

## **Bosch Distinguished Seminar Series**

### **Renin, Genes, and Finding the Cause of Hypertension**

**Speaker:**

Professor Emeritus Brian Morris

**Title:**

Renin, Genes and Finding the Cause of Hypertension

**Date:**

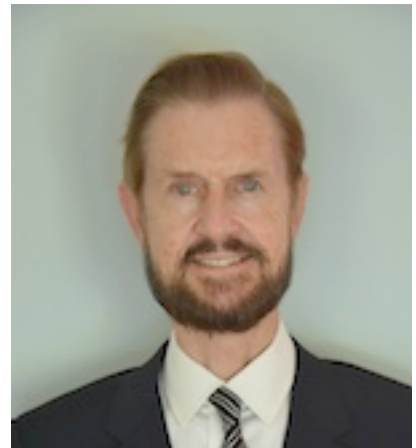
Thursday, 22 May 2014

**Time:**

1.00-2.00pm

**Venue:**

Lecture Theatre 104, New Law Building  
Eastern Avenue, University of Sydney



#### **Professor Emeritus Brian Morris:**

An Adelaide graduate, Brian Morris completed his PhD in Melbourne before postdoctoral studies as a CJ Martin Fellow at UMC and UCSF where he was an American Heart Association (AHA) Advanced Fellow. In 1978 he took up an academic position at University of Sydney, in Physiology, and in 1999 was promoted to Professor, becoming Professor Emeritus in Sep 2013. In 2010 he was awarded the Lewis K. Dahl Memorial Lecture by the AHA's Council for High Blood Pressure Research in Washington, DC. Brian has 344 academic publications, 6,425 citations and a H-index of 43. He has received 60 grants as first-named CI, totalling over \$5 million. He is currently serving a 3<sup>rd</sup> six-year term on the Executive Committee of the High Blood Pressure Research Council of Australia as Editor, formerly being Treasurer. He serves on the editorial board of *Hypertension* and formerly *Journal of Hypertension*. Other service includes NHMRC grant committees and chair or member of committees for national and international conferences. He has been Editor for all Physiology reports since 1979 and the first three (now 'Bosch') Institute reports. He received the Edgeworth David Medal in 1986 and the 2006 Faculty Award for Excellence in Postgraduate Research supervision. His news media contributions include over 25 TV interviews (three on '60 Minutes'), over 100 radio interviews and over 100 in newspapers. Brian is married with two teenage daughters.

## ***ABSTRACT***

My seminar will recount some of the contributions I have enjoyed making to the field of hypertension over the past 44 years. These started with the discovery of prorenin with Eugenie Lumbers in Adelaide in 1970. During my PhD in Melbourne my discovery of angiotensinogen in the kidney provided the first real evidence for the existence of an intrarenal renin-angiotensin system now regarded as crucial to hypertension. After postdoctoral studies I set up my own Lab in Sydney in 1978 and showed directly the synthesis of prorenin in cells. I then determined renin's structure by cloning renin cDNA and, with John Shine, the human renin gene. Studies of renin gene expression followed, first by measuring the response in renin mRNA to physiological stimuli, and later, with various collaborators, by elucidating cyclic AMP-mediated molecular control of the human renin promoter and mRNA stability, as well as the *in vivo* role of a strong, far upstream enhancer. My Lab also cloned the first human tissue kallikrein gene and other genes, and characterized several splicing factors. In 1988 I pioneered the use of molecular genetics to find the genetic basis of hypertension. This began with the renin gene. While this was negative, further association studies implicated other genes. I introduced concepts such as subject choice to improve biological power, the importance of uncommon coding variants in essential hypertension, and "survivor bias". In one of the world's first genome-wide linkage scans I implicated 1p36 as a locus for essential hypertension. Genetic studies of obesity, coronary artery disease and complications of type 2 diabetes followed. In 2011 my Lab turned to transcriptome-wide expression arrays to identify global differences in gene expression in rodent models of hypertension as well as essential hypertension. The latter studies, in kidneys, provided evidence implicating aberrant renin expression. It showed that the defect was in expression of a novel miRNA that normally suppressed renin. More recent research has confirmed the role of this mechanism in the elevated renin and blood pressure in a mouse model of hypertension. My interest in biomedical sciences started in high school with health advocacy and continues to this day with multiple publications. All of this research has been a rewarding experience and I especially encourage the next generation of scientists to think laterally to get ideas and be persistent in your research – success will surely follow!