ac.jp/crid/1520296885749386880>]

Makita K. One Health for achieving solution of a problem. Symposium 'One Health in Japan'. 2023 September 5, Conference of Japan Society of Veterinary Science, online [invited speech].

Numa H, Makita K, et al. Estimation of fox feces count on a road based on ecological data using spatio-temporal model. 2023 September 5-18, Conference of Japan Society of Veterinary Science, online.

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.

Sato T, Yamamoto S, Ogasawara N, Usui M, Nagano N, Doi Y, Horiuchi M, Takahashi S, Yokota S, Tamura Y. Virulent attenuation mechanism by acquisition of *mcr-1*-harboring plasmid into *Escherichia coli* ST131. The 96th meeting of Japanese Society for Bacteriology.

Morita S, Fukuda A, Okamura K, Komatsu T, Tsuyuki Y, Torii K, Sasaki J, Suzuki Y, Nakajima C, Usui M. The Current Status of Companion Animal-Derived Methicillin-Resistant *Staphylococcus pseudintermedius* and the Potential for Zoonotic Infections. The 49th Symposium on Antimicrobial Agents for Animals. Tokyo Japan. April 22. 2023.

Usui M, Measures Against Antimicrobial-Resistant Bacteria Derived from Food Animals. The 97th Annual Meeting of the Japanese Society for Infectious Diseases and the 71st Joint Meeting with the Japanese Society of Chemotherapy. Yokohama, Japan. April 28. 2023.

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.

Kozaki Y, Fukuda A, Nakajima C, Suzuki Y, Usui M. Does Exposure to Tetracycline Antibiotics Exert Selective Pressure on Plasmid-Mediated Tigecycline Resistance Gene *tet(X)*? - 88th Meeting of the Hokkaido Branch, Japan Society of Bacteriology. Obihiro Japan. Aug. 28. 2023.

Morita S, Fukuda A, Okamura K, Komatsu T, Tsuyuki Y, Torii K, Sasaki J, Suzuki Y, Nakajima C, Usui M. The Current Status of Companion Animal-Derived Methicillin-Resistant *Staphylococcus pseudintermedius* and the Potential for Zoonotic Infections. 88th Meeting of the Hokkaido Branch, Japan Society of Bacteriology. Obihiro Japan. Aug. 28. 2023.

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.

Oeda N, Kawabata Y, Hanazono K, Nakabu S, Fukuda A, Usui M. *Clostridioides difficile* in the Environmental Surfaces of Veterinary Hospitals, Including Transmission via Shoe Soles. 66th Meeting of the Japan Veterinary Medical Association. Tokyo, Japan. Sep. 8. 2023.

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.

Kai Tomizawa, Hitomi Satoh, Kasumi Meguro, Gakuto Nakamura, Kenichi Izumi, Rika Fukumori, Kyoko Chisato, Shin Oikawa. Effects of prolonged antibodies feeding on plasma concentrations of metabolites and hormones in dairy calves. The 131 Annual meeting of Japanese association of Animal Science. Sep. 19, 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. The 131 Annual meeting of Japanese association of Animal Science. Sep. 20, 2023.

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.

- c) Other:.....
 (Provide website address or link to appropriate information)

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:

(For example, please explain why there was little or no activity in the reporting period or any other difficulty encountered in fulfilling the Terms of Reference, if relevant.)

Enter comment