

Note From the Group Chairman

It was a pleasure seeing many colleagues in San Diego this past January at the Semiannual Meeting, the first meeting to bring together the investigators who will comprise NRG Oncology. I know many of you took the opportunity to meet with collaborators from GOG and NSABP formally and informally, and we look forward to a truly integrated meeting when we all convene again in San Diego at the February 2014 meeting. The January 2013 RTOG Symposium was a particular highlight, with the scientific leadership reporting on the many significant research advances achieved by the group in recent years and on their importance as integral building blocks for current and future trials.



Walter J. Curran, Jr., MD

I invite you to take a moment to review many of the year-end results presented in this newsletter to better understand the magnitude of work that has continued this past year despite the significant time and effort focused on preparation of the NRG Oncology grant proposal. My sincere thank you to all who contributed to shaping the future of NRG Oncology while continuing to accomplish the work at hand. Information about the new combined group's **research structure and plan** is available on the RTOG Web site at www.rtog.org.

This newsletter also profiles four recently activated RTOG trials. I strongly encourage you to consider participating in one of these trials or others activated in 2012.

I look forward to seeing you again this coming June in Philadelphia.

We Hope You Can Join Us!

Please plan to attend the RTOG Semiannual Meeting June 13–16 at the Loews Philadelphia Hotel. The meeting is open to all RTOG members and members of our NRG Oncology partner sites.

Visit the RTOG Web site to register online, make hotel reservations, and view meeting agendas. Of special note, the RTOG Symposium on Friday, June 14 will feature the topic "Advances in Genomics for Clinical Trials."

To learn more, visit: [RTOG Semiannual Meeting](#)

RTOG Research: A Robust Past and an NRG-ized Future!

RTOG scientific leaders reviewed significant research achievements, exciting trials underway, and plans for building upon the group's successes within NRG Oncology at the RTOG Symposium held on Friday, January 25 at the Semiannual Meeting in San Diego, California.

The many disease site areas in which RTOG is an international radiation oncology research leader were highlighted during the symposium. A notable example is the RTOG 0525 trial (*Phase III Trial Comparing Conventional Adjuvant Temozolomide with Dose-Intensive Temozolomide in Patients with Newly Diagnosed Glioblastoma*), an RTOG-led collaborative effort with the European Organization for Research and Treatment of Cancer (EORTC) that enrolled 1,173 patients across North America and Europe in 2 years.



RTOG Deputy Chair Mitchell Machtay, MD, moderated the RTOG Symposium at the January Semiannual Meeting.

RTOG's significant role in establishing radiation oncology practice standards was also underscored

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RTOG Research: A Robust Past and an NRG-ized Future! (continued)



Benjamin Movsas, MD, presented information about RTOG's expansive quality of life (QOL) research that extends across all disease sites. He highlighted the RTOG 0614 results announced at a plenary session during the ASTRO 2012 Annual Meeting that confirmed the benefits of memantine for delaying decline in cognition after whole-brain radiotherapy for patients with metastatic brain tumors—a result expected to have an immediate impact on the care of this growing population of patients.

throughout the presentations. The RTOG 0236 phase II trial—the first North American multicenter, cooperative group study to test stereotactic body radiation therapy (SBRT) in treating patients with medically inoperable early-stage non-small cell lung cancer—was highlighted for its role in establishing SBRT as standard care for this patient population. Another landmark trial cited, RTOG 9408, provided strong scientific evidence that adding short-term androgen-deprivation therapy to radiation therapy benefits patients with intermediate-risk, but not low-risk, early-stage prostate cancer.

These findings were significant for improving both clinical care and the utilization of health care resources.

Biomarker-driven research was a prominent presentation theme with regard to RTOG past achievements, current trials, and future plans. Significant advances reported include the retrospective analysis of RTOG 0129 data that demonstrated oropharyngeal carcinomas (OPCs) positive for the human papillomavirus (HPV) are distinctly different from HPV-negative OPCs. This finding has led to the conduct of two separate trials investigating treatment for these unique cancers. Also highlighted were the long-term follow-up analyses of RTOG 9402 data, which provided evidence that 1p and 19q chromosome co-deletion and isocitrate dehydrogenase (IDH) status can be used as markers to determine which patients with anaplastic oligodendrogliomas will benefit from combined chemotherapy and radiation therapy.

Meeting attendees also learned more about the active role the RTOG Biospecimen Resource plays supporting RTOG's vigorous program of biomarker investigation and validation through its comprehensive biobanking program, well-developed standard operating procedures, and comprehensive quality assurance program. The dramatic increase in biospecimens submitted in 2012 (59,871) compared with 2011 (35,500) brings the total Biospecimen Resource collection to nearly 350,000 specimens.

RTOG investigators are energized about how the future NRG Oncology will strengthen collaborations already existing between the groups and to forge new research partnerships. The NSABP Breast Cancer Working Committee and RTOG Breast Cancer Working Group have several collaborative trials in development. Members of the RTOG Gastrointestinal Cancer Committee are anxious to collaborate with NRG Oncology's Developmental Therapeutics and Medical Oncology Committees on strategies for choosing novel agents on which to focus; DNA repair inhibitors, anti-angiogenic agents, and immunotherapy are among the possibilities. The synergies between the Gynecologic Oncology Group (GOG) and the RTOG Gynecologic Cancer Working Group, along with a shared spirit of collaboration, bode well for continued advancements in gynecologic cancer research.



Doctors Richard Jordan, DDS, PhD, FRCPath, and Adam Dicker, MD, PhD, respond to questions about RTOG's Biospecimen Resource and Translational Research Program.



Julia White, MD, previewed the exciting NRG Oncology breast cancer research projects in development.

Planned collaborations will extend well beyond NRG Oncology to engage the broader cancer research community. The RTOG Sarcoma Working Group will continue its efforts to build a multidisciplinary team to serve as a platform for all sarcoma investigators and outreach to other groups and organizations, such as the Children's Oncology Group and the NCI-sponsored International Rare Cancers Initiative. Proposed translational research initiatives, including the two Network Group Integrated Translational Sciences Centers projects described on page 7, also embrace a broad team approach.

The NRG Oncology grant proposal also included plans for the Center for Innovation in Radiation Oncology (CIRO), a resource that would support radiation therapy advances by all NCI National Clinical Trials Network groups.

For more information about future **NRG Oncology research plans**, visit the RTOG Web site.

Translational Research Program News

NRG Oncology Translational Research Program Pursues Exciting Science

Planning for the integration of NRG Oncology's legacy translational research programs has spawned the development of U10 grant proposals for two extensive "Network Group Integrated Translational Sciences Centers" projects that are poised to become integral components of the National Cancer Institute's National Clinical Trials Network (NCTN). Submitted coincident with NRG Oncology's operations and statistical grant proposals in January, these proposals highlight science that similarly builds upon the strong translational science work carried out by RTOG, NSABP, and GOG, and forges collaborations with world-class research organizations and experts in the field. The proposals' research teams are expected to learn this fall whether the grants have been funded and, if so, the level of funding to be awarded when the new NCTN programs launch, projected for March 2014.

A proposed **Glioblastoma Translational Science Center at the Broad Institute** project, led by Rameen Beroukhi, MD, PhD, plans to leverage the significant work carried out by the RTOG Brain Tumor Committee and Biospecimen Resource (see sidebar) to develop a platform for interrogating the effects of therapeutic interventions on the evolutionary path of glioblastoma (GBM) tumors. Specifically, the proposal calls for a genome-wide

RTOG Data and Biorepository Provide Valuable Resources

RTOG maintains perhaps the largest clinical database of study participants with newly diagnosed GBM tumors, and a corresponding biorepository for participants enrolled into prospective clinical trials. The number of patients with GBM tumors who have been treated in RTOG clinical trials since 2006 (more than 3500) exceeds that for any single institution or cooperative group. Across the entire RTOG biorepository, there are over 3500 cases with meticulous clinical outcomes delineation; close to 3000 cases with accompanying banked specimens (most have accompanying paraffin-embedded tissue blocks); and approximately 800 cases with accompanying blood, plasma, and serum. This allows for robust analysis of genomic predictors of response and toxicity.

"The building of RTOG's extensive GBM database and biorepository represents a significant commitment on the part of many people and institutions, and it is very gratifying to see the potential these resources hold for the discovery of more effective GBM treatments."

*Richard Jordan, DDS, PhD, FRCPath
Director, RTOG Biospecimen Resource
Professor, Pathology and Radiation Oncology
University of California, San Francisco*

characterization of somatic genetic events in pre- and post-GBM treatment. The project brings together the extensive expertise and resources of the Broad Institute of MIT and Harvard, Dana-Farber Cancer Institute, University of Maryland, Ohio State University, Case Western Reserve University, Moffitt Cancer Center, Thomas Jefferson University, and the University of Utah.

A second grant submitted supports the creation of the **Integrated Translational Genoproteomics Center at Washington University (ITGC)**, led by Matthew Ellis, MB, BChir, PhD. This project is intended to bring into play new approaches to clinical investigations to meet the demands and opportunities presented by today's integrated cancer "omics" (DNA, RNA, and protein-based "genoproteomic" analysis) technologies. The program complements the technical expertise of The Cancer Genome Atlas (TCGA), a comprehensive effort to accelerate the understanding of the molecular basis of cancer through the application of genome analysis technologies. The accrual power and clinical expertise of the NRG Oncology cooperative group would complement the TCGA's technical knowhow by providing clinical and biological annotation for the vast quantities of new data generated by high-throughput sequencing platforms. The ITGC long-term objective is to enable delivery of deep tumor 'omic analysis results to cooperative group investigators for clinical trial screening, eligibility, and pharmacodynamic study of drug action to provide maximal impact in translational medicine.

"The funding of this work would allow us to shift our focus from seeking small differences between different non-targeted therapies, to large differences achieved with etiology-matched therapies ..."

Adam Dicker, MD, PhD

This U10 grant application is modeled on a funded collaboration among the Clinical Proteomics Tumor Analysis Consortium (CPTAC), the Washington University Genome Institute, and the National Surgical Adjuvant Breast and Bowel Project (NSABP) that will determine the feasibility of conducting a deep genoproteomic analysis of samples in neoadjuvant studies in breast cancer. The formation of NRG Oncology permits expanding the vision to include ovarian cancer, head and neck cancer, prostate cancer, and rectal cancer. "The funding of this work would allow us to shift our focus from seeking small differences between different nontargeted therapies to achieving large differences with etiology-matched therapies in disease subsets defined by common biological drivers rather than by anatomy or morphology. It is the start of bringing precision oncology to NRG Oncology," says Adam Dicker, MD, PhD, RTOG Translational Research Program Chair and professor and chair of the Department of Radiation Oncology at Thomas Jefferson University in Philadelphia.

Publications

Strategies for Accelerating the Development of Radiosensitizers

Researchers from the National Cancer Institute (NCI) and RTOG embarked on a collaborative project to formulate new strategies to accelerate the clinical development of targeted cancer drugs for use in combination with radiation therapy (RT) to improve overall survival and cancer cure rates. Their work culminated in the writing of the guidance document “NCI–RTOG Translational Program Strategic Guidelines for the Early-Stage Development of Radiosensitizers,” published in the January 2, 2013 issue of the *Journal of the National Cancer Institute*.

Demonstrating the need for new approaches to speed the rate of drug development for use in radiation therapy, the authors point to a recent study that found “only 30 phase I trials involving radiation are published per year, compared with almost 400 cancer-related, nonradiation, phase I studies.” The publication describes the unique challenges of developing early-phase radiation oncology clinical trials, including “the limited relevance of preclinical work, the pharmaceutical industry’s diminished interest, and the important individual skills and institutional commitments required to ensure a successful program.”

The authors acknowledge the promising early results of studies combining radiosensitizers with hypofractionated RT and immunomodulators with RT warrant further investigation, and the guidelines offer critical questions and important trial design considerations for early-phase research in these and other areas combining radiation with a targeted agent. The authors discuss new clinical trial designs, such as the “time-to-event continual reassessment method” for phase I trials, randomized phase II “screening” trials, and the use of surrogate endpoints, such as pathological response, as well as suggesting a pathway for the early clinical development of radiation response modifiers.

[LINK TO GUIDELINES](#)

“We need new and better methods to more efficiently and expeditiously determine which agents should be studied in preclinical early-phase clinical trials. The strategic guidelines provide an important knowledge base and offer a clear pathway upon which we encourage investigators to build. Our future work in genomics will complement the drug development process.”

*Adam Dicker, MD, PhD
Translational Research Program Chair
Professor and Chair, Department of Radiation Oncology
Thomas Jefferson University, Philadelphia*

Results of RTOG Study Confirm Superior Treatment Regimen for Patients with Larynx Cancer

The long-term results of the RTOG 91-11 (*A Comparison of Three Nonsurgical Treatment Strategies to Preserve the Larynx in Patients With Locally Advanced Larynx Cancer*) were recently published online in the *Journal of Clinical Oncology*. Presenting data on surviving study participants at a median of 10.8 years post-study enrollment, the authors report that concurrent treatment of intermediate-stage larynx cancer with cisplatin chemotherapy and radiotherapy (RT) (concomitant cisplatin/RT) results in fewer laryngectomies and superior local cancer control compared with treatment with sequential cisplatin/fluorouracil chemotherapy followed by radiotherapy (induction PF) or RT alone.

These current results substantiate the initial analysis published in the *New England Journal of Medicine* in 2003 after 3 years of study participant follow-up and the subsequent analysis at the 5-year follow-up. “If your goal is to preserve the larynx and achieve local control in a nonsurgical setting, there’s no question the concomitant treatment approach is superior,” says lead author Arlene A. Forastiere, MD, a member of the RTOG Head and Neck Cancer Committee and professor of oncology at the Johns Hopkins Sidney Kimmel Comprehensive Cancer Center.

[READ THE FULL RELEASE](#)

RTOG Presentations at the ASCO Annual Meeting

RTOG investigators will report the results of 11 studies in abstracts accepted for presentation at the American Society of Clinical Oncology (ASCO) 2013 Annual Meeting taking place May 31–June 4, 2013 in Chicago, Illinois.

Of particular note, the abstract *RTOG 0825: Phase III Double-Blind Placebo-Controlled Trial Evaluating Bevacizumab in Patients with Newly Diagnosed Glioblastoma* was selected for presentation at the meeting’s plenary session scheduled for Sunday, June 2, 1:00–4:00 PM. RTOG 0825 Principal Investigator and lead abstract author Mark Gilbert, MD, (MD Anderson Cancer Center, Houston, TX), will present the study results. Four additional oral presentations of RTOG research results will be presented along with 6 poster sessions. A full schedule of the RTOG abstract presentation dates, times, and locations will be available on the RTOG Web site prior to the meeting.

Congratulations to the research teams for a strong RTOG presence at ASCO 2013.

For Your Information

Revised RTOG Publication Guidelines

The release of revised **RTOG Publications Guidelines** available on the group's Web site was announced on January 26, 2013 during the NRG Oncology Meeting. According to RTOG Publications Committee Chair Maria Werner-Wasik, MD (Thomas Jefferson University Hospital, Philadelphia), "The team working on the guidelines revisions sought to provide clear and concise information about roles and responsibilities of those involved in the publications process and to expand the guidelines to better reflect the variety of constituents who contribute to RTOG publications to include, for example, translational research, physics, and quality of life."

Of particular interest, Werner-Wasik points to the Pre-Publication Procedures section of the new guidelines that highlights the key persons and steps involved in the development, submission, and tracking of abstracts, presentations, and manuscripts. Many of the publications-related questions that RTOG staff field are addressed in this section specifically, and she encourages all investigators involved in publications activities to review and frequently refer to this helpful information. "The Pre-Publication Procedures section really serves as a 'how-to' guide for authors and others who support the publications process," says Werner-Wasik.

The revised guidelines also reflect RTOG's commitment to recognize all investigators who contribute substantially to RTOG's research, whether it's through aiding study development or manuscript writing, or contributing through robust patient accrual or biological material submission. For example, the guidelines confirm that authorship representation for accrual rests with the institution, whether it is a full, provisional, or affiliate member. Expanded guidelines relate to authorship determination and order for protocol-specified and nonprotocol-specified (or "secondary") analyses, and

"We sought to strike a balance between providing well-defined authorship guidelines and allowing some flexibility."

Maria Werner-Wasik, MD

for intergroup studies for which RTOG is the lead group. "We sought to strike a balance between providing well-defined authorship guidelines and allowing for some flexibility," says Werner-Wasik, "and we look forward to hearing from investigators about whether we achieved this goal."

Please forward feedback or questions about the new guidelines to RTOG-Publications@acr.org.

New NIH Publications Requirements

National Institutes of Health (NIH) is moving to stronger compliance and reporting requirements related to publications, particularly as they apply to progress reports. Beginning in spring 2013, at the earliest, NIH will delay processing of noncompeting continuation grant awards if publications arising from an award are not in compliance with the NIH public access policy. Publication citations must include the PubMed Central reference number (PMCID) each time a paper that falls under the public access policy is cited. Using *My NCBI* to update publications progress guarantees that the correct identifier is reported.

Please see <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-12-160.html> for complete text of the notice regarding changes to reporting requirements.

A Message from the Head and Neck Cancer Alliance: Take Part in Oral, Head and Neck Cancer Awareness Week®

The 16th Annual Oral, Head and Neck Cancer Awareness Week® sponsored by the Head and Neck Cancer Alliance, is scheduled for April 14–20, 2013. The weeklong series of events promotes awareness of this potentially life-threatening disease, highlighted by a day of free oral cancer screenings held at medical offices throughout the country.

According to a recent Harris Interactive survey, 71% of Americans say they have not been examined by a medical professional for oral, head and neck cancer. Given the rise in oral cancers related to human papillomavirus (HPV), screening for and early detection of this disease is more important than ever. The Alliance urges you to participate by conducting a free screening at your medical practice, clinic, hospital, or university. For more details, promotional materials (eg, posters, T-shirts, and media kits), and registration information, please visit www.OHANCAW.com and follow us on Facebook and Twitter.

The Alliance urges you to participate by conducting a free screening at your medical practice, clinic, hospital, or university.



In Memoriam

With sadness and much gratitude for their life's work, RTOG recognizes the recent passing of our colleagues.

Kate Murphy, *Patient Advocate*

Stanley Order, MD, ScD, FACR, *Radiation Oncologist and RTOG Leader*

Todd Wasserman, MD, *Radiation Oncologist and RTOG Leader*

People in the News



Congratulations to **Mack Roach III, MD, FACR**, a professor of radiation oncology and urology at the University of California at San Francisco (UCSF), on his appointment by President Obama to serve on the on National Cancer Advisory Board (NCAB), a committee that advises the US National Cancer Institute. Roach serves on the RTOG Genitourinary Cancer, Full Member Principal Investigators, and New Investigators Committees.



Congratulations also go to **John A. "Drew" Ridge, MD, PhD, FACS**, chief of head and neck surgery at the Fox Chase Cancer Center in Philadelphia for recently being named as the inaugural recipient of the Louis Della Penna Family Chair in Head and Neck Oncology. Ridge is a member of the RTOG Head and Neck Cancer Committee.

RA Corner

Going the Extra Mile

Terry Thomas, chair of the RTOG Research Associates Committee and a research coordinator with the Arizona Oncology Services Foundation, relays an amazing story of what it required to enroll a patient onto RTOG 0834 Phase III Trial on Concurrent and Adjuvant Temozolomide Chemotherapy in Non-1p/19q Deleted Anaplastic Glioma: The CATNON Intergroup Trial.

I have been involved with National Cancer Institute (NCI)-sponsored research since 1984. I have registered patients through almost every Cooperative Group and seen many changes to the NCI system. I have served as chairperson of the local Association of Clinical Research Professionals chapter and, for the past several years, as the RTOG Research Associates Committee chairperson. I am part of a 2.5 full-time equivalent (FTE) group of research coordinators for Arizona Oncology Services Foundation, a private practice full member RTOG institution. We do it all, from regulatory and data entry to patient registration. I leave my house at 5:15 AM and usually drive in the driveway at 7:00 PM. I love my job, as do most research coordinators. My family has been devastated by cancer, and this was the reason I applied for the job. I thought I had seen almost everything in my career. I was wrong. [Read Terry's Story](#)

Orient Yourself!

On January 24, RTOG announced the launch of online training modules that enable research associates (RAs) to learn about important RTOG data management procedures at a time most convenient for them.

Available in the "Research Associates" section of the RTOG Web site, the training modules include everything you need to know about patient registration, data submission, RT Quality Assurance (RTQA) procedures, and much more! These modules are a valuable resource for both RAs new to RTOG and seasoned RAs who would like to brush up on a topic or two.

A quiz is available at the completion of each module, so RAs can test their understanding of the material.

To date, more than 150 RAs have taken the opportunity to review the modules—including an RA at an institution in Korea. "The feedback has been very positive," says RTOG Senior Research Associate Roseann Bonanni, CTR, CCRP, who has spearheaded the training project. "I've heard from a number of RAs that the modules currently available on the Web site are excellent." Bonanni stresses the importance of reading completely through each module and explains that the user can take the quiz multiple times.

If you haven't already perused the in-depth material now available, please take a look at:

www.rtog.org/ResearchAssociates/EducationTraining/RAEducationMaterials.aspx

Coming Soon: Training modules covering the content areas of regulatory, serious adverse event (SAE) reporting, administration, and auditing will be added to the training opportunities. Be on the lookout for RTOG broadcasts about these additions to the online training program. The certificate awarded at the completion of all required training modules can be submitted for Society of Clinical Research Associate credits.

Trial Updates

RTOG 1203: A Randomized Phase III Study of Standard vs. IMRT Pelvic Radiation for Postoperative Treatment of Endometrial and Cervical Cancer (Time C); An RTOG Community Cancer Oncology Program (CCOP) Trial

From the Trial Principal Investigators

“IMRT has really been adopted wholeheartedly in our field, with very little high- quality data available to support its benefit. In this time of scrutiny on health care expenditure, it is incredibly important for our specialty to provide evidence for the use of higher-cost therapies. This trial looks at both acute GI toxicity from the patient's perspective, and, as a secondary analysis, whether the improvement in toxicity and quality of life warrants the increased cost of IMRT.”

ANAMARIA YEUNG, MD
RTOG 1203 Co-Principal Investigator
University of Florida

Overview

Intensity-modulated radiation therapy (IMRT) is a method of radiotherapy delivery that allows for conforming of the dose distribution to the shape of the target so that the dose to adjacent normal tissues is reduced. IMRT holds particular potential in the delivery of postoperative pelvic radiation due to the complex shape of the target and the significant toxicity as a consequence of irradiation of the bowel and bone marrow.

Although an abundance of retrospective and single-institution studies demonstrate less acute gastrointestinal (GI) toxicity with IMRT compared with conventional whole pelvic radiation therapy (WPRT), there has been no direct comparison of these two treatment approaches to evaluate the benefit of pelvic IMRT. This question has broad relevance for the management of gynecologic cancer and for the field of radiation oncology. The purpose of this randomized phase III study is to investigate the effect of normal tissue sparing with IMRT on acute and chronic toxicity.

Patient Population: patients with a pathologically proven diagnosis of endometrial or cervical cancer who require postoperative radiation or chemoradiation, and who have a Zubrod performance status of 0–2

Target Accrual: 281 patients

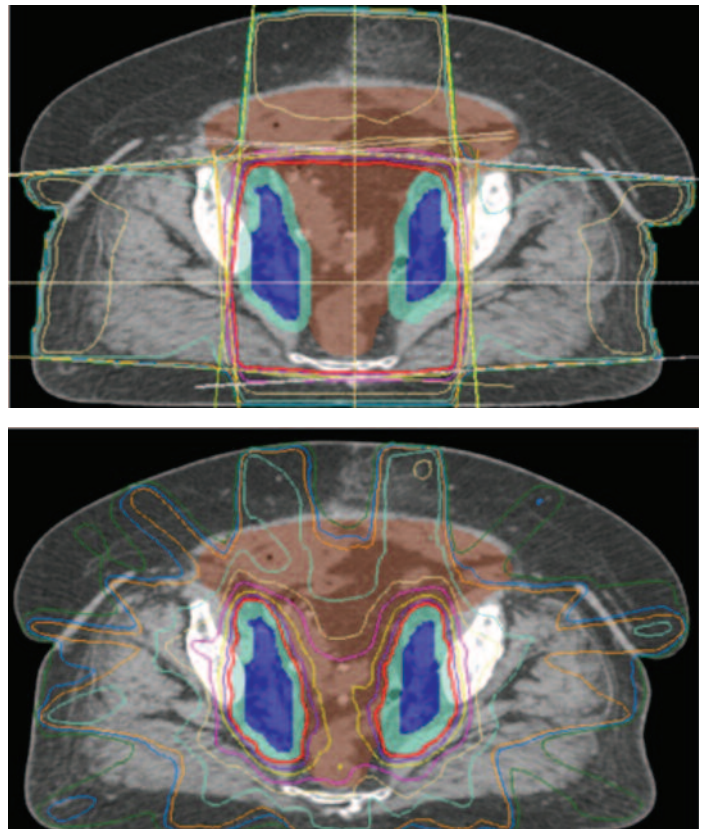


Figure 1-1. Standard three-dimensional conformal irradiation (top panel) requires treatment of small bowel (contoured in brown), which can be spared with IMRT (bottom panel).

Primary Objective

To determine if IMRT reduces acute GI toxicity in the 5th week (after 23–25 fractions) of pelvic radiation as measured with the Expanded Prostate Cancer Index Composite (EPIC)

Trial Schema

S T R A T I F Y	XRT Dose	R A N D O M I Z E
	1. 45 Gy	
	2. 50.4 Gy	
C h e m o t h e r a p y	1. No Chemotherapy	Arm 1 IMRT pelvic radiation treatment
	2. 5 cycles of weekly cisplatin at 40 mg/m ²	Arm 2 4-field pelvic radiation treatment
D i s e a s e S i t e	1. Endometrial	
	2. Cervix	

Trial Updates (continued)

RTOG 1205: Randomized Phase II Trial of Concurrent Bevacizumab and Re-Irradiation Versus Bevacizumab Alone as Treatment for Recurrent Glioblastoma

From the Trial Principal Investigator

“If the results of this trial are positive, the implication is that higher radiotherapy doses are potentially feasible and safe, and therefore, the addition of bevacizumab and re-irradiation in recurrent gliomas may provide the preliminary proof of principle to further study dose-escalated radiation in combination with bevacizumab in the upfront treatment of glioblastoma. Additionally, this trial could potentially set the stage for testing additional chemotherapeutic and/or targeted agents with radiation in the recurrent glioblastoma setting. This could provide preliminary clinical data to move promising agents in the upfront setting in a more efficient manner.”

CHRISTINA TSIEN, MD
RTOG 1205 Principal Investigator
University of Michigan
Ann Arbor, Michigan

Overview

The median survival of patients with glioblastoma (GBM) tumors is 14 months, with the majority of patients developing recurrence at a median of 8 months post treatment. Patients with recurrent GBM have poor prognoses despite treatment with various modalities including surgery, chemotherapy, and re-irradiation.

In 2009, bevacizumab, an angiogenesis inhibitor that targets the vascular endothelial growth factor (VEGF), was approved by the Federal Drug Administration for the treatment of recurrent GBM. Preclinical data suggest that the use of antiangiogenic agents combined with radiation may sensitize both tumors and associated vasculature to radiotherapy and may also reduce the toxicity associated with re-irradiation by reducing the risk of radiation necrosis.

The RTOG 1205 phase II trial will investigate the safety and efficacy of the treatment combination of bevacizumab and re-irradiation in improving overall survival in patients with recurrent GBM not previously treated with bevacizumab. This trial will also be the first prospective, multi-institutional study to evaluate survival, response, and patterns of failure following re-irradiation.

Patient Population: patients with recurrent GBM or a variant such as gliosarcoma or giant cell GBM.

Target Accrual: 178

Primary Objective

To establish an improvement in overall survival in patients with recurrent GBM receiving bevacizumab and re-irradiation compared with those receiving bevacizumab alone

Trial Schema

S T R A T I F Y	Age	R A N D O M I Z E	Arm 1
	1. <50		Bevacizumab alone q 2 weeks (control arm)
	2. ≥50		
	Karnofsky performance status		Arm 2
1. 70–80	Hypofractionated radiotherapy 35 Gy in 10 fractions with concurrent bevacizumab q 2 weeks (experimental arm)		
2. 90–100			
Recent resection			
1. Yes			
2. No/biopsy only			

RTOG 1112: Randomized Phase III Study of Sorafenib vs. Stereotactic Body Radiation Therapy Followed by Sorafenib in Hepatocellular Carcinoma

From the Trial Principal Investigator

“This trial is the first randomized trial investigating radiation therapy for the treatment of hepatocellular carcinoma. It is the third phase III trial to be endorsed by the NIH Hepatobiliary Task Force, and it has the potential to change practice. Success of this study is dependent on participation from all RTOG sites with experience and interest in liver cancer radiation therapy, including international affiliates. Through the credentialing process, educational materials developed for contouring, and real-time review of radiation plans, it is expected that the quality of liver cancer radiation therapy should improve for all participating centers. Please don't hesitate to contact me with questions, and thanks in advance for supporting the study!”

LAURA A. DAWSON, MD
RTOG 1112 Principal Investigator
Princess Margaret Hospital
Toronto, Ontario, Canada

Overview

The incidence of hepatocellular (HCC) cancer has increased from 1.4 to 2.4 per 100,000 over the past two decades, and it is expected

Continued

Trial Updates (continued)

to continue to rise in parallel with the increasing incidence of hepatitis C. Patients with hepatitis C cirrhosis have a 5%–20% 5-year cumulative incidence of HCC, and, even in the absence of cirrhosis, hepatitis B infection is associated with a 15% risk of HCC. Including operable patients, the overall 5-year survival of patients with HCC is less than 10%, substantiating the need for improved therapies.

Stereotactic body radiation therapy (SBRT) has proven a promising local treatment for HCC, associated with sustained responses in the majority of treated patients. Currently, sorafenib, a drug that disrupts the process of tumor proliferation and angiogenesis, is standard systemic therapy for locally advanced or metastatic HCC. Early-phase trial results suggest a strong rationale for combining SBRT with sorafenib for the treatment of HCC and have led investigators to develop a trial that rigorously tests this treatment combination.

Patient Population: patients with HCC not suitable for resection, transplant, radiofrequency ablation, or transarterial chemoembolization (TACE), and/or with recurrent or refractory disease following TACE, and with a Barcelona Clinic Liver Cancer stage of intermediate or advanced, and a Child-Pugh score of A

Target Accrual: 368

(Note: This trial is preactivated and (as of March 15) is not open for patient enrollment. Upon first receipt of local institutional review board approval from a site, a broadcast e-mail will be sent to notify all sites that the trial is open for patient enrollment.)

Primary Objective

To determine if SBRT improves overall survival in patients with HCC treated with sorafenib

Trial Schema

REGISTRATION	Vascular involvement	RANDOMIZE	Arm 1 Daily sorafenib (full dose)
	Hepatitis B vs. C vs. other		
	North American site vs. non-North American site		Arm 2 SBRT alone (27.5 Gy–50 Gy in 5 fractions)
	HCC volume/liver volume (<10% vs. 10–40 vs. >40%)		Followed by sorafenib alone daily (half dose x 1 month, followed by full dose)

RTOG 1216: Randomized Phase II/III Trial of Surgery and Postoperative Radiation Delivered with Concurrent Cisplatin versus Docetaxel versus Docetaxel and Cetuximab for High-Risk Squamous Cell Cancer of the Head and Neck

From the Trial Principal Investigators

“Patients with locoregionally advanced, nonmetastatic HPV-negative head and neck—especially oral, larynx, and hypopharynx—cancers, face many therapeutic, toxicity, and functional challenges. Most are initially treated surgically. Many are found to have high-risk factors for nonsalvageable recurrence. The now-standard chemoradiation options are not as successful as we want and have potential significant toxicity burden. We are excited to have the opportunity to test other promising radiosensitizing combinations with the goal of improving treatment and outcomes, and reducing toxicity.”

DAVID I. ROSENTHAL, MD
RTOG 1216 Co-Principal Investigator
MD Anderson Cancer Center
Houston, Texas

Overview

Approximately 50% of patients with head and neck cancer undergo primary surgery for their malignancy. For those with high-risk clinical and pathologic tumor features, the local-regional failure rates remain high. Efforts to reduce recurrence rates include the use of postoperative radiation therapy (RT) and, more recently, postoperative chemoradiation. The benefit of adding cisplatin chemotherapy to RT in the high-risk setting is modest and is accompanied by significant incremental toxicity. Many patients with head and neck cancer cannot complete the regimen of 100 mg/m² cisplatin every 3 weeks during RT. This highlights the need for new nonplatinum-based agents that may have greater efficacy and less toxicity. The RTOG has conducted several phase II studies testing other agents delivered with radiation in the postoperative setting. The most recent study identified the docetaxel-cetuximab regimen as very promising. Preclinical data also show that this doublet has a very high radiation-sensitizing effect.

Additionally, small phase I–II studies have suggested that docetaxel given concurrently with radiation is feasible and promising. RTOG 1216 will also investigate whether cetuximab, which has a different mechanism of action than docetaxel, adds clinical benefit when added to docetaxel as compared with docetaxel alone, and whether either regimen is better than the current gold standard cisplatin monotherapy with concurrent RT.

Continued

Trial Updates (continued)

This trial also affords a critical opportunity to collect valuable patient-reported outcomes data about symptom burden, quality of life, and function, as well as tissue specimens for correlative biomarker analyses. The proposed correlative studies will aid the development of tissue-based biomarkers to identify patients who would benefit from each treatment regimen and those who are at high risk for relapse and may require future treatment intensification.

Patient Population: patients with pathologic stage III or IV head and neck squamous cell carcinoma involving the oral cavity, oropharynx (p16 negative), larynx, or hypopharynx, and who have at least 1 of the following high-risk pathologic features: extracapsular nodal extension or invasive cancer seen within 3 mm of the primary tumor resection margins

Trial Schema*

S T E P 1	For all patients: Mandatory submission of tissue for EGFR	S T R A T I F Y	Zubrod Performance Status 1. 0 2. 1	S T E P 2	Arm 1: IMRT 60 Gy in 6 weeks and cisplatin 40 mg/m ² weekly x 6 doses	
	For patients with oroharyngeal cancer: Mandatory p16 analysis		Primary Tumor Site 1. Oral Cavity 2. Larynx 3. Hypopharynx 4. p16-negative oropharynx		R A N D O M I Z E	Arm 2: IMRT 60 Gy in 6 weeks and weekly docetaxel (15 mg/m ²) x 6 doses
	EGFR Expression** 1. High 2. Low 3. Inevaluable		Arm 3: IMRT 60 Gy in 6 weeks and cetuximab (loading 400 mg/m ² , then 250 mg/m ² weekly x 6 doses) and docetaxel (15 mg/m ²) weekly x 6 doses			

* If the trial proceeds to the phase III component, Arm 2 or Arm 3 will be chosen as the experimental arm. Patients accrued in the phase II component of the trial will complete the treatment to which they are randomized (Arm 1, 2, or 3) and will be followed as specified in the protocol.

** EGFR, epidermal growth factor receptor.



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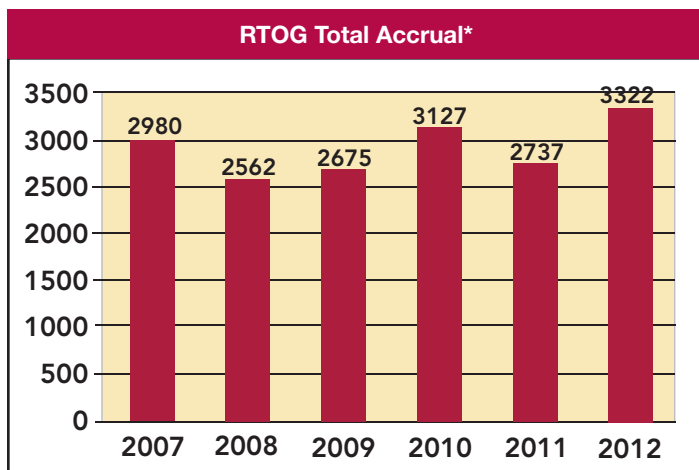
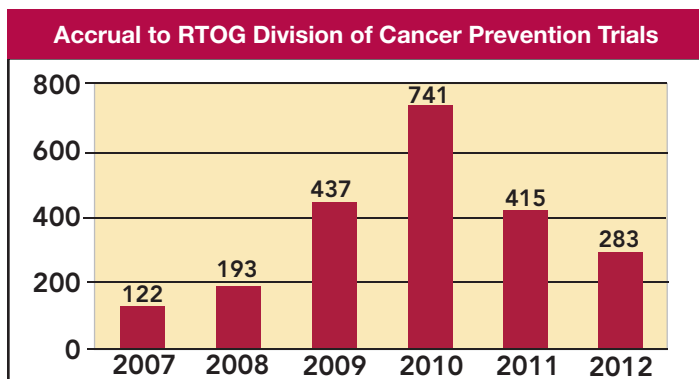
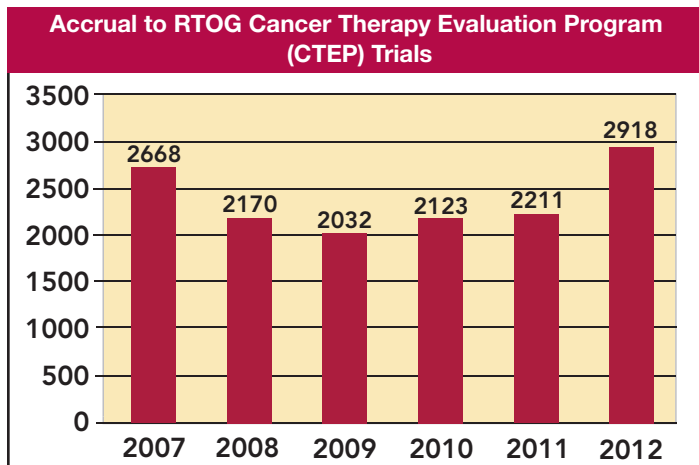
Please send information on awards, honors, change of position, etc. to Karan Boparai at kboparai@acr.org.



RTOG is administered by the American College of Radiology (ACR) and is located in the ACR Clinical Research Center in Philadelphia, PA.

2012 Year-End Results

Accrual Performance 2007–2012



* Includes non-RTOG trials (eg, CTSU trials)

Top-Accruing RTOG Trials

Brain Trials

RTOG 0929: A Randomized Phase I/II Study of ABT-888 in Combination with Temozolomide in Recurrent (Temozolomide Resistant) Glioblastoma

Accrual: 165

RTOG 0837/ACRIN 6689: Randomized, Phase II, Double-Blind, Placebo-Controlled Trial of Conventional Chemoradiation and Adjuvant Temozolomide Plus Cediranib versus Conventional Chemoradiation and Adjuvant Temozolomide Plus Placebo in Patients with Newly Diagnosed Glioblastoma

Accrual: 109

RTOG 0933: A Phase II Trial of Hippocampal Avoidance During Whole Brain Radiotherapy for Brain Metastases—RTOG CCOP Study

Accrual: 102

Breast Trials

RTOG 1005: A Phase III Trial of Accelerated Whole Breast Irradiation With Hypofractionation Plus Concurrent Boost Versus Standard Whole Breast Irradiation Plus Sequential Boost for Early-Stage Breast Cancer

Accrual: 591

Head and Neck Trials

RTOG 1016: Phase III Trial of Radiotherapy Plus Cetuximab Versus Chemoradiotherapy in HPV-Associated Oropharynx Cancer

Accrual: 381

RTOG 0920: A Phase III Study of Postoperative Radiation Therapy (IMRT) +/- Cetuximab for Locally-Advanced Resected Head and Neck Cancer

Accrual: 119

Gastrointestinal Trials

RTOG 0848: A Phase III Trial Evaluating both Erlotinib and Chemoradiation as Adjuvant Treatment for Patients with Resected Head of Pancreas Adenocarcinoma

Accrual: 107

Genitourinary Trials

RTOG 0534: A Phase III Trial of Short Term Androgen Deprivation With Pelvic Lymph Node or Prostate Bed Only Radiotherapy (SPPORT) in Prostate Cancer Patients With a Rising PSA After Radical Prostatectomy

Accrual: 328

RTOG 0815: A Phase III Prospective Randomized Trial of Dose-Escalated Radiotherapy with or without Short-Term Androgen Deprivation Therapy for Patients with Intermediate-Risk Prostate Cancer

Accrual: 295

Continued

Top-Accruing RTOG Trials (continued)

RTOG 0924: Androgen Deprivation Therapy and High Dose Radiotherapy With or Without Whole-Pelvic Radiotherapy in Unfavorable Intermediate or Favorable High Risk Prostate Cancer: A Phase III Randomized Trial
Accrual: 223

2012 Trial Activity Summary

RTOG Trials Opened

- RTOG 1106/ACRIN 6697:** Randomized Phase II Trial of Individualized Adaptive Radiotherapy Using During-Treatment FDG-PET/CT and Modern Technology in Locally Advanced Non-Small Cell Lung Cancer (NSCLC)
- RTOG 1012:** Phase II Randomized Trial of Prophylactic Manuka Honey for the Reduction of Chemoradiation Therapy Induced Esophagitis-Related Pain During the Treatment of Lung Cancer - RTOG CCOP Study
- RTOG 1115:** Phase III Trial of Dose Escalated Radiation Therapy and Standard Androgen Deprivation Therapy (ADT) with a GnRH Agonist vs. Dose Escalated Radiation Therapy and Enhanced ADT with a GnRH Agonist and TAK-700 for Men with High Risk Prostate Cancer
- RTOG 1122:** Phase II Double-Blinded Placebo-Controlled Study of Bevacizumab With or Without AMG 386 in Patients With Recurrent Glioblastoma or Gliosarcoma
- RTOG 1119:** Phase II Randomized Study of Whole Brain Radiotherapy in Combination With Concurrent Lapatinib in Patients With Brain Metastasis From HER2-Positive Breast Cancer: A Collaborative Study of RTOG and KROG
- RTOG 1203:** A Randomized Phase III Study of Standard Vs. IMRT Pelvic Radiation for Post-Operative Treatment of Endometrial and Cervical Cancer (TIME-C)—RTOG CCOP Study
- RTOG 1205:** Randomized Phase II Trial of Concurrent Bevacizumab and Re-Irradiation Versus Bevacizumab Alone as Treatment for Recurrent Glioblastoma

RTOG Endorsed Trials

- RTOG 1174/ANZGOG/GOG 0274:** A Phase III Trial of Adjuvant Chemotherapy as Primary Treatment for Locally Advanced Cervical Cancer Compared to Chemoradiation Alone: The OUTBACK Trial
- RTOG 1175/CALGB 80803:** Randomized Phase II Trial of PET Scan-Directed Combined Modality Therapy in Esophageal Cancer

RTOG 1271/NCCTG N1048: A Phase II/III trial of Neoadjuvant FOLFOX, with Selective Use of Combined Modality Chemoradiation versus Preoperative Combined Modality Chemoradiation for Locally Advanced Rectal Cancer Patients Undergoing Low Anterior Resection with Total Mesorectal Excision

RTOG 1272/NSABP B47: A Randomized Phase III Trial of Adjuvant Therapy Comparing Chemotherapy Alone (Six Cycles of Docetaxel Plus Cyclophosphamide or Four Cycles of Doxorubicin Plus Cyclophosphamide Followed by Weekly Paclitaxel) to Chemotherapy Plus Trastuzumab in Women with Node-Positive or High-Risk Node-Negative HER2-Low Invasive Breast Cancer

RTOG Studies That Met Target Accrual and Closed

- RTOG 0831:** A Randomized, Double-Blinded, Placebo-Controlled Phase III Trial to Evaluate the Effectiveness of a Phosphodiesterase 5 Inhibitor, Tadalafil, in Prevention of Erectile Dysfunction in Patients Treated with Radiotherapy for Prostate Cancer - RTOG CCOP Study
- RTOG 0232:** A Phase III Study Comparing Combined External Beam Radiation And Transperineal Interstitial Permanent Brachytherapy With Brachytherapy Alone For Selected Patients With Intermediate Risk Prostatic Carcinoma
- RTOG 0837:** Randomized, Phase II, Double-Blind, Placebo-Controlled Trial of Conventional Chemoradiation and Adjuvant Temozolomide Plus Cediranib versus Conventional Chemoradiation and Adjuvant Temozolomide Plus Placebo in Patients with Newly Diagnosed Glioblastoma
- RTOG 0539:** Phase II Trial of Observation for Low-Risk Meningiomas and of Radiotherapy for Intermediate- and High-Risk Meningiomas
- RTOG 0933:** A Phase II Trial of Hippocampal Avoidance During Whole Brain Radiotherapy for Brain Metastases

2012 Year-End Results (continued)

Institutional Performance

2012 RTOG TOP-ACCRUING INSTITUTIONS

Full and Provisional Member Institutions

INSTITUTION	PARTICIPANTS ACCRUED
US Oncology	94
Kaiser Permanente Santa Clara	94
University Hospitals of Cleveland	68
McGill University	66
Emory University	64
L'Hotel-Dieu de Quebec	62
Ohio State University	58
Washington University St. Louis	56
University of Utah Health Science Center	55
Medical College of Wisconsin	53

Affiliate Sites

INSTITUTION	PARTICIPANTS ACCRUED
University of Kansas	36
Saskatoon Cancer Center	34
University of Miami	31
University of Louisville	30
Toronto Sunnybrook Regional Cancer Centre	30
Indiana University Medical Center	28
Santa Clara Valley Medical Center	26
York Cancer Center	26
University of Kentucky Lexington	25
Stanford University Medical Center	24

Community Clinical Oncology Programs (CCOPs)

INSTITUTION	PARTICIPANTS ACCRUED
Christiana Care Health Services CCOP	39
John H. Stroger Jr. Hospital of Cook County MB-CCOP	28
S.E. Cancer Control Consortium CCOP	26
Upstate Carolina CCOP-Gibbs Regional Cancer Center	20
Michigan Cancer Research CCOP	19
Virginia Mason CCOP	18
Columbia River CCOP	18
Main Line Health CCOP	17
Metro Minnesota CCOP	15
North Shore CCOP	15

2012 RTOG TOP INSTITUTIONS FOR DATA QUALITY

Full and Provisional Member Institutions

INSTITUTION	2011/12 DATA QUALITY SCORE (%)
L'Hotel-Dieu de Quebec	99.80
New Hanover Radiation Oncology Center	99.79
Northeast Radiation Oncology Center	99.71
Dartmouth-Hitchcock Medical Center	99.71
Intermountain Medical Center	99.69
University of Utah Health Science Center	99.66
Arizona Oncology Services Foundation	99.65
University of Alabama @ Birmingham Medical Center	99.61
McGill University	99.57
Ohio State University	99.53

Community Clinical Oncology Programs (CCOPs)

INSTITUTION	2011/12 DATA QUALITY SCORE (%)
Hematology/Oncology Associates of Central New York	100.00
Northshore University HealthSystem-Evanston CCOP	99.92
Columbus CCOP	99.86
Brooklyn MB-CCOP/ SUNY Downstate	99.76
Upstate Carolina CCOP - Gibbs Regional Cancer Center	99.68
Christiana Care Health Services CCOP	99.65
Grand Rapid Clinical Oncology Program	99.60
Kalamazoo CCOP	99.59
Mount Sinai Comprehensive Cancer Center CCOP	99.55
Geisinger Medical Center	99.55
North Shore CCOP	99.55

2012 Site Activity Report

Welcome to all the sites new to RTOG's clinical research program in 2012 and congratulations to sites that have achieved full or provisional membership in the past year.

FULL MEMBER INSTITUTIONS

Medical University of South Carolina

Charleston, SC

PI: Joseph M. Jenrette, MD

New Hanover Radiation Oncology

Wilmington, NC

PI: Michael A. Papagikos, MD

The Ohio State University

Columbus, OH

PI: Arnab Chakravarti, MD

PROVISIONAL MEMBER INSTITUTIONS

University of California, San Diego

San Diego, CA

PI: Loren K. Mell, MD

AFFILIATE MEMBER SITES

21st Century Oncology-Scottsdale

Scottsdale, AZ

PI: Steven E. Finkelstein, MD

Cancer Treatment Services Arizona

Casa Grande, AZ

PI: Ajay Bhatnagar, MD

Central DuPage Hospital Cancer Center

Warrenville, IL

PI: Christy M. Kesslering, MD

Clinica Alemana de Santiago

Santiago, Chile

PI: Andres Cordova-Bernhardt, MD

Franciscan St. Margaret Health-Dyer Campus

Dyer, IN

PI: Urmi P Kalokhe, MD

Jersey Shore University Medical Center

Neptune, NJ

PI: Jonathan Havens Briggs, MD

Jewish General Hospital

Montreal, Quebec, Canada

PI: Khalil Sultanem, MD

Lancaster General Hospital

Lancaster, PA

PI: Jeffery S. Eshleman, MD

MAASTRO Clinic

Maastricht, Netherlands

PI: Philippe Lambin, MD

Memorial Hermann The Woodlands Hospital

The Woodlands, TX

PI: M. Elizabeth Sands, MD

National University Cancer Institute, Singapore

Singapore

PI: Jiade Jay Lu, MD

Piedmont Fayette Hospital

Fayetteville, GA

PI: Adam Wayne Nowlan, MD

Presbyterian Intercommunity Hospital

Whittier, CA

PI: Edward F. Miles, MD

Rockingham Memorial Hospital Hahn Cancer Center

Harrisonburg, VA

PI: Heather A. Morgan, MD

Sheba Medical Center

Tel Hashomer, Israel

PI: Richard James (Yaacov) Lawrence, MD

South Miami Hospital

Miami, FL

PI: Maria Amelia Rodrigues, MD

Temple University School of Medicine

Philadelphia, PA

PI: Curtis T. Miyamoto

The Norton Cancer Institute - Downtown

Louisville, KY

PI: Aaron C. Spalding, MD

Turville Bay MRI & Radiation Oncology Center

Madison, WI

PI: Michael W. Zinda, MD

Vassar Brothers Medical Center

Poughkeepsie, NY

PI: Edward M. Farhangi, MD

Windsor Regional Hospital

Windsor, Ontario, Canada

PI: Kenneth Michael Schneider, MD

CLINICAL COMMUNITY ONCOLOGY PROGRAM (CCOP) SITES

Greenville CCOP - Cancer Centers of the Carolinas-Eastside

Greenville, SC

PI: David L. Grisell, DO

Northshore University HealthSystem-Evanston CCOP

Evanston, IL

PI: Arif Y. Shaikh, MD

Saint Louis-Cape Girardeau CCOP

Saint Louis, MO

PI: Julie Ann Mai, MD

CCOP COMPONENT SITES

Botsford Hospital

Farmington Hills, MI

PI: Larry Kestin, MD

Cancer Centers of the Carolinas - Andrews

Greenville, SC

PI: David L. Grisell, DO

Cancer Centers of the Carolinas - Faris Road

Greenville, SC

PI: David Grisell, DO

Cancer Centers of the Carolinas - Greer Radiation Oncology

Greer, SC

PI: David Grisell, DO

Cancer Centers of the Carolinas - Seneca

Seneca, SC

PI: David Grisell, DO

Comprehensive Cancer Centers of Nevada - Henderson

Henderson, NV

PI: Raul T. Meoz-Mendez, MD

Comprehensive Cancer Centers of Nevada - Northwest

Las Vegas, NV

PI: Raul T. Meoz-Mendez, MD

Comprehensive Cancer Centers of Nevada - Summerlin

Las Vegas, NV

PI: Raul T. Meoz-Mendez, MD

Comprehensive Cancer Centers of Nevada - Sunset

Las Vegas, NV

PI: Raul T. Meoz-Mendez, MD

Heartland Regional Medical Center

St. Joseph, MO

PI: Rakesh Gaur, MD

Holy Family Memorial Hospital

Manitowoc, WI

PI: Gregory M. Cooley, MD

Idaho Urologic Institute

Meridian, ID

PI: Timothy E. Sawyer, MD

Menorah Medical Center

Overland Park, KS

PI: Rakesh Gaur, MD

Phelps County Regional Medical Center

Rolla, MO

PI: Mary Vogelsang Graham, MD

Research Medical Center

Kansas City, MO

PI: Rakesh Gaur, MD

Rice Memorial Hospital

Willmar, MN

PI: Paul W. Sperduto, MD

continued

2012 Site Activity Report (continued)**Rush-Copley Medical Center**

Aurora, IL
PI: Parthiv S. Mehta, MD

Southern Ohio Medical Center - Cancer Center

Portsmouth, OH
PI: Johnny Ray Bernard, Jr., MD

St Luke's Hospital

Kansas City, MO
PI: Rakesh Gaur, MD

Tampa General Hospital

Tampa, FL
PI: Lawrence B. Berk, MD

SATELLITE SITES**21st Century Oncology - Carolina Radiation Medicine**

Greenville, NC
PI: Ron R. Allison, MD

21st Century Oncology - Lakewood Ranch Oncology

Lakewood Ranch, FL
PI: Dwight L. Fitch, MD

21st Century Oncology - Bradenton

Bradenton, FL
PI: Dwight L. Fitch, MD

21st Century Oncology - Clarkston, MI

Clarkston, MI
PI: Jeff Forman, MD

21st Century Oncology - El Segundo

El Segundo, CA
PI: David C. Khan, MD

21st Century Oncology - Farmington Hills

Farmington Hills, MI
PI: Jeffrey David Forman, MD

21st Century Oncology - Fort Walton Beach

Fort Walton Beach, FL
PI: James H. Stevens, MD

Albert Lea Medical Center

Albert Lea, MN
PI: Timothy F. Kozelsky, MD

Augusta Health Cancer Center

Fishersville, VA
PI: Robert M. Kyler, MD

Carolina Medical Center - Northeast

Concord, NC
PI: Stuart Burri, MD

Chonnam National University Hwasun Hospital

Jeollanam-do, South Korea
PI: Sung-Ja Ahn, MD

Cleveland Clinic Foundation- Parma

Parma, OH
PI: Charles E. Stewart, MD

Cleveland Clinic - Strongsville

Strongsville, OH
PI: Andrew D. Vassil, MD

Fishkill Radiation Oncology Center

Fishkill, NY
PI: Edward Farhangi, MD

Florida Hospital - Kissimmee

Kissimmee, FL
PI: Robert James Sollaccio, MD

Franciscan St. Margaret Health

Hammond, IN
PI: Robert D. Prock, MD

Gangnam Severance Hospital

Seoul, South Korea
PI: Ki Chang Keum, MD

Legacy Mount Hood Medical Center

Gresham, OR
PI: Andrew Y.J. Kee, MD

Legacy Salmon Creek Hospital

Vancouver, WA
PI: Andrew Kee, MD

Levine Cancer Institute-Pineville

Charlotte, NC
PI: Stuart Burri, MD

Northside Hospital Forsyth

Cumming, GA
PI: Sahar E. Rosenbaum, MD

Ocean Medical Center

Brick, NJ
PI: Nathan Kaufman, MD

Olean General Hospital

Olean, NY
PI: Gregory Berton Hare, MD

Providence Holy Cross Health Center - Santa Clarita

Santa Clarita, CA
PI: Rex Hoffman, MD

Putnam Hospital Center

Carmel, NY
PI: Edward Farhangi, MD

Rock Hill Radiation Therapy Center

Rock Hill, SC
PI: Stuart Burri, MD

Samsung Medical Center

Seoul, South Korea
PI: Doo Ho Choi, MD

Seidman Cancer Center - Firelands Regional Medical Center

Sandusky, OH
PI: Grae L. Schuster, MD

Seoul National University Bundang Hospital

Seongnam, Gyeonggi-D, South Korea
PI: In Ah Kim, MD

Shaw Regional Cancer Center

Edwards, CO
PI: Patricia Harrigan Hardenbergh, MD

Skagit Valley Hospital

Mount Vernon, WA
PI: David Abraham Kantorowitz, MD

Swedish Cancer Institute at Swedish Edmonds

Edmonds, WA
PI: Vivek Mehta, MD

Texas Oncology - Austin Midtown

Austin, TX
PI: Srivani Thatikonda, MD

Texas Oncology - Central South Austin

Austin, TX
PI: Carl E. Nuesch, MD

Texas Oncology - Round Rock Cancer Center

Round Rock, TX
PI: Karen Hedva Shahar Cohen, MD

Texas Oncology - Seton Williamson

Round Rock, TX
PI: Courtney Adam Sheinbein, MD

Texas Oncology - South Austin

Austin, TX
PI: Ryan M Tierney, MD

Ulster Radiation Oncology Center

Kingston, NY
PI: Edward Farhangi, MD

University of Miami Sylvester Comprehensive Cancer Center - Deerfield Beach

Deerfield Beach, FL
PI: Lorraine Portelance, MD

University of Kansas Cancer Center - East

Lee's Summit, MO
PI: Parvesh Kumar, MD

University Radiation Therapy Center

Charlotte, NC
PI: Stuart Burri, MD

USON-Cancer Care Northwest - East Holland

Spokane, WA
PI: Christopher M. Lee, MD

USON-Plano West Cancer Center

Plano, TX
PI: Mark A. Engleman, MD

USON-Texas Oncology - Houston Memorial City

Houston TX
PI: Vivek S. Kavadi, MD