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Progress report on the European MRT program: What can the Australian MRT community learn from the European experience?

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There are currently two biomedical synchrotron beamlines in the world with an MRT program and an active MRT user base: ID17 at the European Synchrotron Radiation Facility (ESRF), France, and the Australian Synchrotron's Imaging and Medical Beamline (IMBL). The European program has been ongoing since the 1990s and has identified radioresistant brain tumours as a clinical target for MRT. Indeed, much of the radiobiological data available in the literature relates to MRT irradiation of healthy and tumour inoculated brains of mice and rats. The Australian program has a different focus, instead proposing to target naturally occurring osteosarcomas in domestic dogs. Despite the different directions of the two programs, both communities share a common goal: to begin human clinical trials within 5 years. The past 5 years have seen many critical developments in this direction: the emergence of protocols and techniques for accurate dosimetry in broadbeams and microbeams, treatment planning systems dedicated to keV photons, and beamline specific image guidance protocols. In a "make or break" attempt to prove the safety of MRT for human patients, the European MRT collaboration have proposed a long term study on both healthy and brain tumour bearing pigs, where MRT is delivered as a dose "boost" to conventional stereotactic radiotherapy. The first steps of this project – end-to-end quality assurance (dosimetry and treatment plan verification) on a phantom and a dry-run on a pig carcass – were recently performed. The results from these experiments will be presented, as well as a discussion of what the Australian MRT community can learn from this.

Keywords or phrases (comma separated)

Microbeam radiation therapy, clinical trial, dosimetry, quality assurance

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No

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Yes

What is your gender?

Female

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