PRESS RELEASE

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WITH ZAP-X, GUSTAVE ROUSSY STRENGTHENS ITS RADIOSURGERY PLATFORM

The ZAP-X, a latest-generation stereotactic radiosurgery system, features an innovative gyroscopic design. It enables extremely precise treatment of brain lesions, including those that can be difficult to access. Its arrival at Gustave Roussy strengthens the Institute's radiosurgery platform and reflects its commitment to providing patients with cancer access to the latest therapeutic advances.

On 25 November, Gustave Roussy's radiosurgery platform treated its first patients using ZAP-X. Developed by ZAP Surgical Systems, this state-of-the-art system can treat patients with small brain tumours or metastases using intracranial stereotactic radiosurgery, a radiotherapy approach designed to treat brain tumours with great precision, whether benign, such as meningiomas, or malignant.

State-of-the-art gyroscopic design

Stereotactic radiosurgery systems deliver multiple radiation beams that converge on a precise point: the lesion being treated. Each beam contributes a portion of the total dose delivered to the lesion. By converging on the target, they concentrate a high dose within the lesion to destroy tumour cells, while minimising exposure to the healthy tissue through which the beams pass. Mounted on two independent rotational axes, ZAP-X can move around the patient's head along a spherical trajectory. This gyroscopic architecture enables radiation to be delivered from more than a thousand different angles, with the beams converging precisely on the treatment area.

"*This highly precise approach offers numerous advantages. It requires neither general anaesthesia nor open surgery. For patients, the treatment is generally painless, delivered on an outpatient basis and completed in between one and five sessions. ZAP-X, which was specifically developed to treat tumours and lesions in the brain, enables us to concentrate the radiation dose on the lesion while minimising exposure to the surrounding healthy tissue*," explains Dr Sophie Bockel, Head of the Neuro-Oncology Committee at Gustave Roussy.

"*Treatment is planned using the patient's imaging, particularly MRI and CT scans, which allows us to define the treatment area with great precision. The medical physicist then determines how the beams will be delivered to concentrate the dose on the lesion while sparing nearby sensitive structures, such as the optic nerves or brainstem, as much as possible. During treatment, the patient simply lies down with their head held in place by a custom-made mask, with no invasive frame fixed to the skull. Their position is monitored using imaging throughout the session and, if even the slightest movement is detected, irradiation can be interrupted so that the patient can be repositioned before treatment continues*," adds Dr Frédéric Dhermain, radiation oncologist specialising in neuro-oncology at Gustave Roussy.

Strengthening the radiosurgery platform

The arrival of ZAP-X strengthens Gustave Roussy's radiosurgery platform, which already features several complementary, state-of-the-art systems. The aim is to select the technology best suited to each patient, particularly according to the size and location of the tumour. The platform comprises:

- Two HD Versa linear accelerators, used to treat larger lesions
- CyberKnife, particularly suited to small or medium-sized lesions located close to sensitive organs
- ZAP-X, specifically designed to target very small brain lesions with an extremely high degree of precision
- A dedicated MRI scanner to accurately identify and delineate brain lesions before treatment
- A team of four radiation oncologists specialising in neuro-oncology, working in collaboration with the neurosurgery teams at Bicêtre Hospital (AP-HP) and Sainte-Anne Hospital to provide each patient with a multidisciplinary treatment strategy

More broadly, Gustave Roussy's Department of Radiation Oncology offers the full range of radiotherapy techniques, with 10 external beam radiotherapy machines, as well as brachytherapy and molecular radiotherapy. The department delivers approximately 4,200 courses of treatment each year, supported by a team of 200 staff, including radiation oncologists, medical physicists, dosimetrists, allied healthcare professionals, and administrative teams.

Acquiring high-technology equipment represents a significant investment for Gustave Roussy. The generosity of donors helps to fund this equipment.

"*ZAP-X complements our existing platform and broadens the range of treatment options we can offer our patients. Each technology has its own specific characteristics, allowing us to tailor treatment to the size, location, and complexity of each lesion. Having complementary imaging and radiation delivery technologies available within a single platform enables us to personalise treatment strategies, always with the same objective: to target the tumour as precisely as possible while sparing healthy tissue to the greatest possible extent*," concludes Professor Sofia Rivera, Head of the Department of Radiation Oncology at Gustave Roussy.

About Gustave Roussy
Ranked first in France, first in Europe and third in the world, Gustave Roussy is a centre of global expertise entirely dedicated to patients living with cancer. The Institute is a founding pillar of the Paris-Saclay Cancer Cluster. Source of therapeutic innovations and diagnostic breakthroughs, the Institute welcomes more than 54,000 patients each year, including 2,760 children and adolescents, and develops an integrated approach combining research, care and teaching. An expert in rare cancers and complex tumours, Gustave Roussy treats all cancers at all stages of life. It offers its patients personalised care that combines innovation and humanity, taking into account both care and the physical, psychological and social quality of life. With 4,000 employees at two sites, Villejuif and Chevilly-Larue, Gustave Roussy brings together the expertise essential for high-level cancer research; 40.5% of treated patients are included in clinical studies. To find out more about Gustave Roussy and follow the Institute's news: www.gustaveroussy.fr/en , X, Facebook, LinkedIn, Instagram et Bluesky.

PRESS CONTACTS

GUSTAVE ROUSSY :
Claire Parisel and Léona Pinto – presse@gustaveroussy.fr - Tel. +33 1 42 11 50 59 – +33 1 42 11 63 59 – +33 6 17 66 00 26