

Thomas Cunningham, PhD
Graduate School of Biomedical Sciences
Physiology & Anatomy
Email: Tom.Cunningham@unthsc.edu



Area of Expertise

My laboratory studies the role of the central nervous system in the regulation of the cardiovascular system, and water and electrolyte balance. We study how the brain participates in the normal maintenance of blood pressure and fluid balance, a process called homeostasis. We also investigate how changes in these CNS processes contribute to water retention associated with heart or liver disease and chronic diseases such as hypertension. Our goal is to achieve a better understanding of how the CNS contributes to health and diseases through its interactions with the cardiovascular system.

Qualifications

BA in Psychology, Eastern Illinois University
MS in Biopsychology, University of Iowa
PhD in Biopsychology, University of Iowa

Recent Publications

Neurodegenerative Disease: Roles for Sex, Hormones, and Oxidative Stress

Sumien, N., Cunningham, J. T., Davis, D. L., Engelland, R., Fadeyibi, O., Farmer, G. E., Mabry, S., Mensah-Kane, P., Trinh, O. T. P., Vann, P. H., Wilson, E. N. & Cunningham, R. L., 1 Nov 2021, In: *Endocrinology (United States)*. 162, 11, bqab185.

AT1 α -dependent GABA_A inhibition in the MnPO following chronic intermittent hypoxia

Farmer, G. E., Little, J. T., Marciante, A. B. & Cunningham, J. T., Sep 2021, In: *American Journal of Physiology - Regulatory Integrative and Comparative Physiology*. 321, 3, p. R469-R481

Cardiovascular Neuroendocrinology: Emerging Role for Neurohypophyseal Hormones in Pathophysiology

Aikins, A. O., Nguyen, D. H., Paundralingga, O., Farmer, G. E., Shimoura, C. G., Brock, C. & Cunningham, J. T., 1 Aug 2021, In: *Endocrinology (United States)*. 162, 8, bqab082.

Role of angiotensin II in chronic intermittent hypoxia-induced hypertension and cognitive decline

Marciante, A. B., Shell, B., Farmer, G. E. & Cunningham, J. T., Apr 2021, In: *American Journal of Physiology - Regulatory Integrative and Comparative Physiology*. 320, 4, p. R519-R525

Estrogen receptor involvement in vascular cognitive impairment and vascular dementia pathogenesis and treatment

Nguyen, D. H., Cunningham, J. T. & Sumien, N., Feb 2021, In: *GeroScience*. 43, 1, p. 159-166 8 p.

Sex Differences in the Regulation of Vasopressin and Oxytocin Secretion in Bile Duct-Ligated Rats

Balapattabi, K., Little, J. T., Bachelor, M. E., Cunningham, R. L. & Cunningham, J. T., Feb 2021, In: *Neuroendocrinology*. 111, 3, p. 237-248 12 p.

Brain-Derived Neurotrophic Factor and Supraoptic Vasopressin Neurons in Hyponatremia

Balapattabi, K., Little, J. T., Bachelor, M. & Cunningham, J. T., 1 Jul 2020, In: *Neuroendocrinology*. 110, 7-8, p. 630-641 12 p.

Hypothalamic paraventricular nucleus Gai₂ (guanine nucleotide-binding protein alpha inhibiting activity polypeptide 2) protein-mediated neural control of the kidney and the salt sensitivity of blood pressure

Carmichael, C. Y., Kuwabara, J. T., Pascale, C. L., Moreira, J. D., Mahne, S. E., Kapusta, D. R., Rosene, D. L., Williams, J. S., Thomas Cunningham, J. & Wainford, R. D., 1 Apr 2020, In: *Hypertension*. p. 1002-1011 10 p.

Caspase lesions of PVN-projecting MnPO neurons block the sustained component of CIH-induced hypertension in adult male rats

Marciante, A. B., Wang, L. A., Little, J. T. & Cunningham, J. T., 2020, In: American Journal of Physiology - Heart and Circulatory Physiology. 318, 1, p. H34-H48

G_o DREADD activation of CaMKII α MnPO neurons stimulates nitric oxide activity

Marciante, A. B., Farmer, G. E. & Thomas Cunningham, J., 2020, In: Journal of Neurophysiology. 124, 2, p. 591-609 19 p.

Sponsored Projects

Analytical Core

Cunningham, T.

NHLBI: Nat Heart, Lung & Blood Institute

1/07/15 → 31/03/20

Autonomic Control by Delta FosB and Renin-Angiotensin Signaling in the MnPO During Chronic Intermittent Hypoxia - Postdoctoral Fellow, W. David Knight

Cunningham, T.

American Heart Association - SouthWest

1/01/12 → 31/12/13

Central Mechanisms and Novel BioMarkers of the Salt-Sensitivity of Blood Pressure

Cunningham, T.

Boston University

1/05/18 → 28/02/22

Chemogenetic regulation of the hypothalamus and blood pressure control (For: Simran Malhotra)

Cunningham, T.

Intramural Research(UNTHSC)

5/06/17 → 31/05/18

Homeostatic Regulation of Supraoptic Neurons: Role of BDNF

Cunningham, T.

NHLBI: Nat Heart, Lung & Blood Institute

10/04/14 → 31/03/18

Intermittent Hypoxia-Induced Hypertension: Roles of Angiotensin and Chloride Transport in the Lamina Terminalis

Cunningham, T.

NHLBI: Nat Heart, Lung & Blood Institute

1/07/15 → 31/03/20

Neural Control of Vasopressin Release

Cunningham, T.

NHLBI: Nat Heart, Lung & Blood Institute

19/09/13 → 31/08/14

Neural Regulation of Vasopressin Release in a model of Dilutional Hyponatremia

Cunningham, T. & Cunningham, R.

NHLBI: Nat Heart, Lung & Blood Institute

15/04/18 → 31/03/22

Promoting Diversity in Research Training for Health Professionals

Vishwanatha, J., Cunningham, T. & Schreihof, A.

NHLBI: Nat Heart, Lung & Blood Institute

15/05/16 → 30/04/21

Role of Brain Derived Neurotrophic Factor in the Supraoptic Vasopressin Neurons in Development of Hyponatremia (For: Kirthikaa Balapattabi)

Cunningham, T.

American Heart Association

1/07/18 → 30/06/20

Roles of the CRH-containing Projections from the PVN to the NTS in the Sleep Apnea Induced Hypertension (For: Lei Wang)

Mifflin, S. & Cunningham, T.

American Heart Association

1/07/18 → 30/06/20

Texas Minority Health, Education, Research, and Outreach (Texas MiHERO)

Vishwanatha, J., Knebl, J., Raines-Milenkov, A., Cunningham, T., He, J., Spence-Almaguer, E., Clay, P. & Basha, R.

NIMHD: Natl Institute on Minority Health

14/09/17 → 30/06/22