

to respond to renal denervation with a greater reduction in blood pressure. This emphasizes the importance of improving medication adherence in patients with hypertension.

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- Thomas Kahan

Hot Off the Press



Antoine Caillon

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From RAG to Riches And Back Again: always keep an eye on our mice models

Kathryn Sandberg and her team very recently conducted a study¹, to be published in the June 2017 issue of *Hypertension*, focusing on the loss of resistance to angiotensin II-induced hypertension in Recombination-Activating Gene 1 knockout mice (Rag1^{-/-}) on the C57BL/6J background (Jackson Laboratory). This mouse model is deficient in functional T and B cells due to the lack of the V-D-J recombination enzyme, and has been used by several groups in the past decade to explore the involvement of the adaptive immune arm in hypertension.

In 2007, Guzik et al.² were the first to demonstrate a role for T cells, and not B cells, in angiotensin II- and DOCA-salt-induced blood pressure elevation and vascular remodeling. In Rag1^{-/-} mice, they showed that repletion via tail-vein injection with T cells, but not B cells, from a wild-type source rescued the otherwise blunted hypertensive response to angiotensin II and

DOCA-salt. This study prompted the extensive use of this model to further explore the role of various T cell subsets in hypertension.

However, since 2015, Rag1^{-/-} mice seem to have lost protection against angiotensin II-induced blood pressure increase. This observation was reported by different independent laboratories previously, and addressed in detail in the present study. The authors showed that glomerular angiotensin type 1-receptor binding was higher in recently purchased Rag1^{-/-} mice, suggesting that blood pressure protection as a result of the lack of T cells is lost due to an increase in renal angiotensin type 1-receptor activity. They stressed that spontaneous genetic drift due to mutations lead to phenotypic change in all animals, including inbred mouse strains, because of the universal drive to increase genetic variation.

The gradual loss in blood pressure protection in Rag1^{-/-}

mice can be traced over time as evidenced by increasingly contrasting observations made by us and others since the initial study by Guzik et al. In a study published last year³, our lab showed that angiotensin II infusion caused a similar rise in systolic blood pressure in Rag1^{-/-} and wild-type C57BL/6J mice; only diastolic blood pressure was blunted in Rag1^{-/-} mice. This is different from the Guzik study in which both blood pressures were significantly blunted in these mice.

These observations illustrate the importance of including experimental details about the location and time period over which animals are bred in publications involving animal studies. This will promote rigor and reproducibility in the scientific literature.

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- Antoine Caillon

New Investigator Spotlight Features for March - June 2017

March spotlight of the month



Yolandi Breet

Postdoctoral Research Fellow, Hypertension in Africa Research Team (HART), North-West University, Potchefstroom Campus, South Africa

[Read an interview](#)

May spotlight of the month



Shani Botha

Senior Lecturer and Researcher Medical Research Council Unit for Hypertension & Cardiovascular Disease, Hypertension in Africa Research Team (HART) North-West University, Potchefstroom, South Africa

[Read an interview](#)

April spotlight of the month



Camilla Ferreira Wenceslau

Research Scientist Department of Physiology, Augusta University, 1120 15th St - CA 3149 Augusta, GA 30912-3000. USA

Principal Investigator: "Intrarenal arteries sense trauma-derived mitochondrial N-formyl peptides leading to kidney injury in SIRS".

[Read an interview](#)

June spotlight of the month



Debbie Ona

Clinical Associate Professor, Section of Hypertension, Department of Medicine, University of The Philippines, Philippine General Hospital, Taft Avenue, Manila, Philippines

[Read an interview](#)