



JCET

Jagiellonian Centre
for Experimental Therapeutics

JAGIELLONIAN
UNIVERSITY
IN KRAKOW



Position for the 1 position of a PhD student
in the Doctoral School of Exact and Natural Sciences Biomedical Sciences (EN)
(MCB/JCET/Solaris)
offer no 2022-208

Within the project funded by Weave-UNISONO: "Specific pathomechanisms of aging-related endothelial dysfunction in sepsis: investigation of mechanisms and experimental therapy", the Doctoral School of Exact and Natural Sciences MCB/JCET/Solaris invites applications for the position of a PhD student that will start on April 2022 at the earliest.

For more information, please visit:

[Nauki biomedyczne - Szkoła Doktorska Nauk Ścisłych i Przyrodniczych - Uniwersytet Jagielloński \(uj.edu.pl\)](http://Nauki_biomedyczne_-_Szkola_Doktorska_Nauk_Scislych_i_Przyrodniczych_-_Uniwersytet_Jagielloński_(uj.edu.pl))

Project description:

Sepsis is a life-threatening systemic inflammatory disorder and the outcome of sepsis in elderly patients is substantially worse than in younger patients. Endothelial dysfunction importantly contributes to pathophysiology of sepsis and recent studies provide key evidence that pro-inflammatory stimuli and oxidative stressors induce a significantly more severe degree of endothelial dysfunction in blood vessels of aged rats and mice, when compared to the responses in young animals.

Despite the evidence that aging sensitizes the vasculature to the deleterious effects of pro-inflammatory factors and oxidants, despite the fact that circulatory shock primarily affects the aging population, and despite the fact that the age of the population continues to increase in developed countries, surprisingly there are currently no studies specifically focusing on the mechanisms underlying the sepsis-associated impairment of endothelial function in aging animals.

The central hypotheses of the project await to be verified by a talented PhD student is the following: (1) accelerated endothelial dysfunction is a key contributor to multiple organ failure and mortality in aging animals during sepsis and (2) in aging blood vessels, unique cellular and molecular mechanisms operate that render them extremely vulnerable to the oxidative stress-associated endothelial dysfunction during sepsis. In the frame of the project we will try to identify unique pathophysiological patterns that will yield potentially targetable novel pathways selectively perturbed in the aged vasculature in response to sepsis. The potential target will include Nrf2 (a master regulatory factor of the antioxidant response), nuclear enzyme PARP, telomere loss age-associated down-regulation of circulating IGF1 levels, age-dependent changes in vascular metabolism and others.

This interdisciplinary project encompassing *in vivo* work and vascular and cellular studies, should shed light on the pharmacotherapeutic mechanisms of age-associated worsening of endothelial dysfunction in sepsis. This topic represents an important challenge in medicine given the fact that as yet there are no effective pharmacological approaches for the therapy of circulatory shock and multiorgan failure in sepsis.

To make the application process fast and easy, [please follow the rules.](#)

Please send your application documents to the e-mail address of the Project Manager Prof. dr hab. Stefan Chłopicki e-mail: stefan.chlopicki@jcet.eu and to the Online Application System (OAS) at: <https://irk.uj.edu.pl/en-gb/>

Please note that the OAS will be open on the 7th of March 2022.