

## 2012 年度

### 1. 学術論文、国際会議プロシーディング等、分担執筆

(学術論文)

(1) Matsuura T., Miyamoto N., Shimizu S., Fujii Y., Umezawa M., Takao S., Nihongi H., Toramatsu C., Sutherland K., Suzuki R., Ishikawa M., Matsuda K., Kinoshita R., Umegaki K., Shirato H.,

**“A feasibility study on integration of a real-time tumor-tracking system into proton spot-scanning beam therapy”** *Medical Physics*, submitted (2012.10) 2.830(2011 I.F.)

(2) Toramatsu C., Kato N., Shimizu S., Nihongi H., Matsuura T., Takao S., Miyamoto N. Suzuki R., Sutherland K., Kinoshita R., Onimal R, Ishikawa M., Umegaki K. and Shirato H. **“What is the appropriate size criterion for proton radiotherapy for hepatocellular carcinoma? A dosimetric comparison of spot-scanning proton therapy versus intensity-modulated radiation therapy”** *Inter. J. of Radiation Oncology Biology Physics*, submitted (2012.8)

4.105(2011 I.F.)

(3) Takei T., Shiga T., Morimoto Y., Takeuchi W., Umegaki K., Matsuzaki K., Okamoto S., Magot a K., Hara T., Fukuda S., Tamaki N. **“A novel PET scanner with semiconductor detectors may improve diagnostic accuracy in cervical metastatic survey of head and neck cancer patients”** *Annals of Nuclear Medicine*(2012) in press1.502(2011 I.F.)

(4) Matsuura T., Maeda K., Sutherland K., Takayanagi T., Shimizu S., Takao S., Miyamoto N., Nihongi H., Toramastu C., Nagamine Y., Fujimoto R., Suzuki S., Ishikawa M., Umegaki K., Shirato H. **“Biological effect of dose distortion by fiducial markers in spot-scanning proton therapy with a limited number of fields: a simulation study”** *Medical Physics* 39(9), 5584-5591, September (2012)

2.830(2011 I.F.)

(5) Shirato H., Onimaru R., Ishikawa M., Kaneko J., Takeshima T., Mochizuki K., Shimizu S., Umegaki K., **“Real-time Four-dimensional Radiotherapy for Lung Cancer”** *Cancer Science* 103(1), 1-6, (2012)

3.325(2011 I.F.)cited 1 times Web of Science

(国際会議プロシーディング等)

(1)Umegaki K.,**“Introduction: Development of Gated Spot Scanning Proton Beam Therapy System with Real-Time Tumor-Tracking Technology”** International Seminar for Funding Program for World-Leading Innovative R&D on Science and Technology, 2012.7.24, Sapporo Japan

(2)Toramatsu C., Kato N., Shimizu S., Nihongi H., Matsuura T., Takao S., Miyamoto N., Kinoshita R., Umegaki K., Shirato H., **“The Role of Spot Scanning Proton Therapy in the Treatment of Large tumors: A Comparative Planning Study of Hepatocellular Carcinoma”** 54<sup>th</sup> ASTRO Annual meeting, Boston, USA, 2012.10.28-11.1, to be presented (ASTRO: American Society of Radiation Oncology)

(3) Umezawa M., Fujimoto R., Umekawa T., Fujii Y., Takayanagi T., Ebina F., Aoki T., Nagamine Y., Matsuda K., Hiramoto K., Matsuura T., Miyamoto N., Nihongi H., Umegaki K. and iShirato H.,

**“Development of The Compact Proton Beam Therapy System Dedicated to Spot Scanning with Real-time Tumor-tracking Technology”** CAARI 2012: 22<sup>nd</sup> International Conference on the

Application of Accelerators in Research and Industry, August 5-10, 2012, Fort Worth, Texas, USA AIP (American Institute of Physics) Conference Proceedings 2012, in press

- (4) Toramatsu C., Matsuura T., Takao S., Nihongi H., Miyamoto N., Shimizu S., Kinoshita R., Umegaki K., Shirato H., **"Dosimetric study for shallow-seated tumor using scanning proton beam"** AAPM 54<sup>th</sup> Annual Meeting, 7/29-8/2, 2012, Charlotte, USA (AAPM: American Association of Physicists in Medicine)
- (5) Miyamoto, N., Ishikawa M., Sutherland K., Suzuki R., Matsuura T., Takao S., Toramatsu C., Nihongi H., Shimizu S., Onimaru R., Umegaki K., Shirato H., **"Motion adaptive image filter for low dose X-ray fluoroscopy in real-time tumor-tracking radiotherapy system"** AAPM 54<sup>th</sup> Annual Meeting, 7/29-8/2, 2012, Charlotte, USA
- (6) Matsuura T., Maeda K., Sutherland K., Takayanagi T., Shimizu S., Takao S., Nihongi H., Toramatsu C., Miyamoto N., Nagamine Y., Fujimoto R., Umegaki K., Shirato H., **"Biological Effect of Dose Shadowing by Fiducial Markers in Spot Scanning Proton Therapy with a Limited Number of Fields,"** AAPM 54<sup>th</sup> Annual Meeting, 7/29-8/2, 2012, Charlotte, USA
- (7) Toramatsu, C., Nihongi H., Matsuura T., Takao S., Miyamoto N., Umegaki K., Katoh N., Shimizu S., Kinoshita R., Shirato H., **"A Comparative Planning Study of Large abdominal tumors"** 31st Sapporo International Cancer Symposium, 7/23-24, 2012, Sapporo, Japan
- (8) Matsuura, T., Miyamoto N., Shimizu S., Toramatsu C., Takao S., Nihongi H., Kinoshita R., Onimaru R., Umezawa M., Fujimoto R., Matsuda K., Umegaki K., Shirato H., **"Spot-scanning Proton Therapy for Mobile Tumors -Reduction of Interplay Effect by Gating Technique-"**31st Sapporo International Cancer Symposium, 7/23-24, 2012, Sapporo, Japan
- (9) Takao S., Shimizu S., Matsuura T., Toramatsu C., Nihongi H., Miyamoto N., Matsuda K., Umekawa T., Umegaki K., Shirato H., **"Usability of Treatment Procedure in Spot Scanning Proton Beam Therapy System"** 31st Sapporo International Cancer Symposium, 7/23-24, 2012, Sapporo, Japan
- (10) Nihongi, H., Toramatsu C., Matsuura T., Takao S., Miyamoto N., Umegaki K., Shimizu S., Kinoshita R., Onodera S., Shirato H., **"Preparation for a proton scanning Treatment planning system at Hokkaido University"** 31st Sapporo International Cancer Symposium, 7/23-24, 2012, Sapporo, Japan
- (11) Fujii Y., Ebina F., Fujimoto R., Umezawa M., Hiramoto K., Nagamine Y., Matsuda K., Matsuura T., Miyamoto N., Nihongi H., Umegaki K., Shirato H., **"Development of the Compact Proton Beam Therapy System Dedicated to Spot Scanning with Real Time Tumor Tracking Technology"** The 6th Takahashi Memorial Symposium & the 6th Japan-US Cancer Therapy International Joint Symposium, 7/19-21, 2012, Hiroshima, Japan
- (12) Umekawa T., Kidani T., Sasaki T., Nagamine Y., Umezawa M., Hiramoto K., Miyamoto N., Takao S., Shimizu S., Umegaki K., Shirato H., **"Accuracy Verification of the Marker Tracking System Mounted on the Rotating Gantry"** PTCOG 51, 5.16-19, 2012, Seoul, Korea (PTCOG: Particle Therapy Co-Operative Group)
- (13) Fujimoto R., Hirayama S., Fujii Y., Umezawa M., Hiramoto K., Hosaka M., Nagamine Y., Akiyama H., Matsuura T., Nihongi H., Umegaki K., Shirato H., **"Development of treatment planning algorithm for ensuring target dose coverage in scanning proton therapy"** PTCOG 51, 5.16-19, 2012, Seoul, Korea
- (14) Nihongi H., Toramatsu C., Matsuura T., Takao S., Miyamoto N., Umegaki K., Shimizu S., Kinoshita R., Shirato H., **"Dose Distribution Evaluation of Proton Scanning Dedicated System by Treatment Planning Simulation"** PTCOG 51, 5.16-19, 2012, Seoul, Korea
- (15) Takao S., Shimizu S., Toramatsu C., Matsuura T., Nihongi H., Miyamoto N., Matsuda K., Umekawa T., Umegaki K., Shirato H., **"Design of treatment workflow in proton therapy system with compact"**

rotating gantry” PTCOG 51, 5.16-19, 2012, Seoul, Korea

(16) Toramatsu C., Kato H., Shimizu S., Nihongi H., Matsuura T., Takao S., Miyamoto N., Kinoshita R., Umegaki K., Shirato H., “A Comparative Planning Study of Large abdominal tumors” PTCOG 51, 5.16-19, 2012, Seoul, Korea

(17) Matsuura T., Miyamoto N., Shimizu S., Takao S., Toramatsu C., Nihongi H., Umezawa M., Fujii Y., Umegaki K., Shirato H., “On Reduction of Irradiation Time in Gated Spot Scanning Proton Therapy With Real-Time Tumor-Tracking” PTCOG 51, 5.16-19, 2012, Seoul, Korea

(18) Shirato H., Umegaki K., Shimizu S., Matsuura T., Miyamoto N., Toramatsu C., Takao S., Nihongi H., Hiramoto K. and Nakamura F., “Development of Spot Scanning Proton Beam Therapy System With Real-Time Tumor-Tracking Technology” PTCOG 51, 5.16-19, 2012, Seoul, Korea

## 2. 著書、解説・総説

なし

## 3. 招待講演、市民講演等

(1) 梅垣、「知っておくべき放射線の基礎：放射線と医療」第52回日本核医学会学術総会・第32回日本核医学技術学会総会学術大会合同企画プログラム核医学会市民公開講座、札幌市(2012. 10. 13)

(2) 梅垣、清水「動体追跡技術とスキャニング技術を用いた新たな陽子線治療を目指して」第104回日本医学物理学会学術大会ランチョンセミナー、つくば市(2012.9.14)

## 4. 国内学会発表

(1) 二本木、寅松、松浦、高尾、宮本、梅垣、清水、木下、小野寺、白土、松田、梅澤、平本、“北海道大学における分子追跡陽子線治療装置”第9回日本粒子線治療臨床研究会、指宿市(2012. 10)

(2) 高尾、松浦、寅松、二本木、宮本、清水、木下、松田、木谷、梅垣、白土、“陽子線治療における最適な治療ワークフローの検討”第104回日本医学物理学会学術大会、つくば市(2012. 9)

(3) 前田、松浦、高尾、Sutherland、寅松、二本木、宮本、石川、清水、梅垣、白土、“陽子線スキャニング照射における体内マーカーによる線量遮蔽のTCPを用いた評価”第104回日本医学物理学会学術大会、つくば市(2012. 9)

(4) 宮本、石川、Sutherland、鈴木、松浦、高尾、寅松、二本木、清水、梅垣、白土、“一方向X線透視による低被曝・省スペース型動体追跡装置の開発”第104回日本医学物理学会学術大会、つくば市(2012. 9)

(5) 大友、宮本、Sutherland、鈴木、松浦、鬼丸、清水、梅垣、白土、石川、“体内複数マーカーを用いた高精度ゲーティング照射法の基礎検討”第104回日本医学物理学会学術大会、つくば市(2012. 9)

(6) 二本木、寅松、松浦、高尾、宮本、梅垣、清水、木下、白土“治療計画シミュレーションによる陽子線スキャニング専用機の線量分布の検証”第103回日本医学物理学会学術大会、横浜市(2012. 4)

## 5. 知的財産権

(国内出願中特許)

- (1)「粒子線照射システム及び治療計画装置」特願2012-204767(2012.9.18)
- (2)「動体追跡装置および放射線治療システム」特願2012-199355(2012.9.11)

(国内公開特許)

- (1)「放射線検査装置」特開2012-022639