

Title: Responses to the 2017 '1 Million Gray Question': ASTRO membership's opinions on the most important research question facing radiation oncology

Short running title: The 2017 '1 Million Gray Question': the most important research questions facing radiation oncology

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At ASTRO's 2017 Annual Meeting in San Diego, CA, attendees were asked, "What is the most important research question that needs to be answered in the next 3-5 years?" This request was meant to start a dialogue, promote thoughtful discussion within our professional community, and help inform topics for ASTRO workshops and focus meetings. Nearly 100 people responded while in attendance at the meeting with responses that varied from, "How can we remove barriers so low and middle income countries can have radiation oncology facilities?" to "What is the exact role of radiation in stage IV disease in combination with immunotherapy or targeted agents to combat resistance development?" to "How can personalized care be better integrated into the oncology and radiation oncology clinical space?"

At the end of the meeting, an electronic survey was offered to all attendees, which returned 456 responses. Of the responses, 136 were related to immunotherapy or combination of immunotherapy and radiotherapy (RT) and 131 were related to genomic influences and targeted medicine including personalized/individualized cancer care, dose and fractionation, and cancer biology and genomics. Forty-seven were related to advanced imaging and innovations in physics and technology, such as real-time and functional imaging, MR-guided RT, and proton and heavy ion therapy. Sixty-five were related to new clinical trial design including improving comparative effectiveness research, outcomes measures, care delivery, and further developing goals for specific disease sites. Other topics included oligometastatic disease and the abscopal effect, the role of computers and big data, radiation side effects, global health, cancer prevention, social media, and research funding. The most commonly referenced cancer treatment sites were prostate (21 responses) and breast (18 responses).

And so, what would you do with 1 million Gray? Would you treat 20,000 patients living in a developing nation who otherwise wouldn't have access to radiation services? Would you treat 16,667 patients on a clinical trial combining immunotherapy and SBRT to better define and map a path to abscopal effect? Would you bring comprehensively integrated, personalized cancer care to every patient who walks through your door?

Given the overwhelmingly positive response to this year's question, we plan to continue this exercise as an annual tradition, albeit with a different "1 Million Gray" question each year. So, at the 2018 Annual Meeting, how will you answer the ASTRO Bench to Bedside Question, "What is the BIGGEST research discovery that needs to be translated into the clinic RIGHT NOW?"

Stay tuned and contribute!

Table 1: "What is the most important research question that needs to be answered in the next 3-5 years?"

<i>Immunotherapy in combination with radiotherapy</i>	136 (30%)
<i>Genomic influences and targeted medicine</i>	131 (29%)
<i>New clinical trial design and comparative effectiveness</i>	65 (14%)
<i>Advanced imaging and physics innovation</i>	47 (10%)
<i>Oligometastatic disease, abscopal effect, other</i>	77 (17%)