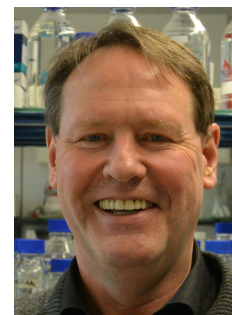


## **curriculum vitae, William F. Martin**

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Date of birth : 16.02.57 in Bethesda, Maryland, USA  
Familial status : Married, four children  
Nationality : German  
University degree : 1981–1985, Technische Universität Hannover, Germany: Biology  
Diplom thesis : 1985, Institut für Botanik, TU Hannover: Plant Molecular Biology  
PhD thesis : 1985–1988, Max-Planck-Institut für Züchtungsforschung, Cologne, with Heinz Saedler; degree conferred by the University of Cologne: Genetics  
Postdoc : 1988–1989, Max-Planck-Institut für Züchtungsforschung, Cologne  
Postdoc : 1989–1999, Institut für Genetik, Universität Braunschweig, with Rüdiger Cerff  
Habilitation : 1992, TU Braunschweig, Germany, *venia legendi* for the field of Botany  
Full professor offers : 1999 Universität Jena (C4) Genetics; 1999 Universität Bochum (C4) Cell Biology  
Full professor : 1999–2011 for "Ecological Plant Physiology" (C4), Universität Düsseldorf  
: 2011– for "Molecular Evolution" (C4), Universität Düsseldorf

### **Honours**

2022 Honorary Lifetime Member of the Croatian Society for Biochemistry and Molecular Biology  
2020 Elected Fellow, Leibniz Sozietät der Wissenschaften zu Berlin  
2019 Visiting Scientist, ETH Zürich, Switzerland  
2019 Elected Corresponding Foreign Member, Accademia delle Scienza di Bologna  
2018 Visiting Scientist, Università Degli Studi di Padova, Italy  
2018 Elected President, Society for Molecular Biology and Evolution  
2013 Visiting Professor, Instituto de Tecnologia Química e Biológica, Oeiras, Portugal  
2012 Elected Member of EMBO (European Molecular Biology Organisation)  
2008 Elected Member of the Nordrhein-Westfälische Akademie der Wissenschaften  
2006 Elected Fellow of the American Academy for Microbiology  
2006–2009 Julius von Haast Fellow, New Zealand Ministry for Research, Science & Technology  
2000–2007 Foreign Associate, CIAR Programme in Evolutionary Biology

### **Awards**

2021 European Research Council Advanced Investigator Grant (3<sup>rd</sup>)  
2019 ISI Highly Cited Researcher, Cross-Field  
2018 Klüh Foundation Award for Science and Research  
2017 Spiridion Brusina Medal, Croatian Society for Natural Sciences  
2017 Distinguished Lectureship Award, Ministry of Science and Technology of Taiwan  
2015 European Research Council Advanced Investigator Grant (2<sup>nd</sup>)  
2011 The Mindlin Lecture Award, University of Washington, USA  
2009 European Research Council Advanced Investigator Grant (1<sup>st</sup>)  
1998 Miescher-Ishida Prize of the International Society of Endocytobiology  
1997 Technology Transfer Prize, Industrie und Handelskammer Braunschweig

1990 Heinz-Maier-Leibnitz Prize of the Deutsche Forschungsgemeinschaft  
1989 Max-Planck postdoctoral stipend

### Positions of trust

2018– German representative, COST action CA 17129 Chemobrionics  
2020– Chair, Scientific Advisory Board, Biodiversity Research Center, Academia Sinica, Taiwan  
2017– Scientific Advisory Board, Biodiversity Research Center, Academia Sinica, Taiwan  
2017 External Advisory Panel, Ganges Microbiome Initiative, India  
2016–2019 Member of the Gender and Diversity Commission of the University of Düsseldorf  
2017 Scientific Advisory Board of CBRC, KAUST, KSA  
2016–2022 Panel member, European Research Council, Consolidator Grants LS8  
2016–2019 Elected member of the Senate of the University of Düsseldorf  
2016– European Science Foundation College of Expert Reviewers  
2010 Science Advisory Committee, Helmholtz Alliance Planetary Evolution and Life  
2007–2012 Selection Committee for the Heinz-Maier-Leibnitz Prize of the DFG  
2004–2007 Elected member of the Senate of the University of Düsseldorf

### Editorial service

2021– Associate Editor, *Frontiers in Microbiology* (Evolutionary and Genomic Microbiology)  
2021– Associate Editor, *Frontiers in Microbiology* (Biology of Archaea)  
2009–2018 Editor-in-Chief, *Genome Biology and Evolution*  
2004–2007 Editor-in-Chief, *Molecular Biology and Evolution*  
2015–2018 Editorial Board Member, *Microbial Genomics*  
2008–2011 Editorial Board Member, *Marine Genomics*  
2015–2019 Editorial Board Member, *Scientific Reports*  
2014–2016 Editorial Board Member, *Life*  
2012– Scientific Advisory Committee, *Marine Genomics*  
2007– Editorial Board Member, *Biology Direct*  
2001– Faculty 1000 Member for Plant Genomes and Evolution  
2012–2013 Editorial Board Member, *Central European Journal of Biology*  
2005–2014 Editorial Board Member, *Environmental Microbiology*  
2005–2012 Editorial Advisory Board, *BioEssays*  
2003–2008 Editorial Board Member, *Plant Biology*  
1999–2004 Editorial Board Member, *European Journal of Phycology*  
1998–2008 Editorial Board Member, *Molecular Biology and Evolution*  
1995–2008 Editorial Board Member, *Gene*

### Other affiliations

Instituto de Tecnologia Química e Biológica  
Universidade Nova de Lisboa  
2780-157 Oeiras  
Portugal

### Recent special lectures

Sept 2022 Plenary Lecture, Annual Meeting Croatian Soc. Biochem. Mol. Biol., Brela, HR  
July 2022 Festvortrag, MSc Chemie und Pharmazie Graduation Ceremony, University of Freiburg, D  
Oct 2021 Morning Plenary, Wetsus Annual Meeting, Leuwarden, NL  
Jan 2019 Evening Lecture, 54<sup>th</sup> Winter Seminar, Klosters, CH  
Nov 2018 Opening Lecture, 34th International Prize for Biology Symposium, A.H. Knoll, Nagoya, J  
Aug 2018 Plenary Lecture, European Bioenergetics Conference, Budapest, H

- July 2018 The Nei Lecture, SMBE Annual Meeting, Yokohama, J
- July 2018 Opening Plenary, Israel Society for Microbiology, Be'er Sheva, ISR
- May 2018 Università degli Studi di Milano Bicocca, 20<sup>th</sup> Anniversary lecture series, Milano, I
- Nov. 2017 Public evening lecture, NRW Akademien der Wissenschaften, Düsseldorf, D
- Nov. 2017 Spiridon Brusina Medal Lecture, Croatian Society for Natural Sciences, Zagreb, HR
- May 2017 Linus Pauling Memorial Lecture Series, Portland, Oregon, USA
- Jul. 2016 Opening Plenary, 19th European Bioenergetics Conference, Riva del Garda, I
- Nov. 2015 Pontifical Academy of Science, The Vatican
- Oct. 2015 Inaugural Meeting of the Institute Biologie Paris Seine, F
- Nov. 2012 Royal Society, Energy transduction and genome function: An evolutionary synthesis, UK
- Nov. 2011 Annual Meeting of the Leopoldina, Halle
- Feb. 2011 The Mindlin Lecture, University of Washington, USA
- Oct. 2010 The Peter-Hemmerich-Vorlesung 2010, University of Konstanz, D
- May 2010 Opening Lecture, Cusanuswerk Symposium Evolution, Nittendorf, D
- Nov. 2009 Opening Lecture, 51st Phylogenetics Symposium, Braunschweig
- Oct. 2009 Opening Lecture, ESF Meeting "Systems Chemistry II", Balatonfüred, Hungary
- Jun. 2009 Opening Plenary, SMBE Annual Meeting, Cedar Rapids, Iowa
- Jan. 2009 The 2009 Howard Dalton Lecture, University of Warwick, UK
- Jan. 2009 The 2009 G.E. Fogg Lecture, Queen Mary University of London, UK
- Feb. 2009 Opening Lecture, BioEd Darwin 200 Symposium, Christchurch, NZ
- Mar. 2006 Evening Plenary, VAAM German Microbiological Society Annual Meeting, Jena
- Dec. 2004 International Prize for Biology Symposium, for Tom Cavalier-Smith, Tokyo, JPN
- Oct. 2003 The Kenneth Sporne Lecture on Plant Evolution, University of Cambridge, UK

**Total citations:** 45000 (Google Scholar) 28000 (ISI)

**H-index:** 103 (Google Scholar) 83 (ISI)

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**Public citation metrics:** <http://scholar.google.de/citations?hl=en&user=ms16utkAAAAJ>

**ISI Highly Cited (Cross-Field):** <https://publons.com/researcher/3165800/william-f-martin/>

### Books (authored)

1. William F. Martin, Aloysius G. M. Tielens, Marek Mentel (2020) *Mitochondria and Anaerobic Energy Metabolism in Eukaryotes*. De Gruyter, Berlin. ISBN 978-3-11-066677-9. 252 pages.

### Original Publications (peer reviewed)

**2023**

288. Beyazay T, Martin WF, Tüysüz H: Direct synthesis of formamide from CO<sub>2</sub> and H<sub>2</sub>O with nickel-iron nitride heterostructures under mild hydrothermal conditions. *J. Am. Chem. Soc. In press*.
287. Beyazay T, Ochoa-Hernández C, Song Y, Belthle K, Martin WF, Tüysüz H: Influence of composition of nickel-iron nanoparticles for abiotic CO<sub>2</sub> conversion to early prebiotic organics. *Angew. Chemie. Int. Ed.* 62:e202218189 (2023).
286. Bremer N, Tria, FDK, Skejo J, Martin WF: The ancestral mitotic state: Closed orthomitosis with intranuclear spindles in the syncytial last eukaryotic common ancestor. *Genome Biol Evol.* 15:016 (2023).
285. Beyazay T, Belthle K, Farès C, Vieira A, Preiner M, Moran J, Martin WF, Tüysüz H: Ambient temperature conversion of CO<sub>2</sub> and H<sub>2</sub> to pyruvate and its subsequent transformation to citramalate over iron and nickel nanoparticles. *Nature Comms.* 14:570 (2023).

284. Belthle K, Beyazay T, Ochoa-Hernández C, Miyazaki R, Foppa L, Martin W, Tüysüz H: Effects of silica modification (Mg, Al, Ca, Ti, and Zr) on supported cobalt catalysts for H<sub>2</sub> dependent CO<sub>2</sub> reduction to metabolic intermediates. *J. Am. Chem. Soc.* 144:21232–21243 (2022).
283. Song B, Modjewski LD, Kapust N, Misrahi I, Martin WF: The origin and distribution of the main oxygen sensing mechanism across metazoans. *Frontiers in Physiology.* 2022:977391 (2022).
282. Fan L, Wu D, Goremykin V, Trost K, Knopp M, Zhang C, Martin WF, Zhu R: Phylogenetic affiliation of mitochondria with alpha-II and rickettsiales: Reply. *Nature Ecol. Evol.* 6:1832–1835 (2022).
281. Bremer N, Knopp M, Martin WF, Tria FDK: Realistic gene transfer to gene duplication ratios identify different roots in the bacterial phylogeny using a tree reconciliation method. *Life.* 12:995 (2022).
280. Subedi BP, Schofield JR, Carbone V, Wolf M, Martin WF, Ronimus RS, Sutherland-Smith AJ: Structural characterisation of methanogen pseudomurein cell wall peptide ligases homologous to bacterial MurE/F murein peptide ligases. *Microbiology.* 168:001235 (2022).
279. Bremer N, Tria FDK, Skejo J, Garg SG, Martin WF: Ancestral state reconstructions trace mitochondria but not phagocytosis into the last eukaryotic common ancestor. *Genome Biology and Evolution.* 14:evac079 (2022).
278. Hedlund BP, Zhang C, Wang F, Rinke C, Martin W: Ecology, metabolism and evolution of Archaea — Perspectives from Proceedings of the International Workshop on Geo-Omics of Archaea. *Frontiers Microbiol.* 2021.827229 (2022).
277. Henriques Pereira DP, Leethaus J, Beyazay T, Vieira AdN, Kleinermanns K, Tüysüz H, Martin WF, Preiner M: Role of geochemical protoenzymes (geozymes) in primordial metabolism: Specific abiotic hydride transfer by metals to the biological redox cofactor NAD<sup>+</sup>. *FEBS J.* 289:3148–3162 (2022).

276. Wimmer JLE, Xavier JC, Vieira AdN, Pereira DPH, Leidner J, Sousa FL, Kleinermanns K, Preiner M, Martin WF: Energy at origins: Favourable thermodynamics of biosynthetic reactions in the last universal common ancestor (LUCA). *Frontiers Microbiol.* 12:793664 (2021).
275. Tria FDK, Martin WF: Gene duplications are at least 50 times less frequent than gene transfers in prokaryotic genomes. *Genome Biol. Evol.* 13:evab224 (2021).
274. Wimmer JLE, Kleinermanns K, Martin WF: Pyrophosphate and irreversibility in evolution, or why PP<sub>i</sub> is not an energy currency and why nature chose triphosphates. *Frontiers Microbiol.* 12:759359 (2021).
273. Subedi BP, Martin WF, Carbone V, Duin EC, Cronin B, Sauter J, Schofield JR, Sutherland-Smith AJ, Ronimus RS. Archaeal pseudomurein and bacterial murein cell wall biosynthesis share a common evolutionary ancestry. *FEMS Microbes.* 2:xtab012 (2021).
272. Skejo J, Garg SG, Gould SB, Hendriksen M, Tria FDK, Bremer N, Franjević D, Blackstone NW, Martin WF: Evidence for a syncytial origin of eukaryotes from ancestral state reconstruction. *Genome Biol. Evol.* 13:evab096 (2021).
271. Martin WF, Nagies FSP, Vieira AdN: To what inanimate matter are we most closely related and does the origin of life harbour meaning? *Philosophies.* 6:33 (2021).
270. Tria FDK, Brueckner J, Skejo J, Xavier JC, Kapust N, Knopp M, Wimmer JE, Nagies FSP, Zimorski V, Gould SB, Garg SG, Martin WF: Gene duplications trace mitochondria to the onset of eukaryote complexity. *Genome Biol. Evol.* 13:evab055 (2021).

269. Wimmer JLE, Vieira AdN, Xavier JC, Kleinermanns K, Martin WF, Preiner M: The autotrophic core: An ancient network of 404 reactions converts H<sub>2</sub>, CO<sub>2</sub>, and NH<sub>3</sub> into amino acids, bases, and cofactors. *Microorganisms* 9:458 (2021).
268. Xavier JC, Gerhards RE, Wimmer JLE, Brueckner J, Tria FDK, Martin WF: The metabolic network of the last bacterial common ancestor. *Commun. Biol.* 4:413 (2021).
267. Garg SG, Kapust N, Lin W, Knopp M, Tria FDK, Nelson-Sathi S, Gould SB, Fan L, Zhu R, Zhang C, Martin WF: Anomalous phylogenetic behavior of ribosomal proteins in metagenome assembled asgard archaea. *Genome Biol. Evol.* 13:evaa238 (2021).
266. Kowallik KV, Martin WF: The origin of symbiogenesis: An annotated English translation of Mereschkowky's 1910 paper on the theory of two plasma lineages. *Biosystems* 199:104281 (2021).

## 2020

265. Vieira AdN, Kleinermanns K, Martin WF, Preiner M: The ambivalent role of water at the origins of life. *FEBS Lett.* 594:2717–2733 (2020).
264. Fan L, Wu D, Goremykin V, Xiao J, Xu Y, Garg S, Zhang C, Martin WF, Zhu R: Phylogenetic analyses with systematic taxon sampling show that mitochondria branch within Alphaproteobacteria. *Nature Ecol. Evol.* 4:1213–1219 (2020).
263. Cunnane SC, Trushina E, Morland C, Prigione A, Casadesus G, Andrews ZB, Beal F, Bergersen LH, Brinton RD, de la Monte S, Eckert A, Harvey JZ, Jeggo R, Jhamandas JH, Kann O, Mannoury la Cour C, Martin WF, Mithieux G, Moreira PI, Murphy MP, Nave KA, Nuriel T, Olliet S, Saudou F, Mattson MP, Swerdlow RH, Millan MJ: Brain energy rescue: an emerging therapeutic concept for neurodegenerative disorders of ageing. *Nature Rev. Drug Discovery.* 19:609–633 (2020).
262. Martin WF: Older than genes: The acetyl-CoA pathway and origins. *Frontiers Microbiol.* 11:817 (2020).
261. Brueckner J, Martin WF: Bacterial genes outnumber archaeal genes in eukaryotic genomes. *Genome Biol. Evol.* 12:282–292 (2020).
260. Xavier JC, Hordijk W, Kauffman S, Steel M, Martin WF: Autocatalytic chemical networks at the origin of metabolism. *Proc. Roy. Soc. Lond. B.* 287:20192377 (2020).
259. Orsi WD, Schink B, Buckel W, Martin WF: Physiological limits to life in anoxic seafloor sediment. *FEMS Microbiol. Rev.* 44:219–231 (2020).
258. Preiner M, Igarashi K, Muchowska KB, Yu M, Varma SJ, Kleinermanns K, Nobu MK, Kamagata Y, Tüysüz H, Moran J, Martin WF: A hydrogen-dependent geochemical analogue of primordial carbon and energy metabolism. *Nature Ecol. Evol.* 4:534–542 (2020).
257. Nagies FSP, Brueckner J, Tria FDK, Martin WF: A spectrum of verticality across genes. *PLoS Genetics.* 16:e1009200 (2020).

## 2019

256. Preiner M, Xavier JC, Vieira AN, Kleinermanns K, Allen JF, Martin WF: Catalysts, autocatalysis and the origin of metabolism. *J. Roy. Soc. Interface Focus.* 9:20190072 (2019).
255. Gould SB, Garg SG, Handrich M, Nelson-Sathi S, Gruenheit N, Tielens AGM, Martin WF: Adaptation to life on land at high oxygen via transition from ferredoxin- to NADH-dependent redox balance. *Proc. Roy. Soc. Lond. B.* 286: 20191491 (2019).

254. Allen JF, Thake B, Martin WF: Nitrogenase inhibition limited oxygenation of Earth's Proterozoic atmosphere.  
*Trends Plant Sci.* 24:1022–1031 (2019).
253. Wein T, Picazo DR, Blow F, Woehle C, Jami E, Reusch TBH, Martin WF, Dagan T: Currency, exchange, and inheritance in the evolution of symbiosis.  
*Trends Microbiol.* 10:836–849 (2019).
252. Martin WF: Carbon–metal bonds, rare and primordial in metabolism.  
*Trends Biochem. Sci.* 44:807–818 (2019).
251. Brunk CF, Martin WF: Archaeal histone contributions to the origin of eukaryotes.  
*Trends Microbiol.* 27:703–714 (2019).
250. Zimorski V, Mentel M, Tielens AGM, Martin WF: Energy metabolism in anaerobic eukaryotes and Earth's late oxygenation.  
*Free Radicals Biol. Med.* 140:279–294 (2019).
249. Xiao J, Fan L, Wu D, Xu Y, Lai D, Martin WF, Zhu R, Zhang C: Archaea, the tree of life, and cellular evolution in eukaryotes.  
*Sci. China Earth Sci.* 62:489–506 (2019).
248. Degli Esposti M, Mentel M, Martin WF, Sousa FL: Oxygen reductases in alphaproteobacterial genomes: Physiological evolution from low to high oxygen environments.  
*Frontiers Microbiol.* 10:499 (2019).
247. Sudianto E, Wu C-S, Leonhard L, Martin WF, Chaw S-M: Enlarged and high repetitive plastome of *Lagarostrobos* and plastid phylogenomics of Podocarpaceae.  
*Mol. Phylog. Evol.* 133:24–32 (2019).
246. Martin WF: Metabolism as we might find it in space. *Astrobiologia, bollettino ufficiale della Società Italiana di Astrobiologia*. December issue, No. 4, 9–15 (2019).

## 2018

245. Preiner M, Xavier JC, Sousa FL, Zimorski V, Neubeck A, Lang SQ, Greenwell HC, Kleinermanns K, Tüysüz H, McCollom TM, Holm NG, Martin WF: Serpentinization: Connecting geochemistry, ancient metabolism and industrial hydrogenation.  
*Life* 8:41 (2018).
244. Barth C, Weiss MC, Roettger M, Martin WF, Uden G: Origin and phylogenetic relationships of [4Fe-4S]-containing O<sub>2</sub>-sensors of bacteria.  
*Environm. Microbiol.* 20:4567–4586 (2018).
243. Xavier JC, Preiner M, Martin WF: Something special about CO-dependent CO<sub>2</sub> fixation.  
*FEBS J.* 285:4181–4195 (2018).
242. Bexkens ML, Zimorski V, Sarink MJ, Wienk H, Brouwers JF, De Jonckheere JF, Martin WF, Opperdoes FR, van Hellemond JJ, Tielens AGM: Lipids are the preferred growth substrate of the protist *Naegleria gruberi*, relative of a human brain-eating pathogen.  
*Cell Reports* 25:537–543 (2018).
241. Gerlitz M, Knopp M, Kapust N, Xavier JC, Martin WF: Elusive data underlying debate at the prokaryote eukaryote divide.  
*Biol. Direct* 13:21 (2018).
240. Garg SG, Martin WF: Asking endosymbionts to do an enzyme's job.  
*Proc. Natl. Acad. Sci. USA.* 115:E4543–E4544 (2018).
239. Kapust N, Nelson-Sathi S, Schönfeld B, Hazkani-Covo E, Bryant D, Lockhart PJ, Roettger M, Xavier JC, Martin WF: Failure to recover major events of gene flux in real biological data due to method misapplication.  
*Genome Biol. Evol.* 10:1198–1209 (2018).
238. Weiss MC, Preiner M, Xavier JC, Zimorski V, Martin WF: The last universal common ancestor between ancient Earth chemistry and the onset of genetics.  
*PLoS Genetics* 14: e1007518 (2018).
237. Martin WF: Eukaryote lateral gene transfer is Lamarckian.  
*Nature Ecol. Evol.* 2:754 (2018).

236. Martin WF, Bryant DA, Beatty JT: A physiological perspective on the origin and evolution of photosynthesis.  
*FEMS Microbiol. Rev.* 42:205–231 (2018).
235. Sousa FL, Preiner M, Martin WF: Native metals, electron bifurcation and CO<sub>2</sub> reduction in early biochemical evolution.  
*Curr. Opin. Microbiol.* 43:77–83 (2018).
234. Portuguese S, Martin WF, Hazkani-Covo E: Mosaic mitochondrial-plastid insertions into the nuclear genome show evidence of both non-homologous end joining and homologous recombination.  
*BMC Evol. Biol.* 18:162 (2018).

**2017**

233. Martin WF: Too much eukaryote LGT.  
*BioEssays* 39:1700115 (2017).
232. Rauch C, Jahns P, Tielens AGM, Gould SB, Martin WF: On being the right size as an animal with plastids.  
*Frontiers Plant Sci.* 8:1402 (2017).
231. Martin WF, Tielens AGM, Mentel M, Garg SG, Gould SB: The physiology of phagocytosis in the context of mitochondrial origin.  
*Microbiol. Mol. Biol. Rev.* 81:e00008-17 (2017).
230. Hazkani-Covo E, Martin WF: Quantifying the number of independent organelle DNA insertions in genome evolution and human health  
*Genome Biol. Evol.* 9:1190–1203 (2017).
229. Martin WF: Going back in genes  
*The Biologist.* 64:20–23 (2017).
228. Martin WF, Zimorski V, Weiss MC: Wo lebten die ersten Zellen — und wovon?  
*Biologie in unserer Zeit.* 47:186–192 (2017).
227. Martin WF, Cerff R: Physiology, phylogeny, early evolution, and GAPDH.  
*Protoplasma.* 254:1823–1834 (2017).
226. Martin WF: Physiology, anaerobes, and the origin of mitosing cells 50 years on.  
*J. Theor. Biol.* 434:2–10 (2017).
225. Martin WF, Roettger M, Ku C, Garg SG, Nelson-Sathi S, Landan G: Late mitochondrial origin is an artefact.  
*Genome Biol. Evol.* 9:373–379 (2017).
224. Martin WF: Symbiogenesis, gradualism and mitochondrial energy in eukaryote evolution.  
*Period. Biol.* 119:141–158 (2017).

**2016**

223. Weiss MC, Neukirchen S, Roettger M, Mrnjavac N, Nelson-Sathi S, Martin WF, Sousa FL: New views on Luca.  
*Nature Microbiology.* 16230 (2016).
222. Ku C, Martin WF: A natural barrier to lateral gene transfer from prokaryotes to eukaryotes revealed from genomes: The 70% rule.  
*BMC Biology.* 14:89 (2016).
221. Weiss MC, Sousa FL, Mrnjavac N, Neukirchen S, Roettger M, Nelson-Sathi S, Martin WF: The physiology and habitat of the last universal common ancestor.  
*Nature Microbiology.* 1:16116 (2016). (Covered by 93 news outlets, Altmetric score >1030)
220. Garg SG, Martin WF: Mitochondria, the cell cycle and the origin of sex via a syncytial eukaryote common ancestor.  
*Genome Biol. Evol.* 8:1950–1970 (2016).
219. Chen X, Schreiber K, Appel J, Makowka A, Faehnrich B, Roettger M, Hajirezaei MR, Sönnichsen F, Schönheit P, Martin WF, Gutekunst K: The Entner-Doudoroff pathway is an overlooked glycolytic route in cyanobacteria and plants.  
*Proc. Natl. Acad. Sci. USA* 113:5441–5446 (2016).

218. Horneck G, Walter N, Westall F, Grenfell JL, Martin WF, Gomez F, Leuko S, Lee N, Onofri S, Tsiganis K, Saladino R, Pilat-Lohinger E, Palomba E, Harrison J, Rull F, Muller C, Strazzulla G, Brucato JR, Rettberg P, Capria MT: AstRoMap — European astrobiology roadmap. *Astrobiology* 16:201–243 (2016).
217. Gould SB, Garg SG, Martin WF: Bacterial vesicle secretion and the evolutionary origin of the eukaryotic endomembrane system. *Trends Microbiol.* 24:525–534 (2016).
216. Sousa FL, Nelson-Sathi S, Martin WF: One step beyond a ribosome: the ancient anaerobic core. *BBA Bioenergetics.* 1857:1027–1038 (2016).
215. Sousa FL, Neukirchen S, Allen JF, Lane N, Martin WF: Lokiarchaeon is hydrogen dependent. *Nature Microbiology.* 16034 (2016).
214. Lane N, Martin WF: Mitochondria, complexity and evolutionary deficit spending. *Proc. Natl. Acad. Sci. USA* 113:E666 (2016).
213. Martin WF, Sousa FL: Early microbial evolution: the age of anaerobes. *Cold Spring Harbor Persp. Biol.* 8:a018127 (2016).
212. Schönheit P, Buckel W, Martin WF: On the origin of heterotrophy. *Trends Microbiol.* 24:12–25 (2016).
211. Martin WF: Physiology, phylogeny, and the energetic roots of life. *Period. Biol.* 118:343–352 (2016).

## 2015

210. Lane N, Martin WF: Eukaryotes really are special, and mitochondria are why. *Proc. Natl. Acad. Sci. USA* 112:E4823 (2015).
209. Garg S, Stöltzing J, Zimorski V, Rada P, Tachezy J, Martin WF, Gould SB: Conservation of transit peptide-independent protein import into mitochondria and hydrogenosomal matrix. *Genome Biol. Evol.* 7:2716–2726 (2015).
208. Carbone V, Schofield LR, Zhang Y, Sang C, Dey D, Hannus IM, Martin WF, Sutherland-Smith AJ, Ronimus RS: Structure and evolution of the archaeal lipid synthesis enzyme *sn*-glycerol-1-phosphate dehydrogenase. *J. Biol. Chem.* 290:21690–21704 (2015).
207. Ku C, Nelson-Sathi S, Roettger M, Sousa FL, Lockhart PJ, Bryant D, Hazkani-Covo E, McInerney JO, Landan G, Martin WF: Endosymbiotic origin and differential loss of eukaryotic genes. *Nature* 524:427–432 (2015).
206. Martin WF, Garg S, Zimorski V: Endosymbiotic theories for eukaryote origin. *Phil. Trans. Roy. Soc. Lond. B.* 370: 20140330 (2015).
205. Rajević N, Kovačević G, Kalafatić M, Gould SB, Martin WF, Franjević D: Algal endosymbionts in European *Hydra* strains reflect multiple origins of the zoochlorella symbiosis. *Mol. Phylog. Evol.* 93:55–62 (2015).
204. Gould SB, Maier UG, Martin WF: Protein import and the origin of red complex plastids. *Curr. Biol.* 25:R515–R521 (2015).
203. Ku C, Nelson-Sathi S, Roettger M, Garg S, Hazkani-Covo E, Martin WF: Endosymbiotic gene transfer from prokaryotic pangenomes: inherited chimerism in eukaryotes. *Proc. Natl. Acad. Sci. USA* 112:10139–10146 (2015).
202. Sousa FL, Hordijk W, Steel M, Martin WF: Autocatalytic sets in *E. coli* metabolism. *J. Systems Chem.* 6:4 (2015).
201. Nelson-Sathi S, Sousa FL, Roettger M, Lozada-Chávez N, Thiergart T, Janssen A, Bryant D, Landan G, Schönheit P, Siebers B, McInerney JO, Martin WF: Origins of major archaeal clades correspond to gene acquisitions from bacteria. *Nature* 517:77–80 (2015).

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19. Martin W: Anaerobic eukaryotes in pursuit of phylogenetic normality: The evolution of hydrogenosomes and mitosomes. In: Tachezy J, ed. *Hydrogenosomes and Mitosomes: Mitochondria of Anaerobic Eukaryotes*. Microbiology Monographs, Vol. 9. Springer-Verlag, Berlin. pp. 1–20 (2008).
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17. Martin W, Dagan T, Henze K: Archaeobacteria and the prokaryote-to-eukaryote transition (and the role of mitochondria therein). In: Brown JR, ed. *Comparative Genomics: Basic and Applied Research*. Taylor and Francis, Boca Raton. pp. 75–88 (2007).
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15. Martin W: Eukaryote and mitochondrial origins: Two sides of the same coin and too much ado about oxygen. In: Falkowski P and Knoll AH, eds. *Primary Producers of the Sea*. Academic Press, New York. pp. 55–73 (2007).
14. Martin W: Konstantin Mereschkowskii und der Ursprung des Zellkerns: Zuviel einer guten Idee? In: Geus A and Höxtermann E, eds. *Evolution durch Kooperation und Integration*. Basilisken-Presse, Marburg. pp. 699–719 (2006).
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12. Martin W: Mitochondrial origins of human nuclear genes and DNA sequences. In: Cooper DN, ed. *Nature Encyclopedia of the Human Genome*. Nature Publishing Group, London. Vol. 4, pp. 9–14 (2003).
11. Henze K, Schnarrenberger C, Martin W: Endosymbiotic gene transfer: A special case of horizontal gene transfer germane to endosymbiosis, the origins of organelles and the origins of



- eukaryotes. In: Syvanen M and Kado C, eds. *Horizontal Gene Transfer*. Academic Press, London. pp. 343–352 (2001).
10. Schnarrenberger C, Martin W: Pathways, Compartmentation and Gene Evolution. In: Xue G, Xue G, Xu Z, Holmes R, Hammond G, Lim HA, eds. *Studies of DNA, RNA, Enzymes and Proteins*. World Sci. Publ. C., N.J. pp. 81–87 (2001).
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  8. Martin W, Scheibe R, Schnarrenberger C. The Calvin cycle and its regulation. In: Leegood RC, Sharkey TD, von Caemmerer S, eds. *Photosynthesis: Physiology and Metabolism (Advances in Photosynthesis Vol. 9)*. Kluwer Academic Publishers. pp. 9–51 (2000).
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  5. Stoebe B, Hansmann S, Goremykin V, Kowallik KV, Martin W: Proteins encoded in sequenced chloroplast genomes: An overview of gene content, phylogenetic information, and endosymbiotic gene transfer to the nucleus. In: Hollingsworth C, Batemann R, Gornall M, eds. *Advances in Plant Molecular Systematics*. Francis and Taylor, Andover. pp. 327–352 (1999).
  4. Martin W. Endosymbiosis and the origins of chloroplast-cytosol isoenzymes: A revision of the gene transfer corollary. In: Syvanen M and Kado C, eds. *Horizontal Gene Transfer*. Chapman Hall, London. pp. 363–379 (1998).
  3. Pahnke J, Bobrova V, Goremykin V, Antonov A, Troitsky A, Martin W: Utility of rDNA internal transcribed spacer sequences from the inverted repeat of chloroplast DNA in pteridophyte molecular phylogenetics. In: Camus JM, Gibby M, Johns RJ, eds. *Pteridology in Perspective*. Royal Botanical Gardens, Kew. pp. 217–230 (1996).
  2. Martin W. Conservation and function of introns in plant glyceraldehyde-3-phosphate dehydrogenase genes. In: Cho MC, and Saedler H, eds. *Proc. 2nd Korean-German Joint Symposium in Plant Biotechnology*. Seoul University Press, Seoul. pp 39–55 (1994).
  1. Böhle U-R, Hilger HH, Cerff R, Martin W: Non-coding chloroplast DNA for plant molecular systematics at the infrageneric level. In: Schierwater B, Streit B, Wagner G, Desalle R, eds. *Molecular Ecology and Evolution: Approaches and Applications*. Birkhäuser, Basel. pp. 391–403 (1994).

#### **Books (edited):**

2. Fangerau H, Geisler H, Halling T, Martin W (eds) *Classification and Evolution in Biology, Linguistics and the History of Science. Concepts – Methods – Visualization*. 198 pp. Steiner, Verlag, Stuttgart (2013).
1. Martin W, Müller M (eds) *Origin of Mitochondria and Hydrogenosomes*. 316 pp. Springer Verlag, Heidelberg (2007).

#### **Book reviews:**

3. Big questions and skepsis. Review of *In Search of Cell History* by Franklin M. Harold. University of Chicago Press, Chicago, 2014. *BioEssays* 37:349–351 (2015).
2. *The Principles of Life* by Tibor Gánti. Oxford University Press. Oxford, UK. *Trends Ecol. Evol.* (2004).
1. *Lateral DNA Transfer: Mechanisms and Consequences* (2002) by Frederic Bushman. Cold Spring Harbor Laboratory Press. Cold Spring Harbor, New York. *BioEssays* 24:482 (2002).

**Patents:**

2. TER gene of *Euglena gracilis*. European Patent 03022783.9
1. Pyruvate:NADP<sup>+</sup> oxidoreductase and uses thereof. European Patent 00117730.2

**Referee service (research funding)**

European Union FP7 (EU), European Research Council (EU), National Science Foundation (USA), Deutsche Forschungsgemeinschaft (D), US Department of Energy (USA), Science Foundation Ireland (IRL), Royal Society Wolfson Research Awards (UK), Wellcome Trust (UK), Wellcome Trust DBT Alliance (India), NASA (USA), German-Israeli Foundation (ISR), United States - Israel Binational Science Foundation (USA-ISR), Marsden Fund (NZ), John Templeton Foundation (USA), Natural Sciences and Engineering Research Council of Canada (CAN), Biotechnology and Biological Sciences Research Council (UK), Leverhulme Trust (UK), Bundesministerium für Bildung und Forschung (D), Minerva Stiftung (D-ISR), Schweizerischer Nationalfonds (CH), Netherlands Organization for Scientific Research (NL), Fonds zur Förderung der wissenschaftlichen Forschung (A), Agence Nationale de la Recherche (F), Hungarian National Research Fund (HU), Alexander von Humboldt Foundation (D), International Human Frontier Science Program (J), United States - Israel Binational Agricultural Research and Development Fund (USA-ISR), Independent Research Fund Denmark (DK), Volkswagen-Stiftung (D), India Alliance (UK-IN), European Commission Fellowships Programme (EU), EMBO Short Term Fellowships (EU), Deutscher Akademischer Austauschdienst (D), Istituto Pasteur-Fondazione Cenci Bolognetti (I), Binational Science Foundation (USA-ISR), International Science Foundation (USA), National Science Center (PL), University of Antwerp Research Council (B), Katholieke Universiteit Leuven (B), Grant Agency of the Czech Republic (CZ), Soros Foundation (USA), Shota Rustaveli National Science Foundation (Republic of Georgia), Fonds voor Wetenschappelijk Onderzoek - Vlaanderen (B), Thüringer Ministerium für Wissenschaft (D), Thomas F. and Kate Miller Jeffress Memorial Trust (USA), David and Lucile Packard Foundation (USA), The W. M. Keck Foundation (USA), Carl-Zeiss-Stiftung (D), The John Simon Guggenheim Memorial Foundation (USA), La Caixa Foundation, (E)

**Referee service (journals)**

*Acta Biotheoretica, Advances in Ecology, Algal Research, American Journal of Botany, American Naturalist, Angewandte Chemie, Annals of the New York Academy of Science, Antonie van Leeuwenhoek, Applied Microbiology and Biotechnology, Archaea, Astrobiology, Biochimica et Biophysica Acta Bioenergetics, Biochimie, BioEssays, Biogeosciences, Bioinformatics, Biologia, Biological Chemistry, Biological Reviews, Biology Direct, Biophysical Journal, BioScience, BioSystems, BMC Bioinformatics, BMC Evolutionary Biology, BMC Genomics, Botanica Acta, Cell, Cell Systems, Cellulose, Central European Journal of Biology, Comparative Biochemistry and Physiology C, Current Biology, DNA Research, Earth and Planetary Science Letters, Elements, eLife, EMBO Journal, EMBO Reports, Environmental Microbiology, Eukaryotic Cell, European Journal of Biochemistry, Evolution, Experimental Parasitology, Frontiers in Zoology, Frontiers in Microbiology, Functional and Integrative Genomics, FEBS Journal, FEBS Letters, FEMS Microbiology Letters, FEMS Microbiological Reviews, Gene, Genome Biology, Genome Biology and Evolution, Genome Research, Geomicrobiology Journal, Heredity, International Journal of Parasitology, International Journal of Molecular Sciences, International Journal of Systematic and Evolutionary Microbiology, ISME Journal, Journal of Bacteriology, Journal of Basic Microbiology, Journal of Biology, Journal of Eukaryotic Microbiology, Journal of Experimental Zoology, Journal of Cell Biology, Journal of Cell Science, Journal of Heredity, Journal of Molecular Biology, Journal of Molecular Evolution, Journal of Phycology, Journal of Proteome Research, Journal of Systems Chemistry, Journal of Theoretical Biology, Marine Biology, Marine Biotechnology, Marine Ecology, mBio, Metabolites, Microbiology (UK),*

*Microbiology and Molecular Biology Reviews, Mitochondrion, Mobile Genetic Elements, Molecular and Cellular Biology, Molecular and Developmental Evolution, Molecular and General Genetics, Molecular Biology and Evolution, Molecular Microbiology, Molecular Phylogenetics and Evolution, Molecular Plant, Nature, Nature Communications, Nature Ecology and Evolution, Nature Genetics, Nature Microbiology, Nature Plants, Nature Reviews Chemistry, Nature Reviews Genetics, Nature Reviews Microbiology, Naturwissenschaften, Nucleic Acids Research, New Phytologist, Origin of Life and Evolution of the Biosphere, Periodicum Biologorum, Philosophical Transactions of the Royal Society of London: Biological Sciences, Photosynthesis Research, Physical Biology, Physiologia Plantarum, Phytochemistry, Plant Cell, Plant Molecular Biology, Plant Physiology, Plant Systematics and Evolution, Precambrian Research, Proceedings of the Royal Society: Series B, Proceedings of the Royal Society Biology Letters, Proceedings of the National Academy of Sciences USA, Protoplasma, PLoS Biology, PLoS Genetics, RNA Biology, Royal Society Interface Focus, Science, Science Advances, Scientific Reports, Systematic Biology, The ISME Journal, Theoretical and Applied Genetics, Trends in Biochemical Sciences, Trends in Ecology and Evolution, Trends in Genetics, Trends in Molecular Medicine, Trends in Parasitology, Trends in Plant Science, Zoology*

Current research funding	Period	Sum (as PI)
ERC Advanced Grant Ecology of Metabolic Origins	2021–2026	€ 2,490,000
Moore-Simons Initiative on the Origin of Eukaryotic Cells (with H. Imachi, M. Nobu, Y. Kamagata, R. Robinson)	2020–2023	€ 640,000
German-Israeli Project Cooperation (with I. Misrahi, Beer Sheva)	2020–2026	€ 600,000
Volkswagen Foundation, Forming catalysts: A basic principle of deep chemistry, life chemistry and life (with H. Tüysüz, J. Moran)	2019–2024	€ 487,000

### Memberships

American Academy for Microbiology, German Botanical Society, Society for Molecular Biology and Evolution, Society for the Study of Evolution, Deutscher Hochschulverband, Verein Deutscher Biologen, VdBiol Arbeitsgemeinschaft Evolutionsbiologie, Nordrheinwestfälische Akademie der Wissenschaften, European Molecular Biology Organization (EMBO), Honorary Member Croatian Society for Biochemistry and Molecular Biology

### PhD Students graduated and current

1. Gilbert Meyer-Gauen	1990–1994	Evolution of glyceraldehyde-3-phosphate dehydrogenase genes
2. Uta-Regina Böhle	1992–1996	Evolution of insular woodiness in the genus <i>Echium</i>
3. Katrin Henze	1993–1997	Origin and evolution of higher plant Calvin cycle genes
4. Jörg Bohlmann	1993–1997	Higher plant anthranilate synthase enzymes and genes
5. Dorothea Tholl	1994–1998	Bacterial homospermidine synthase enzyme and gene
6. Michael Donath	1994–1998	Intron dependent gene expression in plants
7. Vadim Goremykin	1994–1998	Chloroplast DNA phylogeny and evolution
8. Ulrich Nowitzki	1996–2000	Origin and evolution of plant sugar phosphate metabolism
9. Jens Pahnke	1996–2002	Molecular approaches to fern phylogeny
10. Sabine Hansmann	1997–2001	Chloroplast DNA evolution and molecular phylogenetic signal
11. Andrea Hansen	1998–2002	Amino acid biosynthesis pathway evolution
12. Carmen Rotte	1999–2003	Evolution of <i>Euglena</i> pyruvate:ferredoxin oxidoreductase
13. Sandra Trenkamp	2000–2004	Higher plant very long chain fatty acid elongases
14. Meike Hoffmeister	2000–2004	Anaerobic energy metabolism in <i>Euglena</i> mitochondria
15. Ursula Theissen	2002–2006	Sulfide:quinone oxidoreductase in <i>Arenicola</i> mitochondria

16. Christian Winkler	2002–2006	Higher plant ATP-dependent phosphofructokinase
17. Simone Pütz	2003–2007	Evolutionary proteomics of <i>Trichomonas</i> hydrogenosomes
18. Benjamin Kilian	2003–2007	Evolution and domestication of Middle East diploid wheats
19. Gabriel Gelius-Dietrich	2003–2008	Biochemistry and evolution of chytrid hydrogenosomes
20. Sara Tucci	2004–2008	Wax ester fermentation in <i>Euglena</i> mitochondria
21. Silke Rosnowsky	2004–2008	Transformation of <i>Trichomonas vaginalis</i>
22. Nahal Ahamdinedjad	2005–2009	Evolutionary bioinformatics of mitochondrial genomes
23. Britta Delvos	2005–2009	Oomycete cell wall biosynthesis
24. Oliver Deusch	2005–2009	Genome evolution and the cyanobacterial origin of plastids
25. Assa Yeroslaviz	2005–2009	Gene expression in response to environmental stress
26. Nicole Grünheit	2006–2010	Evolutionary dynamics of eukaryotic organellar genes
27. Christian Esser	2006–2010	Evolutionary origins of eukaryotic nuclear genes
28. Verena Zimorski	2006–2010	Mechanisms of protein targeting to <i>Trichomonas</i> hydrogenosomes
29. Xavier Peirera-Bras	2007–2012	Biochemical compartmentation in <i>Trichomonas</i> hydrogenosomes
30. Mayo Röttger	2007–2013	Cyanobacterial genome evolution in Section V and plastid origins
31. Shijulal Nelson-Sathi	2008–2013	Networks of language evolution and gene transfer in Haloarchaea
32. Peter Major	2008–2013	Signals of protein targeting to <i>Trichomonas</i> hydrogenosomes
33. Houda El-Haddad	2010–2013	Cytoskeletal evolution in <i>Tetrahymena thermophila</i>
34. David Bogumil	2010–2013	Chaperone-dependent protein evolution networks
35. Gary Kusdian	2010–2014	The amoeboid transition in <i>Trichomonas vaginalis</i>
36. Christian Wöhle	2010–2014	Evolutionary origins of <i>Chromera velia</i> nuclear genes
37. Kathrin Hoffmann	2009–2014	Aminotermini of <i>Trichomonas</i> hydrogenosomal proteins
38. Thorsten Thiergart	2010–2015	Genome evolution networks linking prokaryotes and eukaryotes
39. Ovidiu Popa	2009–2015	Directed networks of lateral gene transfer
40. Jan de Vries	2013–2016	Molecular basis of plastid longevity in <i>Elysia</i>
41. Chuan Ku	2013–2016	Endosymbiosis and the origin of eukaryotic genes
42. Harald Preisner	2013–2017	Cytoskeleton and amoeboid transformation of <i>Trichomonas</i>
43. Cessa Rauch	2013–2017	Ecology and evolution of <i>Elysia</i>
44. Sriram Garg	2013–2017	The evolution of eukaryotic cell biology
45. Nabor Chavez	2012–2018	Networks and methanogen evolution
46. Martina Preiner	2017–2020	Native metals in early evolution
47. Madeline Weiß	2015–2020	The habitat and physiology of LUCA
48. Sinje Neukirchen	2015–2021	Evolution of prokaryotic sulfur reduction
49. Julia Brückner	2018–2021	The mitochondrial origin of eukaryotic genes
50. Jessica Wimmer	2019–2022	The energetics and metabolism of LUCA
51. Andrey Vieira	2019–2022	Primordial N incorporation
52. Bing Song	2018–2022	Evolutionary bioinformatics and oxygen evolution
53. Falk Nagies	2019–2023	Verticality and oxygen in genome evolution
54. Michael Knopp	2016–	Evolution of primary metabolism
55. Nils Kapust	2017–	Domain fusions in the realm of protein clusters
56. Thorsten Klösges	2009–	Proteobacterial genome evolution networks
57. Delfina Pereira	2020–	Catalysis of primordial redox reactions
58. Nico Bremer	2021–	Ancestral state reconstruction of the first eukaryotes
59. Max Brabender	2021–	Catalysts of primordial N and C incorporation
60. Luca Modjeweski	2021–	Prokaryotic cofactors
61. Katharina Trost	2021–	Microbial genome evolution
62. Loraine Schwander	2022–	Catalysts of primordial N and C incorporation
63. Natalia Mrnjavac	2022–	Protein structures of LUCA

#### Invited lectures, 2004–present

07.23 Morning Plenary, FEBS Young Scientist Forum, Tours, F (online)

07.23 International Symposium for Microbial Sulfur Metabolism, Antwerpen, B

06.23 30-year symposium Biomedical Research Center BMFZ, University of Düsseldorf, D

05.23 Institute for Microbiology, University of Münster, D

03.23 Künstlerverein Malkasten, Düsseldorf, D

02.23 International conference on Chemistry of Size Selected Clusters, Davos, CH

02.23 Sustech, Shenzhen China (online)

02.23 Lambertus Gilde, Industrie Club Düsseldorf, D

01.23 Festvortrag, MSc Molecular Biomedicine Graduation, Faculty of Medicine, Düsseldorf, D

11.22 Faculty of Chemistry and Life Sciences, Karlsruhe Institute of Technology, D

11.22 Plenary Lecture, oLife Fellowship Programme Annual Meeting, Groningen, NL

10.22 Moore Simons Foundation Eukaryotes Initiative (online)

09.22 Plenary Lecture, Annual Meeting Croatian Society for Biochemistry and Mol. Biol., Brela, HR

09.22 University of Milan Bicocca TeCSBi PhD Meeting, Avigliana, I

07.22 Archaea Symposium: Stoffwechsel und Evolution (Emeritierung Peter Schönheit), Kiel, D

07.22 Festvortrag, MSc Chemie und Pharmazie, University of Freiburg, D

06.22 Public lecture, Wasserstoff in der frühen Evolution, Haus der Universität, Düsseldorf, D

05.22 Public lecture, Stellarium Erkrath, Ursprung des Lebens, Düsseldorf, D

03.22 Riken Symposium (Japan) Emergence in Biological Systems (online)

11.21 Public lecture, Ursprung des Lebens, Haus der Universität, Düsseldorf

11.21 Life in the Universe 2, South Africa and Stanford (online)

11.21 Cyano 2021, German cyanobacteria community annual meeting (online)

10.21 Moore Simons Foundation Eukaryotes Initiative (online)

10.21 International Society for the Study of the Origin of Life, ISSOL 2021 (online)

10.21 Plenary, Wetsus Annual Meeting, Leuwarden, NL

00.21 Annual Meeting of the Leucorea, Wittenberg, D

07.21 FEBS Meeting, Lubiana, SLO (online)

05.21 Smith College, MA, Institute Lecture Series, USA (online)

12.20 University of Houston, Departmental Lecture Series, USA (online)

07.20 10<sup>th</sup> Anniversary SusTech Symposium, Shenzhen, PRC (online)

01.20 Rajiv Gandhi Center for Biotechnology, Thiruvananthapuram, India

12.19 Leibniz Sozietät, Berlin, D

12.19 Richard von Weizsäcker Gymnasium, Ratingen, D

11.19 Symposium, Science of Early Life, Kloster Seeon, D

11.19 Undergraduate Programme, Microbiology, ETH Zürich, CH

11.19 The Origin of Eukaryotes, Aguron Institute, Pasadena, USA

10.19 Department of Genetics, Ecology and Evolution, University College London, UK

10.19 Center of Excellence Resolv Annual Meeting, Dortmund, D

09.19 Ursprung des Lebens, Blue Square, Ruhr University, Bochum, D

09.19 Ursprung des Lebens, Nacht der Universität, HHU Düsseldorf, D

05.19 Microbiology Seminar Series, ETH Zürich, Zürich, CH

05.19 What is Excellence? History of Science Roundtable Series, HHU Düsseldorf, D

05.19 Complexity Research Initiative, University of Frankfurt, D

03.19 Strasbourg Microbiology Seminar, University of Strasbourg, Strasbourg, F

03.19 Origin of Photosynthesis, University of Bologna PhD programme series, Bologna, I

03.19 Origin of Eukaryotes, University of Bologna PhD programme series, Bologna, I

03.19 Origin of Life, University of Bologna PhD programme series, Bologna, I

03.19 30 years Hydrothermal Vents and Origin of Life, Granada, E

02.19 Molecular Evolution for High School Teachers (MINT), Düsseldorf, D

02.19 Molecular Evolution for High School Students and Teachers, Napier, NZ

02.19 Annual New Zealand Phylogeny Meeting, Deco 2019, Napier, NZ

01.19 54<sup>th</sup> Winter Seminar, Klosters, CH

12.18 Unité INSERM 1035, Université de Bordeaux, F

11.18 Plenary Lecture, Hadean Bioscience, Tokyo, J

11.18 Opening lecture, 34<sup>th</sup> International Prize for Biology Symposium (for A.H. Knoll), Nagoya, J

11.18 An evening for the Charity Initiative Achse (research on rare diseases), Berlin, D

11.18 Geo Omics of Archaea, Southern University of Science and Technology, Shenzhen, PRC

10.18 Interdisciplinary International Student Meeting on Origin of Life, Düsseldorf, D

10.18 NRW Akademie der Wissenschaften und der Künste, Düsseldorf, D

09.18 Deutsche Sammlung für Mikroorganismen und Zellkulturen, Braunschweig, D

09.18 Otto Hahn Gymnasium, Bergisch Gladbach, D

08.18 Plenary Lecture, European Bioenergetics Conference, Budapest, H

07.18 The Nei Lecture, SMBE Annual Meeting, Yokohama, J  
 07.18 Opening Plenary, Israel Society for Microbiology, Be'er Sheva, ISR  
 06.18 Università Degli Studi di Padova, Visiting Scientist PhD Lecture Series, Padua, I  
 06.18 Metaorganisms, Fondazione Golinelli, Bologna, I  
 06.18 Università Degli Studi di Padova, Visiting Scientist PhD Lecture Series, Padua, I  
 06.18 Università Degli Studi di Padova, Biological Lecture Series, Padua, I  
 06.18 Università Degli Studi di Padova, Visiting Scientist PhD Lecture Series, Padua, I  
 05.18 Acceptance Speech, Klüh Prize Ceremony  
 05.18 Università degli Studi di Milano Bicocca, 20<sup>th</sup> Anniversary lecture series, Milano, I  
 04.18 CRC Metaorganisms, University of Kiel, D  
 04.18 Gerhard C. Stark Foundation Annual Fellows Meeting, Düsseldorf, D  
 04.18 Department of Geology, University of Stockholm, S  
 04.18 Department of Chemistry, University of Strasbourg, F  
 04.18 Department of Genetics, University of Florida, Gainseville, USA  
 04.18 Dean's Interdisciplinary Seminar Series, University of Florida, Gainseville, USA  
 03.18 German Chlamydia Workshop, Kaiserswerth, D  
 03.18 Westfälische Volkssternwarte (Planetarium), Recklinghausen, D  
 03.18 Bioenergetics and Neurodegenerative Disease (ANMI), Paris, F  
 02.18 Department of Plant Biology, Purdue University, USA  
 02.18 Department of Biochemistry, Purdue University, USA  
 01.18 New Year's address for Geosciences, University of Münster, D  
 01.18 Gymnasium Norf, Neuss, D  
 12.17 Biodiversity Research Center, Academia Sinica, Taipei, TW  
 11.17 Spemann Graduate School, University of Freiburg, D  
 11.17 NRW Akademie der Wissenschaften, Düsseldorf, D  
 11.17 Gymnasium Norf, Neuss, D  
 11.17 Medical Research Council Mitochondrial Biology Unit, Cambridge, UK  
 11.17 University of Vienna, Continuum Symposium, Vienna, A  
 11.17 Spiridion Brusina Lecture, Croatian Society for Natural Sciences, Zagreb, HR  
 09.17 University of Oslo, Origin of Life Symposium, Oslo, NOR  
 08.17 Plenary, International Conference on Protistology, Prague, CZ  
 07.17 Plenary, International Symposium on Applied Bioinorganic Chemistry, Toulouse, F  
 06.17 Center for Integrative Genomics, Lausanne, CH  
 05.17 Computational Biology Research Center, KAUST, KSA  
 05.17 Natural History Museum, Vienna, A  
 05.17 Department of Microbiology, University of Vienna, A  
 05.17 Linus Pauling Memorial Lecture Series, Portland, OR, USA  
 05.17 Department of Microbiology, Portland State University, Portland, OR, USA  
 05.17 Department of Microbiology, University of British Columbia, Vancouver, CAN  
 04.17 Department of Biochemistry, University of Toronto, CAN  
 03.17 Genome Evolution Mishima, National Institute of Genetics, Mishima, Japan  
 03.17 National Cheng Kung University, Tainan, TW  
 03.17 National Chung Hsing University, Taichung, TW  
 03.17 Distinguished Lecture, Academia Sinica, Taipei, TW  
 02.17 Institutional Seminar, Center for Genomic Sciences, UNAM Cuernavaca, Mex  
 02.17 Frontiers in Genomics Programme, UNAM Cuernavaca, Mex  
 02.17 Biannual retreat, Department of Biology, Università Degli Studi di Padova, I  
 02.17 Darwin Day 2017, Museo di Storia Naturale di Milano, Milano, I  
 02.17 Forschung im Fokus, Haus der Universität, Düsseldorf, D  
 01.17 Henkelsaal, Düsseldorf, D  
 01.17 Origin of Life Symposium, University of Newcastle, UK  
 01.17 Institute for Advanced Studies, University of Durham, UK  
 12.16 Department of Geosciences, University of Heidelberg, D  
 12.16 Department of Microbiology, University of Dresden, D  
 11.16 Haus der Wissenschaft, Braunschweig, D  
 11.16 Annual Meeting of the Biochemical Society of Mexico, Aguascalientes, Mex  
 09.16 Royal Society workshop, Evolution of the Biological Pump, Kavli House, UK  
 07.16 Opening Plenary, 19th European Bioenergetics Conference, Riva del Garda, I  
 05.16 The Beilstein Symposium on Origin of Life, Cheiemsee, D  
 05.16 ITQB Oeiras, POR  
 04.16 The Rotary Club Düsseldorf, D  
 02.16 Weizmann Institute, Rehovot, ISR

01.16 New Year's Reception of the Rektorin, D  
 11.15 The Laboratory for Molecular Biology, Cambridge, UK  
 11.15 Pontifical Academy of Sciences, The Vatican  
 10.15 University of Münster, D  
 10.15 Inaugural Meeting of the Institute Biologie Paris Seine, F  
 09.15 Max-Planck-Institute for Cell Biology, Dresden, D  
 09.15 Biannual Meeting of the German Botanical Society (Plenary), Freising, D  
 09.15 Ökumenisches Bildungswerk, Hochdahl, D  
 08.15 Annual Meeting of the Italian Society for the Study of Evolution, Bologna, I  
 08.15 Society for the Study of Prokaryotic Photosynthesis (Opening Plenary), Tübingen D  
 06.15 Volcani Research Center, Tel Aviv, ISR  
 06.15 Biological Research Center, Szeved, H  
 05.15 Annual Meeting of the Belgian Biochemical Society, Louvain, B  
 03.15 Annual Meeting of the Society for General Microbiology (SGM), Birmingham, UK  
 03.15 Annual Meeting of the German Society for Microbiology (VAAM), D  
 01.15 GeoMar, University of Kiel, D  
 11.14 Université Paris 6, F  
 11.14 Symbiomics Conference, Mallorca, E  
 11.14 University of Edinburgh, UK  
 11.14 University of Zagreb, HR  
 10.14 Public lecture, "Leben" Naturwissenschaftliches Kolloquium, Gymnasium Norf, D  
 10.14 National Academy of Science Sackler Symposium on Endosymbiosis, Irvine, USA  
 09.14 HDBMB Croatian Society for Molecular Biology Conference, Zadar, HR  
 09.14 University of Luxembourg, LU  
 09.14 ITQB Molecular Biology PhD student retreat, Areia Branca, POR  
 09.14 The Genome: Structure, Expression, Evolution, Stazione Anton Dohrn, Naples, I  
 07.14 European Bioenergetics Conference, Lisbon, POR  
 06.14 Euroscience Open Forum, "What is Life?", Copenhagen, DK  
 06.14 Annual Student's Symposium, Gatersleben, D  
 04.14 SMBE Satellite Meeting on Evolutionary Networks, Kiel, D  
 04.14 Annual Meeting of the British Society for Protist Biology, Lancaster, UK  
 03.14 Public lecture, "Ursprung des Lebens", Universität in der Stadt series, Düsseldorf, D  
 02.14 Darwin Day Lecture, University of Oslo, NOR  
 02.14 Annual PhD Graduation Ceremony Special Lecture, University of Düsseldorf, D  
 01.14 Gulbenkian Institute, History of Biology Lecture Series, Oeiras, POR  
 12.13 Evolutionary Biology Lecture Series, University of Mainz, D  
 11.13 Kyoto Prize Symposium for Masatoshi Nei, National Institute of Genetics, Mishima, J  
 11.13 Early Earth Series, Earth Science Department, ETH Zürich, CH  
 10.13 EMBO Member's Meeting, Heidelberg, D  
 08.13 The EMBO Lecture, 12<sup>th</sup> Int. Conf. on Endocytobiology and Symbiosis, Halifax, CA  
 07.13 SMBE Annual Meeting, Symposium Major Gene Flows in Early Evolution, Chicago, USA  
 06.13 Spemann Graduate School of Biology and Medicine, University of Freiburg, D  
 05.13 Gulbenkian Institute, Oeiras, POR  
 05.13 Instituto de Tecnologia Química e Biológica, Lisbon, POR  
 05.13 PhD Graduate Programme, Gulbenkian Institute, Oeiras, POR  
 05.13 Institute Seminar Series, Gulbenkian Institute, Oeiras, POR  
 03.13 Annual Meeting of the German Society of Cell Biologists, Heidelberg, D  
 02.13 Planetarium Bochum, D  
 02.13 American Academy for the Advancement of Science Annual Meeting, Boston, USA  
 01.13 Ecology and Evolution Seminar Series, Princeton, USA  
 01.13 Institute for Theoretical Studies, Origin of Life Symposium, Princeton, USA  
 12.12 Faculty of Medicine, University of Marseille, F  
 11.12 Royal Society Kavli Centre, "Bioenergetics and the major evolutionary transitions" UK  
 11.12 Royal Society, "Energy transduction and genome function: an evolutionary synthesis" UK  
 10.12 Agouron Institute, "The comings and goings of early animal life" Washington DC, USA  
 09.12 Annual Meeting of the German Society for Gerontology, Bonn, D  
 09.12 Natural History Museum and Planetarium, Münster, D  
 08.12 Gordon Conference on Microbial C1 Metabolism, Maine, USA  
 07.12 Annual Meeting of the Society for Experimental Biology, Salzburg, A  
 06.12 Annual Meeting of the Società Botanica Italiana, Padova, I  
 05.12 University of Frankfurt am Main, D  
 05.12 EMBO Workshop Genome Evolution, Venice, I

04.12 NASA-NSF Workshop "Alternative Chemistries" Washington DC, USA  
 03.12 Florida State University, USA  
 02.12 Evolutionary Cell Biology, National Center for Biological Science, Bangalore, India  
 02.12 MSc Seminar series, University of Gießen, D  
 11.11 University of Strasbourg, Symposium "Proteins in Evolution", Strasbourg, F  
 11.11 University College London, Symposium "Origin of life", London, UK  
 10.11 Pufendorf Symposium "Enigmas in the early evolution of life", Lund, S  
 09.11 Molecular Evolution in the Genomic Era, University III, Rome, I  
 09.11 Public lecture "Was ist Leben?" Evangelische Stadtakademie, Düsseldorf, D  
 09.11 SFB-Symposium Endosymbiosis, Düsseldorf, D  
 09.11 Leopoldina Symposium "Was ist Leben?" Halle, D  
 09.11 University of Marburg, D  
 07.11 Genome Biology and Evolution Summer School, Gulbenkian Institute, Oeiras, POR  
 07.11 Darwin Symposium, European Society for Evolutionary Biology, Seia, POR  
 07.11 SMBE Microbial Genome Evolution session, Kyoto, JPN  
 07.11 SMBE History of Molecular Biology and Evolution session, Kyoto, JPN  
 07.11 The Evening Lecture, 11<sup>th</sup> European Workshop of Astrobiology, Cologne  
 05.11 International Conference on Plant Mitochondrial Biology, Hohenroda, D  
 04.11 CNRS 7138 Systematics, Adaptation and Evolution, Paris, F  
 04.11 University of Vienna, A  
 03.11 Nordrhein-Westfälische Akademie der Wissenschaften, D  
 02.11 University of Barcelona, E  
 02.11 Earth Science Department, University of Washington, USA  
 02.11 The Mindlin Lecture, University of Washington, USA  
 01.11 University of Exeter, UK  
 12.10 Biocomplexity XI: The Evolution of Cooperation, Indiana University, USA  
 11.10 University of Nijmegen, NL  
 10.10 The Peter-Hemmerich-Vorlesung 2010, University of Konstanz, D  
 09.10 Energy and Entropy Symposium, Deutsche Luft- und Raumfahrt, Berlin, D  
 09.10 Opening Plenary, Extremophiles 2010, The Azores, POR  
 07.10 SMBE Tree of Life session, Lyon, F  
 06.10 COST Endosymbiosis Meeting, Bad Bevensen, D  
 06.10 Microbial Evolution Programme, University of Newcastle-Upon-Tyne, UK  
 06.10 Ecology and Evolution Programme, University College London, UK  
 05.10 Origin of Life (with Karl Stetter), Alfred Krupp Academy, Greifswald, D  
 05.10 Evolution, Cusanuswerk, Nittendorf, D  
 05.10 Department of Geological Sciences, Stockholm University, S  
 05.10 New Frontiers in Microbial Genome Research, Bielefeld, D  
 04.10 University of Bonn, D  
 04.10 University of Giessen, D  
 03.10 Sternwarte Neanderhöhe, Neanderthal, D  
 03.10 BMBF Classification and Evolution, Bonn, D  
 02.10 University of Utrecht, NL  
 01.10 Instituto de Tecnologia Química e Biológica, Oeiras, POR  
 12.09 Department of Chemistry, University of Jena, D  
 12.09 Darwin Series, Botanical Garden Düsseldorf, D  
 12.09 Academia Sinica, National Academy of Science of Taiwan  
 11.09 Frontiers of Plant Science, Tai-Cheng University, Taiwan  
 11.09 Opening Lecture, 51st Phylogenetics Symposium, Braunschweig, D  
 11.09 Annual Meeting of the Swiss National Academy of Science, Lucerne, CH  
 11.09 Virginia Tech University, USA  
 10.09 Opening Lecture, ESF Meeting "Systems Chemistry II", Balatonfüred, H  
 10.09 Dominikanerkonvent Düsseldorf, D  
 10.09 Volkshochschule Kreefeld, D  
 09.09 Willi Hennig Symposium, Hohenheim, D  
 09.09 Leopoldina-Symposium on Organelle Genetics, Berlin, D  
 09.09 Botaniker-Tagung, Leipzig, D  
 08.09 BMBF annual retreat, Bergisch-Gladbach, D  
 07.09 Perspectives on the Tree of Life, Dalhousie University, CAN  
 07.09 University of Heidelberg, D  
 06.09 Darwin Series, University of Osnabrück, D  
 06.09 Darwin Series, Museum König, Bonn, D



06.09 Technical University of Recklinghausen, D  
 06.09 Opening Plenary Lecture, SMBE 09, Iowa, D  
 05.09 Rüdiger Cerff's Retirement Symposium, University of Braunschweig, D  
 05.09 University Duisburg-Essen, D  
 05.09 UNESCO Darwin 2000 Symposium, Venice, I  
 03.09 Heinrich Heine Institut, Düsseldorf "Universität in der Stadt", D  
 02.09 Opening Lecture, BioEd Darwin 2000 Symposium, Christchurch, NZ  
 01.09 Howard Dalton Lecture, University of Warwick, UK  
 01.09 G.E. Fogg Lecture, Queen Mary University of London, UK  
 01.09 Dönberger Vortragsreihe, Ev. Gemeinde, Wuppertal, D  
 12.08 Annual Lecture of the Systematics Association, London, UK  
 11.08 University of Pittsburgh, USA  
 11.08 Philosophical Society of America Tree of Life Workshop, Pittsburgh, USA  
 10.08 UCLA Molecular Biology and Human Genetics, Los Angeles, USA  
 10.08 CalTech Geological and Planetary Sciences, Pasadena, USA  
 10.08 NASA Jet Propulsion Laboratory, Pasadena, USA  
 09.08 Faculty of Natural Sciences, Comenius University, Bratislava, SLO  
 07.08 De Bary Lecture on Symbiosis, University of Vienna, A  
 07.08 Department of Marine Biology, University of Vienna, A  
 05.08 Introductory Lecture in the Evolution Series, University of Halle, D  
 03.08 Royal Society of New Zealand, Palmerston North, NZ  
 02.08 Katzir Workshop, The Unbearable Complexity of Life, Tel Aviv, ISR  
 11.07 Royal Society Discussion Meeting, Evolution of Photosynthesis, London, UK  
 10.07 University of Tübingen, D  
 09.07 Endocytobiology X, Gmunden, A  
 07.07 CNRS Marseille, F  
 07.07 CIAR Evolutionary Biology Programme, Halifax, CAN  
 06.07 SMBE Annual Meeting, Halifax, CAN  
 06.07 German-Japanese Cyanobacteria Workshop, St. Goar, D  
 05.07 Das Leben und sein Ursprung, ein Abend der Begegnung mit Kardinal Meissner, D  
 05.07 EMBL, Heidelberg, Evolution in Schools, D  
 05.07 Université Claude Bernard, Lyon, F  
 04.07 Stazione Zoologica Anton Dorne, Naples, I  
 03.07 Bayer Crop Science, Frankfurt am Main, D  
 03.07 Naturwissenschaftliche Gesellschaft, Essen, D  
 03.07 Massey University, Palmerston North, NZ  
 02.07 Annual Invitational NZ Phylogenetics Conference, Mt. Ruapeho, NZ  
 02.07 Otago University, Dunedin, NZ  
 02.07 University of Canterbury, Christchurch, NZ  
 01.07 University of Frankfurt am Main, D  
 12.06 Bayer Crop Science Early Discovery Symposium, Monheim, D  
 12.06 University of Bremen, D  
 12.06 University of Münster, D  
 10.06 Plant Genomics European Meeting, Venice, I  
 09.06 Annual Meeting of the German Plant Genetics Society, Kiel, D  
 06.06 University of Bayreuth, D  
 06.06 International Symposium on Microbial Sulfer Metabolism, Münster, D  
 06.06 Annual Meeting of the Italian Botanical Society, Alessandria, I  
 05.06 From vent chemistry to biochemistry, Santa Fe Institute, New Mexico, USA  
 04.06 Leopoldina Symposium, Microbial Life Strategies in the Environment, Bremen, D  
 04.06 Society for General Microbiology, Warwick, UK  
 03.06 Plenary Lecture, German Microbiological Society (VAAM) Jena, D  
 03.06 Queen Mary University of London, UK  
 03.06 Verein deutscher Biologen, Düsseldorf, D  
 01.06 University of Florida at Gainesville, USA  
 01.06 Evangelische Akademie, Arnoldshain, D  
 01.06 Biocomplexity: Primary Producers of the Sea, Rutgers University, USA  
 11.05 University of Essen, D  
 11.05 University of Utrecht, NL  
 10.05 100 Years of Endosymbiosis, Hamburg, D  
 09.05 University of Göteborg, S  
 07.05 International Botanical Congress, Vienna, A

06.05 Archaea 2005, Munich, D  
06.05 SMBE Annual Meeting, Auckland, NZ  
06.05 American Society for Microbiology General Meeting, Atlanta, USA  
03.05 FEBS Workshop origins of chloroplasts and mitochondria, Wildbad Kreuth, D  
01.05 University of Bremen, D  
12.04 International Prize for Biology Symposium for Tom Cavalier-Smith, Tokyo, JPN  
11.04 University of Regensburg, D  
10.04 Michigan State DOE Plant Science Annual Retreat, Michigan, USA  
10.04 Society of German Biologists (vdbiol), Bonn, D  
10.04 German Botanical Society, Braunschweig, D  
10.04 RECOMB Annual Bioinformatics Meeting, I  
09.04 Origin of Life, Les Treilles, F  
07.04 PCA Bioinformatics, Stockholm, S  
07.04 Kosef Korean-German Cooperation Meeting, Berlin, D  
05.04 CIAR-NASA Gene Transfer and Eukaryote Origins, Vancouver, CDN  
04.04 University of Bern, CH  
04.04 BASF Plant Science, Ludwigshafen, D  
03.04 University of Amsterdam, NL  
03.04 Plant Molecular Biology, Dabringhausen, D  
01.04 Stazione Anton Dorne, Napoli, I  
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