
Aluya Richard Oseghale, PhD

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EDUCATION.

Ph.D. Biomedical Sciences

August 2013 - May 2019

Vascular Biology Major

The Graduate School

Augusta University, Augusta GA, USA

M.Sc. (Dipl. Ing.) Biotechnology

September 2005 - June 2009

University of Applied Sciences

Krems, Austria

B.Sc. (Hons.) Microbiology

January 1997 - June 2000

University of Benin

Benin City, Nigeria

WORKING EXPERIENCE

Postdoctoral Scholar

Porteus Laboratory

July 2019 – current

Department of Pediatrics

School of Medicine

Stanford University

Stanford California

PhD doctoral trainee

Laboratory of Betty Pace, MD

November 2016 – May 2019

Vascular Biology Center

Medical College of Georgia

Augusta University

Augusta Georgia

Graduate Research Assistant

Vascular Biology Center

October 2016

Medical College of Georgia

Georgia Regents University, GRU

June 2014 –

Visiting Scholar/Research Specialist

(Laboratory of Dr. Rudolf Lucas)

October 2009 – July 2013

Vascular Biology Center

Medical College of Georgia

Georgia Regents University, GRU

Research Assistant

January 2006- June 2009

Department of Biotechnology

University of Applied Sciences

Krems, Austria

RESEARCH SKILLS/ROUTINE TECHNIQUES.

• Genome editing e.g. CRISPR/Cas9-mediated gene targeting • Digital droplet PCR, Regular and Quantitative real-time Polymerase Chain Reaction • <i>In vivo</i> animal studies; experienced with mouse models such as β-YAC and sickle cell transgenic mice. • Patch clamp electrophysiology techniques • Electrical Cell-substrate impedance sensing technique • SDS-PAGE and Western blotting • Transformation, transfection and cloning techniques	• Immunohistochemistry • Confocal microscopy • Laser capture microdissection • Experienced in isolation and cultivation of primary cells from human tissues • <i>Ex vivo</i> handling of human stem cells and primary cells including cultivation/proliferation and differentiation of CD34+ stem cells • Cell-based and classical ELISA assays • Experienced in several assay techniques including Caspase, Cytotoxicity, heme quantitation and ATP assays
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PUBLICATIONS.

1. Selvaraj Sridhar, ..., **Oseghale Aluya R**, Pavel-Dinu Mara, Luna Sofia E., Cromer M. Kyle, Sayana Ruhi, Gomez-Ospina Natalia, Porteus Matthew H. DNA-PKcs inhibition results in higher genome editing frequencies of HDR compared to INDELS in human primary cells. *Nat Biotechnol.* 2023 Aug 3. doi: 10.1038/s41587-023-01888-4.
2. **Oseghale AR**, Zhu X, Li B, Peterson KR, Nudelman A, Rephaeli A, Xu H, and Pace BS. δ -Aminolaevulinate and Butyrate Conjugate Prodrug AN-233 Upregulates Fetal Hemoglobin Expression in Sickle Erythroid Progenitors and β -YAC Mice. *Blood Cells Mol Dis.* 2019 Jul 9;79:102345.
3. Zhu X, **Oseghale AR**, Nicole LH, Li B, Pace BS. Mechanisms of NRF2 activation to mediate fetal hemoglobin induction and protection against oxidative stress in sickle cell disease. *Exp Biol Med* (Maywood). 2019 Jan 23;1535370219825859.
4. Lucas R, Sridhar S, Rick FG, Gorshkov B, Umapathy NS, Yang G, **Oseghale A**, Verin AD, Chakraborty T, Matthay MA, Zemskov EA, White R, Block NL, Shally AV. Agonist of growth hormone releasing hormone reduces pneumolysin-induced pulmonary permeability edema. *Proc Natl Acad Sci USA.* 2012; 109(6):2084-9.
5. Lucas R, Czikora I, Sridhar S, Zemskov EA, **Oseghale A**, Circo S, Cederbaum SD, Chakraborty T, Fulton DJ, Caldwell RW, Romero MJ. Arginase 1: an unexpected mediator of pulmonary capillary barrier dysfunction in models of acute lung injury. *Front Immunol.* 2013; 4:228.
6. Lucas R, Czikora I, Sridhar S, Zemskov E, Gorshkov B, Siddaramappa U, **Oseghale A**, Lawson J, Verin A, Rick FG, Block NL, Pillich H, Romero M, Leustik M, Schally AV, Chakraborty T. Mini-review: novel therapeutic strategies to blunt actions of pneumolysin in the lungs. *Toxins (Basel).* 2013 Jul 15;5(7):1244-60. doi: 10.3390/toxins5071244.

PUBLISHED ABSTRACTS.

1. **Aluya R. Oseghale**, Marjorie M. Johnson, Xingguo Zhu, Abraham Nudelman, Ada Rephaeli and Betty Pace. Novel Conjugates of Butyrate and δ -aminolevulinate Increase γ -globin Gene Expression and Fetal Hemoglobin Synthesis in Erythroid Progenitors. *Blood* 2017 130:3511.

2. Itia Lee, Ciprian B. Anea, Sanjiv Kumar, Greer Falls, **Aluya Oseghale** and Julia Brittain. Galectin-3 Is a Mediator of Pulmonary Fibrosis in Sickle Cell Disease: Novel Roles for Hemolysis and Acute Chest Syndrome. Accepted abstract for poster presentation. Blood 2016 128:2480.
3. Sanjiv Kumar, Ciprian B. Anea, Itia Lee, **Aluya Oseghale** and Julia Brittain. Cytoprotective Chaperone Proteins Are Novel Anti-Inflammatory Targets in Sickle Cell Disease. Blood 2016 128:1292.
4. Itia Lee, Nagavedi Umapathy, **Aluya Oseghale**, Julia Brittain. Hemolysis induced activation of monocytes is followed by inactivation via heme-induced heme-oxygenase-1 (HO-1) expression. Blood 2014 124:4057.

PRESENTED ABSTRACTS

1. **Aluya R. Oseghale**, Volker Wiebking, Mahboubah Yazdanifar, Alice Bertaina and Matthew Porteus. Developing CRISPR/Cas9-engineered potent and auxotrophic PRF1^{hi} antigen-specific CAR T cells from graft-derived T lymphocytes. Stanford University 13th Annual Pediatrics Retreat. April 2022.
2. **Aluya R. Oseghale**, Volker Wiebking, Mahboubah Yazdanifar, Alice Bertaina and Matthew Porteus. Generating regulatable CRISPR/Cas9-edited CAR T cells from graft-derived $\alpha\beta^+$ T cells to improve outcomes after $\alpha\beta^+$ T cell-depleted haploidentical HSCT in ALL. Stanford University 12th Annual Pediatrics Retreat. April 2021.
3. **Aluya R. Oseghale**, Volker Wiebking, Alice Bertaina and Matthew Porteus. Manufacturing genome-edited CAR T cells from graft-derived $\alpha\beta^+$ T cells; improving the efficacy of $\alpha\beta^+$ T cell-depleted haploidentical hematopoietic stem cell transplantation (allo-HSCT). Accepted for poster presentation Stanford University 11th annual pediatrics retreat. April 2020.
4. **Aluya R. Oseghale**, Volker Wiebking, Alice Bertaina and Matthew Porteus. Establishing a manufacturing process to generate genome-edited CAR T cells from graft-derived $\alpha\beta^+$ T cells; improving the efficacy of $\alpha\beta^+$ T cell-depleted haploidentical hematopoietic stem cell transplantation (allo-HSCT). Stanford University Hematology-Oncology Retreat (Asilomar), October 2019.
5. **Aluya R. Oseghale**, Bioaru Li, Xingguo Zhu, Kenneth R. Peterson, Hongyan Xu, Abraham Nudelman, Ada Rephaeli, and Betty S. Pace. Conjugate prodrug AN-233 induces fetal hemoglobin in sickle erythroid progenitors and β -YAC mice. The 35th Annual Graduate Research Day, Augusta University, April 2nd 2019.
6. Bria Carrithers, **Aluya R. Oseghale**, Betty S. Pace. Determining the mechanism of fetal hemoglobin induction by the prodrug AN908 through p38 MAPK signaling and histone acetylation. 2019 New England Science Symposium, Harvard Medical School, April 2019.
7. Bria Carrithers, **Aluya R. Oseghale**, Betty S. Pace. Determining the mechanism of fetal hemoglobin induction by the prodrug AN908 through p38 MAPK signaling and histone acetylation. The 10th annual Medical Scholars Research Day, Medical College of Georgia, Augusta University 2018.
8. **Aluya R. Oseghale**, Bioaru Li, Xingguo Zhu, Abraham Nudelman, Ada Rephaeli, and Betty S. Pace. Novel ester of butyrate and δ -aminolevulinate increases γ -globin and fetal hemoglobin synthesis by inactivating eIF2 α kinase in erythroid progenitors. The 34th Annual Graduate Research Day, Augusta University, March 2018.
9. Margaux M. Johnson, Mayuko Takezaki, **Aluya R. Oseghale**, Betty S. Pace, MD. AN908, a novel prodrug conjugate of butyrate and δ -aminolevulinate increases γ -globin gene expression in erythroid progenitors. The 9th annual Medical Scholars Research Day, Medical College of Georgia, Augusta University 2017.

10. **Aluya Oseghale**, Nicole H. Lopez, Biaoru Li, Betty S. Pace. Novel Prodrug AN233: A Potential Fetal Hemoglobin Inducer for Sickle Cell Disease. 33rd Annual Graduate Research Day, Augusta University, March 2017.
11. **Aluya R. Oseghale**, Itia A. Lee, Abdullah Kutlar, MD and Julia E. Brittain, PhD. Effects of Hemolysis on Leukocyte function in Sickle Cell Disease. 10th Annual Meeting of the Foundation of Sickle Cell Disease Research Fort Lauderdale Florida, April 2016.
12. **Aluya R. Oseghale**, Itia A. Lee, Nagavedi S. Umapathy PhD, Abdullah Kutlar, MD and Julia E. Brittain, PhD. Heme Drives Chronic Activation of Monocytes And Induces A Pro-Fibrotic M2 Phenotype – Implications For End Organ Damage in Sickle Cell Disease. 32nd Annual Graduate Research Day, Georgia Regents University, March 2016.
13. **Aluya R. Oseghale**, Itia A. Lee, Nagavedi S. Umapathy PhD, Abdullah Kutlar, MD and Julia E. Brittain, PhD. Hemolysis-associated chronic activation of monocytes induces a pro-fibrotic M2 phenotype – implications for end organ damage in SCD. Morehouse School of Medicine 2016 Curtis Parker Research Symposium (Accepted for Oral Presentation), February 2016.
14. **Aluya R. Oseghale**, Itia A. Lee, Ciprian B. Anea, MD and Julia E. Brittain, PhD. Heme, but not Hemoglobin, Leukocyte Activation in Hemolysis-Associated Disease. 31st Annual Graduate Research Day, Georgia Regents University, March 2015.
15. Guang Yang, Richard White, **Aluya Oseghale**, Supriya Sridhar, Mario Marrero, Trinad Chakraborty and Rudolf Lucas. The Lectin-like Domain of TNF Reduces Listeriolysin-induced EnaC Dysfunction in Human Airways Epithelial Cells. Georgia Bioscience Conference 2010.
16. Guang Yang, **Aluya Oseghale**, Mario Marrero, Terry Hauser, Merouane Bencheriff and Rudolf Lucas. A specific alpha7 nicotinic acetylcholine receptor agonist inhibits TNF-induced ICAM-1 upregulation in brain microvascular endothelial cells. 26th Annual Graduate Research Day, Medical College of Georgia.
17. **Aluya Oseghale**. The Role of the Cholinergic Anti-inflammatory Pathway in Combating Cerebral Malaria. January 2009. University of Applied Sciences FH-Krems, Austria.

PROFESSIONAL COMMUNITY ACTIVITIES.

Invited Speaker: Black Engineers, Scientists, and Technologists (BEST) Week, San Jose California, June 2023.

External Examiner. Biomedical Engineering Showcase, San Jose State University, San Jose CA. May 2023.

Black Engineers, Scientists, and Technologists (BEST) Week, Hayward California, June 2022.

SUPERVISORY EXPERIENCE.

Training summer rotation undergraduate or medical students in Medical Scholars Program

- Tanwani Mbah Tanwani, Biomedical Engineering Student, San Jose State University, Fall 2022 till date.
- Leah Maltzman, Undergraduate Biology Student, Emory University. Summer 2022.
- Elaine Gonzalez, Undergraduate Biology Student, Stanford University. Fall 2021.
- Bria Carrithers, 2nd Year Medical Student, Medical College of Georgia, Augusta University. Summer 2018.

AWARDS.

- A. JumpStart Awardee, Grant Writing Academy, Stanford University. 2021- 2022.
- B. Excellence in Research Award, Vascular Biology Graduate Program, Augusta University. April 2019.
- C. Excellence in Research Award, Vascular Biology Graduate Program, Augusta University. April 2018.
- D. American Society of Hematology (ASH) Minority Graduate Student Abstract Achievement Award 2017
- E. Excellence Award in Vascular Biology Journal Club, Fall 2017.
- F. Excellence Award in Vascular Biology Journal Club, Fall 2016.
- G. One World Scholarship Award, Vienna, Austria, 2006-2009.

RESEARCH SUPPORT

- 1. NIH Hematology T32 training grant (Under Dr. Ravindra Majeti) Award number: 5T32HL120824-07
September 2020 – August 2021
- 2. NIH Hematology T32 training grant (Under Dr. Ravindra Majeti) Award number: 2T32HL120824-06
September 2019 – August 2020.

PROFESSIONAL ORGANISATION(S):

- Member of the American Society of Hematology, ASH.
- Member of the American Heart Association, AHA.
- Member of the American Stroke Association, AHA.

REFERENCES:

Matthew Porteus, MD/PhD

Professor,
Pediatrics - Stem Cell Transplantation
Stanford University School of Medicine
Stanford, CA 94305

Betty Pace, MD

Interim Section Chief
Pediatrics Hematology/Oncology
Augusta University
Augusta GA, USA
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Abdullah Kutlar, M.D.

Director
Adult Sickle Cell Center
Augusta University
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