Keisa Mathis, PhD
Graduate School of Biomedical Sciences
Physiology & Anatomy
Email: Keisa.Mathis@unthsc.edu

Area of Expertise

Chronic inflammation has been implicated in the development of hypertension (high blood pressure). The primary focus of my research is to understand and enhance endogenous nervous and immune system interactions that control inflammation in order to halt the progression of hypertension. To investigate this, we use lupus as the disease model since chronic inflammation contributes to the prevalent hypertension and renal injury in this devastating autoimmune disease that primarily affects young women.
I am currently the PI of a federally-funded grant from the National Heart, Lung, and Blood Institute and a private grant from the Lupus Research Alliance. The federal grant will investigate the regulation of inflammation in the kidney that, if accumulated and left unchecked, can lead to hypertension and renal injury. The private grant will test the efficacy of a cholinergic agonist as an anti-inflammatory therapy in lupus mice and determine whether this drug has positive outcomes on behavior. Work in my lab will include integrative physiological approaches complimented with molecular, cellular, and immunological techniques. A goal of the lab is to take what is learned in the animal model of lupus hypertension and translate it into human studies that could benefit both lupus and hypertensive populations.

Qualifications

MS in Physiology, LSU Health Science Center

PhD in Physiology, LSU Health Science Center

MS in Applied Physics, Purdue University

BS in Physics, Southern University

Recent Publications

Systemic Administration of α7-Nicotinic Acetylcholine Receptor Ligands Does Not Improve Renal Injury or Behavior in Mice With Advanced Systemic Lupus Erythematosus
Morales, J. Y., Young-Stubbs, C. M., Shimoura, C. G., Kem, W. R., Uteshev, V. V. & Mathis, K. W., 13 Apr 2021, In: Frontiers in Medicine. 8, 642960.

Chronic unilateral cervical vagotomy reduces renal inflammation, blood pressure, and renal injury in a mouse model of lupus
Pham, G. S., Shimoura, C. G., Chaudhari, S., Kulp, D. V. & Mathis, K. W., Aug 2020, In: American Journal of Physiology - Renal Physiology. 319, 2, p. F155-F161

When memory does not serve you well
Shimoura, C. G. & Mathis, K. W., 13 Mar 2020, In: Circulation research. p. 722-724 3 p.

Autoimmunity, estrogen, and lupus
Pham, G. S. & Mathis, K. W., 1 Jan 2019, *Sex Differences in Cardiovascular Physiology and Pathophysiology.* Elsevier, p. 219-237 19 p.

Mechanisms of Sex Disparities in Cardiovascular Function and Remodeling
Chaudhari, S., Cushen, S. C., Osikoya, O., Jaini, P. A., Posey, R., Mathis, K. & Goulopoulou, S., 13 Dec 2018, In: Comprehensive Physiology. 9, 1, p. 375-411 37 p.

Microrna-21 ablation exacerbates aldosterone-mediated cardiac injury, remodeling, and dysfunction
Syed, M., Ball, J. P., Mathis, K. W., Hall, M. E., Ryan, M. J., Rothenberg, M. E., Yanes Cardozo, L. L. & Romero, D. G., Dec 2018, In: American Journal of Physiology - Endocrinology and Metabolism. 315, 6, p. E1154-E1167

Pharmacological potentiation of the efferent vagus nerve attenuates blood pressure and renal injury in a murine model of systemic lupus erythematosus
Pham, G. S., Wang, L. A. & Mathis, K. W., Dec 2018, In: American Journal of Physiology - Regulatory Integrative and Comparative Physiology. 315, 6, p. R1261-R1271

Lipopolysaccharide challenge reveals hypothalamic-pituitary-adrenal axis dysfunction in murine systemic lupus erythematosus
Pham, G. S. & Mathis, K. W., 4 Oct 2018, In: Brain Sciences. 8, 10, 184.

Buffering chronic kidney disease with sodium bicarbonate
Williams, E. N. & Mathis, K. W., 1 Sep 2018, In: Clinical Science. 132, 17, p. 1999-2001 3 p.

Complementing T Regulatory Cells to Combat Hypertension
Mathis, K. W., 30 Mar 2018, In: Circulation research. 122, 7, p. 911-912 2 p.

Sponsored Projects

Control of Renal Inflammation in Hypertension
Mathis, K.
National Heart, Lung, and Blood Institute
14/05/21 → 30/04/22

Impaired Neuroimmune Mechanisms in Lupus Hypertension
Mathis, K.
Intramural Research(UNTHSC)
1/07/16 → 31/08/17

Neuroimmune control of renal inflammation in lupus hypertension (For: Shyam Vedantam)
Mathis, K.
Intramural Research(UNTHSC)
5/06/17 → 31/05/18

Neuroimmune Mechanisms Involved in the Pathogenesis of Hypertension and Renal Injury
Mathis, K.
NHLBI: Nat Heart, Lung & Blood Institute
1/01/18 → 31/12/22

Neuroimmune Mechanisms Involved in the Pathogenesis of Hypertension and Renal Injury
Mathis, K. & MATHIS, K. W.
National Heart, Lung, and Blood Institute
1/01/18 → 31/12/21

Neuroimmune Mechanisms Involved in the Pathogenesis of Hypertension and Renal Injury
Mathis, K.
National Heart, Lung, and Blood Institute
1/01/18 → 31/12/21

Renal and Hypertension Outcomes Following Vagal Nerve Stimulation in Mice with Systemic Lupus Erythematosus (For: Charles Maloy)
Mathis, K.
Intramural Research(UNTHSC)
1/03/16 → 28/02/17

Targeting Nicotinic Receptors to Reduce Inflammation Associated with SLE
Mathis, K. & Uteshev, V.
Lupus Research Alliance

1/03/18 → 28/02/21

The Contribution of Vagal Tone to Hypothalamic-Pituitary-Adrenal Axis Activity in SLE-mediated Hypertension (For: Grace Pham)
Mathis, K.
American Heart Association - SouthWest
1/07/16 → 30/06/18

The Role of the Cholinergic Anti-Inflammatory Pathway in Renal Function and Hypertension
Mathis, K.
American Heart Association - National
15/07/14 → 31/12/17

The Role of T Lymphocytes in Hypertension During Chronic Inflammatory Disease
Mathis, K. & MATHIS, K. W.
National Heart, Lung, and Blood Institute
1/02/13 → 31/01/14

The Role of T Lymphocytes in Hypertension During Chronic Inflammatory Disease
Mathis, K.
1/02/13 → 31/12/13

Ultrasound as an Alternative Therapeutic Option for Lupus
Mathis, K.
Intramural Research(UNTHSC)
1/03/15 → 31/08/16