

# **Basic Clinical Radiobiology**

7-11 September 2025 | Rome, Italy

Learn all the fundamental principles of clinical radiobiology that underpin daily decisions about the best way to treat your patients. This vitally important knowledge provides the basis for everything you do in the clinic.

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#### Target group

- Trainees in radiotherapy
- Radiation oncologists who lack basic radiobiological science or who want to update their knowledge (i.e. for CME)
- Biologists
- Medical physicists who wish to familiarize themselves with this field
- Physicians from other disciplines administering ionising radiation
- Radiation therapists (RTTs)

#### **Course Aim**

- Provide an introduction to radiation biology as applied to radiotherapy
- Cover the basic mechanisms of cell death/survival and the radiation response of tumours and normal tissues
- Explain the formulae of tissue tolerance
- Describe the biological basis for current approaches to the improvement of radiotherapy including novel fractionation schemes, retreatment, IMRT, modification of hypoxia, hadron therapy, combined radiotherapy/chemotherapy and biological modifiers of tumour and normal tissue effects

### **Course Content**

- A series of basic lectures introducing molecular and clinical radiobiology
- Mechanisms and models of radiation cell killing
- The linear-quadratic approach to fractionation
- Molecular basis of radiation response
- Radiobiology and tolerance of normal tissues to (re)treatment
- Alternative fractionation schedules in radiotherapy
- Tumour hypoxia and the microenvironment
- Combined radiotherapy and chemotherapy
- The volume and dose-rate effect in radiotherapy
- Biological response modifiers (tumours, normal tissues) and molecular approaches to therapy
- Protons and other particles in radiotherapy
- Radiation-induced malignancies

