

Curriculum Vitae

Dr. rer nat. Martin Horstmann

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date of birth: 30th of July 1990

place of birth: Gelsenkirchen

Academic career

04/2020 – now	Scientific employee and Postdoc at the Ruhr-University Bochum, Department of Animal Ecology, Evolution and Biodiversity (Prof. Dr. Ralph Tollrian)
03/2020 – now	Scientific employee and Postdoc at the Albert-Ludwigs-University Freiburg im Breisgau, Plant Biomechanics Group (Prof. Dr. Thomas Speck)
04/2015 – 04/2020	PhD at the Department of Animal Ecology, Evolution and Biodiversity, Ruhr University Bochum, Germany (summa cum laude) Title: “3D-morphology and Function of Inducible Morphological Defences in <i>Daphnia</i> ” (Prof. Dr. Ralph Tollrian)
11/2014 - 03/2015	Scholarship at the University of Birmingham (UK)
10/2012 - 09/2014	M.Sc.-Biology, Ruhr University Bochum (1,0) Title: <i>Daphnia</i> ’s carapace: structure and stability (Prof. Dr. Ralph Tollrian)
10/2009 - 09/2012	B.Sc. Biology, Ruhr University Bochum (1,0) Title: Biomechanical properties of inducible morphological defences in the carapace of <i>Daphnia</i> (Prof. Dr. Ralph Tollrian)
06/2009	Higher university entrance qualification (Abitur 1,1), Carl-Friedrich-Gauß-Gymnasium, Gelsenkirchen, Germany

Extracurricular activities

06/2015	Workshop “Univariate Statistics in Ecology and Evolution” of the German zoological society (DZG), Bremen, Germany
04/2013 – 06/2013	Internship/“Semesterarbeit” in the Biomechanics group at the Ruhr University Bochum, Germany, with emphasis on model generation and computation with ANSYS
2009 - 2014	Attendance to courses in (Bio-)mechanics, Materials Science, Engineering, Programming and Ethics

Teaching (at the Ruhr University Bochum)

Floristic and faunistic field trips (Excursions for students)

Exercises in Evolution, Ecology and Biodiversity of Animals (determination exercises)

Field trip to Helgoland

A-module "Development and Investigation of Biodiversity"

A-module "Ecology, Evolution and Biodiversity of Invertebrates"

S-module "Evolutionary Ecology"

(Co-) Supervision of Bachelor/Master Theses

SS 16	Elena Konopka	B.Sc.	Kniffe gegen pflanzliche Fallen: induzierbare Verteidigungsmechanismen bei <i>Daphnia pulex</i> und <i>Ceriodaphnia dubia</i> gegenüber <i>Utricularia australis</i>
SS 17	Sebastian Westerdorf	M. Sc.	Biomechanik der Attacke von <i>Chaoborus</i>
WS 17/18	Nadja Kubitza	B. Sc.	Induziertes Verhalten von <i>Ceriodaphnia dubia</i> in Anwesenheit einer karnivoren Pflanze
SS 18	Lea Heier	B. Sc.	<i>Aldrovanda vesiculosa</i> - Beutespektrum und Untersuchung auf induzierbare morphologische Verteidigungen bei <i>Daphnia longicephala</i>
SS 18	Leonie Dierolf	M. Sc.	<i>Daphnia</i> – 3D Morphologie und hydrodynamische Eigenschaften
SS 2019	Simon Alev	B. Sc.	Analysis of the Effects of <i>Daphnia</i> 's Inducible Morphological Defences on Streamline Properties and their Costs
WS 19/20	Vivian Werner	B. Sc.	Kosten von räuberinduzierten Schwimmgeschwindigkeitsanpassungen und morphologischen Verteidigungsstrukturen des Süßwasserkrebses <i>Daphnia</i>

Awards

08/2016	Scholarship of the "Studienstiftung des deutschen Volkes" for the PhD studies in Bochum, Germany
07/2016	Poster Prize at the annual meeting of the society for experimental Biology (SEB) in Brighton
11/2014	Scholarship of the "Studienstiftung des deutschen Volkes" for a 5-month stay at the University of Birmingham, UK
04/2012 – 09/2014	Scholarship of the "Studienstiftung des deutschen Volkes"

03/2010	Winner of the Federal Competition „Jugend denkt Zukunft“ project week in Berlin, Germany
06/2009	“Karl-von-Frisch-Abiturientenpreis” for outstanding merits in Biology
01/2009	“Jugend denkt Zukunft“ project week „From raw materials to products - sustainable biotechnology for future“
11/2007 - 02/2008	20 th International Biology Olympiad, second level

Oral presentations

12/2019	Young Materials Researchers Day, Bochum, Germany; “Biomechanical properties of morphological defences in a crustacean”
09/2019	Annual meeting of the German zoological society (DZG) in Jena, Germany; “Facing the green threat - A waterflea’s defences against a carnivorous plant”
07/2018	Annual meeting of the society for experimental Biology (SEB) in Florence, Italy; “More than meets the eye – unravelling the morphology of <i>Daphnia</i> ’s inducible defences in 3D”
09/2017	Cladocera-meeting in Kulmbach, Germany; More than meets the eye – unravelling the morphology of <i>Daphnia</i> ’s inducible defences in 3D”
07/2017	Annual meeting of the society for experimental Biology (SEB) in Gothenburg, Sweden; “Facing the green threat: Unravelling the complex morphological reactions of daphniids to <i>Utricularia</i> ”
11/2016	PhD-student meeting of the “Studienstiftung des deutschen Volkes“, Düsseldorf, Germany; “3D-morphology and Function of inducible morphological alterations”
10/2016	Graduate meeting of the German Zoological Society in Karlsruhe, Germany; “3D-Morphology and Function of Inducible Morphological Defences in <i>Daphnia</i> ”
07/2016	Annual meeting of the society for experimental Biology (SEB) in Brighton, United Kingdom; “3D-Morphology of Inducible Morphological Defences in <i>Daphnia</i> – a 3D-Method to Analyse Morphological Shape Differences”
03/2016	International Summer School on Phenotypic Plasticity, Greifswald, Germany “3D-morphology and Function of inducible morphological defences”
09/2015	Special interest group meeting arthropod cuticle of the “Royal Entomological Society”, Dresden, Germany; poster: “ <i>Daphnia</i> ’s carapace: An adaptable shield”

Posters

- 09/2018 Annual meeting of the German zoological society (DZG) in Greifswald, Germany; poster: "More than meets the eye - unravelling the morphology of *Daphnia's* inducible defences in 3D"
- 09/2017 Annual meeting of the German zoological society (DZG) in Bielefeld, Germany; poster: "More than meets the eye - unravelling the morphology of *Daphnia's* inducible defences in 3D"
- 09/2016 Annual meeting of the German zoological society (DZG) in Kiel, Germany; poster: "A 3D Method to Analyse Morphological Shape Differences – Detecting inducible morphological defences in *Daphnia*"
- 09/2015 Annual meeting of the German limnological society (DGL) in Essen, Germany; poster: "A 3D high-resolution approach to morphological differences - Detecting inducible defences in *Daphnia*"
- 09/2015 Special interest group meeting arthropod cuticle of the "Royal Entomological Society", Dresden, Germany; poster: "*Daphnia's* carapace: An adaptable shield"

List of Publications

Five most important publications:

1. Kruppert, Sebastian*, **Martin Horstmann** *, Linda C. Weiss, Clemens F. Schaber, Stanislav N. Gorb, and Ralph Tollrian. 2016. "Push or Pull? The Light-Weight Architecture of the *Daphnia Pulex* Carapace Is Adapted to Withstand Tension, Not Compression." *Journal of Morphology* 277 (10): 1320–28. <https://doi.org/10.1002/jmor.20577>. ***these authors contributed equally**
2. Kruppert, Sebastian, **Martin Horstmann**, Linda C. Weiss, Ulrich Witzel, Clemens F. Schaber, Stanislav N. Gorb, and Ralph Tollrian. 2017. "Biomechanical Properties of Predator-Induced Body Armour in the Freshwater Crustacean *Daphnia*." *Scientific Reports* 7 (1): 1–13. <https://doi.org/10.1038/s41598-017-09649-5>.
3. Poppinga, Simon, Lars Erik Daber, Anna Sofia Westermeier, Sebastian Kruppert, **Martin Horstmann**, Ralph Tollrian, and Thomas Speck. 2017. "Biomechanical Analysis of Prey Capture in the Carnivorous Southern Bladderwort (*Utricularia Australis*)." *Scientific Reports* 7 (1): 1–10. <https://doi.org/10.1038/s41598-017-01954-3>.
4. **Horstmann, Martin**, Alexander T Topham, Petra Stamm, John Kenneth Colbourne, Ralph Tollrian, and Linda C. Weiss. 2018. "Scan, Extract, Wrap, Compute - A 3D-Method To Analyse Morphological Shape Differences." *PeerJ* 6: 1–20. <https://doi.org/10.7717/peerj.4861>.
5. Kruppert, Sebastian, Lisa Deussen, Linda C. Weiss, **Martin Horstmann**, Jonas O. Wolff, Thomas Kleinteich, Stanislav N. Gorb, and Ralph Tollrian. 2019. "Zooplankters' Nightmare: The Fast and Efficient Catching Basket of Larval Phantom Midges (Diptera: *Chaoborus*)." Edited by Iman Borazjani. *PLOS ONE* 14 (3): e0214013. <https://doi.org/10.1371/journal.pone.0214013>.

Additional publications

1. Chen, Luxi, Rosemary E. Barnett, **Martin Horstmann**, Verena Bamberger, Lea Heberle, Nina Krebs, John Kenneth Colbourne, Rocío Gómez, and Linda C. Weiss. 2018. "Mitotic Activity Patterns and Cytoskeletal Changes throughout the Progression of Diapause Developmental Program in *Daphnia*." *BMC Cell Biology* 19 (1): 1–12. <https://doi.org/10.1186/s12860-018-0181-0>.
2. **Horstmann, Martin**, L Heier, Sebastian Kruppert, Linda C. Weiss, Ralph Tollrian, L Adamec, Anna Sofia Westermeier, Thomas Speck, and Simon Poppinga. 2019. "Comparative Prey Spectra Analyses on the Endangered Aquatic Carnivorous Waterwheel Plant (*Aldrovanda Vesiculosa*, Droseraceae) at Several Naturalized Microsites in the Czech Republic and Germany." *Integrative Organismal Biology* 1 (1). <https://doi.org/10.1093/iob/oby012>.
3. Poppinga, Simon, Jassir Smaij, Anna Sofia Westermeier, **Martin Horstmann**, Sebastian Kruppert, Ralph Tollrian, and Thomas Speck. 2019. "Prey Capture Analyses in the Carnivorous Aquatic Waterwheel Plant (*Aldrovanda Vesiculosa* L., Droseraceae)." *Scientific Reports*, 1–13. <https://doi.org/10.1038/s41598-019-54857-w>.

Skills

- technical skills: Scanning electron microscopy (SEM)
 (scanning) transmission electron microscopy ((S)TEM)
 fluorescence microscopy
 confocal laser scanning microscopy (cLSM)
 ultrathin microtomy
 histological stainings
- software skills: Microsoft Office
 Photoshop
 ANSYS (finite element and streamline analysis)
 FIJI (image analysis)
 Blender (3D analysis and animation)
 Matlab (programming, analysis and visualisation of data)
 MorphoGraphX (3D analysis and visualisation)
 R (statistics)
 Statistica (statistics)
 C/C++ - basics
- languages: German (native), English (C1), Spanish (A1/A2)

Reviewer activities

Journal of Plankton Research

[Profile on ResearchGate](#)