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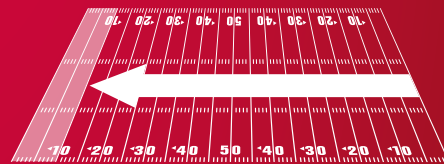
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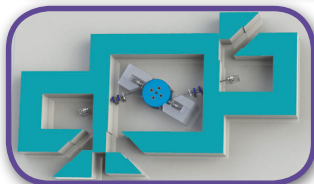
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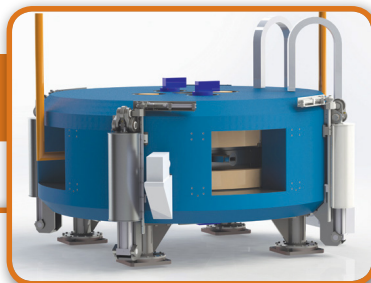


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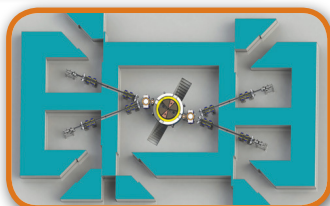


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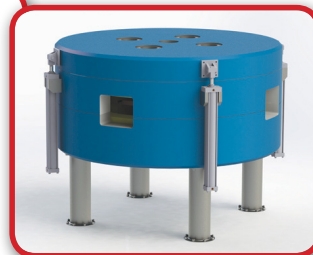
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ASTRO news

AMERICAN SOCIETY FOR RADIATION ONCOLOGY

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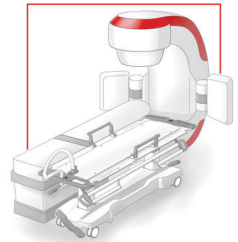
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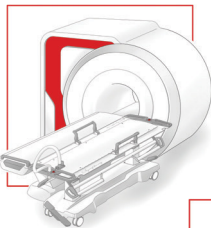
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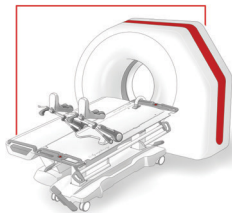
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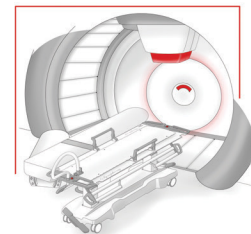
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BOSTON: THE CITY OF CHAMPIONS

WELCOME TO THE SPECIAL ANNUAL MEETING EDITION OF ASTRONEWS!

This issue is almost entirely devoted to ASTRO's 58th Annual Meeting at the Boston Convention and Exhibition Center.

Be sure to read the "Welcome to Boston" story (see pages 28-31) by two of my Massachusetts General Hospital colleagues, Drs. Loeffler and Tarbell, to learn more about Boston's rich history and culture.

Last year I discussed cleaning out my Boston home in prep for my move to a two-bedroom apartment in Nashville. Despite my relocation, I seem to continually return to the "City of Champions;" I much prefer this nickname to "Beantown." Most recently, I have been traveling through Boston Logan every weekend (the Monday 5:00 a.m. return flight to Nashville has been painful) to watch my husband's summer baseball team, the Harwich Mariners, dominate the Cape Cod baseball league. The weather has been delightful, compared to the stifling heat in Nashville, with no northeast storms such as Hurricane Sandy, which pretty much washed out ASTRO's 54th Annual Meeting. Remember the siren sounding during the first Plenary Session, evacuating us all from the Convention Center? Let's hope that the wind and rain stay away this fall.

As our readership surely knows, I am a huge sports and music enthusiast, so let me help to plan your ASTRO Annual Meeting extra-curricular activities in Boston. First, let us discuss the sporting events in the City of Champions. For those arriving a day or two early, my favorite team, the Patriots, are in town on Thursday, September 22, playing against the Texans at Gillette Stadium, and are home again on the Sunday post meeting hosting the Bills. Red Sox fans can watch the Sox make a bid for the American League playoffs as they battle the Toronto Blue Jays during their last home series starting Friday, September 30 (check out your editor sandwiched between "Big Papi" David Ortiz and Hanley Ramirez in the photo). For music, my alternative selections would be Jake Bugg or Peter Bjorn and John, both at the Royale, and other genre in town during our meeting include pop star Meghan Trainor at the Blue Hills Bank Pavilion (immediately adjacent to the Convention Center), Brad Paisley with other country artists at the Xfinity Center, American blues guitarist Buddy Guy at the Wilbur Theatre, and for those lovers of rap, the Bad Boy Family Reunion (Puff Daddy and friends) at the TD Garden. The Berklee Beantown Jazz Festival, which offers three stages of live music, arts, crafts, a family park and even an instrument petting zoo, is occurring on Saturday, September 24 on Columbus Avenue. Other notable events in Boston during the week of the meeting include the Boston Film Festival September 22-25 at Stuart Street Playhouse, and free museum day at any museum in Massachusetts on September 24.

Now on to the meeting highlights. This year's theme is "Enhancing Value, Improving Outcomes," chaired by ASTRO President David C. Beyer, MD, FASTRO, which will emphasize the growing calls from policy makers, physicians and patients for value-based health care.

This year's Presidential Symposium, which opens the meeting on Sunday, September 25th, is focused on "Prostate Cancer: Defining Value and Delivering It."

Continued on next page

The session moderated by two senior experts in the field of prostate radiation oncology, Louis Potters, MD, FASTRO, and Jeff M. Michalski, MD, MBA, FASTRO, will include discussion on treatment modalities, including stereotactic radiosurgery as an emerging option. An important theme of this symposium will be to determine the value of these different treatment approaches amidst a changing health care environment.

Three outstanding keynote speakers will also emphasize this year's ASTRO theme in the context of health care, medicine and safety. Kathleen Sebelius, former U.S. Secretary of Health and Human Services, will deliver Keynote Address I on Monday, September 26; Thomas James Lynch, Jr., MD, chairman and chief executive officer, Massachusetts General Physicians Organization, will give Keynote Address II on Tuesday, September 27, and Jason Ragogna, general manager, SMS and Safety Alliances, Corporate Safety, Security and Compliance, Delta Air Lines, Inc., will provide Keynote Address III on Wednesday, September 28.

This year marks another banner year for abstract submissions, with 2,378 accepted. We will again be offering the opportunity to submit late breaking abstracts from July 20 to August 3. This will allow us to present the latest discoveries at our ASTRO meeting. The revamped interactive poster discussion sessions, with authors discussing their results, continue to be extremely popular. Please check out the Plenary and Clinical Trials session key abstracts on page 18 for a quick overview of some of the highly rated abstracts being presented. Several of these abstracts will challenge and/or change our current standard of care for a variety of malignancies.


One important addition that our attendees are likely to appreciate throughout the upcoming ASTRO meeting is special emphasis on how we handle Big Data analysis and interpretation of the results. This, in part, is why our editorial board asked Søren Bentzen, PhD, to contribute an article on this topic in this *ASTROnews* issue (see pages 14 and 15). As Dr. Bentzen points out, with supersized data sets, we are much more concerned about the possibility that a small, but statistically significant difference between groups, is due to bias. As such, Big Data analyses will be unable to provide any true conclusions regarding outcomes, and may only provide us with potential hypotheses. Such reports are more powerful in revealing changes in management patterns over time, or to review therapies that are used for very rare diseases. As Dr. Bentzen concludes, it is paramount that both the investigators and users of Big Data appreciate the "huge potential as well as the



limitations" of this important resource.

In addition to the more than 48 oral scientific sessions, 52 educational sessions, 29 panel discussions, 20 ePoster sessions and 1,760 paper posters, the Annual Meeting is a prime opportunity for networking. Whether it is visiting the Exhibit Hall to learn more about novel technologies in radiation oncology (see the full list on pages 48), or discussing potential novel research designs with both national and international colleagues, the overarching goal of our ASTRO meeting is to enhance the value and outcomes in patient care. Our Annual Meeting is the culmination of a full year's worth of planning on the part of many ASTRO staff and physicians. My sincere thanks to all involved in what appears will be an extraordinary week back in my old stomping grounds.

Lastly, I must announce that this is my last contribution as senior editor of *ASTROnews*. With my new volunteer roles as ASTRO's Annual Meeting Scientific Committee Vice-chair and the American Board of Radiology president, I thought it best to bring on a new voice for this important ASTRO role. I have been so honored to have served you in this regard over the past three years, and hope that I brought you a unique perspective to the many issues that are important to ASTRO and our profession. Special thanks to Bruce G. Haffty, MD, FASTRO, for giving me this wonderful opportunity, ASTRO CEO and *ASTROnews* Publisher Laura I. Thevenot, and to our devoted editorial board of H. Joseph Barthold, MD; Benjamin Falit, MD, JD; Amato Giaccia, PhD; Geoff Ibbott, PhD, FASTRO; Simon Powell, MD, PhD, FASTRO; Dirk Rades, MD; George Rodrigues, MD, PhD; Alex Spektor, MD, PhD; and Paul Wallner, DO, FASTRO. None of this, however, would have been possible without the support of our superb *ASTROnews* staff. Thanks to Editorial Director Anna Arnone, designer Jaimie Nguyen and a very special "thank you" to the two extraordinary managing editors that I have had the privilege to work with—former editor, Brittany Ashcroft, and our current editor, Erin Boyle. I will truly miss working with all of you.

Now it is time for me to close down my computer in order to land in Nashville (at 6:30 a.m.)—see y'all in Boston! 

Dr. Kachnic is professor and chair of the Vanderbilt department of radiation oncology, Vanderbilt University Medical Center. She welcomes comments on her editorial at astronews@astro.org.



MY YEAR AS CHAIR

THIS YEAR I HAD THE PLEASURE TO SERVE AS THE CHAIR of ASTRO. It's been an exciting and whirlwind year in the role, and I've been so pleased to see the field of radiation oncology continue to be on the cutting edge of technology and medicine. It has been exciting to see ASTRO initiatives flourish as we keep our mission in mind of serving our patients in the most effective way possible while advocating for the continued safety of our patients and specialty and pursuing education and research. I would like to highlight a few of our accomplishments.

This year's 13th annual Advocacy Day in Washington, D.C. was held May 23-24. Nearly 100 members of the Society—including radiation oncologists, residents, physicists, administrators and nurses representing 34 states—met with representatives and their staff to share ASTRO's legislative priorities. I was among them, meeting with members of Congress and their staff from my state of Texas. It is striking how well ASTRO is received on Capitol Hill, which is a credit to our outstanding government relations and health policy staff and volunteers. We are viewed as transparent, ethical and a strong advocate for our patients. This year we discussed the Society's four main legislative priorities with Congress: 1) preserve access to care through stable Medicare payments and alternative payment models; 2) promote delivery and payment system reform by ending self-referral abuse; 3) increase investments in radiation oncology research; 4) preserve and increase funding and residency slots for graduate medical education. These priorities will likely continue to be important into the future as we approach a presidential election year here in the U.S.

Speaking of Washington, we also saw the unveiling of the White House's Cancer Moonshot Initiative, which Vice President Joe Biden is leading. This landmark initiative will help improve awareness and funding for cancer research. We have encouraged ASTRO members to take part in the government's request for ideas on radiation oncology research by submitting ideas through astro.org and other avenues, which members did up until the June 30 deadline.

Continued on next page

"It has been exciting to see ASTRO initiatives flourish as we keep our mission in mind of serving our patients in the most effective way possible while advocating for the continued safety of our patients and specialty and pursuing education and research."

– Bruce D. Minsky, MD, FASTRO



DR. MINSKY (MIDDLE RIGHT) WITH MOATAZ N. EL-GHAMRY, MD, (LEFT) AND GABRIEL AXELRUD, MD, (RIGHT) VISITING WITH REP. PETE SESSIONS (TX-32).

Radiation oncology should be a part of the dialogue, and we should make sure our voice is heard by contributing in every way we can.


ASTRO's internal initiatives continue to thrive. The Accreditation Program for Excellence (APEX[®]) now has 58 applications encompassing 115 facilities, with seven facility visits conducted, five facilities accredited, 10 facility visits in process of scheduling and 198 surveyors approved.

A total of 10 of ASTRO's guidelines have been published in peer-reviewed journals, seven additional are in the process, and three National Comprehensive Cancer Network guidelines are being evaluated. These guidelines offer our members a true benefit. Please take a moment to review these at www.astro.org/Patient-Care.aspx to keep up-to-date on the latest in our field.

RO-ILS: Radiation Oncology Incident Learning System[®] has reported its second year of experience, with 209 participating facilities and 1,750 events submitted. Preliminary data reveal that the most common reasons for errors include communication issues; changes to a patient's treatment plan once underway; and inadequate training and education.

ASTRO continues to take part in exciting and highly educational meetings. This year we co-hosted the 2016 Multidisciplinary Head and Neck Cancer Symposium,

sponsored by ASTRO, the American Society of Clinical Oncology (ASCO) and the American Head and Neck Society (AHNS) in February; hosted the 2016 ASTRO Annual Refresher Course in March; co-hosted the Precision Medicine Workshop in conjunction with the American Association of Physicists in Medicine (AAPM) and National Cancer Institute (NCI) in June (see the ScienceBytes story about the meeting on page 66); and we have the upcoming 2016 Annual Meeting at the Boston Convention and Exhibition Center on September 25-28. The Annual Meeting this year, as in past years, should prove to be an enriching educational experience for all attendees. Please read the many informative articles in this edition of *ASTROnews* to learn more information. Following the Annual Meeting, we have the 2016 Best of ASTRO meeting, November 11-12, 2016 at the Ritz-Carlton in Fort Lauderdale, Florida.

On a personal note, I would like to express my sincere appreciation to ASTRO leadership, staff and most of all you, our members, who provided me with the honor of serving our society as Chair of ASTRO. Although radiation oncology, along with all of oncology, faces challenges in the years ahead, we are fortunate to be members of a terrific profession and have wonderful opportunities to make a positive impact on research and patient care. I believe our future is bright. 

SOCIETY NEWS

ASTRO's newly elected leadership

Five 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 58th Annual Meeting in Boston. For more information, visit www.astro.org/vote.

The new Board of Directors members are:



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Three new patient education videos to join *ASTRO* patient video offerings

IN MAY OF THIS YEAR, ASTRO staff travelled to Willis-Knighton Cancer Center in Shreveport, Louisiana, to shoot the next three patient education videos: Radiation Therapy for Brain Tumors; Radiation Therapy for Gynecologic Cancer; and Radiation Therapy for Head and Neck Cancer. Footage recorded during the three-day shoot includes interviews with radiation oncologists and other members of the radiation therapy treatment team, patient consultations and patient interviews and testimonials. Additionally, the patients at Willis-Knighton were generous enough to allow us to follow them through moments of their treatment, including simulation for head and neck cancer and brain tumors, a six-month follow-up from completion of head and neck cancer, a final proton treatment for a recurrence of a brain tumor and the gynecologic brachytherapy process from consultation through actual treatment. These videos



THE CREW FILMS A NEW ASTRO PATIENT VIDEO IN SHREVEPORT, LOUISIANA.

will be available at the Annual Meeting and will join the already existing collection of patient videos including the 17-minute Introduction to Radiation Therapy and the three nine-minute videos, Radiation Therapy for Breast Cancer, Radiation Therapy for Lung Cancer and Radiation Therapy for Prostate Cancer on www.rtanswers.org. The goal of the video series is to give patients the opportunity to learn what to expect when they discover they need to receive radiation therapy as part of their cancer treatment. The videos have newly updated brochures to complement them and will be available on the ASTRO website at www.astro.org/productcatalog. 

In Memoriam

ASTRO has learned that the following members have passed away. Our thoughts go out to their family and friends.

Moneer A. Khalil, MD

Buffalo Medical Group, Buffalo, New York

Michael B. Sharpe, PhD

Radiation medicine programme, Princess Margaret Cancer Centre and department of radiation oncology, University of Toronto

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

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ASTRO PROUDLY RECOGNIZES THE ONGOING COMMITMENT OF OUR 2016 CORPORATE AMBASSADORS FOR THEIR OUTSTANDING YEAR-ROUND LEADERSHIP AND PROMOTIONAL SPONSORSHIP OF RADIATION ONCOLOGY.





Supersize it: *Big Data* comes to radiation oncology research

BY SØREN BENTZEN, PHD

SO, WHAT'S THE BUZZ ABOUT BIG DATA? And when is a large data set “big”? According to Wikipedia, “big” refers to data sets so large or complex that traditional data processing applications are inadequate. With current technologies, this would mean data volumes in the terabyte (10^{12} bytes = a thousand gigabytes) to exabyte (10^{18} bytes = a billion gigabytes) range. Most biomedical research data sets are not big in this sense, because producing these data sets is relatively expensive. But we are beginning to have access to data sets that are orders of magnitude larger, in terms of the number of cases or the number of characteristics/measurements (or features) per case, than what we had in the past, and these raise new challenges in terms of data analysis and the interpretation of results.

First of all, it is useful to distinguish between two types of big data: “wide” and “tall” data. *Wide data* have a number of features per case that is much larger than the number of cases. An example would be a genome-wide association study where you have individual patient level data on 400,000 single-nucleotide polymorphisms linked with radiation effects in, say, a few hundred or a thousand patients. In wide data sets, the main concern is the high risk of false-positive findings due to multiple comparisons¹. *Tall data*, the focus of this commentary, are data sets where the number of cases is much larger than the number of features per case. These data sets arise, for example, from electronic medical records or from large population databases. They obviously present a wealth of information, but at the same time also challenge our traditional statistical intuition in several ways when we want to translate this information into new knowledge.

One of the most exciting current big data resources for cancer research is the National Cancer Data Base (NCDB)—jointly sponsored by the American College of Surgeons and the American Cancer Society—which

contains patient and treatment data captured from hospital cancer registries of more than 1,500 cancer programs accredited by the Commission on Cancer. Currently, some 70 percent of all newly diagnosed cancer cases in the U.S. are reported to the NCDB. Since 1989, the cumulated number of records in NCDB is 34 million. That is a large number of cases by any measure and potentially a goldmine of knowledge waiting to be discovered. For a common cancer, such as breast cancer, the NCDB comprises a little more than two million cases. Technically, this is not in the big data range mentioned above: when unzipped, the NCDB breast cancer data file is just over one gigabyte, that is, it is still easily stored and analyzed on a standard laptop computer. But the sheer number of cases is fascinating. And this large sample size does shift the emphasis of data analyses away from the traditional fishing for significant p-values. Here are a few things to consider, when looking at a tall-data report.

Bigger is better, but not always much better. A simple example may illustrate this point. If we want to estimate the proportion of patients with a given characteristic that is present in, say, 20 percent of all breast cancer cases, then we will have a precision (standard error of the estimate) of ± 1 percent if we study a sample of 1,600 patients. This standard error will drop to ± 0.03 percent if we study two million breast cases. But so what? The much better precision does not really add usefully to our knowledge. In both cases, we can say fairly confidently that one in five breast cancer patients will have the characteristic.

Finding $P < 0.05$ may not be very significant. When comparing very large samples, even tiny differences may meet our conventional criterion for statistical significance. For example, with two million patients split evenly into two groups, the difference in the proportion of patients with a specific characteristic may be statistically significant

even if it is just one-tenth of one percent! Now, clearly the difference between a prevalence of 20.0 percent and 20.1 percent is not biologically or clinically meaningful. Or to quote an old saying among statisticians: A difference is only a difference if it makes a difference!

Perhaps most importantly, the pinpoint precision of tall data shifts the statistical inference emphasis from sampling variability to bias. With small sample sizes we are typically concerned that an observed difference between two groups could occur just by chance, i.e., as the result of random sampling variability. With big data we are much more concerned about the possibility that a small, but statistically significant, difference between groups is due to some, possibly hidden, bias. Propensity score matching and multivariable modeling may go some way in adjusting for the most obvious imbalances in case mix between groups, but these methods are not perfect in terms of ruling out bias. And we can only correct for factors we know: Selection bias is virtually impossible to rule out completely. This is the reason why comparison of the effectiveness of two treatments, say surgery vs. definitive radiation therapy, in this kind of data set is hard to make entirely convincing. An instructive example of selection vs. causation in tall data analysis may be found in Giordano et al².

On the other hand, patterns-of-care studies are often compelling in this setting. The NCDB data records the actual use of, for example, a given dose prescription or type of treatment delivery technology in the centers that report cases to NCDB. And there is a goldmine of information on type of center, rural vs. urban location, comorbidity scores, race, age, insurance status, year of referral and much, much more.

The strength in numbers really counts whenever we look for something rare, such as therapies that are less commonly used and rare histologies, specific sub-stages of disease. Such cases will be few and far between in a hospital-based retrospective case review or in a randomized controlled trial. Or if we look for trends over time, even when we split the data set according to year of diagnosis, there is often still plenty of statistical power to look for changes in, say, the rate of utilization of intensity-modulated radiation therapy or subtle changes in outcome as a function of calendar time.


In addition to the above general considerations, there are additional limitations for radiation oncology research. The NCDB contains patient level overall survival data and a reasonable level of detail regarding radiation therapy (including regional and boost dose, overall time, number of fractions, delivery technology). But obviously a number of studies have shown the importance of the quality of treatment delivery, and this cannot in any simple way be

“One of the most exciting current big data resources for cancer research is the National Cancer Data Base, which contains patient and treatment data captured from hospital cancer registries of more than 1,500 cancer programs accredited by the Commission on Cancer.”

– Søren Bentzen, PhD

assessed from the database. Also, in terms of treatment outcome, there are no data on local, regional or distant failure, on toxicity or even on cause-specific survival. Still, there are many types of important radiation oncology questions that can be addressed in the NCDB data set and these will expand our knowledge tremendously.

At this year’s ASTRO Annual Meeting, a quick search for keywords in abstracts and titles shows that there are at least seven SEER database studies and no less than 19 NCDB studies that will be presented at the meeting. Sample sizes often run into tens of thousands, with a wide range of topics addressed, often in less common indications or in narrow demographic populations, say, elderly patients. Hopefully, these research studies will attract deserved attention and stimulate lots of discussion at the meeting. It is important that both producers and users of these research results understand the huge potential as well as the limitations of this resource. Big Data science in radiation oncology research is here to stay.

Dr. Bentzen is professor of epidemiology and public health and of radiation oncology at the University of Maryland School of Medicine. 

References

- ¹ Barnett GC, Coles CE, Elliott RM, et al. Independent validation of genes and polymorphisms reported to be associated with radiation toxicity: a prospective analysis study. *Lancet Oncol.* 2012;13:65-77. doi: 10.1016/S1470-2045(11)70302-70303.
- ² Giordano SH, Kuo YF, Duan Z, et al. Limits of observational data in determining outcomes from cancer therapy. *Cancer.* 2008;112:2456-2466.

HIGHLIGHTS AND KEY SESSIONS IN BOSTON

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



AN EDUCATIONAL SESSION AT LAST YEAR'S ANNUAL MEETING.



BENJAMIN MOVNAS, MD, FASTRO, DISCUSSES THE ANNUAL MEETING.

ASTRO'S 58TH ANNUAL MEETING, THIS SEPTEMBER 25–28, 2016 at the Boston Convention and Exhibition Center in Boston, is set to educate attendees with varied sessions on the latest advances in radiation oncology.

The Presidential Symposium, “Prostate Cancer: Defining Value and Delivering It” will focus on how to define the value of radiation oncology and how best to deliver it in the treatment of prostate cancer. Louis Potters, MD, FASTRO, will moderate two sessions, “Value in Radiation Oncology” and “Comparing Treatment Modalities.” Jeff M. Michalski, MD, MBA, FASTRO, will moderate the session “Enhancing the Value of Radiation Oncology.” The Presidential Address, entitled “On Shifting Ground,” will explore transformations now being seen in health care systems. ASTRO President David C. Beyer, MD, FASTRO, will lay out a vision for the specialty to manage this rapidly changing environment.

This year's keynote speakers are experts in health care, medicine and safety. They are: Kathleen Sebelius, former U.S. secretary of health and human services; Thomas James Lynch, Jr., MD, chairman and chief executive officer, Massachusetts General Physicians Organization; and Jason Ragona, general manager, SMS and Safety Alliances, Corporate Safety, Security and Compliance, Delta Air Lines, Inc.

Annual Meeting Scientific Committee Chair Benjamin Movsas, MD, FASTRO, and Vice-chair Lisa A. Kachnic, MD, FASTRO, and the Annual Meeting Education Committee Chair Brian Czito, MD, and Vice-chair George Rodrigues, MD, PhD, have put together an impressive program with many speakers, moderators and topics. This year there are 29 panel sessions, 52 educational sessions, 48 oral scientific sessions and 20 ePoster sessions scheduled. The program also includes a number of joint sessions and workshops. The Plenary Session and Clinical Trials Session will offer highlights from the highest impact studies.

This year's educational sessions, special sessions and scientific panels will cover a variety of topics, several of which directly connect with the 2016 meeting theme. A number are joint sessions, which are submitted from an outside organization in collaboration with an ASTRO member. These sessions include (all room locations and times are subject to change):

- **Joint Session One: Examinations in MOC: Why, How and Future Considerations** – A secure cognitive examination has been a critical element of MOC from the outset of the American Board of Medical Specialties® (ABMS) MOC program, and has been utilized by all ABMS member boards. Despite the widespread adoption of the examination, its validity


and relevance to practice has been challenged, and it remains an area of diplomate criticism and concern. The session will provide historical context for the inclusion of a cognitive examination in MOC; explain how the examination is currently developed, validated and scored; and showcase alternatives being actively considered by the ABR and other specialty boards (Room 210 A-B-C, Sunday, 4:45 p.m.).

- **Joint Session Two: Improving Doctor-Patient Communication Skills in Radiation Oncology** – The objectives of the proposed communication skills development session are threefold. First, the session hopes to raise awareness of the current gaps in knowledge on effective communication strategies important to patient care within radiation oncology. No structured curriculum currently exists in radiation oncology to address this educational need. Second, the session aims to describe an overview of a strategic, skill-based, communication framework that has been tested and validated in oncology and is currently being used to teach fellows, residents, oncologists and other oncology professionals in a variety of medical specialties on how to break bad news, empathically discuss transitions in care and skillfully navigate other challenging patient encounters particularly those that occur in the setting of serious illness (Room 258 A-B-C, Tuesday, 9:00 a.m.).
- **Joint Session Three: Radiation as Adjuvant to Immunotherapy: Optimizing Regimens and Sites** – Participants at this session will learn the rationale for combining specific regimens of radiation therapy with immunotherapy, as well as the controversies surrounding the optimal treatment sites for radiotherapy when used as an adjuvant to immunotherapy treatment. Attendees will be prepared to apply this knowledge in analyzing and choosing treatment combinations and radiation regimens. A panel discussion will give participants an opportunity to ask questions to multiple experts on these topics (Room 153 A-B-C, Tuesday, 4:45 p.m.).

Other sessions

- **Educational Session 36: Radiation Oncology Coding and Reimbursement Update for CY 2017** – This session, previously known as the Health Policy Socioeconomic session and held as a luncheon, has been restructured as an educational session. The session will provide a coding and reimbursement update for CY 2017 as it pertains to radiation

oncology and the radiation treatment team. New codes and payment policies will be reviewed. Speakers will provide details on Medicare spending trends for radiation oncology services. The session will conclude with a discussion of actions taken by the Centers for Medicaid and Medicare and private payors to control health care spending and how ASTRO has actively engaged with public and private payors and other stakeholders to address these concerns (Room 156 A-B-C, Tuesday, 4:45 p.m.).

- **Educational Session 49: Using Comparative Effectiveness Evidence to Demonstrate Value in Radiation Oncology** – The focus of this panel will be to discuss ways that Comparative Effectiveness Research (CER) can demonstrate value, as well as ways that practicing clinicians can take their newfound understanding of CER to promote high value care in their own practices (Room 254 A-B, Wednesday, 1:30 p.m.).
- **Educational Session 28: Oncofertility and Fertility Preservation for the Radiation Oncologist: Increasing Value by Preserving the Future** – This session will provide a practical overview of oncofertility. It will discuss the scope of the risks to fertility in our younger patient population. Specific talks will include a discussion of infertility risks to males and options for therapy, as well as a separate talk about the infertility risks to females, with an emphasis on current and future options for therapy. The session will also focus on specific barriers to providing fertility preservation and provide practical suggestions on building pathways for patients to get fertility preservation (Room 205 A-B-C, Tuesday, 1:00 p.m.). 



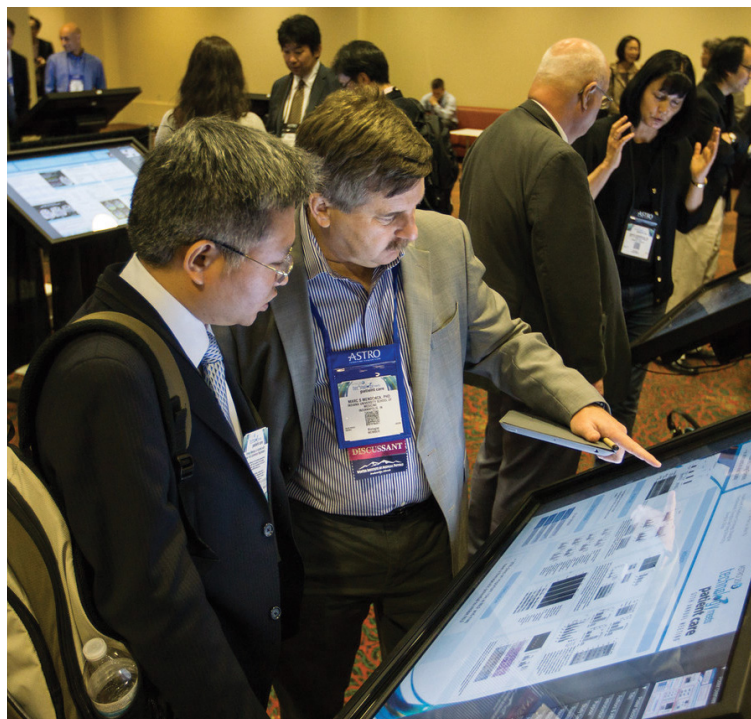
ePOSTERS, PLENARY, CLINICAL SESSIONS OFFER VARIED TOPICS AT ANNUAL MEETING

BY BENJAMIN MOVSAS, MD, FASTRO,
ANNUAL MEETING SCIENTIFIC COMMITTEE CHAIR

THIS YEAR'S 58TH ANNUAL MEETING WILL OFFER attendees a variety of different sessions with cutting-edge clinical and research-based medicine presentations. Education will be offered in different settings, from interactive ePosters to Plenary and Clinical Trials Sessions.

There are multiple panel sessions, educational sessions, oral scientific sessions and workshops at this year's Annual Meeting. On the poster side, this year's meeting will feature more than 1,000 paper posters and 20 ePoster sessions with 180 abstracts, covering all the major disease sites. There are currently six abstracts in the Clinical Trials Session and one in the Plenary Session, but these numbers are subject to change once late breaking abstracts have closed. Late breaking abstracts are open from July 20 to August 3. The ePosters, now in their third year as an interactive experience, feature discussants' opening remarks and then six minute presentations from poster authors, followed by an interactive discussion with touch screens showing posters. ePosters include video and visual aids to enhance the interactive experience. Authors receive technical help to produce these posters prior to the meeting.

The ePosters were re-formatted for a more interactive experience in 2013 following attendee feedback asking for poster presenters to be more available to discuss their own research. Allowing the poster authors to present on their topics also gives another group of presenters, including residents and first-time presenters, a chance to orally present at the meeting outside of other educational sessions. Each ePoster session has nine abstracts. Sessions run concurrently with the meeting's sessions except on Monday and Tuesday mornings, when the Plenary and Clinical Trials Sessions are held.



ANNUAL MEETING ATTENDEES INTERACT WITH AN ePOSTER.

Examples of ePosters at the meeting in the biology track include:

ePoster 14: Biology - Translational Research: Risk Stratification and Prediction of Response (Tuesday, 4:45 p.m.):

- An abstract from **Mohamed Abazeed, MD, PhD**, and colleagues at Cleveland Clinic, Cleveland, Ohio and other institutions, looking at the genetic basis for variation in cancer's vulnerability to ionizing radiation;
- An abstract from **Randall J. Kimple, MD, PhD**, and colleagues at University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin and other institutions looking at patient-derived adenoid cystic carcinoma xenografts to examine personalized radiation therapy;
- An abstract by **Kathryn Strang, BSN, RN, CPC**, and colleagues at Stritch School of Medicine, Loyola University Chicago, Maywood, Illinois and Loyola University Medical Center, Maywood, Illinois, looking at outcomes with the concurrent coincident use of metformin in lung stereotactic body radiation therapy.



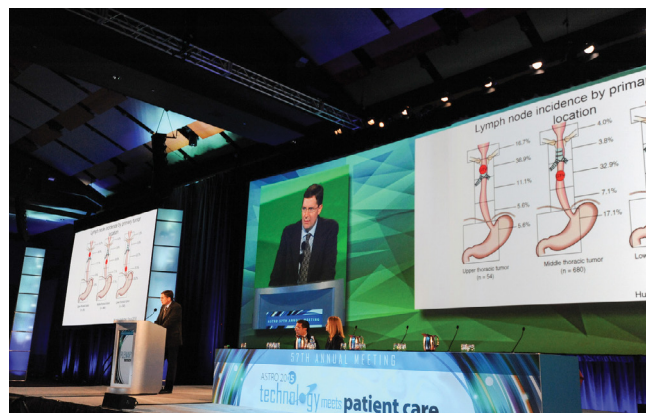
AN ATTENDEE USES A VIDEO SCREEN AT THE MEETING.

For the **Plenary or Clinical Trials Sessions**, here is a snapshot of key abstracts:

- **Daniel E. Spratt, MD**, the University of Michigan Cancer Center, Ann Arbor, Michigan, is the lead author on a study looking at the identification and validation of intrinsic subtypes of prostate cancer in 4,236 primary prostate cancer samples.
- **Deborah Watkins Bruner, PhD, RN**, Nell Hodgson Woodruff School of Nursing, Winship Cancer Institute at Emory University, Atlanta, is lead author on the phase III results of NRG Oncology/RTOG 0415, which is looking at the difference in health-related quality-of-life between two fractionation schedules in low-risk prostate cancer patients.
- **Michael H. Robinson, MD**, University of Sheffield, Sheffield, United Kingdom, is lead author on the Vortex Trial, a randomized controlled multicenter phase III trial examining if the reduction of tissue volume improves limb function in patients with extremity soft tissue sarcoma.

- **Tao Li, MD, PhD**, Sichuan Cancer Hospital and Institute, Chengdu, China, is lead author on a prospective randomized phase II study comparing concurrent chemoradiation therapy (CCRT) with chemotherapy alone in stage IV esophageal squamous cell carcinoma (ESCC).
- **Ann H. Klopp, MD, PhD**, University of Texas MD Anderson Cancer Center, Houston, is lead author on a phase III randomized trial of 289 patients with cervical and endometrial cancer comparing patients' reported toxicity and quality-of-life during pelvic intensity modulated radiation therapy compared to conventional radiation therapy.
- **Anita Mahajan, MD**, University of Texas MD Anderson Cancer Center, Houston, is lead author of a prospective randomized study assessing the differences in health-related quality-of-life between hypofractionated and conventional schedule radiation therapy in low-risk prostate cancer patients.
- **Bradley R. Prestidge, MD, MS**, DePaul Medical Center, Bon Secours Cancer Institute, Norfolk, Virginia, is lead author on the initial report of NRG Oncology/RTOG 0232, a phase III study that is comparing the combined external beam radiation and transperineal interstitial permanent brachytherapy with brachytherapy alone for selected patients with intermediate-risk prostatic carcinoma.

The Plenary Session will take place Monday at 2:15 p.m. in the Grand Ballroom. The Clinical Trials Session will take place Sunday at 3:15 p.m., also in the Grand Ballroom. [A](#)



PHYSICS, BIOLOGY TRACKS FEATURING TOP RESEARCH

BY FELIX FENG, MD, BIOLOGY TRACK CHAIR, AND HARALD PAGANETTI, PHD, PHYSICS TRACK CHAIR

PHYSICS, BIOLOGY AND TRANSLATIONAL RESEARCH IS CONTINUING to have a major impact on patient treatment. The tracks at this year's Annual Meeting will feature exciting physics and biology abstracts.

The Best in Physics abstracts highlight some of the cutting-edge research in physics and demonstrate how physics research strives to improve outcomes.

Six abstracts from the physics track that were well received by the abstract reviewers are highlighted below.

Issam El Naqa, PhD, of the University of Michigan, Ann Arbor, Michigan, is the lead author and will examine if reinforcement learning approaches provide a framework for sequential clinical decision-making in adaptive radiotherapy.

Matthew Jackson, PhD, of the Department of Radiation Oncology, University of Colorado Denver, Aurora, Colorado, is the lead author and will present results on using 4-D CT-ventilation as a pre-operative lung function evaluation tool.

Di Yan, PhD, of the Beaumont Health System, Royal Oak, Michigan, is the lead author and will present results on the selection of FDG PET-based bio-parametric matrixes for tumor dose response mapping and adaptive dose painting by number.

Jeremy Booth, PhD, of the Royal North Shore Hospital, Sydney, Australia, and the University of Sydney, Sydney, Australia, is the lead author and will report on the very first treatments with multi-leaf compensator tracking on a standard linear accelerator.

Houda Bahig, PhD, of the Centre Hospitalier de l'Université de Montréal, Montreal, Canada, is the lead author and will show results from a study aiming at quantifying lung function based on a dual energy computed tomography (DECT)-derived iodine map in patients treated with radiotherapy for lung cancer.

Tahra Takatoshi, PhD, of the Tottori University, Yonago, Japan is the lead author and will present results of a study investigating the changes of apparent diffusion coefficients (ADCs) in diffusion weighted-MRI (DWI) of uterine cervical cancer patients receiving concurrent chemo-radiotherapy (CCRT).

Reflecting the theme of the 2016 ASTRO Annual Meeting, a special session, titled "Biology Special Session: Innovative Biologic Approaches to Improve Risk Stratification and Treatment Outcomes," was created to highlight advances in the effort to individualize therapy for cancer patients. Several presentations, including a few within this session, were selected as the top abstracts in the biology track at ASTRO this year. They include the following:

Daniel E. Spratt, MD, of the University of Michigan, Ann Arbor, Michigan, will present results from one of the largest molecular profiling studies completed to date on prostate cancer.

Piotr Rutkowski, MD, of MSC Memorial Cancer Center and Institute of Oncology, Warsaw, Poland, will present an analysis of blood samples from 477 patients with head and neck cancer looking at circulating free HPV in the blood.

Ovijit Chaudhuri, PhD, of Stanford University, Stanford, California, will present the result of a study utilizing Cancer Personalized Profiling by deep Sequencing (CAPP-Seq), a novel blood-based assay that uses next-generating sequencing to quantitate circulating tumor DNA (ctDNA), in the context of lung cancer.

These first three abstracts highlight advances in biomarkers that identify different subtypes of cancers or that identify early recurrences of cancer after treatment. These biomarkers may eventually be used to help personalize cancer therapy for patients. In addition to these three abstracts, an additional two highlighted abstracts focus on combining radiotherapy with therapeutic agents that target the immune system to enhance treatment response. These abstracts are described below:

"Physics, biology and translational research is continuing to have a major impact on patient treatment."


– Harald Paganetti, PhD



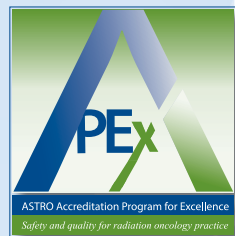
ATTENDEES AT AN EDUCATIONAL SESSION.

Kartsen Anderson Pilonis, MD, PhD, of Weill Cornell Medical College, New York, investigated the preclinical efficacy of adding injections of the cytokine IL-15 to radiotherapy in a mouse model of breast cancer.

Christof Hettich, MD, of the University Clinics in Freiburg, Germany and his team have developed two innovative PET tracers that allow imaging of a pair of important immunotherapy target (PD-1/PD-L1) and are using these tracers to assess the bio-distribution of immunotherapies in mouse models.

These two studies highlight significant advances in therapy and monitoring of immunotherapies given in combination with radiotherapy and underscore the potential of these combination treatment approaches. 

Dr. Feng is vice-chair for faculty development, department of radiation oncology, associate professor of radiation oncology, urology and medicine, Helen Diller Family Comprehensive Cancer Center, University of California at San Francisco. Dr. Paganetti is professor and director of physics research, department of radiation oncology, Massachusetts General Hospital and Harvard Medical School.



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INTERNATIONAL SESSIONS AT ANNUAL MEETING EXAMINE GLOBAL PERSPECTIVE



WORKSHOPS ON *e*CONTOURING WERE HELD AT THE ECANCER MEETING IN CHILE ON MAY 6-7.

FOLLOWING THE SUCCESS AND IMPRESSIVE


ATTENDANCE at the international sessions at ASTRO's 2015 Annual Meeting, ASTRO's International Education Subcommittee (IES) members have compiled a series of outstanding educational offerings again for the 2016 Annual Meeting in Boston from September 25-28. Here are those sessions:

- A 90-minute session on Saturday, "Clinical Trials in China: Opportunities and Challenges," will focus on building a clinical trials research infrastructure.
- Once again this year, there will be a Latin American Refresher Course. The course has been expanded from 90 to 120 minutes to incorporate both Spanish and Portuguese language speakers.
- The international program will feature a session on global health on Monday from 7:45 a.m. to 9:00 a.m.: "A Call to Action in Global Health: Inspiring and Empowering Practical Approaches to Improving Safety, Quality and Global Access to Radiation Therapy." This thought-provoking session will convene members interested in becoming active in global health and aims to inspire and empower attendees to join the global force.
- This year's two-part course, "Global Collaboration in Transitioning from 2-D to 3-D to IMRT," will focus on advancing clinical and safety guidelines in low- to middle-income countries (LMICs) where there are limited radiation therapy resources. The goal of this workshop is to apply Western guidelines to LMICs and to discuss appropriate treatment pathways that will provide the best possible outcomes given specific resource constraints. The first session will take place Monday from 10:45 a.m. to 12:15 p.m. and will focus on breast and cervix cancers. The second session will take place Monday from 4:15 p.m. to 5:45 p.m. and will focus on head and neck and lung cancers.

Other IES news

The IES also has an exciting poster accepted this year. An abstract documenting the improvement in learning by the Asociación Latinoamericana de Terapia Radiante Oncológica (ALATRO) participants from pre- and post-course questions, "A Novel, Pilot Curriculum for International Education of Lymphoma Management Employing *e*Contouring" was accepted for presentation at ASTRO's 2016 Annual Meeting in Boston and can be viewed in the poster hall.

The program also reached Chile when *e*Contouring workshops were held at the *e*Cancer meeting in Chile on May 6-7. Discussions about conducting an *e*Contouring workshop in Chile began at ASTRO's 2015 Annual Meeting with Beatriz Amendola, MD, and Marco Amendola, MD. The *e*Contouring workshop used ASTRO cases and had 64 attendees registered with 50 on the waiting list. The course was repeated twice; attendees listened to a brief lecture and then went on to practice contouring.

The purpose of IES *e*Contouring Initiative is to expand the reach of contouring training to countries outside of the United States and Canada, specifically countries that can demonstrate a training gap and/or need. The program provides opportunities for both domestic ambassadors traveling abroad and international ambassadors wishing to bring contouring training to their facility, region or country. Applications are accepted year-round, and successful courses were recently completed in Turkey and Argentina. For more information about the *e*Contouring Ambassador Initiative, please visit the IES website at www.astro.org/international. 

"An abstract documenting the improvement in learning by the ALATRO participants from pre- and post-course questions was accepted for presentation at ASTRO's 2016 Annual Meeting in Boston and can be viewed in the poster hall."

ASTRO-NCI DIVERSITY SYMPOSIUM AND BREAKFAST WILL ADDRESS DISPARITIES

IMPROVING HEALTH CARE DISPARITIES IN CANCER


CARE represents a significant challenge to the oncology community. Through community-based research, radiation oncologists can improve the lives of local underserved populations and make a direct, positive and lasting impact on cancer health disparities. This year's ASTRO-NCI Diversity Symposium, titled "Addressing Cancer Disparities: How to Improve the Care and Treatment of Local Underserved Populations in Your Practice Through Community-based Research," will focus on the multiple factors contributing to these disparities and the broader effect on local populations.

Expert speakers who have successfully participated in community research addressing cancer health disparities will describe their experiences.

This session is more than a collection of compelling didactic lectures: It has a practical component as well. While community-based research represents an important tool to improve local cancer disparities, many physicians lack the expertise to implement impactful programs. Participants in this session will learn firsthand from

experts who have effectively incorporated community-based research to address cancer care disparities in their practices. Upon completion of this session, participants will have a better understanding of how they can help local communities address cancer health disparities.

Speakers will look at the issue from two sides: the urban experience and the rural experience. Karen Winkfield, MD, PhD, will discuss the successful projects from the black community in Boston (the urban experience) and Daniel Petereit, MD, will address cancer stage and screening disparities among Native American cancer patients in South Dakota (the rural experience).

Continuing education credits will be offered at this special ticketed event, and there will be an interactive question and answer period at the end of the session. Awardees of the ASTRO Minority Summer Fellowship will be recognized at the start of the session. Please add this ticketed event to your Annual Meeting itinerary (note: attendance is capped, so register early!), and join us for this important conversation. 

LIVE SA-CME OFFERINGS AT ANNUAL MEETING

ASTRO WILL BE OFFERING LIVE SELF-ASSESSMENT


CME (SA-CME) for select sessions at this year's Annual Meeting. To help physician and physicist attendees meet the requirements of the American Board of Radiology's (ABR) Part II Maintenance of Certification (MOC) requirements, this year there will be a total of 16 sessions available for Live SA-CME. Various Education, Panel and Joint Sessions have been selected. Live SA-CME sessions are available for purchase during your registration or onsite for \$50 each.

Below is a sample of what is available for SA-CME:

- **Educational Session One:** Challenging Cases to CNS Approaches
- **Panel Session 10:** Ethics in Radiation Oncology
- **Joint Session Two:** Improving Doctor-patient Communication Skills in Radiation Oncology
- **Panel Session 24:** Integration of Immunotherapy for Non-small Cell Lung Carcinoma: Current and Future Perspective

Additionally, two *e*Contouring sessions (**Gastrointestinal Cancers:** Saturday at 11:00 a.m. and **Prostate:** Sunday at 4:45 p.m.) will offer SA-CME. **The Prostate Brachytherapy Simulation Workshop** (Saturday at 8:00 a.m.) will also provide up to 2.5 Live SA-CME credits. SA-CME for the *e*Contouring sessions and Workshop is included as part of the registration fees.

The Live SA-CME sessions will also be recorded and converted to online SA-CME. The online SA-CME activity will be part of ASTRO's eLearning Library and be made available after the conference. Online SA-CME activities allow ASTRO members who are unable to attend the meeting the opportunity to obtain SA-CME credits that are required for the ABR's MOC program.

For more information about Annual Meeting SA-CME sessions, please contact education@ASTRO.org. 



FROM LEFT TO RIGHT: NIMA NABAVIZADEH, MD; ZACHARY S. MORRIS, MD, PHD, MSc; LINDSAY BURT, MD; TREVOR J. ROYCE, MD, MS; LEAH KATZ, MD, MPH; AND DAN TRIFILETTI, MD.

ARRO PROGRAM AT ANNUAL MEETING TO HIGHLIGHT THE RESIDENT EXPERIENCE

BY LEAH KATZ, MD, MPH, ARRO COMMUNICATIONS OFFICER,
ARRO EXECUTIVE COMMITTEE, ON BEHALF OF THE ARRO EXECUTIVE COMMITTEE

THE ASSOCIATION OF RESIDENTS IN RADIATION ONCOLOGY (ARRO) EXECUTIVE COMMITTEE IS EXCITED about the upcoming events at ASTRO's Annual Meeting in Boston. The ARRO Executive Committee has worked hard to develop a program that will enrich the resident experience while providing practical information that can guide residents as they decide their next steps after training.

The ARRO Annual Seminar will take place on Saturday, September 24, from 10:00 a.m. to 5:00 p.m. The morning will begin with presentations from our Global Health Scholars, Daniela Buscariollo, MD, and Clayton Hess, MD, who will share their experiences abroad and their perspectives on how radiation therapy and cancer care are delivered internationally. Then Benjamin Falit, MD, will present an insightful economic series incorporating his formal knowledge of medical economics and his personal experience as a new attending. He will address navigating contracts, student debt and the best way to approach important decisions.

This will be followed by a keynote address by Anthony D'Amico, MD, FASTRO, of the Department of Radiation

Oncology at the Brigham and Women's Hospital, titled "The Path to Happiness and Success." He hopes to provide a humanistic perspective on our careers in radiation oncology, and many residents have enjoyed similar talks by him in the past.

Following Dr. D'Amico's keynote will be the jobs panel, which has always been a highlight of the ARRO Annual Seminar. Lisa A. Kachnic, MD, FASTRO, will moderate in the hopes of answering more of the pressing questions that trainees face as they seek employment after residency. The panel will feature an excellent group of early-career physicians, including:

- Daniel Spratt, MD, University of Michigan, Ann Arbor, Michigan
- Lisa McGee, MD, Radiation Oncology Consultants, Chicago
- Samuel Shin, MD, Kaiser Permanente Southern California, Los Angeles
- Gaorav Gupta, MD, PhD, University of North Carolina Chapel Hill, Chapel Hill, North Carolina
- Ahmed Chaudhary, MD, NorthMain Radiation Oncology, Providence, Rhode Island

After the jobs panel, an educational session exploring the utility of radiation oncology fellowships in our changing job market will be held. The session will be led by Subhakar Mutyala, MD, MPH, professor and medical director of radiation oncology at The University of Arizona Cancer Center at Dignity Health St. Joseph's Hospital and Medical Center. He previously completed a brachytherapy fellowship at Brigham and Women's Hospital, and has great insight into the role of fellowships for residents. He will give a brief fellowship overview, followed by a panel of physicians who previously completed various types of fellowships and will discuss the topic.

The panel features a great group of both early and later-career physicians, including:


- Matthew Biagioli, MD, Beth Israel Deaconess Medical Center, Beth Israel Brachytherapy Fellowship, Boston, now Chair at Florida Hospital, Orlando, Florida
- Ralph Vatner, MD, PhD, Massachusetts General Hospital Pediatric Proton Fellowship, Boston, now assistant professor at University of Cincinnati, Cincinnati
- Stephen Chun, MD, Advanced Radiation Oncology Fellowship at The University of Texas MD Anderson Cancer Center, Houston, now assistant professor there
- Joshua Jones, MD, Harvard Palliative Care Fellowship Program, Boston, now assistant professor at the Hospital of the University of Pennsylvania, Philadelphia
- Adam Garsa, MD, University of California San Francisco, San Francisco, clinical research fellowship, now assistant professor there

- Abigail Stockham, MD, Dana-Farber/Brigham and Women's Cancer Center clinical research fellowship, Boston, now assistant professor at Mayo Clinic Health Systems, La Crosse, Wisconsin


Following the fellowship session, as part of the Resident Wellness series, Patricia Hardenbergh, MD, will discuss work-life balance within our specialty, particularly for those with spouses and children. Finally, Terry Wall, MD, JD, FASTRO, will end the day with the ever-popular Practice Entry Survey Results session.

The newly revamped Meet the Professor reception, previously a breakfast, will occur on Sunday, September 25 from 4:45 p.m. to 5:45 p.m. Residents will have the opportunity to informally meet and greet with several leaders from the field of radiation oncology. Prior feedback noted that the breakfast was not optimal to facilitate conversation, and so we hope our new format will be a success!

Also, new this year: We have moved the ARRO Medical Student Meet and Greet to be part of the ARRO reception on Saturday evening. The ARRO reception will now be open to medical students, and we encourage you to invite the students from your institutions attending the Annual Meeting. This will be a great opportunity for residents to connect with medical students interested in radiation oncology. Please help us spread the word on this change, and we will be sending emails to inform all the students registered as well.

We are incredibly excited for ASTRO's 58th Annual Meeting, and look forward to an outstanding program of ARRO events. 

SHOW DAILIES TO HIGHLIGHT ASTRO'S 58TH ANNUAL MEETING NEWS, EVENTS, PROGRAMS

This year at the Annual Meeting, expect something new—daily newspapers all about the meeting available at the Boston Convention and Exhibition Center in Boston, created by ASTRO volunteers and staff as an added meeting attendee benefit. The newspapers will cover live sessions, as well as preview upcoming sessions. The coverage is set to feature interviews with presenters as well as highlights of the program, including sessions and special events. The newspapers, called “dailies,” will not only cover the meeting, but also offer information about the Accreditation Program for Excellence (APEX®), RO-ILS: Radiation Oncology Incident Learning System®, ASTRO guidelines and other ASTRO-related topics. The two dailies will be printed onsite in Boston and distributed on Sunday (the Sunday/Monday edition) and Tuesday (the Tuesday/Wednesday edition). ASTRO also will continue its tradition of sending a special ASTROgram Show Daily email on Sunday through Wednesday to all attendees and members with meeting highlights. 



READY, SET...

RACE FOR ROI!

BOSTON, MAKE WAY FOR ASTRO 2016 ATTENDEES, who will finally get the chance to compete in the 5K Run for the Future to Benefit the Radiation Oncology Institute (ROI) on your thoroughfares this year. The seventh annual event has been planned every year since 2010, but had to be cancelled in 2012 when Hurricane Sandy pummeled the East Coast, including the Annual Meeting host city of Boston, with high winds and heavy rain.

Despite the treacherous weather conditions, a dedicated group of runners insisted on finishing the planned 5K course that year. Megan E. Daly, MD, was part of that group.

“Running in the hurricane in 2012 with a small group was an adventure, but I’m really looking forward to the race this year with good weather and a big crowd,” she said. “The UC Davis team will be out in full force this year!”

Radiation Business Solutions (RBS) established the Running Strong 5K Run for the Future to Benefit the ROI as a way to support the important research and education programs funded by the Institute. Dan Moore, CEO of RBS, said, “I’m grateful to share that over the past six years, the race has brought in over \$200,000 to the ROI in sponsorships, registrations and cash and in-kind donations. It’s always good to give back to our community, and we’re very appreciative of all the vendors, sponsors and runners that make this possible.”

“The 5K brings together ASTRO meeting attendees in a fun and different way.”

– Deborah A. Kuban, MD, FASTRO, ROI President


On the Monday morning of the meeting, hundreds of runners and walkers will wake up extra early to participate in the 5K. All of their registration fees and the corporate sponsorships for the run will be donated directly to the ROI because RBS covers all costs as the host of the event.

“The 5K brings together ASTRO meeting attendees in a fun and different way, and we are grateful to RBS for hosting this fantastic event,” said ROI president, Deborah A. Kuban, MD, FASTRO. “The proceeds from the run help the ROI to fund practical research that will impact patient care on a daily basis.”

Many runners look forward to the event, including Matt McCurdy, MD, PhD, who has run and won the 5K every year, even unofficially in 2012 as Hurricane Sandy hit Boston. He plans on returning to Boston and running the race this year, too.

“The ROI 5K is a great way to start the conference day, great for networking and it’s for a great cause, but most of all, it is a lot of fun. These are the reasons I’ve participated in every ROI 5K. RBS and those who registered for the last Boston ROI 5K will be especially happy to have the race in Boston this year,” he said.

For more information and to register for the seventh annual 5K Run for the Future to Benefit the ROI, visit www.roi5k.com. Race registration will also be available on site from 10:00 a.m. to 5:00 p.m. on Sunday, September 25 at the ROI Booth in the Northwest Lobby A - Level 1. Participants in the race will enjoy a scenic course around Pleasure Bay and Castle Island in South Boston.

And don’t forget to pack your running shoes! 



GET ON TRACK WITH ADAPTIVE THERAPY

Heading for adaptive? Getting underway is plain sailing with the dose tracking feature in RayStation. You'll see exactly where your dose is going, so you can replan as needed, with powerful automation to speed up your navigation. Now you can be certain treatment delivery is on course to achieve your clinical goals. RayStation – adaptive therapy is now.

**ADVANCING
CANCER
TREATMENT**

Welcome to Boston

BY JAY S. LOEFFLER, MD, FASTRO,
AND NANCY J. TARBELL, MD, FASTRO





Boston offers something for everyone. This unique “city on a hill” is a community we know and love for its rich history, fine arts, edge-of-your-seat sporting events, premiere educational institutions, diverse neighborhoods and world-class medical centers.

The past several years have brought tremendous change to our great city. After serving for 20 years as Boston’s mayor, the late Thomas Menino chose not to seek a sixth term, and the city welcomed a new mayor, Marty Walsh. Neighborhoods such as the Seaport, South End and Jamaica Plain, once neglected, are now flourishing. We are pleased that General Electric will have their new world headquarters in Boston. And with the city’s venture capital and tech industries booming, Boston is poised for even greater success.

Gone are the days of the proverbial New England boiled dinner! Boston has emerged as a gastronomic hub, beginning to outpace “gourmet cities” such as New York and San Francisco. Famous Boston born-and-bred chefs, including Barbara Lynch, continue to open signature restaurants and bars in Boston’s neighborhoods. Many young chefs have migrated to Boston, where investors have recognized the insatiable demand for fine food. Whether you’re visiting Kevin O’Donnell and Michael Lombardi’s SRV in the South End, Tiffani Faison’s Tiger Mama in Fenway, Ming Tsai’s Blue Ginger in Wellesley, Garrett Harker and Jeremy Sewall’s Island Creek Oyster Bar in Kenmore, or Row 34 in Fort Point, you will see that Boston’s restaurants superbly blend our vast cultural influences with locally sourced food.

Boston’s diverse neighborhoods add great vibrancy to the city. We have the seventh largest immigrant population among the 25 largest U.S. cities with over 140 languages spoken. The people within our city represent many ethnicities, including Latin American, European and Asian.

Boston has always been a city where creativity, the arts and entertainment flourish. Recently, Mayor Walsh appointed Julie Burros as the first chief of arts and culture in more than 20 years to steward a cultural plan for the city. Enhanced emphasis has been placed on increasing support for the local arts and theater to make Boston’s cultural portfolio stronger, more accessible and even more diverse. During your stay, we hope you have the opportunity to visit one of our many local artists’ open studios or one of our world famous museums, such as the Museum of Fine Arts near Northeastern University, the Isabella Stewart Gardner Museum in the Fenway area or the Institute

Continued on next page



BOSTON COMMON IS A GREAT PLACE TO RELAX IN NATURE. THE PUBLIC PARK IS THE OLDEST CITY PARK IN THE U.S.

Photo courtesy of Nicolas Depauw, PhD, Massachusetts General Hospital Radiation Physics

of Contemporary Art in the Seaport. A special night out in Boston may involve attending a concert by the Boston Symphony Orchestra, a performance at the stunning Boston Opera House or a comedy show at Laugh Boston.

Boston was recently named the third most walkable major city in the U.S. In part, this is due to the addition of green spaces such as the Rose Kennedy Greenway, a mile-and-a-half of contemporary parkland freed up as a result of the Big Dig that relocated Boston's elevated highway to tunnels underground. The Harborwalk, a public walkway that follows the edge of piers, wharves, beaches and shoreline, extends 47 miles from East Boston to the Neponset River. When suggesting the best places to walk in Boston, we would be remiss if we did not mention Boston's Esplanade on the Charles River and the pristine Boston Common and Public Garden. There is also the Freedom Trail, which meanders through fascinating historic sites along its 2.5-mile route, where you will learn many of the stories that led to America's independence.

Boston is a city that is passionate for its local sports teams. Each April, we celebrate one of our city's favorite holidays, Patriots' Day. On Patriots' Day, around 500,000 spectators gather to support runners from all over the world in the Boston Marathon, the world's oldest annual marathon. Although the marathon itself is only one day, people visit the Boston Marathon finish line—located at Copley Square—throughout the year. As is well-known, Bostonians take enormous pride in our professional sports teams. Whether watching Big Papi hit a grand slam in his final season for the Red Sox, seeing Tom Brady throw Gronk a pass to score a touchdown for the Patriots or taking in an exhilarating Celtics or Bruins game at the TD Garden, you can be sure that there is always a sporting event to talk about! And there's more! Boston is home to four NCAA Division I colleges: Boston College, Boston University, Northeastern University and Harvard University.




THE U.S.S. CONSTITUTION IS AN EXCITING ATTRACTION TO VISIT IN BOSTON.

Boston is known as a hub for higher education and is home to 34 colleges, universities and institutions of higher learning, many of which are considered the best in the world. Learning opportunities span a wide spectrum ranging from technical schools to art schools and from liberal arts schools to major research institutions. Each year, our prestigious Harvard University and Massachusetts Institute of Technology lead the *U.S. News and World Report's* top 10 ranking of national universities.

Speaking of *U.S. News and World Report's* rankings, this year, our very own Massachusetts General Hospital was once again ranked as the number one hospital in America. We are joined by three top-ranked Harvard Medical School teaching hospitals: Brigham and Women's Hospital, Boston Children's Hospital and Dana-Farber Cancer Institute. Boston is also home to other outstanding medical centers, including Beth Israel Deaconess Medical Center, an affiliate of Harvard Medical School; Boston Medical Center, an affiliate of Boston University; and Tufts Medical Center. The bridge that connects our universities and medical institutions truly enhances our ability to deliver world-class research, collaborative teaching, community outreach and the highest quality of health care possible.

From our vibrant culinary scene to our world-class health care institutions, Boston is the best! Together, we have over 60 years of combined experience living and working in this great city. Over the years, we have been thrilled to watch our hometown's remarkable transformation and its ongoing renewal. We hope that during your visit to our great city for ASTRO's 58th Annual Meeting, you will find some time to enjoy some of the wonders our city has to offer.

We warmly welcome you to Boston!

Dr. Loeffler is chief of the department of radiation oncology at Massachusetts General Hospital and the Herman and Joan Suit Professor of Radiation Oncology and professor of neurosurgery at Harvard Medical School. Dr. Tarbell is CC Wang Professor of Radiation Oncology, dean for academic and clinical affairs, Harvard Medical School, and a recipient of ASTRO Gold Medal. Dr. Tarbell remains active in the practice of pediatric radiation oncology. They are married and live in Boston. 

A STATUE OF GEORGE WASHINGTON IN BOSTON COMMON.



GENERAL INFORMATION

BOSTON CONVENTION AND EXHIBITION CENTER

415 Summer Street
 Boston, MA 02210
<https://signatureboston.com/bcec>

All activities take place at the Boston Convention and Exhibition Center unless otherwise stated.

All information is correct as of July 19, 2016 and is subject to change.

ATTENDEE REGISTRATION

North Lobby – Level 1

Attendee Registration Hours:

Saturday, September 24	7:30 a.m. – 5:00 p.m.
Sunday, September 25	6:30 a.m. – 5:00 p.m.
Monday, September 26	7:00 a.m. – 6:00 p.m.
Tuesday, September 27	7:00 a.m. – 5:00 p.m.
Wednesday, September 28	7:00 a.m. – 2:00 p.m.

EXHIBITOR REGISTRATION

North Lobby – Level 1

Exhibitor Registration Hours:

Thursday, September 22	8:00 a.m. – 5:00 p.m.
Friday, September 23	8:00 a.m. – 5:00 p.m.
Saturday, September 24	8:00 a.m. – 5:00 p.m.
Sunday, September 25	7:00 a.m. – 5:00 p.m.
Monday, September 26	8:00 a.m. – 5:00 p.m.
Tuesday, September 27	8:00 a.m. – 5:00 p.m.

**AFFILIATED MEETINGS****40TH ASRT RADIATION THERAPY CONFERENCE**

September 25-27, 2016

Boston Marriott Copley Place

The 40th ASRT Radiation Therapy Conference will take place at the Boston Marriott Copley Place. 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 Boston Marriott Copley Place.

33RD SROA ANNUAL MEETING

September 25-28, 2016

Boston Park Plaza Hotel

The 33rd SROA Annual Meeting will take place at the Boston Park Plaza. ASTRO registered attendees may attend the SROA general session by paying a reduced registration fee of \$240. 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 Boston Park Plaza.

ABSTRACTS AND EMBARGO POLICY

The full text of the abstracts selected for oral, ePoster and poster presentations will be available on the Annual Meeting Online Conference Planner and ASTROmobile beginning Saturday, September 24. All abstracts are published in a supplement of the October 1, 2016 issue of the *International Journal of Radiation Oncology • Biology • Physics* (www.redjournal.org).

All abstracts are embargoed and remain confidential until the date and time of presentation at the Annual Meeting. If you have any questions about the embargo policy, please contact ASTRO's media relations team at press@astro.org.

ASTRO PRIVATE INTERVIEW ROOMS

Private interview rooms are available for rent. These rooms are ideal if you have multiple interviews to conduct or would like to interview applicants in a more private setting. A limited number of private interview rooms are available for three-hour periods, Saturday, September 24 through Tuesday, September 27. For more information, stop by the Ask ASTRO booth located in the North Lobby.



Northwest Lobby B1 – Level 1

Need a break between sessions and visits to the Exhibit Hall?

Stop by ASTRO Connect! This networking lounge offers an area to charge your devices, network with colleagues, have informal meetings, check in on social media sites or just take a few minutes to relax.

ASTRO INFORMATION AND MEMBER SERVICES BOOTH - ASK ASTRO

North Lobby – Level 1

ASTRO representatives are available to answer questions about the Annual Meeting, membership in ASTRO and your member benefits. Assistance with ASTRO 2016 technology tools such as ASTROmobile and the Online Conference Planner is also available. Satellite booths are located in the Northeast and Northwest Lobbies.

Hours of Operation:

Saturday, September 24 7:30 a.m. – 5:00 p.m.
 Sunday, September 25 6:30 a.m. – 5:00 p.m.
 Monday, September 26 7:00 a.m. – 6:00 p.m.
 Tuesday, September 27 7:00 a.m. – 5:00 p.m.

ASTRO PAC LOUNGE

Northeast Lobby A – Level 1

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 2016. The PAC lounge will feature internet access, coffee and beverages, snacks 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 the political process and ensure our members’ voices are being heard by key policymakers on Capitol Hill. Be sure to stop by the lounge to get the most recent legislative and election updates. For more information, please email stephanie.quinn@astro.org or visit www.astro.org/ASTROPAC.

Hours of Operation:

Sunday, September 25 10:00 a.m. – 5:00 p.m.
 Monday, September 26 10:00 a.m. – 5:30 p.m.
 Happy Hour (Room 155) 4:30 p.m. – 5:30 p.m.
 Tuesday, September 27 10:00 a.m. – 5:00 p.m.
 Wednesday, September 28 7:00 a.m. – 4:00 p.m.

ASTROMOBILE: YOUR ANNUAL MEETING GUIDE

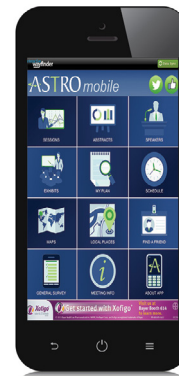
ASTROmobile gives you access to the meeting program and ability to customize your meeting experience with personalized maps and planners.

- Search sessions by day, track or speaker.
- Search exhibitors by name, booth number or product/service category.
- Locate sessions and exhibitors with customized maps.
- Search and view the full abstracts.
- Preview general meeting information.
- Access “My Schedule” – your personal Annual Meeting schedule.
- View convention center maps.
- Take notes on a session or exhibitor and access your notes from your mobile device.
- Integrates with the Online Conference Planner.

ASTROmobile Login Instructions

An account has been created for all registered attendees. Please login as follows:

iPhone Users	<ol style="list-style-type: none"> 1. Download “ASTROmobile16” from the App Store. 2. Log in with your ASTRO credentials: <ul style="list-style-type: none"> • Username: Email Address • You can retrieve your password by clicking “Forgot Password?”
Droid Users	<ol style="list-style-type: none"> 1. Download “ASTROmobile16” from the Google Play Store. 2. Log in with your ASTRO credentials: <ul style="list-style-type: none"> • Username: Email Address • You can retrieve your password by clicking “Forgot Password?”
Smartphone Users	<ol style="list-style-type: none"> 1. Go to www.astro.org/ASTROmobile in your mobile web browser. 2. Log in with your ASTRO credentials: <ul style="list-style-type: none"> • Username: Email Address • You can retrieve your password by clicking “Forgot Password?”







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Imagine future generations freed from the fear of cancer. Where more cancers are treatable and survivors can continue their journeys to live happy, long and productive lives.

At Varian Medical Systems, we are people fueled by passion, imagination and determination. And every day we draw strength and resolve from our single vision of the future.

It drives the work we do to develop the latest techniques in radiotherapy and radiosurgery, so we can offer your oncology care team the most advanced treatment options available anywhere.

Please check with your doctor if radiotherapy or radiosurgery is right for you. Find out more at www.patient.varian.com.

Visit us at ASTRO 2016 Booth 5063.

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Radiation treatments may cause side effects that can vary depending on the part of the body being treated. The most frequent ones are typically temporary and may include, but are not limited to, irritation to the respiratory, digestive, urinary or reproductive systems, fatigue, nausea, skin irritation, and hair loss. In some patients, they can be severe. Radiation treatment is not appropriate for all cancers. See varian.com/use-and-safety for more information.

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ASTRO Bistro

Exhibit Hall B – Rear of 1000/2000 Aisle, Exhibit Level

New this year! We are offering a new dining experience for attendees in the Exhibit Hall—the ASTRO Bistro. The ASTRO Bistro will provide buffet-style meals with different cuisine options offered each day. The ASTRO Bistro provides a comfortable place to eat, meet and network with colleagues and exhibitors.

Hours of Operation:

Sunday, September 25	11:00 a.m. - 2:30 p.m.
Monday, September 26	11:00 a.m. - 2:30 p.m.
Tuesday, September 27	11:00 a.m. - 2:30 p.m.

Price

Individual attendee lunch ticket (per person/day): \$25
Individual attendee three day lunch ticket package*: \$75

**This ticket package provides an individual with a lunch ticket for Sunday, Monday and Tuesday for the ASTRO Bistro.*

Menu

The ASTRO Bistro will offer a variety of food items with menu items changing daily. See a sample menu to the right.

Menu is subject to change.

HOW TO PURCHASE ATTENDEE LUNCH TICKETS:

ASTRO Bistro tickets can be purchased online via the attendee registration process. Your ticket is valid only for lunch on the day requested. **ASTRO Bistro tickets that are not redeemed cannot be used for the following day and are nonrefundable.**

ASTRO Bistro tickets are only redeemable at the ASTRO Bistro and cannot be used at other concessions within the Boston Convention and Exhibition Center. Purchased tickets will be included with your registration materials. Additional tickets may be purchased on-site at the ASTRO Bistro desk located in North Lobby of the Boston Convention and Exhibition Center.

Connect with attendees.



Tweet
#ASTRO16

SAMPLE ASTRO BISTRO MENU

SALADS AND SANDWICHES

BLT salad I*

America's favorite sandwich in a salad with a side of garlic croutons

Wedge salad I*(V)

Baby iceberg, tomato, red onion and chives with blue cheese dressing

English pea and farro salad (V)

Lemon vinaigrette

Grilled ham and cheese

On Texas toast

Smoking gobbler

Smoked turkey, cheddar, cranberry-apricot chutney and sage aioli on whole wheat bulkie roll

Grilled vegetable wrap (V)

Over-sized spinach tortilla filled with grilled vegetables with tomato chutney, provolone and balsamic onions

WARM ENTRÉES

New England clam chowder

With oyster crackers

Chianti braised beef tips*

Blistered red pepper and parmesan mashed potatoes

Wood roasted mushroom orecchiette (V)

Mascarpone cream with roasted garlic

Fire roasted vegetable ratatouille (V)

Extra virgin olive oil, sea salt and cracked pepper

Bakery fresh rolls

From our in-house bakery with sweet butter

DESSERTS

Fresh fruit salad* (V)

Gingered fruit syrup

Hanover Street Italian pastries

Warm blueberry cobbler

Lemon curd

Fresh brewed coffee and iced tea

*Gluten free, (V) vegetarian and vegan

BUSINESS CENTER

North Lobby – Level 1

A FedEx office is conveniently located inside the North Lobby at the Boston Convention and Exhibition Center. Here you can ship, mail, fax, photocopy or create a last-minute presentation. To contact the business center, please dial 617-954-2203, fax 617-954-2204 or email usa1323@fedex.com.

Hours of Operation:

Saturday, September 24	8:00 a.m. – 6:00 p.m.
Sunday, September 25	8:00 a.m. – 6:00 p.m.
Monday, September 26	8:00 a.m. – 6:00 p.m.
Tuesday, September 27	8:00 a.m. – 8:00 p.m.
Wednesday, September 28	9:00 a.m. – 5:00 p.m.

BUSINESS MEETING AND LUNCH

Tuesday, September 27

11:30 a.m. – 1:00 p.m.

Room 210 – Level 2

ASTRO voting members (Active, Affiliate and International members) are invited to attend the Annual Business Meeting. Leaders of the Society will discuss topics of interest to ASTRO members. Lunch will be served.

CE CENTRAL

North Lobby – Level 1

Staff from ASTRO and the ABR will be on hand during the meeting to answer your individual questions about continuing education and MOC requirements, including:

- Current MOC participation status.
- MyABR attestation and documentation guidance.
- Transferring credits between ASTRO and the ABR.
- How to complete an evaluation.
- ASTRO's SA-CME offerings.

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.
- Update your Online Conference Planner.
- Print your boarding pass.
- Print your registration receipt.
- Print your Certificate of Attendance.
- Check email.
- Browse the internet.

Hours of Operation:

Saturday, September 24	8:00 a.m. – 6:15 p.m.
Sunday, September 25	7:15 a.m. – 6:30 p.m.
Monday, September 26	7:15 a.m. – 6:00 p.m.
Tuesday, September 27	7:15 a.m. – 6:30 p.m.
Wednesday, September 28	7:15 a.m. – 4:45 p.m.



EXHIBIT HALL

Halls A-B – Exhibit Level

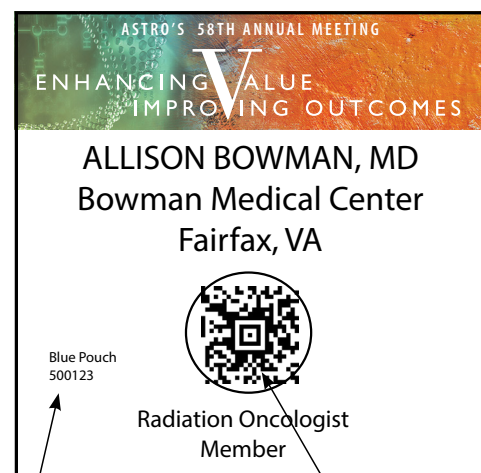
Learn about the latest products in cancer treatment and care in the Exhibit Hall.

Hours of Operation:

Sunday, September 25	10:00 a.m. – 5:00 p.m.
Monday, September 26	10:00 a.m. – 5:00 p.m.
Tuesday, September 27	10:00 a.m. – 5:00 p.m.

EXHIBITOR PRODUCT INFORMATION

Your registration badge will include an Aztec code that contains your contact information. This code can be scanned by exhibitors in the Exhibit Hall, so that you may request information on products and services offered by the company. Your contact information will include your email address, unless you opted not to include it during the registration process. Please stop by Attendee Registration located in the North Lobby if you would like to change your contact information.



Sample Badge Number

Aztec code

FACULTY/VIP OFFICE

Room 103 – Level 1

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 speakers.
- Panel moderators and presenters.
- Scientific program moderators and discussants.
- eContouring learning lab presenters.
- Presidential symposium speakers.
- Keynote speakers and introducers.
- International symposium speakers.

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

Hours of Operation:

Saturday, September 24	6:45 a.m. – 6:00 p.m.
Sunday, September 25	6:45 a.m. – 6:15 p.m.
Monday, September 26	6:45 a.m. – 5:45 p.m.
Tuesday, September 27	6:45 a.m. – 6:15 p.m.
Wednesday, September 28	6:45 a.m. – 4:30 p.m.

FIRST AID

Room 105 – Level 1

First Aid: Dial 617-954-3430 ext. 3430 from a house phone
Building Emergency: Dial 617-954-2222 or ext. 2222 from a house phone

First Aid is located in **Room 105**. In an emergency, please dial **617-954-3430** to contact First Aid or go to ASTRO Registration and have a staff person contact security.

Hours of Operation:

Monday, September 19	8:00 a.m. – 5:00 p.m.
Tuesday, September 20	8:00 a.m. – 5:00 p.m.
Wednesday, September 21	8:00 a.m. – 5:00 p.m.
Thursday, September 22	8:00 a.m. – 8:00 p.m.
Friday, September 20	8:00 a.m. – 8:00 p.m.
Saturday, September 24	7:00 a.m. – 8:00 p.m.
Sunday, September 25	6:30 a.m. – 6:00 p.m.
Monday, September 26	7:00 a.m. – 7:00 p.m.
Tuesday, September 27	7:00 a.m. – 12:00 p.m.
Wednesday, September 28	7:00 a.m. – 8:00 p.m.
Thursday, September 29	8:00 a.m. – 12:00 p.m.

LOST AND FOUND

North Lobby, Ask ASTRO Booth – Level 1

To report a missing item, to check if an item has been turned into security or to turn in a lost item, stop by the Ask ASTRO booth located in North Lobby.

Hours of Operation:

Saturday, September 24	7:30 a.m. – 5:00 p.m.
Sunday, September 25	6:30 a.m. – 5:00 p.m.
Monday, September 26	7:00 a.m. – 6:00 p.m.
Tuesday, September 27	7:00 a.m. – 5:00 p.m.
Wednesday, September 28	7:00 a.m. – 4:00 p.m.

LUGGAGE/COAT CHECK

Room 101 – Level 1

Luggage and coat check will be available in the Boston Convention and Exhibition Center in Room 101 for \$3 per item.

Hours of Operation:

Saturday, September 24	7:30 a.m. – 6:00 p.m.
Sunday, September 25	6:00 a.m. – 6:30 p.m.
Monday, September 26	7:00 a.m. – 7:00 p.m.
Tuesday, September 27	7:00 a.m. – 6:30 p.m.
Wednesday, September 28	7:00 a.m. – 5:00 p.m.

PRESS OFFICE AND NEWS BRIEFINGS

Room 151 A and 151 B – Level 1

Accredited journalists are provided with press kits and access to cover ASTRO's 58th Annual Meeting. For more information about ASTRO's press program and policies, or to view the news briefing schedule, please contact ASTRO's media relations team at 703-286-1600 or press@astro.org or visit: www.astro.org/AMpress.

On-site Press Office Hours of Operation:

Sunday, September 25	8:00 a.m. – 4:00 p.m.
Monday, September 26	8:00 a.m. – 4:00 p.m.
Tuesday, September 27	8:00 a.m. – 4:00 p.m.
Wednesday, September 28	8:00 a.m. – 12:00 p.m.



INDUSTRY-EXPERT THEATER

Theaters 1 and 2 are located in the front of Exhibit Hall A, Exhibit Level
Room 261 is located outside of the Exhibit Hall, Level 2 of the Convention Center

This activity allows companies to present their noteworthy products and services through a live presentation. Seating is available on first-come first-serve basis. The Industry-Expert Theater content and views expressed therein are those of the exhibitor and not of ASTRO. Unless otherwise indicated food will be available for purchase prior to the start of the event in the ASTRO Bistro and concession areas in the rear of Hall B.

SUNDAY, SEPTEMBER 25

THEATER 1, Exhibit Hall

**INTRODUCING THE RADIXACT™
SYSTEM: SMART INTEGRATION
DELIVERS TREATMENT CONFIDENCE**

12:15 p.m. - 1:15 p.m.

Company: Accuray*

Contact: Diane Hobaugh

Phone: 408-789-4265

Email: dhobaugh@accuray.com

THEATER 2, Exhibit Hall

TITLE: TBD

12:15 p.m. - 1:15 p.m.

Company: ScandiDos*

Contact: Ingemar Wiberg

Phone: +46-18-472-3030

Email: ingemar.wibert@scandiDos.com

THEATER 1, Exhibit Hall

**REDUCING HEART RADIATION DAMAGE
USING DEEP INSPIRATION BREATH
HOLD (DIBH) WITH SURFACE GUIDED
RADIATION THERAPY (SGRT) –
A MULTIDISCIPLINARY PERSPECTIVE**

2:45 p.m. - 3:15 p.m.

Company: Vision RT

Contact: Thomas Carter

Phone: +44-7795-127-820

Email: tcarter@visionrt.com

MONDAY, SEPTEMBER 26

THEATER 1, Exhibit Hall

**ENERGIZE YOUR BREAST PROGRAM BY
OFFERING BALLOON BRACHYTHERAPY
TO YOUR PATIENTS**

10:15a.m. – 10:45a.m.

Company: Hologic

Contact: Shannon Wheeler

Phone: 508-263-8657

Email: Shannon.wheeler@hologic.com

THEATER 1, Exhibit Hall

**THE CYBERKNIFE® SYSTEM:
CONFIDENCE IN HYPOFRACTIONATION**

12:30 p.m. - 1:30 p.m.

Company: Accuray*

Contact: Diane Hobaugh

Phone: 408-789-4265

Email: dhobaugh@accuray.com

THEATER 2, Exhibit Hall

**PROTECTING THE RECTUM: IMPROVING
OUTCOMES AND ADVANCING QUALITY
OF LIFE WITH A HYDROGEL SPACER IN
PCA RADIOTHERAPY**

12:30 p.m. - 1:30 p.m.

Company: Augmenix Inc.*

Contact: Eileen Gardner

Phone: 781-902-1625

Email: egardner@augmenix.com

ROOM 261, Level 2

INNOVATIONS IN THERAPY GUIDANCE

12:30 p.m. - 1:30 p.m.

Company: Philips

Contact: Sara Randall

Phone: 608-301-7739

Email: sara.randall@philips.com

TUESDAY, SEPTEMBER 27

THEATER 1, Exhibit Hall

**NOVEL DELIVERY FOR THE TREATMENT
OF BREAKTHROUGH PAIN IN
CANCER (BTPC)**

11:45 a.m. - 12:45 p.m.

Company: Depomed Inc.*

Contact: Kaylyn Insetta

Phone: 908-367-3616

Email: kinsetta@decileten.com

THEATER 2, Exhibit Hall

MRI-GUIDED RADIATION THERAPY

11:45 a.m. - 12:45 p.m.

Company: Viewray*

Contact: Meredith Johnson

Phone: 408-396-2355

Email: mjohnson@viewray.com

**Lunch will be provided by the company, which may subject you to reporting under the Federal Sunshine Act (the "Open Payments Program") or other state laws.*

INDUSTRY SATELLITE SYMPOSIA

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

SUNDAY, SEPTEMBER 25

6:15 p.m. – 11:00 p.m.

PROTON THERAPY SYMPOSIUM

*Institute of Contemporary Art
25 Harbor Shore Drive*

Dinner will be provided.

This is a non-CME informational activity designed for radiation oncologists, medical physicists and hospital administrators to attend the Proton Therapy Symposium. No CME is offered for this program.

Learning Objectives:

The Proton Therapy Symposium will cover the following aspects of cancer treatment:

- Cost effectiveness of proton therapy
- Stockholm group consensus report on the use of proton therapy treatment for pediatric cancers
- The future of proton therapy is adaptive. Clinical case on imaging technology innovation

This activity is hosted by IBA.

MONDAY, SEPTEMBER 26

7:00 p.m. – 8:30 p.m.

ESTABLISHING THE ROLE OF IMMUNO-ONCOLOGY IN HEAD AND NECK CANCER: NEW RESEARCH ADVANCEMENTS

*The Westin Boston Waterfront
Grand Ballroom A
425 Summer St.*

This is a non-CME informational activity designed for radiation oncologists, medical oncologists and surgical oncologists. No CME is offered for this program.

Learning Objectives:

- To better understand immuno-oncology and the rationale for I-O as a modality to treat head and neck cancer.

This activity is hosted by Bristol-Myers Squibb.

TUESDAY, SEPTEMBER 27

6:15 p.m. – 6:45 p.m.: Dinner and Registration
6:45 p.m. – 8:15 p.m.: Symposium

EVALUATING IMMUNOTHERAPY AS A NEW PILLAR OF MULTIMODAL HEAD AND NECK CANCER CARE: WHERE DOES CHECKPOINT BLOCKADE FIT?

*The Westin Boston Waterfront Hotel,
Grand Ballroom A
425 Summer St.*

Dinner will be provided.

Accreditation: The Medical Learning Institute, Inc. is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CME Credits: The Medical Learning Institute, Inc. designates this live activity for a maximum of 1.5 *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 has been designed to meet the educational needs of radiation oncologists, medical and surgical oncologists, advanced practice clinicians and other healthcare professionals involved in managing patients with head and neck cancer.

Learning Objectives:

After participating in the activity, the learners are expected to be better able to:

- Describe the rationale and mechanisms for therapeutic targeting of the immune system in head and neck cancer
- Apply efficacy and safety evidence on the use of immune checkpoint inhibitors in head and neck cancer, including recurrent, metastatic disease/and or platinum-refractory settings
- Summarize potential clinical synergies between immuno-oncology strategies and other modalities commonly used for the management of SCCHN
- Select patients with head and neck cancer who may be eligible for immunotherapies including enrollment in clinical trials

This activity is supported through educational grants from Bristol-Myers Squibb and Merck & Co, Inc. This CME activity is jointly provided by Medical Learning Institute and PVI, PeerView Institute for Medical Education.

PARKING

The Boston Convention and Exhibition Center has a public parking facility called South Parking Lot. To self-park (\$15 and \$30 for oversized vehicles), from Summer Street, turn onto East Side Drive, drive past the valet area and continue straight along the side of the building. At the end of the building, make a right and go down the ramp. At the bottom of the ramp, turn left and you will see the entrance to the South Parking Lot in front of you.

In addition to the South Parking Lot, there are a number of parking lots and garages near the Boston Convention and Exhibition Center. Listed below are public parking lots and garages in close proximity to the convention center, each of which provide certain spaces reserved for use by authorized, handicapped individuals. Please note: ASTRO does not validate for parking.

The Westin Boston Waterfront

450 Summer Street (at D St.)

Phone: 617-532-4600

Connected to Boston Convention and Exhibition Center

Hours of Operation:

Monday – Sunday, 6:00 a.m. – 3:00 a.m.

Daily Rates:

Zero to one hour: \$12 One to two hours: \$21
Two to three hours: \$26 Over three hours: \$36

Parking Type:

Indoor, self-park and valet; no vehicles over 6'8"; electrical vehicle charging

Payment: Credit Card

Lot D-3 492

492 Summer Street

Phone: 617-946-4440

Distance from Convention Center: 0.28 miles

Hours of Operation:

Monday – Sunday, 5:00 a.m. – 3:00 a.m.

Daily Rates:

Transient, \$9-\$36

Parking Type: Indoor, self-park and valet; automobile, motorcycle, oversized vehicles, pickup truck and SUV parking available

Payment: Cash, American Express, Visa and MasterCard

Pilgrim Parking Inc.

225 Northern Avenue

Phone: 617-204-9225

Distance from Convention Center: 0.39 miles

Hours of Operation: Open 24 hours

Daily Rates:

Zero to half an hour:	\$10
Half an hour to one hour:	\$15
One to one and a half hours:	\$20
One and a half to two hours:	\$24
Two to three hours:	\$28
Three to six hours:	\$30
Six to 10 hours:	\$32
10 to 24 hours:	\$36

Indoor Height Restriction: 6'8"

Fish Pier West

212 Northern Avenue

Phone: 617-946-4440

Distance from Convention Center: 0.41 miles

Hours of Operation: Open 24 hours

Daily Rates:

\$8 per hour
Over 4 hours: \$32

Parking Type: Outdoor; automobile, motorcycle, oversized vehicle, pickup truck and SUV parking available

Payment: Cash, American Express, MasterCard and Visa

Seaport Parking

1 Seaport Lane

617-385-4530

Distance from Convention Center: 0.51 miles

Hours of Operation: Open 24 hours

Daily Rates:

Zero to one hour:	\$11
One to two hours:	\$22
Two to three hours:	\$27
Three to six hours:	\$30
Six to 10 hours:	\$32
10 to 24 hours:	\$36

Parking Type: Indoor; automobile, motorcycle and SUV parking available

Payment: American Express, Discover Card, MasterCard and Visa

*Please note that parking rates are subject to change at any time.
Please contact the parking facility directly for the most current rate information.*

POSTERS

Poster Setup and Removal

Hall C – Exhibit Level

Poster Setup Hours:

Saturday, September 24 12:00 p.m. – 5:00 p.m.
 Sunday, September 25 7:30 a.m. – 10:00 a.m.

Poster Removal Hours:

Tuesday, September 27 5:00 p.m. – 7:00 p.m.

Poster Viewing

Hall C, Exhibit Level

ePosters and paper posters will be on display during the poster viewing hours below. Please note that ePosters will not be available for viewing during ePoster discussion session times as the screens will be used for these sessions. See the schedule of events or use the Online Conference Planner or ASTROmobile for the ePoster session schedule.

Poster Viewing Hours

Sunday, September 25 10:00 a.m. – 5:00 p.m.
 Monday, September 26 10:00 a.m. – 6:45 p.m.
 Tuesday, September 27 10:00 a.m. – 5:00 p.m.

Poster Pickup

Hall C, Poster Information, Level 1

For those poster presenters who chose to use ASTRO's poster printing service, please pick up your posters at the Poster Information desk in the Poster Hall.

Hours of Operation:

Saturday, September 24 12:00 p.m. – 5:00 p.m.
 Sunday, September 25 7:30 a.m. – 5:00 p.m.
 Monday, September 26 10:00 a.m. – 5:00 p.m.
 Tuesday, September 27 10:00 a.m. – 5:00 p.m.

Poster Viewing Session and Reception

Hall C, Exhibit Level

Monday, September 26 5:30 p.m. – 6:45 p.m.

All conference attendees are invited to attend this poster viewing session and reception. During this time, poster presenters are available by their poster to answer questions and discuss their research. Drinks will be available for purchase. You must be 21 or older to purchase alcoholic beverages.

Connect with attendees.



Tweet
#ASTRO16

Poster Awards

Poster award winners are presented with their awards at the beginning of the reception and will provide a short oral presentation of their abstract in the poster presentation area within the Poster Hall.

Poster Categories:

- Biology
- Breast
- CNS
- Gastrointestinal
- Genitourinary
- Gynecologic
- Head and Neck
- Health Services Research
- Hematologic/Lymphoma/Leukemia
- History/Education/Social Media
- Informatics/Bioinformatics
- Lung
- Non-malignant
- Nursing
- Palliative Care
- Patient Reported Outcomes/Quality of Life
- Patient Safety
- Pediatrics
- Physics
- Sarcoma



ePOSTER DISCUSSION SESSIONS

Session Format

The ePoster discussion sessions take advantage of touch-screen technology to present more in-depth information and allow for easy viewing of data and discussion with colleagues.

Sessions will begin with oral presentations by each author, then discussant presentations followed by poster viewing and interaction with authors.

- **55 minutes** – Each of the nine authors have six minutes to present their poster at the podium.
- **25 minutes** – Discussants provide additional information to compare and contrast the abstracts, highlight key points and moderate questions and answers.
- **10 minutes** – Authors stand by ePoster and answer questions.

ePoster Presenter Check-in

Outside of Rooms 052 A and 052 B – Exhibit Level
 ePoster Presenters must check-in at the ePoster Check-in booth located between the ePoster session rooms at least two hours prior to their presentation. Staff will be available to assist presenters with uploading any last-minute changes and to help them prepare for their oral presentation. Presenters are required to stand by their posters for the last 10 minutes of the session. Once the session begins, presenters should sit in the front row and wait for the Discussant to call them up to the podium for their presentations. ePoster discussion sessions are 90 minutes long.

PASSPORT PROGRAM

ASTRO introduced the Survivor Circle Passport Program in 2006. This program was created not only to help raise money for the groups ASTRO partnered with in the Survivor Circle, but also to help drive traffic to passport participant's booths. Be sure to get your passport stamped at the Survivor Circle Passport Program participant exhibit booths listed on your ASTRO Passport. Only registered attendees are eligible to take part.

DROP OFF LOCATIONS:

Drop off your completed passports at the Ask ASTRO booth in the North Lobby for a chance to win a prize. Prize drawings will occur at 4:00 p.m. on Sunday, September 25 through Tuesday, September 27. The generous donations from these participating companies help fund the Survivor Circle grants to help support cancer survivors in Massachusetts.

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AMAG Pharmaceutical

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Merck

Novocure

Pfizer

As of
July 25, 2016

RADIATION ONCOLOGY INSTITUTE (ROI) BOOTH

Northwest Lobby A – Level 1



Visit the ROI booth to find out how YOU can help push forward critical research that will advance the field of radiation oncology.

Hours of Operation:

Sunday, September 25	12:00 p.m. – 5:00 p.m.
Monday, September 26	9:00 a.m. – 5:00 p.m.
Tuesday, September 27	9:00 a.m. – 5:00 p.m.
Wednesday, September 28	9:00 a.m. – 12:00 p.m.

BOSTON TRAVEL INFORMATION*North Lobby – Level 1*

Attendees can stop by either one of the two Boston Travel Information desks to receive restaurant recommendations, Boston visitor guides, maps, local directions and more.

Hours of Operation:

Saturday, September 24	9:00 a.m. – 5:00 p.m.
Sunday, September 25	9:00 a.m. – 5:30 p.m.
Monday, September 26	9:00 a.m. – 5:30 p.m.
Tuesday, September 27	9:00 a.m. – 5:30 p.m.
Wednesday, September 28	9:00 a.m. – 5:00 p.m.

SMOKING

The Boston Convention and Exhibition Center is a non-smoking facility.

SPEAKER READY ROOM*Room 102 – Level 1*

Faculty members and abstract presenters should 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 Boston Convention and Exhibition Center.

Hours of Operation:

Saturday, September 24	6:45 a.m. – 6:00 p.m.
Sunday, September 25	6:45 a.m. – 6:15 p.m.
Monday, September 26	6:45 a.m. – 5:45 p.m.
Tuesday, September 27	6:45 a.m. – 6:15 p.m.
Wednesday, September 28	6:45 a.m. – 4:30 p.m.

SURVIVOR CIRCLE*North Lobby, Level 1*

In 2003, ASTRO created the Survivor Circle as a way to honor cancer survivors. Each year, ASTRO awards two grants to patient support organizations located in or near the city hosting the Annual Meeting. Grants are made possible through generous donations from exhibitors. This year ASTRO is proud to recognize Boston Cancer Support and The Samfund for their work with cancer patients and their families. Please stop by the Survivor Circle Booth, located near the Ask ASTRO Booth in the North Lobby.

TRANSPORTATION

Boston offers a number of convenient transportation options to help attendees easily get around the city. For more information on transportation services, visit www.astro.org/travel.

Rental Car Reservations

Avis and Hertz are offering ASTRO attendees special rates on car rentals during the Annual Meeting.

Avis Rent-A-Car

To reserve your Avis rental car, call 1-800-331-1600. Be sure to mention the Avis Worldwide Discount number, J657704, when making your reservation.

Hertz

To reserve your Hertz rental car, call 1-800-654-2240 or 1-405-749-4434 or go to www.hertz.com. Be sure to mention the CV ID number, 04840015, in order to receive the discounted rate.

To and From the Airport

Boston Logan International Airport is approximately 3.3 miles, or 7 minutes, from the Boston Convention and Exhibition Center. The Massachusetts Bay Transportation Authority, often referred to as the MBTA or The T, is the public operator of most bus, subway, commuter rail and ferry routes in the greater Boston area.

Taxi

A one-way taxi ride from Logan Airport (BOS) to the Boston Convention and Exhibition Center is approximately \$25 (gratuity not included).

MBTA

The MBTA has a Silver Line to and from Logan Airport. The Silver Line is complimentary from Logan Airport and stops at the Seaport/World Trade Center across the street from the Boston Convention and Exhibition Center. You can take the Silver Line back to Logan Airport for \$2.10. For more information, visit: www.astro.org/travel

Ride Sharing

Boston has a multitude of rideshare car service options such as Uber, Lyft, Sidecar or Zipcar.

Water Shuttles and Water Taxis

Getting to and from Logan Airport by water shuttle or water taxi is convenient and enjoyable. For more information, visit: www.astro.org/travel

VIRTUAL MEETING

Extend your learning experience with access to the 2016 ASTRO sessions long after the meeting is over. All full conference attendees receive the Virtual Meeting with their registration at no additional cost. You will receive streaming content that has been digitally recorded live and published as audio synchronized to the speaker presentations.* Full conference attendees will have access to the recorded presentations 24 hours after each session.

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





WIRELESS INTERNET ACCESS

Complimentary wireless internet access is provided in all common areas and session rooms throughout the Boston Convention and Exhibition Center. Please note that this does not include the Exhibit Hall. Attendees can bring their laptop to check email, complete their evaluations or surf the internet. Laptops must have a Wi-Fi card to connect.

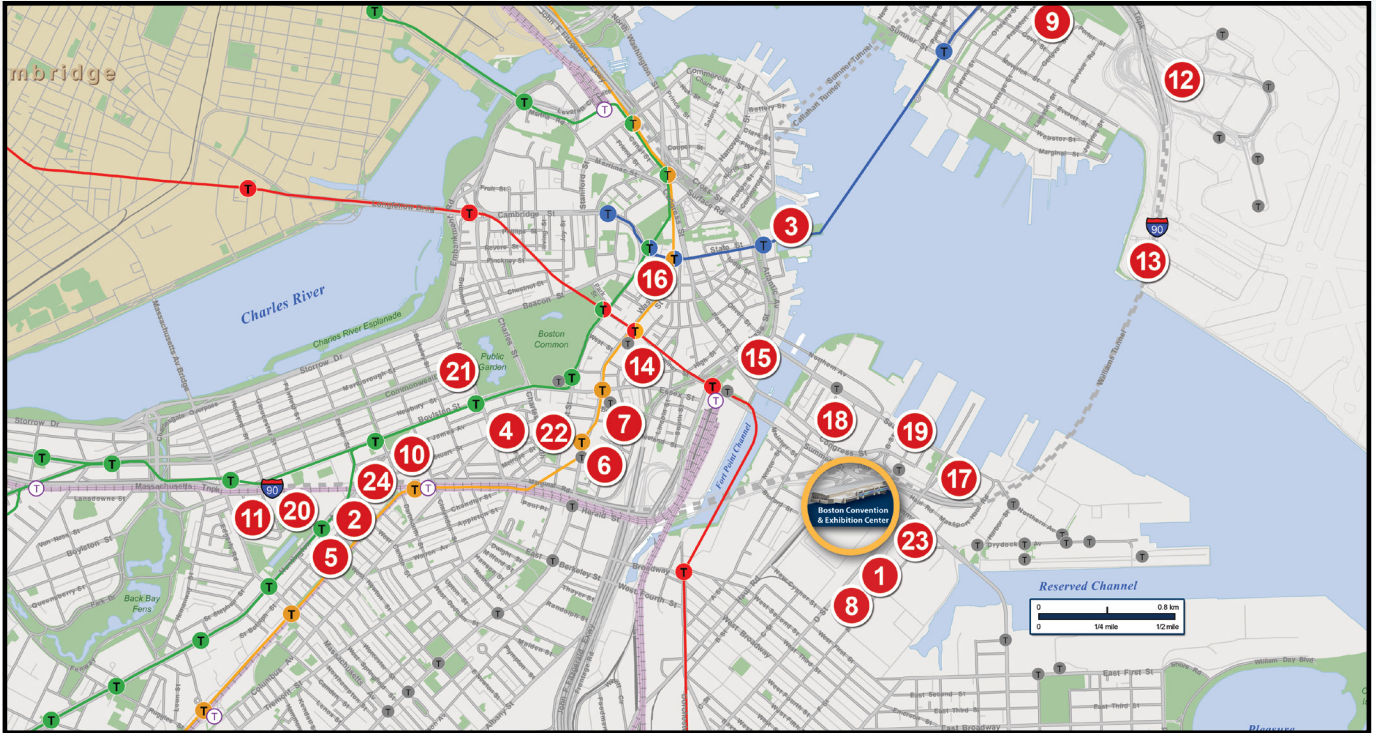


Connect with attendees.



2016 ANNUAL MEETING PROMOTIONAL SPONSORS	
GOLD	
SILVER	  
BRONZE	HOLOGIC VISION RT
COPPER	VERTUAL

2016 ANNUAL MEETING HOTEL MAP



Map Location	Hotel	Single (King Bed) / Double (Two Double Beds)	Walking Distance to Boston Convention and Exhibition Center
1	Aloft Boston Seaport	\$276	0.1 mile
2	Boston Marriott Copley Place	\$319	2.3 miles
3	Boston Marriott Long Wharf	\$355	1.5 miles
4	Boston Park Plaza	\$264	1.8 miles
5	Colonnade Hotel, The	\$305	2.3 miles
6	Courtyard Boston Downtown	\$294	1.6 miles
7	DoubleTree Boston Downtown	\$282	1.4 miles
8	Element Boston Seaport	\$286	0.1 mile
9	Embassy Suites Boston Logan Airport	\$259	3.5 miles
10	Fairmont Copley Plaza, The	\$318/\$353	2.2 miles
11	Hilton Boston Back Bay	\$309	2.5 miles
12	Hilton Boston Logan Airport	\$299	3.2 miles
13	Hyatt Boston Harbor	\$306	2.6 miles

Map Location	Hotel	Single (King Bed) / Double (Two Double Beds)	Walking Distance to Boston Convention and Exhibition Center
14	Hyatt Regency Boston	\$319	1.4 miles
15	InterContinental Boston	\$334	1.1 miles
16	Omni Parker House	\$289	1.5 miles
17	Renaissance Boston Waterfront	\$329	0.4 miles
18	Residence Inn by Marriott Boston Downtown Seaport	\$329	0.8 miles
19	Seaport Hotel	\$317	0.4 miles
20	Sheraton Boston Hotel	\$286	2.5 miles
21	Taj Boston	\$345/\$365	1.9 miles
22	W Boston	\$345	1.6 miles
23	Westin Boston Waterfront Hotel, The (Headquarters Hotel)	\$309	Adjacent
24	Westin Copley Place Boston	\$309	2.2 miles

SHUTTLE SERVICE TO THE BOSTON CONVENTION AND EXHIBITION CENTER

This is preliminary information only, which is subject to change at any time without notice.

HOURS OF OPERATION

Saturday, September 24	7:30 a.m. – 6:30 p.m.
Sunday, September 25	6:30 a.m. – 7:00 p.m.
Monday, September 26	6:30 a.m. – 7:30 p.m.
Tuesday, September 27	6:30 a.m. – 7:00 p.m.
Wednesday, September 28	6:30 a.m. – 5:00 p.m.

HOTELS AND BOARDING LOCATIONS

All travel times are approximate pending time of day, day of week and traffic conditions.

Route	Hotel	Boarding Location at Hotel	Approximate One-Way Travel Time	Frequency in Minutes
1	Boston Marriott Copley Place Colonnade Hotel, The Fairmont Copley Plaza, The Westin Copley Place Boston	Curbside on Huntington Ave. At Boston Marriott Copley Place At Boston Marriott Copley Place At Boston Marriott Copley Place	27-32	10-15 peak 15-20 non peak
2	Hyatt Regency Boston Omni Parker House	Curbside on Chauncy (<i>across the street</i>) On Tremont before Beacon	20-25	10-15 peak 15-20 non peak
3	Boston Park Plaza Courtyard Boston Downtown DoubleTree Boston Downtown W Boston Taj Boston	Columbus Ave. entrance Curbside in front At Courtyard Boston Downtown At Courtyard Boston Downtown At Boston Park Plaza	20-25	10-15 peak 15-20 non peak
4	Boston Marriott Long Wharf InterContinental Boston Residence Inn by Marriott Boston Downtown Seaport	Curbside in front Curbside in front Curbside on Congress St.	17-22	10-15 peak 15-20 non peak
5	Hilton Boston Back Bay Sheraton Boston Hotel	At Sheraton Boston Hotel Curbside on Dalton St.	27-32	10-15 peak 15-20 non peak
6	Embassy Suites Boston Logan Airport Hilton Boston Logan Airport Hyatt Boston Harbor	Curbside in front Curbside on Logan Memorial Highway Water Taxi entrance	27-32	10-15 peak 15-20 non peak
Walk	Aloft Boston Seaport Element Boston Seaport Renaissance Boston Waterfront Seaport Hotel Westin Boston Waterfront, The (Headquarters Hotel)			No shuttle service Walk to/from BCEC

Exhibitors List

(As of July 20, 2016)

For the most current exhibitor information or to view the floor plan of the Exhibit Hall, please visit www.astro.org/annualmeeting.

21st Century Oncology	Eckert & Ziegler BEBIG s.a.	Modus QA	Sirtex Medical Inc.
3D Bolus	ECM - Global Measurement	MPM Medical Inc.	Sky Factory
ABL Medical	Solutions	MuCheck-Oncology Data Systems	Sons Automation
Acceltronics	Elekta	My Girls Skin Care	Source Production & Equipment Co. Inc.
Accuray Inc.	Elsevier	Myriad Genetic Laboratories	Spectrum Pharmaceuticals, Inc.
AEP Linac	Entrinsic Health Solutions, LLC	Nanovi Radiotherapy A/S	Spellman High Voltage
Aktina Medical Corporation	Equicare Health Inc.	NELCO	Electronics Corporation
Alliance Oncology	Everson Tesla Inc.	Neusoft Medical Systems Import & Export Co. Ltd.	Springer
AMAG Pharmaceuticals, Inc.	Executive Communication Systems	Neutron Therapeutics, Inc.	Standard Imaging
American Association of Physicists in Medicine	Foss Therapy Services Inc.	Novartis Oncology	Sumitomo Heavy Industries, Ltd.
American Medical Accounting and Consulting (AMAC)	Fred & Pamela Buffett Cancer Center	Novocure	Sun Nuclear Corporation
American Society of Clinical Oncology (ASCO)	GE Healthcare	Nuclear Power Institute of China	Suremark Company
AnaOno	GenomeDx Biosciences	Oncology Services International	The Phantom Laboratory / Image Owl
Anatom-e	Genomic Health, Inc.	Oncology Systems Limited	The US Oncology Network
Anzai Medical Co., Ltd.	Gold Anchor	Oncura, a GE Healthcare Company	Theragenics Corporation
AQUILAB SAS	H&H Design-Build	Orfit Industries America	Toshiba Medical Systems
architection	Hamamatsu Corporation	PalabraApps	Turkish Society for Radiation Oncology
Ashland	Hermes Medical Solutions, Inc.	P-Cure Ltd.	Unitech Medical, Inc.
Augmenix	Hitachi Ltd.	Philips Healthcare	Vantage Oncology
Bard Medical Division	Hologic, Inc.	Pitts Little Corp.	Varian Medical Systems
Bayer	humediQ GmbH	Precisis Euromechanics GmbH	Veritas Medical Solutions
Beijing Top Grade Medical Equipment Co., Ltd.	IBA (Ion Beam Applications)	ProKnow Systems	Virtual, Ltd.
Best Medical International, Inc.	Imaging Technology News (ITN)	ProTom International	ViewRay, Inc.
Bionix	Innovative Oncology Solutions, Inc.	Provision Healthcare	Vision RT, Ltd.
BJC HealthCare	INSYS Therapeutics, Inc.	Prowess, Inc.	VisionTree Software Inc.
BK Ultrasound	Integrated Medical Technologies	PTW-New York	Water-Jel Technologies
Bogardus Medical Systems, Inc.	IntraOp Medical Corporation	Pyrexar Medical	Wolters Kluwer
Boiron	IOP Publishing	Qfix	Xcision
Brainlab	Iron Medical Systems, Inc.	QLRAD Inc.	Xecan
Bristol-Myers Squibb	iRT Systems GmbH	RAD Technology Medical Systems	Xoft-a subsidiary of iCAD, Inc.
BTG	IsoAid	Radiadyne	Xstrahl Limited
C4 Imaging LLC	IsoRay Medical, Inc.	Radiation Business Solutions	
Cancer CarePoint, Inc.	James L. Davis	Radiation Products Design, Inc.	
Carl Zeiss Meditec, Inc.	Klarity Medical Products	Radiological Imaging Technology - RIT	
CDR Systems, Inc.	Kobold, LLC.	Radiology Oncology Systems, Inc.	
Cemar Electro Inc.	Kunshan GuoLi Vacuum Electric Co., Ltd	Raydose Medical Technology	
Central Care Cancer Center	Landauer, Inc.	RaySearch Laboratories	
Cianna Medical	LAP of America LLC	Remetronix	
CIRS	Leoni CIA Cable Systems S.A.S.	Remote Dosimetry Services, LLC	
CivaTech Oncology, Inc.	Liberty Medical Inc.	Revenue Cycle, Inc.	
CIVCO Medical Solutions	LifeLine Software, Inc.	RS&A, Inc.	
Cleveland Clinic	LinaTech, LLC	RTOG Foundation	
Cold Shot Chillers	Linbeck Construction	RTsafe P.C.	
C-RAD Inc.	LocumTenens.com	S.E. International Inc.	
Crux Quality Solutions, LLC (CruxQS)	Logos Systems Int'l	S+S Par Scientific A/S	
D3 Oncology Solutions	MacroMedics BV	Samsung	
Deltabit	MagnetTx Oncology Solutions	ScandiDos	
Demos Medical Publishing	Mayo Clinic	Sensus Healthcare	
DIACOR	Medlever, Inc.	Shandong Xinhua Medical Instruments Co., Ltd.	
DOSisoft	Mevion Medical Systems	Shenzhen Tengfei Yu Technology Co., Ltd.	
DynaMed Plus	Miaderm at Aiden Industries	Shielding Construction Solutions, Inc.	
e+CancerCare	Micropos Medical AB	Siemens Healthineers	
e2v	MIM Software	Siris Medical	
e4h Architecture	Mirada Medical		
	Mission Search Corp		
	Mitsubishi Electric		
	Mobius Medical Systems		

*Enhanced ROMarketplace listing • Ambassadors are in **Bold**

EXHIBIT HALL

Halls A-B – Exhibit Level

Learn about the latest products in cancer treatment and care in the Exhibit Hall. More than 200 companies will be displaying the latest products and technologies. To find an exhibitor, use the Interactive Map Kiosks conveniently located in the Exhibit Hall or ASTRO's Online Conference Planner at www.astro.org/conferenceplanner.

HOURS OF OPERATION:

Sunday, September 25
10:00 a.m. – 5:00 p.m.

Monday, September 26
10:00 a.m. – 5:00 p.m.

Tuesday, September 27
10:00 a.m. – 5:00 p.m.



Innovators and leaders in the field of radiation oncology honored with ASTRO Gold Medal award

THREE LEADERS IN RADIATION ONCOLOGY have been named recipients of the American Society for Radiation Oncology (ASTRO) Gold Medal, the highest honor bestowed upon ASTRO members. Benedick A. Fraass, PhD, FASTRO, Christopher G. Willett, MD, FASTRO, and Anthony L. Zietman, MD, FASTRO, will be recognized at an awards ceremony during ASTRO's 58th Annual Meeting.

ASTRO awards its annual Gold Medal to individuals who have made outstanding lifetime contributions in the field of radiation oncology, including achievements in clinical patient care, research, teaching and service to the profession. This year marks the 40th consecutive year that ASTRO has presented this accolade, and the new awardees join an exclusive class of 78 gold medalists selected over the decades from the Society's more than 10,000 members.

Here are brief biographies of the 2016 Gold Medalists.

Benedick A. Fraass, PhD, FASTRO, has dedicated his career to advancing the science of radiation treatment planning and delivery, with accomplishments that include developing 3-D systems for routine clinical use, validating advanced uses of computer-controlled radiotherapy and optimizing delivery systems that allow for more powerful radiation doses while reducing the impact on nearby healthy tissue.



Dr. Fraass currently serves as Vice Chair for research as well as professor and director of medical physics in the department of radiation oncology at Cedars-Sinai Medical Center in Los Angeles. He also holds an appointment as a clinical professor in the Department of Radiation Oncology at the University of

California Los Angeles. Before moving to the West Coast, Dr. Fraass spent 27 years at the University of Michigan, where he led the radiation oncology department's physics group and helped elevate the program to national prominence. Dr. Fraass was named the inaugural Allen S. Lichter Professor of Radiation Oncology at Michigan and remains an emeritus professor with the program.

Dr. Fraass' work has enhanced the accuracy and effectiveness of radiation therapy (RT) for scores of patients facing a number of cancer types, including diseases in sites that may be difficult to treat, such as the liver and lungs. As one of Dr. Fraass' letters of support noted, clinical trials under his leadership have pioneered the "ability to combine technical and clinical research toward the goal of tailoring each treatment course in an optimal fashion to suit individual patients through their entire treatment."

Concurrent with his work in tumor visualization and radiation treatment planning, Dr. Fraass continues to be instrumental in several patient safety initiatives, including founding the Radiation Oncology Safety Stakeholders Initiative and co-chairing the joint task force between ASTRO, the American Association of Physicists in Medicine (AAPM) and the American College of Radiology (ACR), which led to development of the ASTRO Safety White Papers. Dr. Fraass is the current co-chair of ASTRO's Integrating Healthcare Enterprise - Radiation Oncology (IHE-RO) Committee, which guides efforts to improve interoperability among the multiple technologies involved in treating patients with RT.

He also serves on the Radiation Oncology Healthcare Advisory Council (RO-HAC), which is associated with the Radiation Oncology Incident Learning System®.

Dr. Fraass' record of service to the medical physics and radiation oncology communities crosses multiple organizations, initiatives and achievements. Since joining ASTRO in 1984, Dr. Fraass has participated extensively in teaching activities at the ASTRO Annual Meeting, delivering lectures on varied topics.

Continued on next page

His commitment to education and mentorship is evident in the legacy of medical physics faculty members and researchers who excelled under his guidance as students, residents and junior faculty. When asked to reflect on his career, Dr. Fraass cited the importance of his peers.

“Most of what we do involves collaboration,” he said. “Whether it’s the safety white papers or the Michigan research on 3-D treatment planning, computer-controlled radiotherapy and dose escalation, for example, these are very importantly group efforts. What strikes me is that it’s not me; it’s the way we were able to work together and accomplish a great deal.”

Dr. Fraass earned a Bachelor of Science degree in physics from Stanford University in Palo Alto, California, as well as a Master’s degree and Doctorate in physics from the University of Illinois, Urbana-Champaign. He also completed a fellowship in radiation oncology at the National Institutes of Health prior to joining the Michigan faculty.

Christopher G. Willett, MD, FASTRO, has improved the lives of gastrointestinal and other cancer patients through a career that has brought achievements in a number of areas. As one of Dr. Willett’s nominating letters explained, he is “a compassionate radiation oncologist fully committed to providing the very best possible care to patients, an innovative translational researcher who has made seminal contributions to the field, and a committed teacher, mentor and leader, whose tireless service has enriched the field of radiation oncology.”

Dr. Willett is the current Chair and a professor of radiation oncology for the Duke Medical Center in Durham, North Carolina.

He also serves as medical director of oncology for the Duke University Medical Center and has held multiple leadership roles with the Duke Cancer Institute.

During his tenure at Duke, Dr. Willett has grown the department’s faculty from 14 to 27 radiation oncologists, increased the number of linear accelerators in the program from five to eight and doubled the number of satellite treatment facilities, expanding the program’s reach into surrounding communities. He also established a department-supported clinical trial recruitment program

that matches 150 to 180 patients each year to investigator-initiated trials.

Before his move to North Carolina, Dr. Willett rose from assistant to full professor of radiation oncology at the Harvard Medical School in Boston in just over a decade. While at Harvard, Dr. Willett also served as director of the gastrointestinal cancer center and clinical director of radiation oncology at Massachusetts General Hospital and began his extensive involvement with the Radiation Therapy Oncology Group (RTOG).

Dr. Willett’s contributions to clinical and translational research are many, whether pioneering intraoperative radiation therapy (IORT) to treat rectal and pancreatic cancers or demonstrating the potential of RT combined with anti-angiogenic therapy to fight a range of different cancers types.

“The marriage of scholarly activities with clinical care should be seamless, where we provide our patients with state-of-the-art care by using information from translational studies to guide future therapies, for example, or promote opportunities for them to enroll in new clinical trials,” he said in a recent interview.

Dr. Willett’s relationship with ASTRO began during his medical training, when he won the Society’s annual Resident Essay Award. He has represented ASTRO as Chair of both the steering and scientific program committees for the multidisciplinary Gastrointestinal Cancers Symposium and was named an ASTRO Fellow in 2011. Dr. Willett also spent several years as a senior editor focused on GI cancer for ASTRO’s *International Journal of Radiation Oncology • Biology • Physics* (Red Journal). He is a member of the Founder’s Circle for the nonprofit Radiation Oncology Institute.

He received his medical degree and a Bachelor of Science degree from Tufts University in Boston. At Tufts, Dr. Willett happened to overlap with his father, who he names as the strongest influence on his decision to pursue this field. The senior Dr. Willett, while in his late 50s, left a successful practice in surgical oncology to pursue a career in radiation oncology, beginning with a residency in the same medical school where the junior Dr. Willett would soon matriculate. From his father, Dr. Willett said he learned “how valuable radiation therapy and brachytherapy could be in helping patients.”





Anthony L. Zietman, MD, FASTRO, has contributed to the science and practice of radiation oncology through decades of innovative and influential research on genitourinary (GU) cancers, active mentorship of future practitioners and faculty members and thoughtful leadership

at the helm of scientific journals and meetings in oncology. As one of his letters of support extolled, Dr. Zietman's contributions to the field of radiation oncology are "important, sustained and wide-ranging," and he is seen as "a consummate clinician, an outstanding teacher and mentor and an innovative clinical scientist."

In 1986, Dr. Zietman joined Harvard Medical School as a research fellow; thirty years later, he is Harvard's Jenot and William Shipley Professor of Radiation Oncology and director of the school's Radiation Oncology Residency Program. Dr. Zietman has treated patients as a radiation oncologist at Massachusetts General Hospital since 1991.

"Conscience-based care" is how Dr. Zietman describes the model of patient care he strives to practice and promote throughout the field. "We should practice with our conscience and from the evidence," he said, stressing the importance for clinicians to couple "a devotion to evidence"




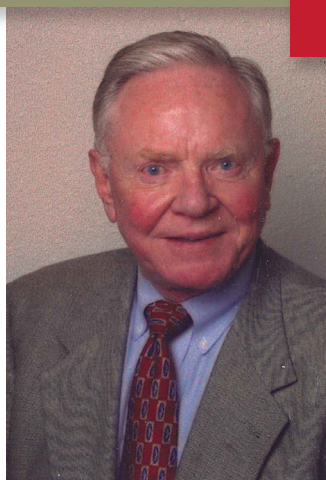
with conscientious consideration of "treating patients with what they need rather than just what we need." Similarly, his research often considers the value, as well as the effectiveness, of cancer treatment, such as attempting to clarify whether proton therapy fosters superior outcomes compared to intensity-modulated radiation therapy (IMRT) for localized prostate cancer.

Dr. Zietman has led multiple clinical trials examining the efficacy of combination therapies for GU cancers, such as androgen deprivation coupled with RT for localized prostate cancer. He also studies outcomes of dose escalation across different types of RT delivery, including three-dimensional conventional radiation therapy (3-D CRT) compared to IMRT.

His dedication to improving patient care for a range of GU malignancies can be seen in the ways he integrates research with service. When the NCI initiated its GU Protocol Steering Committee, Dr. Zietman was named its Co-chair for Radiation Oncology, a role he continues today as he and the committee help coordinate NCI's clinical trials effort for GU cancers. Dr. Zietman also helped establish the multidisciplinary GU Cancers Symposium, a joint effort of ASTRO, the American Urological Association and the American Society for Clinical Oncology, and he has been integral in helping write multiple national guidelines for prostate cancer treatment.

Since being named as editor-in-chief of ASTRO's flagship journal, the *International Journal of Radiation Oncology • Biology • Physics*, in 2011, Dr. Zietman has made strides in diversifying the journal's editorial board and editorial focus while simultaneously elevating the caliber and reputation of the journal. Dr. Zietman's leadership with the Red Journal extends his history of leadership within ASTRO. After leading the program committee for ASTRO's Annual Meeting and leading ASTRO's Education Council for four years, he was elected as president-elect by the membership and subsequently served as president and Chair of the Society. Dr. Zietman credits his time with ASTRO's Board of Directors as the place where he learned the powerful role of policy in shaping health outcomes and the ability of specialty societies to influence these policies.

"In the clinic, I make a difference one patient at a time. But if you change policy, if you write guidelines, you can change the outcomes of thousands of patients at a time," Dr. Zietman said. "ASTRO taught me that and then gave me the chance to shape and impact policy." 



BRACHYTHERAPY PIONEER HAAKON RAGDE, MD

CHOSEN AS ASTRO 2016 HONORARY MEMBER

BY ERIN L. BOYLE, COMMUNICATIONS MANAGER, ERIN.BOYLE@ASTRO.ORG

**ASTRO HAS SELECTED
HAAKON RAGDE, MD,**
as its 2016 Honorary

Member, the highest honor the Society bestows on distinguished cancer researchers, scientists and leaders in disciplines other than radiation oncology, radiobiology or radiation physics. Dr. Ragde will be inducted as the 2016 ASTRO Honorary Member during an awards ceremony at the Annual Meeting, September 25-28, 2016, in Boston.

“Dr. Ragde is a luminary in the field of medicine,” said ASTRO Chair Bruce D. Minsky, MD, FASTRO. “As a board certified urologist, he has an impressive array of achievements, including introducing seed implantation for prostate cancer into the U.S., introducing transrectal ultrasonography and introducing the transrectal ultrasound-guided prostate biopsy method now used. He also took part in bone marrow transplant research that earned researcher E. Donnall Thomas, MD, the Nobel Peace Prize for Physiology or Medicine in 1990. ASTRO thanks Dr. Ragde for his outstanding accomplishments.”

Dr. Ragde has received numerous honors and awards. He has authored more than 100 scientific papers, written textbook chapters and spoken across the globe.

He was born in Norway and immigrated to the U.S. in 1948. He served in the U.S. Army as an artillery forward observer with the 2nd U.S. Infantry Division in the Korean War, receiving a Silver Star, two Bronze Stars with V and Oak Leaf Clusters and a Purple Heart.

Following his service, he entered the University of Virginia, Charlottesville, Virginia, in 1952, where he graduated with a medical degree in 1957.

He accepted a staff position in 1965 in general surgery and urology at the University of Washington. There, Dr. Ragde and a colleague performed the first successful kidney transplants in the state of Washington. However, following these procedures, he was unable to raise money for continuing research. So when Dr. Thomas, the hematology professor who would ultimately win the Nobel Prize, approached Dr. Ragde with an offer to join Dr. Thomas’ bone marrow transplantation research team, Dr. Ragde agreed. The team—Dr. Thomas, Dr. Ragde and

two internists, Ranier Storb, MD, and Robert Epstein, MD—studied how bone marrow transplantation might cure leukemia and other cancers of the blood by replacing the diseased marrow with healthy marrow.


Dr. Ragde said the Nobel Peace Prize for the research did not surprise him. Not only did the five years of work change his life, but he also became good friends with Dr. Thomas.

According to Dr. Ragde, his greatest career accomplishment was template-directed brachytherapy for prostate cancer. He opened a private practice in urology in Seattle following his work with Dr. Thomas and became an expert in transrectal ultrasonography of the prostate. Dr. Ragde was trained in the technique by physicians at the University of Copenhagen, Copenhagen, Denmark and Kyoto University, Kyoto, Japan. His mentor in Denmark called him to Copenhagen to see the accurate placement of ultrasound-directed radioactive seeds into a cancerous prostate. Dr. Ragde then took the technique back to his practice in Seattle.

“Though the safety of the brachytherapy procedure had been verified by both the Memorial-Sloan Kettering Cancer Center and the University of Copenhagen, the endpoints were readily discernible, thus pre-empting the need for a larger population study,” he said.

“The Food and Drug Administration, however, disagreed, claiming we had no reliable data to justify that contention,” he said. “But, as more and more patients sought brachytherapy as a treatment for their prostate cancers, and physicians, in increasing numbers, followed suit by learning the implant technique, the FDA approved the template-directed prostate brachytherapy procedure.”

Dr. Ragde established the Pacific Northwest Cancer Foundation (which created Northwest Biotherapeutics, Inc.) and the Haakon Ragde Foundation for Advanced Cancer Studies. He retired from active practice in 2003 and now researches immunotherapy. He is conducting a study on immunotherapy on advanced prostate cancer patients at the University of Bergen, Bergen, Norway.

He said he was “greatly honored” to be chosen as ASTRO’s 2016 Honorary Member. 

Ten ASTRO members awarded Fellow designation

ASTRO HAS SELECTED 10 DISTINGUISHED MEMBERS

to receive the ASTRO Fellow designation on the 10th anniversary of the Fellow Program. The 2016 class of Fellows will receive the recognition during the Awards Ceremony at ASTRO's 58th Annual Meeting at the Boston Convention and Exhibition Center.

The Fellows Program, started in 2006, honors those that 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. A total of 259 ASTRO members have received the FASTRO designation, not counting this year's 10.

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 Fellows Selection Committee reviews all of the nominations and presents a slate of recommended Fellows to ASTRO's Board of Directors for final approval.

The members of the 2016 Fellows class are:

- **H. Joseph Barthold, MD**, Beth Israel Deaconess Hospital-Plymouth, Plymouth, Massachusetts
- **Jennifer R. Bellon, MD**, Dana-Farber Cancer Institute, Harvard Medical School, Boston
- **Laura A. Dawson, MD**, Princess Margaret Cancer Centre, University of Toronto, Toronto
- **Theodore L. DeWeese, MD**, Johns Hopkins University, Baltimore
- **Shalom Kalnicki, MD**, Montefiore Medical Center, Albert Einstein College of Medicine, New York
- **Nancy P. Mendenhall, MD**, University of Florida, Gainesville, Florida
- **William M. Mendenhall, MD**, University of Florida, Gainesville, Florida
- **Todd Pawlicki, PhD**, University of California San Diego, La Jolla, California
- **Timothy D. Solberg, PhD**, University of California San Francisco, San Francisco
- **John H. Suh, MD**, Cleveland Clinic, Cleveland



2015 CLASS OF ASTRO FELLOWS

FIRST ROW, LEFT TO RIGHT: A. BAPSI CHAKRAVARTHY; RACHEL RABINOVITCH; MANJEET CHADHA; C. LELAND ROGERS; MARTIN COLMAN; ERIC CHANG; CAROL HAHN.
SECOND ROW, LEFT TO RIGHT: MAY ABDEL-WAHAB; JULIA WHITE; KALED ALEKTIAR; JAMES WARNER; RICHARD VALICENTI; DAVID ROSENTHAL; ROBERT MILLER; JOEL CHERLOW; ARNOLD DE LA CRUZ PAULINO; YAN YU.

Two local Boston cancer support groups receive ASTRO Survivor Circle Grant

Nonprofit cancer support organizations each receive \$8,500 grant

BOSTON CANCER SUPPORT AND THE SAMFUND HAVE BEEN CHOSEN as the ASTRO Survivor Circle Grant winners for ASTRO's 58th Annual Meeting, September 25-28, 2016 at the Boston Convention and Exhibition Center. The groups will be in attendance at the meeting to receive the grants.

The Survivor Circle Grant Program is a funding initiative that provides gifts of financial assistance to two cancer support organizations located in or near the host state and nearby states of ASTRO's Annual Meeting. Boston Cancer Support, based in Boston, benefits those who have been touched by cancer, including patients, caregivers or health care professionals through its website, www.bostoncancersupport.org. The Samfund, also based in Boston, supports young adult cancer survivors financially after cancer treatment.

The grant is the second for The Samfund, who first won a Survivor Circle Grant when ASTRO last hosted its Annual Meeting in Boston in 2012.

"We were grateful to receive a grant from ASTRO [that year]," said Samantha Watson, founder of The Samfund. "We have seen tremendous growth since then, both internally—our staff has expanded from two to five, and we have been developing new programs in addition to expanding our grants program—and externally. We've continued to expand our webinar series, are developing our toolkit program and are working with our new Sambassador group, our key volunteers who have taken on a leadership position. With more of a focus on the costs of cancer, The Samfund has been uniquely positioned to participate in larger scale conversations, including our first published article."

Ms. Watson, a two-time cancer survivor, founded The Samfund in 2003 because of her own experiences during and after cancer treatment.

"'Cancer-free' isn't free—especially for young adults who are just starting out their lives," she said. "The high cost of health care, coupled with a dwindling savings account, lost wages and limited parental support, make moving forward after cancer feel impossible."


Boston Cancer Support runs two Collective Impact Programs. CancerCollaborative™ offers professional development and networking for medical professionals including oncology nurses, social workers, patient navigators and patient-support organizations.

Treatment Transport Program helps cancer patients get to and from their treatments affordably.

"The Survivor Circle grant money will be used for patient transportation to radiation and chemotherapy," said Susan Chaityn Lebovits, founder and executive director. "This is one of the largest issues

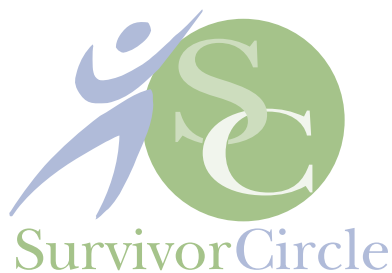
that we have found in all of the communities in which we work. We have relationships with social workers and patient navigators in both large and small hospitals and treatment centers throughout greater Boston and beyond."

The organization has partnered with Lyft, a transportation service app, to

provide discounted rates for cancer patients to get to and from their treatments. "But we must supplement funding for these trips as the cost of transportation to treatments for some patients could mean having to choose between getting to their center or a healthy meal," Ms. Chaityn Lebovits said. "No one should have to make that choice. We are working very hard to serve patients and families who are already under a lot of stress." 



THE SAMFUND RECEIVED ITS SECOND SURVIVOR CIRCLE GRANT THIS YEAR FOLLOWING ITS FIRST GRANT IN 2012.



Greater Boston area breast cancer survivor volunteer selected as ASTRO's 2016 Survivor Circle Award winner



ASTRO HAS CHOSEN THERESA A. KERESZTES, a resident of Wellesley, Massachusetts, to receive the 2016 Survivor Circle Award. Keresztes will be presented with the award, including \$1,000, during an awards ceremony at ASTRO's 58th Annual Meeting in Boston.

The Survivor Circle Award recognizes a cancer survivor who lives in the region where ASTRO holds its Annual Meeting and has dedicated his or her time and energy in service and support of the local community. Keresztes is a volunteer with the Wellesley Cancer Prevention Project, based in Wellesley, Massachusetts, and other groups.

"As a breast cancer survivor and volunteer, Ms. Keresztes has inspired others through her volunteer work on educational prevention programs and other services for people with cancer.

She is a wonderful role model and led by example as she started and maintained a healthy exercise and diet program throughout her own radiation treatment course. She didn't stop there, though, and generously raised money for underinsured breast cancer patients as she completed her first Boston Marathon earlier this year," said ASTRO President-elect Brian D. Kavanagh, MD, MPH, FASTRO. "ASTRO is honored to present Ms. Keresztes with the 2016 Survivor Circle Award."

Keresztes was diagnosed with ductal carcinoma in situ (DCIS) in 2007, undergoing a lumpectomy and radiation therapy at Massachusetts General Hospital in Boston. Following treatment, she received tamoxifen for five years.


Keresztes said she always liked to volunteer, and following the end of her treatment in 2010, she became involved with the Wellesley Cancer Prevention Project. She now sits on the nonprofit's board.

"At the time I joined, the nonprofit was in need of programming and marketing support," she said. "Today we communicate with our community via a new website, social media channels, monthly blogs, newsletters and free public forums. We also partner with strategic

groups to build awareness about health and prevention and launched SmartScan, the only app that tells you what ingredients are potentially unsafe or harmful from the supermarket to the hardware store."

She took part in her first breast cancer survivor fashion show in Boston the same year she joined the organization at an event that she launched, The My Girls Gala Fashion Fundraiser for Breast Cancer Research, sponsored by a jeweller in Boston and Keresztes' newly launched company, My Girls Skin Care, to raise funds for MGH's breast cancer research.

"The event was unique in that the models were also breast cancer patients, and they felt terrific taking part," she said. "Their faces beamed as they took the catwalk for the first time since treatment, but this time in beautiful clothing hand-selected for them and specifically designed for breast asymmetry, which can result from surgery."

Keresztes was honored to receive the award. "I like to volunteer where I may learn from others and get an opportunity to work on new and creative projects that help me grow personally and professionally," she said. "However, one of the greatest gifts I have discovered over the years is that giving to others who do not expect help from others, most often strangers, is the best reward of all." 

RESEARCH

COMPILED BY JUDY KEEN, PHD, DIRECTOR, SCIENTIFIC AFFAIRS,
JUDY.KEEN@ASTRO.ORG

ASTRO AWARDS \$275,000 IN GRANTS TO ADVANCE RADIATION ONCOLOGY

For the past 10 years, ASTRO has provided grants and awards to early career researchers to support research as part of the organization's overall effort to prevent, treat and cure malignancies. These research awards and grants support work in radiation and cancer biology, radiation physics and translational research to advance the field of radiation oncology.

This year, ASTRO has selected four prominent researchers to receive a total of \$275,000 in awards and grants. This includes one Junior Faculty Award winner and three ASTRO Resident/Fellows in Radiation Oncology Research Seed Grant winners. All winners will be recognized at ASTRO's 58th Annual Meeting, September 25 – 28, at the Boston Convention and Exhibition Center.

JUNIOR FACULTY CAREER RESEARCH TRAINING AWARD (JFA)

The Junior Faculty Career Research Training Award gives early career physicians and researchers the opportunity to develop careers and focus research relevant to radiation oncology, biology or physics. One junior faculty was selected for this award, which provides \$100,000 annually for two years. The 2016 JFA grant recipient is:



Stephanie Markovina, MD, PhD

Dr. Markovina received a Bachelor of Arts Degree with Honors in Biology from Washington University in St. Louis, and spent time as a research fellow at the National Institutes of Health, National Cancer Institute with David Gius, MD, PhD, in the radiation biology division prior to matriculating into the MD/PhD program at the University of Wisconsin. She earned her PhD in cell and molecular biology, studying NF-kappaB biology in multiple myeloma under the direction of Shigeki Miyamoto, PhD. She earned her medical degree in 2010.

She served as chief resident and participated in the Holman Research Pathway during clinical residency in Radiation Oncology at Washington University in St. Louis. She joined the faculty at Washington University as a physician scientist in 2015 and is building her lab to study molecular mechanisms of radiation resistance in solid tumors, with a clinical focus on treating patients with anal cancer.

Dr. Markovina welcomed a daughter in September, 2015 and is excited to teach her how to use a pipette and contour loops of small bowel.

She is interested in understanding molecular mechanisms of radiation resistance in cervical cancer and other solid and HPV-related tumors. She will be investigating the role of the lysosome in tumor cell response to radiation and how these signaling pathways might be modulated in cervical cancer to increase the effectiveness of radiation and other anticancer therapies.

RESIDENT/FELLOWS IN RADIATION ONCOLOGY RESEARCH SEED AWARD

The ASTRO Resident/Fellows in Radiation Oncology Research Seed Award supports residents or fellows who are planning a career in basic science or clinical research in radiation oncology. Three researchers were selected for this award, which provides \$25,000 for one year. The three 2016 Resident/Fellows in Radiation Oncology Research Seed Award recipients are:



John Floberg, MD, PhD

Dr. Floberg received his medical degree and PhD at the University of Wisconsin-Madison through the medical scientist training program. Dr. Floberg completed his PhD in the department of medical physics, where he investigated novel methods for reducing noise in positron emission tomography (PET) imaging. He is now participating in the Holman Research Pathway to gain further experience, skills and knowledge in preparation for a career as a physician scientist, and he is a PGY-3 resident in the Washington University/Barnes-Jewish Hospital radiation oncology residency program.

With the ASTRO Residents/Fellows in Radiation Oncology Research Seed Grant, Dr. Floberg will investigate PET and MRI imaging methods to characterize redox state in *in vitro* and *in vivo* models of cervical cancer. His aim is to determine if these imaging modalities can be used as predictive imaging biomarkers to help identify tumors that will respond to therapies designed to enhance radiation sensitivity by altering the redox state of cancer cells.



Chirayu G. Patel, MD, MPH


Dr. Patel, completed his undergraduate degree in molecular biology at the University of Pennsylvania, attended medical school at Brown University and obtained his Master of Public Health in Quantitative Methods from Harvard University. Additionally, he studied multidrug resistance in acute myeloid leukemia as a Howard Hughes Medical Institute - National Institutes of Health (HHMI-NIH) Research Scholar. After completing his intern year at the University of Pittsburgh Medical Center, he began his radiation oncology residency at Vanderbilt University Medical Center, in Nashville, Tennessee.

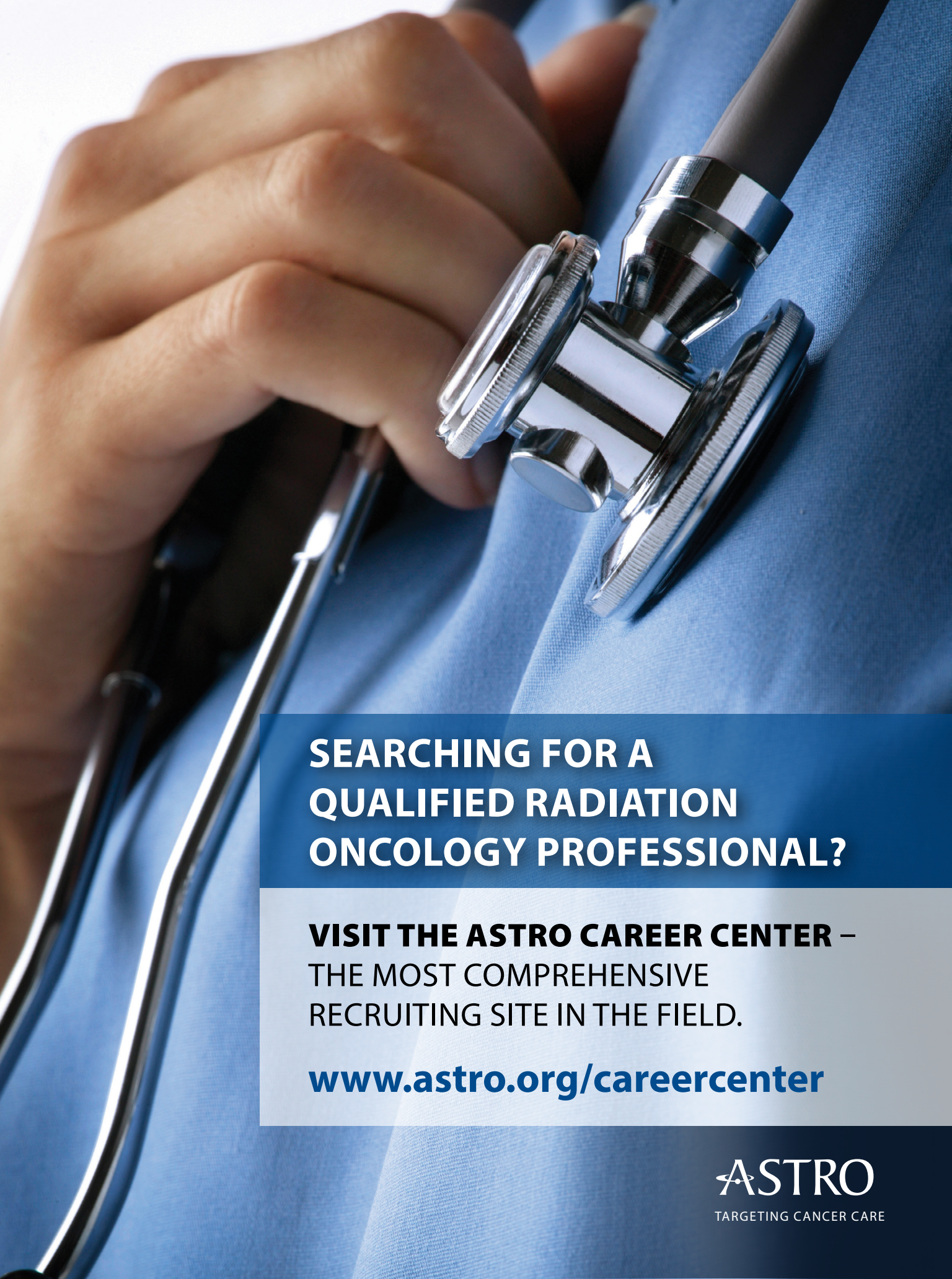
Dr. Patel will investigate altered tumor metabolism, particularly tumor reliance on glutamine, as a mechanism of radioresistance in non-small cell lung cancer. He will explore if this occurs by increased scavenging of reactive oxygen species and will employ small molecule inhibitors to disrupt glutamine metabolism.



Cheng-Chia "Fred" Wu, MD, PhD

Dr. Wu completed his medical degree and PhD training at New York Medical College in the department of pharmacology studying the role of microvasculature in hypertension, which led to his research of tumor vascular biology and radiation therapy. He began his radiation oncology residency training at NYP-Columbia University Medical Center in 2014.

At Columbia University, through the encouragement of Simon Cheng, MD, and Tony Wang, MD, Dr. Wu became involved in multiple clinical projects on CNS malignancies, including a phase I study examining the palliative use of cannabis in patients with glioblastoma. With this ASTRO grant, Dr. Wu will be returning to the bench to investigate if the integrity of the blood brain barrier limits cross-talk between the CNS and the systemic immune systems to checkpoint inhibitor-targeted therapy and abscopal effect, and whether the disruption of the blood brain barrier with focused ultrasound can enhance these effects in the brain. Dr. Wu will be working under the supervision of Drs. Cheng and Tom Hei, PhD, on this project. 



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ANNUAL MEETING

2016

ABSTRACT AWARD

RECIPIENTS

RESIDENT CLINICAL/BASIC SCIENCE RESEARCH AWARD

Clayton Smith, MD, PhD (Biology)
 Thomas Churilla, MD (Clinical)
 Houda Bahig, MD (Physics)

BASIC/TRANSLATIONAL SCIENCE ABSTRACT AWARD***Radiation and Cancer Biology***

Philip Connell, MD
 Alireza Fotouhi Ghiam, MD, MS
 Sana Karam, MD, PhD
 James Welsh, MD

Clinical

Brian Deegan, MD, PhD
 Felix Feng, MD
 Clemens Grassberger, PhD

Radiation Physics

Lanchun Lu, PhD
 Sarah Mattonen, BS
 Tokihiro Yamamoto, PhD
 You Zhang, PhD

ANNUAL MEETING TRAVEL AWARD***Radiation and Cancer Biology***

Aadel Chaudhuri, MD, PhD
 Diane Ling, BA
 Karsten Pilonis, MD
 David Raleigh, MD, PhD
 Kailin Yang, PhD

Clinical

Soheila Azghadi, BS
 Pehr Hartvigson, MD
 Robert Reznik, MD
 Cameron Swanick, MD
 Matthew Ward, MD

Radiation Physics

Michael Connor, BS
 Abbie Diak, PhD
 Matthew Jackson, MD
 George Noid, PhD
 Talha Shaikh, MD

INTERNATIONAL ANNUAL MEETING SCIENTIFIC ABSTRACT AWARD

XiaoShen Wang, MD, PhD

ANNUAL MEETING NURSE ABSTRACT AWARD

Molly Olm-Shipman, BSN, RN, CBCN
 Deborah Watkins-Bruner, PhD, RN, FAAN

RESIDENT ePOSTER RECOGNITION AWARD

Kamran Ahmen, MD (Biology)
 John Vargo, MD (Clinical)
 Lauren Henke, wMD (Physics)

RESIDENT POSTER VIEWING RECOGNITION AWARD***Radiation and Cancer Biology***

Philmo Oh, MD, PhD
 Nils Nicolay, MD, PhD
 Kamila Nowak, MD

Clinical

Andrew Schumacher, MD
 Henry Park, MD, MPH
 Sonja Stieb, MD

Radiation Physics

Xiaofeng Yang, PhD
 Tawfik Giaddui, PhD
 Jonathan Klein, MD

THE HISTORY OF CHEMICAL MODIFIERS OF RADIOTHERAPY

SINCE WORLD WAR II, many efforts to improve the results of radiotherapy in terms of local control and survival by adding drugs before, during or after the radiation treatment have occurred. The modifiers fall into three major classes: cytotoxic agents, oxygen and oxygen mimics and sulfhydryl protectors.

In the U.K., J.S. Mitchell began research to improve radiotherapy with a vitamin K analogue, Synkovite, which he published in 1947. Laboratory research revealed that the drug increased mitotic delay and markedly enhanced the mitotic delay caused by radiation. Mitchell tried large doses of the agent with radiotherapy in 73 patients and felt the results improved over expected in 23 of the patients. Simon Kramer then formed a group to evaluate methotrexate given before radiotherapy in head and neck cancer. This group later became the Radiation Therapy Oncology Group (RTOG) and now the NRG Oncology. The study showed no benefit but engendered many others. Karen Fu showed that bleomycin concurrent with radiotherapy would significantly improve local control in advanced head and neck cancers. Subsequent work demonstrated that cis-platinum was the most effective chemotherapy agent in combination with radiotherapy for head and neck cancer and later for carcinoma of the cervix. As we realized that chemotherapy could enhance local control and survival in tumors responsive to the drug studied, trials showed improved results in many sites including CNS, esophagus, breast, stomach, pancreas and colon cancers as well as anal cancer. Chemotherapy remains the most effective chemical modifier of radiotherapy.

It has been known since the 1920's that oxygen increases the response of living cells to radiation effects in laboratory systems. This knowledge became important to radiotherapists when R.H. Thomlinson and L.H. Gray postulated in 1955 that the growth patterns of cancers indicated hypoxic foci in many tumors. Churchill Davidson then began a series of studies using hyperbaric pressure chambers to increase the oxygen supply to tumors.

His studies in head and neck and cervix cancers, along with MRC multi-institutional studies, gave phase III evidence of effectiveness. A recent meta-analysis showed that the improvement was primarily seen in patients given hypofractionated courses of radiotherapy with hyperbaric oxygen. The treatment was cumbersome, and in some cases dangerous, and the method was discontinued.

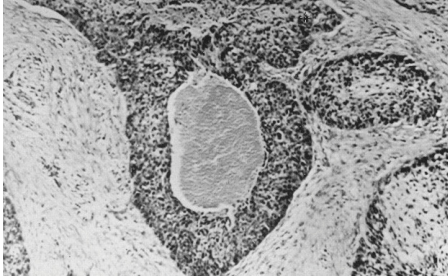
But interest in solving the problem of resistant hypoxic cells in tumors persisted, and G.E. Adams and D.L. Dewey proposed that certain electron affinic drugs could confer the same sensitization on hypoxic cells as oxygen itself and, because they were not metabolized, might reach the centers of tumors more easily. The first published clinical trial was with metronidazole in glioblastoma by Raul Urtasun at the Cross Cancer Center in Alberta. In 1977, he published a letter in the *New England Journal* showing a benefit in survival in a small randomized trial. Neuro and other toxicities limited the cumulative dose of metronidazole and other drugs were sought. Misonidazole was developed at Roche and studied extensively at the Gray lab in England, and then in a large number of phase II and III trials by the RTOG. None proved the efficacy of Misonidazole. It was limited in total dose by neurotoxicity and the National Cancer Institute (NCI)-funded, through contracts, a search for better drugs. Etanidazole

“In the U.K., J.S. Mitchell began research to improve radiotherapy with a vitamin K analogue, Synkovite, which he published in 1947.”

was developed at Stanford Research Institute. It could be given in doses three times that used for Misonidazole. Phase III trials in head and neck and cervix cancer showed no benefit of the drug. A meta-analysis by Overgaard of the whole range of clinical trials of hypoxia solutions including normobaric, hyperbaric and chemical sensitizers in head and neck cancer revealed that there was a benefit in a majority of studies too small to see in individual trials.

During the development of electron affinic sensitizers, it was noted that some agents were transformed in hypoxic tissues to toxic substances. These agents were called hypoxic cell cytotoxins. Under the direction of Martin Brown, the drug tirapazamine was tested in vitro and in vivo and found to be very active. Subsequently it was used in large phase III trials in Australia and New Zealand for head and neck cancer and in the U.S. for cervix cancer, in both cases combined with somewhat reduced doses of cis-platinum in the experimental arm. No benefit was shown.

Continued on next page




PHOTOMICROGRAPH FROM THE THOMLINSON AND GRAY PAPER DEMONSTRATING THE HYPOXIA PROBLEM IN LUNG CANCER, PUBLISHED IN *THE BRITISH JOURNAL OF CANCER* IN 1955.

Why has it been so hard to prove the efficacy of solutions to the hypoxia problem in human tumors? A number of reasons emerge: hypoxic tumors were not selected by hypoxia scans or electrode measurements; all comers were entered. Standard fractionation allows reoxygenation. Human tumors have high glutathione levels that neutralize hypoxic cell sensitizers (HCS), repair of sub-lethal damage is reduced in hypoxic cells and the oxygen enhancement ratio is lower at small fractions. Interest has arisen recently in testing the best HCS in tumors shown to be hypoxic and receiving hypofractionated stereotactic body radiation therapy or radiosurgery, the logic being that with fraction sizes of 10 Gy or larger hypoxic cells will dominate the response.

In 1961, Szybalski discovered that halogenated pyrimidines incorporated into DNA in place of thymidine caused radiosensitization. It was postulated that tumors in non-dividing tissues would be preferentially sensitized. Within five years, H.S. Kaplan and MA. Bagshaw conducted a clinical trial of BUdR given intra-arterially for head and neck cancer. They showed sensitization of normal mucosa, but not a therapeutic gain. Stanford researchers found that intravenous BUdR would be as effective, and others demonstrated the effectiveness of IV IUdR. Phase II clinical trials were done in the NCOG, at NCI and university of Michigan in GBM, AA and sarcomas. A randomized trial in RTOG for AA was stopped early because of poor survival in the BUdR arm, and no other phase III trials were completed. Interest in halogenated pyrimidines has revived with IPdR, an oral prodrug for IUdR, and phase I testing has started.

Harvey Patt reported his discovery that cysteine protected against radiation injury in 1949. Subsequent work showed that many molecules containing a sulfhydryl group had this effect if given before radiation exposure. The U.S. Army contracted for a research program to develop compounds for potential use in a nuclear war. John Yuhas was involved in this program and found an ideal lead compound, WR2721, later known as Amifostine. He postulated, and laboratory studies revealed, that the drug protected most normal tissues more than tumors, probably because of poor penetration by the hydrophilic compound. Phase I studies were done by RTOG, and randomized trials were done with pharma support that showed significant protection of salivary glands and of esophagus.

The agent caused malaise and was given intravenously, so acceptance was poor and the drug was expensive. Intensity-modulated radiation therapy allowed protection of salivary glands and the esophagus, and Amifostine was dropped from clinical use. There is still a need for protection of the brain and the lung that cannot be spared by IMRT, but amifostine is excluded from the brain and protects poorly in lung. Recently M.W. Dewhirst and his group have begun phase I testing of a superoxide dismutase mimic that protects white matter in the brain.

Over the past 70 years, chemical modifiers have proven effective in the case of cytotoxic chemotherapy. New studies have the promise of finding a role for HCS and for an oral halogenated pyrimidine. New looks at protector strategies are also beginning. 

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- RO-ILS Year in Review
- RO-ILS Website
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- Future RO-ILS non-peer reviewed publications

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www.astro.org/ROILS

Annual Report | 2015

BY JEFF M. MICHALSKI, MD, MBA, FASTRO | *ASTRO SECRETARY/TREASURER*

TREASURER'S REPORT

In 2015, ASTRO continued to yield numerous successful achievements including the 57th Annual Meeting, on-line learning, the Coding Resource and other initiatives, meeting the Society's mission of providing educational and professional development opportunities to members and promoting excellence in patient care.

In March 2016, Raffa, an independent auditor, conducted an audit of ASTRO's 2015 financial statements. The auditors expressed an unmodified, "clean opinion," and the highest opinion available. ASTRO's Finance/Audit Committee, which meets regularly to discuss investment and other financial matters, reviewed the report in detail with the auditors. The report was submitted to ASTRO's Board of Directors at the June 2016 meeting. See the online version of *ASTROnews* Annual Meeting Guide for the full financial report.



PROFIT AND LOSS STATEMENT

ASTRO's total operating revenue for 2015 was \$17.6 million. The major revenue sources included the Annual Meeting with \$8.8 million and Specialty Meetings with \$1.3 million, totaling \$10.1 million, representing 56 percent; individual, corporate membership dues and subscriptions representing 20 percent, or \$3.6 million; journal royalties representing 13 percent, or \$2.3 million; and on-line learning representing four percent, or \$714,000.

ASTRO had a \$1.9 million loss from activities for the year, as ASTRO is investing in its future with programs and support of radiation oncology's research on new and existing radiation therapy treatments.

BALANCE SHEET

As of December 2015, ASTRO had a net worth of \$26.7 million with a debt to equity ratio of .33, meaning the total debt is 33 percent of equity. The 2015 market unleashed waves of volatility, and ASTRO's investment performance net fees resulted in a year-end balance of \$30.7 million and make up the majority of ASTRO's assets. Deferred revenue (\$3.7 million) make up the majority of ASTRO's liabilities and increases as members take advantage of ASTRO's multiple year membership dues payment options and Annual Meeting exhibitor's pre-purchase for the following year's booth registrations.

In 2015, ASTRO's Board of Directors designated a portion of reserves to be reinvested into critical programs, such as ROI Campaign Matching Program, Accreditation Program for Excellence (APEX®) and the Radiation Oncology Incident Learning System® as well as the Society's new office space in Arlington, Virginia. As of December 31, 2015, the balance of those designated reserves was \$4.3 million.

ASTRO maintains its strong commitment and makes the necessary adjustment to achieve the goals of the strategic plan to better serve members of the organization, the specialty and cancer patients worldwide, positioning ASTRO to be a leader in the industry.

JEFF M. MICHALSKI, MD, MBA, FASTRO

ASTRO Secretary/Treasurer

DECEMBER 31,

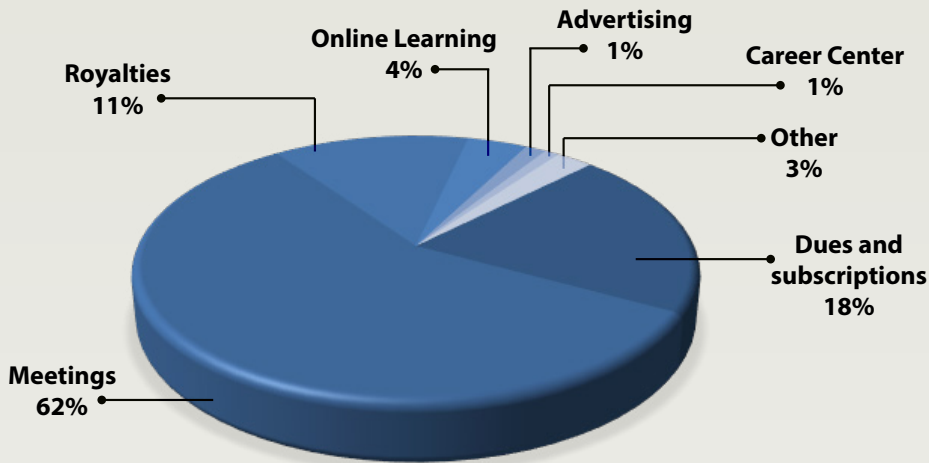
ASSETS	2015		2014	
ASSETS:				
Cash and cash equivalents	1,913,630		3,735,134	
Certificates of deposit	-		1,170,659	
Long-term investments (and percentage allocation)				
Large Cap Equity	10,269,330	35%	11,096,836	38%
Small Cap Equity	1,868,815	6%	2,038,032	7%
International Equity	6,181,803	21%	5,833,602	20%
Intermediate Fixed Income	5,403,506	18%	4,595,116	16%
Alternatives	5,705,609	19%	5,426,949	19%
Accounts receivable	2,259,688		791,059	
Due from Affiliate	6,165		19,021	
Prepaid expenses	1,002,693		403,266	
TOTAL CURRENT ASSETS	<u>\$34,611,239</u>		<u>\$35,109,674</u>	
PROPERTY AND EQUIPMENT, NET:	<u>\$785,962</u>		<u>\$866,114</u>	
OTHER ASSETS:				
Investments - deferred compensation	\$291,657		\$272,288	
Deposits	-		165,203	
TOTAL OTHER ASSETS	<u>\$291,657</u>		<u>\$437,491</u>	
TOTAL ASSETS	<u>\$35,688,858</u>		<u>\$36,413,279</u>	
LIABILITIES AND NET ASSETS				
CURRENT LIABILITIES:				
Accounts payable	1,828,719		2,590,251	
Accrued salaries and benefits	807,738		793,478	
Deferred revenue	3,710,288		3,841,335	
Due to Affiliate(s)	110		-	
TOTAL CURRENT LIABILITIES	<u>\$6,346,855</u>		<u>\$7,225,064</u>	
OTHER LIABILITIES:				
Deferred compensation	291,657		272,288	
Deferred rent	288,951		209,862	
Deferred tenant allowance	1,986,251			
TOTAL LONG-TERM LIABILITIES	<u>\$2,566,859</u>		<u>\$482,150</u>	
TOTAL LIABILITIES	<u>\$8,913,714</u>		<u>\$7,707,214</u>	
NET ASSETS:				
Unrestricted				
Undesignated	22,549,114		22,699,497	
Board designated - program	4,226,030		6,006,568	
TOTAL NET ASSETS	<u>\$26,775,144</u>		<u>\$28,706,065</u>	
TOTAL LIABILITIES AND NET ASSETS	<u>\$35,688,858</u>		<u>\$36,413,279</u>	

	2015	2014
OPERATING INCOME		
Dues and subscriptions	\$3,607,089	\$3,400,156
Meetings	10,083,253	11,843,983
Journal Royalties	2,340,266	2,171,074
Online Learning	713,920	742,411
Leadership Training Program		61,010
Advertising	246,953	225,376
Patient Safety Organization	100,324	102,760
PQRS Registry	67,809	53,011
Career Center	173,129	135,739
Coding Guide	143,587	81,673
Patient Materials	74,704	57,521
Other	56,821	107,646
TOTAL OPERATING INCOME	\$17,607,855	\$18,982,359
OPERATING EXPENSE		
PROGRAMS		
Meetings	\$6,027,930	\$8,117,312
Online Learning	278,594	286,794
Advocacy and Clinical Affairs	720,599	408,981
Registries	285,457	541,630
Clinical Practice/Measures		622,457
Quality Improvement	192,201	
Guidelines	416,452	
Patient Safety Organization	344,525	370,933
Promotion of Science	177,179	
Lobbying	636,892	823,089
State Activity		47,292
Medicare	505,575	536,316
Coding	405,499	523,072
Coverage		86,487
Awards	670,109	703,249
Public Relations	787,108	594,700
Total Programs and Departments	\$11,448,120	\$13,662,314
GENERAL AND ADMINISTRATION		
Operations	\$555,410	\$111,148
Membership	1,806,270	1,938,412
Corporate Relations	271,555	195,557
Finance	1,150,358	1,223,585
Information Technology	914,214	867,074
Human Resources	441,797	387,358
Executive	758,632	639,147
Board of Directors	560,336	679,561
ARRO	21,008	27,678
SCAROP	41,298	16,341
ADROP	9,382	7,598
Total General and Administration	\$6,530,260	\$6,093,457

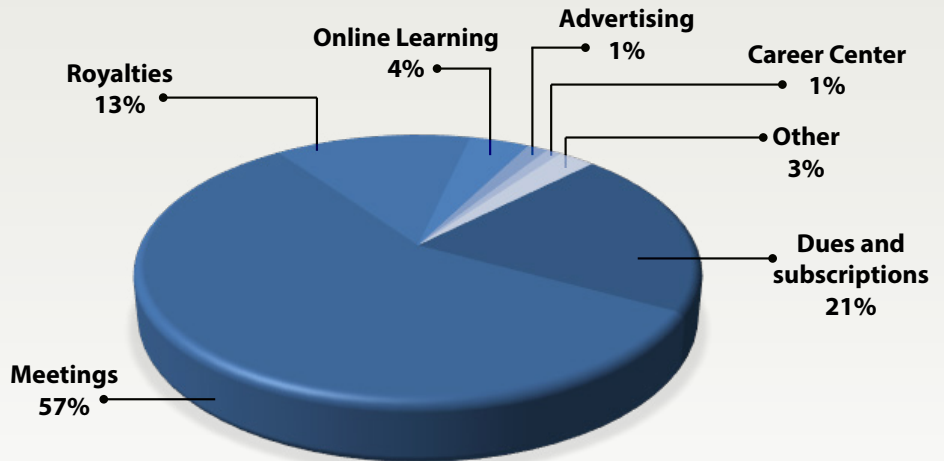
COMMITTEES	\$420,920	\$607,090
TOTAL OPERATING EXPENSES	\$18,399,300	\$20,362,862
OPERATING PROFIT/(LOSS)	\$(791,445)	\$(1,380,502)
OTHER INCOME		
Practice Accreditation	227,200	3,510
Investment Income	(382,181)	1,355,225
OTHER EXPENSE		
Practice Accreditation	806,582	1,237,820
ROI Campaign Matching Program	177,912	277,541
ROI Debt Forgiveness	-	841,672
PROFIT/(LOSS)	\$(1,930,920)	\$(2,378,801)

AMERICAN SOCIETY FOR RADIATION ONCOLOGY | CHARTS

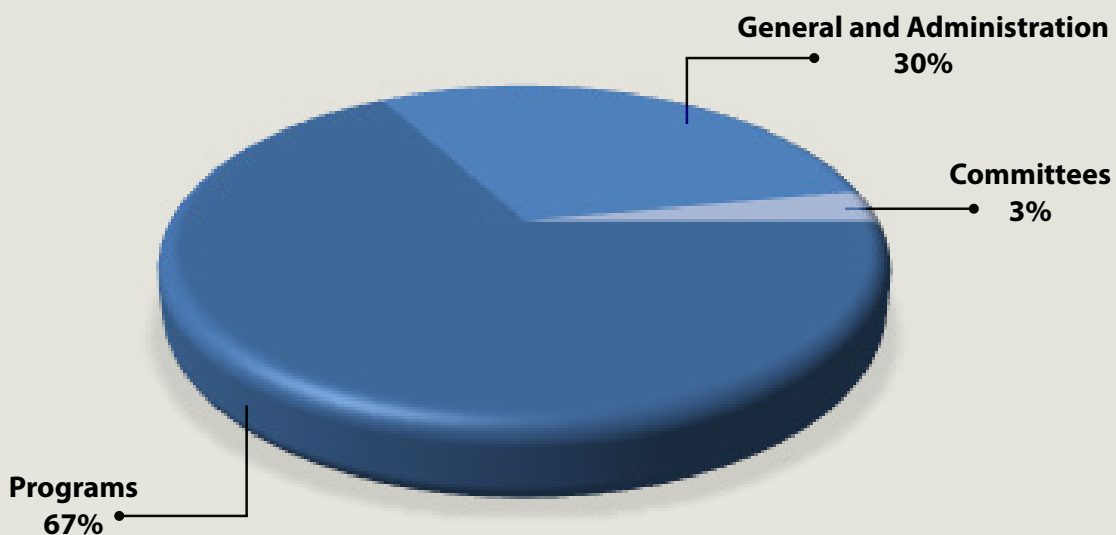
2014 REVENUE



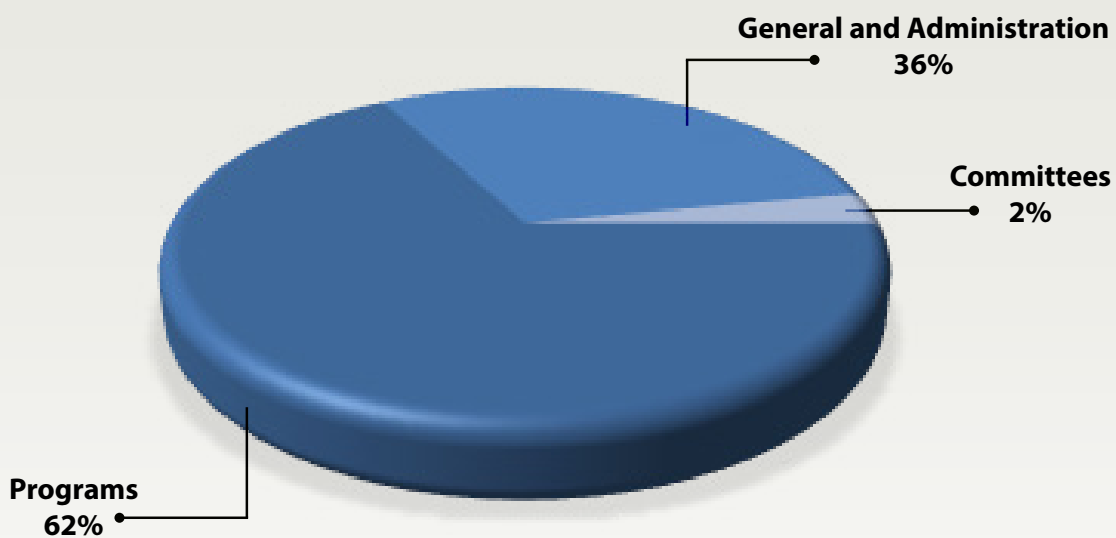
2015 REVENUE



2014 EXPENSES



2015 EXPENSES



2017 ASTRO Meeting Dates and Locations



Multidisciplinary Thoracic Cancers Symposium

March 16-18, 2017

San Francisco Marriott Marquis
San Francisco



ASTRO Annual Refresher Course

April 7-9, 2017

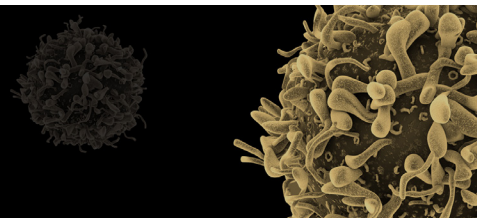
Fairmont Chicago Millennium Park
Chicago



14th Annual Advocacy Day

April 29-May 2, 2017

Hotel is to be confirmed
Washington



Incorporating Immunotherapy into Radiation Oncology

June 15-16, 2017

NIH Campus
Bethesda, Maryland

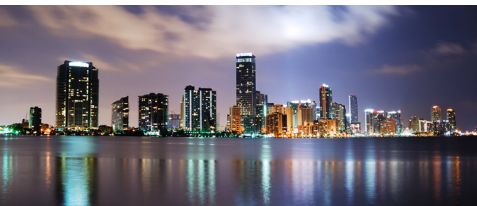


ASTRO 59th Annual Meeting:

The Healing Art and Science of Radiation Oncology

September 24-27, 2017

San Diego Convention Center
San Diego



Best of ASTRO

November 10-11, 2017

Loews Miami Beach Hotel
Miami Beach



ASTRO Coding & Coverage Seminar

December 2017 (Dates to come)

ASTRO Headquarters
Arlington, Virginia



Coming in 2018!

Multidisciplinary Head and Neck Cancers Symposium

February 14-17, 2018

Westin Kierland Resort
Scottsdale, Arizona



PRECISION MEDICINE IN RADIATION ONCOLOGY WORKSHOP PROVIDES INSIGHT INTO PRECISION MEDICINE'S PLACE IN RADIATION ONCOLOGY

IT HAS NOW BECOME A TRADITION that for two days in the beginning of the summer, when Washington, D.C. begins to turn from the spectacular city of cherry blossoms and freshly blooming azaleas to the city of sweltering heat and sticky humidity, radiation oncology researchers, clinicians and policy makers descend on the National Institutes of Health (NIH) Main Campus in Bethesda to talk about—what else?—emerging topics in radiation oncology.

This year was the fourth annual Radiation Oncology Science Workshop. Held on June 16 and 17, 2016, on the NIH Bethesda campus, ASTRO, the American Association of Physicists in Medicine (AAPM) and National Cancer Institute (NCI) hosted Precision Medicine in Radiation Oncology: Personalizing radiation therapy. Over 180 government, academic, private practice, industry and professional society staff attended and listened to talks about genomics in radiation oncology, Big Data's impact on and importance in radiation oncology, and the real world challenges surrounding the incorporation of precision medicine in radiation oncology clinics.

Each day began with a lively keynote address. The first was by Charles Kunos, MD, a radiation oncologist and recent addition to the NCI Cancer Therapy Evaluation Program (CTEP). Dr. Kunos discussed the NCI MATCH trial, which is testing how the matching of genomic mutations to treatment options improves patient outcomes. Day two began with an informative and provocative talk by Scott Zeger, PhD, a biostatistician at the Johns Hopkins School of Public Health, who outlined how to use population data to determine individual treatment.

Discussions held, questions asked


Over the two days, the meeting blended both short talks and long breakout sessions that allowed for in-depth conversation about the opportunities and challenges of incorporating precision medicine into radiation oncology. Discussions ranged from determining a biomarker profile that would predict responses to radiotherapy, using

radiomics and imaging data to its fullest potential, how imaging provides additional insight into genomic data and the real world challenges of incorporating precision medicine in academic and community settings. Questions posed included, is the technology ready for broad, cross-institutional use? What needs to be done to allow this to happen?

A central theme of education emerged from the workshop. It is clear that education about precision medicine is needed. Groups define precision medicine differently, and this results in confusion and misinformation about what it is and how it will be used in patient care. What does precision medicine mean in radiation oncology? Precision medicine is not just genomics, it is also about information and using all that is available to better predict the true health of the patient. Together, the data collected and evaluated by those in radiation oncology will allow clinicians to better assess the patient's disease and needs to make the best clinical decision.

Where do we go from here?

Breakout sessions held on day two provided a forum for debate and discussion. Focused on the three main topics of day one—genomics, imaging and real world challenges in incorporating precision medicine into radiation oncology—participants addressed the next steps needed. These included automation of imaging, image-guided biopsy, development of predictive biomarkers and moving beyond just genomics to incorporate many forms of data (i.e., imaging). Solutions to challenges were proposed and will be synthesized into recommendations and papers to be published in the beginning of 2017.

Now is the time for radiation oncology to embrace precision medicine and to work with others to fully integrate information across platforms and systems. It can be done, and radiation oncology must be a part of the process. 

Novocure™ is proud to be an:

ASTRO
CORPORATE
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i am proof
of extended survival in newly
diagnosed GBM^{1,2,*}

Maureen is an EF-14
clinical trial patient

* Optune was studied in the EF-14 trial, a prospective, international, multicenter, open-label, randomized, controlled, phase 3 trial in newly diagnosed GBM patients comparing Optune + TMZ with TMZ alone (N=700). The prespecified interim analysis occurred when the first 315 patients completed 18 months of follow-up. The primary endpoint was PFS (ITT); OS (per protocol) was a powered secondary endpoint; 1- and 2-year survival rates, PFS6, QoL, and radiological response rates, along with safety, were also secondary endpoints. The final analysis included all patients randomized to EF-14 who had CRF information available at the database cutoff of December 3, 2014. This included 695 of the 700 patients randomized at that time: 466 patients in the Optune + TMZ arm and 229 patients in the TMZ-alone arm.^{1,2}

Indication For Use

Optune® is intended as a treatment for adult patients (22 years of age or older) with histologically-confirmed glioblastoma multiforme (GBM).

Optune with temozolomide is indicated for the treatment of adult patients with newly diagnosed, supratentorial glioblastoma following maximal debulking surgery, and completion of radiation therapy together with concomitant standard of care chemotherapy.

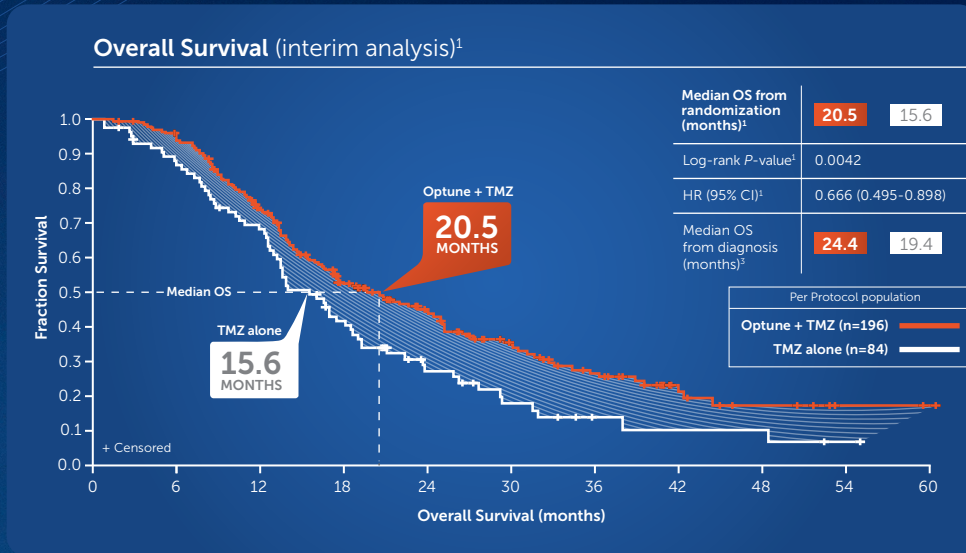
Please see the following Important Safety Information for Optune and visit Optune.com/IFU for Optune Instructions For Use for complete information regarding the device's indication, contraindications, warnings, and precautions.

CI, confidence interval; CRF, case report form; GBM, glioblastoma; HR, hazard ratio; ITT, intent to treat; OS, overall survival; PFS, progression-free survival; PFS6, progression-free survival at 6 months; QoL, quality of life; TMZ, temozolomide.

References: 1. Optune Instructions For Use. Novocure 2015. 2. Stupp R, Taillibert S, Kanner AA, et al. Maintenance therapy with tumor-treating fields plus temozolomide vs temozolomide alone for glioblastoma: a randomized clinical trial. *JAMA*. 2015;314(23):2535-2543. 3. Novocure Data on File. OPT-103.

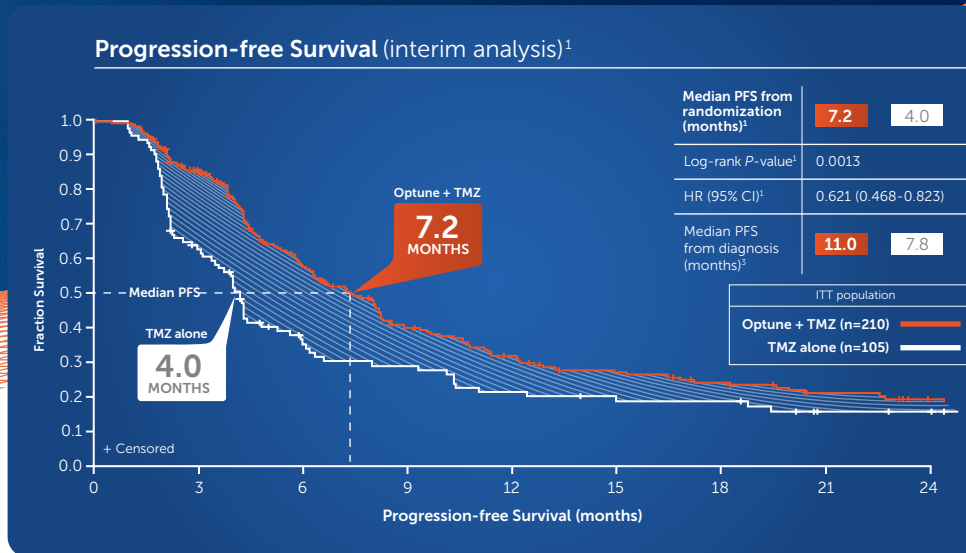
In EF-14, Optune + TMZ significantly extended median overall survival and median progression-free survival^{1,2}

20.5 months median OS with Optune + TMZ^{1-3,†}



[†] In the final analysis (n=695), Optune + TMZ extended median OS by 4.4 months, and this was consistent with the interim analysis (n=315).¹

Median PFS improved by >3 months with Optune + TMZ^{1,‡}



Median time from diagnosis to randomization was **3.8 months²**

[‡] In the final analysis (n=695), Optune + TMZ extended median PFS by 2.9 months, and this was consistent with the interim analysis (n=315).¹

Selected Safety Information

Do not use Optune in patients with an active implanted medical device, a skull defect (such as, missing bone with no replacement), or bullet fragments. Use of Optune together with implanted electronic devices has not been tested and may theoretically lead to malfunctioning of the implanted device. Use of Optune together with skull defects or bullet fragments has not been tested and may possibly lead to tissue damage or render Optune ineffective.



To become an Optune certified prescriber, email us at: optuneinfo@novocure.com

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Important Safety Information

Contraindications

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Do not use Optune in patients that are known to be sensitive to conductive hydrogels. In this case, skin contact with the gel used with Optune may commonly cause increased redness and itching, and rarely may even lead to severe allergic reactions such as shock and respiratory failure.

Warnings and Precautions

Optune can only be prescribed by a healthcare provider that has completed the required certification training provided by Novocure™ (the device manufacturer).

Do not prescribe Optune for patients that are pregnant, you think might be pregnant or are trying to get pregnant, as the safety and effectiveness of Optune in these populations have not been established.

The most common ($\geq 10\%$) adverse events involving Optune in combination with temozolomide were thrombocytopenia, nausea, constipation, vomiting, fatigue, medical device site reaction, headache, convulsions, and depression.

Use of Optune in patients with an inactive implanted medical device in the brain has not been studied for safety and effectiveness, and use of Optune in these patients could lead to tissue damage or lower the chance of Optune being effective.

If the patient has an underlying serious skin condition on the scalp, evaluate whether this may prevent or temporarily interfere with Optune treatment.

Please see the Optune Instructions For Use (IFU) for complete information regarding the device's indication, contraindications, warnings, and precautions at Optune.com/IFU.

From the ABR

BY PAUL E. WALLNER, DO; ANTHONY M. GERDEMAN, PHD;
AND ANNA M. MCGEAGH, MD

DATA-DRIVEN INITIAL CERTIFICATION AND MAINTENANCE OF CERTIFICATION EXAMINATION DEVELOPMENT


THE MISSION OF THE AMERICAN BOARD OF RADIOLOGY (ABR) is

“To certify that our diplomates demonstrate the requisite knowledge, skill and understanding of their disciplines to the benefit of patients.”¹ Implicit in this mission statement is the expectation that the knowledge, skill and understanding are timely and relevant to current practice. Between 1934, when the ABR was first incorporated, and 2010, the determination of timeliness and relevance was made almost entirely by ABR volunteers, serving as either trustees of the Board, or in other ABR committee-based roles. Although this method was generally appropriate, there was a concern that the observations of these content experts, who are often based exclusively in academic health centers, were not entirely demonstrative of practice patterns in the field. With changing patterns of care, the introduction of new technologies, an increasing role of multidisciplinary treatment programs and scientific advances entering the clinic, the ABR trustees determined that a broader approach to the consideration of how radiation oncology (RO) and diagnostic radiology (DR) were actually being practiced was necessary.

To deal with this lack of actionable practice-based data, the ABR trustees decided that a clinical practice analysis (CPA) survey should be developed and administered to radiation oncologists and diagnostic radiologists on a regular basis, with the results to be made available to appropriate stakeholders. Periodic CPAs also are helpful to ensure validity of the examinations by directly tracking examination content to clinical practice. The ABR would use the data generated to inform initial certification (IC) and Maintenance of Certification (MOC) examination development. Cooperating specialty societies would be given access to the data to assist with needs assessment-based program planning for annual meetings, refresher courses and other medical education offerings.

The first RO CPA survey was developed and administered in 2010. Plans called for updating and administering the survey on a triennial basis, and the second administration was carried out as planned, in 2013^{2,3}. The first two CPAs revealed changes in practice patterns that led to significant alterations in examination design and emphasis. It was apparent that the majority of radiation oncologists were seeing few pediatric patients and that those being treated were primarily in children's hospitals and other pediatric cancer centers. Even in private practice, many radiation oncologists were beginning to limit their scope of practice to one or several tumor sites or organ systems. Soft tissue sarcomas and lymphomas were being treated less frequently with radiation, and the use of brachytherapy was declining. Multidisciplinary care was becoming routine, and there were increasing trends toward shorter-course, hypofractionated treatment regimens for a variety of tumor sites and clinical circumstances.

The information gleaned from the 2010 and 2013 CPAs provided data that led directly to development of the MOC modular examination, first administered in October 2015. Pediatric cancer items will no longer be included with adult central nervous system lesions, but instead will be placed in separate modules that will be available for the first time in October 2016. Soft tissue sarcoma items will no longer be included with thoracic disease, but instead will be located within the general radiation clinical content. New examination blueprints that more accurately parallel actual clinical practice have been developed for both IC and MOC examinations.

On May 18, 2016, the ABR announced the development of a pilot project that will create a significant change in MOC Part 3, Assessment of Knowledge, Judgment and Skills⁴. With a target date of 2019 for RO, the new Online Longitudinal Assessment (OLA) tool will be web-based and administered to diplomates throughout their careers, rather than as a secure examination administered once every 10 years in disseminated regional test centers. The press release⁴ introducing the new pilot provides additional details, and there will be many subsequent announcements regarding logistical details as pilot planning continues. Design of the 2016 CPA survey is underway, and it is anticipated that it will be released in the fall. The current survey will more intensely examine details of current RO practice, especially focusing on modalities and techniques that are increasing in significance and those that are falling into disfavor. The data generated by the new survey will be critical to inform the development of future IC examinations and the OLA content. 



References

- ¹ American Board of Radiology about us. <http://www.theabr.org/> Availability verified May 30, 2016.
- ² Wallner, PE, Yang, J and Gerdeman, A. Clinical practice analysis and radiation oncology maintenance of certification examination development. *The Beam*. 2014;7:7-8.
- ³ Wallner, PE and Gudenkauf, A. Update on radiation oncology examination development. *The Beam*. 2015;8:30-31.
- ⁴ American Board of Radiology press release, May 18, 2016. http://www.theabr.org/sites/all/themes/abrmedia/ABR_MOC_Part_3_Changes_Press_Release.pdf Availability verified May 30, 2016.

NEW RO-ILS DATA ELEMENTS LIVE

After a year of gathering user feedback and conducting an interrater reliability study, the new RO-ILS: Radiation Oncology Incident Learning System® data elements will soon be live. The revised data elements will simplify data collection and increase analysis utility for participating practices and the Radiation Oncology Healthcare Advisory Council (RO-HAC). In total, there are now 38 questions with branching logic developed, enabling the portal to only display relevant questions based on a previous answer. For example, if a user selects “Yes” for the question “Was this event equipment related?” the user will be prompted to answer six follow-up equipment questions. In the instance of a near miss not related to equipment, users will only


be asked to answer 26 questions instead of all 38. Certain targeted questions are required (indicated by a red asterisk) and must be answered by the user in order to facilitate a thorough and complete analysis. To see a complete list of questions and answer options, download the Participation Guide on the RO-ILS webpage (www.astro.org/ROILS). In addition, be sure to attend the “RO-ILS and APEX® (Accreditation Program for Excellence): Instruments for Quality Improvement” session at the Annual Meeting in Boston on Tuesday, September 27 at 2:45 p.m. to learn more about the programs. If you have any questions, email roils@astro.org. 

TABLE 1: “SUBMIT EVENT” PAGE

ID#	QUESTION TEXT	FIELD TYPE	BRANCHING LOGIC
101	*Location:	Dropdown	
102	*Sub Location:	Dropdown	If applicable
103	*Additional Location:	Dropdown	If applicable
104	*Event Classification:	Dropdown	
105	*Narrative: (Briefly describe the event):	Text	
106	*Treatment technique pertinent to event:	Checkbox	
107	Local Identifier:	Text	
108	Reporter’s Name:	Text	
109	*Date and time the event occurred:	Date/Time	

TABLE 2: “MY REVIEW: FOLLOW-UP” PAGE

ID#	QUESTION TEXT	FIELD TYPE	BRANCHING LOGIC
201	Event Title:	Text	
202	Role of person who discovered the event:	Checkbox	
203	*Patient’s Age:	Dropdown	
204	*Patient’s Gender:	Radio	
205	Supplemental Information/Additional Follow-up to Event Narrative:	Text	
206	*How was the event discovered?	Text	
207	*In what workflow step was the event first discovered?	Dropdown	
208	*In what workflow step(s) did the event occur?	Checkbox	
209	Treatment imaging being used	Checkbox	“Therapeutic Incident” selected for #104
210	*Was this a systematic error that affected multiple patients?	Radio	“Therapeutic Incident” OR “Safety Incident” selected for #104
211	How many patients were affected by the error?	Integer	“Yes” selected for #210
212	*What was the dose deviation for the course of treatment between the planned total prescription and the delivered dose?	Checkbox	“No” selected for #210
213	How many fraction(s)/treatment(s) were delivered incorrectly?	Integer	Response Options 1-6 selected for #212
214	How many total fractions were prescribed for the course of treatment?	Integer	Response Options 1-6 selected for #212
215	*Was this event equipment related?	Radio	
216	Please choose the Simulation Equipment related to this event, if applicable.	Dropdown	“Yes” selected for #215
217	Please choose the Treatment Planning System related to this event, if applicable.	Dropdown	“Yes” selected for #215
218	Please choose the Treatment Management Systems (R&V) related to this event, if applicable.	Dropdown	“Yes” selected for #215
219	Please choose the Treatment Equipment: External Beam Photon/ Electron related to this event, if applicable.	Dropdown	“Yes” selected for #215
220	Please choose the Treatment Equipment: Proton related to this event, if applicable.	Dropdown	“Yes” selected for #215
221	Please choose the Treatment Equipment: Other related to this event, if applicable.	Dropdown	“Yes” selected for #215
222	*Do you want to report this event to the PSO?	Radio	
223	*In terms of risk to patient safety, how significant was this event?	Dropdown	
224	What might prevent future events like this?	Text	
225	What changes, if any, has the facility made in response to the report? If applicable, please include comments on your experience with the changes made.	Text	
226	Please provide any additional details in the space provided below.	Text	
227	You may use this space for your internal use (i.e. internal tags)	Text	
228	Status	Radio	
239	Contributing factors:	Checkbox	

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JOURNALS

HIGHLIGHTS

HIGHLIGHTS FROM THE INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY • BIOLOGY • PHYSICS

JUNE 1, 2016

Avoiding Severe Toxicity From Combined BRAF Inhibitor and Radiation Treatment: Consensus Guidelines From ECOG

By Anker et al

BRAF kinase gene V600 point mutations drive approximately 40 percent to 50 percent of all melanomas, and BRAF inhibitors (BRAFi) significantly improve survival outcomes. Although radiation therapy provides effective symptom palliation, there is only limited toxicity and efficacy data when combined with BRAF inhibitors. This review of the available literature analyzes what has been reported in terms of increased dermatologic, pulmonary, neurologic, hepatic, esophageal and bowel toxicity from the combination of BRAFi and radiation therapy for melanoma patients.

Palliative Radiation Therapy for Advanced Head and Neck Carcinomas: A Phase II Study

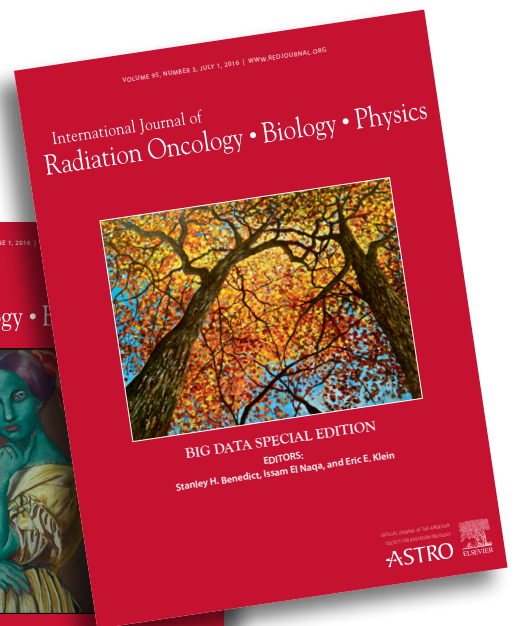
By Fortin et al

There is no general agreement on how to use palliative radiation therapy in advanced head and neck cancer. The authors performed a phase II study evaluating a regimen of 25 Gy in five fractions given with IMRT to the symptomatic tumor volume. Patients completed quality of life and toxicity assessment for the remainder of their lives. This regimen achieved its twin goals of a good level of symptom control while being highly tolerable.

Role of Internal Mammary Node Radiation as a Part of Modern Breast Cancer Radiation Therapy: A Systematic Review

By Verma et al

The authors performed a meta-analysis of studies reported between 1994 and 2015 in an attempt to assess the role of internal mammary lymph node irradiation. It was hypothesized that, as benefits of internal mammary node irradiation may be offset by toxicities, modern radiation therapy techniques may tilt this balance for a subset. They used PRISMA criteria to select studies for inclusion and preliminary data from MA20 and EORTC 22922. They found that internal mammary node irradiation can and should be considered for patients on an individual basis and define groups for whom benefits may be real.



JULY 1, 2016

“Big Data Articles Issue”

This edition includes 10 papers that emerged from last year’s NCI-sponsored workshop on “Big Data” in radiation oncology. Few patients are in evidence-generating prospective trials, and the vast majority of clinical data is “dark,” lost in the shadows of millions of idiosyncratic medical records. How to extract this data and use it to understand therapy and provide feedback to clinicians is a challenge across medicine. Many senior speakers from this workshop give their views on standardization, nomenclature, integration of systems and the challenges we face. They also turn their minds to the kinds of data we need to collect and the methods of analysis that will transform patient care.

Gastrointestinal Cancers—Changing the Standard for Rectal Cancer and Establishing a New Standard for Liver Tumors

By Apisarnthanarax et al

The GI Cancer Editorial Team came together to review and comment on a number of important, recently published papers from the wider oncology literature. They look at a number of papers addressing subtle and not-so-subtle steps forward in the management of rectal cancer, as well as validation of the role of stereotactic body radiation therapy (SBRT) in hepatocellular and cholangiocarcinomas. They also looked at the cognitive consequences of chemotherapy for colorectal cancer.

Continued on next page



HIGHLIGHTS FROM PRACTICAL RADIATION ONCOLOGY

MAY – JUNE 2016

Anesthesia Complications of Pediatric Radiation Therapy

By Verma et al

Complications of anesthesia for pediatric radiation therapy are imperative for both radiation oncologists and anesthesiologists to clinically assess and manage. Rates of anesthetic complications encountered in pediatric radiation therapy are similar, if not lower, than rates reported in controlled operating room settings, implying that anesthesia for pediatric radiation therapy is safe, with low complication rates perioperatively. Though the long-term neurocognitive consequences of multiple anesthetics in pediatric patients have yet to be clearly defined, health care providers should be cognizant of the potentially serious implications.


Influence of Planning Time and Treatment Complexity on Radiation Therapy Errors

By Gensheimer et al

Radiation treatment planning is a complex process with a potential for error. The authors hypothesized that shorter time from simulation to treatment would result in rushed work and a higher incidence of errors. They examined treatment planning factors predictive for near-miss events. When controlling for treatment technique and other clinical factors, there was no relationship between time spent in radiation treatment planning and near-miss events. SBRT and pediatric treatments were more error prone, indicating that clinical and technical complexity of treatments should be taken into account when targeting safety interventions.

Adaptation of the Stanford Technique for Treatment of Bulky Cutaneous T-Cell Lymphoma of the Head

By Ahmed et al

Electron beam radiation therapy is an effective treatment for cutaneous T-cell lymphoma (CTCL). The first description of total skin electron therapy came from Stanford University. Prolonged treatment to ≥ 3000 cGy in six to seven weeks is not feasible for many patients in a palliative setting. Hypofractionated regimens are associated with high response rates. The authors describe a case of bulky CTCL of the head treated with a unique adaptation of the Stanford technique. 

Mild Lung Restriction in Breast Cancer Patients After Hypofractionated and Conventional Radiation Therapy: A Three-Year Follow-Up

By Verbanck et al

The effects of radiation therapy in breast cancer patients includes a small, but consistent, degree of lung restriction and an associated decrease in its diffusing capacity. When accounting for the natural decline in lung function over a three-year period, the restrictive changes observed after three months were either sustained or slowly deteriorated. The overall decline over the three-year period, however, never exceeded nine percent, regardless of radiation therapy modality or respiratory status at baseline.

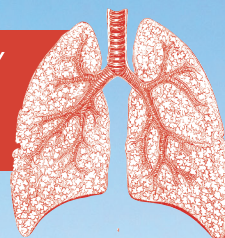
DNA-PKcs Expression is a Predictor of Biochemical Recurrence After Permanent Iodine 125 Interstitial Brachytherapy for Prostate Cancer

By Molina et al

The authors assessed the expression of nonhomologous end-joining proteins by immunohistochemistry in 167 patients treated with iodine 125 seed brachytherapy for prostate cancer. On multivariate analysis, only DNA-PKcs status was an independent predictive marker of biochemical recurrence. DNA-PKcs expression together with the clinical stage might be useful to improve the treatment of low-risk prostate cancer patients.

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