

# SARRP Small Animal Radiation Research Platform BEAMLINE

The First Image-Guided  
Solution Designed  
for Preclinical Particle  
Therapy Research

 **xstrahl**

# THE FIRST IMAGE-GUIDED PLATFORM FOR PRECLINICAL PARTICLE THERAPY RESEARCH

Built on the robust and established SARRP platform, SARRP Beamline provides CT guidance and robotic alignment to perform accurate, targeted particle irradiations for small animal experiments. This development fundamentally advances preclinical experiments in particle therapy, enabling you to perform targeted imaging-guided particle therapy studies and comparative X-ray irradiations directly on your preclinical model.

SARRP Beamline offers a proven dedicated image-guided platform designed specifically for preclinical particle therapy research including protons, electrons, and heavy ions. The unique open cabinet design gives users both the space and access to perform particle irradiation with options for either setting up a beam stop or shooting through the system. A novel on-rails design allows the SARRP to be rolled away from the beam when required for other uses, yet it is easily and reproducibly repositioned when needed.

The system has been developed to enable in-vivo investigations of radiobiological effects of any particle beam, comparative studies between particle and X-ray beams, and investigations into novel treatment

methods. The SARRP Beamline X-ray imaging and delivery components can be customized to meet the needs of your research program.

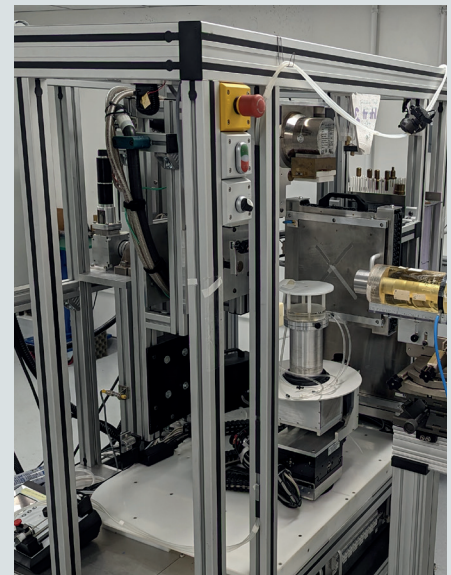
## SARRP Beamline has been shown to be the ultimate adaptable platform for in vivo proton studies.

The SARRP Beamline is designed to be operated remotely from the control room with key components and electronics protected from potential damage. The system can be controlled as a separate unit or can be integrated at various levels into the particle beam workflow.

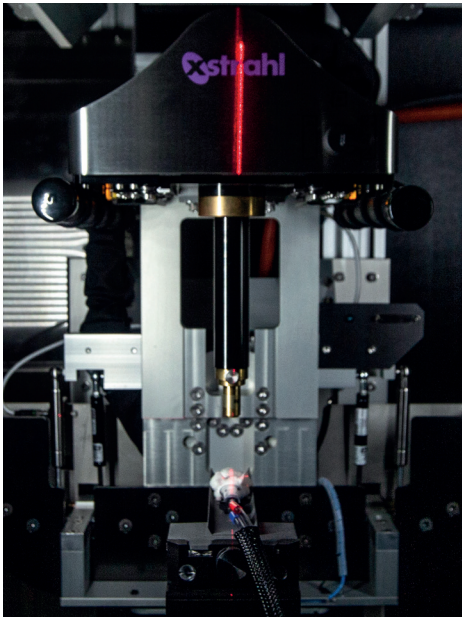
SARRP has revolutionized the way preclinical radiobiology is conducted, mimicking clinical radiation therapy techniques. With particle therapy at the forefront of clinical research for better treatment of disease and implementing novel methods such as FLASH/UHDR radiotherapy, there is a need for a translational platform to form the basis of this research.



GSI HELMHOLTZ CENTRE FOR HEAVY ION RESEARCH



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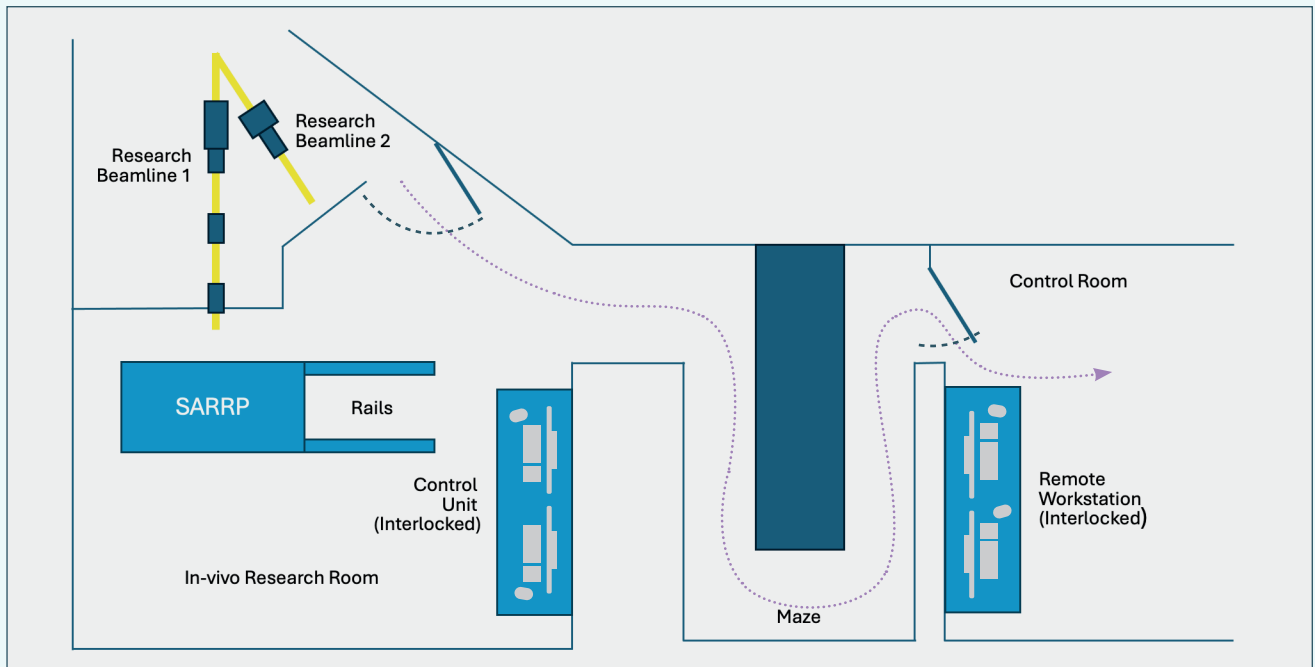
## KEY FEATURES

- Enables image-guided experiments with your particle beamlines
- Open, compact design, customizable to suit the exact needs of the research
- On-rail system ensures easy transportability in and out of the particle beam to enable the beam to be used for other research goals
- Calibration of the SARRP imaging space with the particle beam means the SARRP is the only system with 0.25 mm targeting accuracy
- SARRP immobilization devices enable flexible positioning to deliver pinpoint radiation at any angle
- Remote workstation gives full system control while being integrated into the bunker's safety circuit
- Retains full photon irradiation capabilities of the SARRP for comparison studies

“The SARRP Beamline, integrated into our IBA proton beamline, has been a valuable tool in aiding our proton research projects. Since it is easy to remove the SARRP from the beam using the rails - this means other users are not blocked from access, and we know we can easily realign when needed. The open design is very handy and gives space for whatever procedure we want to implement.”

— Costas Koumenis, Ph.D., Professor of Radiation Oncology  
University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA

## SARRP BEAMLINE SETUP



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## SARRP BEAMLINE IN ACTION

*Proton FLASH Radiotherapy Ameliorates Radiation-induced Salivary Gland Dysfunction and Oral Mucositis and Increases Survival in a Mouse Model of Head and Neck Cancer.*  
Chowdhury P et al *Mol Cancer Ther* 2024; 23(6):877–89 doi.org/10.1158/1535-7163.MCT-23-0663.

*Design and commissioning of an image-guided small animal radiation platform and quality assurance protocol for integrated proton and x-ray radiobiology research.*  
Kim MM et al, *Phys Med Biol.* 2019 Jul 4;64(13):135013. doi: 10.1088/1361-6560/ab20d9.

*An image-guided precision proton radiation platform for preclinical in vivo research.*  
Ford E et al *Phys Med Biol.* 2017 Jan 7; 62(1):43-58. Epub 2016 Dec 14.  
DOI 10.1088/1361-6560/62/1/43.



LEARN MORE ABOUT  
SARRP BEAMLINE

### About Xstrahl

Xstrahl is a medical technology company that designs clinical and research systems to help eradicate cancer. For more than 25 years, Xstrahl has been shaping the development of superficial and orthovoltage therapies for cancer treatment and advancing preclinical research. Xstrahl systems are in operation at more than 700 treatment and research facilities worldwide.

Xstrahl.com

