

Aaron Dennison Smith, Ph.D.

Personal Information:

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Education:

University of Maryland Baltimore, School of Pharmacy (2008-2014)
Ph.D. in Pharmaceutical Sciences

University of Maryland Baltimore County (2002-2007)
B.S. in Biochemistry and Molecular Biology

Research Experience & Employment:

Postdoctoral Fellow (2015-2020)
Duke University, School of Medicine
Department of Pharmacology and Cancer Biology
Supervisor: Dennis Thiele, Ph.D.
Molecular mechanisms of competition for copper at the host-fungal pathogen axis

Postdoctoral Fellow (2014-2015)
University of Maryland Baltimore, School of Pharmacy
Department of Pharmaceutical Sciences
Supervisor: Sarah Michel, Ph.D.
Functional inhibition of a non-classical Zn finger protein (NZF-1) as well as analytical assay development evaluating serum iron levels and speciation in patients administered with an iron nanoparticle drug formulation for the FDA.

Graduate Student (2008-2014)
University of Maryland Baltimore, School of Pharmacy
Department of Pharmaceutical Sciences
Supervisor: Angela Wilks, Ph.D.
Dissertation: Characterization of heme transport in *Pseudomonas aeruginosa* and the preferential pathway for heme uptake

Technical Director (2006-2008)
Chemspec, Inc.
Baltimore, MD
Commercial and industrial chemical manufacturing company. Oversight of QA/QC, inventory management, formulation control, local/national/international regulatory affairs, and research and development.

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Publications:

Smith AD, Garcia-Santamarina S, Thiele DJ (2020) An adaptation to copper limitation involving altered subcellular localization and co-factor utilization of superoxide dismutase is required for virulence in *C. neoformans*. *PLoS Path.* **Manuscript in Review.**

Garcia-Santamarina S, Probst C, Festa RA, Ding C, **Smith AD**, Conklin SE, Brander S, Kinch LN, Grishin NV, Franz KJ, Riggs-Gelasco P, Leggio LL, Johansen KS, Thiele DJ (2020) A Lytic Polysaccharide Monooxygenase-like protein functions in copper import and fungal meningitis. *Nature Chem. Biol.* **16**(3): 337-344.

Green CM, Li Z, **Smith AD**, Novikova O, Bacot-Davis VR, Gao F, Hu S, Banavali NK, Thiele DJ, Li H, Belfort M (2019) Spliceosomal Prp8 intein at the crossroads of protein and RNA splicing. *PLoS Biol.* **10**(17): e3000104

Garcia-Santamarina S*, Festa RA*, **Smith AD***, Yu CH*, Probst C, Ding C, Homer CM, Yin J, Noonan JP, Madhani H, Perfect JR, Thiele DJ (2018) Genome-wide analysis of the regulation of Cu metabolism in *Cryptococcus neoformans*. *Mol Micro.* **108**(5): 473-494. (*Co-first authors)

Smith AD, Logeman BL, Thiele DJ (2017) Copper Acquisition and Utilization in Fungi. *Annu Rev Microbiol.* **71**: 597-623.

Shen W, Plachez C, Tsymbalyuk O, Tsymbalyuk N, Xu S, **Smith AD**, Michel S, Yarnell D, Mullins R, Gulapalli R, Puche A, Simard JM, Fishman PS, Yarowsky P (2016) Cell-based therapy in TBI: Magnetic retention of neural stem cells *in vivo*. *Cell Transplant.* **25**(6): 1085-99.

Smith AD, Modi AR, Sun S, Dawson JH, and Wilks A (2015) Spectroscopic Determination of Distinct Heme Ligands in the Outer Membrane Receptors PhuR and HasR of *Pseudomonas aeruginosa*. *Biochem.* **54**(16): 2601-12.

Smith AD and Wilks A (2015) Differential Contributions of the Outer Membrane Receptors PhuR and HasR to Heme Acquisition in *Pseudomonas aeruginosa*. *J Biol Chem.* **290**(12): 7756-66.

Smith AD and Wilks A (2012) Extracellular Heme Uptake and the Challenges of Bacterial Cell Membranes. In S. Lutsenko & J.M. Arguello (Eds.), *Metal Transporters* (pp. 359-392). Elsevier Inc.: Academic Press.

Selected Abstracts & Presentations:

A new mode of copper regulation: translational reprogramming in response to copper limitation in the fungal pathogen *Cryptococcus neoformans*. Cell Biology of Metals Gordon Research Conference, Castelldefels, Spain. July 2019. Talk and poster presentation.

Transcription factor-driven alternative superoxide dismutase subcellular localization and co-factor utilization as a key virulence factor in *C. neoformans*. FASEB Trace Elements in Biology and Medicine, Tahoe City, CA. June 2018. Talk and poster presentation

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Transcription factor-driven alternative superoxide dismutase subcellular localization and co-factor utilization as a key virulence factor in *C. neoformans*. 5th Annual Cellular Biology of Eukaryotic Pathogens, Clemson University, South Carolina. October 2017. Talk and poster presentation.

Transcription factor-driven alternative co-factor utilization and subcellular localization of SODs to counteract oxidative stress in *C. neoformans*. International Conference on Cryptococcus and Cryptococcosis, Foz do Iguacu, Brazil. March 2017. Poster presentation.

Insights into the regulation of copper homeostasis and the impact of copper in virulence of the opportunistic human fungal pathogen *Cryptococcus neoformans*. Smaller Eukaryotes Meeting, Research Triangle Park, NC. September 2016. Talk.

Characterization of the outer membrane heme receptors and the preferential pathway for heme uptake in *Pseudomonas aeruginosa*. Tetrapyrroles Gordon Research Conference, Newport, Rhode Island. July 2014. Poster presentation.

Characterization of the outer membrane receptor PhuR and the ABC-transporter ShuUV and their contributions to heme utilization. UMB School of Pharmacy Alumni Reunion Day, University of Maryland Baltimore. Fall 2012. Poster presentation.

The DNA Binding Properties of the Cytoplasmic Heme Binding Protein PhuS of *Pseudomonas aeruginosa*. Bioinorganic Chemistry Gordon Research Seminar, Ventura, California. January 2009. Poster presentation.

Awards & Honors:

- Postdoctoral Presentation Award (2018)
Duke University, Molecular Genetics and Microbiology retreat
- Metallomics Poster Award (2018)
FASEB Trace Elements in Biology and Medicine Conference, Tahoe, CA
- Distinguished Trainee Travel Award (2018)
Duke University, Department of Molecular Genetics and Microbiology
- Selected to participate in Duke Scholars in Infectious Diseases program (2016-2017)
- Mitchell Meritorious Research Travel Award (2016)
Duke University, Center for Host-Microbial Interactions (CHoMI)
- Selected to participate in Molecular Mycology course (2016)
Marine Biology Laboratory, Woods Hole, MA
- NIH Fellowship - 5T32AI052080 (2015-2018)
Tri-Institutional Molecular Mycology and Pathogenesis Training Program
- PSC Departmental Fellowship Research Award (2012)
- PSC Departmental Merit Research Award (2011)
- Rho Chi Induction, Pharmacy Honor Society (2009)
- Maryland Saltwater Sportfishermen's Association (MSSA) Scholarship (2002-2006)
- NCAA Div. I Athletic Scholarship (2002-2006)

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Teaching & Mentoring Experience:

Graduate Student Mentor (2018-Present)
Duke University

Teaching Assistant (2008-2009)
University of Maryland Baltimore, School of Pharmacy
PharmD courses: Medicinal Chemistry, Microbiology, Pharmacokinetics

Resource Teacher (2006)
Vertically Integrated Partnerships K-16 Internship
University of Maryland Baltimore County

Leadership Roles:

Graduate Recruitment Strategies Taskforce Committee (2012-2013)

President: Pharmacy Graduate Student Association (2009-2010)

Team Captain: PSC Race for the Cure (2008-2010)