

Publication list – Michael Wagner

I have published between 1992-2016 in my five major research fields (nitrification, single cell tools, wastewater microbiology, endosymbionts, sulfate reduction) 218 papers and more than 30 book chapters. According to ISI (June 2016) my publications have been cited 25,007x (Scopus; 25879; Google Scholar: 36,279) and I have an H-index of 86 (Scopus: 86; Google Scholar: 103). I am currently listed on rank 70 (best position rank 8 in 2010) in the worldwide ISI microbiology citation ranking. Six of my publications appeared in *Nature* (plus a News & Views piece), two in *Science*, ten in *PNAS* and one in *PLoS Biology*. More info about my publications can be found at <http://www.researcherid.com/rid/A-7801-2011>, https://scholar.google.com/citations?user=JF6OQ_0AAAAJ&hl=de, and at <https://www.scopus.com/authid/detail.uri?authorId=7404049045>.

218. **Daims H, Lücker S, Wagner M.** 2016. A new perspective on microbes formerly known as nitrite-oxidizing bacteria. *Trends Microbiol.*, in press

217. **Wang Y, Huang WE, Cui L, Wagner M.** Single cell stable isotope probing in microbiology using Raman microspectroscopy. 2016. *Curr Opin Biotechnol*, **41**: 34-42

216. **Legin AA, Theiner S, Schintlmeister A, Reipert S, Heffeter P, Jakupec MA, Varbanov HP, Kowol CR, Galanski, Berger MW, Wagner M, Keppler BK.** 2016 Multi-scale imaging of anticancer platinum(IV) compounds in murine tumor and kidney. *Chem Sci*, 2016, **7**: 3052–3061

215. **Men Y, Han P, Helbling DE, Jehmlich N, Herbold C, Gulde R, Onnis-Hayden A, Gu AZ, Johnson DR, Wagner M, Fenner K.** 2016. Biotransformation of two pharmaceuticals by the ammonia-oxidizing archaeon *Nitrososphaera gargensis*. *Environ Sci Technol*, **9**: 4682-4692.

214. **Beam JP, Jay ZJ, Schmid MC, Rusch DB, Romine MF, Jennings RdM, Kozubal MA, Tringe SG, Wagner M, Inskeep WP.** 2016. Ecophysiology of an uncultivated lineage of *Aigarchaeota* from an oxic, hot spring filamentous ‘streamer’ community. *ISME J.*, **1**: 210-224

213. **Nesme J, Achouak W, Agathos SN, Bailey M, Baldrian P, Brunel D, Frostegård A, Heulin T, Jansson JK, Jurkevitch E, Kruus KL, Kowalchuk GA, Lagares A, Lappin-Scott HM, Lemanceau P, Le Paslier D, Mandic-Mulec I, Murrell JC, Myrold DD, Nalin R, Nannipieri P, Neufeld JD, O’Gara F, Parnell JJ, Pühler A, Pylro V, Ramos JL, Roesch LF, Schloter M, Schleper C, Sczyrba A, Sessitsch A, Sjöling S, Sørensen J, Sørensen SJ, Tebbe CC, Topp E, Tsiamis G, van Elsas JD, van Keulen G, Widmer F, Wagner M, Zhang T, Zhang X, Zhao L, Zhu YG, Vogel TM, Simonet P.** 2016. Back to the future of soil metagenomics. *Front Microbiol*, **7**

212. **Daims H, Lebedeva EV, Pjevac P, Han P, Herbold C, Albertsen M, Jehmlich N, Palatinszky M, Vierheilig J, Bulaev A, Kirkegaard RH, Bergen MV, Rattei T, Bendinger B, Nielsen PH, Wagner M.** 2015. Complete nitrification by *Nitrospira* bacteria. *Nature*, **528**: 504-509
211. **Wagner M.** Conductive consortia (News & Views piece), *Nature* **526**: 513-514
210. **Palatinszky M, Herbold C, Jehmlich N, Pogoda M, Han P, von Bergen M, Lagkouvardos I, Karst SM, Galushko A, Koch H, Berry D, Daims H, Wagner M.** 2015. Cyanate as an energy source for nitrifiers. *Nature*, **524**: 105-108
209. **Koch H, Lückner S, Albertsen M, Kitzinger K, Herbold C, Spieck E, Nielsen PH, Wagner M, Daims H.** 2015 Expanded metabolic versatility of ubiquitous nitrite-oxidizing bacteria from the genus *Nitrospira*. *Proc Natl Acad Sci U S A*, **112**: 11371-11376
208. **Klose J, Polz MF, Wagner M, Schimak MP, Gollner S, Bright M.** 2015. Endosymbionts escape dead hydrothermal vent tubeworms to enrich the free-living population. *Proc. Natl. Acad. Sci. U.S.A.*, **36**: 11300-11305
207. **Hainzl E, Stockinger S, Rauch I, Heider S, Berry D., Lassnig C, Schwab C, Rosebrock F, Milinovich G, Schleder M, Wagner M, Schleper C, Loy A, Urich T, Kenner L, Han X, Decker T, Strobl B, Müller M.** 2015. Intestinal epithelial cell tyrosine kinase 2 transduces interleukin-22 signals to protect from acute colitis. *J Immunol.*, **195**: 5011-5024
206. **Berry D, Kuzyk O, Rauch I, Heider S, Schwab C, Hainzl E, Decker T, Müller M, Strobl B, Schleper C, Urich T, Wagner M, Kenner L, Loy A.** 2015. Intestinal microbiota signatures associated with inflammation history in mice experiencing recurring colitis. *Front Microbiol*, **6**: 1408
205. **Eichorst SA, Strasser F, Woyke T, Schintlmeister A, Wagner M, Wobken D.** 2015. Advancements in the application of NanoSIMS and Raman microspectroscopy to investigate the activity of microbial cells in soils. *FEMS Microbiology Ecology*, in press.
204. **Berry D, Mader E, Lee TK, Wobken D, Wang Y, Zhu D, Palatinszky M, Schintlmeister A, Schmid MC, Hanson BT, Shterzer N, Mizrahi I, Rauch I, Decker T, Bocklitz T, Popp J, Gibson CM, Fowler PW, Huang WE, Wagner M.** 2015. Tracking heavy water (D₂O) incorporation for identifying and sorting active microbial cells. *Proc. Natl. Acad. Sci. USA*, **112**: E194-203
203. **Gruber-Dorninger C, Pester M, Kitzinger K, Savio DF, Loy A, Rattei T, Wagner M, Daims H.** 2015. Functionally relevant diversity of closely related *Nitrospira* in activated sludge. *ISME J.*, **9**: 643-655
202. **Lückner S, Schwarz J, Gruber-Dorninger C, Spieck E, Wagner M, Daims H.** 2015. *Nitrotoga*-like bacteria are previously unrecognized key nitrite oxidizers in full-scale wastewater treatment plants. *ISME J.*, **9**: 708-720

201. **Pernice M, Dunn SR, Tonk L, Dove S, Domart-Coulon I, Hoppe P, Schintlmeister A, Wagner M, Meibom A.** 2015 A nanoscale secondary ion mass spectrometry study of dinoflagellate functional diversity in reef-building corals. *Environ Microbiol.*, **10**: 3570-3580
200. **Taylor A, Taylor K, Tennigkeit B, Palatinszky M, Stieglmeier M, Myrold D, Schleper C, Wagner M, Bottomley P.** 2015. Inhibitory properties of C2 - C10 1-alkynes on ammonia oxidation in two *Nitrososphaera* species. *Appl Environ Microbiol.*, **81**: 1942-1948
199. **Woebken D, Burow L, Behnam F, Mayali X, Schintlmeister A, Fleming E, Prufert-Bebout L, Singer S, López Cortés A, Hoehler T, Pett-Ridge J, Spormann A, Wagner M, Weber P, Bebout B.** 2015. Revisiting N₂ fixation in Guerrero Negro intertidal microbial mats with a functional single-cell approach. *ISME J.*, **9**: 485-496
198. **Daniel H, Moghaddas Gholami A, Berry D, Desmarchelier C, Hahne H, Loh G, Mondot S, Lepage P, Rothballer M, Walker A, Böhm C, Wenning M, Wagner M, Blaut M, Schmitt-Kopplin P, Kuster B, Haller D, Clavel T.** 2014. High-fat diet alters gut microbiota physiology in mice. *ISME J.*, **8**: 295-308
197. **Koch H, Galushko A, Albertsen M, Schintlmeister A, Gruber-Dorninger C, Lücker S, Pelletier E, Le Paslier D, Spieck E, Richter A, Nielsen PH, Wagner M, Daims H.** 2014. Growth of nitrite-oxidizing bacteria by aerobic hydrogen oxidation. *Science*, **345**: 1052-1054
196. **Probst A, Weinmaier T, Raymann K, Perras A, Emerson J, Rattei T, Wanner G, Klingl A, Berg I, Viehweger B, Yoshinaga M, Hinrichs K-U, Thomas B, Meck S, Auerbach A, Heise M, Schintlmeister A, Schmid M, Wagner M, Gribaldo S, Banfield J, Moissl-Eichinger C.** 2014. Biology of a widespread uncultivated archaeon that contributes to carbon fixation in the subsurface. *Nat Commun.*, **5**: 5497
195. **Schwab C, Berry D, Rauch I, Rennisch I, Ramesmayer J, Hainzl E, Heider S, Decker T, Kenner L, Müller M, Strobl B, Wagner M, Schleper C, Loy A, Urich T.** 2014. Longitudinal study of murine microbiota activity and interactions with the host during acute inflammation and recovery. *ISME J.* **8**(5):1101-14
194. **Rauch I, Hainzl E, Rosebrock F, Heider S, Schwab C, Berry D, Stoiber D, Wagner M, Schleper C, Loy A, Urich T, Müller M, Strobl B, Kenner L, Decker T.** 2014. Opposing effects of type I interferons during the emergence and recovery phases of colitis. *Eur. J. Immunol.*, **44**: 2749-60
193. **Pester M, Maixner F, Berry D, Rattei T, Koch H, Lücker S, Nowka B, Richter A, Spieck E, Lebedeva E, Loy A, Wagner M, Daims H.** 2014. NxrB encoding the beta subunit of nitrite oxidoreductase as functional and phylogenetic marker for nitrite-oxidizing *Nitrospira*. *Environ. Microbiol.* , **16**: 3055-3071
192. **Kyrpides NC, Hugenholtz P, Eisen JA, Woyke T, Göker, M, Parker CT, Amann R, Beck BJ, Chain PSG, Chun J, Colwell, RR, Danchin A, Dawyndt P, Dedeurwaerdere T, DeLong EF, Detter JC, DeVos P, Donohue TJ, Dong X-Z, Ehrlich DS; Fraser C, Gibbs R, Gilbert J, Gilna P, Glöckner FO, Jansson JK, Keasling JD, Knight R, Labeda D,**

Lapidus A, Lee J-S, Li W-J, Juncai MA, Markowitz V, Moore ERB, Morrison M, Meyer F, Nelson KE, Ohkuma M, Ouzounis CA, Pace N, Parkhill J, Qin N, Rosello-Mora R, Sikorski J, Smith D, Sogin M, Stevens R, Stingl U, Suzuki K-I, Taylor D, Tiedje JM, Tindall B, Wagner M, Weinstock G, Weissenbach J, White O, Wang J, Zhang L, Zhou Y-G, Field D, Whitman WB, Garrity GM, Klenk H-P. 2014. Genomic encyclopedia of Bacteria and Archaea: Sequencing a myriad of type strains. *PLoS Biology* **12**(8):e1001920

191. Legin AA, Schintlmeister A, Jakupec MA, Galanski M, Lichtscheidl I, Wagner M, Keppler B. 2014. NanoSIMS combined with fluorescence microscopy as a tool for subcellular imaging of isotopically labeled platinum-based anticancer drugs. *Chemical Science*, **5**: 3135-3143.

190. Lebedeva EV, Hatzenpichler R, Pelletier E, Schuster N, Hauzmayer S, Bulaev A, Grigoreva NV, Galushko A, Schmid M, Palatinszky M, Le Paslier D, Daims H, Wagner M. 2013. Enrichment and genome sequence of the group I.1a ammonia-oxidizing archaeon "Ca. Nitrosotenuis uzonensis" representing a clade globally distributed in thermal habitats. *PLoS One* **8**: e80835

189. Dolinsek J, Lagkouvardos I, Wanek W, Wagner M, Daims H. 2013. Interactions of nitrifying bacteria and heterotrophs: Identification of a *Micavibrio*-like, putative predator of *Nitrospira*. *Appl. Environ. Microbiol.* **79**: 2027-2037

188. Dolinsek J, Dorninger C, Lagkouvardos I, Wagner M, Daims H. 2013. Depletion of unwanted nucleic acid templates by selective cleavage: LNAzymes open a new window for detecting rare microbial community members. *Appl. Environ. Microbiol.* **79**: 1534-1544

187. Berry D, Stecher B, Schintlmeister A, Reichert J, Brugiroux S, Wildd B, Wanek W, Richter A, Rauch I, Decker T, Loy A, Wagner M. 2013. Host-compound foraging by intestinal microbiota revealed by single-cell stable isotope probing. *Proc. Natl. Acad. Sci. USA* **110**: 4720-4725

186. Yilmaz LF, Loy A, Wright E, Wagner M, Noguera DR. 2012. Modeling formamide denaturation of probe-target hybrids for improved microarray probe design in microbial diagnostics. *PLoS One* **7**: e43862

185. Wagner M, Haider S. 2012. New trends in fluorescence in situ hybridization for identification and functional analyses of microbes. *Curr. Opinion. Biotech.* **23**: 96-102

184. Toenshoff ER, Penz T, Narzt T, Collingro A, Schmitz-Esser S, Pfeiffer S, Klepal W, Wagner M, Weinmaier T, Rattei T, Horn M. 2012. Bacteriocyte-associated gammaproteobacterial symbionts of the *Adelges nordmanniana/piceae* complex (Hemiptera: Adelgidae) *ISME J.* **6**: 384-396

183. Spang A, Poehlein A, Offre P, Zumbärgel S, Haider S, Rychlik N, Nowka B, Schmeisser C, Lebedeva EV, Rattei T, Böhm C, Schmid M, Galushko A, Hatzenpichler R, Weinmaier T, Daniel R, Schleper C, Spieck E, Streit W, Wagner M. 2012. The genome of the ammonia-oxidizing Candidatus *Nitrososphaera gargensis*: Insights into metabolic versatility and environmental adaptations. *Environ. Microbiol.* **14**: 3122-45

182. Sorokin DY, Lückner S, Vejmekova D, Kostrikina NA, Kleerebezem R, Rijpstra WIC, Sinninghe Damsté JS, Le Paslier D, Muyzer G, Wagner M, van Loosdrecht MCM,

Daims H. 2012. Nitrification expanded: Discovery, physiology, and genomics of a nitrite-oxidizing bacterium from the phylum *Chloroflexi*. *ISME J.* **6**: 2245-2256

181. Pester M, Rattei T, Flechl S, Gröngröft A, Richter A, Overmann J, Reinhold-Hurek B, Loy A, Wagner M. 2012. amoA-based consensus phylogeny of ammonia-oxidizing archaea and deep sequencing of amoA genes from soils of four different geographic regions. *Environ. Microbiol.* **14**: 525-539

180. Pester M, Knorr K-H, Friedrich MW, Wagner M, Loy A. 2012. Sulfate-reducing microorganisms in wetlands - fameless actors in carbon cycling and climate change. *Frontiers Microbiol.* **3**: 72

179. Pester M, Brambilla E, Alazard D, Rattei T, Weinmaier T, Han J, Lucas S, Lapidus A, Cheng J-F, Goodwin L, Pitluck S, Peters L, Ovchinnikova G, Teshima H, Detter JC, Han CS, Tapia R, Land ML, Hauser L, Kyrpides NC, Ivanova NN, Pagani I, Huntemann M, Wei C-L, Davenport KW, Daligault H, Chain PSG, Chen A, Mavromatis K, Markowitz V, Szeto E, Mikhailova N, Pati A, Wagner M, Woyke T, Ollivier B, Klenk H-P, Spring S, and Loy A. 2012. Complete genome sequences of *Desulfosporosinus orientis* DSM765T, *Desulfosporosinus youngiae* DSM17734T, *Desulfosporosinus meridiei* DSM13257T, and *Desulfosporosinus acidiphilus* DSM22704T. *J. Bacteriol.* **194**: 6300-1

178. Milucka J, Ferdelman TG, Polerecky L, Franzke D, Wegener G, Schmid M, Lieberwirth I, Wagner M, Widdel F, Kuypers MMM. 2012. Zero-valent sulphur is a key intermediate in marine methane oxidation. *Nature* **491**: 541-546

177. Briers Y, Staubli T, Schmid MC, Wagner M, Schuppler M, Loessner MJ. 2012. Intracellular vesicles as reproduction elements in cell wall-deficient L-form bacteria. *PLoS One* **7**: e38514

176. Berry D, Schwab C, Milinovich G, Reichert J, Ben Mahfoudh K, Decker T, Engel M, Hai B, Hainzl E, Heider S, Kenner L, Müller M, Rauch I, Strobl B, Wagner M, Schleper C, Urich T, Loy A. 2012. Phylotype-level 16S rRNA analysis reveals new bacterial indicators of health state in acute murine colitis. *ISME J.* **6**: 2091-106

175. Behnam F, Vilcinskas A, Wagner M, Stoecker K. 2012. A straightforward DOPE-FISH method for simultaneous multicolor detection of six microbial populations. *Appl. Environ. Microbiol.* **78**: 5138-42

174. Tourna M, Stieglmeier M, Spang A, Könneke M, Schintlmeister A, Urich T, Engel M, Schloter M, Wagner M, Richter A, Schleper C. 2011. *Nitrososphaera viennensis*, an ammonia oxidizing archaeon from soil. *Proc. Natl. Acad. Sci. USA* **108**: 8420-8425

173. Steger D, Wentrup C, Braunegger C, Deevong P, Hofer M, Richter A, Baranyi C, Pester M, Wagner M, Loy A. 2011. Microorganisms with novel dissimilatory (bi)sulfite reductase genes are widespread and part of the core microbiota in low-sulfate peatlands. *Appl. Environ. Microbiol.* **77**: 1231-1242

172. Steger D, Berry D, Haider S, Horn M, Wagner M, Stocker R, Loy A. 2011. Systematic spatial bias in DNA microarray hybridization is caused by probe spot position-dependent variability in lateral diffusion. *PLoS One* **6**: e23727

171. Sixt BS, Heinz C, Pichler P, Heinz E, Montanaro J, Op den Camp HJM, Ammerer G, Mechtler K, Wagner M, Horn M. 2011. Proteomic analysis reveals a virtually complete set of proteins for translation and energy generation in elementary bodies of the amoeba symbiont *Protochlamydia amoebophila*. *Proteomics* **11**: 1868-1892

170. Schmitt S, Deines P, Behnam F, Wagner M, Taylor MW. 2011. Chloroflexi bacteria are more diverse, abundant and similar in high than in low microbial abundance sponges. *FEMS Microbiol. Ecol.* **78**: 497-510

169. Pester M, Schleper C, Wagner M. 2011. The Thaumarchaeota: An Emerging View of their Phylogeny and Ecophysiology. *Curr. Opin. Microbiol.* **14**: 300-306

168. Mußmann M, Brito I, Pitcher A, Damsté JSS, Hatzenpichler R, Richter A, Nielsen JL, Nielsen PH, Müller A, Daims H, Wagner M, Head IM. 2011. Thaumarchaeotes abundant in refinery nitrifying sludges express *amoA* but are not obligate autotrophic ammonia oxidizers. *Proc. Natl. Acad. Sci. USA* **108**: 16771-16776.

167. Mlynek G, Sjöblom B, Kostan J, Füreder S, Maixner F, Gysel K, Furtmüller PG, Obinger C, Wagner M, Daims H, Djinovic-Carugo K. 2011. Unexpected diversity of chlorite dismutases: A catalytically efficient dimeric enzyme from *Nitrobacter winogradskyi*. *J. Bacteriol.* **193**: 2408-2417

166. Gruber-Vodicka HR, Dirks U, Leisch N, Baranyi C, Stoecker K, Bulgheresi S, Heindl NR, Horn M, Lott C, Loy A, Wagner M, Ott J. 2011. Paracatenula, an ancient symbiosis between thiotrophic Alphaproteobacteria and catenulid flatworms. *Proc. Natl. Acad. Sci. USA* **108**: 12078-12083

165. Daims H, Wagner M. 2011. In situ techniques and digital image analysis methods for quantifying spatial localization patterns of nitrifiers and other microorganisms in biofilm and flocs. *Methods Enzymol.* **496**: 185-215

164. Berry D, Ben Mahfoudh K, Wagner M, Loy A. 2011. Barcoded primers used in multiplex amplicon pyrosequencing bias amplification. *Appl. Environ. Microbiol.* **77**: 7846-7849

163. Lüscher S, Wagner M, Maixner F, Pelletier E, Koch H, Vacherie B, Rattei T, Sinninghe Damsté JS, Spieck E, Le Paslier D, Daims H. 2010. A *Nitrospira* metagenome illuminates the physiology and evolution of globally important nitrite-oxidizing bacteria. *Proc. Natl. Acad. Sci. USA* **107**: 13479-13484.

162. Haider S, Wagner M, Schmid MC, Sixt BS, Christian JG, Häcker G, Pichler P, Mechtler K, Müller A, Baranyi C, Toenshoff ER, Montanaro J, Horn M. 2010. Raman microspectroscopy reveals long-term extracellular activity of chlamydiae. *Mol. Microbiol.*, **77**: 687-700.

161. Pester M, Bittner N, Deevong P, Wagner M, and Loy A. 2010 A 'rare biosphere' microorganism contributes to sulfate reduction in a peatland. *ISME Journal*. **12**: 1591-1602.

160. Spang A, Hatzenpichler R, Brochier-Armanet C, Rattei T, Tischler P, Spieck E, Streit W, Stahl DA, Wagner M, Schleper C. 2010. Distinct gene set in two lineages of

ammonia-oxidizing-archaea supports the phylum Thaumarchaeota. *Trends Microbiol.* 18: 331-340.

159. **Webster NS, Taylor MW, Behnam F, Lücker S, Rattei T, Whalan S, Horn M, Wagner M.** 2010. Deep sequencing reveals exceptional diversity and modes of transmission for bacterial sponge symbionts. *Environ. Microbiol.*, 12: 2070-2082.

158. **Heinz E, Pichler P, Heinz C, op den Camp HJM, Toenshoff ER, Ammerer G, Mechtler K, Wagner M, Horn M.** 2010. Proteomic analysis of the outer membrane of Protochlamydia amoebophila elementary bodies. *Proteomics* 10: 4363-4376.

157. **Heinz E, Rockey DD, Montanaro J, Aistleitner K, Wagner M, Horn M.** 2010. Inclusion membrane proteins of Protochlamydia amoebophila UWE25 reveal a conserved mechanism for host cell interaction among the Chlamydiae. *J. Bacteriol.* 192: 5093-5102.

156. **Kostan J, Sjöblom B, Maixner F, Mlynek G, Furtmüller PG, Obinger C, Wagner M, Daims H, Djinovic-Carugo K.** 2010. Structural and functional characterisation of the chlorite dismutase from the nitrite-oxidizing bacterium "Candidatus Nitrospira defluvii": Identification of a catalytically important amino acid residue. *J. Struct. Biol.* 172: 331-342

155. **Schmitz-Esser S, Tischler P, Arnold R, Montanaro J, Wagner M, Rattei T, Horn M.** 2010. The genome of the amoeba symbiont 'Candidatus Amoebophilus asiaticus' reveals common mechanisms for host cell interaction among amoeba-associated bacteria. *J. Bacteriol.*, 192: 1045-1057.

154. **Stoecker K, Dorninger C, Daims H, Wagner M.** 2010. Double-labeling of oligonucleotide probes for fluorescence in situ hybridization (DOPE-FISH) improves signal intensity and increases rRNA accessibility. *Appl. Environ. Microbiol.*, 79: 922–926.

153. **Pitcher A, Rychlik N, Hopmans EC, Spieck E, Rijpstra WIC, Ossebaar J, Schouten S, Wagner M, Sinninghe Damsté JS.** 2010. Crenarchaeol dominates the membrane lipids of Candidatus Nitrososphaera gargensis, a thermophilic Group I.1b Archaeon. *ISME Journal*, 4: 542-52.

152. **Heinz E, Tischler P, Rattei T, Myers G, Wagner M, Horn M.** 2009. Comprehensive in silico prediction and analysis of chlamydial outer membrane proteins reflects evolution and life style of the *Chlamydiae*. *BMC Genomics* 10:634.

151. **Hesselsoe M, Füreder S, Schloter M, Bodrossy L, Iversen N, Roslev P, Nielsen PH, Wagner M, Loy A.** 2009. Isotope array analysis of *Rhodocyclales* uncovers functional redundancy and versatility in an activated sludge. *ISME Journal* 3:1349-64.

150. **Wagner M.** 2009. Single-cell ecophysiology of microbes as revealed by Raman microspectroscopy or secondary ion mass spectrometry imaging. *Ann. Rev. Microbiol.*, 63:411-29.

149. **Rinke C, Schmitz-Esser S, Loy A, Horn M, Wagner M, Bright M.** 2009. High genetic similarity between two geographically distinct strains of the sulfur-oxidizing symbiont 'Candidatus Thiobios zoothamnicoli' *FEMS Microbiol. Ecol.* 67: 229-41.

148. **Loy A, Duller S, Baranyi C, Mußmann M, Ott J, Sharon I, Béjà O, Le Paslier D, Dahl C, Wagner M.** 2009. Reverse dissimilatory sulfite reductase as phylogenetic marker for a subgroup of sulfur-oxidizing prokaryotes. *Environ. Microbiol.* 11: 289-299.
147. **Schmitz-Esser S, Toenshoff ER, Haider S, Heinz E, Hoenninger VM, Wagner M, Horn M.** 2008. Diversity of bacterial endosymbionts of environmental *Acanthamoeba* isolates. *Appl. Environ. Microbiol.* 74: 5822-5831.
146. **Schmitz-Esser S, Haferkamp I, Knab S, Penz T, Ast M, Kohl C, Wagner M, Horn M.** 2008. *Lawsonia intracellularis* encodes a functional rickettsia-like ATP/ADP translocase for host exploitation. *J. Bacteriol.* 190: 5746-5752.
145. **Maixner F, Wagner M, Lücker S, Pelletier E, Schmitz-Esser S, Hace K, Spieck E, Konrat R, Le Paslier D, Daims H.** 2008. Environmental genomics reveals a functional chlorite dismutase in the nitrite-oxidizing bacterium "Candidatus Nitrospira defluvii". *Environ. Microbiol.* 10: 3043-3056.
144. **Loy A, Arnold R, Tischler P, Rattei T, Wagner M, Horn M.** 2008. probeCheck - a central resource for evaluating oligonucleotide probe coverage and specificity. *Environ. Microbiol.* 10: 2894-2896.
143. **Hoshino T, Yilmaz LS, Noguera DR, Daims H, Wagner M.** 2008. Quantification of target molecules needed to detect microorganisms by fluorescence in situ hybridization (FISH) and catalyzed reporter deposition-FISH. *Appl. Environ. Microbiol.* 74: 5068-5077.
142. **Steger D, Ettinger-Epstein P, Whalan S, Hentschel U, de Nys R, Wagner M, Taylor MW.** 2008. Diversity and mode of transmission of ammonia-oxidizing archaea in marine sponges. *Environ. Microbiol.* 10: 1087-1094.
141. **Hatzenpichler R, Lebedeva EV, Spieck E, Stoecker K, Richter A, Daims H, Wagner M.** 2008. A moderately thermophilic ammonia-oxidizing crenarchaeote from a hot spring. *Proc. Natl. Acad. Sci. USA* 105: 2134-2139. (Track II)
140. **Haider S, Collingro A, Walochnik J, Wagner M, Horn M.** 2008. Chlamydia-like bacteria in respiratory samples of community-acquired pneumonia patients. *FEMS Microbiol. Lett.* 281: 198-202.
139. **Achtman M, Wagner M.** 2008. Microbial diversity and the genetic nature of microbial species. *Nature Rev. Microbiol.*, 6:431-40.
138. **Wagner M, Smidt H, Loy A, Zhou J.** 2007. Unravelling microbial communities with DNA-microarrays: challenges and future directions. *Microb. Ecol.* 53: 498-506.
137. **Taylor M, Radax R, Steger D, Wagner M.** 2007. Sponge-associated microorganisms: evolution, ecology and biotechnological potential. *Microbiol. Mol. Biol. Rev.* 71: 295-347.
136. **Neufeld JD, Wagner M, Murrell JC.** 2007. Who eats what, where and when? Isotope-labelling experiments are coming of age. *ISME J* 1: 103-110.

135. **Lücker S, Steger D, Kjeldsen KU, MacGregor BJ, Wagner M, Loy A.** 2007. Improved 16S rRNA-targeted oligonucleotide probe set for analysis of sulfate-reducing bacteria by fluorescence in situ hybridization. *J. Microbiol. Methods.* 69: 523-528.
134. **Loy A, Maixner F, Wagner M, Horn M.** 2007. probeBase - an online resource for rRNA-targeted oligonucleotide probes: new features 2007. *Nucleic Acids Res.* 35: D800-D804.
133. **Leloup J, Loy A, Knab NJ, Borowski C, Wagner M, Jørgensen BB.** 2007. Diversity and abundance of sulfate-reducing microorganisms in the sulfate and methane zones of a marine sediment, Black Sea. *Environ. Microbiol.* 9: 131-142.
132. **Kjeldsen KU, Loy A, Thomsen TR, Jakobsen TF, Wagner M, and Ingvorsen K.** 2007. Diversity of sulfate-reducing bacteria from an extreme hypersaline sediment in Great Salt Lake (Utah, USA). *FEMS Microbiol. Ecol.* 60: 287-298.
131. **Huang WE, Stoecker K, Griffiths R, Newbold L, Daims H, Whiteley AS, Wagner M.** 2007. Raman-FISH: Combining stable-isotope Raman spectroscopy and fluorescence in situ hybridization for the single cell analysis of identity and function. *Environ. Microbiol.* 9: 1878-1889.
130. **Heinz E, Kolarov I, Kästner C, Toenshoff ER, Wagner M, Horn M.** 2007. An *Acanthamoeba* sp. containing two phylogenetically different bacterial endosymbionts *Environ. Microbiol.* 9: 1604-1609.
129. **Daims H, Wagner M.** 2007. Quantification of uncultured microorganisms by fluorescence microscopy and digital image analysis. *Appl. Microbiol. Biotech.* 75: 237-248.
128. **Wagner M, Nielsen PH, Loy A, Nielsen JL, Daims H.** 2006. Linking microbial community structure with function: fluorescence in situ hybridization-microautoradiography and isotope arrays. *Curr. Opin. Biotechnol.* 17: 1-9.
127. **Wagner M, Horn M.** 2006. The Planctomycetes, Verrucomicrobia, Chlamydiae and sister phyla comprise a superphylum with biotechnological and medical relevance. *Curr. Opin. Biotechnol.* 17: 241-249.
126. **Strous M, Pelletier E, Mangenot S, Rattei T, Lehner A, Taylor MW, Horn M, Daims H, Bartol-Mave D, Wincker P, Barbe V, Fonknechten N, Vallenet D, Segurens B, Schenowitz-Truong C, Médigue C, Collingro A, Snel B, Dutilh BE, Op den Camp HJM, van der Drift C, Cirpus I, van de Pas-Schoonen KT, Harhangi HR, van Niftrik L, Schmid M, Keltjens J, van de Vossenberg J, Kartal B, Meier H, Frishman D, Huynen MA, Mewes HW, Weissenbach J, Jetten MSM, Wagner M, Le Paslier D.** 2006. Deciphering the evolution and metabolism of an anammox bacterium from a community genome. *Nature* 440: 790-794.
125. **Stoecker K, Bendinger B, Schöning B, Nielsen PH, Nielsen JL, Baranyi C, Toenshoff ER, Daims H, Wagner M.** 2006. Cohn's Crenothrix is a filamentous methane oxidizer with an unusual methane monooxygenase. *Proc. Natl. Acad. Sci. USA* 7: 2363-2367 (Track II).

124. **Spieck E, Hartwig C, McCormack I, Maixner F, Wagner M, Lipski A, Daims H.** 2006. Selective enrichment and molecular characterization of a previously uncultured *Nitrospira*-like bacterium from activated sludge. *Environ. Microbiol.* 8: 405-415.
123. **Rittmann B, Hausner M, Loeffler F, Love NG, Muyzer G, Okabe S, Oerther DB, Peccia J, Raskin L, Wagner M.** 2006. A vista for microbial ecology and environmental biotechnology. *Environ. Sci. Technol.* 40: 1096-103.
122. **Rinke C, Schmitz-Esser S, Stoecker K, Nussbaumer AD, Molnár DA, Vanura K, Wagner M, Horn M, Ott J, Bright M.** 2006. Candidatus Thiobios zoothamnicoli, an ectosymbiotic bacterium covering the giant marine ciliate *Zoothamnium niveum*. *Appl. Environ. Microbiol.* 72: 2014-2021.
121. **Maixner F, Noguera DR, Anneser B, Stoecker K, Wegl G, Wagner M, Daims H.** 2006. Nitrite concentration influences the population structure of *Nitrospira*-like bacteria. *Environ. Microbiol.* 8: 1487-1495.
120. **Kreuzer K, Adamczyk J, Iijima M, Wagner M, Scheu S, Bonkowski M.** 2006. Grazing of a common species of soil protozoa (*Acanthamoeba castellanii*) affects rhizosphere bacterial community composition and root architecture of rice (*Oryza sativa* L.). *Soil Biol. Biochem.* 38: 1665-1672.
119. **Imachi H, Sekiguchi Y, Kamagata Y, Loy A, Qiu YL, Hugenholtz P, Kimura N, Wagner M, Ohashi A, Harada H.** 2006. Non-sulfate-reducing, syntrophic bacteria affiliated with the *Desulfotomaculum* cluster I are widely distributed in methanogenic environments. *Appl. Environ. Microbiol.* 72: 2080-2091.
118. **Haferkamp I, Schmitz-Esser S, Wagner M, Neigel N, Horn M, Neuhaus HE.** 2006. Tapping the nucleotide pool of the host: novel nucleotide carrier proteins of *Protochlamydia amoebophila*. *Mol. Microbiol.* 60: 1534-1545.
117. **Daims H, Taylor MW, Wagner M.** 2006. Wastewater treatment: a model system for microbial ecology. *Trends Biotechnol.* 24: 483-489.
116. **Daims H, Maixner F, Lücker S, Stoecker K, Hace K, Wagner M.** 2006. Ecophysiology and niche differentiation of *Nitrospira*-like bacteria, the key nitrite oxidizers in wastewater treatment plants. *Wat. Sci. Tech.* 54: 21-27.
115. **Daims H, Lücker S, Wagner M.** 2006. daime, a novel image analysis program for microbial ecology and biofilm research. *Environ. Microbiol.* 8: 200-213.
114. **Zverlov V, Klein M, Lücker S, Friedrich MW, Kellermann J, Stahl DA, Loy A, Wagner M.** 2005. Lateral gene transfer of dissimilatory (bi)sulfite reductase revisited. *J. Bacteriol.* 187: 2203-2208.
113. **Wagner M, Loy A, Klein M, Lee N, Ramsing NB, Stahl DA, Friedrich MW.** 2005. Functional marker genes for identification of sulphate-reducing prokaryotes. *Methods Enzymol.* 397: 469-489.
112. **Spring S, Wagner M, Schumann P, Kämpfer P.** 2005. *Malikia granosa* gen. nov., sp. nov., a novel polyhydroxyalkanoate- and polyphosphate-accumulating bacterium isolated

from activated sludge and reclassification of *Pseudomonas spinosa* as *Malikia spinosa* comb. nov. *Int. J. Syst. Evol. Microbiol.* **55**: 621-629.

111. Schmid MW, Ng EYW, Lampidis R, Emmerth M, Walcher M, Kreft J, Goebel W, Wagner M, Schleifer KH. 2005. Evolutionary history of the genus *Listeria* and its virulence genes. *Syst. Appl. Microbiol.* **28**: 1-18.

110. Schmid MC, Maas B, Dapena A, van de Pas-Schoonen K, van de Vossenberg J, Kartal B, van Niftrik L, Schmidt I, Cirpus I, Kuenen JG, Wagner M, Damste JSS, Kuypers M, Revsbech NP, Mendez R, Jetten MSM, Strous M. 2005. Biomarkers for *in situ* detection of anaerobic ammonium-oxidizing (ANAMMOX) bacteria. *Appl. Environ. Microbiol.* **71**: 1677-1684.

109. Sabehi G, Loy A, Jung KH, Partha R, Spudich JL, Isaacson T, Hirschberg J, Wagner M, Beja O. 2005. New insights into metabolic properties of marine bacteria encoding proteorhodopsins. *PLoS Biology* **3**: e273.

108. Molmeret M, Horn M, Wagner M, Santic M, Abu Kwaik Y. 2005. Amoeba as training grounds intracellular bacterial pathogens. *Appl. Environ. Microbiol.* **71**: 20-28.

107. Loy A, Schulz C, Lücker S, Schöpfer-Wendels A, Stoecker K, Baranyi C, Lehner A, Wagner M. 2005. 16S rRNA gene-based oligonucleotide microarray for environmental monitoring of the betaproteobacterial order Rhodocyclales. *Appl. Environ. Microbiol.* **71**: 1373-1386.

106. Lehner A, Loy A, Behr T, Gaenge H, Ludwig W, Wagner M, Schleifer KH. 2005. Oligonucleotide microarray for identification of *Enterococcus* species. *FEMS Microbiol. Lett.* **246**: 133-142.

105. Collingro A, Toenshoff ER, Taylor MW, Fritsche TR, Wagner M, Horn M. 2005. 'Candidatus Protochlamydia amoebophila', an endosymbiont of *Acanthamoeba* spp. *Int. J. Syst. Evol. Microbiol.* **55**: 1863-1866.

104. Collingro A, Poppert S, Heinz E, Schmitz-Esser S, Essig A, Schweikert M, Wagner M, Horn M. 2005. Recovery of an environmental chlamydia strain from activated sludge by co-cultivation with *Acanthamoeba* sp. *Microbiology* **151**: 301-309.

103. Wagner M. 2004. Deciphering the function of uncultured microorganisms. *ASM News* **70**: 63-70.

102. Spring S, Jäckel U, Wagner M, Kämpfer P. 2004. *Ottowia thiooxydans* gen. nov., sp. nov., a novel facultatively anaerobic, N₂O producing bacterium isolated from activated sludge and transfer of *Aquaspirillum gracile* to *Hylemonella gracilis* gen. nov. comb. nov. *Int. J. Syst. Evol. Microbiol.* **54**: 99-106.

101. Schmitz-Esser S, Linka N, Collingro A, Beier CL, Neuhaus HE, Wagner M, Horn M. 2004. ATP/ADP translocases: A common feature of obligate intracellular amoebal symbionts related to chlamydiae and rickettsiae. *J. Bacteriol.* **186**: 683-691.

100. **Loy A, Küsel K, Lehner A, Drake HL, Wagner M.** 2004. Microarray and functional gene analyses of sulfate-reducing prokaryotes in low sulfate, acidic fens reveal co-occurrence of recognized genera and novel lineages. *Appl. Environ. Microbiol.* **70**: 6998-7009.
99. **Horn M, Wagner M.** 2004. Bacterial endosymbionts of free-living amoebae. *J. Euk. Microbiol.* **51**: 509-514.
98. **Horn M, Collingro A, Schmitz-Esser S, Beier CL, Purkhold U, Fartmann B, Brandt P, Nyakatura GJ, Droege M, Frishman D, Rattei T, Mewes HW, Wagner M.** 2004. Illuminating the evolutionary history of chlamydiae. *Science* **304**: 728-730.
97. **Haferkamp I, Schmitz-Esser S, Linka N, Urbany C, Collingro A, Wagner M, Horn M, Neuhaus HE.** 2004. A candidate NAD⁺ transporter in an intracellular bacterial symbiont related to chlamydiae. *Nature* **432**: 622-625.
96. **Ginige MP, Hugenholtz P, Daims H, Wagner M, Keller J, Blackall LL.** 2004. Use of stable-isotope probing, full-cycle rRNA analysis, and fluorescence in situ hybridization-micrautoradiography to study a methanol-fed denitrifying microbial community. *Appl. Environ. Microbiol.* **70**: 588-596 .
95. **Fieseler L, Horn M, Wagner M, Hentschel U.** 2004. Discovery of the novel candidate phylum "Poribacteria" in marine sponges. *Appl. Environ. Microbiol.* **70**: 3724-3732.
94. **Collingro A, Walochnik J, Baranyi C, Michel R, Wagner M, Horn M, Aspöck H.** 2004. Chlamydial endocytobionts of free-living amoebae differentially affect the growth rate of their hosts. *Europ. J. Protist.* **40**: 57-60.
93. **Wagner M, Horn M, Daims H.** 2003. Fluorescence in situ hybridisation for the identification and characterisation of prokaryotes. *Curr. Opinion Microbiol.* **6**: 302-309.
92. **Thoms C, Horn M, Wagner M, Hentschel U, Proksch P.** 2003. Monitoring microbial diversity and natural products profiles of the sponge *Aplysina cavernicola* following transplantation. *Marine Biology* **142**: 685-692.
91. **Schmid M, Walcher M, Bubert A, Wagner M, Wagner M, Schleifer KH.** 2003. Nucleic acid-based, cultivation-independent detection of *Listeria* spp. and genotypes of *L. monocytogenes*. *FEMS Immunol. Med. Microbiol.* **35**: 215-225.
90. **Schmid M, Thill A, Purkhold U, Walcher M, Bottero JY, Ginestet P, Nielsen PH, Wuertz S, Wagner M.** 2003. Characterization of activated sludge flocs by confocal laser scanning microscopy and image analysis. *Wat. Res.* **37**: 2043-2052.
89. **Rossello-Mora R, Lee N, Anton J, Wagner M.** 2003. Substrate uptake in extremely halophilic microbial communities revealed by microautoradiography and fluorescence in situ hybridization. *Extremophiles* **7**: 409-413.
88. **Purkhold U, Wagner M, Timmermann G, Pommerening-Röser A, Koops HP.** 2003. 16S rRNA and amoA-based Phylogeny of 12 Novel Betaproteobacterial Ammonia Oxidizing Isolates: Extension of the Data Set and Proposal of a New Lineage within the Nitrosomonads. *Int. J. Syst. Evol. Microbiol.* **53**: 1485-1494.

87. **Nielsen JL, Wagner M, Nielsen PH.** 2003. Use of microautoradiography to study in situ physiology of bacteria in biofilms. *Rev. Environ. Sci. Biotechnology* **2**: 261-268.
86. **Loy A, Horn M, Wagner M.** 2003. probeBase - an online resource for rRNA-targeted oligonucleotide probes. *Nucleic Acids Res.* **31**: 514-516.
85. **Jetten MS, Sliemers O, Kuypers M, Dalsgaard T, van Niftrik L, Cirpus I, van de Pas-Schoonen K, Lavik G, Thamdrup B, Le Paslier D, Op den Camp HJ, Hulth S, Nielsen LP, Abma W, Third K, Engstrom P, Kuenen JG, Jorgensen BB, Canfield DE, Sinninghe Damste JS, Revsbech NP, Fuerst J, Weissenbach J, Wagner M, Schmidt I, Schmid M, Strous M.** 2003. Anaerobic ammonium oxidation by marine and freshwater planctomycete-like bacteria. *Appl. Microbiol. Biotech.* **63**: 107-114.
84. **Gieseke A, Bjerrum L, Wagner M, Amann R.** 2003. Structure and activity of multiple nitrifying bacterial populations coexisting in a biofilm. *Environ. Microbiol.* **5**: 355-369.
83. **Engel AS, Lee N, Porter ML, Stern LA, Bennett PC, Wagner M.** 2003. Filamentous Epsilonproteobacteria dominate microbial mats from sulfidic cave springs. *Appl. Environ. Microbiol.* **69**: 5503-5511.
82. **Egli K, Langer C, Siegrist HR, Zehnder AJ, Wagner M, van der Meer JR.** 2003. Community analysis of ammonia and nitrite oxidizers during start-up of nitrification reactors. *Appl. Environ. Microbiol.* **69**: 3213-3222.
81. **Baker BJ, Moser DP, MacGregor BJ, Fishbain S, Wagner M, Fry NK, Jackson B, Speolstra N, Loos S, Takai K, Lollar BS, Fredrickson J, Balkwill D, Onstott TC, Wimpee CF, Stahl DA.** 2003. Related assemblages of sulphate-reducing bacteria associated with ultradeep gold mines of South Africa and deep basalt aquifers of Washington State. *Environ. Microbiol.* **5**: 267-277.
80. **Adamczyk J, Hesselsoe M, Iversen N, Horn M, Lehner A, Nielsen PH, Schloter M, Roslev P, Wagner M.** 2003. The isotope array, a new tool that employs substrate-mediated labeling of rRNA for determination of microbial community structure and function. *Appl. Environ. Microbiol.* **69**: 6875-6887.
79. **Wilderer PA, Bungartz HJ, Lemmer H, Wagner M, Keller J, Wuertz S.** 2002. Modern scientific methods and their potential in wastewater science and technology. *Wat. Res.* **36**: 370-393.
78. **Wagner M, Loy A, Nogueira R, Purkhold U, Lee N, Daims H.** 2002. Microbial community composition and function in wastewater treatment plants. *Antonie van Leeuwenhoek* **81**: 665-680.
77. **Wagner M, Loy A.** 2002. Bacterial community composition and function in sewage treatment systems. *Curr. Opin. Biotechnol.* **13**: 218-227.
76. **Strous M, Kuenen JG, Fuerst J A, Wagner M, Jetten MSM .** 2002. The anammox case - A new experimental manifesto for microbiological eco-physiology. *Antonie van Leeuwenhoek* **81**: 693-702.

75. **Stahl DA, Fishbain S, Klein M, Baker BJ, Wagner M.** 2002. Origins and diversification of sulfate-respiring microorganisms. *Antonie van Leeuwenhoek* **81**: 189-195.
74. **Skriwan C, Fajardo M, Hagele S, Horn M, Wagner M, Michel R, Krohne G, Schleicher M, Hacker J, Steinert M.** 2002. Various bacterial pathogens and symbionts infect the amoeba *Dictyostelium discoideum*. *Int. J. Med. Microbiol.* **291**: 615-624.
73. **Poppert S, Essig A, Marre R, Wagner M, Horn M.** 2002. Detection and differentiation of chlamydiae by fluorescence in situ hybridization (FISH). *Appl. Environ. Microbiol.* **68**: 4081-4089.
72. **Nogueira R, Melo LF, Purkhold U, Wuertz S, Wagner M.** 2002. Nitrifying and heterotrophic population dynamics in biofilm reactors: effects of hydraulic retention time and the presence of organic carbon. *Wat. Res.* **36**: 469-481.
71. **Nielsen JL, Juretschko S, Wagner M, Nielsen PH.** 2002. Abundance and phylogenetic affiliation of iron-reducers in activated sludge as assessed by fluorescence in situ hybridization and microautoradiography. *Appl. Environ. Microbiol.* **68**: 4629-4636.
70. **Loy A, Lehner A, Lee N, Adamczyk J, Meier H, Ernst J, Schleifer KH, Wagner M.** 2002. An oligonucleotide microarray for 16S rRNA gene-based detection of all recognized lineages of sulfate-reducing prokaryotes in the environment. *Appl. Environ. Microbiol.* **68**: 5064-5081.
69. **Lee N, la Cour Jansen J, Aspegren H, Henze M, Nielsen PH, Wagner M.** 2002. Population dynamics in wastewater treatment plants with enhanced biological phosphorous removal operated with and without nitrogen removal. *Wat. Sci. Tech.* **46**: 163-170.
68. **Juretschko S, Loy A, Lehner A, Wagner M.** 2002. The microbial community composition of a nitrifying-denitrifying activated sludge from an industrial sewage treatment plant analyzed by the full-cycle rRNA approach. *Syst. Appl. Microbiol.* **25**: 84-99.
67. **Horn M, Fritsche TR, Linner T, Gautom RK, Harzenetter MD, Wagner M.** 2002. Obligate bacterial endosymbionts of *Acanthamoeba* spp. related to the β -subclass of Proteobacteria: proposal of 'Candidatus Procabacter acanthamoebae' gen. nov., sp. nov. *Int. J. Syst. Evol. Microbiol.* **52**: 599-605.
66. **Hentschel U, Hopke J, Horn M, Friedrich AB, Wagner M, Hacker J, Moore BS.** 2002. Molecular evidence for a uniform microbial community in sponges from different oceans. *Appl. Environ. Microbiol.* **68**: 4431-4440.
65. **Helmer-Madhok C, Schmid M, Filipov E, Gaul T, Hippen A, Rosenwinkel KH, Seyfried CF, Wagner M, Kunst S.** 2002. Deammonification in biofilm systems: Population structure and function. *Wat. Sci. Tech.* **46**: 223-231.
64. **Beier CL, Horn M, Michel R, Schweikert M, Gortz HD, Wagner M.** 2002. The genus *Caedibacter* comprises endosymbionts of *Paramecium* spp. related to the *Rickettsiales* (Alphaproteobacteria) and to *Francisella tularensis* (Gammaproteobacteria). *Appl. Environ. Microbiol.* **68**: 6043-6050.

63. **Sorokin D, Tourova T, Schmid M, Wagner M, Koops HP, Kuenen JG, Jetten M.** 2001. Isolation and properties of obligately chemolithoautotrophic and extremely alkalitolerant ammonia oxidizing bacteria from Mongolian soda lakes. *Arch. Microbiol.* **176**: 170-177.
62. **Schmid MC, Schmitz-Esser S, Jetten M, Wagner M.** 2001. 16S-23S rDNA intergenic spacer and 23S rDNA of anaerobic ammonium oxidizers: implications for phylogeny and in situ detection. *Environ. Microbiol.* **3**: 450-459.
61. **Manz W, Wagner M, Kalmbach S.** 2001. Assessment of metabolic potential of biofilm-associated bacteria. *Methods Enzymol.* **336**: 265-76.
60. **Liebig T, Wagner M, Bjerrum L, Denecke M.** 2001. Nitrification performance and nitrifier community composition of a chemostat and a membrane-assisted bioreactor for the nitrification of sludge reject waters. *Bioprocess and Biosystems Engineering*, **24**: 203-210.
59. **Klein M, Friedrich M, Roger AJ, Hugenholtz P, Fishbain S, Abicht H, Blackall LL, Stahl DA, Wagner M.** 2001. Multiple lateral transfer events of dissimilatory sulfite reductase genes between major lineages of sulfate-reducing prokaryotes. *J. Bacteriol.* **183**: 6028-6035.
58. **Jetten MSM, Wagner M, Fuerst J, Schalk J, van Loosdrecht M, Strous M.** 2001. Microbiology and application of the anoxic ammonium oxidation 'Anammox' process. *Curr. Opin. Biotechnol.* **12**: 283-288.
57. **Horn M, Wagner M.** 2001. Evidence for additional genus-level diversity of Chlamydiales in the environment. *FEMS Microbiol. Lett.* **204**: 71-74.
56. **Horn M, Harzenetter MD, Linner T, Schmid EN, Muller KD, Michel R, Wagner M.** 2001. Members of the Cytophaga-Flavobacterium-Bacteroides phylum as intracellular bacteria of acanthamoebae: proposal of 'Candidatus Amoebophilus asiaticus'. *Environ. Microbiol.* **3**: 440-449.
55. **Hentschel U, Schmid M, Wagner M, Fieseler L, Gernert C, Hacker J.** 2001. Isolation and phylogenetic analysis of bacteria with antimicrobial activities from the Mediterranean sponges *Aplysina aerophoba* and *Aplysina cavernicola*. *FEMS Microbiol. Ecol.* **35**: 305-312.
54. **Gieseke A, Purkhold U, Wagner M, Amann R, Schramm A.** 2001. Community structure and activity dynamics of nitrifying bacteria in a phosphate-removing biofilm. *Appl. Environ. Microbiol.* **67**: 1351-1362.
53. **Dubilier N, Mülders C, Ferdelmann T, de Beer D, Thiermann F, Klein M, Wagner M, Erséus C, Krieger J, Giere O, Amann R.** 2001. Endosymbiotic sulphate-reducing and sulphide-oxidizing bacteria in an oligochaete worm. *Nature* **411**: 298-302.
52. **Daims H, Ramsing NB, Schleifer KH, Wagner M.** 2001. Cultivation-independent, semiautomatic determination of absolute bacterial cell numbers in environmental samples by fluorescence in situ hybridization. *Appl. Environ. Microbiol.* **67**: 5810-5818.
51. **Daims H, Purkhold U, Bjerrum L, Arnold E, Wilderer PA, Wagner M.** 2001. Nitrification in sequencing biofilm batch reactors: lessons from molecular approaches. *Wat. Sci. Tech.* **43**: 9-18.

50. **Daims H, Nielsen JL, Nielsen PH, Schleifer KH, Wagner M.** 2001. In situ characterization of *Nitrospira*-like nitrite-oxidizing bacteria active in waste water treatment plants. *Appl. Environ. Microbiol.* **67**: 5273-5284.
49. **Bouchez T, Dabert P, Wagner M, Godon JJ, Moletta R.** 2001. Quantification of bacterial populations in complex ecosystems using fluorescent in situ hybridization, confocal laser scanning microscopy and image analysis. *Genetics Selection Evolution* **33**: S307-S318.
48. **Schmid M, Twachtmann U, Klein M, Strous M, Juretschko S, Jetten M, Metzger JW, Schleifer KH, Wagner M.** 2000. Molecular evidence for genus level diversity of bacteria capable of catalyzing anaerobic ammonium oxidation. *Syst. Appl. Microbiol* **23**: 93-106.
47. **Rodenacker K, Brühl A, Hausner M, Kühn M, Liebscher V, Wagner M, Winkler G, Wuertz S.** 2000. Quantification of biofilms in multi-spectral digital volumes from confocal laser-scanning microscopes. *Image Anal. Stereol.* **19**: 151-156.
46. **Purkhold U, Pommerening-Röser A, Juretschko S, Schmid MC, Koops HP, Wagner M.** 2000. Phylogeny of all recognized species of ammonia-oxidizers based on comparative 16S rRNA and amoA sequence analysis: implications for molecular diversity surveys. *Appl. Environ. Microbiol.* **66**: 5368-5382.
45. **Morgenroth E, Obermayer A, Arnold E, Brühl A, Wagner M, Wilderer PA .** 2000. Effect of long-term idle periods on the performance of sequencing batch reactors. *Wat. Science Technol.* **41**: 105-113.
44. **Kanagawa T, Kamagata Y, Aruga S, Kohno T, Horn M, Wagner M.** 2000. Phylogenetic relationships of filamentous bacteria of the Eikelboom Type 021N isolated from bulking activated sludge and development of an encompassing set of 021N-specific oligonucleotide probes. *Appl. Environ. Microbiol.* **66**: 5043-5052.
43. **Horn M, Wagner M, Muller KD, Schmid EN, Fritsche TR, Schleifer KH, Michel R.** 2000. *Neochlamydia hartmannellae* gen. nov. sp. nov. (Parachlamydiaceae), an endoparasite of the amoeba *Hartmannella vermiformis*. *Microbiology* **146**: 1231-1239.
42. **Fritsche TR, Horn M, Wagner M, Herwig RP, Schleifer KH, Gautom RK.** 2000. Phylogenetic diversity among geographically dispersed Chlamydiales endosymbionts recovered from clinical and environmental isolates of *Acanthamoeba* spp. *Appl. Environ. Microbiol.* **66**: 2613-2619.
41. **Daims H, Nielsen P, Nielsen JL, Juretschko S, Wagner M.** 2000. Novel *Nitrospira*-like bacteria as dominant nitrite-oxidizers in biofilms from wastewater treatment plants: Diversity and in situ physiology. *Wat. Science Tech.* **41**: 85-90.
40. **Bouchez T, Patureau D, Dabert P, Wagner M, Delgenès JP, Moletta R.** 2000. Successful and unsuccessful bioaugmentation experiments monitored by fluorescent in situ hybridization. *Wat. Science Tech.* **41**: 61-68.

39. **Bouchez T, Patureau D, Dabert P, Juretschko S, Dore J, Delgenes P, Moletta R, Wagner M.** 2000. Ecological study of a bioaugmentation failure. *Environ. Microbiol.* **2**: 179-190.
38. **Thill A, Wagner M, Bottero JY.** 1999. Confocal scanning laser microscopy as a tool for the determination of 3D floc structure. *Journal of Colloid and Interface Science* **220**: 465-467.
37. **Snaidr J, Fuchs B, Wallner G, Wagner M, Schleifer KH, Amann R.** 1999. Phylogeny and in situ identification of a morphologically conspicuous bacterium *Candidatus "Magnospira bakii"* present at very low frequency in activated sludge. *Environ. Microbiol.* **1**: 125-135.
36. **Schramm A, Santegoeds CM, Nielsen HK, Ploug H, Wagner M, Pribyl M, Wanner J, Amann R, de Beer D.** 1999. On the occurrence of anoxic microniches, denitrification, and sulfate reduction in aerated activated sludge. *Appl. Environ. Microbiol.* **65**: 4189-4196.
35. **Pellegrin V, Juretschko S, Wagner M, Cottenceau G.** 1999. Morphological and biochemical properties of *Sphaerotilus* sp. isolated from paper mill slimes. *Appl. Environ. Microbiol.* **65**: 156-162.
34. **Nielsen PH, Andreasen K, Lee N, Wagner M.** 1999. Use of microautoradiography and fluorescent in situ hybridization for characterization of microbial activity in activated sludge. *Wat. Sci. Tech.* **39**: 1-9.
33. **Minz D, Flax JL, Green SJ, Muyzer G, Cohen Y, Wagner M, Rittmann BE, Stahl DA.** 1999. Diversity of sulfate-reducing bacteria in oxic and anoxic regions of a microbial mat characterized by comparative analysis of dissimilatory sulfite reductase genes. *Appl. Environ. Microbiol.* **65**: 4666-4671.
32. **Lee N, Nielsen PH, Andreasen KH, Juretschko S, Nielsen JL, Schleifer KH, Wagner M.** 1999. Combination of fluorescent in situ hybridization and microautoradiography - a new tool for structure-function analyses in microbial ecology. *Appl. Environ. Microbiol.* **65**: 1289-1297.
31. **Horn M, Fritsche TR, Gautom RK, Schleifer KH, Wagner M.** 1999. Novel bacterial endosymbionts of *Acanthamoeba* isolates related to the *Paramecium* symbiont *Caedibacter caryophilus*. *Environ. Microbiol.* **1**: 357-367.
30. **Helmer C, Kunst S, Juretschko S, Schmid MC, Schleifer KH, Wagner M.** 1999. Nitrogen loss in a nitrifying biofilm system. *Wat. Sci. Tech.* **39**: 13-21.
29. **Fritsche TR, Horn M, Seyedirashti S, Gautom RK, Schleifer KH, Wagner M.** 1999. In situ detection of novel bacterial endosymbionts of *Acanthamoeba* spp. phylogenetically related to members of the Rickettsiales. *Appl. Environ. Microbiol.* **65**: 206-212.
28. **Daims H, Bruhl A, Amann R, Schleifer KH, Wagner M.** 1999. Probe EUB338 is insufficient for the detection of all Bacteria: Development and evaluation of a more comprehensive probe set. *Syst. Appl. Microbiol.* **22**: 434-444.

27. **Bond PL, Erhart R, Wagner M, Keller J, Blackall LL.** 1999. Identification of some of the major groups of bacteria in efficient and nonefficient biological phosphorus removal activated sludge systems. *Appl. Environ. Microbiol.* **65**: 4077-4084.
26. **Wagner M, Schmid M, Juretschko S, Trebesius KH, Bubert A, Goebel W, Schleifer KH.** 1998. In situ detection of a virulence factor mRNA and 16S rRNA in *Listeria monocytogenes*. *FEMS Microbiol. Lett.* **160**: 159-168.
25. **Wagner M, Roger AJ, Flax JL, Brusseau GA, Stahl DA.** 1998. Phylogeny of dissimilatory sulfite reductases supports an early origin of sulfate respiration. *J. Bacteriol.* **180**: 2975-2982.
24. **Wagner M, Noguera DR, Juretschko S, Rath G, Koops HP, Schleifer KH.** 1998. Combining fluorescent in situ hybridization (FISH) with cultivation and mathematical modeling to study population structure and function of ammonia-oxidizing bacteria in activated sludge. *Wat. Sci. Tech.* **37**: 441-449.
23. **Schuppler M, Wagner M, Schon G, Gobel UB.** 1998. In situ identification of nocardioform actinomycetes in activated sludge using fluorescent rRNA-targeted oligonucleotide probes. *Microbiology* **144**: 249-259.
22. **Schramm A, De Beer D, Wagner M, Amann R.** 1998. *Nitrosospira* sp. and *Nitrospira* sp. as dominant populations in a nitrifying fluidized bed reactor: Identification and activity in situ. *Appl. Environ. Microbiol.* **64**: 3480-3485.
21. **Schleifer K-H, Wagner M.** 1998. In situ detection and identification of bacteria prior to their cultivation. *Bioscience Microflora* **17**: 15-22.
20. **Nielsen PH, Andreasen K, Wagner M, Blackall LL, Lemmer H, Seviour RJ.** 1998. Variability of Type 021N in activated sludge as determined by in situ substrate uptake pattern and in situ hybridization with fluorescent rRNA-targeted probes. *Wat. Sci. Tech.* **37**: 423-430.
19. **Moter A, Leist G, Rudolph R, Schrank K, Choi BK, Wagner M, Gobel UB.** 1998. Fluorescent in situ hybridization shows spatial distribution of yet uncultured *Treponemes* in biopsies from digital dermatitis lesions. *Microbiology* **144**: 2459-2467.
18. **Kühn M, Hausner M, Bungartz H-J, Wagner M, Wilderer PA, Wuertz S.** 1998. Semi-automated confocal laser scanning microscopy and image processing for the analysis of biofilms. *Appl. Environ. Microbiol.* **64**: 4115-4127.
17. **Juretschko S, Timmermann G, Schmid M, Schleifer KH, Pommerening-Roser A, Koops HP, Wagner M.** 1998. Combined molecular and conventional analyses of nitrifying bacterium diversity in activated sludge: *Nitrosococcus mobilis* and *Nitrospira*-like bacteria as dominant populations. *Appl. Environ. Microbiol.* **64**: 3042-3051.
16. **Amann R, Lemmer H, Wagner M.** 1998. Monitoring the community structures of wastewater treatment plants: a comparison of old and new techniques. *FEMS Microbiol. Ecol.* **25**: 205-216.

15. **Fry NK, Frederickson JK, Fishbain S, Wagner M, Stahl DA.** 1997. Phylogenetic analysis of microbial communities associated with two deep, anaerobic, alkaline aquifers. *Appl. Environ. Microbiol.* **63**: 1498-1504.
14. **Wagner M, Rath G, Koops H-P, Flood J, Amann R.** 1996. In situ analysis of nitrifying bacteria in sewage treatment plants. *Wat. Sci. Tech.* **34**: 237-244 .
13. **Mobarry BK, Wagner M, Urbain V, Rittmann BE, Stahl DA.** 1996. Phylogenetic probes for analyzing abundance and spatial organization of nitrifying bacteria. *Appl. Environ. Microbiol.* **62**: 2156-2162.
12. **Kampfer P, Erhart R, Beimfohr C, Bohringer J, Wagner M, Amann R.** 1996. Characterization of bacterial communities from activated sludge: Culture-dependent numerical identification versus in situ identification using group- and genus-specific rRNA-targeted oligonucleotide probes. *Microb. Ecol.* **32**: 101-121.
11. **Amann R, Snaidr J, Wagner M, Ludwig W, Schleifer KH.** 1996. In situ visualization of high genetic diversity in a natural microbial community. *J. Bacteriol.* **178**: 3496-3500.
10. **Wagner M, Rath G, Amann R, Koops H-P, Schleifer KH.** 1995. In situ identification of ammonia-oxidizing bacteria. *Syst. Appl. Microbiol.* **17**: 251-264.
9. **Rossello-Mora RA, Wagner M, Amann R, Schleifer KH.** 1995. The abundance of *Zoogloea ramigera* in sewage treatment plants. *Appl. Environ. Microbiol.* **61**: 702-707.
8. **Wagner M, Erhart R, Manz W, Amann R, Lemmer H, Wedi D, Schleifer KH.** 1994. Development of an rRNA-targeted oligonucleotide probe specific for the genus *Acinetobacter* and its application for in situ monitoring in activated sludge. *Appl. Environ. Microbiol.* **60**: 792-800.
7. **Wagner M, Assmus B, Hartmann A, Hutzler P, Amann R.** 1994. In situ analysis of microbial consortia in activated sludge using fluorescently labelled, rRNA-targeted oligonucleotide probes and confocal scanning laser microscopy. *J. Microscopy* **176**: 181-187.
6. **Wagner M, Amann R, Lemmer H, Manz W, Schleifer KH.** 1994. Probing activated sludge with fluorescently labeled rRNA targeted oligonucleotides. *Wat. Sci. Tech.* **29**: 15-23.
5. **Wagner M, Amann R, Kämpfer P, Assmus B, Hartmann A, Hutzler P, Springer N, Schleifer KH.** 1994. Identification and in situ detection of gram-negative filamentous bacteria in activated sludge. *Syst. Appl. Microbiol.* **17**: 405-417.
4. **Roller C, Wagner M, Amann R, Ludwig W, Schleifer KH.** 1994. In situ probing of Gram-positive bacteria with high DNA G+C content using 23S rRNA-targeted oligonucleotides. *Microbiology* **140**: 2849-2858.
3. **Manz W, Wagner M, Amann R, Schleifer KH.** 1994. In situ characterization of the microbial consortia active in two wastewater treatment plants. *Wat. Res.* **28**: 1715-1723.

2. **Wagner M, Amann R, Lemmer H, Schleifer KH.** 1993. Probing activated sludge with oligonucleotides specific for proteobacteria: inadequacy of culture-dependent methods for describing microbial community structure. *Appl. Environ. Microbiol.* **59**: 1520-1525.

1. **Manz W, Amann R, Ludwig W, Wagner M, Schleifer KH.** 1992. Phylogenetic oligodeoxynucleotide probes for the major subclasses of proteobacteria: problems and solutions. *Syst. Appl. Microbiol.* **15**: 593-600.