Voice of the Trainee

Nathan E. Campbell, Ph.D.
Instructor, Department of Pharmacology & Toxicology
University of Mississippi Medical Center
NACHHD Council

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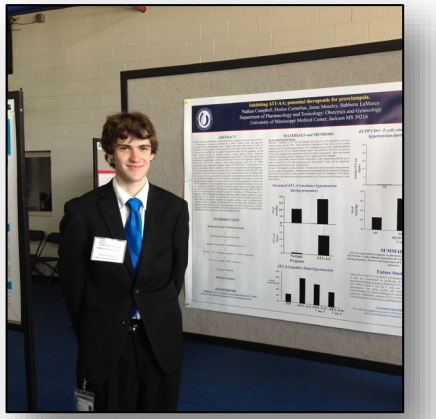
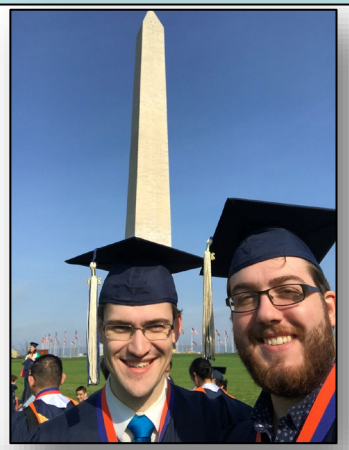
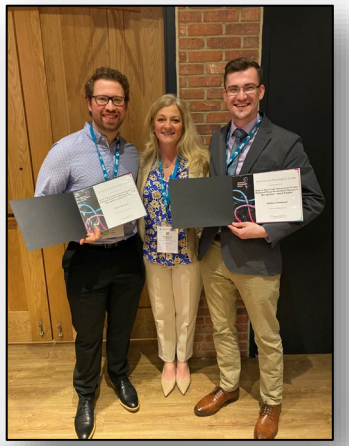
MEDICAL CENTER

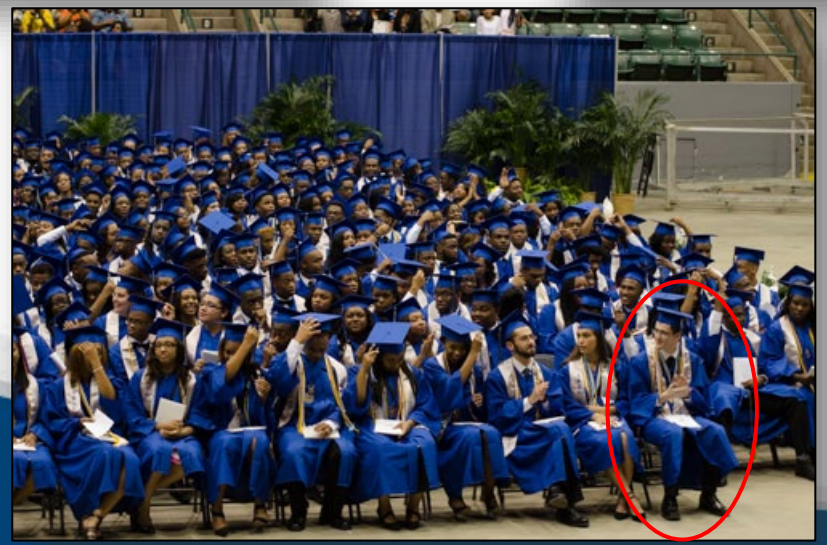
My Education and Career in Research

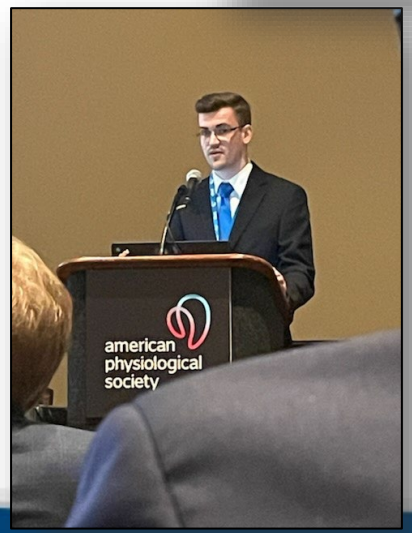
Join High School Base Pair Program	*Graduate High School*	*BME Degree at GWU SURE Program each summer*	*Graduate School at UMMC SGSHS*	*NRSA Predoctoral Fellowship Funded*	*Started Postdoctoral Fellowship*	*NRSA Postdoctoral Fellowship Funded*	*Instructor Position*
2012	*2015*	*2015 - 2019*	*2019-2024*	*2022*	*2024*	*2025*	*2025*





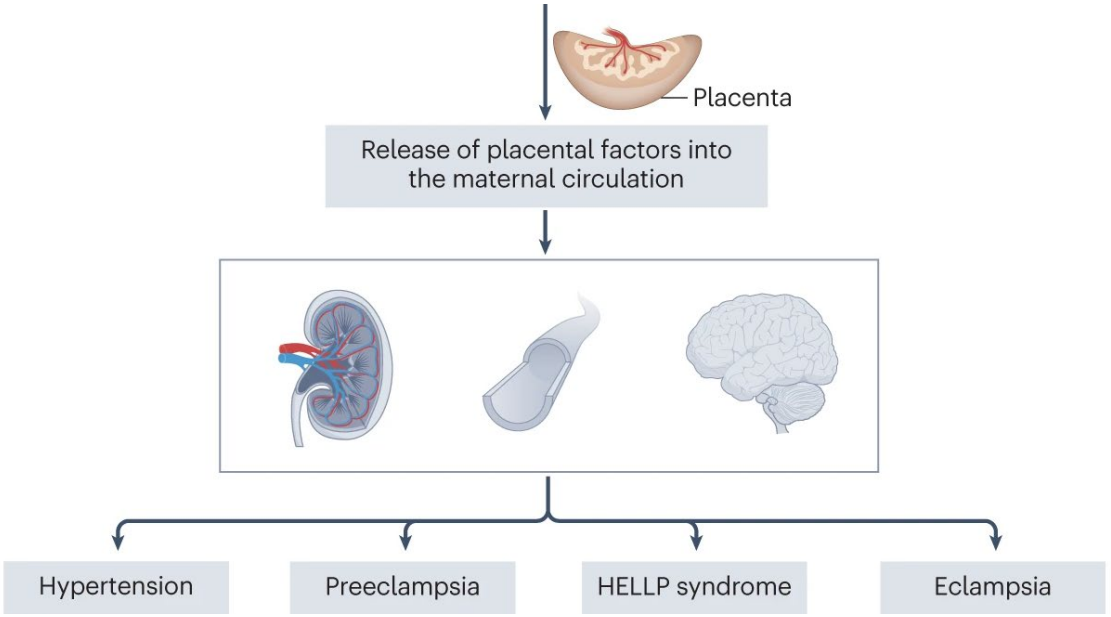


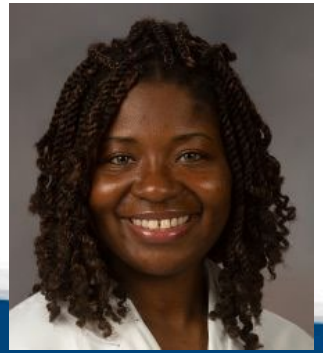




Why Preeclampsia and Why Mississippi

- Serendipity
- Scope of work
- The people I work with





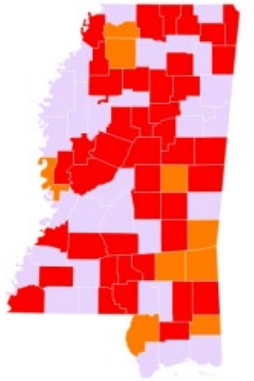
Importance to My Home State

ACCESS TO MATERNITY CARE IN MISSISSIPPI

Access to care during pregnancy and around the time of birth is not consistently available across the country. Hospital closures and a shortage of providers are driving changes in maternity care access, especially within rural areas and among Black, Indigenous, and people of color (BIPOC).[3] The level of maternity care access within each county is classified across Mississippi by the availability of birthing facilities, maternity care providers, and the percent of uninsured women (see table). The map shows that in Mississippi, 51.2 percent of counties are defined as maternity care deserts compared to 32.6 percent of counties in the U.S. overall.

FINDINGS

- In Mississippi, there was a 5.4% increase in the number of birthing hospitals between 2020 and 2019.
- In Mississippi, there was 8,148 babies born in maternity care deserts, 23.2% of all births.
- 34.7% of babies were born to women who live in rural counties, while 25.2% of maternity care providers practice in rural counties in Mississippi



DEFINITIONS OF MATERNITY CARE DESERT AND LEVEL OF MATERNITY CARE ACCESS

Definitions	Maternity care deserts	Low access	Moderate access	Full access*
Hospitals and birth centers offering obstetric care	zero	<2	<2	≥2
Obstetric providers (obstetrician, family physician†, CNM/CM per 10,000 births)	zero	<60	<60	≥60
Proportion of women 18-64 without health insurance	any	≥10%	<10%	any

Sources: U.S. Health Resources and Services Administration (HRSA), Area Health Resources Files, 2022; American Board of Family Medicine, 2017-2020; National Center for Health Statistics, 2021 final natality data.
Note: CNM/CM – certified nurse midwives/certified midwives.
*A county is full access if it meets one or more of the criteria.
†Includes family physicians who provide obstetric care

WHERE YOU LIVE MATTERS: MATERNITY CARE DESERTS AND THE CRISIS OF ACCESS AND EQUITY

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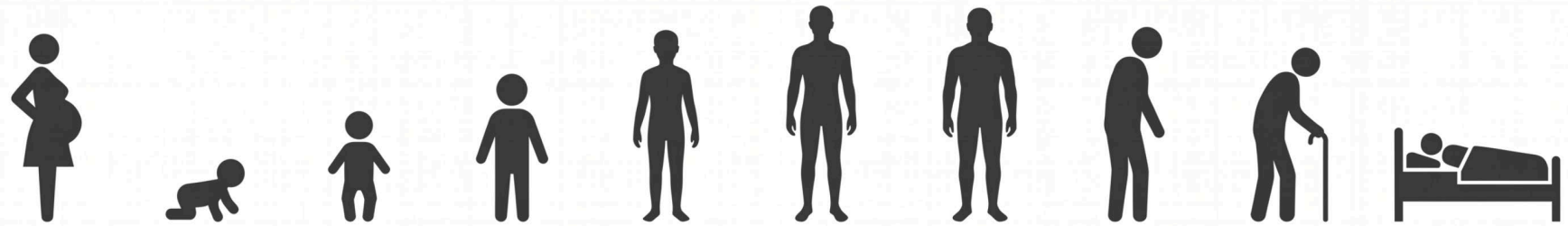
Goal of our Research Program

- Currently, there is no cure for Preeclampsia
- Treatments attempt to manage symptoms but the only potential resolution is delivery
- The goal of our research program is to develop therapeutics to improve maternal health without compromising fetal health



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Overview of Current Research

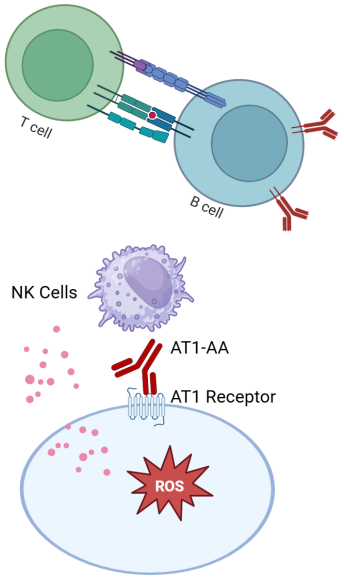
Placental Ischemia during Pregnancy

T cell activation and costimulation of B cells

AT1-AA

Immune complex deposition

Hypertension, Organ Dysfunction, and Growth Restriction During PE



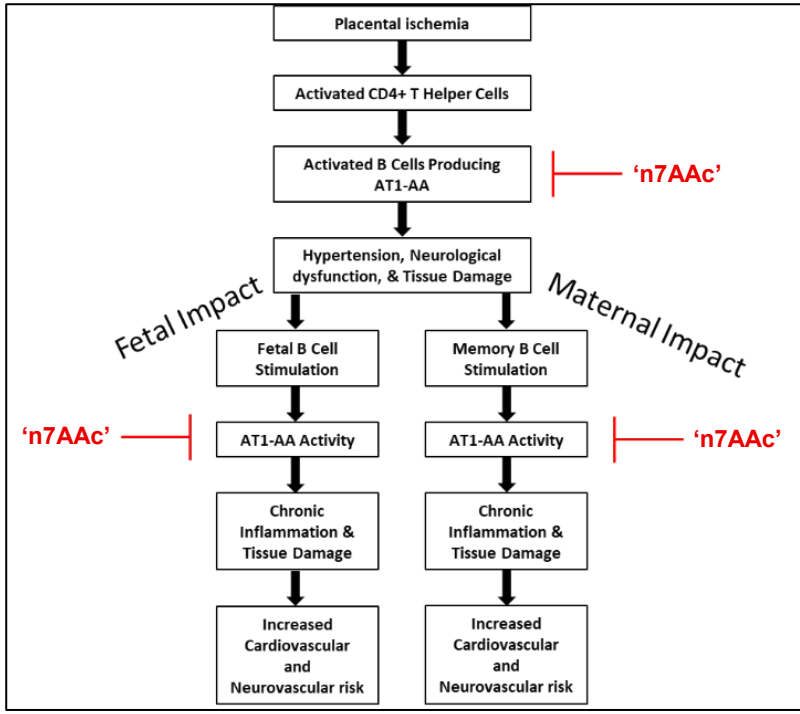
Offspring & Postpartum Mothers

B cells

AT1-AA

Immune complex deposition

Hypertension and Organ Dysfunction Mediating Long-term Risk for Disease



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How NIH Funding has Influenced My Path

- Getting funding gave me confidence in myself as a trainee, junior investigator, and grant writer.
- Freedom to try different experiments and develop some of my own ideas
- Allowed me to travel to many different conferences and build a strong network

HHS Public Access

Author manuscript

Int J Cerebrovasc Dis Stroke. Author manuscript; available in PMC 2023 October 27.

Published in final edited form as:

Int J Cerebrovasc Dis Stroke. 2023 ; 6(1): . doi:10.29011/2688-8734.100154.

AT1-AA Infusion during Pregnancy Impairs CBF Autoregulation Postpartum

Nathan Campbell[1,*], Luke Strong[1], Xing Fang[1], Jane J Border[1], Owen Herrock[1], Ty Turner[1], Evangeline Deer[1], Lorena Amaral[1], Ralf Dechend[3], Richard J Roman[1], Babbette LaMarca[1,2,*]

[1]Department of Pharmacology & Toxicology, University of Mississippi Medical Center, Jackson, MS, USA

[2]Department of Obstetrics and Gynecology, University of Mississippi Medical Center, Jackson, MS, USA

[3]Charité, Campus Buch, Experimental and Clinical Research Center, HELIOS Clinic, Berlin-Buch, Germany

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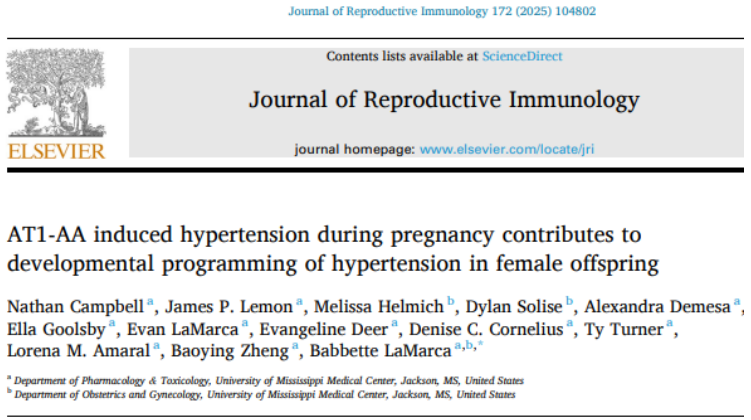


Journal of Reproductive Immunology 172 (2025) 104802

Contents lists available at ScienceDirect

Journal of Reproductive Immunology

journal homepage: www.elsevier.com/locate/jri

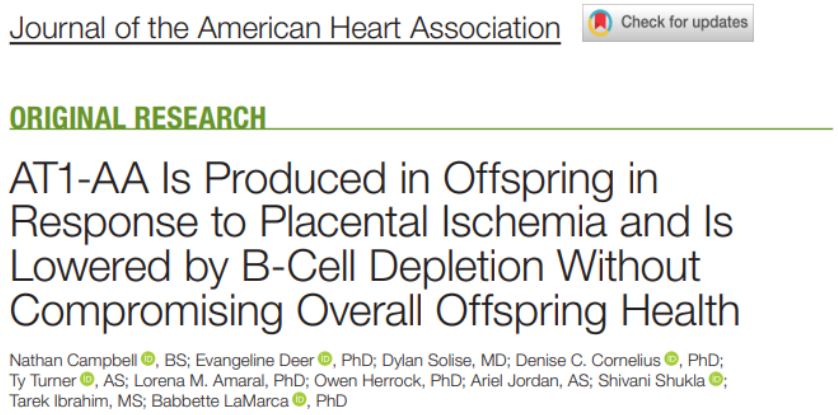
ELSEVIER

AT1-AA induced hypertension during pregnancy contributes to developmental programming of hypertension in female offspring

Nathan Campbell [a], James P. Lemon [a], Melissa Helmich [b], Dylan Solise [b], Alexandra Demesa [a], Ella Goolsby [a], Evan LaMarca [a], Evangeline Deer [a], Denise C. Cornelius [a], Ty Turner [a], Lorena M. Amaral [a], Baoying Zheng [a], Babbette LaMarca [a,b,*]

[a] Department of Pharmacology & Toxicology, University of Mississippi Medical Center, Jackson, MS, United States

[b] Department of Obstetrics and Gynecology, University of Mississippi Medical Center, Jackson, MS, United States



Journal of the American Heart Association

Check for updates

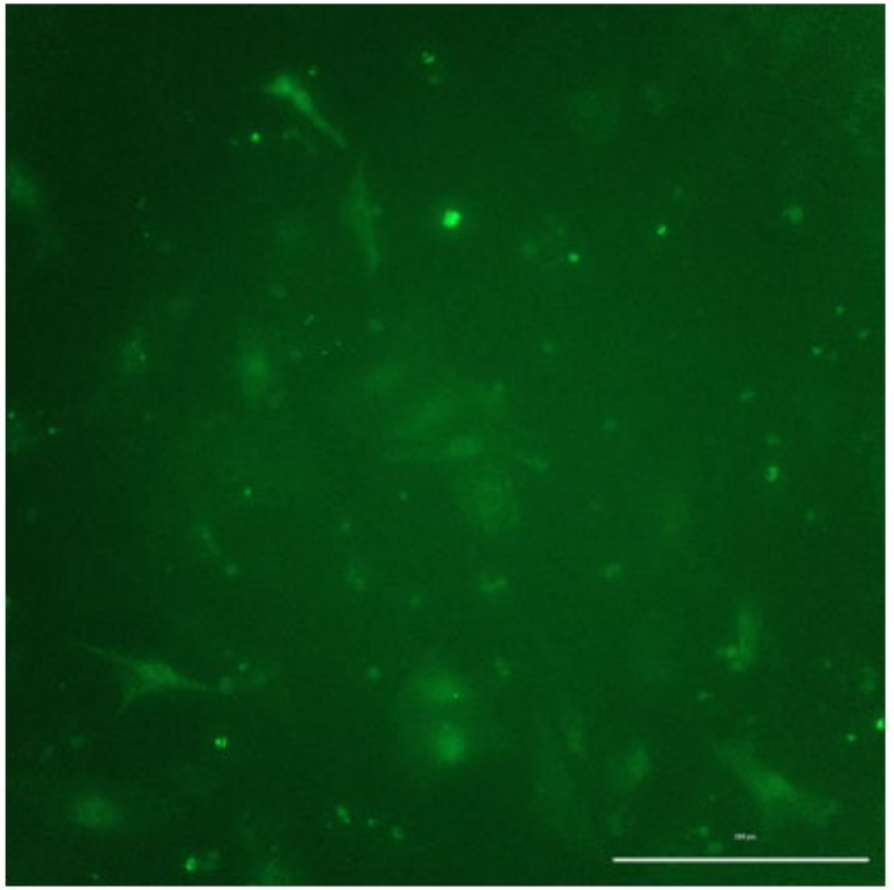
ORIGINAL RESEARCH

AT1-AA Is Produced in Offspring in Response to Placental Ischemia and Is Lowered by B-Cell Depletion Without Compromising Overall Offspring Health

Nathan Campbell, BS; Evangeline Deer, PhD; Dylan Solise, MD; Denise C. Cornelius, PhD; Ty Turner, AS; Lorena M. Amaral, PhD; Owen Herrock, PhD; Ariel Jordan, AS; Shivani Shukla; Tarek Ibrahim, MS; Babbette LaMarca, PhD

Importance of NIH Funding for My State

- Provided support for me as a graduate student that led to the development of an assay to measure AT1-AA
- Only lab in the country that measures this autoantibody.
- Measuring this postpartum in patient populations can help provide information to patients as to what type of medication may be the most effective in treating hypertension after preeclampsia



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My Next Steps

- Publish data from current grants
- Apply for and obtain career development/transition to independence grant (K99/R00)
- Start lab investigating immune mediated consequences of PE on children long term with goal of identifying therapeutics that can reduce adult risks for disease

Thank you!

Questions?