

Samuel S. Hunter

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Education:

- 2006-2014 PhD Bioinformatics & Computational Biology from the University of Idaho.
- 2006-2010 MS Statistics from the University of Idaho.
- 1998-2003 BS Double major in Biology and Math/Computer Science from College of Idaho. GPA 3.66 out of 4.0

Publications:

1. **Hunter SS**, Settles ML, New DD, Parent CE, Gerritsen AT. Mitochondrial Genome Sequence of the Galápagos Endemic Land Snail *Naesiotus nux*. *Genome Announcements*. 2016 Feb 25;4(1):e01362-15.
2. Laurent S, Pfeifer SP, Settles ML, **Hunter SS**, Hardwick KM, Ormond L, Sousa VC, Jensen JD, Rosenblum EB. The population genomics of rapid adaptation: disentangling signatures of selection and demography in white sands lizards. *Molecular ecology*. 2016 Jan 1;25(1):306-23.
3. Loftie-Eaton W, Yano H, Burleigh S, Simmons RS, Hughes JM, Rogers LM, **Hunter SS**, Settles ML, Forney LJ, Ponciano JM, Top EM. Evolutionary paths that expand plasmid host-range: implications for spread of antibiotic resistance. *Molecular biology and evolution*. 2015 Dec 14;msv339.
4. Fendler B, Abo R, **Hunter S**, Ducar M, Garcia E, Van Hummelen P, Lindeman N, MacConaill L. Identifying copy number alterations from targeted sequencing data. *Cancer Research*. 2015 Aug 1;75(15 Supplement):4850-.
5. Abo RP, Lin L, **Hunter SS**, Dolcen DN, Paquette RR, Laing A, de Waal L, Thorner AR, Ducar MD, Ziaugra L, Hahn WC. Comparative analysis of RNA sequencing methods for characterization of cancer transcriptomics. *Cancer Research*. 2015 Aug 1;75(15 Supplement):4867-.
6. Abrahante JE, **Hunter SS**, Maheswaran SK, Hauglund MJ, Tatum FM, Briggs RE. Draft genome sequence of *Pasteurella multocida* isolate P1062, isolated from bovine respiratory disease. *Genome announcements*. 2015 Sep;3(5).
7. Mitchell DM, Stevens CB, Frey RA, **Hunter SS**, Ashino R, Kawamura S, Stenkamp DL. Retinoic Acid Signaling Regulates Differential Expression of the Tandemly-Duplicated Long Wavelength-Sensitive Cone Opsin Genes in Zebrafish. *PLoS Genetics* 2015 August; 11(8):e1005483.
8. Cavileer TD, **Hunter SS**, Olsen J, Wenburg J, Nagler J. A Sex-Determining Gene (*sdY*) Assay Shows Discordance between Phenotypic and Genotypic Sex in Wild Populations of Chinook Salmon. *Transactions of the American Fisheries Society*. 2015 Mar 11; 144:423-430.
9. **Hunter SS**, Yano H, Loftie-Eaton W, Hughes J, De Gelder L, Stragier P, De Vos P, Settles ML, Top EM. Draft Genome Sequence of *Pseudomonas moraviensis* R28-S. *Genome Announcements*. 2014 Feb 20;2(1).
10. Dziejwanowska K, Settles M, **Hunter S**, Linquist I, Schilkey F, Hartzell PL. Phase Variation in *Myxococcus xanthus* Yields Cells Specialized for Iron Sequestration. *PLoS ONE* 04/2014; 9(4):e95189.
11. Sherpa T, Lankford T, McGinn TE, **Hunter SS**, Frey RA, Sun C, Ryan M, Robison BD, Stenkamp DL. Retinal regeneration is facilitated by the presence of surviving neurons. *Developmental Neurobiology*. 2014 Feb 1.
12. Zhbannikov IY, **Hunter SS**, Settles LM, Foster James A. SlopMap: a software application tool for quick and flexible identification of similar sequences using exact k-mer matching. *ArXiv:1307.8407*. 2013 July 31.
13. Johnson TJ, Abrahante JE, **Hunter SS**, Hauglund M, Tatum FM, Maheswaran SK, Briggs RE. Comparative genome analysis of an avirulent and two virulent strains of avian *Pasteurella multocida* reveals candidate genes involved in fitness and pathogenicity. *BMC Microbiology*. 2013 May 13:106.
14. Abrahante JE, Johnson TJ, **Hunter SS**, Maheswaran SK, Hauglund MJ, Bayles DO, Tatum FM, Briggs RE. Draft Genome Sequences of Two Virulent Serotypes of Avian *Pasteurella multocida*. *Genome Announcements*. 2013 Jan; 1(1): e00058-12.
15. Sherpa T, **Hunter SS**, Frey RA, Robison BD, Stenkamp DL. Retinal proliferation response in the

buphthalmic zebrafish, bugeye. *Experimental Eye Research*. 2011 Oct;93(4):424-36.

16. Nagler JJ, Cavileer T, **Hunter S**, Drew R, Okutsu T, Sakamoto T, Yoshizaki G. Non-sex specific genes associated with the secondary mitotic period of primordial germ cell proliferation in the gonads of embryonic rainbow trout (*Oncorhynchus mykiss*). *Molecular Reproduction and Development* 2011 Mar;78(3):181-7.
17. T. Cavileer, **S. Hunter**, T. Okutsu, G. Yoshizaki, J.J. Nagler. Identification of Novel Genes Associated with Molecular Sex Differentiation in the Embryonic Gonads of Rainbow Trout (*Oncorhynchus mykiss*). *Sexual Development*. 2009; 3(4):214-224.

Genomes and other sequences:

1. **Hunter, SS.**, Burleigh, S., Simmons, R., Settles, M.L., DeGelder, L.S., Hughes, J.M., Yano, H., Loftie-Eaton, W. And Top, E.M. Draft Genome Sequence of *Pseudomonas moraviensis* R28-S. AYMZ01000000. 2014.
2. **Hunter, SS.**, Cavileer, T. and Nagler, J.J. The sex determining gene in Chinook salmon (*Oncorhynchus tshawytscha*), genomic region. KC756279. 2013
3. Johnson, T.J., Abrahante, J.E., **Hunter, S.S.**, Hauglund, M., Tatum, F.M., Maheswaran, S.K. and Briggs, R.E. Comparative genome analysis of an avirulent and two virulent strains of avian *Pasteurella multocida* reveals candidate genes involved in fitness and pathogenicity. ASZP01000000. 2013
4. Abrahante, J.E., Johnson, T.J., **Hunter, S.S.**, Maheswaran, S.K. and Briggs, R.E. Draft Genome Sequences of Two Virulent Serotypes of Avian *Pasteurella multocida*. AMBQ01000000 and AMBP01000000. 2013

Publications (in-prep/submitted):

1. Sarver BAJ, Demboski JR, Good JM, Forshee N, **Hunter SS**, and Sullivan J. Comparative phylogenomic assessment of mitochondrial introgression among several species of chipmunks. (In-prep)
2. **Hunter SS**, Lyon RT, Sarver BAJ, Hardwick K, Forney LJ, Settles ML. ARC: Assembly by Reduced Complexity. <http://biorxiv.org/content/early/2015/02/07/014662> (In-prep)

Software:

- Primary designer and programmer for ARC: Assembly by Reduced Complexity, an iterative reference guided *de novo* assembler (<https://github.com/ibest/ARC>) (manuscript in preparation).
- Contributed to rSFFreader an R package for reading SFF formatted files (<http://www.bioconductor.org/packages/2.12/bioc/html/rSFFreader.html>).
- RobustCNV an R package for copy number analysis. (manuscript in preparation).

Professional Experience:

2016-Present:

- **Director, Genomics Resources Core Facility & Clinical Assistant Professor, University of Idaho Institute for Bioinformatics and Evolutionary Studies (IBEST), Moscow, ID:** As director of the GRC, I oversee day to day operations, manage budgets and personnel, identify/acquire new technologies in order to strategically position the core for continued relevance, develop/identify new analysis strategies/pipelines, consult with new/existing clients, and develop new collaborative opportunities through outreach.

2014-2015:

- **Computational Biologist, Dana Farber Cancer Institute, Center for Cancer Genome Discovery (CCGD)/Profile groups, Boston MA:** The CCGD (research) and Profile (clinical) groups use targeted sequence capture to characterize somatic changes associated with cancer. As part of the Clinical Bioinformatics team supporting these projects I developed a method (RobustCNV) to improve copy number calls and worked with other members of the team to document (to CLIA specifications) and integrate this software tool into the production pipeline. I also led development of a comprehensive oncoviruses baitset designed to detect, identify, and in some cases characterize the host-genomic integration site for all known DNA oncoviruses. Other duties involved custom bioinformatic analysis, research, and reporting, selecting and interviewing candidates for open positions, training members of the team on GIT and software development strategies, server administration and trouble shooting, and preparing and delivering presentations to clients, collaborators and pathologists.

2011-2014:

- **Data Scientist, Genomic Resources Core Facility, University of Idaho Institute for Bioinformatics and Evolutionary Studies (IBEST), Moscow, ID:** Data Scientist, microarray and high throughput sequence analysis, custom Python and R scripts and familiarity with software tools (e.g. Samtools,

Bowtie2, BLAT, etc) and sequencing technologies from Illumina, Roche/454 and PacBio.

Teaching Experience:

- 2014-2015: Trained group members on using GIT version control system for software development and ASANA for project management.
- 2012-2013: Co-organized the Sequence Analysis Discussion Group on campus. We tested high throughput sequence analysis software (read cleaning, quality assessment, mapping, assembling, variant calling, etc), compared results from different tools, and discussed best practices for NGS data analysis.
- Summer 2009: Mentored an REU (Research Experiences for Undergraduates) student, Thomas Estus, in a project exploring the role of endothelin signaling in the zebrafish retina. Thomas is currently pursuing a PhD in Biomedical engineering at the University of Connecticut.
- Summer 2009: Taught a component of BCB404, Computing for Bioinformatics (R-programming language).
- Fall 2005: Taught Computer Architecture and Assembly Language Programming CSC-231-01 at the College of Idaho. I was fully responsible for this class and wrote the syllabus, daily lessons, assignments and tests. The class consisted of eight students and ran for one semester.
- March 2005 to Dec 2005: While at D&B Supply, I worked closely with and supervised an intern (Ryan Abo) from the College of Idaho. We developed database driven web applications using Python, Javascript, and MySQL.

Non-academic Professional Experience:

1998-2005:

- **D&B Supply, Caldwell ID.** I was initially hired to do basic tech-support but quickly moved into software development, server, and network administration.
 - **Programming:** Python, C++, Visual Basic, Pascal (Delphi), Java, PHP and some Javascript. From 2002 to 2005 I served as the lead designer/programmer on a number of projects including a data interchange system, inventory process system, and document management system. During my final year of employment I focused on Python and web based applications using asynchronous Javascript + XML popularly referred to as AJAX.
 - **Server administration:** Linux server administrator from 1999 to 2005. Installed and supported Sendmail, Postfix, MySql, Apache, Squid, DNS/Bind and DHCPd as well as a variety of Windows based applications.
 - **Tech Support:** Although not my primary responsibility, I often responded to tech support calls, or communicated with non-technical people about projects I was involved with. I consistently received praise during yearly reviews for communicating in an effective and friendly way.