MORGAN G. I. LANGILLE, PhD

UC Davis Genome Center, 451 East Health Sciences Drive, Davis, CA, 95616
Tel: 530-752-8409 (work); 916-760-7554 (home)
Webpage: http://www.morganlangille.com
E-mail: mlangille@ucdavis.edu

EDUCATION

2004-2009	Ph.D. Molecular Biology and Biochemistry	Simon Fraser University Burnaby, BC, Canada
1999 – 2004	B.Sc, First Division Major in Biology	University of New Brunswick Fredericton, NB, Canada
1999 – 2004	B.CS, First Division	University of New Brunswick Fredericton, NB, Canada

RESEARCH & RELEVANT WORK EXPERIENCE

2009-Current	**Post-Doctoral Fellow** • Development of new computational methods for the analysis of metagenomics data as part of the iSEEM project. • Leading the comparative genomic analysis of 8 newly sequenced Archaea halophile species. • Developed a new file sharing service for scientists called BioTorrents.	Dr. Jonathan Eisen UC Davis, Davis, Ca
2004-2009	**Ph.D. Thesis** • Developed new computational methods for the identification of genomic islands (large regions of horizontal gene transfer) within bacterial genomes using comparative genomics: http://www.pathogenomics.sfu.ca/islandviewer/ • Led genome annotation of newly sequenced *P. aeruginosa* strain • See publications and abstracts for more details	Dr. Fiona Brinkman MBB, SFU Burnaby, BC
06/2008-08/2008	**Bioinformatics Instructor** • Taught introductory classes on bioinformatics	B.C. Institute of Technology Burnaby, BC
06/2007	**Private Consulting** • Computational analysis of metagenomic data obtained from a sand sample	Dr. Robert Naviaux UC San Diego San Diego, CA, USA
06/2007	**Canadian Bioinformatics Workshop** • Instructor for 2 lectures • Teaching assistant during entire workshop	UBC Michael Smith Laboratories Vancouver, BC

09/2005- 12/2005	**Bioinformatics Graduate Program Lab Rotation** • Ontology development for flow cytometry data • Included use of OWL (Web Ontology Language), XML and XSLT languages	Dr. Ryan Brinkman Terry Fox Laboratory BC Cancer Research Centre (BCCRC) Vancouver, BC
01/2005- 04/2005	**Bioinformatics Graduate Program Lab Rotation** • Deconstruction of data transformations using reusable web services • Included development of SOAP (Simple Object Application Protocal) web services	Dr. Mark Wilkinson iCapture St. Paul's Hospital Vancouver, BC
12/2004- 02/2005	**Graduate Course Research Project** • Computational algorithm and tool development for improvement of medical image segmentation • Included programming in Matlab and C • See publications	Dr. Ghassan Hamarneh SFU Burnaby, BC
2003 & 2004	**Summer Research Student** • Detection of retrotransposition gene duplications in *Drosophila melanogaster* and their expression profiles • See publications	Dr. Denise Clark UNB Fredericton, NB
2002	**Summer Research Student** • Analysis and proposal of an improvement on PSI-BLAST	Dr. Patricia Evans UNB Fredericton, NB
09/2001- 05/2003	**Educational Resident Assistant** • Academic/personal advising • Organizing and scheduling of seminars • Conflict mediation between residents	Residential Life and Conference Services UNB, Fredericton, NB

PUBLICATIONS

1. **Langille MGI,** Hsiao WWL, Brinkman FSL (2010) "Detection of genomic islands using bioinformatics approaches", *Nature Reviews Microbiology*, 8(5), 373-82.

2. **Langille MGI** and Eisen JA (2010) "BioTorrents: A File Sharing Service for scientific data" *PLoS One*, 5(4): e10071.

3. Ho Sui SJ, Fedynak A, Hsiao WWL, **Langille MGI**, Brinkman FSL (2009) "The association of virulence factors with genomic islands", *PLoS One*, 4(12): e8094.

4. **Langille MGI** (2009) "Computational prediction and characterization of genomic islands: insights into bacterial pathogenicity", Ph.D. dissertation, Simon Fraser University, Burnaby, BC, Canada.

5. **Langille MGI** and Brinkman FSL (2009) "Bioinformatic detection of horizontally transferred DNA in bacterial genomes", *F1000 Biology Reports*, 1:25.

6. **Langille MGI** and Brinkman FSL (2009) "IslandViewer: an integrated interface for computational identification and visualization of genomic islands", *Bioinformatics*, 25(5):664-5.

7. Winstanley C, **Langille MGI**, Fothergill JL, Kukavica-Ibrulj I, Paradis-Bleau C, Sanschagrin F, Thomson NR, Winsor GI, Quail MA, Lennard N, Bignell A, Clarke L, Seeger K, Saunders D, Harris D, Parkhill J, Hancock REW, Brinkman FSL, and Levesque RC (2008). "Newly introduced genomic prophage islands are critical determinants of *in vivo* competitiveness in the Liverpool Epidemic Strain of *Pseudomonas aeruginosa*", *Genome Research*, 19(1):12-23.

8. **Langille MGI,** Hsiao WWL, Brinkman FSL (2008). "Evaluation of genomic island predictors using a comparative genomics approach", BMC Bioinformatics, 9:329

9. **Langille MGI** and Clark DV (2007). "Parent genes of retrotransposition-generated gene duplicates in *Drosophila melanogaster* have distinct expression profiles", Genomics, 90(3):334-43.

10. Spidlen, J, Gentleman RC, Haaland PD, **Langille MGI**, Meur NL, Ochs MF, Schmitt C, Smith CA, Treister AS, Brinkman RR (2006). "Data standards for flow cytometry", OMICS, 10(2):209-14.

11. Chodorowski A, Mattsson U, **Langille MGI**, Hamarneh G (2005). "Color Lesion Boundary Detection Using Live Wire", Proceedings of SPIE Medical Imaging: Image Processing, 5747:1589-96.

12. Hamarneh G, Yang J, McIntosh C, **Langille MGI** (2005). "3D live-wire-based semi-automatic segmentation of medical images", Proceedings of SPIE Medical Imaging: Image Processing, 5747:1597-603.

BOOK CHAPTERS

1. **Langille, M.G.I.**, F. Zhou, A. Fedynak, W.W.L. Hsiao, Y. Xu, F.S.L. Brinkman. Mobile genetic elements and their prediction, *In* Y. Xu and J.P. Gogarten (eds.), *Computational Methods for Understanding Bacterial and Archaeal Genomes*, Series on Advances in Bioinformatics and Computational Biology, Vol. 7. Imperial College Press, London, 2008.

ABSTRACTS

1. **Langille MGI** and Eisen JA (2010) "BioTorrents: a file sharing service for scientific data" 110th General Meeting of the American Society for Microbiology, May 23-27, 2010, San Diego, California, USA.

2. **Langille MGI** and Eisen JA (2009) "BioTorrents: a file sharing service for scientific data" Biology and Mathematics in the Bay Area Meeting, Nov. 14, 2009, Santa Cruz, California, USA.

3. Winsor GL, Rossum TV, Fleming LA, Lo R, Yu N, **Langille MGI**, Whiteside MD and Brinkman FSL (2009). "Computational Methods to Aid Comparative Analysis of Microbial Genomes." Genome Informatics, October 27-30, 2009, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA.

4. **Langille, M.G.I.,** and F.S.L. Brinkman (2008). "IslandPick and IslandViewer: Tools for the computational identification and visualization of genomic islands." 16th Annual International Meeting on Microbial Genomics, September 14-18, 2008, Lake Arrowhead, California, USA.

5. **Langille, M.G.I**., W.W.L Hsiao, and F.S.L. Brinkman (2007). "Automated detection of prokaryotic genomic islands using a comparative genomics approach." 15th Annual International Conference on Intelligent Systems for Molecular Biology, July 21-25, 2007, Vienna, Austria.

6. Fedynak, A., C.K. Ho, **M.G.I. Langille**, and F.S.L. Brinkman (2007). "Identification of novel essential genes and pathogen-associated genomic regions". Canadian Society for Microbiologists Annual General Meeting. June 17-20, 2007, Quebec, Canada.

7. **Langille, M.G.I**., W.W.L Hsiao, A. Fedynak, C.K. Ho, and F.S.L. Brinkman (2007). "Development and analysis of data sets of prokaryotic genomic islands." Pacific Symposium on Biocomputing, January 3-7, 2007, Maui, Hawaii, USA.

8. Hokamp, K., F.M. Roche, **M. Langille**, M. Acab, D.L. Fulton, M. Laird, Y. Li, R. Lo, S.K. Chan, L.A. Babiuk, R.E.W. Hancock and F.S.L. Brinkman (2006). "Bioinformatics Tools for Cross-species Comparisons of Microarray Data." World Microarray Congress 2006, March 24-25, 2006, Vancouver, B.C., Canada.

9. **Langille, M.**, W.W.L. Hsiao, D.L. Fulton, Y.Y. Li, M.R. Laird and F.S.L. Brinkman (2006). "Ortholuge and IslandPath: tools for the genome-wide detection of orthologs and genomic islands." International Conference on Phylogenomics, March 15-19, 2006. Sainte-Adèle, PQ, Canada.

10. Hsiao, W.W.L., **M. Langille**, A. Fedynak, P. Chilana and F.S.L. Brinkman (2006). "Genomic island analysis: Improved web-based software and insights into an apparent gene pool associated with genomic islands." ASM Northwest Branch Meeting 2006, March 10-12, 2006, Seattle, Washington, USA.

11. Hsiao, W.W.L., **M. Langille**, and F.S.L. Brinkman (2005). "Computational characterization of genomic islands: Insights into a large, novel gene pool." National Academy of Sciences Sackler Tapestry of Life Colloquium: Lateral Transfers of Heritable Elements, December 12-13, 2005, Irvine, CA, USA.

12. Wang, D., **M. Langille**, S. Leung, M. Wilkinson (2005). "Investigation of Data Transformation Frameworks for Enhancing the Interoperability of Bioinformatic Web Services" iCAPTURE Summer Student Research Day, The James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research, Department of Pathology and

Laboratory Medicine, St. Paul's Hospital / Providence Health Care-University of British Columbia, Vancouver, BC, Canada

INVITED PRESENTATIONS

1. "BioTorrents: A File Sharing Service For Scientific Data" Open Science Summit, Jul. 30, 2010, Berkeley, California, USA.

2. "BioTorrents: A File Sharing Service For Scientific Data" Bioinformatics Technology Forum, Jun. 1, 2010, UC Davis, Davis, California, USA.

3. "Computational identification of bacterial genomic islands (large regions of horizontal gene transfer)" Bioinformatics Technology Forum, Nov. 17, 2009, UC Davis, Davis, California, USA.

4. "An introduction to systems biology and network visualization" Techniques in Biotechnology, August 11 & 12, 2008, BCIT, Burnaby, BC, Canada

5. "An introduction to bioinformatics, databases, and NCBI" Techniques in Biotechnology, June 9 & 16, 2008, BCIT, Burnaby, BC, Canada

6. "A graduate student's experience in bioinformatics" BiNS - Bioinformatics Night at SFU, Feb. 29, 2008, SFU, Burnaby, BC, Canada

7. "Introduction to Algorithms in Bioinformatics" Canadian Bioinformatics Workshop, June 22, 2007, UBC Michael Smith Laboratories, Vancouver, BC, Canada

8. "Whole Genome Alignments" Canadian Bioinformatics Workshop, June 21, 2007, UBC Michael Smith Laboratories, Vancouver, BC, Canada

9. "Developing an ontology for flow cytometry data" Bioinformatics Graduate Program Colloquium, November 25, 2005, Vancouver, BC, Canada.

10. "Identifying Genomic Islands Using Comparative Genomics" Vancouver Bioinformatics Users Group (VanBUG), November 17, 2005, Vancouver, BC, Canada.

11. "Comparative Genomics Approach to Identifying Genomic Islands" Bioinformatics Graduate Program Colloquium, September 12, 2005, Vancouver, BC, Canada.

12. "Deconstruction of data transformations into reusable web services" Bioinformatics Graduate Program Colloquium, March 11, 2005, Vancouver, BC, Canada.

13. "Developing an ontology for flow cytometry data" 15th Cytometry development workshop, October 27, 2005, San Hose, CA, USA

AWARDS AND HONOURS

2008	SFU President's PhD Research Stipend	$6000
2008	MBB Travel Fellowship	$450

2006	MSFHR Junior Graduate Studentship Research award	$45,000
2005	NAS Sackler Colloquium Tapestry of Life Conference Travel Grant	$350
2004	CIHR/MSFHR Strategic Training Program in Bioinformatics Award	$36,000
2003	John J. McCaffrey Scholarship	$800
2002	NSERC - Undergraduate Student Research Award	$4800
2001	Khaki University & YMCA Scholarship	$700
2000	Rolf Riegger Bursary	$950
2000	Purdy MacDonald Scholarship	$250
1999	Martha Fraser McIntosh Scholarship	$675
1999	Brock A. Turner Memorial Scholarship	$825

TEACHING

2008	BCIT BIOT 5800 Bioinformatics Summer Instructor	Burnaby, BC
2007	Canadian Bioinformatics Workshop Instructor	Vancouver, BC
2005	Problem Based Learning Teaching Assistant	Simon Fraser University
2004	Shad Valley Students Orientation Workshop Teacher	Simon Fraser University

COMPUTATIONAL SKILLS

Programming Languages
- Extensive use of object oriented programming in Perl.
- Previous use or formal training in Java, C, Matlab, and R.
- Experience with parallel programming on a 50+ computer cluster.

Database and Web Development
- Thorough understanding of relational database design and extensive use of MySQL.
- Comfortable using PHP, JavaScript, HTML, CSS, and XML for web design.

Software
- Operating systems: Windows and Linux/Unix (Suse, Ubuntu)
- Versioning systems: CVS, SVN, and GIT
- Parallel processing and computer cluster usage
- Bioinformatic tools: including but not limited to, Blast, Clustal, Phylip, Cluster, Muscle, Cytoscape, HMMer, and Mauve. Also very familiar with querying public primary and secondary biological databases and the use of genome browsers, structural visualization tools, microarray tools, etc.
- Familiar with common computer science algorithms, such as dynamic programming, hidden Markov models (HMMs), and support vector machines (SVMs).

TRAINING

2007	Genome Annotation	Sanger Centre, England
2005	Ensembl Web/Developer Workshop	UBC Michael Smith Laboratories
2005	Molecular Biology Techniques Workshop	UBC Michael Smith Laboratories
2004	ACUC SCUBA Certificate	University of New Brunswick
2001	Student Orientation	University of New Brunswick
2001	Conflict Mediation	University of New Brunswick

COMMITTEES

2007   SFU MBB Graduate Caucus, Treasurer
2006   Canadian Society for Systems Biology Steering Committee
2005   CIHR/MSFHR Training Program in Bioinformatics Student Caucus
2005   CIHR/MSFHR Training Program in Bioinformatics Steering Committee

MEMBERSHIPS

2010   The American Society for Microbiology
2006   International Society for Computational Biology

REFERENCES

Available upon request.