JAMES P. BERNOT
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Washington, DC 20052
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Education:

2015-present **PhD**
George Washington University Institute for Biomedical Sciences
Primary advisor: Dr. Keith Crandall
Research interests: Parasite evolution, host-parasite associations, phylogenetics, molecular systematics, comparative transcriptomics, morphological evolution
Advanced to candidacy February 20, 2018

2012–2015 **MS**
University of Connecticut, Ecology and Evolutionary Biology Department
Primary advisor: Dr. Janine Caira
Research projects: Taxonomy, systematics, phylogenetics, and evolutionary ecology of tapeworms of triakid sharks

2008–2012 **BS** Summa Cum Laude
University of Connecticut
Major: Biological Sciences, Minor: Ecology and Evolutionary Biology
Honors thesis advisor: Dr. Janine Caira
Honors thesis: Cestode morphology as predicted by elasmobranch relationships

Access to research data:

ORCID ID	http://orcid.org/0000-0002-1769-8631
Google Scholar	https://scholar.google.com/citations?user=9sa6KNwAAAAJ&hl=en
Research Gate	https://www.researchgate.net/profile/James_Bernot
Publons	https://publons.com/author/1181520/james-p-bernot#profile

Publications:

In review Maynard, T., Horvath, A., **Bernot, J. P.**, Karpinksi, B., Tavares, A. L. P., Zeng, A. S. Q., Spurr, L., Olender, J., Moody, S. A., Fraser, C. M., LaMantia, A. S., Lee, N. H. (**in review**). Transcriptional dysregulation in developing trigeminal sensory neurons in the LgDel mouse model of DiGeorge 22q11.2 Deletion Syndrome. 23 pages.

Sein, J., Spurr, L., Bousounis, P., Prashant, N. M., Liu, H., Alomran, N., **Bernot, J. P.**, Ibeawuchi, H., Reece-Stremtan, D., Horvath, A. (**in review**). RsQTL: correlation of expressed SNVs with splicing using RNA-sequencing data. 2 pages.

2020 Boxshall, G. A., **Bernot, J. P.**, Barton, D. P., Diggles, B. K., Yong, R. Q.-Y., Atkinson-Coyle, T., Hutson, K. S. (2020). Parasitic copepods of the family Lernanthropidae Kabata, 1979 (Copepoda: Siphonostomatoida) from Australian fishes, with descriptions of seven new species. *Zootaxa.* https://doi.org/10.11646/zootaxa.4736.1.1

Fujiogi, M., Camargo Jr., C. A., **Bernot, J. P.**, Freishtat, R. J., Harmom, B., Mansbach, J. Castro-Nallar, E., Perez-Losada, E., Hasegawa, K. (2020). In infants with severe bronchiolitis: dual-transcriptomic profiling of nasopharyngeal microbiome and host response. *Pediatric Research*. https://doi.org/10.1038/s41390-019-0742-8

2019 **Bernot, J.P.** and Caira, J. N. (2019). Site specificity and attachment mode of *Symcallio* and *Calliobothrium* species (Cestoda: "Tetraphyllidea") in smoothhound sharks of the genus *Mustelus* (Carcharhiniformes: Triakidae). *PeerJ*. http://doi.org/10.7717/peerj.7264

Bernot, J.P. and Boxshall, G. A. (2019). Two new species of parasitic copepods from the genera *Nothobomolochus* and *Unicolax* (Cyclopoida: Bomolochidae) from Australian waters. *PeerJ*. http://doi.org/10.7717/peerj.6858

2017 Hughes, L.C., Somoza, G.M., Nguyen, B.M., **Bernot, J.P.,** González-Castro, M., Díaz de Astarloa, J.M., and Ortí, G. (2017). Transcriptomic differentiation underlying marine-to-freshwater transitions in the South American silversides *Odontesthes argentinensis* and *O. bonariensis* (Atheriniformes). *Ecology and Evolution*. http://dx.doi.org/10.1002/ece3.3133

Bernot, J.P. and Boxshall, G.A. (2017). A new species of *Pseudopandarus* Kirtisinghe, 1950 (Copepoda: Siphonostomatoida: Pandaridae) from sharks of the genus *Squalus* L. in New Caledonian waters. *Systematic Parasitology*, 94: 275–291. 10.1007/s11230-016-9692-2

2016 **Bernot, J.P.**, Caira, J.N. and Pickering, M. (2016). Diversity, phylogenetic relationships, and host associations of *Calliobothrium* and *Symcallio* (Cestoda: "Tetraphyllidea") parasitizing triakid sharks. *Invertebrate Systematics*, 30: 616–634. 10.1071/IS15040

2015 **Bernot, J.P.**, Caira, J.N. and Pickering, M. (2015). The dismantling of *Calliobothrium* (Cestoda: Tetraphyllidea) with erection of *Symcallio* n. gen. and description of two new species. *The Journal of Parasitology*, 101: 167–181. 10.1645/14-571.1

Grants, awards, and honors

2020 Cosmos Scholar. Cosmos Club Foundation. "Towards a phylogenomic framework for copepod diversity and evolution."

2019 Student Travel Award. 14th International Conference on Copepoda. Kruger National Park, South Africa.

2019 Student Travel Award. The American Society of Parasitologists Annual Meeting. Rochester, MN.

2019 Doctoral student travel award to present at The American Society of Parasitologists Annual Meeting. The Institute for Biomedical Sciences at George Washington University.

2019 Student Travel Award. The Crustacean Society mid-year meeting, Hong Kong.

2018 American Genetics Association travel grant to attend Invertebrate Genomics Alliance Conference and Workshop (GIGA III). Curacao.

2017 Student presentation award. 13th International Conference on Copepoda. Cabrillo Marine Aquarium LA, USA.

2017 Student Travel Award. The American Society of Parasitologists Annual Meeting. San Antonio, TX.

2017 Edward and Phyllis Reed Fellowship for Copepod Research (Smithsonian NMNH).

2017 George Washington University Knowledge in Action Career Internship Fund.

2016 Society for Systematic Biology Mini-ARTS Grant (Advancing Research in Taxonomy and Systematics).

2016 American Museum of Natural History Lerner-Gray Grant for Marine Research.

2016 Honorable Mention, Best Student Presentation Helminthological Society of Washington.

2014 Student Travel Award. The American Society of Parasitologists Annual Meeting. New Orleans, LA.

2013 Best Student Presentation. New England Association of Parasitologists.
2012 Best Student Presentation. Helminthological Society of Washington.
2011 Drotch Scholarship, University of Connecticut.

Invited presentations:

2020 **Bernot, J. P.** "Copepod taxonomy and phylogeny and a new crustacean phylogenomic analysis." Smithsonian Environmental Research Center. Edgewater, MA, USA. January 16, 2020.

2019 **Bernot, J. P.** "Phylogenomics and genome size evolution: exploring the evolution of parasitism in copepods." James Madison University Department of Biology Seminar Series. Harrisonburg, VA, USA. September 6, 2019.

Bernot, J. P., Wyngaard, G. A., Boxshall, G. A., and Crandall, K. C. "Parasitic copepods: diversity, phylogeny, and genome size evolution" The Crustacean Society. Evolution and Ecology of Parasitic and Symbiotic Crustaceans Symposium. Hong Kong. May, 2019.

2017 **Bernot, J. P.**, Crandall, K. C., and Boxshall, G. A. "Towards a Synthetic Tree of the Copepoda" 13th International Conference on Copepoda. LA, USA. July 2017.

Bernot, J. P. and Crandall, K. C. "The Open Tree of Life: integrations with WoRMS" WoRMS Host-Parasite Databasing Workshop. Flanders Marine Institute, Oostende, Belgium. April 2017.

Conference presentations:

2019 **Bernot, J. P.**, Wyngaard, G. A., Boxshall, G. A., and Crandall, K. C. ''Copepod phylogenomics reveals surprising relationships in the broader Crustacea: insights, intrigue, and patterns of genome size evolution" American Society of Parasitologists. Rochester, MN. June, 2019.

2018 **Bernot, J. P.** and Crandall, K. C. "Copepod phylogenomics: orthology inference for target-capture marker development" Third Global Invertebrate Genomics Alliance Research Conference. Curaçao. October, 2018.

Bernot, J. P. and Crandall, K. C. "Get more from publicly available data: ortholog development for target-capture phylogenomics in copepods" American Society of Parasitologists. Cancun, Méx. June 2018.

Bernot, J. P., Boxshall, G. A., and Crandall, K. C. "Copepod phylogeny and systematics: the current state and future directions" 9th International Crustacean Congress. Washington, DC, USA. May 2018.

2017 **Bernot, J. P.**, Crandall, K. C., and Boxshall, G. A. "Copepod phylogeny in the Open Tree of Life: estimating the number of transitions to parasitism" No Bones Invertebrate Zoology Seminar. Smithsonian NMNH. Aug. 2017.

Bernot, J. P., Crandall, K. C., and Boxshall, G. A. "Evolution of parasitism in copepods: a phylogenetic approach using the Open Tree of Life" American Society of Parasitologists. San Antonio, TX. July 2017.

2016 **Bernot, J. P.** and Boxshall, G. A. "A new species of *Pseudopandarus* (Copepoda: Siphonostomatoida; Pandaridae) from sharks of the genus *Squalus* in New Caledonian waters" International Workshop on Symbiotic Copepoda. James Cook University, Australia. July 2016.

Bernot, J. P., Rosa, B. A., Mitreva, M., and Hawdon, J. M. "Utility of genomic and RNA-Seq data sets to identify putative host recognition receptors in hookworms" Helminthological Society of Washington. George Washington University, Washington, DC. April 2016.

2015 **Bernot, J. P.** and Caira J. N. "Tapeworms in *Mustelus* spp. in the Atlantic: from 1819–2015" UConn Graduate Student Symposium. University of Connecticut. Storrs, CT. March 2015.

2014 **Bernot, J. P.**, Caira, J. N., and Pickering-Villa, M. "*Calliobothrium* (Cestoda: Tetraphyllidea) in *Mustelus* (Carcharhiniformes: Triakidae) of the Atlantic Ocean" American Society of Parasitologists. New Orleans, LA. July 2014.

Bernot, J. P., Caira, J. N., and Pickering-Villa, M. "Shark Tapeworms: why do they live where they live? UConn Graduate Student Symposium" University of Connecticut. Storrs, CT. March 2014.

2013 **Bernot, J. P.** and Caira, J. N. "Site Specificity of Tapeworms of the Genus *Calliobothrium* in the Spiral Intestine of Smoothhound Sharks (Carcharhiniformes: Triakidae)" American Society of Parasitologists. Quebec City, Canada. June 2013.

Bernot, J. P. and Caira, J. N. "Site Specificity of Tapeworms of the Genus *Calliobothrium* in the Spiral Intestine of Smoothhound Sharks (Carcharhiniformes: Triakidae). New England Association of Parasitologists" Yale University. New Haven, CT. April 2013.

2012 **Bernot, J. P.**, Caira, J. N., and Pickering, M. "David and Goliath: examination of additional complexity in the genus *Calliobothrium* (Cestoda: Tetraphyllidea) in smoothhound sharks of the genus *Mustelus* (Carcharhiniformes: Triakidae)" American Society of Parasitologists. Richmond, VA. July 2012.

Bernot, J. P., Caira, J. N., and Pickering, M. "Cestode morphology as predicted by elasmobranch relationships: *Calliobothrium* in smooth hound sharks of the genus *Mustelus*" Helminthological Society of Washington. Quinnipiac University. Hamden, CT. April 2012.

2011 **Bernot, J. P.**, Caira, J. N., and Pickering, M. "Cestode morphology as predicted by elasmobranch relationships: *Calliobothrium* in smooth hound sharks of the genus *Mustelus*" New England Association of Parasitologists. Salve Regina University. Newport, RI. Nov. 2011.

Bernot, J. P., Caira, J. N., and Pickering, M. "Cestode morphology as predicted by elasmobranch relationships: *Calliobothrium* in smooth hound sharks of the genus *Mustelus*" 7th International Workshop on Cestode Systematics. University of Kansas. Lawrence, KS. July 2011.

Bernot, J. P., Caira, J. N., and Pickering, M. "Cestode morphology as predicted by elasmobranch relationships: *Calliobothrium* in smooth hound sharks of the genus *Mustelus*" American Society of Parasitologists. Anchorage, AK. June 2011.

Outreach and Public Engagement:

2020 Interviewed for PhDetails blog on graduate student life. http://phdetails.blogspot.com/2020/01/83-jimmy-bernot.html

2019 Scientist representative for Smithsonian Natural History Museum "Congressional Science Night". Invited by Smithsonian Department of Invertebrate Zoology to discuss science, research, and collections with members of Congress, their families, and their professional staff at a special event for science engagement with Congress. July 17, 2019. Smithsonian Museum of Natural History. https://twitter.com/JP_Bernot/status/1151639577746169856

2019 Guest speaker on parasite biology, research, and career options at Temple High School in Arizona on Parasite Day. Video call, presentation, and Q&A for 2 12th grade science classes. March 4, 2019.

2018 "Computational Biology" Discussed research in the Computational Biology Institute in Introduction to Medicine, a college-level course for high school students. George Washington University. July 3, 2018.

2018 Crustacean scientist, ocean hall Invertebrate Zoology Department public outreach. Crustacean specimen displays and Q&A. Smithsonian National Museum of Natural History. April 5, 2018.

2016 Meet-a-scientist "ocean expert" for World Ocean Day at Smithsonian National Museum of Natural History. "Copepods: what reefs eat, and what is eating them." Topic included: food webs, invertebrate diversity, specimen display, Q&A. Smithsonian Museum of Natural History. June 8, 2016.

2016 Served as expert for live Q&A on parasites in Smithsonian "ScienceHow?" Webcast. Broadcast designed to meet middle school science curriculum. Online attendance > 2,000 students. Smithsonian Museum of Natural History. May 19, 2016.

2016 Interviewed for BBC documentary on CRISPR-CAS9 and research ethics. George Washington University. Washington, DC. 19 April, 2016.

2016 Photographer for Smithsonian Insider article: In face of mass extinctions Smithsonian's Global Genome Initiative quietly saves world's DNA. 5 April, 2016.

2015 Prepared specimens and worked with a photographer to design an exhibit on tapeworms in the Connecticut State Natural History Museum

2014 Consulted with Gene Helfman and George Burgess for the publication of the book Sharks: The Animal Answer Guide.

2014 Designed and presented a curriculum on parasites for 1st and 4th grade students. Franklin Elementary School Franklin, CT.

2013 Designed and presented a curriculum on parasites for 3rd and 4th grade students. Franklin Elementary School Franklin, CT.

Teaching experience:

Instructor on record:

2015 Spring	Current Topics in Ecology and Evolution	University of Connecticut

Teaching assistant:

2019 Fall	Parasitology (laboratory)	George Washington University
2018 Fall	Parasitology (laboratory)	George Washington University
2017 Fall	Parasitology (laboratory)	George Washington University
2016 Fall	Parasitology (laboratory)	George Washington University
2015 Spring	Evolutionary Biology	University of Connecticut
2014 Fall	Animal Parasitology (laboratory)	University of Connecticut
2014 Spring	Evolutionary Biology	University of Connecticut
2013 Fall	General Ecology (discussion)	University of Connecticut
2013 Spring	Principles of Biology II (laboratory)	University of Connecticut
2012 Fall	Principles of Biology II (laboratory)	University of Connecticut

Other courses taught:

2017–present	Bimonthly informatics tools training courses	George Washington University
Feb. 2014	Dental Admissions Test Prep Course Designed curriculum and led intensive 7-hour review sessions of Biological Science material on the Dental Admissions Test for undergraduates.	University of Connecticut
March 2013	Dental Admissions Test Prep Course	University of Connecticut

Teaching training

Fall 2019 UNIV 0250 Graduate Assistant Certification Course (1 credit). George Washington University

Fall 2013 EDCI 5830 Fundamentals of Teaching and Learning (3 credits). University of Connecticut.

Spring 2013 EEB 5830 Teaching Methods (1 credit). University of Connecticut.

Lectures in undergraduate courses

2020 "Crustacean diversity and current topics in crustacean research" in Animal Diversity. Meredith College, NC.

2019 "Parasitic crustacean diversity and evolution" in Parasitology. George Washington University, Washington, DC.

"Biology and art in the description of species" in Biology and Art. James Madison University, VA.

2018 "The parasitic Crustacea" in Parasitology. George Washington University

2017 "Parasitic copepods" in Parasitology. George Washington University.

2015 "Genetic conflict and levels of selection" in Evolutionary Biology. University of Connecticut.

2014 "Parasitic copepods: economically important species, evolutionary trends, and life-cycle modifications" in Introduction to Animal Parasitology. University of Connecticut.

2014 "Levels of selection (multilevel selection theory)" in Evolutionary Biology. University of Connecticut.

2013 "Opening a can of worms: tapeworms of elasmobranchs" in Topics in Modern Biology. University of Connecticut.

2012 "Opening a can of worms: my experience with parasites" in Topics in Modern Biology. University of Connecticut.

Mentorship

2019+ Gabriella Ruby. George Washington University. Undergraduate student and Masters student in lab of Dr. John Hawdon. Project: Differential GPCR expression across life stages of the hookworm *Ancylostoma ceylanicum.*

2017-18 Chaimae Samtal. George Washington University. Visiting Fullbright PhD student with Dr. Keith Crandall. Research project: Prostate cancer genetics in Moroccan men.

Professional service:

Appointments:

2015-present Research fellow. Smithsonian National Museum of Natural History Department of Invertebrate Zoology

2017-present REDCap administrator and trainer. CTSI-CN: A Partnership between Children's National Medical Center and George Washington University

2017-present Taxonomic editor World Registry of Marine Species (WoRMS) Copepoda: Bomolochidae and Parasite Portal.

2019 American Society of Parasitologists. Ad hoc committee on diversity, equity and inclusion.

2018-2019 American Society of Parasitologists. Awards Committee

2018-2019 American Society of Parasitologists. Resolutions Committee

2015 Member of graduate student symposium committee. University of Connecticut

2015 Graduate student representative to Ecology & Evolutionary Biology faculty. University of Connecticut

2014 Graduate Student Representative to Ecology & Evolutionary Biology faculty. University of Connecticut

Other professional service:

2019 Organized Ensembl Workshop "Browsing Genes and Genomes" at GWU.
2018 Panel member for GWU undergraduate Q&A on graduate school and research experience. GWU November 27, 2018.
2016 Institute for Biomedical Sciences Curriculum Committee. GWU June 2016.
2015 Master of ceremonies: Graduate Student Symposium. University of Connecticut
2014 Designed Ecology & Evolutionary Biology departmental logo. University of Connecticut.
2014 Designed Ecology & Evolutionary Biology departmental Tshirt and banner. Managed Tshirt sales to raise funds for the Ecology & Evolutionary Biology Graduate Student Association. University of Connecticut

Reviewer for scientific journals:

2019 Molecular Biology and Evolution
Parasitology Research
Parasite
The Biological Bulletin (x2)
Journal of Applied Ichthyology
2018 Parasitology Research
Molecular Phylogenetics and Evolution
2017 Scientific Reports
Molecular Phylogenetics and Evolution (x2)
Comparative Parasitology
PeerJ
2016 PeerJ
Neotropical Biodiversity
2015 African Journal of Marine Science

Membership in professional societies:

2011-present American Association of Parasitologists
Appointed to:
Awards Committee (2018-2019)
Resolutions Committee (2018-2019)
Committee on diversity, equity, and inclusion (2019)
2016-present AAAS
2016-present Society of Systematic Biologists
2017-present The World Association of Copepodologists
2018-present The Crustacean Society
2018-present Global Invertebrate Genomics Alliance (GIGA)

Advanced Training and Workshops:

2016 Workshop on Molecular Evolution. University of Chicago Marine Biological Laboratory. Woods Hole, MA.
2016 Smithsonian Target Enrichment/Bait Capture Workshop. Smithsonian Museum of Natural History. Washington, DC.
2016 3rd International Workshop on symbiotic Copepoda. Heron Island, Australia.
2016 OVPR Grant Writing Workshop: Keys to Successful Grant Writing. George Washington University. Washington, DC.

2015 Practical Computing for Biologists. University of Washington. Friday Harbor Labs. Friday Harbor, WA.
2014 International Workshop on Cestode Systematics and Phylogeny. Universidade de São Paulo. Sao Sebastiao, Brazil.
2011 International Workshop on Cestode Systematics. University of Kansas. Lawrence, KS.

Field work experience:

Oct. 2018 Panama: 10-day survey of parasitic copepods of reefs in Coiba National Park with Smithsonian Tropical Research Institute.
Aug. 2018 New York: 2-week survey of freshwater planktonic and parasitic copepods. SUNY Oneonta Biological Field Station.
June 2016 Australia: 2-week survey of commercial fish parasites as part of ABRS grant (PI Tom Cribb, University of Queensland). Fish collection (spear fishing and line and reel), fish dissection, parasite identification.
May 2014 Connecticut: survey of shark tapeworms of Long Island Sound, CT, USA.
Aug. 2013 United Kingdom: 10-day collection of tapeworms of sharks and rays off the coast of Lowestoft, England.
Jan. 2013 Chile: 3-week collection of tapeworms of sharks and rays off of central Chilean coastline. Field sites included: Huinay Field Station, Puerto Montt, and Valdivia.
May 2012 Peru: Tropical Field Biology Course by SUNY Oneonta in Manu National Park. Invertebrate diversity bio-blitz and leaf cutter ant field experiments.

Other Contributions:

2018 Contributed photos to Operating a Successful Cryopreservation Facility. James Bennet. 2018. Planer plc (Publisher).
2018, 2019 Graduate student mentor in Columbian College of Arts and Sciences international graduate student buddy program. George Washington University.
2017 Contributed a figure to Science Magazine article *Biologists propose to sequence the DNA of all life on Earth*. https://doi.org/10.1126/science.aal0824
2012-present Contributed to the population of the Global Cestode Database as part of NSF PBI Nos. 0818696 and 0818823. Serve as a taxonomic authority on *Symcallio* and *Calliobothrium*. http://tapewormdb.uconn.edu
2011–2015 Consulted with Janine Caira and Kirsten Jensen to design a children's book on tapeworms, Meet the Suckers as part of NSF PBI No. 0818823. University of Connecticut

Laboratory & Computational Skills:

Next Generation Sequencing: DNA extraction, Illumina library prep (Nextera), library quantification (Qbit), library quality check (bioanalyzer), MiSeq and NextSeq sequencing runs and maintenance
Bioinformatics: RNA-Seq and metagenomic analyses: quality control, reference-based transcriptome assembly (TopHat2, HISAT2, Cufflinks) and *de novo* assembly (Trinity); differential gene expression analysis (Cufflinks, DESeq); microbiome characterization (Pathoscope); phylogenetic reconstruction (IQ-TREE, PhyloBayes, RAxML, ASTRAL, Mr Bayes, Open Tree of Life); NCBI data mining; Bash and Python scripting; statistical analyses and figure preparation in R
PCR and Sanger sequencing
REDCap project design, database administration, and teaching database design
Dissection of elasmobranchs and bony fish

Fixation of specimens for morphological and molecular work
Preparation of whole mount specimens: acid/base staining/destaining.
Scanning electron microscopy: preparing specimens, critical-point drying, mounting to stubs, calibrating and capturing images with various detectors on an FEI Nova NanoSEM
Fine needle dissection of minute invertebrates (< 2mm)
Histology: embedding specimens in polymer and serial sectioning with microtome
Formal illustrations using camera-lucida on compound microscopes. Pen and ink formal illustration and digital illustrations in Photoshop and Illustrator
Graphic design in Illustrator and Photoshop