What is proton therapy and how does it differ from other treatments?
In the field of cancer there are different modalities to kill tumours, one of which is radiation therapy. This consists of using particles that damage the DNA of cells and, consequently, kill tumours. Radiation today is largely delivered through X-rays, using photons. However, this method can lead to side effects because the photon beam does not discriminate between cells at different depths.

Proton therapy is a different type of radiation, the major benefit of which is that most of the radiation is deposited at a particular depth which can be tuned to the tumour site itself, sparing much of the healthy surrounding tissues.

Up to now, the problem with providing proton therapy is that, protons require much bigger accelerators. Also, because current proton therapy accelerators are circular, they are bulkier, requiring very large infrastructure, and have more technical constraints. As a result, such therapy has been very expensive, and this cost has been passed through to patients.

What benefits does LIGHT bring to the patient community?
To start with, cancer treatment involves a large ecosystem with the patients at the core, and LIGHT makes proton therapy more accessible to them. When a treatment requires visits every other day, the patient should not have to travel far from home, and that’s why it is important to have proton therapy systems installed in the centre of big cities.

With the design of LIGHT, which accelerates protons in a straight line, avoiding the large infrastructure of circular acceleration, we can address the concerns of everyone in that...
It is amazing to think that a state-of-the-art proton facility hides behind a prestigious period building.

The new facilities are taking shape behind the original facade of the Harley Street building (PHOTOS: ADVANCED ONCOTHERAPY)

Last October, AVO announced an important milestone for LIGHT. Can you tell us more about this? The LIGHT system integrates a series of accelerating units that are added sequentially – the more units you have in the machine, the more “powerful” the accelerator, and the wider the range of tumours that can be treated.

What we announced is the fact that we manufactured, assembled and tested all the units together to create a proton beam capable of treating superficial tumours. This requires low energy, somewhere between 50 and 70 mega electron volts. This is significant because the challenge in the development of this breakthrough technology has always been the initial acceleration.

This means that we can now start the last step of adding the remaining accelerating units. If I were to use a car analogy, I would say that we’ve been able to make a Formula One car and we’re now starting a final step of adding the last cylinder.

Why did AVO choose London for its first installation? We were pleased to partner with the Howard de Walden Estate, which has developed the prominent Harley Street Medical Area. They have been an outstanding partner to work with. The Estate is also covering the £10 million building costs, as a testimonial of their commitment and a huge validation of the work that our team has done to make LIGHT compact and easier to install.

A simple comparison can really help to understand how LIGHT is ideally suited for being installed in the heart of London, and, more generally, in dense areas. For example, a proton project in St Petersburg required a five-acre greenfield site, while the Harley Street project will take up a total area of only 15,000 square feet. The fact we can install a machine in the city is extremely important for patients. The beauty of AVO’s equipment is that it can be delivered to sites module by module, which has enormous positive implications for logistics. One magnet delivered to St Petersburg weighed 57 tonnes, while the heaviest magnet at Harley Street is just five tonnes. Statistics like these give an indication of the huge difference that the LIGHT system can make.

How is the construction of the new Harley Street facility progressing? Progress there has been really impressive. I would say it is amazing to think that a state-of-the-art proton facility hides behind a prestigious period building, in the heart of Marylebone in London. The demolition, excavations, piling and the construction of a new basement structure have all been completed within a limited number of hours per day, keeping the neighbourhood in mind, and the on-site team is now focused on completing the roof installation.

What is your focus ahead of opening the clinic to its first patients in 2020? The last steps are being completed before the fit-out can start in the second half of this year. Our plan is based on an assembly site which is located at Daresbury, operated with our partner, the Science and Technology Facilities Council. In the meantime, and prior to first patients, we will receive the relevant certifications and prepare for the installation of the system on site.

What are AVO’s expansion plans beyond London? Our plan goes well beyond London as, obviously, cancer has no borders. We have received approaches from parties located in city centres across Europe, Asia and the United States and are having discussions with various people around the world who would like to install a machine at the lowest possible cost.