

Centre for the Study of Arteriosclerosis and Functional Evaluation of the Mechanical Properties of the Large Arteries

Director: Prof. Paolo Salvi (Scientific and Technical Advisor: Ing. Giuseppe Lio)

Research group members

Prof. Paolo Salvi, MD, PhD; Dr. Andrea Grillo, MD, PhD, Giuseppe Lio, engineer; Prof. Gianfranco Parati

RESEARCH ACTIVITIES

The activity of this research group is mainly focused on the study of the role of the large elastic arteries in vascular hemodynamics, verifying the effects that the stiffening of the large elastic arteries have on the cardiovascular pathophysiology. Particular attention is paid to the assessment of cardiovascular risk and the clinical implications related to the processes of arteriosclerosis and early vascular aging.

DISEASES ON WHICH RESEARCH IS FOCUSED

- Arteriosclerosis
- Early vascular ageing
- Rare cardiovascular diseases (congenital aortopathies)
- Ischemic heart disease
- Hypertension
- Prevention of ischemic cardiovascular diseases
- Acute and chronic mountain sickness

RESULTS OF PARTICULAR IMPORTANCE ACHIEVED

- Schillaci G, Bilo G, Pucci G, Laurent S, Macquin-Mavier I, Boutouyrie P, Battista F, Settini L, Desamericq G, Dolbeau G, Faini A, Salvi P, Mannarino E, Parati G. Relationship between short-term blood pressure variability and large-artery stiffness in human hypertension findings from 2 large databases. *Hypertension*. 2012; 60:369-377.
- Salvi P, Parati G. Chronic kidney disease: Arterial stiffness and renal function - a complex relationship. *Nat Rev Nephrol*. 2015; 11:11-
- Parati G, Revera M, Giuliano A, Faini A, Bilo G, Gregorini F, Lisi E, Salerno S, Lombardi C, Ramos Becerra CG, Mancia G, Salvi P. Effects of acetazolamide on central blood pressure, peripheral blood pressure and arterial distensibility at acute high altitude exposure. *Eur Heart J*. 2013; 34:759-766.
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- Salvi P, Grillo A, Ochoa JE, Parati G. Arterial stiffening, pulse pressure, and left ventricular diastolic dysfunction. *Eur J Heart Fail*. 2016;18:1362-1364.
- Revera M, Salvi P, Faini A, Giuliano A, Gregorini F, Bilo G, Lombardi C, Mancia G, Agostoni P, Parati G, on behalf of the HIGHCARE-Himalaya investigators. Renin-angiotensin-aldosterone

system is not involved in the arterial stiffening induced by acute and prolonged exposure to high altitude. *Hypertension*. 2017; 70:75-84.

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- Salvi P, Grillo A, Marelli S, Gao Lan, Salvi L, Viecca M, Di Blasio AM, Carretta R, Pini A, Parati G. Aortic dilatation in Marfan syndrome: role of arterial stiffness and fibrillin-1 variants. *J Hypertens*. 2018; 36:77-84.
- Grillo A, Salvi P, Marelli S, Gao Lan, Salvi L, Faini A, Trifirò G, Carretta R, Pini A, Parati G. Impaired central pulsatile hemodynamics in children and adolescents with Marfan syndrome. *J Am Heart Assoc*. 2017; 6:e006815
- Salvi L, Alfonsi J, Grillo A, Pini A, Soranna D, Zambon A, Pacini D, Di Bartolomeo R, Salvi P, Parati G. Post-operative and mid-term hemodynamic changes after replacement of the ascending aorta. *J Thorac Cardiovasc Surg*. 2022;163:1283-1292
- Salvi P, Baldi C, Scalise F, Grillo A, Salvi L, Tan I, De Censi L, Sorropago A, Moretti F, Sorropago G, Gao L, Rovina M, Simon G, Fabris B, Carretta R, Avolio AP, Parati G. Comparison between invasive and noninvasive methods to estimate subendocardial oxygen supply and demand imbalance. *J Am Heart Assoc*. 2021; 10:e021207.

MAIN COLLABORATIONS WITH NATIONAL AND INTERNATIONAL RESEARCH NETWORKS

- Department of Medicine, Surgery and Health Sciences, SC Medicina Clinica, University of Trieste, Trieste, Italy
- Center for the Prevention and Treatment of Arterial Hypertension “Alessandro Filippi”, Mascalucia, Catania, Italy
- Department of Surgical, Medical, Molecular Pathology and Critical Area Medicine, University of Pisa, Pisa, Italy
- Cardiovascular-Genetic Center, IRCCS Policlinico San Donato, San Donato Milanese, Italy
- Department of Medical and Surgical Sciences, IRCCS Policlinico S. Orsola-Malpighi, Bologna, Italy
- Center for the Diagnosis and Treatment of Hypertension, II Cardiovascular Medicine, AUSL-IRCCS of Reggio Emilia, Reggio Emilia, Italy
- UOC Geriatrics B, University of Verona, Verona, Italy.
- "Anna Maria Pirrelli" Hypertension Departmental Operative Unit, University of Bari, Bari, Italy
- Cardiovascular Intervention Unit, Monza Polyclinic, Monza, Italy
- Université de Lorraine, CHRU-Nancy, Geriatric Department, Nancy, France
- Liverpool Centre for Cardiovascular Science, University of Liverpool and Liverpool Heart & Chest Hospital, United Kingdom
- 1st Department of Pediatrics, Semmelweis University, Budapest, Hungary
- Department of Cardiology, Peking University First Hospital, Beijing, China
- Department of Biomedical Sciences, Faculty of Medicine and Health Science, Macquarie University, Sydney, Australia
- Kardiologiska Institutionen, Danderyd Hospital, Karolinska Institutet, Stockholm, Sweden