Rodney James Dyer

Virginia Commonwealth University
rodneydyer.com |github.com/dyerlab
rjdyer@vcu.edu

Education

Ph.D. Biology June 2002
University of Missouri - Saint Louis
Academic Advisor: Victoria L. Sork

M.S. Biology June 1998
University of Missouri - Saint Louis
Academic Advisor: Victoria L. Sork

B.S. Biology June 1996
Western Washington University
Academic Advisor: David Morgan

A.A. General Studies January 1994
Seattle Central Community College

Teaching & Research Interests

Gene flow, theoretical and empirical population genetics, evolutionary biology, data analysis and visualization, high-performance computing, evolutionary consequences of anthropogenic landscape manipulation, analytical tool building, data literacy, open-source software, and reproducible research.

Professional Experience

Full Professor - School for Life Sciences and Sustainability, Virginia Commonwealth University (July 2025 - Present).

Full Professor - Center for Environmental Studies, Virginia Commonwealth University (2017 - June 2025).

Center Director - Center for Environmental Studies, Virginia Commonwealth University (2017 - June 2025)

- Managed the Chartered Research Center and Academic unit, which consisted of 18 faculty and staff, 250 undergraduates, and 25 graduate students.
- Reconfigured curriculum incorporating hands-on experiences, geospatial technology, and quantitative data literacy.

Interim Center Director - Center for the Study of Biological Complexity, Virginia Commonwealth University (2017 - 2018)

Assistant Director - Center for Environmental Studies, Virginia Commonwealth University (2015 - 2017).

- Assisted in operating the Chartered Research Center and Academic unit, which consisted of 16 faculty and staff, 250 undergraduates, and 25 graduate students.
- Director of Undergraduate Research & Curriculum for the Center for Environmental Studies.

Associate Professor - Department of Biology, Virginia Commonwealth University (2010 - 2017).

Assistant Professor - Department of Biology, Virginia Commonwealth University (2004 - 2010).

Postdoctoral Researcher - Department of Ecology, Evolution, and Organismal Biology, Iowa State University, Advisor: Dr. John D. Nason (2002 - 2004).

Howard Hughes Research Fellow - Department of Botany, University of Washington, Advisor: Dr. Douglas Schemske (1995).

Scholarship

Published Manuscripts

Individuals denoted with "§" indicate graduate student co-authors, whereas "‡" indicates undergraduate research assistants. Citation Metrics from Google Scholar; Career: H-Index=27, Times Cited=3313, i10-Index=45; Mean IF=4.20.

Dyer RJ, 2023. A Tool for Population Assignment for Confiscated *Clemmys guttata* with Applications to Rehoming Individuals Confiscated in the Pet Trade. General Technical Report. WMI Wildlife International.

Dyer RJ, Whitehurst M. 2023. Population-Level Genetic Structure for the Spotted Turtle (*Clemmys guttata*) with Extensions to Individual Assignment Models Applicable for Allocation of Confiscated Individuals. General Technical Report. WMI Wildlife International.

Dyer RJ, Roderique BA, 2021. Population genetic structure, connectivity, and potential broodstock sources for the endangered James Spinymussel (*Parvaspina collina*). Virginia Department of Wildlife Resources, General Technical Report. link.

Dyer RJ, Roderique BA, Deadwyler MC. 2021. Refining environmental DNA protocols developed for the endangered James Spinymussle (*Pleurobema collina*). Virginia Transportation Research Council, Technical Report VTRC 21-R14.

Lozada-Bobilard S, Schwarzer C, Dyer R, Tiedemann R, Joshi J. 2021. Genetic diversity and connectivity in plant species differing in clonality and dispersal mechanisms in wetland island habitats. *Journal of Heredity*. doi.

Tassone[§] EE, Miles[§] LS, Dyer RJ, Rosenberg MS, Cowling RM, Verrelli BC. 2021. Evolutionary stability, landscape heterogeneity, and human land-usage shape population genetic connectivity in the Cape Floristic Region biodiversity hotspot. *Evolutionary Applications*, Open Access, doi.

Ritchie[§] AL, Dyer RJ, Nevill PG, Sinclair EA, Krauss SL. 2019. Wide outcrossing provides functional connectivity for new and old *Banksia* populations within a fragmented landscape. *Oecologia*, 190: 255-268.

Desaix[§] MG, Bulluck LP, Eckert AJ, Viverette CB, Boves TJ, Reese[§] JA, Tonra CM, Dyer RJ. 2019. Population assignment reveals low migratory connectivity in a weakly structured songbird. *Molecular Ecology*, doi.

Friedline CJ, Faske[§] T, Lind[§] BM, Hobson EM, Parry D, Dyer RJ, Johnson DM, Thompson[§] LM, Grayson KL, Eckert AJ. 2019. Evolutionary genomics of gypsy moth populations sampled along a latitudinal gradient. *Molecular Ecology*, doi.

Flores-Manzanero[§] *A*, Luna-Bárcenas MA, Dyer RJ, Vázquez-Domínguez E. 2019. Functional

connectivity and home range inferred at a microgeographic landscape genetics scale in a desert-dwelling rodent. *Ecology and Evolution*, **9**, 437-453. doi.

Miles[§] LS, Dyer RJ, Verrelli BC. 2018. Urban hubs of connectivity: contrasting patterns of gene flow within and among cities in the Western black widow spider. *Proceedings of the Royal Society, Series B.*, **285**, 20181224. doi.

Miles[§] LS, Johnson JC, Dyer RJ, Verrelli BC. 2018. Urbanization as a facilitator of gene flow in a human health pest. *Molecular Ecology*, 27, 3219-3230. doi.

Chan DM, Lee[§] JH, Dyer RJ. 2018. Comparison of pollination graphs. In: *Pollination in Plants. Theoretical Biology and Medical Modelling*. doi.

Cushman SA, Shirk A, Howe GT, Dyer RJ, Murphy6 MA, Joost S. 2018. The least cost path from landscape genetics to landscape genomics: challenges and opportunities to explore NGS data in a spatially explicit context. *Frontiers in Genetics, **9**, 215.* doi.

Watts BD, Dyer RJ. 2018. Structure and resilience of bald eagle roost networks. *Wildlife Society Bulletin,* **42**, 195-203. doi.

Bertrand[§] P, Bowman J, Dyer RJ, Manseau M, Wilson P. 2017. Sex-specific graphs: Relating group-specific topology to demographic and landscape data. *Molecular Ecology,* **26**, 3898-3912. doi.

Dyer RJ. 2016. Landscape Genetic Data Analysis. CC-SA. https://goo.gl/kA9I6O.

Tucker[§] AM, Dyer RJ, Huber SK, Bulluck, LP. 2016. Opportunistic conspecific brood parasitism in a box-nesting population of Prothonotary Warblers (*Protonotaria citrea*). *The AUK*, 132, 298-307. doi.

Foster[§] EL, Chan DM, Dyer RJ. 2016. Model comparison for abiotic versus biotic pollen dispersal. *Nonlinear Dynamics, Psychology, and Life Sciences*, 20, 471-483. doi.

Dyer RJ. 2016. *Applied Population Genetics*. CC-SA. https://goo.gl/NF7NId.

Yang L, Zhan-Lin L, Jiangang L, Dyer RJ. 2015. Genetic structure of *Pinus henryi* and *Pinus tabuliformis*: Natural landscapes as significant barriers to gene flow among populations. *Biochemical Systematics and Ecology*, 61, 124-132. doi.

Dyer RJ. 2015. Landscape Genetics and Population Graphs. *Annual Review of Ecology, Evolution, and Systematics*, 46, 327-342. Doi.

Garrick RC, Collins[§] BD, Yi[§] RN, Dyer RJ, Hyseni[§] C. 2015. Identification of eastern United States *Reticulitermes* termite species via PCR-RFLP, assessed using training and test data. *Insects*, 6, 524-537. doi.

Dyer RJ. 2015. Landscapes and Plant Population Genetics. In: Balkenhol N, Cushman S, Waits L. (Eds). *Landscape genetics: Concepts, Methods, and Applications.* J. Wiley & Sons. doi.

Murphy M, Dyer RJ, Cushman S. 2015. Graph theory and network models in landscape genetics. In: Balkenhol N, Cushman S, Waits L. (Eds). *Landscape genetics: Concepts, Methods, and Applications.* J. Wiley & Sons. doi.

Dyer RJ. 2015. Is there such a thing as landscape genetics? *Molecular Ecology*, 24, 3518-3528. doi.

DiLeo[§] MF, Siu[§] JC, Rhodes[§] MK, López-Villalobos[§] A, Redwine[§] A, Ksiazek[§] K, Dyer RJ. 2014. The gravity of pollination: Integrating at-site features into spatial analyses of contemporary pollen movement. *Molecular Ecology*, 23, 3345-3361. doi.

Garrick RC, Nason JD, Fernández-Manjarrés JFF, Dyer RJ. 2013. Ecological co-associations influence species' responses to past climatic change: an example from a Sonoran Desert bark beetle. *Molecular Ecology*, 22, 3345-3361. doi.

Sork VL, Aitken SN, Dyer RJ, Eckert AJ, Legendre P, Neale DB. 2013. Putting the landscape into the genomics of trees: Approaches for understanding local adaptation and population responses to changing climates. *Tree Genetics & Genomes,* 9, 901-911. doi.

Dyer RJ, Chan DM, Gardiakos[§] VA, Meadows[§] CA. 2012. Pollination Graphs: Quantifying pollen pool covariance networks and the influence of intervening landscape on genetic connectivity in the North American understory tree, *Cornus florida* L. *Landscape Ecology,* 27, 239-251. doi.

Eckert AJ, Dyer RJ. 2012. Defining the landscape of adaptive genetic diversity. *Molecular Ecology*, 21, 2836-2838. doi.

Klütsch CFC, Dyer RJ, Misof B. 2012. Combining multiple analytical approaches for the identification of population structure and genetic delineation of two subspecies of the endemic Arabian burnet moth *Reissita simonyi* (Zygaenidae; Lepidoptera). *Conservation Genetics,* 13, 21-37. doi.

Baker[§] SA, Dyer RJ. 2011. Invasion genetics of *Microstegium vimineum* (Poaceae) within the James River Basin of Virginia, USA. *Conservation Genetics*, 12, 793-803. Doi.

Dyer RJ, Nason JD, Garrick RC. 2010. Landscape modeling of gene flow: Improved power using conditional genetic distance derived from the topology of population networks. *Molecular Ecology*, 19, 3746-3759. doi.

Garrick RC, Sunnucks P, Dyer RJ. 2010. Nuclear gene phylogeography using PHASE: dealing with unresolved genotypes, lost alleles, and systematic bias in parameter estimation. *BMC Evolutionary Biology*, 10, 118-134. doi.

Ryan JJ, Dows B, Kirk MV, Eastman JR, Dyer RJ, and LB Kier 2010. A systems biology approach to invasive behavior: Comparing cancer metastasis and suburban sprawl development. *BMC Research Notes*, 3, 36-48. doi.

Dyer RJ 2009. GeneticStudio A suite of programs for the spatial analysis of genetic marker data. *Molecular Ecology Resources*, 9, 110-113. doi.

Garrick RC, Nason JD, Meadows[§] CA, Dyer RJ. 2009. Not just vicariance: Phylogeography of a Sonoran desert euphorb indicates a major role of range expansion along the Baja peninsula. *Molecular Ecology*, 18, 1916-1931. doi.

Garrick RC, Meadows[§] CA, Nason JD, Cognato AI, Dyer RJ. 2009. Variable markers for a Sonoran desert bark beetle, *Araptus attenuatus* Wood (Curculionidae: Scolytinae), with applications to related genera. *Conservation Genetics*, 10, 1177-1179. doi.

Meadows CA[‡], Garrick RC, Dyer RJ. 2009. Analysis of genetic structure in *Euphorbia lomelii*, a desert euphorb. *Auctus*, 1,19-24.

Dyer RJ 2009. *Biological Data Analysis Using R*. Released as Open Source under the Creative

Commons license. download.

Garrick RC, Meadows CA[‡], Nicolas[§] AN, Nason JD, Dyer RJ. 2008. A set of polymorphic nuclear intron markers for conservation genetics and phylogeography of Euphorbia species (Pedilanthus clade). *Conservation Genetics*, 9,1673-1676. doi.

Garrick RC, Dyer RJ, Beheregaray LB, Sunnucks P. 2008. Babies and bathwater: A comment on the premature obituary for nested clade analysis. *Molecular Ecology*, 17, 1401-1402. doi.

Dyer RJ. 2007a. Powers of discerning: Challenges to understanding dispersal processes in natural populations. *Molecular Ecology*, 16, 4881-4882. doi.

Dyer RJ. 2007b. The Evolution of Genetic Topologies. *Theoretical Population Biology*, 71, 71-79. doi.

Gonzales[§] E, Hamrick JL, Smouse PE, Dyer RJ. 2006. Pollen-mediated gene dispersal within continuous and fragmented populations of a forest understory species, *Trillium cunaetum*. *Molecular Ecology*, 15, 2047-2058. doi.

Dyer RJ 2005. Gener: A server-based analysis of pollen pool structure. *Molecular Ecology Notes*, 5, 971-973. doi.

Sork, VL, PE Smouse, V Apsit, RJ Dyer, and RD Westfall. 2005. A Two-Generation analysis of pollen pool genetic structure in flowering dogwood (*Cornus florida*, Cornaceae) in the Missouri Ozarks. *American Journal of Botany*, 92, 262-271. doi.

Dyer RJ, Nason JD. 2004. Population Graphs: The Graph-Theoretic Shape of Genetic Structure. *Molecular Ecology*, 13, 1713-1728. Doi.

Dyer RJ, Westfall RW, Sork VL, Smouse PE. 2004. Two-Generation Analysis of Pollen Flow Across a Landscape V: A Stepwise Approach For Extracting Factors Contributing to Pollen Structure. *Heredity*, 92, 204-211. doi.

Dyer RJ, Sork VL. 2003. The Effects of Autocorrelated Patterns Among Adults on Pollen Pool Differentiation. In: *Modeling and experimental research on genetic processes in tropical and temperate forests.* B. Degan (ed). Les Colloques De L'INRA, Kourou, French Guyana.

Sork VL, Davis FW, Dyer RJ, Smouse PE. 2002a. Mating Patterns In A Savanna Population Of Valley Oak (*Quercus lobata* Née.). USDA Forest Service GTR. PSW-GTR-184.

Sork VL, Dyer RJ, Davis FW, Smouse PE. 2002b. Mating system in California Valley oak, *Quercus lobata* Née. Pp 427-440 In: *Oaks in California's Changing Landscape*. Fifth Symposium on Oak Woodland Savanna. Standiford R, D McCreary (eds). San Diego, California.

Kelly CA, Dyer RJ. 2002. Demographic consequences of inflorescence feeding insects for *Liatris cylindraceae*, an iteroparous perennial. *Oecologia*, 132, 350-360. doi.

Sork VL, Davis FW, Smouse PE, Apsit V, Dyer RJ, Fernandez JF. 2002c. Pollen movement in declining populations of California Valley Oak, *Quercus lobata*: Where have all the fathers gone? *Molecular Ecology*, 11, 1657-1668. doi.

Apsit VJ, Sork VL, Dyer RJ. 2002. Patterns of mating in an insect-pollinated tree species in the Missouri

Ozark Forest Ecosystem Project (MOFEP). Pp. 213-227 In: *Proceedings of the Second Missouri Ozark Forest Ecosystem Symposium: Post-treatment results of the landscape experiment* 2000 October 17-18; St. Louis, MO. Shifley SR and JM Kabrick (eds). Gen. Tech. Rep. NC-227. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 228 pp.

Smouse PE, Dyer RJ, Sork VL, Westfall RD. 2001. Two-Generation Analysis of Pollen Flow Across a Landscape. I. Male Gamete Heterogeneity Among Females. *Evolution*, 55, 260-271. Doi.

Dyer RJ, Sork VL. 2001. Pollen Pool Heterogeneity in Shortleaf Pine, *Pinus echinata* Mill. *Molecular Ecology*, 10, 859-866. doi.

Sork VL, Campbell D, Dyer RJ, Fernandez JF, Nason JD, Petit R, Smouse PE, Steinberg E. 1998. In: *Proceedings from a Workshop on Gene Flow in Fragmented, Managed, and Continuous Populations*. National Center for Ecological Analysis and Synthesis, Santa Barbara, California. Research Paper No. 3.

Grants Awarded

As PI or Co-PI at Virginia Commonwealth University, my research program has been supported by $1,935,683 in grant funding from local, state, and federal agencies.

US Department of Fish And Wildlife. 2021. Spatial Structure and Genetic Connectivity in the Spotted Turtle (*Clemmys guttata*) II: Expanding genomic inference for management and conservation units. $63,132. PI

US Department of Fish And Wildlife. 2018. Spatial structure and genetic connectivity in the spotted turtle (*Clemmys guttata*): Leveraging population genomic inferences for developing management and conservation units. $96,624. PI

Virginia Department of Transportation. 2018. Refining environmental DNA protocols developed for the endangered James Spinymussel (*Pleurobema collina*). $98,771. PI.

Virginia Department of Game and Inland Fisheries. 2017. Assessment of population genetic structure, connectivity, and potential broodstock sources for the endangered James spinymussel (*Pleurobema collina*). $23,018. PI.

National Science Foundation. 2016. *Collaborative research: A landscape resistance mapping approach to understanding species invasion patterns.* Co-PI with D. Johnson. $816,000 total, $464,914 VCU.

Department of the Army. 2015. *Reproductive Ecology and Migratory Connectivity of Prothonotary Warbler Populations at Fort AP Hill, VA.* Collaborative Research Grant. Co-PI with C. Viverette, L. Bulluck. $93,227.

Virginia Department of Transportation. 2015. *Development & Testing of Environmental DNA (eDNA) protocols for cryptic species identification.* PI. $105,772.

National Geographic Society. 2015. Uncovering hidden biodiversity hotspots in the Southern Appalachian Mountains, USA. Co-PI with Dr. Ryan Garrick. $16,503.

Virginia Higher Education Equipment Trust Fund. 2013. *Fragment Analysis for Applied Molecular Ecology.* Virginia Commonwealth University. $31,825.

Virginia Higher Education Equipment Trust Fund. 2008. *Equipment Grant for High Throughput DNA*

Quality Assurance. Virginia Commonwealth University. $23,500.

National Science Foundation. DEB-0640803. 2007-2011. *Unifying the Two-Generation Analysis to Pollen Movement: Analysis of Insect Mediated Pollen Dispersal in The Understory Tree L.* $210,000.

Virginia Higher Education Equipment Trust Fund. 2006. *Increased analysis of genotype diversity through capillary technology.* Co-PI with Dr. B. Brown to purchase MegaBase 96-well genotyper. Virginia Commonwealth University. $66,436.00.

National Science Foundation. DEB-0543102. 2006-2009. *The Evolution of Genetic Structure in Species-Specific Plant-Insect Relationships: The Relative Importance of Biogeographical and Coevolutionary Processes.* Collaborative Research Grant with Dr. John Nason, Iowa State University. $350,000 ($150,000 to RJD).

Rice Center Faculty Research Grant. 2005. *Quantifying Contemporary Gene Movement in the Understory Tree L.* $4006.00.

National Science Foundation, Dissertation Improvement Grant. DEB-0073242. 2000. *Impact of landscape management on mating patterns and pollen movement in (Mill.).* Academic Advisor: V.L. Sork, Department of Biology, University of Missouri - Saint Louis. $5,250.

Presented Talks

Vonesh, J, Carr D, Dyer RJ, *et al.* Leveraging partnerships between university outdoor recreation and STEM departments to build a sense of belonging and teamwork in the field. Ecological Society of America Annual Meeting. August 2024.

Dyer RJ. FOTJ, Connecting students and building teams. River Management Society Lecture, June 2024.

Dyer, RJ. Whitehurst M, Krueger C. Genetic Diversity & Structure in Clemmys guttata. Conservation Symposium for Wood, Blandings, Spotted Turtles, and Related Emydine Turtles. July 2023, Huntingdon, PA.

Dyer RJ. Chromosome walking: Partitioning neutral and putatively adaptive genetic variability using inter-population conditional covariance. Invited Departmental Speaker, Center for Public Health Genomics, University of Virginia, February 2019.

Dyer RJ. *Chromosome walking: The Graph-theoretic shape of neutral and putatively adaptive genetic variance.* Invited symposium speaker, Joint Annual Meetings of the American Society of Agronomy, Crop Science Society of America, & the Canadian Society of Agronomy. Baltimore, Maryland, November 2018.

Dyer RJ. *Can cultivars bridge the urban divide? Connectivity and consequences in flowering dogwood.* Invited Departmental Speaker, Center for Computational Genetics and Genomics, Temple University, Philadelphia, Pennsylvania, November 2016.

Dyer RJ, Seshadri C. *Landscape Epigenetics*. Annual Meetings of the Society for the Study of Evolution. Austin, Texas, June 2016.

Dyer RJ *Hidden Sources of Variation: A landscape genomic walk through the methylome.* Invited Departmental Speaker. University of Paris XI, Orsay France. September 2015.

Dyer RJ *Is there such a thing as Landscape Genetics?* Invited Keynote Speaker, The Spring School.

Georg-August University of Göttingen, Göttingen Germany. March 2014.

Dyer RJ *Can cultivars bridge the urban divide? Connectivity and consequences in flowering dogwood.* Invited Departmental Speaker. Department of Forest Genetics and Forest Tree Breeding, Georg-August University of Göttingen, Göttingen Germany. March 2014.

Dyer RJ *The shape of Neutral & Adaptive Genetic Variance.* Invited Departmental Speaker, Department of Ecology, Evolution, and Organismal Biology. Iowa State University. April 2013.

Dyer RJ *The graph-theoretic shape of genetic structure: Applications to conservation & evolutionary biology.* Invited Departmental Speaker, Department of Biology, the University of Mississippi. November 2012.

Dyer RJ *Lessons from landscape genetics for understanding alterations to connectivity in riverine environments.* Invited Symposium Speaker for "Human influences on connectivity and population structure in rivers." US-International Association of Landscape Ecology Annual Meeting, Portland State University, Portland, Oregon. April 2011.

Dyer RJ *Landscape genetics in the Sonoran desert.* Invited Departmental Speaker, Department of Biology, Mary Washington University. April 2011.

Dyer RJ *Shared phylogeographic history & landscape genetic interactions of the Sonoran desert plant and its parasitic bark beetle.* Invited Departmental Speaker, Department Evolution et Systematique, University of Paris-Sud XI. January 2011.

Dyer RJ *The consequence of intervening landscape context on insect-mediated pollination in the understory tree, .* Swiss Federal Institute for Forest, Snow and Landscape Research. Zurich, Switzerland. August 2010.

Dyer RJ *Using Conditional Genetic Structure to Identify Putatively Adaptive Variation.* Computational Methods in Landscape Genomics. European Commission. Centro di Ecologia Alpina, Monte Bondone, Trento, Italy. August 2010.

Dyer RJ *Landscape Genetics in the Sonoran Desert.* Invited Speaker. Department of Plant Biology, University of Georgia. October 2009.

Dyer RJ *Populations & Landscapes: A Network Approach to Understand Ecologically Relevant Gene Flow.* Invited symposium speaker at the annual meeting of the Society for Molecular Biology and Evolution. University of Iowa. Iowa City, Iowa. June 2009.

Dyer RJ *Genetic congruence of Sonoran desert megaflora.* Annual Meeting of the Society for the Study of Evolution. University of Minneapolis, Minneapolis, Minnesota. June 2008.

Dyer RJ *Statistical marker geography: Assessing congruence in the genetic structure of Sonoran desert megaflora.* Invited speaker, Department of Ecology and Evolutionary Biology, University of California - Los Angeles. February 2008.

Dyer RJ *Genetic analysis of insect-mediated pollen dispersal: A case study in the understory tree L.* 9th International Pollination Symposium. Ames, Iowa. June 2007.

Dyer RJ *Analysis of Population Structure using Population Graphs.* Invited Speaker, Molecular Markers of Plant Population Structure and Process. 21-25 May 2007. University of Copenhagen, Denmark.

Dyer RJ *Gene flow, TwoGener, & pollen distribution curves.* Invited Speaker, Molecular Markers of Plant

Population Structure and Process. 21-25 May 2007. University of Copenhagen, Denmark.

Dyer RJ, Chan DM *Discrete Two-Generation Analysis of Pollen Movement. Or it Would surely be easier if insects were Brownian.* Annual Meeting Society for the Study of Evolution. SUNY Stoney Brook. July 2006.

Dyer RJ *A Graph-Theoretic Perspective on the Evolution of Intraspecific Population Genetic Structure* Invited speaker, Department of Biology, The College of William and Mary. February 2006.

Dyer RJ *A Cellular Automata Model of Contemporary Gene Movement Center for the Study of Biological Complexity, Annual Research Review.* Center for the Study of Biological Complexity, Virginia Commonwealth University. December 2005.

Dyer RJ *Population Genetics of Sonoran Desert Flora & Fauna*. Invited Speaker, Department of Biology, Virginia State University, November 2005.

Dyer RJ *The Shape of Genetic Structure*. Invited Speaker, Department of Biology, George Washington University, October 2005.

Dyer RJ *Virtualizing Pollen Movement at the Rice Center: An Ongoing Study of Dogwood* Invited Speaker, Rice Center Board of Directors. Westover Plantation, Virginia. October 2005.

Dyer RJ *The Geometry of Genetic Differentiation: Graph Theory & Population Genetic*s Invited Speaker, Honors College, Virginia Commonwealth University. October 2005.

Dyer RJ *The Shape of Genetic Structure: A graph-theoretic analysis of global human genetic variation.* Second International Symposium on DNA Polymorphisms in Human Populations. Musee de l'Homme, Paris. December 2003.

Dyer RJ *Graphical models in population genetic analysis.* Invited Departmental Speaker, Department Evolution et Systematique, University of Paris XI. December 2003.

Dyer RJ *Pollen movement dynamics in the forest canopy tree Mill*. Invited Departmental Speaker. Department of Plant Sciences, University of Georgia. November 2003.

Dyer RJ, Nason JD, Hamrick JL. *The Shape of Genetic Structure: Graphs, Cacti, and an Obligate Pollinator.* Annual Meeting of the Society for the Study of Evolution. Chico, California. July 2003.

Dyer RJ *Gene flow outside the vacuum: An analytical model for quantifying the effects of environmental modulators of contemporary pollen movement.* Annual Meeting of the Society for the Study of Evolution. Champaign-Urbana, Illinois. June 2002.

Dyer RJ *Effects of Spatial Variation on Two-Generation Estimates of Gene Flow.* Western Forest Genetics meeting. Davis, California. August 2001.

Dyer RJ, Sork VL *The effects of forest management on contemporary pollen movement in shortleaf pine, Mill.* Annual Meeting of the Society for the Study of Evolution. Knoxville, Tennessee. June 2001.

Dyer RJ. *The 2Gener Model: An Analysis of Contemporary Pollen Movement.* Conifer Microsatellite Workshop, College Station Texas. May 2001.

Dyer RJ, Sork VL *The effects of Autocorrelated Adaptive Patterns Among Adults on Pollen Pool Differentiation.* Modeling and experimental research on genetic processes in tropical and temperate Forests, Kourou, French Guyana. October 2000.

Dyer RJ, Sork VL. *The spatial scale of pollen pool variation in the canopy tree species.* Annual Meeting of

the Society for the Study of Evolution. Bloomington, Indiana. June 2000.

Dyer RJ, Sork VL. *Paternity analysis and gene flow in the Northern Red Oak (L.).* Studying Gene Flow on an Ecological Time Scale, National Center For Ecological Analysis & Synthesis, University of California - Santa Barbara, Santa Barbara, California. January 1999.

Workshops

Landscape genetic data analysis using R. Course developer and instructor. Online Digital Workshop. March 2021.

Landscape genetic data analysis using R. Course developer and instructor. Glasgow, Scotland. March 2019.

Landscape genetic data analysis using R. Course developer and instructor. Wales, England. November 2017.

Landscape genetic data analysis using R. Course developer and instructor. Scottish Center for Ecology and the Natural Environment, Loch Lomond, Scotland. October 2016.

Workshop on Landscape Genetic Techniques. Organizer and Lead Instructor. US-International Association of Landscape Ecology Annual Meeting. Portland State University. Portland Oregon. April 2011.

Distributed Graduate Seminar in Landscape Genetics. Invited instructor. National Center for Ecological Analysis & Synthesis (NCEAS). University of California - Santa Barbara, Santa Barbara, California. 2010.

Distributed Graduate Seminar in Landscape Genetics. Invited instructor. National Center for Ecological Analysis & Synthesis (NCEAS). University of California - Santa Barbara, Santa Barbara, California. 2009.

Diversity, Population Structure, and Mating Patterns. Invited instructor. University of Copenhagen, Copenhagen, Denmark. 2007.

Networks and the Population Dynamics of Disease Transmission, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, Minnesota. 2003.

Conifer Microsatellite Workshop, Texas A&M University, College Station, Texas. 2001.

Gene Flow VIII, National Center For Ecological Analysis & Synthesis, University of California - Santa Barbara, Santa Barbara, California. 2001.

Mathematics of Biological Complexity, University of Tennessee, Knoxville, Tennessee. 2000.

Gene Flow V, National Center For Ecological Analysis & Synthesis (NCEAS), University of California - Santa Barbara, Santa Barbara, California. 2000.

Gene Flow III, National Center For Ecological Analysis & Synthesis (NCEAS), University of California - Santa Barbara, Santa Barbara, California. 1999.

Gene Flow I, National Center For Ecological Analysis & Synthesis (NCEAS), University of California - Santa Barbara, Santa Barbara, California. 1998.

Professional Activities, Awards, & Affiliations

Member. Spotted Turtle Working Group. August 2022 - May 2024.

Panel Member. National Science Foundation, Dimensions in Biodiversity Program. May 2018.

Associate Editor. *Frontiers in Evolutionary & Population Genetics.* 2013 - 2016.

Associate Editor. *American Journal of Botany*. 2011 - 2016.

Research Affiliate Faculty Member. Inger and Walter Rice Center for Environmental Life Sciences. 2014-2016.

Fellow. Center for the Study of Biological Complexity. Virginia Commonwealth University. 2005-2016.

Affiliate Faculty Member. Center for Environmental Studies. Virginia Commonwealth University. 2007-2015.

Invited Symposium Speaker. 4ème Université de la Chaire éco-conception. Performance des outils d'eco-conception. *Network theory and urban design: Uncovering genetic connectivity using pollination networks.* Paris, France. September 2015.

Invited Symposium Keynote Speaker. *Spring School: A practical, hands-on introduction to landscape genetics.* Georg-August University of Göttingen, Göttingen, Germany. March 2014.

Invited Panel Member. *Computational Methods in Landscape Genomics. Forest ecosystem genomics research: Supporting transatlantic cooperation.* European Commission. Centro di Ecologia Alpina, Monte Bondone, Trento, Italy. 2010.

Excellence in Scholarship Award. 2010. College of Humanities & Sciences, *Virginia Commonwealth University*, Richmond, Virginia.

External Reviewer & Site Visit Team Member, Science and Technology Center Program. *National Science Foundation*, Arlington, Virginia, Fall 2009.

Panel Member. Evolutionary Genetics Panel, Division of Environmental Biology, *National Science Foundation*, Arlington, Virginia, Fall 2009.

Panel Member. Population & Evolutionary Processes, Division of Environmental Biology, PhyloBioGeography Grant Review Panel. *National Science Foundation*, Arlington, Virginia. 2008.

Panel Member. Population & Evolutionary Processes, Doctoral Dissertation Improvement Grant Review Panel, *National Science Foundation*, Arlington, Virginia. 2007.

Panel Member. Confinement of Genetically Engineered Crops During Field Testing. *United States Department of Agriculture* APHIS, Riverdale, Maryland. 2004.

Outstanding Biology Graduate Teaching Award. 2001. Department of Biology, *University of Missouri - Saint Louis*.

International Center for Tropical Ecology Travel Grant. 2000. *University of Missouri - Saint Louis.* $400.00.

Biology Department Travel Grant. 2001. *University of Missouri - Saint Louis*. $300.00.

E. Desmond Lee Graduate Research Fellowship. 2000. Department of Biology, *University of Missouri -*

Saint Louis.

Biology Department Travel Grant. 2000. *University of Missouri - Saint Louis*. $300.00.

Jardin du Lac Garden Club Scholarship. 1998. Department of Biology, *University of Missouri - Saint Louis.*

Chancellor's Raven Fellowship. 1996-1997. Department of Biology, *University of Missouri - Saint Louis.*

Department of Education, Veterans Math & Science Initiative. 1994. *Humboldt State University.*

Phi Beta Kappa. 1993. *Seattle Central Community College.*

Software

I have written and provided the following software solutions.

Administravia is a stand-alone application for analyzing and summarizing curriculum and faculty progress, suitable for Departmental and College-level analytics. Webpage.

FOTJ. An iOS phone app to help connect students and build teams in field studies through increased belonging, participation, and teamwork. Webpage, iOS App Store.

Backflow Studio is a stand-alone application (Mac, iPad, iOS) that assists teachers and professors in developing course content using a Backward-Design approach. It is also a webpage.

popgraph. An R package for network analysis of conditional genetic variance. Written in C & R and available for download from github.

gstudio. An R package for the spatial analysis of genetic marker data. Written in C & R and available for download from github.

GeneticStudio. A suite of programs for the spatial analysis of genetic marker data. Individual programs include: Geno A spreadsheet-like application for the analysis of genetic diversity and differentiation, Graph A graph visualization package for analyzing Population Graph topologies, Manteller A matrix analysis program for conducting Mantel analyses and other matrix operations, and SNPFinder A program for the analysis of Solexa sequences for the identification of SNPs. Written in C/C++/R. Both binaries and source code are available.

Graph. An application focusing on the analysis of graph topologies. Specifically for the analysis of independence graphs in the context of Population Graphs (Dyer 2007, Dyer & Nason, 2004). Written in C/Objective-C using OpenGL, GLU, GLUT libraries available for Mac OSX and Linux.

PopGraph. An online analysis program that produces Population Graphs following Dyer & Nason (2004).

FractalDim. A program that can create fractal images from genetic sequence data or analyze imported image files for fractal dimensionality. Used in teaching Mathematical Biology. Written in C/C++. Binaries and source code are available.

Gener. An online analysis program that conducts the 2Generation Analysis of Pollen Structure as presented in Dyer & Sork (2001), Smouse *et al.* (2001), & Dyer *et al.* (2004).

Teaching

The following courses are courses I have taught while at Virginia Commonwealth University.

Genetics (Biology 310). This is the main undergraduate core course in genetics, focusing on transmission, molecular, and evolutionary genetics. This is a large enrollment lecture course and is the last of the core courses required for all Biology undergraduate majors. On average I have taught this course every other spring semester since starting at VCU. Recently, I have initiated an online version of this course taught concurrently with the lecture section to evaluate learning efficiency for online offerings in core biological courses.

Mathematical Biology (Honors/Biology/Math/Bioinformatics 380). Cross-disciplinary approach to the analysis of biological systems. This course was originally a component of the broader impacts of the National Science Foundation grant DEB-0640803 offered as an Honors course. It has since been cross-listed in Biology, Mathematics, and Bioinformatics and has been taken over by Dr. David Chan (Department of Mathematics, Virginia Commonwealth University & Co-PI on the grant).

Capstone: Evolution & Climate (Biology 475). This is a capstone course that examines the interactions between climate and evolutionary processes. This class synthesizes student experiences and uses peer review and iterative feedback to create research proposals presented in video format in an online community.

International Biological Research (Biology 491). This is a hands-on field research that is conducted in Baja California, styled after the successful OTS-courses taught in the tropics. Here undergraduate students develop, design, implement, analyze, and present novel research project that are conducted in Baja California. This course was originally initiated and supported as a component of the Broader Impacts from NSF DEB-0543102 though now has been a stand-alone course.

Population Genetics (Biology/Human Genetics 516). The analysis of neutral and adaptive genetic variation in natural and artificial populations. This course is offered every Fall semester and is a requirement for all DNA track Forensic Science graduate students. This is a partially flipped course that emphasizes applied population genetic analyses.

Environmental Data Literacy (*Environmental Studies 543)*. Core graduate-level statistics and data analysis course for all incoming ENVS master's students.

Modeling Population Processes (Biology 591). A computer laboratory course associated with Population Genetics (Biology 516) introducing students to the use of simulation approaches to understand population dynamics. Taught only once.

Applied Environmental Statistics (Environmental Studies 591). An applied course in statistics targeting incoming graduate students in the Environmental Studies program. This course will replace STAT543 in the CES curriculum as we go forward.

Advanced Geospatial Visualization (Environmental Studies 691). Exploration of techniques and technologies for geospatial visualization using open-source and ESRI technologies.

Landscape Genetics (Biology/Environmental Science 691). An internationally distributed graduate seminar on landscape genetics integrating institutions and expertise from top researchers from across the world. While sponsored initially by the National Science Foundation (NSF) and the

National Center for Ecological Analysis and Synthesis (NCEAS), this course has been offered in the spring semester every other year since 2010. The full content of the most recent section of this course can be found at http://goo.gl/ETd4iw.

Reproducible Research (Biology 691). A survey class covering methods for increasing the reproducibility of biological research. Here we cover material such as using R, markdown, online data repositories, and lexicographic analyses.

Biological Networks (Biology 693). Analysis of how network paradigms are being used in biological inquiry from subcellular to regional scales. Co-taught this graduate seminar once with Dr. Vonesh.

Data Analysis Using R (Biology 695). A general introduction to the use of R for data analysis applicable to incoming graduate students. Wrote Dyer (2009), Biological Data Analysis Using R (available for download from http://dyerlab.bio.vcu.edu), to be used as text for this course. Previously taught fall semesters to incoming graduate students, but is not offered online.

Teaching Related Workshops & Fellowships

Fellow, Online Learning Experience, Academic Learning Transformation Laboratory. Virginia Commonwealth University. Spring 2015.

Mentoring

Professional

New Investigators' Grant Writing Workshop, VCU Office of Research. Faculty Mentor for Dr. Cheng Ly, Department of Statistics and Operations Research. 2014-2016.

Post-doctoral Researchers

The following postdoctoral individuals were in the Dyer Laboratory.

Garrick R Postdoctoral researcher, supported by NSF DEB-0543102 from 2007-2009. Currently an Associate Professor of Biology at the University of Mississippi.

Graduate Students

I have served in the role of primary advisor to the following individuals.

Archibald R *Seed dispersal and subsequent recruitment of the mid-canopy forest tree, Cornus florida.* MS, Environmental Sciences, 2009.

Baker S *Invasion genetic of the invasive grass, Microstegium vimineum (Poaceae).* MS, Biology, 2009.

Carr D *Pollination biology of the understory tree, Cornus florida L.* Supported by NSF DEB-0640803. MS, Biology, 2010.

Crouch S *Spatial genetic structure of the mole salamander, Ambystoma opacum (Gravenhorst)*. MS, Biology, 2008.

DeSaix, M. *Reproductive Ecology and Migratory Connectivity of Prothonotary Warbler*. MS, Center for

Environmental Studies, 2018.

Dillion C *Assessment of pre-PCR whole genome amplification of single pollen grains in flowering dogwood (Cornus florida) L.* Supported by NSF DEB-0640803. MS, Biology, 2009.

Gardiakos V *Investigating patterns of pollen-mediated gene dispersal in the flowering dogwood, Cornus florida L.* Supported in part by NSF DEB-0640803. MS, Biology, 2009.

Hinkle J *eDNA detection of Atlantic Sturgeon.* MS, Center for Environmental Science. Co-Advised with Dr. Greg Garman. MS Environmental Studies, 2015.

Kuechle M. *Spatial arrangement of male reproductive output in the spotted salamander, Ambystoma maculatum.* MS, Center for Environmental Studies, 2019.

Lathum, O. *Pollination as an ecosystem service in shale barren communities of Appalachia*. MS, Center for Environmental Studies, 2020.

Meadows C *Landscape impacts on insect-mediated pollination in the understory tree, Cornus florida.* MS, Biology, Spring 2011.

Redwine A *Pollination and reproductive success along an urban gradient.* MS, Center for Environmental Science.

Roderique B. *Environmental DNA as a tool for surveying cryptic species.* MS, Center for Environmental Studies.

Seshadri C *Genome-wide analysis of epigenetic adaptive variance in Araptus attenuata, the Sonoran Desert bark beetle.* MS, Center for Environmental Studies.

Tucker A *Fitness costs of conspecific brood parasitism in a cavity-nesting warbler.* MS, Department of Biology. Co-advised with Dr. Lesley Bullock.

Viverette C. *Combining population genetics, stable isotopes, and GIS in order to understand connectivity in migrant birds.* PhD, Integrative Life Sciences. 2016.

Whitehurst, M. *Conservation genetics of the Spotted Turtle (Clemmys guttata)*. MS in Environmental Studies. Expected completion in summer 2023.

Graduate Committee Member

Bertrand P. Masters student, Department of Biology, Trent University. Advisor P. Wilson, Bonnette, M. Masters student, Department of Forensic Science, VCU. Advisor: T. Dawson-Cruz, Brentley, S. Doctoral Student, Department of Biology, VCU. Advisor: D. Young, Caplins S. Masters Student, Department of Biology, VCU. Advisor: J. Turberville. Castillo, Maria Loreto. MS. Student, Departmento de Ciencias Ecológicas, Universidad de Chile. Advisor, R. Bustamante. Champagne, J. Masters student, Department of Forensic Science, VCU. Advisor: T. Dawson-Cruz, Cupples, C. Masters student, Department of Forensic Science, VCU. Advisor: T. Dawson-Cruz, Drake, J. Masters student, Bioinformatics Program, Center for the Study of Biological Complexity, VCU. Advisor: P. Fawcett, Foster, E. Masters student, Department of Mathematics, VCU. Supported by research grant NSF DEB-0640803. Advisor D. Chan, Freeman L. Doctoral Student, Program in Integrative Life Science. Advisor: B. Verrelli. Fuller, A. Masters student, Department of Mathematics, VCU. Advisor: Dr. D. Chan, Givens, C. Masters student, Department of Biology, VCU. Advisor: B. Brown, Higgens, C. Masters student, Department of Biology, VCU. Advisor: B. Brown, Hall, M. Doctoral Student. Department of Biology, University of Central Florida. Advisor:

G. Hall. Hite, J. Masters Student, Department of Biology, VCU. Advisor: J. Vonesh, Karns, G. Masters Student, Department of Biology, VCU. Advisor: B. Brown/K. Kester, Kercher, D. Masters student, Department of Biology, VCU. Advisor: B. Brown, Lee, J. Masters student, Department of Mathematics. Advisor DM Chan. Lee, A. Master's student, Department of Statistics and Operations Science, VCU. Advisor E. Boone, Lind B. Doctoral Student, Program in Integrative Life Science. Advisor: A. Eckert, Menon, M. Doctoral student, Program in Integrative Life Sciences, VCU. Advisor: A. Eckert. Naumann, J. Doctoral student, Program in Integrated Life Sciences, VCU. Advisor: D. Young, Rodier, D. Masters student, Department of Biology, VCU. Advisor: T. Dawson-Cruz, Runnels, C. Masters student, Department of Biology, VCU. Advisor: C. Turberville, Seward, M. Masters student, Department of Biology, VCU. Advisor: R. Tombes, Sparks, J. Masters student, Department of Biology, VCU. Advisor: J. Pagels, Swapp, R. Masters student, Department of Internal Medicine, VCU. Advisor J. Clore. Waldrop, A. Doctoral student, Program in Integrative Life Sciences, VCU. Advisor: M. Rivera. Woods, T. Masters Student, Center for Environmental Studies, Advisor: D. McGarvey.

Service

Member, VCU Faculty Senate, Virginia Commonwealth University. August 2022 - January 2024.

Member, University Council, Virginia Commonwealth University. January 2023 - Present.

Member, VCU REAL Council. Virginia Commonwealth University. December 2018 - September 2021

Director, Center for High-Performance Computing. Virginia Commonwealth University. July 2019 - September 2020.

Interim Director, Center for the Study of Biological Complexity, VCU Life Sciences. November 2017 - July 2018.

Member, CSBC Director Search Committee. VCU Life Sciences. 2018.

National Science Foundation, Grant Review Panelist. Division of Environmental Biology, Population, and Evolutionary Processes. 2018.

Member, CSBC Director Search Committee. VCU Life Sciences. 2017.

Associate Editor, *American Journal of Botany*. 2011-2016.

Associate Editor, *Frontiers in Evolutionary & Population Genetics.* 2013-2016.

Member, Promotion and Tenure Committee, Dr. Daniel McGarvey, Center for Environmental Studies, Virginia Commonwealth University. Fall 2016.

Member, Promotion and Tenure Committee, Dr. Andrew Eckert, Department of Biology, Virginia Commonwealth University. Fall 2016.

Member & Secretary, College of Humanities & Sciences Promotion and Tenure Committee. Virginia Commonwealth University. 2014-2016.

Member, Third Year Tenure Review Committee, Dr. Salvatore Agosta, Center for Environmental Studies, Virginia Commonwealth University, Fall 2015.

Member, Third Year Tenure Review Committee, Dr. Cheng Ly, Department of Statistics and Operations Research, Virginia Commonwealth University. Fall 2015.

Chair, Committee for Developing a new PhD Program in Biology. Department of Biology, Virginia Commonwealth University. 2014.

Member, Third Year Tenure Review Committee, Dr. Andrew Eckert, Department of Biology, Virginia Commonwealth University. Spring 2014.

Member, Third Year Tenure Review Committee, Dr. Christopher Ehrhardt, Department of Forensic Sciences, Virginia Commonwealth University. Spring 2014.

Grant Reviewer, U.S. Department of Agriculture, Hatch Grant Program. 2014.

Member & Secretary, College of Humanities & Sciences Promotion and Tenure Committee. Virginia Commonwealth University. 2013-2014.

Member, Promotion and Tenure Committee, Dr. Brian Verrelli. Department of Biology, Virginia Commonwealth University. 2013.

Member, College of Humanities and Sciences Excellence Committee, Virginia Commonwealth University, 2013.

Chair, Departmental Undergraduate Curriculum Committee. Department of Biology, Virginia Commonwealth University. 2012.

Member, Departmental Undergraduate Curriculum Committee. Department of Biology, Virginia Commonwealth University. 2011 - 2014.

Reviewed manuscripts for the *American Journal of Botany*, *American Naturalist*, *Australian Journal of Botany*, *Biotropica*, *Biological Invasions*, *Bulletin of Mathematical Biology*, *Canadian Journal of Botany* (now *Botany*), *Conservation Genetics*, *Current Biology*, *Ecography, Ecology*, *Ecological Letters*, *Evolution*, *Forest Ecology & Management*, *Genetica*, *Heredity*, *Human Biology*, *Journal of Biogeography*, *Journal of Heredity*, *Landscape Ecology*, *Molecular Ecology*, *New Phytologist*, *PLoS Genetics*, *Proceedings of the National Academy of Science*, *Proceedings of the Royal Society*, *Science*, *Tree Genetics & Genomes*, and *Southwest Naturalist*.

Member, Promotion Committee, Dr. Paul Bukaveckas. Department of Biology, Virginia Commonwealth University. 2011.

Chair, Tenure-track faculty search committee for Plant Biologist. Department of Biology, Virginia Commonwealth University. 2010.

Member, ad-hoc committee on Service for Departmental Review. Department of Biology, Virginia Commonwealth University. 2010.

Chair, Promotion and Tenure Committee, Dr. D.C. Ghislaine Mayer, Department of Biology, Virginia Commonwealth University. 2010.

Member, Promotion Committee, Dr. Cara H. Cario, Department of Biology, Virginia Commonwealth University. 2010.

Secretary, Virginia Academy of Science. 2010.

Member, Departmental Awards and Budget Committee. Department of Biology, Virginia Commonwealth University. 2009 - 2010.

Chair, Departmental Undergraduate Curriculum Committee. Department of Biology, Virginia Commonwealth University. 2008 - 2009.

Greenhouse Facilities Manager. Department of Biology, Virginia Commonwealth University. 2006-2008.

Member, Departmental Undergraduate Curriculum Committee. Department of Biology, Virginia Commonwealth University. 2004-2007.

National Science Foundation, Grant Review Panelist. Division of Environmental Biology, Population, and Evolutionary Processes. 2006.