Julie Brahmer

Co-director of the Upper Aerodigestive Department, Bloomberg~Kimmel Institute for Cancer Immunotherapy, Johns Hopkins University, Baltimore, Maryland, USA

Citation: Respir AMJ. 2024;2[1]:46-48. https://doi.org/10.33590/respiramj/UVAP9975.

Q1 What was it that initially inspired you to go into the field of thoracic oncology?

I was initially inspired due to my grandfather's non-Hodgkin lymphoma diagnosis when I was in high school. I found the care of a patient with cancer fascinating, and it is amazing to be part of one of the hardest times in someone's life, no matter the outcome. Once I finally entered into my medical oncology fellowship, years later, I gravitated to thoracic oncology, due to the need to improve treatment options for patients with lung cancer. At the time, 5-year survival in patients with advanced disease was not even talked about. My mentor, a titan in the field, opened many doors for me in order to become a driving force in the care of patients with lung cancer at Johns Hopkins University, Baltimore, Maryland, USA.

Q2 You advocate for a multidisciplinary approach in the field. In what ways are you ensuring your research and practice reflects this, and what are the advantages?

I advocate for a multidisciplinary approach to patient care and research for many reasons. We are learning that more and more patients with cancer require the multiple disciplines to co-ordinate care during their cancer journey. Also, in order to truly advance the field, all disciplines are important in order to really implement research discoveries.

Q3 You serve as a board member in multiple thoracic oncology associations and research foundations. Do you think this has granted you any opportunities in your career, and how have you utilised these positions?

Being involved in thoracic professional societies and patient advocacy groups has enabled me to help increase the awareness that lung cancer deserves increased research, funding, and support. I also get the chance to mentor other professionals, to advocate for their work and career growth

Q4 As one of the investigators on the Phase I trial of the PD-1 blocking antibody nivolumab, which went on to change immunotherapy, what did it feel like to see the treatment you had been working on impact medicine so significantly? What was the process like?

Being part of the development of PD-1 pathway antibodies was an amazing experience. My dream was to be part of the drug development of something significant in the cancer field. Little did I know what power these antibodies would have, and how many cancers could be controlled with these drugs. As someone who has been trained in drug development, I enjoy being part of first-in-human trials, where we give drugs coming out of the lab to patients for the first time. There is such a learning curve. Then, to see this type of drug elicit tumor responses in patients, particularly in

> **"It is amazing to be part of one of the hardest times in someone's life, no matter the outcome"**

cancers not felt to even be immune responsive, was amazing.

I was also proud to advocate for the development in lung cancer, which was once thought not to be immune responsive. Phase III trials have demonstrated the power of this pathway blockade, which can cause significant lung cancer shrinkage and control. What a huge win for our patients! We have patients who typically would not live very long, but now are living for years after treatment with anti-PD-1 antibodies. However, there is so much more work to do in order to increase response, and combat resistance.

Q5 Have you continued your work on analysing the efficacy of nivolumab since the initial trials?

Our team at Johns Hopkins, and within the thoracic oncology community, has focused on how, and why, drugs like nivolumab work, or do not work. Obviously, this is a very complex problem that is multifaceted. We are looking at the host immune system, gut microbiome, tumor microenvironment, and genome, which all play a part in the response and resistance to immunotherapy.

> **This is a very complex problem that is multifaceted**

Q6 Which clinical trials, currently underway in the field of immunotherapy for lung cancer, are you most excited about?

There are many trials of immunotherapy ongoing for patients with lung cancer. I am excited about immunotherapy

> **In order to truly advance the field all disciplines are important, in order to really implement research discoveries**

continuing to be developed in the early-stage treatment prior to surgery, where we can learn so much about the patient, cancer and drug interactions, and how to capitalize on that. Also, I am excited about bispecific antibodies that can block immune checkpoint pathways, and also potentially bring T cells into the tumor to have an effect. I think these molecules will have the power to treat, and bring immunotherapy to, more patients with lung cancer whose cancer may not otherwise respond to these treatments.

Q7 Do you think there is a place for artificial intelligence (AI) or deep learning models yet in the treatment of lung cancer and mesothelioma?

AI and deep learning will revolutionize cancer care, improve day-to-day care, and recognize patterns in patients to improve care. Also, AI and deep learning will help us take into account more precise data regarding patients' tumors, and allow us to tailor therapy to those changes/genomics, etc.

Q8 What is next for you in the world of lung cancer immunotherapy?

That is a great question. I want to continue to work with our team at Johns Hopkins to improve care for our patients, which can be translated into meaningful improvements in long-term survival and quality of life, and broaden the application of immunotherapy to more patients. I also want to continue to mentor early career investigators and faculty, to ensure we foster future research focus on thoracic oncology.

