

## **ESH Working Group on Small Vessels: Section on Microcirculation and Inflammation**

### **PLANNED ACTIVITIES:**

#### **1. *COOPERATIVE RESEARCH PROJECTS***

We plan to render the WG an active forum for cooperation and participation of all members. To this goal, a teleconference will be organized with all members to collect information on the major area of interest of each research group and the methodologies currently used in each laboratory. This information will be shared to all WG members and a call for proposal of new cooperative projects will come soon.

#### **2. *POSITION PAPER***

A Position Paper on 'Microcirculation' will be prepared in the next months by the members of the WG. The layout will be similar to the previous one published in Journal of Hypertension (2014, 32:2120–2129) by members of the Working Group on Macrovascular and Microvascular Alterations of the Italian Society of Arterial Hypertension and therefore it will entail an update both on the methodological aspect and on the clinical aspects.

#### **3. *EDUCATIONAL MATERIAL***

We will have a specific attention to the education and scientific growth of young scientists involved in the working group, in the attempt to build future opinion leaders in the field. To this aim, the WG will develop a comprehensive online educational program, providing specific information on the basic and advanced methods for microvascular assessment, their strengths and limitations in different research settings. The collaboration between different groups will promote mobility of the young scientists among different microvascular laboratories, sharing of protocols and the development of joint projects led by young investigators. The proposal of an in-site course will also be discussed between the WG members. This aspect might contribute to attracting interest by participants to the annual ESH meeting.

#### **4. *REGISTRIES-BIOBANK***

We aim to establish a registry/Biobank of animal and human tissues, sera/plasma samples shared by the laboratories referring to WG members, with the final aim to provide a unique source of data for microvascular research and a robust infrastructure able to attract funding at the EU level for future research projects.

Members: see attached Table.

Yours sincerely,  
Agostino Viridis, MD

## **PUBLICATIONS BY WG MEMBERS**

Due to the very large number of publications by the WG members, only few selected publications have been listed here below.

1. Masi S, Colucci R, Duranti E, Nannipieri M, Anselmino M, Ippolito C, Tirotta E, Georgiopoulos G, Garelli F, Nericcio A, Segnani C, Bernardini N, Blandizzi C, Taddei S, Viridis A. Aging Modulates the Influence of Arginase on Endothelial Dysfunction in Obesity. *Arterioscler Thromb Vasc Biol*. 2018 Oct;38(10):2474-2483.
2. Bruno RM, Grassi G, Seravalle G, Savoia C, Rizzoni D, Viridis A; Study Group on Micro- and Macrocirculation of the Italian Society of Hypertension (SIIA). Age- and Sex-Specific Reference Values for Media/Lumen Ratio in Small Arteries and Relationship With Risk Factors. *Hypertension*. 2018 Jun;71(6):1193-1200.
3. Bruno RM, Duranti E, Ippolito C, Segnani C, Bernardini N, Di Candio G, Chiarugi M, Taddei S, Viridis A. Different Impact of Essential Hypertension on Structural and Functional Age-Related Vascular Changes. *Hypertension*. 2017 Jan;69(1):71-78.
4. Viridis A, Duranti E, Colucci R, Ippolito C, Tirotta E, Lorenzini G, Bernardini N, Blandizzi C, Taddei S. Ghrelin restores nitric oxide availability in resistance circulation of essential hypertensive patients: role of NAD(P)H oxidase. *Eur Heart J*. 2015 Nov 14;36(43):3023-30.
5. Martínez-Revelles S, García-Redondo AB, Avendaño MS, Varona S, Palao T, Orriols M, Roque FR, Fortuño A, Touyz RM, Martínez-González J, Salaices M, Rodríguez C, Briones AM. Lysyl Oxidase Induces Vascular Oxidative Stress and Contributes to Arterial Stiffness and Abnormal Elastin Structure in Hypertension: Role of p38MAPK. *Antioxid Redox Signal*. 2017 Sep 1;27(7):379-397.
6. Ikonomidis I, Pavlidis G, Katsimbri P, Andreadou I, Triantafyllidi H, Tsoumani M, Varoudi M, Vlastos D, Makavos G, Kostelli G, Benas D, Lekakis J, Parissis J, Boumpas D, Alexopoulos D, Iliodromitis E. Differential effects of inhibition of interleukin 1 and 6 on myocardial, coronary and vascular function. *Clin Res Cardiol*. 2019 Mar 11.
7. Ikonomidis I, Voumvourakis A, Makavos G, Triantafyllidi H, Pavlidis G, Katogiannis K, Benas D, Vlastos D, Trivilou P, Varoudi M, Parissis J, Iliodromitis E, Lekakis J. Association of impaired endothelial glycocalyx with arterial stiffness, coronary microcirculatory dysfunction, and abnormal myocardial deformation in untreated hypertensives. *J Clin Hypertens (Greenwich)*. 2018 Apr;20(4):672-679.
8. Ikonomidis I, Papadavid E, Makavos G, Andreadou I, Varoudi M, Gravanis K, Theodoropoulos K, Pavlidis G, Triantafyllidi H, Moutsatsou P, Panagiotou C, Parissis J, Iliodromitis E, Lekakis J, Rigopoulos D. Lowering Interleukin-12 Activity Improves Myocardial and Vascular Function Compared With Tumor Necrosis Factor- $\alpha$  Antagonism or Cyclosporine in Psoriasis. *Circ Cardiovasc Imaging*. 2017 Sep;10(9).
9. De Ciuceis C, Agabiti Rosei C, Caletti S, Trapletti V, Coschignano MA, Tiberio GAM, Duse S, Docchio F, Pasinetti S, Zambonardi F, Semeraro F, Porteri E, Solaini L, Sansoni G, Pileri P, Rossini C, Mittempergher F, Portolani N, Ministrini S, Agabiti-Rosei E, Rizzoni D. Comparison between invasive and noninvasive techniques of evaluation of microvascular structural alterations. *J Hypertens*. 2018 May;36(5):1154-1163.

10. De Ciuceis C, Rossini C, Airò P, Scarsi M, Tincani A, Tiberio GA, Piantoni S, Porteri E, Solaini L, Duse S, Semeraro F, Petroboni B, Mori L, Castellano M, Gavazzi A, Agabiti Rosei C, Agabiti Rosei E, Rizzoni D. Relationship Between Different Subpopulations of Circulating CD4+ T lymphocytes and Microvascular Structural Alterations in Humans. *Am J Hypertens*. 2017 Jan;30(1):51-60.
11. De Ciuceis C, Savoia C, Arrabito E, Porteri E, Mazza M, Rossini C, Duse S, Semeraro F, Agabiti Rosei C, Alonzo A, Sada L, La Boria E, Sarkar A, Petroboni B, Mercantini P, Volpe M, Rizzoni D, Agabiti Rosei E. Effects of a long-term treatment with aliskiren or ramipril on structural alterations of subcutaneous small-resistance arteries of diabetic hypertensive patients. *Hypertension*. 2014 Oct;64(4):717-24.
12. Friederich-Persson M, Nguyen Dinh Cat A, Persson P, Montezano AC, Touyz RM. Brown Adipose Tissue Regulates Small Artery Function Through NADPH Oxidase 4-Derived Hydrogen Peroxide and Redox-Sensitive Protein Kinase G-1 $\alpha$ . *Arterioscler Thromb Vasc Biol*. 2017 Mar;37(3):455-465.
13. Montezano AC, Lopes RA, Neves KB, Rios F, Touyz RM. Isolation and Culture of Vascular Smooth Muscle Cells from Small and Large Vessels. *Methods Mol Biol*. 2017;1527:349-354.
14. Lopes RA, Neves KB, Tostes RC, Montezano AC, Touyz RM. Downregulation of Nuclear Factor Erythroid 2-Related Factor and Associated Antioxidant Genes Contributes to Redox-Sensitive Vascular Dysfunction in Hypertension. *Hypertension*. 2015 Dec;66(6):1240-50.

## Working Group on Small Arteries – section of Microcirculation and Inflammation: member list

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