

Proton Therapy at The Children's Hospital of Philadelphia Cancer Center

- Proton therapy is a highly advanced form of radiation therapy, using high-energy subatomic particles to destroy the DNA in cancerous tumors and prevent cancer cells from multiplying. Protons are the positively-charged particles inside the nucleus of all atoms.
- The Cancer Center at The Children's Hospital of Philadelphia is a world leader in treating pediatric cancers and developing innovative cancer treatments. The Cancer Center's affiliation with Penn Medicine makes proton therapy available to patients at Children's Hospital, as part of the Hospital's comprehensive oncology services.
- Penn Medicine's Roberts Proton Therapy Center, which began treating adult patients in 2010, is the world's largest proton therapy center associated with an academic medical center. Of the seven proton therapy centers open in the U.S., it is the only one to incorporate features for pediatric patients from the earliest planning stages.
- The Roberts Proton Therapy Center is located across 34th Street from the main building of Children's Hospital, in Penn Medicine's Perelman Center for Advanced Medicine.
- Children who receive proton therapy at the Center have the use of a dedicated child-friendly waiting room and a dedicated room for pediatric anesthesia. Designated time is reserved for treating child patients, and as with all oncology patients at Children's Hospital, a multidisciplinary pediatric team focuses on the child's unique needs and on emotional support for the whole family.
- The extremely precise particle beam used in proton therapy concentrates energy directly at the tumor site, minimizing injury to surrounding healthy tissues and thereby greatly reducing the risk of acute and long-term side effects. This precise targeting makes proton therapy particularly appropriate for treating cancers near vital organs: brain tumors, cancers of the head and neck, and tumors located near the spinal cord, heart or lungs.
- Some statistics: the Proton Therapy Center occupies 75,000 square feet. The cyclotron, which accelerates protons to 100,000 miles per second (more than half the speed of light), weighs 220 tons—about as much as a 747 jet. Powerful magnets guide the high-speed, high-energy protons into a beamline, an airless tube about as long as a football field. From the beamline, protons are channeled into five treatment rooms, four of which contain a 90-ton steel gantry that moves around the patient to aim the beam at the correct angle.