

Biophysical modeling of radiation effects

Tuesday, September 10, 2024 4:00 PM (1 hour)

One of the main challenges in using ionizing radiation to treat cancer is translating physical quantities into biological endpoints and, ideally, into predictable clinical outcomes. The earliest mathematical models explaining radiation effects were proposed about a century ago. In recent decades, thanks to the development of hadrontherapy, new models have emerged to describe the enhanced biological effectiveness of heavy ions compared to conventional photon radiotherapy. These models, starting from a variable number of parameters and postulates, focus on predicting relevant quantities that can be employed to assess radiotherapy treatments, such as biological dose to the tumor, tumor control probability, and normal tissue complication probability. This lecture provides an overview of the main features, assumptions, and limitations of some of the best-known biophysical models.

Primary author: Dr ALCOCER, Mario

Presenter: Dr ALCOCER, Mario