

MedAustron – Ion beam therapy and research centre: Radiobiology research

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In Lower Austria the innovative ion beam therapy centre MedAustron was developed in close cooperation with CERN. So far protons and from 2019 also carbon ions, generated by three ion sources, can be accelerated up to 200.000 km/s. The charged particles are pre-accelerated in a linear accelerator and then injected into a synchrotron with a circumference of 80 meters. Stabilized on their path by 300 magnets in total, the particles are further accelerated to their final velocity and then extracted into either one of the three patient treatment rooms or the specifically dedicated research room. The three treatment rooms provide the option to treat multiple tumour entities with a fixed horizontal beam, fixed horizontal plus vertical beam or a rotating gantry (protons only). The research room is custom designed for energies up to 800 MeV protons and currently used by three on site located research teams in a cooperation with the Technical University of Vienna (Radiation Physics) and the Medical University of Vienna (Medical Radiation Oncology and Radiation Biology). Radiation Biology focuses on the exploitation of the physical advantages of particle beams for the improvement of tumour therapy by challenging the currently used generic RBE value of 1.1.