

# 第1章 外部発表

## 1. 環境影響研究部

### 誌上発表リスト

- 1) Imada, S., Kakiuchi, H. and Nagai, M. (2023) Soil drought increases the retention time of plant water in *Pinus thunbergii* saplings. *Plant and Soil*, 489, 667-679.
- 2) Satoh, Y., Otosaka, S., Suzuki, T. and Nakanishi, T. (2023) Factors regulating the concentration of particulate iodine in coastal seawater. *Limnology and Oceanography*, 68, 1580-1594.
- 3) Satoh, Y. and Omori, Y. (2023) Evaluating production rates of particulate organic hydrogen by marine phytoplankton for estimating phytoplanktonic productivity of organically bound tritium. *Water Research*, 245, 120592.
- 4) Tani, T. and Ishikawa, Y. (2023) A deuterium tracer experiment for simulating accumulation and elimination of organically bound tritium in an edible flatfish, olive flounder. *Science of the Total Environment*, 903, 166792.
- 5) Satoh, Y., Ishizuka, S., Hiradate, S., Atarashi-Andoh, M., Nagano, H. and Koarashi, J. (2023) Sequential loss-on-ignition as a simple method for evaluating the stability of soil organic matter under actual environmental conditions. *Environmental Research*, 195, 429.
- 6) Yamada, R., Hasegawa, H., Akata, N., Kakiuchi, H., Ochiai, S., Kuwata, H., Kheamsiri, K., Tokonami, S. and Ueda, S. (2024) Temporal variation of tritium concentration in monthly precipitation collected at a Difficult-to-Return Zone in Namie Town, Fukushima Prefecture, Japan. *Environmental Science and Pollution Research*, 31, 7818-7827.
- 7) Satoh, Y., Y. Ishikawa, T. Tani (2023) Enhancement of eicosapentaenoic and docosahexaenoic acid contents in a Japanese flounder, *Paralichthys olivaceus*, by low-temperature rearing. *Aquaculture*, 582, 740510.
- 8) Nagai, M., H. Sakata, E. Sakaiya, Y. Tako (2023) Degradation rate of <sup>13</sup>C-enriched rice straw ploughed into paddy fields and uptake of released <sup>13</sup>C by rice plants grown in the fields. *Eco-Engineering*, 35, 3-12.
- 9) Tsukada, H., A. Takeda, T. Takahashi, S. Fukutani, M. Akashi, J. Takahashi, S. Uematsue, I. Chyzhevskiy, S. Kirieiev, V. Kashparov, M. Zheleznyak (2023) Transfer of <sup>137</sup>Cs and <sup>90</sup>Sr from soil-to-potato: Interpretation of the association from global fallout in Aomori to accidental release in Fukushima and Chernobyl. *Science of The Total Environment*, 899, 165467.
- 10) 山田大吾, 武田晃 (2023) 放射性セシウム研究の進展と土壤肥科学の貢献 5. 草地土壌特有の問題と対策. *日本土壌肥科学雑誌*, 94(2), 126-130.
- 11) 植田真司, 東麗緒菜, 落合伸也, 矢部いつか (2023) 使用済み核燃料再処理施設に隣接する汽水湖尾駁沼における流況特性と海水交換の推定. *陸水学雑誌*, 84(2), 143-161.
- 12) 植田真司, 長谷川英尚, 柿内秀樹, 大塚良仁, 阿部康一, 赤田尚史, 落合伸也 (2024) 六ヶ所再処理工場のアクティブ試験時における環境放射能 —放出された放射性物質の環境への影響について—. *RADIOISOTOPES*, 73, 81-99.

## 口頭発表リスト

- 1) Sato, Y. and Ohtsuka, Y. (2023) Changes in  $^{129}\text{I}$  concentration of soil samples after thermal drying. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 2) Yanai, M., Kawabata, H. and Takaku, Y. (2023) Chemical form of volatilized iodine from orchard grass (*Dactylis glomerata* L.). *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 3) Ueda, S., Kakiuchi, H. and Hasegawa, H. (2023) Concentration of  $^{14}\text{C}$  in land-aquatic environmental samples around to a spent nuclear fuel reprocessing plant in Rokkasho, Japan from 2006 to 2022. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 4) Unno, Y. and Takeda, A. (2023) Investigation of short-term chemical change in stable ruthenium added to soil using X-ray absorption fine structure analysis. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 5) Hasegawa, H., Kakiuchi, H., and Hasegawa, H. (2023) Seasonal variations of accident derived atmospheric radiocesium in Koriyama City, Fukushima, during 2011-2014. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 6) Shibata, T. and Ishikawa, Y. (2023) Chemical form dependent iodine transfer from seawater or seaweed into abalone. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 7) Abe, K., Chiang, J.-H., Suwa, H., and Hisamatsu, S. (2023) Improvement on three-dimensional stochastic differential equations used for the atmospheric dispersion of gaseous or aerosol materials on undulating areas. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 8) Kawabata, H., Yanai, M., Takaku, Y., and Hisamatsu, S. (2023) Absorption of cesium applied on apple-tree leaf surface and translocation to fruit. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 9) Imada, S., Kawabata, H., and Yanai, M. (2023) Effects of different growth stages on the dry deposition of cesium on the surface of aboveground parts of Chinese yam. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 10) Nagai, M., Kakiuchi, H., and Masuda, T. (2023) Measurement of hydrogen uptake and oxidize by farmland soil using  $\text{D}_2$  as a tracer. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 11) Tani, T. and Arai, R. (2023) A carbon accumulation model for simulating  $^{14}\text{C}$  radioactivity in Chinese yam ‘Nagaimo’ (*Dioscorea polystachya*) grown from a bulbil. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 12) Ohtsuka, Y. and Hisamatsu, S. (2023) Evaluation of natural external radiation dose to a Japanese red fox (*Vulpes vulpes japonica*) using a voxel phantom based on MRI. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 13) Takeda, A., Unno, Y., Swallow, M. J.B., Yagasaki, Y., Yasutaka, T. and Akata, N. (2023) Development of evaluation method for radiocesium availability in soil by biomimetic approach. *International Symposium on Natural*

and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023) , Hirosaki, Aomori, Japan, September.

- 14) Tako, Y., Arai, R. and Tani, T. (2023) Development of  $^{13}\text{CO}_2$  exposure system for estimation of remaining amount of  $^{14}\text{C}$  assimilated from atmosphere in the harvesting part of “Nagaimo” *Dioscorea polystachya*. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 15) Kihana, M. and Yamagami, M. (2023) Effect of Calcium application on rice ears for suppressing Caesium transfer from roots to brown rice. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)* , Hirosaki, Aomori, Japan, September.
- 16) 海野佑介, 尹永根, 鈴木伸郎, 三好悠太, 河地有木, 久保堅司, 橋本洋平, 和崎淳, 信濃卓郎 (2023) メタゲノム解析を用いた植物による難利用性リン獲得に関与する根圏微生物機能の探索. *日本土壌肥料学会 2023 年度愛媛大会*, 愛媛県松山市, 9月.
- 17) 武田晃, 海野佑介, 塚田祥文, 高久雄一 (2023) 放射性ヨウ素の土壌固相—液相間分配係数の変動要因. *日本土壌肥料学会 2023 年度愛媛大会*, 愛媛県松山市, 9月.
- 18) 宇野功一郎, 中尾淳, 奥村雅彦, 小暮敏博, 山口瑛子, 武田晃, 丸山隼人, 信濃卓郎, 矢内純太 (2023) 元素置換型黒雲母を用いた Cs, K の土壌植物間移行メカニズムの解明 *日本土壌肥料学会 2023 年度愛媛大会*, 愛媛県松山市, 9月.
- 19) 多胡靖宏 (2023) 巨星墜つ ～日本における環境制御・生命維持システム (ECLSS) のパイオニア・新田慶治先生 追悼～. *第67回宇宙科学技術連合講演会*, 富山県富山市, 10月.
- 20) 多胡靖宏 (2023) 巨星墜つ ～生態工学会設立の祖・新田慶治先生 追悼～. *2023生態工学会年次大会高崎大会*, 群馬県高崎市, 6月.
- 21) 阿部康一, 川端一史, 長谷川英尚 (2023) ヤマセの常襲地域における気候変動についての検討. *日本気象学会・2023年度秋季大会*, 宮城県仙台市, 10月.
- 22) 石川義朗 (2023) 魚類へのトリチウム移行に関する実験的研究. *海洋生物研究所シンポジウム*, 東京都千代田区, 8月.
- 23) 石川義朗, 馬場貴士, 田中義幸, 桐原慎二 (2023) マコンブの分解過程に関する実験的検討. *日本海洋学会2023年秋季大会*, 京都府京都市, 9月.
- 24) 佐藤雄飛, 谷享 (2023) 海洋放出されたトリチウムの食物連鎖を通じたヒラメへの移行の推定 *日本原子力学会東北支部 第47回研究交流会*, 宮城県仙台市, 12月.
- 25) 今田省吾, 柿内秀樹, 永井勝 (2023) スギ人工林土壌中の放射性同位体濃度の鉛直分布 *第135回日本森林学会大会*, 東京都世田谷区, 3月.
- 26) 植田真司, 長谷川英尚, 落合伸也 (2023) 2016年から2020年における福島県浜通り河川水の $^{129}\text{I}$ 濃度 *第25回環境放射能研究会*, 茨城県つくば市, 3月.
- 27) 新井竜司, 谷 享 (2023) ナガイモのポット栽培における施肥と灌水量が新イモの生長に及ぼす影響 *園芸学会令和6年度春季大会*, 神奈川県厚木市, 3月.
- 28) 細根 孟留, 猪狩 直哉, 南場 大輝, 清川 嶺士, 富吉 真央, 柿内 秀樹, 石川 義朗, 鳥養 祐二 (2023) 環境トリチウムの迅速測定法の開発(6)ヒラメにおける水素同位体の同位体効果の検証 *日本原子力学会 2024年春の年会*, 大阪府東大阪市, 3月.
- 29) 南場 大輝, 猪狩 直哉, 細根 孟留, 清川 嶺士, 富吉 真央, 柿内 秀樹, 石川 義朗, 鳥養 祐二 (2023) 環境トリチウムの迅速測定法の開発(7)貝類における水素同位体の同位体効果の検証 *日本原子力学会 2024年春の大会*, 大阪府東大阪市, 3月.

## 2. 生物影響研究部

### 誌上発表リスト

- 1) Azimzadeh, O., J. Merl-Pham, V. Subramanian, K. Oleksenko, F. Krumm, M. Mancuso, E. Pasquali, I. B. Tanaka, 3rd, S. Tanaka, M. J. Atkinson, S. Tapio, S. Moertl (2023) Late effects of chronic low dose rate total body irradiation on the heart proteome of ApoE<sup>-/-</sup> mice resemble premature cardiac ageing. *Cancers*, 15, 3417.
- 2) Nakayama, T., M. Sunaoshi, Y. Shang, M. Takahashi, T. Saito, B. J. Blyth, Y. Amasaki, K. Daino, Y. Shimada, A. Tachibana, S. Kakinuma (2023) Calorie restriction alters the mechanisms of radiation-induced mouse thymic lymphomagenesis. *PLoS One*, 18, e0280560.
- 3) Grison, S., I. Braga-Tanaka, S. Baatout, D. Klokov (2024) In utero exposure to ionizing radiation and metabolic regulation: perspectives for future multi- and trans-generation effects studies. *International Journal of Radiation Biology*, 1-14. Advance online publication.
- 4) Iizuka, D., M. Sasatani, A. Ishikawa, K. Daino, T. Hirouchi, K. Kamiya (2023) Newly discovered genomic mutation patterns in radiation-induced small intestinal tumors of ApcMin<sup>+/+</sup> mice. *PLoS One*, 18, e0292643.
- 5) Kinugawa, T., I. B. Tanaka, 3rd, S. Tanaka, Y. Manabe, F. Sato, T. Wada. (2024) A mathematical model for radiation-induced life-shortening attributed to cancer. *International Journal of Radiation Biology*, 100, 176-182.
- 6) Ohno, M., M. Takano, K. Hidaka, F. Sasaki, K. Yamauchi, Y. Aoki, T. Nohmi, Y. Nakabeppu, Y. Nakatsu, T. Tsuzuki (2024) Oxidative stress accelerates intestinal tumorigenesis by enhancing 8-oxoguanine-mediated mutagenesis in MUTYH-deficient mice. *Genome Res*, 34, 47-56.
- 7) 田中 聡 (2023) 放射線の心血管系に及ぼす影響. *Radiation Biology Research Communications*, 58, 193-205.
- 8) 廣内 篤久 (2024) 造血組織における細胞間コミュニケーションと放射線応答. *放射線生物研究*, 59, 75-86.
- 9) Kohda, A., Toyokawa, T., Umino, T., & Komura, J. I. (2024). M-FISH as a sensitive tool for detecting chromosome aberrations induced by low levels of radiation. *Cytologia*, 89, 1-2.

### 口頭発表リスト

- 1) Tanaka, I. (2023) Latest Studies at the IES on the Biological Effects of Chronic Low Dose-rate Radiation Exposures in Mice. *7th Plenary Meeting of the High-Level Group On Low-Dose Research*, Paris, France, June.
- 2) Yamauchi, K., Tsutsumi, Y., Kobayashi, T. and Komura, J. (2023) Tumor Suppression Effects of Antioxidant Administration in the Early Stages of Radiation-Induced Tumorigenesis. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)*, Hirosaki, Aomori, Japan, September.
- 3) Takai, D., (2023) Does environmental enrichment mitigate the adverse effects of chronic low dose-rate radiation exposure on mice? *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)*, Hirosaki, Aomori, Japan, September.
- 4) Yanai, T., Kanaiwa-Kudo, S., Abe, A., Saitou, M., Nakamura, S., Tanaka, S., Komura, J. and Kobayashi, T. (2023) Long-Term Effects of Continuous Low-Dose-Rate Gamma-Ray Irradiation on Mouse Hematopoietic Cells. *International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023)*, Hirosaki, Aomori, Japan, September.
- 5) Yamauchi, K., Tsutsumi, Y., Kobayashi, T. and Komura, J. (2023) The Effects of Antioxidant in the Early Stages

of Radiation-Induced Intestinal Tumors in *Apc<sup>Min+</sup>* Mice. 日本放射線影響学会第66回大会, 東京都港区, 11月.

- 6) Tanaka, I., Tanaka, S. and Kobayashi, T. (2023) Experimental studies at the IES on the biological effects of chronic low dose-rate radiation exposure in mice. 日本放射線影響学会第66回大会, 東京都港区, 11月.
- 7) Tanaka, I., Tanaka, S. and Kobayashi, T. (2023) Transgenerational Effects in the Progeny of Male Mice Exposed to Continuous Low Dose-rate Gamma-Rays. 日本放射線影響学会第66回大会, 東京都港区, 11月.
- 8) Sugihara, T., Tanaka, S., Tanaka, I., Murano, H., Nakamura, M., Harada, C., Fujikawa, K., Ogura, K., Nakamura, S., Nakahira, R., Kobayashi, T. and Komura, J. (2023) Masculinization of sexually dimorphic liver gene expression in female mice by low dose-rate irradiation determines the severity of liver disease. 日本放射線影響学会第66回大会, 東京都港区, 11月.
- 9) 山内一己 (2023) 低線量放射線長期連続照射による生物影響. 日本環境変異原ゲノム学会大52回大会, 福岡県福岡市, 11月.
- 10) Nakahira, R., Miura, H., Tanaka, I., Tanaka, S. and Kobayashi, T. (2023) Effects of juvenile exposure to low-dose-rate  $\gamma$ -ray on the development and growth of B6C3F1 mice – Interim Results. 日本放射線影響学会第66回大会, 東京都港区, 11月.
- 11) 山内一己 (2023) 飼育条件の違いによる低線量率放射線長期連続照射マウスの寿命変化 第19回むつ海洋・環境科学シンポジウム (令和5年11月28日) プラザホテルむつ
- 12) 中平嶺, 三浦平太, 田中イグナシヤ, 田中聡, 小林敏之 (2024) 幼若期における低線量率 $\gamma$ 線連続照射のB6C3F1マウス生殖腺への影響 第11回日本獣医病理学専門家協会学術集会 (令和6年3月28日~29日) かごしま県民交流センター

### 3. トリチウム研究センター

#### 誌上発表リスト

- 1) 増田毅, 長島明輝, 田内広 (2023) トリチウム生体影響研究の現状とこれから -UNSCEAR 2016を越えて-. 放射線生物研究, 58(1), 18-57.

#### 口頭発表リスト

- 1) 増田毅 (2023) トリチウム研究センターの設立と研究活動計画 NIFS 一般共同研究会
- 2) Nagashima, H., Komatsu, K. and Tauchi, H. (2023) Possible existence of dose rate threshold for mutation induction by low dose rate gamma-rays. 17th International Congress for Radiation Research
- 3) Nagashima H., Komatsu K., and Tauchi, H. (2023) Possible existence of dose rate threshold for mutation induction by low dose rate radiation: analysis with gamma-rays, International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023), Hirosaki, Aomori, Japan, September.
- 4) Kakiuchi, H., Nagashima, H. and Masuda, T. (2023) Ratios of exchangeable organically bound hydrogen in mice organs *in vivo*. International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023), Hirosaki, Aomori, Japan, September.
- 5) Masuda, T., Kakiuchi, H., Ishikawa, Y. and Tani, T. (2023) Ratios of exchangeable organically bound hydrogen *in vivo* and *in vitro* in flatfish flesh. International Symposium on Natural and Artificial Radiation Exposures and Radiological Protection Studies (NARE2023), Hirosaki, Aomori, Japan, September.

- 6) Masuda, T., Nagashima, H., Kakiuchi, H., Takai, D. and Tauchi, H. (2023) Toward elucidation of biological effects by  $\beta$ -ray from ingested tritium. *日本放射線影響学会第66回大会*, 東京都港区, 11月.
- 7) Masuda, T. (2023) Dose coefficient for ingested tritium. *日本放射線影響学会第66回大会*, 東京都港区, 11月.
- 8) Nagashima, H., Masuda, T. and Tauchi, H. (2023) Analysis of low-concentration tritiated water induced mutations using a hyper-sensitive assay system and understanding tritium disposition in the body using deuterium-labeled compounds. *日本放射線影響学会第66回大会*, 東京都港区, 11月.
- 9) 長島明輝 (2023) 高感度検出系を用いた低濃度トリチウム水による体細胞突然変異の解析. *トリチウム研究会2023核融合炉の社会実装を見据えた同位体科学研究の展望*, 岐阜県土岐市, 7月.