



## **Agreement Regarding Cooperation on Development of Fifth-Generation Quantum Beam Cancer Treatment Facility (Quantum Scalpel) Signed by QST, Sumitomo Heavy Industries, Toshiba, Hitachi, and Mitsubishi Electric**

TOKYO, December 13, 2016 - Today, the National Institutes for Quantum and Radiological Science and Technology (QST), Sumitomo Heavy Industries, Ltd., Toshiba Corporation, Hitachi, Ltd., and Mitsubishi Electric Corporation signed an "Agreement on Comprehensive Cooperation on Fifth-Generation Quantum Beam Cancer Treatment Facility".

QST successfully developed the world's first heavy ion beam treatment facility for treating cancer in 1994 and has built a track record of treating over 10,000 people up until now. In the course of this, QST has drawn up a vision to establish heavy ion therapy, which imposes fewer burden on patient than surgery and other cancer treatment methods, and does not cause immunosuppression, as the basic method of treating cancer in the future. QST intends to achieve its goal of zero cancer deaths by widely spreading and enhancing the adoption of this promising method.

For that reason, QST plans to develop a fifth-generation quantum beam cancer treatment facility (Quantum Scalpel) that can be used and operated at every potential medical institution in Japan and abroad. To be specific, it will develop a heavy ion cancer treatment facility using laser acceleration technology, superconducting technology, and other technology to achieve dramatic reductions in size and construction costs. In parallel with those efforts, it will promote performance improvements, such as demonstrations of practicality, for multi-ion beams, which promises to be more effective at treating cancer than current heavy ion treatment facilities, which use carbon ions.

The four companies Sumitomo Heavy Industries, Toshiba, Hitachi, and Mitsubishi Electric, each of which possesses its own characteristic advanced technical expertise and constantly developing capabilities needed to achieve the assumed tasks of this cooperative endeavor, today agreed to the plan to develop this fifth-generation quantum beam cancer treatment facility and have signed a "Agreement on Comprehensive Cooperation on Fifth-Generation Quantum Beam Cancer Treatment Facility" with QST.

Based on the signing of this agreement, QST, Sumitomo Heavy Industries, Toshiba, Hitachi, and Mitsubishi Electric will apply their respective R&D capabilities, human resources, equipment, and facilities to the performance of activities in accordance with the division of roles to be agreed upon in future deliberations, with the aim of quickly developing the fifth-generation quantum beam cancer treatment facility (Quantum Scalpel).