

# David F. Wright

Gerstner Scholar and Lerner-Gray Fellow Division of Paleontology American Museum of Natural History Central Park West at 79<sup>th</sup> St. New York, NY 10024 *Email:* dwright@amnh.org Website: https://daveyfwright.wordpress.com/ Google Scholar site: https://scholar.google.com/citations?user=dVqMWqkAAAAJ&hl=en

# **EDUCATION**

2016 Ph.D. Geological Sciences, The Ohio State University, advisor: William I. Ausich

Dissertation title: "Phylogenetic Paleobiology: Phenotypic Diversification and Evolutionary Radiation in Paleozoic Crinoids"

- 2012 M.S. Geological Sciences, Ohio University, advisor: Alycia L. Stigall
- 2010 **B.S. Geology (minor in Astrobiology)**, The University of Kansas

#### **PROFESSIONAL EXPERIENCE**

2018—present	Gerstner Scholar & Lerner-Gray Fellow, American Museum of Natural History, Supervisor: Melanie Hopkins
2018—present	<b>Research Associate</b> , Department of Paleobiology, National Museum of Natural History (Smithsonian Institution)
2017—2018	Peter Buck Postdoctoral Fellow, National Museum of Natural History (Smithsonian Institution), Supervisor: Gene Hunt
2008—2009	<b>Collections Assistant</b> The University of Kansas, KU Natural History Museum & Biodiversity Research Center, Division of Invertebrate Paleontology

#### **CURRENT RESEARCH INTERESTS**

- **Macroevolution and geobiology**: the origin of major lineages, models of morphologic diversification, and the ecological & environmental context of large-scale evolutionary radiations, such as the Ordovician Radiation of marine animal life.
- Analytical paleobiology: integrating geologic data with statistical approaches including Bayesian inference and Phylogenetic Comparative Methods (PCMs) to quantify patterns of trait evolution & diversification in the fossil record.
- Systematics & taxonomy: diversity, evolution, phylogeny, and geological history of the phylum Echinodermata (starfish, sea urchins & their kin), especially the Crinoidea (sea lilies & feather stars)

## PUBLICATIONS [Google scholar metrics (03/4/2019): # citations: 195, h-index: 9, i-10 index: 9]

#### Peer reviewed journal articles and book chapters

- **2019** Cole, S.R., **Wright, D.F.**, and Ausich, W.I., Phylogenetic community paleoecology of one of the earliest, complex crinoid faunas (Brechin Lagerstätte, Ordovician). Palaeogeography, Palaeoclimatology, Palaeoecology, 521: 82-98.
- **2018** Ausich, W.I., **Wright, D.F.**, Cole, S.R., and Koniecki, J., Disparid and hybocrinid crinoids (Echinodermata) from the Upper Ordovician (lower Katian) Brechin Lagerstätte of Ontario. Journal of Paleontology, 92: 850-871.
- Cole, S.R., Ausich, W.I., Wright, D.F., and Koniecki, J., An echinoderm Lagerstätte from the Upper Ordovician (Katian), Ontario: taxonomic re-evaluation and description of new dicyclic camerate crinoids. Journal of Paleontology, 92: 488-505.
- **2017** Wright, D.F., Phenotypic innovation and adaptive constraints in the evolutionary radiation of Palaeozoic crinoids. Scientific Reports, 7(1), 13745. doi:10.1038/s41598-017-13979-9.
- Wright, D.F. and Toom, U. New crinoids from the Baltic region (Estonia): fossil tip-dating phylogenetics constrains the origin and Ordovician–Silurian diversification of the Flexibilia (Echinodermata). Palaeontology, 60: 893-910.
- Wright, D.F., W.I. Ausich, S.R. Cole, M.E. Peter, and E.C. Rhenberg. Phylogenetic taxonomy and classification of the Crinoidea (Echinodermata). Journal of Paleontology, 91: 829-846.
- Wright, D.F. Bayesian estimation of fossil phylogenies and the evolution of early to middle Paleozoic crinoids (Echinodermata). Journal of Paleontology, 91: 799-814.
- **2016** Stigall, A.L., J.E. Bauer, A.R. Lam, and **D.F. Wright**. Biotic immigration events, speciation, and the accumulation of biodiversity in the fossil record. Global and Planetary Change, 148: 242-257.
- **2015** Wright, D.F. Fossils, homology, and "Phylogenetic Paleo-ontogeny": a reassessment of primary posterior plate homologies in fossil and living crinoids with insight from developmental biology. Paleobiology, 41:570-591.
- Ausich, W.I., T.W. Kammer, E.C. Rhenberg, and **D.F. Wright**. 2015. Early phylogeny of crinoids within the Pelmatozoan clade. Palaeontology, 58, 937-952.
- Wright, D.F. and W.I. Ausich. From the stem to the crown: phylogeny and diversification of pan-cladid crinoids. Pp. 199-202 *in* Progress in Echinoderm Palaeobiology. S. Zamora and I. Rábano (eds.), Cuadernos del museo Geominero, 19, Instituto Geológico y Minero de España, 292 pp.
- Ausich, W.I., T.W. Kammer, D.F. Wright, S.R. Cole, M.E. Peter, and E.C. Rhenberg. Toward a phylogenetic classification of the Crinoidea (Echinodermata). Pp. 29-32 *in* Progress in Echinoderm Palaeobiology. S. Zamora and I. Rábano (eds.), Cuadernos del museo Geominero, 19, Instituto Geológico y Minero de España, 292 pp.

- **2014** Wright, D.F. and A.L. Stigall, Species-level phylogenetic revision of the Late Ordovician orthid brachiopod genus *Glyptorthis*. Journal of Systematic Palaeontology, 12: 893-906.
- **2013** Wright, D.F. and A.L. Stigall, Phylogenetic revision of the Late Ordovician orthid brachiopod genera *Plaesiomys* and *Hebertella* from North America. Journal of Paleontology, 87: 1107-1128.
- Wright, D.F. and A.L. Stigall, Geological drivers of Late Ordovician faunal change in Laurentia: investigating links between tectonics, speciation, and biotic invasions. PLoS ONE, 8(7): e68353. doi:10.1371/journal.pone.0068353
- **2011** Wright, D.F. and P.A. Selden, A Trigonotarbid arachnid from the Pennsylvanian of Kansas. Journal of Paleontology, 85: 871-876.

#### Other publications (popular articles, etc.)

2017 Wright, D.F., Evolutionary trees and the fossil record: new approaches to phylogenetic paleobiology, Cambridge Core, Cambridge University Press, link: <u>http://blog.journals.cambridge.org/2017/08/25/evolutionary-trees-and-the-fossil-record-new-approaches-to-phylogenetic-paleobiology/</u>

#### GRANTS and FUNDING (cumulative awards > \$438,000)

MacMillan Fund for Paleobiology Fieldwork, NMNH (Smithsonian Institution)	co-
PIs: Lucy Chang, Laura Soul, and Selina Cole, \$6,750	
2016 Smithsonian Peter Buck Postdoctoral Research Fellowship, \$100,000	
Distinguished Postdoctoral Research Fellowship (University of Texas, Jackson	
School of Geosciences), \$160,000 (declined).	
2015 <b>Presidential Fellowship</b> , The Ohio State University, \$21,266	
N. Gary Lane Award, Paleontological Society, \$800	
American Federation of Mineralogical and Geological Societies Student	
Scholarship (Midwest region), \$4,000	
Ray Travel Award, The Ohio State University, \$750	
James R. Welch Scholarship, Association of Applied Paleontological Sciences, \$1,	500
Society of Systematic Biologists travel award,, \$500	
Palaontological Association student grant award, \$650	
2014 Sigma Xi Grants-in-Aid of Research Award, \$700	
2012-2016 Friends of Orton Hall Scholarship, The Ohio State University, \$3,100	
2011 Schuchert and Dunbar Grant-in-Aid, Yale University Peabody Museum, \$1,080	
Paul Sanders Award, Dry Dredgers, 2011, \$1,000	
<b>OHIO Center for Ecology and Evolutionary Studies Fellowship</b> , \$14,070	
Ying-Chien Chang Scholarship, Ohio University, Geological Sciences, \$500	
Geological Sciences Alumni Research Grant, Ohio University, \$400	
2009 Field Camp Scholarship, University of Kansas, Summer, \$1,000	

## HONORS and AWARDS

- 2015 **Distinguished Teaching Award**, School of Earth Sciences, The Ohio State University, Spring
- 2014 **Michael Johnson Graduate Student Award** (Outstanding post-Candidacy PhD student award), The Ohio State University, Spring
- 2013 Distinguished First-Year Graduate Student "Estwing Award", The Ohio State University,
- 2012 Outstanding Graduate Student in Geological Sciences, Ohio University,
- 2011 **Outstanding Teaching Assistant Award**, College of Liberal Arts and Sciences, Ohio University

# **TEACHING EXPERIENCE**

## University Course Instructor

- 2011 Principles of Paleontology, Ohio University, Fall 2011
  - Designed and delivered lectures, homework, and exams for  $\sim 30$  undergraduates.

# Workshop Instructor

- 2019 New Approaches to Phylogenetic Paleobiology, Paleontological Society Short Course to be held during the Geological Society of America annual meeting, *anticipated* September 21, 2019 (*in prep*)
  - Workshop providing both theoretical and "hand-on" training in paleo-phylogenetic methods for both graduate students and professionals using the software *RevBayes*.
  - Co-organized and co-taught with: S.J. Carlson (UC Davis), P.J. Wagner (Nebraska), D.W. Bapst (Texas A&M), A.M. Wright (S. Louisiana), Rachel Warnock (ETH Zurich), and L. Soul (NMNH, Smithsonian).
- 2018 **Computational macroevolution in the R programming language**, National Museum of Natural History, July 11, 2018
  - Analytical methods workshop for graduate students in the NMNH pre-doctoral program using the R programming language.

## **University Guest Lecturer**

- 2015 Earth Through Time, Spring 2015, The Ohio State University
- 2011 Introduction to Geology, Fall 2011, Ohio University
  - Lectured on a variety of topics as needed (*n*=6) to ~75-120 students, including: mineralogy, igneous processes, glacial geomorphology, sediment transport & deposition, climate change, and human evolution.

#### Graduate Teaching Associate

The Ohio State University: School of Earth Sciences

Planet Earth: How it works, Fall 2012, 2013 The Dynamic Earth (Honors), Fall 2014, 2015 The Dynamic Earth, Spring 2013, Summer 2014, Summer 2015 Earth Through Time, Fall 2013-Fall 2014, Spring, 2015

> • I designed a <u>new lab curriculum</u> on the following topics: Plate Tectonics, Sedimentary Rock Identification, Paleoecology and Biostratigraphy, Sedimentary Structures, Reconstructing Ancient Environments, Dinosaur Phylogenetics, Your Inner Fish, Becoming Human, Climate Cycles

Sedimentology and Stratigraphy, Fall 2014

Ohio University: Department of Geological Sciences

Mineralogy, Fall 2010 Introduction to Geology, Winter 2011 Statistical Methods in Geology, Spring 2011 Subsurface Methods, Winter, 2012 Petrography, Spring, 2012

## SYNERGISTIC ACTIVITES, SERVICE, and PROFESSIONAL DEVELOPMENT

- 2017—present Member of the Paleobiology Database, <u>www.paleobiodb.org</u>.
- 2012—2016 Team member of the National Science Foundation's Assembling the Echinoderm Tree of Life Project (2012-2016).

#### Conference symposia

Organized and co-chaired technical sessions at annual Geological Society of America meetings:

- 2019 "Phylogenetic Paleobiology: Good Things Come in Trees" with E.A. Sperling (Stanford), S.J. Carlson (UC Davis), D.W. Bapst (Texas A&M) S.R. Cole (AMNH), J.R. Thompson (Baylor), Will Gearty (Stanford), A.M. Wright (Southeastern Louisiana), P.J. Wagner (U. Nebraska), and C.R. Congreve (Pennsylvania State). Submitted to GSA, 2019.
- 2018 **"Phylogenetic Paleobiology: Exploring Macroevolutionary Trends with Evolutionary Trees"** with Selina Cole (NMNH, Smithsonian Institution), Laura Soul (NMNH, Smithsonian Institution), and Will Gearty (Stanford University). Indianapolis, IN.
- 2016 **"New Approaches to Phylogenetic Paleobiology"** with David Bapst (South Dakota School of Mines), Melanie Hopkins (American Museum of Natural History), and April Wright (Iowa State University). Denver, CO.

- 2015 **"Echinoderm Paleobiology: Diversity, Form, and Phylogeny"** with Selina R. Cole (The Ohio State University) and Jeffrey R. Thompson (University of Southern California). Baltimore, MD.
- 2014 **"Echinoderm Paleobiology: Phylogenetics, Morphology, and Evolutionary Ecology"** with Selina R. Cole (The Ohio State University) and Jeffrey R. Thompson (University of Southern California). Vancouver, BC.

# Peer Reviewer for

Palaeontology, Methods in Ecology and Evolution, Proceedings of the Royal Society B, Journal of Paleontology, Journal of the Linnean Society, Nature Communications, Cahiers de Biologie Marine, Journal of the Royal Society Interface, PloS One, Scientific Reports

# Invited Workshops

- 2018 **Revolutionizing Systematics: Revitalizing Monographs (NSF-funded workshop).** Organized by Meg Daly and hosted by the American Museum of Natural History, Winter 2018.
- 2017 **Taming the BEAST (Bayesian Evolutionary Analysis by Sampling Trees)** workshop organized by the Centre for Computational Evolution at the University of Auckland, Winter 2017.
- 2016 Nantucket phylogeny developeR bootcamp hosted by the University of Massachusetts Boston, Summer 2016
- 2016 **Computational Macroevolution**, Society of Systematic Biologists workshop, Ann Arbor, MI, Summer 2015
- 2014 **"Paleobiological and Phylogenetic Approaches to Macroevolution"**, National Evolutionary Synthesis Center (NESCent) Academy course Durham, NC, Summer 2014
- 2013 Paleobiology Database Workshop in Analytical Methods, Macquarie University, Sydney, Australia, Summer 2013

## **Professional Societies**

Geological Society of America Paleontological Society Palaeontological Association Society of Systematic Biologists

# SCIENCE COMMUNICATION, OUTREACH, and SERVICE

## Museum service: exhibit development and scientific consultant

2018 Exhibit development of the Early Marine Life diorama exhibits, National Museum of Natural History (Smithsonian Institution).

2017-2018 Scientific consultant for exhibit design, scientific illustrations, and fossilpaleoenvironmental reconstructions for the "Deep Time" Fossil Hall exhibits, National Museum of Natural History (Smithsonian Institution).

#### Public outreach activities

2018	Developed materials and participated in outreach discussing the science of invertebrate paleontology to the general public (with examples from echinoderm evolution) during at the American Museum of Natural History's "Family Night" event.
2012-2016	Participated in numerous outreach and communication events promoting the science of geology, paleontology, and evolution to the general public at the Orton Geological Museum's booth, Museum of Biological Diversity Open House.
2012-2016	Participated in outreach and communication discussing the science of geology, paleontology, and evolution to the general public at the Orton Geological Museum's booth, National Fossil Day.
2010	Volunteer to field questions about geology, paleontology, and evolution from community members at The University of Kansas Biodiversity Research Center booth, Kansas City Gem and Mineral Show, 2010
Other service	

- 2018 Paleontological Society judge for undergraduate and graduate student presentations at the Geological Society of America annual meeting, Indianapolis, IN.
  2014-2016 Judge for the Ohio Academy of Science's Annual State Science Day (middle and high school students).
  2013-2016 Judge for The Ohio State University's Denman Undergraduate Research Forum.
- 2013-2016 Judge for The Ohio State University's Denman Undergraduate Research Forum, Mathematical and Physical Sciences; Biomedical and Biological Sciences.

## FIELD WORK EXPERIENCE

## **Research-based excursions**

- 2018-2019 Stratigraphic patterns of taxonomic diversity change in echinoderm and trilobite faunas across the Ordovician—Silurian boundary in Anticosti Island (Canada), August 2018, anticipated August 2019.
- 2018 Stratigraphy and early paleocommunity structure of the Western Interior Seaway of the Bighorn and Wind River basins, Wyoming (Albian-Cenomanian, Cretaceous), September 2018.

2017	Stratigraphy, sedimentology, and paleoecology of Carboniferous carbonates from the Brooks Range, Alaska, Summer 2017
2015	Cambrian—Devonian stratigraphy and echinoderm paleontology of the Iberian Chains and Cantabrian Mountains of central and northern Spain, Summer 2015
2011-2012	Sequence stratigraphy and paleontology of the Late Ordovician type-Cincinnatian Series. 2011-2012.

#### Additional field experience

2013	Pleistocene—Holocene geology, stratigraphy, and reef ecology of San Salvador Island, Bahamas, Spring 2013, (one week).
2012	Regional geology of Kentucky, with emphasis on Mississippian stratigraphy and paleontology, Fall 2012, (one week).
2010	Sequence stratigraphy, stratigraphic analysis, and paleontology of the Sacramento and Guadalupe Mountains of New Mexico and West Texas. Spring 2010, (one week).
2009	Structural geology, igneous petrology, and stratigraphy of western Nevada. Field mapping using laptops with GIS software. Summer 2009, (two weeks).
	Field mapping and stratigraphic analysis of Precambrian, lower Paleozoic, and Cretaceous rocks near Canon City, Colorado. Summer 2009, (four weeks).
	Structural geology and field mapping in the Arbuckle Mountains in Oklahoma. Spring 2009, (one week).
2008	Introduction the geological history of Kansas, Colorado, Utah, and Wyoming. Field mapping and stratigraphic analysis. Summer 2008, (two weeks).

# INVITED TALKS, PUBLIC PRESENTATIONS, and MEDIA INTERVIEWS

- 2019 The dredge, the hammer, and the phylogenetic tree: reconstructing the evolution of biological diversity in crinoid echinoderms, EvMorph seminar, The University of Chicago, March 7, 2019.
- 2017 Meet the Scientist, Time Scavengers: scavenging the fossil record for clues to Earth's climate and life, link: <u>https://timescavengers.blog/2017/10/09/davey-f-wright-paleontologist/</u>(Interview).

Phenotypic innovation and constraint in the evolutionary radiation of Paleozoic crinoids. Smithsonian Institution, Department of Paleobiology, February 24, 2017. (NMNH Paleobiology seminar series).

2016 Phenotypic diversification and evolutionary radiation in Paleozoic crinoids. Ohio University, Department of Geological Sciences, November 18, 2016. (Invited presentation).

Unifying fossils and phylogenetic biology to study evolution in "deep time". The Ohio State University, School of Earth Sciences, First-annual distinguished graduate student lecture, January 28, 2016.

- 2015 The Protean Paleontologist: interdisciplinary approaches to studying the geologic history of Earth's biodiversity. The Ohio State University, School of Earth Sciences, Water-Climate-Environment Symposium, April 17, 2015.
- 2013 Tectonics, biogeography, and the *Origin of Species*: Late Ordovician brachiopods as a case study in macroevolutionary events. The Ohio State University School of Earth Sciences, Earth History Division Brownbag Seminar, February 12, 2013 (Darwin's 201<sup>st</sup> birthday)

## **PUBLISHED ABSTRACTS**

- 2019 Wright, D.F., Cole, S.R., and Ausich, W.I., Fossil phylogenies reveal the timing, magnitude, and duration of the largest radiation of marine animal life. North American Paleontological Convention (NAPC).
- 2018 Wright, D.F. 2018. A Cambrian origin for crinoids? Probabilistic modeling of evolutionary trees supports a long fuse of latent diversification across the Cambrian—Ordovician boundary. Geological Society of America Abstracts with Programs.

Bapst, D.W., **Wright, D.F**, Cole, S.R., Hopkins, M.J. Melchin, M., Congreve, C.R., Lamsdell, J.C., Mitchell, C.E. and Carlson, S.J. 2018. On the origin of morphospecies—using Bayesian phylogenetics to quantify the mode of ancestor-descendant relationships in Paleozoic invertebrates. Geological Society of America Abstracts with Programs.

Wright, D.F., Cole, S.R., and Ausich, W.I. 2018. Fossil phylogenies reveal species-level diversification dynamics during the Ordovician Radiation of marine life. Geological Society of America Abstracts with Programs.

Cole, S.R., and **Wright, D.F.**, and Ausich, W.I. 2018. Phylogenetic structure of community assembly and niche partitioning: a case study using crinoids from the Brechin Lagerstätte (Upper Ordovician, Ontario). Geological Society of America Abstracts with Programs.

**Wright, D.F.**, Cole, S.R., and Ausich, W.I. 2018. Bayesian modeling of a comprehensive genus-level informal supertree reveals the diversification and evolutionary dynamics of Ordovician crinoids. IGCP 653 meeting (Ordovician research group).

Cole, S.R., **Wright, D.F.**, and Ausich, W.I. 2018. Phylogenetic community paleoecology of crinoid echinoderms from the Upper Ordovician (Katian) Brechin Lagerstätte. IGCP 653 meeting (Ordovician research group).

Cole, S.R., and **Wright, D.F.** 2018. A northern paleolatitude echinoderm fauna from the Mississippian Lisburne Group of arctic Alaska: preliminary paleontologic and stratigraphic characterization. Geological Society of America Abstracts with Programs (southeastern regional meeting).

2017 Wright, D.F. 2017. Quantifying the ecological components of phenotypic diversification during the "Age of Crinoids" with phylogenetic comparative methods. Geological Society of America Abstracts with Programs.

Cole, S.R., and **Wright, D.F.** 2017. Investigation of lower Mississippian strata from the northcentral Brooks Range of Alaska: preliminary stratigraphic and paleontologic characterization. Geological Society of America Abstracts with Programs.

**Wright, D.F** and Toom, U. 2017. New crinoids from the early Paleozoic of Baltica (Estonia) constrain the origin and Ordovician–Silurian diversification of flexible crinoids. Geological Society of America Abstracts with Programs.

Ausich, W.I., Cole, S.R., and **Wright, D.F.** 2017. Descriptive versus homologous terminology: describing the crinoid. Geological Society of America Abstracts with Programs.

**Wright, D.F.** 2017. Phenotypic innovation and adaptive constraints in the evolutionary radiation of Paleozoic crinoids (Echinodermata). Evolution 2017 (annual meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists) Full Program.

**Wright, D.F.** 2017. Time, stratigraphy, and fossil phylogenies: re-evaluating the use of temporal data in phylogeny reconstruction and trait evolution. Geological Society of America Abstracts with Programs (southeastern regional meeting).

Cole, S. R., **D.F. Wright**, W. I. Ausich, and J.M. Koniecki. 2017. New crinoids from the "Kirkfield Fauna" of the Bobcaygeon and Verulam Formations (Upper Ordovician), Ontario. Geological Society of America Abstracts with Programs (southeastern regional meeting).

2016 Wright, D.F. 2016. Bayesian tip-dating and tree-based analyses of morphologic evolution: an empirical assessment of rate heterogeneity and morphospace occupation among Paleozoic crinoids. Geological Society of America Abstracts with Programs.

Wright, D.F., W.I. Ausich, S.R. Cole, M.E. Peter, and E. C. Rhenberg. 2016. New phylogeny-based and Linnaean classifications of the Crinoidea (Echinodermata). Geological Society of America Abstracts with Programs.

Stigall, A.L., A.R. Lam, **D.F. Wright**, and J.E. Bauer. 2016. Biotic immigration events, speciation, and the accumulation of biodiversity in the fossil record. Geological Society of America Abstracts with Programs.

**Wright, D.F.** 2016. Phylogenetic evidence for adaptive radiation and elevated morphologic rates among stem lineage fossil crinoids. Evolution 2016 (annual meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists) Full Program, p 91.

2015 Stigall, A.L., J.E. Bauer, H.R. Brame, A.R. Lam, and D.F. Wright. 2015. Immigration, speciation, and biodiversity in Ordovician seas of Laurentia. Stratigraphy 12(2): 134-135. S.A. Leslie, D. Goldman, R.C. Ordorff, (eds.), 12th International Symposium on the Ordovician System, short papers and abstracts (online only).

**Wright, D.F.** 2015. Diversification dynamics of crown group Crinoidea (Echinodermata): testing adaptive radiation in comatulids using Bayesian Analysis of Macroevolutionary Mixtures. Geological Society of America Abstracts with Programs, 47(7), p. 765.

**Wright, D.F.** 2015. Testing the taxonomic structure of Paleozoic Pan-Cladid crinoids: a statistical phylogenetic approach using the fossilized birth-death process and Bayesian inference. Geological Society of America Abstracts with Programs, 47(7), p. 854.

Cole, S.R., **D.F. Wright**, W.I. Ausich, and J.M. Koniecki. 2015. Taxonomic re-evaluation of fossil crinoids from the Bobcaygeon and Verulam Formations (Upper Ordovician) near Brechin, Ontario. Geological Society of America Abstracts with Programs, 47(7), p. 764.

Stigall, A.L., **D.F. Wright**, A.R. Lam, and J.E. Bauer. 2015. Biotic immigration events, speciation, and biodiversity in Ordovician seas of Laurentia. Geological Society of America Abstracts with Programs, 47(7).

2014 Wright, D.F. 2014. Fossils, phylogenies, and models of trait evolution: examining phenotypic evolution in the Ordovician brachiopod genus *Glyptorthis*. Geological Society of America Abstracts with Programs, 46(6).

Cole, S.R., **D.F. Wright**, and J.R. Thompson, 2014. Brittle stars bid A Farewell to Arms: testing the link between echinoderm regeneration rates and seawater geochemistry. Geological Society of America Abstracts with programs, 46(6).

- 2013 Cole, S.R., **D.F. Wright**, and J.R. Thompson, 2013. A Farewell to Arms: testing the effect of seawater chemistry on echinoderm regeneration rates using brittle stars. Geological Society of America Abstracts with programs, 126(52).
- 2012 Wright, D.F. and A.L. Stigall, 2012. Using phylogenetic biogeography to link tectonics, speciation, and biotic invasion in Late Ordovician Laurentia. Geological Society of America Abstracts with Programs, 44 (7).

Stigall, A.L., **D.F. Wright**, and H.R. Brame. 2012. Integrating ecological and evolutionary responses of Late Ordovician brachiopods to environmental change. International Geoscience Programme (IGCP) Project 591, "The Early to Middle Paleozoic Revolution".

**Wright, D.F.** and A.L. Stigall, 2012. Paleobiogeography of the Late Ordovician Richmondian Invasion: inferring source regions from phylogenetic patterns. Geological Society of America Abstracts with Programs, 44 (5).

- 2011 Wright, D.F. and A.L. Stigall, 2011. Phylogenetic revision of the Ordovician brachiopod genus *Glyptorthis*. Geological Society of America Abstracts with Programs, 43 (5).
- 2010 Wright, D.F. and P.A. Selden, 2010. Trigonotarbid arachnids from the Pennsylvanian of Kansas. Geological Society of America Abstracts with Programs, 42 (9).