

Personal information

First name: Elisabetta

Last name: Molteni

Education

- November 2021 – October 2024: PhD in "Alimenti e Salute umana" (3rd cycle), at University of Udine, Department of food, environmental and animal sciences.
Thesis title: *"HER2 evaluation from tissue to liquid biopsy: improving CTC HER2 characterization for clinical implementation in breast cancer"*.
Supervisor: prof. Giuseppe Damante, co-supervisors: prof. Massimo Cristofanilli, prof. Lorenzo Gerratana, prof. Carolina Reduzzi.
- June 2023 – October 2024: PhD student visiting at Weill Cornell Medicine (Cristofanilli's Lab).
- Master's degree in Functional Genomics at University of Trieste, graduated on 25th October 2021.
Thesis title: *"Validation of the use of an NGS panel for the implementation of molecular diagnosis in patients with familial breast and ovarian cancer."*
Supervisor: prof. Guidalberto Manfioletti, correlators: dr. Catia Mio, prof. Giuseppe Damante.
- Bachelor's degree in biological sciences, graduated on 21st February 2019 at University of Milan.
- Scientific high school, applied sciences address, obtained 7th July 2015, at Liceo scientifico G.B.Grassi Lecco.

University experiences

- Master's thesis trainee at the laboratories of the Institute of Medical Genetics directed by Prof. Giuseppe Damante within the University of Udine, March 2021-October 2021.
- 3-year thesis trainee at the laboratories of Dr. Maria Cristina Bonza (University of Milan) and Dr. Annalisa Bucchi (University of Milan), during September 2018-December 2018.

Professional skills

- Molecular biology (nucleic acid extraction and quantification, electrophoresis, PCR, RT-PCR, qPCR, ddPCR, MS-ddPCR, protein extraction and quantification, Western Blot);
- PBMCs' isolation;
- CTC enrichment;
- Immunofluorescence staining;
- Cell culture;
- Transfection assay;
- Sanger sequencing;
- NGS Sequencing on the Ion Torrent platform;
- Analysis of NGS sequencing data.

Publications

- Rahat Alam, Anna Reva, David G. Edwards, Bree M. Lege, Laura Munoz Arcos, Carolina Reduzzi, Swarnima Singh, Xiaoxin Hao, Yi-Hsuan Wu, Zeru Tian, Laura Michie Natalee, Gargi Damle, Deniz Demirciouglu, Yixian Wang, Sharon Nirmalakumar, Ling Wu, **Elisabetta Molteni**, Dan Hasson, Bora Lim, Zbigniew Gugala, Jerry Edward Chipuk, Julie E. Lang, Joseph A. Sparano, Chonghui Cheng, Massimo Cristofanilli, Han Xiao, Xiang H-F. Zhang, Igor L. Bado. "*Bone-Induced Her2 Promotes Secondary Metastasis in HR+/Her2- Breast Cancer*". Accepted Cancer discovery, Dec 2024.
- Nadia Bayou, Sarah Henretta, Laura Arcos Munoz, **Elisabetta Molteni**, Caterina Gianni, Mara Serena Serafini, Eleonora Nicolo', Letizia Pontillo, Hunter Andrew Gaudio, Maroua Manai, Maaz Khan Afghan, Jyothi Manohar, Olivier Elemento, Eleni Andreopoulou, Massimo Cristofanilli and Carolina Reduzzi. "*A novel semi-automated pipeline for HER2 quantification on circulating tumor cells in patients with breast cancer*". Submitted Scientific Reports, Dec 2024.
- Lorenzo Foffano; Alessandra Franzoni; **Elisabetta Molteni**; Fabiola Giudici; Arianna Dri; Debora Basile; Linda Cucciniello; Silvia Buriolla; Claudia Noto; Stefania Russo; Elena Nascimbeni; Silvia Bolzonello; Brenno Pastò; Serena Della Rossa; Lorenzo Allegri; Marta Bonotto; Alessandro Marco Minisini; Barbara Belletti; Giuseppe Damante; Fabio Puglisi. "*Longitudinal profiling of hormone receptor positive, HER2 negative metastatic breast cancer through droplet digital PCR-based circulating tumor DNA fragmentomics*". Submitted Translational Oncology, Dec 2024.

- Arianna Dri, Monica Beatriz Schiappacassi, Angela Caroli, Giuseppe Niccoli, Lorenzo Foffano, Wally Marus, Adrian Zdjelar, Chiara Cigana, Claudia Noto, Brenno Pastò, Linda Cucciniello, Serena Della Rossa, **Elisabetta Molteni**, Gustavo Baldassarre, Lorenzo Gerratana and Fabio Puglisi. "Application of Minimal Residual Disease for personalized treatment sequencing and monitoring in oligometastatic breast cancer after surgical debulking and consolidation radiotherapy of distant disease". Submitted JCO Precision Oncology, Dec 2024.
- Letizia Pontolillo; Andrew A. Davis; Lorenzo Gerratana; Arielle J. Medford; Judy Wang; Eleonora Nicolò; Katherine Clifton; Marko Velimirovic; Surbhi Warrior; Emily Podany; Mara Serena Serafini; Jeannine Donahue; Laura Munoz-Arcos; **Elisabetta Molteni**; Marla Lipsyc-Sharf; Caterina Gianni; Charles S. Dai; Diana Giannarelli; Emilio Bria; Cynthia X Ma; Aditya Bardia; Carolina Reduzzi; Massimo Cristofanilli. "Circulating genomic landscape following cyclin-dependent kinase 4/6 inhibitors exposure in HR+/HER2- metastatic breast cancer: a retrospective multi-institutional Consortium analysis". Submitted npj breast cancer, Nov 2024.
- Foffano L, Vida R, Piacentini A, **Molteni E**, Cucciniello L, Da Ros L, Buriolla S, Cereser L, Roncato R, Gerratana L, Puglisi F. "Is ctDNA ready to outpace imaging in monitoring early and advanced breast cancer?" Expert Rev Anticancer Ther. 2024 Jun 10. doi: 10.1080/14737140.2024.2362173. Epub ahead of print. PMID: 38855809.
- **Molteni, E.**, Baldan, F., Damante, G. et al. "Dihydrotanshinone I exhibits antitumor effects via β -catenin downregulation in papillary thyroid cancer cell lines". Scientific Reports 14, 7853 (2024). <https://doi.org/10.1038/s41598-024-58495-9>
- Serafini M.S*, **Molteni E***, Nicolò E, Gerratana L, Reduzzi C, Cristofanilli M. "Cellular residual disease (CRD) in early breast cancer –Expanding the concept of minimal residual disease monitoring?". The Journal of Liquid Biopsy, Mar 2024, <https://doi.org/10.1016/j.jlb.2023.100132>. *Equally contributed
- Nicolò E, Serafini M.S, Arcos L.M, Pontolillo L, **Molteni E**, Bayou N, Andreopoulou E, Curigliano G, Reduzzi C, Cristofanilli M. "Real-time assessment of HER2 status in circulating tumor cells of breast cancer patients: Methods of detection and clinical implications". The Journal of Liquid Biopsy, Dec 2023, <https://doi.org/10.1016/j.jlb.2023.100117>.
- **Molteni E**, Baldan F, Damante G, Allegri L. "GSK2801 Reverses Paclitaxel Resistance in Anaplastic Thyroid Cancer Cell Lines through MYCN Downregulation". Int J Mol Sci. 2023 Mar 22;24(6):5993. doi: 10.3390/ijms24065993. PMID: 36983070; PMCID: PMC10054879.
- Allegri L, Baldan F, **Molteni E**, Mio C, Damante G. "Role of m6A RNA Methylation in Thyroid Cancer Cell Lines". Int J Mol Sci. 2022 Sep 29;23(19):11516. doi: 10.3390/ijms231911516. PMID: 36232810; PMCID: PMC9569446.

Poster

- Poster presentation at SABCS 2024. *"Liquid Cytopathology for HER2 Status in Breast Cancer: Beyond Tissue Biopsy"*.
Elisabetta Molteni, Lorenzo Foffano, Letizia Pontolillo, Eleonora Nicolò, Mara Serena Serafini, Laura Munoz-Arcos, Caterina Gianni, Nadia Bayou, Giuseppe Damante, Huiping Liu, Lorenzo Gerratana, Carolina Reduzzi, Massimo Cristofanilli.
- Poster presentation at SABCS 2024. *"Circulating tumor DNA (ctDNA) dynamics as a predictor of treatment response: a review of Liquid Biopsy-RECIST (LB-RECIST) criteria in Metastatic Breast Cancer (MBC)"*.
Lorenzo Foffano, Andrew A. Davis, Carolina Reduzzi, Emily Podany, Arielle J. Medford, Marko Velimirovic, Katherine Clifton, Annika Putur, Laura Munoz-Arcos, Letizia Pontolillo, Rachel O Abelman, Caterina Gianni, Shaili Tapiavala, **Elisabetta Molteni**, Marla D Lipsyc-Sharf, Eleonora Nicolò, Eleni Andreopoulou, Fabio Puglisi, William J Gradishar, Cynthia X. Ma, Aditya Bardia, Lorenzo Gerratana, Massimo Cristofanilli.
- Poster presentation at SABCS 2024. *"Clinical impact of MRD detection through ctDNA tumor-agnostic assay in early-stage breast cancer patients: a real-world experience"*.
Caterina Gianni, Eleonora Nicolò, Marla Lipsyc-Sharf, Brian DiCarlo, Eleni Andreopoulou, Ashley Schreier, Jeannine Donahue, Letizia Pontolillo, Laura Munoz-Arcos, Mara Serena Serafini, **Elisabetta Molteni**, Nadia Bayou, Kelly Eng, Amanda Kaylan Strickland, Marko Velimirovic, Lorenzo Gerratana, Andrew Davis, Arielle Medford, Olivier Elemento, Aditya Bardia, Ugo De Giorgi, Carolina Reduzzi and Massimo Cristofanilli.
- Poster presentation at SABCS 2024. *"Investigating differences in the composition of circulating tumor cells (CTCs) clusters in invasive lobular and ductal carcinoma to decipher lobular breast cancer metastasis."*
Eleonora Nicolò, **Elisabetta Molteni**, Lorenzo Foffano, Lorenzo Gerratana, Mara S. Serafini, Letizia Pontolillo, Caterina Gianni, Laura Munoz-Arcos, Nadia Bayou, Kaylan Strickland, Hunter Gaudio, Brenno Pastò, Maroua Manai, Youbin Zhang, Paolo D'Amico, Andrew A. Davis, Jeannine Donahue, Huiping Liu, William J. Gradishar, Giuseppe Curigliano, Carolina Reduzzi, Massimo Cristofanilli.
- Poster presentation at SABCS 2024. *"A novel, semi-automated Pipeline for HER2 Quantification on CTCs in breast cancer patients. Is cytopathology of peripheral blood a new diagnostic option?"*.

Nadia Bayou, Sarah Henretta, Laura Arcos Munoz, **Elisabetta Molteni**, Caterina Gianni, Mara Serena Serafini, Amanda Strickland, Eleonora Nicolò, Letizia Pontillo, Jyothi Manohar, Olivier Elemento, Massimo Cristofanilli and Carolina Reduzzi.

- Poster presentation at SABCS 2024. *"Exosomes as drivers and biomarkers of TAM recruitment and immune evasion in inflammatory breast cancer"*.

Serena Lucotti, Mara Serafini, Amanda Kaylan Strickland, Marwa Manai, **Elisabetta Molteni**, Carolina Reduzzi, Valerie Fraser, Massimo Cristofanilli, and David Lyden.

- Poster presentation at SABCS 2024. *"Differential ctDNA-based genomic features of Triple-Negative Metastatic Lobular Breast Cancer: insights into a rare and poorly understood disease"*.

Lorenzo Gerratana, Andrew A. Davis, Lorenzo Foffano, Carolina Reduzzi, Emily Podany, Arielle J. Medford, Marko Velimirovic, Katherine Clifton, Annika Putur, Laura Munoz-Arcos, Letizia Pontillo, Rachel O Abelman, Caterina Gianni, Shaili Tapiavala, **Elisabetta Molteni**, Marla D Lipsyc-Sharf, Eleonora Nicolò, Eleni Andreopoulou, William J Gradishar, Fabio Puglisi, Cynthia X. Ma, Aditya Bardia, Massimo Cristofanilli.

- Poster presentation at SABCS 2024. *"BRCA1/2 alterations in circulating tumor DNA: correlation with germline origin and impact on survival in breast cancer"*.

Letizia Pontillo, Carolina Reduzzi, Andrew A. Davis, Arielle J. Medford, Emily Podany, Lorenzo Gerratana, Annika Putur, Surbhi Warrior, Caterina Gianni, Eleonora Nicolò, Katherine Clifton, Whitney L. Hensing, Marko Velimirovic, Laura Munoz-Arcos, Mara S. Serafini, **Elisabetta Molteni**, Marla Lipsyc-Sharf, Jeannine Donahue, Neelima Vidula, Nadia Bayou, Charles S. Dai, Jennifer C. Keenan, Amir Behdad, William J. Gradishar, Emilio Bria, Cynthia X. Ma, Diana Giannarelli, Aditya Bardia, Massimo Cristofanilli.

- Poster presentation at ISLB 2024. *"MicroOrganoSphere (MOS): a novel technology for circulating tumor cell (CTC)-derived organoid formation"*.

Elisabetta Molteni, Divya Dayanidhi, Nadia Bayou, Mara Serena Serafini, Jyothi Manohar, Pashtoon Kasi, Olivier Elemento, David Hsu, Massimo Cristofanilli, Carolina Reduzzi.

- Poster presentation at ISLB 2024. *"Optimization and Evaluation of a novel CTC culture protocol using 'reset' vascular endothelial cells (R-VECs) and microfluidic enrichment"*.

Nadia Bayou, Tansol Choi, Valerie Gallegos, Amanda Strickland, Ying Liu, **Elisabetta Molteni**, Benjamin Hopkins, Shahin Rafii, Massimo Cristofanilli and Carolina Reduzzi.

- Poster presentation at ISLB 2024. *"Automated Analysis Pipeline for HER2 Expression Profiling in CTCs: Computational Potential for Advancing Personalized Therapy for Metastatic Breast Cancer"*.

Sarah Henretta, Nadia Bayou, Laura Arcos Munoz, **Elisabetta Molteni**, Massimo Cristofanilli and Carolina Reduzzi.

- Poster presentation at [AACR 2024](#). "Distribution and prognostic significance of circulating tumor cells (CTCs) and tumor-derived extracellular vesicles (tdEVs) in patients (pts) with lobular metastatic breast cancer (MBC)".

Nicolo' E, Gerratana L, Foffano L, Arcos L.M, Serafini M.S, Manai M, Pontolillo L, Bayou N, **Molteni E**, Strickland K, Gianni C, Zhang Y, D'Amico P, Davis A.A, Donahue J, Liu H, Gradishar W.J, Shah A.N, Curigliano G, Reduzzi C, Cristofanilli M.

- Poster presentation at [ASCO 2024](#). "Differential genomic profiling of the progesterone receptor (PR) negative and estrogen receptor (ER) low metastatic breast cancer subtypes through circulating tumor DNA: A TNBC-like disease subtype?".

Lorenzo Gerratana, Andrew A. Davis, Lorenzo Foffano, Carolina Reduzzi, Emily L Podany, Arielle J Medford, Katherine Clifton, Marko Velimirovic, Annika Putur, Laura Sofia Munoz-Arcos, Letizia Pontolillo, Shaili Tapiavala, **Elisabetta Molteni**, Eleonora Nicolò, William John Gradishar, Cynthia X. Ma, Eleni Andreopoulou, Fabio Puglisi, Aditya Bardia, Massimo Cristofanilli.

- Poster presentation at [SABCS 2023](#) (PO5-15-02). "Integration of synonymous mutations and variants of unknown significance for baseline and longitudinal characterization of metastatic breast cancer by circulating tumor DNA".

Molteni E, Reduzzi C, Davis A.A, Foffano L, Medford A.J, Clifton K, Hensing W.L, Velimirovic M, Shah A.N, Arcos L.M, Dai C.S, Keenan J, Denault E.N, Gradishar W.J, Damante G, Behdad A, Gerratana L, Puglisi F, Ma C.X, Bardia A, Cristofanilli M.

- Poster presentation at [SABCS 2023](#) (P04-15-09) "Unraveling the influence of progesterone receptor status on endocrine therapy sensitivity: insight from epigenetic and fragmentomics ctDNA profiling in estrogen receptor positive, HER2 negative metastatic breast cancer (MBC)".

Foffano L, **Molteni E**, Dri A, Franzoni A, Cucciniello L, Da Ros L, Buriolla S, Bolzonello S, Noto C, Russo S, Spazzapan S, Nascimben E, Pastò B, Targato G, Della Rossa S, Bonotto M, Minisini A.M, Damante G, Belletti B, Gerratana L, Puglisi F.

- Poster presentation at [AIOM 2023](#). "Patterns of time to progression intervals across clinical and liquid biopsy (LB) features in hormone receptor positive (HR+) HER2 negative (HR-) metastatic breast cancer (MBC) patients treated with first-line endocrine therapy (ET)".

Cucciniello L, Noto C, Bolzonello S, **Molteni E**, Da Ros L, Pastò B, Franzoni A, Spazzapan S, Russo S, Foffano L, Buriolla S, Targato G, Dri A, Della Rossa S, Bonotto M, Damante G, Belletti B, Gerratana L, Puglisi F.

- Poster presentation at [SABCS 2023](#) (PO4-05-07). *"Differential dynamics of fragmentomic and epigenetic circulating tumor DNA (ctDNA) features in first-line Palbociclib and Ribociclib treatment for Hormone Receptor (HR) positive, HER2 negative metastatic breast cancer (MBC)"*.

Noto C; Cucciniello L; **Molteni E**; Bolzonello S; Franzoni A; Da Ros L; Buriolla S; Dri A; Foffano L; Spazzapan S; Russo S; Pastò B; Cudia G; Targato G; Della Rossa S; Bonotto M; Minisini A.M; Damante G; Belletti B; Gerratana L; Puglisi F.

- Poster presentation at [SABCS 2023](#). *"Association between BRCA alterations detected by circulating tumor DNA and germline mutations in breast cancer patients: a retrospective mono-institutional analysis"*.

Pontolillo L, Nicolò E, Arcos L.M, Reduzzi C, Serafini M.S, Strickland A.K, Bayou N, Donahue J, **Molteni E**, Gerratana L, Giannarelli D, Andreopoulou E, Bria E, Cristofanilli M.

- Poster presentation at [SIGU 2023](#). *"Scalable and cost-effective ctDNA fragmentomic profiling using droplet digital PCR (ddPCR): Implementation in a prospective multicenter clinical study"*.

Franzoni A, Foffano L; **Molteni E**; Dri A; Basile D; Cucciniello L; Lisanti C; Buriolla S; Corsetti S; Noto C; Russo S; Spazzapan S; Nascimbeni E; Pastò B; Targato G; Della Rossa S; Bonotto M; Minisini A.M; Belletti B; Gerratana L; Puglisi F, Damante G.

- Poster presentation at [ESMO 2023](#). *"Patterns of time to progression intervals across clinical and liquid biopsy (LB) features in hormone receptor positive (HR+) HER2 negative (HER2-) metastatic breast cancer (MBC) patients (pts) treated with first-line endocrine therapy (ET)"*.

Cucciniello L, Noto C, Bolzonello S, **Molteni E**, Da Ros L, Pastò B, Franzoni A, Spazzapan S, Russo S, Foffano L, Buriolla S, Targato G, Allegri L, Dri A, Della Rossa S, Bonotto M, Damante G, Belletti B, Gerratana L, Puglisi F.

- Digital poster presentation at [ESHG 2022](#) (Control No. 1567). *"Beyond BRCA: mutational landscape of a cohort of 186 patients with hereditary breast and ovarian cancer"*.

Mio C., **Molteni E.**, Fogolari F., Damante G.

Language skills

- Italian: native language
- English: level B2

IT skills

- Excellent use of Office Package (Word Excel PowerPoint etc.)
- Excellent use of Automated CTC Classification, Enumeration and PhenoTyping (ACCEPT).

Lecco,

December 18, 2024