Radiation Oncology

Group leader

Sancho Pardo, Gemma (FGS)

Researchers

Balart Serra, Josep (FGS)
Farré Bernado, Núria (FGS)
Isern Verdum, Josep (FGS)
Julià Sanahuja, Joan Carles (FGS)
Majercakova, Katarina (FGS)
Mera Errasti, Maria Arantzazu (FGS)
Montezuma Niño, Laura Constanza (FGS)
Rojas Cordero, Jady Vivian (FGS)
Soto Cambres, Ana María (FGS)
Vila Capel, Antoni (FGS)

Research technicians

Cifuentes Antolinez, Patricia (IR)

DESCRIPTION

We are focused on expanding the use of extreme hypofractionation, both in primary and oligometastatic tumours, investigating whether it increases the efficacy of systemic treatment or whether outcomes are conditioned by older age and patient frailty. We are co-leading a project to develop a methodology for clinical audits in radiation therapy. We collaborate with different groups to identify predictors of response and toxicity to radiotherapy in combination with systemic treatments. We continue with the development of the total body irradiation model with VMAT and SBRT in rats.

MAIN LINES OF RESEARCH

- European project for the development of a predictive model for lung cancer patients, using omics-based variables that integrate established clinical factors with others derived from big data analysis and advanced imaging features, to create digital human avatars. (Farré Bernado, Nuria).
- Clinical Audits in Radiotherapy: Training for Auditors and Auditees. (Sancho Pardo, Gemma).
- Gold nanoparticles to enhance the synergy of radiotherapy and chemotherapy. (Balart Serra, Josep).
- SBRT (stereotactic body RT) in primary tumors (lung, pancreas, prostate) and ablative treatment of metastases in oligometastatic patients, with planning based on metabolic imaging, applying techniques for respiratory

motion control such as image-guided RT (IGRT) or surface-guided RT (SGRT). (Sancho Pardo, Gemma; Farré Bernado, Nuria; Balart Serra, Josep; Isern Verdum, Josep).

- VMAT-TBI as part of conditioning in haematopoietic progenitor transplantation. (Sancho Pardo, Gemma; Vila Capel, Antoni).
- Predictive factors of response to radiotherapy in head and neck tumours. (Montezuma Niño, Laura Constanza).
- Irradiation of large-volume sarcomas with Lattice technique. (Majercakova, Katarina; Isern Verdum, Josep).
- SBRT (stereotactic body RT) in primary tumors (lung, pancreas, prostate) and ablative treatment of metastases in oligometastatic patients, with planning based on metabolic imaging, applying techniques for respiratory motion control such as image-guided RT (IGRT) or surface-guided RT (SGRT). (Sancho Pardo, Gemma; Farré Bernado, Nuria; Balart Serra, Josep; Isern Verdum, Josep).
- Surface-guided radiotherapy with respiratory motion control techniques in SBRT. (Balart Serra, Josep; Farré Bernado, Nuria).
- Development and training of an auto-segmentation system for the definition of organs at risk and irradiation volumes. (Julia Sanahuja, Joan Carles).
- Impact on clinical outcomes of peer-review sessions incorporated into clinical practice. (Rojas Cordero, Jady Vivian; Sancho Pardo, Gemma).
- Adaptation of radiotherapy schedules in oncogeriatric oncology. (Soto Cambres, Ana Maria; Mera Errasti, Maria Arantzazu; Sancho Pardo, Gemma).
- Total Body Irradiation and SBRT in rats using modern Medical devices. (Balart Serra, Josep; Sancho Pardo, Gemma).

SCIENTIFIC CHALLENGES

- Clinical impact of ablative radiotherapy of oligometastases.
- Use of AI to identify predictors of response and toxicity to radiotherapy in lung and prostate cancer.
- Incorporate Deep-learning autosegmentation in clinical practice.
- Changes in radiotherapy dose and fractionation in elderly patients
- Expansion of the use of the SGRT with respiratory motion control techniques in SBRT and for the intrafraction movement control during VMAT-TBI.
- Use of clinical devices to perform experimental irradiation in rats.
- Use of nanoparticles to enhance the efficacy of radiation therapy.

ACTIVE & AWARDED GRANTS

- Balart Serra, Josep. Nanopartículas de oro 2 en 1 para un aumento sinérgico de la radioterapia y la quimioterapia. AECC 2024. Asociación Española Contra el Cáncer. Duration: 2024-2027. 45.500,00 €
- Farré Bernado, Nuria. CANCER MULTI-OMICS AVATARS FOR INTEGRATED PRECISION MEDICINE. EraPerMed Farré. Unión Europea (GenCat FUNDING - Aciones complementarias). Duration: 2023-2025. 198.202,00 €
- Jornet Sala, Nuria & Sancho Pardo, Gemma. Catalan Clinical Audit network for Quality Improvement in RT [CAT-ClinART]. EU4H Action Grants 2023. UE. Duration: 2023-2027. 374.999,92 € (FGS)

SCIENTIFIC PRODUCTION

- Bonet M, Recalde E, Soto A, Martínez A, Murcia M, Mases J, Fernández MN, Yufera JC, Álvarez A, Eraso MA, Feltes N, Hernandez L, Bernard P, Ramos L, Garcia V. Use of social media in radiation oncology: multicenter data from the GOCO Group. Reports Of Practical Oncology And Radiotherapy. 2024; 29(2). DOI:10.5603/rpor.100386. PMID:39143971. Document type: Article.
- Mármol MCC, Aguado M, Cajal TRY, Gallardo A, Catasus L, Gonzalez A, Mendez JE, Lasa A, Arumi M, Rubio OG, Serra JB, Hernandez FM, von A, Kommoss FKF, Espinosa I. Non-C19MC-altered embryonal tumor

with multilayered rosettes in a young woman with DICER1 syndrome: case report and review of the literature. Pathologica. 2024; 116(3). DOI:10.32074/1591-951X-970. PMID:38979591. Document type: Review.

- Puente J, Arrea FA, Rueda OB, Gauna DC, Durán I, Avila JJF, Gómez A, Blázquez MJP, Fentes DP, Pardo GS, Casas J, Gratal P, Pardo MT, Porta VG. Criteria and indicators to evaluate quality of care in genitourinary tumour boards. Clinical & Translational Oncology. 2024; 26(7). DOI:10.1007/s12094-024-03381-z. PMID:38341809. IF:2,800 (Q2/5D). Document type: Article.
- Sicre JE, Ivars M, Heinz OH, Ludwig PW, Verdun JI, Torres EB. Use of Postoperative Radiotherapy and Multiple Adjuvant Treatments After Surgical Removal of a Giant Retroauricular Keloid in a Pediatric Patient. PEDIATRIC DERMATOLOGY. 2024; DOI:10.1111/pde.15787. PMID:39491479. IF:1,200 (Q3/7D). Document type: Article.