

ANNUAL MEETING SPECIAL EDITION 2013

# ASTRO *news*

FALL 2013

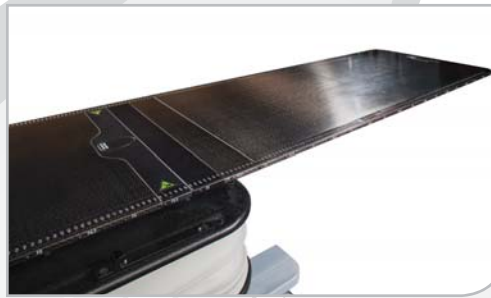
## ASTRO IN ATLANTA

**GEORGIA  
HOSTS  
SOCIETY'S  
55TH  
ANNUAL  
MEETING**

**PLUS  
REMEMBERING  
K. KIAN ANG, MD, PHD, FASTRO**

**2012 ASTRO ANNUAL REPORT**





# Comprehensive, Not Complicated

Visit CIVCO Booth #1826 at the ASTRO Annual Meeting to learn more!

**CIVCO's comprehensive motion management solutions improve workflow and increase efficiency by:**

- **Providing seamless imaging and treatment planning** with dosimetrically matched couchtops that feature a large, junction-free & artifact-free treatment area.
- **Improving the patient's experience** during SRS/SRT with non-invasive, rigid and secure immobilization for accuracy within 1mm.
- **Allowing customized setups** for SBRT with bridges that secure directly to the couchtop, thus eliminating the need for overlays.
- **Remotely repositioning patients** with robotic 6 degrees of freedom to ensure sub-millimeter positioning accuracy.



[WWW.CIVCO.COM/RO](http://WWW.CIVCO.COM/RO) | 800.842.8688 | +1 712.737.8688

COPYRIGHT © 2013. CIVCO IS A REGISTERED TRADEMARK OF CIVCO MEDICAL SOLUTIONS. TRUPOINT ARCH, UNIVERSAL COUCHTOP, PROTURA, BODY PRO-LOK AND MISERIES ARE TRADEMARKS OF CIVCO. ALL PRODUCTS MAY NOT BE LICENSED IN ACCORDANCE WITH CANADIAN LAW. 2013A0869

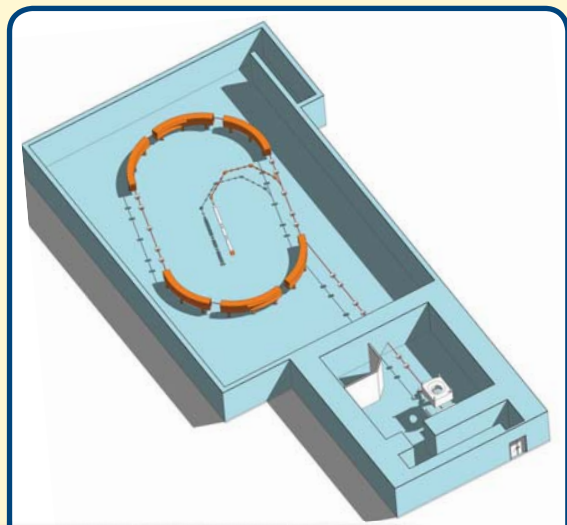


Radiation Oncology

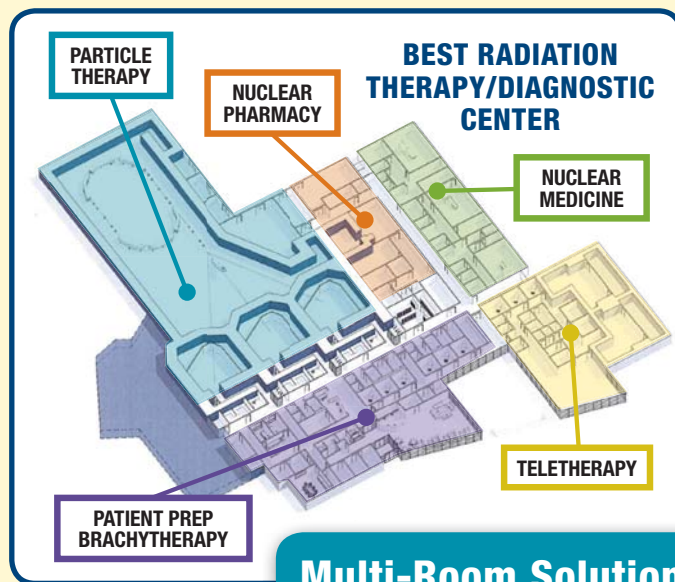


# Best<sup>®</sup> Particle Therapy

**Introducing ... Best Medical Synchrotrons with variable energy from proton to carbon, in Single or Multi-Room Solutions, with or without Gantry!**



**Single Room Solution**



**Multi-Room Solution**

Best Particle Therapy, Inc. is a new member of the TeamBest<sup>®</sup> family of companies, founded by Krishnan Suthanthiran in 1977. TeamBest<sup>®</sup> currently offers products for brachytherapy and teletherapy. Best NOMOS, a TeamBest<sup>®</sup> company, invented IMRT (intensity-modulated radiation therapy) in the early 1990s. TeamBest<sup>®</sup> continues to expand its product offerings to cover low tech to high tech with the primary goal of making these technologies affordable and accessible globally. Best Particle Therapy will utilize advanced state-of-the-art accelerator technologies and provide cost-effective solutions for particle therapy treatment and research.

“Particle Therapy” (PT) is a radiotherapy technique that utilizes hadrons and was first proposed by R.R. Wilson in 1946 after analysis of inverted depth-dose distribution measured at the Berkeley Cyclotron. This analysis resulted in the first radiological use of hadrons in 1954 by Cornelius Tobias and John Lawrence at the Radiation Laboratory (former E.O. Lawrence Berkeley National Laboratory, LBNL). This pioneering work explored the use of hadrons, i.e., protons, deuterons, helium and neon ions, for therapeutic exposure of human patients and concluded at LBNL with the shutdown of the BEVALAC in 1992. Inspired by the success of the early work in the USA, international efforts were made to develop particle therapy into a mature radiological treatment modality where more than 78,275 patients have been treated worldwide with hadron particle therapy. Currently, only protons and carbon ions are in use at particle therapy centers. There are approximately 30 proton facilities in operation, and 5 facilities, worldwide, offering carbon ion particle therapy. To date, more than 56,854 patients have been treated with protons and 7,151 patients treated with carbon ions.

(Statistics courtesy of PTCOG)

Best Particle Therapy, Inc. © 2013

Best Particle Therapy, Inc. 7643 Fullerton Road, Springfield, Virginia 22153 USA  
604 681 3327 866 909 4647 [www.bestproton.com](http://www.bestproton.com) [www.teambest.com](http://www.teambest.com)

AFRICA | ASIA | EUROPE | LATIN AMERICA | MIDDLE EAST | NORTH AMERICA



# Contents



10



26

## Features

- 10 Remembering K. Kian Ang, MD, PhD, FASTRO  
ASTRO pays tribute to a distinguished former chairman.

- 14 Annual Meeting Highlights
- 14 Key sessions and changes
  - 16 Plenary and Clinical Trials Sessions
  - 17 Practice accreditation
  - 18 ASTRO Resource Center
  - 18 ARRO Annual Seminar
  - 20 International Education Subcommittee
  - 21 NROR progress and lessons learned
  - 22 CMS Open Payments program

- 26 Welcome to Atlanta  
Learn more about the key attributes and attractions of the 2013 Annual Meeting host city.

- 51 Annual Report 2012  
ASTRO Secretary/Treasurer Phillip M. Devlin, MD, reviews the Society's 2012 financial statements.



**ON THE COVER:** THE COLORFUL "OLYMPIA" SCULPTURE, CREATED BY PALEY STUDIOS LTD. IN 1990 FROM FABRICATED STEEL AND POLCHROME, STANDS BY THE PROMENADE II BUILDING IN MIDTOWN ATLANTA. PHOTO: © 2013, KEVIN C. ROSE/ATLANTAPHOTOS.COM



**CyberKnife®**  
RADIOSURGERY



**TomoTherapy®**  
RADIATION THERAPY



One dominates full-body radiosurgery.  
The other treats the entire spectrum  
of radiation oncology patients.

Accuray is continually resetting the limits of the smallest treatable tumors as well as the largest, regardless of how many there are, or where they are in the body. And to us, providing you **more** powerful and **more** flexible **radiation oncology options** is the most important thing of all.



*One company, two great technologies*

[accuray.com](http://accuray.com)

If you can't have both, we'll help you choose. Contact an Accuray representative at 888-522-3740.

VOLUME 16 • NUMBER 3

# ASTRO news

AMERICAN SOCIETY FOR RADIATION ONCOLOGY

ASTROnews (ISSN 1523-4185) is published quarterly at 8280 Willow Oaks Corporate Drive, Suite 500, Fairfax, VA 22031. Dues for individual membership in the American Society for Radiation Oncology are \$525 (U.S.), which includes \$38 for an ASTROnews subscription. Periodicals Postage Paid at Fairfax, VA 22030-9998 and at additional mailing offices.

Copyright 2013 ASTRO. All rights reserved.

POSTMASTER: Send address changes to ASTROnews, 8280 Willow Oaks Corporate Drive, Suite 500, Fairfax, VA 22031. Telephone: 703-502-1550; Fax: 703-502-7852; Website: [www.astro.org/astronews](http://www.astro.org/astronews). Printed in the U.S.A., by Quad Graphics in Midland, MI

ASTRO accepts paid advertising. Although we make every effort to accept advertising only from reputable sources, publication of such advertising does not constitute an endorsement of any product or claim.

For all of the most recent news from ASTRO, please visit [www.astro.org](http://www.astro.org).

Printed on 10 percent postconsumer recycled paper, with eco smart inks.

**SENIOR EDITOR:** Thomas Eichler, MD  
**PUBLISHER** Laura I. Thevenot

**EDITORIAL DIRECTOR:** Anna Arnone  
**MANAGING EDITOR:** Brittany Ashcroft

**DESIGN/PRODUCTION:** Kimberly Kerin  
**ONLINE:** Benjamin Reese

**ADVERTISING:** Gene Conselyea  
Triple Threat Media  
732-598-3232  
[gene@triplethreatmedia.com](mailto:gene@triplethreatmedia.com)

**CONTRIBUTING EDITORS:**

Chiemeka Chine  
Michele Donohue  
Nadine Eads  
Katherine Egan Bennett  
Morgan Fincham  
Sheila Madhani  
Maryam Mojarrad  
Barbara Moody  
Caroline Patton  
Amber Sims  
Cristin Watson

**EDITORIAL BOARD:** H. Joseph Barthold, MD  
Tomas Dvorak, MD  
Dirk Rades, MD  
Jeanne Sixta, OCN, BSN

## Inside



48

### 5 Editor's Notes

### 6 Ambassadors

### 7 Chairman's Update

### Society News

#### 13 Annual Meeting Daily Update email

#### 13 In Memoriam

#### 13 ABIM Foundation's *Choosing Wisely*

### 30 Annual Meeting Information

#### 39 Shuttle service

#### 42 Exhibitors

#### 43 Hotel map

#### 44 Annual Meeting award recipients

#### 46 New officers

#### 46 Industry partners

#### 47 2013 Fellows

#### 48 2013 Gold Medalists

#### 50 2013 Honorary Member

#### 61 Corporate supporters

### 55 Research grants and awards

### 58 Physics Update

### 60 Nursing

### 62 Journals





### OUR FIRST PRIORITY

**WELCOME TO THE ANNUAL MEETING** edition of *ASTROnews*! This issue is devoted almost entirely to the 55th gathering of radiation oncologists, nurses, physicists, residents, technologists, dosimetrists and friends of ASTRO at the Georgia World Congress Center in Atlanta. Be sure to read the “Welcome to Atlanta” story (see page 26) from Walter J. Curran Jr., MD, to get a flavor for this wonderful host city. It is a city rich in history with a metro population exceeding five million and is home to the world’s busiest airport, Hartsfield-Jackson Atlanta International. And be sure to make time for a night out at one of the city’s superb restaurants—whether a trendy spot in Buckhead or a quick trip to The Varsity for a couple of chili dogs and a cold frosty.

The theme for this year’s meeting is “Patients: Hope • Guide • Heal,” chaired by ASTRO President Colleen A. F. Lawton, MD, FASTRO. This year’s Presidential Symposium, which kicks off the meeting on Sunday, September 22, is devoted to “Prostate Cancer: Patient Focused Advances,” and will examine many of the controversies surrounding prostate cancer management with the patient at center stage. Jeff A. Sloan, PhD, of the Mayo Clinic in Rochester, Minn., will examine the difference between patient-reported and clinician-reported

outcomes and how we can use this information to improve patient care.

The keynote speakers are top notch: Darrell G. Kirch, MD, president and CEO of the Association of American Medical Colleges, will talk about the future of physician training; Otis W. Brawley, MD, chief medical officer of the American Cancer Society will discuss the importance of survivorship; and Peter Friedl, MD, PhD, of the St. Radboud University Nijmegen Medical Centre, University of Nijmegen in the Netherlands and MD Anderson Cancer Center in Houston, will speak on cell patterning during cancer invasion and immune cell interaction. There will be more than 50 educational sessions, 19 panel presentations and 40 scientific sessions, in addition to the Plenary Session devoted to the cutting-edge science that is the hallmark of our specialty. These will be supplemented by a record number of oral abstract presentations, including more than 1,400 poster submissions. The Exhibit Hall will feature more than 200 companies and offer attendees an opportunity to explore exciting technologies representing the present and future of radiation oncology.

The theme of this Annual Meeting is a refreshing reminder of whom it is that we serve. Many of us—myself included—are wrapped up in the seemingly perpetual struggle to stabilize reimbursement rates, to repeal the SGR and to close the self-referral loophole, part of a long list of ASTRO health policy and government relations initiatives. The Society’s sundry committees will gather throughout the course of the meeting

---

The theme of this Annual Meeting is a refreshing reminder of whom it is that we serve.

At the end of the day, however, we still have patients who rely on our expertise in both the science and the art of practicing medicine.

to compare notes, plot strategy and chart a course for the specialty in the coming year. Likewise, there are various constituencies that have their own focus at the meeting: residents seeking that first job while others may be looking for a change of scenery; a variety of vendors showcasing their products; and the thousands who come simply to see old friends and learn what's new. None of this is possible (dare we say necessary?), however, without our patients.

Many doctors who have been in practice for a number of years will say—and I tend to agree with them—that much of the enjoyment of practicing medicine is gone. It has slowly evaporated due to the endless encroachment of regulatory and legislative interference in the quest to decrease costs and improve quality. This is the modern American medical system. We may not

like it, but we, the house of medicine, are largely responsible for the current state of affairs. In many respects, we are our own worst enemies. Like it or not, things will change—with or without us. This is reality, not speculation.

At the end of the day, however, we still have patients who rely on our expertise in both the science and the art of practicing medicine. As radiation oncologists, we have a foxhole on the front lines in the fight against cancer. We cannot, and should not, lose sight of that person sitting in the exam room who is scared, tearful, angry ... hopeful that you can help them, no matter what practice and reimbursement structure evolves in the years to come. The science of radiation oncology will continue to change. The way we practice medicine and the way we are paid for what we do will also

change in the foreseeable future. The one constant in the equation, however, is the patient. Hope. Guide. Heal.

Finally, the Annual Meeting means many things to many people. For ASTRO staff, it is the culmination of more than a year's worth of planning, coordinating and brainstorming with on-the-fly adjustments during the course of the meeting (hint: remember Superstorm Sandy in 2012?). Let me be the first to say "thank you!!!" to all of the people who make this the premier radiation oncology conference in the world.

Make the most of the meeting! Learn, network, relax and have fun!

*Dr. Eichler is the medical director of radiation oncology at the Thomas Johns Cancer Hospital in Richmond, Va. He welcomes comments on his editorial at [astronews@astro.org](mailto:astronews@astro.org).*

## 2013 Ambassador Recognition

*ASTRO proudly recognizes our 2013 Corporate Ambassadors for their outstanding year-round leadership and support of radiation oncology.*



**Bayer HealthCare**  
Pharmaceuticals



**BRAINLAB**



**ELEKTA**

**PHILIPS**

**SIEMENS**

**VARIAN**  
medical systems

A partner for **life**





## THE VALUE PROPOSITION AND RADIATION ONCOLOGY

*"It's tough to make predictions, especially about the future."* – Yogi Berra

warned, will no longer be sufficient to maintain and grow radiation oncology programs. The emergence of accountable care payment models are predicted to inspire radiation oncologists, along with all physicians, to compete based not simply on technical and practice-based competencies, but on the absolute value of the care they provide. The eventuality of the value proposition in health care not only concerns each of us as individuals, but also our specialty as a whole.

The Affordable Care Act (ACA), through the Centers for Medicare and Medicaid Services (CMS), promulgated a number of initiatives that promote the value proposition in health care and the prospect of value-based payments. Although CMS has come forward with the Medicare Shared Savings Program (MSSP) and Accountable Care Organization (ACO) advanced payment programs, we have seen little oriented towards specialty care and certainly nothing for radiation oncology. Instead, CMS and other payers are primarily focused on initiatives that seek to reduce hospital readmissions, manage expensive big-ticket diseases, such as congestive heart failure, and bolster primary and

preventative care while promoting the not-so-subliminal intent of reducing the demand for specialty care—like us. So, with the seeming lower priority of specialty-specific reform, what's a little tertiary specialty like radiation oncology to do?

Although CMS's main payment reform efforts tend to center on primary and secondary care solutions for the cost dilemma in health care, the Center for Medicare and Medicaid Innovation (CMMI)—yet another feature of the ACA—does fund smaller pilots in specialty care. In 2012, CMMI awarded grants of more than \$1 billion (over three years) to various pilot programs testing new payment and care delivery models. There are a few oncology-related grants in the bunch, including ones looking into an oncology medical home, coordination of care for oncology patients in rural communities, expanding comprehensive cancer support services and an innovative little project that includes testing a model for single fraction radiation therapy for palliation of painful bone metastases. "Wait a second," you say. "That is not novel or innovative." That is the thing about innovation in health care; things don't have to be new or groundbreaking to be considered innovative. Instead, developing approaches that implement established, yet underutilized good ideas can be considered innovative. Single fraction radiation therapy

**LET'S STIPULATE** – I have no idea how all of this is going to turn out. But, I don't feel too bad about it because no one else does either. No one knows exactly how health care reform will change radiation oncology. Demographics tell us that a growing and aging population with mounting cancer incidence is certainly in our future. However, the traditional strategies we have used to build and sustain radiation oncology practices, such as outreach to referring physicians, investment in high-end technologies and ensuring understanding of quality around the care we give, we are

---

The eventuality of the value proposition in health care not only concerns each of us as individuals, but also our specialty as a whole.

for bone metastasis, with its Level 1 evidence, has been slow on the uptake in the United States. In fact, the traditional standard 10 fractions (30 Gy) is actually well below the average number of fractions given to these patients, according to most claims-based data sets. Most think the reason for this is obvious—the encounter-based fee-for-service, get-paid-for-how-much-you-do reimbursement system is the root cause. That may well be the case, and in a value-based accountable care world we are likely to see the number of fractions drop for palliative disease. However, and maybe I am naïve or too much of an advocate for our specialty, but I don't think all of our treatment behavior is due to the perverse economic incentive. Consider that even in sophisticated integrated care organizations there is underuse of single fraction treatment for bone metastasis. Some of this treatment behavior could be based on the reality that many of us are either ill-prepared or do not understand which patients really are in their last few months of life and would therefore particularly benefit from the use of single fraction treatment. So the innovation in all of this is to figure out how to mainstream this established, high-value, cost-saving treatment so that more patients can reap its benefits.

Although we talk about quality in health care, most of the tumult in health care reform is about cost. Elkin et. al. in 2010 reported that inflation-adjusted, direct medical spending on cancer care exhibited a 50 percent

higher growth rate compared to the rest of health care (Elkin et al, Cancer's Next Frontier: Addressing High and Increasing Costs. *JAMA*, 2010; 303:1086-1087). So, with IMRT utilization and expenditure flattening and the growth in total cost of radiation oncology care also slowing in the past few years, we all know what this cost run up in cancer care is about, right? Kidding on the square, isn't this about our medical oncology colleagues, along with Big Pharma, touting the use of expensive drugs, many with marginal value, in questionable circumstances? Maybe so, but explanations for the problems we face in our health care delivery system usually aren't that simple. Complex problems do have complex solutions, and the complex problem of controlling cost and finding value in cancer care is no different. It turns out that much of the current cost run-up on the medical oncology side of things appears to also be due to shifts in the site of service for delivery of chemotherapy and the skewing of the shared decision model (incentivized, in part, by our encounter-based fee-for-service payment system) when informing the patient of alleged benefits of treatment. In addition, the wide variation in chemotherapy treatment regimens used by medical oncologists in the care of non-curable patients, with the associated wide variation in cost, adds to the mix. However, along with medical oncology, radiation oncology also suffers from wide variations in our treatment regimens for similar disease presentations, while delivering similar patient outcomes with concomitant-wide differences in cost.

Another significant factor in the rising costs of cancer care relates to the prevailing attitude that cancer is a "sacred cow" when it comes to cost control or curtailing care, even futile care. However, in this era of payment reform, payer tactics are emerging to address the oncology cost problem, including narrow networks limiting patient access to providers who accrue less cost and the use of comparative effectiveness schemes that consider least costly or average cost alternatives for use of drug or radiation treatment regimens.

When the value question is posed to patients, we know they certainly value cures, but do they (or their families) value weeks or a few months of additional survival touted for some drug regimens? Likewise, do patients and families value three to four weeks of radiation therapy to improve symptoms of pain, or would a single day of treatment be considered more valuable? And would a single-day encounter with the radiation oncologist, including consult, clinical treatment planning, simulation, dosimetry planning, dose check by a medical physicist and treatment (not cutting any corners), be even be more appreciated?

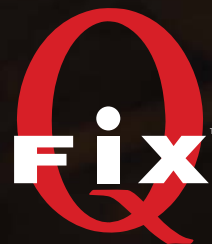
Patient empowerment and increased transparency around treatment outcomes and actual cost of care are likely to emerge as significant forces in health care reform. For example, the patient experience will be factored into reimbursement. Starting in 2012, CMS's Value-Based Purchasing Program withholds 1 percent of hospitals' inpatient reimbursement and then redistributes the withheld dollars based on hospitals' quality performance. Thirty percent of this incentive payment will be based on patient feedback collected through the Hospital Consumer Assessment of Healthcare Providers and Systems

*Continued on Page 63*

---

**Complex problems do have complex solutions, and the complex problem of controlling cost and finding value in cancer care is no different.**





*Strength where you need it most.*  
***Variable Perf™ Aquaplast RT™ & Fibreplast™***



Visit us at ASTRO | Booth # 1627



Qfix | Avondale, PA | Call +610-268-0585 or visit [www.Qfix.com](http://www.Qfix.com)



# Remembering K. Kian Ang, MD,

BY PAUL M. HARARI, MD, FASTRO, AND THOMAS A. BUCHHOLZ, MD, FASTRO

THE DISCIPLINE OF RADIATION ONCOLOGY lost a brilliant physician scientist with the passing of K. Kian Ang, MD, PhD, FASTRO, 63, on June 19, 2013 from cancer.

Born in China and raised in Indonesia, Kian earned his MD and PhD degrees at the Catholic University of Leuven in Belgium. Kian completed his radiation oncology training and early faculty years under the guidance of Emmanuel van der Schueren, MD, PhD, forging a close professional relationship with Dr. van der Schueren and Albert van der Kogel, PhD. Together, they published a series of seminal papers in the early 1980s on spinal cord normal tissue tolerance that helped launch the field forward and opened doors to advance understanding of linear quadratic formulation and normal tissue radiation response.

Scientific interaction with Kian was frequently accompanied by close personal interaction as he genuinely loved

all aspects of life with family and friends. As recounted by Dr. van der Kogel, “Together we set up a series of carefully designed multifraction experiments (up to 90 fractions!) on rat spinal cord, which formed the basis of Kian’s PhD thesis and a start of his enormously successful career as a clinician-scientist. Doing these experiments together, with monthly scientific weekend sessions at the home of Emmanuel van der Schueren, was a unique experience and formed the basis of a lifelong friendship with Kian and his family.”

In 1984, Dr. Ang was recruited to MD Anderson Cancer Center in Houston where he spent the majority of his academic career. Over several decades he became well established as a master clinician, talented physician scientist and first-class educator. He served as deputy chairman for radiation oncology and deputy division head for radiation



(From left) Luka Milas, MD, PhD, FASTRO, Howard D. Thames, MD, FASTRO, Lester J. Peters, MD, FASTRO, H. Rodney Withers, MD, DSc, FASTRO, Herman D. Suit, MD, FASTRO, K. Kian Ang, MD, PhD, FASTRO, and Paul M. Harari, MD, FASTRO, gather during the 2008 ASTRO Gold Medal dinner.



# PhD, FASTRO

oncology for more than two decades and held the endowed Gilbert H. Fletcher Distinguished Memorial Chair. His clinical research focused largely on refinement of therapy for head and neck cancer patients through development of biologically sound therapy regimens derived from preclinical models for testing in multi-institutional randomized trials.

James D. Cox, MD, FASTRO, who served as department chair for much of Kian's MD Anderson tenure noted, "Kian was a forceful presence anywhere he interfaced at MD Anderson. He commanded such respect from everyone within the department, from those in collaborating departments and among senior leaders of the institution. His expertise with all aspects of head and neck cancer, his excellence as a teacher and his amazing ability to lead collaborations were unparalleled. He always brought solutions to problems. His ability to focus is legendary. He is irreplaceable."

Dr. Ang became a valuable leader within the Radiation Therapy Oncology Group (RTOG) and chaired the Head and Neck Cancer Committee from 1999–2012. This committee completed a series of major randomized trials that contributed to changing the standard of care for head and neck cancer. His laboratory efforts focused on enhancing radiation response using altered fractionation and rational combinations with chemotherapy and molecular targeting agents. He served as principal investigator of a long-standing National Institutes of Health Program Project Grant, titled "Modulation and Prediction of Radiation Response," that fostered interaction between laboratory and clinical scientists to develop novel therapy strategies. In collaboration with other investigators, Dr. Ang helped establish the combination of radiation with cetuximab as an approved therapy for the treatment of patients with head and neck cancer and human papillomavirus-associated oropharyngeal cancer as a distinct head and neck cancer entity.

Dr. Ang's leadership extended well beyond MD Anderson. He served many societies in various capacities,



Dr. Ang and his wife, Sunny, enjoy the 2012 ASTRO Gold Medal dinner.

# Remembering

## K. Kian Ang, MD, PhD, FASTRO

including trustee of the American Board of Radiology. Dr. Ang was highly involved with ASTRO, serving as president in 2005–2006 and chairman the following year. During this time, the Radiation Oncology Institute (ROI) was formed and the Conflict of Interest Committee was established. Dr. Ang led ASTRO's effort to work with other cancer experts and organizations to create the Multidisciplinary Head and Neck Cancer Symposium.

He received many awards and delivered numerous keynote lectures, including the Clinical Research Award of the European Society for Therapeutic Radiology and Oncology (1984), the Verstandig Award of the University of Tennessee (1994), Emmanuel van der Schueren Lecture of the Belgian Society of Radiation Oncology (2000), the Dallas Fort Worth Living Legend Faculty Achievement Award in Clinical Research (2000), the Wharton Lecturer of the University of Toronto (2005), Regaud Medal of the European Society for Therapeutic Radiology and Oncology (2007) and the ASTRO Gold Medal (2011).

He co-authored more than 350 peer-reviewed papers (many in high-impact journals such as *The New England Journal of Medicine*, the *International Journal of Radiation Oncology • Biology • Physics*, *The Lancet* and the *Journal of Clinical Oncology*), contributed to more than 50 book chapters and edited seven textbooks. Dr. Ang recently assumed the role of vice president of MD Anderson's Global Academic Program. In this capacity, he orchestrated academic and educational collaborations between MD Anderson and 26 leading cancer centers throughout the world. This new responsibility capitalized on Dr. Ang's passion for making a difference in global health and reflected his talent, comfort and capability to expertly engage international affairs.

The professional contributions of Dr. Ang made a true impact. Discoveries he fostered and clinical trials he led improved the chance of being cured for many patients with head and neck cancer, thereby changing medical practice. Dr. Ang combined all of these professional skills with a warm, genuine and humble nature. He was universally respected and loved. He was a role model, mentor and educator to many future leaders of cancer medicine. He was known for his passion for life, love for his family and friend-



(Top) Dr. Ang presents Barbara L. Fowble, MD, FASTRO, with her FASTRO designation during the 2007 ASTRO Annual Meeting.



(Bottom) Dr. Ang and his wife, Sunny, join Brian Hill (second from left) and his wife, Ingrid (far right), at the 2010 ASTRO Annual Meeting. Brian Hill credits Dr. Ang with saving his life after stage IV oropharyngeal cancer.

ship to so many. He is survived by his devoted wife, Sunny, and their two children, Angelica and Dimitri. The legacy of Kian Ang lives forward through his beloved family, through colleagues and trainees and through the many patients who benefitted from the warm personal touch and brilliant contributions of this unique physician scientist. We salute you, Kian.

*Dr. Harari is chairman of the department of human oncology at the University of Wisconsin in Madison, Wis., and Dr. Buchholz is division head of the division of radiation oncology and chairman of the department of radiation oncology at MD Anderson Cancer Center.*


# SOCIETY NEWS

## ASTRO launches Annual Meeting Daily Update email newsletter

This year, ASTRO will issue a “show daily” email newsletter during the Annual Meeting.

The email newsletter will be distributed each morning of the Annual Meeting (Sunday-Wednesday). The Daily Update will contain important information regarding don’t-miss events for the day, brief recaps of the previous day’s events, any session or schedule changes and other important news and information to help attendees make the most of their time at the Annual Meeting.

The new Annual Meeting Daily Update email newsletter will be sent to all Annual Meeting attendees, even those who register on-site, and all ASTRO members—regardless of whether they are attending the Annual Meeting—to keep them informed of key events.

The Daily Update can be read in email form and in mobile and Web versions, and will also be published on the ASTRO website, so members can access the information from various devices. 

## In Memoriam

ASTRO recently learned that the following members have passed away. We offer condolences to their families and friends.

Roch Kowalski, MD  
K. Kian Ang, MD, PhD, FASTRO

The Radiation Oncology Institute (ROI) gratefully accepts gifts in memory of or in tribute to individuals. For more information, call 1-800-962-7876 or visit [www.roinstitute.org](http://www.roinstitute.org).

## ASTRO participating in ABIM Foundation’s *Choosing Wisely* initiative

BY CAROLINE PATTON, GUIDELINES ANALYST, CAROLINEP@ASTRO.ORG, AND CHIEMEKA CHINE, GUIDELINES ANALYST, CHIEMEKAC@ASTRO.ORG


The *Choosing Wisely*® campaign, developed by the American Board of Internal Medicine (ABIM) Foundation, encourages specialty societies to develop a list of *Five Things Physicians and Patients Should Question*. The list is comprised of evidence-based recommendations that highlight potentially unnecessary tests or therapies and promote informed and collaborative discussions between physicians and patients.

In April 2012 nine medical societies released lists, with 17 additional medical groups following in February 2013. ASTRO’s list will be released at the Annual Meeting. Initial lists from 11 other societies will be released later this year. ASTRO committees in health policy, clinical affairs and quality, and government relations identified potential items for inclusion. Seven physicians from these committees refined the list and developed text and references for each item. ASTRO’s Board of Directors selected the final list.

ASTRO is proud to be a partner in *Choosing Wisely*. Our highest priority is to provide members with tools and professional guidance to ensure patients receive the safest, most effective treatments. Involvement in *Choosing Wisely*

advances this goal by encouraging patient-physician dialogue about risks and benefits of various radiation therapies and by promoting coordinated, integrated care—from active treatment to survivorship.

Shaping the framework for delivery of safe, high-quality, high-value health care to all patients by the radiation oncology team is one of the five goals in ASTRO’s strategic plan. In 2010, ASTRO launched *Target Safely*, a six-point patient protection plan to improve safety and quality and to reduce errors during radiation treatments. By committing to *Choosing Wisely*, ASTRO is reinforcing our dedication to advancing patient care through education, clinical practice, science and advocacy.

ASTRO will unveil its *Five Things Physicians and Patients Should Question* list of evidence-based recommendations for *Choosing Wisely* on Monday, September 23 at the 2013 Annual Meeting in Atlanta. Learn more about ASTRO’s involvement in *Choosing Wisely* and the list of five treatments or procedures ASTRO has identified for increased consideration during this informative session. 



# Key sessions and changes at ASTRO's 55th Annual Meeting

BY CRISTIN WATSON, ASSISTANT DIRECTOR OF EDUCATION, CRISTINW@ASTRO.ORG

ASTRO's 55th Annual Meeting, taking place September 22-25 at the Georgia World Congress Center in Atlanta, will once again draw attendees from around the world to the premier scientific meeting for radiation oncology.

As ASTRO strives to continually improve the Annual Meeting experience for attendees, the Society has made some program changes for the 2013 Annual Meeting, including more breaks for longer periods of time and grouping similar sessions for nurses and international attendees.

The changes for this year's meeting include:

- Shortening educational sessions on Monday, Tuesday and Wednesday morning from 90 minutes to 75 minutes.
- Extending breaks from 15 minutes to 30 minutes, as the schedule allows, to provide more unopposed time for attendees to network and visit the Exhibit Hall.
- Moving the Nursing Program to Saturday and Sunday to allow for more nurses to attend, beginning with a luncheon on Saturday and concluding with sessions on Sunday afternoon following the Presidential Symposium.
- Grouping International Sessions together as a mini symposium on Wednesday (see "International Education Subcommittee continues to evolve, offers sessions during Annual Meeting" on page 20).

The theme of this year's Annual Meeting is "Patients: Hope

• Guide • Heal." The three keynote speakers will address this theme with a strong focus on patient care. Darrell G. Kirch, MD, president and chief executive officer of the Association of American Medical Colleges, Otis W. Brawley, MD, chief medical officer of the American Cancer

Society, and Peter Friedl, MD, PhD, chairman for Microscopic Imaging of the Cell at the St. Radboud University Nijmegen Medical Center, University of Nijmegen in the Netherlands and professor at MD Anderson Cancer Center in Houston, will deliver the keynotes.

In addition to the keynotes, the Presidential Symposium from ASTRO President Colleen A. F. Lawton, MD, FASTRO, will focus on "Prostate Cancer: Patient Focused Advances" and will include a special guest lecture from Jeff A. Sloan, PhD, of the Mayo Clinic in Rochester, Minn.

Two new scientific tracks were added this year that correlate with the theme of the Annual Meeting: patient safety and patient-reported outcomes. There are three scientific sessions within these tracks:

- Scientific Session V: Patient-Reported Outcomes – Pelvic Malignancies (Tuesday, 2:45 p.m.).
- Scientific Session II: Patient-Reported Outcomes – Head and Neck, Thoracic and Breast Cancers (Wednesday, 10:30 a.m.).
- Scientific Session JJ: Patient Safety (Wednesday, 10:30 a.m.).

While the educational sessions and scientific panels will cover a variety of topics, there are several that directly relate to the theme of this year's Annual Meeting. Those sessions are (in chronological order):

- Panel 02 – Patient Reported Quality of Life Following Radiation Therapy for Prostate Cancer (Sunday, 4:30 p.m.).
- Educational Session 212 – Overuse, Underuse and Misuse of Radiation Therapy and the Future of Radiation Oncology – Impact on Quality, Payment Reform and Patient Care (Monday, 10:45 a.m.).
- Panel 07 – Bringing Forth Evidence to Put Patients First: How Guidelines Will Impact Practice of Radiation Oncology (Monday, 4:00 p.m.).
- Panel 10 – Safety First: Using a National Patient Safety Organization to Improve the Quality of Care (Monday, 4:00 p.m.).
- Educational Session 302 – Oncofertility and Fertility Preservation Treatment: Patient Needs and Opportunities for Radiation Oncologists (Tuesday, 7:45 a.m.).
- Educational Session 312 – Patients First: Cancer Care from the Patient's View (Tuesday, 1:00 p.m.).

*Continued on Page 16*



Longer breaks between sessions will allow Annual Meeting attendees more time to network and visit the Exhibit Hall.

# In Just 5 Days...

a radiotherapy facility is installed  
a pre-commissioned accelerator makes beam  
a "New Normal" in upgrading accelerators begins



## The TRV™ Temporary Radiotherapy Vault



Want to upgrade your accelerator but find the pain of change greater than the pain of living with the obsolete? RAD Technology is your solution for untenable logistics when upgrading your linear accelerator. Proven patented technology will exceed your expectations.

- Locate at your existing site
- Patients stay on-campus
- Protect referrals
- Avoid staff layoffs
- Lease for as long as you need
- Can be powered by a generator
- Occupies a 42' x 63' footprint
- Sanitary and domestic water self-contained

Let RAD provide a free site assessment and plot your TRV solution on your campus. Stop by our booth and leave with your solution.

See us at

# ASTRO

booth #743

### Pre-register to Win

*Need a New RT Facility?  
RAD will layout and model  
a new PRO Vault and  
Clinic using 3D printing  
technology. Scan for  
full details or visit*

[www.radtechnology.com/astro13](http://www.radtechnology.com/astro13)



RAD Technology Medical Systems, LLC ■ Aventura, FL  
877.828.5879 ■ [www.radtechnology.com](http://www.radtechnology.com)

**RAD**  
TECHNOLOGY MEDICAL SYSTEMS  
— BUILDING A BETTER WAY —



*Continued from Page 14*


- Panel 12 – Patient Reported Outcomes: “Hearing the Patient’s Voice” in a User-friendly and Meaningful Way (Tuesday, 4:30 p.m., repeated from canceled session in 2012).
- Panel 14 – Medical Error Disclosure in Radiation Oncology (Tuesday, 4:30 p.m.).
- Educational Session 408 – Survivorship Issues for Radiation Therapy Patients (Wednesday, 7:45 a.m.).
- Panel 17 – Radiosurgery for Metastases – Improved Patient Care or Unnecessary Cost? (Wednesday, 2:45 p.m.).

To provide attendees with the best educational experiences, ASTRO has rescheduled some of the sessions that were canceled during the 2012 Annual Meeting due to Superstorm Sandy. Those sessions that will take place this year are (in chronological order):

- Educational Session 101 – Stem Cells, Bystander and

Cell Death Mechanisms (Sunday, 1:45 p.m.).

- Panel 03 – SBRT for Lung Cancer (Sunday, 4:30 p.m.).
- Panel 13 – Brachytherapy Fundamentals and Evolving Paradigms (Tuesday, 4:30 p.m.).
- Panel 15 – Cancer Genesis, Treatment and Late Effects Across the Age Spectrum (Tuesday, 4:30 p.m.).
- Educational Session 401 – Volumetric Modulated Arc Therapy: Planning and Quality Assurance (Wednesday, 7:45 a.m.).
- Educational Session 414 – Cancer of the Colon, Rectum, Anus (Wednesday, 1:00 p.m.).
- Panel 16 – Postmastectomy Radiotherapy After Neoadjuvant Chemotherapy: Update on Indications for Treatment (Wednesday, 2:45 p.m.).

All times are subject to change. For more information or to register for the Annual Meeting, visit [www.astro.org/annualmeeting](http://www.astro.org/annualmeeting). 

## Plenary and Clinical Trials Sessions feature top scientific studies

BY LYNN D. WILSON, MD, MPH, FASTRO, ANNUAL MEETING SCIENTIFIC COMMITTEE CHAIRMAN, AND  
BENJAMIN MOVSAS, MD, FASTRO, ANNUAL MEETING SCIENTIFIC COMMITTEE VICE-CHAIRMAN

ASTRO’s 55th Annual Meeting features cutting-edge science and research related to radiation oncology. The Annual Meeting program consists of 19 scientific panels and 50 educational sessions, in addition to 363 oral presentations, 1,460 poster presentations and 144 digital posters in 19 disease site tracks.

This year, 2,331 abstracts were received from researchers around the world. While more than 60 percent of the abstracts (1,486) are from the United States, 7 percent (171) are from Japan, nearly 6 percent (135) are from China and 5 percent (118) are from Canada.

The Plenary Session currently includes three highly rated studies on intermediate-risk prostate cancer, non-small cell lung cancer and depression in patients receiving radiation therapy. Lead author Thomas M. Pisansky, MD, of the Mayo Clinic in Rochester, Minn., will discuss the results of RTOG 9910, a phase III trial evaluating if extended duration of neoadjuvant total androgen suppression and radiation therapy improves disease-specific survival in intermediate-risk prostate cancer.

Also in the Plenary Session, lead author Benjamin Movsas, MD, FASTRO, of the Henry Ford Health System in Detroit, will present a study on the results of a quality of

life analysis of RTOG 0617, a randomized radiation dose escalation trial in patients with stage III non-small cell lung cancer, based on patient-reported outcomes.

William Small Jr., MD, FASTRO, of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University in Chicago, is the lead author of RTOG 0841 and will share the results during the Plenary Session of the study on the effectiveness of a two-item questionnaire in screening for depression in cancer patients receiving radiation therapy.

The Clinical Trials Session currently consists of nine studies:

- Maria Grazia Ghi, MD, of the Divisione di Oncologia Medica in Venezia, Italy, will discuss the efficacy results of the GSTTC Italian study, a Phase II-III study presenting the response rate and survival data for concomitant chemoradiotherapy (cisplatin and 5-fluorouracil and radiation therapy) versus cetuximab and radiation therapy in locally advanced head and neck squamous cell carcinoma patients.
- Michael R. Folkert, MD, PhD, of Memorial Sloan-Kettering Cancer Center in New York, is lead author and will share the results of a study on the predictive model-




ing of outcomes (local failure, regional failure or distant metastasis) following definitive chemoradiotherapy for oropharyngeal cancer, using FDG-PET image characteristics.

- Gregory M. Videtic, MD, of the Cleveland Clinic in Cleveland, is lead author and will discuss RTOG 0915, a randomized phase II study comparing two schedules of stereotactic body radiation therapy for medically inoperable patients with stage I peripheral non-small cell lung cancer.
- David A. Palma, MD, PhD, of the London Regional Cancer Program in London, Ontario, is the lead author of a study using the meta-analysis of individual patient data of more than 1,000 patients to predict esophagitis after chemoradiotherapy for non-small cell lung cancer.
- Antonio C. Zuliani, MD, of Campinas State University in Campinas, Brazil, is lead author of a 10-year randomized, controlled clinical trial analyzing the disease-free survival and overall survival of women with stage IIIB squamous cell cervical cancer after receiving either cisplatin plus radiation therapy and high-dose-rate brachytherapy or radiation therapy alone.
- Akila N. Viswanathan, MD, of Brigham and Women's Hospital at Dana-Farber Cancer Institute in Boston, is lead author and presenter of the one-year results from the RTOG 0921, a phase II study evaluating the addition of

cisplatin and bevacizumab followed by carboplatin and paclitaxel to post-operative intensity modulated radiation therapy for endometrial cancer.

- Raymond Mailhot Vega, MD, of the Washington University School of Medicine in St. Louis, lead author, will share the results of a study comparing the cost-effectiveness of proton therapy versus photon therapy in managing pediatric medulloblastoma.
- Hans T. Eich, MD, PhD, of the University of Muenster in Muenster, Germany, is lead author of a study analyzing the relapse of FDG-PET-positive residual tumors in patients with advanced stage Hodgkin's lymphoma after receiving consolidated radiation therapy in the HD15 trial of the German Hodgkin Study Group.
- Edward Chow, MD, of Sunnybrook Health Sciences Centre in Toronto, is the lead author of an eight-year study of 850 patients from nine countries examining response and quality of life outcomes in a randomized trial of single versus multiple fractions of re-irradiation for painful bone metastases.

Late-breaking abstracts may be added to these sessions in August. The Plenary Session takes place Monday, September 23 at 2:00 p.m. in the Thomas Murphy Ballroom. The Clinical Trials Session is scheduled for Sunday, September 22 at 1:45 p.m. in the Thomas Murphy Ballroom. 

## Annual Meeting offers opportunity to learn about practice accreditation


BY NADINE EADS, DIRECTOR OF QUALITY IMPROVEMENT, NADINEE@ASTRO.ORG

ASTRO's practice accreditation program highlights the Society's commitment to safety and quality. The program uses evidence-based guidelines and consensus statements on the practice of radiation oncology to establish standards of performance. ASTRO's practice accreditation program will provide an objective peer review of essential functions and processes of radiation oncology practices, in addition to an onsite visit from a multidisciplinary team.

The practice accreditation program consists of five key areas: patient-centered care, the process of care, the radiation oncology team, safety, and quality management and assurance.

There are several opportunities to learn more about ASTRO's practice accreditation program during ASTRO's 55th Annual Meeting in Atlanta. On Saturday, September 21, prospective surveyors can attend a training session that

will provide an overview of the program and guidance on the surveyor's role. Radiation oncologists, physicists and radiation therapists interested in becoming surveyors are encouraged to attend this training session. On Monday, September 23, the practice accreditation luncheon will provide highlights of the program and a radiation oncologist, a physicist and a radiation therapist will offer insights on the accreditation process. Additionally, staff will be in the ASTRO Resource Center (Booth 543, Exhibit Hall) to answer questions about the program.

Additional registrations are required for the training and luncheon at the Annual Meeting. To register, visit [www.astro.org/annualmeeting](http://www.astro.org/annualmeeting). For more information on the practice accreditation program, visit [www.astro.org/Practice-Management/Practice-Accreditation/Index.aspx](http://www.astro.org/Practice-Management/Practice-Accreditation/Index.aspx). 

## ASTRO Resource Center features various products and services for members and patients

BY BARBARA MOODY, MARKETING MANAGER, BARBARAM@ASTRO.ORG

The ASTRO Resource Center in the Exhibit Hall (Booth 543) at ASTRO's 55th Annual Meeting allows meeting attendees to learn about all of the products and services available to ASTRO members. If you are not yet a member, ASTRO staff will be on hand to help you apply for membership online. Information will be available on ASTRO's new programs, including the practice accreditation program (see "Annual Meeting offers opportunity to learn about practice accreditation" on page 17), designed to provide an objective peer review of radiation oncology practices to ensure safety and quality of care.


Other featured products this year include the 2013 PQRIwizard for Medicare PQRS reporting and the Radiation Oncology-Incident Learning System (RO-ILS), the new medical error reporting system. Booth visitors also will have the opportunity to review updated patient brochures, browse the updated patient website (rtanswers.org) and get information on ASTRO's 2014 specialty meetings. A professional photographer will be in the booth again this year to take members' pictures for the ASTRO member directory. Staff will host training sessions for ROhub, ASTRO's exclusive online community for members.

The Survivor Circle is in the ASTRO Resource Center again this year. Established in 2003, the Survivor Circle was created to honor cancer survivors. Each year, ASTRO



The ASTRO Resource Center is also home to the Survivor Circle, which spotlights two local patient support organizations. The 2012 Survivor Circle Grant recipients were The Center for Cancer Support and Education and Surviving and Moving Forward: The SAMFund for Young Adult Survivors of Cancer.

partners with two local patient support organizations and features them at the Survivor Circle. The groups, through generous donations from exhibitors, also receive grants of up to \$10,000. The 2013 Survivor Circle Grant recipients are the Cancer Foundation of Northeast Georgia and the South Georgia Medical Center, Pearlman Cancer Center.

For more information on the Annual Meeting, visit [www.astro.org/annualmeeting](http://www.astro.org/annualmeeting). For more information on the Survivor Circle, visit [www.rtanswers.org/survivorcircle](http://www.rtanswers.org/survivorcircle). 

## ARRO Annual Seminar explores various topics for residents

BY THE ARRO EXECUTIVE COMMITTEE

Residents at all stages of training are encouraged to attend the Association of Residents in Radiation Oncology (ARRO) Annual Seminar, occurring Saturday, September 21, from 9:00 a.m. to 5:00 p.m. at the Georgia World Congress Center in Atlanta, prior to the start of ASTRO's 55th Annual Meeting. The seminar features several terrific speakers who will cover a broad range of topics of interest to residents.

The day begins with Global Health Scholars Award Presentations. The ASTRO/ARRO Global Health Scholars Program allows residents to experience cancer care in a developing nation through a one-month (or longer) project

of their own design. Rachel Jimenez, MD, of the Harvard Radiation Oncology Program in Boston, Sarah Milgrom, MD, of Memorial Sloan-Kettering Cancer Center in New York, and Youssef Zeidan, MD, of Stanford Hospital and Clinics in Stanford, Calif., will discuss their travels abroad to India, Senegal and Lebanon, respectively.

This year's ARRO Annual Seminar will launch a new resident curriculum effort designed to supplement topics that are not formally taught in residency. These sessions will be available for review on the ARRO website and will be updated with new topics throughout the year and at each subsequent ARRO Annual Seminar. *Continued on Page 19*


*Continued from Page 18*

The curriculum will encompass two broad categories, economics and academic medicine, and how they relate to radiation oncology. The economics series will include topics such as practice models, reimbursement and billing. Najeeb Mohideen, MD, of Northwest Community Hospital in Arlington Heights, Ill., will present the first session in this series, which will focus on process of care, coding and reimbursement in radiation oncology. The academic medicine series will address skills pertinent to careers in academic medicine, including manuscript writing, clinical trial design and grant writing. The first session in the academic medicine series will focus on manuscript writing and will be presented during the Annual Seminar by Anthony L. Zietman, MD, FASTRO, editor-in-chief of the Red Journal, and Katherine Egan Bennett, ASTRO's managing editor of scientific publications.

J. Frank Wilson, MD, FASTRO, professor and chairman of radiation oncology at the Medical College of Wisconsin in Milwaukee, will deliver the keynote address, "Radiation Oncology: Our Future Seen Through the Lens of the Past." Dr. Wilson has been a leader in numerous professional organizations within the oncology community.

The afternoon sessions will include two interactive panels. The first panel discussion, moderated by Subhakar Mutyala, MD, of Texas A&M Health Science Center College of Medicine in Temple, Texas, will focus on fellowships in radiation oncology. Lisa A. Kachnic, MD, of Boston Medical Center in Boston, will moderate the second panel, which will address the process of applying for jobs. Recent graduates in community practice and academic centers will sit on the panel and discuss topics pertaining to the application process, interviewing and entering practice.

As is tradition at the ARRO Annual Seminar, Terry J. Wall, MD, JD, FASTRO, of St. Luke's Cancer Institute in Kansas City, Mo., will present two sessions at the seminar. Through his unique training in both radiation oncology and law, Dr. Wall is well qualified to present the session on "Legal Aspects of Entering Practice." He also will review the most recent practice entry survey results.

The ARRO Executive Committee is looking forward to a wonderful Annual Meeting and hopes to see you in Atlanta! To register for the ASTRO Annual Meeting and ARRO Annual Seminar, visit [www.astro.org/annualmeeting](http://www.astro.org/annualmeeting). 

## SEARCHING FOR QUALIFIED RADIATION ONCOLOGY PROFESSIONALS?

### Find them online on the ASTRO Career Center and in Atlanta at the ASTRO Career Fair

It's easy to find the right talent for your company when you use the ASTRO Career Center. Advanced features allow you to search our resume database by various criteria including education, title, location and more.

Planning to attend the ASTRO Annual Meeting? The ASTRO Career Fair is a perfect opportunity to interview qualified candidates. Employer interview space at the Career Fair is free for ASTRO members with your purchase of an online career center posting. For more information or to purchase a posting, go to [www.astro.org/careercenter](http://www.astro.org/careercenter).



**ASTRO**  
RADIATION ONCOLOGY  
CAREER CENTER

#### JOB SEEKERS

Be sure to indicate your availability for an interview at the ASTRO Annual Meeting by selecting the Career Fair option on "MyAccount" in the Career Center.

Career Center jobs can also be found on the ASTRO Facebook page and on Twitter.



## International Education Subcommittee continues to evolve, offers sessions during Annual Meeting

BY KENNETH HU, MD, INTERNATIONAL EDUCATION SUBCOMMITTEE VICE-CHAIRMAN, AND  
NINA A. MAYR, MD, INTERNATIONAL EDUCATION SUBCOMMITTEE CHAIRMAN

ASTRO's International Education Subcommittee (IES) continues to expand its educational efforts. It has recently undergone an organizational shift to better coordinate and identify novel approaches to answer the increasing interest in global outreach from ASTRO members.

Under the new structure, five regional work groups representing Africa, China, India, Latin America and Southeast Asia, along with an Information Technology work group and an International Liaison work group, each led by a chairman and vice-chairman, will identify, oversee and convey the priorities and achievements of their respective members. The initial tasks of the work groups will be to assess the educational infrastructure, needs and priorities of their regions.

The needs assessment includes understanding the following: health care delivery for cancer patients and prevalent cancers endemic to the region; existing technical infrastructure; and current educational methods and requirements for radiation oncologists, physicists and allied professionals.

The regional work groups of the IES will also identify lead institutions and radiation oncology centers that can serve as educational hubs able to sustain programs to train

other sites within the region. The availability of technical resources for telemedicine (e.g., high-speed Internet access, audio/video equipment for teleconferencing, large-bandwidth wireless environment) will also be assessed. Of particular interest are projects to develop Web-based interactions, such as *e*Contouring, chart rounds and access to the Virtual Meeting version of ASTRO's Annual Meeting and specialty meetings. From the needs assessment, the work groups will identify an initial set of goals and metrics to determine outcomes.

The reorganization will allow IES to optimize coordination of its global health efforts and those of U.S. institutions, medical specialty societies, individuals and other international societies. Representatives from other major oncology societies, including ESTRO, JASTRO, ASCO, TASTRO, SASCRO and RANZCR, as well as NCI/NIH, IAEA, RTOG, SCAROP, ADROP and ARRO, will play key roles in the new IES structure. While the IES is reorganizing, it will continue to promote international education exchange and the ASTRO/ARRO Global Health Scholars Program for residents.

Several international events will be held at ASTRO's 55th Annual Meeting. The popular International Attendee Welcome Breakfast will take place on Sunday, September 22, and is open to all International attendees (an international attendee badge holder is required to be admitted). For the first time, a "Best of ESTRO at ASTRO" session, held on Sunday, will highlight topics from ESTRO's annual meeting. A similar "Best of ASTRO at ESTRO" session will occur during ESTRO's annual meeting. Foreign language poster walks (separate ticket required) are offered in Chinese and Spanish on Monday. The Chinese Poster Walk will focus on head and neck disease abstracts, and the Spanish Poster Walk will focus on breast, CNS and prostate disease abstracts. On Wednesday, the International Symposium will review the role of radiation oncology in global health efforts among developing nations. The challenges and needs of Africa, China, India, Latin America and Southeast Asia will be presented, along with strategies to lessen infrastructure, educational and clinical gaps.

To register for the Annual Meeting and these special international events, visit [www.astro.org/annualmeeting](http://www.astro.org/annualmeeting). 



International attendees participate in a Foreign Language Poster Walk during ASTRO's 54th Annual Meeting in Boston.


# NROR highlights progress, lessons learned at ASTRO Annual Meeting

BY MARYAM MOJARRAD, SENIOR PROJECT MANAGER, RADIATION ONCOLOGY INSTITUTE, MARYAMM@ASTRO.ORG

The National Radiation Oncology Registry (NROR) pilot program is rolling out. The NROR Gateway Portal where sites will enter data has been constructed, the sites have been selected and the first patients will be registered later this year. ASTRO Annual Meeting attendees will have an opportunity to learn about the NROR's progress and lessons learned in the first phase of development in two posters.

The "Practice-Based Evidence to Evidence-Based Practice: Initial Challenges in Building the NROR" poster describes how the NROR has tackled the obstacles to quality improvement by implementing innovative solutions tailored for radiation oncology. The selection of approximately 30 pilot sites provides a representative mix of facility types, patient volumes, settings and regional locations. A unique feature of the NROR is the automatic abstraction and aggregation of treatment and outcome data from electronic medical records, oncology information systems and radiation therapy treatment planning systems. A set of radiation oncology-specific measures will serve as benchmarks for quality improvement. Participating facilities will receive reports on their data compared to the national NROR data set as well as comparable facilities.

The second poster, "The National Radiation Oncology Registry: Approaches to Regulatory Compliance to Promote Wide Participation" focuses on the regulatory challenges of establishing a multi-center study with minimal burden to patients and providers, while maintaining health information security and privacy. The NROR's standardized participation agreement includes both a business associate agreement and a data use agreement and complies with the Health Insurance Portability and Accountability Act (HIPAA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act. The regulatory and administrative burden at the sites is minimized by utilization of a central institutional review board (IRB). An "opt-out" consent meets IRB requirements while allowing for maximum patient participation. Privacy protection is assured by the separation of data collection from analysis.

The NROR provides an innovative framework for expansion to a nationwide electronic registry for radiation oncology focused on real-world, near real-time data aimed at quality care. Attendees can learn more about both of these posters during the Poster Viewing Session and Reception at the Annual Meeting on Monday, September 23 from 5:30 - 6:30 p.m. 



**Help your patients understand their treatment options.**  
**Cancer diagnosis can be frightening and confusing.**

Help your patients understand radiation therapy as a treatment option by sharing ASTRO's disease-site specific brochures and referring them to RTAnswers.org. This recently updated patient-oriented website provides comprehensive information to help patients and their caregivers make informed decisions about their treatment options.



# ASTRO urges members to prepare to review and verify their data in CMS Open Payments program

BY SHEILA MADHANI, ASSISTANT DIRECTOR OF MEDICARE POLICY, SHEILAM@ASTRO.ORG

The Physician Payment Sunshine Act has evolved into the Centers for Medicare and Medicaid Services (CMS) Open Payments program. While the name has changed, the intent of this program is the same: manufacturers will be required to report payments and other transfers of value to physicians and teaching hospitals. Names of providers and payments received in 2013 (beginning August 1) will be posted publicly by September 30, 2014. Providers will have an opportunity to review and dispute data prior to it being publicly available. ASTRO urges all members to understand the impact of this program and has prepared the following frequently asked questions to help members better understand how to prepare for this Medicare initiative.

## **What is the CMS Open Payments Program?**

The intent of the National Physician Payment Transparency Program (Open Payments) is to create greater transparency of the financial relationships among manufacturers, physicians and teaching hospitals.

Open Payments requires reporting the following information annually to CMS:

- Applicable manufacturers of covered drugs, devices, biologicals and medical supplies to report payments or other transfers of value they make to physicians and teaching hospitals.
- Applicable manufacturers and applicable group purchasing organizations (GPOs) to report certain ownership or investment interests held by physicians or their immediate family members.
- Applicable GPOs to report payments or other transfers of value made to physician owners or investors if they held ownership or an investment interest at any point during the reporting year.

CMS will collect, aggregate and publish this data on a public website.

## **If the manufacturer is reporting the payments, what do I need to do as a provider?**

Providers will have an opportunity to review and dispute data prior to it being publicly available. ASTRO urges all members to take advantage of this opportunity.

Physicians and teaching hospitals are encouraged to register with CMS so they can review submitted data to ensure it is accurate and complete or to dispute the informa-

tion and work with applicable manufacturers and applicable GPOs to make any necessary corrections to the information before CMS makes it public. CMS will release information on how to register at a later date.

## **What is a transfer of value?**

A transfer of value can include a wide range of items. Some examples are: consulting fees, compensation for services other than consulting, honoraria, gifts, entertainment, food and beverages, travel and lodging, education, research, charitable contributions, royalty or license, current or prospective ownership or investment interest, compensation for serving as faculty or speaker for an unaccredited and non-certified CE program, grants and space rental (teaching hospital only).

## **What if a vendor takes me out during the Annual Meeting?**

If a vendor takes you out (e.g., for a meal, for coffee, etc.) during the ASTRO Annual Meeting, the vendor must report it to CMS. CMS will collect, aggregate and publish this information on a public website. CMS will provide you the opportunity to review and work with vendors to make any necessary corrections to the information before it is made public.

## **Are indirect payments reportable?**

An indirect payment goes from a manufacturer to a physician or teaching hospital through an intermediary, such as a specialty society or research organization. A payment is considered indirect and reportable if an applicable manufacturer or GPO requires, instructs, directs or causes an intermediary to provide the payment or other transfer of value to a specific physician or teaching hospital. Applicable manufacturers are required to identify each physician who received a payment or transfer of value and report appropriately. For example, if payment was given to a specific physician to cover travel and lodging expenses for a meeting or event, it would need to be reported.

## **How will this work?**

- Step 1: Industry payments and other transfers of values are made to physicians and teaching hospitals.
- Step 2: Companies submit data to CMS on payments and other transfers of value information. For each data submission, submitter must attest that the data is timely, accurate and complete.

*Continued on Page 63*



# NOW APPROVED

*For the treatment of patients with castration-resistant prostate cancer, symptomatic bone metastases and no known visceral metastatic disease*

## Xofigo<sup>®</sup> radium Ra 223 dichloride injection

To learn more, visit [www.xofigo-us.com](http://www.xofigo-us.com)

Visit us at Booth 554 at ASTRO's 55th Annual Meeting

### Important Safety Information

• **Contraindications:** Xofigo is contraindicated in women who are or may become pregnant. Xofigo can cause fetal harm when administered to a pregnant woman

• **Bone Marrow Suppression:** In the randomized trial, 2% of patients in the Xofigo arm experienced bone marrow failure or ongoing pancytopenia, compared to no patients treated with placebo. There were two deaths due to bone marrow failure. For 7 of 13 patients treated with Xofigo bone marrow failure was ongoing at the time of death. Among the 13 patients who experienced bone marrow failure, 54% required blood transfusions. Four percent (4%) of patients in the Xofigo arm and 2% in the placebo arm permanently discontinued therapy due to bone marrow suppression. In the randomized trial, deaths related to vascular hemorrhage in association with myelosuppression were observed in 1% of Xofigo-treated patients compared to 0.3% of patients treated with placebo. The incidence of infection-related deaths (2%), serious infections (10%), and febrile neutropenia (<1%) was similar for patients treated with Xofigo and placebo. Myelosuppression—notably thrombocytopenia, neutropenia, pancytopenia, and leukopenia—has been reported in patients treated with Xofigo.

Monitor patients with evidence of compromised bone marrow reserve closely and provide supportive care measures when clinically indicated. Discontinue Xofigo in patients who experience life-threatening complications despite supportive care for bone marrow failure

• **Hematological Evaluation:** Monitor blood counts at baseline and prior to every dose of Xofigo. Prior to first administering Xofigo, the absolute neutrophil count (ANC) should be  $\geq 1.5 \times 10^9/L$ , the platelet count  $\geq 100 \times 10^9/L$ , and hemoglobin  $\geq 10$  g/dL. Prior to subsequent administrations, the ANC should be  $\geq 1 \times 10^9/L$  and the platelet count  $\geq 50 \times 10^9/L$ . Discontinue

Xofigo if hematologic values do not recover within 6 to 8 weeks after the last administration despite receiving supportive care

• **Concomitant Use With Chemotherapy:** Safety and efficacy of concomitant chemotherapy with Xofigo have not been established. Outside of a clinical trial, concomitant use of Xofigo in patients on chemotherapy is not recommended due to the potential for additive myelosuppression. If chemotherapy, other systemic radioisotopes, or hemibody external radiotherapy are administered during the treatment period, Xofigo should be discontinued

• **Administration and Radiation Protection:** Xofigo should be received, used, and administered only by authorized persons in designated clinical settings. The administration of Xofigo is associated with potential risks to other persons from radiation or contamination from spills of bodily fluids such as urine, feces, or vomit. Therefore, radiation protection precautions must be taken in accordance with national and local regulations

• **Adverse Reactions:** The most common adverse reactions ( $\geq 10\%$ ) in the Xofigo arm vs the placebo arm, respectively, were nausea (36% vs 35%), diarrhea (25% vs 15%), vomiting (19% vs 14%), and peripheral edema (13% vs 10%). Grade 3 and 4 adverse events were reported in 57% of Xofigo-treated patients and 63% of placebo-treated patients. The most common hematologic laboratory abnormalities in the Xofigo arm ( $\geq 10\%$ ) vs the placebo arm, respectively, were anemia (93% vs 88%), lymphocytopenia (72% vs 53%), leukopenia (35% vs 10%), thrombocytopenia (31% vs 22%), and neutropenia (18% vs 5%)

Please see following pages for brief summary of full Prescribing Information.



Bayer HealthCare

 ALGETA



**BRIEF SUMMARY OF PRESCRIBING INFORMATION**

**CONSULT PACKAGE INSERT FOR FULL PRESCRIBING INFORMATION**

**1 INDICATIONS AND USAGE**

Xofigo™ is indicated for the treatment of patients with castration-resistant prostate cancer, symptomatic bone metastases and no known visceral metastatic disease.

**2 DOSAGE AND ADMINISTRATION**

**2.3 Instructions for Use/Handling**

**General warning**

Xofigo (an alpha particle-emitting pharmaceutical) should be received, used and administered only by authorized persons in designated clinical settings. The receipt, storage, use, transfer and disposal Xofigo are subject to the regulations and/or appropriate licenses of the competent official organization.

Xofigo should be handled by the user in a manner which satisfies both radiation safety and pharmaceutical quality requirements. Appropriate aseptic precautions should be taken.

**Radiation protection**

The administration of Xofigo is associated with potential risks to other persons (e.g., medical staff, caregivers and patient's household members) from radiation or contamination from spills of bodily fluids such as urine, feces, or vomit. Therefore, radiation protection precautions must be taken in accordance with national and local regulations.

**For drug handling**

Follow the normal working procedures for the handling of radiopharmaceuticals and use universal precautions for handling and administration such as gloves and barrier gowns when handling blood and bodily fluids to avoid contamination. In case of contact with skin or eyes, the affected area should be flushed immediately with water. In the event of spillage of Xofigo, the local radiation safety officer should be contacted immediately to initiate the necessary measurements and required procedures to decontaminate the area. A complexing agent such as 0.01 M ethylene-diamine-tetraacetic acid (EDTA) solution is recommended to remove contamination.

**For patient care**

Whenever possible, patients should use a toilet and the toilet should be flushed several times after each use. When handling bodily fluids, simply wearing gloves and hand washing will protect caregivers. Clothing soiled with Xofigo or patient fecal matter or urine should be washed promptly and separately from other clothing. Radium-223 is primarily an alpha emitter, with a 95.3% fraction of energy emitted as alpha-particles. The fraction emitted as beta-particles is 3.6%, and the fraction emitted as gamma-radiation is 1.1%. The external radiation exposure associated with handling of patient doses is expected to be low, because the typical treatment activity will be below 8,000 kBq (216 microcurie). In keeping with the **As Low As Reasonably Achievable (ALARA)** principle for minimization of radiation exposure, it is recommended to minimize the time spent in radiation areas, to maximize the distance to radiation sources, and to use adequate shielding. Any unused product or materials used in connection with the preparation or administration are to be treated as radioactive waste and should be disposed of in accordance with local regulations.

The gamma radiation associated with the decay of radium-223 and its daughters allows for the radioactivity measurement of Xofigo and the detection of contamination with standard instruments.

**4 CONTRAINDICATIONS**

Xofigo is contraindicated in pregnancy.

Xofigo can cause fetal harm when administered to a pregnant woman based on its mechanism of action. Xofigo is not indicated for use in women. Xofigo is contraindicated in women who are or may become pregnant. If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, apprise the patient of the potential hazard to the fetus [see Use in Specific Populations (8.1)].

**5 WARNINGS AND PRECAUTIONS**

**5.1 Bone Marrow Suppression**

In the randomized trial, 2% of patients on the Xofigo arm experienced bone marrow failure or ongoing pancytopenia compared to no patients treated with placebo. There were two deaths due to bone marrow failure and for 7 of 13 patients treated with Xofigo, bone marrow failure was ongoing at the time of death. Among the 13 patients who experienced bone marrow failure, 54% required blood transfusions. Four percent (4%) of patients on the Xofigo arm and 2% on the placebo arm permanently discontinued therapy due to bone marrow suppression.

In the randomized trial, deaths related to vascular hemorrhage in association with myelosuppression were observed in 1% of Xofigo-treated patients compared to 0.3% of patients treated with placebo. The incidence of infection-related deaths (2%), serious infections (10%), and febrile neutropenia (<1%) were similar for patients treated with Xofigo and placebo. Myelosuppression; notably thrombocytopenia, neutropenia, pancytopenia, and leukopenia; has been reported in patients treated with Xofigo. In the randomized trial, complete blood counts (CBCs) were obtained every 4 weeks prior to each dose and the nadir CBCs and times of recovery were not well characterized. In a separate single-dose phase 1

study of Xofigo, neutrophil and platelet count nadirs occurred 2 to 3 weeks after Xofigo administration at doses that were up to 1 to 5 times the recommended dose, and most patients recovered approximately 6 to 8 weeks after administration [see Adverse Reactions (6)].

Hematologic evaluation of patients must be performed at baseline and prior to every dose of Xofigo. Before the first administration of Xofigo, the absolute neutrophil count (ANC) should be  $\geq 1.5 \times 10^9/L$ , the platelet count  $\geq 100 \times 10^9/L$  and hemoglobin  $\geq 10$  g/dL. Before subsequent administrations of Xofigo, the ANC should be  $\geq 1 \times 10^9/L$  and the platelet count  $\geq 50 \times 10^9/L$ . If there is no recovery to these values within 6 to 8 weeks after the last administration of Xofigo, despite receiving supportive care, further treatment with Xofigo should be discontinued. Patients with evidence of compromised bone marrow reserve should be monitored closely and provided with supportive care measures when clinically indicated. Discontinue Xofigo in patients who experience life-threatening complications despite supportive care for bone marrow failure.

The safety and efficacy of concomitant chemotherapy with Xofigo have not been established. Outside of a clinical trial, concomitant use with chemotherapy is not recommended due to the potential for additive myelosuppression. If chemotherapy, other systemic radioisotopes or hemibody external radiotherapy are administered during the treatment period, Xofigo should be discontinued.

**6 ADVERSE REACTIONS**

The following serious adverse reactions are discussed in greater detail in another section of the label:

- Bone Marrow Suppression [see Warnings and Precautions (5.1)]

**6.1 Clinical Trials Experience**

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

In the randomized clinical trial in patients with metastatic castration-resistant prostate cancer with bone metastases, 600 patients received intravenous injections of 50 kBq/kg (1.35 microcurie/kg) of Xofigo and best standard of care and 301 patients received placebo and best standard of care once every 4 weeks for up to 6 injections. Prior to randomization, 58% and 57% of patients had received docetaxel in the Xofigo and placebo arms, respectively. The median duration of treatment was 20 weeks (6 cycles) for Xofigo and 18 weeks (5 cycles) for placebo.

The most common adverse reactions ( $\geq 10\%$ ) in patients receiving Xofigo were nausea, diarrhea, vomiting, and peripheral edema (Table 3). Grade 3 and 4 adverse events were reported among 57% of Xofigo-treated patients and 63% of placebo-treated patients. The most common hematologic laboratory abnormalities in Xofigo-treated patients ( $\geq 10\%$ ) were anemia, lymphocytopenia, leukopenia, thrombocytopenia, and neutropenia (Table 4).

Treatment discontinuations due to adverse events occurred in 17% of patients who received Xofigo and 21% of patients who received placebo. The most common hematologic laboratory abnormalities leading to discontinuation for Xofigo were anemia (2%) and thrombocytopenia (2%).

Table 3 shows adverse reactions occurring in  $\geq 2\%$  of patients and for which the incidence for Xofigo exceeds the incidence for placebo.

**Table 3: Adverse Reactions in the Randomized Trial**

System/Organ Class Preferred Term	Xofigo (n=600)		Placebo (n=301)	
	Grades 1-4 %	Grades 3-4 %	Grades 1-4 %	Grades 3-4 %
<b>Blood and lymphatic system disorders</b>				
Pancytopenia	2	1	0	0
<b>Gastrointestinal disorders</b>				
Nausea	36	2	35	2
Diarrhea	25	2	15	2
Vomiting	19	2	14	2
<b>General disorders and administration site conditions</b>				
Peripheral edema	13	2	10	1
<b>Renal and urinary disorders</b>				
Renal failure and impairment	3	1	1	1

**Laboratory Abnormalities**

Table 4 shows hematologic laboratory abnormalities occurring in  $\geq 10\%$  of patients and for which the incidence for Xofigo exceeds the incidence for placebo.

**Table 4: Hematologic Laboratory Abnormalities**

Hematologic Laboratory Abnormalities	Xofigo (n=600)		Placebo (n=301)	
	Grades 1-4 %	Grades 3-4 %	Grades 1-4 %	Grades 3-4 %
Anemia	93	6	88	6
Lymphocytopenia	72	20	53	7
Leukopenia	35	3	10	<1
Thrombocytopenia	31	3	22	<1
Neutropenia	18	2	5	<1

Laboratory values were obtained at baseline and prior to each 4-week cycle.



As an adverse reaction, grade 3-4 thrombocytopenia was reported in 6% of patients on Xofigo and in 2% of patients on placebo. Among patients who received Xofigo, the laboratory abnormality grade 3-4 thrombocytopenia occurred in 1% of docetaxel naïve patients and in 4% of patients who had received prior docetaxel. Grade 3-4 neutropenia occurred in 1% of docetaxel naïve patients and in 3% of patients who have received prior docetaxel.

#### Fluid Status

Dehydration occurred in 3% of patients on Xofigo and 1% of patients on placebo. Xofigo increases adverse reactions such as diarrhea, nausea, and vomiting which may result in dehydration. Monitor patients' oral intake and fluid status carefully and promptly treat patients who display signs or symptoms of dehydration or hypovolemia.

#### Injection Site Reactions

Erythema, pain, and edema at the injection site were reported in 1% of patients on Xofigo.

#### Secondary Malignant Neoplasms

Xofigo contributes to a patient's overall long-term cumulative radiation exposure. Long-term cumulative radiation exposure may be associated with an increased risk of cancer and hereditary defects. Due to its mechanism of action and neoplastic changes, including osteosarcomas, in rats following administration of radium-223 dichloride, Xofigo may increase the risk of osteosarcoma or other secondary malignant neoplasms [see *Nonclinical Toxicology* (13.1)]. However, the overall incidence of new malignancies in the randomized trial was lower on the Xofigo arm compared to placebo (<1% vs. 2%; respectively), but the expected latency period for the development of secondary malignancies exceeds the duration of follow up for patients on the trial.

#### Subsequent Treatment with Cytotoxic Chemotherapy

In the randomized clinical trial, 16% patients in the Xofigo group and 18% patients in the placebo group received cytotoxic chemotherapy after completion of study treatments. Adequate safety monitoring and laboratory testing was not performed to assess how patients treated with Xofigo will tolerate subsequent cytotoxic chemotherapy.

## 7 DRUG INTERACTIONS

No formal clinical drug interaction studies have been performed.

Subgroup analyses indicated that the concurrent use of bisphosphonates or calcium channel blockers did not affect the safety and efficacy of Xofigo in the randomized clinical trial.

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy Category X [see *Contraindications* (4)]

Xofigo can cause fetal harm when administered to a pregnant woman based on its mechanism of action. While there are no human or animal data on the use of Xofigo in pregnancy and Xofigo is not indicated for use in women, maternal use of a radioactive therapeutic agent could affect development of a fetus. Xofigo is contraindicated in women who are or may become pregnant while receiving the drug. If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, apprise the patient of the potential hazard to the fetus and the potential risk for pregnancy loss. Advise females of reproductive potential to avoid becoming pregnant during treatment with Xofigo.

### 8.3 Nursing Mothers

Xofigo is not indicated for use in women. It is not known whether radium-223 dichloride is excreted in human milk. Because many drugs are excreted in human milk, and because of potential for serious adverse reactions in nursing infants from Xofigo, a decision should be made whether to discontinue nursing, or discontinue the drug taking into account the importance of the drug to the mother.

### 8.4 Pediatric Use

The safety and efficacy of Xofigo in pediatric patients have not been established. In single- and repeat-dose toxicity studies in rats, findings in the bones (depletion of osteocytes, osteoblasts, osteoclasts, fibro-osseous lesions, disruption/disorganization of the physis/growth line) and teeth (missing, irregular growth, fibro-osseous lesions in bone socket) correlated with a reduction of osteogenesis that occurred at clinically relevant doses beginning in the range of 20 – 80 kBq (0.541 - 2.16 microcurie) per kg body weight.

### 8.5 Geriatric Use

Of the 600 patients treated with Xofigo in the randomized trial, 75% were 65 years of age and over and while 33% were 75 years of age and over. No dosage adjustment is considered necessary in elderly patients. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

### 8.6 Patients with Hepatic Impairment

No dedicated hepatic impairment trial for Xofigo has been conducted. Since radium-223 is neither metabolized by the liver nor eliminated via the bile, hepatic impairment is unlikely to affect the pharmacokinetics of radium-223 dichloride [see *Clinical Pharmacology* (12.3)]. Based on subgroup analyses in the randomized clinical trial, dose adjustment is not needed in patients with mild hepatic impairment. No dose adjustments can be recommended for patients with moderate or severe hepatic impairment due to lack of clinical data.

## 8.7 Patients with Renal Impairment

No dedicated renal impairment trial for Xofigo has been conducted. Based on subgroup analyses in the randomized clinical trial, dose adjustment is not needed in patients with existing mild (creatinine clearance [CrCl] 60 to 89 mL/min) or moderate (CrCl 30 to 59 mL/min) renal impairment. No dose adjustment can be recommended for patients with severe renal impairment (CrCl less than 30 mL/min) due to limited data available (n = 2) [see *Clinical Pharmacology* (12.3)].

## 8.8 Males of Reproductive Potential

#### Contraception

Because of potential effects on spermatogenesis associated with radiation, advise men who are sexually active to use condoms and their female partners of reproductive potential to use a highly effective contraceptive method during and for 6 months after completing treatment with Xofigo.

#### Infertility

There are no data on the effects of Xofigo on human fertility. There is a potential risk that radiation by Xofigo could impair human fertility [see *Nonclinical Toxicology* (13.1)].

## 10 OVERDOSAGE

There have been no reports of inadvertent overdosing of Xofigo during clinical studies.

There is no specific antidote. In the event of an inadvertent overdose of Xofigo, utilize general supportive measures, including monitoring for potential hematological and gastrointestinal toxicity, and consider using medical countermeasures such as aluminum hydroxide, barium sulfate, calcium carbonate, calcium gluconate, calcium phosphate, or sodium alginate.<sup>1</sup>

Single Xofigo doses up to 250 kBq (6.76 microcurie) per kg body weight were evaluated in a phase 1 clinical trial and no dose-limiting toxicities were observed.

## 13 NONCLINICAL TOXICOLOGY

### 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Animal studies have not been conducted to evaluate the carcinogenic potential of radium-223 dichloride. However, in repeat-dose toxicity studies in rats, osteosarcomas, a known effect of bone-seeking radionuclides, were observed at clinically relevant doses 7 to 12 months after the start of treatment. The presence of other neoplastic changes, including lymphoma and mammary gland carcinoma, was also reported in 12- to 15-month repeat-dose toxicity studies in rats.

Genetic toxicology studies have not been conducted with radium-223 dichloride. However, the mechanism of action of radium-223 dichloride involves induction of double-strand DNA breaks, which is a known effect of radiation.

Animal studies have not been conducted to evaluate the effects of radium-223 dichloride on male or female fertility or reproductive function. Xofigo may impair fertility and reproductive function in humans based on its mechanism of action.

## 17 PATIENT COUNSELING INFORMATION

Advise patients:

- To be compliant with blood cell count monitoring appointments while receiving Xofigo. Explain the importance of routine blood cell counts. Instruct patients to report signs of bleeding or infections.
- To stay well hydrated and to monitor oral intake, fluid status, and urine output while being treated with Xofigo. Instruct patients to report signs of dehydration, hypovolemia, urinary retention, or renal failure / insufficiency.
- There are no restrictions regarding contact with other people after receiving Xofigo. Follow good hygiene practices while receiving Xofigo and for at least 1 week after the last injection in order to minimize radiation exposure from bodily fluids to household members and caregivers. Whenever possible, patients should use a toilet and the toilet should be flushed several times after each use. Clothing soiled with patient fecal matter or urine should be washed promptly and separately from other clothing. Caregivers should use universal precautions for patient care such as gloves and barrier gowns when handling bodily fluids to avoid contamination. When handling bodily fluids, wearing gloves and hand washing will protect caregivers.
- Who are sexually active to use condoms and their female partners of reproductive potential to use a highly effective method of birth control during treatment and for 6 months following completion of Xofigo treatment.



Manufactured for:

**Bayer HealthCare**

Bayer HealthCare Pharmaceuticals Inc.  
Wayne, NJ 07470

Manufactured in Norway

Xofigo is a trademark of Bayer Aktiengesellschaft.

© 2013, Bayer HealthCare Pharmaceuticals Inc.

All rights reserved.

Revised: 05/2013

6708400BS







# WELCOME TO ATLANTA

BY WALTER J. CURRAN JR., MD

PHOTOGRAPHS: © 2013, KEVIN C. ROSE/ATLANTAPHOTOS.COM

SINCE ATLANTA LAST HOSTED ASTRO'S ANNUAL MEETING IN 2004, the Georgia World Congress Center neighborhood has been in the midst of an exciting transition. The Georgia Aquarium opened as the world's largest aquarium in 2005 and features many dramatic exhibits, including beluga whales, dolphins and sea otters. The nearby World of Coca-Cola opened in 2007 as the world's largest museum and entertainment center dedicated to the history of carbonated beverages. Many of the hotels near the convention center have undergone significant renovations since 2004, and there are literally several dozen new restaurants in the area since 2004. In the next several years, this neighborhood will add the National College Football Hall of Fame, a new replacement retractable-roof stadium for the Atlanta Falcons and an entertainment zone featuring a 180-foot-high ferris wheel. Due to these additions and a total of more than \$3 billion in private investments over a ten-year period, *Fortune Magazine* recently cited Atlanta as having one of the strongest "emerging downtowns" in the nation.



Visitors confined to downtown Atlanta alone may not recognize why our city is considered the most forested of all major American cities, as well as a city of great and vibrant neighborhoods. Take some time during the meeting to hop onto MARTA, our modern transit system, or into a cab and visit our varied in-town neighborhoods, all of which are within a few miles of your hotel. These include Buckhead (luxurious and upscale shopping, art galleries, dining and entertainment), Midtown (great restaurants, large dynamic nightclubs, Piedmont Park and the High Museum of Art), the Westside (outstanding restaurants and renovated industrial architecture), Inman Park (restaurants and Victorian architecture), Decatur (growing mix of innovative restaurants and shop-

**Opposite page:** The 21-acre Centennial Olympic Park is the largest downtown park developed in the country in the last 25 years.



**Left:** The Georgia Aquarium houses more than 100,000 animals in 8 million gallons of fresh and salt water.

**Bottom Left:** The High Museum of Art has more than 11,000 works of art in its permanent collection and features a colorful mobile by Alexander Calder.



Our Hartsfield-Jackson airport is by far the world's busiest airport, and the city is fourth among American cities in serving as the corporate home of Fortune 500 companies. Atlanta is considered the leading home to the health care IT industry, and our universities are all distinguished within their own realms: Georgia Institute of Technology as one of the four leading science and engineering universities in the nation, Emory University as one of the leading private universities in terms of biomedical research and health care delivery, Morehouse College and Spellman College as the leading historically black colleges in the nation, and Georgia State University as a thriving urban state university.

Atlanta's success as the ninth largest metropolitan region in the eighth most populous state is in no small part due to the vision of two of its extraordinary leaders in the 20th century: Robert Winship Woodruff and Dr. Martin Luther King Jr. Woodruff's decades of progressive leadership in business (Coca-Cola), philanthropy (Woodruff Foundation) and civic affairs defined a path to many significant opportunities for Atlanta and its people. This work, coupled with the human rights leadership provided by Dr. King and the Southern Christian Leadership Conference, still lives on today in Atlanta as defining a city whose leadership has transcended

traditional barriers to progress in economic and in human terms. To better appreciate this history, visit the Martin Luther King Jr. National Historic Site and the Ebenezer Baptist Church in the Sweet Auburn neighborhood just a few blocks from your hotel.

For you sports and recreation enthusiasts, Piedmont Park in Midtown and the adjacent Atlanta Beltline are great places for running, walking, biking and relaxing. The Atlanta Braves will be hosting the Milwaukee Brewers on Monday, Tuesday and Wednesday during the Annual Meeting at 7:10 p.m. at nearby Turner Field. There are three Division I college football games in Georgia on Saturday, September 21: University of North Carolina at Georgia Tech (2 miles); North Texas at Georgia (80 miles); and Jacksonville State vs Georgia State at Georgia Dome (walking distance).

Atlanta weather in late September should be perfect for the Annual Meeting: highs in the low 80s and lows in the 60s. Looking forward to seeing y'all then!

*Dr. Curran serves as the executive director of the Winship Cancer Institute of Emory University in Atlanta, the Lawrence Davis Professor and chairman of radiation oncology at Emory University and the group chairman of the Radiation Therapy Oncology Group.*

ping), Virginia-Highlands (restaurants and small nightclubs), Castleberry Hill (art galleries) and Little Five Points (funky shops and nightlife). Many restaurants here feature a farm-to-table philosophy, not a difficult task in a state where agriculture remains the leading industry by revenue. Also remember that Georgia has 100 miles of beautiful Atlantic coastline as a source of seafood, the least developed section of the entire Atlantic shoreline.

Today's Atlanta is an energetic center of commerce, research, education, entertainment and transportation.



AMERICAN SOCIETY FOR RADIATION ONCOLOGY

# 2014 Meetings

## Join Us at These Important Radiation Oncology Events

### **MULTIDISCIPLINARY HEAD AND NECK CANCER SYMPOSIUM**

**February 20-22, 2014**

JW Marriott Camelback Inn Resort and Spa, Scottsdale, Ariz.

### **SPRING REFRESHER COURSE**

**March 7-9, 2014**

The Roosevelt Hotel, New Orleans

### **STATE OF THE ART RADIATION THERAPY:**

*Practical Treatment, Biology and Imaging*

**May 16-18, 2014**

Grand Hyatt San Antonio, San Antonio

### **ASTRO 56TH ANNUAL MEETING**

**September 14-17, 2014**

Moscone Convention Center, San Francisco

### **BEST OF ASTRO**

**October 17-18, 2014**

Eden Roc Hotel, Miami Beach

### **CHICAGO MULTIDISCIPLINARY SYMPOSIUM IN THORACIC ONCOLOGY**

**October 31-November 2, 2014**

Chicago Marriott Downtown Magnificent Mile, Chicago

**ASTRO**

TARGETING CANCER CARE

**For more information visit [www.astro.org](http://www.astro.org).**

**GEORGIA WORLD CONGRESS CENTER**

285 Andrew Young International Blvd., NW  
Atlanta, GA 30313  
www.gwcc.com

All activities take place in Buildings A and B at the Georgia World Congress Center unless specifically stated otherwise. All information is current as of July 26, 2013, and is subject to change.

**ATTENDEE REGISTRATION****Registration Hall, Building B**

Attendee registration counters will be located in the Registration Hall in Building B of the Georgia World Congress Center.

**Attendee Registration Hours:**

Saturday, September 21	7:00 a.m. – 5:00 p.m.
Sunday, September 22	6:30 a.m. – 5:00 p.m.
Monday, September 23	7:00 a.m. – 6:00 p.m.
Tuesday, September 24	7:00 a.m. – 5:00 p.m.
Wednesday, September 25	7:00 a.m. – 2:00 p.m.

**EXHIBITOR REGISTRATION****Registration Hall, Building B**

Exhibitor registration counters will be located in the Registration Hall in Building B of the Georgia World Congress Center.

**Exhibitor Registration Hours:**

Thursday, September 19	8:00 a.m. – 5:00 p.m.
Friday, September 20	8:00 a.m. – 5:00 p.m.
Saturday, September 21	7:00 a.m. – 5:00 p.m.
Sunday, September 22	7:00 a.m. – 5:00 p.m.
Monday, September 23	8:00 a.m. – 5:00 p.m.
Tuesday, September 24	8:00 a.m. – 5:00 p.m.

**AFFILIATED MEETINGS****37TH ASRT RADIATION THERAPY CONFERENCE**

September 22-24, 2013  
Hyatt Regency Atlanta

The 37th Annual ASRT Radiation Therapy Conference will take place at the Hyatt Regency Atlanta. ASTRO registered attendees may attend ASRT sessions by paying a reduced registration fee of \$195. Proof of registration (registration confirmation or badge) is required to receive this reduced rate. If you have not registered to attend the ASRT conference but would like to do so, please register on-site at the Hyatt Regency Atlanta.

**30TH SROA ANNUAL MEETING**

September 22-25, 2013  
InterContinental Buckhead Atlanta

The 30th SROA Annual Meeting will take place at the InterContinental Buckhead Atlanta. ASTRO registered attendees may attend the SROA general sessions by paying a reduced registration fee of \$210. Proof of registration (registration confirmation or badge) is required to receive this reduced rate. If you have not registered to attend the SROA conference but would like to do so, please register on-site at the InterContinental Buckhead Atlanta.

**ASTRO CAREER FAIR****Room B207, Building B**

Take advantage of the ASTRO Career Fair to connect with candidates for employment. Equipped with computers and printers for your convenience, the Career Fair is available for employers to conduct interviews with job applicants. Employers and applicants must register through the online ASTRO Career Center in order to schedule interviews at the on-site Career Fair.

**Hours of Operation:**

Saturday, September 21	1:00 p.m. – 6:00 p.m.
Sunday, September 22	8:00 a.m. – 6:00 p.m.
Monday, September 23	8:00 a.m. – 6:00 p.m.
Tuesday, September 24	8:00 a.m. – 6:00 p.m.

Private interview rooms are also available. These rooms are ideal if you have multiple interviews to conduct or just need more privacy. A limited number of meeting rooms will be available for three-hour periods Saturday, September 21 through Tuesday, September 24. For more information, contact Todd Karstaedt at [todd@astro.org](mailto:todd@astro.org).

## ASTRO RESOURCE CENTER

### Booth 543, Exhibit Hall, Building B

Visit the ASTRO Resource Center to find out about ASTRO's products and services. Learn about ASTRO member benefits, including the Radiation Oncology-Incident Learning System (RO-ILS), the new medical error reporting system; practice accreditation; educational meetings and webinars; patient advocacy and more. ASTRO's knowledgeable staff will be available to answer any questions about your membership. Stop by to have your picture taken and uploaded to the ASTRO membership directory. Staff will be on hand to demonstrate the use and functionality of *ROhub*, ASTRO's exclusive online member community. The Survivor Circle is also located in the Resource Center.

### Hours of Operation:

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 5:00 p.m.
Tuesday, September 24	10:00 a.m. – 5:00 p.m.

## ASTRO PAC LOUNGE

### B301, Building B

ASTRO's political action committee (PAC) is offering access to an exclusive lounge for all ASTRO members who have donated to the ASTRO PAC in 2013. The PAC lounge will feature Internet access, coffee and beverages, food and a place to rest between sessions. Members who have not made their contribution yet will be able to donate on-site. ASTRO PAC provides ASTRO with the opportunity to more fully participate in government and ensure our members' voices are being heard by key policy makers on Capitol Hill. Be sure to stop by the lounge to get the most recent legislative and election updates. For more information, please email Shandi Hill at [shandih@astro.org](mailto:shandih@astro.org) or visit [www.astro.org/ASTROPAC](http://www.astro.org/ASTROPAC).

### Hours of Operation:

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 5:30 p.m.
Happy Hour and Legislative Issue Forum	4:30 p.m. – 5:30 p.m.
Tuesday, September 24	10:00 a.m. – 3:00 p.m.

## ASTRO ONLINE CONFERENCE PLANNER –

### YOUR ANNUAL MEETING GUIDE

Start planning your Annual Meeting experience with the Online Conference Planner. Build your personalized "My Plan" with your customized schedule.

- Search for sessions by day, track or speaker.
- Search for exhibitors by name, booth number or product/service category.
- Session and exhibitor details with location maps.
- Search and view abstracts.
- General meeting information.
- Access your "MyPlan" – your personal Annual Meeting Schedule.
- Convention Center maps.
- Access the meeting evaluation and view your continuing education certificate.
- Take notes on a session or exhibitor and access your notes from your mobile device.
- Search and exchange messages with colleagues attending the meeting using Find a Friend. Find a Friend is integrated with your "My Plan" on the Online Conference Planner.
- Integrates with ASTROmobile, the official meeting app, so that you can build your schedule in the Online Conference Planner and view your "My Plan" in ASTROmobile.



**Go to [www.astro.org/conferenceplanner](http://www.astro.org/conferenceplanner) to start using the Online Conference Planner.**



In a world of changing information,  
we're with you every step of the way.

**THE VARIAN ONCOLOGY SOFTWARE SOLUTION.**

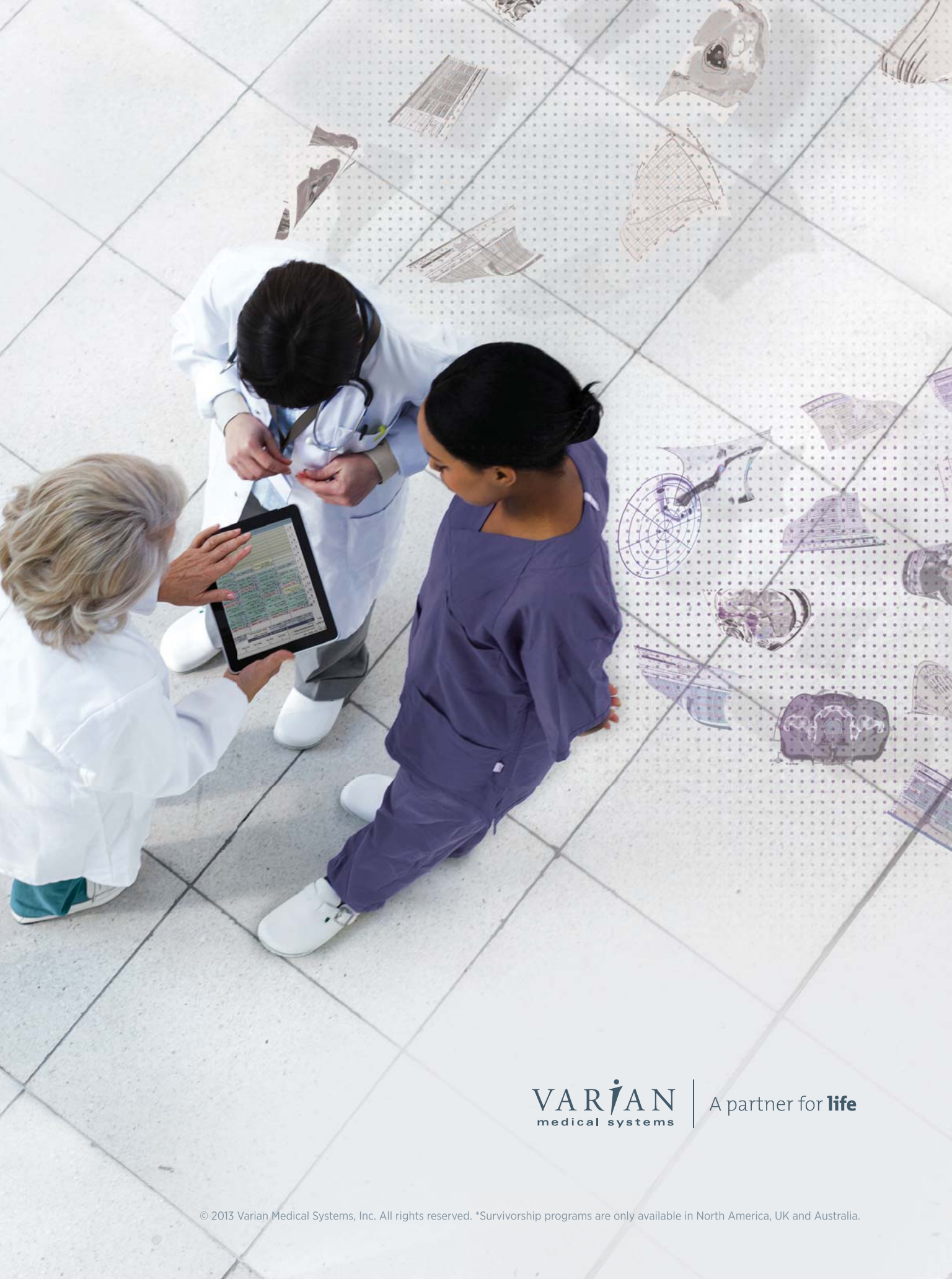
In cancer care, the best medicine is often information. But what makes good information possible? Data. It's the unseen lifeblood of today's medical system. That's why Varian is cultivating an environment where images, treatment plans and patient records connect and work together securely and efficiently. It's an oncology software solution that enables better teamwork among doctors and clinicians, more efficient workflows and customized treatment delivery. As your ally in the rapidly changing world of healthcare, we're with you through it all, from patient diagnosis and treatment to survivorship\*.

**Visit us at ASTRO 2013, Booth #1115.**

Learn more at: [Varian.com/OncologySoftware](http://Varian.com/OncologySoftware)







**VARIAN**  
medical systems

A partner for **life**

**ATLANTA TOURISM AND CONCIERGE DESK*****Main Lobby, Building B***

Attendees can stop by the Atlanta information desk located in the Main Lobby of Building B at the Georgia World Congress Center to receive restaurant recommendations and make reservations and receive Atlanta visitor guides, maps, destination information and local directions.

***Hours of Operation:***

Saturday, September 21	9:00 a.m. – 5:00 p.m.
Sunday, September 22	9:00 a.m. – 5:30 p.m.
Monday, September 23	9:00 a.m. – 5:30 p.m.
Tuesday, September 24	9:00 a.m. – 5:30 p.m.
Wednesday, September 25	9:00 a.m. – 2:00 p.m.

**BUSINESS CENTER*****Located off of the Main Lobby, Building B***

A business center is conveniently located off of the Main Lobby of Building B of the Georgia World Congress Center. The business center offers a variety of services, including packing and shipping, sign production, copying and office supplies.

***Hours of Operation:***

Saturday, September 21	8:30 a.m. – 5:00 p.m.
Sunday, September 22	8:30 a.m. – 5:00 p.m.
Monday, September 23	8:30 a.m. – 5:00 p.m.
Tuesday, September 24	8:30 a.m. – 5:00 p.m.
Wednesday, September 25	8:30 a.m. – 5:00 p.m.

**BUSINESS MEETING****Tuesday, September 24, 2013****11:30 a.m.-1:00 p.m.*****Room B302-B305, Building B***

ASTRO voting members (Active, Affiliate, Allied or International members) are invited to attend the Business Meeting on Tuesday, September 24, from 11:30 a.m. – 1:00 p.m. Leaders of the Society will discuss and make presentations on important topics of interest to ASTRO members. In addition, results of a patient awareness survey conducted this summer will be presented. You should not miss this important meeting. Lunch will be served.

**CE CENTRAL*****Located off Main Lobby, Building B***

Do you have questions about continuing education or the 2013 changes to the American Board of Radiology's (ABR) Maintenance of Certification (MOC) program? Staff from ASTRO and ABR will be on hand during the meeting to answer your individual questions about continuing education and MOC requirements.

CE Central computer stations provide access for you to:

- Complete your continuing education and meeting evaluation.
- View/print a session tracking form.
- Search abstracts.
- Search exhibitors.
- Access your online conference planner.

***Hours of Operation:***

Saturday, September 21	1:00 p.m. – 5:00 p.m.
Sunday, September 22	8:00 a.m. – 6:00 p.m.
Monday, September 23	8:00 a.m. – 6:00 p.m.
Tuesday, September 24	8:00 a.m. – 6:00 p.m.
Wednesday, September 25	8:00 a.m. – 4:30 p.m.

**CYBER CAFÉ*****Booth 126, Exhibit Hall, Building B***

ASTRO attendees can browse the Internet and check, retrieve and send email messages at the Cyber Café in the Exhibit Hall.

***Hours of Operation:***

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 5:00 p.m.
Tuesday, September 24	10:00 a.m. – 5:00 p.m.

**ELECTRONIC BUSINESS CARD**

Included with your badge, you will receive an electronic business card equipped with a magnetic strip containing your contact information and other demographic data. This card can be scanned in card readers located in exhibitor booths throughout the Exhibit Hall. Simply give your electronic business card to the exhibitor and your contact information will be recorded for follow-up by the exhibitor.

**Note:** Attendee email addresses will be included in the contact information given to exhibitors unless you indicated to exclude your email at the time of registration.



**EXHIBIT HALL****Halls B1-B3, Building B**

Learn about the latest products in cancer treatment and care in the Exhibit Hall. See page 42 for a list of 2013 exhibitors.

**Hours of Operation:**

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 5:00 p.m.
Tuesday, September 24	10:00 a.m. – 5:00 p.m.

**FACULTY/VIP OFFICE****Room B401, Building B**

Faculty members and VIPs should check in at the Faculty/VIP Office to pick up registration materials and receive last-minute updates and program changes. The Faculty/VIP Office is conveniently located next to the Speaker Ready Room. Faculty and VIPs are welcome in the Faculty/VIP Office throughout the meeting. Faculty members include:

- Educational session lecturers.
- Panel moderators and presenters.
- Scientific session moderators and discussants.
- eContouring Learning Lab presenters.
- Presidential Symposium lecturers.
- Keynote speakers and introducers.
- Nursing program speakers.
- International Symposium presenters.

**Note:** Presenters of abstracts are not classified as faculty and should follow attendee registration instructions.

**Hours of Operation:**

Saturday, September 21	6:30 a.m. – 6:00 p.m.
Sunday, September 22	6:30 a.m. – 6:00 p.m.
Monday, September 23	6:30 a.m. – 6:00 p.m.
Tuesday, September 24	6:30 a.m. – 6:00 p.m.
Wednesday, September 25	6:30 a.m. – 4:30 p.m.

**FIRST AID****Outside Hall B1, Building B**

First Aid is located outside of Hall B1 between the entrance of Halls B1 and B2 at the Georgia World Congress Center. The first aid phone number is 404-223-4041 or dial ext. 4041 from a house phone. In an emergency, please contact first aid or go to ASTRO Registration and have a staff person contact security.

**Hours of Operation:**

Monday, September 16	8:00 a.m. – 5:00 p.m.
Tuesday, September 17	8:00 a.m. – 5:00 p.m.
Wednesday, September 18	8:00 a.m. – 5:00 p.m.
Thursday, September 19	8:00 a.m. – 5:00 p.m.
Friday, September 20	8:00 a.m. – 5:00 p.m.
Saturday, September 21	7:00 a.m. – 6:00 p.m.
Sunday, September 22	6:30 a.m. – 6:30 p.m.
Monday, September 23	7:00 a.m. – 7:00 p.m.
Tuesday, September 24	7:00 a.m. – 10:00 p.m.
Wednesday, September 25	7:00 a.m. – 8:00 p.m.
Thursday, September 26	8:00 a.m. – 5:00 p.m.

**GEORGIA WORLD CONGRESS CENTER  
INFORMATION****Main Lobby, Building B**

Georgia World Congress Center staff can help with convention center brochures and maps.

**Hours of Operation:**

Saturday, September 21	7:00 a.m. – 5:00 p.m.
Sunday, September 22	6:30 a.m. – 5:00 p.m.
Monday, September 23	7:00 a.m. – 6:00 p.m.
Tuesday, September 24	7:00 a.m. – 5:00 p.m.
Wednesday, September 25	7:00 a.m. – 4:30 p.m.

**INFORMATION DESK****Outside of Registration Hall and located off of Main Lobby, Building B**

Have a question? Stop by the Information Desk to get your questions answered.

**Hours of Operation:**

Saturday, September 21	7:00 a.m. – 5:00 p.m.
Sunday, September 22	6:30 a.m. – 5:00 p.m.
Monday, September 23	7:00 a.m. – 6:00 p.m.
Tuesday, September 24	7:00 a.m. – 5:00 p.m.
Wednesday, September 25	7:00 a.m. – 4:30 p.m.

## INDUSTRY-EXPERT THEATER

**Rear of 100 Aisle, Exhibit Hall, Building B**

This activity allows companies to present their noteworthy products and services through a live presentation in the Industry-Expert Theater located in the Exhibit Hall. Seating is available on a first-come, first-served basis. A box lunch will be provided by ASTRO.

**Sunday, September 22****12:45 p.m. – 1:45 p.m.*****Accuray: Dynamic Technology in Motion****Supported by Accuray**Contact: Jim Bilich**Phone: 925-348-2082***Monday, September 23****12:15 p.m. – 1:15 p.m.*****An In-Depth Look at Xofigo® (radium Ra 223 dichloride)****Supported by Bayer HealthCare and Algeta**Contact: The Lockwood Group**Phone: 203-817-0951***Tuesday, September 24****11:45 a.m. – 12:45 p.m.*****Title TBD****Supported by ScandiDos**Contact: Ingemar Wiberg**Phone: +46-70-331-5168*


---

*Industry-Expert Theater presentations are not certified for Continuing Medical Education credit.*

---

## INDUSTRY SATELLITE SYMPOSIUM

ASTRO has reviewed and approved these symposia as appropriate for presentation. These symposia represent the content and views of the sponsors and are not part of the official ASTRO Annual Meeting.

**Sunday, September 22****6:30 p.m. – 8:30 p.m. (Registration and dinner begin at 6:00 p.m.)*****Bone-Seeking Radiopharmaceuticals for Treatment of Prostate Cancer with Bone Metastases: Implications of Emerging Data Showing Survival Improvements***  
***Omni Hotel at CNN Center, Grand Ballroom E***

**Accreditation:** This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of Medical Education Resources (MER) and PleXus Communications. MER is accredited by the ACCME to provide continuing medical education for physicians.

**CME Credits:** Medical Education Resources designates this live activity for a maximum of 2.0 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**Target Audience:** This activity is intended for radiation oncologists, nuclear medicine physicians, radiation biologists and physicists caring for patients with prostate cancer.

This activity is hosted by Medical Education Resources and PleXus Communication and is supported by an educational grant from Bayer HealthCare Pharmaceuticals Inc.

**Monday, September 23****6:00 p.m. – 7:45 p.m. (Registration 5:00 p.m. – 6:00 p.m. Reception to follow symposium.)*****Hope, Guidance and Healing: Necessary Components of Effective Proton Therapy and Clinical Research***  
***Piedmont Driving Club***

**Accreditation:** The University of Florida College of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

**CME Credits:** The University of Florida College of Medicine designates this live activity for a maximum of 2.0 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

This activity is hosted by the University of Florida and is supported by a grant from IBA.

## LOST AND FOUND

**Outside of Registration Hall and located off of Main Lobby, Building B**

To report a missing item, to check to see if an item has been turned into security or to turn in a lost item, please stop by one of the Information Desks.

### Hours of Operation:

Saturday, September 21	7:00 a.m. – 5:00 p.m.
Sunday, September 22	6:30 a.m. – 5:00 p.m.
Monday, September 23	7:00 a.m. – 6:00 p.m.
Tuesday, September 24	7:00 a.m. – 5:00 p.m.
Wednesday, September 25	7:00 a.m. – 4:30 p.m.

## LUNCH VOUCHER

Attendees will receive a lunch voucher valued at \$10 that can be used at food outlets in the Exhibit Hall only. This voucher is provided to all attendees and exhibitors with their registration materials. **Replacements for lost vouchers will not be issued.**

## LUGGAGE/COAT CHECK

**Registration Hall, Building B**

Luggage and coat check will be available at the Georgia World Congress Center for \$3 per item.

### Hours of Operation:

Saturday, September 21	6:30 a.m. – 6:00 p.m.
Sunday, September 22	6:00 a.m. – 6:30 p.m.
Monday, September 23	7:00 a.m. – 7:00 p.m.
Tuesday, September 24	7:00 a.m. – 6:30 p.m.
Wednesday, September 25	7:00 a.m. – 5:00 p.m.

## PARKING

There is self-parking available at the Georgia World Congress Center. **ASTRO does not validate parking.**

### Self-Parking

If you plan on driving to the Georgia World Congress Center, there is self-parking provided in the Red (International) Deck. This parking lot is the closest to Buildings A and B where the ASTRO Annual Meeting is located. This lot is gated and has an attendant on duty during all event hours. The standard rate for parking is \$10, which is subject to change at any time.

## PASSPORT PROGRAM

The Survivor Circle Passport Program, created in 2006, helps raise money for the groups we partner with in the Survivor Circle and helps drive traffic to passport participants' booths. Participating companies' names and logos are listed on a passport given to all attendees. Attendees can stop by your booth to learn more about your company and receive a stamp. When they have received stamps from all participating companies, they drop off their passport at the Survivor Circle in the ASTRO Resource Booth (Booth 543, Exhibit Hall) for the chance to win prizes. This opportunity is given to the first 10 companies to make their donation. To learn more visit [www.rtanswers.org/passportprogram](http://www.rtanswers.org/passportprogram).

Thank you to the groups who have signed on (as of July 26, 2013):

21st Century Oncology  
Pitts Little Corp.  
Revenue Cycle Inc.  
Spectrum Pharmaceuticals Inc.



**MetroHealth**

## Faculty Radiation Oncologist

The MetroHealth Medical Center is recruiting for a faculty radiation oncologist to join our staff full/part time. Applicants should have a strong interest in clinical practice. We participate in national protocols and have an excellent working relationship with the medical oncologists and our referring base. The successful candidate will have an appointment to the medical faculty of the Case Western Reserve University School of Medicine. We treat approximately fifty (50) patients daily. There are two (2) treatment machines, a Varian Trilogy and a Varian iX which is IMRT functional. A Phillips Big Bore Brilliance CT simulator is in service. We have an active HDR program.

Qualified applicants for assistant professor should hold an MD or equivalent degree, be board certified or board eligible in radiation oncology. Rank will commensurate with experience and achievement.

MetroHealth invites applicants to forward their curriculum vitae to:

**Peter M. Laye M.D.**  
Director, Division of Radiation Oncology  
MetroHealth Medical Center, Cancer Care Center  
2500 MetroHealth Drive, Cleveland, Ohio 44109-1998  
Email [playe@metrohealth.org](mailto:playe@metrohealth.org) or fax to 216 778-5948

Case Western Reserve University and MetroHealth Medical Center are Equal Opportunity/Affirmative Action Employers  
Women and minorities are encouraged to apply



**POSTER VIEWING****Hall B4, Building B****Poster Viewing Hours:**

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 6:30 p.m.
Poster Reception	5:30 p.m. – 6:30 p.m.
Tuesday, September 24	10:00 a.m. – 5:00 p.m.

**Includes posters from the following categories:**

Biology  
 Breast  
 CNS  
 Gastrointestinal  
 Genitourinary  
 Gynecologic  
 Head and Neck  
 Health Services Research  
 History  
 Informatics/Bioinformatics  
 Lung  
 Lymphoma  
 Non-malignant  
 Palliative Care  
 Patient Reported Outcomes  
 Patient Safety  
 Pediatric  
 Physics  
 Sarcoma

**POSTER VIEWING SESSION AND RECEPTION****Hall B4, Building B****Monday, September 23****5:30 p.m. – 6:30 p.m.**

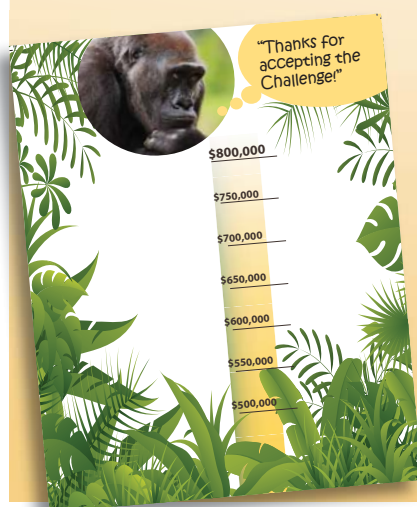
Each full conference attendee, exhibitor and Monday one-day conference attendee will receive one drink ticket that can be used for a complimentary beverage at the Poster Viewing Session and Reception. After your ticket has been redeemed, drinks will be available for purchase. You must be 21 years of age to consume alcoholic beverages. Your drink ticket will be included with your badge in your registration materials.

**PRESS ROOM****Room B403 and B404, Building B**

ASTRO will present News Briefings featuring the top abstracts to journalists reporting on the Annual Meeting. Lead authors of abstracts are encouraged to submit press releases about their abstract for online visibility in the Virtual Press Room for institutions and corporate members. For more information about ASTRO's Press Program, Policies and Virtual Press Rooms, visit [www.astro.org/AMpress](http://www.astro.org/AMpress) or contact ASTRO's Press Office at 703-286-1600 or [press@astro.org](mailto:press@astro.org).

**Hours of Operation:**

Sunday, September 22	7:00 a.m. – 4:00 p.m.
Monday, September 23	7:00 a.m. – 4:00 p.m.
Tuesday, September 24	7:00 a.m. – 4:00 p.m.
Wednesday, September 25	7:00 a.m. – 12:00 p.m.

**RADIATION ONCOLOGY INSTITUTE (ROI) BOOTH****Located on Level 4, Building B**

Annual Meeting attendees are invited to visit the Radiation Oncology Institute (ROI) booth, located on Level 4 in Building B at the Georgia World Congress Center. Learn about ROI's research initiatives and current projects, including the National Radiation Oncology Registry (NROR), Safety and Quality in IMRT Delivery Accuracy and Best Practices in Toxicity Management.

ROI's mascot, "ROI" the gorilla, will be on hand for those wishing to accept our Gorilla Challenge. Don't miss out on this great opportunity and show your support of ROI!

**Hours of Operation:**

Sunday, September 22	8:00 a.m. – 5:00 p.m.
Monday, September 23	8:00 a.m. – 5:00 p.m.
Tuesday, September 24	8:00 a.m. – 5:00 p.m.
Wednesday, September 25	8:00 a.m. – 12:00 p.m.

# SHUTTLE SERVICE TO THE GEORGIA WORLD CONGRESS CENTER

Complimentary shuttle service will be provided between the Georgia World Congress Center and official ASTRO hotels. The shuttle drop-off and pick-up locations are located along Andrew Young International Boulevard, just outside the Registration Hall at the Georgia World Congress Center.

This is preliminary information only, which is subject to change at any time without notice. Upon arrival in Atlanta, please refer to the sign in your hotel lobby for the most current information.

Hours of Operation	
Saturday, September 21	7:00 a.m. – 6:00 p.m.
Sunday, September 22	6:30 a.m. – 7:00 p.m.
Monday, September 23	6:30 a.m. – 7:30 p.m.
Tuesday, September 24	6:30 a.m. – 7:00 p.m.
Wednesday, September 25	6:30 a.m. – 5:00 p.m.

Route	Hotel	Boarding Location at Hotel	Approximate one-way travel time	Frequency in minutes
1	DoubleTree by Hilton Atlanta Downtown Hampton Inn and Suites Holiday Inn Atlanta Downtown Westin Peachtree Plaza	At Westin Peachtree Plaza. At Westin Peachtree Plaza. At Westin Peachtree Plaza. Curbside on Spring.	7-12 minutes	Peak 10-15 Nonpeak 15-20
2	Hyatt Regency Atlanta	On Baker at Peachtree Street.	10-15 minutes	Peak 10-15 Nonpeak 15-20
3	Courtyard Atlanta Downtown Ellis Ritz-Carlton Atlanta Twelve Hotel Centennial Park W Atlanta Downtown	On Ellis at Peachtree Street. On Ellis at Peachtree Street. On Ellis at Peachtree Street. Curbside on Spring Street. Curbside on Spring Street.	13-17 minutes	Peak 10-15 Nonpeak 15-20
4	Sheraton Atlanta Hotel	On International at Courtland.	10-15 minutes	Peak 10-15 Nonpeak 15-20
5	Atlanta Marriott Marquis Hilton Atlanta	Curbside on Peachtree Center. At Atlanta Marriott Marquis.	10-15 minutes	Peak 10-15 Nonpeak 15-20
Walk Hotels	Embassy Suites Atlanta Glenn Hotel, The Hilton Garden Inn Omni Hotel at CNN Center	No Shuttle Service		

## SHUTTLE SERVICE

Complimentary shuttle service will be provided between the Georgia World Congress Center and official ASTRO hotels. The shuttle drop-off and pick-up locations are located along Andrew Young International Boulevard, just outside the Registration Hall in at the Georgia World Congress Center. Please refer to page 39 for the shuttle schedule. Please refer to signs at the convention center and your hotel lobby for the most current information.

## SMOKING

Georgia World Congress Center is a nonsmoking facility.

## SPEAKER READY ROOM

### *Room B402, Building B*

Faculty members and abstract presenters must upload their PowerPoint presentation in advance of their session in order to have it pre-loaded onto the ASTRO conference network. To ensure presentations have been properly uploaded, faculty members and abstract presenters are asked to check in at the Speaker Ready Room to review the information and make any last-minute edits.

Speakers should plan to save their presentation on a portable device and bring it to the Speaker Ready Room at least 24 hours in advance of their presentation or upon arrival at the Georgia World Congress Center.

### *Hours of Operation:*

Saturday, September 21	6:30 a.m. - 6:00 p.m.
Sunday, September 22	6:30 a.m. - 6:00 p.m.
Monday, September 23	6:30 a.m. - 6:00 p.m.
Tuesday, September 24	6:30 a.m. - 6:00 p.m.
Wednesday, September 25	6:30 a.m. - 4:30 p.m.

## SURVIVOR CIRCLE

### *ASTRO Resource Center, Booth 543, Exhibit Hall, Building B*

In 2003, ASTRO created the Survivor Circle as a way to honor cancer survivors. Each year, ASTRO partners with two local patient support organizations and features them at the Survivor Circle at the Annual Meeting. Through generous donations from exhibitors and attendees, ASTRO raises funds for the two organizations featured in the Survivor Circle. Since its inception, the Survivor Circle has raised more than \$250,000 for our partner organizations. Stop by the Survivor Circle, located in the ASTRO Resource Center to learn more about the recipients of this year's Survivor Circle Grants, the Cancer Foundation of Northeast Georgia and the South Georgia Medical Center, Pearlman Cancer Center.

# GET YOUR PHOTO TAKEN FOR THE ROhub

A professional photographer will be on hand in the ASTRO Resource Center, Booth 543, in the Annual Meeting Exhibit Hall. Stop by to get your photo taken for the ASTRO member directory and learn more about the ROhub – ASTRO's new online community.





## TECHNOLOGY HELP DESK

### **Located off Main Lobby, Building B**

Need help using ASTROmobile, the official app for the Annual Meeting? Have questions about the touch screen interactive wayfinder stations that can help you navigate the convention center? Stop by the Technology Help Desk located off the Main Lobby in Building B at the Georgia World Congress Center to get your technology-related questions answered.

### **Hours of Operation:**

Saturday, September 21	7:00 a.m. – 5:00 p.m.
Sunday, September 22	6:30 a.m. – 5:00 p.m.
Monday, September 23	7:00 a.m. – 6:00 p.m.
Tuesday, September 24	7:00 a.m. – 5:00 p.m.
Wednesday, September 25	7:00 a.m. – 4:30 p.m.

## TRANSPORTATION

Atlanta offers a number of convenient transportation options to help attendees easily get around the city.

### **Airport**

The Hartsfield-Jackson Atlanta International Airport is 11 miles from downtown Atlanta. Board outbound scheduled buses, shared ride and long distance vans, taxis, and hotel and rental car courtesy vans located in the arrival area of each terminal.

### **Taxi**

On average, a one-way taxi ride from the airport to downtown is a flat rate of \$30, and an additional \$2 for each additional passenger. All areas within a 11-mile radius of downtown Atlanta are charged by meter starting at \$8, and \$2 for each additional passengers. If you are departing to a hotel outside the 11-mile radius of downtown Atlanta your taxi fare will be metered.

### **MARTA**

MARTA is Atlanta's public transportation system that provides rail and bus services throughout downtown and to and from the airport. There is a MARTA station connected to the Hartsfield-Jackson Atlanta International Airport located right off of baggage claim. The one-way fare to downtown on MARTA is \$2.50 and will get you downtown in 20 minutes.

## VIRTUAL MEETING

All full conference attendees receive the Virtual Meeting with their registration at no additional cost. With the Virtual Meeting, you can extend your learning experience with access to the 2013 ASTRO sessions after the meeting is over. You will receive streaming content that has been digitally recorded live and published as audio synchronized to the speaker presentations\*. Approximately six weeks after the meeting, full conference attendees will receive an email with a link providing access to the Virtual Meeting.

*\*Presentations are included in the Virtual Meeting as approved per faculty.*

## VIRTUAL POSTERS

### **Hall B4, Exhibit Hall, Building B**

Computer terminals and seating are available to view the virtual poster displays at your leisure. Correspond with presenters or forward a presentation to a colleague or your home office.

### **Hours of Operation:**

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 5:00 p.m.
Tuesday, September 24	10:00 a.m. – 5:00 p.m.

## WIRELESS INTERNET ACCESS

Complimentary wireless Internet access is provided in all common areas and session rooms throughout the Georgia World Congress Center. Please note that this does not include the Exhibit Hall. Attendees can bring their laptop to check email, complete the evaluation or browse the Internet. Laptops must have a Wi-Fi card to connect.

# EXHIBITOR LIST

(As of July 12, 2013)

For more information on an exhibiting company or to view the floor plan of the Exhibit Hall, please visit [www.astro.org/exhibithall](http://www.astro.org/exhibithall).

.decimal	D3 Oncology Solutions
21st Century Oncology	Dara BioSciences
A2J Laser Technology	Demos Medical Publishing
Acceletronics	Desert Harvest
AccuBoost	DIACOR
Accuray Inc.	DOSIsoft
Advanced Shielding Technologies Inc.	e+CancerCare
Aktina Medical Corporation	e2v
Alliance Oncology	Eckert & Ziegler BEBIG
Alphatron Linac	Elekta
American Association of Medical Dosimetrists	ELSEVIER
American College of Radiology	Equicare Health Inc.
American Medical Accounting and Consulting	Everson Tesla Inc.
American Radium Society	Foss Therapy Services Inc.
American Society of Radiologic Technologists	Gammex
Anzai Medical Co. Ltd.	GE Healthcare
AQUILAB	GeneDx Inc.
architecture	Genomic Health Inc.
ASCO	GMV Soluciones Globales Internet S.A.U
ASTRO Resource Center	Gold Anchor
Augmenix	Guangzhou Renfu Medical Equipment Co. Ltd.
Azimuth Therapy	Healthcare Administrative Partners
Bayer HealthCare	Healthcare Global Enterprises
Best Medical International Inc.	Hermes Medical Solutions Inc.
Biocompatibles Inc.	Hitachi Aloka Medical
Bionix Radiation Therapy	Hitachi America Ltd.
BK Medical Systems	Hologic Inc.
Bogardus Medical Systems Inc.	IBA SA
Boiron	Imaging Technology News
Brainlab	ImpediMed Inc.
Bristol-Myers Squibb	INSYS Therapeutics Inc.
BSD Medical	Integrated Oncology Network
Buck Engineering & Consulting GMBH	IntraOp Medical
C&G Technologies	IOP Publishing
C.R. Bard Inc.	Iron Medical Systems Inc.
Cancer CarePoint Inc.	IsoAid
Cancer Treatment Centers of America	IsoRay Medical Inc.
Cangene Corporation	James L. Davis
Carbon Medical Technologies	Klarify
Carl Zeiss Meditec Inc.	Kobold
CDR Systems Inc.	Kyoto Kagaku Co. Ltd
Cemar Electro Inc.	Landauer Inc.
Churchill Consulting Inc.	LAP of America L.C.
Cianna Medical	Leoni CIA Cable Systems S.A.S.
CIRS	Liberty Medical Inc.
CIVCO Medical Solutions	LifeLine Software Inc.
Cold Shot Chillers	LinaTech, LLC
CompHealth	Lippincott Williams & Wilkins
Computerized Radiation Scanners Inc.	Locumtenens.com
C-RAD Inc.	MACROMEDICS BV
	MASEP Infini Medical Science Technology Development Co. Ltd.
	Max Medical Co. Ltd.

McKesson Specialty Health	Radiological Imaging Technology - RIT
Medspira LLC	Radiology Oncology Systems Inc.
Mevion Medical Systems	RADMAX Ltd.
Miadern Radiation Relief at Aiden Industries LLC	RaySearch Laboratories AB
Mick Radio Nuclear-Instruments Inc.	Red Journal, The
Micropos Medical AB	Remetronix
MIM Software	Revenue Cycle Inc.
Ministry Health Care	RS&A Inc.
Mirada Medical	S+S Par Scientific
Mission Search	ScandiDos
Mitsubishi Electric	Sensus Healthcare
Mobius Medical Systems	Shandong Xinhua Medical Instruments Co. Ltd.
Modus Medical Devices Inc.	Shielding Construction Solutions Inc.
MPM Medical Inc.	Siemens Medical Solutions USA Inc.
MuCheck-Oncology Data Systems	Sky Factory, The
Multidata Systems International Corp.	SonaCare Medical LLC
Myriad Generic Laboratories	Sordina IORT Technologies S.p.A
NELCO	SPEC-MED
Neurologica	Spectrum Pharmaceuticals Inc.
OiService CT & MR	Springer
Oncolink-University of Pennsylvania	Standard Imaging
Oncology Services International	Sumitomo Heavy Industries Ltd.
Oncology Systems Limited	Sun Nuclear Corporation
Oncure Medical Corp	superDimension Inc.
Orfit Industries America	Suremark Company, The
Oxford Instruments Service LLC	Teva CNS
P-Cure Ltd.	Theragenics Corporation
Perioperative Services LLC	Top Grade Medical Equipment Co. Ltd.
Phantom Laboratory, The	Toshiba Medical Systems
Philips Healthcare	TRG Oncology Equipment
Pioneer Bioscience Publishing	Vantage Oncology
Pitts Little Corp.	Varian Medical Systems
<i>Practical Radiation Oncology</i>	Velocity Medical Solutions
Precise Construction Inc.	Veritas Medical Solutions
Precision X-Ray	Virtual Ltd.
ProNova Solutions	ViewRay Inc.
ProTom International Inc.	Vision RT Ltd.
Prowess Inc.	VisionTree Software Inc.
PTW	VOA Associates
Qfix	Water-Jel Technologies
QLRAD Inc.	Wells Fargo Equipment Finance Inc.
RAD Technology Medical Systems	Wiley
RadiaDyne	Willmed Corporation
Radia-Guard	Xecan
Radiologica LLC	Xoft
Radiation Business Solutions	Xstrahl Limited
Radiation Oncology Resources	
Radiation Products Design Inc.	
Radiation Therapy Oncology Group	

## EXHIBIT HALL HOURS

### Halls B1-B3, Building B

Meet more than 200 vendors and learn about the latest products and services in cancer treatment and care.

### Hours of Operation:

Sunday, September 22	10:00 a.m. – 5:00 p.m.
Monday, September 23	10:00 a.m. – 5:00 p.m.
Tuesday, September 24	10:00 a.m. – 5:00 p.m.

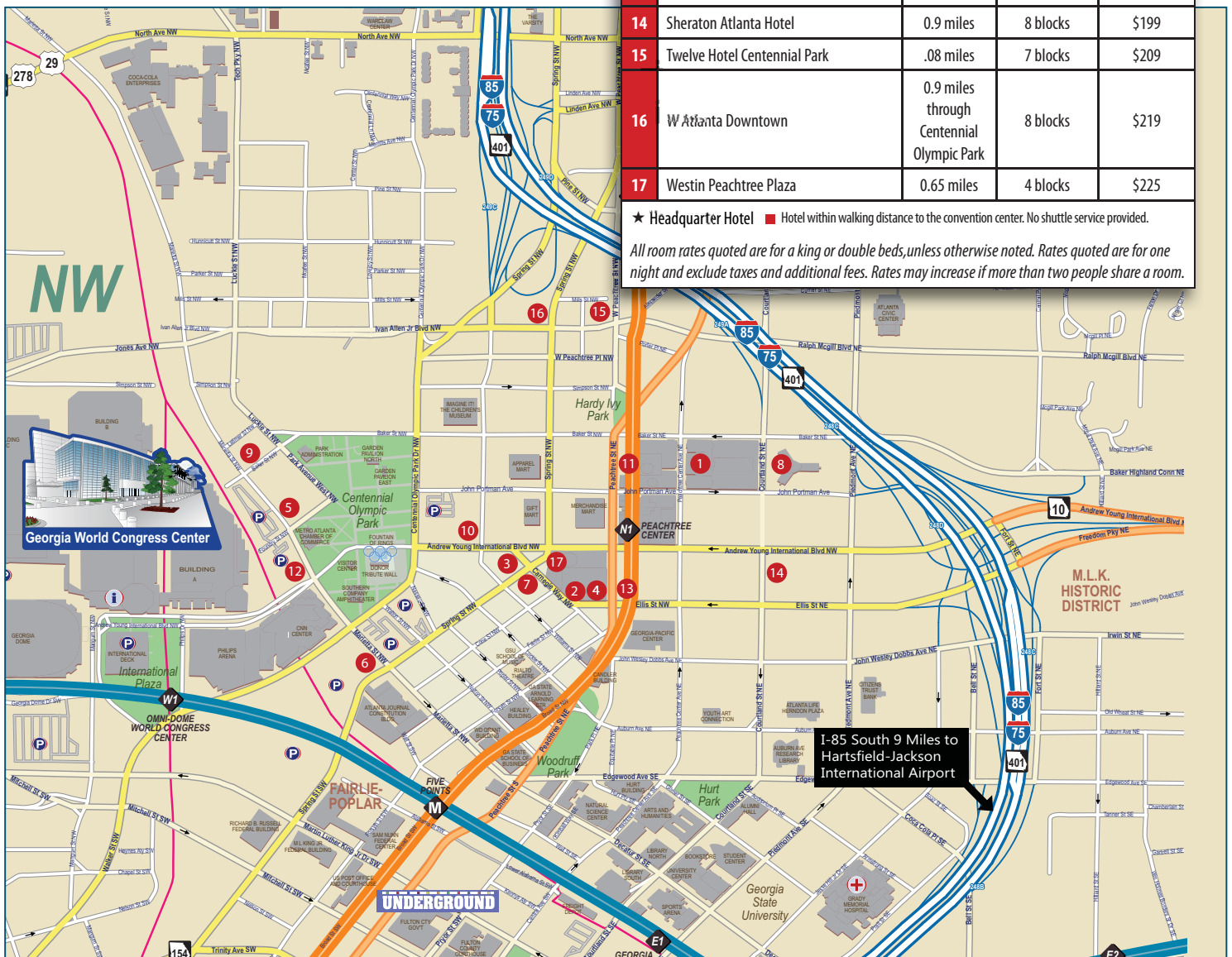


## HOTEL MAP

Number	Hotel	Miles to Convention Center	Blocks to Convention Center	Rate (king/double beds)
1	Atlanta Marriott Marquis	0.8 miles	7 blocks	\$216
2	Courtyard Atlanta Downtown	.50 miles	5 blocks	\$209
3	DoubleTree by Hilton Atlanta Downtown	0.5 miles	3 blocks	\$211
4	Ellis, The	.60 miles	5 blocks	\$209
5	Embassy Suites Atlanta ■	.03 miles	1 block	\$235
6	Glenn Hotel, The ■	.03 miles	2 blocks	\$214
7	Hampton Inn & Suites	0.6 miles	3 blocks	\$189/\$209
8	Hilton Atlanta	0.95 miles	8 blocks	\$221
9	Hilton Garden Inn ■	0.5 miles	2 blocks	\$211
10	Holiday Inn Atlanta Downtown	0.4 miles	3 blocks	\$179
11	Hyatt Regency Atlanta	0.75 miles	5 blocks	\$240
12	Omni Hotel at CNN Center ★ ■	Adjacent	Adjacent	\$248
13	Ritz-Carlton Atlanta	0.7 miles	5 blocks	\$245
14	Sheraton Atlanta Hotel	0.9 miles	8 blocks	\$199
15	Twelve Hotel Centennial Park	.08 miles	7 blocks	\$209
16	W Atlanta Downtown	0.9 miles through Centennial Olympic Park	8 blocks	\$219
17	Westin Peachtree Plaza	0.65 miles	4 blocks	\$225

★ Headquarter Hotel ■ Hotel within walking distance to the convention center. No shuttle service provided.

All room rates quoted are for a king or double beds, unless otherwise noted. Rates quoted are for one night and exclude taxes and additional fees. Rates may increase if more than two people share a room.



# 2013 ASTRO Annual Meeting Award Recipients

ASTRO has selected 42 researchers to receive the 2013 Annual Meeting Abstract Awards. These individual grants, totaling \$34,500 in funding, recognize the top-rated abstracts in seven categories and showcase the high quality of research from around the world that is presented at ASTRO's Annual Meeting, in addition to demonstrating ASTRO's continued commitment to promoting and advancing cancer research. The winners will receive the honor during ASTRO's 55th Annual Meeting in Atlanta. For more information about each award, visit [www.astro.org/Meetings-and-Events/2013-Annual-Meeting/Abstracts/Awards.aspx](http://www.astro.org/Meetings-and-Events/2013-Annual-Meeting/Abstracts/Awards.aspx).

## RESIDENT CLINICAL/BASIC SCIENCE RESEARCH AWARD

Timothy Harris, MD, PhD  
(Radiation and Cancer Biology)  
Michael Folkert, MD, PhD (Radiation Physics)  
Alireza Fotouhi Ghiam, MD, MSc (Clinical)

## BASIC SCIENCE ABSTRACT AWARD

### *Radiation Physics*

Bin Han, PhD  
Teo Stanescu, PhD  
Seishin Takao, PhD  
Eric Williams, PhD  
Yun Yang, PhD

### *Radiation and Cancer Biology*

Anita Aiyer, MS  
Mekhail Anwar, MD, PhD  
Michael Spiotto, MD, PhD  
Ting Xu, MD  
Gregory Vlacich, MD, PhD

## ANNUAL MEETING ABSTRACT TRAVEL AWARD

Scott Bratman, MD, PhD  
Christopher Chapman, MS  
Avani Dholakia, BS  
Aaron Falchook, MD  
Annemarie Fernandes, MD  
Victor Mangona, MD  
Ankit Modh, BS  
David Palma, MD, PhD  
Anupam Rishi, MD  
Roshan Sethi, BS  
Anand Shah, MD, MPH  
Arshin Sheybani, MD  
Terence Sio, MD, MS  
Christopher Tinkle, MD, PhD  
Ralph Vatner, MD, PhD

## INTERNATIONAL – U.S. ANNUAL MEETING SCIENTIFIC ABSTRACT AWARD

Antonio Zuliani, MD, PhD, MBA, MS

## RESIDENT DIGITAL POSTER RECOGNITION AWARD

Ann Raldow, MD (Clinical)  
Daniel Bracey, MD (Radiation and Cancer Biology)  
Mu-Han Lin, PhD (Radiation Physics)

## RESIDENT POSTER VIEWING RECOGNITION AWARD

### *Clinical*

Emma Holliday, MD (First place)  
Naamit Gerber, MD (Second place)  
Christine Min, MD (Third place)

### *Radiation and Cancer Biology*

Carmen Perez, MD, PhD (First place)  
Anthony Apicelli, MD, PhD (Second place)  
Youssef Zeidan, MD, PhD (Third place)

### *Radiation Physics*

Junaid Pasha, MD (First place)  
Shikui Tang, PhD (Second place)  
Charles Wooten, MD (Third place)

## ANNUAL MEETING NURSE ABSTRACT AWARD

Jean Hamker, RN

# Register by November 13 for Lowest Rates!



## MULTIDISCIPLINARY HEAD & NECK CANCER SYMPOSIUM



## February 20-22, 2014

JW Marriott Camelback Inn Resort and Spa | Scottsdale, Arizona

**Join us for this essential meeting for the head and neck community.**

Highlights will include:

- Interactive education sessions on supportive care and directed therapy.
- Information on the latest surgical and radiotherapeutic techniques.
- Oral abstract sessions with the most current, cutting-edge science.
- Case-based discussion sessions and attendee interaction following presentations.
- Practitioners examining updates on clinical trials, new treatment approaches and toxicity mitigation.

**Register now: [www.headandnecksymposium.org](http://www.headandnecksymposium.org)**

This live activity has been approved for AMA PRA Category 1 Credit™.

**Co-sponsors:**





## ASTRO elects new leadership

Four new officers have been elected to serve on ASTRO's Board of Directors. The new officers' terms will begin at the Annual Business Meeting at ASTRO's 55th Annual Meeting in Atlanta, which takes place September 22-25, 2013.

For more information on the new Board of Directors members' backgrounds, visit [www.astro.org/About-ASTRO/Governance/Elections.aspx](http://www.astro.org/About-ASTRO/Governance/Elections.aspx).

### *The new Board of Directors members are:*



*President-elect*

**BRUCE D. MINSKY, MD**

MD Anderson Cancer Center, Houston



*Secretary/Treasurer-Elect*

**JEFF M. MICHALSKI, MD, MBA, FASTRO**

Washington University School of Medicine, St. Louis



*Health Policy Council Vice-chairman*

**THOMAS J. EICHLER, MD**

CJW Medical Center, Richmond, Va.



*Science Council Vice-chairman*




**THEODORE L. DEWEESE, MD**

Johns Hopkins University School of Medicine, Baltimore

## 2013 ANNUAL MEETING INDUSTRY PARTNERS

(AS OF JULY 26, 2013)

*Special thanks to ASTRO's 55th Annual Meeting Industry Partners*

<b>GOLD</b>	
<b>SILVER</b>	 
<b>BRONZE</b>	CIVCO Medical Solutions
<b>COPPER</b>	Sun Nuclear      Vertual, Ltd.

# Ten ASTRO members awarded Fellows designation

BY BRITTANY ASHCROFT, COMMUNICATIONS MANAGER, BRITTANYA@ASTRO.ORG

ASTRO has selected 10 distinguished members to receive the ASTRO Fellows designation. The 2013 class of Fellows will receive the recognition during the Awards Ceremony at ASTRO's 55th Annual Meeting on Tuesday, September 24 at 10:30 a.m. in the Thomas Murphy Ballroom at the Georgia World Congress Center in Atlanta.

The Fellows Program, started in 2006, honors those who have been an Active or Emeritus member of ASTRO for at least 15 years, have given the equivalent of 10 years of service to ASTRO and have made significant contributions to the field of radiation oncology in the areas of research, education, patient care or service and leadership. Including the 2013 class of Fellows, 212 ASTRO members have received the FASTRO designation.

Candidates must be nominated by a current ASTRO Fellow, accompanied by three letters of support from a selected subset of ASTRO members, which includes past or present members of ASTRO's Board of Directors, ASTRO Gold Medalists, ASTRO Fellows and former or current departmental chairs. A nine-member Fellows Selection Committee reviews all of the nominations and presents a slate of recommended Fellows to ASTRO's Board of Directors for final approval.

"These 10 new Fellows join an elite group of ASTRO members that have significantly impacted the Society, the specialty and cancer patients worldwide through their

leadership in and service to research, education and patient care efforts," said ASTRO President Colleen A. F. Lawton, MD, FASTRO, professor, program director and vice-chairman of radiation oncology at the Medical College of Wisconsin in Milwaukee. "Congratulations to my colleagues on receiving the designation of ASTRO Fellow."

*The members of the 2013 Fellows class are:*

- Jonathan J. Beitler, MD, MBA, *Winship Cancer Institute of Emory University, Atlanta*
- Phillip M. Devlin, MD, *Harvard Medical School, Boston*
- Thomas J. Eichler, MD, *Thomas Johns Cancer Hospital, Richmond, Va.*
- Silvia C. Formenti, MD, *New York University School of Medicine, New York*
- Stephen M. Hahn, MD, *Perelman School of Medicine at the University of Pennsylvania, Philadelphia*
- Geraldine M. Jacobson, MD, MPH, MBA, *West Virginia University, Morgantown, W.Va.*
- Tariq Altaf Mian, PhD, *Medical Radiation Physics Inc., Scottsdale, Ariz.*
- Bhudatt R. Paliwal, PhD, *University of Wisconsin, Madison, Wis.*
- Seth A. Rosenthal, MD, *Radiation Oncology Centers, Roseville, Calif.*
- Peter B. Schiff, MD, PhD, *New York University School of Medicine, New York* 

## 2012 FELLOWS



# Three distinguished physicians and researchers awarded Gold Medal

BY BRITTANY ASHCROFT, COMMUNICATIONS MANAGER, BRITTANYA@ASTRO.ORG

ASTRO has selected Amato J. Giaccia, PhD, Radhe Mohan, PhD, FASTRO, and Prabhakar Tripuraneni, MD, FASTRO, to receive the ASTRO Gold Medal, the Society's highest honor. The 2013 awardees will receive the ASTRO Gold Medal during the Awards Ceremony on Tuesday, September 24, at ASTRO's 55th Annual Meeting at the Georgia World Congress Center in Atlanta.

ASTRO's Gold Medal is bestowed annually on up to three ASTRO members who have made outstanding contributions to the field of radiation oncology, including work in research, clinical care, teaching and service. Nominees may be from any of the scientific disciplines represented in ASTRO, including radiation oncology, biology and physics.

The Gold Medal was first awarded in 1977 and since then, including the 2013 recipients, 72 of ASTRO's members have received the award.

"Congratulations to my esteemed colleagues, Drs. Giaccia, Mohan and Tripuraneni for receiving the ASTRO Gold Medal," said ASTRO Chairman Michael L. Steinberg, MD, FASTRO. "Individually, they have influenced the direction of radiation oncology research, explored technologies that guide the way we practice, and directly affected the growth of ASTRO and the specialty overall. The collective impact of their achievements has significantly improved the care for and resources available to cancer patients worldwide."

## Amato J. Giaccia, PhD

Dr. Giaccia is a radiation biologist and a 21-year ASTRO member who has made considerable contributions to radiation oncology research. His research has focused on the role of tumor microenvironment in tumor progression and metastasis, specifically the response of tumors and normal tissue to a reduced oxygen environment, or hypoxia. Dr. Giaccia co-authored a 1996 study, "Hypoxia-mediated selection of cells with diminished apoptotic potential in solid tumors," published in *Nature*, that impacted the research direction of the field by establishing the molecular basis for hypoxia-mediated apoptosis, the process of programmed cell death.

"Winning the ASTRO Gold Medal is a tremendous honor for me personally, as well as for all of the past and current members of my laboratory," Dr. Giaccia said. "This award represents recognition for my lab's work in studying the tumor microenvironment and its impact on cancer therapy."

His laboratory published definitive data in a 2006 study in *Nature* and two studies in 2009 in *Cancer Cell* and the *Journal of Clinical Oncology* demonstrating that hypoxia-related secreted proteins are involved in mediating cell



invasion and metastasis. These findings have contributed to the focus on secreted proteins in active clinical and translational investigations in laboratories and biotechnology companies around the world. Dr. Giaccia advanced this research into clinical studies through the development of protein targeting strategies.

In addition to leading valuable research projects, Dr. Giaccia has also dedicated his career to fostering the growth of junior faculty members and trainees. He is the director of the Stanford Cancer Biology Training Program, director of the Radiation Biology/Molecular Therapeutic Program and the associate director of Education and Basic Research for the National Cancer Institute (NCI)-designated Stanford Cancer Center. Dr. Giaccia's graduate students and post-doctoral fellows have gone on to achieve success as independent investigators in academic departments throughout the world. Dr. Giaccia is the Jack, Lulu and Sam Willson Professor of Cancer Biology, associate chair of the department of radiation oncology and director of the Division of Radiation and Cancer Biology at the Stanford University School of Medicine in Stanford, Calif.



## Radhe Mohan, PhD, FASTRO

Dr. Mohan, a medical physicist for 42 years and 22-year ASTRO member, has had a major influence in several areas of radiation oncology, including radiation dosimetry, 3-D conformal radiation therapy (3-D CRT), intensity modulated radiation therapy (IMRT) and ongoing research in proton therapy.

“Advancing the field through research, creativity and innovation is the most important contribution a physicist can make to help improve the efficiency, clinical effectiveness and safety of patient care,” Dr. Mohan said.

In the 1970s, Dr. Mohan pioneered the development of computer-aided systems for automated dosimetry and record-and-verify systems for radiation therapy, which enhanced patient safety. By the mid- to late 1980s, he was among the key leaders in the development of 3-D CRT, and in the 1990s, of IMRT. His most recent efforts have focused on image-guided radiation therapy, management of respiratory motion and proton therapy. Dr. Mohan is the principal investigator at MD Anderson Cancer Center in Houston on a major



program project grant from NCI, working with Massachusetts General Hospital in Boston, for research and development to optimize proton therapy.

In addition to his extensive research work, Dr. Mohan has shared his expertise by serving on various ASTRO committees and on the editorial team of the *International Journal of Radiation Oncology • Biology • Physics* (Red Journal), the official scientific journal of ASTRO. He was the Red Journal's physics senior editor from 2003 to 2011 and has been a reviewer for the Red Journal since 1995. As a member of ASTRO's Annual Meeting Scientific Program Committee, the Radiation Physics

Committee and the Physics Resource Panel, Dr. Mohan has provided valuable perspective and leadership to the Society.

“It is a great honor and highly gratifying to be recognized by the radiation oncology community for my work as a physicist,” said Dr. Mohan, a professor and the Larry and Pat McNeil Chair in Cancer Research in the department of radiation physics of the Division of Radiation Oncology at MD Anderson Cancer Center.

---

## Prabhakar Tripuraneni, MD, FASTRO

A 30-year ASTRO member and former ASTRO chairman, Dr. Tripuraneni, a radiation oncologist, has impacted the clinical aspect of radiation oncology through his insights in vascular brachytherapy. He was also instrumental within ASTRO through his leadership roles on ASTRO's Board of Directors and on various committees in the areas of practice accreditation, website development and e-learning initiatives.

“I feel it is my duty to give back, as much as I can, to my professional community and to help pioneer new ways to treat the many cancers affecting our patients,” he said.

Working with physicists and cardiologists in the late 1990s, Dr. Tripuraneni



developed the methodology, dosimetry and dose prescription for endovascular brachytherapy to avoid coronary restenosis. Restenosis is a common problem after angioplasty, when the blood vessels can become blocked again; Dr. Tripuraneni and colleagues pioneered techniques to irradiate the stent to prevent tissue from growing and blocking it again. This technique was published in 1997 in *The New England Journal of Medicine*.


In addition to his clinical expertise and accomplishments, Dr. Tripuraneni has played an integral role in expanding ASTRO's services and support to its members and the radiation oncology field. He was a key player in creating the ASTRO

*Continued on Page 50*

Continued from Page 49

Fellows designation, which honors active ASTRO membership of at least 15 years and commendable service to ASTRO and the field of radiation oncology; in organizing Integrating the Healthcare Environment–Radiation Oncology (IHE-RO), an initiative that works to improve the sharing of information among the various computer systems and software utilized in radiation oncology practices; and in providing guidance and leadership for ASTRO's new practice accreditation program. His additional efforts included launching the initial ASTRO.org website in 1998; serving as editor of *ASTROnews*, the Society's quarterly member

magazine; launching the first Radiation Oncology Inter-Society meeting in 2007; and organizing the first *e*Contouring sessions at ASTRO's 2005 Annual Meeting.

"I am honored to receive ASTRO's Gold Medal and to be recognized by my peers. In many ways, I share this honor with numerous colleagues who willingly volunteer their time, energy and skill for the betterment of radiation oncology through their work on behalf of ASTRO," said Dr. Tripuraneni, head of the division of radiation oncology at Scripps Clinic in La Jolla, Calif., and the chief medical officer of Viewray, Inc. in Cleveland. 

## Leading consultant and researcher receives Honorary Membership

BY BRITTANY ASHCROFT, COMMUNICATIONS MANAGER, BRITTANYA@ASTRO.ORG

Jean Owen, PhD, a health care consultant and researcher, has been selected as ASTRO's 2013 Honorary Member. Dr. Owen will receive this honor during the Awards Ceremony at ASTRO's 55th Annual Meeting on Tuesday, September 24 at 10:30 a.m. in the Thomas Murphy Ballroom at the Georgia World Congress Center in Atlanta.

Honorary Membership is the highest honor ASTRO awards to distinguished cancer researchers and leaders in disciplines other than radiation oncology, radiobiology and radiation physics. Candidates must be nominated by one Active member of ASTRO and receive letters of support from two additional Active members. One individual is selected each year for Honorary Membership by ASTRO's Board of Directors.

With the American College of Radiology (ACR) Clinical Research Center for 23 years as director (1989–2001) and senior director (2001–2012), Dr. Owen served as project director of the ACR Quality Research in Radiation Oncology (QRRO) project, formerly the Patterns of Care Study (PCS), where she was involved in developing detailed clinical performance measures and survey processes to measure quality of care benchmarks in radiation oncology nationwide.

"PCS produced national data for the radiation oncology practice that assessed the quality of radiation oncology throughout all types of practice. Over the years QRRO evolved to address and measure highly specific quality measures in this constantly evolving, technically advanced specialty," she said. "The major impact was to help create an




environment of critical self-assessment within radiation oncology and to build a foundation of quality assessment data that is embedded in the culture of the specialty."

She has contributed to more than 75 published peer-reviewed journal articles, with 36 appearing in the *International Journal of Radiation Oncology • Biology • Physics* and *Practical Radiation Oncology*, ASTRO's two official journals. Dr. Owen has also co-authored more than 100 abstracts presented at scientific meetings, 64 of which were ASTRO meetings.

Additionally, Dr. Owen has served as a consultant to the Radiation Oncology Institute's Data Dictionary Committee since 2009. Her work on QRRO has enabled her to provide a unique expertise to this committee.

"QRRO results can provide evidence to help ASTRO support policy recommendations, and the methods developed can help build new studies and databases," Dr. Owen said.

While Dr. Owen has worked with ASTRO for many years, she was "thrilled" to receive Honorary Membership.

"It has been a tremendous pleasure to work with many leaders of ASTRO, as well as the many ASTRO members who have supported QRRO surveys. The Annual Meetings and other activities of ASTRO are a central focus providing the framework that pulls together everyone working on research, policy, quality improvement and other endeavors within radiation oncology," she said. "I am particularly happy to become a member of this organization that I have long felt very much a part of." 

# Annual Report | 2012

## TREASURER'S REPORT

In May 2013, independent auditors, Squire, Lemkin and Company, LLP, conducted an audit of ASTRO's 2012 financial statements. The auditors expressed an unqualified "clean opinion." ASTRO's Finance/Audit Committee reviewed the report in detail with the auditors and submitted it to the Board of Directors, where it was approved in June 2013.

## STATEMENT OF ACTIVITIES

ASTRO had a \$1.9 million gain in 2012—the result of a \$147,302 loss in operations and a \$2.1 million gain in investments and other activities. By comparison in 2011, ASTRO had a \$360,257 loss—the result of a \$566,912 gain in operations and a \$927,169 loss in investments and other activities.

ASTRO adhered to a disciplined investment process as set out in an investment policy approved by the Board of Directors. Targeted asset allocation and manager stock selection mitigated the volatility that occurred in the second quarter of 2012 as European and global economic concerns resulted in a flight to quality. The portfolio returned strong absolute returns of 11.6 percent, or \$2.9 million.

Two additional meetings were held in 2012 that did not take place in 2011—Multidisciplinary Head and Neck Cancer Symposium and 2012 Chicago Multidisciplinary Symposium in Thoracic Oncology. The additional net profit from these two meetings was \$148,018. These meetings are scheduled to take place again in 2014. The 2012 Annual Meeting in Boston was quite successful and profitable despite the cancellation of Monday afternoon and evening events due to Superstorm Sandy. There is a \$426,689 insurance claim pending as a result.

## FINANCIAL POSITION

Individual and corporate dues represented only 18 percent of total revenue. Many other membership organizations rely almost exclusively on membership dues. ASTRO was fortunate to have had other revenue sources—the Annual Meeting at 47 percent and journal royalties at 12 percent being the largest—that combined with individual and corporate dues to allow ASTRO to support its many programs as well as specialty and online educational activities to the benefit of its members.

As of December 31, 2012, ASTRO had a very liquid balance sheet with \$34.6 million in assets and \$5.1 million in liabilities. In 2009, the ASTRO Board of Directors designated \$13.25 million for special projects of which \$6.63 million has been spent through 2012 and \$6.62 million remains for future years. These projects include the Radiation Oncology Institute Vision of Value Campaign, the development of guidelines, practice accreditation, self-referral study and expanded learning initiatives. These should all benefit the future practice of radiation oncology and the cancer community in general.

ASTRO continues to thrive as a world premier radiation oncology Society leading the mission to improve patient care through education, clinical practice, advancement of science and advocacy.

Phillip M. Devlin, MD  
ASTRO Secretary/Treasurer

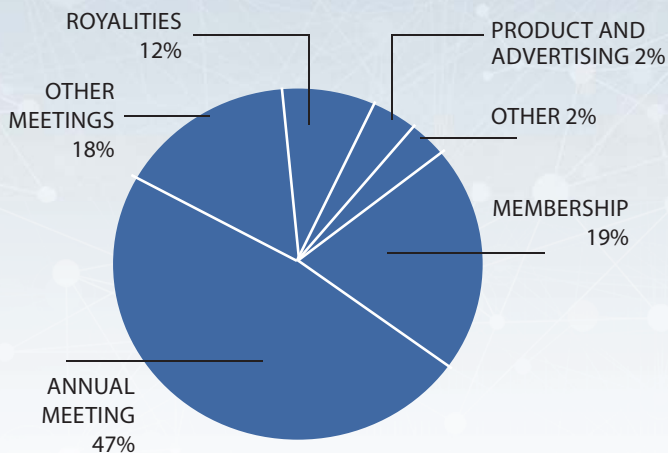




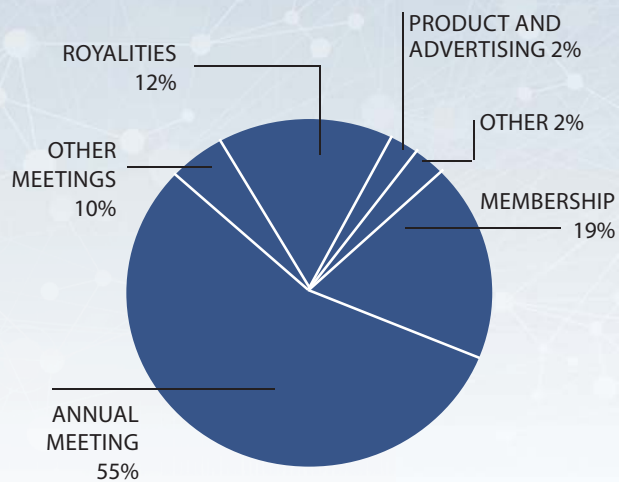
	DECEMBER 31,	
	2012	2011
<b>ASSETS</b>		
<b>CURRENT ASSETS:</b>		
Cash and cash equivalents	2,757,048	1,719,674
Certificates of deposit	3,762,739	2,629,745
Long-term investments <i>(and percentage allocation)</i>		
Large Cap Equity	8,649,943 35%	7,709,651 34%
Small Cap Equity	1,502,964 6%	1,354,832 6%
International Equity	4,986,757 20%	4,285,241 19%
Intermediate Fixed Income	5,984,239 24%	5,304,847 24%
Alternatives	3,715,759 15%	3,731,913 17%
Accounts receivable	766,546	979,454
Due from Affiliate	546,865	430,300
Prepaid expenses	367,091	380,490
TOTAL CURRENT ASSETS	\$33,039,951	\$28,526,147
<b>PROPERTY AND EQUIPMENT, NET:</b>	\$1,505,024	\$1,767,108
<b>OTHER ASSETS:</b>		
Deposits	22,575	63,484
TOTAL OTHER ASSETS	\$22,575	\$63,484
<b>TOTAL ASSETS</b>	<b>\$34,567,550</b>	<b>\$30,356,739</b>
<b>LIABILITIES AND NET ASSETS</b>		
<b>CURRENT LIABILITIES:</b>		
Accounts payable	1,324,312	1,085,573
Accrued expenses	835,607	724,047
Deferred rent, current	58,738	46,819
Deferred revenue	2,348,567	550,671
Due to Affiliate(s)	329,204	277,424
TOTAL CURRENT LIABILITIES	\$4,896,428	\$2,684,533
<b>LONG TERM LIABILITIES:</b>		
Deferred rent, non-current	202,037	260,608
TOTAL LONG TERM LIABILITIES	\$202,037	\$260,608
<b>TOTAL LIABILITIES</b>	<b>\$5,098,465</b>	<b>\$2,945,141</b>
<b>NET ASSETS:</b>		
Unrestricted		
Undesignated	22,845,051	19,250,209
Board designated programs	6,624,034	8,161,389
TOTAL NET ASSETS	\$29,469,085	\$27,411,598
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b>\$34,567,550</b>	<b>\$30,356,739</b>

	FOR YEARS ENDED DECEMBER 31,	
	2012	2011
<b>REVENUE AND SUPPORT:</b>		
MEMBERSHIP	\$3,264,333	\$2,935,611
MEETINGS		
Annual meeting	\$8,379,484	\$8,401,485
Other meetings	3,245,755	1,541,994
Total Meetings	\$11,625,239	\$9,943,479
OTHER		
Royalties	2,135,316	1,772,113
Products	140,352	147,364
Advertising	191,346	139,700
Other	347,049	387,216
Total Other	\$2,814,063	\$2,446,393
<b>TOTAL REVENUE AND SUPPORT</b>	<b>\$17,703,635</b>	<b>\$15,325,483</b>
<b>EXPENSES:</b>		
MEETINGS		
Annual Meeting	\$3,802,886	\$3,573,039
Other meetings	3,069,503	1,619,135
Meetings and Education Support	584,442	411,144
Total Meetings	\$7,456,831	\$5,603,318
COMMITTEES	\$782,513	\$493,681
PROGRAMS		
Advocacy and Clinical Affairs	\$3,499,116	\$2,833,147
Communications	443,985	376,395
Public Awareness Campaign	119,445	98,221
Corporate Relations	106,925	170,234
Total Programs	\$4,169,471	\$3,477,997
SUPPORTING SERVICES		
Administration and Executive	798,509	906,457
Membership	1,608,049	1,323,297
Information Technology	1,140,197	1,118,079
Finance	996,888	919,169
Human Resources	313,271	253,389
Board of Directors	585,208	663,184
Total Supporting services	\$5,442,122	\$5,183,575
<b>TOTAL EXPENSES</b>	<b>\$17,850,937</b>	<b>\$14,758,571</b>
<b>PROFIT/(LOSS) FROM OPERATIONS</b>	<b>\$(147,302)</b>	<b>\$566,912</b>
INVESTMENT INCOME/(LOSS)	2,903,271	(558,095)
ROI Administration	(825,358)	(369,074)
<b>PROFIT/(LOSS)</b>	<b>\$1,930,611</b>	<b>\$(360,257)</b>

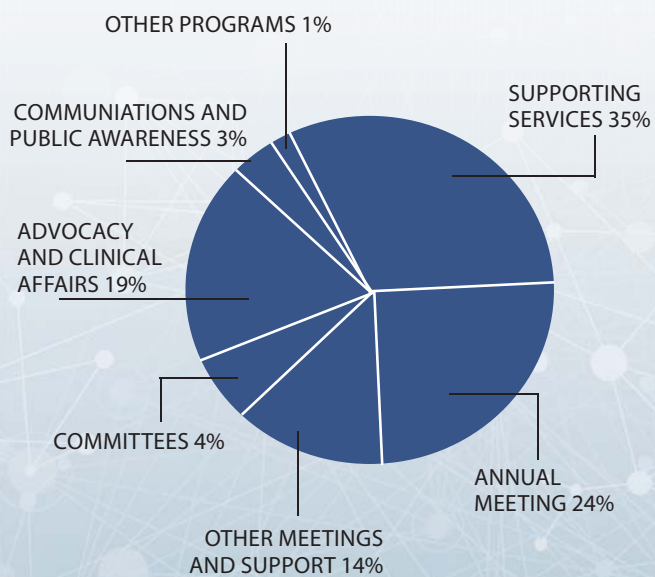
2012 Revenue



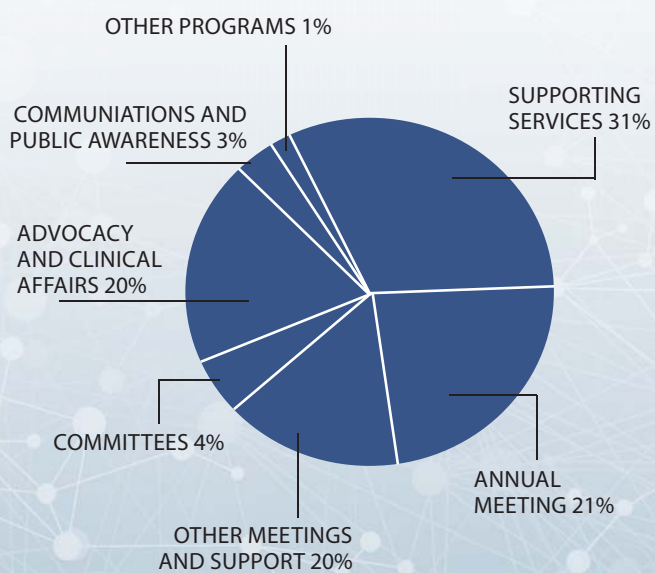
2011 Revenue



2012 Expenses



2011 Expenses





# RESEARCH

COMPILED BY AMBER SIMS, PROGRAM MANAGER, AMBERS@ASTRO.ORG

## ANNUAL AWARDS AND GRANTS HELP SUPPORT RADIATION ONCOLOGY RESEARCH

*ASTRO's Research Evaluation Committee selects seven to receive a total of \$675,000*

**The Junior Faculty Career Research Training Award provides \$200,000 to two recipients (\$100,000 annually for two years) to help develop the careers of promising junior faculty by allowing them dedicated time to work on research projects in radiation oncology, biology, physics or outcomes/health services. Two awards will be presented this year.**

### JOSEPH MANCIAS MD, PHD

Beth Israel Deaconess Medical Center,  
Boston

**Research Title:** Evaluation of Autophagy Inhibition as a Radiosensitizer for Pancreatic Cancer

Pancreatic ductal adenocarcinoma (PDAC) exhibits profound resistance to available therapies, thus there is a strong impetus to identify new therapeutic targets for this disease. Recent work has shown that autophagy is critical for PDAC growth and autophagy inhibition synergizes with radiation in PDAC cell lines. Therefore, autophagy inhibition may be useful clinically, especially in the setting of locally advanced PDAC. The goals of the proposed project are twofold: 1) to understand if autophagy inhibition promotes radiosensitization in PDAC tumors, and 2) to identify new biomarkers to select PDAC patients who may benefit from autophagy inhibition combined with radiotherapy and biomarkers to monitor autophagy inhibition. The proposed research has the potential to improve the dismal prognosis of pancreatic cancer patients and to optimize the care of patients enrolled in clinical trials utilizing autophagy inhibition.

### TERENCE WILLIAMS, MD, PHD

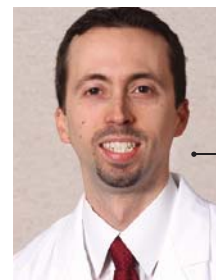
The Ohio State University, Columbus,  
Ohio

**Research Title:** Elucidating and Targeting Intrinsic KRAS Mutant Radioresistance with Novel RAS Targeted Therapies

Pancreatic adenocarcinoma is a highly lethal disease with a five-year survival of approximately 5 percent and is typified by an extraordinarily high rate of KRAS mutations, which drive transformation, genomic instability and tumor progression in part through downstream activation of MEK-ERK. We have previously demonstrated that radiation activates ERK-1/2 and that upstream inhibition of MEK-1/2 effectively radiosensitizes KRAS mutant tumors both *in vitro* and *in vivo*.

The goals of this project are to better characterize DNA damage response (DDR) pathways in KRAS mutant tumor cells in order to improve the effects of radiation, focusing specifically on KRAS effector MEK-ERK pathways, as well as novel mutant KRAS-dependent signaling processes. We hypothesize that we can further define signaling events leading to ERK activation after radiation, identify how MEK-ERK pathway inhibition leads to radiosensitization, determine differences in DDR signaling that are

Joseph Mancias MD,  
PhD



Terence Williams, MD,  
PhD

specific to KRAS mutant cells, and identify novel mechanisms of radiosensitivity that demonstrate KRAS mutant tumor selectivity over normal cells.

Pancreatic cancer and other KRAS mutant adenocarcinomas are typified by treatment refractoriness. Local control, classically achieved by surgery or radiation, is often important for survival in these diseases. Higher rates of local control can be achieved with radiation dose escalation, but at the risk of significant toxicity. Further improvements in radiation efficacy need to be achieved by improving the therapeutic ratio between tumor and normal tissue, likely through a better understanding of the molecular and genetic differences specific to the tumor cell.

*Continued on Page 56*

**The ASTRO Resident/Fellows in Radiation Oncology Research Seed Grant offers \$25,000 to residents and fellows hoping to pursue careers in basic science or clinical research to support carrying out a pilot project related to radiation treatment. Three awards will be presented this year.**

### ANDREW SHARABI, MD, PHD

*Johns Hopkins University, Baltimore*

**Research Title:** Analysis of Radiation Induced Antigen Specific Immune Responses

One of the most desirable attributes of the immune system is the ability to develop highly specific and systemic responses to antigens. In the past, cytotoxic therapies such as chemotherapy and radiation were thought to suppress the immune system. However, recent data have shown that radiation can induce changes in tumor cells that promote immune responses and increase tumor susceptibility to immune-mediated cell death.

Additionally, monoclonal antibodies that block negative regulators or checkpoints of the immune system, such as CTLA-4 and PD-1, are gaining recognition as immunotherapy agents that can enhance immune responses in multiple different tumor types.

Interestingly, when radiation is used in combination with these monoclonal antibodies, there are preclinical data and case reports of robust immune responses and long-term systemic tumor control. Furthermore, recent provocative evidence in breast cancer, colorectal cancer, and melanoma suggests that focused radiation can in fact stimulate an anti-tumor immune response that can act at distant sites outside of the radiation field, termed the Abscopal Effect.

Our hypothesis is that the strategic use of radiation combined with novel immunotherapy agents will lead to synergistic effects and improved clinical outcomes due to radiation-induced antigen-specific immune responses (Abscopal Effect).

### GREGORY GAN, MD, PHD

*University of Colorado Denver, Anschutz Medical Campus, Aurora, Colo.*

**Research Title:** The Hedgehog Pathway Modulates Radiotherapy Resistance in Head and Neck Cancer

The epidermal growth factor receptor (EGFR) is preferentially expressed in HPV negative (HPV-) head/neck squamous cell carcinomas (HNSCC) and is associated with a more aggressive phenotype. Resistance to EGFR blockade and radiotherapy (RT) remains a significant problem for both locoregional and distant tumor control due to accelerated repopulation mediated by the Hedgehog Pathway (HhP) and the Epithelial to Mesenchymal Transition (EMT). Our lab has demonstrated that the HhP is unregulated in response to RT both acutely and in chronically irradiated cell lines, and this can be suppressed with the HhP inhibitor cyclopamine. Preliminary mouse xenograft studies have shown that dual therapy with RT and cyclopamine is associated with improved tumor control. However, the molecular mechanism for GLI1 nuclear translocation following RT and the role GLI1 plays on the tumor microenvironment remain unknown.

The specific aims of this study are: (1) determine whether the DNA damage response pathway effects GLI1 translocation into the nucleus following RT, and (2) determine whether HhP inhibition of tumor stroma/microenvironment contributes to enhanced tumor control following RT *in vivo*.

Elucidating GLI1 nuclear translocation and its expression in the

microenvironment of head/neck cancer following RT will provide a better molecular understanding of GLI1 regulation and whether stromal GLI1 expression *in vivo* is associated with tumor survival following genotoxic stress. This knowledge could then be used to more intelligently combine targeted agents that synergize with RT and HhP inhibitors.

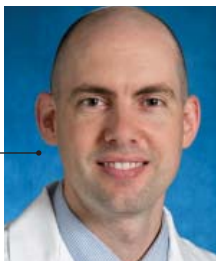
### DARRION MITCHELL, MD, PHD

*University of Iowa Hospital and Clinics, Iowa City, Iowa*

**Research Title:** Epithelial to Mesenchymal Transition as a Therapeutic Target in Prostate Cancer

Epithelial to Mesenchymal Transition (EMT) is a well-documented phenomenon important for both embryonic development in mammals and metastatic invasion in malignancies. EMT also serves as a mechanism enabling metastatic foci to develop resistance to radiotherapy and chemotherapy. Published data indicate autophagy may be partly responsible for therapeutic resistance. However, whether autophagy is linked to EMT-like states is unknown. Preliminary data from our lab show elevated autophagy in prostate cancer cells in an EMT-like state. Genetic inhibition of autophagy via knock-down of the autophagy-mediating protein ATG5 in TEM 4-18 cells led to decreased cell survival under conditions of energetic stress. Our lab has also shown pharmacological inhibition via chloroquine leads to decreased autophagy and subsequent cell death. Chloroquine inhibits autophagy in breast, pharyngeal and cervical cancer cell lines. Data from

Andrew Sharabi, MD, PhD



Gregory Gan, MD, PhD

Darrion Mitchell, MD, PhD



Timothy Showalter, MD

Karen Hoffman, MD, MHSC, MPH



our lab shows it inhibits autophagy in prostate cancer cells as well. Our first aim is to determine if inhibiting autophagy by chloroquine leads to radiosensitization of prostate cancer cells in the EMT-like state by increasing oxidative stress. Our second aim focuses on identifying novel small molecules that are selectively cytotoxic to prostate cancer cells in the EMT-like state via the development of a high-throughput assay. Our long-term goal is that this work will substantially improve our current management of metastatic disease, contributing to the advancement of targeted therapy for not only prostate cancer metastasis but other cancers as well.

**The ASTRO/ROI Comparative Effectiveness Research Award is a new award that provides \$100,000 to two recipients (\$50,000 annually for two years) to researchers who will conduct comparative effectiveness research within radiation oncology. Two awards will be presented this year.**

#### TIMOTHY SHOWALTER, MD

*University of Virginia, Charlottesville, Va.*

**Research Title:** Individualized comparative effectiveness research for prostate cancer treatment decisions after radical prostatectomy

Effective therapies are available for patients who recur after radical prostatectomy (RP) (salvage) or for those at high risk of recurrence immediately after RP (adjuvant). Adjuvant RT (ART) has been shown in randomized trials to improve outcomes compared to observation. Salvage RT (SRT) is also effective, but no randomized trials have been completed to support SRT. ART and SRT are currently being compared in randomized trials, but results are not expected for over a decade, leaving much controversy surrounding ART versus early SRT.

We will conduct individualized comparative effectiveness research (i-CER) to better inform individual prostate cancer (PC) patients faced with ART decisions. We will apply individualized decision analysis (IDA) modeling to create a framework that can incorporate a range of baseline attributes. Incorporating individual patient preferences is essential for i-CER, so we will develop a preference assessment instrument tailored to PC patients considering ART, and incorporate individual preferences as a component of the IDA. We will develop an electronic decision support tool for shared-decision making that is based upon a versatile, expandable and retrainable IDA heuristic. Stakeholders will be identified and involved throughout the research process so that findings will be most relevant to PC patients.

#### KAREN HOFFMAN, MD, MHSC, MPH

*MD Anderson Cancer Center, Houston*

**Research Title:** Impact of Radiotherapy Practice Structure on Prostate Cancer Treatment Costs and Outcomes

Men diagnosed with localized prostate cancer who select definitive radiation therapy are faced with the dilemma of where to receive treatment. Traditionally, men were treated at clinics created, managed and overseen by radiation oncologists. Urology-owned “integrated” prostate cancer practices emerged in the 2000s and are built on business models that include urologist ownership of linear accelerators, salaried radiation oncologists, and remote dosimetry and treatment planning.

It is not known if men who receive radiation therapy at “integrated” practices experience more side effects than men treated at traditional practices or if the cost of prostate cancer care is higher at “integrated” practices. To address this knowledge gap, we propose a comparative effectiveness study characterizing and comparing radiotherapy treatment complications, cost-of-care and treatment patterns at “integrated” and traditional practices. Texas is uniquely suited to study the influence of “integrated” practices on prostate cancer care because 28 percent of urologists in Texas work in “integrated” practices.

The results of this study will inform patients, health care providers and policymakers regarding the optimal practice environment in which to receive prostate cancer treatment.

*For more information on these awards, visit [www.astro.org/astronews](http://www.astro.org/astronews).*



## THE FUTURE OF NANOTECHNOLOGY IN RADIATION THERAPY

**NANOTECHNOLOGY IS AN EXCITING** and rapidly developing field with ramifications in engineering, material science, biology and medicine. The term nanomedicine was coined by the National Institutes of Health to recognize the fast-growing field and its potential to fundamentally change the way diseases are diagnosed, treated and prevented.

Nanomaterials are engineered to have one or multiple physical properties, such as fluorescence and magnetism, which are enhanced and are often drastically different from bulk material of the same chemical composition. Moreover, their large surface areas are highly modifiable to carry different electrical charges, water solubilities, biocompatibilities and most importantly, affinities to certain cells and physiological environments. The infinite combinations of nanomaterial sizes, morphology, physical and chemical properties, and surface modifications provide tremendous research opportunities for a wide range of biomedical topics. Naturally, nanotechnology has found a home in cancer research.

While general cancer imaging is the inseparable twin of cancer therapy, there has been a direct infiltration of

nanotechnology into radiation therapy. Two eternal topics in radiation therapy, radiosensitization and radioprotection, have exemplified the use of nanotechnology. High atomic number nanoparticles can increase the attenuation and local radiation dose from X-rays. Increased tumor cell killing was observed with the uptake of Au nanoparticles and kV X-rays. Due to the diminishing importance of photoelectric reaction in the MV X-ray range, the potential to use gold nanoparticles for human radiosensitization has been seriously challenged. Nonetheless, a notion has emerged that the intratumoral distribution of Au nanoparticles may be highly heterogeneous, creating much greater local radiation dose where the particles aggregate and increasing tumor and tumor supporting tissue destruction<sup>1</sup>. The notion needs substantiating evidence from future cell and animal studies, but the idea of high atomic number nanoparticles for radiosensitization remains active.

Radiation damage to cells is predominantly through free radicals generated from the ionization process. Several types of nanomaterials, including CeO<sub>2</sub> nanoparticles, have been developed to reduce the

normal damage from free radicals. The cerium atom can exist in either the +3 (fully reduced) or +4 (fully oxidized) state. In its oxidative form, CeO<sub>2</sub> also exhibits oxygen vacancies, or defects, in the lattice structure, through loss of oxygen and/or its electrons, alternating between CeO<sub>2</sub> and CeO<sub>2-x</sub> during redox reactions. The change in cerium valence during a redox event subsequently alters the structure of the oxide lattice, possibly creating additional oxygen vacancies by lattice expansion. This electron translation within the lattice provides reduced power for free radical scavenging. After the scavenging event, the original lattice structure may be regenerated by releasing H<sub>2</sub>O while the cerium atom returns to the +3 state. Colon et al. showed that CeO<sub>2</sub> nanoparticles, which were well tolerated by study animals, effectively protected mice from 20-Gy thoracic irradiation<sup>2</sup>. Although there is evidence that normal tissue is protected by CeO<sub>2</sub> nanoparticles, its mechanism needs to be better understood and methods to improve the specificity developed.

Nanoparticles can be fabricated to directly deliver the radiation dose to the tumor, a technology called nanobrachytherapy<sup>3</sup>. The idea of delivering radionuclides to the tumor for treatment has been well established in radioimmunology, but fabricating radionuclides into nanomaterials can add properties, such as magnetism for MR imaging. Success of nanobrachytherapy relies on tumor targeting specificity, a paramount topic in almost all cancer nanotechnological research

---

**The infinite combinations of nanomaterial sizes, morphology, physical and chemical properties, and surface modifications provide tremendous research opportunities for a wide range of biomedical topics.**

areas. Both passive tumor targeting methods, e.g., enhanced permeation and retention effects, and active targeting methods, e.g., using antibodies and peptides binding with tumor cell receptors, have been explored with varying degrees of success. Most likely, nanobrachytherapy will benefit from the greater collective effort.

Beyond these classical radiation therapy topics, radiation also can be seen as a precise way of delivering a quantitative stimulus to tissue for secondary therapy and imaging with the assistance of nanomaterials. One such example is simultaneous photodynamic therapy with radiation therapy. Photodynamic therapy kills cells by mechanisms very different from radiation therapy and can be used to overcome radioresistance. A quantum dot-photosensitizer conjugate was synthesized to utilize radiation energy from therapeutic X-ray for photodynamic therapy. Using quantum dots as the energy medium, Yang et al. demonstrated the energy transfer from MV to photosensitizers and subsequent singlet-oxygen-induced cell death<sup>4</sup>. Because of the highly quantitative nature of radiation dose, in theory, photodynamic therapy can be switched on at locations exposed to a threshold radiation isodose that is made conforming to the tumor by methods such as intensity modulated radiotherapy.

Another creative example is by exploiting radiation-induced immunological response. Hariri et al. showed that moderate radiation doses can upregulate vascular endothelium cell surface protein expression that bonded specifically to FePt nanoparticles decorated with HVGGSV peptides<sup>5</sup>. This interesting pathway opens opportuni-

ties for radiation therapy-induced drug delivery, treatment response imaging and *in vivo* 3-D dosimetry.

Additionally, the future breakthrough in adopting nanomaterials for more effective radiation therapy can be an interactive one. A recent trend in nanotechnological research is to engineer the nanomaterials so it is only activated by specific environmental factors, such as the heat, pH value and magnetic field. The ability to do so with X-ray irradiation would add another dimension to the research. An early example has been shown by Beaulac et al. in that the magnetism of doped colloidal quantum dots can be controlled by light<sup>6</sup>, providing a way to

“see” where we treat in a MR-guided radiation therapy setting.

Overall, it is fair to say that the nanotechnological infiltration into radiation therapy is still beginning with many aspects remaining to be discovered. The next major breakthrough could come from one of the classical radiotherapy topics in radiosensitization, protection or dosimetry; or as material media to bridge X-ray energy with a secondary physical, chemical or biological process for cancer treatment. As scientists and clinicians in radiation therapy, it is important to keep an open mind. The future of radiation therapy may very well reside in the future of nanotechnology.

---

## REFERENCES

1. Jones BL, Krishnan S, Cho SH. Estimation of microscopic dose enhancement factor around gold nanoparticles by Monte Carlo calculations. *Med Phys*. 2010 Jul;37(7):3809-3816.
2. Colon J, Herrera L, Smith J, et al. Protection from radiation-induced pneumonitis using cerium oxide nanoparticles. *Nanomedicine*. 2009 Jun;5(2):225-231.
3. Khan MK, Minc LD, Nigavekar SS, et al. Fabrication of {198Au0} radioactive composite nanodevices and their use for nanobrachytherapy. *Nanomedicine*. 2008 Mar;4(1):57-69.
4. Yang W, Read PW, Mi J, et al. Semiconductor nanoparticles as energy mediators for photosensitizer-enhanced radiotherapy. *Int Journal Radiat Oncol Biol Phys*. 2008 Nov 1;72(3):633-635.
5. Hariri G, Wellons MS, Morris WH 3rd, Lukehart CM, Hallahan DE. Multifunctional FePt nanoparticles for radiation-guided targeting and imaging of cancer. *Ann Biomed Eng*. 2011 Mar;39(3):946-952.
6. Beaulac R, Schneider L, Archer PI, Bacher G, Gamelin DR. Light-induced spontaneous magnetization in doped colloidal quantum dots. *Science*. 21 Aug 2009;325: 973-976.

*This article was submitted on behalf of the Radiation Physics Committee.*

## INCORPORATING SIMPLE GERIATRIC ASSESSMENT TOOLS IN THE RADIATION ONCOLOGY SETTING

AGE IS DIRECTLY ASSOCIATED WITH and is the single greatest risk factor for developing cancer. Cancer incidence and mortality rise exponentially in 50–85-year-olds. According to the National Cancer Institute, the number of new cancer cases is roughly 11 times greater for people 65 years and older<sup>1</sup>.

The U.S. Census Bureau projects that by 2030, one in five Americans will be 65 years or older. With this forecast, health care providers are faced with the challenge of educating staff to meet the needs of older patients. Incorporating a focused geriatric assessment that addresses key components including baseline functional levels, common geriatric problems and quality of life is essential<sup>2</sup>. This type of assessment allows for early intervention and support in preventing complications before, during and after radiation treatment.

The needs of older adults can be easily overlooked without a focused exam. Many elderly patients have at least two or more comorbidities prior to their diagnosis and treatment of cancer. Most important to the patient is preserving baseline functional status, keeping their current comorbidities in check, preserving quality of life and preventing complications when receiving treatment. Not all elderly patients are vulnerable, but identifying those who are allows us to foresee necessary

support that may be needed and have interventions in place.

The Comprehensive Geriatric Assessment (CGA), a multidimensional, interdisciplinary diagnostic process, focuses on the somatic, functional and psychosocial domains. This approach captures all of the essential information pertaining to the elderly patient, but it is also time consuming, taking up to three hours. This is not practical or feasible in most outpatient radiation oncology settings. A more reasonable option would be a modified approach utilizing standard instruments of the CGA as part of the assessments before, during and after treatment.

There are six key tools that are short, practical, user friendly and reliable that can easily be incorporated and part of the electronic medical record (EMR).

### 1. **Katz Index of Independence in Activities of Daily Living (ADLs):**

This assessment takes five to 10 minutes and measures functional status based on the patient's ability to perform ADLs independently. Six functions (bathing, dressing, toileting, transferring, continence and feeding) are measured and scored on a yes/no scale<sup>3</sup>.

### 2. **Lawton-Brody Instrumental Activities of Daily Living Scale:**

This evaluation takes 10 to 15

minutes and is used to measure more complex ADLs than the Katz Index. Eight domains are measured (ability to use telephone, shopping, food preparation, housekeeping, laundry, mode of transportation, responsibility for own medications and ability to handle finances). Women are scored from 0–8, and men are scored from 0–5, as men have historically been excluded from ratings in food preparation, housekeeping and laundry to avoid potential gender bias<sup>4</sup>.

**3. Hendrich II Fall Risk Model:** This test aids in determining the risk of falling based on gender, mental and emotional status, symptoms of dizziness and categories of medication that increase the risk for falls and takes five to 10 minutes to administer<sup>5</sup>.

**4. Get Up and Go Test:** This check detects patients at risk of falling by measuring basic functional mobility, balance and/or gait problems. In this three-minute evaluation, patients are asked to begin seated in a chair, then stand up, walk 10 feet, turn around and sit back down in the original chair. During the process, staff observes the patient's postural stability, stepage, stride and sway<sup>6</sup>.

**5. Mini-Cog Test:** This three-minute screening for cognitive impairment uses a three-item recall test for memory and a clock drawing test. It is useful in that it is less affected by

---

Incorporating a focused geriatric assessment that addresses key components including baseline functional levels, common geriatric problems and quality of life is essential<sup>2</sup>.



ethnicity, language and education as other assessments<sup>7</sup>.

## 6. Geriatric Depression Scale–

**Short Version:** This 15-item questionnaire takes approximately 10 minutes to administer and asks patients to respond with yes or no answers in reference to how they have felt in the past week. Of the 15 questions, 10 indicate a presence of depression when answered with a yes, while the remaining five indicate depression when answered with a no<sup>8</sup>.

These six assessments allow nurses to check and monitor baseline functional, cognitive and psychosocial levels in elderly patients without taking too much time. Incorporating simple, practical and reliable screening tools specifically for this population helps prevent complications and preserve baseline function and overall quality of life.

## REFERENCES

1. Howlader N, Noone AM, Krapcho M, Garshell J, Neyman N, Altekruse SF, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Cho H, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). *SEER Cancer Statistics Review, 1975-2010*, National Cancer Institute. Bethesda, Md., [http://seer.cancer.gov/csr/1975\\_2010/](http://seer.cancer.gov/csr/1975_2010/), based on November 2012 SEER data submission, posted to the SEER website, 2013.
2. Extermann M, Hurria A. Comprehensive Geriatric Assessment for Older Patients With Cancer. *J Clin Oncol*. 2007;25(14):1824-1831.
3. Shelkey M, Wallace M. Monitoring Function Status in Hospitalized Older Adults. *Am J Nurs*. 2008 April;108(4):64-71.
4. Graf C. The Lawton Instrumental Activities of Daily Living Scale. *Am J Nurs*. 2008 April;108(4):52-62.
5. Hendrich A. How to Try This: Predicting Patient Falls. *Am J Nurs*. 2007 Nov;107(11):50-58.
6. Mathias S, Nayak USL, Isaacs B. Balance in elderly patients: the "get-up and go" test. *Arch Phys Med Rehabil*. 1986;67:387-389.
7. Borson S. The mini-cog: a cognitive "vitals signs" measure for dementia screening in multi-lingual elderly. *Int J Geriatr Psychiatry*. 2000; 15(11):1021.
8. Sheikh JI, Yesavage JA. (1986). Geriatric Depression Scale (GDS). Recent evidence and development of a shorter version. In T.L. Brink (Ed.), *Clinical Gerontology: A Guide to Assessment and Intervention* (pp. 165-173). NY: The Haworth Press, Inc.

*Lynn Heup is a nurse practitioner in the department of radiation oncology at Emory Healthcare in Atlanta.*

# 2013 ANNUAL MEETING SUPPORTERS

*Special thanks to the following companies for supporting ASTRO's 55th Annual Meeting with an unrestricted educational grant (as of July 26, 2013).*



**Bayer HealthCare**  
Pharmaceuticals

&



**ALGETA**

*Lilly*



**Oncology**

**VARIAN**  
medical systems

A partner for **life**

# JOURNALS

BY MORGAN FINCHAM, ASSISTANT MANAGING EDITOR OF SCIENTIFIC PUBLICATIONS,  
MORGANF@ASTRO.ORG AND KATHERINE EGAN BENNETT, MANAGING EDITOR OF  
SCIENTIFIC PUBLICATIONS, KATHERINEB@ASTRO.ORG

## ARTICLE HIGHLIGHTS FROM ASTRO'S JOURNALS



### From the July-September 2013 issue of *Practical Radiation Oncology (PRO)*

#### Enhancing the Role of Case-oriented Peer Review to Improve Quality and Safety in Radiation Oncology: Executive summary

by Rangaraj *et al*

Part of ASTRO's Target Safely Campaign, this white paper focuses on the role of peer review as a component of a broad safety/quality assurance (QA) program. It summarizes several areas in radiation oncology that may benefit from peer review. An accompanying podcast interview between *PRO* Editor-in-Chief W. Robert Lee, MD, and author Lawrence B. Marks, MD, FASTRO, is available at [www.practicalradonc.org](http://www.practicalradonc.org).

#### Safety Considerations for IGRT: Executive Summary

by Jaffray *et al*

The white paper summarized in this executive summary recommends foundational elements and specific activities to maximize the safety and effective-

ness of image guided radiation therapy (IGRT).

#### Patient Safety Improvements in Radiation Treatment Through 5 Years of Incident Learning

by Clark *et al*

Five years of data demonstrates that effective use of an incident learning system encourages the reporting of incidents whether or not they directly impact a patient and serves as a proactive means of enhancing safety and quality.

#### Patient Safety Improvement Efforts: How Do We Know We Have Made an Impact?

by Terezakis and Ford

An invited commentary from Terezakis and Ford accompanies Clark *et al*'s paper and examines patient safety improvements and how to tell if we are making a difference by viewing Clark *et al*'s study in context with other studies of voluntary reporting systems in radiation oncology.

#### From the *International Journal of Radiation Oncology • Biology • Physics* (Red Journal)

June 1, 2013

#### National Institutes of Health Funding in Radiation Oncology: A Snapshot

by Steinberg *et al*

More than 900 individual grants active at the time of analysis in the National Institutes of Health (NIH) for Fiscal Year (FY) 2013 were reviewed and manually identified which originated from radiation oncology departments,

determining that radiation oncology received only 1.6 percent of cancer research funding from NIH in FY 2013.

#### Second Solid Cancers After Radiation Therapy: A Systematic Review of the Epidemiologic Studies of the Radiation Dose-Response Relationship

by Berrington *et al*

This CME article shows the patterns of cancer risk after fractionated high-dose radiation are much less well understood than those after lower-dose exposures (0.1-5 Gy).

#### Proposed Lymph Node Staging System Using the International Consensus Guidelines for Lymph Node Levels Is Predictive for Nasopharyngeal Carcinoma Patients From Endemic Areas Treated With Intensity Modulated Radiation Therapy

by Li *et al*

A lymph node staging system for nasopharyngeal carcinoma is proposed based on the International Consensus Guidelines for lymph node levels and a range of MRI-determined nodal variables.



*Continued on Page 64*

## CHAIRMAN'S *update*

*Continued from Page 8*

(HCAHPS) survey. Although there are no cancer-specific questions on the HCAHPS survey at the time of this writing, the National Cancer Institute (NCI) and the Agency for Healthcare Research and Quality (AHRQ), are working to create cancer-specific questions. Likewise, patient-reported outcomes in radiation oncology could not only inform translational and comparative effectiveness research, health technology assessment and quality assurance, but could also be used as a basis to quantify value from a patient perspective and potentially be used as an aspect of reimbursement. Current tools for patient-reported outcomes in

radiation oncology are in development. At UCLA, health services researcher Susie McCloskey, MD, is conducting research to adopt PRO-CTCAE (the patient reported outcomes version of the NCI-CTCAE, a toxicity reporting tool used in cancer clinical trials) for use in radiation oncology.

What will health care reform innovation look like for radiation oncology? Likely, innovative change will have features that include implementation of common standards for delivery of care to reduce variation; holistic care coordination to improve the patient experience; transparency of information regarding treatment outcomes and

cost of care at the provider level; and the restructuring of provider incentives so they promote value as opposed to incentivize volume of service. In the past, payers were reluctant to closely scrutinize spending on cancer care. However, the escalating cost of care is forcing everyone to re-examine which cancer treatments are going to be paid for and by what method they are going to be paid.

*Dr. Steinberg is professor and chairman of radiation oncology at the David Geffen School of Medicine at UCLA. He welcomes comments on his editorial at [astronews@astro.org](mailto:astronews@astro.org).*

## ASTRO urges members to prepare to review and verify their data in CMS Open Payments program

*Continued from Page 22*


- Step 3: CMS provides a 60-day period where providers can review, dispute and request corrections to their data.
- Step 4: CMS will make data available on a public website. Data will be searchable, aggregatable and downloadable.

### **What is the timeline for the 2013 program?**

CMS has announced the following program cycle for the 2013 Open Payment program:

- Data collection period (Aug. 1, 2013 – Dec. 31, 2013)
- Registration period (early 2014)
- Data submission period (by March 31, 2014)
- Data Review and Dispute board (second quarter in 2014)
- Correction period (second quarter in 2014)
- Publication (Sept. 30, 2014)

### **Where do I find more information about the Open Payment program?**

More information is available on the CMS website at [www.cms.gov/Regulations-and-Guidance/Legislation/National-Physician-Payment-Transparency-Program/index.html](http://www.cms.gov/Regulations-and-Guidance/Legislation/National-Physician-Payment-Transparency-Program/index.html). CMS has also set up a help desk that can be reached via email at [openpayments@cms.hhs.gov](mailto:openpayments@cms.hhs.gov). 

## EXECUTIVE DIRECTOR

The Board of Trustees of the American Board of Radiology (ABR) is issuing a call for applications for the position of Executive Director. It is anticipated that the new Executive Director's contract will begin July 1, 2014, or earlier, to coordinate with the current Executive Director's contract, who is retiring. Applications are now being accepted. The application process may be closed as appropriate at the discretion of the ABR.

The Executive Director supports the Board of Trustees and oversees the operation of the ABR office and its staff of approximately 70 employees. The position reports to the President of the ABR, who also serves as the Chairman of the Board of Trustees. The Executive Director represents the ABR to the public and medical community at large at the discretion of the President and the trustees. The Executive Director is responsible for the management of operations of the Board and directly oversees those staff members who support the trustees in this effort. For more information, please visit [www.theabr.org/sites/all/themes/abr-media/pdf/ABR-executive-director.pdf](http://www.theabr.org/sites/all/themes/abr-media/pdf/ABR-executive-director.pdf).





# JOURNALS

## **Differences in Brainstem Fiber Tract Response to Radiation: A Longitudinal Diffusion Tensor Imaging Study**

by *Uh et al*

To determine if radiation-induced changes in white matter tracts are uniform across the brainstem, these authors analyze serial diffusion tensor imaging data.

## **Anti-PD-1 Blockade and Stereotactic Radiation Produce Long-Term Survival in Mice With Intracranial Gliomas**

by *Lim et al*

Radiation is one of the main treatments for glioblastoma multiforme, the most common primary brain tumor in adults. In this study, a small animal irradiator is used to deliver a focused beam of radiation to the tumor in an animal model. The SRS-based immunotherapy paradigm exhibits the potential to induce and maintain antitumor immunity against primary intracranial neoplasms.

## **Use of 4-Dimensional Computed Tomography-Based Ventilation Imaging to Correlate Lung Dose and Function With Clinical Outcomes**

by *Vinogradskiy et al*

The potential benefit of using ventilation in treatment planning is examined by evaluating whether dose to highly ventilated regions of the lung resulted in increased incidence of clinical toxicity.

**July 1, 2013**

## **Preclinical Evaluation of Genexol-PM, a Nanoparticle Formulation of Paclitaxel, as a Novel Radiosensitizer for the Treatment of Non-Small Cell Lung Cancer**

by *Werner et al*

Building on the research in radiation oncology to identify agents that can

improve chemoradiation therapy, the authors perform a preclinical evaluation of Genexol-PM, the only clinically approved nanoparticle chemotherapeutic with a controlled drug release profile, as a radiosensitizer using non-small cell lung cancer as a model disease.

## **Impact of Boost Radiation in the Treatment of Ductal Carcinoma In Situ: A Population-Based Analysis**

by *Rakovitch et al*

This is a large population-based study of all individuals in Ontario diagnosed with DCIS from 1994-2003 and treated with breast-conserving surgery and whole breast radiation, with or without boost, to examine the independent effect of boost radiation on the development of local recurrence.

## **Proton Therapy for Breast Cancer After Mastectomy: Early Outcomes of a Prospective Clinical Trial**

by *MacDonald et al*

This early report from a prospective clinical trial documents that proton radiation therapy in the postmastectomy setting is feasible and that skin tolerance is acceptable.

## **Neoadjuvant Chemoradiation for Distal Rectal Cancer: 5-Year Updated Results of a Randomized Phase 2 Study of Neoadjuvant Combined Modality Chemoradiation for Distal Rectal Cancer**

by *Mohiuddin et al*

Patients are randomized to receive either neoadjuvant 5-FU and hyperfractionated radiation (55-60 Gy) or irinotecan/5-FU and once daily radia-



tion (50-55 Gy). Surgery takes place four to 10 weeks later. Disease-specific survival rates are 78 percent and 85 percent, and five-year overall survival rates are 61 percent and 75 percent for Arm 1 and Arm 2, respectively.


## **Sunitinib Plus Androgen Deprivation and Radiation Therapy for Patients With Localized High-Risk Prostate Cancer: Results From a Multi-institutional Phase 1 Study**

by *Corn et al*

The feasibility of sunitinib in combination with androgen deprivation and external beam radiation therapy in localized high-risk prostate cancer are established and a phase 2 dose is recommended for further study. An important and unexpected interaction between sunitinib and bicalutamide is detected.

## **National Residency Matching Program Results for Radiation Oncology: 2012 Update**

by *Yu et al*

In this updated analysis of National Residency Matching Program data, a new trend is identified in the large proportion of applicants “hedging their bets” in a competitive field by applying to other specialties simultaneously. 

Access these articles and more on the *PRO* website at [www.practicalradonc.org](http://www.practicalradonc.org), the Red Journal website at [www.redjournal.org](http://www.redjournal.org) and the HealthAdvance mobile application at [www.journals.elsevierhealth.com/periodicals/mobileapps](http://www.journals.elsevierhealth.com/periodicals/mobileapps).

Can't make the 2013 Annual Meeting in Atlanta?  
Join us in San Diego in November!



# 2013 Best of ASTRO

*Science of Today, Hope for Tomorrow*

**November 8-9, 2013 • Hilton San Diego Bayfront**

Attend this two-day meeting to review the most highly-rated abstracts from the 2013 Annual Meeting. Topics to be discussed include physics, patient safety, palliative care and the following disease sites:

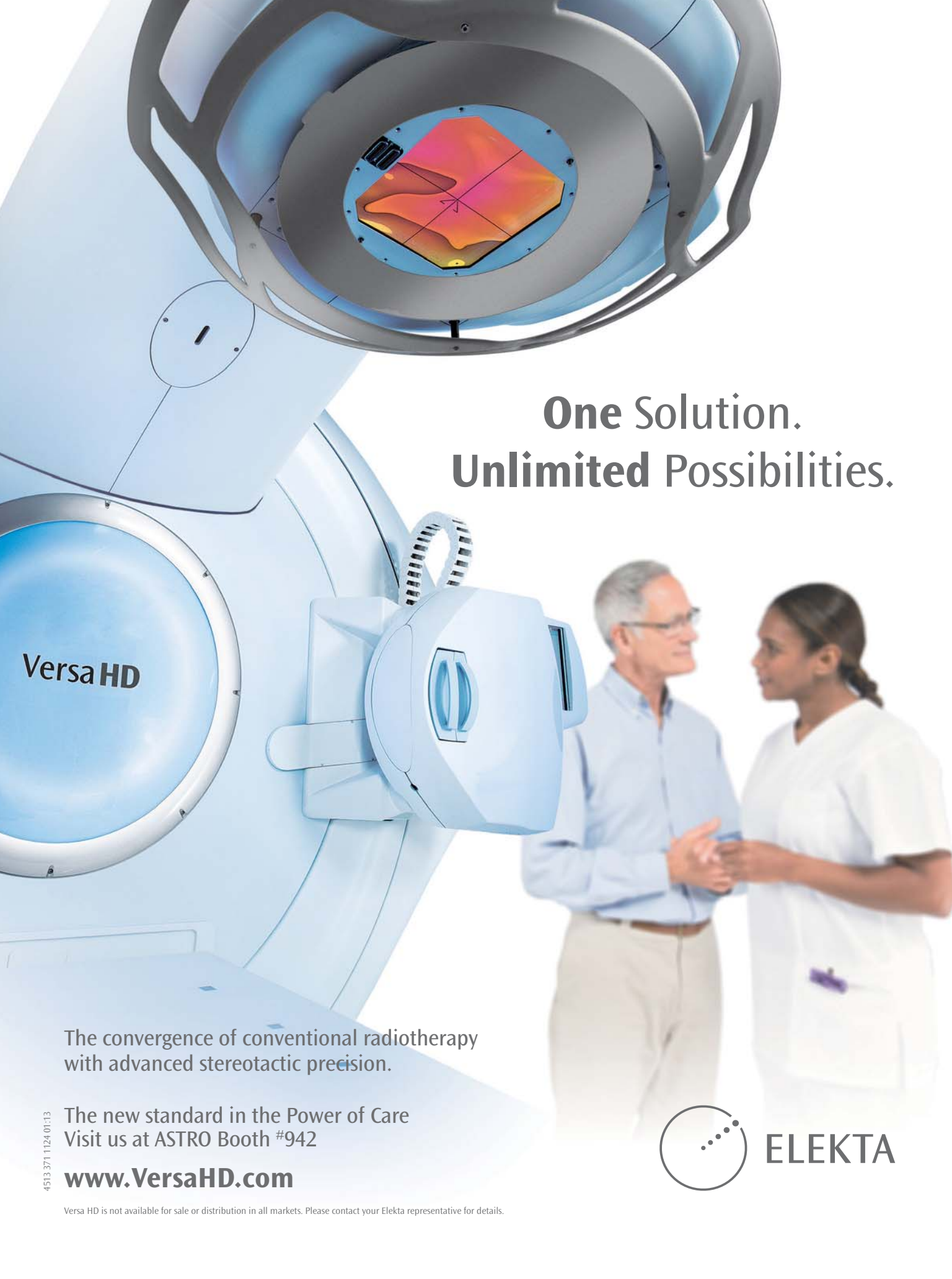
Head and Neck, GU, GI, GYN, Breast, Lung, Lymphoma and CNS.

**Register now: [www.astro.org/bestofastro](http://www.astro.org/bestofastro)**

This live activity has been approved for *AMA PRA Category 1 Credits™*.







## One Solution. Unlimited Possibilities.

**VersaHD**

The convergence of conventional radiotherapy  
with advanced stereotactic precision.

The new standard in the Power of Care  
Visit us at ASTRO Booth #942

**[www.VersaHD.com](http://www.VersaHD.com)**



**ELEKTA**