

David R. Minkley

5205 Worthington Rd., Victoria, BC, V8Y 2T8

Ph: 250-888-9827 Email: dminkley@uvic.ca

EDUCATION

- 2018 M.Sc., Biology. University of Victoria, Victoria, BC, Canada
- 2011 Double B.Sc. with Co-op Designation, Computer Science & Biology. University of Victoria, Victoria, BC, Canada

SKILLS & ABILITIES

- Bioinformatics** *Skills* - Reference genome assembly and annotation; transcriptome assembly and annotation; structural and SNP variant calling; RADseq analysis; comparative genomics; transposable element identification, annotation and classification; microarray and RNAseq gene expression analysis; population genomics; molecular evolution; genetic marker identification; phylogenetics; transcription factor binding site identification; HPC system usage
- Tools* - ABySS; ADMIXTURE; ALLPATHS-LG; bcftools; bedtools; BLAST; bowtie; bwa; Canu; cnvnator; DAVID; duphold; EMBOSS toolkit; Falcon; FastQC; fineSTRUCTURE; FoldX ; GATK; Genespring; GMAP; GO Trimming; GSNAP; Hisat2; HMMER; IGV; Image; Jellyfish; LTR-FINDER; ltrharvest; LTR STRUC; MEGA; Muscle; PASTECClassifier; PBJelly; Phylip; PicardTools; PILER; Plink; Polyphen2; RECON; RegRNA; RepeatMasker; RepeatModeler; RepeatScout; REPET; Samtools; SHAPEIT; Smoove; SNeP; Snphylo; SOAPdenovo2; Speedseq; STRUCTURE; Symap; T-COFFEE; Treemix; TRF; Trimmomatic; Trinity; USEARCH; VCFtools; wgs-assembler
- Programming** Expertise in Python (biopython, pysam, numpy, networkx), R (ggplot, adegenet, vcfR, dendextend, gdsfint, GenomicRanges, hierfstat, rbamtools, SeqArray), and Bash. Professional experience with C, Java, AWK, SQL, CSS, HTML, and PHP. Familiarity with Javascript, Perl, C++, BASIC, Squeak Smalltalk and ARM Assembly.

AWARDS & SCHOLARSHIPS

- 2015 Arne H. Lane Graduate Fellowship in Marine Science (\$12,500)
- 2015 UVic Graduate Award for Degree Progress (\$5,000)
- 2014 UVic Graduate Award (\$1,760)
- 2014 UVic Biology Department Conference Travel Award (\$500)
- 2013 British Columbia Jobs Plan Graduate Student Fellowship (\$15,000)
- 2012 Best Poster Presentation at the 9th International Sea Lice Conference (\$2,500)
- 2008 NSERC Undergraduate Student Research Award (\$4,500)
- 2008 Gordon Fields Memorial Scholarship (\$200)
- 2005 UVic Undergraduate Entrance Scholarship (\$2,000)
- 2005 BC Government Passport to Education (\$1,000)
- 2005 BC Provincial Scholarship Award (\$1,000)

2005 Rotary Club of Sidney Scholarship (\$1,000)
2003 Duke of Edinburgh's Award – Bronze Level

WORK EXPERIENCE

Research Associate

2018-Present

Koop Lab, Biology/Centre for Biomedical Research, University of Victoria

- Developed SNP and Structural Variant discovery pipelines using HPC systems
- Performed population genomic analysis on 300+ individuals from three salmonid species to identify geographic patterns of variation and landscape genomic features of note
- Coordinated the technical portion of a successful Compute Canada resource allocation worth \$36,500

Assistant System Administrator

2010; 2016-2018

Bamfield Marine Sciences Centre

- Solely responsible for day-to-day network and computing systems at a medium-sized remote education and research station for month-long periods while primary administrator was on leave
- Oversaw the programming and configuration of switching hardware and assisted with the physical expansion and upgrade of network infrastructure
- Implemented numerous station services including the Moodle learning platform, an evaluation and report-generation module, a course application form and a slideshow-style announcement service

Masters Student and Research Assistant

2011-2018

Koop Lab, Biology/Centre for Biomedical Research, University of Victoria

- Created *de novo* transposable element repeated-DNA databases for five salmonid and two sea louse species and reconstructed historical patterns of TE activity
- Responsible for producing reference genome and transcriptome assemblies for Northern pike
- Identified commercially-important sex-specific genetic markers in Sablefish using my own kmer-based technique
- Assisted professors and graduate students with a wide array of bioinformatics tasks
- Implemented the algorithm for GO Trimming, a software tool to reduce redundant terms in Gene Ontology datasets

Self-employed Tutor

2006-2018

Victoria, BC

- Assisted students in mastering high school- and university-level topics in math, biology, chemistry, physics, computer science, child and youth care and program evaluation

Programmer and System Administrator

2008-2011

Viral Bioinformatics Resource Centre, University of Victoria

- Developed analytical software tools to identify patterns in virus genomes, in particular the influenza virus
- Responsible for the upkeep, backup and continued functionality of VBRC's databases and servers

Senior Help Desk Consultant

2008-2009

University of Victoria

- Served as the first point of contact for all university computing issues, serviced hardware, assisted employees with migration to Microsoft Exchange and SharePoint systems, and troubleshooted user identity and credential issues at all levels of the university community, including the President's office

Field Biologist

2007

D.G. Regan and Associates

- Maintained a bi-weekly survey of over 500 larval mosquito breeding sites on southern Vancouver island in accordance with the Provincial West Nile Virus program.
- Applied biological larvicide to specific problem areas following an Integrated Pest Management Plan
- Wrote several season-end municipal progress reports.

VOLUNTEER EXPERIENCE

2013 – Present	Emergency Floor Coordinator, Petch Building
2014	Co-chair, UVic Biology Dept. Graduate Student Symposium
2013	Media committee member, UVic Biology Dept. Graduate Student Symposium
2013	Volunteer, “Café Scientifique” community seminar series
2003 – 2011	Volunteer, service projects and programs organized through the Kiwanis volunteer organization
2008 – 2010	Workshop presenter, Kiwanis CKI volunteer organization district convention
2009 – 2010	Technology and records chair, Pacific Northwest District of Kiwanis CKI
2009, 2010	Overall chair, ‘Bonspiel’ international volunteer service weekend in Victoria, BC.
2008 – 2009	Executive board member, Pacific Northwest District of Kiwanis CKI.
2006 – 2007	Co-president, UVic Kiwanis CKI Volunteer Club

PEER-REVIEWED PUBLICATIONS

† Authors contributed equally

Pearse DF, Barson N, Nome T, Gao G, Campbell M, Abadía-Cardoso A, Anderson E, Rundio DE, Williams TH, Naish KA, Baranski M, Moen T, Liu S, Kent M, **Minkley DR**, [14 others]. Sex-dependent dominance maintains migration supergene in rainbow trout. *In review at Nature Ecology and Evolution*.

Jacobs A, Carruthers M, Yurchenko A, Gordeeva NV, Alekseyev SS, Hooker O, Leong JS, Minkley DR, Rondeau EB, Koop BF, Adams CE, Elmer KR. Parallelism in eco-morphology and gene expression despite variable evolutionary and genomic backgrounds in a Holarctic fish. *Submitted to PLoS Genetics*.

Christensen KA[†], Rondeau EB[†], **Minkley DR[†]**, Leong JS[†], Nugent CM, Danzmann RG, Ferguson MM, Stadnik A, Devlin RH, Muzzerall R, Edwards M, Davidson WS, Koop BF (2018). The Arctic charr (*Salvelinus alpinus*) genome and transcriptome assembly. *PLoS One* **13**(9): e0204076.

Messmer AM, Leong JS, Rondeau EB, Mueller AM, Despina CA, **Minkley DR**, Kent MP, Lien S, Boyce B, Morrison D, Fast MD, Norman JD, Danzmann RG, Koop BF. A 200K SNP chip reveals a novel Pacific

salmon louse genotype linked to differential efficacy of Emamectin benzoate (2018). *Marine Genomics*. doi.org/10.1016/j.margen.2018.03.005

Christensen KA, Leong JS, Sakhrani D, Biagi CA, **Minkley DR**, Withler RE, Rondeau EB, Koop BF, Devlin RH (2018). Chinook salmon (*Oncorhynchus tshawytscha*) genome and transcriptome. *PLoS One* **13**(4): e0195461.

Lien S, Koop BF, Sandve SR, Miller JR, Kent MP, Nome T, Hvidsten TR, Leong J, **Minkley DR**, ... [37 others] (2016). The Atlantic salmon genome provides insights into rediploidization. *Nature* **533**:200-205.

Minkley DR, Whitney MJ, Lin S, Barsky MG, Kelly C, Upton C (2014). Suffix tree searcher: exploration of common substrings in large DNA sequence sets. *BMC Research Notes* **7**:466.

Rondeau EB, **Minkley DR**, Leong JS, Messmer AM, Jantzen JR, von Schalburg KR, Lemon C, Bird NH, Koop BF (2014). The genome and linkage map of the northern pike (*Esox lucius*): conserved synteny revealed between the salmonid sister group and the Neoteleostei. *PLoS One* **9**: e102089.

Rondeau EB, Messmer AM, Sanderson DS, Jantzen SG, von Schalburg KR, **Minkley DR**, Leong JS, Macdonald GM, Davidsen AE, Parker WA, Mazzola RSA, Campbell B, Koop BF (2013). Genomics of sablefish (*Anoplopoma fimbria*): expressed genes, mitochondrial phylogeny, linkage map and identification of a putative sex gene. *BMC Genomics* **14**:452.

von Schalburg KR, Gowen BE, Rondeau EB, Johnson NW, **Minkley DR**, Leong JS, Davidson WS, Koop BF (2013). Sex-specific expression, synthesis and localization of aromatase regulators in one-year-old Atlantic salmon ovaries and testes. *CBP Part B* **164**: 236-246.

Jantzen SG, Sutherland BJG, **Minkley DR**, Koop BF (2011). GO Trimming: Systematically reducing redundancy in large Gene Ontology datasets. *BMC Research Notes* **4**:267.

PRESENTATIONS

Expansion of repeated DNA has differentially shaped the genomes of salmonids. Oral presentation at the 2017 UVic Biology Department Graduate Student Symposium. Victoria, BC, Canada

Salmon bioinformatics: Whole-genome duplications and transposable elements. Invited oral presentation as part of the Bamfield Marine Science Centre 2016 Fall Seminar Series. Bamfield, BC, Canada

Travelling DNA: Horizontal transfer of transposable elements and the evolution of salmon. Oral presentation at the 2014 UVic Biology Department Graduate Student Symposium. Victoria, BC, Canada.

Travelling DNA: Horizontal transfer of transposable elements and the evolution of salmon. Oral presentation at the 2014 Brackendale Ecology and Evolution Retreat. Brackendale, BC, Canada.

Massive proliferation of transposable elements following the salmonid whole-genome duplication. Poster presented in 2014 at the 2nd International Conference on Integrative Salmonid Biology. Vancouver, BC, Canada.

Massive proliferation of Tc1-Mariner transposable elements following the salmonid whole-genome duplication. Poster presented at the 2014 Keystone Symposium on Mobile Genetic Elements and Genome Evolution. Santa Fe, USA.

Evolution of the Salmonids: transposable element proliferation and the Salmonid whole-genome duplication. Oral presentation at the 2014 Pacific Ecology and Evolution Conference (PEEC). Bamfield, BC, Canada.

Proliferation of transposable elements following Salmonid genome duplication. Oral presentation at the 2013 Annual UVic Biology Department Graduate Student Symposium. Victoria, BC, Canada.

Transposable element abundance in Atlantic and Pacific *Lepophtheirus salmonis* (Krøyer) genomes. Poster presented at the 9th International Sea Lice Conference. Bergen, Norway

REFERENCES

Available upon request