

Nathaniel Sharp – Curriculum Vitae

Biodiversity Research Centre & Department of Zoology
University of British Columbia

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EDUCATION AND PROFESSIONAL EXPERIENCE

- 2014- *Banting / NSERC / Killam* Postdoctoral Fellow, Dept. of Zoology, University of British Columbia, Canada. Advisors: Sally Otto and Mike Whitlock.
- 2008-14 Ph.D., Dept. of Ecology and Evolutionary Biology, University of Toronto, Canada. Thesis: *New mutations: condition-dependent rates and sex-specific effects*. Advisor: Aneil Agrawal.
- 2004-08 Hon. B.Sc. with High Distinction, Ecology and Evolutionary Biology. University of Toronto, Canada.

PUBLICATIONS

Sharp NP, Sandell L, James C, Otto SP. Genome-wide effects of ploidy on spontaneous mutation in yeast. In prep.

Sharp NP, Agrawal AF. Mutation-selection balance and the maintenance of genetic variation in sex-specific fitness components in *Drosophila melanogaster*. In revision.

13. Gilbert KJ, Sharp NP, Angert AL, Conte GL, Draghi JA, Guillaume F, Hargreaves AL, Matthey-Doret R, Whitlock MC. (2017) Local adaptation interacts with expansion load during range expansion: Maladaptation reduces expansion load. ***American Naturalist*** 189: 368-380.
12. Sharp NP, Otto SP (2016) Evolution of sex: Using experimental genomics to select among competing theories. ***BioEssays*** 38: 751-757.
11. Sharp NP, Agrawal AF (2016) Low genetic quality affects key dimensions of the mutational spectrum. ***PLoS Biology*** 14: e1002419.
10. Sharp NP, Agrawal AF (2016) The decline in fitness with inbreeding: evidence for negative dominance-by-dominance epistasis in *Drosophila melanogaster*. ***Journal of Evolutionary Biology*** 29: 857-864.
9. Sharp NP, Vincent CM (2015) The effect of parasites on sex differences in selection. ***Heredity*** 114: 367-372.
8. Vincent CM, Sharp NP (2014) Sexual antagonism for resistance and tolerance to infection in *Drosophila melanogaster*. ***Proceedings of the Royal Society B***. 281: 20140987. (Recommended on *Faculty of 1000*).
7. Wang AD, Sharp NP, Agrawal AF (2014) Sensitivity of mutational fitness effects to environment, genetic background, and adaptedness: a case study with *Drosophila*. ***Evolution*** 68: 840-853.
6. Sharp NP, Agrawal AF (2013) Male-biased fitness effects of spontaneous mutations in *Drosophila melanogaster*. ***Evolution*** 67: 1189-1195.
5. Clark SCA, Sharp NP, Rowe L, Agrawal AF (2012) Relative effectiveness of mating success and sperm competition offence at eliminating deleterious mutations in *Drosophila*

melanogaster. **PLoS ONE** 7: e37351.

4. Sharp NP, Agrawal AF (2012) Evidence for elevated mutation rates in low-quality genotypes. **Proceedings of the National Academy of Sciences USA** 109:6142-6146. (Recommended on *Faculty of 1000*).
3. Wang AD, Sharp NP, Spencer CC, Tedman-Aucoin K, Agrawal AF (2009) Selection, epistasis, and parent-of-origin effects on deleterious mutations across environments in *Drosophila melanogaster*. **American Naturalist** 174: 863-874.
2. Sharp NP, Agrawal AF (2009) Sexual selection and the random union of gametes: Testing for a correlation in fitness between mates in *Drosophila melanogaster*. **American Naturalist** 174:613-622.
1. Sharp NP, Agrawal AF (2008) Mating density and the strength of sexual selection against deleterious alleles in *Drosophila melanogaster*. **Evolution** 62:857-867.

RESEARCH SCHOLARSHIPS AND FELLOWSHIPS

2016-18	Banting Postdoctoral Fellowship (NSERC). \$140,000.
2014-16	NSERC Postdoctoral Fellowship. \$90,000.
2014-16	Killam Postdoctoral Fellowship. \$24,000.
2013-14	Ontario Graduate Scholarship. \$15,000.
2012-13	Queen Elizabeth II/Dr. F.M. Hill Ontario Graduate Scholarship in Science and Technology. \$15,000.
2009-12	NSERC Vanier Canada Graduate Scholarship. \$150,000.
2009-10	Ontario Graduate Scholarship (declined). \$15,000.
2008-9	NSERC Alexander Graham Bell Canada Graduate Scholarship. \$17,500.
2008	University of Toronto Excellence Award in Natural Sciences and Engineering. \$5,625.
2007	NSERC Undergraduate Student Research Award. \$5,625.

AWARDS

(EEB = Ecology and Evolutionary Biology Dept., University of Toronto)

2016	Young Investigator Award, American Society of Naturalists. \$500.
2016	Postdoc talk award, Evo-WIBO meeting. Port Townsend, WA.
2015	2 nd Prize, Hamilton Award for Best Talk, Society for the Study of Evolution.
2014	Genetics Society of America DeLill Nasser Award for Professional Development in Genetics. \$1000.
2012	1 st Prize, Best Talk. Canadian Society for Ecology and Evolution. \$500.
2008-14	Six graduate awards and fellowships, EEB. Total \$15,991.
2008	2 nd Prize, Best Talk. \$300. Canadian Society for Ecology and Evolution.
2008	Outstanding Fourth-Year Honours Project Poster Presentation, EEB.
2007	J.R. Dymond Memorial Award, EEB. \$971.

- 2007 Honourable Mention, Poster Competition. Canadian Society for Ecology and Evolution.
- 2004-8 Dean's List Scholar, University of Toronto.
- 2004 Engineering Award. \$1,000. Danforth Collegiate and Technical Institute.

PRESENTATIONS (as presenter only)

Invited Seminars:

The effect of ploidy level on the rate and spectrum of new mutations. (2017) Linfield College, OR (upcoming).

Genetic quality affects key dimensions of the mutational spectrum in *Drosophila*. (2015) Invited talk, Institute for Evolutionary Biology, U. Edinburgh.

Genetic quality affects key dimensions of the mutational spectrum in *Drosophila*. (2015) Invited talk, Dept. of Genetics, U. Cambridge.

Conference Presentations:

The effect of ploidy level on the rate and spectrum of new mutations. (2017) *Evolution*, Portland, OR.

The effect of ploidy level on the rate and spectrum of new mutations. (2017) *CSEE*, Victoria, BC.

Young Investigator Prize Talk: The rates and effects of mutations are altered by multiple types of genomic variation. (2016) *Evolution*, Austin, TX.

Experimental evidence for variation in mutation rate due to condition-dependent DNA repair. (2016) *Evo-WIBO*, Port Townsend, WA.

Genetic quality affects key dimensions of the mutational spectrum. (2015) *Evolution*, Guarujá, SP, Brazil.

Evidence for elevated mutation rates in low-quality genotypes from phenotypic assays and genome sequencing. (2014) *EcoEvo Retreat*, Brackendale, BC.

The effect of genetic quality on the mutation rate, estimated from genome sequences of mutation accumulation lines. (2014) *Evolution*, Raleigh, NC.

The effect of genetic quality on the mutation rate, estimated from genome sequences of mutation accumulation lines. (2014) *Genomes to Biomes*, Montreal, QC.

The effect of sexual selection on mutation load and genetic variation. (2013) *ESEB Congress*, Lisbon, Portugal. (Poster).

Sexual selection can reduce mutation load in *Drosophila melanogaster*. (2012) *Joint Congress on Evolutionary Biology*, Ottawa, ON.

The effect of genetic quality on the mutation rate in *Drosophila melanogaster*. (2011) *CSEE*, Banff, AB.

The effect of genetic quality on the mutation rate in *Drosophila melanogaster*. (2011) *Ontario Ecology, Ethology and Evolution Colloquium*, Scarborough, ON.

The effect of genetic quality on the mutation rate in *Drosophila melanogaster*. (2010) *Evolution*, Portland, OR.

Sexual selection and mutation load. (2008) *CSEE*, Vancouver, BC.

Density-dependent sexual selection in *Drosophila melanogaster*. (2007) CSEE, Toronto, ON. (Poster).

Internal Seminars:

The effect of ploidy level on the rate and spectrum of new mutations. (2017) Vancouver Yeast Meeting, University of British Columbia.

Mutation load in sexual populations: effects of sexual selection and condition-dependence. (2014) Internal seminar series, Biodiversity Research Centre, University of British Columbia.

New mutations: condition-dependent rates and sex-specific effects. (2014) PhD Exit Seminar, EEB, University of Toronto.

Males: what are they good for? Sexual selection and mutation load in *Drosophila melanogaster*. (2012) EEB student seminar series, University of Toronto.

The effect of genetic quality on the mutation rate in *Drosophila melanogaster*. (2011) EEB Atwood Colloquium, University of Toronto.

Mutations in their genetic environment. PhD Proposal Seminar. (2010) EEB, University of Toronto.

NON-REFEREED CONTRIBUTIONS

Sharp, NP (2016) Behind the Podium: A conversation with TAGC Keynote Speaker David Kingsley. Genes to Genomes, <http://genestogenomes.org/behind-the-podium-a-conversation-with-tagc-keynote-speaker-david-kingsley/>.

Sharp, NP (2014) Why do plants have biased sex ratios? The Seeds of Science, <http://wp.me/p4xYHi-4S>.

TEACHING

Guest Lectures:

Evolution and Adaptation (2014): sexual selection and assortative mating.

Evolutionary Genetics (2012): molecular signatures of selection, demography.

Biology, Models and Mathematics (2012): two lectures, introductory genetics.

Evolution and Adaptation (2012): sexual selection and assortative mating.

Biology, Models and Mathematics (2011): two lectures, introductory genetics.

Teaching Assistant:

Evolutionary Genetics (2013): tutorials, grading.

Evolutionary Ecology (2013): tutorials, grading.

Evolution and Adaptation (2012): grading.

Organisms in their Environment (2008-9): labs, tutorials, grading; nominated for Teaching Assistant Award.

SERVICE AND VOLUNTEERING

EEB = Ecology and Evolutionary Biology Dept., University of Toronto

BRC = Biodiversity Research Centre, University of British Columbia

- Founding Organizer, EEB Postdocs discussion group, BRC (2017)
- Organizer, Evolution Discussion Group, BRC (2016-17)
- Talk Judge, Zoology Graduate Student Symposium, BRC (2015)
- FlyBase Advisory Committee (2014-16)
- Poster Judge, Zoology Graduate Student Symposium, BRC (2014)
- Poster Judge, EcoEvo Retreat, Brackendale, BC (2014)
- Volunteer, Ontario BioBlitz (2013)
- Chair, Atwood Lecturer Committee, EEB (2013)
- Volunteer, Toronto Science Festival (2013)
- Ombudsperson, EEB (2012)
- Panelist, Academic Careers roundtable, Careers and Research in Ecology and Evolution Workshop, EEB (2012)
- Graduate Student Program Satisfaction Survey Committee, EEB (2011)
- Graduate Curriculum Committee, EEB (2011)
- Graduate Mentoring Coordination Committee, EEB (2011)
- Careers and Research in Ecology and Evolution Workshop Committee, EEB (2010)
- Volunteer, Not Far From The Tree, Toronto (2010)
- Atwood Lecturer Committee, EEB (2009, 2010, 2012)
- Organizing Committee Leader, Departmental Colloquium, EEB (2009)
- Volunteer, University of Toronto Science Outreach Camp (2009)
- Darwin Day Committee, EEB (2009)
- Space Committee, EEB (2009-12)
- Graduate Affairs Committee, EEB (2008, 2010)
- Chair Search Committee, EEB (2007)

External Reviewer:

Proceedings of the National Academy of Sciences USA, Nature Communications, eLife, Current Biology, Proceedings of the Royal Society B, Evolution, The American Naturalist, Biology Letters, Journal of Evolutionary Biology, Heredity, Ecology and Evolution, Scientific Reports, European Journal of Entomology

PROFESSIONAL MEMBERSHIPS

American Society of Naturalists (ASN), Canadian Society for Ecology and Evolution (CSEE), European Society for Evolutionary Biology (ESEB), Genetics Society of America (GSA), Society for the Study of Evolution (SSE)