

# Curriculum Vitae

## PERSONAL INFORMATION

First name / Surname **ELISABETTA VULPIS**  
Address Department of Molecular Medicine, "Sapienza" University of Rome, Viale Regina Elena, 291  
00161 Rome, Italy  
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Nationality ITA

## EDUCATION AND TRAINING

Date November 1, 2012 – February 5, 2016  
Position PhD Student in Immunological, Hematological and Rheumatic Sciences. PhD course coordinator: Prof. A.Santoni.  
Name and type of organisation providing education and training Laboratory of Molecular Immunology and Immunopathology, directed by Prof. A.Santoni, Department of Molecular Medicine "Sapienza" University of Rome – Viale Regina Elena 291, Rome  
Topic of the thesis Molecular characterization and immunomodulatory properties of Multiple Myeloma cell-derived exosomes on NK cell-mediated functions: role of Toll-like receptor 2".  
Date October 18, 2011  
Title of qualification awarded Master Degree in Medical Biotechnology  
Vote 110/110 e lode  
Title of the thesis Role of oxidative stress in Fabry disease cardiomyopathy  
Name and type of organisation providing education and training "Sapienza" University of Rome - P.zza Aldo Moro, 5 – Rome  
Date July 9, 2008  
Title of qualification awarded Bachelor Degree in Biotechnology  
Vote 104/110  
Title of the thesis Study on the Wnt glycoproteins and glucocorticoid interactions  
Name and type of organisation providing education and training "Sapienza" University of Rome - P.zza Aldo Moro, 5 – Rome  
Date 2004  
Title of qualification awarded High school degree  
Vote 100/100  
Name and type of organization providing education and training Liceo Scientifico Statale "Nomentano"- Via Casal Boccone, 60 - Rome

## PERSONAL SKILLS AND COMPETENCES

Mother tongue Italian

Other language(s)  
Self Assessment  
European level (\*)

English

| Understanding |                 |         |                 | Speaking           |                 |                   |                 | Writing |                 |
|---------------|-----------------|---------|-----------------|--------------------|-----------------|-------------------|-----------------|---------|-----------------|
| Listening     |                 | Reading |                 | Spoken interaction |                 | Spoken production |                 |         |                 |
| B2            | Proficient user | B2      | Proficient user | B2                 | Proficient user | B2                | Proficient user | B2      | Proficient user |

(\*) Common European Framework of Reference for Languages

Computer skills and competences

Excellent use of Microsoft Office  
Basis of Bioinformatics  
Basic knowledge of FlowJo, PRISM, ImageJ, ImageLab

Technical skills and competences

Basic cell techniques of histology and immunohistochemistry  
Cellular immunology and cell biology:  
Basic cell culture technique. Routine maintenance and storage of cell lines. Leukocytes purification from the peripheral blood. Isolation of lymphoid and myeloid cell populations with magnetic beads. Immunofluorescence and FACS analysis.  
Biochemistry  
Isolation of proteins from cells and tissues. Western blot. ELISA. Exosome and microvesicles isolation and purification from the conditioned media of cell lines and from patient serum and plasma.  
Molecular Biology:  
Isolation of RNA and miRNA from cells, tissues and exosomes. RT-PCR, Real-time PCR. Electrophoresis of nucleic acids. Retroviral gene transduction in human and mouse cell lines.

## MEETING ABSTRACTS

-Vulpis E. "Genotoxic stress affects the extracellular vesicle-mediated communication between Multiple Myeloma and Natural Killer cells". Invited speaker - III International AICC Exosome Meeting. Virtual edition, 7th-8th June 2021.

-Vulpis E, Loconte L, Molfetta R, Caracciolo G, Masuelli L, Petrucci MT, Paolini R, Santoni A, Zingoni A. "Immunomodulatory properties of extracellular vesicles carrying NKG2D activating ligands: a double edge sword in cancer immunosurveillance". XII National congress of the Italian Society of Immunology, Clinical Immunology and Allergology. Virtual edition May 26-28, 2021.

-Vulpis E, Loconte L, Peri A, Molfetta R, Masuelli L, Caracciolo G, Petrucci MT, Paolini R, Soriani A, Cippitelli M, Santoni A, Zingoni A. "Multiple myeloma cell-derived MICA+ extracellular vesicles impair NKG2D-mediated NK cell immunosurveillance". Oral presentation - 1th SOHO Clinical And Biological school of Multiple Myeloma. Virtual event, December 15-17, 2020.

-Bonanni V, Vulpis E, Stabile H, Ricciardi MR, Petrucci MT, Gismondi A, Zingoni A, Santoni A and Bernardini G. "CXCR3 controls anti-Myeloma efficacy of NK cells adoptively transferred for immunotherapy". 9th Biology and Molecular Medicine (BeMM) symposium 2018, Rome, Italy, November 13, 2018.

-Bonanni V, Vulpis E, Stabile H, Ricciardi MR, Petrucci MT, Gismondi A, Zingoni A, Santoni A and Bernardini G. "Modulation of CXCR3/CXCL10 axis affects migration of Natural Killer cell populations in Multiple Myeloma". International Retreat of PhD Students in Immunology. Verona (Italy) October 6-7, 2017.

- Bonanni V, Vulpis E, Stabile H, Ricciardi MR, Petrucci MT, Gismondi A, Zingoni A, Santoni A and Bernardini G. "Modulation of CXCR3/CXCL10 axis affects migration of Natural Killer cell populations in Multiple Myeloma". XI National congress of the Italian Society of Immunology, Clinical Immunology and Allergology. Bari (Italy) May 28-31, 2017

-Vulpis E, Cecere F, Molfetta R, Caracciolo G, Digiacoimo L, Peruzzi G, Masuelli L, Simonelli L, D'Oro U, Soriani A, Fionda C, Paolini R, Cippitelli M, Santoni A, Zingoni A "Characterization and immunomodulatory role of multiple myeloma cell-derived exosomes on human NK cell-mediated functions: role of TLR2". (Oral presentation) X National congress of the Italian Society of Immunology, Clinical Immunology and Allergology. Abano terme (Italy) May 25-28, 2016.

-Abruzzese MP, Fionda C, Zingoni A, Soriani A, Vulpis E, Molfetta R, Paolini R, Ricciardi MR, Petrucci MT, Santoni A and Cippitelli M "Inhibition of bromodomanin and extra-terminal (BET) proteins increases NKGD2 ligand MICA expression and sensitivity to Natural Killer cell-mediated cytotoxicity in Multiple Myeloma cells: role of cMYC/IRF4". Biology and Molecular Medicine (BeMM) symposium 2015, Rome, Italy, November 30, 2015.

-Abruzzese MP, Fionda C, Zingoni A, Soriani A, Vulpis E, Molfetta R, Paolini R, Ricciardi MR, Petrucci MT, Santoni A and Cippitelli M. "Inhibition of bromodomanin and extra-terminal (BET) proteins increases NKGD2 ligand MICA expression and sensitivity to Natural Killer cell-mediated cytotoxicity in Multiple Myeloma cells: role of cMYC/IRF4". 4th European Congress of Immunology (ECI), Vienna, Austria, September 6-9, 2015.

-Vulpis E, Zingoni A, Cecere F, Molfetta R, Masuelli L, Simonelli L, Fionda C, Soriani A, Cippitelli M, Paolini R, Santoni A "Multiple myeloma cell-derived exosomes modulate human NK cell-mediated functions". 4th European Congress of Immunology (ECI), Vienna, Austria, September 6-9, 2015.

-Abruzzese MP, Fionda C, Zingoni A, Soriani A, Vulpis E, Molfetta R, Paolini R, Ricciardi MR, Petrucci MT, Santoni A and Cippitelli M. "Inhibition of bromodomanin and extra-terminal (BET) proteins increases NKGD2 ligand MICA expression and sensitivity to Natural Killer cell-mediated cytotoxicity in Multiple Myeloma cells: role of cMYC/IRF4". International Retreat of PhD Students in Immunology, Catanzaro, Italy, June 19-20, 2015.

-Vulpis E, Zingoni A, Cecere F, Molfetta R, Masuelli L, Simonelli L, Fionda C, Soriani A, Cippitelli M, Paolini R, Santoni A. "Multiple myeloma cell-derived exosomes: molecular features and immunomodulatory role on human Natural Killer cell-mediated functions". (Oral presentation) International Retreat of PhD Students in Immunology, Catanzaro, Italy, June 19-20, 2015.

-Vulpis E, Zingoni A, Cecere F, Molfetta R, Masuelli L, Simonelli L, Fionda C, Soriani A, Cippitelli M, Paolini R, Santoni A. "Multiple myeloma cell-derived exosomes modulate human NK cell-mediated functions" Biology and Molecular Medicine (BeMM) symposium 2015, Rome, Italy, January 23, 2015.

-Vulpis E, Zingoni A. "Multiple myeloma cell-derived exosomes modulate human NK cell-mediated functions" (Oral presentation). International Retreat of PhD Students in Immunology, Bari, Italy, October 10-11, 2014.

-Fionda C, Zingoni A, Cecere F, Vulpis E, Ricciardi MR, Petrucci MT, Santoni A, Cippitelli M. "Upregulation of NKG2D and DNAM-1 ligand expression by immunomodulatory drugs (IMiDs) in multiple myeloma cells". IX National Conference of the Italian Society of Immunology, Clinical Immunology and Allergology, Florence, Italy, May 28-31, 2014.

-Cecere F, Vulpis E, Amendola MG, Molfetta R, Soriani A, Fionda C, Furst D, Petrucci MT, Ricciardi MR, Paolini R, Cippitelli M, Santoni A and Zingoni A. "Differential shedding of MICA allelic variants and MICB in response to chemotherapeutic agents in multiple myeloma cells: role of ADAM10". IX National Conference of the Italian Society of Immunology, Clinical Immunology and Allergology, Florence, Italy, May 28-31, 2014.

-Cecere F, Zingoni A, Vulpis E, Molfetta R, Fionda C, Soriani A, Furst D, Ludwig A, Petrucci MT, Ricciardi MR, Cerboni C, Paolini R, Cippitelli M and Santoni A. "ADAM10 contributes to MICA/B shedding from multiple myeloma cells in response to genotoxic stress". 15th International Congress of Immunology (ICI), Milan, Italy, August 22-27, 2013.

-Vulpis E, Zingoni A. "Differential shedding of mica allelic variants in multiple myeloma cells in response to chemotherapeutic agents". (Oral presentation) International Retreat of PhD Students in Immunology, Bari, Italy, June 7, 2013.

-Chimenti C, Vulpis E, Cudemo G, Tafani M, Villanova L, Verardo R, Russo MA, Frustaci A. "Increased oxidative stress contributes to cardiomyocyte dysfunction in Fabry disease cardiomyopathy". ESC Congress, Paris, August 27-30, 2011.

## PUBLICATIONS

-Vulpis E, Loconte L, Peri A, Molfetta R, Caracciolo G, Masuelli L, Petrucci MT, Simonelli L, Fionda C, Soriani A, Cerboni C, Cippitelli M, Paolini R, Palmieri G, Santoni A, Zingoni A. "Impact on NK cell functions of acute versus chronic exposure to extracellular vesicle-associated MICA: dual role in cancer immunosurveillance". (submitted)

-Giulimondi F\*, Digiaco L\*, Vulpis E, Pozzi D, Loconte L, Ferri G, Cardarelli F, Mahmoudi M, Zingoni A and Caracciolo G. "Nano-enabled immunomodulation by protein corona". (submitted)

-Hasim MS, Vulpis E, Giuseppe S, Shih HY, Scheer A, MacMillan O, Petrucci MT, Santoni A, Zingoni A, Ardolino M. "When the Killer become thieves: trogocytosed PD-1 inhibits NK cells". (under revision)

-Vulpis E, Giulimondi F, Digiaco L, Zingoni A, Safavi-Sohi R, Sharifi S, Caracciolo G and Mahmoudi M. "The possible role of sex as an important factor in development and administration of nanomedicine-based COVID-19 vaccine". *Mol Pharm.* 2021 May 13:acs.molpharmaceut.1c00291. doi: 10.1021/acs.molpharmaceut.1c00291. IF 4.321

-Zingoni A, Vulpis E, Loconte L, Santoni A. "NKG2D ligand shedding in response to stress: role of ADAM10". *Front Immunol.* 2020 Mar 25;11:447. doi: 10.3389/fimmu.2020.00447. IF 6.429

-Soriani A, Vulpis E, Cuollo L, Santoni A, Zingoni A. "Cancer Extracellular Vesicles as Novel Regulators of NK Cell Response". *Cytokine Growth Factor Rev* 2019 Nov 30. DOI: 10.1016/j.cytogfr.2019.11.007. IF 5.982

-Molfetta R\*, Lecce M\*, Quatrini L, Caracciolo G, Digiaco L, Masuelli L, Militi ND, Vulpis E, Zingoni A, Galandrini R, Santoni A, Paolini R. "Immune Complexes Exposed on Mast Cell-Derived Nanovesicles Amplify Allergic Inflammation". *Allergy*, 2019 Nov 12. DOI: 10.1111/all.14103. IF 8.706

-Castiello L, Zevini A, Vulpis E, Muscolini M, Ferrari M, Palermo E, Peruzzi G, Krapp C, Jakobsen M, Olganier D, Zingoni A, Santoni, A and Hiscott J. "An Optimized Retinoic Acid-Inducible Gene 1 Agonist M8 Induces Immunogenic Cell Death Markers in Human Cancer Cells and Dendritic Cell Activation". *Cancer Immunol Immunother*, 68 (9), 1479-1492 Sep 2019. DOI: 10.1007/s00262-019-02380-2. IF 5.442

-Giulimondi F, Digiaco L, Pozzi D, Palchetti S, Vulpis E, Capriotti AL, Zenezini Chiozzi R, Laganà A, Amenitsch H, Masuelli L, Mahmoudi M, Screpanti I, Zingoni A, Caracciolo G. "Interplay of Protein Corona and Immune Cells Controls Blood Residency of Liposomes". *Nat Commun*, 10 (1), 3686 2019 Aug 15. DOI: 10.1038/s41467-019-11642-7. IF 12.121

-Vulpis E, Soriani A, Cerboni C, Santoni A, Zingoni A. "Cancer exosomes as conveyors of stress-induced molecules: new players in the modulation of NK cell response". *Int J Mol Sci.* 2019 Jan 31;20(3). pii: E611. doi: 10.3390/ijms20030611. IF 4.556

-Vulpis E\*, Stabile H\*, Soriani A, Fionda C, Petrucci MT, Mariggio E, Ricciardi MR, Cippitelli M, Gismondi A, Santoni A and Zingoni A. "Key Role of the CD56lowCD16low Natural Killer Cell Subset in the Recognition and Killing of Multiple Myeloma Cells". *Cancers* 2018, 10, 473; doi:10.3390/cancers10120473. IF 6.126

-Zingoni A, Vulpis E, Cecere F, Amendola MG, Fuerst D, Saribekyan T, Achour A, Sandalova T, Nardone I, Peri A, Soriani A, Fionda C, Mariggio E, Petrucci MT, Ricciardi MR, Mytilineos J, Cippitelli M, Cerboni C, Santoni A. "MICA-129 dimorphism and soluble MICA are associated with the progression of Multiple Myeloma". *Frontiers in Immunology* 2018 May 1;9:926. doi: 10.3389/fimmu.2018.00926. IF 6.429

-Borrelli C, Ricci B, Vulpis E, Fionda C, Ricciardi MR, Petrucci MT, Masuelli L, Peri A, Cippitelli M, Zingoni A, Santoni A and Soriani A. "Drug-induced senescent Multiple Myeloma cells elicit NK cell

proliferation by direct or exosome-mediated IL-15 trans-presentation". *Cancer Immunology Research*. 2018 Jul;6(7):860-869. doi: 10.1158/2326-6066.CIR-17-0604. IF 8.728

-Vulpis E, Cecere F, Molfetta R, Soriani A, Fionda C, Peruzzi G, Caracciolo G, Palchetti S, Masuelli L, Simonelli L, D'Oro U, Abruzzese MP, Petrucci MT, Ricciardi MR, Paolini R, Cippitelli M, Santoni A, Zingoni A. "Genotoxic stress modulates the release of exosomes from multiple myeloma cells capable of activating NK cell cytokine production: Role of HSP70/TLR2/NF-kB axis". *Oncoimmunology* 2017 Jan 13;6(3):e1279372. doi: 10.1080/2162402X.2017.1279372. IF 5.869

-Bernardini G, Vulpis E, Bonanni V, Stabile H, Ricciardi MR, Petrucci MT, Gismondi A, Santoni A, Zingoni A. "High expression levels of IP10/CXCL10 are associated with modulation of the natural killer cell compartment in multiple myeloma". *Leukemia Lymphoma* 2017 Oct; 58: 2493-2496. doi: 10.1080/10428194.2017.1295144. IF 3.093

-Abruzzese MP, Bilotta MT, Fionda C, Zingoni A, Soriani A, Vulpis E, Borrelli C, Zitti B, Petrucci MT, Ricciardi MR, Molfetta R, Paolini R, Santoni A, Cippitelli M. "Inhibition of bromodomain and extra-terminal (BET) proteins increases NKG2D ligand MICA expression and sensitivity to NK cell-mediated cytotoxicity in multiple myeloma cells: role of cMYC-IRF4-miR-125b interplay". *J Hematol Oncol* 2016 Dec; 9: 134. IF 10.743

-Zingoni A, Vulpis E, Nardone I, Soriani A, Fionda C, Cippitelli M, Santoni A. "Targeting NKG2D and NKp30 Ligands Shedding to Improve NK Cell-Based Immunotherapy". *Crit Rev Immunol* 2016; 36: 445-460. doi: 10.1615/CritRevImmunol.2017020166. IF 2.327

-Chimenti C, Scopelliti F, Vulpis E, Tafani M, Villanova L, Verardo R, De Paulis R, Russo MA, Frustaci A. "Increased oxidative stress contributes to cardiomyocyte dysfunction and death in patients with Fabry disease cardiomyopathy". *Human Pathology*, 2015 Aug 4. pii: S0046-8177(15)00280-4. doi: 10.1016/j.humpath.2015.07.017. IF 3.014

-Fionda C, Abruzzese MP, Zingoni A, Cecere F, Vulpis E, Peruzzi G, Soriani A, Molfetta R, Paolini R, Ricciardi MR, Petrucci MT, Santoni A and Cippitelli M. "The IMiDs targets IKZF-1/3 and IRF4 as novel negative regulators of NK cell-activating ligands expression in multiple myeloma". *Oncotarget*, 2015 Sep 15;6(27):23609-30. IF 3.765

-Zingoni A\*, Cecere F\*, Vulpis E, Fionda C, Molfetta R, Soriani A, Petrucci MT, Ricciardi MR, Furst D, Amendola MG, Mytilineos J, Cerboni C, Paolini R, Cippitelli M and Santoni A. "Genotoxic Stress Induces Senescence-Associated ADAM10-Dependent Release of NKG2D MIC Ligands in Multiple Myeloma Cells". *J Immunol*, 2015 Jul 15; 195(2):736-48. doi: 10.4049/jimmunol.1402643. IF 4.718

## FELLOWSHIPS

|  |   |
|--|---|
| Date   | October 1 <sup>st</sup> , 2020 – Present  |
| Name and type of organization providing fellowship | Department of Molecular Medicine, "Sapienza" University of Rome   |
| Topic of the fellowship                            | Research fellowship n. 41/2020 - "Dissecting mast cell phenotype and function during colorectal cancer progression".  |
| Date   | January 1 <sup>st</sup> , 2017 – September 30, 2020   |
| Name and type of organization providing fellowship | Department of Molecular Medicine, "Sapienza" University of Rome   |
| Topic of the fellowship                            | Three-years AIRC research fellowship "Costanza Walter" - "Immunomodulatory role an autocrine effect of Multiple Myeloma cell-derived exosomes: implications for TLR2/Hsp70 axis". |

Date December 1<sup>st</sup>, 2015 – November 30, 2016  
Name and type of organization providing fellowship *Department of Molecular Medicine, "Sapienza" University of Rome*  
Topic of the fellowship "Caratterizzazione molecolare e proprietà immunomodulatorie di esosomi prodotti da cellule tumorali"

Date January 1<sup>st</sup>, 2012 – June 30, 2012  
Name and type of organization providing fellowship Istituto Nazionale Malattie Infettive Lazzaro Spallanzani – Via Portuense 292 - Rome  
Topic of the fellowship Multicenter randomized study on the efficacy of immunosuppression in patients with virus-negative inflammatory cardiomyopathy

Date February 15, 2011 – December 14, 2012  
Name and type of organization providing fellowship Istituto Nazionale Malattie Infettive Lazzaro Spallanzani – Via Portuense 292 - Rome  
Topic of the fellowship *Role of inflammation/infection in antiretroviral drug associated coronary plaque*

Date September 2009 – January 31<sup>st</sup>, 2011  
Name and type of organization providing fellowship Department of Cardiovascular, Respiratory, Nephrological e Geriatric Sciences, University of Rome "Sapienza".

Firmato:

**Elisabetta Vulpis**