



MOVE YOUR RESEARCH INTO NEW DIMENSIONS WITH A ROTATIONAL X-RAY IRRADIATOR



XenX – Clinically Based Irradiation system



THE XENX IRRADIATOR PLATFORM HAS BEEN DESIGNED TO ALLOW HIGH THROUGHPUT TARGETED IRRADIATION STUDIES ON CELLS AND SMALL ANIMALS

An upgrade to a standard X-ray irradiator, the XenX allows users to deliver radiation from multiple angles, allowing a much more conformal dose to the target tissue. With fixed and variable collimation the XenX retires lead blocks and fixed beam irradiators with enhanced targeting and less normal tissue toxicity.

In Vitro

XenX is able to greatly improve accuracy and reproducibility of in vitro experiments. Cell irradiation is often affected by the flask and liquid distorting dose distribution. XenX's rotating X-ray tube gives the option of irradiating from underneath a flask, hence guaranteeing a uniform dose, as the cells tend to settle to the bottom.

Wellplates can be irradiated in a stack. To guarantee a uniform dose the stack can be irradiated from the top and bottom or side to side. In this configuration the dose uniformity is within 6% across a 6cm stack of plates; which vastly increases throughput while maintaining a constant dose. XenX used in this way is a relevant replacement for a Cesium unit.

In Vivo

The real benefit comes with small animals. There are a variety of accessories that allow the XenX to be able to target specific organs, tumors or Xenographs and minimize dose to non-targeted tissues.

The Portal imaging camera provides a fluoroscopic X-ray image of the specimen, or so called "beams eye view." This allows the user to guide their radiation beam to the correct target, which is visible on the 2 D X-ray. As a comparison, the XenX set up and delivery is equivalent to clinical practice, where cone beam CT is not available. AP and Lateral Portal images can be obtained to verify the target is in the correct position. The X,Y,Z manual stages allow the user to accurately position the Animal.

Beam Collimation – Leave the lead behind


XenX is available with a range of fixed collimators, or a variable collimator. The variable collimator allows the user to simply adjust the X-ray field to irradiate only the target, and minimize dose to other tissue. With a beam size from 0,0mm to 4 cm x 8cm the system is capable of targeting whole organs xenographs or specific orthotropic tumors. Throughput is accelerated by using the built in X-ray Field light to align the target.

Fixed collimators from 5mm give a quick and efficient beam size, with minimal scatter.

The use of collimators and multiple beam arrangements have led to much higher fractionated doses being delivered¹. Several groups have proved that clinical dose regimes of up 60Gy can be delivered over a 7 week period compared to conventional lead cut-out based experiments.

Enhanced Imaging

For soft tissue targeting, the XenX is compatible with the Xstrahl MuriGlo system which will dock onto the system and allow Bioluminescent imaging. These BLI images can be overlaid on the x-ray image to visualize soft tissue targets.



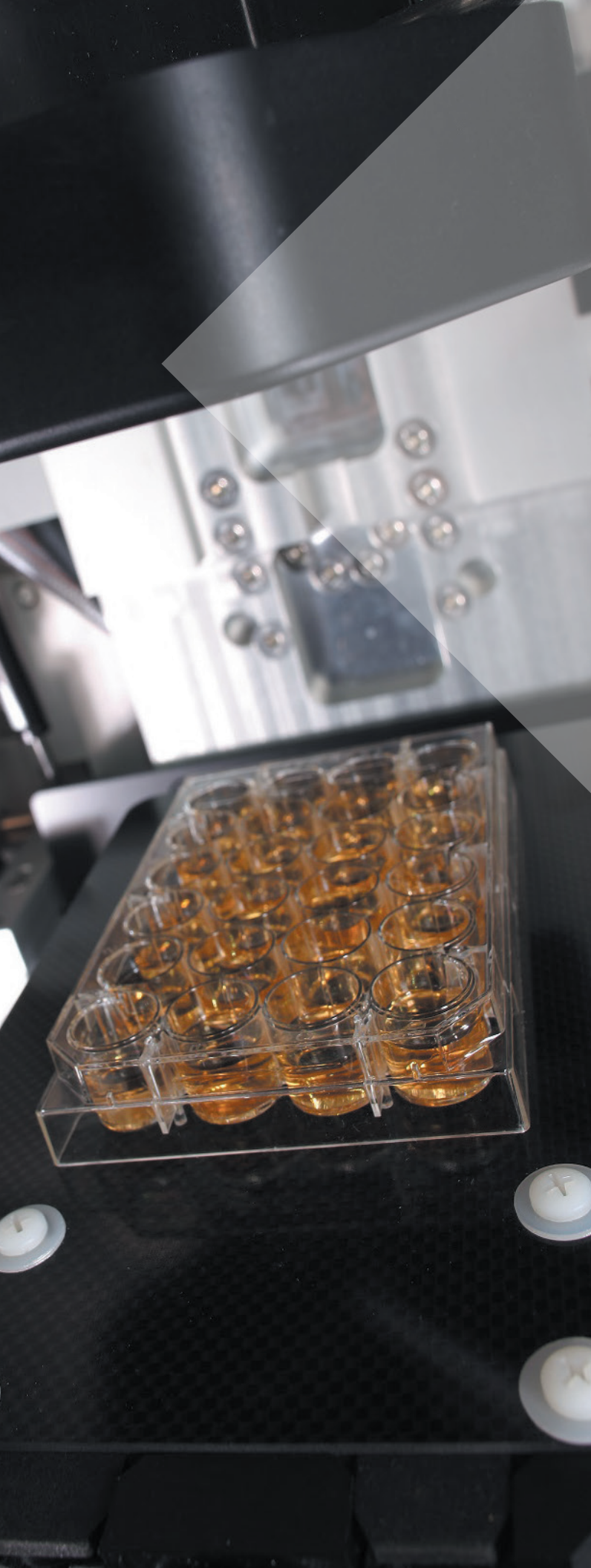
As Oncology research moves towards clinically relevant experiments the use of radiation also needs to match this trend.

Dose Planning

A fast simple dose calculator based on depth in tissue is a standard feature on XenX. The depth can be measured on the lateral portal image. The treatment time will be calculated based on the measured depth.

Users who have access to a CT can use Xstrahl Muriplan to plan their experiments. Muriplan will import the CT data, so the user can set an Isocenter and place beams. The dose distribution is calculated and displayed as isodose lines. Contouring and DVH are also available for dose planning and verification.

- > 225kV X-Ray beam with filtration suitable for both animals and cells. Shielded for use in any lab.
- > 360 Gantry for multiple beam angles to minimize surface dose
- > Fixed and dynamic variable collimator's for conformal dose delivery
- > X-Ray imaging for accurate guided set up. Optional Bioluminescence imaging
- > Dose calculation and optional advanced planning system
- > Large field and dynamic dose delivery for multiple cell plates
- > X, Y, Z adjustable specimen table and a variety of animal beds to accurately position specimen.



Xstrahl Service and Support

Every system in the Xstrahl range is available with full clinical and engineering support, this is further enhanced with specialist training which can be given at any time during the ownership period.

Xstrahl works closely with customers to ensure every system matches their individual requirements and budgets. Product sales and efficient installation are only the start of every customer relationship, Xstrahl is committed to providing customers with an unrivalled level of service that supports the continued longevity and performance of all its systems.

The Xstrahl range is built for daily and long-term use and takes advantage of superior quality construction and industrial-strength components to ensure low maintenance year after year. We offer a full range of service contracts and maintenance support that span comprehensive cover to just one annual inspection to suit customer requirements.

As your research moves toward clinical practice, the XenX is able to be upgraded to the full SARRP system: which gives full imaging capability via use of cone beam CT and automated robotics delivery of dose; further enhancing the applicability of your research to a clinical environment.

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Reference

Preclinical Models for Translational Research Should Maintain Pace With Modern Clinical Practice. Dilworth, J et al. Int Journal Rad Onc (2014), Volume 88, Issue 3, Pages 540-544