M. Andrew Jansen, Ph.D.

Curriculum Vitæ

Updated: *April 25, 2023*

Personal Information

Address Beltsville Agricultural Research Center, Bldg. 012, Room 1-8
10300 Baltimore Avenue, Beltsville, MD 20705-2325
Phone (301) 504-6649
E-mail andrew.jansen@usda.gov
Website Electron & Confocal Microscopy Unit
GitHub github.com/entojansen

Research Interests

Insect evolution and biomechanics; nanoindentation of insect cuticle; structural adaptation and morphological optimization; mechanical behavior of biomaterials; biomimetic design of robotic systems and materials.

Education

2020 - 2022 Postdoctoral Fellowship, University of Bonn. Advisor: Dr. Alexander Blanke
ERC Starting Grant (Recipient: Alexander Blanke, Grant agreement ID: 754290) "**MECH-EVO-INSECT**"
2014 - 2019 Ph.D., Arizona State University, Evolutionary Biology. Advisor: Dr. Nico Franz
"Evolutionary Biomechanics of the Rostrum of *Curculio* Linnaeus, 1758 (Coleoptera: Curculionidæ)"
2012 - 2014 M.Sc., Arizona State University, Biology.
"A Phylogenetic Revision of *Minyomerus* Horn, 1876 and *Piscatopus* Sleeper, 1960 (Curculionidæ: Entiminæ: Tanymecini: Tanymecina)"
2007 - 2011 B.S., University of Florida, Entomology and Nematology.

Current Employment

2022 - Present

Employer United States Department of Agriculture
Agricultural Research Service (Northeast Area)
Position Research Entomologist – Systematic Entomology Laboratory
Director – Electron and Confocal Microscopy Unit

Peer Reviewed Publications

Dougherty, L., Borejsza-Wysocka, E., Miaule, A., Wang, P., Zheng, D., **Jansen, M.A.**, Brown, S., Pineros, M., Dardick, C., and K. Xu. 2023. A single amino acid substitution in MdLAZY1A dominantly impairs shoot gravitropism in *Malus*. *Plant Physiology. Submitted April 4, 2023.*

Jansen, M.A., Niverty, S., Chawla, N., & N.M. Franz. 2021. Reducing the risk of rostral bending failure in *Curculio* Linnaeus, 1758. *Acta Biomaterialia* 126: p. 350-371.

Jansen, M.A., Williams, J., Chawla, N., & N.M. Franz. 2019. Avoidance of catastrophic structural failure as an evolutionary constraint: Biomechanics of the acorn weevil rostrum. *Advanced Materials* 31(41): 1903526.

Jansen, M.A. & N.M. Franz. 2018. Descriptions of four new species of *Minyomerus* Horn, 1876 (Coleoptera: Curculionidæ), with notes on their distribution and phylogeny. *PeerJ.* 6: e5633.

Jansen, M.A., Luck, K., Campbell, J., Amor, H.B., & D. Aukes. 2017. Bio-inspired robot design considering load-bearing and kinematic ontogeny of Chelonioidea sea turtles. In *Biomimetic and Biohybrid Systems*. p. 216-229

Luck, K., **Jansen, M.A.**, Campbell, J., Aukes, D., & H.B. Amor. 2017. From the lab to the desert: fast prototyping and learning of robot locomotion. *Proceedings of Robotics: Science and Systems*. 13: p. 75-83.

Jansen, M.A., Singh, S.S., Chawla, N., & N.M. Franz. 2016. A multilayer micromechanical model of the cuticle of *Curculio longinasus* Chittenden, 1927 (Coleoptera: Curculionidæ). *Journal of Structural Biology*. 195: p. 139-158.

Singh, S.S., **Jansen, M.A.**, Franz, N.M., & N. Chawla. 2016. Microstructure and nanoindentation of the rostrum of *Curculio longinasus* Chittenden, 1927 (Coleoptera: Curculionidæ). *Materials Characterization*. 118: p. 206-211.

Jansen, M.A. & S.E. Halbert. 2016. Key to Florida Alydidæ (Hemiptera: Heteroptera) and selected exotic pest species. *Insecta Mundi*. 0476: p. 1-14.

Jansen, M.A. & N.M. Franz. 2015. Phylogenetic revision of *Minyomerus* Horn, 1876 sec. Jansen & Franz, 2015 (Coleoptera, Curculionidæ) using taxonomic concept annotations and alignments. *ZooKeys*. 528: p. 1-133.

Featured Media

Clement, M. 2019. "Weevil genius: Insect inspires stronger, more flexible materials". *ASU Now*. 10 October.

Shimonoya, R. 2020. "The strongest bug, uncrushed by a car, reveals its secret of robustness". *Nikkei, Technology Column*. Electronic version of the Japanese Business Daily. 28 November.

Manuscripts in Preparation

Jansen, M.A. Two new species of *Minyomerus* Horn, 1876 (Coleoptera: Curculionidæ). *In Prep.*

Jansen, M.A. & A. Blanke. Classification of unidirectional plies in the cuticle of Polyneoptera. *In Prep.*

Conference Presentations

Jansen, M.A., & N.M. Franz. 2018."Comparative bending mechanics and morphology of the snout in *Curculio* Linnaeus 1756". *Annual Meeting of the Entomological Society of America*, Vancouver, BC.

Jansen, M.A., Chawla, N., & N.M. Franz. 2017. "Fracture mechanics and evolution of resilient cuticle in the rostrum of *Curculio* Linnaeus, 1758". *Annual Meeting of the Entomological Society of America*, Denver, CO.

Jansen, M.A. & N.M. Franz. 2017. "Evolutionary mechanics of the rostrum in *Curculio* Linnaeus, 1758". *Annual Meeting of the Willi Hennig Society*, St. Petersburg, FL.

Jansen, M.A., Luck, K., Campbell, J., Amor, H.B., & D. Aukes. 2017. "Bio-inspired robot design considering load-bearing and kinematic ontogeny of Chelonioidea sea turtles". *Living Machines*, Stanford, CA.

Luck, K., **Jansen, M.A.**, Campbell, J., Aukes, D., & H.B. Amor. 2017. "From the lab to the desert: fast prototyping and learning of robot locomotion". *Robotics: Science and Systems*, Cambridge, MA.

Jansen, M.A. & N.M. Franz. 2016. "Why the long face? Insights into the mechanical behavior of the rostrum in the genus *Curculio* Linnaeus, 1758". International Congress of Entomology, Orlando, FL.

Jansen, M.A., Singh, S.S., Chawla, N., & N.M. Franz. 2015. "Mechanical Behavior of the Rostrum of *Curculio* Linnaeus, 1758 (Coleoptera: Curculionidæ)". Annual Meeting of the Entomological Society of America, Minneapolis, MN.

Jansen, M.A. & N.M. Franz. 2014. "A phylogenetic revision of *Minyomerus* Horn, 1876, and *Piscatopus* Sleeper, 1960 (Coleoptera: Curculionidæ: Entiminæ: Tanymecini)". Annual Meeting of the Entomological Society of America Pacific Branch, Tucson, AZ.

Jansen, M.A. & N.M. Franz. 2013. "A phylogenetic revision of *Minyomerus* Horn, 1876, and *Piscatopus* Sleeper, 1960 (Coleoptera: Curculionidæ: Entiminæ: Tanymecini)". Annual Meeting of the Entomological Society of America, Austin, TX.

Jansen, M.A. & N.M. Franz. 2013. "A phylogenetic revision of *Minyomerus* Horn, 1876, and *Piscatopus* Sleeper, 1960 (Coleoptera: Curculionidæ)". 12th Biennial Conference of Science and Management on the Colorado Plateau, Flagstaff, AZ.

Awards and Fellowships

2019 $12,000.00 - ASU School of Life Sciences Completion Fellowship
2018 Awarded honorary 1-year membership - AAAS/Science Excellence in Science Program
2018 $400.00 - ASU School of Life Sciences Fall Travel Award
2018 $500.00 - ASU Q2 Graduate College Travel Award
2018 $12,250.00 - ASU Biomimicry Center Fellowship (Corporate sponsorship by Google, Inc.)
2017 $500.00 - The Willi Hennig Society Student Travel Award
2017 $400.00 - ASU School of Life Sciences Fall Travel Award
2017 $195.00 - ASU Q2 Graduate College Travel Award
2017 $6,000.00 - ASU Evolutionary Biology Doctoral Program Summer Fellowship
2016 $400.00 - ASU School of Life Sciences Fall Travel Award

Products Developed

C-Turtle

Website https://sites.google.com/view/c-turtle/
Design Version 1.0 Cut-files
License Attribution 4.0 International (CC BY 4.0)

Patent Applications

Aukes, D., Amor, H.B., Luck, K., **Jansen, M.A.**, & J. Campbell, *inventors*; Arizona State University, Skysong Innovations, *assignee*. 2018. United States non-provisional patent application for systems and methods for rapid-prototyped robotic devices. *US Patent Application No. 16/215,910*. Filed 11 December 2018.

Aukes, D., Amor, H.B., Luck, K., **Jansen, M.A.**, & J. Campbell, *inventors*; Arizona State University, Skysong Innovations, *assignee*. 2017. United States provisional patent application for systems and methods for rapid-prototyped robotic devices. *US Patent Application No. 62/597,276*. Filed 11 December 2017.

Featured Media

Adams, D. 2017. "An army of these odd-looking robotic 'turtles' might help rid the world of landmines". *Digital Trends*. 26 May.

Ander, J. 2017. "Landmine-clearing Pi-powered C-Turtle". *Raspberry Pi Official Blog*. 26 July.

Coledewey, D. 2017. "These flat-pack turtlebots will crawl across minefields for safety's sake". *Tech Crunch*. 25 May.

Crookes, D. 2017. "C-TURTLE". *The MagPi Magazine*: Issue 63 1 November.

DeLisle, J.J. 2017. "Raspberry-Pi-powered turtle robot learns to navigate new terrains on its own - From planetary exploration to swarm robotic landmine sensing, C-Turtle's possibilities are endless". *Electronic Products*. 11 August.

Fagan, K. 2017. "The landmine-detecting robot 'turtle'". *BBC News*. 22 July.

Horsey, J. 2017. "Raspberry Pi used to create C-Turtle, landmine clearing robot". *Geeky Gadgets*. 27 July.

Kety, S. 2017. "'C-Turtle', the 3D printed robot whose movements are similar to a sea turtle". *3D Adept News*. 16 August.

Koslow, T. 2017. "Out of the shell - C-Turtle: the paper turtle robot that can detect landmines". *All3DP*. 20 August.

Lavars. N. 2017. "Turtle-bot teaches itself to waddle through the desert". *New Atlas*. 26 May.

Ludacer, R. 2017. "Researchers are using robotic sea turtles to find land mines". *Tech Insider*. 10 June.

Ray, A. 2017. "A new turtle explorer - This $70 robot that mimics a sea-turtle may eventually reach Mars". *Quartz*. 15 August.

Massaouden, L. 2017. "C-Turtle, le robot tortue en carton qui doit un jour explorer Mars". *Mashable avec France 24*. 25 August.

Mathews, L. 2017. "Robotic Turtles With Raspberry Pi Brains Are Sniffing Out Land Mines". *Geek.com*. 27 July.

Sabin, D. 2017. "This crawling C-Turtle robot could hunt for landmines". *Inverse*. 26 May.

Reynolds, M. 2017. "Robotic turtles can be used to detect landmines in the desert". *New Scientist Magazine*: Issue 3127. 24 May.

Sant, J.V. 2017. "ASU Robotics turns to nature for inspiration". KPHO Broadcasting Corporation: *3TV/CBS5*. 5 June.

Scott, C. 2017. "Partially 3D printed C-Turtle robots crawl and adapt in the desert". *3Dprint.com*. 17 August.

Seckel, S. 2017. "Technology comes from collaboration between computer science, mechanical engineering and biology". *ASU Now*. 25 May.

Seckel, S. 2017. "ASU-designed C-Turtle robot teaches itself to get around". *ASU Now*. 25 May.

Wehner, M. 2017. "These robotic turtles could save your life". *New York Post*. 25 May.

Unknown - 'Hackster Staff'. 2017. "Nature-inspired C-Turtle robot waddles the desert with ease". *Hackster*. 26 May.

Unknown - 'Gadget Junkie'. 2017. "C-Turtle: cardboard turtle robot with Raspberry Pi". *gadgetify*. 27 July.

Unknown - 'Robot Man'. 2017. "C-Turtle cardboard robot turtle learns to navigate different terrains". *Robotic Gizmos*. 27 July.

Design and Prototyping Services

Western Entomological Supply (Co-founder)

github.com/western-entomological

2017 - 2019 Design and production of insect mounting points for entomological collections (Universal Laser Cutter VLS 6.60)

2017 - 2019 Design and production of curation equipment for insect specimens (MakerBot Replicator 2x)

2018 Production of cassette cartridge spacer and brackets prototypes for TechShot (MakerBot Replicator 2x)

Programming Languages and Software

Languages

Most proficient with Python, R, and LaTeX
Intermediate experience with Bash, MATLAB
Dabbled in Abaqus Script, HTML, XML, Java, BASIC, Visual Basic, JavaScript, Git
Currently training in C++17/20

Software

Most proficient with Solidworks, Abaqus/CAE, PrusaSlicer, Adobe Illustrator
Intermediate experience with COMSOL, GitHub Desktop, GraphPad Prism
Dabbled in ImageJ, Amira, Adobe Photoshop

Society Memberships

2013 - 2019 Entomological Society of America, Pacific Branch
2013 - 2019 Coleopterists Society

Academic Service

Manuscript Reviewer

Acta Biomaterialia
The Coleopterists Bulletin
Coleopterists Society Monographs (Patricia Vaurie Series)
The Pan-Pacific Entomologist
Zootaxa

Book Chapter Reviews

"Weevils (Coleoptera: Dryophthoridæ, Brachyceridæ, Erirhinidæ, Curculionidæ) of the Prairie Ecozone in Canada". Robert S. Anderson, Patrice Bouchard, & Hume Douglas. In Volume 4 of *Arthropods of Canadian Grasslands.*

Community Outreach

2013 - 2018 ASU - SoLS Night of the Open Door
2013 - 2016 ASU - IAFSE Engineering Open House
2014 - 2015 ASU - SoLS Graduate Partners in Science Education

Insect Identification and Collection Services

2019 Greater Good, Madrean Discovery Expedition - Sierra Chivato, SO, México
2017 - 2018 US Department of Agriculture - Tempe, AZ, USA
2017 Greater Good, Madrean Discovery Expedition - Cajón Bonito, SO, México
2014 Madrean Discovery Expedition - Patagonia, AZ, USA
2013 Madrean Discovery Expedition - Sierra la Púrica, SO, México
2013 US National Park Service, BioBlitz - Joshua Tree National Park, CA, USA
2012 Madrean Discovery Expedition - Sierra Aconchi, SO, México

Teaching Appointments

Course	Subject	Semester	Position
BIO 201	Human Anatomy and Physiology	Fall - 2019	Instructor
BIO 386	Entomology	Fall - 2018	Instructor
BIO 201	Human Anatomy and Physiology	Spring - 2017	Teaching Assistant
BIO 281	Biology (1st Semester for Majors)	Fall - 2016	Teaching Assistant
BIO 182	Biology (2nd Semester)	Summer - 2016	Teaching Assistant
BIO 181	Biology (1st Semester)	Spring - 2016	Teaching Assistant
BIO 282	Biology (2nd Semester for Majors)	Spring 2014	Teaching Assistant
BIO 386	Entomology	Fall - 2013, 2014, 2015	Teaching Assistant

Field and Museum Work

Field Work

United States	AZ, CA, CO, FL, GA, ID, NM, NV, PR, SC, TX, UT (2010 - 2022)
Germany	NRW (2020 - 2022)
Mexico	SO (2012, 2013, 2017, 2019)
Guatemala	AV, BV, CM, CQ, ES, GU, HU, IZ, JA, PR, QC, QZ, SA, SO, SR, SU, TO, ZA (2014)

Collections Visited

ASUT USA, Arizona, Tempe, Arizona State University, Hasbrouck Insect Collection
BYUC USA, Utah, Provo, Brigham Young University, Monte L. Bean Life Science Museum
CASC USA, California, San Francisco, California Academy of Sciences
CSCA USA, California, Sacramento, California State Collection of Arthropods
CSDS USA, California, Baker, Desert Studies Center
CSUC USA, Colorado, Fort Collins, Colorado State University
CWOB USA, Arizona, Green Valley, Charles W. O'Brien Collection
EMEC USA, California, Berkeley, University of California, Essig Museum of Entomology
FSCA USA, Florida, Gainesville, Division of Plant Industry, Florida State Collection of Arthropods
FSMC USA, Florida, Gainesville, University of Florida, Florida Museum of Natural History
LBOB USA, Arizona, Green Valley, Lois B. O'Brien Collection
MGCL USA, Florida, Gainesville, University of Florida, McGuire Center for Lepidoptera and Biodiversity
NAUF USA, Arizona, Flagstaff, Northern Arizona University
NMSU USA, New Mexico, Las Cruces, New Mexico State University, Museum of Southwestern Biology
NVDA USA, Nevada, Reno, Nevada State Department of Agriculture
RLAC USA, California, El Dorado Hills, Rolf L. Aalbu Collection
SMFD Germany, Hessen, Frankfurt-am-Main, Forschungsinstitut und Naturmuseum Senckenberg
SWRS USA, Arizona, Portal, Southwestern Research Station
TAMU USA, Texas, College Station, Texas Agricultural and Mechanical University
TTUZ USA, Texas, Lubbock, Texas Tech University
UAIC USA, Arizona, Tucson, University of Arizona
UCDC USA, California, Davis, University of California, R.M. Bohart Museum of Entomology
UCRC USA, California, Riverside, University of California, Entomology Research Museum
UNMC USA, New Mexico, Albuquerque, University of New Mexico
UMNH USA, Utah, Salt Lake City, University of Utah, Utah Museum of Natural History
UVGC Guatemala, Guatemala City, Universidad del Valle de Guatemala, Colleción de Artrópodos
ZMHB Germany, Berlin, Museum für Naturkunde der Humboldt Universität zu Berlin

Employment History

2021 Postdoctoral Researcher - University of Bonn
2020 Postdoctoral Researcher - University of Cologne
2019 Adjunct Instructor - Mesa Community College
2019 Research Consultant - The Biomimicry Center, Arizona State University
2012 Museum Technician - Florida State Collection of Arthropods & McGuire Center for Lepidoptera
2011 Research Technician - Honeybee Research and Extension Laboratory, University of Florida
2011 Research Assistant - Division of Insect Behavior, USDA-ARS, Gainesville, FL
2009 - 2011 Senior Counsellor - Center for Precollegiate Education and Training, University of Florida

Professional References

Alexander Blanke, Ph.D., blanke@uni-bonn.de
Postdoctoral Advisor
AG Evolutionary Morphology
Institute for Evolutionary Biology and Zooecology
University of Bonn
Bonn 53121, DE

Nico Franz, Ph.D., nico.franz@asu.edu
Doctoral Advisor
Biodiversity Knowledge Integration Center
Natural History Collections
Arizona State University
Tempe, AZ 85282, USA

Additional references available upon request.

M. Andrew Jansen, Ph.D.
mjansen@uni-bonn.de
Institute for Evolutionary Biology and Zooecology
University of Bonn
Bonn 53121, DE