OMB No. 0925-0001 and 0925-0002 (Rev. 12/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Bruder do Nascimento, Thiago

eRA COMMONS USER NAME (credential, e.g., agency login): tbruderdonasci

POSITION TITLE: Assistant Professor of Pediatrics

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Sao Paulo State-UNESP	MS	02/2011	Pharmacology
University of Sao Paulo-USP	PHD	03/2024	Pharmacology
Albert Einstein College, New York	Scholar	04/2012	Physiology
University of Ottawa, Ottawa, ON	Scholar	07/2013	Physiology
Georgia Regents University	Postdoctoral	04/2014	Physiology
University of Sao Paulo-USP	Postdoctoral	05/2015	Pharmacology
Augusta University	Postdoctoral	06/2016	Physiology

Personal Statement

I have a long-standing interest in studying the mechanisms of vascular physiology and pathophysiology. My interest in vascular biology began during my undergraduate and master's studies at the University of São Paulo State (UNESP) in Brazil, where I explored the effects of anabolic steroids on vascular function, as well as the impact of high-fat diet and emotional stress on cardiovascular biology.

For my Ph.D., I joined Dr. Rita C. Tostes' laboratory at the University of São Paulo (USP) to investigate the pleiotropic effects of atorvastatin on Nox-derived reactive oxygen species (ROS) in the vasculature and kidneys in a mouse model of type 2 diabetes. Still in my Ph.D., I had the privilege of collaborating with leading vascular biologists. Thanks to an exchange program, I spent nearly half a year in Dr. Nicholas Sibinga's laboratory at Albert Einstein College in New York, USA, and a year in Dr. Rhian M. Touyz's lab in Ottawa, Canada. My Ph.D. findings resulted in multiple publications including *JMCC and Clinical Science*. Following my graduation, I joined Dr. Eric Belin de Chantemele's laboratory in the Department of Physiology at Augusta University in the USA. There, I investigated the connection between neuroscience and blood pressure regulation, with a focus on Ptp1b in pro-opiomelanocortin (POMC) neurons. Our data generated multiple publications (*Pharm Res*, 2015 and *Clin Sci*, 2016) and awards from APS and ASPET.

In 2015, due to family obligations, I returned to Brazil, where I received independent funding to study aldosteronism-associated hypertension and vascular injury. This research led to a publication in the renowned cardiovascular journal, *Circulation*, 2016.

In 2016, I rejoined Dr. Belin de Chantemele's lab to explore the role of adipose tissue in blood pressure regulation and vascular biology. Our work led to several publications, including articles in Hypertension (2019) and JAHA (2020). As a postdoctoral researcher, I was awarded an NIH-K99 grant. In 2019, I transitioned to an assistant professor position in the Department of Pediatrics at the University of Pittsburgh, where I remained until June 2024. In July 2024, I moved to the University of South Alabama as an assistant professor in the Department of Physiology & Cell Biology.

As a principal investigator, my lab focuses on exploring the interactions between vascular and immune cells in the context of vasculitis, hypertension, and associated end-organ damage. Our recent publications include studies in Vascular Pharmacology (2021), Biochemical Pharmacology (2022), Shock (2023), Bioscience Reports (2023), Biomedicine and Pharmacotherapy (2023), JAHA (2023), AJP Endocrinology & Metabolism (2024a, b), and Hypertension (2024). As a mentor, I am proud that our lab has successfully guided trainees in reaching their career goals, with many advancing to fellowships, PI positions, or transitioning into industry. Our lab is also well-funded, including support from an R01 grant from NHLBI.

Active and recently completed projects that I would like to highlight include:

R01HL169202
09/204-08/2025
Bruder-Nascimento (PI)
Molecular mechanisms of progranulin as a regulator of endothelial biology and blood pressure control

CDA-AHA-857268
08/21-07/2024
Bruder-Nascimento (PI)
Progranulin on Kawasaki's disease -induced vascular damage.

R00HL140139
09/19-08/2023
Bruder-Nascimento (PI)
Leptin, a therapeutic avenue for the treatment of vascular disease, focus on congenital and antiretroviral therapy-associated lipodystrophies.

B. Positions, Scientific Appointments, and Honors

2024- current	Assistant Professor, Department of Physiology & Cell Biology, University of South Alabama
2019 - 2024	Assistant Professor, Department of Pediatrics, University of Pittsburgh
2021 -Present	AHA Review committee: Predoctoral and Postdoctoral grants - Hypertension
2021- 2021	NIH Peer Review Committee: Atherosclerosis and Vascular Inflammation (AVI)
2021-Present	AHA Review committee: Transformational Project Award – Immunology and Microbiology
2023-Present	AHA Review committee: - AHA Review committee: Strategically Focused Research Network (SFRN) on Biologic Pathways of Chronic Psychosocial Stressors on Cardiovascular Health
Editorship	AJP - Heart and Circulatory Physiology; Life Science; Comprehensive Physiology.
Ad Hoc	Circulation Research; Circulation: Heart Failure; JCI Insight; Hypertension; ATVB; JAHA; Function; Pharmacological Research; British Journal of Pharmacology; Redox Biology; Function; AJP - Heart and Circulatory Physiology; etc.

Honors

2023	Fellow of American Heart Association
2019	Stephanie Watts Career Development Award from AHA
2019	APS-Cardiovascular Section Research Recognition Award
2018	APS-Cardiovascular Section - Clinical Science Young Investigator Awardee
2017	APS-Cardiovascular Section - Outstanding Trainee Award

C. Contributions to Science

1. As an undergraduate student in Dr. Cordellini's laboratory at the University of Sao Paulo State (UNESP) in Brazil, I began my career as a cardiovascular biologist, focusing on understanding how androgenic-anabolic steroids affect exercise-induced beneficial effects on vascular function and blood pressure. Although I had not published my findings in top-tier journals, my results led to two first-author papers during my undergraduate studies. During my time at the same institution, I pursued my master’s degree in pharmacology, where I studied

the effects of chronic stress and a high-fat diet on cardiovascular function and blood pressure control. During this period, I had the privilege of being mentored by distinguished Brazilian cardiologist, Dr. Cicogna, who contributed to the design and interpretation of my cardiac-related experiments. My dissertation work resulted in several publications and national awards.

a. **Bruder-Nascimento T**, Campos DH, Cicogna AC, Cordellini S. Chronic stress improves NO- and Ca2+ flux-dependent vascular function: a pharmacological study. Arq Bras Cardiol. 2015;104(3):226-33. PubMed PMID: 25884770;

b. **Bruder-Nascimento T**, Campos DH, Leopoldo AS, Lima-Leopoldo AP, Okoshi K, Cordellini S, Cicogna AC. Chronic stress improves the myocardial function without altering L-type Ca+2 channel activity in rats. Arq Bras Cardiol. 2012;99(4):907-14. PMID: 22936032.

c. **Nascimento TB**, Baptista Rde F, Pereira PC, Campos DH, Leopoldo AS, Leopoldo AP, Oliveira Júnior SA, Padovani CR, Cicogna AC, Cordellini S. Vascular alterations in high-fat diet-obese rats: role of endothelial L-arginine/NO pathway. Arq Bras Cardiol. 2011;97(1):40-5. PMID: 21603776.

d. **Bruder-Nascimento T**, Cordellini S. Vascular adaptive responses to physical exercise and to stress are affected differently by nandrolone administration. Braz J Med Biol Res. 2011;44(4):337-44. PMID: 21445526.

2. In search of new opportunities, I was determined to join a top laboratory in the field of vascular biology in Brazil. I became a part of Dr. Rita Tostes' laboratory in the Department of Pharmacology at the University of São Paulo, which keeps the best pharmacology graduate program in South America. During my Ph.D., I focused on studying the effects of statins on vascular function, inflammation, and remodeling in type 2 diabetic mice (db/db). My research revealed that atorvastatin effectively mitigates vascular dysfunction in db/db mice through its antioxidant properties, demonstrated by reduced NOXs expression and activity. During this time, I had the privilege of interacting with leading scientists in the field of vascular biology from around the world. Initially, I spent 5 months in Dr. Nicholas Sibinga's laboratory at Albert Einstein College in New York City, USA, where I delved into molecular and cellular techniques. There, I made a significant discovery that angiotensin II induces vascular migration via Nox1 and Fat1 cadherin. Additionally, I spent a year in the renowned laboratory of Dr. Rhian Touyz at the University of Ottawa, further developing my Ph.D. research and acquiring advanced molecular skills in vascular biology and redox signaling. During my Ph.D., I first-authored 5 manuscripts, one of which was highlighted by the Clinical Science Journal for its clinical importance. I was also recognized for having defended the best thesis in 2014 in the Pharmacology Ph.D. program.

a. **Bruder-Nascimento T**, Callera GE, Montezano AC, Belin de Chantemele EJ, Tostes RC, Touyz RM. Atorvastatin inhibits pro-inflammatory actions of aldosterone in vascular smooth muscle cells by reducing oxidative stress. Life Sci. 2019 Mar 15; 221:29-34. PMID: 30721707

c. **Bruder-Nascimento T**, Callera G, Montezano AC, Antunes TT, He Y, Cat AN, Ferreira NS, Barreto PA, Olivon VC, Tostes RC, Touyz RM. Renoprotective Effects of Atorvastatin in Diabetic Mice: Downregulation of RhoA and Upregulation of Akt/GSK3. PLoS One. 2016;11(9):e0162731. PMID: 27649495

d. **Bruder-Nascimento T**, Callera GE, Montezano AC, He Y, Antunes TT, Nguyen Dinh Cat A, Tostes RC, Touyz RM. Vascular injury in diabetic db/db mice is ameliorated by atorvastatin: role of Rac1/2-sensitive Nox-dependent pathways. Clin Sci (Lond). 2015 Apr;128(7):411-23. PMID: 25358739

d. **Bruder-Nascimento T**, Chinnasamy P, Riascos-Bernal DF, Cau SB, Callera GE, Touyz RM, Tostes RC, Sibinga NE. Angiotensin II induces Fat1 expression/activation and vascular smooth muscle cell migration via Nox1-dependent reactive oxygen species generation. J Mol Cell Cardiol. 2014;66:18-26. PMID: 24445059

3. In 2014, I began a postdoctoral fellowship in Dr. Belin de Chantemele's lab at Augusta University. However, due to family reasons (please see my scientific contributions in topic 4 below), I had to return to Brazil. I quickly reached out to Dr. Tostes for assistance in returning to Brazil, and she invited me to apply for a funding opportunity, which turned to be selected for fund. During this period, I had the opportunity to mentor undergraduate students under my direct supervision. All three of these students received funding through various fellowships and have since succeeded in their careers as physicians or scientists in Brazil. Scientifically, I made significant contributions, discovering that aldosterone induces vascular damage dependent on NLRP3 inflammasome activation in the hematopoietic compartment. Additionally, my research revealed that immune

cells from aldosteronism patients exhibit an exacerbated NLRP3 inflammasome activation. This work earned me the Young Investigator Award at the 41st International Aldosterone Conference and was published in the highly regarded journal, Circulation.

a. **Bruder-Nascimento T**, Ferreira NS, Zanotto CZ, Ramalho F, Pequeno IO, Olivon VC, Neves KB, Alves-Lopes R, Campos E, Silva CA, Fazan R, Carlos D, Mestriner FL, Prado D, Pereira FV, Braga T, Luiz JP, Cau SB, Elias PC, Moreira AC, Câmara NO, Zamboni DS, Alves-Filho JC, Tostes RC. NLRP3 Inflammasome Mediates Aldosterone-Induced Vascular Damage. Circulation. 2016 6;134(23):1866-1880. PMID: 27803035
b. Teixeira LB, Parreiras-E-Silva LT, **Bruder-Nascimento T**, Duarte DA, Simões SC, Costa RM, Rodríguez DY, Ferreira PAB, Silva CAA, Abrao EP, Oliveira EB, Bouvier M, Tostes RC, Costa-Neto CM. Ang-(1-7) is an endogenous β-arrestin-biased agonist of the AT1 receptor with protective action in cardiac hypertrophy. Sci Rep. 2017 19;7(1):11903. PMID: 28928410
c. da Costa RM, Neves KB, Mestriner FL, Louzada-Junior P, **Bruder-Nascimento T**, Tostes RC. TNF-α induces vascular insulin resistance via positive modulation of PTEN and decreased Akt/eNOS/NO signaling in high fat diet-fed mice. Cardiovasc Diabetol. 2016 25;15(1):119. PMID: 27562094

4. For my postdoctoral fellowship, I joined Dr. Belin de Chantemele's laboratory at Augusta University in Augusta, USA, on two separate occasions: first in 2014 and later in 2016. During my postdoc, my research focused on understanding the vascular role of leptin, an adipocyte-derived hormone known for its influence on food intake and energy expenditure. My research had two main branches: 1. Investigating the effects of leptin signaling in pro-opiomelanocortin (POMC) and its impact on cardiovascular function and 2. Exploring how adipose tissue contributes to maintaining vascular homeostasis. During this period, my studies were supported by the AHA through a postdoctoral fellowship and a Career Development Award (which I later relinquished to accept the K99/R00). I also received support from the NIH through the prestigious K99/R00. Moreover, my research received recognition with several scientific awards from the AHA and the American Physiological Society (APS). As the first author, I have contributed to the publication of six manuscripts in respected journals.

a. **Bruder-Nascimento T**, Kress TC, Kennard S, Belin de Chantemèle EJ. HIV Protease Inhibitor Ritonavir Impairs Endothelial Function Via Reduction in Adipose Mass and Endothelial Leptin Receptor-Dependent Increases in NADPH Oxidase 1 (Nox1), C-C Chemokine Receptor Type 5 (CCR5), and Inflammation. J Am Heart Assoc. 2020 Oct 20;9(19):e018074. PMID: 33003981
b. **Bruder-Nascimento T**, Faulkner JL, Haigh S, Kennard S, Antonova G, Patel VS, Fulton DJR, Chen W, Belin de Chantemèle EJ. Leptin Restores Endothelial Function via Endothelial PPARγ-Nox1-Mediated Mechanisms in a Mouse Model of Congenital Generalized Lipodystrophy. Hypertension. 2019 Dec;74(6):1399-1408. PubMed PMID: 31656096
c. **Bruder-Nascimento T**, Kennard S, Antonova G, Mintz JD, Bence KK, Belin de Chantemèle EJ. Ptp1b deletion in pro-opiomelanocortin neurons increases energy expenditure and impairs endothelial function via TNF-α dependent mechanisms. Clin Sci (Lond). 2016 Jun 1;130(11):881-93. PMID: 26935109
d. **Bruder-Nascimento T**, Butler BR, Herren DJ, Brands MW, Bence KK, Belin de Chantemèle EJ. Deletion of protein tyrosine phosphatase 1b in proopiomelanocortin neurons reduces neurogenic control of blood pressure and protects mice from leptin- and sympatho-mediated hypertension. Pharmacol Res. 2015;102:235-44. PMID: 26523876

5. From August 2019 to June 2024, I was a tenure-track assistant professor in the Department of Pediatrics at the University of Pittsburgh. In July 2024, I transitioned to the University of South Alabama to continue my research in vascular biology, with a focus on the function, structure, and inflammation associated with hypertension and vasculitis. My lab has actively contributed to the field through publications in esteemed journals such as Hypertension, JAHA, and AJP-Endocrinology & Metabolism. Our primary research goal is to elucidate the endothelial and immune mechanisms involved in the development and progression of hypertension and vasculitis.

a. Cau SB, Bruder-Nascimento A, Silva MB, Ramalho FNZ, Mestriner F, Alves-Lopes R, Ferreira N, Tostes RC, **Bruder-Nascimento T**. Angiotensin-II activates vascular inflammasome and induces vascular damage. Vascular Pharmacology, 2021;139:106881. PMID: 34098096

b. Bruder-Nascimento A, Awata WMC, Alves JV, Singh S, Costa RM, **Bruder-Nascimento T**. Progranulin maintains blood pressure and vascular tone dependent on EphrinA2 and Sortilin1 receptors and eNOS activation. J Am Heart Assoc (JAHA) 2023 15;12(16):e030353**.** PMID: 37581395

c. Costa RM, Cerqueira DM, Bruder-Nascimento A, Alves JV, Awata WMC, Singh S, Kufner A, Prado DS, Johny E, Cifuentes-Pagano E, Hawse WF, Dutta P, Pagano PJ, Ho J, **Bruder-Nascimento T.** Role of the CCL5 and Its Receptor, CCR5 in the Genesis of Aldosterone-Induced Hypertension, Vascular Dysfunction, and End-Organ Damage. Hypertension. 2024. PMID: 38240165. *Selected for the April issue cover and invited for Twitter discussion by Hypertension.*

d. Costa R, Cerqueira D, Francis L, Bruder-Nascimento A, Alves J, Sims-Lucas S, Ho J, **Bruder-Nascimento T**. *In utero* exposure to maternal diabetes exacerbates dietary sodium intake-induced endothelial dysfunction by activating cyclooxygenase 2-derived prostanoids. AJP-Endocrinology & Metabolism. 2024 1;326(5):E555-E566. PMID: 38446637

Complete list of Published Work in MyBibliography:

https://www.ncbi.nlm.nih.gov/myncbi/thiago.bruder%20do%20nascimento.1/bibliography/public/