### First clinical use of Monte Carlo photon dose planning in RayStation

*Heidelberg University Hospital, Germany, has treated its first patient using Monte Carlo photon dose planning in RayStation®\*. The decision to go clinical was made after a thorough validation of the functionality. The first patient, who has cervical cancer involving the lymph nodes, was recently treated.*

In April 2018, RayStation was selected for particle therapy treatment planning in a joint decision by clinicians and researchers at Heidelberg Ion Beam Therapy Center (HIT), Heidelberg University Hospital and the German Cancer Research Center (DKFZ). Heidelberg University Hospital extended its RayStation installation for photon beam therapy in July 2018, strengthening the existing partnership with RaySearch. The order reflects the hospital's aim of adopting RayStation as its sole treatment planning system, consolidating several legacy systems.

A vital feature in a treatment planning system is the ability to calculate the radiation dose a patient would receive during a proposed treatment. This involves modeling the components of the treatment machine, the patient's anatomy and the radiation beam itself. RayStation 8B introduced the Monte Carlo dose calculation method for photon radiation, based on the well-known Monte Carlo algorithm, which is widely regarded as the gold standard for dose calculation.

The drawback of Monte Carlo has traditionally been prohibitively long calculation times. However, the GPU-based dose engine in RayStation overcomes this limitation. As an example, the dose for a dual-arc VMAT plan can be computed in less than 30 seconds – faster than any other system on the market. The Monte Carlo dose engine can also be used to calculate dose during optimization of the treatment plan, which can improve accuracy.

Bernhard Rhein, PhD and medical physicist at Heidelberg University Hospital, says: "The Monte Carlo dose engine has resulted in more accurate dose computation, especially for bone structures and the borders between tissues of differing densities. This is a significant step forward in bringing the calculated dose closer to the actual dose."

Johan Löf, CEO and founder of RaySearch, says: "Improving the speed and accuracy of dose computation for clinics is vital to our ambition of taking radiation therapy forward. Dose accuracy is key to effective treatment that spares healthy tissue, while high calculation speed saves valuable planning time. Monte Carlo dose planning in RayStation meets both of these needs."

## About Heidelberg University Hospital

Heidelberg University is the oldest university in Germany; its first medical lectures were held here in 1388. Today, Heidelberg University Hospital is one of the largest and most prestigious medical centers in Europe, with a reputation based on excellent patient care, research and teaching. Heidelberg University Hospital offers inpatients and outpatients innovative and effective treatment for all complex diseases. Modern buildings with state-of-the-art equipment deliver medical care to the highest international standards. Proximity and interlinking of the specialist departments benefit the patient, with interdisciplinary cooperation ensuring optimal treatment.

## About RaySearch

RaySearch is a medical technology company that develops innovative software solutions to improve cancer care. The company markets the RayStation treatment planning system and RayCare®*, the next-generation oncology information system, worldwide. Over 2,600 clinics in more than 65 countries use RaySearch software to improve life and outcomes for patients. The company was founded in 2000 and the share has been listed on Nasdaq Stockholm since 2003.

## About RayCare

RayCare is designed to support the complex logistical challenges of modern oncology clinics. It represents the future of oncology information system technology, supporting the vision of one oncology workflow. Many cancer patients receive a combination of treatment types, and RayCare is designed to reflect that. It will efficiently coordinate activities in radiation therapy, chemotherapy and surgery and will offer advanced features for clinical resource optimization, workflow automation and adaptive radiation therapy. RayCare is being developed with tomorrow's requirements for advanced analytics and decision support in mind.

## About RayStation

RayStation is a flexible, innovative treatment planning system, chosen by many of the leading cancer centers worldwide. It combines unique features such as unmatched adaptive therapy capabilities, multi-criteria optimization, market-leading algorithms for IMRT and VMAT optimization with highly accurate dose engines for photon, electron, proton and carbon ion therapy. RayStation supports a wide range of treatment machines, providing one control center for all treatment planning needs and ensuring centers get greater value from existing equipment. RayStation also seamlessly integrates with RayCare, the next-generation oncology information system. By harmonizing the treatment planning, we enable better care for cancer patients worldwide.

*More information about RaySearch is available at www.raysearchlabs.com*

* Subject to regulatory clearance in some markets.

*For further information, please contact:*
Johan Löf, Founder and CEO, RaySearch Laboratories AB (publ)
Telephone: +46 (0)8-510 530 00
johan.lof@raysearchlabs.com

Peter Thysell, CFO, RaySearch Laboratories AB (publ)
Telephone: +46 (0)70 661 05 59
peter.thysell@raysearchlabs.com