

## EDUCATION

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**Ph.D.**, Biological Sciences (2014), Univ. of Cincinnati, Cincinnati, OH

Areas of concentration: Evolutionary Ecology, Entomology, Molecular Biology

**Candidate of Science** (Ph.D.- equivalent), Biological Sciences (2002), Herzen State University, St. Petersburg, Russia

Areas of concentration: Zoology, Immunology, Parasitology

**Diploma**, Biology/Psychology joint major, *cum laude* (1997), Herzen State University, St. Petersburg, Russia

Areas of concentration: Genetics, Ecology

## EXPERIENCE

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**Assistant Research Scientist**, Dept. of Entomology, Univ. of Maryland, College Park, MD (2020–present)

- Conduct research on biology and ecology of invasive insect pests, and species interactions with environment: design and lead experiments; interpret, evaluate, and synthesize research data and conduct data analysis; coordinate research activities; present at conferences, write reports and journal publications
- Design, lead, and conduct systematic review and meta-analysis of host plant usage of invasive insect pests in the US
- Lead and conduct statistical analysis of existing data from large-scale lab assays on insect behavioral responses
- Lead and conduct statistical analysis of multistate data on insect parasitoid composition across multiple habitats/regions
- Design and perform field trials in the agricultural settings, to test insect parasitoid potential for augmentative biocontrol of the invasive brown marmorated stink bug (as part of USDA National Institute of Food and Agriculture, Specialty Crops Research Initiative)
- Design, lead, and conduct various lab assays using molecular biology techniques, light and scanning electron microscopy (focus on invasive spotted lanternfly)
- Design experimental protocols for species collection, sample processing, microscopy, DNA barcoding
- Develop educational materials for the outreach component of a grant on diverse perennial circular systems funded by NIFA Sustainable Agricultural Systems program
- Proposed and submitted 2 grants (for \$330,000 total) on host plant usage by insect pests via DNA analysis of insect gut contents
- Developed course "DNA Barcoding for Everyone" which covers all the main steps of DNA barcoding work and provides video tutorials and protocols for each step
- Mentored 6 students in DNA barcoding, statistical analysis, and data retrieval for a systematic review
- Published 4 journal articles (+3 in prep.); presented at 3 conferences; gave 2 invited talks; published 5 extension newsletter articles

**Lecturer**, Master of Chemical & Life Sciences Program, Univ. of Maryland, College Park, MD (2019–present)

- Teach Evolutionary Biology (online summer graduate course): develop and discuss course materials with students, grade students' assignments
- Mentor students in final scholarly paper project
- Revised and developed new assignments for 11 modules of the course
- Over the past 3 summer terms all enrolled students have successfully completed the evolutionary biology course

**Postdoctoral Associate**, Dept. of Entomology, Univ. of Maryland, College Park, MD (2018–2020)

- Conducted research on novel plant-insect interactions focusing on invasive species: designed and led experiments, data analysis; presented at conferences and wrote publications
- Performed insect molecular gut content analysis: developed, led, and conducted lab assays, routine DNA extraction, PCR, gel electrophoresis, DNA spectrophotometry, DNA purification, and sequence analysis
- Trained lab members, managed equipment and supplies for various DNA barcoding projects.
- Performed histological and morphometrical analysis using light/scanning electron microscopy
- Designed and performed field and greenhouse experiments on plant-insect interactions
- Proposed, developed, and managed DNA barcoding workflow for lab research which created new internship and research opportunities in the lab (for 11 students), brought new grant funding (~\$100,000) to the lab, and produced 3 new peer-reviewed journal papers
- Developed course "Invasion Ecology" for upper-level undergraduate students
- Proposed, submitted, and received 3 grants (\$97,340 total) on insect molecular gut content analysis and morphology
- Mentored 11 students in DNA barcoding, field/greenhouse/lab experiments, and statistical analysis
- Published 4 journal articles; presented at 11 conferences (with 1 presentation award); gave 4 invited talks

**Genetics Instructor**, Biology Dept., Grand View University, Des Moines, IA (2016–2017)

- Taught upper-level Genetics and Molecular Biology laboratory courses for biotechnology majors
- Trained ~60 students in various molecular biology techniques: human chromosome spread, bacterial conjugation, complementation test in yeast; DNA extraction, PCR, agarose gel electrophoresis; DNA ligation, transformation, plasmid isolation, restriction digest analysis; sequence analysis, etc.
- Mentored 13 students in sequence analysis and preparation of 3 student poster presentations for the university research symposium
- Obtained and deposited to GenBank a partial sequence for GAPDH gene for *Salvia rosmarinus* which hasn't been deposited before; 13 students are co-authors on this GenBank submission
- All enrolled students (~60 students) have successfully completed both Genetics and Molecular Biology courses

**Research Associate**, Dept. of Entomology, Univ. of Wisconsin-Madison, Madison, WI (Apr–Jul 2016)

- Conducted research on reproductive biology and phenology of *Drosophila suzukii*: designed and led experiments, data analysis; presented at a scientific meeting and wrote publications
- Went on regular field trips in Wisconsin and Minnesota
- Performed fly collection, identification, lab assays, dissection
- Developed and published a new method for determining fly mating status by isolating spermathecae
- Trained a high school student in tissue dissection, microscopy, staining, and slide preparation
- Published 3 journal articles and 2 extension newsletter articles; gave 1 invited talk

**Research Associate**, Texas A&M AgriLife Research, Amarillo, TX (Jan–Mar 2016)

- Developed experimental design for a comparative study of plant resistance to injury from insect pests
- Performed field/greenhouse experiments and species collection
- Mentored 2 students in data analysis of pesticide efficacy from field trials
- Awarded with Financial Travel Support to International Congress of Entomology (\$595 awarded from Texas A&M, College Station, TX)

**Graduate Research/Teaching Assistant**, Dept. of Biol. Sciences, Univ. of Cincinnati, Cincinnati, OH (2009–2014)

- Conducted doctoral research on insect evolutionary relationships/ecology of plant-insect interactions: designed and led experiments, data analysis; presented at scientific meetings and wrote publications
- Performed DNA-based identification and phylogenetic analysis of forensically important flies
- Designed and performed lab assays; conducted insect molecular gut content analysis; worked on plant population genetics (focus on characterization of plant microsatellite markers)

- Performed field/greenhouse/lab experiments on plant herbivore resistance/tolerance
- Taught laboratory courses (Microbiology, Biology Laboratory, Genetics and Cell Biology)
- Went on multiple field trips in Ohio, Maryland, Montana, Iowa
- Developed and published two new methods: (a) PCR-based method for detecting plant DNA within insect gut contents; and (b) nondestructive method for estimating plant biomass changes
- Research was covered by 4 media outlets
- Awarded with Graduate Research Fellowship for Outstanding Incoming PhD Students (\$3,000)
- Proposed, submitted, and received 3 university grants (\$2,000 total) on studying plant-insect interactions
- Received 2 presentation awards (\$375 total)
- Published 5 journal articles; presented at 10 conferences (2 presentation awards); gave 1 invited talk

**Researcher**, Institute of Cytology of the Russian Academy of Science, St. Petersburg, Russia (2008–2009)

- Conducted research on genetic variation and hybridization in littoral snails
- Performed routine tissue processing, DNA extraction, PCR, and sequence analysis
- Published 1 journal article

**Research Assistant/Instructor**, Dept. of Zoology, Herzen State University, St. Petersburg, Russia (1997–2009)

- Conducted research on cellular mechanisms of host-parasite interactions (focus on snail immune responses, cell proliferation, and parasite development): designed and led experiments, data analysis; presented at scientific meetings and wrote publications
- Performed routine tissue dissection, processing, histological analysis of parasite encapsulation by host hemocytes, and quantification of cell mitotic activity
- Taught lectures, laboratories and field courses in ecology, biology and invertebrate zoology
- Proposed, submitted, and received a grant on snail defense responses to parasites from the Ministry of Education and Science of the Russian Federation (\$8,000)
- Identified and characterized snail hematopoietic tissue (previously not described) and published the results
- Mentored 11 students in microscopy, morphology, morphometry, and various ecological projects
- Published 2 journal articles and 4 symposium publications; presented at 4 conferences; gave 1 invited talk

## PEER-REVIEWED PUBLICATIONS

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### *Journal Articles*

1. McPherson, C., **Avanesyan, A.**, and W. O. Lamp (2022) Diverse host plants of the first Instars of the invasive *Lycorma delicatula*: Insights from eDNA metabarcoding. *Insects: Special Issue "Advances on Invasive Insect Pests: Insect Behavior, Host Plant Usage, Biocontrol, and More"*, 13(6), 534, doi.org/10.3390/insects1306053. Invited paper.
2. **Avanesyan, A.**, and W.O. Lamp. (2022) Response of five *Miscanthus sinensis* cultivars to grasshopper herbivory: implications for monitoring of invasive grasses in protected areas. *Plants: Special Issue "Invasive Alien Species in Protected Areas "*, 11(1), 53, <https://doi.org/10.3390/plants11010053>. Invited paper.
3. **Avanesyan, A.**, Sutton, H., and W.O. Lamp. (2021) Choosing an effective PCR-based approach for diet analysis of insect herbivores: A systematic review. *Journal of Economic Entomology*, 114(3), 1035–1046.
4. **Avanesyan, A.**, Illahi, N. and W.O. Lamp. (2021) Detecting ingested host plant DNA in potato leafhopper, *Empoasca fabae*: potential use of molecular markers for gut content analysis. *Journal of Economic Entomology*, 114(1), 472–475.
5. **Avanesyan, A.**, and W.O. Lamp. (2020) Use of molecular gut content analysis to decipher the range of food plants of the invasive spotted lanternfly, *Lycorma delicatula*. *Insects: Special Issue " Molecular gut content analysis: deciphering trophic interactions of insects"*, 11(4), 215, <https://doi.org/10.3390/insects11040215>. Invited paper.
6. **Avanesyan, A.**, Mangel T.K., and W. Lamp (2019) External morphology and developmental changes of tarsal tips and mouthparts of the invasive spotted lanternfly, *Lycorma delicatula*. *PLOS ONE*, 0226995.

7. **Avanesyan, A.**, Lamp, W., Snook, K., and P. Follett. (2019) Short-term physiological response of a native Hawaiian plant, *Hibiscus arnottianus*, to injury by the exotic leafhopper, *Sophonia orientalis* (Hemiptera: Cicadellidae). *Environmental Entomology*, 48(2): 363-369.
8. **Avanesyan, A.** (2018) Should I eat or should I go? Acridid grasshoppers and their novel host plants: potential for biotic resistance. *Plants: Special Issue "Plants Interacting with other Organisms: Insects"*, 7(4), 83; <https://doi.org/10.3390/plants7040083>. Invited paper.
9. Guédot, C., **Avanesyan, A.**, and K. Hietala-Henschell. (2018) Effect of temperature and humidity on the seasonal phenology of *Drosophila suzukii* (Diptera: Drosophilidae) in Wisconsin. *Environmental Entomology*, 47(6): 1365–1375.
10. Jaffe, B.D., **Avanesyan, A.**, Bal, H. K., Grant, J., Grieshop, M.J., Lee, J.C., Liburd, O.E., Rhodes, E., Rodriguez-Saona, C., Sial, A.A., Zhang, A., and C. Guédot (2018) Multistate comparison of attractants and the impact of fruit development stage on trapping *Drosophila suzukii* (Diptera: Drosophilidae) in raspberry and blueberry. *Environmental Entomology*, 47(4): 935–945.
11. **Avanesyan, A.**, Jaffe, B.D., and C. Guédot (2017) Isolating spermatheca and determining mating status of *Drosophila suzukii*: a protocol for tissue dissection and its applications. *Insects: Special issue "Invasive Insect Species"*, 8(1), 32; doi:10.3390/insects8010032. Invited paper.
12. **Avanesyan, A.** and T.M. Culley (2016) Tolerance of native and exotic prairie grasses to herbivory by *Melanoplus* grasshoppers: application of a non-destructive method for estimating plant biomass changes as a response to herbivory. *The Journal of the Torrey Botanical Society*, 144(1):15-25.
13. **Avanesyan, A.**, and T.M. Culley (2015) Feeding preferences of *Melanoplus femurrubrum* grasshoppers on native and exotic grasses: behavioral and molecular approaches. *Entomologia Experimentalis et Applicata*. 157: 153-163.
14. Merritt, B.J., Culley, T.M., **Avanesyan, A.**, Stokes, R., and J. Brzyski (2015) An empirical review: Characteristics of plant microsatellite markers that confer greater levels of genetic variation. *Applications in Plant Sciences* 3 (8): 1500025.
15. **Avanesyan, A.**, and T.M. Culley (2015) Herbivory of native and exotic North-American prairie grasses by nymph *Melanoplus* grasshoppers. *Plant Ecology*. 216: 451-464.
16. **Avanesyan, A.** (2014) Plant DNA detection from grasshopper gut contents: a step-by-step protocol, from tissues preparation to obtaining plant DNA sequences. *Applications in Plant Sciences* 2 (2): 1300082.
17. Granovitch, A.I., Maximovich, A.N., **Avanesyan, A.V.**, Starunova, Z.I., and N.A. Mikhailova (2013) Micro-spatial distribution of two sibling periwinkle species across the intertidal indicates hybridization. *Genetica* 141 (7): 293-301.
18. Ataev, G.L., Dobrovolskij, A.A., **Avanessian, A.V.**, and E.S. Loker (2001) Germinal elements and their development in *Echinostoma caproni* and *Echinostoma paraensei* (Trematoda) miracidia. *The Journal of Parasitology* 87 (5): 1160-1164.
19. Ataev, G.L., **Avanessian, A.V.**, Loker, E.S., and A.A. Dobrovolskij (2001) The organization of germinal elements and dynamics of *Echinostoma* mother sporocyst reproduction (Trematoda: Echinostomatidae). *Parazitologia* 35 (4): 307-319. (In Russian)

#### ***Symposium Publications (published conference abstracts and annual meeting papers)***

1. **Avanesyan, A.** (2005) Cellular defense mechanisms of *Planorbis planorbis* and *Planorbarius corneus* snails. *Journal of Ural Immunology* 1 (4): 2. (In Russian)
2. **Avanesyan, A.**, and M.A. Gvozdev (2003) Epidemical importance of the pathogenic organism activity in water reservoirs. *In Environment and Human Health: Intern. Ecological Forum*, p. 30.
3. **Avanesyan, A.**, and M.A. Gvozdev (2003) Trematode infections of freshwater snails in small water reservoirs of Leningrad Area. *The Journal of Infectious Pathology* 10 (4): 8-9. (In Russian)
4. Ataev, G.L., Dobrovolskij, A.A., **Avanessian, A.V.**, and C. Coustau (2000) Significance of the amebocyte-producing organ of *Biomphalaria glabrata* snails (strains selected for susceptibility/resistance) in cellular response to *Echinostoma caproni* mother sporocysts infection. *Bulletin of the Scandinavian Society for Parasitology* 10 (2): 65.

## CONFERENCE PRESENTATIONS (\*undergraduate students, ♦ high school students)

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1. Wilkinson, A. ♦, **Avanesyan, A.**, and W. Lamp. (2022) Using molecular gut content analysis to characterize PLH (*Empoasca fabae*) movement within a farmscape. Entomological Society of America Annual Meeting, Eastern Branch. Philadelphia, PA. Poster presentation
2. **Avanesyan, A.**, Waterworth, R. A., Ramsey, S., Stelzig, O., and P. M. Shrewsbury. (2021) Interspecific and intraspecific interactions of *Anastatus reduvii*, an egg parasitoid of the brown marmorated stink bug (BMSB), *Halyomorpha halys* Stål (Hemiptera: Pentatomidae). Entomological Society of America Annual Meeting, Eastern Branch. Oral presentation.
3. Lamp, W., **Avanesyan, A.**, Sulc M., Griggs, T., and Y. Park. (2021) Using alfalfa leaf temperature to detect injury by potato leafhopper, *Empoasca fabae*: A comparison of handheld and drone measurements. Entomological Society of America Annual Meeting, Eastern Branch. Oral presentation.
4. **Avanesyan, A.**, and W. Lamp. (2020) Variation in plant responses to grasshopper herbivory among the cultivars of the introduced *Miscanthus sinensis*. Botany 2020: Annual Meeting of the Botanical Society of America. Oral presentation.
5. **Avanesyan, A.**, Mangel, T., and W. Lamp. (2019) External morphology and developmental changes of tarsal tips and mouthparts of the invasive spotted lanternfly, *Lycorma delicatula*. Annual Meeting of the Entomological Society of America, St. Lois, MO. Poster presentation.
6. Smith, D., **Avanesyan, A.**, and W. Lamp. (2019) Are natural enemies related to plant diversity in agricultural drainage ditches? Annual Meeting of the Entomological Society of America, St. Lois, MO. Poster presentation.
7. Kutz, D., **Avanesyan, A.**, and W. Lamp. (2019) Drainage ditches as sources of beneficial spiders on farms to enhance conservation biological control. Annual Meeting of the Entomological Society of America, St. Lois, MO. Oral presentation.
8. **Avanesyan, A.**, and W. Lamp (2019) External morphology of the spotted lanternfly, *Lycorma delicatula*, and its association with insect host plants. Postdoctoral Research Symposium. University of Maryland, College Park, MD. Poster presentation
9. **Avanesyan, A.**, and W. Lamp (2019) External morphology of the spotted lanternfly, *Lycorma delicatula*, and its association with insect host plants. Entomological Society of America Annual Meeting, Eastern Branch. Blacksburg, VA. Poster presentation
10. **Avanesyan, A.**, and W. Lamp (2019) Feeding preferences of native acridid grasshoppers for novel host plants: a case study of biotic resistance. Entomological Society of America Annual Meeting, Eastern Branch. Blacksburg, VA. Oral presentation
11. Kutz, D., **Avanesyan, A.**, and W. Lamp (2019) Drainage ditches as sources of beneficial spiders on farms: A closer look at plant-spider community associations. Entomological Society of America Annual Meeting, Eastern Branch. Blacksburg, VA. Oral presentation
12. **Avanesyan, A.**, and W. Lamp (2018) Use of molecular markers for plant DNA to determine host plant usage for potato leafhopper, *Empoasca fabae*. Annual Meeting of the Entomological Society of America: 2018 ESA, ESC, and ESBC Joint Annual Meeting, Vancouver, BC, Canada. Oral presentation
13. **Avanesyan, A.** (2018) Should I eat or should I go? Acridid grasshoppers and their novel host plants: implications for biotic resistance. Annual Meeting of the Entomological Society of America: 2018 ESA, ESC, and ESBC Joint Annual Meeting, Vancouver, BC, Canada. Poster presentation
14. **Avanesyan, A.** (2018) Should I eat or should I go? Acridid grasshoppers and their novel host plants: implications for biotic resistance. Postdoctoral Research Symposium. University of Maryland, College Park, MD. Poster presentation
15. Omanovic, E.\*, Welsch, A.\*, Graving, S.\*, Christiansen, K.\*, **Avanesyan, A.**, and I. Hazan (2017) Sequencing of GAPDH Gene in Cilantro and Rosemary. Annual Grand View Scholarship Symposium. Grand View University. Des Moines, IA. Poster presentation
16. Christofferson, D.\*, Miller, R.\*, Piatt, D.\*, Backer, S.\*, Reyes-Zuniga, K.\*, **Avanesyan, A.**, and I. Hazan (2017) Sequencing the GAPDH Gene of *Rosmarinus officinalis*. Annual Grand View Scholarship Symposium. Grand

View University. Des Moines, IA. Poster presentation

17. Geisinger, S.\*, Jones, K.\*, Sopher, K.\*, Salazar-Klock, L.\*, **Avanesyan, A.**, and I. Hazan (2017). Sequencing of GAPDH Gene in *Coriandrum sativum* (Cilantro). Annual Grand View Scholarship Symposium. Grand View University. Des Moines, IA. Poster presentation
18. Merritt, B.J., Culley, T.M., **Avanesyan, A.**, Stokes, R., and J. Brzyski (2015) An empirical review: Characteristics of plant microsatellite markers that confer greater levels of genetic variation. Botany 2015: Annual Meeting of the Botanical Society of America, Edmonton, Alberta, Canada. Poster presentation
19. Culley, T. M., and **A. Avanesyan** (2014) Estimating the tolerance of native and exotic grasses to grasshopper herbivory. Botany 2014: Annual Meeting of the Botanical Society of America. Boise, ID. Oral presentation
20. **Avanesyan, A.**, and T. M. Culley (2014) Prevalence of exotic and native plant food in the gut contents of *Melanoplus femurrubrum* grasshoppers: molecular confirmation of diet. 5th annual Midwest Graduate Research Symposium. Toledo, OH. Oral presentation
21. **Avanesyan, A.**, and T. M. Culley (2013) Plant DNA detection from grasshoppers' gut contents: method and applications. 61st Annual Meeting of the Entomological Society of America, Austin, TX. Oral presentation
22. **Avanesyan, A.**, and T.M. Culley (2013) Interaction of native and invasive grasses with a generalist herbivore insect (Updated: results from 2012-2013). 98th Annual Meeting of the Ecological Society of America. Minneapolis, MN. Oral presentation
23. **Avanesyan, A.**, and T.M. Culley (2013) Interaction of native and invasive grasses with a generalist herbivore insect. 4th Annual Midwest Graduate Research Symposium. Toledo, OH. Oral presentation
24. **Avanesyan, A.**, and T.M. Culley (2013) Feeding preferences of the generalist insect herbivore, *Melanoplus femurrubrum* grasshopper, on invasive and native plants. Entomological Society of America Annual Meeting, Eastern Branch. Lancaster, PA. Oral presentation
25. **Avanesyan, A.**, and T.M. Culley (2013) A comparison of *Miscanthus sinensis* and two native grasses in their resistance and tolerance to herbivory by a generalist insect. Ohio Invasive Plants Council Research Conference. Columbus, OH. Poster presentation
26. **Avanesyan, A.**, Stamper, T.I. , Timm, A., Wong, E., Dahlem, G.A., and R. DeBry (2010) Phylogenetic relationships of the *Sarcophagidae* (Diptera), using three mitochondrial loci (COI, COII, and ND4) and one nuclear locus (PER). Entomological Society of America Annual Meeting, San Diego, CA. Poster presentation
27. **Avanesyan, A.**, Stamper, T.I., and R. DeBry (2010) Infection rate of grasshoppers in Montana, parasitized by *Sarcophagidae* flies: a host range and parasite species determination. Graduate Poster Forum, University of Cincinnati. Poster presentation
28. Berendzen, P.B., Ophus, J.D., and **A. Avanesyan** (2007) A cross-cultural study of students' understanding of evolution. The nature of science and their need for cognition. 10th Russian-American Conference: Modern Concepts in Higher Education. Herzen State University, St. Petersburg, Russia. Oral presentation
29. Gvozdev, M.A., and **A. Avanesyan** (2006) Bioethical aspects of the development of aquaculture in Russia. 6th Annual Methodological Seminar: Issues and Prospects of Biological and Ecology Education. Herzen State University, St. Petersburg, Russia. Oral presentation
30. **Avanesyan, A.**, and G.L. Ataev (2001) The organization of the amebocyte-producing organ in different pulmonate snails. International Symposium: Animal Physiology, I. M. Sechenov Institute of Evolutionary Physiology and Biochemistry, St. Petersburg, Russia. Poster presentation
31. Ataev, G.L., Dobrovolskij, A.A., **Avanessian, A.V.**, and C. Coustau (2000) Significance of the amebocyte-producing organ of *Biomphalaria glabrata* snails (strains selected for susceptibility/resistance) in cellular response to *Echinostoma caproni* mother sporocysts infection. International Symposium: Ecological Parasitology at the Turn of the Millennium. Organized by the Russian Parasitological Society and the Scandinavian Society for Parasitology. St. Petersburg, Russia. Oral presentation

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## INVITED TALKS

1. **Avanesyan, A.** (2020) Using databases for exploring research questions. Department of Entomology, University of Maryland, College Park, MD; The Lamp lab, weekly meeting. Guest speaker.
2. **Avanesyan, A.** (2020) Molecular resources and protocols: from PLS4178 to PLS4172. Department of

Entomology, University of Maryland, College Park, MD; The Lamp lab, weekly meeting. Guest speaker.

3. **Avanesyan, A.** (2019) Ecology of invasive species, consequences on society. Department of Entomology, University of Maryland, College Park, MD; HONR208D class. Guest lecturer.
4. **Avanesyan, A.** (2019) Spotted lanternfly: information and update. Maryland Organic Food & Farming Association, Maryland Dept. of Agriculture, Annapolis, MD.
5. **Avanesyan, A.** (2018) Novel plant-insect associations: implications of the lack of coevolution. Department of Entomology, University of Maryland, College Park, MD; weekly seminar series. Seminar speaker.
6. **Avanesyan, A.** (2018) Ecology of invasive species, consequences on society. Department of Entomology, University of Maryland, College Park, MD; HONR208D class. Guest lecturer.
7. **Avanesyan, A.** (2016) Identifying and controlling spotted wing drosophila. Berry Field Day organized by Wisconsin Berry Growers Association. River Falls, WI.
8. **Avanesyan, A.**, and T. M. Culley (2014) Interaction of generalist grasshoppers with native and exotic grasses: behavioral and molecular approaches. 62nd Annual Meeting of the Entomological Society of America, Portland, OR.
9. **Avanesyan, A.** (2008) Biology education in Russia. Biology Department, University of Northern Iowa, Cedar Falls, IA; weekly seminar series. Seminar speaker.

#### GENBANK SUBMISSIONS (\*undergraduate students, \*\*graduate students, ♦ high school students)

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1. Hartman, M. E. \*\*, **Avanesyan, A.** and Lamp, W. (2021) *Limoniidae* sp. isolate MH2h cytochrome c oxidase subunit I (COX1) gene, partial cds; mitochondrial. Direct Submission, GenBank Accession no. OL743186
2. **Avanesyan, A.** and W. O. Lamp. (2021) *Philoscia muscorum* voucher ISO-1 cytochrome c oxidase subunit I (COX1) gene, partial cds; mitochondrial. Direct Submission, GenBank Accession no. OK576272
3. McPherson C. \*, **Avanesyan, A.** and W. O. Lamp. (2021) [Predicted: *Carya illinoensis*] isolate 4n ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. OK623476
4. **Avanesyan, A.** and W. O. Lamp. (2020) *Betula pendula* isolate 1E4a ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MT119453
5. **Avanesyan, A.** and W. O. Lamp. (2020) *Acer pseudoplatanus* isolate 1F4b ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MT108179
6. **Avanesyan, A.** and W. O. Lamp. (2020) *Vitis vinifera* isolate 1B3 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MN862495
7. **Avanesyan, A.** and W. O. Lamp. (2020) *Ailanthus altissima* ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MN853649
8. **Avanesyan, A.** and W. O. Lamp. (2020) *Celastrus orbiculatus* isolate TT4a ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MN862496
9. Illahi, N. \*, **Avanesyan, A.** and W. O. Lamp. (2020) *Lonicera maackii* ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MN631052
10. Smith, D.K. \*\*, **Avanesyan, A.** and W. O. Lamp. (2020) *Eupatorium serotinum* tRNA-Leu (*trnL*) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MN395725
11. Smith, D.K. \*\*, **Avanesyan, A.** and W. O. Lamp. (2020) *Lonicera maackii* tRNA-Leu (*trnL*) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MN365276
12. Smith, D.K. \*\*, **Avanesyan, A.** and W. O. Lamp. (2020) *Pisum sativum* isolate slf-2 tRNA-Leu (*trnL*) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MN335637

13. Smith, D.K. \*\*, **Avanesyan, A.** and W. O. Lamp. (2020) *Acer platanoides* tRNA-Leu (trnL) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MN450067
14. Smith, D.K. \*\*, **Avanesyan, A.** and W. O. Lamp. (2020) *Acer rubrum* tRNA-Leu (trnL) gene, intron; chloroplast. Direct Submission, GenBank Accession no. MN450068
15. Illahi, N.\*, **Avanesyan, A.** and W. O. Lamp. (2019) *Ailanthus altissima* isolate BC4b ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast. Direct Submission, GenBank Accession no. MN856629
16. Stancliff, B. ♦, **Avanesyan, A.** and W. Lamp. (2019) *Vicia faba* tRNA-Leu (trnL) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MK934667
17. Stancliff, B. ♦, Smith, D.\*\*, **Avanesyan, A.** and W. Lamp. (2019) *Pisum sativum* tRNA-Leu (trnL) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MK919208
18. Stancliff, B. ♦, Abdelwahab, O.\*, **Avanesyan, A.** and W. Lamp. (2019) *Vigna unguiculata* tRNA-Leu (trnL) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MK883492
19. Stancliff, B. ♦, Ho, J.\*, **Avanesyan, A.** and W. Lamp. (2019) *Helianthus annuus* tRNA-Leu (trnL) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MK875279
20. **Avanesyan, A.**, and W. Lamp. (2019) *Vicia faba* var. *major* isolate PLH\_fb tRNA-Leu (trnL) gene, partial sequence; chloroplast. Direct Submission, GenBank Accession no. MK837073
21. Backer, S.\*, Christiansen, K.\*, Christofferson, D.\*, Geisinger, S.\*, Graving, S.\*, Jones, K.\*, Miller, R.\*, Omanovic, E.\*, Piatt, D.\*, Reyes-Zuniga, K.\*, Salazar-Klock, L.\*, Sopher, K.\*, Welsch, A.\*, **Avanesyan, A.**, and I. Hazan (2017) *Salvia rosmarinus* isolate rs *GAPC-2* gene, partial cds. Direct Submission, GenBank Accession no. MF074139

#### PROFESSIONAL DEVELOPMENT (selected courses, workshops, and training)

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- **The Data Scientist's Toolbox:** an online non-credit course authorized by Johns Hopkins University and offered through Coursera; verified certificate (June 1 - 20, 2022)
- **Command Line Tools for Genomic Data Science:** an online non-credit course authorized by Johns Hopkins University and offered through Coursera; verified certificate (Jul 15 – Aug 20, 2021)
- **Python for Genomic Data Science:** an online non-credit course authorized by Johns Hopkins University and offered through Coursera; verified certificate (Jun 15 – Jul 23, 2021)
- **Introduction to Genomic Technologies:** an online non-credit course authorized by Johns Hopkins University and offered through Coursera; verified certificate (Jun 10-29, 2021)
- **Data Science Math Skills:** an online non-credit course authorized by Duke University and offered through Coursera; verified certificate (Jun 1-19, 2021)
- **2021 Virtual Advanced Landscape Plant IPM PHC Short Course;** Department of Entomology, University of Maryland, College Park, MD; certificate earned (Jan 5-14, 2021)
- **Next Generation Sequencing:** seminar; GENEWIZ, Bioscience Research, University of Maryland, College Park, MD (Sep 24, 2019)
- **Scanning Electron Microscopy:** training in tissue preparation and photo imaging; Laboratory for Biological Ultrastructure, University of Maryland, College Park, MD (Dec 2018 – Jan 2019)
- **Effective Student Learning:** eight workshops; Teaching and Learning Transformation Center, University of Maryland, College Park, MD (2018 – 2019)
- **Bayesian Modeling for Socio-Environmental Data:** nine-day course; The National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD (May 29 – June 8, 2018)
- **Spatial Analysis, ArcGIS Online and Story Maps, Introduction to GIS and Python:** four workshops; University of Maryland Libraries, College Park, MD (Feb – Apr, 2018)
- **Coursework in mathematics** (19 credit hours, GPA 4.0): Calculus I, Calculus II, Calculus III, Matrices & Linear Algebra, Differential Equations & Transformations; Department of Mathematics, Iowa State University, Ames, IA (June 2014 – May 2015)



## GRANTS AND AWARDS

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1. Maryland Agricultural Experiment Station Competitive Grant Program, Co-PI and Primary Researcher, "Identification of host plant use by the invasive spotted lanternfly (*Lycorma delicatula*) using next-gen DNA sequencing technology"; 2020-2021; \$29,509
2. Maryland Agricultural Experiment Station McIntire Stennis Forestry Research Program, co-PI and Primary Researcher, "Stylet morphology of the invasive spotted lanternfly: implications for host tree–associations and potential tree damage"; 2018-2019; \$30,000
3. Maryland Specialty Block Grant Program, Primary Researcher, "The invasive spotted lanternfly, *Lycorma delicatula*, and its specialty crop host plants: insect host usage at each developmental stage."; 2018-2020; \$37,831
4. Postdoctoral Research Symposium. Univ. of Maryland. 2<sup>nd</sup> place in Poster Competition; 2018; \$300
5. Planting Science Digging Deeper Fellowship. Botanical Society of America; 2017; \$2000
6. Entomological Society of America. 1<sup>st</sup> place in Graduate Student Ten-Minute Paper Competition. Austin, TX; 2013; \$175; 2<sup>nd</sup> place in Ph.D. Student Oral Competition. Lancaster, PA; 2013; \$200
7. Wieman Wendel Benedict Awards, Univ. of Cincinnati; 2013: \$200; 2012: \$600; 2011: \$1200
8. Graduate Research Fellowship for Outstanding Incoming Ph.D. Students, Univ. of Cincinnati; 2009; \$3000
9. The Ministry of Education and Science of the Russian Federation, Primary Researcher; "The effect of cellular defense responses of snails to development of trematodes"; 2000-2004; \$8,000

## RESEARCH SKILLS

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- **Scientific research:** design, conduct, and interpret scientific research; design and lead lab/field/greenhouse experiments, as well as systematic reviews and meta-analysis of existing biological and ecological data; data processing and statistical analysis, problem-solving, troubleshooting; communicating research findings with a variety of audiences via publications and conference presentations; collaborating with researchers from multiple institutions on various projects
- **Molecular biology:** DNA/RNA extraction, PCR (mitochondrial COI, COII, and ND4; nuclear PER, ITS-1, ITS-2, GAPDH, and RAPD marker; chloroplast *trnL* (UAA) and *rbcl*; plant microsatellite markers), agarose gel electrophoresis, DNA/RNA spectrophotometry, DNA purification; restriction digest analysis, DNA cloning, sample preparation for NGS; sequence analysis (editing, aligning, estimating sequence quality, determining gene structure, species identification using BLAST, annotating and depositing sequences to the NCBI GenBank database, etc.), phylogenetic analysis
- **Microscopy / Histology / Immunology:** light microscopy and scanning electron microscopy; dissection, tissue isolation, processing, and tissue fixation; sectioning tissue using a microtome, differential staining of tissue sections, slide preparation; identification and characterization of hematopoietic tissue; measuring cell proliferation (by quantification of mitotic activity); morphological analysis of encapsulation of parasites by hemocytes (with a focus on formation of hemocyte aggregations, types of capsules, hemocyte layers in a capsule, adhesion and destruction of a parasite by hemocytes); morphometric analysis
- **Cell biology:** protein and enzyme assays (spectrophotometric, colorimetric methods), protein quantification, enzyme activity analysis; cell fractionation (isolating mitochondria and non-mitochondria fractions); morphological analysis of cell proliferation and differentiation (germinal cells), embryo development, cellular composition (invertebrates)
- **Microbiology:** aseptic/sterile techniques, culturing, staining (simple, Gram, acid-fast), KOH string test, microscopic examination of morphological characteristics of bacteria; isolation streaking, measuring cell density, bacteriophage titer analysis; MIC determination, testing for antibiotic sensitivity (dilution method, Kirby-Bauer test); metabolic tests, preparation of Winogradsky columns; complementation test with yeast (*S. cerevisiae*), bacterial conjugation (*E. coli*)
- **Field / greenhouse / lab work:** designing and conducting field/greenhouse/lab experiments; species collection and identification (plants, insects, snails and other invertebrates); insect parasitoid rearing and release for insect biocontrol; insect population monitoring using traps, sticky cards, etc.; plant growing and

maintenance (mostly grasses, fava beans), animal rearing and colony maintenance (snails, insects); establishing plots, planting, setting up lab assays; measuring plant biomass, cover, growth, insect food consumption and assimilation, distribution, etc.; multiple field trips in Ohio, Maryland, Montana, Iowa, Minnesota, Wisconsin, Pennsylvania

- **Data analysis/coding:** statistical modelling, systematic reviews, meta-analysis; R (data analysis), Linux shell, Python (basic programming), HTML

## **MENTORING** (\*undergraduate students, \*\*graduate students, ♦ high school students)

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### **Department of Entomology, University of Maryland, College Park** (2018 – present):

Brock Couch\*\*, Kevin Clements\*, Nina McGranahan ♦, Bryan Stancliff ♦, Omar Abdelwahab\*, Jessica Ho\*, Darsy Smith\*\*, Margaret Hartman\*\*, Nurani Illahi\*, Hannah Sutton\*, Olivia Shaffer\*, Cameron McPherson\*, Anya Wilkinson ♦, Leela Anna Johnson\*

*(Term projects in DNA barcoding: species identification, host plant DNA detection from insect guts, phylogenetics, systematic review on molecular diet analysis, meta-barcoding of the gut contents using NGS approach, retrieving and analyzing plant trait data from public databases)*

### **Department of Entomology, University of Wisconsin-Madison** (2016):

Claire Mattmiller ♦

*(Term project: determining mating status of the spotted wing drosophila using light microscopy and histological analysis)*

### **Department of Zoology, Herzen State University, St. Petersburg, Russia** (2002–2009):

Tanja Perminova\*, Maria Lopatkina\*, Natalia Shamkina\*, Luba Komarova\*, Julia Sackina\*, Anastasia Arsenieva\*, Ekaterina Shapkina\*, Natalia Kogotkova\*, Egor Silin\*, Irina Potapova\*, Alexandr Mogilev\*

*(Senior thesis research projects and term projects in animal ecology and animal behavior: ecological monitoring of aquatic populations, environmental analysis, analysis of animal social behavior, etc.)*

## **COURSES TAUGHT**

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### **Master of Chemical & Life Sciences Program, University of Maryland, College Park, MD** (2019–present; instructor of record)

- Evolutionary Biology (online graduate course; 3 units; 2019-present)
- Seminar in Current Topics in Chemical and Life Science: Scholarly Paper Section (3 units; 2021-present)

### **Department of Entomology, University of Maryland, College Park** (2018; teaching assistant):

- Insect Biodiversity (laboratory; 3 units)
- Aquatic Entomology (laboratory; 3 units)

### **Biology Department, Grand View University** (2016–2017; instructor of record):

- Genetics (laboratory; 4 units; 2016–2017)
- Molecular Biology (laboratory; 4 units; 2017)

### **Department of Biological Sciences, University of Cincinnati** (2010–2014; teaching assistant):

- Biology Laboratory (laboratory; 4 units; 2011)
- Genetics and Cell Biology (laboratory; 4 units; 2013–2014)
- Elementary Microbiology for Health Professionals (laboratory; 4 units; 2012)
- General Microbiology Laboratory (laboratory; 4 units; 2010–2013)

### **Department of Zoology, Herzen State University, St. Petersburg, Russia** (2002–2009; instructor of record):

- Introductory Biology (lectures, laboratory; 2003–2006)
- General Biology (lectures; 2002–2005)
- General Ecology (lectures, laboratory, field course; 2005–2007)
- Human Ecology (lectures; 2007)
- Animal Ecology (lectures, laboratory; 2003–2009)
- Bioindication (lectures; 2008)

- Animal Behavior (lectures; 2004)
- Invertebrate Zoology (laboratory, field course; 2002–2003)

## COURSES DEVELOPED

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- **DNA Barcoding for Everyone** (video tutorials, experimental modules; developed in 2022; course materials are available at [alinaavanesyan.com](http://alinaavanesyan.com))
- **Invasion Ecology** (lectures, laboratory; developed in 2020; course outline with sample materials is available at [alinaavanesyan.com](http://alinaavanesyan.com))
- **Animal Ecology** (lectures, laboratory; developed in 2003; taught during 2003–2009)

## EXTENSION AND OUTREACH

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### *Extension Newsletters*

1. **Avanesyan, A.** and P. Shrewsbury (2021) Digger wasps in your landscapes: the more the better! University of Maryland Extension, TPM/IPM Weekly Report: Beneficial of the Week. October 1, 2021.
2. **Avanesyan, A.** and P. Shrewsbury (2021) Soldier beetles are common on many flower species now. University of Maryland Extension, TPM/IPM Weekly Report: Beneficial of the Week. July 16, 2021.
3. **Avanesyan, A.** and P. Shrewsbury (2021) Green lacewings to the rescue! University of Maryland Extension, TPM/IPM Weekly Report: Beneficial of the Week. June 18, 2021.
4. **Avanesyan, A.** and P. Shrewsbury (2021) Egg parasitoids of the spotted lanternfly: time to attack! University of Maryland Extension, TPM/IPM Weekly Report: Beneficial of the Week. April 23, 2021.
5. **Avanesyan, A.** and P. Shrewsbury (2020) At least two generalist predators attack the spotted lanternfly. University of Maryland Extension, TPM/IPM Weekly Report: Beneficial of the Week. October 23, 2020.
6. **Avanesyan, A.** and C. Guédot (2016) Exclusion barriers as a sustainable strategy for management of Spotted Wing *Drosophila*. Wisconsin Fruit News, 1(6).
7. **Avanesyan, A.** and C. Guédot (2016) Raspberry varieties and their infestation by *Drosophila suzukii*. Wisconsin Fruit News, 1(4).

### *Outreach Activities*

- Volunteer: Maryland Day, University of Maryland, College Park (2018, 2019, 2022)
- Scientist Mentor and member of Master Plant Science Team, Planting Science Program, Botanical Society of America; [www.plantingscience.org](http://www.plantingscience.org) (2017-2020)
- Volunteer: Southwest Ohio District Science & Engineering Expo Coaching Day (2014)

## SERVICE

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- Senator: University Senate, full-time professional track faculty representative for the College of Computer, Mathematical and Natural Sciences, University of Maryland. Elected position (2021-2024)
- 2022 NSF grant reviewer: grant application review, work on grant panel
- Committee member for an undergraduate honors student, Dept. of Entomology, Univ. of Maryland (Spring 2022)
- Grant Reviewer: reviewed and provided feedback on student grant proposals for Northeast Sustainable Agriculture Research and Education program, Dept. of Entomology, Univ. of Maryland (Spring 2021, Spring 2022)
- Research scientist hiring committee member for the Department of Entomology, University of Maryland (Spring 2021)
- Subject editor: Journal of Orthoptera Research, subject areas - Molecular Biology, Biodiversity and Conservation, General Ecology (June 2018-present)
- Guest editor: Journal Insects, Special Issue "Molecular gut content analysis: deciphering trophic interactions of insects" (2019), Special Issue "Advances on Invasive Insect Pests: Insect Behavior, Host Plant Usage, Biocontrol, and More" (2021-2022)

- Journal Reviewer Board Member: Agriculture (Jan 2021-present), Insects (Mar 2020-present)
- Journal Reviewer (61 reviews total; full list is at <https://publons.com/researcher/1292799/alina-avanesyan>): Genes (1), Molecular Phylogenetics and Evolution (1), International Journal of Molecular Sciences (1), PLOS One (5), Biodiversity Data Journal (1), Basic and Applied Ecology (2), Insects (15), Agronomy (2), Forests (2), Environmental Entomology (7), PeerJ (2), Agriculture (1), Water (1), Journal of Biogeography (2), Oikos (1), Acta Oecologica (1), Global Change Biology (2), Bulletin of Entomological Research (3), Journal of the Kansas Entomological Society (1), Journal of Orthoptera Research (3), Foods (2), International Journal of Tropical Insect Science (2), Sustainability (2), Plants (1)
- Research staff representative for the Department of Entomology, University of Maryland (Spring 2021)
- Organizer and moderator of symposiums: “Novel plant-insect associations: interactions between exotic and native species”, Entomological Society of America Annual Meeting, Eastern Branch. Blacksburg, VA. (2019); “Novel plant-insect associations: implications of the lack of coevolution”, Annual Meeting of the Entomological Society of America, Portland, OR. (2014)
- Planning committee member: research symposium organized by Office of Postdoctoral Affairs, University of Maryland, College Park (2018)
- Moderator for student presentations: Grad 10-min; P-IE, Forestry; Annual Meeting of the Entomological Society of America: 2018 ESA, ESC, and ESBC Joint Annual Meeting, Vancouver, BC, Canada (2018)
- Judge for student presentations: Grad 10-min: P-IE, Behavior; Undergrad 10-min: SysEB, Annual Meeting of the Entomological Society of America: 2018 ESA, ESC, and ESBC Joint Annual Meeting, Vancouver, BC, Canada (2018); 4th Scholarship Symposium, Grand View University (2017); Undergraduate Research Poster Forum, University of Cincinnati (2014); 7th Annual Southwest Ohio District Science & Engineering Expo for students in grades 6–12 (2014)

## MEDIA COVERAGE

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- Avanesyan and Lamp successfully ID host plant DNA in gut content of lanternflies. University of Maryland, Department of Entomology. News and Events. April 3, 2020.
- UMD researchers study plant responses to leafhopper injury. University of Maryland, Department of Entomology. News and Events. February 5, 2019.
- Protect or destroy? The role of native grasshoppers in their home habitats. By Dylan Kutz and Serhat Solmaz. University of Maryland, Department of Entomology. Seminar blog. December 13, 2018.
- Meet the Journal of Orthoptera Research newest subject editor! University of Maryland, Department of Entomology. ENTM Newsletter | Summer 2018. August 16, 2018.
- Grasshoppers are what they eat. New method to extract plant DNA from grasshopper guts improves understanding of plant-insect interactions. Botanical Society of America News, ScienceDaily, ScienceNewsline, Phys.org, EurekAlert! February 5, 2014.
- New technique of studying insect physiology through DNA extractions. By Jen Ellis. LabRoots. February 18, 2014.
- Gut instinct. By Manupriya. Down to Earth. The Soc. for Environ. Comm., India. March 15, 2014.
- UC doctoral student researches grasshopper guts to determine feeding patterns. University of Cincinnati News Release. April 9, 2014.
- Flying foe? By Dama Ewbank. University of Cincinnati Research Magazine. November, 2010.
- UNI biology researcher works with Russian counterpart. UNI newsletter. May 13, 2008.

## SOCIETY MEMBERSHIP

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- Entomological Society of America
- The Orthopterists' Society
- American Association for the Advancement of Science