

## Curriculum vitae

### Personal Data

---

Name: Nico Posnien  
Date of birth: October 1, 1981  
Nationality: German  
Legal status: Married, 2 children  
Private Address: Rohnsterrassen 8  
37085 Göttingen

Researcher ID: D-1639-2012  
ORCID ID: 0000-0003-0700-5595

### Current working address

---

Georg-August-Universität Göttingen, Johann-Friedrich-Blumenbach Institut für Zoologie und Anthropologie, Abteilung Entwicklungsbiologie, Justus-von-Liebig-Weg 11, 37077 Göttingen  
Phone: +49 (0) 551 39 28662  
Email: nposnie@gwdg.de  
Web: <https://www.posnien-lab.net/>

### Employment

---

since December 2023	Heisenberg Fellow (non-permanent), Georg-August University, Göttingen, Germany funded by the <b>DFG</b>
December 2021 – November 2023	Group Leader, Georg-August University, Göttingen, Germany
November 2015 – November 2021	Emmy-Noether Group Leader, Georg-August University, Göttingen, Germany funded by the <b>DFG</b>
May 2015 – October 2015	Independent Group Leader, Department of Developmental Biology, Georg-August University, Göttingen, Germany
May 2012 – April 2015	Independent Group Leader, Department of Developmental Biology, Georg-August University, Göttingen, Germany funded by the <b>Volkswagen Foundation</b> (May 2012 – April 2015)
April 2012	Independent Post-doctoral Research Associate, Department of Developmental Biology, Georg-August University, Göttingen, Germany
August 2011 – March 2012	Post-doctoral Research Associate in the laboratory of Dr. Alistair P. McGregor, School of Life Sciences, Oxford Brookes University, Oxford, UK
February 2012	Research stay at Harvard University in the Lab of Cassandra Extavour

- January 2010 – July 2011 Post-doctoral Research Associate in the laboratory of Dr. Alistair P. McGregor, Vetmeduni Vienna, Austria
- September 2009 – December 2009 Post-doctoral Research Associate in the laboratory of Prof. Dr. Gregor Bucher, Junior Research Group Developmental Genetics, Georg-August University, Göttingen, Germany

## Education

---

- July 2006 – September 2009 *Dr. rer. nat.*  
Junior Research Group Developmental Genetics, Georg-August-University, Göttingen, Germany  
Supervised by Prof. Gregor Bucher  
Thesis title: „*Function and Evolution of highly conserved head genes in the red flour beetle Tribolium castaneum*”  
Date of Promotion: 17<sup>th</sup> September 2009  
Grade: **summa cum laude**
- October 2001 – June 2006 *Diploma*  
Georg-August-University Göttingen, Germany  
Main subjects: Developmental Biology, Human Genetics, Zoology  
Thesis title: “*The Tribolium castaneum gene Tc-optix/six3 and the evolution of the labrum*”  
Date of Diploma: 20<sup>th</sup> June 2006  
Grades by subject: Entwicklungsbiologie (sehr gut), Zoologie (sehr gut), Humangenetik (gut)  
Final Grade: **sehr gut**

## Awards & Prizes

---

- 2023 Heisenberg Fellow, German Research Foundation
- 2019 Walther-Arndt-Forschungspreis of the German Zoological Society (DZG) (awarded at the DZG Meeting in Jena, September 13, 2019)
- 2015 Emmy-Noether Fellow, German Research Foundation

## Appointment Procedures

---

- 2021 *tertio loco* W3 Molecular Genetics at University Hohenheim
- 2017 *tertio loco* W2 t.t. W3 Zoology at University Gießen

## University and Community Organization | Memberships

---

- since 2022 Employee representative at the board of the Johann-Friedrich-Blumenbach Institute for Zoology und Anthropology
- since 2021 Member of the Society for Molecular Biology and Evolution (SMBE)
- 2016 – 2020 Employee representative at the board of the Johann-Friedrich-Blumenbach Institute for Zoology und Anthropology
- 2016 – 2020 Scientific Cluster Representative (“Science & Technology”) of the University Göttingen within the U4 network
- 2019 - 2023 Deputy Spokesperson of the “International Max Planck Research School for Genome Science” (IMPRS-GS), Göttingen, Germany

since 2019	Recommender for Peer Community in Genomics (PCI Genomics)
since 2018	Council Member European Society for Evolutionary Developmental Biology (EED)
since 2018	Speaker of “Developmental Biology” Section of the German Zoological Society (DZG)
since 2018	Member of the Center for Integrated Breeding Research (CiBreed), Göttingen, Germany
since 2017	Head of “Transcriptomics” work group of the European <i>Drosophila</i> Population Genomics Consortium (DrosEU)
since 2017	Member of the examination committee of the MSc/PhD program Developmental, Neural, and Behavioral Biology, University Göttingen, Germany
since 2017	Member of the program committee of the “International Max Planck Research School for Genome Science” (IMPRS-GS), Göttingen, Germany
since 2017	Recommender for Peer Community in Evolutionary Biology (PCI Evol Bio)
2016	Member of the Commission “Mitarbeiterkonzept der Fakultät für Biologie und Psychologie“ at the University Göttingen
since 2014	Member of the European <i>Drosophila</i> Population Genomics Consortium (DrosEU)
since 2014	Member of Verband Biologie, Biowissenschaften & Biomedizin in Deutschland (VBIO)
since 2013	Member of Junior European <i>Drosophila</i> Investigators (JEDI)
since 2012	Member of the German Zoological Society (DZG)
since 2012	Member of Göttingen Graduate School for Neurosciences and Molecular Biosciences (GGNB)
since 2012	Member of Göttingen Center for Molecular Biosciences (GZMB)
since 2012	Coordinator of GOEvol Consortium; trigger collaboration in the field Evolutionary Biology in Göttingen
since 2006	Member of the European Society for Evolutionary Developmental Biology (EED)

## Reviewer

---

### *Journals*

eLife, Development, Molecular Biology and Evolution, Bioinformatics, Genome Biology and Evolution, International Journal of Developmental Neuroscience, Frontiers in Zoology, Development Genes and Evolution, Evolution & Development, Communications Biology, Journal of Evolutionary Biology, Frontiers in Ecology and Evolution, Scientific Reports, Insect Molecular Biology, Acta Zoologica, PloS One, Gene, PeerJ, Data in Brief

### *Funding sources*

Deutsche Forschungsgemeinschaft (DFG), Research Fund - Flanders (FWO), The Leverhulme Trust, Agence Nationale de la Recherche (ANR), Estonian Research Council

## Editor

---

Editor for Development, Genes and Evolution

Guest Editor for “Size and Shape” Special Issue in Development, Genes and Evolution

Editor of Research Topic: “Evolution of postembryonic development” in Frontiers in Ecology and Evolution

## Other scientific activities

---

2024

- Co-Organizer of the Symposium “Gene regulatory networks in development and evolution – Do we need a network-centric view on complex biological processes?” as part of the biannual meeting of the European Society for Evolutionary Developmental Biology (EED), June 25-28, 2024, Helsinki, Finland (with Natascha Turetzek (Zhang) (LMU Munich))
- Co-Organizer of the Symposium of the Developmental Biology section of the German Zoological Society as part of the annual meeting, September 9-13, 2024, Stuttgart, Germany (with Natascha Turetzek (Zhang) (LMU Munich))

2023

- Co-Organizer of Interdisciplinary Symposium “Big Data ⇔ Big Questions” as part of the annual German Zoological Society Meeting, September 8, 2023, Kassel (with Natascha Turetzek (Zhang) (LMU Munich), Alexander Brandt (U Lausanne), Jeremias N. Brand (MPI-Nat Göttingen), Max S. Farnworth (U Bristol))
- Co-Organizer of “SpiderFest - #Genomes #Genes #Forms #Functions” as satellite symposium at annual German Zoological Society Meeting, September 4, 2023, Kassel (with Matthias Pechmann (U Cologne), Monika Eberhard (U Hamburg), Linda Weiss (U Bochum), Natascha Turetzek (Zhang) (LMU Munich), Nikola-Michael Prpic-Schäper (U Gießen))
- Co-Organizer of the Workshop “Development, Function, and Evolution of Invertebrate Eyes”, March 20-21, 2023, Göttingen (with Alex Buffry (U Durham), Maike Kittelmann (Oxford Brookes), Alistair McGregor (U Durham), Lauren Sumner-Rooney (Museum Nat, Berlin))

2022

- Co-Organizer of the Symposium of the Developmental Biology section of the German Zoological Society as part of the annual meeting, September 2022 (co-organizer: Natascha Zhang, Munich)
- Co-Organizer of the virtual DZG Graduate Meeting “Mind the gap: From Genotype to Phenotype and the role of Modelling, Genomic Prediction, and Development” March 2022 (co-organizer: Natascha Zhang, Munich)

2021

- Co-Organizer of Section Symposium of the FG Entwicklungsbiologie as part of the 113<sup>th</sup> Annual Meeting of the German Zoological Society, August/September 2021 (co-organizer: Natascha Zhang, Munich)

2020

- Co-Organizer of Virtual Meeting of the Developmental Biology section of the German Zoological Society, September 2020 (co-organizer: Natascha Zhang, Munich)

2019

- Teacher at SPIRIT Summer School “Molecular Zoology”, September 2019, Göttingen

- Co-Organizer of DZG Satellite Symposium “Haeckel’s legacy” as part of the 112<sup>th</sup> Annual Meeting of the German Zoological Society, September 11, 2019  
(co-organizers: Natascha Zhang, Munich; Benjamin Naumann, Jena)
  - Organization of DZG Graduate Meeting “Evo-Devo in Germany: Status-Quo and future directions”, March 4-6, 2019 (co-organizer: Natascha Zhang, Munich)
- 2018
- Co-Organizer of GOEvol VI Meeting, “#Sensation @GOEEvolution 2018”, September 27-28, Göttingen (as part of GOEvol Consortium)
  - Co-Organizer of Workshop “CRISPR/Cas-Applications in Developmental Biology” at 111<sup>th</sup> Annual Meeting of the German Zoological Society, September 11, 2018  
(co-organizers: Susanne Önel, Gregor Bucher)
  - Organization of the Symposium “Going beyond embryos – evolution of postembryonic development” as part of the 7th meeting of the European Society for Evolutionary Developmental Biology (EED), July 2018 (co-organizer: Micael Reis, Uni Göttingen)
- 2017
- Teacher at SPIRIT Summer School “Molecular Zoology”, August 2017, Göttingen
  - Member of poster price committee (judge) at annual Meeting of the German Society of Developmental Biology (GFE) in Kiel, March 2017
  - Organization of the 3rd International SpiderWeb Meeting in March 2017 (with Nikola-Michael Prpic-Schäper) (responsible for program and fundraising)
  - Organization of the Symposium “The evolutionary diversity of nervous system development - from worms to humans” as part of the 12th Göttingen Meeting of the German Neuroscience Society, March 2017 (with Max Farnworth, University Göttingen)
- 2016
- Organizer of the GOEvol V Meeting, Göttingen, October 2016; “Networks in Biology” (as part of GOEvol Consortium)
  - Organization of the Symposium “Micro-Evo-Devo – Integrating evolution, development and population genetics” as part of the sixth meeting of the European Society for Evolutionary Developmental Biology (EED), July 2016 (co-organizer: Sebastian Kittelmann, Oxford Brookes University, UK)
- 2015
- Organization of the GOEvol IV Meeting, Göttingen, February 2015 (as part of GOEvol Consortium)
- 2014
- Member of poster price committee (judge) at biannual Meeting of the European Society for Evolutionary Developmental Biology (EED) in Vienna, Austria, July 2014
  - Main organizer of Symposium “Size and Shape – Integration of morphometrics, mathematical modelling, developmental and evolutionary biology”, April 2014, Göttingen
- 2013
- Organization of the GOEvol III Meeting, Göttingen (responsible for scientific program and fundraising) (as part of GOEvol Consortium)
- 2012
- Organization of Next Generation Sequencing Workshop as part of GOEvol Meeting, Göttingen

- Organization of the GOEvol II Meeting, Göttingen (as part of GOEvol Consortium)
- Organization of the GZMB Summer Symposium, Göttingen (with two other Junior Group Leaders)

## Key qualifications

---

2018

- Workshop “Creating the conditions for research success - Approaches to research and publication strategy for research group leaders” by Iain Patten (Göttingen)

since 2017

- Coordination of Junior Group Leader Peer Group with focus on Leadership skills

since 2016

- Member of Junior Group Leader Peer Group with focus on Leadership skills

2015

- Art of Leadership (Göttingen)
- Convincing self-presentation in academic talks (Göttingen)
- Strengths-Based Leadership (Göttingen)

2014

- Workshop Peer Coaching (Göttingen)
- Career Essentials: My Project Management Skills (Göttingen)
- Career Essentials: Leading without Leadership Position (Göttingen)
- Medienkompetenz – Schreiben und verstanden werden (Hannover, NAWIK; VolkswagenStiftung)
- Grant Writing Workshop (Göttingen)
- Webdesign Workshop (Göttingen)

## Oral Presentations (only invited)

---

„Complex morphologies, many genes, and a plethora of challenges - What we learnt from eye size variation in *Drosophila*”. Göttingen Symposium “Frontiers in Molecular Zoology”, University Göttingen. September 21-22, 2023

“Can gene regulatory networks help us understanding the evolution of complex traits? What we can learn from natural variation in compound eye size in *Drosophila*.” Southwest University, Chongqing, China. September 13, 2023

„Complex morphologies, many genes, and a plethora of challenges - What we learnt from eye size variation in *Drosophila*”. Seminar Series, Zoology, University Halle. February 6, 2023

“Functional genomics for non-model organisms – opportunities and challenges”. Coordination meeting for the DFG Priority Programme "Genomic Basis of Evolutionary Innovations (GEvol)" (SPP 2349). July, 15, 2021

“Morphology meets Genomics - Evolution of visual system development in *Drosophila*”. Advanced Master Course “Evolutionary Biology”, University of Konstanz, May 2021

“Multiple loci linked to inversions are associated with eye size variation in species of the *Drosophila virilis* phylad”. 13th Annual Arthropod Genomics Symposium (Virtual Conference), July 21-23, 2020

*“Evolution of visual system development – morphology meets genomics”*. Seminar Series, Christian-Albrechts-University Kiel, May 2019

*“Micro-Evo-Devo: Morphology meets Genomics”*. 8<sup>th</sup> DrosEU Workshop, Barcelona, Spain, April 2019

*“Evolution of visual system development – morphology meets genomics”*. Seminar Series, Hamburg University, May 2018

*“Evolution of visual system development in Drosophila – morphology meets genomics”*. Seminar Series, CABD, Sevilla, Spain, March 2018

*“Evolution of visual system development in Drosophila – morphology meets genomics”*. Seminar Series, Queen Mary University London, UK, December 2017

*“Systems-Evo-Devo: Evolution of developmental gene regulatory networks”*. Seminar Series, Ludwig-Maximilians-Universität München, Fakultät für Biologie, Biozentrum, October 2016

*“Comparative transcriptomics of head development in closely related Drosophila species”*. Seminar Series, Institute of Functional Genomics of Lyon (IGFL), Lyon, France, February 2016

*“Evo-devo in the omics era: Comparative transcriptomics of head development in closely related Drosophila species”*. Seminar Series, Geocenter, University Uppsala, Sweden, November 2015

*“Evolution of the head developmental gene regulatory network in three closely related Drosophila species”*. Biology Seminar Series, University Rostock, Germany, January 2015

*“Establishment of genomics and transcriptomics resources and their use in understanding visual system development in Parasteatoda tepidariorum”*. 2nd International SpiderWeb Meeting, Jena, Germany, September 2014

*“Genomics approaches for emerging model organisms – an overview”*. iBeetle workshop: How to establish functional genetics in Zoology, Göttingen, Germany, September 2014

*“Evolution of the head developmental gene regulatory network in three closely related Drosophila species”*. 2<sup>nd</sup> Eco-Evo-Devo Postgraduate Summer School, Oxford Brookes University, Oxford, UK, August 2014

## Publications

### Summary

		all	since 2019
30 research articles in peer-reviewed journals	Citations	3,311	1,466
6 reviews in peer-reviewed journals	h-index	25	19
3 book chapters	i10-index	32	32

based on Google Scholar (Feb 9, 2024)

### Submitted and in preparation

Hoedjes KM\*, Grath S\*, **Posnien N\***, Ritchie MG\*, Schlötterer C\* *et al.* (under review *Molecular Ecology*) "From whole bodies to single cells: a guide to transcriptomic approaches for ecology and evolutionary biology."

\*equal contribution

Medina-Jiménez BI, Budd GE, Pechmann M, **Posnien N**, Janssen R (under review *BMC Evo Devo*) "Single-cell sequencing reveals novel insights into spider eye development."

Torres-Oliva M\*, Buchberger E\*, Buffry AD\*, Kittelmann M, Sumner-Rooney L, Gaspar PMC, Bullinger GC, Guerrero G, Casares F, Arif S#, **Posnien N#**, Nunes DDS#, McGregor AP#, Almudi I# (in prep) "Differences in *orthodenticle* expression promote ommatidial size variation between *Drosophila* species."

\*equal contribution; #corresponding authors

**preprint:** doi: 10.1101/2021.03.17.435774

Cerveau N##, Jackson D##, **Posnien N##** (in prep, invited review for *Frontiers in Zoology*) "Assembling transcriptomes *de novo* using short read data from emerging model organisms: Recommendations and pitfalls for the novice"

\*equal contribution; #corresponding authors

Lu T-H, Wiegler G, Reim L, Ahrend J, Torres-Oliva M, Buchberger E, **Posnien N** (in prep) "Genes related to peripodial epithelium development contribute to natural variation in eye size and shape between *Drosophila melanogaster* and *D. mauritiana*"

Dang TKL\*, Reis M\*, **Posnien N** (in prep) „Integration of multi-omics data reveals cellular processes underlying eye size variation between *Drosophila americana* and *D. novamexicana*"

\*equal contribution

Torres-Oliva M\*, Buchberger E\*, Almudi I, Lu T-H, **Posnien N** (in prep) "Regulatory divergence in closely related *Drosophila* species depends on the architecture of developmental gene regulatory networks."

\*equal contribution

### Research Articles and Reviews

**Posnien N**, Hunnekuhl VS, Bucher G (2023). "Gene Expression Mapping of the Neuroectoderm across Phyla – Conservation and Divergence of Early Brain Anlagen between Insects and Vertebrates." *eLife* 12 (September).

doi: 10.7554/elife.92242.



Wiegleb G, Reinhardt S, Dahl A, **Posnien N** (2022). "Tissue dissociation for single-cell and single-nuclei RNA sequencing for low amounts of input material." *Frontiers in Zoology* 19:27.  
doi: 10.1186/s12983-022-00472-x

**Posnien N**#, Beldade P, Casares F (2022) Editorial: Evolution of Postembryonic Development. *Front. Ecol. Evol.* 10:859670

#corresponding author

doi: 10.3389/fevo.2022.859670

Reis M\*, Siomava N\*, Wimmer EA, **Posnien N** (2021). Conserved and Divergent Aspects of Plasticity and Sexual Dimorphism in Wing Size and Shape in Three Diptera. *Front. Ecol. Evol.* 9:660546.

doi: 10.3389/fevo.2021.660546

\*equal contribution

Buchberger E, Bilen A, Ayaz S, Salamanca D, Matas de las Heras C, Niksic A, Almudi I, Torres-Oliva M, Casares F, **Posnien N** (2021). Variation in pleiotropic hub gene expression is associated with interspecific differences in head shape and eye size in *Drosophila*. *Molecular Biology and Evolution*; msaa335.

doi: 10.1093/molbev/msaa335

Reis M, Wiegleb G, Claude J, Lata R, Horchler B, Ha N-T, Reimer C, Vieira CP, Vieira J, **Posnien N** (2020). Multiple loci linked to inversions are associated with eye size variation in species of the *Drosophila virilis* phylad. *Scientific Reports*.

doi: 10.1038/s41598-020-69719-z

Kapun M, Barrón MG, [... incl. **Posnien N**...], Flatt T, González J (2020). Genomic Analysis of European *Drosophila melanogaster* Populations Reveals Longitudinal Structure, Continent-Wide Selection, and Previously Unknown DNA Viruses. *Molecular Biology and Evolution*; msaa120.

doi: 10.1093/molbev/msaa120

Cordellier M, Schneider JM, Uhl G, **Posnien N** (2020). Sex differences in spiders: from phenotype to genomics. *Development Genes and Evolution*.

doi: 10.1007/s00427-020-00657-6.

Herndon N, Shelton J, [... incl. **Posnien N**...], Brown SJ, Bucher G (2020). Enhanced genome assembly and a new official gene set for *Tribolium castaneum*. *BMC Genomics* 21:47.

doi: 10.1186/s12864-019-6394-6.

Buchberger E, Reis M, Lu T-H, **Posnien N** (2019). Context dependent gene regulation and implications for evolutionary studies. *Genes* 10(7), 492

doi: 10.3390/genes10070492

Reis M, Vieira PC, Lata R, **Posnien N**, Vieira J (2018). Origin and consequences of chromosomal inversions in the *virilis* group of *Drosophila*. *Genome Biology and Evolution*; evy239,

doi: 10.1093/gbe/evy239

Torres-Oliva M, Schneider J, Wiegleb G, Kaufholz F, **Posnien N** (2018). Dynamic genome wide expression profiling of *Drosophila* head development reveals a novel role of Hunchback in retinal glia cell development and blood-brain barrier integrity. *PLoS Genet* 14(1):e1007180.

doi: 10.1371/journal.pgen.1007180

Pechmann M, Benton MA, Kenny NJ, **Posnien N**, Roth S (2017). A novel role for Ets4 in axis specification and cell migration in the spider *Parasteatoda tepidariorum*. *eLife* 2017;6:e27590.

doi: 10.7554/eLife.27590

Schwager EE, [...], **Posnien N\***, Richards S\*, McGregor AP\* (2017). The house spider genome reveals a whole genome duplication during arachnid evolution. *BMC Biology* 201715:62.

doi: 10.1186/s12915-017-0399-x

\*equal contribution/corresponding authors

Khatib AA, Siomava N, Iannini A, **Posnien N**, Casares F (2017). Specific expression and function of the *Six3 optix* in *Drosophila* serially homologous organs. *Biology Open* 2017

Siomava N, Wimmer EA, **Posnien N** (2016). Size relationships of different body parts in the three dipteran species *Drosophila melanogaster*, *Ceratitis capitata* and *Musca domestica*. *Dev Genes Evol.*

Torres-Oliva M, Almodí I, McGregor AP, **Posnien N** (2016). A robust (re-)annotation approach to generate unbiased mapping references for RNA-seq-based analyses of differential expression across closely related species. *BMC Genomics*.

Prpic N-M, **Posnien N** (2016). Size and shape—integration of morphometrics, mathematical modelling, developmental and evolutionary biology. *Dev Genes Evol* 1–4.

Schomburg C, Turetzek N, Schacht MI, Schneider J, Kirfel P, Prpic N-M+ and **Posnien N+** (2015). Molecular characterization and embryonic origin of the eyes in the common house spider *Parasteatoda tepidariorum*. *EvoDevo* 2015, 6:15.

+corresponding authors

Hilbrant M, Almudi I, Leite DJ, Kuncheria L, **Posnien N**, Nunes MDS, McGregor AP (2014). Sexual dimorphism and natural variation within and among species in the *Drosophila* retinal mosaic. *BMC Evolutionary Biology* 14: 240.

**Posnien N\*+**, Zeng V\*, Schwager EE, Pechmann M, Hilbrant M, Keefe JD, Damen, WGM, Prpic, NM, McGregor AP, Extavour CG+ (2014). A Comprehensive Reference Transcriptome Resource for the Common House Spider *Parasteatoda tepidariorum*. *PLoS ONE* 9: e104885.

\*equal contribution

+corresponding authors

Hogvall M, Schönauer A, Budd GE, McGregor AP, **Posnien N**, Janssen, R (2014). Analysis of the Wnt gene repertoire in an onychophoran provides new insights into the evolution of segmentation. *EvoDevo* 5: 14.

Janssen R, **Posnien N** (2014). Identification and embryonic expression of Wnt2, Wnt4, Wnt5 and Wnt9 in the millipede *Glomeris marginata* (Myriapoda: Diplopoda). *Gene Expression Patterns* 14: 55–61.

Arif S, Hilbrant M, Hopfen C, Almudi I, Nunes MDS, **Posnien N**, Kuncheria L, Tanaka K, Mitteröcker P, Schlötterer C, McGregor AP (2013). Genetic and Developmental Analysis of Differences in Eye and Face Morphology Between *Drosophila simulans* and *Drosophila mauritiana*. *Evolution & Development* 15, 4 (2013): 257–267.

Kittlmann S, Ulrich J, **Posnien N**, Bucher G (2013). Changes in anterior head patterning underlie the evolution of long germ embryogenesis. *Dev Biol* 374, 1: 174–184.

**Posnien N\***, Hopfen C\*, Hilbrant M, Ramos-Womack M, Murat S, Schönauer A, Herbert SL, Nunes MDS, Arif S, Breuker CJ, Schlötterer C, Mitteroecker P and McGregor AP (2012). Evolution of Eye Morphology and Rhodopsin Expression in the *Drosophila melanogaster* Species Subgroup. *PLoS ONE* 7(5): e37346

\*equal contribution

Fu J\*, **Posnien N\***, Bolognesi R, Fischer TD, Rayl P, Oberhofer G, Kitzmann P, Brown SJ, Bucher G (2012). Asymmetrically expressed *axin* required for anterior development in *Tribolium*. *PNAS* 2012 May; 109(20):7782–7786.

\*equal contribution

**Posnien N\***, Koniszewski N\*, Hein H, Bucher G (2011). Candidate Gene Screen in the red flour beetle *Tribolium* Reveals *six3* as Ancient Regulator of Anterior Median Head and Central Complex Development. *PLoS Genet* 7(12)

\*equal contribution

**Posnien N**, Koniszewski N, Bucher G (2011). Insect *Tc-six4* marks a unit with similarity to vertebrate placodes. *Dev Biol* 350: 208-216

Steinmetz PRH, Urbach R, **Posnien N**, Eriksson J, Kostyuchenko RP, Brena C, Guy K, Akam M, Bucher G, Arendt D (2010). *Six3* demarcates the anterior-most developing brain region in bilaterian animals. *EvoDevo* 2010, 1:14

**Posnien N**, Schinko J, Kittelmann S, Bucher G (2010). Genetics, development and composition of the insect head - A beetle's view. *Arthropod Struct Dev* 39: 399-410.

**Posnien N**, Bucher G (2010). Formation of the insect head involves lateral contribution of the intercalary segment, which depends on *Tc-labial* function. *Dev Biol* 338: 107-116.

Yang X, Weber M, Zarinkamar N, **Posnien N**, Friedrich F, Wigand B, Beutel R, Damen WGM, Bucher G, Klingler M, Friedrich M (2009). Probing the Drosophila retinal determination gene network in *Tribolium* (II): The Pax6 genes *eyeless* and *twin of eyeless*. *Dev Biol* 333: 215-227.

**Posnien N**, Bashasab F, & Bucher G (2009). The insect upper lip (labrum) is a nonsegmental appendage-like structure. *Evol Dev* 11(5):480-488

Schinko JB, Kreuzer N, Offen N, **Posnien N**, Wimmer EA, Bucher G (2008). Divergent functions of *orthodenticle*, *empty spiracles* and *buttonhead* in early head patterning of the beetle *Tribolium castaneum* (Coleoptera). *Dev Biol* 317: 600-613.

Tribolium Genome Sequencing Consortium (including **Posnien N**) (2008). The genome of the model beetle and pest *Tribolium castaneum*. *Nature* 452: 949-955.

## Book chapters

**Posnien N** (2018) "Phenotyping in evo-devo" in Modelling and Quantitative Approaches to Evo-Devo (section editor: Philipp Mitteröcker) as part of Evolutionary Developmental Biology - A Reference Guide (Editors: Laura Nuño de la Rosa and Gerd B. Müller); pp. 953-964. Cham: Springer International Publishing.

doi: 10.1007/978-3-319-32979-6\_121

**Posnien N**, Schinko J, Grossmann D, Shippy TD, Konopova B, Bucher G (2009) RNAi in the Red Flour Beetle (*Tribolium*). *CSH Protoc* 2009: pdb prot5256.

Schinko J, **Posnien N**, Kittelmann S, Koniszewski N, Bucher G (2009) Single and double whole-mount in situ hybridization in red flour beetle (*Tribolium*) embryos. *CSH Protoc* 2009: pdb prot5258.

## Funding Statement

### Ongoing

- from December 2023 Heisenberg Programme of the DFG  
“A multi-omics approach towards the genetic architecture of morphological diversity”  
Grant Nr.: PO 1648/8-1
- from April 2023 DFG Sequencing Grant (Research Grant; 3 Jahre; **196.684 EUR PhD position/consumables + 106.811 EUR** sequencing costs); collaboration with Sonja Grath (LMU Munich) and Claudia Fricke (U Halle)  
“Identification of loci underlying local adaptation in European *Drosophila* populations”  
Grant Nr.: PO 1648/7-1
- from September 2022 DFG Grant as part of Priority Programme “Genomic Basis of Evolutionary Innovations (GEvol)” (SPP 2349) (Collaborative project with five PIs, total funding volume: **553,530 EUR** incl. 2 PhD positions; 211,900 EUR assigned to me)  
“Gene and genome duplication and phenotypic novelties –Insights from spiders and insects”  
Grant Nr.: PO 1648/6-1

### Completed

- May 2019 DFG Sequencing Grant (Research Grant; 3 years; **137.127 EUR**)  
“Gene expression divergence during *Drosophila* head development on single cell resolution”  
Grant Nr.: PO 1648/4-1
- July 2020 Extension of DFG Emmy Noether Fellowship (1 year; **217.050 EUR**, including consumables, my own salary, 1 Postdoc position, student assistants)  
“Evolution of gene expression and gene regulation during head development in *Drosophila americana* and *D. novamexicana*”  
Grant Nr.: PO 1648/3-2
- December 2018 PhD position funded by Niedersächsisches Ministerium für Wissenschaft und Kultur as part of the International Max Planck Research School for Genome Science (IMPRS-GS)
- October 2016 PhD position funded by RTG 1644 “Scaling Problems in Statistics” (joint PhD position with Henner Simianer, Dpt. of Animal Breeding, Göttingen)
- April 2016 GGNB-Junior Group Stipend (**12 months, 1.365 EUR/month** fellowship for one PhD student, 103 EUR/month consumables)  
“Identification of the molecular basis for a sexual dimorphism in head shape and mandible size in the broad-horned flour beetle, *Gnathocerus cornutus*”
- November 2015 DFG Emmy Noether Fellowship (3 years + 1 +1; **1.028.770 EUR + 342.050 EUR**, including consumables, my own salary, 2 PhD positions (6 years), 1 Postdoc position (4 years), student assistants)

- “Evolution of the gene regulatory network underlying head development in closely related *Drosophila* species”  
Grant Nr.: PO 1648/3-1
- July 2014 Georg-August-University Göttingen, MWK “Strategische Maßnahmen der Georg-August-Universität Göttingen” – Anschubfinanzierung für den wissenschaftlichen Nachwuchs (9 months, **9.983,24 EUR**, including consumables and student assistant support)  
"Evolution and development of the dorsal head in three closely related *Drosophila* species"
- Feb 2014 Volkswagen Foundation - Support for Europe (18 months, **50.000 EUR**, including consumables and Postdoc fellowship salary for Dr. Micael Reis of IBMC Porto/Portugal, who will work on one of my projects)  
“Evolution of eye and head size and shape between *Drosophila novamexicana* and *Drosophila americana*”  
Grant Nr.: 85983-1
- March 2012 DFG (36 months, **305.950 EUR**, including my own salary)  
*I could not accept this grant due to potential double funding*  
"Identification of the changes in the gene regulatory network underlying head evolution in five closely related *Drosophila* species"  
Grant Nr.: PO 1648/1-1
- March 2012 Volkswagen Foundation (36 months, **307.500 EUR**, including consumables and my own salary)  
“Identification and evolution of the gene regulatory network underlying head development in five closely related *Drosophila* species”  
Grant Nr.: 85 983

## Teaching experience

### Lectures and methods courses

#### *Bachelor Basic Course (Grundpraktikum) Entwicklungs- und Zellbiologie*

This basic course offers a mix of lectures about fundamental cellular and developmental concepts and hands-on practical exercises.

#### *Current Developmental Biology*

In this advanced Master course, I provide lectures and practical experiments to teach the concept of master regulators in development using overexpression and loss of function of the gene *eyeless/pax6* in *Drosophila melanogaster*. Additionally, the whole mount *in situ* hybridization method is used to analyze and compare the spatial expression of key developmental genes across arthropod embryonic development (beetle, fly, spider).

#### *Evolutionary Developmental Biology, quantitative and population genetics*

In the three-week Master level module course “Evolutionary Developmental Biology” I incorporated several lectures and practical experiments that cover an introduction to population genetics for evo-devo studies, bioinformatic analyses of next generation sequencing data, basic statistics and a broad range of quantitative methods. In 2016, I incorporated a completely new module composed of a *Drosophila* based selection experiment to demonstrate how phenotyping in combination with genotyping can be used to detect selective sweeps. This practical exercise is accompanied by lectures on population genetics, quantitative genetics and basic Mendelian genetics. In 2017, I incorporated a module using classical *Drosophila* genetics tools to demonstrate the concept of “master regulator” genes during development. This part of the course allows discussing developmental gene expression and function in a broader gene regulatory network context.

#### *Analysis of NGS data (de novo assembly, RNAseq, ChIPseq)*

In 2013, I initiated a three-day method course for graduate students of the Göttingen Graduate School for Neurosciences, Biophysics, and Molecular Biosciences (GGNB) with the focus on the analysis of next generation sequencing data. This course was established in collaboration with Prof. Tim Beißbarth (Institute of Medical Bioinformatics, UMG, Göttingen) and Dr. Stefan Bonn (now Center for Molecular Neurobiology, Hamburg). My main teaching parts are introductory lectures on next generation sequencing technologies, *de novo* assembly of genomes and transcriptomes and the generation and analysis of ChIPseq data. Additionally, I established a half-day bioinformatics exercise covering command line basics and *de novo* transcriptome assembly.

### *Gene expression in developmental biology*

From 2015 to 2017, I offered an introductory 2-day methods course about “Expression analysis” for the MSc/PhD program Molecular Biology (part of International Max Planck Research School). I introduced various genetic (UAS/Gal4 system, reporter assays) and histological (Immunohistology, *in situ* hybridization) methods to study gene expression in *Drosophila melanogaster*. Introductory lectures were accompanied by laboratory work.

### *Molecular Zoology/Bioinformatics*

In 2016, I joined the course “Molecular Zoology and Insect Biotechnology” for the MSc/PhD program “Biodiversity, Ecology and Evolution” as co-teacher. In this five-week course I contribute lectures on Bioinformatics (RNAseq, *de novo* assembly) and Quantitative Genetics. Additionally, I provide two half-day exercises covering differential gene expression analysis (RNAseq) and *de novo* transcriptome assembly.

### *Outreach*

In addition to these academic teaching activities, in 2014 I established an outreach activity with a local Kindergarten. The children visited our department where they got introduced to the concept of metamorphosis during a lecture that combined the famous children book “The Very Hungry Caterpillar” (by Eric Carle) with real pictures and videos of metamorphosing insects. Additionally, the children got the chance to see a broad range of different arthropod groups through the microscope. This outreach activity took place again in July 2016 with a similar major scope. However, this year the children collected many arthropods in advance, and we took pictures with high resolution microscopes. Based on these pictures and the collected specimens we discussed the major body plans of different arthropod groups.

## Detailed teaching experience

### *Courses/Summer Schools*

since January 2019	Teacher for Core Module „Current Developmental Biology” for MSc/PhD program Developmental, Neural, and Behavioral Biology, Göttingen
since March 2018	Teacher for Bachelor Basic Course (Grundpraktikum) Entwicklungs- und Zellbiologie
since May 2016	Teacher for Bioinformatics and Quantitative Genetics at Course “Molecular Zoology and Insect Biotechnology” for MSc/PhD program Biodiversity, Ecology and Evolution, Göttingen

November 2015 – December 2017	Introductory 2-day methods course “Expression analysis” for MSc/PhD program Molecular Biology (part of International Max Planck Research School), Göttingen
August 2014	Teacher for Bioinformatics at 2nd Eco-Evo-Devo Summer School at Oxford Brookes University, Oxford, UK
since November 2013	Co-organizer and teacher of GGNB Course “Next generation sequencing (NGS) – Analysis of RNAseq and ChIP-seq data”, Göttingen
June 2012 – December 2018	Teacher and main coordinator of the course “Evolutionary Developmental Biology” for MSc/PhD program Developmental, Neural, and Behavioral Biology, Göttingen
June/July 2008	Teaching Assistant EMBO/Zoonet Course “Molecular approaches to Evolution and Development”, Fiskebäckskil, Sweden

*Project supervision (only as independent junior group leader, since May 2012)*

#### Postdoc

05/2021 – 05/2022	Dr. Linh Dang
11/2019 – 02/2020	Dr. Elisa Buchberger
05/2014 – 07/2020	Dr. Micael Reis
04/2016 – 07/2017	Dr. Montserrat Torres-Oliva

#### PhD

since 09/2023	Siddharth Murali
since 09/2022	Duğçar Ebrar Erdoğan
02/2020 – 02/2021	Zaheer-ud-din Syed
10/2016 – 02/2024	Amel Chtioui (joint supervision with Prof. Simianer, Animal Breeding, Göttingen), <i>2 maternity leaves during PhD</i>
12/2018 – 11/2022	Gordon Wiegleb
10/2017 – 02/2022	Ting-Hsuan Lu
02/2016 – 10/2019	Elisa Buchberger
07/2013 – 06/2014	Co-supervisor of Christoph Schomburg (main supervisor: Nikola-Michael Prpic-Schäper)
10/2012 – 03/2016	Montserrat Torres-Oliva

*Note: Besides my own PhD students, I have been serving as thesis committee member or extended examination committee member for 25 PhD thesis committees.*

#### Master

10 weeks practical course as part of rotation project (incl. protocol) + proposal for Master thesis + ~6 months Master project incl. thesis

03/2023 -	Laura Schoch
11/2022 – 02/2023	Lena Reim (Master Rotation)
06/2021 – 03/2022	Leon Driehaus-Ortiz (Master Rotation)
06/2020 – 04/2021	Armin Niksic (Master Rotation, Master thesis)
02/2020 – 06/2020	Jan Ahrend (Master Rotation)
05/2018 – 06/2019	Georg Bullinger (Master Rotation, Master thesis)
04/2017 – 12/2018	Gordon Wiegleb (Master Rotation, Master thesis)
10/2015 – 01/2017	David Salamanca (Master Rotation, Master thesis)



09/2015 – 10/2017	Julia Schneider (Master Rotation, Master thesis)
10/2014 – 02/2017	Melissa Jüds (Master Rotation, Master thesis)
11/2014 – 12/2014	Elisa Buchberger (Master Rotation, Master thesis)

Bachelor

6 weeks practical course (incl. protocol) + 2 weeks proposal for Bachelor project + 10 weeks Bachelor thesis (laboratory project + thesis).

03/2023 – 08/2023	Neele Schikora
10/2020 – 04/2021	Lena Reim
05/2019 – 09/2020	Lennart Hüper
01/2019 – 12/2019	Marc Hesselbarth
04/2016 – 03/2017	Natalia Haubrich
05/2016 – 11/2016	Antje Sievers
02/2015 – 09/2015	Anja Strohdiek
10/2014 – 04/2015	Gordon Wiegler
10/2014 – 01/2015	Carolin Schilling
07/2013 – 04/2014	Nora Ksionsko
03/2013 – 04/2014	Lena Steins
12/2012 – 04/2013	Melanie Weber (Vetmed Uni, Vienna, Austria, external Bachelor thesis)
09/2012 – 03/2013	Julia Schneider
09/2012 – 02/2013	Phillipp Kirfel
04/2012 – 09/2012	René Illner

External students/visitors

01/2024 – 07/2024	Dibyoyoti Chattopadhyay (University of Pavia, Italy)
11/2022 – 01/2023	Elisavet Kanari (Aristotle University of Thessaloniki, Greece)
11/2021 – 02/2022	Tutku Çekigil (Middle East Technical University, Ankara, Turkey)
07/2018 – 09/2018	Cristina Matas de las Heras (Universidad CEU San Pablo, Madrid, Spain)
06/2018 – 09/2018	Sanem Ayaz (Izmir University, Turkey)
06/2017 – 10/2017	Anıl Bilen (Bilkent University, Molecular Biology and Genetics, Turkey)
03/2017 – 09/2017	Naomí Ruth Hernández Rojas (Universidad de Talca, Talca, Chile)
02/2016 – 07/2016	Bairon Exe Hernández Rojas (Universidad de Talca, Talca, Chile)