

**Curriculum vitae of Sara Perrotta**

Name and Surname

Sara Perrotta

**EDUCATION AND TRAINING**

01/01/2018-at present Winner of 36 months research fellowship to be carried out at the Department of Molecular Medicine, “Sapienza” University of Rome; Department’s director Prof.ssa Angela Santoni. (Procedure n. 2021/2017 dated 21/11/17 code: B\_I\_Sym)

*Research activity:* A neurosplenic pathway coupling Immunity and Hypertension - SymPAthY” finanziated by European Commission - G.A. 759921 – ERC - STG-Horizon 2020

*Principal Investigator:* Prof.ssa Daniela Carnevale

2015 - 2018 PhD Student in Experimental Medicine at the Department of Clinical and Molecular Medicine, “Sapienza” University of Rome;  
*Director of the Department:* Prof. Maurizio Sorice

*Tutor:* Prof. Maurizio Taurino, “Sant’Andrea” Hospital of Rome; Department of Clinical and Molecular Medicine, “Sapienza” University of Rome.

*Research activity performed:* study of the lymphocytes and monocyte subsets in patients with symptomatic and asymptomatic carotid artery stenosis and in patients with Stanford A acute aortic dissection versus subjects with traditional cardiovascular risk factors such as hypertension, dyslipidemia, diabetes and smoke. The frequency of lymphocytes and monocytes subsets was determined by flow cytometry and by histology and immunohistochemistry. Interleukin levels were measured by ELISA.

Research activity was performed at the Department of Biology and Biotechnology “Charles Darwin”, “Sapienza” University of Rome.

2015 Degree in Medical Biotechnology, Bioingegneristic curriculum [LM (DM 270/04) – ORDIN. 2012]; (classe LM-9) at “Sapienza” University of Rome, final mark 110/110 cum laude.

2014 - 2015 Internship at the Department of Biology and Biotechnology “Charles Darwin”, “Sapienza” University of Rome.

*Director of the laboratory:* Prof.ssa Paola Del Porto

*Principal investigator of the project* Prof. Maurizio Taurino, Department of Clinical and Molecular Medicine, Department of Vascular Surgery, “Sant’Andrea” Hospital of Rome, “Sapienza” University of Rome.

*Research activity performed:* the study regarded the correlation between the ratio of anti-inflammatory Treg lymphocytes and pro-inflammatory T helper 17

lymphocytes in patients with carotid artery stenosis versus subjects with traditional cardiovascular risk factors.

The frequency of the lymphocytes subsets was determined by flow cytometry; interleukin (IL)-17, IL-10 and metalloproteinase (MMP)-12 levels were measured by ELISA.

Results of this research have been presented in the degree thesis: “*Valutazione dei subsets linfocitari Treg e Th17 in pazienti affetti da stenosi carotidea*” and published in the article “*Regulatory T CD4+CD25+ lymphocytes increase in symptomatic carotid artery stenosis*. Del Porto F, Cifani N, Proietta M, **Perrotta S**, Dito R, Di Gioia C, Carletti R, Rizzo L, Orgera G, Rossi M, Ferri L, Tritapepe L, Taurino M. *Annals of Medicine*, 2017 Jun;49(4):283-290”.

2012 Degree in Biotechnology [L (DM 509/99)]; (classe 1), at “Sapienza” University of Rome, final mark 105/110.

2012 Internship at Department of Biology and Biotechnology “Charles Darwin”, “Sapienza” University of Rome.

*Director of the laboratory:* Prof.ssa Ada Maria Tata.

*Research activity performed:* the study regarded the homeostasis of the cholinergic system in relation to levels of immune cells in patients with Multiple Sclerosis. We investigated if the cause of the decrease of Acetylcholine levels in serum and cerebrospinal liquid of patients with Multiple Sclerosis is due to the activity of the hydrolyzing enzymes acetylcholinesterase (AChE) and butyrylcholinesterase (BuChE) or of the ACh biosynthetic enzyme and the protein carriers involved in non-vesicular ACh release.

The frequency of the enzymes and cholinergic markers was determined by RT-PCR and colorimetric assay of Ellman.

Results of this research have been presented in the degree thesis: “*Espressione di marcatori colinergici nel siero e nel liquido cerebrospinale di pazienti affetti da Sclerosi Multipla*”.

2006 High School Diploma in Scientific Studies, Liceo Scientifico “Alfano da Termoli”, Termoli (CB), final mark 84/100.

## RESEARCH ACTIVITY POST-LAUREAM

01/04-30/11/2015 Winner of a 8-month fellowship for research activity to be carried out at the Department of Clinical and Molecular Medicine, “Sapienza” University of Rome; Department’s director Prof.ssa Maria Rosaria Torrisi. (Procedure n. 5/15 Prot. 165/15 dated 20/02/2015)

*Research activity:* “Macrophages and atherosclerosis: evaluation of macrophage subpopulations in patients affected by carotid stenosis and Stanford-A acute aortic dissection through imaging techniques and in vitro sampling”

**TECHNICAL SKILLS AND COMPETENCES**

*Molecular and cellular biology techniques:* isolation of Peripheral Blood Mononuclear Cells (PBMC) from human peripheral blood, isolation of single-cells from mouse tissues, cells culture, cytofluorimetric analysis (BD FACS Calibur, BD FACS Canto, BD FACS Celesta), cell sorting (BD Influx), confocal microscopy analysis, optical microscopy, ELISA assay.

*Softwares:* Microsoft Office applications, GraphPad PRISM, BD CellQuest Pro, BD FACS Diva Software, BD FACS Sortware Software, FlowJo Software.

**Language:** Italian

**Other languages:** English, B2 (Certificate from the British Centre, Rome)

**TRAINING COURSE ATTENDANCES**

2018 BD Influx Operator Course, 19-23/03/2018 presso BD Belex, Erembodegem, Belgio

**CONFERENCE ATTENDANCES**

2020 37<sup>th</sup> Digital edition of National Congress of the Italian Society of Hypertension (SIIA), 1-3 October 2020, Bologna

2019 36<sup>th</sup> National Congress of the Italian Society of Hypertension (SIIA), 27-29 September 2019, Rome

2018 35<sup>th</sup> National Congress of the Italian Society of Hypertension (SIIA), 27-29 September 2018, Rome

2017 8<sup>th</sup> Biology and Molecular Medicine “BeMM” Symposium, 20 November 2017, Rome

2016 7<sup>th</sup> Biology and Molecular Medicine “BeMM” Symposium, 18 November 2016, Rome

2016 117<sup>th</sup> National Congress of the Italian Society of Internal Medicine, 14-16 October 2016, Rome

2015 116<sup>th</sup> National Congress of the Italian Society of Internal Medicine, 10-12 October 2015, Rome

**CONFERENCE PRESENTATIONS:**

2020 *Poster presentation, SIIA, Italian Society of Hypertension, 37<sup>th</sup> National Conference, Bologna.*  
*Cardiac remodeling induced by pressure overload activates a neuroimmune mechanism in the spleen which through PIGF induces the recruitment of adaptive macrophages into the left cardiac ventricle. Perrotta S, Carnevale R, Pallante F, Mastroiacovo F, Cifelli G, Lembo G, Carnevale D.*

2019 *Poster presentation, SIIA, Italian Society of Hypertension, 36<sup>th</sup> National Conference,*

Rome.

*Adaptive cardiac remodeling to chronic pressure overload requires the expression of Placental Growth Factor in the spleen and deployment of adaptive/reparative macrophages to the left ventricle.* **Perrotta S**, Iacobucci R, Carnevale L, Fardella V, Carnevale R, Pallante F, Lembo G, Carnevale D.

- 2018 *Poster presentation, SIIA, Italian Society of Hypertension, 35<sup>th</sup> National Conference, Rome.*  
*Characterization of molecular mechanisms activated by the splenic immune reservoir to establish adaptive cardiac remodeling to pressure overload.* **Perrotta S**, Cifelli G, Carnevale R, Lembo G, Carnevale D.
- 2016 *Poster presentation, SIMI, Italian Society of Internal Medicine, 117<sup>th</sup> National Conference, Rome.*  
*Monocyte subsets and atherosclerosis.* Cifani N, Ferri L, **Perrotta S**, Iaconi M, Dito R, Tritapepe L, Proietta M, Bruno G, Taurino M, Del Porto F.
- 2015 *Poster presentation, SIMI, Italian Society of Internal Medicine, 116<sup>th</sup> National Conference, Rome*  
*T helper 17 and critical carotid artery stenosis.* **Perrotta S**, Cifani N, Iaconi M, Ferri L, Orgera G, Guaragna M, Proietta M, Bruno G, Taurino M, Del Porto F.

## ABSTRACTS

- *Neuropilin1 and PlGF/VEGF-B: a novel neuroimmune pathway involved in Angiotensin II induced hypertension and target organ damage.*  
Carnevale D, **Perrotta S**, Iodice D, Pallante F, Iacobucci R, Cifelli G, Lembo G. ATVB Scientific Session 2019, Boston, 14-16 May 2019.
- *PI3Kgamma regulates the cross-talk of CD8 T cells and the Vasculature in Hypertension.*  
Carnevale D, Iodice D, Iacobucci R, Carnevale L, **Perrotta S**, Pallante F, Lembo G. ATVB Scientific Session 2019, Boston, 14-16 May 2019
- *PlGF/VEGF-B/Neuropilin1: a Neuroimmune Mechanism Necessary for the Initiation of the Adaptive Immune Response Recruited by Angiotensin II to Induce Hypertension and Target Organ Damag.*  
Carnevale D, Iodice D, **Perrotta S**, Carnevale L, Iacobucci R, Perrotta M , Pallante F, Cifelli G, Lembo G. American Heart Association's Scientific Sessions 2019, New Orleans, Luisiana, 5-8 September 2019.
- *Adaptive Cardiac Remodeling to chronic pressure overload requires the expression of PlGF in the spleen to recruit reparative macrophages to the left ventricle.*  
Carnevale D, **Perrotta S**, Carnevale R, Carnevale L, Perrotta M, Pallante F, Cifelli G, Lembo G. American Heart Association's Scientific Sessions 2019, New Orleans, Luisiana, 5-8 September 2019.

- *VEGF-B cooperates with PlGF to modulate the splenic immune response involved in Angiotensin II induced hypertension and target organ damage.*  
Perrotta M, Pallante F, Carnevale L, Iodice D, **Perrotta S**, Lembo G, Carnevale D. American Heart Association's Scientific Sessions 2019, Philadelphia, Pennsylvania, 16-18 November 2019
- *Pressure overload activates a neuroimmune mechanisms in the spleen that guides adaptive cardiac remodeling through Placental Growth Factor.*  
Carnevale D, **Perrotta S**, Carnevale R, Pallante F, Carnevale L, Perrotta M, Lembo G. American Heart Association's Scientific Sessions 2019, Philadelphia, Pennsylvania, 16-18 November 2019
- *Adaptive Cardiac Remodeling to Chronic Pressure Overload Requires the Expression of Placental Growth Factor in the Spleen and Deployment of Adaptive/Reparative Macrophages to the Left Ventricle.*  
D. Carnevale, **S. Perrotta**, G. Cifelli, V. Fardella, R. Carnevale, G. Lembo. American Heart Association's Scientific Sessions 2018, Chicago, Illinois, 10-12 November 2018.
- *Characterization of molecular mechanisms activated by the splenic immune reservoir to establish adaptive cardiac remodeling to pressure overload.*  
**Perrotta S**, Cifelli G, Carnevale R, Lembo G, Carnevale D. SIIA 2018, Italian Society of Hypertension, 35<sup>th</sup> National Conference, Rome 27-29 September 2018.
- *Activation of natural killer cells in recombination activating gene 1 null mice with angiotensin II induced hypertension.*  
Liang Xiao, **Sara Perrotta**, Wei Chen, Hana A Itani, Giuseppe Lembo, Daniela Carnevale, David G Harrison. Gordon Research Conference 2018, Ventura, CA 18-23 February 2018.
- *Monocyte subsets and atherosclerosis.*  
Iaconi M, Cifani N, **Perrotta S**, Proietta M, Taurino M, Tritapepe L, Del Porto F. SIAARTI 2017, Rimini 18-21 October 2017.
- *Interleukin-17-related pathways are involved in carotid Atherosclerosis, but not in Stanford-A acute aortic dissection.*  
Del Porto F, Cifani N, Ferri L, **Perrotta S**, Dito R, Iaconi M, Carletti R, Proietta M, Tritapepe L, di Gioia C, Taurino M. EAS16-0903, vascular biology: macrophages, inflammation, immunity. Abstracts/Atherosclerosis 252 (2016) e1-e196.
- *Role of T helper 17 lymphocytes subpopulations in critical carotid artery stenosis.*  
Proietta M, Cifani N, Del Porto F, Ferri L, Orgera G, **Perrotta S**, Dito R, Tritapepe L, Iaconi M, Taurino M. EAS16-0922, vascular biology: macrophages, inflammation, immunity. Abstracts/Atherosclerosis 252 (2016) e1-e196.
- *Monocyte subsets and atherosclerosis.*  
Cifani N, Ferri L, **Perrotta S**, Iaconi M, Dito R, Tritapepe L, Proietta M, Bruno G, Taurino M, Del Porto F. SIMI 117<sup>th</sup> National Conference, Rome 14-16 October 2016.
- *T helper 17 and critical carotid artery stenosis.*

**Perrotta S**, Cifani N, Iaconi M, Ferri L, Orgera G, Guaragna M, Proietta M, Bruno G, Taurino M, Del Porto F. SIMI 116<sup>th</sup> National Conference, Rome 2015.

- *Metalloproteinase-12 and stroke.*  
Cifani N, **Perrotta S**, Iaconi M, Ferri L, Mingoia C, Orgera G, Tritapepe L, Bruno G, Taurino M, Proietta M, Del Porto F. SIMI 116<sup>th</sup> National Conference, Rome 2015.
- *IL-17 in acute aortic dissection.*  
Iaconi M, Cifani N, **Perrotta S**, Ferri L, Dito R, Festa C, Taurino M, Orgera G, Bruno G, Tritapepe L, Proietta M, Del Porto F. SIMI 116<sup>th</sup> National Conference, Rome 2015.

## PUBLICATIONS:

- *Celiac vagus nerve stimulation recapitulates Angiotensin II-induced splenic noradrenergic activation, driving egress of CD8 effector cells.* Carnevale L, Pallante F, Perrotta M, Iodice D, **Perrotta S**, Fardella S, Mastroiacovo F, Carnevale D, Lembo G. Cell Rep 2020 Dec 15;33(11):108494.
- *A neuro-humoral activation of RAAS in endothelial dysfunction modulating immunity in heart failure.* **Sara Perrotta**, Daniela Carnevale. Cardiovasc Res 2020 Aug 4;cvaa243.
- *Regulatory T CD4+CD25+ lymphocytes increase in symptomatic carotid artery stenosis.* Del Porto F, Cifani N, Proietta M, **Perrotta S**, Dito R, Di Gioia C, Carletti R, Rizzo L, Orgera G, Rossi M, Ferri L, Tritapepe L, Taurino M. Annals of Medicine, 2017 Jun;49(4):283-290.

## GRANTS:

2018 Progetto per Avvio alla Ricerca - Tipo 1

*“The importance of PI3K $\gamma$  signaling in the activation of immune CD8 T cells in hypertension”* Department of Molecular Medicine, “Sapienza” University of Rome.

*“In compliance with the Italian legislative Decree no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document.”*

Rome, 23/12/2020

SIGNED

Sara Perrotta