

Philippe Lambin: how advances in imaging impact precision radiation oncology?

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Editor's note

The 10th Shanghai International Conference on Radiation Oncology was held during August 10–11, 2018 in Shanghai, China. The conference was attended by numerous internationally renowned experts, devoting much attention to thoracic tumor radiotherapy and covering dozens of international academic researches.

During the meeting, the Editorial Office of *Precision Cancer Medicine* is honored to conduct an interview with Prof. Philippe Lambin with an aim to not only share his knowledge and stories among the peers across the world, but also to bring better understanding regarding the developments in the field of precision radiation oncology.

Expert introduction

Philippe Lambin (*Figure 1*), Professor, Radiation Oncology, Maastricht University, The Netherlands. Prof. Philippe Lambin is a clinician, Radiation Oncologist, pioneer in translational research with a focus on hypoxia, imaging and Decision Support Systems. He has a PhD in Radiation Biology and is a professor at the University of Maastricht (Radiation Oncology). He is co-author of more than 450 peer reviewed scientific papers and co-inventor of more than 15 patents. His main areas of interest are directed towards translational research in Radiation Biology with a specific focus on tumour hypoxia, functional imaging (CT-PET), lung and head and neck cancer. He has recently become interested in the development of multifactorial ‘treatment decision support system’ and combining hypoxia targeting with immunotherapy.



Figure 1 Philippe Lambin.

Interview (Figure 2)

PCM: *Imaging has been central to enabling the personalization of radiotherapy and this has demonstrated impact. In your view, how have advances in imaging impacted precision radiation oncology?*

Prof. Lambin: The first question of imaging is located in the tumor. For example, in lung cancer, there has been enormous progress by using PET-CT, FDG. When we use PET-CT, we know that the gross tumor volume (GTV) is smaller than with CT, and that we can identify the invaded mediastinal nodes. Therefore, we can irradiate a smaller volume and side effects are less pronounced. So that's the main advantage of FDG-PET based-imaging. Now, I think

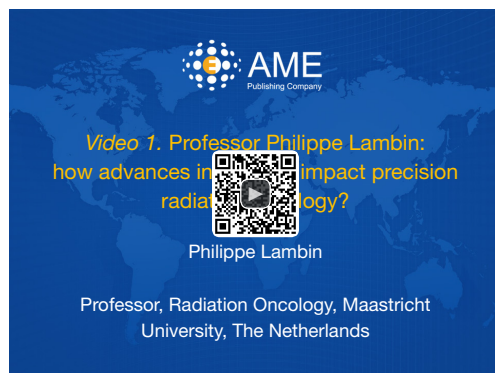


Figure 2 Professor Philippe Lambin: how advances in imaging impact precision radiation oncology (1).

Available online: <http://www.asvide.com/article/view/27467>

molecular imaging is trying to answer the question: what is the best treatment for the specific patient? Do we have to use palliative treatment, curative treatment, or targeted immunotherapy? There are more complicated and more expensive molecular imaging approaches, for example, by using specific biomarkers, like HX-4; or simple methods, like radiomics. In my view, in precision medicine we need both approaches.

PCM: *What are challenges to integrating imaging data into precision radiation oncology?*

Prof. Lambin: The main challenge is access to data. In order to carry out a proper imaging study, not only do you need a large volume of data but you also need data from several large centers to externally validate your results. It also depends on which approach you take. If you want to use new hardware (e.g., dual energy CT, MR-PET...), it will require financial investment; if you want to use new biomarkers, it is quite complex, so you will need a brilliant pharmacology department; if you want to use radiomics, it is easier and cheaper. In short, it's crucial to choose the right methodology.

PCM: *How do you think about the future scientific direction of radiation oncology?*

Prof. Lambin: The future of radiation oncology will be a combination with systemic treatment and in particular with immunotherapy. We shouldn't forget that cancer is a systemic disease and radiotherapy is a local regional

treatment, so we really need to combine this with systemic treatment, especially lung cancer. In addition, I would say the most promising area is immunotherapy. This is due to the fact that we have seen that with immunotherapy, we have an abscopal effect, which is very interesting, but we also have a memory effect, which means that if a patient is cured, he or she will be cured for a longer period of time.

PCM: *In 2015, you resigned as CEO of MAASTRO clinic and have been dedicating yourself to research, to the coaching of your students. I'm curious about what has motivated you to make this decision.*

Prof. Lambin: When I started in MAASTRO Clinic in 2000, I became head of the department at 39 years old and have been there for 15 years, which is a long period. When we started, we had 100 employees; 15 years later, we have 400 employees. So that was quite exhausting. While my real passion is research, and I thought I have done my work for 15 years, I have some prestigious grants (such as ERC advanced and other European grants) and it was the right moment to do something else.

PCM: *What would your advice be to your younger self?*

Prof. Lambin: I remember when I started radiotherapy, 20 years ago or more, some colleagues told me that this discipline would disappear and would be replaced by systemic treatment. However, radiotherapy has made extraordinary progress. So I don't regret to have chosen this discipline as it is a combination of physics, biology, clinics and big data. If we can manage to combine research and clinical activities, that is really exciting. My advice would then be to try to do research in parallel with your patient care activities, read the key literature and be focused to be excellent in your field.

PCM: *May I know something about yourself that many people do not know?*

Prof. Lambin: Probably many people don't know that I have seven children. By Chinese standards, it is quite unusual. It's actually good training to become a head of department. With seven children, there are always problems and financial deficit, you can't get rid of them... If you can manage seven kids, you can also manage a department. I also have a 55 kg big dog, a cat, two parrots and chickens...

and, last but not least, a very supportive wife!

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aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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