Curriculum vitae

(as of 02/2017)

Prof. Dr. Christian Kost

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1 Personal information

Citizenship:	German
Family status:	married, two children

2 Education

2003-2006	MPI for Chemical Ecology/ Friedrich-Schiller University Jena, Germany	Dr. rer. nat. *magna cum laude*		Biology
1995-2001	University of Kaiserslautern, Germany	Diplom	*very good*	Biology

3 Research and professional experience

Since 2016	*Ecology and evolution of microbial interactions* University of Osnabrück, Osnabrück, Germany	**Professor**
2009-2016	*Ecology and evolution of metabolic cross-feeding interactions* MPI for Chemical Ecology, Jena, Germany	**Group leader**
2006-2008	*Genomic and phenotypic analysis of experimentally evolved* Pseudomonas fluorescens *strains* Rainey lab, Massey University, Auckland, New Zealand	**Postdoc**
2006-2006	*Chemical ecology of defence mutualisms in the lima bean* Boland lab, MPI for Chemical Ecology, Jena, Germany	**Postdoc**
2003-2006	*Chemical ecology of defence mutualisms in the lima bean* Heil lab, MPI for Chemical Ecology, Jena, Germany	**Doctoral student**
2001-2003	*Role of driver ants for maintaining the diversity of soil-dwelling arthropods* Linsenmair lab, University of Würzburg, Germany	**Scientific coworker**
1995-2001	*Foraging ecology of leaf-cutting ants and population genetics of ant-associated, ectosymbiotic bacteria* Wirth lab, University of Kaiserslautern, Germany	**Diploma student**

4 Research interests

- Ecology and evolution of metabolite cross-feeding among microorganisms
- Genomic and physiological consequences of a synergistic coevolution
- Contact-dependent interactions among bacterial cells
- Coevolutionary dynamics within microbial interaction networks
- Bacterial multicellularity

5 Academic awards

2016-	*Member* | SFB 944
20115-	*Member* | SPP1617
2011	*Best oral presentation* | Evolution at the Sea Symposium (VolkswagenStiftung)
2009 -	*Associate faculty member* | Faculty of 1.000
2007	*Travel award* | University of Auckland (500 NZ$)
2006-2008	*Feodor Lynen Fellowship* | Alexander von Humboldt Foundation (78,600 €)
2006	*Travel award* | Summer Institute of Statistical Genetics, Seattle, USA (2,000 US$)
2006	*Merian award* | Society for Tropical Ecology
2005	*Best poster award* | International Max Planck Research School (1,000 €)
2005	*Travel award* | International Society of Chemical Ecology (500 US$)
2001	*Merian award* | Society for Tropical Ecology

6 Evaluations

2014	Evaluated by the Scientific Advisory Board of the MPI for Chemical Ecology and given the grade	*»outstanding«*
2012	Evaluated by the Scientific Advisory Board of the MPI for Chemical Ecology and given the grade	*»excellent«*

7 Professional activities

7.1 International research experience

2006-2008	Postdoc: Auckland, New Zealand (2 years)
2004	Field work for PhD project: Puerto Escondido, Mexico (2.5 months)
2003	Field work for PhD project: Puerto Escondido, Mexico (2.5 months)
2002	Field work for research project: Comoé National Park, Ivory Coast (4.5 months)
2001	Field work for research project: Comoé National Park, Ivory Coast (2 months)
1999-2000	Field work for diploma project: Paracou, French Guiana (3 months)
1999	Voluntary service and research practical: Utila, Honduras (2 months)
1999	Research practical: Sahara, Tunisia (1 month)

7.2 Advanced training

2015	*Appointment Negotiations*, DHV, Bonn
2014	*Academic Teaching for Natural Scientists*, FSU Jena
2013	*Mediation and Conflict Management for Ombudspersons*, ZWM Speyer
2011-2012	*Management Development Programme in Science Modules I, II, III, and IV*, MPG
2010	*Appointment Negotiations,* ZWM Speyer
2009	*Communication, Conflict- and Project Management*, ZWM Speyer
2009	*Safety Aspects of Genetic Engineering,* Jena
2006	*Statistical Genetics*, Seattle, USA
2006	*Adaptive Dynamics*, Groningen, Netherlands
2004	*Mass Spectrometry in Chemical Ecology*, MPI CE, Jena

2003-2006 *International Max Planck Research School (IMPRS):* The Exploration of Ecological Interactions with Molecular and Chemical Techniques, MPI CE, Jena

7.3 Reviewing activities

Journals Behavioral Ecology | Biological Journal of the Linnaean Society | Biosystems | BMC Evolutionary Biology | Chemoecology | Current Opinion in Microbiology | Ecological Applications | Ecological Entomology | Ecology | Ecology Letters | Environmental Microbiology Reports | Evolution | eLife | Frontiers in Microbiology | GEO kompakt | Insectes Sociaux | Journal of Applied Entomology | Journal of Chemical Ecology | Journal of Ecology | Journal of Insect Behavior | Journal of Plant Interactions | Journal of Plant Growth Regulation | Microbial Ecology | Molecular Ecology | Nature Microbiology | Oecologia | PLoS Biology | PLoS ONE | PNAS | Scientific Reports | The ISME Journal | The Open Plant Science Journal

Funding bodies Academia Sinica | L'Agence nationale de la recherché | Daimler Benz Stiftung | Eidgenössische Technische Hochschule Zürich | Maurice & Phyllis Paykel Trust | Marsden Fund |Minerva-Weizmann Program | National Science Foundation | National Centre for Biological Sciences | NER Indian Chemical Ecology | Netherlands Organisation for Scientific Research | New Zealand Foundation for Research, Science, and Technology | Sigma Delta Epsilon – Graduate Women in Science | United States – Israel Binational Science Foundation (BSF)

7.4 Elected ombudsperson

2009-2016 MPI for Chemical Ecology, Jena, Germany

7.5 Third-party funding

Total: 1,437 T€

Research grant, SFB 944 (DFG)	320 T€
Research grant, SPP1617 (DFG)	188 T€
PhD fellowship International Max Planck Research School (MPG)	95 T€
PhD fellowship, GERLS PhD programme (DAAD)	42 T€
PhD fellowship, Jena School for Microbial Communication, (JSMC, DFG)	142 T€
PhD fellowship International Max Planck Research School (MPG)	52 T€
Advanced Postdoctoral Fellowship (VolkswagenStiftung)	344 T€
PhD fellowship, Jena School for Microbial Communication (JSMC, DFG)	87 T€
PhD fellowship, Jena School for Microbial Communication (JSMC, DFG)	87 T€
Feodor Lynen Postdoctoral Fellowship (Alexander von Humboldt Foundation)	79 T€

7.6 Organization

2017 Mini-Symposium, Osnabrück, Germany: *Microbiota* (with Karlheinz Altendorf, Michael Hensel, Sabine Zachgo)

Conference session, ESEB, Groningen, Netherlands: *Major transitions in evolution* (with Abel Bernadou, Boris Kramer, Karen Meusemann, and William Ratcliff)

2015 Conference session, ESEB, Lausanne, Switzerland: *Groups versus individuals: levels of selection in microbial systems* (with Martin Ackermann)

2012 Workshop, MICOM, Jena, Germany: Are bacteria multicellular organisms?

2011 Conference session, ESEB, Tübingen, Germany: *Mutualistic interactions: causes and consequences* (Martin Kaltenpoth)

Workshop, MICOM, Jena, Germany: *Bacterial individuality*

7.7 Teaching activities

Since 2017	Supervision of 1 postdoctoral student
2006-2017	Supervision of 14 doctoral students (5 as co-supervisor)
2007-2017	Supervision of 15 master/ diploma students (8 as co-supervisor)
2011-2017	Supervision of 5 bachelor students
2002-2017	Supervision of 13 students (internship, seminar projects, laboratory courses)
Since 2017	Lecture series and practical course: *Ecology*, University Osnabrück
Since 2017	Master/ extension module: *Fundamental principles in ecology and evolution*, University Osnabrück
Since 2016	Master module: *Experimental ecology and evolution*, University Osnabrück
2010-2016	Master of Microbiology Module: *Chemical Ecology*, FSU Jena
2014	Block course: *Ecological interactions and evolutionary game theory,* JSMC, FSU Jena
2013	Basic lecture course: *Practical statistics*, MPI Jena
2013	Basic lecture course: *Ecological interactions in structured environments*, IMPRS, MPI Jena
2012	Invited guest lecture: *Microorganisms as model systems in chemical ecology*, Frontiers in Chemical Ecology, MPI Jena
2012	Basic lecture course: *Experimental evolutio*n, IMPRS, MPI Jena
2011	Basic lecture course: *Good scientific practice,* MPI Jena
2011	Basic lecture course: *Practical statistics*, MPI Jena
2010	Block course: *Ecological interactions and evolutionary game theory,* JSMC, FSU Jena
2006	Basic lecture course: *Practical statistics*, MPI Jena
2005	Short course: *Field ecology*, FSU Jena
2005	Basic lecture course: *Practical statistics*, MPI Jena

7.8 Invited talks

2017	Münster Graduate School of Evolution, Münster, Germany Irseer Naturstofftage, Dechema, Kloster Irsee, Germany Netherlands Institute of Ecology, Wageningen, Netherlands DGFZ 2017, Jena, Germany
2016	Institute for Medical Microbiology, Giessen, Germany SFB 987, Marburg, Germany SFB 944, Osnabrück, Germany SFB 680 Cologne, Germany
2015	National Center for Biological Sciences, Bangalore, India. Indian Institute of Science (IISC), Bangalore, India. Max Planck Research School for Evolutionary Biology, Hamburg, Germany. GZMB-Kolloquium Mikrobiologie/Strukturbiologie, Göttingen, Germany. Gordon Research Conference on Animal-Microbe Symbioses, Waterville Valley, USA. Swiss Microbial Ecology Meeting, Ascona, Switzerland.
2014	Max Planck Institute for Marine Microbiology, Bremen, Germany Christian Albrechts University, Kiel, Germany Center for Molecular Biology, Ruprecht Karls University, Heidelberg, Germany LeadNet meeting, Mainz, Germany
2013	Max Planck Institute for Terrestrial Microbiology, Marburg, Germany Free University, Berlin, Germany RGT 1708 Workshop, Bad Urach, Germany NESCent Catalysis Meeting, Durham, USA
2012	Frontiers in Chemical Ecology, Max Planck Institute for Chemical Ecology, Jena, Germany
2011	Max Planck Institute for Chemical Ecology, Jena, Germany

2010 ETH Zürich, Zürich, Switzerland
Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Dübendorf, Switzerland
2009 University of Kaiserslautern, Kaiserslautern, Germany
Jena Centre for Bioinformatics JCB, Jena, Germany
Max Planck Institute for Chemical Ecology, Jena, Germany
2007 Jena Centre for Bioinformatics JCB, Jena, Germany

8 Publications

8.1 Peer-reviewed publications

33 articles; 1,947 citations; h-index = 17 (source: Google scholar)
* Equally contributing authors

2017 Junker RR, Kuppler J, Amo L, Blande JD, Borges RM, van Dam NM, Dicke M, Dötterl S, Ehlers B, Etl F, Gershenzon J, Glinwood R, Gols R, Groot AT, Heil M, Hoffmeister M, Holopainen JK, Jarau S, John L, Kessler A, Knudsen JT, **Kost C**, Larue-Kontic AAC, Leonhardt SD, Lucas-Barbosa J, Majetic CJ, Menzel F, Parachnowitsch AL, Pasquet RS, Poelman EH, Raguso RA, Ruther J, Schiestl FP, Schmitt T, Tholl D, Unsicker SB, Verhulst N, Visser ME, Weldegergis BT, Köllner TG. Co-variation and phenotypic integration in chemical communication displays: biochemical constraints and eco-evolutionary implications. *New Phytologist*, accepted.

2016 D'Souza G, **Kost C**. (2016). Experimental evolution of metabolic dependency in bacteria. *PLoS Genetics*, 12(11): e1006364.

Germerodt S, Bohl K, Lück A, Pande S, Schröter A, Kaleta C, Schuster S, **Kost C**. (2016). Pervasive selection for cooperative cross-feeding in bacterial communities. *PLoS Computational Biology*, 12(6): e1004986.

Pande S, Kaftan F, Lang S, Svatoš A, Germerodt S, **Kost C**. (2016). Privatization of cooperative benefits stabilizes mutualistic cross-feeding interactions in spatially structured environments. *The ISME Journal*, 10, 1413-1423.

Waschina S, D'Souza G, **Kost C***, Kaleta C*. (2016). Metabolic network architecture and carbon source determine metabolite production costs. *The FEBS Journal*, 283, 2149-2163.

2015 D'Souza G, Waschina S, Kaleta C, **Kost C**. (2015). Plasticity and epistasis strongly affect bacterial fitness after losing multiple metabolic genes. *Evolution*, 69(5), 1244-1254.

Pande S, Shitut S, Freund L, Westermann M, Bertels F, Colesie C, Bischofs IB, **Kost C**. Metabolic cross-feeding via intercellular nanotubes among bacteria. *Nature Communications*, 6: 6238.

Schmidt R, Waschina S, Boettger-Schmidt D, **Kost C**, Kaleta C. Computing autocatalytic sets to unravel inconsistencies in metabolic network reconstructions. *Bioinformatics*, 31(3), 373-381.

Seccareccia I, **Kost C**, Nett M. Quantitative analysis of *Lysobacter* predation. *Applied and Environmental Microbiology*, 81(20), 7098-7105.

Sudakaran S, Retz F, Kikuchi Y, **Kost C***, Kaltenpoth M*. Evolutionary transition in symbiotic syndromes enabled diversification of phytophagous insects on an imbalanced diet. *The ISME Journal*, 9(12), 2587-2604.

2014 D'Souza G, Waschina S, Pande S, Bohl K, Kaleta C, **Kost C**. Less is more: Selective advantages can explain the prevalent loss of biosynthetic genes in bacteria. *Evolution*, 68(9): 2559-2570.

Thiele T, **Kost C**, Roces F, Wirth R. Foraging leaf-cutting ants learn to reject *Vitis vinifera* ssp. *vinifera* plants that emit herbivore-induced volatiles. *Journal of Chemical Ecology,* 40:617-620

Pande S, Merker H, Bohl K, Reichelt M, Schuster S, de Figueiredo, LF, Kaleta C, **Kost C**. Fitness and stability of obligate cross-feeding interactions that emerge upon gene loss in bacteria. *The ISME Journal,* 8, 953-962.
→ rated as *'hot'* by Thompson Reuters (top 0.1% of papers in its field);
article featured on the journal's homepage

2012 Bertels F, Merker H, **Kost C**. Design and characterization of auxotrophy-based amino acid biosensors. *PLoS ONE*, 7(7): e41349.

Radhika V, **Kost C**, Bonaventure G, David A, Boland W. Volatile emission in bracken fern (*Pteridium aquilinum*) is induced by jasmonates but not by herbivory. *PLoS ONE*. 7(11): e48050.

Sudakaran S, Salem H, **Kost C**, Kaltenpoth M. Geographic and ecological stability of the symbiotic mid-gut microbiota in European firebugs, *Pyrrhocoris apterus* (Hemiptera, Pyrrhocoridae). *Molecular Ecology*, 21(24): 6134-6151.

2011 **Kost C**, Tremmel M, Wirth R. Do leaf cutting ants cut undetected? Testing the effect of ant-induced plant defences on foraging decisions in *Atta colombica. PLoS ONE*, 6(7), e22340.

Rainey PB, Beaumont HJE, Ferguson, GC, Gallie J, **Kost C**, Libby E, Zhang XX. The evolutionary emergence of stochastic phenotype switching in bacteria. *Microbial Cell Factories*, 10 Suppl 1:S14.
→ rated as *'Recommended'* by FACULTY of 1.000

2010 Radhika V, **Kost C**, Boland W, Heil M. Towards elucidating the differential regulation of floral and extrafloral nectar secretion. *Plant Signaling & Behavior*, 5, 924-926.

Radhika V, **Kost C**, Mithöfer A, Boland W. Regulation of extrafloral nectar secretion by jasmonates in lima bean is light dependent. *Proceedings of the National Academy of Sciences of the United States of America*, 107, 17228-17233.

Venkatesan R, **Kost C**, Boland W, Heil M. The role of jasmonates in floral nectar secretion. *PLoS ONE*, 5(2), e9265.

Bohl K, de Figueiredo, LF, Hädicke O, Klamt S, **Kost C**, Schuster S, Kaleta C. CASOP GS: Computing intervention strategies targeted at production improvement in genome-scale metabolic networks, in Schomburg D & Grote A (Eds.), *Proceedings of the 25th German Conference on Bioinformatics.* 71-80.

2009 Beaumont HJE, Gallie J, **Kost C**, Ferguson GC, Rainey PB. Experimental evolution of bet hedging. *Nature*, 462, 90-93.
→ rated as '*Exceptional*' by FACULTY of 1.000

2008 **Kost C**, Heil M. The defensive role of volatile emission and extrafloral nectar secretion for lima bean in nature. *Journal of Chemical Ecology*, 34, 2-13.

Radhika V, **Kost C**, Bartram S, Heil M, Boland W. Testing the optimal defence hypothesis for two indirect defences: secretion of extrafloral nectar and emission of volatile organic compounds. *Planta*, 228, 449-457.

2007 **Kost C**, Lakatos T, Böttcher I, Arendholz WR, Redenbach M, Wirth R. Non-specific association between filamentous bacteria and fungus-growing ants, *Naturwissenschaften*, 94, 821-828.

Mekem Sonwa M, **Kost C**, Biedermann A, Wegener R, Schulz S, Boland W. Dehydrogenation of ocimene by active carbon: artefact formation during headspace sampling from leaves of *Phaseolus lunatus*, *Arkivoc*, 3, 164-172.

2006 Heil M, **Kost C**. Priming in indirect defences, *Ecology Letters*, 9, 813-817.

Leal IR, Fischer A, **Kost C**, Tabarelli M, Wirth R. Ant protection against herbivores and nectar thieves in *Passiflora coccinea* flowers, *Écoscience*, 13, 431-438.

Kost C, Heil M. Herbivore-induced plant volatiles induce an indirect defence in neighbouring plants, *Journal of Ecology*, 94, 619-628.

2005 **Kost C**, Heil M. Increased availability of extrafloral nectar reduces herbivory in Lima beans (*Phaseolus lunatus*, Fabaceae), *Basic and Applied Ecology*, 6, 237-248.

Kost C, de Oliveira EG, Knoch TA, Wirth R. Spatio-temporal permanence and plasticity of foraging trail systems in young and mature leaf-cutting ant colonies (*Atta* spp.), *Journal of Tropical Ecology*, 21, 1-12.

Arimura GI, **Kost C**, Boland W. Herbivore-induced, indirect plant defences, *Biochimica et Biophysica Acta: Lipids and Lipid Metabolism*, 1734, 91-111.

8.2 Other publications (non peer-reviewed)

2015 Hölscher T, **Kost C**, Kovács ÁT. Einblicke in das Sozialleben von Mikroben. *Biospektrum*, 264-266.

Kost C. Gemeinsam stärker: metabolische Arbeitsteilung bei Bakterien. *Biospektrum*, 592, 592-596.

2006 Schulze B, **Kost C**, Arimura GI, Boland W. Duftstoffe: Die Sprache der Pflanzen - Signalrezeption, Biosynthese und Ökologie, *Chemie in unserer Zeit*, 40, 366-377.

8.3 Book chapter

2008 **Kost C**. Chemical Communication, in Jorgensen SE & Fath BD (Eds.), *Encyclopedia of Ecology*, Oxford: Elsevier, 557-575.