

Curriculum Vitae
Jeffrey R. Thompson

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**Personal
Details:**

Born: Columbus, Ohio, April 1, 1991

Marital Status: Single

Nationality: USA

Languages Spoken: English (Fluent); Spanish (Limited Working Proficiency)

**Professional
Appointments:**

Post-doctoral Research Associate, Baylor University, Waco Texas, USA
September 2018-Present

Education:

PhD, August, 2018, University of Southern California, Los Angeles California, USA
Dissertation Title: Integrated approaches to studying diversification through time using sea urchins as a model system

The Ohio State University, Columbus, Ohio, USA
Graduation: 2013 with Honors and Honors Research Distinction in Geological Sciences
Major: Geological Sciences
Minor: Evolutionary Studies
GPA: 3.69 *Cum Laude*

**Awarded
Fellowships:**

Oxford University Museum Visiting Research Fellowship, **To be Undertaken February 2019**

**Peer-reviewed
publications:**

Thompson, J. R., Mirantsev, G. V., Petsios, E., and Bottjer D. J. *In review*. Phylogenetic analysis of the Archaeocidaridae and Palaeozoic Miocidaridae (Echinodermata: Echinoidea) and the origin of crown group echinoids.

17. Thompson, J. R., and Bottjer, D. J. *In press* Quantitative analysis of substrate preference in Carboniferous stem group echinoids. *Palaeogeography, Palaeoclimatology, Palaeoecology*.

16. Thompson, J. R., and Ewin, T. A. M. *In press*. A new species of *Hyattechinus* (Echinoidea) from the type Devonian of the United Kingdom and implications for the distribution of Devonian proterocidarid echinoids. *Geological Magazine*.

15. Feng, X, Chen, Z. -Q., Benton, M. J., Wu, S., Bottjer, D. J., Thompson, J. R. *In press*. A diverse trackway-dominated marine ichnoassemblage from the Lower Triassic in the northern Paleo-tethys: ichnology and implications for biotic recovery. *Palaeogeography, Palaeoclimatology, Palaeoecology*.

14. Pietsch, C., Ritterbush, K., **Thompson, J. R.**, Petsios, E., Bottjer D. J. *In press*. Evolutionary models in the Early Triassic Marine Realm. *Palaeogeography, Palaeoclimatology, Palaeoecology*.
13. Petsios, E., **Thompson, J. R.**, Pietsch, C., Bottjer D. J. *In press*. Biotic impacts of temperature before, during, and after the end-Permian extinction: a multi-metric and multi-scale approach to modeling extinction and recovery dynamics. *Palaeogeography, Palaeoclimatology, Palaeoecology*.
12. **Thompson, J. R.**, Hu, S.-X., Zhang, Q-Y, Petsios, E., Cotton, L. J., Huang, J.-Y., Zhou, C.-y, Wen, W., Bottjer, D. J. 2018. A new stem group echinoid from the Triassic of China leads to a revised macroevolutionary history of echinoids during the end-Permian mass extinction. *Royal Society Open Science*. Vol. 5, 1711548.
11. **Thompson, J. R.**, Petsios, E., Bottjer, D. J. 2017. A diverse assemblage of Permian echinoids (Echinodermata, Echinoidea) and implications for character evolution in early crown group echinoids. *Journal of Paleontology*, Vol. 91, No. 4, pp. 767-780.
10. **Thompson, J. R.**, Erkenbrack, E. M., Hinman, V. F., McCauley, B. S., Petsios, E., Bottjer D. J. 2017. Paleogenomics of echinoids reveals an ancient origin for the double-negative specification of micromeres in sea urchins. *Proceedings of the National Academy of Sciences*, Vol. 114, No. 23, pp. 5870-5877.
9. **Thompson, J. R.**, and Denayer, J. 2017. Revision of echinoids from the Tournaisian (Mississippian) of Belgium and the importance of disarticulated material in assessing palaeodiversity. *Geological Journal*, Vol. 52, No. 4, pp. 529-538.
8. **Thompson, J. R.** and Ausich, W. I. 2016. Facies distribution and taphonomy of echinoids from the Fort Payne Formation (late Osagean, early Viséan, Mississippian) of Kentucky. *Journal of Paleontology*, Vol. 90, No. 2, pp. 239-249.
7. Erkenbrack, E. M., Ako-Asare, K., Miller, E., Tekelenburg, S., **Thompson, J. R.**, Romano, L. 2016. Ancestral state reconstruction by comparative analysis of a GRN kernel operating in echinoderms. *Development Genes and Evolution*, Vol. 226, No. 1, pp. 37-45.
6. **Thompson, J. R.**, Petsios, E., Davidson, E. H., Erkenbrack, E. M., Gao, F., and Bottjer, D. J. 2015. Reorganization of sea urchin gene regulatory networks at least 268 million years ago as revealed by oldest fossil cidaroid echinoid. *Scientific Reports*, Vol. 5, 15541.
5. Corsetti, F. A., Ritterbush, K. A., Bottjer, D. J., Greene, S. E., Ibarra, Y., Yager, J. A., West, A. J., Berelson, W. M., Rosas, S., Becker, T. W., Levine, N. M., Loyd, S. J., Martindale, R. C., Petryshyn, V. A., Carroll, N. R., Petsios, E., Piazza, O., Pietsch, C., Stellmann, J. L., **Thompson, J. R.**, Washington, K. A., Wilmeth, D. T. 2015. Investigating the paleoecological consequences of supercontinent breakup: Sponges clean up in the Early Jurassic. *The Sedimentary Record* Vol. 13, No. 2, pp. 4-10.
4. Gao, F.¹, **Thompson, J. R.**¹, Petsios, E., Erkenbrack, E., Moats, R. A., Bottjer, D. J., and Davidson, E. H. 2015. Juvenile skeletogenesis in anciently diverged sea urchin clades. *Developmental Biology*, Vol. 400, No. 1, pp. 148-158
3. **Thompson, J. R.**, Crittenden, J., Schneider, C. L., and Bottjer, D. J. Lower Pennsylvanian (Bashkirian) echinoids from the Marble Falls Formation, San Saba, Texas, USA. 2015. *Neues Jahrbuch für Geologie und Paläontologie Abhandlung*, Vol. 276, No. 1, pp. 79-89.

2. **Thompson, J. R.**, and Ausich, W. I. 2015. Testing for escalation in Lower Mississippian camerate crinoids. *Paleobiology*, Vol. 41, No. 1, pp. 89-107.

1. **Thompson, J.R.**, Ausich, W.I., and Smith L. 2013. Echinoderms from the Lower Devonian (Emsian) Malvinokaffric Realm of Bolivia. *Journal of Paleontology*, Vol. 87. No. 1, pp. 166-175.

¹ denotes co-first authorship.

**Published
abstracts:**

Thompson, J. R., and Erkenbrack, E. M. 2017 Phylogenetics and the reconstruction of ancient gene regulatory networks. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 49. No. 6. Talk.

Nebelsick, J. H., and **Thompson, J. R.** 2017. Paleoecology and biotic controls of mixed carbonate-siliciclastic sediments: A case study from the echinoid dominated Miocene button beds of central California. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 49. No. 6. Talk.

Petsios, E., **Thompson, J. R.**, Pietsch, C., and Bottjer D. J. 2017. Biotic impacts of temperature before, during, and after the end-Permian extinction: a multi-metric and multi-scale approach to modeling extinction and recovery dynamics. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 49. No. 6. Poster

Thompson, J. R., Petsios, E., and Bottjer, D. J. 2016. Phylogenetic analysis of the Miocidaridae and Triadotiaridae with implications for the evolution of early post-Paleozoic echinoids. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 48. No. 7. Poster.

Thompson, J. R., Erkenbrack, E. M., Petsios, E., and Bottjer, D. J. 2016. Paleogenomics of echinoids and the evolution of echinoid gene regulatory networks. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 48. No. 7. Talk.

Erkenbrack, E. M., and **Thompson, J. R.** Embryos and ancestors: Reconstructing gene regulatory networks and embryonic development in ancestral echinoids. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 48. No. 7. Talk.

Thompson, J. R., Petsios, E., and Bottjer, D. J. 2015. Using fossils and phylogenies to date the timing of key gene regulatory network innovations: An example using echinoids. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 47. No. 7 p. 854. Talk.

Thompson, J. R. and Bottjer, D. J. 2015. Palaeoenvironmental setting and substrate affinity in Carboniferous echinoids. Geological Society of America. Geological Society of America *Abstracts with Programs*. Vol. 47. No. 7 p. 764. Poster.

Thompson, J. R. and Bottjer, D. J. 2015. Palaeoenvironmental controls on the distribution of Carboniferous Echinoids. pp. 181-183 in *Progress in Echinoderm Palaeobiology*. S. Zamora and I. Rábano (eds). Talk.

- Thompson, J. R.**, Petsios, E., and Bottjer, D. J., 2014. Phylogenetic analysis of the Archaeocidaridae (Echinoidea) and implications for the evolution of crown group echinoids, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 46. No. 6, p. 79. Talk.
- Petsios, E., **Thompson, J. R.**, and Bottjer, D. J. 2014. Hidden Triassic echinoid diversity; Exploring lineages with no fossil record, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 46. No. 6, p. 79. Talk.
- Cole, S. R., Wright, D. F. and **Thompson, J. R.**, 2014. Brittle stars bid a farewell to arms: Testing the link between echinoderm regeneration rates and seawater chemistry, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 46. No. 6, p. 79. Talk.
- Bottjer, D. J., Pietsch, C., Ritterbush, K. A., Petsios, E. and **Thompson J. R.** 2014. Evolution in the Early Triassic, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 46 No. 6, p. 419. Talk.
- Thompson, J. R.**, Petsios, E., and Bottjer, D. J., 2014. A new basal cidaroid (Echinoidea) from the Middle Permian of North America, 10th North American Paleontological Convention, Paleontological Society special publications Vol. 13. p. 17. Poster.
- Cole, S. R., Wright, D. F. and **Thompson, J. R.**, 2013. A farewell to arms: Testing the effect of seawater chemistry on echinoderm regeneration rates using brittle stars, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 45. No. 7, p. 323. Poster
- Thompson, J. R.**, and Ausich, W. I., 2013. Escalation and speciation in Lower Mississippian camerate crinoids, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 45. No. 7, p. 682. Talk
- Thompson, J. R.**, and Ausich, W.I., 2012. Microevolutionary response in Lower Mississippian camerate crinoids to predatory pressures, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 44. No. 7, p. 137. Talk
- Thompson, J. R.**, 2012. A new method for evaluating the convexity of morphological characteristics, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 44, No. 5, p. 67. Poster
- Thompson, J. R.**, and Ausich, W. I., 2011. Four new crinoids from the Lower Devonian of Bolivia, Geological Society of America, Geological Society of America *Abstracts with Programs*. Vol. 43, No. 5, p. 85. Poster
- Ausich, W. I., and **Thompson, J. R.**, 2011. Three new crinoids from the Lower Devonian of Bolivia, Geological Society of America *Abstracts with Programs*. Vol. 43, No. 1, p. 164. Poster.

**Invited
Presentations:**

- Thompson, J. R.** 2018. Unraveling the early evolution of sea urchins: Mass extinctions, gene regulatory networks, and the origin of crown group echinoids. University College London, UK

Thompson, J. R. 2018. Unraveling the early evolution of sea urchins: Mass extinctions, gene regulatory networks, and the origin of crown group echinoids. Paleobiology Discussion Group Weekly Seminar Series. University of Bristol, UK.

Thompson, J. R. 2018. Integrated approaches to understanding diversification through time using sea urchins as a model system. Seminar Series. Los Angeles County Museum of Natural History, USA.

Thompson, J. R. 2017. Sea urchins and the Paleozoic-Mesozoic transition: Mass extinctions, gene regulatory networks and the origin of the crown group echinoids. Paleontology Seminar, The Natural History Museum, London, UK.

Thompson, J. R. Petsios, E. and Bottjer, D. J. 2014. A prelude to the present: Paleontological perspectives on 450 million years of echinoid evolution, Developmental Biology of the Sea Urchin Meeting XXII.

Popular science articles:

Thompson, J.R. 2015. Patterns in Palaeontology: Palaeogenomics. *Palaeontology Online*, Vol. 5, Article 11, pp. 1-9.

Book reviews:

Thompson, J. R. 2016. "British Jurassic regular echinoids. Part 1, Introduction, Cidaroida, Echinothurioida, Aspidodiadematoidea, and Pedinoida" by Andrew B. Smith. *Geological Journal*, Vol. 51, No. 6, pp. 968.

Thompson, J. R. 2015. "The British Devonian Crinoidea: Part 1, Introduction and Camerata" by Stephen K. Donovan and Fiona E. Fearnhead. *Geological Journal*, Vol. 50, No. 4, pp. 550-551.

Thompson, J. R. 2013. "The British Silurian Crinoidea: Part 3, Addendum to Parts 1 and 2, Camerata and columnals" by Stephen K. Donovan, Rosanne E. Widdison, David N. Lewis, and Fiona E. Fearnhead. *Geological Journal*, Vol. 49, No. 4-5, pp. 534-535.

Service to the community:

-USC Young Researchers Program, Executive board. September 2013-2015. Visited schools and in Central Los Angeles Area to encourage participation from high school students in collegiate level research.

-Educational Outreach through Orton Geological Museum, 2010-2013. Gave talks and participated in outreach to teach children and local families about geology.

-Educational Outreach through Ohio State Museum of Biological Diversity, 2011-2012

-I have co-chaired topical sessions at the annual Geological Society of America meeting on the following topics:

Echinoderm Paleobiology: Phylogenetics, morphology, and evolutionary paleoecology. 2014, Vancouver. With David Wright and Lena Cole

Echinoderm Paleobiology: Diversity, form, and phylogeny. 2015, Baltimore. With David Wright and Lena Cole.

Evolution, Development, and Paleogenomics. 2016, Denver. With David Bottjer

Paleogenomics and Geobiology. 2017. Seattle. With David Bottjer

-I co-chaired the weekly USC Earth Science Departmental Paleo/Environment Seminar from August 2017 to May 2018. With Dylan Wilmeth.

-I have peer-reviewed articles for the following journals:

Geology (1)

Geological Journal (1)

Proceedings of the Geologists' Association (4)

Proceedings of the Yorkshire Geological Society (1)

Journal of Paleontology (2)

Palaeogeography, Palaeoclimatology, Palaeoecology (1)

Acta Palaeontologica Polonica (1)

Annals of Marine Biology and Research (1)

BMC Evolutionary Biology (1)

Quaternary International (1)

**Research
presentations
without published
abstracts:**

Thompson, J. R. 2017. Using phylogenies and fossils to constrain the timing of the evolution of echinoderm gene regulatory networks. London Echinoderm Network: Neurobiology, Evolution, Regeneration, and Development Meeting. Talk.

Thompson, J. R., and Erkenbrack, E. M. 2017. Reconstructing Ancestral Development in Echinoderm Evolutionary Developmental Biology. Developmental Biology of the Sea Urchin XXIV. Poster

Thompson, J. R., Petsios, E., and Bottjer, D. J., 2015. Using Fossils and Phylogenies to date the timing of key gene regulatory network innovations in echinoids, The Palaeontological Association 59th Annual Meeting. Talk

Thompson, J. R., and Bottjer, D. J. 2015. Testing for palaeoenvironmental preference and substrate affinity in Carboniferous echinoids. The Palaeontological Association 59th Annual Meeting. Poster

Thompson, J. R., Petsios, E., and Bottjer, D. J., 2015. Using Fossils and Phylogenies to date the timing of key gene regulatory network innovations: an example using sea urchins, Developmental Biology of the Sea Urchin XXIII. Talk

Thompson, J.R., 2012 Microevolutionary response in Lower Mississippian camerate crinoids to predatory pressures, The Ohio State University Fall Undergraduate Research Forum. Poster

Thompson, J.R., 2012 Microevolutionary response in Lower Mississippian camerate crinoids to predatory pressures, Shell Undergraduate Research Experience Poster Session. Poster

Thompson, J.R., 2012, A new method for evaluating the convexity of morphological characteristics, Denman Undergraduate Research Forum. Poster

Thompson, J.R., 2012, A new method for evaluating the convexity of morphological characteristics, Natural and Mathematical Sciences Undergraduate Research Forum. Poster

Thompson, J.R., 2011, Three new crinoids from the Lower Devonian of Bolivia, Denman Undergraduate Research Forum. Poster

Thompson, J.R., 2011, Three new crinoids from the Lower Devonian of Bolivia, Natural and Mathematical Sciences Undergraduate Research Forum. Poster

Awarded grants:

2018. University of Southern California Paleosciences Research Consortium Student award **\$500.00**

2016. Geological Society of America Student Grant In Aid **\$2500 & Outstanding Mention**

2016. Paleontological Society Student Research Grant N. Gary Lane Award **\$800**

2015. Palaeontological Association Student Travel Grant to Attend Progress in Echinoderm Paleontology Meeting Fieldtrip **€650**

2015. National Science Foundation Graduate Research Fellowship. **Honorable Mention.**

2014. American Association of Petroleum Geologists Grant in Aid. **\$3000.**

2014. National Science Foundation Graduate Research Fellowship. **Honorable Mention.**

2013, Sigma Xi/OSU Undergraduate Research Office Grant in Aid of Research, **\$300.**

2011, The Ohio State University Arts & Sciences Undergraduate Research Scholarship, **\$1200.**

Awards:

2017. University of Southern California Dornsife College Fellowship.

2015. USC Department of Earth Sciences Departmental Teaching Award.

2013. University of Southern California Keck Fellowship.

2013. Winner Ohio State Natural and Mathematical Sciences Research Forum.

2011. Ohio State Board of Trustees Student Recognition Award, August.

2012. 2nd Place Winner at Denman Undergraduate Research Forum.

2011. 2nd Place Winner at Denman Undergraduate Research Forum.

2012. Ohio State School of Earth Sciences Undergraduate Book Award recipient.

2011-2012. Lieberman Scholarship recipient.

2011-2013. The Ohio State University Honors College, Member.

2009-2013. Ohio State Provost Scholarship recipient.

2009-2013. Ohio State Biological Sciences Scholars Program, Member.

Fall 2009, Autumn 2010-Spring 2011, Winter 2012. Ohio State Dean's List.

Lab experience:

Visited seven museums in the United States and twenty-one in western Europe to gather data for dissertation with total amount of in-museum working days totaling over 100 days.

Worked in the lab of Eric Davidson (CalTech) cloning genes, making RNA probes and performing *in situ* hybridization experiments on developing juvenile sea urchins. June 2013.

Worked in the lab of Eric Davidson (CalTech) cloning genes and performing quantitative pcr to examine temporal gene expression in sea urchin embryos. August-September 2014.

Performed RNA extractions from embryonic sea urchins for rna-seq to determine embryonic transcriptome of *Centrostephanus coronatus*. August 2014.

Field experience:

- Four days performing field work for dissertation collecting fossil sea urchins in Northern England with Dr. S. K. Donovan. Summer 2017.
- Two weeks performing field work on the sedimentology and taphonomy of Miocene-aged marine deposits in Central California with Dr. James Nebelsick. Fall 2016 and Spring 2017.
- Two weeks performing field work for collaborative research project with Dr. William Foster and Dr. Alexa Sedlacek in Triassic rocks in Nevada and Utah. Spring 2016.
- Five days performing field work as a field assistant to Elizabeth Petsios in Northern Italy. Summer 2014.
- Two weeks performing field work for dissertation working on Pennsylvanian and Lower Triassic rocks in Nevada and California. Autumn 2013 and Spring 2014.
- Two weeks of field hand experience in Estonia, July 2012. Worked as a field hand to paleontologist William Ausich looking for and recovering fossils in Estonia for National Geographic Society funded research.
- Ohio State Geological Sciences Field Camp, Summer 2011. Six Week course of Geological Mapping in Central Utah

Computational Experience:

- I have extensive experience (five years+) using the statistical package and programming language R, and have used this in most of my research projects to produce figures and write scripts for statistical analysis including parametric and nonparametric tests, bootstrapping, Bayesian inference, and comparative phylogenetics.
- I attended the Workshop on Molecular Evolution at the Marine Biology Laboratory at Woods Hole to gain enhanced familiarity using BLAST, Multiple Sequence Alignment, Phylogenetic Inference in MrBayes, PAUP*, and RAxML and Divergence Time Estimation in PhyloBayes and MCMCTREE. July 2016
- I have experience with both MPI and non-MPI computing on multimode Linux computing clusters.

Work experience:

- Department of Earth Sciences, University of Southern California, Teaching Assistant, January-May 2017
Description: I taught three sections per week of the laboratory portion of an introductory non-major's Earth History course.
- Department of Earth Sciences, University of Southern California, Teaching Assistant, August-December 2016
Description: I designed the curriculum, taught, and graded assignments for the once-weekly laboratory portion of an upper division Earth Science major's course, Paleontology.
- School of Earth Sciences, Ohio State, Teaching Assistant, August-December 2012.
Description: I lead labs, conducted and oversaw experiments, and graded assignments in a non-science major's introductory Earth Science course.
- Shell Undergraduate Research Intern, June-August 2012.
Description: Performed independent research funded by Shell E & P.
- School of Earth Sciences, Ohio State, Research Assistant, 2010-2011.

Description: Attained and organized data regarding Paleozoic crinoids for use in the NSF funded *Assembling the Echinoderm Tree of Life* International Research Collaborative. Work Supervised by Dr. William I. Ausich.

Byrd Polar Research Center, Ohio State, Research Assistant, 2010.

Description: Analyzed images of glaciers using ENVI geospatial imaging software and MATLAB computer programming software to edit Landsat images and track glacial advances and retreats. Work Supervised by Dr. Ian Howat.

Professional Memberships:

Geological Society of America
Paleontological Society
Palaeontological Association
Society for Developmental Biology

Referees:

Prof. David J. Bottjer
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Dr. Andrew B. Smith
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Natural History Museum
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