

# Curriculum Vitae – Root Gorelick

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Professor Root Gorelick, Ph.D.

Department of Biology and

School of Mathematics & Statistics and

Institute of Interdisciplinary Studies

Carleton University

1125 Raven Road

Ottawa, Ontario K1S 5B6 Canada

Voice 613-520-2600 ext. 1586

Fax 613-520-3539

Skype root.gorelick

URL <http://rootgorelick.com/>

E-mail [Root.Gorelick@carleton.ca](mailto:Root.Gorelick@carleton.ca)

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**A EDUCATION**

- 2000-2003 Ph.D. Biology (evolutionary epigenetic theory) Arizona State University.  
 1998-2000 M.S. Economics (game theory) Arizona State University.  
 1997-1998 M.A. Economics (public utility regulation) New Mexico State University.  
 1994-1997 M.S. Biology (co-evolution of flowering plants and insects) New Mexico State Univ.  
 1980-1982 M.A. Mathematics (theory of semigroups) Temple University.  
 1976-1980 B. A. Physics and Mathematics, Cornell University.

**B EMPLOYMENT**

- 2016- Carleton University, Full Professor.  
 2016- Carleton University, Northern Studies Program, faculty member.  
 2013- Carleton University, Instructor in Indigenous Studies.  
 2010-2016 Carleton University, Associate Professor.  
 2007- Ottawa-Carleton Institute of Mathematics & Statistics, faculty member.  
 2007- Ottawa-Carleton Joint Bioinformatics Program, faculty member.  
 2006- Ottawa-Carleton Institute of Biology, faculty member.  
 2006-2010 Carleton University, Assistant Professor.  
 2005-2006 American Association for Advancement of Science, Science Policy Fellow.  
 2004-2005 Faculty Research Associate, Sociobiology, Arizona State University.  
 2004-2004 Post-Doctoral Fellow, Arizona State Univ. (with Bert Hölldobler, Jennifer Fewell).  
 1983-1994 Johns Hopkins University's Applied Physics Laboratory, Senior Mathematician.  
 1982-1983 Sperry Corporation, Assistant Engineer.

**C PUBLICATIONS****1. Peer-reviewed journals** (student names underlined)

81. Gorelick R (2020) The *Coryphantha sneedii* complex is indeed complex and continuously intergrades with *Coryphantha vivipara*. *Haseltonia* 27: 40-59. [with back cover photo]  
 80. Gorelick R (2020) Ultra-thin hairy new shoots on belowground cuttings of recently rooted *Cylindropuntia leptocaulis* (Cactaceae). *Haseltonia* 27: 113-115.  
 79. Gorelick R (2020) Range of *Cylindropuntia whipplei* (Cactaceae) in New Mexico. *Phytoneuron* 2020(47): 1-10.  
 78. Gorelick R (2020) Chromosome architecture drives cycad evolution. *Cycads* 5(1): 23-32.  
 77. Gorelick R (2019) *Espostoa (Vatricania) guentheri* have unusual cephalia or pseudocephalia. *Haseltonia* 26: 58-67. [plus front cover photo]  
 76. Young R, Gorelick R, Xing T (2018) Cluster-based modeling of hexokinase network in long distance sugar signaling in temperate broadleaf eudicot trees. *Tree Genetics & Genomes* 14: article 56 [9 pages; <https://doi.org/10.1007/s11295-018-1272-y>].  
 75. Gorelick R, Villablanca FX (2018) Meiosis decreases recombination load; Mitosis increases recombination load. *Ideas in Ecology and Evolution* 11: 19-28.  
 74. Gorelick R (2018) Historical note on rooting succulent leaf cuttings. *Haseltonia* 24: 63.  
 73. Gorelick R (2017) Organ pipe cactus, *Stenocereus thurberi*, with fleshy leaves on spherical short-shoots that have indeterminate growth. *Haseltonia* 23: 117-124.  
 72. Gorelick R, Carpinone J, Derraugh LJ (2017) No universal differences between females and males: anisogamy and asymmetrical female meiosis. *Biological Journal of the Linnean Society* 120: 1-21.  
 71. Panchen Z, Gorelick R (2017) Prediction of Arctic plant phenological sensitivity to climate change from historical records. *Ecology and Evolution* 7: 1325-1338.  
 70. Gorelick R (2016) What is a cephalium? *Bradleya* 34: 100-124.

69. Panchen Z, Gorelick R (2016) Flowering time across the Canadian Arctic Archipelago may be driven more by microclimate than latitude and elevation. *International Journal of Plant Sciences* 177: 661-670.
68. Gorelick R (2016) Subdermal woody thorns with secondary growth may support shoots of senita, *Lophocereus schottii* (Cactaceae). *Haseltonia* 22: 18-21. [plus both front and back cover photos]
67. Gorelick R\*, Fraser D\*, Mansfield M, Dawson J, Wijeneyake S, Bertram S. [\* contributed equally] (2016). Abrupt shortening of bird W chromosomes in ancestral Neognathae. *Biological Journal of the Linnean Society* 119: 488-496.
66. Panchen Z, Gorelick R (2015) Flowering and fruiting responses to climate change of two Arctic plant species, purple saxifrage (*Saxifraga oppositifolia*) and mountain avens (*Dryas integrifolia*). *Arctic Science* 1: 45-58.
65. Gorelick R (2015) New combinations in *Coryphantha* and *Escobaria* (Cactaceae). *Journal of the Botanical Research Institute of Texas* 9: 25-30, 351-352.
64. Gorelick R (2015) Wherefore stoch-aptation? *Ideas in Ecology and Evolution* 8: 46-49.
63. Gorelick R (2015) Northern range limit of *Opuntia fragilis* and the Cactaceae is 56°N, not 58°N. *Madroño* 62: 115-123.
62. Gorelick R (2015) Why vegetative propagation of leaf cuttings is possible in succulent and semi-succulent plants. *Haseltonia* 20: 51-57.
61. Fraser D, Gorelick R, Rybczynski N (2015) Extinction and climate change influence phylogenetic community assembly of North American hoofed mammals. *Biological Journal of the Linnean Society* 114: 585-594.
60. Gorelick R, Drezner TD, Hancock K (2015) Freeze-tolerance of cacti (Cactaceae) in Ottawa, Ontario, Canada. *Madroño* 62: 32-44.
59. Gorelick R, Fraser D, Zonneveld B, Little D (2014) Cycad (Cycadales) chromosome numbers are not correlated with genome size. *International Journal of Plant Sciences* 175: 986-997.
58. Gorelick R (2014) Defining clonality and individuals in plant evolution. *Ideas in Ecology and Evolution* 7: 84-88.
57. Fraser D, Hassall C, Gorelick R, Rybczynski N (2014) Mean annual precipitation explains spatiotemporal patterns of Cenozoic mammal beta diversity and latitudinal diversity gradients in North America. *PLoS One* 9(9): e0106499.
56. Gorelick R (2014) Do Micrognathozoa have micro genomes? *Biological Journal of the Linnean Society* 122: 640-644.
55. Gorelick R (2014) Indigenous sciences are not pseudoscience. *Ideas in Ecology and Evolution* 7: 43-55. [Reprinted in *Indigenizing the university: diverse perspectives*. Editor: Frances Widdowson. Pages 175-198. Calgary: Theodosian Press (2021).]
54. Gorelick R (2014) Morphology and development of sunken terminal cephalium in *Discocactus* (Cactaceae). *Madroño* 61: 194-200.
53. Gorelick R, Marler TE (2014) Kin recognition by roots occurs in cycads and probably in conifers. *Communicative & Integrative Biology* 7(1): e28009.
52. Gorelick R (2014) Fishing for philosophical phylogenetic foibles. *Ideas in Ecology and Evolution* 7: 8-10.
51. Gorelick R (2014) Axillary branching of lateral cephalia in Cactaceae is not constrained by tilting of shoot apices. *Haseltonia* 19: 13-16.
50. Abdallah BY, Horne SD, Stevens JB, Liu G, Ying AY, Vanderhyden B, Krawetz SA, Gorelick R, Heng HHQ (2013) Single cell heterogeneity: Why unstable genomes are incompatible with average profiles. *Cell Cycle* 12: 3640-3649.

49. Gorelick R. (2013) *Coleocephalocereus purpureus* has a cephalium; *Micranthocereus streckeri* has a pseudocephalium (Cereaceae, Cactoideae, Cactaceae). *Bradleya* 31: 142-149. Erratum (2014) *Bradleya* 32: 180.
48. Gorelick R, Olson K (2013) Polyploidy is genetic hence may cause non-adaptive radiations, whereas pseudopolyploidy is genomic hence may cause adaptive non- radiations. *Journal of Experimental Zoology (Part B. Molecular and Developmental Evolution)* 320B: 286-294.
47. Gorelick R (2013) Measures of diversity should include both matrix and vector inputs. *Ecological Economics* 86: 211-212.
46. Gorelick R (2012) Mitosis circumscribes individuals; sex creates new individuals. *Biology & Philosophy* 27: 871-890.
45. Gorelick R (2012) Theory may not be definable and its development is not efficient. *Ideas in Ecology and Evolution* 5: 25-26.
44. Gorelick R (2012) Meiosis is not gender neutral. *BioScience* 62: 623-624.
43. Gorelick R, Marler TE (2012) Evolutionary developmental biology in cycad phenology. *Communicative & Integrative Biology* 5: 272-274.
42. Lorioux S, DeNardo D, Gorelick R, Lourdaï O (2012) A good start in life: access to preferred temperatures during gravidity improves offspring quality in the Children's python (*Antaresia childreni*). *Journal of Experimental Biology* 215: 1346-1353.
41. Bertram S, Fitzsimmons L, McAuley E, Rundle H, Gorelick R (2012) Phenotypic covariance structure and its divergence for acoustic mate attraction signals among four cricket species. *Ecology and Evolution* 2: 181-195.
40. Gorelick R, Machado M (2012) Axillary branching of lateral cephalia of *Coleocephalocereus* (Cactaceae). *Haseltonia* 17: 35-41.
39. Gorelick R (2011) Creativity: standing on the shoulders of Hobbes' *Leviathan*. *Ideas in Ecology and Evolution* 4: 40-42.
38. Gorelick R (2011) Do we have a consistent terminology for species diversity? The fallacy of true diversity. *Oecologia* 167: 885-888.
37. Gorelick R, Derraugh L, Carpinone J, Bertram S. (2011) Post-plasmogamic pre-karyogamic sexual selection: mate choice inside an egg cell. *Ideas in Ecology and Evolution* 4: 14-23.
36. Gorelick R, Heng H (2011) Sex reduces genetic variation: a multidisciplinary review. *Evolution* 65: 1088-1098. [featured on front cover]
35. Gorelick R (2011) What is theory? *Ideas in Ecology and Evolution* 4: 1-10.
34. Olson K, Gorelick R (2011) Chromosomal fission accounts for small-scale radiations in *Zamia* (Zamiaceae). *Botanical Journal of the Linnean Society* 165: 168-185.
33. Gorelick R, Olson K (2011) Is lack of cycad (Cycadales) diversity due to lack of polyploidy? *Botanical Journal of the Linnean Society* 165: 156-167. [listed in "Faculty of 1000 Biology"]
32. Gorelick R (2010) Questioning heteronormative theories of mate choice. *Biological Theory* 5: 397.
31. Gorelick R, Bertram S (2010) Multi-way multi-group segregation and diversity indices. *PLoS One* 5(6): e10912.
30. Gorelick R, Carpinone J (2009) Origin and maintenance of sex: The evolutionary joys of self sex. *Biological Journal of the Linnean Society* 98: 707-728.
29. Gorelick R, Bertram S (2009) Swimming eastern chipmunks, *Tamias striatus*, and hairy-tailed mole, *Parascalops breweri*, in Kawartha Highlands Provincial Park, Ontario. *Canadian Field-Naturalist* 122: 73-75.

28. Gorelick R (2009) Evolution of cacti is largely driven by genetic drift, not selection. *Bradleya* 27: 37-48.
27. Bertram S, Gorelick R [both authors contributed equally] (2009) Quantifying and comparing mating systems using normalized mutual entropy. *Animal Behaviour* 77: 201-206.
26. Gorelick R, Laubichler M (2008) Genetic = Heritable (Genetic  $\neq$  DNA). *Biological Theory* 3: 79-84.
25. Gorelick R (2008) Early cactus evolution. *Haseltonia* 14: 3-5.
24. Gorelick R (2008) Species richness and the analytic geometry of latitudinal and altitudinal gradients. *Acta Biotheoretica* 56: 197-203.
23. Mottram R, Gorelick R (2008) Proposal to require prior deposition of types. *Taxon* 57: 314.
22. Gorelick R, Osborne R (2007) Evolution of dioecy and sex chromosomes in cycads. *Memoirs of the New York Botanical Garden* 97: 326-334.
21. Osborne R, Gorelick R (2007) Sex change in cycads: Cases, causes, and chemistry. *Memoirs of the New York Botanical Garden* 97: 335-345.
20. Gorelick R (2007) When information theory is no longer theory. *Biological Theory* 2: 180-182.
19. Jeanson R, Fewell J, Gorelick R, Bertram S (2007) Emergence of increased division of labor as a function of group size. *Behavioral Ecology and Sociobiology* 62: 289-298.
18. Bertram S, Kemp D, Johnson J, Orozco S, Gorelick R (2007) Heritability of acoustic signaling time in the Texas field cricket, *Gryllus texensis*. *Evolutionary Ecology Research* 9: 975-986.
17. Gorelick R, Bertram S (2007) Quantifying division of labor: Borrowing tools from sociobiology, sociology, information theory, landscape ecology, and biogeography. *Insectes Sociaux* 54: 105-112.
16. Gorelick R (2006) Evolutionary flatland. *Biological Theory* 1: 203-205.
15. Gorelick R (2006) Combining species richness and abundance in a single diversity index using matrix analogues of Shannon's and Simpson's indices. *Ecography* 29: 525-530.
14. Gorelick R (2005) Theory for why dioecious plants have equal length sex chromosomes. *American Journal of Botany* 92: 979-984.
13. Gorelick R (2005) Environmentally-alterable additive genetic effects. *Evolutionary Ecology Research* 7: 371-379.
12. Gorelick R, Doan S (2005) Distribution of *Ferocactus emoryi* (Cactaceae) in Arizona. *Bradleya* 23: 31-40.
11. Gorelick R, Bertram S, Killeen P, Fewell J (2004) Normalized mutual entropy in biology: Quantifying division of labor. *American Naturalist* 164: 677-682.
10. Gorelick R, Laubichler M (2004) Decomposing multi-locus linkage disequilibrium. *Genetics* 166: 1581-1583.
9. Gorelick R (2004) Resolving the phylogenetic placement of *Blossfeldia liliputana* (Cactaceae): Reticulate evolution, chloroplast inheritance, and graft-chimeras. *Bradleya* 22: 9-14.
8. Gorelick R (2004) Neo-Lamarckian medicine. *Medical Hypotheses* 62: 299-303.
7. Gorelick R (2003) Evolution of dioecy and sex chromosomes via methylation driving Muller's ratchet. *Biological Journal of the Linnean Society* 80: 353-368.
6. Gorelick R (2003) Transposable elements suppress recombination in all meiotic eukaryotes, including automictic ancient asexuals. *Journal of Natural History* 37: 903-909.

5. Gorelick R, Bertram S (2003) Maintaining heritable variation via sex-limited temporally fluctuating selection: A phenotypic model accommodating non-Mendelian epigenetic effects. *Theory in Biosciences* 122: 321-338.
4. Bertram S, Gorelick R, Fewell J (2003) Colony response to graded resource changes: an analytical model of the influence of genotype, environment, and inheritance pattern. *Theoretical Population Biology* 64: 151-162.
3. Gorelick R (2002) DNA sequences and cactus classification. *Bradleya* 20: 1-4.
2. Gorelick R, Osborne R (2002). Inducing sex change and organogenesis from tissue culture in the endangered African cycad *Encephalartos woodii* (Cycadales, Zamiaceae). *South African Journal of Science* 98: 114-117.
1. Gorelick R (2001) Did insect pollination cause increased seed plant diversity? *Biological Journal of the Linnean Society* 74: 407-427.

## 2. Peer-reviewed book chapters (student names underlined)

3. Gorelick R. (2021) A case for Indigenous sciences. *In Indigenizing the university: diverse perspectives*. Editor: Frances Widdowson. Pages 215-221. Calgary: Theodosian Press.
2. Gorelick R, Carpinone J, Derraugh L (2013) Fundamental differences between females and males? *In Challenging popular myths of sex, gender, and biology*. Editor: Ah-King M. Pages 9-22. Heidelberg: Springer.
1. Gorelick R, Laubichler M, Massicotte R (2011) Asexuality and epigenetic variation. *In Epigenetics: linking genotype and phenotype in development and evolution*. Editors: Hallgrímsson B and Hall B. Pages 87-102. San Francisco: University of California Press.

## 3. Papers in Review (student names underlined)

4. Gorelick R. Inclusive academic freedom in universities: ending self-policing, increasing diversity, and decreasing content. *Critical Education*.
3. Young R, Gorelick R. A spoonful of sugar makes the sap go up. *Botany*.
2. Gorelick R. Linkage disequilibrium and  $\beta$ -diversity are both measures of diversity and association that should be based on ratios of observed-over-expected values. *Theoretical Population Biology*.
1. Gorelick R, Boone J. Elevation range of *Cylindropuntia acanthocarpa* (Cactaceae) is at least 160-1769 m. *Madroño*.

## 4. Non-Refereed Journal Articles – Botanical notes

62. Gorelick R (2021) *Mammillarias* of northern New Mexico: *M. wrightii* and *M. meiacantha*. *Journal of the Mammillaria Society* 67: In press.
61. Gorelick R (2021) *Mammillaria lasiacantha* and similar looking species at Anthony Gap, New Mexico. *Journal of the Mammillaria Society* 67: In press.
60. Gorelick R (2021) *Opuntia* winter colors. *Cactus and Succulent Journal* 93: In press.
59. Gorelick R (2021) *Pediocactus knowltonii*. *Cactus and Succulent Journal* 93: In press.
58. Gorelick R, Gorelick R (2021) Cacti grow smaller in cold environments and larger in warm ones. *Cactus and Succulent Journal* 93: In press.
57. Gorelick R (2021) Sotol (*Dasyliirion wheeleri*) with curly leaves. *Cactus and Succulent Journal* 93: In press.
56. Gorelick R (2020) *Opuntia basilaris* var. *heilii*. *Cactus World* 38(4): 293-294.
55. Gorelick R (2020) *Coryphantha organensis* and other cacti at Soledad Canyon, Organ Mountains, New Mexico. *Cactus World* 38(4): 269-276.
54. Gorelick R (2020) *Cylindropuntia leptocaulis* x *versicolor*. *Cactus Explorer* 26: 80-82.

53. Gorelick R (2020) *Coryphantha missouriensis* with pectinate spines. *Cactus World* 38(3): 238.
52. Gorelick R (2020) *Cylindropuntia ramosissima* – the diamond cholla. *Cactus World* 38(3): 195-198.
51. Gorelick R (2020) Cuyama River cacti and succulents. *Cactus and Succulent Journal* 92: 189-207.
50. Gorelick R (2019) Spineless *Opuntia fragilis*. *Cactus and Succulent Journal* 91: 287-288.
49. Gorelick R (2019) *Echinocereus reichenbachii* subsp. *baileyi*. *Cactus and Succulent Journal* 91: 197-201.
48. Gorelick R (2018) *Opuntia tortispina*. *Cactus and Succulent Journal* 91: 197-198.
47. Gorelick R (2017) Rooting *Sinningia* leaves. *CactusWorld* 35: 222.
46. Gorelick R (2017) *Opuntia fragilis* in the San Juan Islands. *Cactus and Succulent Journal* 89(4): 185-188.
45. Gorelick R (2017) Historical records of the range of *Opuntia fragilis*. *Cactus Explorer* 18: 41-42.
44. Gorelick R (2015) *Hesperoyucca whipplei*. *Cactus and Succulent Journal* 87(6): 269-270. [with front cover photo]
43. Gorelick R (2014) Stem architecture of pachycaulous morning glories. *Cactus Explorer* 13: 88-89.
42. Gorelick R (2014) Sex determination and sex change in cycads: tantalizing new hints. *Cycad Newsletter* 37: 29.
41. Gorelick R (2014) *Sclerocactus parviflorus* amongst the arches. *Cactus and Succulent Journal* 86: 38-40.
40. Gorelick R, Mahr D (2013) *Tephrocactus*. *Cactus and Succulent Journal* 85: 262-276.
39. Gorelick R (2013) *Pterocactus*. *Cactus and Succulent Journal*. 85: 219-221.
38. Gorelick R (2012) *Euphorbia antiquorum* and James Bond. *Cactus and Succulent Journal* 84: 244-246.
37. Gorelick R (2011) *Ferocactus hamatacanthus* at Big Bend. *Cactus World* 29: 211-216.
36. Gorelick R (2011) *Ariocarpus fissuratus* and other cacti at the Dog Canyon trailhead, Big Bend. *Cactus and Succulent Journal* 83: 146-149.
35. Gorelick R (2011) Isotomous branching at the *Zamia furfuracea* cone axis. *Cycad Newsletter* 34: 29.
34. Gorelick R (2011) Cacti and agaves at the Grand Canyon's South Rim. *Cactus World* 29: 27-30.
33. Gorelick R (2010) *Coryphantha echinus*. *Cactus World* 28: 112.
32. Gorelick R (2009) *Dracaena draco*...in Canada. *Cactus and Succulent Journal* 81: 277. Erratum (2010) *Cactus and Succulent Journal* 82: 31.
31. Gorelick R (2009) *Meritorious micranthocerei*. *Cactus World* 27: 183-184.
30. Gorelick R and Charles G (2009) Columnar cacti of eastern Brazil. Published on-line at <http://shop.cssainc.org/columnar-cacti-eastern-brazil.html>.
29. Gorelick R (2009) The genera *Brasilicereus*, *Cipocereus* and *Pilosocereus* in eastern Brazil. *Cactus and Succulent Journal* 81: 126-129, 132-136.
28. Gorelick R (2009) Two more cephalium-bearing cacti: *Espostoopsis dybowskii* and *Facheiroa cephaliomelana* subsp. *estesvii*. *Cactus and Succulent Journal* 81: 137.
27. Mota Lambert S and Gorelick R (2009) Opuntiods of eastern Brazil – *Tacinga*, *Quiabentia*, *Brasiliopuntia*. Published on-line at <http://shop.cssainc.org/opuntiods->

- eastern-brazil.html.
26. Gorelick R (2009) Odd opuntias: *Quiabentia* and *Brasilopuntia*. *Cactus and Succulent Journal* 81: 162.
  25. Gorelick R (2009) Cacti after a few wet years in southern New Mexico. *Cactus and Succulent Journal* 81: 22-24, 33.
  24. Gorelick R (2008) *Fouquieria burragei*, a rare species from southern Baja. *Cactus and Succulent Journal* 80: 204-207.
  23. Gorelick R (2008) Some crested cacti of Baja California. *Cactus and Succulent Journal* 80: 4-6.
  22. Gorelick R (2007) *Cochemiea halei* on peninsular Baja California Sur. *Cactus and Succulent Journal*. 79: 274-275.
  21. Gorelick R (2007) The Phoenix Desert Botanical Garden. *Cactus World* 25: 125-136. [with front cover photo].
  20. Gorelick R (2007) Northernmost sightings of *Bursera microphylla*. *Cactus and Succulent Journal* 79: 109.
  19. Gorelick R (2007) *Marenopuntia (Corynopuntia) marenae*. *Cactus and Succulent Journal* 79: 139.
  18. Gorelick R (2007) Achlorophyllous *Mammillaria grahamii* in Tempe, Arizona. *Cactus and Succulent Journal* 79: 4-6.
  17. Gorelick R (2006) *Coryphantha dasyacantha* found in New Mexico...and the cacti at Anthony Gap. *Cactus and Succulent Journal* 78: 184-189.
  16. Gorelick R (2006) *Echinocereus coccineus* var. *rosei* in Doña Ana County, New Mexico. *Cactus and Succulent Journal* 78: 172-173.
  15. Gorelick R (2006) Hiking New Mexico's Achenbach Canyon. *Cactus and Succulent Journal* 78: 131-136.
  14. Gorelick R (2006) *Coryphantha recurvata* at Sycamore Canyon. *Cactus and Succulent Journal* 78: 146-149.
  13. Gorelick R (2006) *Nopalea auberi*. *Cactus and Succulent Journal* 78: 151.
  12. Gorelick R (2006) *Cylindropuntia molesta*. *Cactus and Succulent Journal* 78: 95.
  11. Gorelick R (2006) *Opuntia basilaris*. *Cactus and Succulent Journal* 78: 72.
  10. Gorelick R (2005) *Opuntia quitensis*. *Cactus and Succulent Journal* 77: 265.
  9. Gorelick R (2005) Cacti and succulents at First Water Creek, Superstition Mountains, Arizona. *Cactus and Succulent Journal* 77: 237-243.
  8. Gorelick R (2005) Cacti along Vekol Wash in south-eastern Sonoran Desert National Monument. *British Cactus and Succulent Journal* 23: 35-40.
  7. Gorelick R (2005) *Bursera microphylla* and surrounding spring wildflowers. *Cactus and Succulent Journal* 77: 196-201.
  6. Gorelick R (2005) Flower density on a *Cleistocactus* species. *Cactus and Succulent Journal* 77: 130-131.
  5. Gorelick R (2005) *Bursera microphylla* in Phoenix, Arizona. *Cactus and Succulent Journal* 77: 146-147.
  4. Gorelick R (2005) *Echinocactus polycephalus* subsp. *xeranthemoides* in Marble Canyon. *Cactus and Succulent Journal* 77: 44-45.
  3. Gorelick R (2004) *Epipactis gigantea* in Marble Canyon. *Orchids* 73: 488.
  2. Osborne R, Gorelick R (2003) Sex change in cycads. *Palms and Cycads* 76: 10-15.
  1. Gorelick R (2001) Cycad prepollen: Description and possible evolutionary consequences of zoidogamy. *Cycad Newsletter* 24: 12-14.



## 5. Non-Refereed Journal Articles – Miscellaneous

7. Gorelick R (2021) Cryptic sex: How female and unisexual animals reproduce ‘asexually’ – without males. *The Conversation* 18 February 2021. <https://theconversation.com/cryptic-sex-how-female-and-unisexual-animals-reproduce-asexually-without-males-154998>.
6. Gorelick R (2018) Divisions in the university commons yield dividends: a partial review of Peter MacKinnon’s “University Commons Divided”. *Academic Matters* (Spring 2018). <https://academicmatters.ca/divisions-in-the-university-commons-yield-dividends-a-partial-review-of-peter-mackinnons-university-commons-divided/>.
5. Gorelick R (2017) Academic freedom to teach Indigenous sciences. *SAFS Newsletter* 75: 5-7.
4. Gorelick R (2016) Obscuring transparency and silencing dissent: Carleton University’s Board of Governors. *Academic Matters* (spring/summer): 10-14 [cover story].
3. Gorelick R (2016) Gag orders in Council: Carleton University’s Board of Governors and silencing of dissent. *Our Schools/Our Selves* 25(3): 35-50 [cover story].
2. Gorelick R (2013) What is natural history? *CSEE Bulletin* 14: 17-19.
1. Gorelick R (2002) The printed book is not a dinosaur: letter to the editor. *Chronicle of Higher Education* 48(48): 4.

## 6. Book Reviews

28. Gorelick R (2018) Divisions in the university commons yield dividends: a partial review of Peter MacKinnon’s *University Commons Divided*. *Academic Matters* (Spring 2018). <https://academicmatters.ca/2018/05/divisions-in-the-university-commons-yield-dividends-a-partial-review-of-peter-mackinnons-university-commons-divided/>.
27. Gorelick R (2015) *CITES and cacti: a user’s guide* by Maurizio Sajeve, H. Noel McGough, Lucy Garrett, Jonas Lüthy, Maurice Tse-Laurence, Catherine Rutherford, and Guilia Sajeve. *Plant Science Bulletin* 61: 73-75.
26. Gorelick R (2014) *Melocactus the genus in Aruba, Bonaire and Curaçao* by George Thomson. *Cactus and Succulent Journal* 86: 162.
25. Gorelick R (2013) *Plant Physics* by Karl J. Niklas and Hanns-Christof Spatz. *Plant Science Bulletin* 59: 21-22.
24. Gorelick R (2010) *The Aloe of Madagascar* by Jean-Bernard Castillon and Jean-Philippe Castillon. *Cactus and Succulent Journal* 82: 280-281.
23. Gorelick R (2010) *The art of plant evolution* by W. John Kress and Shirley Sherwood. *Plant Science Bulletin* 56: 138-139.
22. Gorelick R (2010) *Texas cacti* by Brian Loflin and Shirley Loflin. *Cactus and Succulent Journal* 82: 33.
21. Gorelick R (2009) *Introduction to bryophytes* by Alain Vanderpoorten and Bernard Goffinet. *Plant Science Bulletin* 55: 167-168.
20. Gorelick R (2009) *The biology of deserts* by David Ward. *Plant Science Bulletin* 55: 78-79.
19. Gorelick R (2008) *Curious world of carnivorous plants: A comprehensive guide to their biology and cultivation* by Wilhelm Barthlott, Stefan Porembski, Rüdiger Seine, and Inge Theisen. *Plant Science Bulletin* 54: 159.
18. Gorelick R (2008) *The origins of genome architecture* by Michael Lynch. *Plant Science Bulletin* 54: 165.
17. Gorelick R (2008) *Cacti of Texas: A field guide* by A. Michael Powell, James F. Weedon, and Shirley A. Powell. *Plant Science Bulletin* 54: 81.

16. Gorelick R (2008) *The ribbon of green: Change in riparian vegetation in the southwestern United States* by Robert H. Webb, Stanley A. Leake and Raymond M. Turner. *Plant Science Bulletin* 54: 31.
15. Gorelick R (2008) *The great cacti: Ethnobotany and biogeography* by David Yetman. *Cactus and Succulent Journal* 80: 84.
14. Gorelick R (2007) *Structure and function of a Chihuahuan Desert ecosystem* edited by Kris M. Havstad, Laura F. Huenneke and William H. Schlesinger. *Plant Science Bulletin* 53: 168-169.
13. Gorelick R (2007) *Dry borders: Great natural reserves of the Sonoran Desert* edited by Richard S. Felger and Bill Broyles. *Cactus and Succulent Journal* 79: 278.
12. Gorelick R (2007) *Copiapoa in their environment (2006)* by Rudolf Schulz. *Cactus and Succulent Journal* 79: 171.
11. Gorelick R (2007) *The organ pipe cactus* by David Yetman. *Plant Science Bulletin* 53: 74.
10. Gorelick R (2007) *Bradleya 24* edited by Colin Walker. *Cactus and Succulent Journal* 79: 35.
9. Gorelick R (2006) *Plant-pollinator interactions: From specialization to generalization* edited by Nickolas Waser and Jeff Ollerton. *Plant Science Bulletin* 52: 139-140.
8. Gorelick R (2006) *The geographic mosaic of coevolution* by John N. Thompson. *Plant Science Bulletin* 52: 100-101.
7. Gorelick R (2006) *An enthusiasm for orchids: Sex and deception in plant evolution* by John Alcock. *Orchids* 75: 777.
6. Gorelick R (2006) *Ferocactus* by John Pilbeam and Derek Bowdery. *Cactus World* 24: 95-96.
5. Gorelick R (2006) *Growing hardy orchids* by John Tullock. *Plant Science Bulletin* 52: 67-68.
4. Gorelick R (2005) *Sonoran Desert plants: An ecological atlas* by Raymond M. Turner, Janice E. Bowers and Tony L. Burgess. *Plant Science Bulletin* 51: 146-147 [reprinted with permission in 2007 as *Cactus and Succulent Journal* 79: 278-279].
3. Gorelick R (2005) *Plant diversity and evolution: Genotypic and phenotypic variation in higher plants* edited by R. J. Henry. *Plant Science Bulletin* 51: 150-151.
2. Gorelick R (2005) *Cacti of the Trans-Pecos and adjacent areas* by A. Michael Powell and James F. Weedin. *Plant Science Bulletin* 51: 110-112.
1. Gorelick R (2005) *Food plants of the Sonoran Desert* by Wendy C. Hodgson. *Cactus and Succulent Journal* 77: 129.

## 7. Published botanical photos

My botanical photography has been featured on the dust jacket of Graham Charles' 2009 book *Gymnocalycium* (which is the name of a cactus genus), front cover of *CactusWorld* magazine, the website of the Cactus and Succulent Society of America, many of my own non-peer-reviewed papers (approximately 300 published photos; including 4 cover photos), ARKive's ([www.arkive.org](http://www.arkive.org)) "Images of Life on Earth" photo library of endangered species (26 photos), and the British Cactus and Succulent Society's annual calendar (having one of the 12 winning entries in their 2015 photo contest).

## D RESEARCH GRANTS

Evolutionary implications of sex reducing heritable variation: Disaggregated individuals, haploid leks, and the Red Queen on asexual Red Bull. Natural Science and Engineering Research Council (NSERC), Discovery Grant. Gorelick R. Date of Award: 2 April 2012. Five year award, CA\$21,000 per year (total: CA\$105,000).

What is sex? How did it originate? Why does it persist? Natural Science and Engineering Research Council (NSERC), Discovery Grant. Gorelick R. Date of Award: 28 March 2007. Five year award, CA\$21,170 per year (total: CA\$105,850).

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Cactus and Succulent Society of America – Research Grant.  
Dispersal of usually buffalo-dispersed *Opuntia fragilis* throughout islands in the Salish Sea. Date of Award: 5 September 2017. Amount US\$2,400.

UCLA Canadian Studies Program – visiting scholar program. Date of award: 27 March 2017. Amount US\$700.

Natural history (symposium proposal). Canadian Society for Ecology and Evolution. Gorelick R and Judge K. Date of Award: 23 November 2012. Amount CA\$800.

Darwinian implications of global climate change. Society for Study of Evolution. Gorelick R. Date of Award: 6 January 2009. Amount US\$700.

Is endoploidy localized to heat-producing sporophylls in cycads? Montgomery Botanical Center. Research Fellowship. Gorelick R. Date of Award: 7 April 2008. Amount US\$1,700.

Division of Labor of Incipient Social Groups. NSF IBN (National Science Foundation; Integrative Behavior and Neuroscience). PIs: Fewell J, Bertram S (Arizona State University). Senior Personnel: Gorelick R. Date of award: 14 December 2004. Amount US\$276,381.

Does polyploidy trigger pedomorphism in *Pediocactus* and *Sclerocactus*? Cactus and Succulent Society of America (Research Awards). PI: Gorelick R. Co-PIs: Griffith MP (Montgomery Botanical Center) and Peters R (Sandia National Laboratories). Date of award: 11 October 2004. Amount: US\$1,200.

## **E OTHER SCHOLARLY OR PROFESSIONAL ACTIVITY**

### **1. Editorial Duties**

I was editor of *Haseltonia*, a peer-reviewed botanical journal (2006-2010 and 2013-2015). I greatly improved the quality of this journal: tripling subscription rates, doubling number of pages published, and getting the journal indexed on Thomson Reuter's ISI Web-of-Science. This has been no small task insofar as my staff consisted of only one part-time person, my very able managing editor.

Additional editorial responsibilities:

*Index to Plant Chromosome Numbers*, Contributing Editor (2004 - 2012).

*Plant Science Bulletin* (Botanical Society of America), Editorial Committee (2008 - 2012).

*Plant Science Bulletin* (Botanical Society of America), Associate Editor (2010 - 2012).

*Cactus and Succulent Journal*, guest editor (2008 - 2009).

*Ideas in Ecology and Evolution*, Editorial Advisory Board (2009 - ).

*Coevolution*, Editorial Board (2012 - 2016).

**2. INVITED presentations** (student names underlined)

66. Cacti at Anthony Gap. Tucson Cactus & Succulent Society. 4 March 2021.
65. Definitions of female and male are too fluid in evolutionary biology. Biology Department. Santa Clara University. 15 January 2020.
64. No (universal) differences between females and males. Department of Biology. University of Ottawa. 5 March 2018.
63. Aquatic plants are weird and diverse. Greater Ottawa Water Garden Horticultural Society. 15 November 2017.
62. Is development and structural support of cephalia and pseudocephalia adaptive? 34<sup>th</sup> meeting of the International Organization for the Study of Succulent Plants. Cadereyta de Montes, Querétaro, Mexico. 24 October 2017. Keynote address.
61. No essential differences between females and males. Canadian Scholar program, Center for the Study of Women and Institute for Society & Genetics. University of California at Los Angeles. 17 May 2017.
60. Dispersal of brittle prickly pear cactus by buffalo and sea otters. Canadian Scholar program, University of California at Los Angeles. 15 May 2017.
59. What is sex? Canadian Scholar program, University of California at Los Angeles. 15 May 2017.
58. No essential differences between females and males. Canadian Scholar program, Department of Ecology and Evolutionary Biology, University of California at Los Angeles. 15 May 2017.
57. Duty to whom? Institutional loyalty and collegial governance. Confederation of University Faculty Associations of British Columbia (BC CUFA). Meeting on “University governance in the 21<sup>st</sup> century”. Vancouver. 4 March 2017.
56. Indigenous sciences are not pseudosciences. Symposium on “Indigenizing the university: diverse perspectives” at Mount Royal University, Calgary. 10 February 2017.
55. Biology and mythology: pseudoscience and academic freedom. Society for Academic Freedom and Scholarship conference at St. Mary’s University, Halifax. 4 Nov 2016.
54. Pseudoscience and academic freedom: evolution, quantum physics, non-Euclidean geometry, Bayes’ rule, and indigenous science. Keynote address at the Society for Academic Freedom and Scholarship conference at St. Mary’s University, Halifax. 3 November 2016. [other three keynote speakers: Adèle Mercier, Denis Rancourt, Frances Widdowson]
53. Academic freedom in university governance? – blogging and gagging. Keynote address at the University of Saskatchewan Faculty Association’s 10<sup>th</sup> annual Academic Freedom Event. 7 April 2016.
52. No universal differences between female and male eukaryotes. Department of Biology, New Mexico State University. 10 March 2016.
51. What are cephalia? Are they adaptive? Tucson Cactus and Succulent Society. 3 March 2016.
50. The cactus cephalium (the platypus of plants) may not be adaptive. Department of Biology, California Polytechnic State University, San Luis Obispo. 9 May 2014.
49. Sex is boring, conservative, and reduces heritable variation. Department of Biology, Trent University. 26 Feb 2014. [presented by Gorelick R; co-authors: Heng H and Carpinone J]
48. The cactus cephalium (the platypus of plants) may not be adaptive. Huntington Succulent Plant Symposium. San Marino, California. 31 August 2013.

47. Symposium Introduction. Natural history symposium. Canadian Society for Ecology and Evolution, Annual Meeting, Kelowna. 13 May 2013.
46. The cactus cephalium – the platypus of plants – is not adaptive. Natural history symposium. Canadian Society for Ecology and Evolution, Annual Meeting, Kelowna. 13 May 2013.
45. Sex is boring, conservative, and reduces heritable variation. Department of Biology, California Polytechnic State University, San Luis Obispo. 10 May 2013. [presented by Gorelick R; co-authors: Heng H and Carpinone J]
44. Sex is boring, conservative, and reduces heritable variation. Department of Ecology and Evolutionary Biology, University of California at Los Angeles. 17 April 2013. [presented by Gorelick R; co-authors: Heng H and Carpinone J]
43. What is an individual? Sexual selection in haploid individuals? Department of Ecology and Evolutionary Biology, University of California at Los Angeles, 17 April 2013.
42. Polyploidy causes non-adaptive radiations; pseudopolyploidy causes adaptive non-radiations. Department of Ecology, Evolution, and Marine Biology, University of California at Santa Barbara. 8 April 2013. [presented by Gorelick R; co-author Olson K]
41. Odd plants in odd places: Why an evolutionary and ecological theorist studies the natural history of cactus and succulents. Tucson Cactus and Succulent Society. 4 April 2013.
40. Sex is boring, conservative, and reduces heritable variation. School of Life Sciences. Arizona State University. 26 March 2013. [presented by Gorelick R; co-authors: Heng H and Carpinone J]
39. Cactus cephalia are not adaptive. Department of Biology, California Polytechnic State University, San Luis Obispo. 27 February 2013.
38. What is an individual? Sexual selection in haploid individuals? Department of Biology, California Polytechnic State University, San Luis Obispo. 18 January 2013.
37. What is an individual? Sexual selection between haploid individuals? Centre of Evolutionary Biology, University of Western Australia. 2 August 2012.
36. The sexes and behavior inside an egg cell: a theoretical framework. Ottawa-Carleton Institute of Biology, Annual Meeting [presented by Derraugh L; co-authors: Gorelick R, Carpinone J, Bertram S]. 26 April 2012.
35. Are there differences between females and males? Not in traditional individuals, but maybe in gametes. Center for Inquiry (CFI) Ottawa. 21 Jan 2012.
34. How cytosine methylation acquired its gene regulation function. Canadian Society of Zoology, Annual Meeting, Ottawa – invited symposium titled “New perspectives on adaptation to environmental variation via epigenetic mechanisms” [presented by Wijenayake S; co-author: Gorelick R]. 18 May 2011.
33. Sex is boring, conservative, and reduces genetic variation. New Mexico State University. [presented by Gorelick R; co-authors: Heng HHQ, Carpinone J]. 29 April 2011.
32. Evolution of cacti is largely driven by genetic drift, not selection. Sul Ross State University (Alpine, Texas). 25 April 2011.
31. Sex is boring, conservative, and reduces heritable variation. Wayne State University. [presented by Gorelick R; co-authors: Heng HHQ, Carpinone J]. 24 February 2011.
30. Flirting with Isabella’s Rossellini’s *Green Porno*. Café Scientifique, Canadian Museum of Nature. 11 February 2011.
29. Are there differences between females and males? Views of a reluctant haploid essentialist. Department of Psychology, Carleton University. 10 February 2011.
28. Obligate self-sex: Why have sex without any genetic mixing? ASAP 2008 Workshop, Analogies in Gender Expression and Sexual Strategy in Animals and Plants, Universität Tübingen (Neuhausen, Germany). 11 September 2008.

27. Why have sex without reproduction or recombination? – evolutionary epigenetic theory. Département de Sciences Biologiques, Université de Montréal. 17 March 2008.
26. What is eukaryotic sex? What is its function? How did it originate? Department of Biology, University of Ottawa. 20 September 2007.
25. Defining biological theory, incorporating the comparative approach and a case study: from feminist and legal theories to an evolutionary theory of sex. Santa Fe Institute (New Mexico). 14 August 2007.
24. Quantifying diversity. University of British Columbia. 28 April 2006.
23. Creating and quantifying genetic diversity. Carleton University. 6 April 2006.
22. Evolution of diversity and sex in plants. State University of New York at Plattsburgh. 23 March 2006.
21. Genetic theory: epigenetics, environment, sex, linkage disequilibrium. University of South Alabama. 16 February 2006.
20. Quantification and causation of diversity: evolutionary, ecological, and genetic. University of Tennessee at Knoxville. 30 January 2006.
19. Variance contrivances of sex in flowering plants. Southern Illinois University at Carbondale. 10 January 2006.
18. Quantification and causation of diversity (evolutionary, ecological, and genetic). Southern Illinois University at Carbondale. 9 January 2006.
17. Combining population abundance and species density into a single biodiversity indicator using matrix equivalents of Shannon's and Simpson's indices. Heinz Center symposium on Biological Community Condition. 30 November 2005.
16. Quantifying interactions: molecules, genes, cells, individuals, and species. Washington State University. 15 April 2005
15. Macroevolutionary implications of molecular epigenetic signals in plants. Carleton University. 31 March 2005.
14. Macroevolutionary implications of molecular epigenetic signals in plants. University of Central Florida. 28 March 2005.
13. Quantifying interactions: molecules, genes, cells, individuals, and species. Arizona State University. 21 March 2005.
12. Ecosystem services: first quantify the underlying interactions. American Association for the Advancement of Science (Washington, DC). 18 March 2005.
11. Quantifying interactions: molecules, genes, cells, individuals, and species. University of Toronto at Mississauga. 16 March 2005.
10. Evolutionary implications of adding and removing cytosine methylation from plant genomes: polyploidy and biodiversity, plasticity and sex. Wilfrid Laurier University. 15 March 2005.
9. Epigenetics, molecular epigenetics, and Waddington. [presented by Gorelick R; co-author Laubichler M] Working Group on History and Philosophy of Developmental Biology; Philosophy of Science Association and History of Science Society, University of Texas at Austin. 21 November 2004.
8. Heritable epigenetic signals in cancer evolution. Amazon Project Conference on Breast Cancer, Università degli Studi di Palermo (Italy). 18 November 2004.
7. An information theoretic approach to understanding social organization. [presented by Gorelick R; co-authors: Fewell J, Bertram S] Santa Fe Institute, Social Insect Working Group Meeting in Margetshöchheim. Universität Würzburg (Germany). 9 Sept 2004.
6. Equivalence between genetic, epigenetic, and epistatic effects: implications for social behavior. Santa Fe Institute, Social Insect Working Group Meeting in Margetshöchheim. Universität Würzburg – Biozentrum (Germany). 9 Sept 2004.

5. Evolutionary epigenetic theory: polyploidy, environmental perturbations, radiations, and phenotypic plasticity. University of Toronto at Mississauga. 13 August 2004.
4. Evolutionary epigenetic theory in plants: gene duplications and environmental perturbations. Lakehead University. 5 May 2004.
3. Epigenetic theory in plant ecology: gene duplications and environmental perturbations. Trent University. 22 April 2004.
2. Evolutionary epigenetic theory: evolution of seed plant radiations, dioecy, sex chromosomes, and phenotypic plasticity. University of Akron. 17 April 2004.
1. Did insect pollination cause increased seed plant diversity? University of Arizona. 26 February 2003.

### 3. OTHER presentations (student names underlined)

83. Inclusive academic freedom. Inter-Disciplinary Lunch Event, Carleton University. 12 January 2021.
82. Measuring diversity using entropy (Shannon), covariance (Simpson), and independence (linkage disequilibrium). Canadian Society for Ecology & Evolution, Annual Meeting, Victoria. 9 May 2017.
81. Is the brittle prickly pear cactus dispersed by sea otters in the Salish Sea? [poster] Canadian Society for Ecology & Evolution, outreach poster, Annual Meeting, Victoria. 8 May 2017.
80. No differences between female and male eukaryotes: myths of anisogamy and asymmetrical meiosis. Canadian Society for Ecology & Evolution, Annual Meeting, St. John's. 10 July 2016.
79. No essential differences between females and males. Inter-Disciplinary Lunch Event, Carleton University. 4 November 2015.
78. Blogging, gagging, and academic freedom. Inter-Disciplinary Lunch Event, Carleton University. 9 September 2015.
77. Implications of chromosomal fission, fusion, and duplication for cycad evolution and diversity. Cycad 2015. Triennial Meeting, Medellín, Columbia. [presented by Gorelick R; co-authors: Olson K, Fraser D, Little DP]. 20 August 2015.
76. What is an individual? Animal Behavior Society, Annual Meeting, Anchorage, Alaska. 13 June 2015.
75. Cacti in Canada: climate and range limits. Canadian Society for Ecology & Evolution, Annual Meeting, Saskatoon. 22 May 2015.
74. Multiple ontologies + single consensus axiology = ?. Inter-Disciplinary Lunch Event, Carleton University. 29 January 2015.
73. #Strategy. Hashtag Series, Carleton University. 21 January 2015.
72. Can latitudinal richness gradients be measured in the past? Society for Vertebrate Paleontology, Annual Meeting, Berlin. [presented by Fraser D; co-authors: Gorelick R and Rybczynski N]. 6 Nov 2014.
71. Are specialized cactus flowering structures more like Mount St. Helens or the leaning Tower of Pisa? Inter-Disciplinary Lunch Event, Carleton University. 11 September 2014.
70. Phylogenetic overdispersion of late Cenozoic ungulate communities [presented by Fraser D; co-authors: Gorelick R and Rybczynski N]. Canadian Society for Ecology & Evolution, Annual Meeting, Montréal. 27 May 2014.
69. Insights into post-secondary education and Measuring diversity. Rock Bridge High School (Columbia). 8 April 2014.
68. Phenology of Arctic plants in the Canadian Arctic Archipelago [presented by Panchen Z; co-authors: Gorelick R, Jain-Schlaepfler S, Osborne O] Ottawa-Carleton Northern

- Research Symposium, Annual Meeting, University of Ottawa. 6 February 2014.
67. What is science? Inter-Disciplinary Lunch Event, Carleton University. 15 January 2014. [jointly presented by Evelyn Maeder (criminology & law) and Root Gorelick]
  66. Global climate change drives temporal patterns of North American mammal beta diversity. Society for Vertebrate Paleontology, Annual Meeting, Los Angeles. [presented by Fraser D; co-authors: Hassall C, Gorelick R, and Rybczynski N]. 1 Nov 2013. Peer-reviewed abstract published in *Journal of Vertebrate Paleontology* 33 (online supplement, October 2013): 130.
  65. Measuring bizarreness of gerrymandered voting districts. Inter-Disciplinary Lunch Event, Carleton University. 11 September 2013.
  64. Quantifying division of labour: a unified framework. Annual Behaviour Society, Annual Meeting, Boulder, CO [presented by Gorelick R; co-author Bertram S] 31 July 2013.
  63. Sexual selection inside a fertilized egg? Society of Plant Signaling & Behaviour, Annual Meeting, Vancouver, BC. 10 July 2013. [I was intentionally assigned the last talk of the meeting to keep people at the meeting and energized to the end.]
  62. Warmer climates weaken latitudinal gradients. Society for Vertebrate Paleontology, Annual Meeting, Raleigh, NC. [presented by Fraser D; co-authors: Hassall C, Gorelick R, and Rybczynski N]. 18 Oct 2012. Peer-reviewed abstract published in *Journal of Vertebrate Paleontology* 32 (Suppl. 3): Technical Session VIII.
  61. Black swans, white buffalo, 100-year storms, democratisation, and Indigenous (Turtle Island) science. Inter-Disciplinary Lunch Event, Carleton University. 19 Sept 2012.
  60. Sex circumscribes individuals. Society for Study of Evolution and Canadian Society for Ecology & Evolution, Annual Meeting, Ottawa. 6 July 2012.
  59. Miocene hoofed mammal range size and occupancy under conditions of global climate change. Society for Study of Evolution and Canadian Society for Ecology & Evolution, Annual Meeting, Ottawa [presented by Fraser D; co-authors: Gorelick R, Rybczynski N]. 6 July 2012.
  58. Sexual selection inside an egg cell. Animal Behaviour Society, Annual Meeting, University of New Mexico [presented by Gorelick R; co-authors: Derraugh L, Carpinone J, Bertram S] 11 June 2012.
  57. What is theory? Inter-Disciplinary Lunch Event, Carleton University. 27 February 2012.
  56. Are twins one individual or two? Science Café, Ottawa. 26 October 2011.
  55. Should twins count as one or two individuals? Inter-Disciplinary Lunch Event, Carleton University. 15 September 2011.
  54. Sexy males signal more often: the relationship between signal structure and quantity. Animal Behavior Society, Annual Meeting, Indiana Univ. [presented by Fitzsimmons L; co-authors: Bertram S, Whattam E, Rundle H, Gorelick R]. 27 July 2011.
  53. Warmer climates weaken latitudinal gradients. Canadian Society of Zoology, Annual Meeting, Ottawa [presented by Fraser D; co-authors: Gorelick R, Rybczynski N]. 17 May 2011. [Cas Lindsey award for best student talk in the Evolution, Ecology & Ethology section].
  52. Gene regulatory role of cytosine methylation. Canadian Society for Ecology and Evolution, Annual Meeting, Banff Centre [presented by Wijenayake S; co-author Gorelick R]. 15 May 2011.
  51. The evolution of ruminant masseter and cranial morphology: model selection and the phylogenetic comparative method. Canadian Society for Ecology & Evolution, Annual Meeting, Banff Centre [presented by Fraser D; co-author Gorelick R]. 15 May 2011.



50. Interplay between signaling attractiveness and effort. Canadian Society for Ecology and Evolution, Annual Meeting, Banff Centre [presented by Bertram S; co-authors Whattam E, Fitzsimmons L, Gorelick R]. 13 May 2011.
49. Pre-karyogamic sexual selection. Canadian Society for Ecology and Evolution, Annual Meeting, Banff Centre [presented by Derraugh LJ; co-authors Carpinone J, Bertram S, Gorelick R]. 13 May 2011.
48. Sex decreases genetic variation. Canadian Society for Ecology and Evolution, Annual Meeting, Banff Centre [presented by Gorelick R; co-author Heng HHQ]. 13 May 2011.
47. How maple trees make maple syrup. Science Café, Ottawa. 23 March 2011.
46. What is diversity How should we measure it? Inter-Disciplinary Lunch Event, Carleton University. 27 January 2011.
45. Differences between females and males. Inter-Disciplinary Lunch Event, Carleton Univ. [presented by Gorelick R; co-authors Carpinone J, Derraugh L]. 23 September 2010.
44. Differences between females and males: Are there any? Science Café, Ottawa [presented by Gorelick R; co-authors Carpinone J, Derraugh L]. 15 September 2010.
43. What exactly are the differences between females and males? Canadian Society for Ecology and Evolution, Annual Meeting, Université Laval [presented by Gorelick R; co-authors Carpinone J, Derraugh L]. 12 May 2010.
42. Evolution of gynogenesis. Canadian Society for Ecology and Evolution, Annual Meeting, Université Laval [presented by Derraugh L; co-author Gorelick R]. 10 May 2010.
41. Trojan sperm. Canadian Society for Ecology and Evolution, Annual Meeting, Université Laval [presented by Carpinone J; co-authors Gorelick R, Derraugh L]. 10 May 2010.
40. Syngamy evolved from meiosis. Ottawa-Carleton Institute of Biology, Annual Symposium, University of Ottawa [presented by Carpinone J; co-author Gorelick R]. 15 April 2010.
39. Fall foliage 101: Why do leaves turn different colours? Science Café, Ottawa. 30 Sept 2009.
38. Origin and maintenance of sex: the evolutionary joys of self sex. Society for Study of Evolution, Annual Meeting, University of Idaho. 13 June 2009.
37. Evolution of sex chromosomes in birds. Canadian Society for Ecology and Evolution, Annual Meeting, Dalhousie Univ. [presented by Gorelick R; co-authors Mansfield M, Dawson J]. 16 May 2009.
36. Measuring biodiversity using normalized mutual entropy with proportional resampling. Canadian Society for Ecology and Evolution, Annual Meeting, Dalhousie University [presented by Yasseen A; co-author Gorelick R]. 15 May 2009.
35. Breaking up: Chromosomal fission in the radiation of ferns. Canadian Society for Ecology and Evolution, Annual Meeting, Dalhousie Univ. [presented by Olson K; co-author Gorelick R]. 15 May 2009.
34. Cacti: Images from Brazil, Old Mexico, New Mexico...and Kaladar! Science Café, Ottawa. 30 January 2009.
33. Does polyploidy induce diversity in seed plants? Canadian Society for Ecology and Evolution, Annual Meeting, University of British Columbia. 13 May 2008.
32. What is sex? A feminist and queer look. Science Café, Ottawa. 30 April 2008.
31. Angiosperm diversity is not caused by insect pollination. Plant-animal interaction seminar. University of Ottawa. 7 March 2008.
30. Creating and quantifying biological diversity. Mathematics colloquium. Carleton University. 8 February 2008.
29. Is lack of cycad diversification due to lack of polyploidy? 8<sup>th</sup> International Conference on Cycad Biology, University of Panama (Panama City). 13 January 2008.

28. Origin and maintenance of sex via diminution of heritable variation. Canadian Society for Ecology and Evolution, Annual Meeting, University of Toronto. 20 May 2007.
27. What is sex? How did it evolve? Research Works seminar at Carleton University. This talk was covered by the science reporter for the Toronto *Globe & Mail*, "Sex and the single organism" by Anne McIlroy, 9 December 2006, page F8). 28 November 2006.
26. Cacti of south central New Mexico. Ottawa Cactus & Succulent Group. 5 Nov. 2006.
25. Quantifying ecological and genetic diversity using normalized mutual entropy [poster]. Canadian Society for Ecology and Evolution, Université du Québec à Montréal. 3 April 2006.
24. Quantifying biodiversity. American Association for the Advancement of Sciences, Environmental Policy Fellows Seminar (Washington DC). 12 January 2006.
23. Cacti of southern New Mexico and Arizona. National Center for Environmental Assessment seminar, U.S. Environmental Protection Agency (Washington DC). 8 December 2005.
22. What is theory? A feminist perspective? Southwest Colloquium on the History and Philosophy of the Life Sciences, Arizona State University. 2 April 2005.
21. Evolution of dioecy and sex chromosomes in cycads. [presented by R Gorelick; co-author: R Osborne] 7<sup>th</sup> International Conference on Cycad Biology. Xalapa, Veracruz, Mexico. 12 January 2005.
20. The stream orchid, *Epipactis gigantea*, along the Colorado River in the Grand Canyon. Arizona Orchid Society. 1 November 2004.
19. Quantifying social interactions. [presented by Gorelick R; co-authors Fewell J, Killeen P, Bertram S], Math & Cognition Seminar. Arizona State University. 5 October 2004.
18. Did polyploidy epigenetically trigger macroevolutionary radiations? Evolution, Annual Meeting, Colorado State University. 27 June 2004.
17. Calling time in the Texas field cricket (*Gryllus texensis*) has zero additive genetic variance. [presented by Gorelick R; co-author Bertram S] Evolution, Annual Meeting, Colorado State University. 27 June 2004.
16. Heritability of calling time in the Texas field cricket (*Gryllus texensis*; Orthoptera). [presented by Bertram S; co-author Gorelick R] Animal Behavior, Annual Meeting, Oaxaca, Mexico. 13 June 2004.
15. Model organisms obfuscate research on the evolutionary origins of sex and sex chromosomes. Southwest Colloquium on the History and Philosophy of the Life Sciences, University of Texas at Austin. 6 March 2004.
14. Using normalized mutual entropy to quantify division of labor [poster]. [presented by Fewell J; co-authors Bertram S, Killeen P, and Gorelick R] Mathematics and Algorithms of Social Insects, Georgia Tech University. 15 December 2003.
13. Quantifying division of labor using normalized mutual entropy. [presented by Gorelick R; co-authors Bertram S, Fewell J, Killeen P] Animal Behavior, Annual Meeting, Boise State University. 23 July 2003.
12. Decomposing multi-locus linkage disequilibrium. [presented by Gorelick R; co-author Laubichler M] Evolution, Annual Meeting, California State Univ, Chico. 22 June 2003.
11. Estimating epigenetic effects using parent-offspring regression. [presented by Gorelick R; co-author Bertram S] Evolution, Annual Meeting, California State University, Chico. 22 June 2003.
10. Quantifying division of labor. [presented by Gorelick R; co-authors Bertram S, Fewell J], Math and Cognition Seminar. Arizona State University. 15 April 2003.
9. Quantifying division of labor in social insects [poster]. [presented by Gorelick R; co-authors Bertram S, Fewell J], University of Arizona. 5 April 2003.

8. Defining and estimating epigenetic components of heritability. Math and Cognition Seminar. Arizona State University. 12 November 2002.
7. Evolution of dioecy and sex chromosomes via nuclear methylation driving Muller's ratchet. Evolution, Annual Meeting, University of Illinois at Urbana-Champaign. 29 June 2002.
6. Mathematical modeling of the effects of DNA methylation over evolutionary time. Math and Cognition Seminar. Arizona State University. 2 April 2002.
5. Evolution of dioecy and sex chromosomes via nuclear methylation driving Muller's ratchet. California Population and Evolutionary Genetics (CalPEG), Annual Meeting, University of California at Santa Barbara. 15 December 2002.
4. Colony response to graded resource changes: an analytical model of the influence of genotype, environment, and inheritance pattern. [presented by Gorelick R; co-authors Bertram S, Fewell J], Math and Cognition Seminar. Arizona State University. 6 November 2001.
3. Inducing sex change and organogenesis via demethylation in the endangered cycad *Encephalartos woodii* [poster]. [presented by Gorelick R; co-author Osborne R] Botanical Society of America, Annual Meeting (Albuquerque, NM). 14 Aug. 2001.
2. Attracting a mate can also attract a predator: What should an individual do? Evolutionary Game Theory Seminar. Arizona State University. 26 April 2000.
1. Does insect pollination facilitate seed plant diversity? [poster]. University of Arizona. 7 April 2001.

#### 4. Other Professional Activities

Grant proposals reviewed for: Natural Science and Engineering Research Council of Canada (NSERC; 4) and U.S. National Science Foundation (NSF; 6)

Member of the Scientific Advisory Committee, Canadian Institute of Ecology and Evolution (reviewed 8 grant proposals in 2016)

Member of Research Committee, Cactus and Succulent Society of America (2009-2021); reviewed 61 grant proposals

Member of the International Organization for Succulent Plant Study (IOS) (2014 - )  
[I was the first member inducted from Canada]

Panel Chair (general biological sciences), Ontario Graduate Scholarship (OGS), Ontario Ministry of Training, Colleges, and Universities (2011); reviewed 65 proposals

I reviewed chapters in the following books (N=1):

*Macroevolution: interpretation, explanation, evidence*, edited by Emanuele Serrelli and Natalie Gontier (2014) Springer

I reviewed the following books or large parts thereof (N=3):

*Tree: a life story* by David Suzuki and Wayne Grady (2011) Greystone Books

*Genome theory* by Henry Heng (2011) Springer

*Genome tango* by Henry Heng (2013) Oxford University Press

*Debating cancer: the paradox in cancer research* by Henry Heng (2016) World Scientific

I reviewed proposals for the following books (N=1):

*The biology of deserts* (2<sup>nd</sup> edition) by David Ward (2014) Oxford University Press

I reviewed manuscripts for the following journals (N = 81):

<i>Genetics</i> (5)	<i>Journal of Applied Ecology</i>	<i>Proceedings of Royal Society, Biology</i>
<i>Animal Behaviour</i> (7)	<i>Conservation Biology</i>	<i>International Journal of Plant Sciences</i> (2)
<i>Behavioral Ecology</i> (2)	<i>Biological Theory</i> (2)	<i>Memoirs of the New York Botanical Garden</i>
<i>Ecography</i> (4)	<i>Ecological Economics</i>	<i>American Journal of Botany</i> (7)
<i>BioEssays</i> (2)	<i>Epigenetics</i>	<i>Plant Ecology &amp; Diversity</i> (3)
<i>Evolution</i>	<i>Genetica</i>	<i>African Journal of Biotechnology</i>
<i>Oecologia</i> (3)	<i>Haseltonia</i> (5)	<i>Ethnic and Racial Studies</i> (2)
<i>Algorithms</i> (2)	<i>Amphibia-Reptilia</i>	<i>Advances in Complex Systems</i>
<i>Current Zoology</i>	<i>Plant Biology</i>	<i>Journal of Empirical Legal Studies</i>
<i>PLoS One</i> (2)	<i>Annals of Botany</i>	<i>Ideas in Ecology &amp; Evolution</i> (8)
<i>Societies</i>	<i>Plant Science</i>	<i>Journal of Experimental Zoology</i> (2)
<i>Madroño</i> (2)	<i>Frontiers in Zoology</i> (2)	<i>Flowering Plants of Africa</i>
<i>Scientific Reports</i> (2)	<i>Evolutionary Biology</i>	<i>Revista Chilena de Historia Natural</i>
<i>Ecology &amp; Evolution</i>		

## F ACADEMIC RESPONSIBILITIES

### 1. Undergraduate courses taught

BIOL 2002 – Plant Form and Function (2007-2011, 2013-2016)  
 BIOL 3609 – Evolutionary Concepts (2009)  
 BIOL 4103 – Population Genetics (2007, 2008, 2015)  
 BIOL 4203 – Evolution of Sex (2008, 2010, 2011, 2014, 2021)  
 BIOL 4506 – Cactus Biology (2020)  
 INDG 3901 – Indigenous perspectives in ecology & evolution (2013)

BIOL 3901 – Directed Studies (2020)  
 BIOL 4901 – Directed Studies (2006-2011)  
 INSC 3909 – Independent Study (2007, 2008, 2014)  
 INSC 4907 – Honours Project (2011, 2012, 2014, 2020, 2021)  
 INSC 4908 – Honours Thesis (2011, 2012, 2014, 2015, 2016)  
 BIOL 4908 – Honours Thesis (2007-2012, 2014-2016)  
 ENSC 4906 – Honours Thesis (2011, 2012, 2015, 2016)

1980-1982 and 1997-1998: I taught ten mathematics courses at Temple University, State University of New York at Old Westbury, New Mexico State University, and Montgomery County Community College. I also taught portions of two women's studies courses.

### 2. Graduate courses taught

BIOL 5501 – Philosophy of Adaptationism (2008)  
 BIOL 5501 – Evolution of Insect Flight (2008)  
 BIOL 5502 – Evolution of Sex (2008, 2010, 2021)  
 BIOL 5502 – Population Genetics (2016)  
 BIOL 5510 – Advanced Evolutionary Biology (2011, 2014)  
 BIOL 6300 – Advanced Plant Biology (2010) (co-taught with several others)

### 3a. Students Supervised – Degrees Completed

#### Ph.D.

Sophie Lorioux (2007-2011) (primary supervisor: Olivier Lourdais, Université de Poitiers) Early environmental influences and maternal developmental regulation: ecological and evolutionary implications in two squamate species.

Danielle ‘Dani’ Fraser (2010-2015) (co-supervisor: Natalia Rybczynski, Canadian Museum of Nature) Change in North American mammal community structure under late Cenozoic (~36 Ma – present) climate change.

Zoe Panchen (2011-2016) Impact of climate change on flowering and fruiting phenology of Arctic plants in Nunavut, Canada.

#### M.Sc.

Abdool Yasseen (2010) Quantifying diversity with normalised mutual entropy.

Krystle Olson (2010) Genome duplication, chromosomal fission, and their roles in adaptive and non-adaptive radiations of plants.

Jessica Carpinone (2010) Evolution of syngamy.

Lindsay Derraugh (2012) Evolution and diversification of sex: from sex to the sexes.

Sanoji Wijenayake (2012) DNA methyltransferase enzymes may not enhance genomic protection against exogenous DNA invasions.

Victoria Nowell (2015) (co-supervisor: Tyler Smith, Agriculture Canada) Environmental factors limiting distribution of the endangered few-flowered club-rush, *Trichophorum planifolium* (Cyperaceae). *Graduated with distinction.*

Ross Young (2018). How maple, birch, and walnut trees make edible sap in late winter and early spring.

Drew Hayes (2019) (co-supervisor: Tyler Smith, Agriculture Canada) The genetic structure of *Celtis tenuifolia* and comparisons to the related species *C. occidentalis*, and *C. laevigata*: Implications for the conservation management of threatened populations in Southern Ontario.

#### B.Sc. Honours

Mahindini Rajendra (2007) Correlation between ploidy and herbaceousness in roses.

Melissa Mansfield (2007-2008) Evolution of smaller avian W chromosomes.

Lindsay Derraugh (2009) Evolution of gynogenesis.

Se-Wing Huang (2012) Is selection relaxed in engineered environments?

Lauren Montgomery (2012) Evolution of distinct mating types.

Laura Derksen (2012) Are paedomorphic cacti polyploid?

Cindy Shaheen (2014) Mathematical model of multi-locus functional epistasis.

Duncan Macdonald (2014-2015) Microwear analysis of extant & extinct Arctic ungulate teeth.

Davina Gordon (2014-2015) Evolutionary origin of eukaryotic cells.

Boyan Woychyshyn (2015-2016) Phylogenetic analysis of white-nose syndrome in bats.  
 Carly Casey (2015-2016) Effects of climate change on Arctic plant flowering.  
 Winston Campeau (2017-2018) Using graph theory to measure diversity.  
 Ruston Fellows (2014-2019) Indigenous ecology.

### **Undergraduate independent study**

Laura Gleeson (2006) Evolution of X inactivation and dosage compensation.  
 Marc Kiely (2006) Correlates and possible causes of species invasions.  
 Kahina Abdesselam (2007) Non-Fisherian alternative measures of heritability.  
 Abdool Yasseen (2007) Global health policy implications of prion diseases.  
 Lindsay Derraugh (2008) Evolution of gynogenesis.  
 Tyler Black (2009) Is there cryptic sex in Hyphochytriomycota?  
 Alex Chung (2010) Biological applications of Shannon's entropy.  
 Katrina Gaibisels (2010) Epigenetics of disease.  
 Ross Young (2011) Correlations of gynogenesis and parthenogenesis.  
 Sewon Park (2011) Ploidy in cacti.  
 Ross Young (2011) How maple trees make maple syrup.  
 Joey Carter (2012) Paleoecological inferences from ungulate teeth.  
 Sofia Jain-Schlaepfer (2013) Phenological responses to climate change.  
 Jenny Tutton (2014) Mathematically modeling the red queen running backward.  
 Carly Casey (2015) What influences gender of sexually labile *Silene acaulis*?  
 Mat Roloston (2018) Latitudinal patterns of functional diversity in mammals  
 Kika Otiono (2018) Is karyogamy a modified form of meiosis?  
 Samantha Sieklicki (2018) Optimizing societal knowledge acquisition  
 Ashan Ayanarajan (2019) Landmark analysis of teeth to identify fossil equines  
 Nadeea Rahim (2019) Epigenetics and women's rights.

### **3b. Students Supervised – Degrees in Progress**

#### **M.Sc.**

Zoe Landry (2019-2021) (co-supervisor: Dani Fraser, Canadian Museum of Nature)  
 Paleoevolution and paleoecology of Arctic wolves.

#### **B.Sc. Honours**

Nadeea Rahim (2020-2021) How biologists use Black women's bodies to push the  
 narrative of the "other"

### 3c. Student Awards

Abdool Yasseen: Hibiscus Millennium Award (2008) \$1,000

Krystle Olson: Bonneville Family Scholarship in Botany (2009) \$1,000

Lindsay Derraugh: Lambda Foundation for Excellence Award (2011) \$2,349

Sanoji Wijenayake: Lorraine Crincket Endowment Award in Science (2011) \$1,506

Emma Micalizzi: Northern Scientific Training Program grant (Department of Aboriginal Affairs and Northern Development, Canada) (2014) \$1,675

Danielle ('Dani') Fraser:

- NSERC PGS-D (2010-2013) \$63,000 (\$21,000 per year)
- Cas Lindsey award for best student talk in the Evolution, Ecology & Ethology section at the Canadian Society for Zoology (2011) \$300
- NCEAS R Macroevolution workshop – travel award (2011) \$2,000
- Koningstein Scholarship for Excellence in Science & Engineering (2011) \$6,500
- International Fulbright Science and Technology Award (2012) \$15,000
- Taylor & Francis Award for best student article in the *Journal of Vertebrate Paleontology* for your article titled, "Anterior dentary shape as an indicator of diet in ruminant artiodactyls." (runner up) (2012)
- Graduate Research and Innovative Thinking (GRIT) award (2013) \$3,500
- Ontario Graduate Scholarship (2013) \$15,000
- Dawson Pre-Doctoral Fellowship Grant, Society for Vertebrate Paleontology (2013) \$3,000
- Sir James Lougheed Award of Distinction, Government of Alberta (2014) \$20,000
- Ontario Graduate Scholarship (2014) \$15,000
- Smithsonian Institution Peter Buck Postdoctoral Fellowship at the National Museum of Natural History (2015-2017) \$96,000 USD (\$48,000 USD/year) Supervisors: Kate Lyons and Peter Wagner
- Graduate Student Open Access Award (2015) \$1,000

Zoe Panchen:

- Bonneville Family Scholarship in Botany (2012) \$1,000
- Macoun Travel Award; Canadian Botanical Association (2012) \$500
- International Climate Change Conference, travel scholarship (2012) \$300
- Stan Rowe Award for best contribution in the Ecology and Conservation Section of the Canadian Botanical Association (honourable mention) (2012)
- Canadian Foundation for University Women, Beverly Jackson award (2013) \$2,000
- Parks Canada: round-trip transportation to Lake Hazen, Quttinirpaaq National Park, Ellesmere Island (2013)
- Ontario Graduate Scholarship, reversion list (2013)
- NSERC CGS-D (2013-2015) \$70,000 (\$35,000 per year)
- Northern Scientific Training Program grant (Department of Aboriginal Affairs and Northern Development, Canada) (2013) \$2,700
- Koningstein Scholarship for Excellence in Science & Engineering (2014) \$8,000
- Graduate Research and Innovative Thinking (GRIT) award (2014) \$4,500
- Northern Scientific Training Program grant (Department of Aboriginal Affairs and Northern Development, Canada) (2014) \$2,575

- Arctic Circle fall outreach Ottawa-Resolute ticket student award (round-trip airfare from Ottawa to Resolute for community outreach. In kind contribution by First Air (2014) of approximately \$4,400
- Hamlin Graduate Fellowship (2015) \$2,282
- Polar Continental Shelf Program, Natural Resources Canada (2015) \$38,757
- George Carmody Travel Award (2015) \$1,250
- Ontario Graduate Scholarship (2015) \$15,000
- Northern Scientific Training Program grant (Department of Aboriginal Affairs and Northern Development, Canada) (2015) \$3,100
- Stan Rowe Award for best contribution in ecology from the Canadian Botanical Society (honourable mention) (2015)
- Alfred and Isabel Bader Student Travel Award (2016) \$6,000
- Arctic Institutes of North America, Jennifer Robinson Memorial Scholarship (2016) \$5,000
- Graduate Student Open Access Award (2016) \$1,000
- Lionel Cinq-Mars award for best student presentation (honourable mention) at the Canadian Botanical Association annual meeting (2016)
- NSERC and L'Oréal-UNESCO for Women in Science Supplement (2019) \$30,000

Victoria Nowell:

- Bonneville Family Scholarship in Botany (2014) \$1,000
- Ontario Ministry of Natural Resources, Species at Risk Stewardship Fund Grant (2014-2015) \$5,000
- Ontario Biodiversity Summit, best student poster award (2015)

Ross Young: Hibiscus Millennium Award (2017) \$3,500

#### **4. Teaching Innovation**

- Multiple writing assignments in large second-year class (150 students/class).
- Inclusion of feminist and gender studies, including transgender studies, in biology classes.
- Teaching second-year botany as part art history and part architecture.
- Emphasis on critical thinking and effective communication, not subject matter content.
- Extensive use of deconstruction/reconstruction when teaching science.
- Developed a new 4<sup>th</sup> year course on evolution of sex.
- Developed a new 4<sup>th</sup> year course on cactus biology.
- Developed a new 3<sup>rd</sup> year course on Indigenous perspectives in ecology and evolution. (through Carleton's School of Canadian Studies' program in Indigenous Studies).

#### **5. Teaching Philosophy**

In teaching, I consider content to be largely irrelevant, instead focusing on teaching students how to think and “the 3 R’s”: reading, writing, and arithmetic. I teach introductory botany course as though it were art history or architecture, mostly discussing beautiful images of plants and what constitutes creative design (never to be confused with ‘intelligent design’), even if it seems suboptimal. In lieu of dry course materials, I teach via questions, such as ‘Why do leaves turn colour in fall?’ and ‘How do maple trees make maple syrup?’ (we understand the broad-brush answers to both questions, but surprisingly the details of both questions are still active research areas). In teaching evolution of sex, I go way beyond the nuts-and-bolts science to get students to question the following:



- What is sex? Why is it so pervasive? Why is the two-fold cost of sex a Trojan horse?
- Does sex with oneself count as sex? Why does automixis not refer to a hybrid SUV?
- What's the difference between sex and gender? Why is it possible to be transgendered?
- Does sex rejuvenate? What is the relationship between sex, death, and development?
- Are there differences between females and males? Are these sociological constructs?

I try tearing down artificial borders between disciplines by teaching across disciplines, such as a course in Indigenous Studies or courses in Women's and Gender Studies.

## **G ADMINISTRATIVE RESPONSIBILITIES (INCLUDING COMMITTEE WORK)**

My administrative activities range from negotiating with the university's administration to preserve Senate's oversight in quality assurance and mandate review, protecting rights of internal members of the Board of Governors and their constituencies, as well as arranging visits of external speakers, coordinating Science Café, and founding/organizing the Inter-Disciplinary Lunch Event (IDLE).

### **1. External**

Ontario Confederation of University Faculty Associations (OCUFA) – inaugural member of OCUFA ad hoc committee on university governance (2018)

### **2. University**

Carleton University Academic Staff Association (CUASA)

Communications Officer (2016-2017)

Member of Collective Bargaining Committee (2017-2019)

Member (honourary) of Equity Committee (2016-2017)

President (2017-2019)

Past-president (2019-2022)

Collective Bargaining Committee and member of Negotiating Team (2021- )

Carleton University Board of Governors (2013-2016)

(elected by faculty at Carleton University)

Member of Board review panel for re-appointment of University President (2012)  
(elected to this panel by the university Senate)

Member of the Board's Building Committee (2013-2014)

Member of the Board's Community Relations and Advancement Committee (2013-2016)

Member of the Board's Governance Committee (2014-2015)

I authored a Carleton Board of Governors blog: <http://carletonbogblog.wordpress.com/>.

I became the *de facto* monitor of and ardent advocate for due process, equal protection, free speech, and academic freedom on Carleton University's Board of Governors.

Senate (2009-2017)

Senate Executive Committee (2010-2012)

Senate Governance Committee (2007-2012)

Senate Equity Committee (2011-2012)

I authored a Carleton University Senate blog: <http://carletonsenateblog.wordpress.com/>.

Copyright Breach Review Panel (2011)

Search committee (alternate member) for Dean of Science (2006-2007)

Member of Advisory Committee, American Studies Research Centre (Carleton) (2010 - )

Affiliated faculty member in Global Genders and Sexualities, part of the Bachelor of Global and International Studies (2017 - )

Founder and coordinator of Inter-Disciplinary Lunch Event (IDLE) at Carleton (2010-2016 and 2020-present).

Every second week during fall and winter terms (winter does not end in Ottawa until late April or early May), I bring together faculty members from five faculties and twenty different departments to discuss whatever interdisciplinary topic the presenter thinks might interest their colleagues. Recently, we added post-docs, PhD students, and librarians into the mix. We convene for one-hour, taking turns presenting our latest and most radical ideas, remembering to make our work accessible to people in any discipline. Everybody is welcome to attend and present. If colleagues find something interesting, then we should be willing to presume that it is indeed interesting and probably of value across most disciplines. By the time the presenter has finished their first slide, usually everyone in the room has spoken. While comments and criticisms fly from all directions, this is the nicest and most amicable group I have ever seen. Topics have ranged from pregnant men, to the mathematics in Samuel Beckett, to connections between paleoart and cognitive neuroscience, to Aboriginal higher education, to teenage sexting, ironically to sexual approaches to computer security. See <https://rootgorelick.com/idle/> for a schedule of past and future topics.

Co-organizer of Darwin Week (9-13 February 2009) at Carleton University.

Beginning in 2007, Chris Burn (geography), Heidi Maibon (philosophy) and I organized Carleton's Darwin week to celebrate the bicentennial of the birth of Charles Darwin and the sesquicentennial of the publication of the *Origin of Species by Means of Natural Selection*. We not only brought in speakers to convey the biology and geology, for which Darwin is best known, but also the religious implications of his work, as well as Darwinian perspectives on the modern phenomenon of climate change. We brought to Carleton such luminaries as Dan Dennett, Rosemary and Peter Grant, David Livingstone, Mike Summerfield, Charley Krebs, and Patty Gowaty. Almost all of these events were standing-room-only.

Member of Advisory Committee, American Studies Research Centre (Carleton) (2010 - )

Carleton Fossil Free Faculty – active member since this group's inception in 2014.

### 3. Faculty

Coordinator of Carleton's Science Café (2009-2012)

Organizer of 2009 Discovery Lecture, featuring Charles Goodnight and Andrew Simons

Member of search committee for associate dean of science for research (2010)

Member of Carleton University's Environmental Science Council (2013 - )

Graduate Student Committees outside of biology on which I was an external: 5

Undergraduate Student Committees outside of biology: 4

#### 4. Department

Biology Department Graduate Committee (2008-2010)  
Biology Department Recruitment and Retention Committee (2009-2010)  
Biology Department Planning Committee (2007-2009)  
Faculty Representative for the Carleton University Biology Society (2007/08 and 2010/11)  
Biology Department representative for the Carleton University Library (2013-2018; 2020-2021)  
Biology Department Planning & Priorities Committee (2015-2017)  
Canada 150 Research Chairs search committee member (2017)  
Biology Department search committee member - Plant Population Molecular Genetics or Genomics (2017-2018)

Graduate Student Committees in biology on which I was an advisor: 13

Graduate Student Committees in biology on which I was an external or chair: 26

I hosted (and often partly funded) the following speakers at Carleton:

Joe Roman, University of Vermont (16 Feb 2007)  
Chris Eckert, Queen's University (26 October 2007)  
Risa Sargent, University of Ottawa (15 February 2008)  
Charles Goodnight, University of Vermont (4 February 2009)  
Charley Krebs, University of British Columbia (11-12 February 2009)  
Joe Roman, University of Vermont (12 February 2009)  
Simon Dalby, Carleton University (12 February 2009)  
Peter Andr e, Carleton University (12 February 2009)  
Patty Gowaty, University of California at Los Angeles (13 February 2009)  
Steve Arnold, Oregon State University (16-17 April 2009)  
Rosemary Grant, Princeton University (16-17 April 2009)  
Peter Grant, Princeton University (16-17 April 2009)  
Spencer Barrett, University of Toronto (26-27 November 2009)  
Rachel Massicotte, Universit  de Montr al (19 March 2010)  
Ingela Alger, Carleton University (15 October 2010)  
Henry Heng, Wayne State University (9 March 2012)  
Aurora Nedelcu, University of New Brunswick (13 April 2012)  
Marie-Eve Drouin-Gagn , Universit  Concordia (17-19 September 2013)  
Alfred Villaneuve, Algonquin artist and naturalist (10 October 2013)  
Emily Missyabit McAuley, Simon Fraser University (17 and 22 October 2013)  
Richard Primack, Boston University (8 November 2013)  
Mike Hulme, King's College (13-14 Nov. 2014) [co-hosted on the coat-tails of Chris Burn]  
Samantha Hopkins, University of Oregon (29 May 2015)  
Tricia Johnson, Rush University (16 October 2015)  
David Inouye, University of Maryland (12 September 2016)

#### H HONOURS

Nominated for TVO's 2010 Best Lecturer Award.

Nominated for Ottawa's 2012 Capital Educators' Award.

Nominated for president of Carleton University Academic Staff Association (declined) (March 2012).

British Cactus and Succulent Society photo contest (2015); one of 12 best photos submitted; featured on 2016 calendar.

## I MEDIA

### Radio

- 2009 Sept 28 - CBC Radio 1 (“All in a Day”) – Why do leaves turn red in fall?
- 2011 Oct 26 - CBC Radio 1 (“Ottawa Morning”) – Are twins one individual or two?
- 2014 Jan 29 - CBC Radio 1 (“Ottawa Morning”) – Barack Obama’s State of the Union
- 2015 Dec 1 - CFRA 580 AM News Talk Radio – Blogging the Carleton Board of Governors.
- 2015 Dec 8 - CKCU 93.1 FM – Carleton BoG Gags Committee (and not in a fun way). <http://cod.ckcufm.com/programs/425/24877.html>. Joseph Hutt interviewed me at 12:00 – 26:00 on this link, plus more on BoG at 37:20 – 43:20.
- 2015 Dec 14 - CFRA 580 AM News Talk Radio – Carleton board of governors representative fights for academic freedoms (by Alison Sandor). <http://www.cfra.com/news/2015/12/14/carleton-board-of-governors-representative-fights-for-academic-freedoms>.
- 2016 April 7 - CJWW 600 AM - Campus chill: threats to academic freedom (by Adam Brilz). <http://www.saskatoonhomepage.ca/news/local-news/73224-campus-chill-threats-to-academic-freedom>.
- 2016 April 18 - CFRA 580 AM News Talk Radio – “Three groups pass no confidence motions against Carleton's Board of Governors” (by Jen Halsall). <http://www.cfra.com/news/2016/04/18/three-groups-pass-no-confidence-motions-against-carletons-board-of-governors>.
- 2016 July 12 - CKGL 570 AM News, Eric Drozd Show – “Removal from Carleton University’s Board of Governors for not signing a gag order”.
- 2019 Apr 15 - CBC News – “Post-secondary campuses greet PC funding plan with mix of acceptance and fear” (by Stu Mills). <https://www.cbc.ca/news/canada/ottawa/ontario-provincial-budget-ottawa-colleges-universities-1.5096562>.

### Television

- 2009 Sept 29 - CTV – Why do leaves turn red in fall?
- 2011 Feb 8 - Rogers TV – Are there any differences between females and males?
- 2012 Sept 3 – CBC TV (“The National”) – Canoes versus kayaks

### Newspaper and Magazine

- 2006 Dec 09 - *Globe & Mail* – Sex and the single organisms (by Anne McIlroy).
- 2010 Dec 20 - *Globe & Mail* – Promiscuity among squirrels has nothing to do with evolution (by Caroline Alphonso).
- 2012 Feb 22 - *University Affairs* – Meet Carleton’s intrepid cycle–canoe commuter (by Léo Charbonneau).
- 2012 Sept 28 - *CBC News* – Fall colours: Why summer's weird weather has affected the leaves (by Daniel Schwartz).
- 2014 Mar 26 - *Charlatan* – Privacy breach ruled out by Carleton administration (by Amanda Vollmershausen). <http://www.charlatan.ca/2014/03/privacy-breach-ruled-out-by-carleton-administration/>.

- 2014 July 04 - *Globe & Mail* – How green cities are better for us physically and psychologically (text by Erin Anderssen; photos by Dave Chan). Original story at: <http://www.theglobeandmail.com/life/health-and-fitness/health/how-green-cities-are-better-for-us-physically-and-psychologically/article19474393/#dashboard/follows/>. Additional photos at: <http://davechan.ca/commuting-to-work-by-canoe/>.
- 2014 Oct 11 - *Ottawa Sun* – Floating down the road (by Tony Campbell), page 2.
- 2015 Nov 28 - *Ottawa Citizen* – Canadian university professors ‘condemn’ Carleton University board for gag order (by Chris Cobb). Original story at: <http://ottawacitizen.com/news/local-news/canadian-university-professors-condemn-carleton-university-board-for-gag-order>. Print edition: 30 November 2015, page A4.
- 2015 Nov 30 - *Ottawa Citizen* – Carleton board of governors a free speech battleground (by Andrew Duffy). Original story at: <http://ottawacitizen.com/news/local-news/carletons-board-of-governors-a-free-speechbattleground>. Print edition: 1 December 2015, page A4.
- 2015 Dec 1 - *The Junction* – Carleton gag order impacts students, professors [and: Reaction to gag order overwhelmingly negative on Twitter] (by Olivia Bowden). <http://cusjc.ca/thejunction/2015/12/01/carleton-gag-order-suffocates-students-professors/>.
- 2015 Dec 2 - *Ottawa Sun* – Carleton U risks international blacklist due to openness concerns (by Dani-Elle Dube). Original story at: <http://www.ottawasun.com/2015/12/01/carleton-u-risks-international-blacklist-due-to-openness-concerns>.
- 2015 Dec 3 - *Charlatan* – Carleton’s BoG under investigation by Canadian Association of University Teachers (by Sima Shakeri). Original story at: <http://charlatan.ca/2015/12/carletons-bog-under-investigation-by-the-canadian-association-of-university-teachers/>. Print edition: 3 December 2015, Volume 45, Issue 17, page 2.
- 2015 Dec 4 - *CBC News* – “Carleton University student, staff groups demand governance changes: ‘We saw this as an attack,’ says student representative about proposed changes to board of Governors” (by Elyse Skura). Original story at: <http://www.cbc.ca/news/canada/ottawa/carleton-university-governance-board-of-directors-1.3350028>.
- 2015 Dec 4 - *Ryersonian* – “Ryerson prof blasts Carleton’s new policy breaching academic freedom” by Lana Hall. <http://www.ryersonian.ca/ryerson-prof-blasts-carletons-new-policy-breaching-academic-freedom/>.
- 2015 Dec 14 - *Canadian Press* – “Carleton professor facing expulsion from board backed by university teachers” by Terry Pedwell. <http://www.citynews.ca/2015/12/14/carleton-professor-facing-expulsion-from-board-backed-by-university-teachers/>.
- 2015 Dec 14 - *Ottawa Citizen* – “Prof refuses to sign agreement, Carleton faces censure over secrecy order” by Chris Cobb. <http://ottawacitizen.com/news/local-news/prof-refuses-to-sign-agreement-carleton-faces-censure-over-secrecy-order>. Print edition: 15 December 2015, page A4.
- 2015 Dec 15 - *Ottawa Citizen* – “Carleton spat with faculty damaging university's reputation, says governance expert” by Chris Cobb.

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