

BIOGRAPHICAL SKETCH

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NAME: Daveri, Elena

eRA COMMONS USER NAME (credential, e.g., agency login): elenadaveri

POSITION TITLE: Researcher

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
University of Siena - Siena, Italy	BS	10/2005	11/2008	Biomedical Laboratory Techniques
University of Siena - Siena, Italy	MS	01/2009	12/2011	Health Biology
University of Siena - Siena, Italy	PhD	12/2012	03/2016	Life Science

A. Personal Statement

I am a motivated researcher working in a high-level translational immunology unit, with a primary focus on the interplay between immunity, metabolism, and cancer. My main interest lies in exploring how diet can modulate myeloid immunity both as a preventive strategy against cancer and as a means to enhance antitumor immunity in established cancers. Since my Ph.D. studies, I have been deeply involved in cancer research, investigating molecular mechanisms that lead to the inhibition of cell growth and the induction of cell death across various cancer models, including colorectal cancer (CRC).

During my postdoctoral training at UC Davis, I gained valuable experience in studying phytochemicals as primary prevention agents for nutrition-related diseases, including cancer. Currently, as a young team leader, I am actively engaged in translational research that addresses clinical needs. I serve as the Work Package (WP) leader for projects focused on tumor immunology and immunomodulation, aiming to identify novel biomarkers for patient stratification. My leadership is crucial in coordinating diverse, interdisciplinary efforts, ranging from experimental design to data analysis.

I work closely with a multidisciplinary team and collaborate with international research partners to achieve our research goals. Additionally, a key aspect of my role involves training students, where I emphasize both the development of technical skills and the cultivation of critical thinking, fostering a collaborative and innovative learning environment.

B. Positions, Scientific Appointments and Honors**Positions and Scientific Appointment**

2023 – present Researcher, Translational Immunology Unit, Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan (Milan, Italy).

2019 – 2023 Postdoctoral fellow, Translational Immunology Unit, Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, (Milan, Italy).

2018 – 2019	Research collaborator, Immunotherapy of Human Tumors Unit, Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, (Milan, Italy).
2016 – 2018	Postdoctoral researcher, Department of Nutrition and Environmental Toxicology, University of California, Davis (Davis, CA, USA).
2015 – 2015	Visiting scholar, Department of Nutrition and Environmental Toxicology, University of California, Davis (Davis, CA, USA).
2012 – 2016	Ph.D. student, Department of Life Science, University of Siena (Siena, Italy).

Peer reviewer of the scientific journal

- Food & Function – Royal Society of Chemistry;
- Nutrients- MDPI
- Journal for ImmunoTherapy of Cancer- BMJ
- Archives of Biochemistry and Biophysics- Elsevier
- Frontiers in Immunology- Frontiers

Society membership

- SIC, Società Italiana Cancerologia
- EACR, European Association for Cancer Research
- Ordine dei Biologi della Lombardia

Honors

October 2023	Winner of the public selection for fixed-term position as researcher at Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, Italy.
January 2023	Winner of the research fellow “Dissecting the impact of life style interventions on myeloid trained immunity in cancer patients” from Umberto Veronesi Foundation.
January 2022	Winner of the research fellow “Diet-mediated training of myeloid immune cells to impact on colon carcinogenesis” from Umberto Veronesi Foundation.
January 2021	Winner of the research fellow “Myeloid cells featured by dysfunctional lipid traffic as key mediators of gut carcinogenesis” from Pezcoller Foundation.
March 2019	Winner of a research fellow at Unit of Immunotherapy of Human Tumors, IRCCS Foundation, National Cancer Institute, Milan, Italy.
April 2016	Selected for Postdoctoral Fellowship, Department of Nutrition, UC Davis, USA.
October 2015	Young investigator poster awards ICPH 2015: “Procyanidins modulate the lipid raft-associated epidermal growth factor receptor signaling”.
November 2013	MIUR fellowship grant for PhD graduation school in Life Science, <i>Cycle XVIII</i> .

C. Contributions to Science

Graduate Career:

- **Ph.D. Research:** My Ph.D. research focused on studying the chemopreventive and chemotherapeutic properties of natural polyphenols. Specifically, I investigated the anti-cancer properties of Rottlerin, a natural polyphenol, using in vitro models of apoptotic-resistant breast cancer (MCF-7) and malignant melanoma (SK-Mel-28). My work explored the contribution of the mTOR signaling pathway as a molecular mechanism leading to cell death.
- **Visiting Scholar:** During my time as a visiting scholar, I investigated the anti-colorectal cancer (CRC) effects of hexameric proanthocyanidins (PACs), which are oligomers of flavan-3-ols extracted from cocoa. My research focused on the modulation of the lipid raft-located Epidermal Growth Factor Receptor (EGFR) in various in vitro CRC models, including Caco-2, HT-29, LoVo, SW480, HCT 116, and HCT 8 cell lines.

Postdoctoral Career:

- **Postdoctoral Researcher:** My postdoctoral research conducted in USA concentrated on the beneficial effects of flavonoids on the gastrointestinal tract, particularly their role in preventing

gastrointestinal cancers and mitigating the development of pathologies associated with obesity and Western-style diets, such as inflammation and cancer. This research utilized both in vitro and in vivo models. Additionally, I investigated the health benefits of dietary supplementation with a plant polyphenol blend rich in anthocyanins. This study, conducted as a randomized crossover trial, assessed the impact on systemic inflammation, immunological parameters, and metabolic responses following a high-fat meal challenge in healthy subjects (ClinicalTrials.gov identifier: NCT03309982).

- **Research Collaborator:** I contributed to the project “Immunomonitoring and Immunotherapy of Cancer Patients,” which aimed to identify novel biomarkers that enhance our understanding of the efficacy of immunotherapy and predict which cancer patients are likely to benefit from immunological therapies. My involvement included identifying mechanisms associated with the adverse effects of immune checkpoint inhibitor therapies.
- **Researcher:** I contributed to study the mechanisms involved in the modulation of immunosuppressive components in cancer patients. The research involved several projects investigating:

Immune-Related Features in Cancer: Investigated functional and prognostic immune-related characteristics, focusing on myeloid-derived suppressor cells (MDSCs) in various cancer types, including colorectal cancer (CRC), early-onset CRC, metastatic CRC to the peritoneum, and locally recurrent rectal cancer (LRRC).

Immunity in Inherited CRC Forms: Studied the role of local and systemic immunity in controlling abnormal epithelial cell growth in inherited forms of CRC, such as Familial Adenomatous Polyposis (FAP) and Lynch syndrome.

Immune Cell Metabolism and Antitumor Responses: Analyzed the influence of immune cell metabolism on antitumor immune responses and the impact of metabolic dysfunctions within the tumor microenvironment. Investigated how immunosuppressive dyslipidemic myeloid infiltrates affect clinical outcomes and explored potential phenotype reshaping through nutritional interventions and dietary fat modulation.

Diet and Immunity: Evaluated the effects of anti-inflammatory, low-fat, high-fiber diets on the activity and function of local and systemic immunity, aiming to develop new preventive and therapeutic strategies.

Immunogenicity of Microsatellite-Stable CRC: Assessed the immunogenic profiles of microsatellite-stable (MSS) CRCs to identify patients with favorable immune profiles for adjuvant or neoadjuvant immunotherapeutic regimens. Correlated tumor immunogenicity with local and systemic immune profiles, as well as clinical, pathological, and molecular characteristics, to establish a comprehensive tissue sample set for studying MSS CRC immunogenicity.

Immunological Signature Development: Developed an immunological signature using digital pathology analysis of local immune infiltrates to predict clinical outcomes in LRRC patients.

Open Projects:

- Institutional Research Call_BRI 2021: “Harnessing the extracellular matrix to awaken the immune response in patients with peritoneal metastasis”; Role: Research collaborator.
- AIRC IG 2022 “Persisting of myeloid dysfunction after curative surgery: effect on cancer recurrence and impact of dietary intervention” Role: Research collaborator.
- AIRC IG 2022: “Unfolding the interactions between cancer cells and immunity in the tumor microenvironment of Pseudomyxoma Peritonei” Role: Research collaborator.
- Institutional Research Call_RC2023-Linea1: “Collection of body fluids, diet and lifestyle information for the identification of risk factors and potential biomarkers in early onset colorectal cancer patients” Role: Research collaborator.
- Institutional Research Call_RC2023-Linea4: “Exploration of myeloid immunity estimated by radiomics to predict curability in locally recurrent rectal cancer (ELISABETH); Role: PI;
- PNRR-MCNT2-2023: “Improving the unmet need of early diagnosis of cancer in Lynch syndrome carriers: the role of differential microRNAs expression patterns, exome analyses, immunological profiles and tumor type- specific intracellular bacteria” Role: Research collaborator;

- TRANSCAN-3 (JTC 2023): “Epigenomic regulation of cancer immunity by dietary intervention”; Role: Research collaborator.

Involvement in clinical trials

“ANtiGEnicity vs. Immunosuppression in COlorectal cancer (ANGELICO)” (INT 127/19); Role: co-PI (PI: Filiberto Belli);

Involvement as research team collaborator

- “Preventive anti-inflammatory diet to reduce gastro-intestinal inflammation in FAP patients: a prospective pilot study” (PI: Marco Vitellaro INT 78/17; NCT04552405);
- “Generation of experimental models from precancerous/cancerous lesions in subjects with familial adenomatous polyposis (FAP)” (PI: Marco Vitellaro; INT103/19);
- “Profiling immune responses in healthy donors to improve the knowledge of cancer-related immune dysfunction (IRIHEA study)” (PI: Licia Rivoltini; INT61/20)

Scientific publication

(5 most relevant publications as (co-)first, (co-)last, corresponding author)

1. Sorrentino L*, **Daveri E***, Sabella G, Battaglia L, Milione M, Rivoltini L, Cosimelli M. Pathologic complete response after neoadjuvant chemotherapy/(re)chemoradiation for pelvic relapse of rectal cancer undergoing complex pelvic surgery: more frequent than expected? (2022) Int J Colorectal Dis.;37(10):2257-2261. doi: 10.1007/s00384-022-04260-1. PMID: 36182980
2. **Daveri E.**, Sorrentino L., Lalli L., Guaglio M., Battaglia L., Cattaneo L., Sabella G., Milione M., Rivoltini L., Cosimelli M., Belli F. Low baseline neutrophil-to- lymphocyte and platelet-to-lymphocyte ratios predict increased overall survival in locally recurrent rectal cancer despite R1 margins. (2022). Dig Liver Dis.;54(7):864-870. doi: 10.1016/j.dld.2022.01.002. PMID:35093274.
3. **Daveri E.**, Luisson E., Vallacchi V., Vergani B., Leone B.E., Garassino M.C., Figini M., Rivoltini L. Is impaired response to PD-1 blockers of high serum PD- 1 patients related to immune complexes? (2021). Ann Oncol.;32(6):814-816. doi: 10.1016/j.annonc.2021.02.022. PMID: 33684461.
4. **Daveri E.**, Adamo A.M., Alfino E., Zhu W., Oteiza P.I. Hexameric procyanidins inhibit colorectal cancer cell growth through both redox and non-redox regulation of the epidermal growth factor signaling pathway. (2021) Redox Biol. 38:101830. doi: 10.1016/j.redox.2020.101830. PMID: 33338921.
5. **Daveri E.**, Vergani E., Shahaj E., Bergamaschi L., La Magra S., Dosi M., Castelli C., Rodolfo M., Rivoltini L., Vallacchi V., Huber V. microRNAs Shape Myeloid Cell-Mediated Resistance to Cancer Immunotherapy. (2020). Front Immunol. 11:1214. doi: 10.3389/fimmu.2020.01214. PMID: 32793185.

Complete List of Published Work in My Bibliography:

<https://pubmed.ncbi.nlm.nih.gov/?term=daveri+e>