

BIOGRAPHICAL SKETCH

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NAME: POWELL, WADE H

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

POSITION TITLE: Professor of Biology

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)	END DATE MM/YYYY	FIELD OF STUDY
Davidson College, Davidson, NC	BS	05/1987	Biology
East Tennessee State University, Johnson City, TN	MS	12/1991	Biological Sciences
Emory University, Atlanta, GA	PHD	05/1997	Biochemistry and Molecular Biology
EMORY UNIVERSITY, ATLANTA, GA	NIH training grant	08/1992	
EMORY UNIVERSITY, ATLANTA, GA	NIH training grant	09/1993	

B. Positions and Honors**Positions and Employment**

1988 - 1989 Headmaster, Ideleri Secondary School, Maragoli
1997 - 2000 Postdoctoral Scholar, WOODS HOLE OCEANOGRAPHIC INSTITUTION
2000 - Professor of Biology, KENYON COLLEGE

Other Experience and Professional Memberships

1997 - Member, AAAS
1998 - Member, Society for Environmental Toxicology and Chemistry (SETAC)
2001 - Member, Council for Undergraduate Research (CUR)
2004 - Member, Society for Toxicology (SOT)

Honors

2004 Tomsich Science Award, Kenyon College
2006 Trustees Teaching Excellence Award, Kenyon College
2019 Daniel and Patricia Acosta Undergraduate Educator Award, Society of Toxicology (SOT)

C. Contribution to Science

1. AHR signaling in amphibians
 - a. Taft JD, Colonna MM, Schafer RE, Plick N, Powell WH. Dioxin Exposure Alters Molecular and Morphological Responses to Thyroid Hormone in *Xenopus laevis* Cultured Cells and Prometamorphic Tadpoles. *Toxicol Sci.* 2018 Jan 1;161(1):196-206. PubMed PMID: [29294139](#); PubMed Central PMCID: [PMC5837452](#).
 - b. Freeburg SH, Engelbrecht E, Powell WH. Subfunctionalization of Paralogous Aryl Hydrocarbon Receptors from the Frog *Xenopus laevis*: Distinct Target Genes and Differential Responses to Specific Agonists in a Single Cell Type. *Toxicol Sci.* 2017 Feb;155(2):337-347. PubMed PMID:

[27994169](#); PubMed Central PMCID: [PMC5291211](#).

- c. Shoots J, Fraccalvieri D, Franks DG, Denison MS, Hahn ME, Bonati L, Powell WH. An Aryl Hydrocarbon Receptor from the Salamander *Ambystoma mexicanum* Exhibits Low Sensitivity to 2,3,7,8-Tetrachlorodibenzo-p-dioxin. *Environ Sci Technol*. 2015 Jun 2;49(11):6993-7001. PubMed PMID: [25941739](#); PubMed Central PMCID: [PMC4454367](#).
- d. Odio C, Holzman SA, Denison MS, Fraccalvieri D, Bonati L, Franks DG, Hahn ME, Powell WH. Specific ligand binding domain residues confer low dioxin responsiveness to AHR1 β of *Xenopus laevis*. *Biochemistry*. 2013 Mar 12;52(10):1746-54. PubMed PMID: [23394719](#); PubMed Central PMCID: [PMC3669666](#).

2. AHR signaling in fish

- a. Karchner SI, Franks DG, Powell WH, Hahn ME. Regulatory interactions among three members of the vertebrate aryl hydrocarbon receptor family: AHR repressor, AHR1, and AHR2. *J Biol Chem*. 2002 Mar 1;277(9):6949-59. PubMed PMID: [11742002](#).
- b. Powell WH, Bright R, Bello SM, Hahn ME. Developmental and tissue-specific expression of AHR1, AHR2, and ARNT2 in dioxin-sensitive and -resistant populations of the marine fish *Fundulus heteroclitus*. *Toxicol Sci*. 2000 Oct;57(2):229-39. PubMed PMID: [11006353](#).
- c. Powell WH, Hahn ME. The evolution of aryl hydrocarbon signaling proteins: diversity of ARNT isoforms among fish species. *Mar Environ Res*. 2000 Jul-Dec;50(1-5):39-44. PubMed PMID: [11460724](#).
- d. Powell WH, Karchner SI, Bright R, Hahn ME. Functional diversity of vertebrate ARNT proteins: identification of ARNT2 as the predominant form of ARNT in the marine teleost, *Fundulus heteroclitus*. *Arch Biochem Biophys*. 1999 Jan 1;361(1):156-63. PubMed PMID: [9882441](#).

3. RNA polymerase II elongation

- a. Powell W, Lennon JC, Elsevier JP, Reines D. Glutamic acid-371 of the barnase homology domain in RNA polymerase II is not required for SII-activated RNA cleavage. *Mol Gen Genet*. 1997 Jan 27;253(4):507-11. PubMed PMID: [9037112](#).
- b. Powell W, Bartholomew B, Reines D. Elongation factor SII contacts the 3'-end of RNA in the RNA polymerase II elongation complex. *J Biol Chem*. 1996 Sep 13;271(37):22301-4. PubMed PMID: [8798387](#); PubMed Central PMCID: [PMC3371613](#).
- c. Powell W, Reines D. Mutations in the second largest subunit of RNA polymerase II cause 6-azauracil sensitivity in yeast and increased transcriptional arrest in vitro. *J Biol Chem*. 1996 Mar 22;271(12):6866-73. PubMed PMID: [8636112](#); PubMed Central PMCID: [PMC3371610](#).
- d. Gu W, Powell W, Mote J Jr, Reines D. Nascent RNA cleavage by arrested RNA polymerase II does not require upstream translocation of the elongation complex on DNA. *J Biol Chem*. 1993 Dec 5;268(34):25604-16. PubMed PMID: [7503982](#); PubMed Central PMCID: [PMC3373964](#).

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

R15 ES011130-06 POWELL, WADE H (PI) 09/01/01-08/31/21

Aryl hydrocarbon receptor (AHR) interactions in a frog model of dioxin toxicity

Role: PI

1725426, NSF Slonczewski (PI) 09/01/17-08/31/20

MRI: Acquisition of FACS Cell Sorter for Research on Antibiotic Resistance and Environmental Toxicant Receptors

Role: CPI

Completed Research Support

R15 ES011130-05 POWELL, WADE H (PI) 09/01/01-09/29/18
Aryl hydrocarbon receptor multiplicity in a frog model of dioxin toxicity
Role: PI

R15 ES011130-04 POWELL, WADE H (PI) 09/01/01-09/09/14
Low-affinity aryl hydrocarbon receptors in the frog *Xenopus laevis*
Role: PI

R15 ES011130-03 POWELL, WADE H (PI) 09/01/01-09/22/11
Multiple low-affinity aryl hydrocarbon receptors in the frog *Xenopus laevis*
Role: PI

R15 ES011130-03S1 POWELL, WADE H (PI) 08/15/09-08/14/11
Multiple low-affinity aryl hydrocarbon receptors in the frog *Xenopus laevis*
Role: PI

R15 ES011130-02 POWELL, WADE H (PI) 09/01/01-08/31/07
Mechanisms of dioxin insensitivity in developing frogs
Role: PI

R15 ES011130-01 POWELL, WADE H (PI) 09/01/01-08/31/04
Dioxin sensitivity of an amphibian toxicity test model
Role: PI

GLCA, Great Lakes Colleges Association POWELL, WADE H (PI) 05/01/09-08/01/09
Communicating Science to the Public: A Program for Kenyon Summer Science Scholars and Science Faculty
Role: CPI

WHOI, Reinhart Coastal Research Center POWELL, WADE H (PI) 06/01/99-06/01/01
Physiological Consequences of Multiple Environmental Stresses to Estuarine Fish: Dioxin-like Compounds and Hypoxia.
Role: PI