

# Alina Avanesyan, Ph.D.

Postdoctoral Associate  
Department of Entomology  
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## Summary

- **Areas of expertise:** evolutionary ecology, molecular biology, organismal biology, entomology
- **Research experience:** plant-insect interactions and insect biology (7 years); DNA barcoding, phylogenetics, and population genetics (6 years); host-parasite interactions (5 years)
- **Publications, presentations:** 17 peer-reviewed publications, 23 conference presentations, six invited talks
- **Selected courses taught (lectures and/or laboratories):** Genetics and Cell Biology, Molecular Biology, Introductory Biology, Microbiology, Invertebrate Zoology, General Biology, Animal Behavior, Animal Ecology, General Ecology
- **Courses developed:** Animal Ecology, Animal Behavior, Human Ecology, Bioindication
- **Mentoring:** 2 graduate students, 14 undergraduate students, 3 high school students

## Education

- **Ph.D.,** Biological Sciences (2014). University of Cincinnati. *Dissertation:* Native versus exotic grasses: the interaction between generalist insect herbivores and their host plants
- **Candidate of Science (Ph.D.-equivalent),** Biological Sciences (2002). Herzen State University, St. Petersburg, Russia. *Dissertation:* The effect of defense responses of snails on development of trematode partenitae (with a focus on the family Echinostomatidae)
- **Diploma,** Biology, Psychology, *cum laude* (1997). Herzen State University, St. Petersburg, Russia

## Professional Experience

**Postdoctoral Associate,** Department of Entomology, University of Maryland, College Park (01/2018–present)

- Research on ecology and evolution of plant-insect interactions with a focus on novel associations between native and exotic species and their effect on natural and managed systems
- Current projects: (a) external morphology and host plant usage of the invasive spotted lanternfly, using molecular approach, light microscopy and scanning electron microscopy; (b) host plant usage of the potato leafhopper based on molecular markers for ingested plant DNA; (c) DNA barcoding of isopods as a tool to assess wetland-stream connectivity; (d) biodiversity of agricultural drainage ditches; (e) herbivore resistance and tolerance in exotic grasses.
- Mentored seven students in DNA barcoding work

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

- Taught upper-level Genetics and Molecular Biology laboratory courses for biotechnology majors
- Trained students in standard molecular biology techniques: DNA extraction, PCR, agarose gel electrophoresis, DNA ligation, transformation, restriction digest analysis, sequence analysis, etc.

**Research Associate**, Department of Entomology, University of Wisconsin-Madison (Spring/Summer 2016)

- Worked on biology and distribution of *Drosophila suzukii*: went on regular field trips in Wisconsin and Minnesota; performed fly collection, identification, lab assays, dissection
- Developed and published a method for determining fly mating status by isolating spermathecae
- Trained high school student in tissue dissection, microscopy, staining, and slide preparation

**Research Assistant/Teaching Assistant**, Department of Biological Sciences, University of Cincinnati (2009–2014)

- Worked on plant responses to herbivory and insect feeding preferences (dissertation project)
- Designed and conducted field trials on herbivory, greenhouse experiments, and lab insect assays
- 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
- Performed DNA-based identification and phylogenetic analysis of forensically important flies
- Worked on plant population genetics: performed DNA extraction, PCR, setup sequence reactions
- Taught laboratory courses (Microbiology, Biology Laboratory, Genetics and Cell Biology)
- Went on multiple field trips in Ohio, Maryland, Montana, and Iowa

**Researcher**, Laboratory of Cell Biology in Culture, Institute of Cytology of the Russian Academy of Science, St. Petersburg, Russia (2008–2009, part-time)

- Worked on genetic variation and hybridization in littoral snails: performed tissue processing, DNA extraction, PCR, sequence analysis; co-managed database for snail hybridization project
- Trained two students in DNA extraction, PCR, and agarose gel electrophoresis

**Visiting Research Scholar**, Department of Biology, University of Northern Iowa (Spring 2008)

- Worked on phylogeography of North-American fiddler crabs populations: extracted genomic DNA, conducted PCR, gel electrophoresis; prepared sequence reactions

**Instructor/Docent**, Department of Zoology, Herzen State University, St. Petersburg, Russia (2002–2009)

- Taught lectures, laboratories and field courses in ecology, biology and invertebrate zoology
- Trained students in microscopy, species identification, invertebrate morphology, basic morphometric analysis, standard bioindication and biomonitoring methods, etc.
- Mentored a total of 11 undergraduate students in research on animal ecology

**Research Assistant**, Department of Zoology, Herzen State University, St. Petersburg, Russia (1997–2002)

- Worked on cellular immune responses of snails to infection by trematodes (dissertation project)
- Conducted collection, identification, maintaining snails in lab; estimated snail infection rates
- Performed histological analysis of parasite encapsulation by snail hemocytes; morphological analysis of trematode larvae development; snail tissue dissection and processing
- Identified and characterized snail hematopoietic tissue (previously not described)
- Trained three students in tissue processing, dissection, microscopy, and slide preparation

## Courses Taught (\*courses developed)

### *Department of Entomology, University of Maryland, College Park* (2018-2019):

- Evolutionary Biology (online course; 3 units; upcoming summer 2019; instructor of record)
- Insect Biodiversity: The Good, The Bad and The Weird (laboratory; 3 units; 2018; teaching assistant)
- Aquatic Entomology (laboratory; 3 units; 2018; teaching assistant)

### *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)

## Published Course Materials

1. **Avanesyan, A.** (2003) Animal Ecology: Lecture notes. Herzen State University. St. Petersburg, Russia. 40 p. (In Russian)
2. **Avanesyan, A.** (2003) Animal Ecology: Lab assignments. Herzen State University. St. Petersburg, Russia. 15 p. (In Russian)

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

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

- Brock Couch\*\*
- Kevin Clements\*
- Nina McGranahan♦
- Bryan Stancliff♦
- Omar Abdelwahab\*
- Jessica Ho\*
- Darsy Smith\*\*

(Term projects in DNA barcoding: isopod species identification, host plant DNA detection from insect guts, phylogenetics)

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

- Claire Mattmiller<sup>♦</sup>

(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.)

**GenBank Submissions** (\*undergraduate students, <sup>♦</sup> high school students)

1. Stancliff, B. <sup>♦</sup>, Ho, J. \*, **Avanesyan, A.** and W. Lamp. (2019) *Helianthus annuus* tRNA-Leu (*trnL*) gene, partial sequence; chloroplast. Direct Submission, *GenBank* Accession no. MK875279
2. **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
3. 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**

- Teaching and Learning Transformation Center, University of Maryland. Workshops (2018-2019):
  - Integrating Diversity Throughout the Semester (May 1, 2019)
  - Planning & Facilitating Group Discussions (Apr 18, 2019)
  - Crafting Your Teaching Philosophy Statement (Mar 14, 2019)
  - Teaching Thinking: Strategies to Support Student Engagement and Metacognition (Feb 12, 2019)
  - Starting Off On the Right Foot: Promoting Positive Classroom Climate and Student Inclusion (Sep 21, 2018)
  - Creating Effective Course Designs (Sep 17, 2018)
- Spotted Lanternfly Regional Summit; Penn. Dept. of Agriculture, Harrisburg, PA (Mar 6-7, 2019)
- Bayesian Modeling for Socio-Environmental Data: a nine-day short course; The National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD (May 29-June 8, 2018)
- Digging Deeper Summer Professional Development: a five-day workshop; Biological Sciences Curriculum Study (BSCS), Colorado Springs, CO (July 23-27, 2017)

- 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).

## Peer-Reviewed Publications

### Journal Articles

1. **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.
2. **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.
3. 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.
4. 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.
5. **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.
6. **Avanesyan, A.** and T.M. Culley (2017) 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.
7. **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.
8. 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.
9. **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.
10. **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.
11. 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.
12. 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.
13. 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)

**Published Abstracts**

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.

**Manuscripts in preparation**

1. **Avanesyan, A.,** Mangel, T.K., and W.O. Lamp. External morphology and developmental changes of tarsal tips and mouthparts of the spotted lanternfly, *Lycorma delicatula*
2. **Avanesyan, A.,** and W.O. Lamp Use of molecular markers for plant DNA to determine host plant usage for potato leafhopper, *Empoasca fabae*.

**Conference Presentations** (\*undergraduate students)

1. **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
2. **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
3. 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
4. **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
5. **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
6. **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
7. 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
8. 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

9. 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
10. 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
11. 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
12. **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
13. **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
14. **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
15. **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
16. **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
17. **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
18. **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
19. **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
20. 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
21. 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
22. **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
23. 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

## Invited Talks

1. *Upcoming talk:* **Avanesyan, A.** (2019) Ecology of invasive species, consequences on society. Department of Entomology, University of Maryland, College Park, MD; HONR208D class. Guest lecturer.
2. **Avanesyan, A.** (2019) Spotted lanternfly: information and update. Maryland Organic Food & Farming Association, Maryland Dept. of Agriculture, Annapolis, MD.
3. **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.
4. **Avanesyan, A.** (2018) Ecology of invasive species, consequences on society. Department of Entomology, University of Maryland, College Park, MD; HONR208D class. Guest lecturer.
5. **Avanesyan, A.** (2016) Identifying and controlling spotted wing drosophila. Berry Field Day organized by Wisconsin Berry Growers Association. River Falls, WI.
6. **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.
7. **Avanesyan, A.** (2008) Biology education in Russia. Biology Department, University of Northern Iowa, Cedar Falls, IA; weekly seminar series. Seminar speaker.

## Non Peer-Reviewed Publications

### *Research Reports*

1. **Avanesyan, A.**, Thurman C.L., and P.B. Berendzen (2008) Exploring effective methods of DNA extraction and the amplification of specific mtDNA and nDNA regions in fiddler crabs (*Uca*). Functional Morphology, Ecology and Animal Life Cycles 8: 15-20. (In Russian)
2. **Avanesyan, A.** (2005) Structural changes in the amebocyte-producing organ of *Biomphalaria pfeifferi* snails during *Echinostoma caproni* infection. Functional Morphology, Ecology and Animal Life Cycles 5: 102-106. (In Russian)
3. **Avanesyan, A.** and G.L. Ataev (2004) Hematopoiesis in gastropods. Functional Morphology, Ecology and Animal Life Cycles 4: 105-111. (In Russian)
4. Ataev, G.L., and **A. Avanesyan** (2000) Snail defense responses to infection by trematodes. Functional Morphology, Ecology and Animal Life Cycles, pp. 118-122. (In Russian)

## Grants and Awards

1. Maryland Agricultural Experiment Station, McIntire Stennis Forestry Research Program, co-PI with William Lamp, "Stylet morphology of the invasive spotted lanternfly: implications for host tree–associations and potential tree damage"; 2018-2019; \$30,000
2. Maryland Specialty Block Grant Program, primary researcher, PI: William Lamp, "The invasive spotted lanternfly, *Lycorma delicatula*, and its specialty crop host plants: insect host usage at each developmental stage."; 2018-2020; \$37,831
3. Postdoctoral Research Symposium. University of Maryland. 2<sup>nd</sup> place in Poster Competition.



College Park, MD; 2018; \$300

4. Planting Science Digging Deeper Fellowship. Botanical Society of America; 2017; \$2000
5. Entomological Society of America. 1<sup>st</sup> place in Graduate Student Ten-Minute Paper Competition. Austin, TX; 2013; \$175
6. Entomological Society of America. Eastern Branch. 2<sup>nd</sup> place in Ph.D. Student Oral Competition. Lancaster, PA; 2013; \$200
7. Wieman Wendel Benedict Awards. Department of Biological Sciences, University of Cincinnati; 2013: \$200; 2012: \$600; 2011: \$1200
8. Graduate Research Fellowship for Outstanding Incoming Ph.D. Students Department of Biological Sciences, University of Cincinnati; 2009; \$3000

## Research Skills

- **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; sequence analysis (editing, aligning, assembling, estimating sequence quality, determining gene structure, etc.), phylogenetic analysis; preparation of human chromosome spreads (using HeLa cancer cells)
- **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)
- **Histology, microscopy, cellular immunology:** dissection and tissue isolation, tissue processing, embedding techniques, sectioning tissue using a microtome, differential staining of tissue sections; light microscopy, slide preparation, cell size measurements; 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 of insect mouthparts and tarsi; scanning electron microscopy
- **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 work:** species collection and identification (plants, invertebrates); animal rearing and maintenance of lab colonies (snails, insects); establishing plots, planting, setting up feeding assays; measuring plant biomass, cover, growth, leaf damage, insect food consumption and assimilation, etc.; multiple field trips in Ohio, Maryland, Montana, Iowa, Minnesota, Wisconsin, and Russia
- **Data analysis, programming, computer skills:** R (data analysis), Python (basic programming); Linux shell, Vim (basic usage); HTML/CSS; sequence analysis (various software)

## Extension and Outreach

### *Outreach Activities*

- Scientist Mentor and member of Master Plant Science Team (2017-present)  
Planting Science Program, [www.plantingscience.org](http://www.plantingscience.org)

### *Extension Newsletters*

1. **Avanesyan, A.** and C. Guédot (2016) Exclusion barriers as a sustainable strategy for management of Spotted Wing *Drosophila*. Wisconsin Fruit News, 1(6).
2. **Avanesyan, A.** and C. Guédot (2016) Raspberry varieties and their infestation by *Drosophila suzukii*. Wisconsin Fruit News, 1(4).

## Service

- Subject editor: Journal of Orthoptera Research (June 2018-present)
- Reviewer: PeerJ (2019); Molecular Phylogenetics and Evolution (2018); PLOS One (2018); Journal of Biogeography (2018); International Journal of Molecular Sciences (2018); Acta Oecologica (2018); Global Change Biology (2017, 2018); Biodiversity Data Journal (2017); Journal of the Kansas Entomological Society (2017); Journal of Orthoptera Research (2016, 2017)
- Volunteer: Maryland Day, University of Maryland, College Park (2019)
- Organizer and moderator of a symposium, “Novel plant-insect associations: interactions between exotic and native species”, Entomological Society of America Annual Meeting, Eastern Branch. Blacksburg, VA. (2019)
- Moderator, 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)
- Planning committee member: research symposium organized by Office of Postdoctoral Affairs, University of Maryland, College Park (2018)
- Volunteer: Maryland Day, University of Maryland, College Park (2018)
- Organizer and moderator of section symposium, “Novel plant-insect associations: implications of the lack of coevolution”, 62nd Annual Meeting of the Entomological Society of America, Portland, OR. (2014)
- Judge for poster forums: 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)
- Volunteer: Southwest Ohio District Science & Engineering Expo Coaching Day (2014)

## Media Coverage

- 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, ScienceNewslane, 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, a magazine of The Society for Environmental Communications, 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**

- Botanical Society of America
- Ecological Society of America
- Entomological Society of America
- The Orthopterists' Society