

**BIOMEDICAL & VETERINARY SCIENCES
GRADUATE PROGRAM**



ANNOUNCES

The Doctor of Philosophy Seminar and Examination of

Benjamin Okyere

**“Eph-Mediated Restriction of Cerebrovascular
Arteriogenesis”**

**Monday, March 18th, 2019
1:00 pm
Life Sciences I
(First Floor, Room 101)**

Bio



Ben was born in Ghana and moved to the United States in 2002. Succinctly, his scientific interest and motivation is medical discovery to combat debilitating human diseases and improve public health.

Thus, he has always pressed to become a better research scientist. Ben's current doctoral dissertation explores pial collateral vascular remodeling in the injured adult brain, a key neuroprotective mechanism after ischemic stroke.

He also holds a MS degree from Virginia Tech. His studies investigated the contribution of megakaryocyte cells in Myelodysplastic Syndromes.

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VMCVM Office of Research and Graduate Studies

Ruth L. Kirschstein National Research Service Award (F31NS095719-01A1)

National Institute of Neurological Disorders and Stroke of the National
Institutes of Health (R01NS096281)

The Regenerative Medicine Interdisciplinary graduate education program
(IGEP)

The Initiative for Maximizing Student Development (IMSD)

Lay Language Abstract

Stroke is the 5th leading cause of death in the United States. Ischemic stroke is the most common type of stroke and occurs when blood flow to part of the brain is impeded. Lack of blood results in cell death and tissue loss in the brain. In an effort to restore blood flow, specialized vessels in the brain called collaterals remodel and become larger to allow re-routed blood to the blood-deprived region of the brain. The duration it takes to remodel these remarkable blood vessels and reroute blood varies in humans, and sometimes is not able to prevent adequate tissue loss. The current work explores novel therapeutic targets to accelerate collateral remodeling in an effort to reduce tissue loss after stroke.

Publications

Benjamin Okyere, Tre Mill, Elizabeth A. Kowalski, Kisha Greer, Alison Cash, Yun Qian, Xia Wang, John B. Matson, and Michelle H. Theus. EphA4 constrains pial collateral remodeling by suppressing endothelial cell-specific pAkt/Tie2 receptor signaling following ischemic stroke (Under Review).

Benjamin Okyere, Miranda Creasey, Yeonwoo Lebovitz and Michelle Theus. Temporal remodeling of pial collaterals and functional deficits in a murine model of ischemic stroke. *Journal of Neuroscience Methods*, 2017, 293: 86–96.

Okyere B, Giridhar K, Hazy A, Chen M, Keimig D, Bielitz RC, Xie H, He JQ, Huckle WR, Theus MH. Endothelial-Specific EphA4 negatively regulates native pial collateral formation and re-Perfusion following hindlimb ischemia. *PLoS One*. 2016;11(7).

Chadwick Powell, Jeffrey Foster, **Benjamin Okyere**, Michelle Theus, and John Matson. Therapeutic delivery of H₂S via COS: small molecule and polymeric donors with benign byproducts. *J. Am. Chem. Soc.*, 2016, 138 (41), pp 13477–13480.

Puthiyaveetil AG, **Okyere B**, Reilly CM, Caudell D. Diverging in vitro antibody isotype switching preference in B-lymphocytes from C57BL/6 and FVB mice. *In Vivo*. 2013; 27(1):29-39.

Knoll JD, Arachchige SM, Wang G, Rangan K, Miao R, Higgins SL, **Okyere B**, Zhao M, Croasdale P, Magruder K, Sinclair B, Wall C, Brewer KJ. Electrochemical, spectroscopic, and photophysical properties of structurally diverse polyazine bridged Ru(II),Pt(II) and Os(II),Ru(II),Pt(II) supramolecular motifs. *Inorg Chem*. 2011 Sep 19;50(18):8850-60.

Mongelli MT, Heinecke J, Mayfield S, **Okyere B**, Winkel BS, Brewer KJ. Variation of DNA photocleavage efficiency for [(TL)₂Ru(dpp)]Cl₂ complexes where TL=2,2' bipyridine, 1,10-phenanthroline, or 4,7-diphenyl-1,10-phenanthroline. *J Inorg Biochem*. 2006 Dec;100(12):1983-7.

Presentations

Okyere, B., and Theus, M. 2018. EphA4 limits the endothelial cell-specific response during pial collateral remodeling post ischemic stroke. Abstract for poster presentation, The Central Virginia Chapter of the Society for Neuroscience, Richmond, VA.

Okyere, B., Hazy, A., and Theus, M. 2017. Mechanisms regulating collateral remodeling after ischemic stroke. Abstract for poster presentation, Janssen & Consumer R&D Scientist Mentoring Open House, Spring House, PA.

Okyere, B., and Theus, M. 2017. Collateral remodeling as a therapeutic target for ischemic stroke. Abstract for oral presentation, The Central Virginia Chapter of the Society for Neuroscience, Roanoke, VA.

Okyere, B., Wang, X., and Theus, M. 2016. EphA4 is a novel negative regulator of collateral formation and remodeling following stroke. Abstract for poster presentation, Mid-Atlantic PREP/IMSD Research Symposium (MAPRS), Richmond, VA.

Okyere, B., Wang, X., and Theus, M. 2016. EphA4 is a novel negative regulator of collateral formation and remodeling following stroke. Abstract for poster presentation, Biomedical and Veterinary Science Symposium, Blacksburg, VA.

Okyere, B., Wang, X., and Theus, M. 2015. EphA4 negatively regulates vascular remodeling after ischemic stroke in a middle cerebral occlusion mouse model. Abstract for poster presentation, The American Society for Neural Therapy and Repair, Clearwater, FL.

Okyere, B., Baumann G, Garcia L, Liebl D and Theus, M. 2015. Pronounced hypoxia in the SVZ following TBI. Abstract for poster presentation, Central Virginia Chapter of the Society of Neuroscience, Richmond, VA.

Okyere, B., Wang, X., and Theus, M. 2015. EphA4 negatively regulates vascular remodeling after ischemic stroke in a middle cerebral occlusion mouse model. Abstract for poster presentation, Annual Biomedical Research Conference for Minority Students (ABRCMS), Seattle, WA.

Okyere B., Cawley J., Puthiyaveetil A.G., and Heid B. 2013. NUP98-HOXD13 mice have megakaryocytes with impaired actin localization during the development of Myelodysplastic syndrome. Abstract for poster presentation, American Society of Hematology Conference, New Orleans, LA.

Awards and Academic Achievements

Excellence for PhD poster, Central Virginia Chapter of the Society for Neuroscience, Richmond, VA, March 2018.

Janssen & Consumer R&D Scientist Mentoring Diversity Program Award, 2017

International Center for Professional Development scholarship, 2017
Scientist mentoring and development program (SMDP)

The Ruth L. Kirschstein Predoctoral Individual National Research Service Award (F31), 2017

VMRCVM Graduate Fellowship, 2017

Outstanding PhD Poster, 28th Biomedical and Veterinary Science Symposium, Virginia-Maryland Regional College of Veterinary Science, Virginia Tech, 2017

Initiative for Maximizing Student Development (IMSD) Graduate Presentation, Mid-Atlantic PREP/IMSD Research Symposium, 2016

Graduate School Association Silver Poster Presentation Award, Virginia Tech, 2015

North American Vascular Biology Organization Scholarship (NAVBO), Charlottesville, VA, 2015

The Initiative for Maximizing Student Development (IMSD) Program Award, Virginia Tech, 2014

The Regenerative Medicine Interdisciplinary Graduate Education Program Award, Virginia Tech, 2013

Outstanding Masters Poster, 24th Biomedical and Veterinary Science Symposium, Virginia-Maryland Regional College of Veterinary Science, Virginia Tech, 2013

Graduate Research and Development Program Award, Virginia Tech, Graduate Students Association, 2012

Outstanding PhD Poster, 23rd Biomedical and Veterinary Science Symposium, Virginia-Maryland Regional College of Veterinary Science, Virginia Tech, 2011

Examination Graduate Committee

Major Advisor/Chair:

Michelle H. Theus, PhD
Associate Professor
Department of Biomedical Sciences & Pathobiology

Graduate Advising Committee Members:

William R. Huckle, M.S., PhD
Associate Professor and Associate Dean of Graduate Studies
Biomedical Sciences & Pathobiology

Tanya Leroith, DVM, PhD, Diplomate, ACVP
Clinical Professor
Department of Biomedical Sciences & Pathobiology

Andrea Bertke, PhD
Assistant Professor
Department of Population Health Sciences

External Examiner

Biraj M. Patel, MD

Neurointerventional Surgery
Department of Radiology
Assistant Professor
VTC School of Medicine

Seminar title: Current Management of Acute Ischemic Stroke: Case-Based Approach.

Thursday March 14, 2019

1:00 PM

VMIA (Room 220)



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