Hypertension represents a global health epidemic that is predicted to affect over 1.5 billion individuals by the year 2025 and salt-sensitive hypertension is a significant component of hypertension. Salt-sensitivity affects approximately 50% of hypertensive patients, leading to a 3-fold increase in the risk of adverse cardiovascular events compared to salt-resistant hypertensive patients. It is well established that integrated neural, humoral, and renal mechanisms are implicated in the pathogenesis of salt-sensitive hypertension. Interest in enhancing our understanding of the neural mechanisms involved in hypertension, and salt-sensitivity in particular, has been renewed by the elegant work of Dr. Fujita who demonstrated a direct role of renal sympathetic innervation in the dysregulation of the renal sodium chloride co-transporter as a key event in the pathophysiology of salt-sensitive hypertension (1 and 2) the conflicting results of the SIMPLICITY HTN trials in which renal nerve ablation produced both persistent blood pressure reduction (HTN 1 & 2) and a lack of effect versus placebo (HTN-3). Despite decades of pioneering work enhancing our knowledge of the neural control of the kidney (2) and recent insights into the regulation of renal sodium transporters, as illustrated schematically, the central mechanisms regulating sympathetic nerve traffic to the kidney remain to be defined.

Owing to the increasing worldwide prevalence of hypertension, and the role of dietary salt-intake in the pathophysiology of this disease (5), it is clear that increased understanding of the central mechanisms involved in blood pressure regulation, in both normotensive and salt-sensitive hypertensive animal models and humans is required. A significant number of key questions pose barriers to our understanding of the pathophysiology of salt-sensitivity including; how and where is salt-sensed by the body? What mechanistic responses are activated to maintain salt-resistance and do these represent future therapeutic targets? How can you rapidly and reproducibly assess salt-sensitivity in human patient populations? Can non-invasive biomarkers of salt-sensitivity be identified? I look forward to the answers to these issues being addressed by the global hypertension community in the coming decades to enhance our ability to understand and combat the global hypertension epidemic.

REFERENCES:

- Richard Wainford