

Curriculum Vitae

Robert Dudley
Department of Integrative Biology
University of California, Berkeley
Berkeley, CA 94720 U.S.A.
wings@berkeley.edu; 510-642-1555

Personal

Year/place of birth: 1961/Edinburgh, Scotland
Married to Han Junqiao; two children

Education

1987. Ph.D. in Zoology, University of Cambridge, United Kingdom
1983. B.S. *summa cum laude*, Duke University, North Carolina; graduation with
Distinction in Zoology

Professional Appointments

2003–present: Professor, Department of Integrative Biology, UC-Berkeley
2003–present: Research Morphologist, Museum of Vertebrate Zoology, UC-Berkeley
2003–present: Affiliate Faculty, Essig Museum of Entomology, UC-Berkeley
1997–2002: Associate Professor, Section of Integrative Biology, University of Texas, Austin
1992–1997: Assistant Professor, Department of Zoology, University of Texas, Austin
1992–present: Research Associate, Smithsonian Tropical Research Institute, Panama

Research Interests

1. Biomechanics, functional morphology, and evolution of animal flight
2. Physiological ecology of tropical insects, particularly flight energetics and migration
3. Evolutionary origins of human alcoholism in primate frugivory

Fellowships, Research Grants, and Awards

2020. Fellow, California Academy of Sciences
2019–2024. NSF DEB-1831833: "Dimensions: Convergent evolution of nectarivory and its association with high-altitude adaptation in hummingbirds and sunbirds", Co-PI with R. Bowie and J.A. McGuire (\$1,999,978; 5 years)
2016–2022. Class of 1933 Chair in the Biological Sciences, University of California, Berkeley
2013–2016. AFOSR Flow Interactions and Control #13RSA030: "Into turbulent air: hummingbird aerodynamic control in unsteady circumstances" (\$580,395; 3 years)
2011–2012. NSF IBN-1110855: "The biomechanics and evolution of flight reduction in stick insects", Dissertation Improvement Grant with Y. Zeng and D. Wake (\$9,230; 16 months)
2009–2016. NSF DGE-0903711: "IGERT: Biological and bio-inspired motion systems operating in complex environments", Co-PI with R.J. Full, R. Fearing and M.A.R. Koehl (\$3,195,091; 5 years with 2 one-year no-cost extensions)
2009–2013. NSF IOS-0837866/-0843120 (Collaborative research) and REU Supplements: "How to fall from trees: biomechanics and ecology of gliding flight in arthropods", Co-PI with S.P. Yanoviak (\$538,547; 4 years)
2008–2009. National Geographic Society Research Grant: "Toward a biogeography of salt", Co-Investigator with M. Kaspari and S. Yanoviak (\$21,700; 12 months)
2007–2012. John and Mary Gompertz Endowed Chair in Integrative Biology, University of California, Berkeley

- 2007–2008. National Geographic Society Research Grant: "Flight into thin air: the physiology and diversity of alpine bumblebees", Co-Investigator with M. Dillon (\$16,200; 1 year)
- 2006–2011. NSF DEB-0543556 and REU Supplements: "Phylogenetic and biogeographic history of high-altitude adaptation in hummingbirds", Co-PI with J.A. McGuire (\$485,698; 5 years)
- 2005–2006. National Geographic Society Research Grant: "Gliding flight in rainforest canopy ants", Co-Investigator with S.P. Yanoviak and M. Kaspari (\$20,000; 1 year)
- 2004–2005. NSF IOB-0437613: "SICB Symposium: Adaptation for life at high elevation (\$3000; 1 year), co-organized with D. Altshuler
- 2003–2004. NSF IBN-0335585: "SICB Symposium: The coevolution of frugivorous animals with the natural occurrence of ethanol in fermenting fruit" (\$11,550; 1 year), co-organized with M. Dickinson
- 2003–2005. National Geographic Society Research Grant: "Optimal migration in butterflies: quantifying the aerodynamic power curves for flight", Co-Investigator with R.B. Srygley (\$30,585; 2 years)
- 2002–2003. United States-Israel Binational Science Foundation: "Role of ethanol in the nutritional and sensory physiology of frugivores", Co-Investigator with C. Korine and B. Pinshow (\$50,000; 1 year)
- 2002–2004. Texas Advanced Research/Technology Program: "Dynamic models for flapping wing micro-air vehicles derived from hummingbird flight", Co-Investigator with M. Akella (\$241,340; 2 years)
- 2001–2005. NSF DEB-0108555: "Evolution of flight performance and the phylogeny of hummingbirds", Co-Investigator with J.A. McGuire (\$303,760; 4 years)
2001. National Geographic Society Research Grant: "Do migrating Neotropical butterflies use a magnetic compass to orient?", Co-Investigator with R.B. Srygley and E. Oliveira (\$22,680; 1 year)
2000. Association of American Publishers Award for Best Professional/Scholarly Book in Biological Science for *The Biomechanics of Insect Flight: Form, Function, Evolution*
- 2000–2003. NSF OPP-9980360: "Temperature compensation in Antarctic pteropods: an integrative approach" (\$174,180; 3 years)
- 1999–2002. NSF IBN-9817138: "Limits to hummingbird flight performance: ecological and comparative perspectives" (\$325,000; 3 years)
- 1999–2001. NSF IBN-9902155: "Hummingbird morphology and its influence on flight performance, competitive ability, and foraging behavior", Dissertation Improvement Grant with D. Altshuler (\$9880; 18 months)
1999. Invited participant, NSF Antarctic Biology Training Course (McMurdo)
1999. Study Visit, Deutscher Akademischer Austauschdienst, Erlangen Universität: "Hovering in glossophagine phyllostomid bats" (\$3100)
- 1998–2000. Earthwatch Institute: "Physiology and ecology of hummingbirds along an altitudinal gradient", Co-Investigator with D. Altshuler (\$58,145; 2 years)
1998. Short Term Visitor Award, Smithsonian Institution (\$1925)
- 1997–1999. NSF IBN-9601089: "Biomechanical and physiological limits to animal flight performance" (\$110,000; 2 years)
- 1997–1999. NIH NRSA MH11703: "Evolution of communication in anuran amphibians", (postdoctoral fellowship for W. Martin; \$74,024; 2 years)
1997. Short Term Visitor Award, Smithsonian Institution (\$1875)
- 1996–1999. National Geographic Society Research Grant: "Flying lizards (Genus *Draco*) and the evolution of vertebrate flight", Co-investigator with J.A. McGuire (\$40,765; 30 months)
1996. Short Term Visitor Award, Smithsonian Institution (\$1875)

1994–1997. National Geographic Society Research Grant: "Orientation of butterflies migrating across the Caribbean Sea and Panama", Co-Investigator with R.B. Srygley (\$59,500; 30 months)
1994–1996. NIH NRSA AR008331: "Energetic limits to hummingbird flight performance (postdoctoral fellowship for P. Chai; \$69,100; 2 years)
1994. Short Term Visitor Award, Smithsonian Institution (\$2000)
1993. National Academy of Sciences Project Development Grant (\$2000)
1993. Short Term Visitor Award, Smithsonian Institution (\$1900)
1991–1992. Whitehall Foundation Grant-in-Aid (\$15,000)
1988–1991. Smithsonian Institution Three-year Postdoctoral Fellowship for research at the Smithsonian Tropical Research Institute (\$75,000)
1987–1988. Smithsonian Institution Postdoctoral Fellowship, STRI (\$21,000)
1983–1987. Marshall Scholarship for doctoral studies at the University of Cambridge
1983. Olney Fellowship at the Cold Spring Harbor Laboratory, Long Island
1983. Horn Memorial Prize for Excellence in Zoology, Duke University

Teaching and Training Activities

Undergraduate courses: Biomotion, Comparative Physiology, Entomology, Mechanics of Organisms (lecture and laboratory)

Graduate courses: Air & Water, Animal Locomotion, Bio-inspired Design of Motion Systems, Biomechanics & Metabolic Physiology seminar

Graduate student advisorship:

Leah Lee (2018–present)

Aleksey Maro (2017–present)

Erik Sathe (2015–present)

Leeann Louis (Ph.D., 2019); clinical data scientist, DeepHealth

Sofia Chang (M.S., 2018; co-advisor with Mimi Koehl)

Marc Badger (Ph.D., 2016); engineer, Aescape

Erica Kim (Ph.D., 2014); proof.bwoc@gmail.com

Yu Zeng (Ph.D., 2013; co-advisor with Dave Wake); postdoctoral fellow, Chapman University

Dennis Evangelista (Ph.D., 2013); science teacher, Morristown Beard School, New Jersey

Yonatan Munk (Ph.D., 2011; co-advisor with Mimi Koehl)

Jose Maria Fernandez (Ph.D., 2010)

Greg Byrnes (Ph.D., 2009); Associate Professor, Department of Biology, Siena College

Chris Clark (Ph.D., 2009); Associate Professor, Department of Biology, UC-Riverside

Matt Medeiros (Ph.D., 2009); postdoctoral fellow, University of Hawaii at Manoa

Ryan Hill (Ph.D., 2008); Associate Professor, Dept. of Biological Sciences, University of the Pacific, Stockton, CA

Brendan Borrell (Ph.D., 2006); science journalist: brendanborrell.com

Travis LaDuc (Ph.D., 2003; co-advisor with D. Cannatella); Curator of Herpetology, Texas Memorial Museum, University of Texas at Austin

Jennifer Yeh (Ph.D., 2001; co-advisor with D. Cannatella); science writer

Doug Altshuler (Ph.D., 2001); Professor, Department of Zoology, University of British Columbia, Vancouver

Postdoctoral sponsorship:

Adi Domer-Yechezkel (HFSP Postdoctoral Fellow, 2022–2025)

Ammon Corl (NSF Postdoctoral Fellow, 2019–2024)

Alejandro Rico-Guevara (UC-Berkeley Miller Fellow, 2017–2020); Assistant Professor, Department of Biology, University of Washington

Victor Ortega-Jiménez (UC MEXUS-CONACYT Postdoctoral Fellowship, 2010–2012; AFOSR Postdoctoral Fellow, 2013–2016); Assistant Professor, School of Biology and Ecology, University of Maine
Marta Wolf (Swedish Research Council Postdoctoral Fellowship, 2010–2012); Postdoctoral Fellow, Lund University
Nir Sapir (Rothschild Foundation Postdoctoral Fellowship, 2010–2012); Senior Lecturer, Department of Evolutionary and Environmental Biology, University of Haifa
Michael Dillon (NSF Postdoctoral Research Fellowship, 2007–2009); Professor, Department of Zoology and Physiology, University of Wyoming
Robert Buchwald (NSF Postdoctoral Research Fellowship, 2006–2010); Biology Lecturer, University of Colorado, Boulder
Stacey Combes (UC-Berkeley Miller Fellow, 2004–2007); Professor, Department of Neurobiology, Physiology & Behavior, University of California, Davis
Chris Witt (NSF, 2004–2006; co-sponsor with J. McGuire); Professor, Department of Biology, University of New Mexico
Sagiri Horisawa (Texas Advanced Research Program, 2001–2004); Lecturer in Engineering, Tokai University, Japan
Peng Chai (NIH NRSA, 1994–1998); statistician, Celerion (Lincoln, Nebraska)

Reviewing Activities

Journals: *Acta Biomaterialia*, *Aerospace Science & Technology*, *Alcoholism: Clinical and Experimental Research*, *American Journal of Physical Anthropology*, *American Journal of Physiology (Regulatory, Integrative and Comparative Physiology)*, *American Naturalist* (Associate Editor, 2005–2021), *Animal Behaviour*, *Animal Conservation*, *Annals of the Entomological Society of America*, *Arthropod Structure & Development*, *Austral Ecology*, *Australian Journal of Entomology*, *Behavioral Ecology*, *Behavioral Pharmacology*, *Behavioural Brain Research*, *Biochemical Genetics*, *Bioinspiration & Biomimetics*, *Biological Journal of the Linnean Society*, *Biological Reviews of the Cambridge Philosophical Society*, *Biology Letters*, *Biotropica*, *Brain Behavior and Evolution*, *Bulletin of the American Museum of Natural History*, *Canadian Journal of Zoology*, *CEAS Aeronautical Journal*, *Condor*, *Comparative Biochemistry and Physiology*, *Current Zoology*, *Ecological Entomology*, *Ecology*, *eLife*, *Entomological News*, *Entomological Science*, *Evolution* (Associate Editor, 2009–2012), *Experiments in Fluids*, *Functional Ecology*, *Geobiology*, *Geology*, *Integrative and Comparative Biology*, *Integrative Organismal Biology*, *Insect Conservation and Diversity*, *Insect Science*, *Journal of Aircraft*, *Journal of Animal Ecology*, *Journal of Anatomy*, *Journal of Avian Biology*, *Journal of Bionic Engineering*, *Journal of Comparative Physiology B*, *Journal of Economic Entomology*, *Journal of Experimental Biology*, *Journal of Experimental Zoology*, *Journal of Fluid Mechanics*, *Journal of Fluids Engineering*, *Journal of Herpetology*, *Journal of Insect Behavior*, *Journal of Insect Physiology*, *Journal of Mammalogy*, *Journal of Morphology*, *Journal of Natural History*, *Journal of Neuroscience Methods*, *Journal of the Kansas Entomological Society*, *Journal of the Royal Society Interface*, *Journal of Theoretical Biology*, *Journal of Tropical Ecology*, *Methods in Ecology and Evolution*, *Movement Ecology*, *Nature*, *Naturwissenschaften*, *Oecologia*, *Paleobiology*, *Philosophical Transactions of the Royal Society of London B*, *Physiological Entomology*, *Physiological and Biochemical Zoology* (Editorial Board, 2014–present), *PLOS ONE*, *Proceedings of the Royal Society B*, *Proceedings of the National Academy of Sciences USA*, *Quarterly Review of Biology*, *Reviews of Modern Physics*, *Royal Society Open Science*, *Science*, *Science of Nature*, *Scientific Reports*, *Studies on Neotropical Fauna and Environment*, *The Auk*, *Wilson Bulletin*, *Zoologia*, *Zoologica Scripta*, *Zoology*
Book publishers: Chicago University Press, Johns Hopkins University Press, Oxford University Press, Princeton University Press, Rutgers University Press, University of California Press

Funding agencies: Academia Europaea, American Philosophical Society, Biotechnology and Biological Sciences Research Council (U.K.), Deutsche Forschungsgemeinschaft, European Research Council, European Research Council Advanced Grants, Israel Science Foundation, National Center for Biological Sciences (Bangalore), National Geographic Society Research Grants, National Environment Research Council (U.K.), National Science Foundation, National Science Center (Poland), National University of Singapore Academic Research Fund, Portuguese Foundation for Science and Technology, USDA SBIR Program

Foreign Languages

Deutsch als Fremdsprache certificate, Friedrich-Alexander-Universität, Erlangen
reading and conversational knowledge of French and Spanish
survival conversational Mandarin

Membership in Professional Societies

American Ornithological Society, Association for Tropical Biology, Association of Marshall Scholars, Entomological Society of America, International Canopy Network, Phi Beta Kappa, Sigma Xi, Society for Integrative and Comparative Biology, Society for the Study of Evolution

University Service (UC-Berkeley)

Department:

2022–2023: Chair, Space Committee
2021–2022: Chair, Space Committee (spring); Member, Strategic Planning Committee
2016–2021: Chair of Integrative Biology
2014–2016: Vice-Chair of Integrative Biology; Member, Executive Committee
2014–2015: Member, Adaptation Search Committee
2013–2014: Member, Curriculum Committee
2012–2013: Member, Animal Physiology Search Committee; Member, Curriculum Committee
2011–2012: Graduate Advisor for first-year Ph.D. students; Member, MVZ Director Search Committee; Member, Undergraduate Achievement Committee
2009–2010: Member, Space Committee; Graduate Advisor for fourth-year Ph.D. students
2008–2009: Member, Curriculum Committee; Graduate Advisor for third-year Ph.D. students
2007–2008: Chair, Departmental Retreat Planning Committee; Graduate Advisor for second-year Ph.D. students; Member, Grinnell Medal Award Committee, Museum of Vertebrate Zoology
2006–2007: Chair, Graduate Admissions Committee; Graduate Advisor for first-year Ph.D. students
2005–2006: Member, Graduate Admissions and Fellowships Committee; Member, Vertebrate Evolution (Mammalogy) Search Committee
2004–2005: Chair, Vertebrate Evolution Search Committee; Chair, Academic Program Committee; Member, Graduate Admissions and Fellowships Committee; Member, Executive Committee
2003–2004: Chair, Mammalian Physiology Search Committee; Member, Executive Committee

University:

2013–2016: Member, Academic Senate Committee on Demonstrations and Student Actions
2007–present: Co-director (with R.J. Full), Center for Integrative Biomechanics, Education, and Research (*ciber.berkeley.edu*)
2006–2010: Member, Academic Senate Committee on Academic Freedom

Organized Symposia

- 2017: "Primates and dietary ethanol: evolutionary outcome, or modern accident?" (American Association of Physical Anthropology Annual Meeting, New Orleans; co-organized with Nate Dominy)
- 2016: "The physiological ecology of insect flight: from millisecond escape to long-distance migration" (XXV International Congress of Entomology, Orlando; co-organized with Jason Chapman)
- 2016: "Wings and powered flight: morphological core features in insect evolution" (XXV International Congress of Entomology, Orlando; co-organized with Günther Pass)
- 2012: "Insect flight and migration: aerial performance in a changing world" (XXIV International Congress of Entomology, Daegu, South Korea; co-organized with Jason Chapman)
- 2011: "The biomechanics and behavior of gliding animals" (Annual Meeting of the Society for Integrative and Comparative Biology, Salt Lake City; co-organized with Steve Yanoviak)
- 2005: "Adaptations to life at high elevation" (Annual Meeting of the Society for Integrative and Comparative Biology, San Diego; co-organized with Doug Altshuler)
- 2004: "*In Vino Veritas*: The comparative biology of ethanol consumption" (Annual Meeting of the Society for Integrative and Comparative Biology, New Orleans; co-organized with Michael Dickinson)

Extramural Presentations (last five years)

- 2022: Applied Mathematics Seminar, Courant Institute (NYU); Smithsonian Tropical Research Institute, Panama; "Insect Flight" symposium, APS Comparative Physiology Meeting (San Diego)
- 2019: "Science and Culture of Fermentation" symposium, Dartmouth College; Schoodic Institute for Education & Research (Acadia National Park, Maine); Smithsonian Tropical Research Institute, Panama
- 2018: Monterey Bay Aquarium Research Institute (Moss Landing); "Alcohol and Humans: A Long and Social Affair" symposium, British Academy (London); Institute of Vertebrate Paleontology & Paleoanthropology (Beijing; two talks); Dept. of Biology, Hebei Normal University (Shijiazhuang); Nanjing Aeronautics Institute (two talks); Institute of Plant Physiology and Ecology, Chinese Academy of Sciences (Shanghai); Schoodic Institute for Education & Research (Acadia National Park, Maine); Dept. of Physics, Georgia Tech
- 2017: "Darwin Week", College of Charleston; "Primates and Dietary Ethanol" symposium, Annual Meeting, American Association of Physical Anthropologists (New Orleans); Dept. of Biology, University of Akron (two seminars)
- 2016: "U-turn on Addictions" symposium, European Union Reframing Addictions Project (Barcelona); Dept. of Zoology, University of British Columbia; Annual Meeting, Society for Integrative and Comparative Biology (Portland)

Publications

- Dudley, R. (2023). The flight of butterflies. In: *Butterflies of the Levant, Vol. I* (ed. D. Benyamini). 4D Microrobotics Ltd., Beit Arye, Israel.
- Brown, C.E., Sathe, E.A., Dudley, R. and S.M. Deban. (2022a). Aerial maneuvering by plethodontid salamanders spanning an arboreality gradient. *Journal of Experimental Biology* **225**, jeb244598.
- Brown, C., Sathe, E.A., Dudley, R. and S.M. Deban. (2022b). Gliding and parachuting by arboreal salamanders. *Current Biology* **32**:R453-454.
- Campbell, C., Maro, A., Weaver, V. and R. Dudley. (2022). Dietary ethanol ingestion by free-ranging spider monkeys (*Ateles geoffroyi*). *Royal Society Open Science* **9**:211729 (6 pp.)

- Kou, G., Wang, Y., Dudley, R., Wu, Y. and D. Li. (2022). Coping with captivity: takeoff speed and load-lifting capacity are unaffected by substantial changes in body condition for a passerine bird. *Journal of Experimental Biology* **225**, jeb244642 (7 pp.)
- Louis, L.D., Bowie, R.C.K. and R. Dudley. (2022). Wing and leg bone microstructure reflects migratory demands in resident and migrant populations of the Dark-eyed Junco (*Junco hyemalis*). *Ibis* **164**:132-150.
- Maro, A. and R. Dudley. (2022). Non-random distribution of ungulate salt licks relative to distance from North American oceanic margins. *Journal of Biogeography* **49**:254-260.
- Carn, D., Lanaspa, M.A., Benner, S.A., Andrews, P., Dudley, R., Andres-Hernando, A., Tolan, D.R. and R.J. Johnson. (2021). The role of thrifty genes in the origin of alcoholism: a narrative review and hypothesis. *Alcoholism: Clinical and Experimental Research* **45**:1519–1526.
- Dudley, R. (2021). A morphofunctional hypothesis for selection on EDAR V370A and associated elements of sinodonty. *Dental Anthropology* **34**:49-54.
- Dudley, R. and A. Maro. (2021). Human evolution and dietary ethanol. *Nutrients* **13**:2419 doi.org/10.3390/nu13072419 (9 pp.)
- Dudley, R. (2020). The natural biology of dietary ethanol, and its implications for primate evolution. In: *Alcohol and Humans: A Long and Social Affair* (eds. K. Hockings and R. Dunbar), pp. 10-23. Oxford: Oxford University Press.
- Ortega-Jimenez, V.M., Herbst, E.C., Leung, M. and R. Dudley. (2020). Natural barriers: waterfall transit by small flying animals. *Royal Society Open Science* **7**:201185 (9 pp.)
- Su, G., Dudley, R., Pan, T., Zheng, M., Peng, L. and Q. Li. (2020). Maximum aerodynamic force production by the wandering glider dragonfly (*Pantala flavescens*, Libellulidae). *Journal of Experimental Biology* **223**:218552 (8 pp.)
- Zeng, Y., Chang, S.W., Williams, J.Y., Nguyen, L.Y.-N., Tang, J., Naing, G., Kazi, C. and R. Dudley. (2020). Canopy parkour: movement ecology of post-hatch dispersal in a gliding nymphal stick insect (*Extatosoma tiaratum*). *Journal of Experimental Biology* **223**:226266 (12 pp.)
- Zeng, Y., O'Malley, C., Singhal, S., Rahim, F., Park, S., Chen, X. and R. Dudley. (2020). A tale of winglets: evolution of flight morphology in stick insects. *Frontiers in Ecology and Evolution* **8**:121 (15 pp.)
- Badger, M.A., Wang, H. and R. Dudley. (2019). Avoiding topsy-turvy: how Anna's Hummingbirds (*Calypte anna*) fly through upward gusts. *Journal of Experimental Biology* **222**:176263 (10 pp.)
- Dudley, R. and R.J. Wootton. (2019). Charles Porter Ellington (1952–2019). *Journal of Experimental Biology* **222**:218628 (2 pp.)
- Ortega-Jimenez, V.M. and R. Dudley. (2019). Superb autorotator: rapid decelerations in impulsively launched samaras. *Journal of the Royal Society Interface* **16**:20180456 (5 pp.)
- Rico-Guevara, A., Rubega, M.A., Hurme, K.J. and R. Dudley. (2019). Shifting paradigms in the mechanics of nectar extraction and hummingbird bill morphology. *Integrative Organismal Biology* 10.1093/iob/oby006 (15 pp.)
- Rico-Guevara, A., Sustaita, D., Gussekloo, S., Olsen, A., Bright, J., Corbin, C. and R. Dudley. (2019). Feeding in birds: thriving in terrestrial, aquatic, and aerial niches. In: *Feeding in Vertebrates: Evolution, Morphology, Behavior, Biomechanics* (eds. V.L. Bels and I.Q. Whishaw), pp. 643-693. Berlin: Springer Verlag.
- Wang, Y., Yin, Y., Ge, S., Li, M., Zhang, Q., Li, J., Wu, Y., Li, D. and R. Dudley. (2019). Limits to load-lifting performance in a passerine bird: the effects of intraspecific variation in morphological and kinematic parameters. *PeerJ* **7**:e8048 (12 pp.)
- Dudley, R. and G. Pass. (2018). Wings and powered flight: core novelties in insect evolution. *Arthropod Structure & Development* **47**:319-321.
- Ortega-Jimenez, V.M. and R. Dudley. (2018). Ascending flight and decelerating vertical glides in Anna's Hummingbirds. *Journal of Experimental Biology* **221**:191171 (5 pp.)

- Volponi, M.A.S., McLean, D.J., Volponi, P. and R. Dudley. (2018). Moving like a model: mimicry of hymenopteran flight trajectories by clearwing moths of Southeast Asian rainforests. *Biology Letters* **14**:20180152 (6 pp.)
- Yanoviak, S.P. and R. Dudley. (2018). Jumping and the aerial behavior of aquatic mayfly larvae (*Myobaetis ellenae*, Baetidae). *Arthropod Structure & Development* **47**:370-374.
- Anderson, P., Berridge, V., Conrod, P., Dudley, R., Hellman, M., Lachenmeier, D., Lingford-Hughes, A., Miller, D., Rehm, J., Room, R., Schmidt, L., Sullivan, R., Ysa, T. and A. Gual. (2017). Reframing the science and policy of nicotine, illegal drugs and alcohol – conclusions of the ALICE RAP Project. *F1000Research* **6**:289. doi:10.12688/f1000research.10860.1 (13 pp.)
- Badger, M., Ortega-Jimenez, V., Wang, H. and R. Dudley. (2017). Into rude air: hummingbird flight performance in variable aerial environments. *Philosophical Transactions of the Royal Society of London B* **371**:20150387 (7 pp.)
- Muijires, F.T., Chang, S., van Veen, W., Spitzen, J., Biemans, B.T., Koehl, M.A.R. and R. Dudley. (2017). Escaping blood-fed malaria mosquitoes minimize tactile detection without compromising on take-off speed. *Journal of Experimental Biology* **220**:3751-3762.
- Ortega-Jimenez, V.M., von Rabenau, L. and R. Dudley. (2017). Escape jumping by three age-classes of water striders from smooth, wavy and bubbling water surfaces. *Journal of Experimental Biology* **220**:2809-2815.
- Ortega-Jimenez, V.M., Martín-Alcántara, A., Fernandez-Feria, R. and R. Dudley. (2017). On the autorotation of animal wings. *Journal of the Royal Society Interface* **14**:20160870. (10 pp.)
- Skandalis, D.A., Bahlman, J.W., Groom, D., Segre, P.S., Welch, K.C., Witt, C.C., McGuire, J.A., Dudley, R., Lentink, D. and D.L. Altshuler. (2017). The biomechanical origin of extreme wing allometry in hummingbirds. *Nature Communications* **8**:1047 (9 pp.)
- Ortega-Jimenez, V.M., Arriaga-Ramírez, S. and R. Dudley. (2016). Meniscus ascent by thrips (Thysanoptera). *Biology Letters* **12**:20160279 (4 pp.)
- Sun, Y.-F., Ren, Z.-P., Wu, Y.-F., Lei, F.-M., Dudley, R. and D.-M. Li. (2016). Flying high: limits to flight performance by sparrows on the Qinghai-Tibetan plateau. *Journal of Experimental Biology* **219**:3642-3648.
- Zeng, Y., Lam, K., Chen, Y., Gong, M., Xu, Z. and R. Dudley. (2016). Biomechanics of aerial righting in wingless nymphal stick insects. *Interface Focus* **7**:20160075 (12 pp.)
- Badger, M., Ortega-Jimenez, V.M., von Rabenau, L., Smiley, A. and R. Dudley. (2015). Electrostatic charge on flying hummingbirds and its potential role in pollination. *PLOS ONE* **10**(9):e0138003 (11 pp.)
- Full, R.J., Dudley, R., Koehl, M.A.R., Libby, T. and C. Schwab. (2015). Interdisciplinary laboratory course facilitating knowledge integration, mutualistic teaming, and original discovery. *Integrative and Comparative Biology* **5**:912-925.
- Munk, Y., Yanoviak, S.P., Koehl, M.A.R. and R. Dudley. (2015). The descent of ant: field-measured three-dimensional trajectories of gliding ants. *Journal of Experimental Biology* **218**:1393-1401. doi:10.1242/jeb.106914
- Yanoviak, S.P., Munk, Y. and R. Dudley. (2015). Arachnid aloft: directed aerial descent in a Neotropical canopy spider. *Journal of the Royal Society Interface* **12**:20150534 (5 pp.)
- Zeng, Y., Lin, Y., Abundo, A. and R. Dudley. (2015). The visual ecology of directed aerial descent in first-instar nymphs of the stick insect *Extatosoma tiaratum*. *Journal of Experimental Biology* **218**:2305-2314. doi:10.1242/jeb.109553
- Dillon, M.E. and R. Dudley. (2014). Surpassing Mt. Everest: extreme flight performance of alpine bumble-bees. *Biology Letters* doi:10.1098/rsbl.2013.0922 (4 pp.)
- Dudley, R. (2014). *The Drunken Monkey: Why We Drink and Abuse Alcohol*. Berkeley: University of California Press. 154 pp.
- Evangelista, D., Cam, S., Huynh, T., Krivitskiy, I. and R. Dudley. (2014). Ontogeny of aerial righting and wing flapping in juvenile birds. *Biology Letters* doi:10.1098/rsbl.2014.0497 (4 pp.)

- Evangelista, D., Cam, S., Huynh, T., Kwong, A., Mehrabani, H., Tse, K. and R. Dudley. (2014). Shifts in stability and control effectiveness during evolution of Paraves support aerial maneuvering hypotheses for flight origins. *PeerJ* 2:e632. doi:10.7717/peerj.632 (25 pp.)
- Kim, E.J., Wolf, M., Ortega-Jimenez, V.M. and R. Dudley. (2014). Hovering performance of Anna's Hummingbirds (*Calypte anna*) in ground effect. *Journal of the Royal Society Interface* 11:20140505 (8 pp.)
- McGuire, J.A., Witt, C.C., Van Remsen, J., Corl, A., Rabosky, D.L., Altshuler, D.L. and R. Dudley. (2014). Molecular phylogenetics and the diversification of hummingbirds (Apodiformes: Trochilidae). *Current Biology* doi:10.1016/j.cub.2014.03.016 (7 pp.)
- Ortega-Jimenez, V.M., Wolf, M., Variano, E.A. and R. Dudley. (2014). Into turbulent air: size-dependent effects of von Kármán vortex streets on hummingbird flight kinematics and energetics. *Proceedings of the Royal Society of London B* doi:10.1098/rspb.2014.0180 (10 pp.)
- Srygley, R.B., Dudley, R., Oliveira, E.G. and A.J. Riveros. (2014). El Niño, host plant growth, and migratory butterfly abundance in a changing climate. *Biotropica* 46:90-97.
- Xu, X., Zhou, Z., Dudley, R., Mackem, S., Chuong, C.-M., Erickson, G.M. and D.J. Varricchio. (2014). An integrative approach to understanding bird origins. *Science* 346:1253293 doi:10.1126/science.1253293 (12 pp.)
- Ortega-Jimenez, V.M. and R. Dudley. (2013). Rapid spiderweb deformation induced by electrostatically charged insects. *Scientific Reports* doi:10.1038/srep02108 (4 pp.)
- Projecto-Garcia, J., Natarajan, C., Moriyama, H., Weber, R.E., Fago, A., Cheviron, Z.A., Dudley, R., McGuire, J.A., Witt, C.C. and J.F. Storz. (2013). Repeated elevational transitions in hemoglobin function during the evolution of Andean hummingbirds. *Proceedings of the National Academy of Sciences USA* 110:20669-20674.
- Sapir, N. and R. Dudley. (2013). Implications of floral orientation for flight kinematics and metabolic expenditure of hover-feeding hummingbirds. *Functional Ecology* 27:227-235.
- Wolf, M., Ortega-Jimenez, V.M. and R. Dudley. (2013). Structure of the vortex wake in hovering Anna's Hummingbirds (*Calypte anna*). *Proceedings of the Royal Society of London B* doi:10.1098/rspb.2013.2391 (7 pp.)
- Dudley, R., Kaspari, M. and S.P. Yanoviak. (2012). Lust for salt in the western Amazon. *Biotropica* 44:6-9.
- Medeiros, M.J. and R. Dudley. (2012). Jumping performance in flightless Hawaiian grasshopper moths (Xyloryctidae: *Thyrocopa* spp.). *Proceedings of the Hawaiian Entomological Society* 44:55-61.
- Ortega-Jimenez, V.M. and R. Dudley. (2012a). Aerial shaking performance of wet Anna's Hummingbirds. *Journal of the Royal Society Interface* 9:1093-1099.
- Ortega-Jimenez, V.M. and R. Dudley. (2012b). Flying in the rain: hovering performance of Anna's Hummingbirds under varied precipitation. *Proceedings of the Royal Society of London B* 279:3996-4002.
- Sapir, N. and R. Dudley. (2012). Backward flight in hummingbirds employs unique kinematic adjustments and entails low metabolic cost. *Journal of Experimental Biology* 215:3603-3611.
- Buermann, W., Chaves, J.A., Dudley, R., McGuire, J.A., Smith, T.B. and D.L. Altshuler. (2011). Projected changes in elevational distribution and flight performance of montane Neotropical hummingbirds in response to climate change. *Global Change Biology* 17:1671-1680.
- Dudley, R. and S.P. Yanoviak. (2011). Animal aloft: the origins of aerial behavior and flight. *Integrative and Comparative Biology* 51:926-936.
- Fernández, M.J., Dudley, R. and F. Bozinovic. (2011). Comparative energetics of the Giant Hummingbird (*Patagona gigas*). *Physiological and Biochemical Zoology* 84:333-340.
- Jusufi, A., Zeng, Y., Full, R.J. and R. Dudley. (2011). Aerial righting reflexes in flightless animals. *Integrative and Comparative Biology* 51:937-943.
- McGuire, J.A. and R. Dudley. (2011). The biology of gliding in flying lizards (genus *Draco*)

- and their fossil and extant analogs. *Integrative and Comparative Biology* **51**:983-990.
- Peterson, K., Birkmeyer, P., Dudley, R. and R. Fearing. (2011). A wing-assisted running robot and implications for avian flight evolution. *Bioinspiration & Biomimetics* **6** 046008 (8 pp.)
- Yanoviak, S.P., Munk, Y. and R. Dudley. (2011). Evolution and ecology of directed aerial descent in arboreal ants. *Integrative and Comparative Biology* **51**:944-956.
- Altshuler, D.L., Dudley, R., Heredia, S.M. and J.A. McGuire. (2010). Allometry of hummingbird lifting performance. *Journal of Experimental Biology* **213**:725-734.
- Buchwald, R. and R. Dudley. (2010). Limits to vertical force and power production in bumblebees (Hymenoptera: *Bombus impatiens*). *Journal of Experimental Biology* **213**:426-432.
- Clark, C.J. and R. Dudley. (2010). Hovering and forward flight energetics in Anna's and Allen's Hummingbirds. *Physiological and Biochemical Zoology* **83**:654-662.
- Evangelista, D., Fernández, M.J., Berns, M.S., Hoover, A. and R. Dudley. (2010). Hovering energetics and thermal balance in Anna's Hummingbirds (*Calypte anna*). *Physiological and Biochemical Zoology* **83**:406-413.
- Sane, S.P., Srygley, R.B. and R. Dudley. (2010). Antennal regulation of migratory flight in the Neotropical moth *Urania fulgens*. *Biology Letters* **6**:406-409.
- Srygley, R.B., Dudley, R., Oliveira, E.G., Aizprúa, R., Pelaez, N.Z. and A.J. Riveros. (2010). El Niño and dry season rainfall influence hostplant phenology and an annual butterfly migration from Neotropical wet to dry forests. *Global Change Biology* **16**:936-945.
- Yanoviak, S.P., Munk, Y., Kaspari, M. and R. Dudley. (2010). Aerial manoeuvrability in wingless gliding ants (*Cephalotes atratus*). *Proceedings of the Royal Society of London B* **277**:2199-2204.
- Kaspari, M., Yanoviak, S.P., Dudley, R., Yuan, M. and N. Clay. (2009). Sodium shortage as a constraint on the carbon cycle in an inland tropical rainforest. *Proceedings of the National Academy of Sciences USA* **106**:19405-19409.
- Bradley, T.J., Briscoe, A.D., Brady, S., Contreras, H.L., Danforth, B.N., Dudley, R., Grimaldi, D., Harrison, J.F., Kaiser, A., Merlin, C., Reppert, S.M., VandenBrooks, J.M. and S.P. Yanoviak. (2009). Episodes in insect evolution. *Integrative and Comparative Biology* **49**:590-606.
- Clark, C.J. and R. Dudley. (2009). Flight costs of long, sexually selected tails in hummingbirds. *Proceedings of the Royal Society of London B* **276**:2109-2115.
- Combes, S.A. and R. Dudley. (2009). Turbulence-driven instabilities limit insect flight performance. *Proceedings of the National Academy of Sciences USA* **106**:9105-9108.
- Dickinson, M.H. and R. Dudley. (2009). Flight. In: *Encyclopedia of Insects*, 2nd ed. (eds. V. Resh and R. Cardé), pp. 364-372. San Diego: Academic Press.
- McGuire, J.A., Witt, C.C., Remsen, J.V., Dudley, R. and D.L. Altshuler. (2009). A higher-level taxonomy for hummingbirds. *Journal of Ornithology* **150**:155-165.
- Yanoviak, S.P., Kaspari, M. and R. Dudley. (2009). Gliding hexapods and the origins of insect aerial behaviour. *Biology Letters* **5**:510-512.
- Dudley, R. and R.B. Srygley. (2008). Airspeed adjustment and lipid reserves in migratory Neotropical butterflies. *Functional Ecology* **22**:264-270.
- Kaspari, M., Yanoviak, S.P. and R. Dudley. (2008). On the biogeography of salt limitation: a study of ant communities. *Proceedings of the National Academy of Sciences USA* **105**:17848-17851.
- Kunz, T.H., Gauthreaux, S.A., Hristov, N.I., Horn, J.W., Jones, G., Kalko, E.K.V., Kelly, T.A., Larkin, R.P., McCracken, G.F., Swartz, S.M., Srygley, R.B., Dudley, R., Westbrook, J.K. and M. Wikelski. (2008). Aeroecology: probing and modelling the aerosphere. *Integrative and Comparative Biology* **48**:1-11.
- Mazeh, S., Korine, C., Pinshow, B. and R. Dudley. (2008). Does ethanol in fruit influence feeding in the frugivorous yellow-vented bulbul (*Pycnonotus xanthopygos*)? *Behavioural Processes* **77**:369-375.

- Srygley, R.B. and R. Dudley. (2008). Optimal strategies for insects migrating in the flight boundary layer: mechanisms and consequences. *Integrative and Comparative Biology* **48**:119-133.
- Yanoviak, S.P., Kaspari, M., Dudley, R. and G. Poinar. (2008). Parasite-induced fruit mimicry in a tropical canopy ant. *American Naturalist* **171**:536-544.
- Dudley, R. (2007). Air. In: *Encyclopedia of Tidepools and Rocky Shores* (eds. M.W. Denny and S.D. Gaines), pp. 8-10. Berkeley: University of California Press.
- Dudley, R., Byrnes, G., Yanoviak, S.P., Borrell, B.J., Brown, R. and J.A. McGuire. (2007). Gliding and the functional origins of flight: biomechanical novelty or necessity? *Annual Review of Ecology, Evolution, and Systematics* **38**:179-201.
- Altshuler, D.L. and R. Dudley. (2006a). Adaptations to life at high elevation: an introduction to the symposium. *Integrative and Comparative Biology* **46**:3-4.
- Altshuler, D.L. and R. Dudley. (2006b). The physiology and biomechanics of avian flight at high altitude. *Integrative and Comparative Biology* **46**:62-71.
- Srygley, R.B., Dudley, R., Oliveira, E.G. and A. Riveros. (2006). Experimental evidence for a magnetic sense in Neotropical migrating butterflies (Lepidoptera: Pieridae). *Animal Behaviour* **71**:183-191.
- Sánchez, F., Korine, C., Steeghs, M., Laarhoven, L.-J., Harren, F.J.M., Cristescu, S.M., Dudley, R. and B. Pinshow. (2006). Ethanol and methanol as possible odor cues for Egyptian fruit bats (*Rousettus aegyptiacus*). *Journal of Chemical Ecology* **32**:1289-1300.
- Dudley, R., Huey, R.B. and D.R. Carrier. (2006). Living History of Physiology: Carl Gans. *Advances in Physiology Education* **30**:102-107.
- Dillon, M., Frazier, M.R. and R. Dudley. (2006). Into thin air: physiology and evolution of alpine insects. *Integrative and Comparative Biology* **46**:49-61.
- Yanoviak, S.P. and R. Dudley. (2006). The role of visual cues in directed aerial descent of *Cephalotes atratus* workers (Hymenoptera: Formicidae). *Journal of Experimental Biology* **209**:1777-1783.
- Dudley, R. (2005). Evolutionary and historical aspects of ethanol ingestion. In: *Comprehensive Handbook of Alcohol-Related Pathology, Volume 1. General aspects of alcohol and mechanisms of disease* (eds. V.R. Preedy and R.R. Watson), pp. 3-13. London: Academic Press.
- McGuire, J.A. and R. Dudley. (2005). The cost of living large: comparative gliding performance in flying lizards (Agamidae: *Draco*). *American Naturalist* **166**:93-106.
- Borrell, B.J., Goldbogen, J. and R. Dudley. (2005). Flapping aquatic propulsion at low Reynolds numbers: swimming kinematics of the Antarctic pteropod, *Clione antarctica*. *Journal of Experimental Biology* **208**:2939-2949.
- Borrell, B.J., LaDuc, T.J. and R. Dudley. (2005). Respiratory cooling in rattlesnakes. *Comparative Biochemistry and Physiology A* **140**:471-476.
- Stiles, F.G., Altshuler, D.L. and R. Dudley. (2005). On the wing morphology and flight behavior of some North American hummingbird species. *The Auk* **122**:872-886.
- Yanoviak, S.P., Dudley, R. and M. Kaspari. (2005). Directed aerial descent in canopy ants. *Nature* **433**:624-626.
- Altshuler, D.L., Dudley, R. and J.A. McGuire. (2004). Resolution of a paradox: hummingbird flight at high elevation does not come without a cost. *Proceedings of the National Academy of Sciences USA* **101**:17731-17736.
- Altshuler, D.L., Stiles, F.G. and R. Dudley. (2004). Of hummingbirds and helicopters: hovering costs, competitive ability and foraging strategies. *American Naturalist* **163**:16-25.
- Dudley, R. (2004). Ethanol, fruit ripening, and the historical origins of human alcoholism in primate frugivory. *Integrative and Comparative Biology* **44**:315-323.
- Dudley, R. and M.H. Dickinson. (2004). The comparative biology of ethanol consumption: an introduction to the symposium. *Integrative and Comparative Biology* **44**:267-268.

- Altshuler, D.L., Dudley, R. and C.P. Ellington. (2004). Aerodynamic forces of revolving hummingbird wings and wing models. *Journal of Zoology, London* **264**:327-332.
- Childress, S. and R. Dudley. (2004). Transition from ciliary to flapping mode in a swimming mollusc: flapping flight as a bifurcation in Re_{ω} . *Journal of Fluid Mechanics* **498**:257-288.
- Dillon, M.E. and R. Dudley. (2004). Allometry of maximum vertical force production during hovering flight of Neotropical orchid bees (Apidae: Euglossini). *Journal of Experimental Biology* **207**:417-425.
- Roberts, S.P., Harrison, J.F. and R. Dudley. (2004). Allometry of kinematics and energetics in Carpenter Bees (*Xylocopa varipuncta*) hovering in variable-density gases. *Journal of Experimental Biology* **207**:993-1004.
- Sánchez, F., Korine, C., Pinshow, B. and R. Dudley. (2004). The possible roles of ethanol in the relationship between plants and frugivores: first experiments with Egyptian fruit bats. *Integrative and Comparative Biology* **44**:290-294.
- Stephens, D. and R. Dudley. (2004). The drunken monkey hypothesis. *Natural History* **113**(10): 40-44.
- Altshuler, D.L. and R. Dudley. (2003). Kinematics of hummingbird hovering flight along simulated and natural elevational gradients. *Journal of Experimental Biology* **206**:3139-3147.
- Berner, R.A., Beerling, D.J., Dudley, R., Robinson, J.M. and R.A. Wildman. (2003). Phanerozoic atmospheric oxygen. *Annual Review of Earth and Planetary Sciences* **31**:105-134.
- Dickinson, M.H. and R. Dudley. (2003). Flight. In: *Encyclopedia of Insects* (eds. V. Resh and R. Cardé), pp. 416-426. San Diego: Academic Press.
- Altshuler, D.L. and R. Dudley. (2002). The ecological and evolutionary interface of hummingbird flight physiology. *Journal of Experimental Biology* **205**:2325-2336.
- Dudley, R. (2002a). Fermenting fruit and the historical ecology of ethanol ingestion: is alcoholism in modern humans an evolutionary hangover? *Addiction* **97**:381-388.
- Dudley, R. (2002b). Mechanisms and implications of animal flight maneuverability. *Integrative and Comparative Biology* **42**:135-140.
- Dudley, R. and Y. Winter. (2002). Hovering flight mechanics of Neotropical flower bats (Phyllostomidae: Glossophaginae) in normo- and hypodense gas mixtures. *Journal of Experimental Biology* **205**:3669-3677.
- Dudley, R., Srygley, R.B., Oliveira, E.G. and P.J. DeVries. (2002). Flight speeds, lipid reserves, and predation of the migratory moth *Urania fulgens* (Uraniidae). *Biotropica* **34**:120-126.
- Moon, B.R., LaDuc, T.J., Dudley, R. and Chang, A. (2002). A twist to the rattlesnake tail. In: *Topics in Functional and Ecological Vertebrate Morphology* (eds. P. Aerts, R. Van Damme, K. D'Août and A. Herrel), pp. 63-76. Shaker Publishing, Maastricht.
- Dudley, R. (2001a). Limits to human locomotor performance: phylogenetic origins and comparative perspectives. *Journal of Experimental Biology* **204**:3235-3240.
- Dudley, R. (2001b). The biomechanics and functional diversity of flight. In: *Insect Movement: Mechanisms and Consequences* (ed. I. Woiwod and D. Reynolds), pp. 19-41. Wallingford: CAB International.
- Dudley, R. (2000a). Evolutionary origins of human alcoholism in primate frugivory. *Quarterly Review of Biology* **75**:3-15.
- Dudley, R. (2000b). *The Biomechanics of Insect Flight: Form, Function, Evolution*. Princeton: Princeton University Press. 476 pp.
- Dudley, R. (2000c). The evolutionary physiology of animal flight: paleobiological and present perspectives. *Annual Review of Physiology* **62**:135-155.
- Vermeij, G.J. and R. Dudley. (2000). Why are there so few evolutionary transitions between aquatic and terrestrial ecosystems? *Biological Journal of the Linnean Society* **70**:541-554.
- Chai, P. and R. Dudley. (1999). Maximum flight performance of hummingbirds: capacities, constraints, and trade-offs. *American Naturalist* **153**:398-411.

- Dudley, R. (1999). Unsteady aerodynamics. [Perspectives: Biomechanics]. *Science* **284**:1937-1938.
- Gans, C., Dudley, R., Aguilar, N.M. and J.B. Graham. (1999a). Late Paleozoic atmospheres and biotic evolution. *Historical Biology* **13**:199-219.
- Gans, C., Dudley, R., Aguilar, N.M. and J.B. Graham. (1999b). The pre-Devonian carbon dioxide crash, the late Paleozoic oxygen pulse, and associated shifts in ventilatory mechanisms. In: *Water/Air Transition in Biology* (ed. A.K. Mittal, F.B. Eddy, and J.S. Datta Munshi), pp. 31-43. New Delhi: Oxford & IBH Publishing Co.
- Chai, P., Chang, A.C. and R. Dudley. (1998). Flight thermogenesis and energy conservation in hovering hummingbirds. *Journal of Experimental Biology* **201**:963-968.
- Dudley, R. (1998). Atmospheric oxygen, giant Paleozoic insects and the evolution of aerial locomotor performance. *Journal of Experimental Biology* **201**:1043-1050.
- Oliveira, E.G., Srygley, R.B. and R. Dudley. (1998). Do neotropical migrant butterflies navigate using a solar compass? *Journal of Experimental Biology* **201**:3317-3331.
- Chai, P., Chen, J.S.C. and R. Dudley. (1997). Transient hovering performance of hummingbirds under conditions of maximal loading. *Journal of Experimental Biology* **200**:921-929.
- Graham, J.B., Aguilar, N., Dudley, R. and C. Gans. (1997). The late Paleozoic atmosphere and the evolutionary physiology of tetrapods. In: *Amniote Origins: Completing the Transition to Land* (eds. S.S. Sumida and K.L.M. Martin), pp. 141-167. New York: Academic Press.
- Jaramillo, C., Rand, A.S., Ibáñez, R. and R. Dudley. (1997). Elastic structures in the vocalization apparatus of the túngara frog, *Physalaemus pustulosus* (Leptodactylidae). *Journal of Morphology* **233**:287-295.
- Chai, P. and R. Dudley. (1996). Limits to flight energetics of hummingbirds hovering in hypodense and hypoxic gas mixtures. *Journal of Experimental Biology* **199**:2285-2295.
- Chai, P., Harrykisson, R. and R. Dudley. (1996). Hummingbird hovering performance in hyperoxic heliox: effects of body mass and sex. *Journal of Experimental Biology* **199**:2745-2755.
- Dudley, R. and G.H. Adler. (1996). Biogeography of milkweed butterflies (Nymphalidae: Danainae) and mimetic patterns on tropical Pacific archipelagos. *Biological Journal of the Linnean Society* **57**:317-326.
- Dudley, R. and P. Chai. (1996). Animal flight mechanics in physically variable gas mixtures. *Journal of Experimental Biology* **199**:1881-1885.
- Grodnitsky, D.L. and R. Dudley. (1996). Vortex visualization during free flight of heliconiine butterflies (Lepidoptera: Nymphalidae). *Journal of the Kansas Entomological Society* **69**:199-203.
- Srygley, R.B., Oliveira, E. and R. Dudley. (1996). Wind drift compensation, flyways, and conservation of diurnal, migrant Neotropical Lepidoptera. *Proceedings of the Royal Society of London B* **263**:1351-1357.
- Adler, G.H., Austin, C.C. and R. Dudley. (1995). Dispersal and speciation of skinks among archipelagos in the tropical Pacific Ocean. *Evolutionary Ecology* **9**:529-541.
- Chai, P. and R. Dudley. (1995). Limits to vertebrate locomotor energetics suggested by hummingbirds hovering in heliox. *Nature* **377**:722-725.
- Dudley, R. (1995a). Aerodynamics, energetics and reproductive constraints of migratory flight in insects. In: *Insect Migration: Tracking Resources Through Space and Time* (ed. V.A. Drake and A.G. Gatehouse), pp. 303-319. Cambridge: Cambridge University Press.
- Dudley, R. (1995b). Extraordinary flight performance of orchid bees (Apidae: Euglossini) hovering in heliox (80% He/20% O₂). *Journal of Experimental Biology* **198**:1065-1070.
- Graham, J.B., Dudley, R., Aguilar, N. and C. Gans. (1995). Implications of the late Palaeozoic oxygen pulse for physiology and evolution. *Nature* **375**:117-120.
- Larimer, J.L. and R. Dudley. (1995). Accelerational implications of hummingbird display dives. *The Auk* **112**:1064-1066.

- Dudley, R. (1994). Aerodynamics of insect dispersal and the constraint of body size. In: *Proceedings of the 13th International Biometeorology Congress* (ed. A.R. Maarouf, N.N. Barthakur and W.O. Haufe), Part 2 (Vol. 3), pp. 1035-1041. Downsview: Environment Canada.
- Dudley, R. and R.B. Srygley. (1994). Flight physiology of Neotropical butterflies: allometry of airspeeds during natural free flight. *Journal of Experimental Biology* **191**:125-139.
- Dudley, R. and G.J. Vermeij. (1994). Energetic constraints of folivory: leaf fractionation by frugivorous bats. *Functional Ecology* **8**:668.
- Adler, G.H. and R. Dudley. (1994). Butterfly biogeography and endemism on tropical Pacific islands. *Biological Journal of the Linnean Society* **51**:151-162.
- Larimer, J.L. and R. Dudley. (1994). Centrifugal force and blood pressure elevation in the wings of flying hummingbirds. *Journal of theoretical Biology* **168**:233-236.
- Rand, A.S. and R. Dudley. (1993). Frogs in helium: the anuran vocal sac is not a cavity resonator. *Physiological Zoology* **66**:793-806.
- Srygley, R.B. and R. Dudley. (1993). Correlations of the position of center of body mass with butterfly escape tactics. *Journal of Experimental Biology* **174**:155-166.
- Dudley, R. (1992). Aerodynamics of flight. In: *Biomechanics (Structures & Systems): A Practical Approach* (ed. A.A. Biewener), pp. 97-121. Oxford: Oxford University Press.
- Dudley, R. and A.S. Rand. (1992). Underwater sound production in a Neotropical anuran, *Physalaemus pustulosus* (Leptodactylidae). *Bioacoustics* **4**:211-216.
- Dudley, R. and G.J. Vermeij. (1992). Do the power requirements of flapping flight constrain folivory in flying animals? *Functional Ecology* **6**:101-104.
- Mulkey, S.S., A.P. Smith, S.J. Wright, J.L. Machado and R. Dudley. (1992). Contrasting leaf phenotypes control seasonal variation in water loss in a tropical forest shrub. *Proceedings of the National Academy of Sciences USA* **89**:9084-9088.
- Dudley, R. (1991a). Biomechanics of flight in Neotropical butterflies: aerodynamics and mechanical power requirements. *Journal of Experimental Biology* **159**:335-357.
- Dudley, R. (1991b). Comparative biomechanics and the evolutionary diversification of flying insect morphology. In: *The Unity of Evolutionary Biology* (ed. E.C. Dudley), pp. 503-514. Portland: Dioscorides Press.
- Dudley, R. (1991c). Thermoregulation in unpalatable danaine butterflies. *Functional Ecology* **5**:503-506.
- Dudley, R. and C. Gans. (1991). A critique of symmorphosis and optimality models in physiology. *Physiological Zoology* **64**:627-637.
- Dudley, R. and A.S. Rand. (1991). Vocal sac inflation and sound production in the túngara frog, *Physalaemus pustulosus* (Leptodactylidae). *Copeia* **1991**:460-470.
- Dudley, R., King, V.A. and R.J. Wassersug. (1991). The implications of shape and metamorphosis for drag forces on a generalized pond tadpole (*Rana catesbeiana*). *Copeia* **1991**:252-257.
- Stern, D.L. and R. Dudley. (1991). Wing buzzing by territorial male orchid bees, *Eulaema meriana* (Hymenoptera: Apidae). *Journal of the Kansas Entomological Society* **64**:88-94.
- DeVries, P.J. and R. Dudley. (1990). Morphometrics, airspeed, thermoregulation and lipid reserves of migrating *Urania fulgens* (Uraniidae) moths in natural free flight. *Physiological Zoology* **63**:235-251.
- Dudley, R. (1990a). Biomechanics of flight in Neotropical butterflies: morphometrics and kinematics. *Journal of Experimental Biology* **150**:37-53.
- Dudley, R. (1990b). Thanatosis in the Neotropical butterfly *Caligo illioneus* (Nymphalidae: Brassoliniinae). *Journal of Research on the Lepidoptera* **28**:125-126.
- Dudley, R. and P.J. DeVries. (1990a). Flight physiology of migrating *Urania fulgens* (Uraniidae) moths: kinematics and aerodynamics of natural free flight. *Journal of Comparative Physiology A* **167**:145-154.

- Dudley, R. and P.J. DeVries. (1990b). Tropical rain forest structure and the geographical distribution of gliding vertebrates. *Biotropica* **22**:432-434.
- Dudley, R. and C.P. Ellington. (1990a). Mechanics of forward flight in bumblebees. I. Kinematics and morphology. *Journal of Experimental Biology* **148**:19-52.
- Dudley, R. and C.P. Ellington. (1990b). Mechanics of forward flight in bumblebees. II. Quasi-steady lift and mechanical power requirements. *Journal of Experimental Biology* **148**:53-88.
- Dudley, R. and K. Milton. (1990). Parasite deterrence and the energetic costs of slapping in howler monkeys, *Alouatta palliata*. *Journal of Mammalogy* **71**:463-465.
- Dudley, R. (1985). Fluid-dynamic drag of limpet shells. *Veliger* **28**:6-13.
- Dudley, R. (1980). Crab-crushing of periwinkle shells, *Littorina littorea*, from two geographical provinces. *Nautilus* **94**:108-111.

Representative Media Coverage

animal flight:

- "How wingless salamanders fly", *Nature News & Views* (31 May 2022)
- "It's not a bird or a plane. It's a skydiving salamander", *New York Times* (26 May 2022)
- "Secrets of California's skydiving salamanders revealed by researchers", *The Guardian* (25 May 2022)
- "Des salamandres pratiquent la chute libre depuis les arbres les plus hauts du monde", *Geo* (24 May 2022)
- "Salamanders in free fall!", *Daily Mail* (24 May 2022)
- "Skydiving salamanders have mastered falling with style", *Popular Science* (23 May 2022)
- "Wandering salamanders glide like skydivers from the world's tallest trees", *Science News* (23 May 2022)
- "These 'skydiving' salamanders survive leaps from the world's tallest trees", *National Geographic*
- "Watch these 'skydiving' salamanders that parachute out of California redwoods", *San Francisco Chronicle*
- "Watch hummingbirds 'dance' through waterfalls", *Science* (18 Aug. 2020)
- "How mosquitos use stealth to steal your blood", *National Geographic News* (23 Oct. 2017)
- "How blood-bloated mosquitos escape a swat", *LiveScience* (19 Oct. 2017)
- "The physics of mosquito takeoffs shows why you don't feel a thing", *Science News* (18 Oct. 2017)
- "Glider spiders", *The Economist* (22 Aug. 2015)
- "These spiders will glide through the air like Superman", *Washington Post* (20 Aug. 2015)
- "First glimpse of sky-diving spiders showing off gliding skills", *New Scientist* (19 Aug. 2015)
- "Look away now arachnophobes!", *Daily Mail* (19 Aug. 2015)
- "Spiders glide gracefully to safety" *Science* (18 Aug. 2015)
- "Spiders skydive to safety", *The Guardian* (18 Aug. 2015)
- "Gliding spiders found falling from tropical trees", *Smithsonian.com* (18 Aug. 2015)
- "Flying spiders found—and they can steer in mid-air", *National Geographic News* (18 Aug. 2015)
- "What happens when you put a hummingbird in a wind tunnel?", *KQED Science* (31 March 2015)
- "Gliding ant flies like a backwards superman", *Discover* (20 March 2015)
- "Hummingbirds: still evolving endless forms most wonderful", *The Guardian* (7 April 2014)
- "Hummingbird speciation really hummed, say scientists", *Christian Science Monitor* (4 April 2014)
- "Birds of a feather: hummingbird family tree unveiled", *Reuters* (3 April 2014)
- "Hummingbird diversity still booming", *Nature News* (3 April 2014)
- "Hummingbird evolution was fast, but is slowing", *LiveScience* (3 April 2014)
- "When hummingbirds fly unfriendly skies", *Science News* (25 March 2014)
- "Himalayan heights pose no problem for bees", *Nature News* (5 Feb. 2014)
- "Bumblebees capable of flying higher than Mount Everest", *ScienceShots* (4 Feb. 2014)
- "How the hummingbird ended up in the Andes", *Christian Science Monitor* (3 Dec. 2013)
- "Le coup de fil électrique meurtrier de l'araignée", *Le Monde* (15 July 2013)
- "Static electricity: the secret of spider webs", *NPR Living on Earth* (12 July 2013)
- "How spiders use an electrical charge to trap insects", *Christian Science Monitor* (8 July 2013)
- "Honey bees' electric charge makes them easy prey for spiders", *Daily Telegraph* (4 July 2013)
- "Gotcha! Spider silk grabs electrically charged insects in midair", *ScienceNOW* (4 July 2013)
- "Droopy flowers and their wiles", *New York Times* (21 Nov. 2012)
- "For hummingbirds, it's easy to shift into reverse", *New York Times* (2 Oct. 2012)
- "Hummingbirds' backward flight is efficient", *BBC Nature News* (27 Sept. 2012)
- "Birds switch gears to stay on course", *New York Times* (23 July 2012)
- "How hummingbirds weather the storm", *ScienceNOW* (17 July 2012)
- "Hummingbirds shake their heads to deal with rain", *BBC News* (8 Nov. 2011)
- "Winged robots hint at the origins of flight", *ScienceNOW* (17 Oct. 2011)
- "A bum steer: skydiving ants in the Amazon direct their fall using their rear end", *Daily Mail* (24 June 2011)

"Flying ants use legs, butts to steer", *Discovery News* (20 June 2011)
 "Gliding ants use their legs as rudders", *The Guardian* (17 March 2010)
 "Bumblebees set new insect record for high-altitude flying", *The Independent* (1 June 2008)
 "Gliders of the forest", *Zoogoer* (Sept./Oct. 2007)
 "Wingless gliders may reveal the origins of insect flight", *New York Times* (4 April 2006)
 "Landing on their tiny feet", *New York Times* (15 Feb. 2005)
 "High diving ants swing back toward their tree", *Science News* (12 Feb. 2005)
 "Falling ants fly a zigzag to safety", *Los Angeles Times* (12 Feb. 2005)
 "Ants skydive to escape predators", *Discovery Channel* (9 Feb. 2005)
 "Amazonian ants glide back home", *CBC Toronto* (9 Feb. 2005)
 "Falling ants steer themselves to safety", *New Scientist* (12 Feb. 2005)
 "Amazing ants fly when they fall", *MSNBC* (9 Feb. 2005)
 "Scientists discover the skydiving secret of a wingless canopy ant", *Independent, UK* (9 Feb. 2005)
 "Kolibris im Höhenflug", *Frankfurter Allgemeine Zeitung* (4 Feb. 2004)
 "When giants had wings and 6 legs", *New York Times* (3 Feb. 2004)

evolutionary origins of alcoholism:

"Why do humans have a taste for alcohol?", *Discover Magazine* (27 April 2022)
 "Monkeys love alcohol", *Atlas Obscura* (21 April 2022)
 "Alkoholkonsum: Darum lieben Affen fermentierte Früchte", *Die Welt* (6 April 2022)
 "Your primate ancestors may be the reason humans love alcohol", *Miami Herald* (4 April 2022)
 "Паукообразные обезьяны часто едят фрукты, содержащие 1-2% алкоголя", *Scientific Russia* (4 Apr. 2022)
 "La atracción humana por el alcohol se remonta a la de otros primates", *laSexta* (31 March 2022)
 "Chimp off the old block", *Daily Mail* (31 March 2022)
 "Macacos gostam de frutas que contém álcool – e o que isso diz sobre nós?", *Galileu* (1 April 2022)
 "Les singes boivent de l'alcool", *franceinfo Radio France* (27 March 2022);
 "Was alcohol mankind's secret evolutionary advantage?" *Wine Spectator* (December 2019)
 "The secret lives of totally hammered birds", *Outside* (30 Oct. 2018)
 "Les oiseaux sont-ils alcooliques?", *Ulyces Science* (8 Nov. 2018)
 "Eat, drink and be merry—it's in our genes", *South China Morning Post* (6 March 2017)
 "Our ancestors were drinking alcohol before they were human", *BBC Earth* (23 Feb. 2017)
 "Animals like to get drunk, too", *Wall Street Journal* (17 Dec. 2015)
 "Primates and alcohol", *It's All Academic*, Australian Broadcasting Corporation (20 March 2015)
 "The Drunken Monkey investigates our early taste for booze and reward", *The Australian* (28 Feb. 2015)
 "Drunken Monkey", *This Way Up*, Radio New Zealand (23 Aug. 2014)
 "The Drunken Monkey", *Times Higher Education* (29 May 2014)
 "Drunken monkeys: does alcoholism have an evolutionary basis?", *LiveScience* (11 April 2014)
 "An evolutionary explanation for why humans are hard-wired to drink", *Business Insider* (11 April 2014)
 "Alcohol", BBC World Service *The Why Factor* (10 Jan. 2014)
 "Ethanol, la nature de l'alcool" (2012 documentary film, Bienvenue Productions)
 "The wine of astonishment: why drinking wine gets you drunk", *Fine Wine* (#22, 2008)
 "Booze and the beast", *BBC Radio 4* (5 April 2005)
 "Hipoteza pijaneu malpy", *Wiedza i Zycie* (March 2005)
 "What would Darwin say about drinking?", *Wine Spectator* (August 2004)
 "Of drunken elephants, tippy fish, and scotch with a twist", *New York Times* (23 March 2004)
 "Alcoholic by nature", *The Times, London* (19 October 2000)
 "I am simian", *Toronto Star* (14 July 2000)
 "Evolution of alcoholism", *Natural History* (July 2000)
 "Homo Intoxicatus", *Discover Magazine* (June 2000)
 "Alcoholic advantage", *Boston Globe* (May 2000)
 "Primate's penchant for fermented fruit", *Seattle Times* (21 March 2000)
 "Who sampled the first cocktail?", *Atlanta Constitution* (19 March 2000)
 "Primeval link to alcohol fondness", *Weekend Australian* (18 March 2000)
 "Forbidden fruit", *Dallas Morning Herald* (13 March 2000)
 "Prost, Mensch!", *Sonntagszeitung* (26 December 1999)
 "Beastly drunk", *New Scientist* (27 November 1999)

fruit mimicry in parasitized ants:

"Even by parasite standards, these worms stand out", *New York Times* (8 April 2008)
 "Caught red-bellied", *Natural History* (April 2008)
 "Parasite disguises ant as berry", *Earth & Sky* (Feb. 2008)
 "Worm makes ants into berries", *MSNBC* (16 Jan. 2008)

"Wurmsichtige Beeren", *SpektrumDirect* (17 Jan. 2008)
"Parasites morph ants to look 'berry' tasty", *Discovery News* (17 Jan. 2008)
"Faux fruit", *ScienceShots* (17 Jan. 2008)
"Parasite makes ants resemble berries", *National Geographic News* (16 Jan. 2008)
"Falsches Früchtchen", *Frankfurter Allgemeine Sonntagszeitung* (20 Jan. 2008)
"Ants look berry nice", *CBC Radio Quirks & Quarks* (26 Jan. 2008)
"Ameisen in verführerischem Beerenkostüm", *Neue Zürcher Zeitung* (30 Jan. 2008)