

Roslyn Dakin

Curriculum Vitae

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Appointments

Starting 2019 Assistant Professor, Department of Biology, Carleton University
2017-2019 Postdoctoral Fellow, Smithsonian Conservation Biology Institute, Migratory Bird Center
Social behaviour in wire-tailed manakins
Mentor: Brandt Ryder
2013-2017 Postdoctoral Fellow, Department of Zoology, UBC (maternity leave 2016-17)
Visual control of complex behaviour in flight
Mentor: Doug Altshuler
2014-16 NSERC Postdoctoral Fellowship, UBC
2011-13 Teaching Fellow, Queen's University

Education

2006-13 PhD & MSc Biology, Queen's University
Linking courtship behaviour, colour perception and mate choice decisions
Advisor: Bob Montgomerie
2002-06 BSc Honours, Queen's University

Research Interests

- Sensory and decision-making algorithms of behavior
- Influence of movement on ecological, social, and communication systems
- Mechanisms of social behavior and reproductive performance
- Function and evolution of multivariate phenotypes

Publications

† undergraduate co-author

1. **R Dakin***, PS Segre*, AD Straw and DL Altshuler. Morphology, muscle capacity, skill, and maneuvering ability in hummingbirds. **Science** 359: 653-657. doi:10.1126/science.aao7104
Featured in a Perspective article in the same issue.
2. PS Segre*, **R Dakin***, TG Read, AD Straw, and DL Altshuler. (2016) Mechanical constraints on flight at high elevation decrease maneuvering performance of hummingbirds. **Current Biology** 26: 3368-3374. doi:10.1016/j.cub.2016.10.028
** Co-first author.*
3. EE LeDue, K Mann, E Koch†, B Chu, **R Dakin**, and MD Gordon. (2016) Starvation-induced depotentiation of bitter taste in *Drosophila*. **Current Biology** 26: 2854-2861. doi:10.1016/j.cub.2016.08.028

4. **R Dakin**, TK Fellows, and DL Altshuler. (2016) Visual guidance of forward flight in hummingbirds reveals control based on image features instead of pattern velocity. **PNAS** 113: 8849-8854. doi:10.1073/pnas.1603221113
5. **R Dakin**, JQ Ouyang, ÁZ Lendvai, MF Haussmann, IT Moore, and F Bonier. (2016) Weather matters: begging calls are temperature- and size-dependent signals of offspring state. **Behaviour** 153: 871-896. doi:10.1163/1568539X-00003370.
6. **R Dakin**, O McCrossan†, JF Hare, R Montgomerie, and SA Kane. (2016) Biomechanics of the peacock's display: how feather structure and resonance influence multimodal signaling. **PLoS One** 11(4): e0152759. doi:10.1371/ journal.pone.0152759

In the top 1% most downloaded articles for PLoS One.

7. **R Dakin**, ÁZ Lendvai, JQ Ouyang, IT Moore, and F Bonier. (2016) Plumage colour is associated with partner parental care in mutually ornamented tree swallows.. **Animal Behaviour** 111: 111-118. doi:10.1016/j.anbehav.2015.10.006
8. PS Segre, **R Dakin**, A Straw, VB Zordan, MH Dickinson, and DL Altshuler. (2015) Burst muscle performance predicts the speed, acceleration, and turning performance of Anna's hummingbirds. **eLife** doi:10.7554/eLife.11159
9. DL Altshuler, JW Bahlman, **R Dakin**, AH Gaede, B Goller, D Lentink, PS Segre, and DA Skandalis. (2015) The biophysics of bird flight: functional relationships integrate aerodynamics, morphology, kinematics, muscles, and sensors. **Canadian Journal of Zoology** 93: 961-975. doi:10.1139/cjz-2015-0103
10. JQ Ouyang, ÁZ Lendvai, **R Dakin**, A Domalik†, V Fasanello†, B Vassallo†, MF Haussmann, IT Moore, and F Bonier. (2015) Weathering the storm: parental effort and experimental manipulation of stress hormones predict brood survival. **BMC Evolutionary Biology** 15: 219. doi:10.1186/s12862-015-0497-8
11. ÁZ Lendvai, Ç Akçay, JQ Ouyang, **R Dakin**, A Domalik†, PS St John†, M Stanback, IT Moore, and F Bonier. (2015) Analysis of the optimal duration of behavioral observations based on an automated continuous monitoring system in tree swallows (*Tachycineta bicolor*): is one hour good enough? **PLoS One** 10(11): e0141194. doi:10.1371/journal.pone.0141194
12. **R Dakin** and R Montgomerie. (2014) Condition-dependent mate assessment and choice by peahens: implications for sexual selection. **Behavioral Ecology** 25: 1097-1104. doi: 10.1093/beheco/aru087
13. **R Dakin** and R Montgomerie. (2014) Deceptive copulation calls attract female visitors to peacock leks. **American Naturalist** 183: 558-564. doi: 10.1086/675393
14. **R Dakin** and R Montgomerie. (2013) Eye for an eyespot: how iridescent ocelli influence peacock mating success. **Behavioral Ecology** 24: 1048-1057. doi: 10.1093/beheco/art045

2nd most downloaded PDF of 2013 in Behavioral Ecology. Highlighted as the Editor's Choice.

15. **R Dakin**. (2011) The crest of the peafowl: a sexually dimorphic plumage ornament signals condition in both males and females. **Journal of Avian Biology** 42: 405-414. doi: 10.1111/j.1600-048X.2011.05444.x
16. **R Dakin** and R Montgomerie. (2011) Peahens prefer peacocks displaying more eyespots, but rarely. **Animal Behaviour** 82: 21-28. doi: 10.1016/j.anbehav.2011.03.016

Highlighted as a Featured Article in the July 2011 issue of Animal Behaviour.

17. **R Dakin** and R Montgomerie. (2009) Peacocks orient their courtship displays towards the sun. **Behavioral Ecology and Sociobiology** 63: 825-834. doi: 10.1007/s00265-009-0717-6

Featured in Principles of Animal Communication (2011) by Bradbury & Vehrencamp.

Manuscripts in Progress

18. **R Dakin** and TB Ryder. Dynamic network partnerships shape cooperative behavior. Submitted to **eLife** in June 2018.
19. SA Kane, D van Beveren† and **R Dakin**. Biomechanics of the peafowl's crest reveals frequencies tuned to social displays. Submitted to **PLoS One** in June 2018. Preprint available: <https://www.biorxiv.org/content/early/2018/06/08/197525>
20. DL Altshuler, PS Segre, and **R Dakin**. A framework for studying maneuverability. Invited review for the **Journal of Experimental Biology**. Manuscript in preparation.
21. TK Fellows, **R Dakin**, B Goller, L Tyrell, E Fernández-Juricic, and DL Altshuler. The spatial and temporal acuity of the hummingbird visual system is lower than predicted by scaling. Analyses complete and manuscript in preparation.

Reproducible Data and Analyses

1. Smithsonian Dspace Repository. (2018) Dataset for: *Social network interactions shape phenotypic variation in cooperation*. doi: <https://doi.org/10.25570/nzp/10088/35448>
2. figshare. (2017) Statistical supplement to: *Evolution reveals the biomechanical organization of maneuvering flight in hummingbirds*. doi: <https://doi.org/10.6084/m9.figshare.5307136.v3>
3. figshare. (2017) Statistical supplement to: *Biomechanics of the peafowl's crest: a potential mechanosensory role for feathers during social displays*. doi: <https://doi.org/10.6084/m9.figshare.5451379>
4. figshare. (2016) Statistical supplement to: *Visual guidance of forward flight in hummingbirds reveals control based on image features instead of pattern velocity*. doi: <https://doi.org/10.6084/m9.figshare.3382759.v4>
5. figshare. (2016) Statistical supplement to: *Mechanical constraints on flight at high elevation decrease maneuvering performance of hummingbirds*. doi: <https://doi.org/10.6084/m9.figshare.3466361.v4>
6. Dryad. (2015) Data from: *Burst muscle performance predicts the speed, acceleration, and turning performance of Anna's hummingbirds*. doi: <http://dx.doi.org/10.5061/dryad.14762>
7. Dryad. (2013) Data from: *Deceptive copulation calls attract female visitors to peacock leks*. doi: <http://dx.doi.org/10.5061/dryad.vt562>

Other Published Work (non-refereed)

1. **R Dakin**. (2012) Grades, the currency on campus. **University Affairs** magazine, December.
2. **R Dakin**. (2012) Accreditation of environmental degree programs raises concerns. **University Affairs** magazine, November.
3. **R Dakin**. (2012) Getting up close to nature. **Kingston Whig Standard** newspaper, February 4.

Selected Recent Conference Presentations

* presenting author † undergraduate co-author

R Dakin*, TB Ryder. (2018) Dynamic network partnerships shape cooperative behaviour. CSEE, Guelph. Oral presentation. *Selected for the Peter Yodzis Colloquium "Integrating the ecology and evolution of social interactions"*.

R Dakin*, PS Segre, AD Straw, and DL Altshuler. (2018) Hummingbird evolution reveals the biomechanical organization of maneuverability. SICB, San Francisco. Oral presentation.

SA Kane, D Van Beveren†*, and **R Dakin**. (2018) Biomechanics of the peafowl's crest: a potential mechanosensory role for feathers during social displays. SICB, San Francisco. Poster presentation.

SA Kane*, **R Dakin**, Y Lu†, and R Fang†. (2018) Courtship display dynamics and iridescent structural color in peacocks and related ocellated pheasant species. SICB, San Francisco. Oral presentation.

R Dakin*, TK Fellows, and DL Altshuler. (2016) Hummingbirds visually control forward flight using image features instead of image pattern velocity. SICB, Portland. Oral presentation.

R Dakin*, O McCrossan*†, JF Hare, R Mongomerie, SA Kane*. (2016) The biomechanics of an audiovisual courtship display: how peacocks shake their feathers to produce a coordinated signal. SICB, Portland. Poster.

PS Segre*, **R Dakin**, VB Zordan, MH Dickinson, AD Straw, and DL Altshuler. (2016) Burst muscle performance predicts the speed, acceleration, and turning performance of hummingbirds. SICB, Portland. Oral presentation.

R Dakin*, TK Fellows, and DL Altshuler. (2015) Effect of optic flow on flying birds is inhibited by feature size. Behaviour 2015, Cairns. *Selected for the symposium "Vision using two eyes"*.

R Dakin*. (2013) How iridescent ocelli influence peacock mating success. AOU Joint Ornithological Society Meeting, Chicago. *Invited contribution to the symposium "Physiological and functional advances in avian coloration"*.

R Dakin*. (2013) Linking courtship behavior, color perception and mate choice decisions. Animal Behavior Society, Boulder. *Finalist in the Warder Clyde Allee Award competition symposium.*

Academic Presentations

Manakin Genomics RCN Video Workshop	Apr. 2018
Cornell University, Department of Neurobiology and Behavior	Mar. 2018
Memorial University of Newfoundland, Department of Psychology	Feb. 2018
San Diego State University, Biology Department	Feb. 2018
Carleton University, Department of Biology	Jan. 2018
University of British Columbia, Department of Zoology	Nov. 2017
Smithsonian Institution, Smithsonian Conservation Biology Institute	Sept. 2017
University of Ottawa, Department of Biology	Feb. 2017
Canadian Wildlife Services and Environment Canada	Dec. 2015
Simon Fraser University, Department of Biological Sciences	Dec. 2015
University of California, Riverside, Department of Evolution, Ecology, and Organismal Biology	Jan. 2014

Scholarships and Fellowships

Smithsonian Institution Fellowship Award (2017-2019)	\$98,000
NSERC Postdoctoral Fellowship (2014-16)	\$90,000
R.S. McLaughlin Fellowship, Queen's University (2011-12)	\$10,000
Ontario Graduate Scholarship, Science and Technology (2010-11)	\$15,000
NSERC Scholarship, Doctoral (2008-10)	\$42,000
Dean's Doctoral Field Travel Grant, Queen's University (2009)	\$3,000
NSERC Scholarship, Master's (2006-08)	\$34,800
Sport Canada Scholarship, Canadian National Sailing Team (2003-04)	\$10,500

Awards

Broadening Participation Award, Society for Integrative and Comparative Biology (2018)
Dorothy Skinner Award for research excellence, Society for Integrative and Comparative Biology (2016)
Dean of Science Excellence in Service Award, UBC Faculty of Science (2015)
UBC Postdoc Conference Travel Award (2015)
American Ornithologists' Union Student Travel Award (2013)
Canadian Foundation for Innovation Emerging Science Journalist Award (2011)

Fred Cooke Award, Society for Canadian Ornithologists (2008)
Conference Travel Grant, Iridescence: More than Meets the Eye (2008)
Ontario Sailing Leadership Award (2007)
Medal in Biology, Queen's University (2006)
Helen Arlis Denyes Scholarship in Biology, Queen's University (2005)
James H. Rattray Scholarship in Science, Queen's University (2004)
Wallace Near Prize in Biology, Queen's University (2004)

Teaching

As a graduate student, I was awarded a fellowship to teach 3rd year Animal Behaviour, a lecture and laboratory course with >100 undergraduate students, as well as the online course Ecology and the Environment in 2012 and again in 2013. All courses below were at Queen's University in Canada.

Courses Taught

Ecology and the Environment BIOL111 (Summer 2012, 2013)
Nominated for the Christopher Knapper Teaching Award
Animal Behaviour BIOL321 (Fall 2011) <http://www.roslyndakin.com/biol321>

Teaching Assistantships

Evolutionary Genetics BIOL206 (Spring 2012)
History and Philosophy of Biology BIOL433 (Spring 2011)
Evolution and Human Affairs BIOL350 (Fall 2011)
The Biology of Sex BIOL210 (2007-12)
Data Management and Analysis BIOL243 (Fall 2006)
Differential and Integral Calculus MATH121 (2003-04 help session instructor)

Guest Lectures

Data Management and Statistics for Biologists BIOL243 (I taught the 1st week; Fall 2013)
Comparative Cognition PSYC 355 (Spring 2013)
Nanoscience and Nanotechnology PHYS483 (Winter 2008; Spring 2012)
The Biology of Sex BIOL210 (2008-10)
Population and Evolutionary Ecology BIOL302 (Fall 2006)

Education Courses Completed

Teaching and Learning in Higher Education SGS901, with Andy Leger (Spring 2013)

Advising and Mentoring

Paolo Segre, PhD UBC (2013-15)	current: postdoc at Stanford University
Tyee Fellows, MSc UBC (2013-15)	Medical school at U of T
Chun Chi Lau, BScH UBC (2014-15)	Medical school at Oxford
Hannah Visty, BSc UBC (2014-15)	MSc at UBC, Forest and Conservation Sciences
Jordan Roth, BSc UBC (2014-15)	BSc at UBC, Computer Science and Statistics
Michelle Loranger, BScH Queen's (2012-13)	MSc at Carleton, Biology; Employed at the Canadian Museum of Nature
Alison Porter, BScH Queen's (2011-12)	MSc at UBC, Zoology; Employed by the Beaty Biodiversity Centre

Service

R Study Group (workshops on statistical software), UBC (2014-16)
R Club (workshops on statistical software), Queen's University (2012-13)
Hiring Committee, Integrative Cell Biologist, Queen's University (2012)
Hiring Committee, Instructor for Introductory Biology, Queen's University (2011)
Appointments, Review, Tenure & Promotion Committee (elected representative, Queen's) (2010-12)
Biology Graduate Students' Committee, Queen's University (2010-12)
Organizing Committee, Society of Canadian Ornithologists conference (2007)

Reviewer for American Naturalist, Animal Behaviour, Behavioral Ecology, Behavioral Ecology and Sociobiology, Biological Journal of the Linnean Society, Biology Letters, Biotropica, BMC Evolutionary Biology, Ethology, Functional Ecology, Journal of Ornithology, National Geographic Society Grants, Nature Communications, Peerage of Science, PLoS One, Proceedings of the National Academy of Sciences, The Auk, The Society for Integrative and Comparative Biology, and The Werner & Hildegard Hesse Ornithological Research Awards at UBC

Outreach

National Girls Learning Code Day mentor, "Collaborative Game Production" (2018)
Ladies Learning Code workshop mentor, "HTML and CSS for beginners" (2017)
National Learn to Code Day mentor, "Using Data to Solve Problems: Intro to AI and Machine Learning" (2017)
Sedona Hummingbird Festival, invited speaker (2017)
Peacock Day Los Angeles, keynote at an outreach event with over 4,400 attendees, 170 at talk (2017)
Reddit PLoS Science Wednesday, invited host for science Ask Me Anything series (2016)
Science Fair Judge, Greater Vancouver Regional Science Fair (2016)
"Peacocks are Way Cool because..." public event at the Beaty Biodiversity Museum (2015)
Los Angeles Arboretum, invited speaker (2010, 2015)
Canadian Association for Girls in Science, mentor and field trip organizer (2013)
CFRC 101.9, training coordinator for a radio program by and for seniors (2012-13)
Science Fair Judge, Frontenac, Lennox and Addington Regional Science Fair (2011-13)
SEEDS at Queen's University, taught animal behaviour to 7-8th grade students (2012)
"Hen's Quest: A Peacockumentary" shortlisted for US Animal Behavior Society film awards (2011)
YouTube, created videos about scientific research with >177,000 views: [youtube.com/user/roslyndakin](https://www.youtube.com/user/roslyndakin)

Media Coverage

Natural Born Rebels... BBC/PBS Series
Evolution of maneuverability... Science, Science News, Seeker, Daily Mail, BBC, CBC, Forbes
Visual guidance of flight ... Gizmodo, Christian Science Monitor, BBC Radio, City TV, Vancouver Sun, Daily Planet, National Geographic feature story
Biomechanics of the peacock's display... New York Times/Science Take, Quirks and Quarks, Science News, Christian Science Monitor, Gizmodo, Wall Street Journal, Nature Research Highlights, Scientific American, Discover, PBS Newshour
Deceptive courtship strategies... Quirks and Quarks, BBC, Science News, National Geographic, NPR
Sexual selection and peacocks... The Nature of Things, Slate, Nature News, Wired, Science News, Wall Street Journal

References

Additional contact information available upon request

Dr. Doug Altshuler (*post-doc mentor*)

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Professor

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Dr. Bob Montgomerie (*PhD supervisor*)

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Dr. Suzanne Amador Kane (*collaborator*)

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Professor and Chair

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Dr. Brandt Ryder (*post-doc mentor*)

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