



## Proton and Carbon Ion Therapy

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### Message from the Guest Editor

Dear Colleagues,

Proton therapy was introduced in the 1940s and carbon-ion therapy was started in the 1990s. Recently the particle therapy of protons and carbon ions has spread to many countries around the world. Compared to conventional radiation treatment with X-rays, there are clinical reports that particle therapy is more effective against: 1) malignant tumors with less X-ray sensitivity; 2) tumors close to vital organs; and 3) large tumors.

In this Special Issue, we would like to discuss how particle therapy is employed for cancers that are difficult to treat with X-ray therapy, as well as possible future uses of this therapy and its current state of progress. It would also be beneficial to look into the efficacy of combining particle therapy with chemotherapy.

If we are able to clarify the strong points of ion beam radiotherapy in this special edition, we can expect progress on differentiating the uses of proton therapy and carbon-ion therapy from X-ray radiotherapy.

We also welcome advice from facilities that have experience with proton therapy and/or carbon-ion therapy to those medical institutions that are considering introducing it.





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## Message from the Editor-in-Chief

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