

EUROPEAN
CURRICULUM VITAE
FORMAT



PERSONAL INFORMATION

Name EMANUELA MARCENARO
E-mail emanuela.marcenaro@unige.it
Nationality Italian
Gender F

WORK EXPERIENCE

- Dates (from - to) **11/2022 – to date**
• Name and address of the employer Department of Experimental Medicine (Di.Me.S.), School of Medical and Pharmaceutical Sciences
University of Genova, Genova, Italy
Research, Teaching
Full Professor (BIO/17)
Cytology, Histology, Embryology, Cellular and Molecular Immunology, Oncoimmunology
- Dates (from - to) **11/2023 – to date**
• Name and address of the employer University of Genova, Genova, Italy
Research, Teaching
Member of the Technology Transfer Commission of the University of Genoa
This Commission promotes and supports activities relating to patents, spin-offs and actions relating to technology transfer.
- Dates (from - to) **02/2022 – to date**
• Name and address of the employer University of Genova, Genova, Italy
Research, Teaching, Third mission
Vice-President of the UNIGE Strategic Center SRV
Cooperation Network for Risk, Safety & Security Studies
- Dates (from - to) **12/2021 – to date**
• Name and address of the employer University of Genova, Genova, Italy
Research, Teaching, Third mission
Member of the Technical-Scientific Commission of the UNIGE Strategic Center SRV
Cooperation Network for Risk, Safety & Security Studies
- Dates (from - to) **2020 – 10/2021**
• Name and address of the employer Department of Experimental Medicine (Di.Me.S.), School of Medical and Pharmaceutical Sciences
University of Genova, Genova, Italy
Research, Teaching, Management activity
Member of the Executive Committee of the Medical School, UNIGE
Contribution in the overall management of the School
- Dates (from - to) **02/2018 – 10/2022**
• Name and address of the employer Department of Experimental Medicine (Di.Me.S.), School of Medical and Pharmaceutical Sciences
University of Genova, Genova, Italy
Research, Teaching
Associate Professor (BIO/17)
Cytology, Histology, Embryology, Cellular and Molecular Immunology, Oncoimmunology
- Dates (from - to) **2017 – to date**

- Name and address of the employer
 - Type of business or sector
 - Occupation or position held
- Main activities and responsibilities
 - Dates (from - to)
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- Main activities and responsibilities
 - Dates (from - to)
- Name and address of the employer
 - Type of business or sector
 - Occupation or position held
- Main activities and responsibilities
 - Dates (from - to)

Department of Experimental Medicine (Di.Me.S.), School of Medical and Pharmaceutical Sciences
 University of Genova, Genova, Italy
 Research, Teaching, Management activity
Member of the Executive Committee of the Department of Experimental Medicine, Medical School, UNIGE
 Contribution in the overall management of the Department

2015– to date
 University of Genova, Genova, Italy
 Research, Teaching
Member of the Academic Board of the PhD Course in Clinical and Experimental Immunology, UNIGE
 Cellular and Molecular Immunology, Oncoimmunology

2006 – to date
 Innate Pharma Biotech Company, Marseille, France
 Research
Scientific Collaborator/Consultant
 Study of molecules that modulate NK cell function and their possible use in immunotherapies

12/2005 – 01/2018
 Department of Experimental Medicine (Di.Me.S.), School of Medical and Pharmaceutical Sciences University of Genova, Genova, Italy
 Research, Teaching
Assistant Professor (BIO/17)
 Cytology, Histology, Embryology, Cellular and Molecular Immunology, Oncoimmunology

2005
 Laboratory of Molecular Immunology, University of Genoa and Istituto G. Gaslini, Genova, Italy
 Research
Research Fellowship
 Characterization of the interactions between NK cells and dendritic cells in response to pathogens and tumors

2003-2004
 Laboratory of Molecular Immunology, University of Genoa, Genova, Italy
 Research
Post-Doctoral Fellow
 Cellular and Molecular Immunology, Oncoimmunology

2003 – 12/2020
 Center of Excellence for Biomedical Research (CEBR) (Molecular Immunology Unit), University of Genova, Genova, Italy
 Research
Affiliated Scientist/ Member of the Executive Committee
 Cellular and Molecular Immunology, Oncoimmunology

2000 – 2002
 Laboratory of Molecular Immunology, University of Genova, Genova, Italy
 Research
FIRC-AIRC cancer research fellowship
 Project on Receptors for HLA class I molecules in Human Natural Killer lymphocytes

1996 – 2000
 Laboratory of Molecular Immunology, University of Genoa, Genova, Italy
 Research
Researcher
 Project on Activating receptors of human Natural Killer lymphocytes

EDUCATION AND TRAINING

- 2002: Specialization** in Clinical Pathology 50/50 summa cum laude, University of Genova, Italy
- 1997: Master Degree** in Biology 110/110 summa cum laude, University of Genova, Italy

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE OTHER LANGUAGES	ITALIAN ENGLISH
SOCIAL SKILLS AND COMPETENCES	Excellent ability to work in a team environment with tight deadlines and multiple activities/priorities, ability to collaborate with others to find the best solutions, great team spirit, positive attitude toward new and interdisciplinary research, very active and proactive
ORGANIZATIONAL SKILLS AND COMPETENCES	Strong attitude to human research management, project management and project coordination demonstrated by the numerous Institutional roles covered (see work experience) She is also member of the Research, GEV, Didactic and AQ Commissions of Di.Me.S., UNIGE
TECHNICAL SKILLS AND COMPETENCES	Cell and Molecular biology, Hybridoma/monoclonal antibody generation, cytofluorimetric analysis, manipulation of flow cytometry data, in vitro/ex vivo/in vivo models, miRNA/siRNA-based approaches, immune functional assays, spatial biomarker analysis.
DRIVING LICENCE(S)	A, B

ADDITIONAL INFORMATION

SHORT BIOGRAPHY

Marcenaro E. is a Group Leader at the laboratory of Molecular Immunology, Department of Experimental Medicine, University of Genoa, Italy. Her scientific activity focuses on the characterization of the phenotypic/functional properties of human natural killer (NK) cells, a lymphocyte subset that exerts a potent cytolytic activity against tumors. Her research is currently focused on age-related changes in NK cell immune-checkpoints from childhood through old age. Her discoveries contributed to improve our knowledge of NK cell-tumor interactions thus helping the scientific community to look for more focused and efficient anti-cancer therapies. She contributed to the discovery and characterization of HLA- and non HLA-specific inhibitory receptors (see patents) and of different activating NK receptors/coreceptors involved in non-HLA restricted lysis of human tumor cells. Some of the molecules Marcenaro E. has contributed to discover are now used in clinical trials and clinical practice.

She is author of several Communications at International Congresses and National Congresses, often as an invited speaker and invited scientific reviewer of International Peer-review Journals.

MAIN SCIENTIFIC ACHIVEMENTS/CONTRIBUTION TO SCIENCE

1996-1999: Identification of CD94/NKG2A and IRp60 (CD300a) inhibitory receptors

1998-1999: Identification of Natural Cytotoxicity Receptors (NCRs)

2000-2001: Identification of the 2B4 (CD244) and NTB-A (CD352) co-receptors

2003: Demonstration that the CD59 receptor is associated with NCRs and activates the cytotoxic function of NK cell

2004-2010: Analysis of the expression/function of activating/inhibiting NK-cell receptors in HIV-infected patients

2004: Demonstration that the NTB-A co-receptor mediates a homophilic recognition

2005-2008 Demonstration of the effect of type1/type2 cytokines in the polarization of T mediated by NK cells

2005: Identification and characterization of a subpopulation of CD56neg CD16+ NK cells in HIV patients

2007: Demonstration of ChemR23 receptor expression and function in human NK cells

2008: Demonstration of a direct TLR2-mediated recognition of Mycobacterium bovis by NK cells

2009-2014: Description of new mechanisms of NK cell recruitment in the tumor microenvironment and the potential clinical applications of these studies in hematopoietic stem cells transplantation

2012-2017: Demonstration of the existence of direct receptor/ligand interactions between NK cells and other effectors of innate immunity (neutrophils, eosinophils, macrophages)

2013-2015: Demonstration of the role of NK cells in EBV infection

2015-2017: Identification of a new mechanism of tumor escape in patients with ovarian carcinoma mediated by sB7-H6, a ligand for NKp30.

2016-2017: Identification and characterization of a subset of NK cells expressing high levels of the PD-1 inhibitory checkpoint, involved in the immunosuppression of the anti-tumor function of NK cells

2018: Identification of an anergic NK cell population (NKG2A+, CD56dull, CD16-) as a possible therapeutic target in haploidentical haematopoietic stem cell transplants

2018: Identification of a miRNA signature which is able to efficiently discriminate the two main NK cell subsets

regardless of their surface phenotype

2018: Demonstration that miR-146a-5p is involved in the regulation of KIR expression and may be exploited to generate or increase the effect of NK KIR-mismatching against HLA-class I+ tumor cells

2019: Identification and characterization of a subset of human group 3 innate lymphoid cells expressing high levels of the PD-1 inhibitory checkpoint

2019: Identification of biomarkers marking a CCR7-driven metastatic melanoma pathway

2019: Characterization of NK cells from low-grade and high-grade peritoneal carcinomatosis patients

2019: Identification of ILC-k: human innate lymphoid cells displaying unique metabolic features and KIR-independent cytotoxicity, impaired in acute myeloid leukemia

2019: Identification of a new CD56+ ILC-1 like subset with properties similar to NK cells whose function is impaired in patients with AML

2019: Identification of a subset of gamma-delta 1 Nkp46+ T cells with anti-tumor activity against colorectal cancer

2019: Demonstration that under inflammatory conditions the down-modulation of the expression of HLA-I molecules makes neutrophils more susceptible to NK-mediated apoptosis

2020: Identification of mechanisms of tumor escape in ovarian cancer patients

2021: Antiviral functions of NK cells in COVID-19

2021: Feasibility and Efficacy of Post-Transplant Consolidation Immunotherapy with Nivolumab in Patients Affected by Relapsed/Refractory Hodgkin Lymphoma

2022: NKG2A and HLA-E as an alternative immune checkpoint axis in bladder cancer.

2023: Identification of a novel cord blood NK cell subpopulation expressing functional programmed death receptor-1

2023: Relevant role for the PD-1 immune checkpoint expressed on NK cells in ovarian cancer patients

PATENTS

Marcenaro E. has international patents relative to mAbs against NKG2A (n. PT2476705 E) that have been recently employed in clinical trials (<http://worldwide.espacenet.com>):

-Patent US 60/639,465 Grant date: 12/28/2004

Title: Monoclonal Antibodies against NKG2A: methods of treating immune disorders particularly autoimmune or inflammatory disorders. Authors: Moretta A, Marcenaro E

-Patent PCT-IB2005/004013 Grant date: 12/27/2005

Title: Monoclonal Antibodies against NKG2A. Authors: Moretta A, Marcenaro E, Romagne F, Andre P

-Patent WO2006/070286-2006, Patent KR20070094945 (A)-2007, Patent ZA200706185 (A)-2008, Patent 20090208416-2009, Patent US 2011/0229486 A1-2011, Patent EP2476705 (A1)-2012, Patent CN102977213 (A)-2013, Patent US08993319-2015, Patent PT2476705 (E)-2016, Patent 14594353-2018, Patent US 10/160,810-2018, Patent US 16/226,742-2019

BIBLIOMETRIC INDICATORS (up dated on January, 2024)

Prof. Marcenaro is author of **more than 114 papers** on International Journals.

H-index (Scopus): 54 - Total citations (Scopus): 10117 (ORCID ID: orcid.org/0000-0003-4103-7566)

Mean Impact Factor: around 10 (calculated on almost all the papers)

EDITORIAL ACTIVITIES and ACADEMIC AFFILIATION

Editorial Board Member and Review Editor for Cancers and Frontiers in Medicine Journals

Guest Associate Editor for the Cancers and Frontiers in Immunology Journals

Review Editor in "Cancer Immunity and Immunotherapy" and in Gene and Cell Therapy in Frontiers

Member of the Academic Board of Histology, UNIGE

Member of the European Academy of Tumor Immunology (<http://www.euroacadti.eu>)

Member of the Accademia Ligure di Scienze (<http://www.accademialigurediscienzelettere.it/>)

ONGOING RESEARCH GRANTS

-POR-FESR 2021-2027 Project. Title: Creation of an organizational model and an Integrated Screening and data governance system based on Aging markers and on the prediction of the development of haemato-oncological and cardiovascular diseases in the adult/elderly population (Principal Investigator of UNIGE Unit)

-PRIN 2022 (Cod. 2022YCKH7K). Title: "Understanding Breast Cancer Immune Microenvironment for Precision Cancer Immunotherapy" (Principal Investigator)

-AIRC Foundation for Cancer Research Project (AIRC IG 2021-Id. 26037). Title: "Understanding the role of NK cells in checkpoint blockade immunotherapy for treatment of breast and gynecologic cancers" (Principal Investigator)

-San Paolo Foundation Project (ROL 32638-2019). Title: "Adoptive cellular immunotherapy and checkpoint inhibitors for the treatment of relapsed/refractory Hodgkin's lymphoma patients: anti-neoplastic role of NK cells " (Group Leader Unit Unige)

-National Institute of Health Research Project (RF-2016 -02364099) (Group Leader Unit Unige)

Swiss League Against Cancer Research Project (Ref. KFS-5250-02-2021) Title: “*Innate lymphoid cell (ILC)-driven immune modulation in ovarian cancer*” (collaborator)

AIRC Project-Investigator Grant 2017 (n. 20312). Title: “Checkpoint inhibitors regulate anti-tumor responses by human NK cells” (Co-investigator)

-AIRC-Special Program ISM 5xmille 2018 Project (n. 21147). Title: Immunity in Cancer Spreading and Metastasis (ISM) (Co-investigator)

Research Contract funded by Innate Pharma Biotechnology Company, Marseille, France (Contract n. 719/17). Title: “Role of NK cells in checkpoint blockade immunotherapy for the treatment of ovarian cancer patients” (Principal Investigator)

-Roche Project 2017 (12-months) (Marcenaro E: Scientific Manager, Pesce S: P.I.)

-Fondazione Carige Project (n° 2013.0275-11). Title: “Analysis of the role of microRNAs in the differentiation of human NK cell subsets” (Principal Investigator) (completed).

Prof. Marcenaro is also PI of a project related to the production of Monoclonal Antibodies (Aut. N. n° 648/2020-PR) and PI or co-investigator of observational / translational / clinical protocols.

TEACHING/MENTORING ACTIVITIES

Prof. Marcenaro coordinates several teaching classes and courses within the Medical School from University of Genoa. She mentored the internships and the experimental thesis of numerous undergraduate students (University Degree in Biotechnology, Medicine and Surgery, Biological Science, Pharmacology) 6 PhD students and 8 international/international Post-Doctoral fellows.

She is member of the Committee Officer School of Specialization in Orthopedics and Traumatology and Clinical Allergology and Immunology, UNIGE.

SELECTED PUBLICATIONS:

Identification of a novel cord blood NK cell subpopulation expressing functional programmed death receptor-1

Greppi M, Obino V, Goda R, Rebaudi F, Carlomagno S, Della Chiesa M, Sivori S, Ubezio G, Agostini V, Bo A, Pesce S, and **Marcenaro E**. *Front Immunol* 2023, Vol. 14, <https://doi.org/10.3389/fimmu.2023.1183215> IF: 8,786

NKG2A and HLA-E define an alternative immune checkpoint axis in bladder cancer.

Salomé B, Sfakianos JP, Ranti D, Daza J, Bieber C, Charap A, Hammer C, Banchereau R, Farkas AM, Ruan DF, Izadmehr S, Geanon D, Kelly G, de Real RM, Lee B, Beaumont KG, Shroff S, Wang YA, Wang YC, Thin TH, Garcia-Barros M, Hegewisch-Solloa E, Mace EM, Wang L, O'Donnell T, Chowell D, Fernandez-Rodriguez R, Skobe M, Taylor N, Kim-Schulze S, Sebra RP, Palmer D, Clancy-Thompson E, Hammond S, Kamphorst AO, Malmberg KJ, **Marcenaro E**, Romero P, Brody R, Viard M, Yuki Y, Martin M, Carrington M, Mehrazin R, Wiklund P, Mellman I, Mariathasan S, Zhu J, Galsky MD, Bhardwaj N, Horowitz A. *Cancer Cell*. 2022 Sep 12;40(9):1027-1043.e9. doi: 10.1016/j.ccell.2022.08.005. IF: 38.585

Endowing universal CAR T-cell with immune-evasive properties using TALEN-gene editing.

Jo S, Das S, Williams A, Chretien AS, Pagliardini T, Le Roy A, Fernandez JP, Le Clerc D, Jahangiri B, Chion-Sotinel I, Rozlan S, Dessez E, Gouble A, Dusséaux M, Galetto R, Duclert A, **Marcenaro E**, Devillier R, Olive D, Duchateau P, Poirot L, Valtou J. *Nat Commun*. 2022 Jun 30;13(1):3453. doi: 10.1038/s41467-022-30896-2. IF: 17.694

Post-Transplant Nivolumab Plus Unselected Autologous Lymphocytes in Refractory Hodgkin Lymphoma: A Feasible and Promising Salvage Therapy Associated With Expansion and Maturation of NK Cells. Guolo F, Minetto P, Pesce S, Ballerini F, Clavio M, Cea M, Frello M, Garibotto M, Greppi M, Bozzo M, Miglino M, Passannante M, Marcolin R, Tedone E, Colombo N, Mangerini R, Bo A, Ruzzenenti MR, Carlier P, Serio A, Luchetti S, Dominietto A, Varaldo R, Candiani S, Agostini V, Ravetti JL, Del Zotto G, ***Marcenaro E***, ***Lemoli RM. (*Marcenaro E co-last author)**. *Front Immunol*. 2021 Nov 5;12:753890. doi: 10.3389/fimmu.2021.753890. *Clinical Trial*. IF: 8,786

Untimely TGF β responses in COVID-19 limit antiviral functions of NK cells. Witkowski M, Tizian C, Ferreira-Gomes M, Niemeyer D, Jones TC, Heinrich F, Frischbutter S, Angermair S, Hohnstein T, Mattiola I, Nawrath P, McEwen S, Zocche S, Viviano E, Heinz GA, Maurer M, Kölsch U, Chua RL, Aschman T, Meisel C, Radke J, Sawitzki B, Roehmel J, Allers K, Moos V, Schneider T, Hanitsch L, Mall MA, Conrad C, Radbruch H, Duerr CU, Trapani JA, **Marcenaro E**, Kallinich T, Corman VM, Kurth F, Sander LE, Drosten C, Treskatsch S, Durek P, Kruglov A, Radbruch A, Mashreghi MF, Diefenbach A. *Nature*. 2021 Dec;600(7888):295-301. doi: 10.1038/s41586-021-04142-6. Epub 2021 Oct 25. IF: 69.504

Different Features of Tumor-Associated NK Cells in Patients With Low-Grade or High-Grade Peritoneal Carcinomatosis.

Pesce S, Belgrano V, Greppi M, Carlomagno S, Squillario M, Barla A, Della Chiesa M, Di Domenico S, Mavilio D, Moretta L, Candiani S, Sivori S, De Cian F, ***Marcenaro E**. *Front Immunol*. 2019 Aug 21;10:1963. doi: 10.3389/fimmu.2019.01963. eCollection 2019. IF: 8,786

New. miRNA Signature Heralds Human NK Cell Subsets at Different Maturation Steps: Involvement of miR-146a-5p in the Regulation of KIR Expression.

Pesce S, Squillario M, Greppi M, Loiacono F, Moretta L, Moretta A, Sivori S, Castagnola P, Barla A, Candiani S, ***Marcenaro E**. *Front Immunol*. 2018 Oct 15;9:2360. doi: 10.3389/fimmu.2018.02360. eCollection 2018. IF: 8,786

The Innate Immune Cross Talk between NK Cells and Eosinophils Is Regulated by the Interaction of Natural Cytotoxicity Receptors with Eosinophil Surface Ligands. Pesce S, Thoren FB, Cantoni C, Prato C, Moretta L, Moretta A, ***Marcenaro E**. *Front Immunol*. 2017 Apr 28;8:510. doi: 10.3389/fimmu.2017.00510. eCollection 2017. IF: 8,786

Identification of a subset of human natural killer cells expressing high levels of programmed death 1: A phenotypic and functional characterization. Pesce S, Greppi M, Tabellini G, Rampinelli F, Parolini S, Olive D, Moretta L, Moretta A, ***Marcenaro E**. *J Allergy Clin Immunol*. 2017 Jan;139(1):335-346.e3.

doi: 10.1016/j.jaci.2016.04.025. IF: 14.290

B7-H6-mediated downregulation of NKp30 in NK cells contributes to ovarian carcinoma immune escape. Pesce S, Tabellini G, Cantoni C, Patrizi O, Coltrini D, Rampinelli F, Matta J, Vivier E, Moretta A, Parolini S, ***Marcenaro E**. *Oncoimmunology*. 2015 Jan 22;4(4):e1001224. IF: 8.110

KIR2DS1-dependent acquisition of CCR7 and migratory properties by human NK cells interacting with allogeneic HLA-C2+ DCs or T-cell blasts. ***Marcenaro E**, Pesce S, Sivori S, Carlomagno S, Moretta L, Moretta A. *Blood*. 2013 Apr 25;121(17):3396-401. doi: 10.1182/blood-2012-09-458752. IF: 26.669

Uptake of CCR7 and acquisition of migratory properties by human KIR+ NK cells interacting with monocyte-derived DC or EBV cell lines: regulation by KIR/HLA-class I interaction. ***Marcenaro E**, Cantoni C, Pesce S, Prato C, Pende D, Agaugué S, Moretta L, Moretta A. *Blood*. 2009 Nov 5;114(19):4108-16. doi: 10.1182/blood-2009-05-222265. IF: 25.669

The role of chemerin in the colocalization of NK and dendritic cell subsets into inflamed tissues. ***Parolini S**, ***Santoro A**, ***Marcenaro E**, Luini W, Massardi L, Facchetti F, Communi D, Parmentier M, Majorana A, Sironi M, Tabellini G, Moretta A, Sozzani S. . (*Marcenaro E co-first author). *Blood*. 2007 May 1;109(9):3625-32. doi: 10.1182/blood-2006-08-038844. IF: 25.669

Link for publications list:

https://iris.unige.it/simple-search?query=marcenaro#.X_hswi1aY_U

<https://www.scopus.com/authid/detail.uri?authorId=6603464832>

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

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

GENOVA, November 30, 2023



