254-D Merrimac Trail
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Ronald D. Smith

Objective: *To teach people about programming and mathematics, to inspire others to become lifelong learners, and to never stop learning myself.*

Positions/Education

2014-present **William & Mary** Williamsburg, VA
Department of Applied Science
Advisers: Gregory D. Conradi Smith and Joshua R. Puzey
Ph.D. candidate (expected graduation 2019 August)
Research focus: Computational biology & genomics

2007-2013 **Farmingdale State College** Farmingdale, NY
B.Sc. Applied Mathematics
Awards/Honors:
Summa Cum Laude
Outstanding Academic Excellence Award: Highest GPA in Applied Mathematics
Nancy C. Thomson Award for Excellence in Mathematics

2004-2014 **Henry Schein, Inc. / Pentron Corporation** Melville, NY / Wallingford, CT
Analyst (held multiple positions)
Notable: Taught self to program in VBA, Visual Basic, and SQL.

Technical Skills

Programming Languages

MATLAB - Expert. Primarily used for simulations, data analysis, visualization and animation.

R - Proficient. Used sporadically, usually in conjunction with other bioinformatics software which is often written in R.

Python - Proficient. My go-to language for processing large data files. Currently learning about Jupyter notebooks which seem like they could be a great teaching aid.

Bash / UNIX / LINUX - Moderately proficient. Syntax can be a bit cryptic but very fast and especially useful for processing or pre-processing large data files (e.g., using awk). Also used to automate/manage other processes, e.g., running a sequence of Python scripts serially or in parallel and writing error logs.

JavaScript - Just started learning. I became interested in website design, primarily for teaching purposes. Focused on developing interactive math simulations and data visualizations.

VBA and Visual Basic - Used to be very proficient. The first languages I learned. Self-taught at my last job. Used primarily to automate database and spreadsheet tasks. Also wrote my first fun math programs: cellular automata, sudoku puzzle solvers, solving and plotting harmonic oscillators, visualizing chord/scale structures for guitar and piano, and many others.

Markup languages

HTML5 / CSS - Just started relearning HTML and CSS, goes hand-in-hand with JavaScript.

LaTeX - Used every day. Hands down the best way to write notes and papers, or create this CV.

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PGFPlots / TikZ - In conjunction with LaTeX, great for creating very clean and professional figures.

Other

Other software, with varying proficiency, but not used very often: Mathematica, Maple, Microsoft Access, Microsoft Excel, SQL, SageMath, JMP.

Refereed Publications

Hayes JA, Kottick A, Picardo MCD, Halleran AD, Smith RD, Smith GD, Saha MS and Negro CA. **Transcriptome of neonatal preBötzinger complex neurones in Dbx1 reporter mice.** *Scientific Reports* 7.1 (2017): 8669.

Edger PP, Smith RD, McKain MR, Cooley AM, Vallejo-Marin M, Yuan Y, Bewick AJ, Ji L, Platts AE, Bowman MJ, Childs KL, Washburn JD, Schmitz RJ, Smith GD, Pires JC, and Puzey JR. **Subgenome dominance in an interspecific hybrid, synthetic allopolyploid, and a 140-year-old naturally established neo-allopolyploid monkeyflower.** *The Plant Cell* (2017): tpc-00010.

Chrysafi L, and Smith RD. **Mathematics of Finance: The Eigenway.** *Mathematics and Computer Education* 46.1 (2012): 18.

Submitted Manuscripts

Edger PP, Poorten TJ, VanBuren R, Hardigan MA, Colle M, McKain MR, Smith RD, Teresi S, Nelson ADL, Wai CM, Alger EI, Bird KA, Yocca AE, Pumplin N, Ou S, Ben-Zvi G, Brodt A, Baruch K, Swale T, Shiue L, Acharya CB, Cole GS, Mower JP, Childs KL, Jiang N, Lyons E, Freeling M, Puzey JR, and Knapp SJ. **Origin and evolution of the octoploid strawberry genome.** Accepted for publication 2019 January. *Nature Genetics.*

Smith RD, Kinser TJ, Smith GD, and Puzey JR. **A likelihood ratio test for changes in homeolog expression bias.** Revisions submitted 2018 May. *BMC Bioinformatics.*

Talks/Posters

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2018 November 30. *The population genetics of transposable elements.*

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2018 April 20. *Understanding the genome-wide distribution of genes and transposons in Mimulus guttatus.*

Graduate Research Symposium, William & Mary, Williamsburg, VA, 2018 March 7. *The role of selection in sculpting the genome-wide distribution of genes and transposons.*

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2017 October 13. *Comprehensive mapping of long-range interactions reveals folding principles of the human genome.* Lieberman-Aiden, Erez, et al. Science 326.5950 (2009): 289-293.

The Center for Applied Mathematical Sciences, Farmingdale State College, Farmingdale, NY, 2017 March 31. *What is graduate school?* (Invited speaker)

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The Center for Applied Mathematical Sciences, Farmingdale State College, Farmingdale, NY, 2017 March 30. *A likelihood ratio test for changes in homeolog expression bias.* (Invited speaker)

Graduate Research Symposium, William & Mary, Williamsburg, VA, 2017 March 25. *Likelihood ratio tests for homeolog expression bias.*

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2017 February 10. *Polyploidy can drive rapid adaptation in yeast.* Selmecki, Anna M., et al. Nature 519.7543 (2015): 349.

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2016 October 21. *A likelihood ratio test to detect homeolog expression bias.*

(BAMM) Biology and Medicine through Mathematics Conference, Virginia Commonwealth University, Richmond, VA, 2016 May 21. *Homeolog expression bias.* (poster)

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2016 March 25. *The evolution of genetic networks by non-adaptive processes.* Lynch, Michael. Nature Reviews Genetics. 8.10 (2007):803.

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2015 November 3. *Synchronization and rhythmic processes in physiology.* Glass, Leon. Nature. 410.6825 (2001): 277.

Joint 2015 MBI-NIMBioS-CAMBAM Summer Graduate Workshop on Nonlinear Dynamics in Biological Systems, McGill University, Montreal QC, Canada. Summer 2015. *Phase locking in the Fattened Arnold Map.* (Workshop presentation with graduate students L Boullu and RG Townsend. Advised by Leon Glass.)

Biomath Journal Club / Seminar, William & Mary, Williamsburg, VA, 2015 April 3. *The effect of local transposon density on homeolog specific expression differences in allopolyploid monkey-flower.* (with Smith GD, and Puzey JR).

Teaching/Training/Mentorships

2014-present **Undergraduate mentoring in computational genomics & bioinformatics**
Worked with several biology undergraduates involved in research projects, including:
-Scripting in MATLAB, R, Python, and Bash.
-Training on various bioinformatics software.
Students: Madison Folmer, Hunter Call, Maliha Ahmed, Scott Teresi (see below)

Spring 2018 **Mentored biology undergraduate Scott Teresi**
"Origin and Evolution of the octoploid strawberry genome", accepted for publication in Nature Genetics (2019 Jan).

2017-2018 **Mentored high school senior Jakob Weiss**
(Governor's School for Science and Technology, Hampton, VA.)
"Developing a population genetics model for transposable elements"
Topics covered:
-Genomics data analysis
-Mathematical modeling of recombination
-Population genetics
Jakob participated in the mentorship as part of his senior year requirements and received a perfect score on his final presentation.

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2015-2017 **Teaching assistant for Cellular Biophysics and Modeling**
(William & Mary, Williamsburg, VA)
Every other semester, held regular review sessions (2-3 hrs/wk) and assisted with grading.

Spring 2014 **Calculus TA** at SUNY Old Westbury (Old Westbury, NY)
Attended classes, assisted with instruction and grading, met with students after class.
Delivered one full period lecture, "Intro to exponential and logarithmic functions and their derivatives".

Spring 2008 **Physics tutor** at Farmingdale State College (Farmingdale, NY)
Recruited by the physics chair after taking Physics I with him.
Held weekly review sessions (2 hrs/wk).

2008-2014 **Trainer / "Consultant"**, Henry Schein, Inc. (Melville, NY)
Acted as consultant for several departments, involving software and process development and training.