IBA and UMC Groningen engage in FLASH irradiation research collaboration for breast cancer

Four-year collaboration to investigate the potential of IBA's ConformalFLASH® technology for the treatment of early-stage breast cancer

Louvain-la-Neuve, Belgium, April 5, 2022 IBA (Ion Beam Applications S.A., EURONEXT), the world leader in particle accelerator technology, and the University Medical Center Groningen (UMCG) announce today a four-year research collaboration agreement towards development of a new FLASH irradiation protocol for the treatment of early-stage breast cancer.

The focus of the partnership will be on building advanced FLASH irradiation techniques and pre-clinical radiobiology models to accelerate the validation and adoption of IBA's ConformalFLASH®[1] technology for use in pre-operative early breast cancer treatment. ConformalFLASH® is a novel delivery technique combining ultra-high dose rate FLASH radiotherapy with the unique Bragg Peak properties of protons. These ultra-high dose rates create the opportunity to optimize and accelerate the radiotherapy process and increase the therapeutic ratio[2]. By increasing the fraction dose and applying FLASH dose rates it is hoped that maximal ablative radiotherapy can be delivered.

The delivery of ablative doses of radiation to a tumor is often limited by radiation-induced toxicity to normal surrounding tissues. As a result, the standard of care in breast cancer treatment is to deliver post-operative radiotherapy over multiple doses. In recent years there has been increased interest in applying pre-operative radiotherapy with reduced irradiated volume, whilst increasing the fraction dose, resulting in fewer fractions and thereby improving patient comfort.[3] Furthermore, pre-operative radiotherapy provides the opportunity to study the biological response of breast cancer to radiotherapy.

As part of the collaboration, both parties will share resources and combine expertise as well as leverage the knowledge and infrastructure of the Particle Therapy Research Center (PARTREC), a dedicated research facility functioning in synergy with the clinical UMCG Groningen Proton Therapy Center (GPTC).

Nicolas Denef, Proton Therapy Product Management Director at IBA, added: "We have been working closely with UMCG for many years, following the first flash irradiation in an IBA gantry treatment room in 2019. Our ConformalFLASH® technology combines the use of the Proton Bragg Peak with FLASH dose rates, thereby potentially leading to better outcomes. We look forward to once again partnering with UMCG and to sharing this expertise with our

large community of IBA centers as this research is conducted."

Prof. Dr. Stefan Both, Head of Medical Physics at UMC Groningen, said: "We are excited to leverage the combined strength of PARTREC and GPTC to embark on this long-term collaboration with IBA. We hope that through this research, we are able to accelerate patient access to FLASH therapy across the world, to further improve survival rates and quality of life."

John Maduro, MD, PhD, Radiation Oncologist at UMC Groningen, said: "FLASH proton therapy gives a unique opportunity to explore personalized breast cancer radiotherapy and holds the potential to further reduce treatment burden and cost by offering a single fraction ablative treatment for early-stage breast cancer patients."

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About IBA

IBA (Ion Beam Applications S.A.) is the world leader in particle accelerator technology. The company is the leading supplier of equipment and services in the field of proton therapy, considered to be the most advanced form of radiation therapy available today. IBA is also a leading player in the fields of industrial sterilization, radiopharmaceuticals and dosimetry. The company, based in Louvain-la-Neuve, Belgium, employs approximately 1,600 people worldwide. IBA is a certified B Corporation (B Corp) meeting the highest standards of verified social and environmental performance.

IBA is listed on the pan-European stock exchange EURONEXT (IBA: Reuters IBAB.BR and Bloomberg IBAB.BB).

More information can be found at: www.iba-worldwide.com

About UMCG

The University Medical Center Groningen (UMCG) is the only university hospital in the northern part of the Netherlands, and therefore the final point of referral for many patients. The department of Radiation Oncology is one of the largest breast cancer centres in the Netherlands, annually treating around 750 new breast cancer patients. Research at the UMCG is characterized by a combination of fundamental and patient oriented clinical research. The interaction between these two catalyses the development of new clinical and research opportunities. Innovative cancer treatment is one of our key research areas. As a sound basis for our research priorities enabling top-notch research, we invest in excellent, state-of-the-art equipment and facilities, such as the Oncogical Life Study (OncoLifeS), the

Data Science Center in Health (DASH), and the Particle Therapy Research Center (PARTREC). Jointly, our staff of almost 12,000 people working in clinical care, research and education focus on one common goal: building the future of health. For more information visit: www.umcg.nl

For further information, please contact:

IBA

Aymeric Harmant
Global Marketing Director
+32 10 203 796
global.marketing@iba-group.com

Olivier Lechien
Corporate Communication Director
+32 10 475 890
communication@iba-group.com

For media and investor enquiries:
Consilium Strategic Communications
Amber Fennell, Angela Gray, Lucy Featherstone
+44 (0) 20 3709 5700
IBA@consilium-comms.com

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[1] ConformalFLAsH® is a registered brand of IBA's Proton FLASH irradiation solution currently under research and development phase.

[2] J. Bourhis, P. Montay-Gruel, P. Gonçalves Jorge et al., Clinical translation of FLASH Radiotherapy: Why and how?, Radiotherapy and Oncology

[3] Barry A. and Fyles A., Establishing the Role of Stereotactic Ablative Body Radiotherapy in Early-Stage Breast Cancer, Intenational Journal of Breast Cancer