
Curriculum Vitae of Nicolas Rohner

Professional Experience and Positions

2016-present	Assistant Professor, Department of Molecular & Integrative Physiology, KU Medical Center, Kansas City, KS
2015-present	Assistant Investigator, Stowers Institute for Medical Research, Kansas City, MO
2010-2015	Postdoctoral Fellow, Department of Genetics, Harvard Medical School, Boston, MA

Education

Postdoc 2010-2015	Department of Genetics, Harvard Medical School, Boston, MA <i>Advisor:</i> Dr. Cliff Tabin
Ph.D. 2010	Department of Genetics, Max-Planck-Institute for Developmental Biology, Tübingen, Germany <i>Advisor:</i> Dr. Christiane Nüsslein-Volhard Ph.D. Grade: "magna cum laude"
M.Sc. 2005	Department of Genetics, Friedrich-Alexander University Erlangen, Germany <i>Advisor:</i> Dr. Georg Fey Grade: 1.2 (1.0 - 6.0; 1.0 is best)
B.Sc. 2002	Friedrich-Alexander University Erlangen, Germany Grade: 1.2 (1.0 - 6.0; 1.0 is best)

Research Interest

My research interest focuses on the interface of developmental biology, genetics and evolution with an interest on understanding the genetic basis and molecular mechanisms of adaptation to novel and extreme environments. I am mostly using the cavefish *Astyanax mexicanus* to address the question of how these fish had to change their metabolism to survive in the nutrient poor cave environment and whether we can learn from their survival strategy to better understand our current maladaptation to modern civilizations.

Honors and Fellowships

- 2014 EMBO Travel and Meeting bursary to attend the FEBS EMBO 2014 Meeting
- 2014 Young Investigator Travel Award for the SMBE (Society for Molecular Biology & Evolution) Meeting in Puerto Rico
- 2014 Selected Speaker Prize at the Harvard Medical School Department of Genetics Retreat
- 2011-2013 Two year Postdoctoral Fellowship from the German Government (Deutsche Forschungsgemeinschaft- DFG)
- 2012 Postdoc Research Day Poster Award at Harvard Medical School in recognition of outstanding poster presentation
- 2012 Nominated and Elected for the AAAS Program for Excellence in Science
- 2011 Stipend from the GSO (German Scholars Organization) for “Building Bridges” an undertaking to attract scientists from abroad back to Germany
- 2005-2008 Max-Planck Ph.D. Fellowship
- 2006 Student award for the best poster presentation at the 1st European Meeting of Evolution and Development, Prague

Seminars and Invited Talks

Invited Plenary Presentations

- 2018 1st AsiaEvo Conference, Shenzhen, China
- 2017 Alumnus Speaker Ph.D. Symposium Max-Planck-Institute, Tuebingen
- 2017 10th meeting of the Zebrafish Disease Models Society, San Diego, CA
- 2017 ASBMB special symposium on Evolution and Core Processes in Gene Regulation, Kansas City, MO
- 2017 8th Aquatic Models of Human Disease Conference. Birmingham, AL
- 2016 American Century Championship. Edgewood Tahoe South, NV
- 2016 Harvard’s 17th Annual Postgraduate Nutrition Symposium. Boston, MA
- 2016 MBL Embryology course. Woods Hole, MA
- 2015 Epigenomics & Metabolomics Symposia. Cambridge, MA
- 2014 Harvard-LMU Young Scientists' Forum. Cambridge, MA

Selected from abstract submissions (oral)

2017	Evolution 2017, Portland, OR
2016	Ecological Genomics Symposium, Kansas City, MO
2016	20 th Evolutionary Biology Meeting, Marseille, France
2016	SDB 75 th Annual Meeting, Boston, MA
2016	12 th International Conference on Zebrafish Development and Genetics, Orlando, FL
2016	International Society for Evolution, Medicine and Public Health Meeting, Durham, NC
2016	International conference on Subterranean Biology, Fayetteville, AR
2015	4 th Astyanax International Meeting, Santiago de Querétaro, Mexico
2015	15 th ESEB Meeting, Lausanne, Switzerland
2014	Society for Molecular Biology & Evolution Annual Meeting, San Juan, Puerto Rico
2014	Cell Symposia Evolution of Modern Humans, Sitges, Spain
2013	36 th meeting of the Society of Craniofacial Genetics and Developmental Biology, Boston, MA
2013	EMBL SYMPOSIUM: New model systems for linking evolution and ecology, Heidelberg, Germany
2013	3 rd Astyanax International Meeting, Ciudad Valles, Mexico
2011	2 nd Astyanax International Meeting, Ciudad Valles, Mexico
2007	5th European Zebrafish Genetics and Development Meeting, Amsterdam, Netherlands

Selected from abstract submissions (poster)

2017	EvoDevo PAN-AM. 2nd Biennial Meeting, Calgary, Canada
2017	American Diabetes Association. 77th Scientific Sessions, San Diego, CA
2017	KU Diabetes Institute Research Symposium
2016	7 th EMBO Meeting, Mannheim, Germany (selected for flash talk)
2016	Wellcome Trust Evolutionary Systems Biology Meeting, Hinxton, UK
2015	Ecological and Evolutionary Genomics Gordon Conference, Biddeford, ME
2014	EMBO-FEBS Meeting, Paris, France
2013	Biological Mechanism in Evolution - Gordon conference, Easton, MA
2012	4 th EMBO-Meeting, Nice, France
2012	First Joint Congress on Evolutionary Biology, Ottawa, Canada

-
- 2009 16th International Society of Developmental Biologists Congress, Edinburgh, Scotland
 - 2008 67th Annual Meeting of the Society for Developmental Biology, Philadelphia, PA
 - 2006 1st European Meeting of Evolution and Development, Prague, Czech Republic

Invited Departmental Seminars

- 2018 George Washington University, Department of Biological Sciences, Washington DC
- 2017 Carnegie Institution for Science, Washington DC
- 2017 Institut Pasteur, Department of Developmental & Stem Cell Biology, Paris, France
- 2017 University of California, Santa Barbara, Department of Mechanical Engineering, Santa Barbara, CA
- 2017 Iowa State University, Genetics, Development, and Cell Biology Department, Ames, IA
- 2016 Florida Atlantic University, Department of Biological Sciences, Jupiter, FL
- 2016 Max-Planck-Institute for Heart and Lung Research, Bad Nauheim, Germany
- 2015 Kansas University Medical Center, Department of Molecular & Integrative Physiology, Kansas City, KS

Service and Committees

- 2018 Member Stowers Graduate School search committee
- 2017-18 Member Accreditation Criterion Group, Stowers Graduate School
- 2017 Ad-hoc Reviewer for the Emmy Noether Program (DFG)
- 2017 Organizer 5th cavefish meeting in Santiago de Querétaro, Mexico
- 2017 Ad-hoc Reviewer for The Research Foundation – Flanders (FWO)
- 2017 Member Stowers Graduate School search committee
- 2016 Poster judge at the SDB 75th Annual Meeting, Boston, MA
- 2015-present Implementation and maintenance of the community cavefish website: www.cavefin.org
- 2015 Ad-hoc Reviewer for the German science foundation (DFG)
- 2014-present Reviewer for numerous papers in the following journals:

Aquatic Conservation Marine and Freshwater Ecosystems, BMC Biology, BMC Evolutionary Biology, Current Biology, Development, Developmental Biology, eLife, Environmental Biology of Fishes, Evolution and Development, Frontiers in Zoology, Genome Biology and Evolution, Integrative Zoology, Molecular Biology and Evolution, Molecular Ecology, Nature Communications, PLOS ONE, Proceedings B, Science Advances, Scientific Reports.

2010-present Member of the following societies for at least one year: Society for Molecular Biology and Evolution, European Society for Evolutionary Biology, Society for the Study of Evolution, International Society for Evolution, Medicine & Public Health, American Diabetes Association, Genetics Society of America, Society for Developmental Biology, Euro-Evo-Devo Society.

Teaching Experience and Outreach

- 2016 Guest lecture for the developmental biology module of the Stowers Graduate School Program
- 2016 Evo-Devo one week module for the Stowers Graduate School Program
- 2016 Lunch and Learn Lecture, Stowers Institute for Medical Research, Kansas City, MO
- 2015 Evo-Devo one week module for the Stowers Graduate School Program
- 2014 Guest Lecture, Human Evolutionary Biology Department, Peabody Museum Cambridge, MA
- 2012 Teaching Assistant position at Boston College for the Fall course: „Investigations in Molecular Cell Biology“
- 2012 Two day teaching training and workshop at Boston College about Bloom’s Taxonomy of educational objectives
- 2011-2014 Mentoring in the Four Directions Summer Research Program at Harvard Medical School and Brigham and Women’s Hospital for undergraduate students with a commitment to the health of Native American communities (Students: Zack MacDonald, Clifford Jacobs, Jennifer Meylor, and Sean Gay)
- 2009 Co-teaching „Entwicklungsgenetik der Tiere (Developmental Genetics of Animals)“ with Prof Dr. Reuter, University of Tübingen

List of All Students

Postdoctoral Research Associates

2016-present Robert Peuss
2015-present Jaya Krishnan

Graduate students

2016-present Shaolei Xiong

Graduate student advising

Dissertation Advisory Committees (DAC)

Karla Terrazas
Shuonan He
Kyle Patton

Rotation students

Augusto Ortega
Kyle Patton
Kevin Ramos

Undergraduate Researchers

2017 Alice Bedois
2017 Aubrey Kent
2017 Emily Orr
2016 Abagael Sykes
2016 Rebecca Richmond-Smith
2016 Jennifer Rutkowski
2011-2013 Tam Luong

Field Trips

2017 Caving trip to Pachón and Subterráneo, Sierra del Abra, Mexico
2016 Caving trip to Caballo Moro, Sierra de Guatemala, Mexico
2013 Caving trip to Subterráneo, Sierra del Abra, Mexico
2011 Caving trip to Tinaja, Sierra del Abra, Mexico
2007 Field trip to collect Phoxinellus species, Croatia and Bosnia Herzegovina

Publications

Total - 1321 citations, h-index 11, i10-index 11
Since 2012 - 1268 citations, h-index 11, i10-index 11

In submission/ Biorxiv:

1. Riddle M, Aspiras A, Gaudenz K, Peuß R, Sung J, Martineau B, Peavey M, Box AC, Tabin JA, McGaugh SE, Borowsky R, Tabin CJ and **Rohner N**. *Insulin resistance in cavefish as an adaptation to a nutrient-poor environment*. (submitted/ available on Biorxiv: bioRxiv 179069; <https://doi.org/10.1101/179069>)

Peer reviewed publications:

1. Krishnan J, **Rohner N**. *Cavefish and the basis for eye loss*. **Philos Trans R Soc Lond B Biol Sci**. 2017 Feb 5;372(1713).
2. Daane JM, **Rohner N**, Konstantinidis P, Djuranovic S, Harris MP. *Phylogenomic evidence for epistasis between fgfr1 and fgf20 in skeletal evolution*. **Mol Biol Evol**. 2016 Jan;33(1):162-73
2. Aspiras A*, **Rohner N***, Martineau B, Borowsky R, Tabin CJ. *Loss of function mutations in MC4R drive adaptation of Astyanax mexicanus through hyperphagia*. **PNAS** 2015 Aug 4;112(31):9668-73
* contributed equally
Featured in National Geographic, Featured on BBC Radio, Featured in the New York Times, Harvard Press Release
3. McGaugh SE, Gross JB, Aken B, Blin M, Borowsky RL, Chalopin D, Hinaux H, Jeffery WR, Keene AC, Ma L, Minx P, Murphy D, O'Quin KE, Rétaux S, **Rohner N**, Searle SMJ, Stahl B, Tabin C, Volf JN, Yoshizawa M, Warren WC. *The cavefish genome reveals candidate genes for eye loss*. **Nature Communications** 2014 Oct 20;5:5307.
4. **Rohner N**, Tschopp P, Tabin CJ. *Facial Makeup Enhancing our Looks*. **Current Biology** 2014 Jan 6;24(1):R36-8

-
5. **Rohner N**, Jarosz DF, Kowalko JE, Yoshizawa M, Jeffery WR, Borowsky RL, Lindquist S, Tabin CJ. *Cryptic Variation in Morphological Evolution: HSP90 as a Capacitor for the Adaptive Loss of Eyes in Cavefish*. **Science** 2013 Dec 13;342(6164):1372-5
Editors choice Science, Editors choice Nature Genetics, Featured in National Geographic, Featured in Scientific American, Harvard Press Release and Whitehead-Institute Press release
 6. Kowalko JE, **Rohner N**, Linden TA, Rompani SB, Warren WC, Borowsky R, Tabin CJ, Jeffery WR, Yoshizawa M. *Convergence in feeding posture occurs through different genetic loci in independently evolved cave populations of *Astyanax mexicanus**. **PNAS** 2013 Oct 15;110(42):16933-8
 7. Kowalko JE, **Rohner N**, Rompani SB, Peterson BK, Linden TA, Yoshizawa M, Kay EH, Weber J, Hoekstra HE, Jeffery WR, Borowsky R, Tabin CJ. *Loss of Schooling Behavior in Cavefish through Sight-Dependent and Sight-Independent Mechanisms*. **Current Biology** 2013 Oct 7; 23(19): 1874-83
Featured as Dispatch in Current Biology
 8. Amemiya CT, Alföldi J, Lee AP, Fan S, Philippe H, Maccallum I, Braasch I, Manousaki T, Schneider I, **Rohner N**, Organ C, Chalopin D, Smith JJ, Robinson M, Dorrington RA, Gerdol M, Aken B, Biscotti MA, Barucca M, Baurain D, Berlin AM, Blatch GL, Buonocore F, Burmester T, Campbell MS, Canapa A, Cannon JP, Christoffels A, De Moro G, Edkins AL, Fan L, Fausto AM, Feiner N, Forconi M, Gamielien J, Gnerre S, Gnirke A, Goldstone JV, Haerty W, Hahn ME, Hesse U, Hoffmann S, Johnson J, Karchner SI, Kuraku S, Lara M, Levin JZ, Litman GW, Mauceli E, Miyake T, Mueller MG, Nelson DR, Nitsche A, Olmo E, Ota T, Pallavicini A, Panji S, Picone B, Ponting CP, Prohaska SJ, Przybylski D, Saha NR, Ravi V, Ribeiro FJ, Sauka-Spengler T, Scapigliati G, Searle SM, Sharpe T, Simakov O, Stadler PF, Stegeman JJ, Sumiyama K, Tabbaa D, Tafer H, Turner-Maier J, van Heusden P, White S, Williams L, Yandell M, Brinkmann H, Volff JN, Tabin CJ, Shubin N, Scharl M, Jaffe DB, Postlethwait JH, Venkatesh B, Di Palma F, Lander ES, Meyer A, Lindblad-Toh K. *Analysis of the African coelacanth genome sheds light on tetrapod evolution*. **Nature** 2013 Apr 18;496(7445):311-6
Featured in BBC News, Scientific American, Harvard and Broad Press Release
 10. Smith JJ, Kuraku S, Holt C, Sauka-Spengler T, Jiang N, Campbell MS, Yandell MD, Manousaki T, Meyer A, Bloom OE, Morgan JR, Buxbaum JD,

Sachidanandam R, Sims C, Garruss AS, Cook M, Krumlauf R, Wiedemann LM, Sower SA, Decatur WA, Hall JA, Amemiya CT, Saha NR, Buckley KM, Rast JP, Das S, Hirano M, McCurley N, Guo P, **Rohner N**, Tabin CJ, Piccinelli P, Elgar G, Ruffier M, Aken BL, Searle SM, Muffato M, Pignatelli M, Herrero J, Jones M, Brown CT, Chung-Davidson YW, Nanlohy KG, Libants SV, Yeh CY, McCauley DW, Langeland JA, Pancer Z, Fritzsich B, de Jong PJ, Zhu B, Fulton LL, Theising B, Flicek P, Bronner ME, Warren WC, Clifton SW, Wilson RK, Li W. *Sequencing of the sea lamprey (*Petromyzon marinus*) genome provides insights into vertebrate evolution.* **Nature Genetics** 2013 Apr;45(4):415-21, 421e1-2

11. Norton WH, Stumpfenhorst K, Fauss-Kessler T, Folchert A, **Rohner N**, Harris MP, Callebert J, and Bally-Cuif L. *Fgf signalling in the brain reveals a genetic basis for an aggression-boldness syndrome.* **Journal of Neuroscience** 2011 Sep 28;31(39):13796-807
12. **Rohner N**, Perathoner S, Frohnhöfer HG, Harris MP. *Enhancing the efficiency of N-ethyl-N-nitrosourea-induced mutagenesis in the zebrafish.* **Zebrafish** 2011 Sep 28;31(39):13796-807
13. **Rohner N**, Bercseny M, Orban L, Kolanczyk ME, Linke D, Brand M, Nüsslein-Volhard C, and Harris MP. *Duplication of fgfr1 Permits Fgf Signaling to Serve as a Target for Selection during Domestication.* **Current Biology** 2009 Oct 13;19(19):1642-7
Recommended Faculty1000, Editors choice Science, Editors choice Nature, Dispatch Current Biology, Max-Planck-Institute Press Release, Featured on National Public Radio.
14. Harris MP, **Rohner N**, Schwarz H, Perathoner S, Konstantinidis P, and Nüsslein-Volhard C. *Zebrafish eda and edar mutants reveal conserved and ancestral roles of ectodysplasin signaling in vertebrates.* **PLoS Genetics** 2008 Oct 3;4(10):e1000206

Book chapters (peer reviewed):

1. 'Out of the Dark' Cavefish are Entering Biomedical Research for "Zebrafish, Medaka, and Other Small Fishes - New Model Animals in Biology, Medicine, and Beyond". published by Springer science. (in press)
2. The role of genome evolution in developmental evolution for "The Encyclopedia of Evolutionary Biology" published by Elsevier. May 06 2016. ISBN: 9780128000496

-
3. Selection through Standing Genetic Variation in “The evolution and biology of Mexican cavefish” published by Elsevier. Oct 12 2015. ISBN: 978-0-12-802148-4

Press coverage

- 2017 Q&A – A discussion with Nicolas Rohner (**Stowers Report Fall/Winter 2016**)
- 2016 Changes in cavefish metabolism could lead to new insights into diabetes (**News Medical Life Sciences**)
- 2016 Blind cave fish may provide insights into human health (**Science in Depth**, by Elizabeth Pennisi)
- 2016 Why Scientists Are Falling For A Blind, Albino, Binge-Eating Cavefish (**KCUR Public Radio**)
- 2015 How can you eat, eat, eat—and stay healthy? Ask a blind cavefish. (**National Geographic**)
- 2015 Fat Fish Illuminate Human Obesity: Binge-eating cavefish share mutated gene with some obese people (**HMS News**)
- 2015 Insatiable Fish Share Gene With Binge-Eating Humans (**New York Times**)
- 2013 Blind Cave Fish Could Change Our Understanding of Evolution (**Scientific American**)
- 2013 How A Fish Unleashed Its Evolutionary Potential And Went Blind (**National Geographic**)
- 2013 Evolution’s Fast Track: Eyeless cavefish reveal mechanisms of cryptic genetic variation (**HMS News**)