

## 【General Session】

April 13 (Thu.) 418

### Radiobiology

14:00-15:00

Chairperson: Yutaka Takahashi

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|---------|--|--|------------------|
| POP-001 | Gene expression analysis for radioresistance in human cancer cell lines                                | Nagoya University                            | Yoshiyuki Hirano |
| POP-002 | Estimation of cell survival irradiated by Cherenkov lights in radiation therapy                        | Nagoya University                            | Yoshiyuki Hirano |
| POP-003 | Assessment of the reduction in biological dose resulting from interruption of radiotherapy             | Hiroshima University                         | Naoki Takashita  |
| POP-004 | Incidence and predictors of proton radiation-induced rib fracture                                      | Medipolis Proton Therapy and Research Center | Naoaki Kondo     |
| POP-005 | Protective effects of amino acids derivatives on plasmid DNA damage Induced by therapeutic carbon Ions | Nagoya University                            | Katsunori Yogo   |
| POP-006 | Development of new contrast-enhanced radiotherapy (LiPERT)   | Hiroshima University Hospital                | Daisuke Kawahara |

### Diagnostic Imaging

15:10-16:00

Chairperson: Hidetake Hara

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|---------|--|-----------------------------------|----------------|
| POP-007 | Fundamental study of digital tomosynthesis using a portable flat panel detector                                    | Tokyo Metropolitan University     | Yoshiyuki Nyui |
| POP-008 | Comparative evaluation of noise characteristics and spatial resolution in multiple CT image reconstruction methods | University of the Ryukyus         | Masashi Kinjyo |
| POP-009 | Analysis of osteolytic bone metastatic lesions in CT images using diffusion equation and vector analysis           | Osaka University                  | Kentaro Doi    |
| POP-010 | Embossed X-ray computed tomography using a 50- $\mu$ m-pixel flat panel detector                                   | Iwate Medical University Hospital | Yuichi Sato    |
| POP-011 | Cancer visualization using gadobutrol-glucose solution and 7.0T magnetic resonance imaging                         | Iwate Medical University          | Eiichi Sato    |

### AI (QA)

16:10-16:50

Chairperson: Yukio Fujita

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|---------|---|--------------------------------|---------------|
| POP-012 | Unsupervised learning with Generative Adversarial Network for error detection in intensity-modulated radiation therapy                                | Niigata University             | Kazuki Mayumi |
| POP-013 | Development of a deep learning model for estimating rotational error using tangential images for breast position matching                             | Okazaki City Hospital          | Kento Tanaka  |
| POP-014 | Evaluation of treatment planning parameters affecting the gamma analysis based on machine learning for CyberKnife brain stereotactic radiotherapy     | Niigata Neurosurgical Hospital | Sae Nakamura  |
| POP-015 | Development of a deep-learning system that instantly provides patient-specific QA results using dose distribution in patient body and MLC information | Tohoku University              | Ryota Tozuka  |

**Radiotherapy (Proton • Brachytherapy)**

	9:00-9:50	Chairperson: Yoshikazu Maeda
POP-016	Experimental validation of gated proton pencil beam scanning with 4D dynamic dose calculations.	
	Osaka Proton Therapy Clinic	Yuki Tominaga
POP-017	Research on measurement of human body components using positron-emitting nuclei generated in the body by proton irradiation	
	Osaka University	Ryota Sudo
POP-018	Assessment of PET images in proton scanning irradiation	
	Osaka University	Akihiro Tanaka
POP-019	Prediction of three-dimensional location of internal markers using long short-term memory for real-time tumor tracking radiotherapy	
	Hokkaido University	Kazuki Numakura
POP-020	Establishment of new methodology of transit dose assessment by using effective transit time in brachytherapy	
	National Cancer Center Hospital	Masato Nishitani

**QA/QC (Particle Therapy)**

	10:00-10:50	Chairperson: Hideyuki Takei
POP-021	Commissioning of rotating gantry for carbon ion therapy	
	Yamagata University	Hikaru Souda
POP-022	Dependence of inter-fractional range variation on Beam Angle in proton therapy for pancreatic cancer	
	Hokkaido University	Yuhei Kikkawa
POP-023	Evaluation of the influence of target position variation on dose distributions of line scanning technique	
	Kouseikai Proton Therapy Center	Yuya Azuma
POP-024	Development and basic characterization of Ion chamber for ultra-high dose rates	
	Osaka University	Mahoro Nakatani
POP-025	Comparison of field size effect by irradiation method with carbon beam	
	Gunma University Heavy Ion Medical Center	Akihiko Matsumura

**QA/QC (Photon • Electron)**

	15:30-16:30	Chairperson: Satoshi Tanabe
POP-026	Multi-institutional comparison of X-ray beam data characteristics in treatment planning system	
	National Cancer Center	Shohei Mikasa
POP-027	Investigation of contour propagation in MRgRT for prostate cancer with open-source DIR software	
	Tohoku University	Taichi Hoshino
POP-028	Examination of EPID quality control method used for verification of verification of body fluence distribution	
	Aomori Rosai Hospital	Koji Ishita
POP-029	Impact of water equivalent beanbag on dose distribution in total body irradiation: a Monte Carlo simulation study	
	Kokura Memorial Hospital	Takahiro Kubota
POP-030	Suggestion of the iterative breath hold VMAT using the projection streaming of kV perspective image	
	University of Tokyo Hospital	Yuki Nozawa

- POP-031 A Study of quantitative quality control of 3D water phantom using image analysis  
NHO Shikoku Cancer Center Yuki Tanimoto

### Nuclear Medicine • Radiation Protection

16:40-17:20 Chairperson: Keisuke Tsuda

- POP-032 Observation and suppression of edge artifacts in PSF reconstruction using simulated brain images  
Tokyo Metropolitan University Hiroyuki Shinohara
- POP-033 In vivo imaging of technetium isotope (Tc-95) using electron tracking Compton camera  
Tokai University Sara Endo
- POP-034 Evaluation of absorbed dose of  $\alpha$  rays emitted by radon and thoron deposited in lungs by analyzing track images  
Teikyo University Suguru Takeuchi
- POP-035 Investigation of a high-sensitivity Compton camera for  $^{177}\text{Lu}$  radioactive contamination imaging: A Geant4 simulation  
Kitasato University Hikari Tsukamoto

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### Radiotherapy 1 (Planning)

9:00-9:50 Chairperson: Atsushi Myojoyama

- POP-036 Investigation of the optimal noise reduction filters for quantum noise for CT-based Ventilation Imaging  
Ibaraki Prefectural University of Health Sciences Shin Miyakawa
- POP-037 Feasibility study of lost regions generation for limited field of view CBCT images using Diffusion Models  
Kitasato University Kohei Yamamoto
- POP-038 Investigation of the optimized gating method in respiratory gated radiotherapy using Spiral 4DCT  
Ibaraki Prefectural University of Health Sciences Kenji Yasue
- POP-039 Evaluation of imaging dose from cone beam computed tomography in radiation therapy for nasopharyngeal cancer using Monte Carlo simulations  
Tsuchiura Kyodo General Hospital Satoshi Oyama
- POP-040 Development of carbon ion CT imaging system  
Osaka University Daiki Kinkawa

### Radiation Measurement 1

10:00-10:50 Chairperson: Chang Weishan

- POP-041 Study on chemical bonding of alanine dosimeter irradiated with carbon beam  
National Metrology Institute of Japan, AIST Hidetoshi Yamaguchi
- POP-042 Clinical application of a new X-ray computed tomography polymer gel dosimeter for a E2E test of high-dose-rate brachytherapy  
National Cancer Center Hospital East Miki Yonemura
- POP-043 Physical properties of sheet type thermoluminescence dosimeter for carbon ion beams  
Yamagata University Hospital Yoshifumi Yamazawa
- POP-044 Study of real-time patient body surface dose distribution measurement during radiotherapy  
Osaka University Mizuki Omura
- POP-045 Research and development of multipurpose 2D radiation measurement system including time axis  
Osaka University Taketo Tanaka

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Radiotherapy (Heavy Ion • BNCT)

15:40-16:30

Chairperson: Takushi Takata

- POP-046 Effect of dose heterogeneity on cell killing effect in carbon ion radiotherapy  
Osaka University Misato Umemura
- POP-047 Dosimetric evaluation of hydrogel spacer in carbon ion radiotherapy for prostate cancer  
Ion Beam Therapy Center, SAGA HIMAT Foundation Yoshikazu Tsunashima
- POP-048 A study of a method deducing stopping power ratio for carbon ion derived from two energies for single energy CT  
Osaka University Naoki Ishino
- POP-049 Comparison of physical dose and dose-averaged linear energy transfer between treatment planning system and Monte Carlo simulation in carbon-ion radiotherapy  
Nagoya University Akihisa Ishikawa
- POP-050 The usefulness of SUV-based variable in <sup>18</sup>F-BPA dynamic PET study for patient selection to BNCT for head and neck cancer  
National Cancer Center Hospital Tetsu Nakaichi

Radiation Measurement 2

16:40-17:40

Chairperson: Hiroki Ohtani

- POP-051 Efficient quality assurance with a two dimensional detectors array in Iris Collimator of CyberKnife  
Hokkaido Ohno Memorial Hospital Daisuke Tanii
- POP-052 Performance test of electrometer applying direct-current generator under magnetic field  
National Cancer Center Hospital Mitsuhiro Kon
- POP-053 Feasibility study of a dose-rate dosimeter for radiotherapy using a commercially available medical linac and dual silicon diodes  
Iwate Medical University School of Medicine Satoshi Yamaguchi
- POP-054 Development of a high-spatial-resolution dose profile measurement device using a barium titanate capacitor  
Hokkaido University Yuma Kuga
- POP-055 Real-time measurement of a non-invasive 3D position detector for high dose-rate Ir-192 source  
Kyushu University Hiroyuki Arakawa
- POP-056 X-ray-dose-rate measurement using a 35 GΩ current to voltage amplifier  
Iwate Medical University Eiichi Sato

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Radiotherapy 2 (Planning)

9:00-10:00

Chairperson: Toru Kawachi

- POP-057 QAQC for Image-guided radiotherapy using Cherenkov emission  
National Cancer Center Hospital Hiroyuki Okamoto
- POP-058 Novel QA using AR technology for robotic radiosurgery system  
Osaka University Hiroya Shiomi
- POP-059 Three-dimensional treatment and imaging isocenter verification test using polymer gel dosimeter and kV-CBCT  
National Cancer Center Hospital East Riki Oshika
- POP-060 Mathematical model for tumor volume calculation with setup error using single-isocenter stereotactic radiotherapy  
Niigata University Medical and Dental Hospital Hisashi Nakano

POP-062 Development of a non-contact site-specific body movement monitoring system using depth sensors for radiotherapy

Kitasato University Ryutaro Yamashita

### AI (Radiotherapy)

10:10-11:00

Chairperson: Hidemi Kamezawa

POP-063 Evaluation of deep learning-based treatment planning prediction in head and neck cancer patients using two different types of input structures

University of Yamanashi Masahide Saito

POP-064 Auto segmentation of Head and Neck region by generative adversarial network using multi-attention mechanism

Hiroshima University Takahiro Nishimura

POP-065 Development and evaluation of AI models for automatic organ segmentation in radiotherapy

Hyogo Ion Beam Medical Center Masaki Suga

POP-066 Machine learning prediction for lung dose in locally advanced esophageal cancer using VMAT

National Cancer Center Hospital Shogo Kurokawa

POP-067 Examination of radiotherapy planning using deep learning reconstruction

Fujita Health University Hospital Yasunori Saito

### AI (Other)

11:10-12:00

Chairperson: Jun'ichi Kotoku

POP-068 Phantom study to correct an unobservable area due to a high-density obstacle in DSA images using deep learning

Teikyo University Takeshi Takata

POP-069 AI-based outcome prediction for ovarian cancer using data imbalance correction method

Hiroshima University Misato Kishi

POP-070 Radiomics analysis and machine learning for non-small cell lung cancer patients to predict recurrence after surgery

Hiroshima University Reo Isobe

POP-071 Discrimination of the pulmonary nodules using the chest CT image features by homology method

Osaka University Akira Sato

POP-072 Machine learning to classify pulmonary hypertension using echocardiographic measurements

Teikyo University Takumasa Tsuji