

Work Program:

Research activity on breast cancer, ranging from neoadjuvant and adjuvant treatment to first-line treatment, with a particular focus on artificial intelligence techniques. Several scientific collaborations with Italian and international Centers for translational and clinical studies are ongoing in this field.

Some of these projects include

- Improving prognosis of HER2+ breast cancer patients receiving neoadjuvant treatment
- Exploring the efficacy and safety of novel treatments for triple-negative breast cancer patients in a real-world setting
- Understanding how breast cancer becomes resistant to anticancer treatment
- Finding new ways to make first-line therapies more effective
- Using artificial intelligence in several settings of breast cancer, from diagnosis to prognosis and response to systemic treatments

Team Composition:

A multidisciplinary research group including medical oncologists, data scientists with expertise in the analysis of biomedical data, medical physicists, researchers, radiation oncologists, radiologists, pathologists, etc. supports the development of these research projects.

Team Leaders:

Alessandro Rizzo

Team Members:

Raffaella Massafra, Annarita Fanizzi, Maria Colomba Comes, Samantha Bove, Antonio Cusmai, Vito Lorusso, Annalisa Nardone, Cosmo Maurizio Ressa, Daniele La Forgia, Agnese Latorre, Lucia Rinaldi, Silvana Acquafredda, Francesco Giotta, Gennaro Palmiotti, Sergio Diotaiuti, Alfredo Zito

Key networks:

IRCCS Sant'Orsola, Bologna; Oncology Unit, Macerata Hospital; Policlinico, Bari; Napoli University "Luigi Vanvitelli"; Centro di Riferimento Oncologico, Aviano; Azienda Ospedaliero Universitaria - Ospedali Riuniti, Foggia; Ankara University (Turkey); "Dimiccoli" Hospital, Barletta; Associazione Italiana di Fisica Medica (AIFM); Istituto Nazionale di Fisica Nucleare (INFN); Dipartimento Interateneo di Fisica, Bari University

Key funding:

Ricerca Corrente 2022

Key publications:

- Rizzo A, Cusmai A, Massafra R, Bove S, Comes MC, Fanizzi A, Rinaldi L, Acquafredda S, Gadaleta-Caldarola G, Oreste D, Zito A, Giotta F, Lorusso V, Palmiotti G. Pathological

Complete Response to Neoadjuvant Chemoimmunotherapy for Early Triple-Negative Breast Cancer: An Updated Meta-Analysis. *Cells*. 2022 Jun 7;11(12):1857. doi: 10.3390/cells11121857.

- Massafra R, Bove S, La Forgia D, Comes MC, Didonna V, Gatta G, Giotta F, Latorre A, Nardone A, Palmiotti G, Quaresmini D, Rinaldi L, Tamborra P, Zito A, Rizzo A, Fanizzi A, Lorusso V. An Invasive Disease Event-Free Survival Analysis to Investigate Ki67 Role with Respect to Breast Cancer Patients' Age: A Retrospective Cohort Study. *Cancers (Basel)*. 2022 Apr 28;14(9):2215. doi: 10.3390/cancers14092215. PMID: 35565344; PMCID: PMC9104454.
- Rizzo A, Massafra R, Fanizzi A, Rinaldi L, Cusmai A, Latorre A, Zaccaria GM, Ronchi M, Telegrafo M, Gadaleta-Caldarola G, Giotta F, Lorusso V, Palmiotti G. Adenosine pathway inhibitors: novel investigational agents for the treatment of metastatic breast cancer. *Expert Opin Investig Drugs*. 2022 Jul;31(7):707-713. doi: 10.1080/13543784.2022.2078191. Epub 2022 May 18. PMID: 35575038.
- Massafra R, Comes MC, Bove S, Didonna V, Gatta G, Giotta F, Fanizzi A, La Forgia D, Latorre A, Pastena MI, Pomarico D, Rinaldi L, Tamborra P, Zito A, Lorusso V, Paradiso AV. Robustness Evaluation of a Deep Learning Model on Sagittal and Axial Breast DCE-MRIs to Predict Pathological Complete Response to Neoadjuvant Chemotherapy. *J Pers Med*. 2022 Jun 10;12(6):953. doi: 10.3390/jpm12060953. PMID: 35743737; PMCID: PMC9225219.
- Bove S, Comes MC, Lorusso V, Cristofaro C, Didonna V, Gatta G, Giotta F, La Forgia D, Latorre A, Pastena MI, Petruzzellis N, Pomarico D, Rinaldi L, Tamborra P, Zito A, Fanizzi A, Massafra R. A ultrasound-based radiomic approach to predict the nodal status in clinically negative breast cancer patients. *Sci Rep*. 2022 May 12;12(1):7914. doi: 10.1038/s41598-022-11876-4. PMID: 35552476; PMCID: PMC9098914.