

SARAH S. DURKIN, PH.D.

QUALIFICATIONS

- Demonstrated leadership and initiative in STEM education and outreach includes: program development, management, and assessment for student outreach and educator professional development; developing and implementing diversity, equity and inclusion strategy; assisting in management and execution of STEM budget and efforts to obtain funding, development and coordination of DoN/DoD initiatives; assessment and evaluation of programs and return on investment; coordination of midshipmen and faculty involvement in outreach activities and events; instructional and curriculum development of project based learning modules in critical technical areas; educator training and program development; creation and implementation of marketing strategy; event coordination and communication; data management, analysis and presentation; coordination and collaboration across campus, including academic departments, Office of Admissions, Office of Diversity, Public Affairs, Information Technology Services, Media Support, Institutional Research, Budget Office; liaison with external organizations including DoD STEM, Naval STEM, DoD Education Activity (DoDEA), Naval Academy Foundation, NOAA, SeaPerch, Maryland State Department of Education, school districts.
- Instructional experience includes: undergraduate teaching in Biology and Chemistry including laboratory instruction. Development of curriculum in undergraduate biology course for non-majors. Curriculum development and instruction in STEM critical technical areas, including: biotechnology, environmental engineering, biomedical, bioengineering, optics, forensics, chemistry, corrosion, alternative energy, electricity and circuits, applied math, cyber security, robotics.
- Strong education background in cellular and molecular biology, biomedical applications, microbiology, biochemistry, general chemistry.
- 14 years technical and industrial applied science experience conducting hands-on, innovative laboratory and field research in diverse areas of applied biology including: cancer drug discovery, mouse models of cancer, microbiology, cell and molecular biology, neurodegenerative disorders, and marine biology.
- Excellent oral, written and web-based communication skills. Highly capable in computers and technology, data management, analysis and presentation.

EDUCATION

Eastern Virginia Medical School/Old Dominion University
Doctor of Philosophy, Biology - 2006

Norfolk, VA

University of Pennsylvania Philadelphia, PA
Master of Arts, Biology - 2000

University of Pennsylvania Philadelphia, PA
Bachelor of Arts, Biology, magna cum laude – 2000

EXPERIENCE

United States Naval Academy Annapolis, MD

Associate Director, Professor of the Practice, STEM Center for Education and Outreach: 2014-present

- Assist STEM Director in management and execution of multi-million dollar STEM budget and efforts to obtain future funding including drafting white papers, developing funding partners, maintaining metrics, assessment and reporting. Funding efforts include DoD STEM National Defense Education Program (NDEP) 3-year grant “Expanding Biotechnology Literacy to Shape the Future Workforce” in 2021 for \$450K; “Best Practices in STEM Outreach” initiative sponsored by ONR since 2014 with new funding from DoD STEM in 2018 and 2021; \$150K Early Service STEM Educator Initiative funded by ONR in 2018; DoDEA funding including supplement for overseas DoDEA professional development site visits; Maryland Space Grant Consortium college internships and High School Girls STEM Day; USNA Foundation funding sources including Northrop Grumman, Boeing, Exelon Corp, Avantor, General Motors, and Dr. Ernst Volgenau.
- Develop and implement assessment and evaluation of STEM programs in terms of objectives, outcome, impact, and return on investment including strategy, assessment tool design, data collection, management, organization, analysis, reporting and presentation.
- Develop and implement Diversity, Equity, and Inclusion strategy including building relationships and coordinating with underserved school districts locally and nationally; creating school visit and field trip opportunities for underserved groups; providing professional development and classroom supplies for educators in underserved schools; developing opportunities for schools and educators serving military-connected students.
- Expand opportunities for national robotics programs including SeaPerch underwater ROVs and FIRST Robotics. Manage annual robotics regional competitions held at U.S. Naval Academy; introduce SeaPerch and related curriculum to educators in underserved and military-connected communities, provide training, support, and supplies; implemented SeaPerch partnership grant with NOAA’s Office of Ocean Exploration and Research (OER) from 2014-2019, providing 20 educator collaborative workshops around the nation.
- Develop, document, and implement over 100 activities for multidisciplinary project-based learning modules in STEM critical technology areas including biotechnology, environmental engineering, biomedical, bioengineering, optics, forensics, chemistry, corrosion, alternative energy, electricity and circuits, applied math, cyber security, robotics. Collaborate with faculty in academic departments, contribute to academic papers.
- Develop and maintain relationships and seek new partnerships with outside funding sources. Coordinate and collaborate with internal and external organizations including: academic departments, Office of Admissions, Office of Diversity, Institutional Research, ITSD, Operations Department, Multimedia Support Center, Public Affairs, FOIA/PA Coordinator;

external organizations: Office of Naval Research, Office of the Secretary of Defense, NOAA, DoDEA, Navy Medicine, USNA Foundation, Maryland MESA, Philadelphia Regional Noyce Partnership, Maryland State Department of Education, school districts.

- Administrative and supervisory experience with faculty, staff, high school and college interns, Naval Academy recent graduates, reservists, and midshipmen including supervision of midshipmen Summer Heroes Youth Program since Summer 2019; train and mentor STEM Center staff; administrative management of midshipmen for excusals and movement orders.
- Organize and coordinate multiple events on site and travel to remote sites locally, nationally, and overseas. Recruit and retain faculty and midshipmen volunteers, including coordination, communication, training, and assessment. Instruct midshipmen STEM outreach class. Expand and develop complex programs including Summer Heroes Youth Program, Summer STEM Program, Girls STEM Days, and new programs for High School students including Biotech Day and STEM on Deck.
- Develop and execute expanded educator training and DoD scientist and engineer training programs on- and off-site, assess impact, plan and coordinate workshops including on-site implementation provided to student groups, maintain communications, create and maintain participant databases. Create, maintain and manage online sites for sharing curriculum documentation including APAN Naval STEM Group and DoDEA Schoology site.
- Initiate and execute continuing education credits with Maryland State Department of Education, Fairfax County Public Schools, Prince William County Public Schools, and DC Public Schools, including coordination with state and school districts, records management, and communication. Initiated, managed, and instructed online continuing education credit course with Anne Arundel Community College and University of San Diego.
- Generate and implement marketing strategy including: full website re-design, implementation and maintenance; website new notes, semester and summer newsletters, develop process for event advertisement and registration; social media; coordination with Public Affairs Office and multimedia requests. Coordination with FOIA/PA coordinator and ITSD to adapt to current requirements for forms and data collection.

United States Naval Academy

Annapolis, MD

Adjunct Faculty: 2012-2014

- Supported the STEM Office by organizing events, developing assessment and marketing strategies, and developing curriculum for student outreach and educator training.
- Taught undergraduate course in biology for the non-major. Developed new curriculum for classroom and laboratory.
- Taught core undergraduate course in chemistry to first-year students, including lecture and laboratory. Provided extensive one-on-one extra instruction. Staffed Chemistry Resource Room as support for Chemistry Department.

Pfizer Global Research and Development

La Jolla, CA

Postdoctoral Fellow: 2008-2010

- Engineered novel therapeutic antibody for use as anti-cancer drug, with emphasis on inhibiting cancer stem cell signaling pathway (patent application submitted). Tested and analyzed drug in cancer models including human cells and mice.

- Orally presented research findings and topics of interest in regular group and department meetings.
- Supervised and trained undergraduate student interns in laboratory research.

Eastern Virginia Medical School

Norfolk, VA

*Ph.D. Candidate: 2002-2006**Postdoctoral Fellow: 2007*

- Researched structural and functional characteristics of interactions between host cell proteins and the Human T-cell Leukemia Virus Type 1 (HTLV-1) oncoprotein Tax.
- Prepared and presented lectures on current topics in biology at department meetings and in graduate courses. Trained graduate students in laboratory research.
- Presented research findings at five regional, national and international conferences. Only student selected to present research orally at 12th International Conference on Human Retrovirology, Montego Bay, Jamaica, 2005.
- Awarded travel grant in school-wide competition for best graduate student research.

Pfizer Global Research and Development

La Jolla, CA

Research Scientist I: 2002

- Performed cell-based assays for drug compound screening in type II diabetes/obesity drug development group, focus on PPAR γ ligand. Conducted research to identify and validate new targets for drug development.

University of West Florida

Pensacola, FL

Center for Environmental Diagnostics and Bioremediation*Adjunct Associate in Molecular Biology: 2000-2001*

- Researched the effects of ultraviolet radiation on marine bacteria, with emphasis on changes in microbial community structure.
- Conducted field research during 2-week cruise in Gulf of Mexico to collect environmental samples, and performed molecular analysis.

University of Pennsylvania, School of Medicine Philadelphia, PA*Research Assistant: 1997-2000*

- Researched polyglutamine-repeat expansion neurodegenerative disease, Spinocerebellar Ataxia Type 3/Machado Joseph Disease (SCA3/MJD) in cell culture model.
- Presented findings at University of Pennsylvania undergraduate research symposium.

University of Pennsylvania, Tutoring Center

Philadelphia, PA

Biology Tutor: 1997-2000

- Tutored undergraduate students in introductory and advanced biology courses individually and in small groups.

National Institutes of Health

Bethesda, MD

National Institute of Neurological Disorder and Stroke

Summer Intern in Biomedical Research: 1998

- Investigated role of p75 neurotrophin receptor in sympathetic neuron development in genetically engineered mouse model.
- Orally presented research findings to department.

PUBLICATIONS AND PRESENTATIONS

1. Fees RE, da Rosa JA, **Durkin SS**, Murray MM, Moran AL. Unplugged Cybersecurity: An approach for bringing computer science into the classroom. *International Journal of Computer Science Education in Schools* 2018; 2(1):3-13.
2. Mason CL, Daniels DE, da Rosa JA, **Durkin SS**, Hetlyn RE, Moran AL. Communicating STEM to educators and students in informal settings using a Naval-relevant message. *The Ecosystem of Science Communication: Communicating the Science Solution 2016 National Center for Science and Civic Engagement Washington Symposium*. American Association for the Advancement of Science Headquarters, Washington DC, Oct 2016.
3. Busiek RR, da Rosa JA, **Durkin SS**, Hetlyn RE, Moran AL. Buoying Undergraduate Learning with Informal STEM Outreach. *Washington Symposium and SENCER-ISE National Meeting*. Washington DC, Sep 2015.
4. Da Rosa JA, **Durkin SS**, Hetlyn R, Moran AL, Keener P, Haynes M, Ryan M. Engineering to Explore the Ocean: A cooperative educators professional development workshop by the National Oceanic and Atmospheric Administration and the United States Naval Academy. *Earth Scientist* 2015; 31(3):9-15.
5. Da Rosa JA, **Durkin SS**, Hetlyn R, Murray M, Moran AL. Midshipmen-facilitated informal STEM education. *Science Education and Civic Engagement* 2015; 7(2):31-40.
6. Mutch B, **Durkin SS**, Moran P. USNA electrochemistry/corrosion STEM efforts. *Annual Technical Corrosion Collaboration Review Meeting for the Office of the Secretary of Defense Corrosion Policy and Oversight Office*. University of Akron, Aug 2014.
7. Rice J, **Durkin SS**, Mutch B, Gray G, Moran A. Defining a partnership: USNA/NOAA collaborative workshop on ocean exploration. *National Marine Educators Association*, Annapolis, MD, July 2014.
8. Fryrear KA, **Durkin SS**, Gupta SK, Tiedebohl JB, Semmes OJ. Dimerization and a novel Tax speckled structure localization signal are required for Tax nuclear localization. *J Virol* 2009; 83(11):5339-52.
9. **Durkin SS**, Guo X, Fryrear KA, Mihaylova VT, Gupta SK, Belgnaoui SM, Haoudi A, Kupfer GM, Semmes OJ. HTLV-1 Tax oncoprotein subverts the cellular DNA damage

- response via binding to DNA-dependent protein kinase. *J Biol Chem* 2008; 283(52):36311-20.
10. Ramadan E, Ward M, Guo X, **Durkin SS**, Sawyer A, Vilela M, Osgood C, Pothen A, Semmes OJ. Physical and in silico approaches identify DNA-PK in a Tax DNA-damage response interactome. *Retrovirology* 2008 Oct 15; 5:92.
 11. Gupta SK, Guo X, **Durkin SS**, Fryrear KF, Ward MD, Semmes OJ. Human T-cell leukemia virus type 1 Tax oncoprotein prevents DNA-damage induced chromatin egress of hyperphosphorylated Chk2. *J Biol Chem* 2007; 282(40): 29431-40.
 12. Pakulski JD, Baldwin A, Dean AL, **Durkin S**, Karentz D, Kelly CA, Scott K, Spero HJ, Wilhelm SW, Amin R, Jeffrey WH. Responses of heterotrophic bacteria to solar irradiance in the eastern Pacific Ocean. *Aquat Microb Ecol* 2007; 47:153-162.
 13. **Durkin SS**, Ward MD, Fryrear KA, Semmes OJ. Site-specific phosphorylation differentiates active from inactive forms of the human T-cell leukemia virus type 1 Tax oncoprotein. *J Biol Chem* 2006; 281(42):31705-12.
 14. Arnosti C, **Durkin S**, Jeffrey WH. Patterns of extracellular enzyme activities among pelagic marine microbial communities: implications for cycling of dissolved organic carbon. *Aquat Microb Ecol* 2005; 38: 135-45.
 15. Simmon KE, Steadman DD, **Durkin S**, Baldwin A, Jeffrey WH, Sheridan P, Horton R, Shields MS. Autoclave method for rapid preparation of bacterial PCR-template DNA. *J Microbiol Methods* 2004; 56:143-9.
 16. Perez MK, Paulson HL, Pendse SJ, **Saionz SJ**, Bonini NM, Pittman RN. Recruitment and the role of nuclear localization in polyglutamine-mediated aggregation. *J Cell Biol* 1998; 143:1457-70.