Roslyn Dakin, PhD

Curriculum Vitae
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Appointments

Starting July 2019	Assistant Professor, Department of Biology, Carleton University in Canada
2017-2019	Postdoctoral Fellow, Smithsonian Conservation Biology Institute, Migratory Bird Center *Social behaviour in wire-tailed manakins* Mentor: Dr. Brandt Ryder
2013-2016	Postdoctoral Fellow, Zoology, University of British Columbia (maternity leave 2016-17) *Visual control of complex behaviour in flight* Mentor: Dr. Doug Altshuler
2014-16	NSERC Postdoctoral Fellowship, University of British Columbia
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: Dr. Bob Montgomerie
2002-06	BSc Honours, Queen's University *Structural plumage colour as a signal of mate quality in tree swallows*

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** and TB Ryder. Reciprocity and behavioral heterogeneity govern the stability of social networks. Accepted, **PNAS**. https://doi.org/10.1101/694166
2. TB Ryder*, **R Dakin***, BJ Vernasco, BS Evans, BM Horton, IT Moore. Testosterone modulates status-specific patterns of cooperation in a social network. Accepted, **American Naturalist** https://doi.org/10.1101/453548

   * *Co-first author.*
3. B Goller, TK Fellows, **R Dakin**, L Tyrell, E Fernández-Juricic, and DL Altshuler. (2019) Spatial and temporal resolution of the visual system of Anna's hummingbirds (*Calypte anna*) relative to other birds. **Physiological and Biochemical Zoology** https://doi.org/10.1086/705124
4. SA Kane, Y Wang, R Fang, Y Lu, **R Dakin**. (2019) How conspicuous are peacock eyespots and other colorful feathers in the eyes of mammalian predators? **PLoS One** 14: e0210924. doi:10.1371/journal.pone.0210924
5. **R Dakin** and TB Ryder. (2018) Dynamic network partnerships and social contagion drive cooperation. **Proceedings of the Royal Society B** 285: 20181973. doi:10.1098/rspb.2018.1973
6. SA Kane, D van Beveren† and **R Dakin**. (2018) Biomechanics of the peafowl's crest reveals frequencies tuned to social displays. **PLoS One** 13: e020724. doi:10.1371/journal.pone.0207247

7. **R Dakin***, PS Segre*, AD Straw and DL Altshuler. (2018) 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.

   ** Co-first author.*

- *I took parental leave in 2016-17 following the birth of my daughter, for a total of 9 months full-time absence from research. This is typical in Canada, where the government funds up to 18 months of paid parental leave.*

8. 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
9. 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
10. **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
11. **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.
12. **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.

13. **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
14. 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
15. 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
16. 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
17. 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
18. **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
19. **R Dakin** and R Montgomerie. (2014) Deceptive copulation calls attract female visitors to peacock leks. **American Naturalist** 183: 558-564. doi: 10.1086/675393
20. **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.

21. **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

22. **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.

23. **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

24. **R Dakin**, IT Moore, BM Horton, BJ Vernasco, and TB Ryder. Testosterone-mediated behavior shapes the emergent properties of social networks. In review at **Journal of Animal Ecology**. https://doi.org/10.1101/737650

25. **R Dakin** and TB Ryder. Gender bias in research teams and the underrepresentation of women in science. In review at **PLOS Biology**. https://doi.org/10.1101/741694

26. DL Altshuler, PS Segre, and **R Dakin**. A framework for studying the biomechanics of maneuverability. Invited review paper for the **Journal of Experimental Biology**.

Reproducible Data and Code

1. figshare. (2019) Data from: *Testosterone modulates status-specific patterns of cooperation in a social network.* https://doi.org/10.5061/dryad.fm129s7
2. figshare. (2019) Statistical supplement to: *How conspicuous are peacock eyespots and other colorful feathers in the eyes of mammalian predators?* https://figshare.com/s/688fb19dad98b6273324
3. Dspace. (2018) Supplementary Materials for: *Dynamic network partnerships and social contagion drive cooperation*. https://doi.org/10.25570/nzp/10088/35448
4. figshare. (2018) Statistical supplement to: *Biomechanics of the peafowl's crest reveals frequencies tuned to social displays*. doi: https://doi.org/10.6084/m9.figshare.5451379.v5
5. figshare. (2017) Statistical supplement to: *Morphology, muscle capacity, skill, and maneuvering ability in hummingbirds.* doi: https://doi.org/10.6084/m9.figshare.5307136.v4
6. 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
7. 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
8. Plos One. (2016) Supplementary Materials for: *Biomechanics of the peacock's display: how feather structure and resonance influence multimodal signaling*. doi: https://doi.org/10.1371/journal.pone.0152759
9. 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
10. 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

TB Ryder, **R Dakin***, BJ Vernasco, BM Horton, and IT Moore. (2019) Testosterone mediates status-specific patterns of cooperation and transmission of behavior in a social network. ICCPB Ottawa, Oral presentation.

R Dakin*, BM Horton, BJ Vernasco, IT Moore, TB Ryder. (2019) Understanding the androgen basis of individual differences in cooperation. SICB, Tampa. Poster presentation.

R Dakin*, TB Ryder. (2019) Dynamic network partnerships and social contagion drive cooperation. SICB, Tampa. Oral presentation.

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.

PS Segre PS, **R Dakin**, TGJ Read, AD Straw, and DL Altshuler*. (2017). Mechanical constraints on flight at high elevation decrease maneuvering performance. SICB, New Orleans. 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".*

AD Domalik*†, ÁZ Lendvai, JQ Ouyang, **R Dakin**, IT Moore, F Bonier. (2014). Does baseline corticosterone predict neophobia in tree swallows (*Tachycineta bicolor*)? SICB, Austin. Poster presentation.

JQ Ouyang*, ÁZ Lendvai, **R Dakin**, AD Domalik†, VJ Fasanello†, BG Vassallo†, MF Haussmann, IT Moore, R Bonier. (2014). Breeding under stress: physiological factors influencing nest failure during inclement weather conditions. SICB, Austin. Oral presentation.

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 – Invited

National Wildlife Research Centre, Ottawa	upcoming
University of Toronto, Scarborough	Nov. 2019
Université du Québec à Montréal	Oct. 2019
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

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

Carleton University

Biological Methods, Analysis and Interpretation BIOL 1105 (Fall 2019)	180 students
Raving Raven	
Social Evolution BIOL 3804 (Winter 2020)	45 students

Queen's University

Ecology and the Environment BIOL 111 (Summer 2012, 2013) 100 students
Nominated for the Christopher Knapper Teaching Award
Animal Behaviour BIOL 321 (Fall 2011) http://www.roslyndakin.com/biol321 100 students

Guest Lectures

Animal Behaviour BIOL 3802 (Winter 2019)
Ornithology BIOL 4500 (Fall 2018)
Data Management and Statistics for Biologists BIOL 243 (Fall 2013)
Comparative Cognition PSYC 355 (Spring 2013)
Nanoscience and Nanotechnology PHYS 483 (Winter 2008; Spring 2012)
The Biology of Sex BIOL 210 (2008-10)
Population and Evolutionary Ecology BIOL 302 (Fall 2006)

Education Courses Completed

Teaching and Learning in Higher Education SGS 901, with Andy Leger (Spring 2013)

Advising and Mentoring

Graduate Students and Post-docs

Ilias Berberi, PhD Carleton (2020-2024)	Incoming PhD student; employed as research assistant
Ben Vernasco, PhD Virginia Tech (2017-19)	Postdoc at Washington State University
Levente Orban, Postdoc UBC (2016-19)	Instructor at Kwantlen Polytechnic University
Paolo Segre, PhD UBC (2013-15)	Postdoc at Stanford University
Tyson Read, MSc UBC (2013-15)	Wildlife Biologist, Pacific Gas and Electric
Tyee Fellows, MSc UBC (2013-15)	Medical School at the University of Toronto

BSc Honours Theses

Erin Jackson, BScH Carleton (2019-2020)	BSc in progress
Paisley Clunis, BScH Carleton (2019-2020)	BSc in progress
Owen McCrossan, BScH Drexel (2015-16)	Research Assistant at Drexel University
Chun Chi Lau, BScH UBC (2014-15)	Medical School at Oxford
Alice Domalik, BScH Queen's (2013-14)	MSc at Simon Fraser University, Biology
Michelle Loranger, BScH Queen's (2012-13)	MSc at Carleton; employed at Canadian Museum of Nature
Alison Porter, BScH Queen's (2011-12)	MSc at UBC; employed at the Beaty Biodiversity Centre

BSc Researchers

Dan van Beveren, BSc Haverford (2017-18)	BSc in progress at Haverford, Physics
Yasmin Banga, BSc UBC (2016)	BSc in progress, applying to Medical School
Hannah Visty, BSc UBC (2014-15)	MSc at UBC, employed as an Ecological Consultant
Jordan Roth, BSc UBC (2014-15)	BSc at UBC, Computer Science and Statistics

Service

Biology Library Representative (2019-2020)
Local Committee, 10th International Congress of Comparative Physiology and Biochemistry ICCPB (2018-19)
Student Award Judge, ICCPB (2019)
Student Award Judge, SICB (2016-19)
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)

Thesis Committee: Lisa Liang MSc, Jillian Rohonczy MSc

Examination Committee: Allison Binley PhD (2019), Winston Campeau PhD (2019), Maria Doria MSc (2019), Donovan Tremblay MSc (2019)

Reviewer for American Naturalist, Animal Behaviour, Behavioral Ecology, Behavioral Ecology and Sociobiology, Biological Journal of the Linnean Society, Biology Letters, Biotropica, BMC Evolutionary Biology, Ecology and Evolution, Ethology, Functional Ecology, Journal of Animal Ecology, Journal of Ornithology, National Geographic Society Grants, Nature Communications, Peerage of Science, PLoS One, PNAS, Proceedings of the Royal Society B, The Auk, The Society for Integrative and Comparative Biology, and The Werner & Hildegarde 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 (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, I have created videos about scientific research with >190,000 views: youtube.com/user/roslyndakin

Media Coverage

Crest feathers are tuned to social displays… Science, New Scientist, Daily Mail, The Atlantic, The Scientific American 60-Second Science Podcast, Birdnote podcast
Natural Born Rebels… BBC/PBS Series, Episode 3 "The Mating Game"
Peacocks accused of fowl play… Vancouver Weekly
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, Vancouver Weekly

References

Additional contact information available upon request

Dr. Doug Altshuler *(post-doc mentor)*
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Dr. Bob Montgomerie *(PhD supervisor)*
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