

Faculty of Applied Biological Sciences
Gifu University

Annual Report of Research Activities 2018

Vol. 15

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I Research Achievement

1) Academic Paper

【Course of Applied Life Science】

- [1] Achmad Ridwan Ariyantoro, Achmad Ridwan Ariyantoro, **Nakako Katsuno, Takahisa Nishizu.**
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※¹ Also recorded on Joint Department of Veterinary Medicine

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【Course of Agricultural and Environmental Science】

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- [2] Ueno M, Iijima H, Takeshita K, Takahashi H, Yoshida T, Uehara H, Igota H, Matsuura Y, **Ikeda T**, Azumaya M, Kaji K.
“Robustness of adult female survival maintains a high-density sika deer (*Cervus nippon*) population following the initial irruption”
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2) Book

【Joint Department of Veterinary Medicine】

- [1] Horii Y, **Shiina T**, **Shimizu Y**.
“Chapter 2: The Mechanism Enabling Hibernation in Mammals. In: Survival Strategies in Extreme Cold and Desiccation: Adaptation Mechanisms and their Applications.” 『Advances in experimental medicine and biology』
Springer, Vol.1081, pp.45-60, 2018

II Lectures, Conference Presentation, etc.

1) Conference Presentation

【Course of Applied Life Science】

- [1] **Akio Ebihara**, Rui Zhang, **Atsuhiko Shimada**, Seiki Kuramitsu.
“Crystal structures of S-adenosyl-L-methionine hydroxide adenosyltransferase from thermophiles: shedding light on SN2-substitution reaction catalyzed by an enzyme.”
International Workshop on 50th Anniversary of Thermus thermophilus Discover(Izu, Shizuoka), 2018/09/28-29
- [2] Gotoh S, Tsuboi M, **Kitaguchi K**, **Yabe T**.
“Analysis of polysaccharide structure of pectin from persimmon, *Diospyros kaki* Fuyu”
ISNFF (International Society for Nutraceuticals & Functional Foods) 2018 Conference & Exhibition(Vancouver, Canada), 2018/10/14-17
- [3] Hayashi S, Hibi Y, Yanase E.
“A study on the color deepening mechanism in red rice during storage”
XXIXth International Conference on Polyphenols(Madison, USA), 2018/07/16-20
- [4] Homon Y, **Katsuno N**, **Nishizu T**.
“Effects of cation on texture and structure deterioration of frozen-thawed konjac-glucomannan gel”
the 32nd EFFoST International Conference 2018(Nantes, France), 2018/11/06/08
- [5] Hosoi Y, Yamaya K, Takei R, **Katsuno N**, **Nishizu T**.
“The effects of time-dependent changes in the physical properties of the bolus and the microstructures of rice crackers on melt-in-mouth sensory characteristic”
the 32nd EFFoST International Conference 2018(Nantes, France), 2018/11/06/08
- [6] **Imaizumi T**, Tanaka F, Uchino T.
“Kinetic evaluation of effects of low-temperature blanching on mechanical properties of carrot”
International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering(Korea), 2018/05/28
- [7] Jia X, **Katsuno N**, **Nishizu T**.
“Formation mechanism of white powder on the surface of dried persimmon during frozen storage.”
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- [8] Kumazawa M, **Thammawong M**, Naznin HA, **Nakano K**.
“Hypoxia tolerance evaluation of red lettuce by expression analysis of LsADH gene.”
Proceedings of the 9th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering (ISMAB2018)(Korea), 2018/05/28-30
- [9] Nagaya D, Syukri D, **Thammawong M**, **Nakano K**.
“Change of phospholipid species in Japanese mustard spinach leaves during senescence.”
Proceedings of the 9th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering (ISMAB2018)(Korea), 2018/05/28-30
- [10] Nakanishi K, **Yanase E**.
“Study on the enhancement of functional components in Broccoli sprout. Indo-Japan Bilateral symposium on future perspective of bioresource utilization in North-East India.”
Indian institute of technology Guwahati(India), 2018
- [11] Nayla Majeda Alfarafisa, **Kohji Kitaguchi**, **Tomio Yabe**.
“The effect of Japanese persimmon (*Diospyros kaki*) extract on the prevention of sarcopenia”
The 6th UGSAS-GU International Symposium on Animal Production and Conservation for Sustainable Development 2018(Gifu, Japan), 2018/10/17-18

- [12] Nayla Majeda Alfarafisa, **Tomio Yabe**.
 “The effect of Japanese persimmon (*Diospyros kaki*) extract on the prevention of sarcopenia”
 International Symposium on Innovative Crop Protection for Sustainable Agriculture 2018 (Gifu, Japan),
 2018/03/07
- [13] **Nishizu T**, Tamaru R, **Katsuno N**.
 “Predicting occurrence of precipitation in canned coffee preserved under a high temperature environment
 using ultrasonic phase velocity”
 Food Colloid Conference(Leeds, UK), 2018/04/08-11
- [14] Shariful IM, **Katsuno N**, Kawahara H, **Nishizu T**.
 “Influence of water crystallization on freeze-thaw stability of mayonnaise”
 2018 JSRAE Annual Conference(Fukushima, Japan), 2018/09/07
- [15] **Shimada A**, Kubo M, Baba S, Ago H, Tsukihara T, Yoshikawa S.
 “A nanosecond time-resolved XFEL structure analysis reveals the structural changes associated with CO
 release from Cytochrome c Oxidase”
 The 18th Annual Meeting of the Protein Science Society of Japan(Niigata, Japan), 2018/06/28
- [16] Shinyama N, Yamaguchi K, Takeuchi M, **Yamauchi K**, **Mitsunaga T**.
 “May the Natural Product Constituents Contribute to Improvement of Alzheimer's Type Dementia ?”
 The 4th International Symposium on Temulawak and Potential Plants for Jamu(Indonesia), 2018/08/28
- [17] Takahara N, **Thammawong M**, Naznin HA, **Nakano K**.
 “Antioxidant gene expression analysis of cucumber in recovering chilling injury by storage temperature
 shifting.”
 Proceedings of the 9th International Symposium on Machinery and Mechatronics for Agriculture and
 Biosystems Engineering (ISMAB2018)(Korea), 2018/05/28-30
- [18] Tsuji C, **Katsuno N**, **Nishizu T**.
 “Visualizing and quantifying the distribution of cooking oil in deep-fried foods using an X-ray
 μ CT technique”
 the 32nd EFFoST International Conference 2018(Nantes, France), 2018/11/06/08
- [19] Wang Xiaoyu, **Kosei Yamauchi**, **Tohru Mitsunaga**.
 “Screening of Indonesian medicinal plants methanol extracts on osteoclastogenesis”
 The 65th Annual Meeting of the Japanese Society of Pharmacognosy(Hiroshima, Japan), 2018/09/17
- [20] Yamaguchi K, Hattori H, **Yamauchi K**, **Mitsunaga T**.
 “Glucosylation of Vanilloid Compounds Contained in Grains of Paradise”
 The 4th International Symposium on Temulawak and Potential Plants for Jamu(Indonesia), 2018/08/28
- [21] **Yamauchi K**, **Mitsunaga T**.
 “Anticancer Activity of Methylquercetins”
 The 4th International Symposium on Temulawak and Potential Plants for Jamu(Indonesia), 2018/08/28
- [22] Yanase E.
 “Analysis of isoflavones and coumestrol in Soybean sprouts. Indo-Japan Bilateral symposium on future
 perspective of bioresource utilization in North-East India.”
 Indian institute of technology Guwahati(India), 2018

【Course of Agricultural and Environmental Science】

- [1] Doi K, Tamiya S, Nakajima N, **Yayota M**.
 “Can grazing goats maintain nutritional status for five years in an abandoned field?”
 The 7th Japan-China-Korea Grassland Conference(Sapporo, Japan), 2018/07/08-10
- [2] Enomoto T, Oikawa A, **Kobayashi Y**, **Koyama H**.
 “Impact of aluminum induced malate excretion on primary metabolism of Arabidopsis root”
 10th International Symposium on Plant-Soil Interactions at Low pH(Putrajaya, Malaysia), 2018/06/25-29
- [3] **Hiramatsu K**.
 “Controlling the process of denitrification in flooded rice soils by using microbial fuel cell applications”
 PAWEES2018(Nara, Japan), 2018/11/20-22

- [4] **Hirota I**, Iwamatsu M, **Kawakubo N**.
 “Japanese arrow bamboo (*Pseudosasa japonica* var. *japonica*) and its utilization in traditional Japanese archery”
 11th WORLD BAMBOO CONGRESS(Mexico), 2018/08/14
- [5] Hoshino S, Hirayama K, Seino S, Kawaguchi Y, Ogawa N, Imai N, Matsuda I, **Yayota M**.
 “Seasonal change of in vivo and in vitro digestibility in captive proboscis monkey (*Nasalis larvatus*).”
 The 7th International Workshop on Tropical Biodiversity and Conservation(Sabah, Malaysia), 2018/10/16-17
- [6] Kawamura K, Ogura S, **Yayota M**, Lim J, Jang Y, Moon H.
 “Drone-based remote sensing for mapping herbage biomass in alpine grazed pasture: a case study in a goat farm in Republic of Korea”
 The 7th Japan-China-Krea Grassland Conference(Sapporo, Japan), 2018/07/08-10
- [7] **Koyama H**, **Kobayashi Y**.
 “Regulation of STOP1-mediated aluminum tolerance mechanisms in *Arabidopsis* roots”
 10th International Symposium on Plant-Soil Interactions at Low pH(Putrajaya, Malaysia), 2018/06/25-29
- [8] Malek Marian, Tomoki Nishioka, **Hiroyuki Koyama**, Haruhisa Suga, **Masafumi Shimizu**.
 “Novel isolates of *Ralstonia* and *Mitsuraria* species as biocontrol agents for controlling tomato bacterial wilt.”
 IOBC-WPRS meeting -Biological and integrated control of plant pathogens(Spain), 2018/04/23-26
- [9] Nakajima N, Doi K, Tamiya S, **Yayota M**.
 “Potential of diverse pasture for improving physiological and immunological status in grazing cattle”
 The 7th Japan-China-Krea Grassland Conference(Sapporo, Japan), 2018/07/08-10
- [10] Nakano Y, Kusunoki K, Iuchi S, Kobayashi M, **Koyama H**, **Kobayashi Y**.
 “Dissecting the genetic architectures of Aluminum tolerance in *Arabidopsis thaliana* accessions”
 10th International Symposium on Plant-Soil Interactions at Low pH(Putrajaya, Malaysia), 2018/06/25-29
- [11] **Ninomiya S**.
 “Animal welfare and behaviour”
 International Symposium on Animal Production and Conservation for Sustainable Development 2018(Gifu, Japan), 2018/10/17
- [12] Ogura S, **Yayota M**, Kawamura K, Jang Y, Lim J, Park J, Moon H.
 “Characteristics of nutrient uptake by domestic herbivores in species-rich alpine pastures in Eastern Asia”
 The 7th Japan-China-Krea Grassland Conference(Sapporo, Japan), 2018/07/08-10
- [13] **Onishi T**, Nagao S.
 “Construction of a model for the prediction of residential time and water quality of the Kiba Lake”
 Joint International Symposium of Institute of Nature and Environmental Technology(Kanazawa University), 2018/03/02-04
- [14] **Onishi T**, Tashiro Y, Yoh M, Kubo T, Shiraiwa T.
 “How dissolved iron is transported from lands to oceans?, 2nd International symposium of river basin studies – towards the interdisciplinary study of the sustainable utilization and management of river basin systems -”
 River Basin Research Center(Gifu University), 2018/03/09
- [15] **Onishi T**, Yoshino J, Somura H, **Hiramatsu K**.
 “Evaluation of climate change impacts on discharge and water quality of the Ise Bay watersheds”
 JpGU 2018(Makuhari, Japan), 2018/05/24
- [16] **Onishi T**, Yoshino J, Somura H, **Hiramatsu K**.
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- [17] Tokizawa m, Enomoto T, Ito H, **Yamamoto YY**, **Kobayashi Y**, Kochian L, **Koyama H**.
 “STOP1 transcription factor regulates the early aluminum-inducible expression of its primary target genes via the unfolded protein response-like pathway”
 10th International Symposium on Plant-Soil Interactions at Low pH(Putrajaya, Malaysia), 2018/06/25-29
- [18] Tomoki Nishioka, Chihiro Tanaka, Malek Marian, Yasuhiro Igarashi, Haruhisa Suga, **Masafumi Shimizu**.
 “Role of Burkholderia-derived pyochelin in the *Fusarium* wilt suppression of *Allium*-cultivated soil”
 IOBC-WPRS meeting -Biological and integrated control of plant pathogens(Spain), 2018/04/23-26
- [19] Yamada N, **Noda K**, Kimura M, Iida A, Soaladaob K.
 “GIS analysis for vulnerability assessment of salt damage on coastal agricultural fields: a case of Taro Patch in the Republic of Palau”
 IOP Conference Series: Earth and Environmental Science, Vol.129(1), pp.012029, 2018/03

- [20] **Yayota M**, Doi K.
“Restoration and Utilization of Abandoned Fields through Goat Grazing”
International Symposium on Animal production and Conservation for sustainable Development,
2018(Gifu, Japan), 2018/10/17-18
- [21] **Yayota M**, Iida M, Doi K.
“Characterizing bite pattern of goats grazing different morphological plants”
The 7th Japan-China-Krea Grassland Conference(Sapporo, Japan), 2018/07/08-10
- [22] Yudhi Pramudya, **Takeo Onishi**, **Masateru Senge**, **Ken Hiramatsu**, Mohammad Ridwan Nur Prasetyo,
Komariah.
“Evaluation of recent Indonesian drought conditions by standardized precipitation index”
JSIDRE annual meeting 2018(Kyoto), 2018/09/05
- [23] Yuli T, Kawai S, **Yayota M**.
“Improving quality of TMR silage from agricultural by-products: Effects of fermented juice of epiphytic
lactic acid bacteria on the silage quality, nutrient intake, and apparent digestibility in ewes”
The 7th Japan-China-Krea Grassland Conference(Sapporo, Japan), 2018/07/08-10

【Joint Department of Veterinary Medicine】

- [1] Alom F, **Matsuyama H**, Nagano H, Tanahashi Y, **Unno T**.
“Possible involvement of TRPM4 channels in the cholinergic contractile responses in mouse detrusor and
ileal smooth muscles”
The 18th World Congress of Basic and Clinical Pharmacology(Kyoto, Japan), 2018/07/01-06
- [2] Fukuda S, Ide T, **Ito N**, **Sugiyama M**, Yoshikawa T, Murat T, Taniguchi K, Komoto S.
“Development of efficient and simple reverse genetics system based on only rotavirus cDNAs”
The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/28
- [3] Goto M, Owaki K, Hirata A, Yanai T, Sakai H.
“Tumor necrosis factor-related apoptosis inducing ligand (TRAIL) induces apoptosis to canine
hemangiosarcoma cells in vitro.”
The Annual Conference of the Veterinary Cancer Society(Louisville, USA), 2018/08/23
- [4] **Inoshima Y**, Iwata A, **Okada A**.
“Up-regulation of serum amyloid A3 mRNA expression after stimulation with lipopolysaccharide and
lipoteichoic acid in mouse lung cells”
The XVIth International Symposium on Amyloidosis(Kumamoto, Japan), 2018/03/26
- [5] ^{**8}Kawada H, **Takasu M**, Miyoshi T, Tanahashi Y, Syoda S, Iwasaki R, Hyodo F, Goshima S, **Mori T**,
Matsuo M.
“Radiological anatomy of cardiovascular system in matured microminipigs as a pre-clinical research
model for the interventional radiology”
Annual meeting and postgraduate course of the cardiovascular and interventional radiological society of
Europe 2018(Portugal), 2018/09/22-26
- [6] Kojima I, **Ito N**, **Sugiyama M**, Masatani T.
“Role of amino acid substitution at position 95 in rabies virus matrix protein in cell membrane disruption”
The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/28
- [7] Kumei H, Shimosato N, Kobayashi M, **Sakai H**, **Okada A**, **Ohya K**, **Fukishi H**.
“Role of ORF19(UL41) of equine herpesvirus type 1 in neuropathogenesis”
The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/28
- [8] Maeda N, **Inoshima Y**, Maenaka K.
“Identification of cellular factors that interact with jaagsiekte sheep retrovirus envelope protein”
The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/28
- [9] Michihito Sasaki, Paulina Duhita Anindita, **Naoto Ito**, **Makoto Sugiyama**, Michael Carr, Ayato Takada,
Yasuko Orba, Hirofumi Sawa.
“Characterization of rabies virus mutants showing different abilities to bind to heparan sulfate”
The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/29

- [10] Nagano H, Tasker J, **Matsuyama H**, Sobue Y, Saito S, **Sakai H**, Ishii T, Tanahashi Y, **Unno T**.
 “M2 muscarinic receptor mediates arginine-vasopressin synthesis possibly through decreasing presynaptic GABA release in the supraoptic nuclei”
 The 18th World Congress of Basic and Clinical Pharmacology(Kyoto, Japan), 2018/07/01-06
- [11] Nakagama N, Hirano M, Muto M, **Nishiyama S**, Kobayashi S, Kariwa H, Yoshii K.
 “Effect of endogenous viral elements in tick-derived cultured cells on exogenous virus infection”
 The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/29
- [12] **Nishiyama S**, Hirano M, Muto M, Kambara M, Kobayashi S, Kariwa H, Yoshii K.
 “Functional analysis of subgenomic flavivirus RNA derived from tick-borne encephalitis virus”
 The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/29
- [13] Okada K, **Ito N**, Takahash T, **Nishiyama S**, **Sugiyama M**.
 “Different Rabies virus P protein isoforms contribute to the suppression of IFN induction in neural and muscle cells”
 The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/28
- [14] Takahashi Y, Ishizuka M, Hirano M, Muto M, **Nishiyama S**, Kobayashi S, Kariwa H, Yoshii K.
 “Characterization of tick-borne encephalitis virus isolated from Ixodes ovatus in Central Hokkaido in 2017”
 The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/29
- [15] Tatsuki Takahash, **Naoto Ito**, Kentaro Yamada, Nadine Gillich, Masayuki Horie, Kazuma Okada, **Shoko Nishiyama**, Akira Nishizono, Martin Schwemmler, **Makoto Sugiyama**.
 “Establishment of G gene-deficient, Cre recombinase-expressing rabies virus for identification of primary target cells in peripheral tissue”
 The 66th Annual Meeting of the Japanese Society for Virology(Kyoto, Japan), 2018/10/29
- [16] Yoshizaki K, Hirata A, **Nishii N**, **Kawabe M**, **Mori T**, **Yanai T**, **Sakai H**.
 “Gastrointestinal polyps in Jack Russel Terriers with germline mutation of APC gene”
 The Congress of the European Society of Veterinary Pathology and the European Collage of Veterinary Pathologist. Cluj-Napoca(Romania), 2018/09/08

※8 Also recorded on Animal Medical Center

【Animal Medical Center】

- [1] ※8Kawada H, Takasu M, Miyoshi T, Tanahashi Y, Syoda S, **Iwasaki R**, Hyodo F, Goshima S, Mori T, Matsuo M.
 “Radiological anatomy of cardiovascular system in matured microminipigs as a pre-clinical research model for the interventional radiology”
 Annual meeting and postgraduate course of the cardiovascular and interventional radiological society of Europe 2018(Purtugal), 2018/09/22-26

※8 Also recorded on Joint Department of Veterinary Medicine

2) Academic lecture

【Course of Applied Life Science】

- [1] **Arahata K.**
“Rice farming in the Japan's matured market”
International Seminar on Promoting Rice Farmers' Market through Value-adding Activities(Taiwan),
2018/06/07 (Invitation lecture)
- [2] **Imamura A.**
“Chemical synthesis of structurally complex gangliosides via unique synthetic approach”
Sialoglyco2018 (Banff, Alberta, Canada, 2018/05/12 (Invitation lecture)
- [3] **Kitaguchi K, Ishisono K, Yabe T.**
“Anti-inflammatory effects of pectin in intestinal macrophages”
AC21 Joint Mini-Symposium on Agro-Industry Research for Well-Being 2018(Bangkok, Thailand),
2018/11/12-14 (Invitation lecture)
- [4] **Nakagawa T.**
“Isolation and molecular breeding of the budding yeast to develop new brand of Japanese sake.”
Indo-Japan Bilateral Symposium on Future Perspective of Bioresource Utilization in North-Eastern
Region (IJBS 17)(Guwahati, India), 2018/02/01 (Invitation lecture)

【Course of Agricultural and Environmental Science】

- [1] **Hirota I.**
“Multiple risk management during agricultural production shortages in a mountain village in northern
Laos—Roles of forest resources, livestock”
International Conference on Climate Change(The Alana Solo, Solo, Indonesia), 2018/11/27 (Invitation
lecture)
- [2] **Ninomiya S.**
“Animal welfare and behaviour”
Internatinal Symposium on Animal Production and Conservation for Sustainable Development
2018(Gifu), 2018/10/17 (Invitation lecture)
- [3] **Noda K.**
“Introduction of ADAP-T”
International Conference on Climate Change(Solo, Indonesia), 2018/11/26-27 (Invitation lecture)
- [4] **Takashi S. T. Tanaka.**
“Sustainable crop and soil management: case studies in Southwest China and Japan”
Sustainable Soil Health Management to Support Healthy Life(Sebelas Maret University), 2018/11/12
- [5] **Takashi S. T. Tanaka, Yusuke Kono, Tsutomu Matsui.**
“Applications of Structural Equation Modeling in Crop Yield Variability of the Farmers' Fields”
6th International Workshop Sustainability of Crop Production and Productivity Under Global Climate
Change(Lampung University, Indonesia), 2018/12/03 (Invitation lecture)
- [6] Yamada N, **Noda K.**
“GIS analysis for vulnerability assessment of salt damage on Taro Patch in Palau”
6th International Workshop on Crop Production and Productivity under Global Climate Change(Lampung,
Indonesia), 2018/12/03 (Invitation lecture)

【Joint Department of Veterinary Medicine】

- [1] **Takashima Y.**
“Toxoplasma gondii infection in domestic animals - beyond mouse model -”
14th International Congress for Parasitology(Korea), 2018/08/19-24 (Invitation lecture)



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