

Curriculum vitae

• Personal Data

Name: Nico Posnien
Date of birth: 1st October 1981
Nationality: German
Legal status: Married, 2 children

ResearcherID: D-1639-2012

• Current working address

Georg-August-Universität Göttingen, Johann-Friedrich-Blumenbach Institut für Zoologie und Anthropologie, Abteilung Entwicklungsbiologie, Justus-von-Liebig-Weg 11, 37077 Göttingen
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• Employment

since November 2015	Emmy-Noether Group Leader, Georg-August University, Göttingen, Germany funded by the DFG
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 Volkswagen Foundation (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: 17th 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: 20th June 2006
 Grades by subject: Entwicklungsbiologie (sehr gut), Zoologie (sehr gut), Humangenetik (gut)
 Final Grade: **sehr gut**

• Awards & Prizes

2019 Walther-Arndt-Prize of the German Zoological Society
 2015 Emmy-Noether Fellowship of the DFG
 2012 Postdoc Fellowship of the Volkswagen Foundation

• Memberships

- Society for Evolutionary Developmental Biology (EED)
Council Member since 06/2018
- German Zoological Society (Deutsche Zoologische Gesellschaft)
Speaker of „Fachgruppe Entwicklungsbiologie“ since 06/2018
- GOEvol (<http://www.goevol.uni-goettingen.de/>)
- Member of Göttingen Graduate School for Neurosciences and Molecular Biosciences (GGNB)
- JEDI - Junior European Drosophila Investigators
- DrosEU Consortium (<http://droseu.net/>)
head of “Transcriptomics” work group
- Member of Göttingen Center for Molecular Biosciences (GZMB)

- Recommender for Peer Community in Evolutionary Biology (PCI Evol Bio)
- Recommender for Peer Community in Genomics (PCI Genomics)
- Member of the Center for Integrated Breeding Research (CiBreed), Göttingen
- International Max Planck Research School for Genome Science (IMPRS-GS)
Program committee member since 03/2017, deputy spokesperson since 02/2019

• Reviewer

Journals

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

Funding sources

Deutsche Forschungsgemeinschaft (DFG), Research Fund - Flanders (FWO)

• Editor

Associate Editor for Frontiers in Ecology and Evolution

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

Editor for Development, Genes and Evolution

Guest Editor for "Size and Shape" Special Issue (Development, Genes and Evolution)

Editor for Topical Collection "Size and Shape" (Development, Genes and Evolution)

• Other scientific activities

2020

- Co-Organizer of Special Topic Symposium "From tiny steps to major transitions - Evo-Devo on various scales" of the FG Entwicklungsbiologie as part of the 113th Annual Meeting of the German Zoological Society, September 2018
(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 112th Annual Meeting of the German Zoological Society, September 11, 2018
(co-organizers: Natascha Zhang, Munich; Benjamin Naumann, Jena)

- 2018
 - Organization of DZG Graduate Meeting “Evo-Devo in Germany: Status-Quo and future directions”, March 4-6, 2019 (co-organizer: Natascha Zhang, Munich)
 - 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 111th 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)

• University Organization

2019

- Deputy Spokesperson of the “International Max Planck Research School for Genome Science” (still active)

2017

- Mitglied der Prüfungskommission des Masterstudiengangs “Developmental, Neural, and Behavioral Biology” (still active)
- Member of the program committee of the “International Max Planck Research School for Genome Science” (still active)

2016

- Mitglied der Kommission: “Mitarbeiterkonzept der Fakultät für Biologie und Psychologie“ (finished)
- Mitarbeitervertreter im Vorstand des Johann-Friedrich-Blumenbach Institut für Zoologie und Anthropologie (until March 2020)
- Scientific Cluster Representative (“Science & Technology”) of the Georg-August-University within the U4 network (still active)
- Co-initiator of dialogue about “Sexual harassment in the academic context”

• Key qualifications

2018

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

2017

- Coordination of Junior Group Leader Peer Group with focus on Leadership skills (still active)

2016

- Member of Junior Group Leader Peer Group with focus on Leadership skills (still active)

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)

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

“Micro-Evo-Devo: Morphology meets Genomics”. 8th 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”. 2nd Eco-Evo-Devo Postgraduate Summer School, Oxford Brookes University, Oxford, UK, August 2014

• Funding Statement

May 2019	<p>DFG Sequencing Grant (Research Grant; 3 years)</p> <p>“Gene expression divergence during <i>Drosophila</i> head development on single cell resolution” Grant Nr.: PO 1648/4-1</p>
since December 2018	<p>PhD position funded by Niedersächsisches Ministerium für Wissenschaft und Kultur as part of the International Max Planck Research School for Genome Science (IMPRS-GS)</p>
since October 2016	<p>PhD position funded by RTG 1644 “Scaling Problems in Statistics” (joint PhD position with Henner Simianer, Dpt. of Animal Breeding, Göttingen)</p>
April 2016	<p>GGNB-Junior Group Stipend (12 months, 1.365 EUR/month fellowship for one PhD student, 103 EUR/month consumables)</p> <p>“Identification of the molecular basis for a sexual dimorphism in head shape and mandible size in the broad-horned flour beetle, <i>Gnathocerus cornutus</i>”</p>
November 2015	<p>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)</p> <p>“Evolution of the gene regulatory network underlying head development in closely related <i>Drosophila</i> species” Grant Nr.: PO 1648/3-1</p>
July 2014	<p>Georg-August-University Göttingen, MWK “Strategische Maßnahmen der Georg-August-Universität Göttingen” – Anschlagfinanzierung für den wissenschaftlichen Nachwuchs (9 months, 9.983,24 EUR, including consumables and student assistant support)</p> <p>"Evolution and development of the dorsal head in three closely related <i>Drosophila</i> species"</p>
Feb 2014	<p>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)</p> <p>“Evolution of eye and head size and shape between <i>Drosophila novamexicana</i> and <i>Drosophila americana</i>” Grant Nr.: 85983-1</p>

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

Publications

Summary

25 articles in peer-reviewed journals
 4 reviews in peer-reviewed journals
 3 book chapters

	all	since 2015
Citations	2,129	1,193
h-index	19	17
i10-index	23	23

based on Google Scholar (March 26, 2020)

- **In revision, submitted, in preparation**

Kapun M, Barrón MG, [... incl. **Posnien N**...], Flatt T, González J (in revision). "Genomic analysis of European *Drosophila melanogaster* populations on a dense spatial scale reveals longitudinal population structure and continent-wide selection."

preprint: doi: <https://doi.org/10.1101/313759>

Buchberger E, Bilen A, Ayaz S, Salamanca D, Matas de las Heras C, Niksic A, Almudi I, Torres-Oliva M, Casares F, **Posnien N** (submitted) "Variation in a pleiotropic regulatory module drives evolution of head shape and eye size in *Drosophila*."

preprint: doi: <https://doi.org/10.1101/2020.01.24.918011>

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

preprint: doi: <https://doi.org/10.1101/2020.03.24.005413>

Siomava N, Wimmer EA, **Posnien N** (in prep) "Extensive sexual wing shape dimorphism in *Drosophila melanogaster*, *Ceratitis capitata* and *Musca domestica*"

preprint: doi: <https://doi.org/10.1101/135749>

Almudi I*, Arif S*, Torres-Olivia, M*, Buchberger E*, Kittelmann M, Sumner-Rooney L, Gaspar P, **Posnien N***, Nunes MDS+, McGregor AP+ (in prep) "Genetic analysis of ommatidial size variation between *Drosophila* species."

*equal contribution

+corresponding authors

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**

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.

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, Wiegler 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.
- 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* 2017;15:62. doi: 10.1186/s12915-017-0399-x
- 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, Almudi 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*.
- 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, 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.

- **Review articles and Editorials**

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.

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

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

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.

- **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. 1–12. Cham: Springer International Publishing. doi: 10.1007/978-3-319-33038-9_121-1

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.