

## **CURRICULUM VITAE**

**Diego S. Porto**

Finnish Museum of Natural History  
University of Helsinki  
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**Google Scholar:** <https://scholar.google.com/citations?user=hRTdDu4AAAAJ&hl>

**Researcher ID:** <http://www.researcherid.com/rid/J-4408-2017>

**ORCID:** <https://orcid.org/0000-0002-1657-9606>

## **ACADEMIC EMPLOYMENT**

- |                |                                |  |
|----------------|--------------------------------|--|
| 2022 - present | <b>Postdoctoral Researcher</b> | Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland. Supervisor: Sergei Tarasov |
| 2020 - 2022    | <b>Postdoctoral Associate</b>  | Department of Biological Sciences, Virginia Tech, Blacksburg, VA, USA. Supervisor: Josef C. Uyeda        |

## **EDUCATION**

- |           |   |   |
|-----------|---|---|
| 2015-2019 | <b>Ph.D.</b> in Entomology                    | Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil<br>Dissertation title: <i>Phylogenetic relationships and comparative internal morphology of bees (Hymenoptera: Apoidea: Anthophila)</i><br>Dissertation advisor: Eduardo A. B. Almeida                                |
| 2013-2015 | <b>M.Sc.</b> in Entomology                    | Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil<br>Thesis title: <i>Phylogenetic relationships of corbiculate bees (Hymenoptera: Apidae: Apini)</i><br>Thesis advisor: Eduardo A. B. Almeida  |
| 2008-2013 | <b>Teaching Degree</b> in Biological Sciences | Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil   |
| 2008-2012 | <b>B.A.</b> in Biological Sciences            | Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil<br>Dissertation title: <i>Comparative morphology of species from the genus <i>Pyrogaster</i> Motschulsky, 1853 (Coleoptera: Lampyridae: Photurinae)</i><br>Dissertation advisors: Simone P. Rosa and Dalton S. Amorim |

## **RESEARCH & TEACHING INTERESTS**

Systematics, taxonomy, entomology, invertebrate zoology, zoology, comparative morphology, morphological evolution, evolutionary biology, phylogenetic comparative methods, anatomy ontologies, phenomics, cybertaxonomy.

## PUBLICATIONS

1. **Porto, D. S.**, Dahdul, W. M., Lapp, H., Balhoff, J. P., Vision, T. J., Mabee, P. M., & Uyeda, J. (2022). Assessing Bayesian phylogenetic information content of morphological data using knowledge from anatomy ontologies. *Systematic Biology*, 71(6), 1290–1306. DOI: <https://doi.org/10.1093/sysbio/syac022>
2. **Porto, D. S.**, & Almeida, E. A. B. (2021). Corbiculate bees (Hymenoptera: Apidae): Exploring the limits of morphological data to solve a hard phylogenetic problem. *Insect Systematics and Diversity*, 5(3), 2. DOI: <https://doi.org/10.1093/isd/ixab008>
3. **Porto, D. S.**, Almeida, E. A. B., & Pennell, M. W. (2021). Investigating Morphological Complexes Using Informational Dissonance and Bayes Factors: A Case Study in Corbiculate Bees. *Systematic Biology*, 70(2), 295–306. DOI: <https://doi.org/10.1093/sysbio/syaa059>
4. **Porto, D. S.**, & Almeida, E. A. B. (2019). A comparative study of the pharyngeal plate of Apoidea (Hymenoptera: Aculeata), with implications for the understanding of phylogenetic relationships of bees. *Arthropod Structure & Development*, 50, 64–77. DOI: <https://doi.org/10.1016/j.asd.2019.04.002>
5. **Porto, D. S.**, Almeida, E. A. B., & Vilhelmsen, L. (2017). Comparative morphology of internal structures of the mesosoma of bees with an emphasis on the corbiculate clade (Apidae: Apini). *Zoological Journal of the Linnean Society*, 179(2), 303–337. DOI: <https://doi.org/10.1111/zoj.12466>
6. **Porto, D. S.**, Vilhelmsen, L., & Almeida, E. A. B. (2016). Comparative morphology of the mandibles and head structures of corbiculate bees (Hymenoptera: Apidae: Apini). *Systematic Entomology*, 41(2), 339–368. DOI: <https://doi.org/10.1111/syen.12156>
7. **Porto, D. S.**, Melo, G. A., & Almeida, E. A. B. (2016). Clearing and dissecting insects for internal skeletal morphological research with particular reference to bees. *Revista Brasileira de Entomologia*, 60(1), 109–113. DOI: <https://doi.org/10.1016/j.rbe.2015.11.0>
8. Almeida, E. A. B., & **Porto, D. S.** (2014). Investigating eusociality in bees while trusting the uncertainty. *Sociobiology*, 61(4), 355–368. DOI: <https://doi.org/10.13102/sociobiology.v61i4.355-368>

## GRANTS, FELLOWSHIPS AND AWARDS

2023	Travel Award, Society of Systematic Biologists (US\$1,000 USD)
2019-2021	Research grant, São Paulo Research Foundation (FAPESP) Title: <i>Phylogenomic systematics, comparative morphology and biogeography of bees (Hymenoptera: Anthophila)</i> Institution: Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil Researchers: Eduardo A. B. Almeida (PI), Diego S. Porto (co-PI), Marcio R. Pie (co-PI)
2019	Ph.D. international internship grant, São Paulo Research Foundation (FAPESP) (~US\$10,000) Title: <i>Phenotypic Evolution and Patterns of Bee Diversification (Hymenoptera: Apoidea: Anthophila)</i> Host institution: University of British Columbia, British Columbia, Vancouver, Canada Internship supervisor: Matthew W. Pennell
2016	Marie Stopes Travel Award, Willi Hennig Society (US\$600 USD)
2016-2019	Ph.D. scholarship, São Paulo Research Foundation (FAPESP) (~US\$32,000) Title: <i>Phylogenetic relationships and comparative internal morphology of bees (Hymenoptera: Apoidea: Anthophila)</i> Institution: Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil

- 2015-2016 Ph.D. scholarship, Brazilian National Council for Scientific and Technological Development (~US\$6,500)  
Title: *Phylogenetic relationships and comparative internal morphology of bees (Hymenoptera: Apoidea: Anthophila)*  
Institution: Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil
- 2014 Masters international internship grant, São Paulo Research Foundation (FAPESP) (~US\$6,000)  
Title: *Comparative Morphology of Internal Skeletal Structures of the Head of Corbiculate Bees (Apidae: Apini)*  
Host institution: University of Copenhagen, Copenhagen, Denmark  
Internship supervisor: Lars B. Vilhelmsen
- 2013-2015 Masters scholarship, São Paulo Research Foundation (FAPESP) (~US\$10,000)  
Title: *Phylogenetic Relationships of Corbiculate Bees (Hymenoptera: Apidae: Apini)*  
Institution: Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil

## INVITED PRESENTATIONS

- 2022 2022 Joint ESA, ESC, and ESBC Annual Meeting, Vancouver, BC, Canada.  
**Porto, D. S.**, Almeida, E. A. B., & Tarasov, S. *Phylogeny and evolutionary dynamics of bee phenomes: An integrative approach to semantic-aware morphological phylogenetics*
- 2015 XI Encontro Sobre Abelhas, Ribeirão Preto, SP, Brazil.  
**Porto, D. S.** *Phylogenetic relationships of corbiculate bees (Apidae: Apini) inferred from new data from internal structures of exoskeleton.*

## TALKS AND POSTERS

- 2023 5th Standalone Meeting of the Society of Systematic Biologists, Mexico City, Mexico.  
**Porto, D. S.**, Tarasov, S., Charpentier, C., Dahdul, W. M., Lapp, H., Balhoff, J. P., Vision, T. J., Mabee, P. M., & Uyeda, J. *Integrating Anatomy Ontologies and Phylogenetics in the Era of Phenomics.* (poster)
- 2022 XXXIX Annual Meeting of the Willi Hennig Society. Helsinki, Finland.  
**Porto, D. S.**, Tarasov, S., Charpentier, C., Dahdul, W. M., Lapp, H., Balhoff, J. P., Vision, T. J., Mabee, P. M., & Uyeda, J. *rphenoscate: An R package for semantic-aware comparative analyses of organismal phenotypes.* (talk)
- 2022 XXXIX Annual Meeting of the Willi Hennig Society. Helsinki, Finland.  
Tarasov, S., & **Porto, D. S.** *Paving the way: from traditional taxonomy to comparative phenomics.* (talk)
- 2022 XXVI International Congress of Entomology. Helsinki, Finland.  
**Porto, D. S.**, & Tarasov, S. *Reconstructing Evolutionary Dynamics of Phenomes: Integrating Phylogenetic Models and Ontologies.* (talk)
- 2021 Entomology Annual Meeting. Denver, CO, USA.  
**Porto, D. S.**, & Almeida, E. A. B. *Phylogenetic comparative skeletal morphology of bees (Hymenoptera: Apoidea: Anthophila).* (online talk)
- 2021 Evolution Meeting. Virtual Conference, USA.  
**Porto, D. S.**, Dahdul, W. M., Lapp, H., Balhoff, J. P., Vision, T. J., Mabee, P. M., & Uyeda, J. *Phylogenetic information content of anatomy ontologies.* (online talk)

- 2020 XXXIII Congresso Brasileiro de Zoologia, Águas de Lindóia, SP, Brazil.  
Almeida, E. A. B., Bossert, S., & **Porto, D. S.** *Evolução das abelhas: Biogeografia em 120 milhões de anos do planeta em transformação.* (talk)
- 2019 2nd Australian Native Bee Conference, Brisbane, QLD, Australia.  
Almeida, E. A. B., **Porto, D. S.**, Bossert, S., Danforth, B. N., & Pie, M. R. *Australian bees: Ancient or young, but very attractive.* (talk)
- 2019 Evolution Meeting, Providence, RI, USA.  
**Porto, D. S.**, Almeida, E. A. B., & Pennell, M. W. *Investigating morphological complexes using phylogenetic dissonance and Bayes factors: a case study in corbiculate bees.* (poster)
- 2016 XXXV Annual Meeting of the Willi Hennig Society, Buenos Aires, Argentina.  
**Porto, D. S.**, & Almeida, E. A. B. *Phylogeny and comparative morphology of internal structures of corbiculate bees (Apidae: Apinae: Apini).* (poster)
- 2014 XXX Congresso Brasileiro de Zoologia, Porto Alegre, RS, Brazil.  
**Porto, D. S.**, & Almeida, E. A. B. *Morfologia comparada do propecto em abelhas corbiculadas (Apidae: Apini).* (poster)
- 2012 Grupo de Apoio Pedagógico de Ribeirão Preto (GAPRP), Universidade de São Paulo, FFCLRP, Ribeirão Preto, SP, Brazil.  
Mancini, G. V., **Porto, D. S.**, Fachin, D. A., & Kawasaki, C. S. *Estágio Supervisionado: Uma Experiência de Interação entre Universidade e Escola.* (poster)
- 2012 III Encontro de Estágios Obrigatórios e Experiências de Ensino: Compartilhando experiências de estágios, Universidade de São Paulo, EACH, São Paulo, SP, Brazil.  
Mancini, G. V., Fachin, D. A., **Porto, D. S.**, Kawasaki, C. S., Pires, M. R., Guesso, M., & Castro, F. *Estágio supervisionado: integração entre escola e universidade.* (poster)
- 2011 19th International Symposium of Scientific Initiation, Universidade de São Paulo, Ribeirão Preto, SP, Brazil.  
**Porto, D. S.**, Rosa, S. P., & Amorim, D. S. *Comparative morphology of three species of the genus Pyrogaster Motschulsky, 1853 (Coleoptera: Lampyridae: Photurinae).* (poster)

## TEACHING EXPERIENCE

### Teaching Assistance

#### Undergraduate level

- 2017 Invertebrate Zoology II (5920838), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.
- 2016 Invertebrate Zoology II (5920838), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.
- 2012 Invertebrate Zoology II (5920229), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.
- 2011 Invertebrate Zoology II (5920229), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.

### Lectures

- 2022 XIX Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Comparative morphology of Hexapoda: A study model for understanding biological diversity.* (online)

- 2021 XIX Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Comparative morphology of Hexapoda: A study model for understanding biological diversity.* (online)
- 2021 Coffee with Science, Universidade de São Paulo, Ribeirão Preto, SP, Brazil.  
*Modeling morphological evolution: What do we really learn from coins and dice?* (online)
- 2020 Invertebrate Zoology II (5920838), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.  
*Metazoan diversification during the Cambrian and fossil groups of Panarthropoda.* (online)
- 2020 Special Topics in Evolutionary Biology: Macroevolution & Phylogenetics (BIOL 5984),  
Virginia Tech, Blacksburg, VA, USA.  
*Advanced Topics in Morphological Evolution.* (online)
- 2019 Invertebrate Zoology II (5920838), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.  
*Metazoan diversification during the Cambrian and fossil groups of Panarthropoda.*
- 2018 Invertebrate Zoology II (5920838), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.  
*Metazoan diversification during the Cambrian and fossil groups of Panarthropoda.*
- 2018 XVI Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Coleções Científicas, Curadoria e Métodos de Coleta*
- 2017 Invertebrate Zoology II (5920838), Universidade de São Paulo, Ribeirão Preto, SP, Brazil.  
*Diversificação de Metazoa durante o Cambriano e grupos fósseis de Panarthropoda*
- 2017 XV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Scientific Collections, Curatorship, and Collecting Methods.*
- 2016 XIV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Scientific Collections, Curatorship, and Collecting Methods.*
- 2016 XIV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Diversity and Taxonomy of Bees.*
- 2014 XII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Diversity and Systematics of Bees.*

## Workshops

- 2018 XVI Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*External Morphology of Hexapoda.*
- 2017 XV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*External Morphology of Hexapoda.*
- 2016 XIV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Collecting Methods in Entomology.*
- 2016 XIV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*External Morphology of Hexapoda.*
- 2015 XIII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Fundamentals of Hymenoptera Taxonomy.*

- 2015 XIII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*External Morphology of Hexapoda.*
- 2015 XIII SECIBIO, Faculdade de Filosofia, Ciências e Letras de Ituverava, Ituverava, SP, Brazil.  
*Studying Insects: Taxonomy, Morphology, and Diversity.*
- 2014 XII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*Collecting Methods in Entomology.*
- 2014 XII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.  
*External Morphology of Hexapoda.*

## OUTREACH EXPERIENCE

- 2018 Biological Sciences exhibition. Bio na Rua – Ribeirão Preto 2018  
Universidade de São Paulo, FFCLRP, Ribeirão Preto, Brazil.
- 2017 Biological Sciences exhibition. Bio na Rua – Ribeirão Preto 2017  
Universidade de São Paulo, FFCLRP, Ribeirão Preto, Brazil.
- 2013 Biological Sciences exhibition. VIII Mostra da Biologia  
Universidade de São Paulo, FFCLRP, Ribeirão Preto, Brazil.
- 2012 Biological Sciences exhibition. VII Mostra da Biologia  
Universidade de São Paulo, FFCLRP, Ribeirão Preto, Brazil.
- 2009 Guide in 'Nocturnal Educational Tour' at Zoo and 'Penguin's Exhibition'  
Parque Ecológico São Carlos, São Carlos, SP, Brazil.

## SERVICE

- |      |   |   |
|------|---|---|
| 2021 | Undergraduate<br>Dissertation Committee | Dissertation: <i>Selection of priors for the calibration of the morphological clock in estimating divergence times of the family Scolebythidae (Hymenoptera: Aculeata).</i><br>Institution: Universidade Federal do Paraná, Curitiba, Brazil.<br>Candidate: Anderson Lepeco       |
| 2021 | Master Thesis<br>Committee              | Thesis: <i>Comparative anatomy and phylogenetic implications of the skeletal musculature of the head of the family Apidae sensu latu (Hymenoptera: Apoidea).</i><br>Institution: Universidade Federal do Paraná, Curitiba, Brazil.<br>Candidate: Odair Milioni de Meira           |
| 2019 | Undergraduate<br>Dissertation Committee | Dissertation: <i>Genetic and morphological variability of the crab Cyclograpsus integer H. Milne Edwards, 1837 along its distribution in the Western Atlantic Ocean.</i><br>Institution: Universidade de São Paulo, Ribeirão Preto, Brazil.<br>Candidate: Beatriz Heloisa Valézio |
| 2016 | Organizing Committee                    | XIV Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.   |
| 2015 | Poster Reviewer                         | 23º Simpósio Internacional de Iniciação Científica e Tecnológica da USP (SIICUSP), Ribeirão Preto, SP, Brazil.  |

2015	Organizing Committee	XI Encontro Sobre Abelhas, Ribeirão Preto, Brazil.
2015	Organizing Committee	XIII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.
2014	Poster Reviewer	22º Simpósio Internacional de Iniciação Científica e Tecnológica da USP (SIICUSP), Ribeirão Preto, SP, Brazil.
2014	Organizing Committee	XII Curso de Verão em Entomologia, Universidade de São Paulo, Ribeirão Preto, Brazil.

## JOURNAL REVIEWER

*Apidologie, Arthropod Structure & Development, Arthropod Systematics & Phylogeny, Insectes Sociaux, Neotropical Entomology, Zookeys.*

## MENTORSHIP

### Undergraduates

2020-2023     Kaine Lovill  
Institution: Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

## MUSEUM & COLLECTION EXPERIENCE

2013-2019     Entomological Collection ‘Prof. J.M.F. Camargo’ (RPSP), Ribeirão Preto, SP, Brazil.

## FIELD EXPERIENCE

2016-2017     Monthly field expeditions to Estação Ecológica de Itirapina, Itirapina, SP, Brazil.  
2016-2017     Monthly field expeditions to Estação Ecológica Jataí, Luiz Antônio, SP, Brazil.  
2015            Field expedition to Parque Estadual Morro do Diabo, Teodoro Sampaio, SP, Brazil.

## HACKATHONS

2023            TraitFest, RENCI, University of North Carolina, Chapel Hill, NC, USA.  
Products: *PhenoNet*: A pipeline to generate networks representing trait dependencies from a character matrices and ontology annotations.  
<https://github.com/phenoscape/TraitFest-2023/blob/main/PhenoNet.R> (coauthor)

## SOFTWARE

*rphenoscate*     Semantically-aware evolutionary analyses incorporating morphological knowledge represented in anatomy ontologies. (coauthor)  
R package: <https://github.com/uyedaj/rphenoscate>

*ontobayes*

Exploratory analyses of phylogenetic data integrating knowledge from anatomy ontologies and information theory metrics. (author)  
R package: <https://github.com/diegosasso/ontobayes>

## **ADDITIONAL SKILLS**

Certificate in scientific illustration (80h)

## **LANGUAGES**

Portuguese: native

English: speaking, reading and writing – fluent

Spanish: speaking, reading and writing – intermediary