

Rebecca Cunningham, PhD
UNT System College of Pharmacy
Pharmaceutical Sciences
Institute for Healthy Aging
Email: Rebecca.Cunningham@unthsc.edu



Area of Expertise

Dr. Rebecca Cunningham studies the role of steroid hormones, specifically androgens, from prenatal development to aging. Most of her team's research has been focused on androgen signaling mechanisms and defining the effects of androgens on central nervous system function. One of Dr. Cunningham's long-term research goals is to determine how development and aging alters neuronal steroid hormonal responses in an oxidative stress environment, a key characteristic of aging, developmental disorders, and neurodegeneration. She has shown that androgens can either be neuroprotective or damaging, and these effects are dependent on the oxidative stress environment. In pursuing this goal, Dr. Cunningham and team use in vitro, in vivo, and clinical approaches to understand how androgens affect brain function. Hopefully this research will expand the understanding of how steroid hormones impact the brain. At the same time, she seeks to gain new insights that can lead to a better understanding of the role of sex in central nervous system disorders.

Qualifications

BS in Psychology, Truman State University
PhD in Neurobiology, University of Texas at San Antonio

Recent Publications

Chronic Testosterone Deprivation Sensitizes the Middle-Aged Rat Brain to Damaging Effects of Testosterone Replacement

Smith, C., Contreras-Garza, J., Cunningham, R. L., Wong, J. M., Vann, P. H., Metzger, D., Kasanga, E., Opong-Gyebi, A., Sumien, N. & Schreihofner, D., 1 Oct 2020, In : Neuroendocrinology. 110, 11-12, p. 914-928 15 p.

Neuroprotective and neurotoxic outcomes of androgens and estrogens in an oxidative stress environment

Duong, P., Tenkorang, M. A. A., Trieu, J., McCuiston, C., Rybalchenko, N. & Cunningham, R. L., 29 Mar 2020, In : Biology of Sex Differences. 11, 1, 12.

Angiotensin type 1a receptors in the median preoptic nucleus support intermittent hypoxia-induced hypertension

Shell, B., Farmer, G. E., Nedungadi, T. P., Wang, L. A., Marciante, A. B., Snyder, B., Cunningham, R. L. & Cunningham, J. T., 1 May 2019, In : American journal of physiology. Regulatory, integrative and comparative physiology. 316, 5, p. R651-R665

NADPH oxidase mediates membrane androgen receptor-induced neurodegeneration

Tenkorang, M. A. A., Duong, P. & Cunningham, R. L., 2019, In : Endocrinology. 160, 4, p. 947-963 17 p.

Rat strain and housing conditions alter oxidative stress and hormone responses to chronic intermittent hypoxia

Snyder, B., Duong, P., Tenkorang, M., Wilson, E. N. & Cunningham, R. L., 6 Nov 2018, In : Frontiers in Physiology. 9, NOV, 1554.

Androgens modulate chronic intermittent hypoxia effects on brain and behavior

Snyder, B., Duong, P., Trieu, J. & Cunningham, R. L., Nov 2018, In : Hormones and Behavior. 106, p. 62-73 12 p.

Chronic intermittent hypoxia induces hormonal and male sexual behavioral changes: Hypoxia as an advancer of aging

Wilson, E. N., Anderson, M., Snyder, B., Duong, P., Trieu, J., Schreihofner, D. A. & Cunningham, R. L., 15 May 2018, In : Physiology and Behavior. 189, p. 64-73 10 p.

N-terminal truncations in sex steroid receptors and rapid steroid actions

Schreihofner, D. A., Duong, P. & Cunningham, R. L., May 2018, In : Steroids. 133, p. 15-20 6 p.

Sex differences in sleep apnea and comorbid neurodegenerative diseases
Snyder, B. & Cunningham, R. L., May 2018, In : Steroids. 133, p. 28-33 6 p.

Sex-related differences in oxidative stress and neurodegeneration
Tenkorang, M. A., Snyder, B. & Cunningham, R. L., May 2018, In : Steroids. 133, p. 21-27 7 p.

Sponsored Projects

A Critical Window for Testosterone Replacement Therapy
Schreihof, D. & Cunningham, R.
Intramural Research(UNTHSC)
1/04/14 → 31/12/15

Androgen Exacerbation of Oxidative Stress Mediated Dopamine Neuronal Damage
Cunningham, R.
Garvey Texas Foundation
1/03/13 → 28/02/15

Androgen Modulation of Neurodegeneration in Dopamine Neurons
Cunningham, R., CUNNINGHAM, R. L. & CUNNINGHAM, R. L.
1/03/08 → 28/02/11

Androgens and Caspase-1: Role in Dopaminergic Neurodegeneration
Cunningham, R.
Intramural Research(UNTHSC)
1/07/11 → 31/08/13

Brain Region Specific Neurodegeneration in Chronic Intermittent Hypoxia (For: Lincoln Downs)
Cunningham, R.
Intramural Research(UNTHSC)
15/10/15 → 15/02/16

Cytokine Secretion in dopamine neurons (For: Jenny Trieu)
Cunningham, R.
Intramural Research(UNTHSC)
5/06/17 → 31/05/18

Interactions between testosterone and oxidative stress in dopamine neurons
Cunningham, R.
1/07/15 → 30/06/20

Interactions between Testosterone and Oxidative Stress in Dopamine Neurons
Cunningham, R. & Sumien, N.
NINDS: Neurological Disorders & Stroke
1/07/15 → 30/06/20

Neural Regulation of Vasopressin Release in a model of Dilutaional Hyponatremia
Cunningham, T. & Cunningham, R.
NHLBI: Nat Heart, Lung & Blood Institute
15/04/18 → 31/03/22

Oxidative Stress and Androgens: Role in Neuroinflammation
Cunningham, R.
Intramural Research(UNTHSC)

1/09/14 → 31/08/15

Pilot study on the risks of testosterone replacement to the brain

Cunningham, R. & Schreihof, D.

15/08/15 → 31/05/18

Pilot Study on the Risks of Testosterone Replacement to the Brain

Schreihof, D., Sumien, N. & Cunningham, R.

NIA: National Institute on Aging

15/08/15 → 31/05/18

Sleep Apnea, Oxidative Stress, and Testosterone on Neuroinflammation

Cunningham, R.

Alzheimer's Association

1/10/14 → 30/09/16

Testosterone Increases Apoptosis in Dopamine Neurons with High Oxidative Stress Load with TCOM Student Olivia Simmons

Cunningham, R.

Intramural Research(UNTHSC)

1/09/13 → 31/08/14

Testosterone's Influence on Oxidative Stress Induced Inflammation

Cunningham, R.

Intramural Research(UNTHSC)

15/10/14 → 14/10/15

The Role of Androgens and Oxidative Stress in Dopamine Neurons - Rebecca Cunningham

Cunningham, R.

American Heart Association - Sth Central

1/07/10 → 30/06/12

The Role of Androgens on Ubiquitin Function in Oxidative Stress-Mediated Dopamine Neuronal Dysfunction

Cunningham, R.

William & Ella Owens Med Research Foun

1/03/14 → 28/02/15