

EDITORIAL

## 2024 Carl W. Gottschalk Distinguished Lectureship of the American Physiological Society Renal Section

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The American Physiological Society (APS) Renal Section has selected Gerardo Gamba, MD (Fig. 1), as the recipient of the 2024 Carl Gottschalk Distinguished Lectureship. Dr. Gamba is a Professor of Medicine and head of the Molecular Physiology Unit at the Biomedical Research Institute of the National Autonomous University of Mexico and the Salvador Zubirán National Institute of Medical Sciences and Nutrition. He is also a full member of the National Academy of Medicine of Mexico and the Mexican Academy of Sciences.

Dr. Gamba is a world leader in kidney physiology, primarily focusing his research on the mechanisms and regulation of solute transport along the nephron. After completing his medical and scientific training in Mexico, he obtained a fellowship under the mentorship of Prof. Steven Hebert at the Brigham and Women's Hospital, Harvard Medical School, in Boston, MA. Embracing the expression cloning "era," his seminal discoveries in this period included the isolation of the thiazide-sensitive NaCl cotransporter (NCC; SLC12A3) (1) and the Na<sup>+</sup>-K<sup>+</sup>-2Cl<sup>-</sup> cotransporter (NKCC2) of the thick ascending limb (SLC12A1) (2), alongside playing a key role in cloning of the Ca<sup>2+</sup>-sensing receptor (CaSR) (3). All of these findings revolutionized the field, leading to a new key understanding of the basis of Gitelman and Bartter syndromes and the development of drugs that interact with CaSR, which are common use in clinical practice today.

After his fellowship, Dr. Gamba returned to Mexico to take a faculty position and continue his research into the SLC12 family of cation Cl<sup>-</sup> cotransporters and the diseases associated with their dysfunction. Today, he is considered one of the foremost experts in this field, with his groundbreaking discoveries continuing to unearth new roles for these transport proteins. For example, a recent publication that goes "full circle" to his days in Boston demonstrated that the molecular basis for hypertension after consumption of high fructose-containing beverages is most likely a result of NCC activation via a luminal CaSR (4). Other notable studies include the thorough step-by-step characterization of how NCC activity is regulated by the with-no-lysine (WNK) kinase family and the downstream STE20/SPS1-related proline/alanine-rich kinase (SPAK). For example, Dr. Gamba's group established that NCC is activated by angiotensin II through a pathway that involves WNK4, providing a mechanism for how dietary salt restriction increases NCC activity (5). Furthermore, the work from Dr. Gamba and his colleagues was instrumental in our understanding how the

WNK-NCC signaling pathways are a key part of the switch modulating the balance between Na<sup>+</sup> reabsorption and K<sup>+</sup> secretion and hence important for blood pressure control (6, 7). The regulation of SLC12 family members by the WNK-SPAK cascade and various hormones is an area he continues to actively work on (8, 9). Dr. Gamba's scientific contributions in this area are documented by his many definitive reviews in the field (10), which have served to disseminate the important work done not only by him but also by others in the field. In addition to work on solute transport, Dr. Gamba has collaborated with predominantly colleagues from Mexico to uncover a role for the aldosterone receptor blocker spironolactone in preventing chronic kidney disease in the settings of acute kidney disease and calcineurin inhibitor use. These translational studies highlight the important clinical impacts of his work outside the field of electrolyte balance and hypertension and underscore his position as one of the most respected nephrologists in the world.

In addition to grants from the Mexican Council of Science and Technology, Dr. Gamba has been consistently successful in obtaining funding from international sources, including the Howard Hughes Medical Institute, Leducq Fondation, The Wellcome Trust, and the National Institutes of Health. Dr. Gamba has also been a recipient of a National Institutes of Health R01 grant as a Principal Investigator, a very rare occurrence in Latin America. Dr. Gamba has also played a key role in building research excellence in economically challenged areas, both in Mexico and throughout Latin America. Thus, in addition to his more than 160 papers in English language journals, he also publishes regularly in Spanish language journals (~60 papers).

Dr. Gamba is also a true Renaissance man who combines a passion for classical music, especially by Gustav Mahler, with a broad knowledge of literature and world events, allowing him to write a topical weekly column for a local newspaper, *La Cronica de Hoy*.

In summary, Dr. Gamba has become one of the major scientific leaders, and certainly one of the most productive in renal physiology and pathophysiology, in all of Latin America. He continues to make seminal contributions in the areas of renal and transport physiology and train the next generation of renal physiologists. The Renal Section is honored to award him the 2024 Carl Gottschalk Distinguished Lecture.



Figure 1. Gerardo Gamba, MD.

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## DISCLOSURES

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## AUTHOR CONTRIBUTIONS

R.A.F. drafted manuscript; R.A.F. and D.H.E. edited and revised manuscript; R.A.F. and D.H.E. approved final version of manuscript.

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