

ALEEZA C. GERSTEIN

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Citizenship: Canadian

EDUCATION & APPOINTMENTS

- 2018 Assistant Professor, The University of Manitoba
Departments of Microbiology and Statistics
- 2015 Banting Postdoctoral Fellow, Canadian Institutes of Health Research.
Department of Microbiology, University of Minnesota. Advisor: Dr. Kirsten Nielsen
- 2013 Postdoctoral Fellow, National Sciences and Engineering Research Council of Canada &
Azrieli International Postdoctoral Fellowship. Department of Molecular Microbiology &
Biotechnology, Tel Aviv University and Department of Genetics, Cell Biology & Development,
University of Minnesota. Advisor: Dr. Judith Berman
- 2012 Doctorate of Philosophy, Zoology, University of British Columbia.
Advisor: Dr. Sarah (Sally) Otto
- 2006 Master of Science, Zoology, University of British Columbia. Advisor: Dr. Sarah (Sally) Otto
- 2003 Bachelor of Science (Honours), Ecology & Evolution, University of Western Ontario

PUBLICATIONS (*directly-mentored undergraduate student; **equal contribution)

- Overview: 15 first author papers H-index: 13
20. A. Forche, G. Cromie, **A.C. Gerstein**, A.C., N. Solis, Z. Pisithkul, W. Srifa, E. Jeffery, D. Abbey, S.G. Filler, A. Dudley, J. Berman. (2018) Oral cavity exposure yields rapid phenotypic and genotypic diversification in *C. albicans*. *GENETICS*. 209: 725-741.
19. **A.C. Gerstein**, H. Lim*, J. Berman & M. Hickman (2017) Ploidy tug-of-war: Evolutionary and genetic environments influence the rate of ploidy drive in a human fungal pathogen. *Evolution*. 71: 1025-1038.
18. **A.C. Gerstein** & K. Nielsen (2017) It's not all about us: Evolution and maintenance of *Cryptococcus* virulence requires selection outside the human host. *Yeast*. 34: 143-154.
17. J. Ono, **A.C. Gerstein** & S.P. Otto (2017) Widespread genetic incompatibilities between first-step mutations during parallel adaptation of *Saccharomyces cerevisiae* to a common environment. *PLoS Biology*. 15: e1002591.
16. **A.C. Gerstein**, A. Rosenberg, I. Hecht & J. Berman (2016) *diskImageR*: Quantification of resistance and tolerance to antimicrobial drugs using disk diffusion assays. *Microbiology*. 162: 1059-1068.
15. **A.C. Gerstein****, M.S. Fu**, K. Ormerod, Z. Li, J. Fraser, J. Berman & K. Nielsen (2015) Polyploid titan cells produce haploid, diploid, and aneuploid progeny to promote stress adaptation. *mBio*.

5: e01340-15.

14. **A.C. Gerstein** & J. Berman (2015) Shift and adapt: the cost and benefits of karyotypic variation. *Current Opinion in Microbiology*. 26: 130-136
13. **A.C. Gerstein****, J. Ono**, D.S. Lo*, M. Campbell*, A. Kuzmin & S.P. Otto (2014) Too much of a good thing: The unique and repeated paths towards copper adaptation. *Genetics*. 199: 555-571
12. M. Z. Anderson, **A.C. Gerstein**, L. Wigen, J.A. Baller & J. Berman (2014) Silencing is noisy: Population and cell level noise in telomere-adjacent genes is dependent on telomere position and Sir2. *PLoS Genetics*. 10: e1004436
11. **A.C. Gerstein**, A. Kuzmin & S.P. Otto (2014) Loss of heterozygosity facilitates passage through Haldane's sieve for *Saccharomyces cerevisiae* undergoing adaptation. *Nature Communications*. DOI: 10.1038/ncomms4819. (Selected as an exceptional recommended read by F1000Prime)
10. **A.C. Gerstein** (2012) Mutational effects depend on ploidy: All else is not equal. *Biology Letters*. 9: 20120614
9. **A.C. Gerstein**, D.S. Lo* & S.P. Otto (2012) Parallel genetic changes and non-parallel gene-environment interactions underlie drug resistance in yeast. *Genetics*. 192: 241-252
8. **A.C. Gerstein** & S.P. Otto (2011) Diploid superiority over haploids during *Saccharomcyes cerevisiae* batch culture evolution is not explained by fitness assays. *PLoS One*. 6: e26599
7. **A.C. Gerstein** & J.-S Moore (2011) Perspective. Small is the new big: Assessing the population structure of microorganisms. *Molecular Ecology*. 20, 4385–4387
6. **A.C. Gerstein**, M.A. Mandegar*, L.A. Cleathero* & S.P. Otto (2011) Haploid adapt faster than diploids across a range of environments. *Journal of Evolutionary Biology*. 24:531-540
5. **A.C. Gerstein** & S.P. Otto (2009) The causes of evolution. *Journal of Heredity*. 100: 571-581
4. S.P. Otto & **A.C. Gerstein** (2008) Primer: The evolution of haploidy and diploidy. *Current Biology*. 18: R1121-R1124
3. **A.C. Gerstein**, R. McBride & S.P. Otto (2008) Ploidy reduction in *Saccharomyces cerevisiae*. *Biology Letters*. 4: 91-94
2. **A.C. Gerstein**, H.E. Chun, A. Grant & S.P. Otto (2006) Genomic convergence toward diploidy in *Saccharomyces cerevisiae*. *PLoS Genetics*. 9: e145
1. S.P. Otto & **A.C. Gerstein** (2006) Why have sex? The population genetics of sex and recombination. *Biochemical Society Transaction*. 34(4): 519-522

In review:

21. M. Mandic, M.L. Ramon, **A.C. Gerstein**, A.Y. Gracey & J.G. Richards. Variable gene transcription underlies phenotypic convergence of hypoxia tolerance in sculpins.
22. S Yeaman, **A.C. Gerstein**, K.A. Hodgins, M.C. Whitlock. Quantifying how constraints limit the diversity of viable routes to adaptation. *In review at PLoS Genetics*.

SOFTWARE

1. *diskImageR*: analysis pipeline to analyze drug resistance and tolerance from photographs of disk diffusion assays. Available for download on CRAN and at <https://github.com/acgerstein/diskImageR>

FELLOWSHIPS AND GRANTS (total dollar amount)

- 2015 Banting Postdoctoral Fellow, 2 years, CIHR (\$140 000 CAD)
- 2013 Merck Non-Clinical Investigator Studies Program grant (with Dr. Judith Berman)
- 2013 Molecular Mycology course scholarship, Marine Biology Laboratories (\$1530 USD)
- 2013 Postdoctoral Fellowship, 2 years, NSERC (\$80 000 CAD)
- 2013 Postdoctoral Fellowship, 1 year, Azrieli Foundation (\$40 000 CAD)
- 2011 Faculty of Science Graduate Fellowship, 1 year, University of British Columbia (\$11 000 CAD)
- 2009 Killam Predoctoral Fellowship, 2 years, University of British Columbia (\$55 000 CAD)
- 2009 Travel grant, University of British Columbia Zoology Department (\$500 CAD)
- 2007 Canada Graduate Scholarship, 2 years, NSERC (\$70 000 CAD)
- 2006 McLean Fraser Research Fellowship, University of British Columbia (\$725 CAD)
- 2006 Postgraduate Masters Scholarship, 2 years, NSERC (\$34 000 CAD)
- 1999 The University of Western Ontario Continuing Scholarship, 4 years (\$8000 CAD)

AWARDS AND HONOURS

- 2014 Microbial and Plant Genomics Institute travel award, University of Minnesota (\$1000 USD)
- 2013 Delill Nasser Career Development travel award, Genetics Society of America (\$1000 USD)
- 2013 Microbial and Plant Genomics Institute travel award, University of Minnesota (\$400 USD)
- 2012 W.D. Hamilton Award for best student talk, Society for the Study of Evolution (\$500 USD)
- 2012 Talk award, Canadian Society for the Study of Ecology and Evolution (\$200 CAN)
- 2011 Honourable mention talk award, Universities of British Columbia Ecology & Evolution Retreat
- 2008 Honourable mention poster award, Universities of British Columbia E&E Retreat
- 2006 Best M.Sc. student talk award, University of British Columbia, Zoology Graduate Symposium

INVITED WORKSHOPS, MEETINGS & SYMPOSIUM PRESENTATIONS

- 2018 "150 Years of the American Naturalist" Symposium, American Society of Naturalists Stand-Alone meeting, California, USA
- 2015 "The Evolutionary Ecology of Complex Life Investment Strategies" workshop, The Santa Fe Institute, New Mexico, USA.
- 2015 "Genome and Metabolome Diversity" session; Elements, Genomes, and Ecosystems; a Royal Society Meeting, Buckinghamshire, England.
- 2013 Azrieli Fellows Forum, Tel Aviv, Israel.

- 2012 “Evolutionary and Population Genomics” session; Cellular & Molecular Fungal Biology Meeting, Gordon Research Conference, New Hampshire, USA.
- 2010 “Biodiversity: A Molecular Perspective” Symposium, Canadian Society for Ecology and Evolution, Quebec, Canada.

INVITED UNIVERSITY SEMINARS

- 2017 Department of Biological Sciences, The University of Calgary, AB Canada.
- 2015 Biology Department, The University of Winnipeg, MB Canada.
- 2015 Medical Microbiology & Immunology Department Bioinformatics Group, Creighton University, NE USA.
- 2015 Biology Department, Georgia Tech, GA USA.
- 2014 Department of Microbiology, The University of Manitoba, MB Canada.
- 2012 Department of Biological Sciences, The University of Calgary, AB Canada.
- 2012 Department of Biological Sciences, The University of Manitoba, MB Canada.
- 2012 Comparative Physiology Seminar, University of British Columbia, BC Canada.
- 2011 Biology Department, The University of Winnipeg, MB Canada.
- 2010 EEBB Graduate Colloquium Seminar, Michigan State University, MI USA.

SELECTED CONTRIBUTED PRESENTATIONS *(all oral unless noted)*

- 2017 Society for the Study of Evolution, OR USA.
- 2017 Fungal Genetics Conference, Genetics Society of America, CA USA. *(oral & poster)*
- 2017 UMycoNet, University of Minnesota Fungal Symposium, MN USA.
- 2015 Molecular Mechanisms in Evolution, Gordon Research Conference, MA USA. *(poster)*
- 2015 Fungal Genetics Conference, Genetics Society of America, CA USA. *(poster)*
- 2014 Evoltwin (Evolution in the Twin Cities), The University of Minnesota, MN USA.
- 2014 Cellular & Molecular Fungal Biology, Gordon Research Conference, NH USA. *(poster)*
- 2014 Genome Stability Seminar, The University of Minnesota, MN USA.
- 2013 Broad-Israel Cell Circuits Symposium, Jerusalem, Israel. *(poster)*
- 2012 Experimental Approaches to Evolution and Ecology using Yeast, EMBL Conference, Heidelberg, Germany. *(poster)*
- 2012 Joint Congress on Evolutionary Biology, ON Canada.
- 2012 Evolutionary Biologists of the Pacific Northwest, WA USA.
- 2012 Vancouver Area Yeast Meeting, BC Canada.
- 2011 Universities of British Columbia E&E Retreat, BC Canada.
- 2011 Microbial Population Biology, Gordon Research Conference, NH USA. *(poster)*
- 2011 Canadian Society for Ecology and Evolution, AB Canada.
- 2010 Society for the Study of Evolution, OR USA.

- 2010 Vancouver Area Yeast Meeting, BC Canada.
- 2009 Evolutionary and Ecological Functional Genomics, Gordon Research Conference, NH USA. (*poster*)
- 2008 Environmental and Evolutionary Genomics of Yeast, EMBL Conference, Heidelberg, Germany. (*poster*)
- 2005 Society for the Study of Evolution, AK USA.

ACADEMIC EMPLOYMENT

- 2017- Assistant program manager, *GENETICS* Program in Mentored Peer Review, Genetics Society of America
- 2011 Teaching assistant, University of British Columbia, Evolutionary Genetics
- 2010 Teaching assistant, University of British Columbia, Evolutionary Genetics
- 2008 Fact checker/expert reader, Whitlock, M.C. & D. Schluter. 2008. *The Analysis of Biological Data*. Roberts & Company, Greenwood Village, CO, USA.
- 2006 Teaching assistant, University of British Columbia, Biostatistics
- 2005 Teaching assistant coordinator, University of British Columbia, Biostatistics
- 2005 Teaching assistant, University of British Columbia, Biostatistics
- 2004 Teaching assistant, University of British Columbia, Experimental Biology

PROFESSIONAL WORKSHOPS AND COURSES ATTENDED

- 2017 Single Cell RNA-Seq Workshop, UC Davis Bioinformatics Training Program, 3 days
- 2015 Parallel Computing Overview, Minnesota Supercomputing Institute, 1 day
- 2015 Quality Control of Illumina Data at the Command Line, 1 day
- 2013 Molecular Mycology course, Marine Biology Lab at Woods Hole, 2.5-week intensive
- 2012 Introduction to Computer Science and Programming, MITx, 14 weeks
- 2012 Learn to Program: The Fundamentals, Coursera, 6 weeks
- 2011 Learning to Script in Python & Unix, UBC Biodiversity Research Center, 1 day
- 2011 Introduction to the UNIX operating system, UBC Biodiversity Research Center, 1 day
- 2010 Introduction to Bioinformatics using PERL, UBC Biodiversity Research Center, 3 days
- 2005 Teaching and Learning in the Life Sciences, Biology 535 graduate course, semester
- 2005 Instructional Skills Workshop, UBC Centre for Teaching, Learning and Technology, 3 days
- 2005 Learning Styles & Teaching Perspectives, UBC Centre for Teaching, Learning and Technology, 1 day

DIRECT SUPERVISION

Overview: 22 undergraduate students & 2 high school students

- 2014 Heekyung (Suzie) Lim, Honours thesis student, University of Minnesota
- 2014 Rachel Urbitas, Undergraduate directed research student, University of Minnesota
- 2013 Zohar Meir, Undergraduate project student, Tel Aviv University
- 2012-13 Matthew Campbell, Undergraduate work study & directed studies student, UBC
- 2011 Tracey Hinder, Undergraduate work study student, UBC
- 2011 Anna Van Tol, Undergraduate work study student, UBC
- 2011 Andrea Au, Undergraduate work study student, UBC
- 2010-11 Karl Heilbron, NSERC USRA student, UBC
- 2010-11 William Li, Undergraduate work study student, UBC
- 2010 Shing Zhan, Undergraduate directed studies course, UBC
- 2010 Sherry Li, Undergraduate work study student, UBC
- 2009-12 Dara Lo, Undergraduate work study student, UBC
- 2009 Yukon Chen, Undergraduate directed studies project, UBC
Won best poster at the UBC Multidisciplinary Undergraduate Research Student conference.
- 2009 Lisa Anderson, Undergraduate work study student, UBC
- 2009 Emma Hodgson, Undergraduate work study student, UBC
- 2008-10 Omar Kamal & Benny Lo, High School research projects.
Students from an underprivileged middle school that I mentored for the Vancouver Regional Science Fair in conjunction with Lets Talk Science.
- 2008 Gurpreet Khadir, Undergraduate work study student, UBC
- 2007-09 Will Tang, Undergraduate work study student, UBC
- 2005-07 Laura Glaubrach, Undergraduate work study student, UBC
- 2005 Lesley Cleathero, NSERC USRA student, UBC
- 2004-05 Mohammed Mandegar, NSERC USRA student, UBC
- 2004 Simon Wu, NSERC USRA student, UBC
- 2004 Elizabeth Chun, Undergraduate work study student, UBC

SERVICE TO THE COMMUNITY AND OUTREACH

- 2017- OurWinnipeg Community Advisory Panel
- 2017- 18 Co-Chair, Early Career Scientists Communications and Outreach Committee;
Genetics Society of America
- 2016-17 Publications Committee Trainee Representative; Genetics Society of America
- 2016-17 Reviewer, Game Changer: Manitoba's Idea Competition; University of Manitoba
- 2016-17 Leadnow Community Organizer; Winnipeg, Manitoba
- 2016 Victoria Hospital Research & Evaluation Volunteer Associate; Winnipeg Regional Health

Authority, Winnipeg, Canada

- 2004-12 Member, Zoology Graduate Students Association; UBC Zoology
2009-12 Zoology Graduate Student Mentor; UBC Zoology
2011 Primary organizer, Learning to Script in Python & UNIX Workshops; UBC Biodiversity Research Center workshops
2009-10 Chair, Zoology Graduate Student Mentorship Program; UBC Zoology
2009 Demonstrator, *Gee! in Genome* exhibit at Science World; Vancouver, Canada
2007 Primary organizer and concepter, An Evening of Biologists Socializing; Vancouver, Canada
2008 Organizing committee, the Srivastava Women in Science Workshop; UBC
2008 Organizing committee, Graduate Student Symposium; UBC Zoology
2008 Organizing committee, EEB Evolution Lecture; UBC Zoology
2007-08 Vice president, Graduate Student Association; UBC Zoology
2007 Primary organizer, Universities of British Columbia E&E Retreat; British Columbia Canada
2006 Organizing committee, International Genetics of Speciation meeting
2006 Organizing committee, the Graduate Student Society Interdisciplinary Conference; UBC
2006 Organizing committee, Graduate Student Symposium; UBC Zoology
2005-06 Coordinator, Vancouver Evolution Group; Vancouver, Canada
2005 Student representative, Wesbrook Scholarship Award committee; UBC
2005 Graduate student representative, Premier Undergraduate Award committee; UBC
2004-06 Departmental representative, Graduate Student Society (GSS); UBC
2004-06 Committee member, GSS External Committee; UBC
2004-05 Committee member, GSS House/Finance Committee; UBC
2004-05 Primary organizer, DIRT Lunch, a weekly student seminar series; UBC Zoology

REVIEWING

Journals: American Naturalist, Axios Review, Biological Journal of the Linnean Society, BMC Genomics, Cell Reports, Ecology Letters, Ecology & Evolution, Evolution, G3 (Genes|Genomes|Genetics), GENETICS, Heredity, Journal of Biological Dynamics, Molecular Biology and Evolution, Molecular Ecology, Nature Ecology and Evolution, PLoS One, Proceedings of the Royal Society Biology, Proceedings of the Royal Society Open Science, Yeast

Funding Agencies: GWIS (Graduate Women in Science) Fellowship, French National Research Agency, The Leverhulme Trust, United States National Science Foundation

PROFESSIONAL SOCIETY MEMBERSHIP

Genetics Society of America (GSA), Society for the Study of Evolution (SSE), American Society for Microbiology (ASM)

CAREER INTERRUPTION

06/2016-02/2017 Maternity leave (9 months)