

Third Laureate Fundamental Research

Project Title: New and Unique Mechanism of GFR Regulation

Researcher: Prof. Laszlo Rosivall

Country: Hungary

Field: Medical Sciences

Scientific Affiliation: Semmelweis University



Abstract:

We pioneered recognizing and characterizing intrarenal renin-angiotensin system (RAS). Utilizing cutting edge technics, for the first time, and demonstrated the existence of fenestration in endothelium of distal portion of renal afferent arteriole (AA). Using nanotechnology and visualized in vivo the GFR and demonstrated that fenestration: 1) allows filtration of fluid prior to glomerular filtration, which can be as high as about %30 of GFR, 2) correlates with activity of RAS, 3) may change by age, in response to some stimuli such as thirst and in some diseases. Consequently, AA is not a uniform vessel and presents new functions. Also demonstrated a new mechanism in regulation of GFR (short loop feedback mechanism). This unique JGA morphology and the high filtration volume in AA is one of the most striking recent observations of renal microcirculation, and questions several basic renal physiological issues and opens new pathway in alteration of RAS.

Biography:

Prof. László Rosivall, Széchenyi prize laureate, is the head of Department of Pathophysiology, International Nephrology Research and Training Center and School of Basic Medical Sciences at Semmelweis University. He is the member of European Academy of Sciences and Arts, Honorary Doctor of Tirgu-Mures University and Honorary Member of Polish Nephrological Society. He served as: President of Semmelweis University; President of Worldwide Hungarian Medical Academy; Treasurer of International Society for Pathophysiology; Council Member of International Society of Nephrology, Founder and President of Hungarian Kidney Foundation, President of Budapest Nephrology School and Roma Medical Education Program. He has published 166 articles, 75 chapters, 4 textbooks, 1 monograph and 2 patents.

