

Nicole Phillips, PhD  
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## Area of Expertise

I first arrived at UNTHSC in 2007 as a Masters student in the Forensic Genetics Program, working extensively in research on expert systems and software development for the field. Upon graduating in 2009, and having found a love for research, I decided to pursue a PhD in Molecular Genetics, which was conferred in December of 2013. Throughout my experience at UNTHSC as a student and postdoctoral fellow, my research interests evolved. With my roots in forensic genetics, I began studying genetics of age-related, complex disease. In 2016, I returned to UNTHSC as a faculty member and have established a diverse research program.

Our laboratory has a several areas of interest:

- 1) studies of mitochondrial DNA and mitochondrial function, in the context of various disease states such as Alzheimer's disease, type 2 diabetes and preeclampsia (in collaboration with Dr. Stella Goulopoulou);
- 2) genetic aspects of pain and pain management, as the Director for Genomic Research for PRECISION Texas;
- 3) genetic risk for age-related disease and comorbidity patterns, via genome-wide genotyping, methylation profiling, and data mining.

## Qualifications

MS in Forensic Genetics, UNT Health Science Center

PhD in Molecular & Medical Genetics, UNT Health Science Center

BS in Biology, University of Houston

## Recent Publications

### **Circulating Cell-Free Mitochondrial DNA in Pregnancy**

Bradshaw, J. L., Cushen, S. C., Phillips, N. R. & Goulopoulou, S., Jul 2022, In: *Physiology*. 37, 4, p. 187-196 10 p.

### **Reduced Maternal Circulating Cell-Free Mitochondrial DNA Is Associated With the Development of Preeclampsia**

Cushen, S. C., Ricci, C. A., Bradshaw, J. L., Silzer, T., Blessing, A., Sun, J., Zhou, Z., Scroggins, S. M., Santillan, M. K., Santillan, D. A., Phillips, N. R. & Goulopoulou, S., 18 Jan 2022, In: *Journal of the American Heart Association*. 11, 2, e021726.

### **Accurate profiling of forensic autosomal STRs using the Oxford Nanopore Technologies MinION device**

Hall, C. L., Kesharwani, R. K., Phillips, N. R., Planz, J. V., Sedlazeck, F. J. & Zascavage, R. R., Jan 2022, In: *Forensic Science International: Genetics*. 56, 102629.

### **The embers underneath the CoV-2 pandemic: a semblance of the persistent burn of health inequities and disparities in the United States**

Jones, H. P. & Phillips, N. R., Oct 2021, In: *Nature Immunology*. 22, 10, p. 1188-1189 2 p.

### **The Perfect Storm: COVID-19 Health Disparities in US Blacks**

Phillips, N., Park, I. W., Robinson, J. R. & Jones, H. P., Oct 2021, In: *Journal of racial and ethnic health disparities*. 8, 5, p. 1153-1160 8 p.

### **Multiomics investigation of hypertension and white matter hyperintensity as a source of vascular dementia or a comorbidity to alzheimer's disease**

Pathak, G. A., Barber, R. C. & Phillips, N. R., 2021, In: *Current Alzheimer Research*. 18, 2, p. 171-177 7 p.

### **Comparative analysis of racial differences in breast tumor microbiome**

Thyagarajan, S., Zhang, Y., Thapa, S., Allen, M. S., Phillips, N., Chaudhary, P., Kashyap, M. V. & Vishwanatha, J. K., 1 Dec 2020, In: *Scientific Reports*. 10, 1, 14116.

### **Differentiation of Hispanic biogeographic ancestry with 80 ancestry informative markers**

Setser, C. H., Planz, J. V., Barber, R. C., Phillips, N. R., Chakraborty, R. & Cross, D. S., 1 Dec 2020, In: Scientific Reports. 10, 1, 7745.

### **Endothelin-1 Mediated Decrease in Mitochondrial Gene Expression and Bioenergetics Contribute to Neurodegeneration of Retinal Ganglion Cells**

Chaphalkar, R. M., Stankowska, D. L., He, S., Kodati, B., Phillips, N., Prah, J., Yang, S. & Krishnamoorthy, R. R., 1 Dec 2020, In: Scientific Reports. 10, 1, 3571.

### **Genetically-regulated transcriptomics & copy number variation of proctitis points to altered mitochondrial and DNA repair mechanisms in individuals of European ancestry**

Pathak, G. A., Polimanti, R., Silzer, T. K., Wendt, F. R., Chakraborty, R. & Phillips, N. R., 2 Oct 2020, In: BMC Cancer. 20, 1, 954.

## **Sponsored Projects**

### **Circulating Cell-Free Mitochondrial DNA in a Preclinical Model of Preeclampsia with Placental Ischemia**

Goulopoulou, S. & Phillips, N.

American Heart Association

1/07/19 → 30/06/22

### **Epigenetic Risk Factors for Early Age at Onset of Alzheimer's & MCI Among Non-Caribbean Hispanics**

Barber, R., Phillips, N. & Zhou, Z.

Alzheimer's Disease Program

22/08/18 → 31/08/20

### **Mitochondrial Function as a Mechanism for Diabetes-Related Cognitive Decline**

Phillips, N. & Phillips, N.

Intramural Research(UNTHSC)

1/09/14 → 28/02/18

### **Nanosensing of Oxidized Cell-free mtDNA: Biomarkers of Inflammation and Mitochondrial Dysfunction**

Phillips, N., Planz, J. & Goulopoulou, S.

Intramural Research(UNTHSC)

1/06/17 → 31/05/18

### **Osteopathic Heritage Foundation And The Osteopathic Research Center: Partnership To Enhance The Evidence For Osteopathic Medicine**

Licciardone, J. & Phillips, N.

Osteopathic Heritage Foundation

15/11/09 → 14/11/17

### **Safety and Effectiveness of Opioids in Patients with Low Back Pain: A Registry-Based Cohort Study to Compare Single- and Multi-Gene Approaches to Precision Medicine Prescribing vs. Usual Care**

Licciardone, J., Phillips, N., Aryal, S., Mason, D. & White, A.

Intramural Research(UNTHSC)

1/01/17 → 30/06/18

### **Texas Center of Minority Health, Education, Research and Outreach - Admin Supplement**

Vishwanatha, J., Phillips, N., Barber, R. & Zhou, Z.

NIMHD: Natl Institute on Minority Health

23/09/17 → 31/05/22

### **The Osteopathic Approach to Chronic Pain Management: Assessing its Biopsychosocial Processes and Relationships to Clinical Outcomes**

Licciardone, J., Phillips, N. & Aryal, S.  
American Osteopathic Association  
1/09/17 → 31/08/19