CURRICULUM VITAE

JORDAN G. OKIE

Assistant Research Professor, School of Earth and Space Exploration (SESE)
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EDUCATION

2011	Ph.D. in Biology, University of New Mexico (UNM), Albuquerque, NM. Dissertation: *Metabolic ecology and allometric scaling of microorganisms and major evolutionary transitions*. Committee: James H. Brown (chair), Melanie Moses, Bob Sinsabaugh, Cristina Takacs-Vesbach, and Richard Michod (external).
2007	*Complex Systems Summer School*, Santa Fe Institute (one-month long graduate program, Beijing, China).
2003	B.A. in Biology with Distinction, *Magna Cum Laude*, Carleton College, MN. Senior thesis: *Managing for the resilience of ecosystems*.
2000	School for International Training, semester abroad, Tanzania. Field studies on conservation, ecology, and ethnography.

RESEARCH POSITIONS

2015-current	Assistant Research Professor of the School of Earth & Space Exploration (SESE), Affiliated Faculty of the Center for Biodiversity Outcomes, Arizona State University.
2022	Sabbatical Visitor, Sante Fe Institute.
2017-2021	Affiliated Faculty, ASU-Santa Fe Institute Center for Biosocial Complex Systems.
2014-2015	Visiting Scholar and Research Scientist, Elser Lab, School of Life Sciences, Arizona State University.
2012-2014	NASA Astrobiology Institute Postdoctoral Fellow, School of Earth and Space Exploration, Arizona State University. Advisors: Everett Shock and Tori Hoehler.
2011-2012	Exploration Postdoctoral Fellow, School of Earth and Space Exploration, Arizona State University. Advisors: Everett Shock and Jason Raymond.
2010-2011	Research Assistant, Takacs-Vesbach's molecular microbial ecology lab, McMurdo Dry Valleys, Antarctica & Univ. of New Mexico.
2006-2008	Howard Hughes Medical Institute Interfaces Scholar, Univ. of New Mexico.
2005-2006	Lab and Field Assistant, Jennifer King's terrestrial biogeochemistry and ecosystem ecology lab, Univ. of Minnesota.

2004 Desert Biological Monitor, Bureau of Land Management, CA.

2003 Research and policy intern, Save America's Forests, Washington, D.C.

2001 Long-term Ecological Research Intern, Cedar Creek Natural History Area, Univ. of Minnesota.

BOOKS

Cockerill, K., M. Armstrong, J. Richter, **J.G. Okie**. 2017. *Environmental Realism – Challenging Solutions.* Palgrave Macmillan, London. (Team-written book on sustainability and environmental studies with social scientists).

PEER REVIEWED JOURNAL ARTICLES

In review and selected in prep

38.

37. Solowiej-Wedderburn, J., A. Leimar, C. Kempes, J.G. Okie, and E. Libby From cooperation to predation: the evolutionary origins of phagocytosis *Journal of Theoretical Biology*.

Published or In press

39. Burger, J.R., **J.G. Okie**, I. Zliobate, W. Zuo., J.H. Brown. Energy and fitness: power is not all-powerful in evolution. *Proceedings of the National Academy of Sciences*. In press.

38. **Okie, J.G.,** J.H. Brown, A. Kodric-Brown, J.R. Burger, T.P. Flanagan, T.S. Fristoe, Hammond, S., N. Mercado-Silva, J.C. Nekola, and J. Richter. Three Centuries of Technological Innovation: Opportunity is the Mother of Invention. *Proceedings of the National Academy of Sciences* 123:e2525310123.

37. Storch, D., G. Ridder, and **J.G. Okie.** Diversity patterns are parsimoniously explained by equilibria. *Trends in Ecology and Evolution* 41:576-577.

36. Storch, D., G. Riddle, **J.G. Okie**. 2025. Museums, cradles, and biodiversity disequilibria: Reconciling biodiversity dynamics using equilibrium theory. *Trends in Ecology and Evolution* Early Online Edition.

35. Marta A Jarzyna, Leo Ohyama, Evan P Economo, Jacquelyn L Gill, Rilquer Mascarenhas, **Jordan G Okie**, Clara Qin, Daniel L Rabosky, Phillip PA Staniczenko, Michael J Hickerson, Rosemary G Gillespie, Brian J McGill. 2025. Emergence and dynamics of regional species pools. *Global Ecology and Biogeography* 34:5 e70046.

34. **Okie, J.G**. and D. Storch. 2025. The Equilibrium Theory of Biodiversity Dynamics: a general framework for scaling species richness and community abundance along environmental gradients. *American Naturalist* 205:1. DOI: 10.1086/733103.

33. Fahimi, P., C.F. Matta, and **J.G. Okie**. 2023. Are size and mitochondrial power of cells inter-determined? *Journal of Theoretical Biology* 572:111565. DOI: 10.1016/j.jtbi.2023.111565.

32. Libby, E., C. Kempes, and **J.G. Okie**. 2023. Metabolic compatibility and the rarity of endosymbioses. *Proceedings of the National Academy of Sciences* 120:e2206527120.

31. Burger, J.R., **Okie, J.G**., I.A. Hatton, V.P. Weinberger, M. Shrestha, K.J. Liedtke, T. Be, A.R. Cruz, X. Feng, and C. Hinojo-Hinojo. 2022. Global city densities: re-examining urban scaling theory. *Frontiers in Conservation Science* 3: 125.

30. Jiang, X, D.J. Van Horn, **J.G. Okie**, H.N. Buelow, E. Schwartz, D.R. Colman, K. Feeser, C.D. Takacs-Vesbach. Limits to the Three Domains of Life: Lessons from Community Assembly along an Antarctic Salinity Gradient. 2022. *Extremophiles* 26: 15.

29. Storch, D., I. Šímová, J. Smyčka, E. Bohdalková, A. Toszogyova, and **J.G. Okie**. 2022. Biodiversity dynamics in the Anthropocene: how human activities change equilibria of species richness. *Ecography* 44:1-19.

28. **Okie, J.G.,** A.T. Poret-Peterson, Z.M.-P. Lee, L. Eguiarte, A. Richter, L.D. Alcaraz-Peraza, L.E. Eguiarte, J.L. Siefert, V. Souza, C.L. Dupont, and J.J. Elser. 2020. Genomic adaptations in information processing underpin trophic strategy in a whole-ecosystem nutrient experiment. *eLife* 9:e49816. DOI: 10.7554/*eLife*.49816.

27. Storch, D.E., and **J.G. Okie**. 2019. The carrying capacity for species richness. *Global Ecology and Biogeography* 28:1519-1532.

26. Feeser, K.L., D.J. Van Horn, H.N.Buelow, D.R. Colman, T. McHugh, **J.G. Okie**, E. Schwartz, and C.D. Takacs-Vesbach. 2018 Local and regional scale heterogeneity drive bacterial community diversity and composition in a polar desert. *Frontiers in Microbiology* 9:1929.

25. Storch, D., E. Bohdalková, and **J.G. Okie.** 2018. The more-individuals hypothesis revisited: the role of community abundance in species richness regulation and the productivity-diversity relationship. *Ecology Letters* 21:920-937.

24. Zhang, C., D. Niu, M. Song, J.J. Elser, **J.G. Okie**, ad H. Fu. 2018. Effects of rainfall manipulations on carbon exchange of cyanobacteria and moss-dominated biological soil crusts. *Soil Biology & Biochemistry 124:24-31.*

23. Bo Wu, F. Liu, M. D. Weiser, D. Ning, **J. G. Okie**, L. Shen, B. Chai, J. Li, Y. Deng, K. Feng, L. Wu, S. Chen, J. Zhou, and Z. He. 2018. Temperature delimits the diversity and structure of N_2O-reducing microbial assemblages. *Functional ecology* 32:1867-1878.

22. **Okie, J.G.**, V.H. Smith, and M. Martin-Cereceda. 2016. Major evolutionary transitions of life, metabolic scaling, and the number and size of mitochondria and chloroplasts. *Proceeding of the Royal Society B* 283:20160611.

21. Hammond, S., J.H. Brown, J.R. Burger, T.P. Flanagan, T.S. Fristoe, N. Mercado-Silva, J.C. Nekola, and **J.G. Okie**. 2015. Food spoilage, storage, and transport: Implications for a sustainable future. *Bioscience* 65:758-768.

20. **Okie, J.G.**, D.J. Van Horn, D. Storch, M. N. Gooseff, J. E. Barrett, L. Kopsova, C.D. Takacs-Vesbach. 2015. Niche and metabolic principles explain patterns of diversity and distribution: theory and a case study with soil bacterial communities. *Proceeding of the Royal Society B* 282:20142630.

19. Marquet, P.A., A.P. Allen, J.H. Brown, J. Dunne, B.J. Enquist, J.F. Gillooly, P.A. Gowaty, J.L. Green, D. Storch, J. Harte, S.P. Hubbell, **J.G. Okie**, A. Ostling, M. Ritchie, D. Storch, and G.B. West. 2015. On the importance of first principles in ecological theory development. *Bioscience* 64:701-710.

18. Van Horn, D.J., **J.G. Okie**, H.N. Buelow, M.N. Gooseff, J.E. Barrett, and C.D. Takacs-Vesbach. 2014. Soil microbial responses to increased moisture and organic resources along a salinity gradient in a polar desert. *Applied and Environmental Microbiology* 80:3034-43.

17. Schwartz, E., D.J. Van Horn, H.N. Buelow, M.N. Gooseff, J.E. Barrett, **J.G. Okie**, C.D. Takacs-Vesbach. Characterization of Growing Bacterial Populations in McMurdo Dry Valley Soils through Stable Isotope Probing with ^{18}O-water. *FEMS Microbial Ecology* 89:415-425.

16. Marquet, P.A., A.P. Allen, J.H. Brown, J. Dunne, B.J. Enquist, J.F. Gillooly, P.A. Gowaty, J.L. Green, D. Storch, J. Harte, S.P. Hubbell, J. O´Dwyer, **J.G. Okie**, A. Ostling, M. Ritchie, D. Storch, and G.B. West. 2014. On theory in ecology. *Bioscience* 64:701-710.

15. Saarinen, J.J., A.G. Boyer, J.H. Brown, D.P. Costa, S.K.M. Ernest, A.R. Evans, M. Fortelius, M.J. Hamilton, L.E. Harding, K. Lintulaakso, S.K. Lyons, **J.G. Okie**, R.M. Sibly, F.A. Smith, P.R. Stephens, J. Theodor, M.D. Uhen, and J.L. Gittleman. 2014. Patterns of maximum body size evolution in Cenozoic land mammals: intrinsic biological processes and extrinsic forcing. *Proc. Roc. Soc. B.* 281:20132049.

14. Brown, J.H., C.D. Allen. W.R. Burnside, M. Chang, A.D. Davidson, T.S. Fristoe, M.J. Hamilton, S.T. Hammond, A. Kodric-Brown, N. Mercado-Silva, J.C. Nekola, and **J.G. Okie**. 2014. Macroecology Meets Macroeconomics: Resource Scarcity and Global Sustainability. *Ecological Engineering* 65:24-32.

13. Hammond, S.T., J.H. Brown, J.R. Burger, M. Chang, T.P. Flanagan, T.S. Fristoe, A. Kodric-Brown, and **J.G. Okie**. 2013. Bankrupting nature for the (temporary) wealth of nations. *Trends in Ecology and Evolution* 28:576-577.

12. **Okie, J.G.,** A.G. Boyer, J.H. Brown, D.P. Costa, S.K.M. Ernest, A.R. Evans, M. Fortelius, J.L. Gittleman, M.J. Hamilton, L.E. Harding, K. Lintulaakso, S.K. Lyons, J.J. Saarinen, F.A. Smith, P.R. Stephens, J. Theodor, M.D. Uhen, and R.M. Sibly. 2013. Effects of allometry, productivity, and lifestyle on rates and limits of body size evolution. *Proceeding of the Royal Society B* 280:20131007.

11. Nekola, J.C., J.H. Brown, A. Kodric-Brown, and **J.G. Okie**. 2013. Global sustainability versus the Malthusian-Darwinian dynamic: A response to Rull. *Trends in Ecology and Evolution* 28:444.

10. **Okie, J.G.** 2013. General models for the spectra of surface area scaling strategies of cells and organisms: fractality, geometric dissimilitude, and internalization. *American Naturalist* 181:421-439.

9. Nekola, J.C., C.D. Allen, J.H. Brown, J.R. Burger, A.D. Davidson, T.S. Fristoe, M.J. Hamilton, S.T. Hammond, A. Kodric-Brown, N. Mercado-Silva, and **J.G. Okie**. 2013. The Malthusian-Darwinian dynamic and the trajectory of civilization. *Trends in Ecology and Evolution* 28:127-130.

8. Burger, J.R., C.D. Allen, J. H. Brown, W.R. Burnside, A.D. Davidson, T.S. Fristoe, M.J. Hamilton, N. Mercado-Silva, J.C. Nekola, **J.G. Okie**, and W. Zuo. 2012. The macroecology of sustainability**.** *PLOS Biology* 10:e1001345.

7. Collins, S.L., S.E. Koerner, J.A. Plaut, **J.G. Okie**, D. Brese, L.B. Calabrese, A. Carvajal, R.J. Evansen, and E. Nonaka. 2012. Functional redundancy buffers tallgrass prairie from long-term increases in growing season precipitation. *Functional ecology* 26:1450-1459.

6. Evans, A.R., D.O. Jones, A.G. Boyer, J.H. Brown, D.P. Costa, S.K.M. Ernest, E.M.G. Fitzgerald, M. Fortelius, J.L. Gittleman, M.J. Hamilton, L.E. Harding, K. Lintulaakso, S.K. Lyons, **J.G. Okie**, J.J. Saarinen, R.M. Sibly, F.A. Smith, P.R. Stephens, J. Theodor, and M.D. Uhen. 2012. The maximum rate of mammal evolution. *Proc. Natl. Acad. Sci. U.S.A.* 109:4187-4190.

5. Brown, J.H., W.R. Burnside, A.D. Davidson, J.P. DeLong, W.C. Dunn, M.J. Hamilton, N. Mercado-Silva, J.C. Nekola, **J.G. Okie**, W.H. Woodruff, and W. Zuo. 2011. Energetic Limits to Economic Growth. *Bioscience* 61:19-26.

4. Smith, F.A., A.G. Boyer, J.H. Brown, D.P. Costa, T. Dayan, S.K.M. Ernest, A.R. Evans, M. Fortelius, J.L. Gittleman, M.J. Hamilton, L.E. Harding, K. Lintulaakso, S.K. Lyons, C. McCain, **J.G. Okie**, J.J. Saarinen, R. Sibly, P.R. Stephens, J. Theodor, and M.D. Uhen. 2010. The evolution of maximum body size of terrestrial mammals. *Science* 330:1216-1219.

3. DeLong, J.P., **J.G. Okie**, M.E. Moses, R.M. Sibly, and J.H. Brown. 2010. Shifts in metabolic scaling, production, and efficiency across major evolutionary transitions of life. *Proc. Natl. Acad. Sci. U.S.A.* 107:12941-12945.

2. Sandel, B., L.J. Goldstein, N.J.B. Kraft, **J.G. Okie**, M.I. Shuldman, D.D. Ackerly, E. E. Cleland and K.N. Suding. 2010. Contrasting trait responses in plant communities to experimental and geographic variation in precipitation. *New Phytologist* 188:565-575.

1. **Okie, J.G.**, and J.H. Brown. 2009. Niches, body sizes, and the disassembly of mammal communities on the Sunda Shelf islands. *Proc. Natl. Acad. Sci. U.S.A.* 106:19679-19684.

BOOK CHAPTERS

5. Storch, D. and J.G. Okie. Scaling diversity, abundance and energy: The Equilibrium Theory of Biodiversity Dynamics. *Scaling in Biology*. SFI Press. In press.

4. Glazier, D., L. Aviles, and **J.G Okie.** Size and metabolism from cells to societies: universal physical constraints and adaptive responses. Scaling in Cells, *Scaling in Biology*. SFI Press. In press.

3. Arroyo, J., **J.G. Okie**, D. Muratore, C. Kempes, and G. West. Scaling in Cells, *Scaling in Biology*. SFI Press. In press.

2. Elser, J.E., **J.G. Okie**, Z. Lee, and V. Souza. 2018. The Effects of Nutrients and N:P Ratio on Microbial Communities: Testing the Growth Rate Hypothesis and Its Extensions in Lagunita Pond (Churince). In: *Ecosystem Ecology and Geochemistry of Cuatro Cienegas* (Garcia-Oliva F., Elser J., Souza V., editors). Springer, Cham.

1. **Okie, J.G.** 2012. Microorganisms. In: *Metabolic ecology: A scaling approach* (J. H. Brown, R. M. Sibly, and A. Kodric-Brown, editors). Wiley-Blackwell, Oxford, England.

PUBLICATIONS IN NON-SCHOLARLY JOURNALS AND MAGAZINES

Brown, J.H., J.R. Burger, W. Burnside, M. Chang, A. Davidson, T. Fristoe, M. Hamilton, S. Hammond, A. Kodric-Brown, N. Mercado-Silva, J. Nekola, and **J.G. Okie**. 2013. Gasoline and fertility. *Nautilus* 001: http://nautil.us/issue/1/what-makes-you-so-special/gasoline-and-fertility.

SELECTED PUBLICATION IMPACTS AND BIBLIOMETRICS

- Total number of citations: 3364; H-index: 25 (Google Scholar Profile).
- Results and figures from several papers (Okie and Brown, 2009; Delong et al., 2010; Brown et al., 2011; Burger et al., 2012; Okie 2012; Okie 2013; Hammond et al., 2015; Cockerill et al., 2017) cited in textbooks and incorporated into course syllabi in several American and European universities.
- Data from several of my papers (2009, 2010, 2015, 2016) used by others in several high-profile and novel papers (including in *PNAS*, *Trends in Ecology and Evolution*, and *Physical Biology*).
- Scaling theory and biodiversity theory used by others in several papers (*Ecology Letters*, *Functional Ecology, PNAS*, *Ecology*, *Proceedings B*, *J. of Evolutionary Biology*).
- Invited paper for special issue in *Ecography* for UN Decade on Ecosystem Restoration based on my Equilibrium Theory of Biodiversity Dynamics.
- Faculty of 1000 Biology recommended my *Bioscience* (2014), P*LoS Biology* (2012), and *Bioscience* (2011) papers.
- Research on human energetics and macroecology featured in *Scientific American* online article.

- Editorials featuring my work: *PLoS Biology* (2012) article featured in *PLoS Biology* editorial by Georgina Mace; *Functional Ecology* (2012) paper featured in Spotlight by Alan Knapp, John Briggs, and Melinda Smith, PNAS Commentary piece by David Polly on *PNAS* (2012) paper developing scaling methods for paleontology.

GRANTS, FELLOWSHIPS, AND SCHOLARSHIPS

Total of $1,168,023 awarded

2023 The Company of Biologists. Lead: Douglas Glazier; Co-leads: Leticia Avilés, Jordan Okie & Pedro Pequeno. Funding for large interdisciplinary four-day workshop. Title: *Major evolutionary transitions from cells to societies: Toward a new synthesis of causes and consequences*. Rejected.

2020 Swedish Research Council. PI: E. Libby, formal external collaborator: J. Okie. Three year project with budget for collaborative trips to Umea University, Sweden. Title: *A theoretical framework for the evolution of beneficial endosymbioses*. **Awarded**.

2019 Czech Science Foundation. PI: D. Storch; formal external collaborator: J. Okie. Five years of funding with budget for five month-long trips to the Center for Theoretical Studies, Prague. Title: *The equilibrium theory of biodiversity dynamics – the macroecological perspective*. Helped with writing. **Awarded.**

2017 National Science Foundation, Division of Polar Programs. Lead PI: B. Hall (ASU); co-PIs: J.Okie and D. Van Horn. Budget: $343,736.00. Title: *Collaborative Research: Resistance and resilience of soil microbial community structure and biogeochemical function in response to water track expansion in the McMurdo Dry Valleys*: Rejected.

2017 NASA, Exobiology and Evolutionary Biology Program, ROSES. Lead PI: C. Kempes, co-Is: J. Okie and E. Libby. *The Energetic, Organizational, and Evolutionary Consequences of Eukaryotes*. Contributed material on endosymbionts, evolutionary transitions, and allometric scaling. Rejected.

2017 NASA, CAN 8. Lead PI: H. Hartnett; co-Is: J. Okie and many other ASU faculty. Budget: $9,981,225.00. *Signs of Life on Anoxic Worlds*. Contributed material on bioenergetics, thermodynamics, and microbial ecology. Rejected.

2017 NASA, Can 8. Lead PI: S. Walker; co-Is: J. Okie and many others at ASU, Santa Fe Institute and elsewhere. Budget: $9,064,801.00. *Laws of Life: Constraints and Contingency in the Emergence and Evolution of Biospheres*. Contributed material on allometric scaling and major evolutionary transitions in individuality. Rejected.

2016 National Science Foundation, Division of Polar Programs. Lead PI: D. Van Horn; ASU PI: J. Okie; co-PI: C. Takacs-Vesbach; Budget: $481,221. Title: *Collaborative research: Integrating metagenomics and metabolic ecology to understand the activity and biogeography of the cryosphere*. Rejected with favorable reviews. Co-wrote proposal with D.V.H.

2016 NASA Exobiology and Evolutionary Biology Program, ROSES. PI: Everett Shock; co-Is: Jordan Okie and Jason Raymond, **$852,867**. Title: *Geochemical and biochemical changes at the transition to photosynthesis*. **Awarded after third submission** (1/1/2016-12/31/2018). Co-wrote proposal, contributing substantial revisions and material on eco-evolutionary modeling, ecoinformatics, and statistical analyses.

2016 Czech Science Foundation. PI: David Storch; Formal external collaborator: J. Okie. Title: *Are there limits to diversity? Towards an equilibrium theory of diversity*. **Awarded.**

2014, 2015 National Science Foundation, Division of Polar Programs. lead PI: Jordan G. Okie; co-PIs: James P. O'dwyer, Jason Raymond, and David J. Van Horn $1,332,954 ($590,219 to J.G.O at ASU, including support for a three-year postdoctoral position and undergraduate researchers). Title: *Collaborative research: Untangling niche and neutral controls on community assembly using local-to-global scale experiments and modeling*. First and second submission declined with highly favorable reviews.

2012 Postdoctoral Research Grant, School of Earth and Space Exploration, $2.2k awarded.

2011 NASA Astrobiology Institute Postdoctoral Program Fellowship, **$144.6k** (two years of salary & benefits + $16k in travel funds). Title: *Thermodynamic and kinetic constraints on metabolic diversity: Quantifying the biogeochemical niche space of life*. **Awarded.**

2011 Exploration Postdoctoral Fellowship, School of Earth and Space Exploration, Arizona State University, **$110.2k** (two years of support, 2nd year declined). Title: *Thermodynamic and kinetic constraints on metabolic diversity: Quantifying the biogeochemical niche space of life*. **Awarded.**

2008, 2010 Two different Student Research Allocation Committee Grants, UNM, $1k total. **Awarded.**

2008, 2010 Two different Student Enrichment Opportunity Awards, Program in Interdisciplinary Biological and Biomedical Sciences (PIBBS), UNM, $1.6k total. **Awarded.**

2009, 2010 Melinda Bealmer Memorial Scholarship and Grove Research Scholarship, Biology Department, $2k total, UNM. **Awarded.**

2006-2009 Three different NSF Student Travel Grants, $4.4k total. **Awarded.**

2007-2008 Howard Hughes Medical Institute Interfaces Initiative Graduate Fellowship through PIBBS, UNM, **$30.5k** (one-year stipend). **Awarded.**

2006-2007 Howard Hughes Medical Institute Interfaces Initiative Graduate Fellowship through PIBBS, UNM, **$30.5k** (one-year stipend). **Awarded.**

2006 President's Fellowship, University of Virginia, **$60k** (two-year stipend, declined). **Awarded.**

AWARDS AND HONORS

2026 Professor of Impact Award for SES 225 *Biogeochemical Cycles*, College of Liberal Arts and Sciences.

2024 *Ecgography* 2022-2023 Top Cited Article.

2015 Fellow, International Mobility Fund of Charles University in Prague (awarded two-month stipend and travel support to visit the Center for Theoretical Study).

2014 *American Naturalist* 2014 Student Paper Award for my 2013 paper (selected from over 70 student papers by the editorial board, J. Bronstein, T. Day, and S. Kalisz).

2010 Best Graduate Student Oral Presentation, 19th Annual Research Day, Department of Biology, UNM.

2008 Honorable Mention, NSF Graduate Research Fellowship Program.

2007 Best Student Poster in session entitled "An Integrative View of Ecogeographic Rules", International Biogeography Society Biennial Meeting.

2007 Honorable Mention, NSF Graduate Research Fellowship Program.

2003 Distinction in Biology major, Carleton College.

2003 Distinction in senior thesis, Carleton College.

WORKING GROUPS AND WORKSHOPS

2023 Participant: *Limits of (Im)mortality in Complex Living Systems*, Sana Fe Institute (3 days). Organizer: D. Krakauer and Caitlin McShea.

2023 Invited participant and speaker: *Network for Ecological Theory Integration*, Santa Fe Institute (3 days). Organizers: J. Dunne and P. Marquet.

2022 Invited participant: *Insights from macro-ecology and macro-evolution for biodiversity assessment*, Schoodic Institute (Maine, 5 days). Main organizers: R. Gillespie, UC Berkeley, with B. McGill and M. Hickerson.

2022 Invited speaker and participant: *Synthesizing Biological Scaling: Towards a Universal Theory*, Sante Fe Institute (4 days). Organizers: B. Enquist, C. Kempes, and M. O'connor.

2021 Invited speaker and participant*: Origins of Life Research* hosted by Sante Fe Institute with support from NASA (indefinitely postponed due to *Delta* variant).

2020 Invited speaker and participant: *Modeling the Human Niche*, workshop hosted by Bridging Biodiversity and Conservation Science at University of Arizona (Tucson, 2 days). Organizer: J.R. Burger.

2019 Invited speaker and participant: *Life and Systems in Closed Worlds,* Biospere 2, International Laboratory iGLOBES, Centre National de la Recherche Scientifique (Ecole Normale Supérieure and Paris Sciences & Lettres University) and University of Arizona (2 days). Organizers: Regis Ferriere, Perig Pitrou, Joffrey Becker.

2018 Invited participant: *Network for Ecological Theory Integration,* Center for Theoretical Study, Prague (3 days). Organizer: David Storch.

2018 Invited team member: *What fundamental rules govern the self-sustainability of ecosystems for long-term space settlement*, Interplanetary Initiative, Arizona State University. Leader: Hikaru Furukawa.

2016 Invited speaker and participant: *Network for Ecological Theory Integration,* Santa Fe Institute, with support from the ASU-SFI Center for Biosocial Complex Systems (NM). Organizers: Jennifer Dunne and Pablo Marquet.

2015 Invited speaker and participant: *Bio-inspired environmental sustainability: Lessons for environmental management, planning, and policy from 3.8bn years of evolution*, University of Liverpool (UK). Organizers: David Atkinson, Sue Kidd, Andy Morse, and Joe Spenser.

2015 Invited speaker and participant: *Cities as Organisms: Scaling and Networks in Urban, Social, and Biological Systems*, University of Maribor (Slovenia). Organizers: D. Korošak, M. Marhl, C. Říha, and D. Storch.

2014 Invited speaker and participant: *Network for Ecological Theory Integration*, Millennium Science Initiative, in affiliation with the Institute of Ecology and Biodiversity, the Center for Stochastic Analysis and Applications, and the Santa Fe Institute (Chile). Organizer: P. Marquet.

2013 Invited participant: *Engines of Life: Thermodynamic Pathways to Metabolism*, Beyond Center for Fundamental Concepts in Science, Arizona State University, in association with NASA Astrobiology Institute's Focus Group on Thermodynamics, Disequilibrium, and Evolution (Tempe, AZ). Organizers: P. Davies, S.I. Walker, and L. Barge.

2009-2012 Invited speaker and participant: *Integrating Macroecological Pattern and Processes across Scales*, NSF Research Coordination Network (yearly meetings; Santa Fe, NM). Organizers: F. Smith, M. Ernest, and S. Lyons.

2009-2010 Invited speaker and participant: *Universal Diversity Patterns Across the Sciences*, Santa Fe Institute and Center for Theoretical Studies (Sana Fe, NM and Prague, Czech Republic). Organizers: J. Nekola, A. Sizling, and D. Storch.

2008 *Ushering in a new functional ecology: dynamics in a changing environment*, National Center for Ecological Analysis and Synthesis, Distributed Graduate Seminar Synthesis Meeting (Santa Barbara, CA).

2007 Invited participant: *Towards a unified theory of biodiversity*, National Center for Ecological Analysis and Synthesis. Organizers: A.P. Allen, J. Green, S. Hubbell, P. Marquet (Santa Barbara).

2006 *Unifying biodiversity theories*, Santa Fe Institute. Organizer: J. Dunne.

SERVICE AND PUBLIC OUTREACH

Reviewer of over 60 journal manuscripts
Applied Soil Ecology (2), American Naturalist (4)*, Biology Letters (1), Biological Journal of the Linnean Society* (1), *Cell* (3), *Ecography* (2), *Ecological Applications* (1), *Ecology* (1), *Ecology Letters* (10)*, Environmental Microbiology* (1), *Environmental Microbiology Reports (1), Evolution* (1), *Frontiers in Cell and Developmental Biology* (2), *Global Ecology and Biogeography* (2), *Journal of Evolutionary Biology* (1), *Journal of Theoretical Biology* (1), *Landscape Ecology* (1), *MDPI Biology* (1), N*ature Communications* (2), *Nature Microbiology* (2), *Proceedings B* (2), *Physica A* (1), *Physical Biology* (2), *PNAS* (17), *Science Advances* (3), Scientific Reports (1), *South African Journal of Animal Science* (2), *Trends in Microbiology* (1), *Trends in Ecology and Evolution* (1).

Media coverage: Research featured in Wired, National Geographic, Scientific America, New York Times, NBCNews, Sierra Club, the Academic Radio podcast, British Ecological Society, many online science news outlets, and numerous local and university news outlets.

Reviewer of numerous grant proposals
National Science Foundation Geobiology and Low-Temperature Geochemistry program (2), NSF EPSCoR (1), NASA Exobiology program (3 as primary reviewer, 3 more as secondary reviewer), European Research Council (1), NASA Postdoc Fellowship Program (2).

University and Departmental Committees & Working Groups
Facilities and Safety (Fall 2021-Summer 2022), Undergraduate Curriculum Subcommittee – Online BA and BS in Earth and Environmental Science (Fall 2021 – 2024), Astrobiology and Biogeosciences BS Working Group (Fall 2022 - 2024), Inclusive Community Committee (Fall 2023-2025), Colloquium Committee (2025-current).

Letters of Recommendation or Evaluation for: Tenure and Promotion to Associate Professor (1), Undergraduate Internships (9), PhD Positions (2), Postdoctoral and Assistant Faculty Positions (15)

Designer and manager of departmental scholarship program and student success course for 30 incoming undergraduate majors (2022-current, SESE's Steps-to-Success program)

2024-current	Editorial Board Member of MDPI Biology in the Conservation and Biodiversity Section (editor of ~1 article per month).
2025-2026	Event Committee Member, 1st International Online Conference on Biology (2026, Organized by MDPI)
2024	Invited 1-hr-long interview with journalist from *Quanta Magazine* on scaling in biology.
2023	Co-wrote proposal to the Company of Biologists to fund workshop on *Major evolutionary transitions from cells to societies: Toward a new synthesis of causes and consequences* (lead: D. Glazier, co-leads: L. Avilés, J. Okie, P. Pequeno)(declined).

2023	Collaborated with ASU and Santa Fe Institute on press release covering my 2023 PNAS paper on prokaryotic endosymbiosis.
2023	Invited 1-hr-long interview with journalist from LiveScience on the ecological and physical limits to maximum body size in animals.
2021	Invited 1-hr-long interview on sustainability, human biology, and the future of humans in space for "The 5th Industrial Revolution VODCast", hosted by healthcare innovator and Professor Ruchin Kassan, Department of Management, Seton Hall University (https://www.youtube.com/watch?v=P2N6-tJg6EY&t=1781s).
2017	Invited 1-hr-long interview used as video content for two new online courses for educators and the public entitled *What Is Science* (Sustainability Science Education, ASU).
2017	Invited panelist for seminar of Masters of Environmental Management Program, Western State Colorado University (invited by Dr. Melanie Armstrong).
2017	Invited 1-hr long interview with journalist from top French population science magazine *Science & Vie* about my research on body size evolution and gigantism, to be included in article on body size.
2016	Served on 5-day proposal review panel on evolutionary biology for the NASA Exobiology program.
2016	Invited 1-hr-long interview about my research, the scientific process, microbiology, evolution, astrobiology, and sustainability on ASU Connections Podcast: http://conklinradio.com/?s=okie.
2013	Invited radio talk and podcast on macroecology of body size evolution, *The Academic Minute,* Northeast Public Radio, September 18th: http://wamc.org/post/dr-jordan-okie-arizona-state-university-evolution-size. Broadcast throughout the US and Canada.
2013	Wrote widely-distributed press release covering research in Okie et al. (2013, *Proceedings B*), Arizona State University.
2013	Session chair of Evolutionary Theory session at Evolution 2013 conference.
2009-2010	Graduate and Professional Student Association Representative for Biology Department, UNM.
2009	Poster judge, Biology Research Day, UNM.
2006	Grant reviewer, Graduate Research Allocation Committee, UNM.
2006-2007	Leader of UNM Complex Systems Group, a campus organization supporting complex systems education, research, discussion groups, and collaborations.
2003	Program Assistant at environmental non-profit organization, Save America's Forests, D.C.

TEACHING EXPERIENCE

2026	Instructor of online 3-credit course *Local to Global Biogeochemistry of the Anthropocene* (SES 225), ASU. ~90 students.
2025	Instructor of online 3-credit course *Local to Global Biogeochemistry of the Anthropocene* (SES 225), ASU. ~30 students.
2024	Instructor of online 3-credit course *Local to Global Biogeochemistry of the Anthropocene* (SES 225), ASU. ~30 students.
2023	Designer and manager of *SESE Steps-to-Success* scholarship program and course for incoming majors in ASU's School of Earth and Space Exploration. ~30 students.
2023	Designer and instructor of new scalable online 3-credit course *Local to Global Biogeochemistry of the Anthropocene* (SES 225), ASU. ~30 students.
2022	Manager of *SESE Steps-to-Success* scholarship program and course for incoming majors in ASU's School of Earth and Space Exploration.
2021	Designer and instructor of new 3-credit course *Astrobiology* (GLG 460/598), ASU.
2019	Designer and instructor of self-designed Exploration Learning 2-credit course *Universal Space Ecology* (SESE 494/598), ASU.
2018	Weekly mentoring of PhD student Hikaru Furukawa, ASU.
2015	Informal weekly mentoring of PhD student Tucker Ely, ASU.
2010	Teaching Assistant, developed biology lab curricula, UNM.
2010	Teaching Assistant, Biogeography (Biol. 494), UNM.
2009	Teaching Assistant, Intro. to Mathematical Biology (Biol. 492/592), UNM.
2008-2009	Teaching Assistant, every semester running 3 lab courses and lecturing to ~90 students per semester, Intro. to Biology for Non-majors Lab (Biol. 112L), UNM.
2007	Instructor and founder of self-designed, new 3-credit course entitled *Perspectives in Human Ecology* (Biol. 402/502, Anth. 450/550), UNM.
2003-2006	Tutored students in high school biology, college chemistry, college calculus, high school Spanish, high school French, and piano (Minneapolis and D.C.).

MENTORING & PEDAGOGICAL COMMITTEES

In progress	Savannah Jones, doctoral committee, School of Life Sciences, ASU
In progress	Marc Fontánez, doctoral committee, SESE, ASU.
In progress	Reza Shahjahan, doctoral committee, SESE, ASU

In progress	Camerian Millsaps, doctoral dissertation committee, 2022-current, SESE, ASU
Passed	Marc Fontánez, doctoral qualifying exam, 2026, SESE, ASU.
Passed	Reza Shahjahan, doctoral qualifying exam and second advisor on Second Project, 2026, SESE, ASU.
Defended	Veronica Mierzejewski, doctoral dissertation committee & second advisor on Second Project, 2022-2026, SESE, ASU
Defended	Hikaru Furukawa, doctoral dissertation committee, 2018-2026, SESE, ASU
Defended	Siena Smania, M.S. thesis committee, 2025-2026, SESE, ASU
Defended	Pilar Vergeli, doctoral dissertation committee, 2019-2025, SESE, ASU
Defended	Theresa Fisher, doctoral dissertation committee, 2020-2023, SESE, ASU
Passed	Lucas Reynoso, 5th member of second-year doctoral committee, 2024-2025, SESE, ASU
Passed	Veronica Mierzejewski, doctoral qualifying exam chair, 2023, SESE, ASU
Passed	Pilar Vergeli, doctoral qualifying exam, 2020, SESE, ASU
Passed	Nicholas Ambus, B.A. Honors Thesis Committee Member, 2019, School of Life Sciences and Barrett, the Honor's College, ASU
Passed	Hikaru Furukawa, doctoral qualifying exam chair, 2019, SESE, ASU
Passed	Aishawarya Iyer, 5th member and doctoral qualifying exam chair, 2019, SESE, ASU
Passed	Theresa Fisher, 5th member and doctoral qualifying exam chair, 2018, SESE, ASU
Defended	Harrison Smith, doctoral dissertation committee, 2018, SESE, ASU

SELECTED PRESENTATIONS

2026	Okie, J.G. *Downscaling the equilibrium theory of biodiversity dynamics for landscapes.* Annual Meeting of the North American Regional Chapter of the International Association for Landscape Ecology, Athens, GA (talk).
2026	Okie, J.G. *From prokaryotes to superorganisms: constraints and innovations in the evolution of size and complexity*. Department of Biology Seminar, University of Kentucky, Lexington (invited talk).
2026	Storch, D. , G. Ridder, and J.G. Okie. *Cradles, museums, and biodiversity disequilibria: Reconciling global diversity dynamics using equilibrium theory*. International Biogeography Society Biannual Meeting, Aarhus (talk).
2024	Okie, J.G. and David Storch. *Theory predicting the interacting effects of body size and temperature on species richness*. International Biogeography Society Biannual Meeting, Prague (poster).

2023 Okie, J.G. *Integrating first principles of evolution, kinetics, thermodynamics, and stochasticity into diversity theory*. Network of Ecological Theory Integration, Santa Fe Institute (invited talk).

2022 Okie, J.G. *Constraints and evolution of biosphere geometry*. Synthesizing Biological Scaling: Towards a Universal Theory Workshop, Santa Fe Institute, NM (invited talk).

2022 Okie, J.G. *Constraints and evolution of biosphere geometry and structure*. Integrated Science Lab, Umea University, Sweden (invited seminar).

2022 Okie, J.G. and David Storch. *Scaling and gradients of biodiversity and biomass equilibria*. Gordon Research Conference on Unifying Ecology Across Scales (invited talk).

2022 Storch, D. and J.G. Okie. *Scaling of diversity, abundance, and energy based on the Equilibrium Theory of Biodiversity Dynamics*. INTECOL, Geneva (talk).

2022 Storch, D. and J.G. Okie. *Equilibrium Theory of Biodiversity Dynamics: Interplay between patterns of diversity, abundance, and energy*. International Biogeography Society 10th Biennial conference, Toronto (talk).

2020 Burger, J.R., J.G. Okie, I. Hatton, V.P. Weinberge, M. Shrestha, X. Feng, B.J. Enquist, and K.C. Ernst. *Scaling urban densities globally*. America Geophysical Union Fall Meeting (poster).

2020 Okie, J.G. *The Anthropocene and human niche: a story of technological evolution*. Modeling the Human Niche, workshop hosted by Bridging Biodiversity and Conservation Science at University of Arizona (invited talk).

2019 Okie, J.G. *Metabolic and ecological rules of living systems along the insularity spectrum*. Life and Systems in Closed Worlds, workshop at Biosphere 2 co-organized by Centre National de la Recherche Scientifique and University of Arizona (invited talk).

2019 Burger, R., M. Tallavaara, T. Fristoe, M. Luoto, J. Schramski, V. Weinberger, J.G. Okie. *Energetic origins of the Anthropocene: modeling human abundance, distribution, and energy use in space and time*. America Geophysical Union Fall Meeting, San Francisco (poster).

2019 Hartnett, H.E., N.R. Hinkel, A.D. Anbar, S.J. Desch, T. Fisher, H. Furukawa, D. Glaser, J.G. Okie, C.T. Unterborn, P. Vergeli, S. Walker, and P. Young. *The biogeosciences are a critical step on the path toward detecting life on exoplanets*. America Geophysical Union Fall Meeting, San Francisco (talk).

2018 Okie, J.G. and E. Shock. *Theory on thermodynamic constraints to metabolic and biogeochemical diversity*. International Symposium on Biomathematics and Ecology Education and Research, Intercollegiate Biomathematics Alliance, Tempe, AZ (talk).

2018 Storch, D. and J.G. Okie. *Is there a carrying capacity for species richness: Revisiting the more-individuals hypothesis*. Ecological Society of America Annual Meeting, New Orleans (talk).

2018 *Jiang, X., *D. Van Horn, J.G. Okie, E. Schwartz, D. Coleman, K. Feeser, C. Takacs-Vesbach. *Limits to the Three Domains of Life: Lessons from an Antarctic Salinity Gradient,* POLAR2018 Open Science Conference by the Scientific Committee on Antarctica Research, Switzerland (poster). *Shared first authorship.

2018 Furukara, H., S. Walker, and J.G. Okie. *Agency-steered Ecosystems on Planetary Bodies*, AbGradCon Astrobiology Graduate Conference, Atlanta (talk).

2017 Cockerill, K., M. Armstrong, J. Richter, J.G. Okie. *No Solutions: Resisting Certainty in Water Supply Management*. AGU Fall Meeting, San Francisco (talk).

2016 Okie, J.G. *Major evolutionary transitions of life, metabolic scaling, and the number and size of mitochondria and chloroplasts*, Gordon Research Conference on "Unifying Ecology Across Scales: Linking the Levels from Physiological to Ecosystem Ecology", Maine (**invited talk**).

2016 Okie, J.G.**,** A.T. Poret-Peterson, Z.M.-P. Lee, L. Eguiarte, L.D. Alcaraz-Peraza, C.L. Dupont, J.L. Siefert, V. Souza, and J.J. Elser. *Role of information processing traits and genome size in microbial community responses to a whole-ecosystem nutrient enrichment experiment*, Gordon Research Conference on "Unifying Ecology Across Scales: Linking the Levels from Physiological to Ecosystem Ecology", Maine (poster).

2016 Okie, J.G. *Quantifying constraints on metabolic and taxonomic diversity patterns*, NASA Astrobiology Institute Postdoctoral Program Alumni Seminar Series, online (**invited seminar**).

2015 Okie, J.G. *Integrating macroecology and metabolic ecology across domains of life,* Department of Ecology seminar, Charles University, Prague (**invited seminar**).

2015 Okie, J.G., D.J. Van Horn, D. Storch, M. N. Gooseff, J. E. Barrett, L. Kopsova, C.D. Takacs-Vesbach. 2015. *Niche and metabolic principles explain patterns of diversity and distribution: theory and a case study with soil bacterial communities*. EU Macroecology 2015 conference, Copenhagen (poster).

2015 Okie, J.G. *From microbes to monsters 2.0: Biological scaling across evolutionary transitions.* Biology Thursdays*,* Charles University, Prague (**invited public lecture**).

2015 Okie, J.G. *Transitions in individuality, geometric organization, and shifting constraints on the scaling of metabolic systems*. Cities as Organisms: Scaling and Networks in Urban, Social, and Biological Systems workshop, University of Maribor, Slovenia (**invited talk**).

2014 Okie, J.G. *Diversity theory: Expanding and integrating niche, metabolic, and thermodynamics principles.* Network for Ecological Theory Integration, Chile (**invited talk**).

2014 Okie, J.G. *Thermodynamic constraints on metabolic diversity patterns*. Gordon Research Conference, "Unifying Ecology Across Scales: the Role of Nutrients, Metabolism, and Physiology", Maine (poster).

2014 Okie, J.G. *Metabolic scaling across major evolutionary transitions in individuality*. Multidisciplinary Astrophysics Seminar, Embry-Riddle Aeronautical University, Prescott, Arizona (**invited talk**).

2013 Okie, J.G. *Quantifying constraints on the distribution and evolution of functional diversity*. Hugh Hansen Ecology and Evolution Seminar, Arizona State University (**invited talk**).

2013 Okie, J.G. *Dangers of relying on scientific and technological innovations for a sustainable future*. Annual Meeting of the Society for the Social Study of Science, San Diego (**invited talk**).

2013 Okie, J.G., D.R. Colman, P. Xiaoben, E. Shock, D.J. Van Horn, J. Zhou, C. Takaks-Vesbach. 2013. *Contrasting diversity-temperature relationships between domains of life along extreme thermal gradients*. Ecological Society of America 2013 Annual Meeting (contributed talk).

2013 Okie, J.G., P. Canovas, E.L. Shock. 2013. *Theory quantifying thermodynamic constraints on ecosystem metabolic diversity patterns*. Goldschmidt 2013 conference, Italy (poster).

2013 Okie, J.G. *General models for the spectra of surface area scaling strategies: geometric dissimilitude, fractality, and internalization*. Evolution 2013 conference, Utah (contributed talk).

2012 Okie, J.G., A.G. Boyer, J.H. Brown, D.P. Costa, S.K.M. Ernest, A.R. Evans, M. Fortelius, J.L. Gittleman, M.J. Hamilton, L.E. Harding, K. Lintulaakso, S.K. Lyons, J.J. Saarinen, F.A. Smith, P.R. Stephens, J. Theodor, M.D. Uhen, and R.M. Sibly. *Theory on the rates and limits of body size evolution: the effects of allometry, production, and lifestyle*. Gordon Conference: The Metabolic Basis of Ecology, Maine (poster).

2012 Okie, J.G. *On a metabolic theory of community ecology in microorganisms*. BrownFest Scientific Symposium, University of New Mexico (**invited talk**).

2012 Okie, J.G. *Metabolism, scaling, and major evolutionary and ecological transitions of life*. Astrobiology Science Conference, Atlanta (contributed talk).

2010 Okie, J.G. *Surface area scaling strategies in unicellular organisms: fractality, organelles, and geometric dissimilitude*. Gordon Conference: The Metabolic Basis of Ecology, Maine (poster).

2010 Okie, J.G. *Towards a general theory of metabolic scaling across the major evolutionary transitions of life*. Biology Research Day, University of New Mexico (contributed talk).

2009 Okie, J.G. *Shifts in metabolic scaling across major evolutionary transitions of life*. Biology Department, University of New Mexico (**invited talk**).

2009 Okie, J.G., and J.H. Brown. *Niches, body sizes, and the disassembly of mammal communities on the Sunda Shelf islands*. Ecological Society of America Annual Meeting (poster).

2009 Okie, J.G., and J.H. Brown. *Niches, body sizes, and the disassembly of mammal communities on the Sunda Shelf islands*. Program in Interdisciplinary Biological and Biomedical Sciences, University of New Mexico (**invited talk**).

2009 Okie, J.G., W. Zuo, and J.H. Brown. *From islands to continents: species body size distributions and macroecological scaling theory*. International Society of Biogeography Biennial Meeting, Mexico (poster).

2008 Okie, J.G., W. Zuo, and J.H. Brown. *On the power law shape and spatial scaling of species body size distributions*. National Academy of Sciences Sackler Colloquium: Biogeography, Changing Climates, and Niche Evolution, Los Angeles (poster and **invited talk**).

2008 Okie, J.G. *Scaling the variation in ecosystem carbon flows*. Gordon Conference: The Metabolic Basis of Ecology, Maine (poster).

2008 Okie, J.G. *Surface-area scaling strategies and allometry in unicells: fractality, organelles, and geometric dissimilitude*, Gordon Conference Graduate Research Seminar: The Metabolic Basis of Ecology, Maine (contributed talk).

2007 Burnside, W.* and J.G. Okie. *Cultural ecogeography: environmental determinants of hunter-gatherer territory sizes*. The International Biogeography Society Biennial Meeting, Canary Islands (poster). *Authors contributed equally.

PROFESSIONAL TRAINING WORKSHOPS & COURSES

2022 **Master Class for Teaching Online**, 16 hrs total, ASU.