



WG 2 – Physiological and Technical Background From Bench to Bedside

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Highlights
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TASK 2.1 – MECHANISMS (LED BY S. DOGAN & B.G. TUNA)



- **Aim:** To summarise current knowledge on mechanisms of vascular ageing, derived from basic research, and on genetics of vascular ageing, and establish research priorities for integration of novel pathways into the framework of integrative physiology and translation into clinical research

Deliverable 2.1: Call-for-action document

- **Main achievements:**
 - *Theories and molecular basis of vascular aging* published in *Int J Mol Sci* (coordinated by E. Gkaliagkousi, K. Gopčević and & L. Antonis; collaboration with WG3)
 - *Pathophysiology of circulating biomarkers and relationship with vascular aging* published in *Front Physiol* (coordinated by K. Gopčević; collaboration with WG3)
 - *Pharmacological modulation of vascular ageing* published in *Ageing Res Rev* (coordinated by L. Roth)
 - *Centenarians – The way to longevity and healthy aging* under review (initiated by K. Eruslanova; coordinated by S. Summer)
 - *Studying mechanisms of vascular aging using in vitro and in vivo approaches* under preparation (coordinated by L. de Rooij)

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- **Main achievements:**
 - 2 Workshops (Limassol training school):
 - *Single-cell profiling of the vasculature during ageing* (L. de Rooij)
 - *Circulating biomarkers of vascular ageing* (K. Gopcevic)
 - 5 Recorded research presentations:
 - *Impact of cocoa flavanol intake on age-dependent vascular stiffness* by C. Heiss
 - *Targeted delivery of atorvastatin by aptamer gated silica nanoparticles in atherosclerosis cell culture mode* by E. Oztemiz
 - *Pathophysiology of circulating biomarkers and relationship with vascular aging* by K. Gopčević
 - *Theories and molecular basis of vascular aging* by E. Gkaliagkousi
 - *Modeling vascular aging in mice (without having to wait too long)* by A. Roks

TASK 2.2 – MODELS (LED BY B. WESTERHOF & J. ALASTRUEY)



- **Aim:** To reach consensus on the application, differences, interplay, limitations and potential complementarity of different mathematical models and techniques used for vascular ageing assessment advancing their potential clinical application

Deliverable 2.2: Consensus document on mathematical models

- **Main achievements:**
 - Horizon 2023 grant VITAL awarded (coordinated by P. Segers, with participants from all other WGs)
 - Arterial pulse wave modelling and analysis for vascular age studies: a review from VascAgeNet published in *AJP – Heart* (coordinated by B. Westerhof & J. Alastruey)
 - *The value of mathematical models* under preparation (coordinated by B. Westerhof & J. Alastruey)
 - 2 Workshops (Split & Limassol training schools):
 - *Mathematical Modelling: a window into cardiovascular ageing* (B. Westerhof)
 - *Hands-on: analysing cardiovascular signals to assess vascular age* (P. Charlton)
 - 2 Research presentations:
 - *Transfer functions* by B. Westerhof
 - *Assessing vascular age from the photoplethysmogram* by P. Charlton

TASK 2.3 – TRANSLATION



- **Aim:** To accelerate the translation from bench to bedside by implementing cross-domain activities (involving basic scientists, vascular physiologists, clinical researchers, pharmacologists, pharmaceutical companies) to identify future targets for treatments concerning vascular ageing

Deliverable 2.3: Report on activities

- **Main achievements:**
 - Round table at the training school in Split (Sep 2021)
 - Webinar *Endothelial dysfunction, ageing and COVID-19* by E. Osto
 - 1 Recorded research presentation:
 - *Arterial ageing in the middle-aged: 10 years follow-up data in the Asklepios population* by D. Campos
 - Round table on *Translational Science in Vascular Ageing* at Artery 23 (Chairs/Moderators: E. Bianchini, C.C. Mayer)
 - *Translational Science in Vascular Ageing – from Bench to Bedside: Insights from a VascAgeNet Roundtable* published in *Artery Research* (coordinated by E. Bianchini, C.C. Mayer)



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Jordi Alastruey

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