Dataset S1. Endogenous respiration rates in heterotrophic prokaryotes

Notes to Table **S1a**:

On data collection:
Prokaryote data were compiled by searching the www.pubmedcentral.nih.gov full-text library for "bacterium" and "endogenous respiration" and subsequent analysis of the returned 570 documents (mostly papers in the Journal of Bacteriology and Journal of Applied and Environmental Microbiology, time period 1940-2006) and references therein.

On cell size and taxonomy:
Data on endogenous respiration rates (i.e. respiration rates of non-growing cells in nutrient-deprived media) in heterotrophic eukaryotes are presented. Studies of bacterial respiration **very rarely** report information on cell size, which had therefore to be retrieved from different sources. To do so, an attempt was made to assign the bacterial strains described in the metabolic sources to accepted species names, to futher estimate the cell size for these species in the relevant literature. This was done using strain designations and information in the offician bacterial culture collections, like ATCC (American Type Culture Collection), NCTC (National Type Culture Collection) and others.

Column "**Species (Strain)**" gives the strain designation **as given by the authors** of the respiration data paper. Column "**Valid Name**" gives the relevant valid species name for this strain, as determined from culture collections' information and/or other literature sources. Valid names follow Euzéby (1997). Cell size in the "**Mpg**" column correspond to species indicated in the "Valid Name" column. Note that this information is of approximate nature, because many respiration data come from quite old publications and it was sometimes difficult to find out the valid name of the strain used with great precision. "**Class:Order**" column contains the relevant taxonomic information for the species listed in the "Valid Name" column as given by Euzéby (1997) (http://www.bacterio.net).

For example, Hareland et al. (1975) reported respiration rate for *Pseudomonas acidovorans* (ATCC strain number 17455). ATCC web site (www.atcc.org) says that this strain is *Delftia acidovorans* originally deposited as *Pseudomonas acidovorans*. Cell size for *Pseudomonas acidovorans* was therefore determined from the species description of *Delftia acidovorans* given by Wen et al. (1999). "**Class:Order**" for these data was determined as given at http://www.bacterio.net for *Delftia acidovorans*.

Note that the taxonomic uncertainty exclusively relates to the cell size determination. Cell size information participates in the paper's results only as a crude mean for all the 173 species studied, which is unlikely biased in any significant way. Taxonomic uncertainties, if any, do not influence any of the conclusions regarding the range, mean and frequency distribution of the prokaryotic respiration rates analysed in the paper.

Abbreviations and universal conversions: DM – dry mass; WM – wet mass; N – nitrogen mass; C – carbon mass; Pr – protein mass; X/Y – X by Y mass ratio in the cell, e.g. DM/WM is the ratio of dry to wet cell mass; 1 W = 1 J s^{-1}; 1 mol O_2 = 32 g O_2.

Original units are the units of endogenous respiration rate measurements as given in the original publication (**Source**); **qou** is the numeric value of endogenous respiration rate in the original units. E.g., if it is "$\mu l\ O_2\ (5\ mg\ DM)^{-1}\ (2\ hr)^{-1}$" in the column **"Original units"** and "200" in the column **"qou"**, this means that cells amounting to 5 mg dry mass consumed 200 microliters oxygen in two hours.

qWkg is the original endogenous respiration rate **qou** converted to W (kg WM)$^{-1}$ (Watts per kg wet mass) using the following conversion factors: C/DM = 0.5 (Kratz & Myers 1955; Bratbak & Dundas 1984; Nagata 1986), Pr/DM = 0.5 (Gronlund & Campbell 1961; Sobek et al. 1966; Smith & Hoare 1968 (see Table S1a); Zubkov et al. 1999), N/DM = 0.1 (SI Methods, Table S12b) if not indicated otherwise, and DM/WM = 0.3 as a crude mean for all taxa applied in the analysis (SI Methods, Table S12a). Energy conversion: 1 ml O_2 = 20 J. The respiratory quotent of unity was used (1 mol CO_2 released per 1 mol O_2 consumed).

TC is ambient temperature during measurements, degrees Celsius.

q25Wkg is endogenous respiration rate converted to 25 °C using $Q_{10} = 2$, **q25Wkg** = **qWkg** × $2^{(25 - TC)/10}$, dimension W (kg WM)$^{-1}$. For each species rows are arranged in the order of increasing **q25Wkg**.

Mpg: estimated cell mass, pg (1 pg = 10^{-12} g). In most cases it is estimated from linear dimensions (using geometric mean of the available linear size range) assuming spherical cell shape for cocci and cylindrical shape for rods. Square brackets around the **Mpg** value indicate that the cell size information was obtained from a different source than the source of endogenous respiration rate data. When converting cell volume to cell mass, cell density of 1 g ml^{-1} was assumed.

Source: the first, unbracketed reference in this column is where the value of **qou** is taken from; references and data in square brackets refer to cell size determination. Cell size reference "BM" in brackets corresponds to Bergey's Manual of Systematic Bacteriology, 1st Edition (Holt, 1984, 1986, 1989); BM9 is Bergey's Manual of Determinative Bacteriology, 9th Edition (Holt et al. 1994). Word "genus" in brackets indicates that cell size is determined as mean for the genus. This was done for those genera where the range of minimum to maximum cell masses did not exceed a factor of ten. E.g. for an unknown Chromatium sp. (BM9 genus: rods 1-6×1.5-15 μm, which corresponds to cell mas range from 1.2 to 420 pg) cell mass was left undetermined (empty "**Mpg**" column).

Culture age: Information on culture age and the duration of respiration measurements, if available.

Comments: this column provides relevant information on culture conditions and cellular composition of the studied species, often including additional data on respiration rates that were obtained for the same strain (species) by the same group of authors.

Log_{10}-transformed values of **q25Wkg** (W (kg WM)$^{-1}$), minimum for each species, were used in the analyses shown in Figures 1-3 and Table 1 in the paper (a total of 173 values for n = 173 species). The corresponding rows are highlighted in blue.

References within Table S1a to Tables, Figures etc. refer to the corresponding items in the original literature indicated in the **Source** column.

Table **S1a**. Endogenous respiration rates in heterotrophic prokaryotes.

Species (strain)	Valid name	Class: Order	Original units	MIN	qou	qWkg	TC	q25Wkg	Mpg	Source	Culture age	Comments
Acetobacter aceti (Ch 31)	1.Acetobacter aceti	Clostridia: Clostridiales	μmol O_2 (1.8 × 45 mg WM)$^{-1}$ (5 hr)$^{-1}$	MIN	2	0.6	30	0.42	[0.75]	De Ley & Schell 1959 [BM, ellipsoid or rod-shaped 0.6-0.8×1.0-4.0 μm]	Cells incubated for 4-5 days on gelatin slants at 20 C; respiration measured for 5 hr	Cells additionally incubated for 2-3 days at 30 C in a shaking apparatus "occasionally displayed higher endogenous respiration, 13.5 μmol O_2 (1.8 × 45 mg WM)$^{-1}$ (2.5 hr)$^{-1}$= 8.3 W/kg; this respiration increased exponentially during incubation
Acholeplasma laidlawii (NCTC 10116)	2.Acholeplasma laidlawii	Mollicutes: Acholeplasmatales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	1.2	1.4	37	0.61	[0.04]	Abu-Amero et al. 1996 [Wieslander et al. 1987, sphere diam 0.3-0.6 μm]	Cells harvested after 24-72 hr incubation	
Hydrogenomonas ruhlandii	3.Achromobacter ruhlandii	Betaproteobacteria: Burkholderiales	μl O_2 (0.5 mg DM)$^{-1}$ (2 hr)$^{-1}$	MIN	9	15	30	10.61	0.2	Packer & Vishniac 1955 [rods 0.4-0.75×0.75-2.0 μm, mean 0.5×1.1 μm]	Bacteria harvested after 4-5 days' incubation on agar plates; respiration of resting cells measured for 2 h	Hydrogen-oxidizing bacterium isolated from soil
Achromobacter sp.	4.Achromobacter sp.	Betaproteobacteria: Burkholderiales	μmol O_2 (100 mg DM)$^{-1}$ (2 hr)$^{-1}$	MIN	45.1	8.4	30	5.94	[0.6]	Gronlund & Campbell 1961 [Chester & Cooper 1979, 0.5-0.8×1.5-2.5 μm]	cells harvested after 20 hr growth; respiration measured for 2 hr	Classification and size determination made for the Achromobacter genus as described at www.bacterio.cict.fr. There is no such species at www.bacterio.cict.fr
Achromobacter sp. (B8)	5.Achromobacter sp.	Betaproteobacteria: Burkholderiales	μl O_2 (5 mg DM)$^{-1}$ (2 hr)$^{-1}$		200	35	30	24.75	[0.6]	Tomlinson & Campbell 1963 [Chester & Cooper 1979, 0.5-0.8×1.5-2.5 μm]	cells harvested after 20 hr growth; respiration measured for 2 hr	No drop of respiration during the first two hours Classification and size determination made for the Achromobacter genus as described at www.bacterio.cict.fr. There is no such species at www.bacterio.cict.fr
Achromobacter viscosus (ATCC 12448)	6.Achromobacter viscosus	Betaproteobacteria: Burkholderiales	μl O_2 (5 mg DM)$^{-1}$ (2 hr)$^{-1}$	MIN	200	35	30	24.75	[0.6]	Tomlinson & Campbell 1963 [Chester & Cooper 1979, 0.5-0.8×1.5-2.5 μm]	cells harvested after 20 hr growth; respiration measured for 2 hr	No drop of respiration during the first two hours Classification and size determination made for the Achromobacter genus as described at www.bacterio.cict.fr. There is no such species at www.bacterio.cict.fr
Achromobacter xerosis (ATCC 14780)	7.Achromobacter xerosis	Betaproteobacteria: Burkholderiales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	14	23	30	16.26	[0.5]	Jurtshuk & McQuitty 1976 [Groupé et al. 1954, 0.5×2-3 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	Classification and size determination made for the Achromobacter genus as described at www.bacterio.cict.fr. There is no such species at www.bacterio.cict.fr
Hydrogenomonas facilis	8.Acidovorax facilis	Betaproteobacteria: Burkholderiales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	4-11	7	30	4.95	0.3	Schatz & Bovell 1952 [rods, 0.4×2.5 μm in	Heterotrophic cultures: cells grown for 48, 21, 72, and 48 hr on lac-	Synonym Pseudomonas facilis

										heterotrophic cultures, 0.3×2.0 in autotrophic cultures]	tate, succinate, glucose and tryptose, respectively.	
Acinetobacter calcoaceticus (ATCC 19606)	9.Acinetobacter baumannii	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	4	12	30	8.49	[2]	Jurtshuk & McQuitty 1976 [BM, genus, rods 0.9-1.6× 1.5-2.5]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Acinetobacter calcoaceticus (208)	10.Acinetobacter calcoaceticus	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	7	6.7	30	4.74	[2]	Jurtshuk & McQuitty 1976 [BM, genus, rods 0.9-1.6× 1.5-2.5]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Acinetobacter johnsonii (210A)	11.Acinetobacter johnsonii	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	41	46	30	32.53	[2]	van Veen et al. 1993 [BM, genus, rods 0.9-1.6× 1.5-2.5]	Cells harvested at the logarithmic phase	When starved for 12 hours, respiration decreases to "very low rates" but when glucose is added, returns back to the higher level indicating no loss of viability. This suggests that 41 W/kg is an overestimate.
Acinetobacter calcoaceticus (ATCC 31012)	12.Acinetobacter sp.	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2.0	3.3	25	3.30	[2]	Bruheim et al. 1999 [BM, genus, rods 0.9-1.6× 1.5-2.5]	Cells grown to the early stationary phase on oil	
Acinetobacter sp.	13.Acinetobacter sp.	Gammaproteobacteria: Pseudomonadales	µl O_2 (4 mg DM)$^{-1}$ min^{-1}	MIN	0.25	6	30	4.24	[2]	Sparnins et al. 1974 [BM, genus, rods 0.9-1.6× 1.5-2.5]	Bacteria grown overnight to the stationary phase (Dagley & Gibson 1975)	Gram-negative, oxidase-negative coccobacillus that cannot utilize glucose was isolated from agricultural soil in St. Paul, Minnesota, USA and tentatively identified as Acinetobacter sp.
Acinetobacter sp. (4-CB1)	14.Acinetobacter sp.	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	7	8	30	5.66	[2]	Adriaens et al. 1989 [BM, genus, rods 0.9-1.6× 1.5-2.5]	Cells grown to the late exponential phase Adriaens & Focht 1991: the same strain grown on various substrates displayed endogenous respiration from 9.4 to 68.4 nmol O_2 (mg protein)$^{-1}$ min^{-1}= 11-77 W/kg at 30 C	Bacterium isolated from soil contaminated with polychlorobiphenyl
Aeromonas hydrophila (ATCC 4715)	15.Aeromonas hydrophila	Gammaproteobacteria: Aeromonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	23	38	30	26.87		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Aeromonas hydrophila (ATCC 9071)	16.Aeromonas veronii	Gammaproteobacteria: Aeromonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	12	20	30	14.14		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Agrobacterium	17.Agrobacterium	Alphaproteobacteria:	µl O_2 (mg	MIN	12	20	30	14.14	[1.5]	Jurtshuk &	Cells harvested at the	

tumefaciens (ATCC 15955)	tumefaciens	Rhizobiales	DM)$^{-1}$ hr^{-1}							McQuitty 1976 [BM9, genus, rods 0.6-1.0×1.5-3.0 µm]	late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Hydrogenomonas eutropha (ATCC 17697)	18.Alcaligenes eutrophus	Betaproteobacteria: Burkholderiales	µmol O_2 (3.6 mg DM)$^{-1}$ hr^{-1}	MIN	8	83	33	47.67	[0.8]	Bongers 1970 [BM, rods, 0.7×1.8-2.6 µm]	Respiration of cells withdrawn from turbidistat (steady-state growth)	Hydrogen-oxidizing bacterium, max. respiration (in the presence of H_2) is ten times the endogenous rate
Alcaligenes faecalis (ATCC 8750)	19.Alcaligenes faecalis	Betaproteobacteria: Burkholderiales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	16	27	30	19.09		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Alcaligenes sp. (strain 5)	20.Alcaligenes sp.	Betaproteobacteria: Burkholderiales	µmol O_2 (14 mg DM)$^{-1}$ (5 hr)$^{-1}$	MIN	4	2.1	30	1.48		Subba-Rao & Alexander 1985	Bacteria grown for 2 days; washed; incubated in buffer for 6 to 12 hr on a rotary shaker at 30 C to reduce endogenous respiration; washed again and added to respirometer flasks (Subba-Rao & Alexander 1977)	Bacteria isolated from enrichments with benzhydrol as the sole carbon source.
Unnamed methylotroph (CC495)	21.Aminobacter lissarensis	Alphaproteobacteria: Rhizobiales	nmol O_2 (mg WM)$^{-1}$ min^{-1}	MIN	0.22	1.6	25	1.60	[0.6]	Coulter et al. 1999 [BM9, genus, rods, 0.6-1.0×1.0-3.0 µm]	Cells harvested in the late exponential phase	Bacterium isolated from the top 5 cm of soil in a beech wood in Northern Ireland
Amoebobacter purpureus (ML1)	22.Amoebobacter purpureus	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	9.8	11	30	7.78	[36]	Overmann & Pfennig 1992 [Eichler & Pfennig 1988, 3.3-3.8×3.5-4.5 µm]	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 µM; respiration rates of phototrophically (anaerobically) and chemotrophically (microaerobically) grown cells do not differ; the species dsiplays poor if any growth in the dark.	Purple sulfur bacteria isolated from the chemocline of meromictic Mahoney Lake (British Columbia, Canada) Endogenous respiration of cells with visible sulfur globules is lower, 5.7 nmol O_2 (mg protein)$^{-1}$ min^{-1}
Amoebobacter roseus (6611)	23.Amoebobacter roseus	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	4.8	5.4	30	3.82	[5]	Overmann & Pfennig 1992 [BM9, genus, spherical cells 1.5-3 µm diam]	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 µM; respiration rates of phototrophically (anaerobically) and chemotrophically	Purple sulfur bacteria Endogenous respiration of cells with visible sulfur globules is higher, up to 22 nmol O_2 (mg protein)$^{-1}$ min^{-1}

											(microaerobically) grown cells do not differ; the species is capable of chemotrophic growth in the dark.	
Amoebobaeter pendens (5813)	24.Amoebobaeter pendens	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	7.6	8.5	30	6.01	[5]	Overmann & Pfennig 1992[BM9, genus, spherical cells 1.5-3 µm diam]	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 µM; respiration rates of phototrophically (anaerobically) and chemotrophically (microaerobically) grown cells do not differ.	Purple sulfur bacteria Endogenous respiration of cells with visible sulfur globules is higher, up to 35 nmol O_2 (mg protein)$^{-1}$ min^{-1}
Spirillum (Aquaspirillum) itersonii (ATCC 12639)	25.Aquaspirillum itersonii	Betaproteobacteria: Neisseriales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	6	10	30	7.07	[0.9]	Jurtshuk & McQuitty 1976 [Krieg 1976, helical shape, Fig. 1E, Table 3, diam 0.3-0.4 µm, full length ~10 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Arthrobacter crystallopoietes	26.Arthrobacter crystallopoietes	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.1	0.2	30	0.14	1.7	Ensign 1970	Cells harvested during the exponential phase of growth (48 hr for spherical cells, 4-8 hr for rods); stable endogenous respiration during 24 days of starvation at 100% viability	cell mass estimated from the dry mass data for spherical cells (0.5 mg dry mass per 10^9 cells) Endogenous respiration at harvest was about 8-9 µl O_2 (mg DM)$^{-1}$ hr^{-1} and decreased 80-fold during the first two days of starvation Growing spherical cells contain about 40% (dry mass) of a glycogen-like polysaccharide; rods — 10% (Boylen & Ensign 1970) Boylen 1973: Bacteria of this species survived 6 months of extreme desiccation at 50% viability converting 0.0005% of their carbon per hour to carbon dioxide (≈ 10^{-2} W/kg)
Arthrobacter globiformis (ATCC 8010)	27.Arthrobacter globiformis	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	5	8.3	30	5.87	[0.5]	Jurtshuk & McQuitty 1976 [Conn & Dimmick 1947, rods 0.6-0.8×1-1.5 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Arthrobacter globiformis (NCIB	28.Arthrobacter sp.	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.45	0.75	25	0.75	0.2	Luscombe & Gray 1974	Cells harvested from continuous cultures	Cocci survive better than rods; initial endogenous respiration was 1.74 and

10683)											and starved for more than 2 days, steady-state viability approximately 80%.	7.33 µl O_2 (mg DM)$^{-1}$ hr^{-1} for cocci and rods, respectively, but "after 2 days these had both fallen to a relatively stable level of 0.45", which was monitored for 7 days. Cell volume corresponds to the minimum dilution rate (0.01 h^{-1}); it grows up to 0.96 µm^3 at 0.3 h^{-1}.
Arthrobacter sp.	29.Arthrobacter sp.	Actinobacteria: Actinomycetales	µl O_2 (15 mg DM)$^{-1}$ (20 min)$^{-1}$	MIN	3.6	1.2	30	0.85	[1.5]	Devi et al. 1975 [BM9, genus, rods 0.8-1.2×1-8 µm; Devi et al. 1975 indicate their strain is 2 µm in length]	Bacteria grown for 48 hr; endogenous respiration of resting cells measured for 80 min; data taken for the last 20 min	Data from Fig. 4a (induced cells), last 20 min of endogenous respiration; bacteria living in soil of Citrus plantations; rods 2 µm in length Respiration decreases with time (mean 2.3 W/kg)
Arthrobacter sp. (TMP)	30.Arthrobacter sp.	Actinobacteria: Actinomycetales	µl O_2 (50 mg WM)$^{-1}$ min^{-1}	MIN	0.9	6	30	4.24		Donnelly et al. 1981	Cells harvested during exponential growth	Isolated from soil
Arthrobacter sp. (CA1)	31.Arthrobacter sp.	Actinobacteria: Actinomycetales	µmol O_2 (5.3 mg DM)$^{-1}$ hr^{-1}	MIN	2	14	30	9.90		Ougham & Trudgill 1982	Bacteria harvested at late logarithmic phase; respiration measured for 2 hr	Bacteria isolated from field soil contaminated by aviation fuel, UK
Azotobacter agile	32.Azomonas agilis?	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	12.6	21	26	19.59	13	Gunter & Kohn 1956	Cells harvested from 16 to 18-hr yeast agar plates	Cell mass estimated from dry mass data, Table 1, 3.8 pg DM/cell
Azorhizobium caulinodans (ORS571)	33.Azorhizobium caulinodans	Alphaproteobacteria: Rhizobiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	34	38	30	26.87	[0.5]	Allen et al. 1991 [BM9, rods 0.5-0.6×1.5-2.5 µm]	Endogenous respiration of cells taken from continuous culture; measured for 10 min	
Azospirillum brasiliense (ATCC 29145)	34.Azospirillum brasiliense	Alphaproteobacteria: Rhodospirillales	µmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	0.02 4	27	37	11.75	[1]	Loh et al. 1984 [BM, species image]	cells harvested during mid log-phase, starved for 4 hr at 4 C; constant respiration rate throughout the experiment (≈4 hr)	
Azospirillum lipoferum (ATCC 29707)	35.Azospirillum lipoferum	Alphaproteobacteria: Rhodospirillales	µmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	0.03 5	39	37	16.98	[4]	Loh et al. 1984 [BM, species image]	cells harvested during mid log-phase, washed and starved for 4 hr at 4 C	Synonim Spirillum lipoferum (BM)
Azotobacter chroococcum (NCIB 8003)	36.Azotobacter chroococcum	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	15	25	30	17.68	[14]	Bishop et al. 1962 [Bisset & Hale 1958, Figs. 1-3, 7, 13, diam approx. 3 µm]	Respiration measured immediately after harvesting the cells (aerobic culture) at the end of the logarithmic growth phase	Max. resp. (in the presence of glucose) was 130 µl O_2 (mg DM)$^{-1}$ hr^{-1}
Azotobacter vinelandii (O)	37.Azotobacter vinelandii	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.9	1.5	30	1.06	[0.5]	Sobek et al. 1966 [Tsai et al. 1979, Fig. 3, diam 1 µm, ATCC 12837, ≈0.06 pgDM/cell, Fig. 1]	Respiration of glucose-grown cells harvested at 20 hr and starved for 48 hr (Table 1); viability >95% (Fig. 2)	During starvation respiration diminishes from 4.6-5.8 µl O_2 (mg DM)$^{-1}$ hr^{-1} (depending on growth substrate) during the first four hours and to 0.9-1.4 µl O_2 (mg DM)$^{-1}$ hr^{-1} between 48th and 52th hours

											Johnson et al. 1958 report that "well-washed cells of this organism possess no significant endogenous respiration"	Viability and respiration depend on the remaining store of PHB (poly-β-hydroxybutyric acid). 16-hr grown cultures were deprived of significant PHB stores and rapidly lost viability during starvation Protein/DM (cell protein to DM ratio) in 16-hr cultures at the beginning of starvation is 0.58-0.71 depending on growth substrate (0.52-0.54 in 24-hr cultures). At the end of starvation (72 hr) it is 0.39-0.59 in 16-hr cultures and 0.44-0.52 in 24-hr cultures
Azotobacter vinelandii (O, ATCC 12518)	38.Azotobacter vinelandii	Gammaproteobacteria: Pseudomonadales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		19	30	30	21.21	[0.5]	Jurtshuk & McQuitty 1976 [Tsai et al. 1979, Fig. 3, diam 1 μm, ATCC 12837, ≈0.06 pgDM/cell, Fig. 1]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	Jurtshuk et al. 1975: Strain O cells grown to the late logarithmic phase, washed and "allowed to sit overnight at 4 C to reduce the intracellular endogenous reserve by starvation"; respiration at 30 C was 9-12 μl O_2 (mg DM)$^{-1}$ hr^{-1} = 15-20 W/kg
Bacillus cereus (C5-25)	39.Bacillus cereus	"Bacilli": Bacillales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	8.5	14	37	6.09	[3.7]	Nickerson & Sherman 1952 [BM, species]	Normal (not filamentous) cells grown for 18 hr; respiration measured for about 1.5 hr; data of Table 3 Church & Halvorson 1957 report 5 μl O_2 (mg N)$^{-1}$ hr^{-1} = 0.8 W/kg at 30 C; heat-shocked spores stored for 4-48 months at –20 C	N/DM=0.100-0.141 Q_{10} for this species in Ingram 1940
Bacillus cereus (USDA)	40.Bacillus cereus	"Bacilli": Bacillales	μl O_2 (mg N)$^{-1}$ hr^{-1}		188	31	30	21.92	[3.7]	Dietrich & Burris 1967 [BM, species]	Cells cultured for 2 weeks; respiration measured for 1 hr after 10 min equilibration	
Bacillus cereus	41.Bacillus cereus	"Bacilli": Bacillales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		56	97	30	68.59	[3.7]	Jurtshuk & McQuitty 1976 [BM, species]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Bacillus firmus (ATCC 14575)	42.Bacillus firmus	"Bacilli": Bacillales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	8	13	30	9.19	[0.9]	Jurtshuk & McQuitty 1976 [Kanso et al. 2002, rods 0.6-0.9×1.2-4 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Bacillus megaterium	43.Bacillus megate-	"Bacilli": Bacillales	μl O_2 (mg	MIN	2	3.3	30	2.33	[7]	Jurtshuk &	Cells harvested at the	

	rium		DM)$^{-1}$ hr^{-1}						[[1.96]]	McQuitty 1976 [Bisset 1953, Fig. 17, rods 1.4×4.3 µm] [[Kubitschek 1969, Coulter counter]]	late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Bacillus megaterium (KM)	44.Bacillus megaterium	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		7.7	13	30	9.19	[7]	Frederick et al. 1974 [Bisset 1953, Fig. 17, rods 1.4×4.3 µm]	Flasks with washed cells equilibrated in Warburg bath for a total of 30 min; respiration measured for at least 60 min; respiration of cells starved for 2 hr (by shaking in phosphate buffer)	Obligately aerobic asporogenous strain Respiration of unstarved cells was 11 µl O_2 (mg DM)$^{-1}$ hr^{-1}
Bacillus megaterium (ATCC 19213)	45.Bacillus megaterium	"Bacilli": Bacillales	natoms O (mg protein)$^{-1}$ min^{-1}		<40	25	30	17.68	[7]	Decker & Lang 1977 [Bisset 1953, Fig. 17, rods 1.4×4.3 µm]	Log-phase harvested cells (strain ATCC 19213) respired at a rate of less than 10% of 400 natoms O (mg protein)$^{-1}$ min^{-1} = 25 W/kg; respiration measured for 1 min	
Bacillus megaterium (NCTC 9848)	46.Bacillus megaterium	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		28	47	37	20.46	[7]	Bishop et al. 1962 [Bisset 1953, Fig. 17, rods 1.4×4.3 µm]	Cells harvested at the end of the logarithmic growth phase	
Bacillus megaterium (KM)	47.Bacillus megaterium	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		35	58	25	58.00	[7]	Marquis 1965 [Bisset 1953, Fig. 17, rods 1.4×4.3 µm]	Cells harvested in the phase of declining growth rate; respiration measured for 90 min	
Bacillus popilliae (NRRL B-2309-P)	48.Bacillus popilliae	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.5	0.8	30	0.57	[0.8]	Pepper & Costilow 1964 [Mitruka et al. 1967, Fig. 1, rods 0.6×2-4 µm]	Cells harvested in the stationary phase after 24 hr incubation	Bacterium causing "milky disease" of the Japanese beetle (Popilla japonica) larvae Similar respiration rates were measured for B. lentimorbus
Bacillus pumilus (ATCC 70)	49.Bacillus pumilus	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	3	5	30	3.54	[0.7]	Jurtshuk & McQuitty 1976 [Hayase et al. 2004, rods 0.5-0.7×2.0-3.0 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Bacillus stearothermophilus (PH24)	50.Bacillus stearothermophilus	"Bacilli": Bacillales	µl O_2 (14.2 mg DM)$^{-1}$ (30 min)$^{-1}$	MIN	35	8.2	50	1.45	[0.7]	Buswell 1975 [Montesinos et al. 1983, Coulter counter]	Cells harvested in late exponential phase (14-16 hr of growth on phenol) at 55 C and either used immediately or stored at –20 C; respiration measured for 30 min	The organism, obligate thermophile, was isolated from industrial sediment at Ravenscraig Steel Works near Motherwell, Scotland.
Bacillus subtilis (W-	51.Bacillus subtilis	"Bacilli": Bacillales	µl O_2 (mg	MIN	2	3.3	30	2.33	[1.4]	Jurtshuk &	Cells harvested at the	Crook 1952 reports 4-5 µl O_2 (mg

23)			$DM)^{-1}$ hr^{-1}							McQuitty 1976 [Kubitschek 1969, Coulter counter]	late-logarithmic growth phase (two thirds of the maximal growth concentration); respiration was 2 μl O_2 (mg $DM)^{-1}$ hr^{-1} for B. subtilis W-23 and B. (vulgatus) subtilis	$DM)^{-1}$ hr^{-1} for spores after heat shock and 0.3 for untreated spores at 25 °C; Nitrogen content B. subtilis N/DM=0.111; B. cereus N:DM=0.128 Bohin et al. 1976: sporulating bacteria: 90 μl O_2 (0.9 mg $DM)^{-1}$ (40 $min)^{-1}$ = 250 W/kg at 37 C
Bacillus subtilis (Marburg strain C4)	52.Bacillus subtilis	"Bacilli": Bacillales	μl O_2 (5 mg $DM)^{-1}$ (700 $min)^{-1}$		225	6.5	37	2.83	[1.4]	Gary & Bard 1952 [Kubitschek 1969, Coulter counter]	"Resting cell suspensions were prepared by harvesting cells from flask cultures after 6 to 8 hr incubation at 37 C, the periods of maximum respiratory and fermentative activity." Respiration of cells grown on "complex medium" (Fig. 7) (C-cells) was 225 μl O_2 (5 mg $DM)^{-1}$ (700 $min)^{-1}$= 6.5 W/kg; cells grown on "simple medium" (S-cells) respired at 600 μl O_2 (5 mg $DM)^{-1}$ (700 $min)^{-1}$= 17 W/kg	
Bacillus subtilis (ATCC 6633)	53.Bacillus subtilis	"Bacilli": Bacillales	μmol O_2 (100 mg $DM)^{-1}$ (2 $hr)^{-1}$		29.8	5.6	30	3.96	[1.4]	Gronlund & Campbell 1961 [Kubitschek 1969, Coulter counter]	Cells harvested after 20 hr growth; respiration measured for 2 hr	
Bacillus subtilis (D76)	54.Bacillus subtilis	"Bacilli": Bacillales	μl O_2 (5.7 mg $DM)^{-1}$ (10 $min)^{-1}$		20	32	30	22.63	[1.4]	Clifton & Cherry 1966 [Kubitschek 1969, Coulter counter]	Cells harvested after 16 hr growth at 30 C respired initially at a rate of 60 μl O_2 (5.7 mg $DM)^{-1}$ (10 $min)^{-1}$ = 105 W/kg; this rate decreased approximately threefold by the end of 160 min' measurements (Fig. 1)	
Bacillus subtilis (NCTC 9848)	55.Bacillus subtilis	"Bacilli": Bacillales	μl O_2 (mg $DM)^{-1}$ hr^{-1}		24	75	37	32.65	[1.4]	Bishop et al. 1962 [Kubitschek 1969, Coulter counter]	Respiration measured immediately after harvesting the cells at the end of the logarithmic growth phase; respiration of spores was below detection limit.	
Bdellovibrio bacte-	56.Bdellovibrio	Deltaproteobacteria:	μl O_2 (mg	MIN	14.8-	25	30	17.68	0.3	Hespell et al.	Cells incubated for 18-	Bacterium-predator attacking E. coli

riovorus (109J)	bacteriovorus	Bdellovibrionales	DM)$^{-1}$ hr^{-1}		17.3					1973 [DM=10^{-13} pg/cell]	24 hr in a medium containing E. coli cells that were all lyzed by the time of harvest; respiration measured for 2-4 hr Rittenberg & Shilo 1970: 13-27 nmol O_2 (0.42 mg protein)$^{-1}$ min^{-1} = 35-72 W/kg at 30 C	Rittenberg & Shilo 1970 report 0.42 mg protein per 10^{10} cells of strain 109 Straley et al. (1979) characterize this respiration rate as "unusually high"; Friedberg & Friedberg (1976) as "extremely high"
Pseudomonas natriegens	57.Beneckea natriegens	Gammaproteobacteria: “Vibrionales”	µl O_2 (1.07 mg DM)$^{-1}$ (30 min)$^{-1}$	MIN	85	265	30	187.38	[1.5]	Cho & Eagon 1967 [Baumann et al. 1971, Figs. 12, 16, rods 0.6-1.2×1.9-3.6 µm depending on culture conditions?]	Cells harvested at the end of the logarithmic phase; respiration of resting cells measured for 45 min	Oxygen uptake with all substrates is characterized as "low" (the lowest with glucose, 268 µl O_2 (mg DM)$^{-1}$ hr^{-1} = 450 W/kg is within the upper range of maximum specific metabolic rates in bacteria Marine bacterium with shortest known generation time (9.8 min) (Eagon 1962) Synonym Vibrio natriegens
Bradyrhizobium japonicum (I-110)	58.Bradyrhizobium japonicum	Alphaproteobacteria: Rhizobiales	nmol O_2 (mg protein)$^{-1}$ hr^{-1}	MIN	53	1.0	29	0.76	[0.7]	Frustaci et al. 1991 [BM]	Respiration of late-log phase cells	
Neisseria catarrhalis	59.Branhamella catarrhalis	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	1	1.7	37	0.74	[1.3]	Bishop et al. 1962 [Baumann et al. 1968, diam 1.0-1.7 µm, coccoid]	Respiration measured immediately after harvesting the cells at the end of the logarithmic growth phase	Max. resp. (in the presence of glucose) was 10 µl O_2 (mg DM)$^{-1}$ hr^{-1}
Branhamella catarrhalis (Gp4)	60.Branhamella catarrhalis	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		14	23	30	16.26	[1.3]	Jurtshuk & McQuitty 1976 [Baumann et al. 1968, diam 1.0-1.7 µm, coccoid]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	Respiration of Branhamella (Neisseria) catarrhalis (ATCC 25238) and Branhamella catarrhalis (NC31) was 16 and 17 µl O_2 (mg DM)$^{-1}$ hr^{-1}, respectively (27-28 W/kg)
Brucella abortus (19)	61.Brucella melitensis	Alphaproteobacteria: Rhizobiales	µl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	40-82	6.5	34	3.48	[0.3]	Gerhard et al. 1950 [BM9, genus, cocci or short rods 0.5-0.7×0.6-1.5 µm]	Cells grown for 24 hr; respiration varies among equally prepared suspensions	
Burkholderia sp. (JT 1500)	62.Burkholderia sp.	Betaproteobacteria: Burkholderiales	nmol O_2 (mg DM)$^{-1}$ min^{-1}	MIN	19	21	30	14.85	0.7	Morawski et al. 1997 [rods 0.5-0.8×1.5-3.0]	Cells grown for 15-18 hr	Bacterium isolated from Miami soil
Cellvibrio gilvus	63.Cellvibrio gilvus	Gammaproteobacteria: Pseudomonadales	µl O_2 (3 mg wet packed cells)$^{-1}$ (30 min)$^{-1}$	MIN	10	37	30	26.16	2	Hulcher & King 1958a [Hulcher & King 1958b, rods 0.75-1.5×1.5-3.75 µm]	Cells grown on cellobiose for 18 hr at room temperature	Cells in young cultures are very large (3×10 µm), 24-hr cells grown on cellulose were 0.3-0.5×0.8-1.5 µm (Hulcher & King 1958b) There is no such species at http://www.bacterio.cict.fr; higher taxon as for Cellvibrio genus.

Chromatium sp. (Miami PBS1071)	64.Chromatium sp.	Gammaproteobacteria: Chromatiales	nmol O_2 (mg DM)$^{-1}$ min^{-1}	MIN	4.8	11	25	11.00		Kumazawa et al. 1983 [BM9 genus: rods 1-6×1.5-15 μm]	2-3 days' old cultures grown anaerobically in the light; respiration increased severalfold upon addition of H_2 and fell to the endogenous level after H_2 was exhausted	Marine purple sulfur bacterium
Chromatium vinosum (2811)	65.Chromatium vinosum	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	2.0	2.2	30	1.56	[1.5] [[1.21]]	Overmann & Pfennig 1992 [Montesinos et al. 1983, Coulter counter] [[Mas et al. 1985]]	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 μM; respiration rates of phototrophically (anaerobically) and chemotrophically (microaerobically) grown cells do not differ; the species is capable of chemotrophic growth in the dark.	Purple sulfur bacteria Respiration rate increases with oxygen concentration reaching a plateau at approx. 6 μM. Endogenous respiration of cells with visible sulfur globules is higher, up to 24 nmol O_2 (mg protein)$^{-1}$ min^{-1}
Corynebacterium diphtheriae (ATCC 11913)	66.Corynebacterium diphtheriae	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	4	6.7	30	4.74		Jurtshuk & McQuitty 1976 [	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Corynebacterium sp.	67.Corynebacterium sp.	Actinobacteria: Actinomycetales	μl O_2 (100 mg WM)$^{-1}$ (120 min)$^{-1}$	MIN	180	10	30	7.07		Levine & Krampitz 1952	Cells harvested after 2-4 days growth; respiration measured for 2 hr	A soil-isolated bacterium sometimes capable of acetone degradation
Pseudomonas acidovorans (ATCC 17455=NCIB 10013)	68.Delftia acidovorans	Betaproteobacteria: Burkholderiales	μl O_2 (4 mg DM)$^{-1}$ min^{-1}	MIN	0.5	13	30	9.19	[0.8]	Hareland et al. 1975 [Wen et al. 1999, rods, 0.4-0.8×2.5-4.1 μm]	Bacteria grown for 20 hr (end of logarithmic growth); respiration measured for about 10 min	Bacteria originally isolated from poultry house deep-litter
Pseudomonas sp. B_2aba	69.Delftia acidovorans	Betaproteobacteria: Burkholderiales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		8	13	30	9.19	[0.8]	Kornberg & Gotto 1961 [Wen et al. 1999, rods, 0.4-0.8×2.5-4.1 μm]	Cells grown on glycollate harvested during the logarithmic phase; for succinate-grown cells 10 μl O_2 (mg DM)$^{-1}$ hr^{-1} (17 W/kg). Cooper & Kornberg 1964: cells grown on itaconate harvested during the logarithmic phase, 39 μl O_2 (mg DM)$^{-1}$ hr^{-1} = 65 W/kg; for succinate-grown	

											cells 40 µl O_2 (mg DM)$^{-1}$ hr^{-1}	
Pseudomonas desmolytica (S449B1)	70.Delftia acidovorans	Betaproteobacteria: Burkholderiales	µl O_2 (0.6 mg DM)$^{-1}$ (160 min)$^{-1}$		14	15	30	10.61	[0.8]	Jigami et al. 1979 [Wen et al. 1999, rods, 0.4-0.8×2.5-4.1 µm]	Cells harvested after 3 days of growth	
Pseudomonas acidovorans (ATCC 15688)	71.Delftia acidovorans	Betaproteobacteria: Burkholderiales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		18	30	30	21.21	[0.8]	Jurtshuk & McQuitty 1976 [Wen et al. 1999, rods, 0.4-0.8×2.5-4.1 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Desulfovibrio salexigens (Mast1)	72.Desulfovibrio salexigens	Deltaproteobacteria: Desulfovibrionales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	12	13	30	9.19	[1.5]	van Niel & Gottschal 1998 [BM]	Cells harvested at the end of the exponential growth phase	Organism isolated from the oxic-anoxic (top) layer of a marine microbial mat, Greece
Enterobacter aerogenes	73.Enterobacter aerogenes	Gammaproteobacteria: “Enterobacteriales”	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	6	10	30	7.07	[0.3]	Jurtshuk & McQuitty 1976 [Fu et al. 2003, rods 0.6×1.2 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Enterobacter cloacae (17/97)	74.Enterobacter cloacae	Gammaproteobacteria: “Enterobacteriales”	nmol O_2 (mg DM)$^{-1}$ min^{-1}	MIN	13.9	31	30	21.92	[0.9]	Majtán & Majtánová 1999 [BM9, genus, rods 0.6-1.0×1.2-3.0 µm]	Cells harvested from the exponential phase; respiration measured for 10 min	Bacterium isolated from a patient suffering from nosocomial infection.
Enterococcus cecorum (DSM 20682^{T})	75.Enterococcus cecorum	“Bacilli”: “Lactobacillales”	nmol O_2 (mg DM)$^{-1}$ min^{-1}	MIN	1.7	3.8	30	2.69	[0.4]	Bauer et al. 2000 [BM]	Respiration of cells from aerobically glucose-grown cultures; respiration of anaerobically grown cells <1 nmol O_2 (mg DM)$^{-1}$ min^{-1}	
Streptococcus faecalis (NCDO 581)	76.Enterococcus faecalis	“Bacilli”: “Lactobacillales”	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.16	0.3	30	0.21	[0.2]	Bryan-Jones & Whittenbury 1969 [BM]	respiration of resting suspensions of cells grown aerobically with glucose	
Streptococcus faecalis (ATCC 8043)	77.Enterococcus hirae	“Bacilli”: “Lactobacillales”	µmol O_2 (100 mg DM)$^{-1}$ (2 hr)$^{-1}$	MIN	8.0	1.5	30	1.06		Gronlund & Campbell 1961	Cells harvested after 17 hr growth; respiration measured for 2 hr	
Enterococcus hirae (ATCC 8043, ATCC 9790)	78.Enterococcus hirae	“Bacilli”: “Lactobacillales”	µl O_2 (mg DM)$^{-1}$ hr^{-1}		1	1.7	30	1.20		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Enterococcus sp. (RfL6)	79.Enterococcus sp.	“Bacilli”: “Lactobacillales”	nmol O_2 (mg DM)$^{-1}$ min^{-1}	MIN	15.1	33	30	23.33	0.8	Bauer et al. 2000 [rods, 0.6-1×1.1-3 µm]	Respiration of cells from aerobically glucose-grown cultures; respiration of anaerobically grown cells	

											15.1 nmol O_2 (mg $DM)^{-1}$ min^{-1}	
Escherichia coli (EMG-2 K12 Ymel)	80.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	ngatom O (mg $protein)^{-1}$ min^{-1}	MIN	58-86	32	37	14	[0.7]	Lawford & Haddock 1973 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Cells were grown to the early exponential phase and starved for 2 hr by vigorous shaking at 37 C; respiration varied (depending on carbon source for growth	
Escherichia coli (W-1485)	81.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	µl O_2 (mg $DM)^{-1}$ hr^{-1}		2.7	4.5	26	4.20	[0.7]	Gunter & Kohn 1956 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Cells harvested from 16 to 18-hr yeast agar plates	
Escherichia coli ($O11a_1$)	82.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	µl O_2 (mg $DM)^{-1}$ hr^{-1}		4	6.7	30	4.74	[0.7]	Jurtshuk & McQuitty 1976 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	Respiration was 13, 7, 9, 10, 6, 8, 7, 6, and 5 µl O_2 (mg $DM)^{-1}$ hr^{-1} for strains B, B/r, C, Crookes, K12, K12S UTH 2593, K12S UTH 3672, and F , respectively (8.3-22 W/kg).
Escherichia coli	83.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	µl O_2 (mg $DM)^{-1}$ hr^{-1}		7	12	37	5.22	[0.7]	Dawes & Ribbons 1965 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Stable respiration of aerobically grown cells harvested during the exponential phase and starved aerobically for 150-180 min; no loss of viability during 12 hr of starvation	“Stationary-phase cells respire endogenously at higher rates and contain larger reserves of glycogen, which is the initial substrate oxidized [than exponential-phase cells]. Carbohydrate content of exponential-phase cells drops rapidly together with endogenous respiration during the first 100 min of starvation
Escherichia coli (B)	84.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	µl O_2 (10 mg $DM)^{-1}$ (2 $hr)^{-1}$		180	15	35	7.50	[0.7]	Sobek & Talburt 1968 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Cells grown for 20 hr at 35 C; respiration measured for 2 hr	
Escherichia coli (ATCC 4157)	85.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	µl O_2 (mg $DM)^{-1}$ hr^{-1}		12	20	37	8.71	[0.7]	Davis & Bateman 1960 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Cells harvested after 16.5 hr growth at 37 C; respiration measured for 2 hr	
Escherichia coli (ATCC 6894)	86.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	µmol O_2 (100 mg $DM)^{-1}$ (2 $hr)^{-1}$		79	15	30	10.61	[0.7]	Gronlund & Campbell 1961 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on	Cells harvested after 20 hr growth; respiration measured for 2 hr	

										growth rate]		
Escherichia coli (Gratia)	87.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg N)$^{-1}$ hr^{-1}		105	17.5	30	12.37	[0.7]	Dietrich & Burris 1967 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Cells cultured for 2 weeks; respiration measured for 1 hr after 10 min equilibration	Bacteria “had a lower endogenous [respiration] … if harvested during exponential growth than after reaching the stationary phase”
Escherichia coli	88.Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}		37	62	37	26.99	[0.7]	Bishop et al. 1962 [Kubitschek 1969, Coulter counter, 0.33-1.46 μm^3 depending on growth rate]	Respiration measured immediately after harvesting the cells (aerobic culture) at the end of the logarithmic growth phase	Anaerobically grown culture respired at 2 μl O_2 (mg DM)$^{-1}$ hr^{-1}= 3.3 W/kg
Flavobacterium capsulatum (ATCC 14666)	89.Flavobacterium capsulatum	Flavobacteria: Flavobacteriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	38	63	30	44.55	[0.3]	Jurtshuk & McQuitty 1976 [BM9, genus, rods 0.5×1.0-3.0 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	Listed in ATCC as Novosphingobium capsulatum
Pasteurella tularensis (SCHU S4, 38 A)	90.Francisella tularensis	Gammaproteobacteria: Thiotrichales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	22	3.7	37	1.61	[0.01]	Weinstein et al. 1962 [BM9, rods 0.2×0.2-0.7 μm]	Cells grown for 16 to 18 hr; respiration of strains 503, CHUR, JAP, LVS, and MAX was 60, 38, 53, 105, and 94 μl O_2 (mg N)$^{-1}$ hr^{-1}, respectively (6.3-17.5 W/kg)	
Frankia sp. (EAN1$_{pec}$)	91.Frankia sp.	Actinobacteria: Actinomycetales	nmol O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	242	9	25	9.00		Tisa & Ensign 1987 [BM, genus, hyphae 0.5-2.0 μm diam]	Bacteria grown for 21 days	Members of the genus *Frankia* are filamentous actinomycetes that infect roots and induce nodule formation in a variety of woody dicotyledonous plants.
Haemophilus influenzae (641b)	92.Haemophilus influenzae	Gammaproteobacteria: Pasteurellales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	3	0.5	37	0.22	[0.14]	Biberstein & Spencer 1962 [BM, coccobacilli or small regular rods 0.3-0.5 - 0.5-3.0 μm]	Bacteria grown for 18-24 hr at 37 C; respiration of washed cells measured for 60 min	Respiration of strains b, c, d, 525, and K 75 was 14, 6, 7, 32, and 9 μl O_2 (mg N)$^{-1}$ hr^{-1}, respectively (1-5.3 W/kg).
Haemophilus parahaemolyticus (9796)	93.Haemophilus parahaemolyticus	Gammaproteobacteria: Pasteurellales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	21	3.5	37	1.52		Biberstein & Spencer 1962	Bacteria grown for 18-24 hr at 37 C; respiration of washed cells measured for 60 min	Respiration of strain 7901 was 24 μl O_2 (mg N)$^{-1}$ hr^{-1} (4 W/kg).
Haemophilus parainfluenzae (K 98)	94.Haemophilus parainfluenzae	Gammaproteobacteria: Pasteurellales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	21	3.5	37	1.52	[0.4]	Biberstein & Spencer 1962 [Kahn 1981, Fig. 1, 0.6×1.3-1.7 μm; Kowalski et al. 1991, diam 0.75-1.25 μm]	Bacteria grown for 18-24 hr at 37 C; respiration of washed cells measured for 60 min	Respiration of strains K 8, K 17, and K 45 was 24, 32, and 41 μl O_2 (mg N)$^{-1}$ hr^{-1}, respectively (4-6.8 W/kg). White 1962: Stationary-phase cells (>15 hr old) have an insignificant endogenous respiration. Log-phase cells have a small endogenous respiratory rate.
Halobacterium salinarium (1)	95.Halobacterium salinarum	Archaea: Halobacteria: Halobacteriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	10	17	30	12.02	[3.9]	Stevenson 1966 [Mescher & Strominger 1976,	Cells grown for about 70 hr to the end of the exponential phase	An extremely halophilic bacterium

										rods 0.5×5 µm]		
Micrococcus halodenitrificans	96.Halomonas halodenitrificans	Gammaproteobacteria: Oceanospirillales	µl O_2 (2 mg DM)$^{-1}$ (30 min)$^{-1}$	MIN	40	67	25	67.00	[0.4]	Sierra & Gibbons 1962 [Ventosa et al. 1998, rods, 0.5-0.9×0.9-1.2 µm]	Cells harvested towards the end of the logarithmic phase (about 40 hr)	Endogenous respiration and viability of starved cells remained constant at around 40 µl O_2 (mg DM)$^{-1}$ hr^{-1} and 100%, respectively, for 3 hr, while the amount of intracellular polyester rapidly declined. After 3 hr both endogenous respiration and viability started to decline rapidly. In polyester-poor cells this process was initiated immediately after the beginning of starvation. Cells of this organism contain more nitrogen than other bacteria
Aerobacter aerogenes	97.Klebsiella pneumoniae? Enterobacter aerogenes?	Gammaproteobacteria: "Enterobacteriales"	µl O_2 (mg N)$^{-1}$ hr^{-1}		67	11	30	7.78		Dietrich & Burris 1967	Bacteria cultured for 2 weeks in an extract from wheat plants; respiration measured for 1 hr after 10 min equilibration	Bacteria "had a lower endogenous [respiration] … if harvested during exponential growth than after reaching the stationary phase"
Aerobacter aerogenes	98.Klebsiella pneumoniae? Enterobacter aerogenes?	Gammaproteobacteria: "Enterobacteriales"	µmol O_2 (100 mg DM)$^{-1}$ (2 hr)$^{-1}$		69.3	13	30	9.19		Gronlund & Campbell 1961	Cells harvested after 20 hr growth	
Klebsiella pneumoniae (M5a1)	99.Klebsiella pneumoniae	Gammaproteobacteria: "Enterobacteriales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33	[0.4]	Jurtshuk & McQuitty 1976 [BM]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Klebsiella pneumoniae (ATCC 13882)	100.Klebsiella pneumoniae	Gammaproteobacteria: "Enterobacteriales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}		4	6.7	30	4.74	[0.4]	Jurtshuk & McQuitty 1976 [BM]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Aerobacter aerogenes (NCTC 418)	101.Klebsiella pneumoniae	Gammaproteobacteria: "Enterobacteriales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}		12	20	37	8.71	[0.4]	Bishop et al. 1962 [BM]	Respiration measured immediately after harvesting the cells at the end of the logarithmic growth phase	
Lactobacillus brevis (12)	102.Lactobacillus brevis	"Bacilli": "Lactobacillales"	µl O_2 (12 mg DM)$^{-1}$ (2 hr)$^{-1}$	MIN	2.9	0.2	30	0.14	[1.6]	Walker 1959 [BM, rods 0.7-1.0×2-4]	Cells (strain 1.2) were grown for 48 hr; endogenous respiration measured for 3 hr (Fig. 3); mean respiration rate for the second and third hour was taken; during the first hour, respiration was 4 times higher	Bacterium originally isolated from New Zealand cheddar cheese Respiration decreases with starvation time
Lactobacillus casei sbsp. rhamnosus (ATCC 7469)	103.Lactobacillus casei	"Bacilli": "Lactobacillales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	1	1.7	30	1.20		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two	

											thirds of the maximal growth concentration)	
Streptococcus lactis (strains 8, 9, 32)	104.Lactococcus lactis	"Bacilli": "Lactobacillales"	μl O_2 (115 mg DM)$^{-1}$ (4 hr)$^{-1}$	MIN	170	0.6	30	0.42	[0.2]	Spendlove et al. 1957 [BM]	Cells grown for 11 hr; for 7- and 9-hr grown cells respiration was around 400 μl O_2 (115 mg DM)$^{-1}$ (4 hr)$^{-1}$	In 11-hr cells respiration decreases in the first 30 min of the 4-hr' measurement, then remains relatively constant; in 7-hr and 9-hr cells respiration first decreases, then starts to increase again after 2-3 hr.
Lactococcus lactis ssp. lactis (DSM 20481^T)	105.Lactococcus lactis	"Bacilli": "Lactobacillales"	nmol O_2 (mg DM)$^{-1}$ min^{-1}		<1	2.3	30	1.63	[0.2]	Bauer et al. 2000 [BM]	Respiration of cells from aerobically and anaerobically glucose-grown cultures	
Lactococcus sp. (TmLO5)	106.Lactococcus sp.	"Bacilli": "Lactobacillales"	nmol O_2 (mg DM)$^{-1}$ min^{-1}	MIN	<1	2.3	30	1.63	0.8	Bauer et al. 2000 [rods, 0.6-1×1.1-3 μm]	Respiration of cells from aerobically and anaerobically glucose-grown cultures	
Legionella pneumophila (Knoxville-1, serotype 1)	107.Legionella pneumophila	Gammaproteobacteria: Legionellales	μl O_2 (mg DM)$^{-1}$ min^{-1}	MIN	0.2	20	37	8.71	[0.3]	Tesh et al. 1983 [Faulkner & Garduño 2002, rods 0.3-0.5×1.5-3.0 μm, prereplicative phase; Kowalski et al. 1999, 0.3-0.9×2 μm]	Bacteria harvested at mid- to late exponential growth phase (15-18 hr growth time) when the mass-specific oxygen consumption is highest (~70 W/kg); washed; "held at 37 C until used"; calibrated for 3 min; respiration measured when "a steady rate of endogenous respiration was established".	
Legionella pneumophila (serogroup 1)	108.Legionella pneumophila	Gammaproteobacteria: Legionellales	μl O_2 (400 μg protein)$^{-1}$ (40 min)$^{-1}$		25	77	37	33.52	[0.3]	Bonach & Snyder 1983 [Faulkner & Garduño 2002, rods 0.3-0.5×1.5-3.0 μm, prereplicative phase; Kowalski et al. 1999, 0.3-0.9×2 μm]]	Cells harvested at mid-log phase, shaken for 30 min, respiration measured for 40 min	
Pseudomonas AM1 (NCIB 9133)	109.Methylobacterium extorquens	Alphaproteobacteria: Rhizobiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	5	6	30	4.24	[1]	Keevil & Anthony 1979 [Peel & Quayle 1961, rods 0.8×2.0 μm]	Cells harvested at the end of logarithmic phase; depending on growth conditions, respiration ranged from 5 to 16 orig. units; the same result obtained by O'Keeffe & Anthony 1978	
Methylomicrobium sp. (AMO 1)	110.Methylomicrobium sp.	Gammaproteobacteria: Methylococcales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	10	11	30	7.78	3	Sorokin et al. 2000 and personal communication	Cells grown with methane at pH 10 Endogenous respira-	

										with Dr. D.Yu. Sorokin (15 Nov 2006) (ovoid rods, 1-1.5×2-3 µm)	tion is usually below 10 nmol O_2 (mg protein)$^{-1}$ min^{-1}, except in cells grown on acetate and at high pH (10.8-11.5), when it can be 20-50 nmol O_2 (mg protein)$^{-1}$ min^{-1}	
Methylophilus methylotrophus (NCIB 10515)	111.Methylophilus methylotrophus	Betaproteobacteria: Methylophiliales	ng-atoms O (mg DM)$^{-1}$ min^{-1}	MIN	1.4	1.6	40	0.57	[0.15]	Dawson & Jones 1981 [Jenkins et al. 1987, rods 0.3-0.6×0.8-1.5 µm]	Cells harvested from continuous culture and used within 3 hr	Obligate methylotroph using methanol as the sole source of carbon and energy
Methylosinus trichosporium OB3b (ATCC 35070)	112.Methylosinus trichosporium	Alphaproteobacteria: Rhizobiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	38	42	30	29.70	[1]	Lontoh et al. 1999 [Reed & Dugan 1978, Fig. 1]	Cells harvested in the exponential phase	Cell mass estimated from cell linear dimensions as shown in Fig. 1 of Reed & Dugan 1978
Sarcina lutea	113.Micrococcus luteus	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.7	1.2	37	0.52	[1.1]	Burleigh & Dawes 1967 [BM]	Cells were harvested after 24 hr growth on peptone; starved for 29 hr; viability 96%; respiration fell to "barely measurable" (0.3 µl O_2 (mg DM)$^{-1}$ hr^{-1}) when starvation was prolonged to 72 hr with viability falling to 25% Bishop et al. 1962: respiration measured immediately after harvesting the cells at the end of the logarithmic growth phase was below detection limit (0 orig. units) (148 µl O_2 (mg DM)$^{-1}$ hr^{-1}in the presence of lactate)	Endogenous respiration decreased during starvation most rapidly in the first 5 hr of starvation (from 21.1 to 0.7 orig. units) Initial endogenous respiration depended on the time of harvesting: mid-exponential (21 hr) — 30 orig. units; onset of the stationary phase (34 hr) — 15.9; 60 hr — 6.3 orig. units; the decline of respiration is correlated with the decline of intracellular contents of free amino acids, carbohydrate etc. Mathews & Sistrom 1959: endogenous respiration is reduced by 75% by shaking for 3 hr at 34 C (cells harvested in the exponential phase after 10-12 hr incubation at 34 C)
Sarcina lutea	114.Micrococcus luteus	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		3.5	6	35	3.00	[1.1]	Dawes & Holms 1958 [BM]	Cells harvested after 24 hr growth at 35 C and aerated for 5 hr; respiration 3.5 µl O_2 (mg DM)$^{-1}$ hr^{-1} = 6 W/kg	
Micrococcus lysodeikticus	115.Micrococcus luteus	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		11	18	37	7.83	[1.1]	Davis & Bateman 1960 [BM]	Cells harvested after 16.5 hr growth at 37 C; respiration measured for 2 hr	
Sarcina flava	116.Micrococcus luteus	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		9	15	30	10.61	[1.1]	Jurtshuk & McQuitty 1976 [BM]	Cells harvested at the late-logarithmic growth phase (two	

											thirds of the maximal growth concentration); respiration was 16, 9 and 30 μl O_2 (mg DM)$^{-1}$ hr^{-1} for Micrococcus (Sarcina) luteus, M. (S. flava) luteus and M. (lysodeikticus) luteus ATCC 4698, respectively (27, 15 and 50 W/kg)	
Micrococcus sp. (S9)	117.Micrococcus sp.	Actinobacteria: Actinomycetales	μl O_2 (4 mg DM)$^{-1}$ min^{-1}	MIN	0.40	10	30	7.07		Sparnins & Chapman 1976 [BM, genus, spherical cells, diam 0.5-2.0 μm]		
Micrococcus sp.	118.Micrococcus sp.	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	10	17	30	12.02		Cooper et al. 1965 [BM, genus, spherical cells, diam 0.5-2.0 μm]	Cells harvested during the exponential phase	The organism was isolated from soil. Size and classification as for genus Micrococcus Cohn 1872
Moraxella osloensis	119.Moraxella osloensis	Gammaproteobacteria: Pseudomonadales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	8	13	30	9.19	[2.3]	Jurtshuk & McQuitty 1976 [Baumann et al. 1968, rods 0.9-1.7×1.6-2.7 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Mycobacterium fortuitum	120.Mycobacterium fortuitum	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	10	17	30	12.02		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Mycobacterium leprae	121.Mycobacterium leprae	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	37	1.44		Mori et al. 1985	Cells isolated from mice	
Mycobacterium lepraemurium (Hawaiian strain)	122.Mycobacterium lepraemurium	Actinobacteria: Actinomycetales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	20-70	3.3	37	1.44		Gray 1952	Culture isolated from infected rats; occasionally, some suspensions respired less than 5 μl O_2 (mg N)$^{-1}$ hr^{-1}	
Mycobacterium phlei (72)	123.Mycobacterium phlei	Actinobacteria: Actinomycetales	μmol O_2 (mg N)$^{-1}$ hr^{-1}	MIN	4.8	14	37	6.09	[0.4]	Tepper 1968 [BM]	Glucose-grown cells (strain 72) harvested from 5-day culture; respiration calculated assuming N/DM ratio of 0.08 (Tepper 1968); respiration measured for a minimum of 90 min; glycerol-grown cells had 7.3 μmol O_2 (mg N)$^{-1}$ hr^{-1}= 16 W/kg	N/DM=5.6-6.8% for glycerol-grown cells, 7.8-8.9% for glucose-grown cells

Mycobacterium phlei	124.Mycobacterium phlei	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		16	27	30	19.09	[0.4]	Jurtshuk & McQuitty 1976 [BM]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Mycobacterium smegmatis (607)	125.Mycobacterium smegmatis	Actinobacteria: Actinomycetales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	146	24	37	10.45		Forbes et al. 1962 [BM, genus, rods 0.2-0.6×3.0-3.5 μm]	Cells harvested after 22 hr incubation.	
Mycobacterium stercoris (NCTC 3820)	126.Mycobacterium smegmatis	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		11.9	20	30	14.14		Hunter 1953 [BM, genus, rods 0.2-0.6×3.0-3.5 μm]	Cells grown for 5-6 days; respiration of M. (butyricum) smegmatis (NCTC 337) and M. smegmatis (NCTC 523) was 13.4 and 15 μl O_2 (mg DM)$^{-1}$ hr^{-1}, respectively	
Mycobacterium smegmatis	127.Mycobacterium smegmatis	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		13	22	30	15.56		Jurtshuk & McQuitty 1976 [BM, genus, rods 0.2-0.6×3.0-3.5 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration); respiration was 13 μl O_2 (mg DM)$^{-1}$ hr^{-1} = 22 W/kg at 30 C	
Mycobacterium tuberculosis var. hominis	128.Mycobacterium tuberculosis	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ (5 hr)$^{-1}$	MIN	6.5	2.2	37	0.96	[0.2]	Engelhard et al. 1957 [BM, rods 0.2-0.5×2-4 μm]	Bacteria grown for 25 to 28 hr in batches; magnetically mixed in buffer solution for 5 hr; stored at –5 C for no more than 12 hr before analysis; respiration measured for 5 hr	Human tuberculosis bacteria
Mycobacterium tuberculosis var. hominis (H37Rv, LRv)	129.Mycobacterium tuberculosis	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		4.2-5.8	7	37.8	2.9	[0.2]	Segal & Bloch 1955 [BM, rods 0.2-0.5×2-4 μm]	Various growth conditions	
Mycobacterium tuberculosis var. avium	130.Mycobacterium tuberculosis	Actinobacteria: Actinomycetales	μl O_2 (10 mg WM)$^{-1}$ (90 min)$^{-1}$		100	37	37	16.11	[0.2]	Minami 1957 [BM, rods 0.2-0.5×2-4 μm]	Cultures 3 days old	
Mycobacterium tuberculosis var. hominis (H37Rv)	131.Mycobacterium tuberculosis	Actinobacteria: Actinomycetales	μl O_2 (mg WM)$^{-1}$ (hr)$^{-1}$		0.46-1.10	2.6-6	37	23.33	[0.2]	Youmans et al. 1960 [BM, rods 0.2-0.5×2-4 μm]	Various growth conditions. Similar results were obtained later by the same team (Youmans & Youmans 1962a,b)	
Myxococcus xanthus (FB)	132.Myxococcus xanthus	Deltaproteobacteria: Myxococcales	μl O_2 (15 mg DM)$^{-1}$ (75 min)$^{-1}$	MIN	7	4.6	30	3.25	[1]	Dworkin & Niederpruem 1964 [McVittie et al. 1962, rods,	Vegetative cells harvested in the early stationary phase (30 hr); respiration meas-	No measurable respiration in microcysts

										0.5×3-8 μm]	ured for 75 min	
Neisseria elongata (ATCC 25295)	133.Neisseria elongata	Betaproteobacteria: Neisseriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	5	8.3	30	5.87	[0.2]	Jurtshuk & McQuitty 1976 [BM, short rods 0.5 μm width]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Neisseria flava (ATCC 14221)	134.Neisseria flava	Betaproteobacteria: Neisseriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	7	12	30	8.49	[0.2]	Jurtshuk & McQuitty 1976 [BM, genus, cocci, diam 0.6-1.0 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Neisseria gonorrhoeae	135.Neisseria gonorrhoeae	Betaproteobacteria: Neisseriales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	0.5	0.6	37	0.26	[0.2]	Kenimer & Lapp 1978 [BM, genus, cocci, diam 0.6-1.0 μm]	Cells harvested during early stationary phase after 18-20 hours of incubation; respiration measured for 2-3 min	Cell mass estimated from linear dimensions given in BM
Neisseria mucosa	136.Neisseria mucosa	Betaproteobacteria: Neisseriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	9	15	30	10.61	[0.2]	Jurtshuk & McQuitty 1976 [BM, genus, cocci, diam 0.6-1.0 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Neisseria sicca	137.Neisseria sicca	Betaproteobacteria: Neisseriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	8	13	30	9.19	[0.2]	Jurtshuk & McQuitty 1976 [BM, genus, cocci, diam 0.6-1.0 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Nitrobacter agilis	138.Nitrobacter winogradskyi	Alphaproteobacteria: Rhizobiales	μl O_2 (mg protein)$^{-1}$ hr^{-1}	MIN	12	10	30	7.07	[0.24]	Smith & Hoare 1968 [Tappe et al. 1999, 0.17-0.3 μm^3]	Incubation time 20 hr	Facultative heterotroph otherwise growing on nitrite, =Nitrobacter winogradskyi (Pan 1971) Protein to dry mass ratios (Protein/DM) are 0.55, 0.47 and 0.44 for autotrophic, autotrophic plus 1mM acetate, and autotrophic plus 5mM acetate, grown cells, respectively.
Nitrobacter agilis (ATCC 14123)	139.Nitrobacter winogradskyi	Alphaproteobacteria: Rhizobiales	ng-atoms O (mg protein)$^{-1}$ min^{-1}		20	11	25	11.00	[0.24]	Hollocher et al. 1982 [Tappe et al. 1999, 0.17-0.3 μm^3]	Cells grown at 30 C to the late exponential phase, stored for no more than 3 days at 0 C before measurements	1 mg WM ≈ 0.1 mg protein
Nitrosomonas europaea	140.Nitrosomonas europaea	Betaproteobacteria: Nitrosomonadales	ng-atoms O (mg protein)$^{-1}$ min^{-1}	MIN	20	11	25	11.00	[0.6]	Hollocher et al. 1982 [Tappe et al. 1999, 0.5-0.7 μm^3]	Bacteria grown at 30 C to the late exponential phase, stored for no more than 3 days at 0 C	1 mg WM ≈ 0.1 mg protein
Nocardia corallina	141.Nocardia corallina	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	1	1.7	30	1.20	2.1	Robertson & Batt 1973 (rods, 0.8-1.2×2-4 μm)	Cells harvested at the end of growth phase; respiration measured after 45 hours of starvation; viability more than 90%	Soil bacterium Dry mass data (Fig. 1): 4.3×10^9 cells (90% viable) make up 1.6 mg dry mass: 0.4×10^{-12} g dry mass cell^{-1}

											Respiration rate fell from 10 to 1 μl O_2 (mg DM)$^{-1}$ hr^{-1} during the first 45 hr of the total 450 hr' period of starvation Midwinter & Batt 1953 report 1-12 μl O_2 (mg DM)$^{-1}$ hr^{-1} for cells grown on different substrates for 24-96 hr at 30 C; respiration measured for about 3 hr	Cell mass estimated from linear dimensions given by Robertson & Batt (1973), 2-4 μm (length) × 0.8-1.2 μm (diameter), is greater, 2.4× 10^{-12} g cell^{-1}
Nocardia corallina (A-6)	142.Nocardia corallina	Actinobacteria: Actinomycetales	μl O_2 (4.8 mg DM)$^{-1}$ (220 min)$^{-1}$		40	4	30.3	2.77	[2.1]	Raymond et al. 1967 [Robertson & Batt 1973, rods, 0.8-1.2×2-4 μm]	Cells grown for 72 hr; respiration measured for 220 min.	
Nocardia asteroides (ATCC 3308)	143.Nocardia farcinica	Actinobacteria: Actinomycetales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	5	8.3	30	5.87	[0.1]	Jurtshuk & McQuitty 1976 [Takeo & Uesaka 1975, Fig. 1, hyphae diam 0.6 μm mycellium; Kowalski et al. 1999, 1-1.25×3-5 μm airborne]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Nocardia sp. (Z1)	144.Nocardia sp.	Actinobacteria: Actinomycetales	μl O_2 (42 mg DM)$^{-1}$ hr^{-1}	MIN	56	2.2	30	1.56		Watson & Cain 1975 [BM9, genus, hyphae diam 0.5-1.2 μm]	Cells grown for 24 hr	Bacterium isolated from soil with by enrichment with pyridine
Nocardia erythropolis	145.Nocardia sp.	Actinobacteria: Actinomycetales	μl O_2 (7.5 mg DM)$^{-1}$ (200 min)$^{-1}$	MIN	40	3	30	2.12		Cartwright & Cain 1959 [BM9, genus, hyphae diam 0.5-1.2 μm]	Respiration measured for 200 min Cain et al. 1968: Cells harvested after 24-36 hr incubation (Smith et al. 1968); respiration measured for 90 min was 185 μl O_2 (14.3 mg DM)$^{-1}$ hr^{-1}= 22 W/kg at 30 C	No change of respiration with time The organism was originally isolated from soil by enrichment with *p*-nitrobenzoate (Cain et al. 1958) Classification and size determination made for the Nocardia genus. There is no N. erythropolis at www.bacterio.cict.fr.
Nonomuraea sp. (ATCC 39727)	146.Nonomuraea sp.	Actinobacteria: Actinomycetales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	1	1	25	1.00		Palese et al. 2003	Respiration of cells in the lag phase (incubated for 15 hr) prior to exponential growth	Endogenous respiration increases from lag to exponential phase from 1 to 35 nmol O_2 (mg protein)$^{-1}$ min^{-1}, then starts to drop abruptly in the stationary phase (min. value measured after 160 hr incubation was 7 nmol O_2 (mg protein)$^{-1}$ min^{-1})

Micrococcus denitrificans	147.Paracoccus denitrificans	Alphaproteobacteria: Rhodobacterales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	5	8.3	30	5.87	[0.16]	Kornberg & Morris 1965 [BM, spheres (0.5-0.9 μm in diam) or short rods (0.9-1.2 μm long)]	Cells harvested during the exponential phase	Endogenous reserves of cells were "depleted" by 4 hr aerobic shaking at 30 C in another experiment
Pasteurella pseudotuberculosis (NCTC 1101)	148.Pasteurella pseudotuberculosis	Gammaproteobacteria: Enterobacteriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	7	12	25	12.00		Bishop et al. 1962	Respiration measured immediately after harvesting the cells at the end of the logarithmic growth phase	Max. resp. (in the presence of glucose) was 331 μl O_2 (mg DM)$^{-1}$ hr^{-1}
Pediococcus cerevisiae (ATCC 8081)	149.Pediococcus acidilactici	“Bacilli”: “Lactobacillales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33	[2.2]	Jurtshuk & McQuitty 1976 [BM9, genus, spheres 1.0-2.0 μm diam]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Phaeospirillum fulvum (5K, KM MGU 325)	150.Phaeospirillum fulvum	Alphaproteobacteria: Rhodospirillales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	25.3	28	28	22.74	[2]	Berg et al. 2002 [BM]	Bacteria harvested from early exponential cultures grown photoheterotrophically	Purple bacteria
Picrophilus oshimae	151.Picrophilus oshimae	Thermoplasmata (Archaea): Thermoplasmatales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	22.7	25	60	2.21	[1]	Van de Vossenberg et al. 1998 [Schleper et al. 1995, cocci, diam 1-1.5 μm]	Starvation for several hours	Thermoacidophilic archaeon
Proteus morganii [=Morganella morganii]	152.Proteus morganii	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	3	5	30	3.54	[0.4]	Jurtshuk & McQuitty 1976 [BM, rods, 0.6-0.7×1-1.7 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Proteus vulgaris	153.Proteus vulgaris	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	3	5	37	2.18	[0.4]	Bishop et al. 1962 [BM9, genus, rods 0.4-0.8×1-3 μm]	Respiration measured immediately after harvesting the cells (aerobic culture) at the end of the logarithmic growth phase; endogenous respiration of anaerobic culture was below detection limit (0 orig. units)	Max. resp. (in the presence of glucose) was 87 orig. units
Proteus vulgaris	154.Proteus vulgaris	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}		3	5	30	3.54	[0.4]	Jurtshuk & McQuitty 1976 [BM9, genus, rods 0.4-0.8×1-3 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Pseudomonas aeruginosa	155.Pseudomonas aeruginosa	Gammaproteobacteria: Pseudomonadales	μl O_2 (mg N)$^{-1}$ (75 min)$^{-1}$	MIN	50	6.7	30	4.74	[0.5]	Rogoff 1962 [Montesinos et al. 1983, Coulter counter; see also datra of Hou et al. 1966, 0.2-0.8 pg]	Cells isolated from soil and closely resembling P. aeruginosa were grown for 18 to 48 hr; respiration was measured for 75 min	

Pseudomonas aeruginosa (120Na)	156.Pseudomonas aeruginosa	Gammaproteobacteria: Pseudomonadales	μmol O_2 (100 mg DM)$^{-1}$ (2 hr)$^{-1}$	55.5	10	30	7.07	[0.5]	Gronlund & Campbell 1961 [Montesinos et al. 1983, Coulter counter; see also datra of Hou et al. 1966, 0.2-0.8 pg]	Cells (strain 120Na) harvested after 20 hr growth; respiration measured for 2 hr; for strain ATCC 9027 respiration was 80 orig. units Tomlinson & Campbell 1963: cells (strain 120Na) harvested after 20 hr growth at 30 C; respiration measured for 2 hr; 120 μl O_2 (5 mg DM)$^{-1}$ (2 hr)$^{-1}$ = 20 W/kg Gronlund & Campbell 1963: cells (strain ATCC 9027) harvested after 20 hr growth at 30 C; respiration measured for 3 hr; hourly rates decreased from 4.75 to 4.0 to 3.19 μmol O_2 (10 mg DM)$^{-1}$ hr^{-1}, with no loss of viability (min. rate 12 W/kg) Gronlund & Campbell 1966: cells (strain ATCC 9027) harvested after 20 hr growth at 30 C; respiration measured for 2 hr; 95 μl O_2 (5 mg DM)$^{-1}$ (2 hr)$^{-1}$ = 16 W/kg Warren et al. 1960 report practically the same rate, 2500 μl O_2 (100 mg DM)$^{-1}$ (2 hr)$^{-1}$ = 20 W/kg; the same age of culture (20 hr), strain ATCC 9027	Hou et al. 1966: Cell size of P. aeruginosa: 4.5×10^{8} viable cells = 29.6 $\times10^{-6}$ g = 17.5 $\times$ 10^{-6} g protein, cells harvested after 8 hr growth: 1 cell = 0.06 $\times10^{-12}$ g dry mass = 0.2 $\times10^{-12}$ g wet mass For 24-hr phosphorus starved cells, they observed 4.18×10^{8} viable cells = 44.4 $\times10^{-6}$ g = 22.8 $\times$ 10^{-6} g protein: 1 cell = 0.35 $\times$ 10^{-12} g wet mass For refed cells at 30 hr: 7.68×10^{8} viable cells = 182 $\times10^{-6}$ g = 75.1 $\times$ 10^{-6} g protein: 1 cell = 0.8 $\times$ 10^{-12} g wet mass Protein to DM (Protein/DM) ratio = 0.59, 0.51 and 0.41, respectively.
Pseudomonas aeruginosa (ATCC 15442)	157.Pseudomonas aeruginosa	Gammaproteobacteria: Pseudomonadales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	17	28	30	19.80	[0.5]	Jurtshuk & McQuitty 1976 [Montesinos et al.	Cells harvested at the late-logarithmic growth phase (two	

										1983, Coulter counter; see also datra of Hou et al. 1966, 0.2-0.8 pg]	thirds of the maximal growth concentration)	
Pseudomonas (pyo-ceanea) aeruginosa	158.Pseudomonas aeruginosa	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg $DM)^{-1}$ hr^{-1}		28	47	37	20.46	[0.5]	Bishop et al. 1962 [Montesinos et al. 1983, Coulter counter; see also datra of Hou et al. 1966, 0.2-0.8 pg]	Respiration measured immediately after harvesting the cells (aerobic culture) at the end of the logarithmic growth phase; anaero-bically grown culture respired at 15 µl O_2 (mg $DM)^{-1}$ hr^{-1} = 25 W/kg	
Pseudomonas aeru-ginosa (9/93 and 72/92)	159.Pseudomonas aeruginosa	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg $DM)^{-1}$ min^{-1}		23.7	53	30	37.48	[0.5]	Majtán et al. 1995 [Montesinos et al. 1983, Coulter counter; see also datra of Hou et al. 1966, 0.2-0.8 pg]	Cells harvested at the exponential phase; respiration measured for 10 min	
Pseudomonas fluo-rescens (A.3.12)	160.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	µl O_2 (3 mg $DM)^{-1}$ hr^{-1}	MIN	8	4.4	28	3.57	[1]	Altekar & Rao 1963 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8 pg/cell at 70% water content]	Cells washed after incubation for 24 hr in a growth medium on a shaker; respiration of “resting” cells meas-ured for 4 hr; value for the last hour taken (Fig. 4)	Respiration decreases with time (mean for the 4 hrs was ≈8 W/kg)
Pseudomonas fluo-rescens (A.3.12)	161.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg $DM)^{-1}$ hr^{-1}		5.9	10	26	9.33	[1]	Gunter & Kohn 1956 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8 pg/cell at 70% water content]	Respiration of washed cell suspensions har-vested from 16 to 18-hr yeast agar plates	
Pseudomonas fluo-rescens (KBI)	162.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	µmol (10 mg $DM)^{-1}$ hr^{-1}		4	15	30	10.61	[1]	Hughes 1966 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8 pg/cell at 70% water content]	Cells grown for 22-24 hr at 25 C; respiration measured after equili-bration for 30 min at 30 C	
Pseudomonas fluo-rescens (A.3.12)	163.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	µmol O_2 (100 mg $DM)^{-1}$ (2 $hr)^{-1}$		98	18	30	12.73	[1]	Gronlund & Campbell 1961 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8	Cells harvested after 20 hr growth; respira-tion measured for 2 hr at 30 C Tomlinson & Camp-	

										pg/cell at 70% water content]	bell 1963: 190 µl O_2 (5 mg DM)$^{-1}$ (2 hr)$^{-1}$ = 32 W/kg for 20-hr cultures at 30 C	
Pseudomonas fluorescens (A.3.12)	164.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		20	33	30	23.33	[1]	Jacoby 1964 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8 pg/cell at 70% water content]		
Pseudomonas fluorescens (KBI)	165.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	µl O_2 (2 mg DM)$^{-1}$ (160 min)$^{-1}$		110	34	30	24.04	[1]	Kornberg 1958 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8 pg/cell at 70% water content]	Cells grown for 10-12 hr, harvested during logarithmic phase; respiration measured for 160 min	
Pseudomonas fluorescens (ATCC 13525)	166.Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg DM)$^{-1}$ (min)$^{-1}$		45.7	60	30	42.43	[1]	Eisenberg et al. 1973 [BM, 0.7-0.8×2.0-3.0 µm; Gunter & Kohn 1956, 0.24 pg DM/cell = 0.8 pg/cell at 70% water content]	Respiration of washed cells harvested at midlog or early stationary phase	
Pseudomonas formicans	167.Pseudomonas formicans	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ (40 min)$^{-1}$	MIN	4	10	30	7.07	[7]	Sabina & Pivnick 1956 [Crawford 1954, rods 1-2×4-5 µm]	Bacteria grown for 5 days in a mixture of soluble oils; incubated for 24 hr in a nutrient broth; aerated vigorously in nutrient broth for 18 hr; harvested and washed; washed suspension "shaken for 2 to 8 hr at room temperature in an attempt to reduce the endogenous respiration"; respiration measured for 210 min (Fig. 2); value taken for the last 40 min	Bacteria isolated from used emulsifiers of industrial oil, Illinois, USA Endogenous respiration decreases with time during 2-4 hr of respiration (Figs. 2, 4)
Pseudomonas oleovorans	168.Pseudomonas oleovorans	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33	[0.16]	Sabina & Pivnick 1956 [Lee & Chandler 1941, almost coccoid, 0.5×0.8 µm]	Bacteria grown for 5 days in a mixture of soluble oils; incubated for 24 hr in a nutrient broth; aerated vigorously in nutrient broth for 18 hr; harvested and washed; washed	Bacteria isolated from used emulsifiers of industrial oil, England Endogenous respiration decreases with time during 2-4 hr of respiration (Figs. 2, 4)

											suspension "shaken for 2 to 8 hr at room temperature in an attempt to reduce the endogenous respiration"; respiration measured for 210 min (Fig. 3); value taken for the last hour	
Pseudomonas oleovorans	169.Pseudomonas oleovorans	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg DM)$^{-1}$ min $^{-1}$		16-19	40	30	28.28	[0.16]	Peterson 1970 [Lee & Chandler 1941, almost coccoid, 0.5×0.8 μm]	Cells harvested in late-log-phase	
Pseudomonas putida (O1OC)	170.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	nmol O_2 (25 mg DM)$^{-1}$ min^{-1}	MIN	11	1	30	0.71	[1.7]	Chapman & Ribbons 1976 [BM, 0.7-1.1×2.0-4.0 μm]	Succinate-grown cells harvested after 16-20 hr incubation in the late-logarithmic phase; respiration measured for 2 min; respiration of strains O1OC, ORC and O1 varied from 11 to 29 nmol O_2 (25 mg DM)$^{-1}$ min^{-1} (1-2.6 W/kg) depending on growth substrate.	The organism was isolated from orcinol enrichments Respiration measured for 1 hr (strain ORC) was 43 μl (20 mg WM)$^{-1}$ hr^{-1} (Fig. 3) = 12 W/kg
Pseudomonas putida (arvilla mt-2 (PaM1))	171.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	μl O_2 (20 mg WM)$^{-1}$ hr^{-}		10	2.8	30	1.98	[1.7]	Kunz & Chapman 1981 [BM, 0.7-1.1×2.0-4.0 μm]	P. putida (arvilla) mt-2 cells grown for 24 hr on toluene or 48 hr on pseudocumene; respiration 10 μl O_2 (20 mg WM)$^{-1}$ hr^{-1} = 2.8 W/kg	
Pseudomonas putida (biotype B)	172.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	μl O_2 (mg DM)$^{-1}$ min^{-1}		0.27/ 6.1	4.4	30	3.11	[1.7]	Sebek & Barker 1968 [BM, 0.7-1.1×2.0-4.0 μm]	Cells harvested towards the end of the exponential phase, shaken for 18 hr "to reduce endogenous respiration"	
Pseudomonas putida (TM)	173.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	μl O_2 (10 mg WM)$^{-1}$ min^{-1}		0.25	8.3	30	5.87	[1.7]	Donnelly & Dagley 1980 [BM, 0.7-1.1×2.0-4.0 μm]	Cells harvested during exponential growth	Strain isolated from rotting oak leaves
Pseudomonas fluorescens-putida	174.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	μl O_2 (mg DM)$^{-1}$ hr^{-1}		11.2	19	37	8.27	[1.7]	Chakrabarty & Roy 1964 [BM, 0.7-1.1×2.0-4.0 μm]	Cells grown to the stationary phase (72 hr)	Respiration decreases from mid-exponential to late-exponential to stationary phase (20.3 → 17.8 → 11.2 μl O_2 (mg DM)$^{-1}$ hr^{-1}); in cells harvested at 20 hr (mid-exponential) and starved for 0-4 hr respiration decreases from 27 (0th) to 20 (2nd) to 16.5 (3rd) to 15.6

												(4th hr) µl O_2 (mg DM)$^{-1}$ hr^{-1}
Pseudomonas putida (PRS1)	175.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		10	17	30	12.02	[1.7]	Meagher et al. 1972 [BM, 0.7-1.1×2.0-4.0 µm]	Cells harvested during exponential growth	
Pseudomonas putida	176.Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg DM)$^{-1}$ min^{-1}		15	34	30	24.04	[1.7]	Peterson 1970 [BM, 0.7-1.1×2.0-4.0 µm]	Cells harvested in late-log-phase	
Pseudomonas saccharophila	177.Pseudomonas saccharophila	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	20-28	33	30	23.33		Doudoroff et al. 1956	Cells harvested from early stationary phase cultures	
Pseudomonas sp. (B1)	178.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	2	2.2	30	1.56		Van Ginkel et al. 1992 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Yeast-glucose plate inoculates were incubated in a stationary fashion at 30 C; washed; endogenous respiration measured for 5 min	Bacteria isolated from activated sludge taken from a domestic seweage plant, The Netherlands
Pseudomonas sp.	179.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µmol O_2 (50 mg)$^{-1}$ (4 hr)$^{-1}$	MIN	13	8	30	5.66		Shaw 1956 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Bacteria grown for 24 hr at 30 C; washed; respiration measured for 4 h	An airborne organism isolated in the laboratory; University of Otago; New Zealand; a fluorescent species of Pseudomonas
Pseudomonas sp.	180.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		10	17	30	12.02		Sariaslani et al. 1982 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Bacteria harvested during log phase; respiration measured for about 1 h	Bacteria isolated from California soil, USA.
Pseudomonas sp. (OD1)	181.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	25	3.30		Jayasuriya 1956 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Bacteria grown on oxalate for 40 hr at 25 C	
Pseudomonas sp. (PN-1)	182.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µmol O_2 (6.05 mg protein)$^{-1}$ (145 min)$^{-1}$	MIN	6.5	8.3	30	5.87		Taylor 1983 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Endogenous respiration of anaerobically grown cells	
Pseudomonas sp. P6 (NCIB 10431)	183.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µmol O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	0.4	15	30	10.61		Jones & Turner 1973 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Respiration measured for not less than 90 min	Synonym Acrhomobacter sp. P6
Azotomonas insolita (ATCC 12412)	184.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	11	18	30	12.73		Jurtshuk & McQuitty 1976 [BM, genus, rods 0.5-1.0×1.5-5.0]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	Size determination is made for Pseudomonas genus, since ATCC 12412 correponds to a Pseudomonas sp.
Pseudomonas sp. (B13)	185.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	µg O_2 (mg DM)$^{-1}$ min^{-1}	MIN	0.5	35	20	49.50		Tros et al. 1996 [BM, genus, rods 0.5-1.0×1.5-5.0 µm]	Bacteria grown for about 210 hr in a recycling fermentor to reach the stationary phase; endogenous respiration measured for 5-10 min of a sample taken from the recycling fermentor	Bacteria isolated from activated sludge taken from a domestic seweage plant, The Netherlands
Streptomyces nitri-	186.Pseudonocardia	Actinobacteria: Acti-	µl O_2 (mg	MIN	1.5	2.5	30	1.77		Isenberg et al.	Mycellium grown for	5 mg DM= 25 mm^3 wet packed volume

ficans	nitrificans	nomycetes	DM)$^{-1}$ hr^{-1}							1954	5-6 days	→ DM/WM=0.2
Rhizobium japonicum (61A76)	187.Rhizobium japonicum	Alphaproteobacteria: Rhizobiales	µmol O_2 (0.71 mg protein)$^{-1}$ (10 min)$^{-1}$	MIN	0.1	16	23	18.38	[0.7]	Peterson & LaRue 1982 [BM9, genus, rods, 0.5-0.9×1.2-3.0 µm]	Bacteria harvested at mid-log phase of growth	Free-living bacteria
Rhizobium leguminosarum (128 C 53)	188.Rhizobium leguminosarum	Alphaproteobacteria: Rhizobiales	µl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	57	9.5	30	6.72	[0.6]	Dietrich & Burris 1967 [BM]	Bacteria cultured for 2 weeks in an extract from wheat plants; respiration measured for 1 hr after 10 min equilibration	
Rhizobium meliloti (F-28)	189.Rhizobium meliloti	Alphaproteobacteria: Rhizobiales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	7	12	30	8.49	[0.7]	Jurtshuk & McQuitty 1976 [BM9, genus, rods, 0.5-0.9×1.2-3.0 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration); respiration of strain 3DOa1 was 9 orig. units	
Rhodobacter sphaeroides (2R)	190.Rhodobacter sphaeroides	Alphaproteobacteria: Rhodobacterales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	14.9	17	28	13.81	[0.8]	Berg et al. 2002 [Gunter & Kohn 1956 0.23 pg DM/cell = 0.8 pg/cell at 70% water content]	Bacteria (strain 2R) harvested from early exponential cultures grown photoheterotrophically	Purple bacteria
Rhodopseudomonas spheroides	191.Rhodobacter sphaeroides	Alphaproteobacteria: Rhodobacterales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		20.8	35	26	32.66	0.8	Gunter & Kohn 1956 [0.23 pg DM/cell = 0.8 pg/cell at 70% water content]	Cells harvested from 16 to 18-hr yeast agar plates	Cell mass estimated from dry mass data, Table 1, 0.23 pg DM/cell
Corynebacterium (7E1C, ATCC 19067)	192.Rhodococcus rhodochrous	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	10	17	30	12.02		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Rhodococcus sp. (094)	193.Rhodococcus sp.	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	1.3	2.2	25	2.20		Bruheim et al. 1999	Cells grown to the early stationary phase on oil	The isolate was obtained from enrichment cultures by using inocula from Norwegian coastal waters
Nocardia opaca	194.Rhodococcus sp.	Actinobacteria: Actinomycetales	µl O_2 (14.8 mg DM)$^{-1}$ (60 min)$^{-1}$	MIN	60	7	30	4.95		Cartwright & Cain 1959	Respiration measured for 60 min	
Nocardia sp. (NCIB 11216)	195.Rhodococcus sp.	Actinobacteria: Actinomycetales	µl O_2 (5 mg DM)$^{-1}$ min^{-1}	MIN	0.37	7.4	25	7.40		Harper 1977	Bacteria grown at 25 C to early exponential phase	A microorganism capable of using benzonitrile as sole carbon, nitrogen and energy source was isolated by elective culture from mud obtained from the bed of the River Lagan in Belfast
Rhodospirillum rubrum (2R KM MGU 301)	196.Rhodospirillum rubrum	Alphaproteobacteria: Rhodospirillales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	3.4	3.8	28	3.09	[9]	Berg et al. 2002 [BM]	Bacteria harvested from early exponential cultures grown photoheterotrophically;	Purple bacteria Breznak et al. 1978 found half-life survival time of 3-4 days in the dark for

											respiration measured in the dark	this species
Vibrio costicola (NRCC 37001)	197.Sallinivibrio costicola	Gammaproteobacteria: “Vibrionales”	μg O_2 (mg DM)$^{-1}$ min^{-1}	MIN	0.10	7	25	7.00	[0.4]	Kushner et al. 1983 [Huang et al. 2000, rods, 0.5×1.5-3.2 μm]	Cells harvested just before the stationary phase; respiration varied from 0.10 to 1.14 μg O_2 (mg DM)$^{-1}$ min^{-1} (7-80 W/kg) depending on salt concentration in the medium	
Salmonella typhimurium (LT2)	198.Salmonella typhimurium	Gammaproteobacteria: "Enterobacteriales"	μl O_2 (1.36 mg DM)$^{-1}$ (10 min)$^{-1}$	MIN	2	15	37	6.53	[0.66]	Hoffee & Englesberg 1962 [Montesinos et al. 1983, Coulter counter]	Cells harvested in the exponential phase; respiration measured for 10 min	
Salmonella typhimurium (ATCC 6444)	199.Salmonella typhimurium	Gammaproteobacteria: "Enterobacteriales"	μl O_2 (mg DM)$^{-1}$ hr^{-1}		6	10	30	7.07	[0.66] [1.35]	Jurtshuk & McQuitty 1976 [Montesinos et al. 1983, Coulter counter] [Kubitschek 1969, Coulter counter]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Serratia marcescens (D1)	200.Serratia marcescens	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (10 mg DM)$^{-1}$ (3.5 hr)$^{-1}$	MIN	75	4	37	1.74	[0.4]	Blizzard & Peterson 1962 [BM, 0.5-0.8×0.9-2 μm]	Bacteria incubated at 37 C for 18-20 hr on a rotary shaker; respiration measured for 3.5 hr; it grows with time	Respiration grows (!) with time
Chromobacter prodigiosum (NCTC 1377)	201.Serratia marcescens	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}		11	18	37	7.83	[0.4]	Bishop et al. 1962 [BM, 0.5-0.8×0.9-2 μm]	Respiration measured immediately after harvesting the cells at the end of the logarithmic growth phase	Max. resp. (in the presence of glucose) was 200 μl O_2 (mg DM)$^{-1}$ hr^{-1}
Serratia marcescens	202.Serratia marcescens	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}		8	13	30	9.19	[0.4]	Jurtshuk & McQuitty 1976 [BM, 0.5-0.8×0.9-2 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Serratia marcescens (8 UK)	203.Serratia marcescens	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}		21	35	30	24.75	[0.4]	Davis & BAteman 1960 [BM, 0.5-0.8×0.9-2 μm]	Cells harvested after 16 hr growth	
Shigella flexneri 3 (1013)	204.Shigella flexneri	Gammaproteobacteria: “Enterobacteriales”	μl O_2 (0.4 mg N)$^{-1}$ hr^{-1}	MIN	25	10	37	4.35		Erlandson & Ruhl 1956	Bacteria grown for 18 hr at 37 C; washed; stored in a refrigerator (can be stored for 5 days with no loss of activity); cells not older than 4 days were used in the analysis; respiration measured for 2 h	Human dysentery agent
Sphaerotilus natans (12)	205.Sphaerotilus natans	Betaproteobacteria: Burkholderiales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	27	45	28	36.55	6.5	Stokes 1954 [1.2-1.8×3-5 μm;	Cells grown for 16 hr at 28 C on a shaker;	Originally isolated from contaminated flowing water

										sheathed filaments in young cultures, liberated flagellated cells in old cultures]	washed suspensions were aerated for 3-5 hr to reduce endogenous respiration, which is characterized as "rather high" perhaps "due to the large amount of fatty material stored in the cells"	Aeration for more than 5 hr "tended to destroy the oxidizing capacity of the cells"
Sporosarcina ureae	206.Sporosarcina ureae	"Bacilli": Bacillales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	7	12	30	8.49	[3.8]	Jurtshuk & McQuitty 1976 [BM9, genus, rods, 1-2×2-3 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Staphylococcus aureus	207.Staphylococcus aureus	"Bacilli": Bacillales	7 μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	9.3-15.7	16	37	7	[0.04-0.17] [[0.27]]	Ramsey 1962 [Watson et al. 1998, diam 0.41 μm for long-starved cells, 0.69 μm for exponential phase cells] [[Montesinos et al. 1983, Coulter counter]]	Cells grown for 12, 24, 48 and 72 hr on agar respired at 14.8, 12.0, 10.0 and 0 μl O_2 (mg DM)$^{-1}$ hr^{-1}, respectively, at 37 C; depending on the growth medium, endogenous respiration ranged from 9.3 to 15.7 μl O_2 (mg DM)$^{-1}$ hr^{-1} = 16-26 W/kg	
Staphylococcus aureus (FDA 209P)	208.Staphylococcus aureus	"Bacilli": Bacillales	μl O_2 (14 mg DM)$^{-1}$ (4 hr)$^{-1}$		44	1.3	30	0.92	[0.04-0.17] [[0.27]]	Huber & Schuhardt 1970 [Watson et al. 1998, diam 0.41 μm for long-starved cells, 0.69 μm for exponential phase cells] [[Montesinos et al. 1983, Coulter counter]]	Cells grown for 18 hr at 37 C with shake aeration; respiration measured for 4 hr.	
Staphylococcus aureus	209.Staphylococcus aureus	"Bacilli": Bacillales	μl O_2 (0.1-0.15 mg N) hr^{-1}		2	2.2	37	0.96	[0.04-0.17] [[0.27]]	Yotis & Ekstedt 1959 [Watson et al. 1998, diam 0.41 μm for long-starved cells, 0.69 μm for exponential phase cells] [[Montesinos et al. 1983, Coulter counter]]	Cells incubated for 16 hr at 37 C; respiration measured for 6 hr; it decreases with time Yotis 1963: respiration of washed cells measured for 60 min at 37 C was 14 to 20 μl O_2 (mg DM)$^{-1}$ hr^{-1}= 23 W/kg	Respiration decreases with starvation time from 21 μl O_2 (0.1-0.15 mg N) hr^{-1} in the first hour, 11.5 (second hour), 6.5 (third, fourth hour), 2 (fifth, sixht hour), min. rate = 2.2 W/kg
Staphylococcus	210.Staphylococcus	"Bacilli": Bacillales	μl O_2 (6.02 mg		9.73	2.7	37	1.18	[0.04-	Bluhm & Ordal	Cells grown for 10 hr	

aureus (MF-31)	aureus		DM)$^{-1}$ hr^{-1}						0.17] [[0.27]]	1969 [Watson et al. 1998, diam 0.41 µm for long-starved cells, 0.69 µm for exponential phase cells] [[Montesinos et al. 1983, Coulter counter]]	at 37 C; respiration of heat injured cells is three times lower	
Staphylococcus aureus (31-r)	211.Staphylococcus aureus	"Bacilli": Bacillales	µmol O_2 (mg DM)$^{-1}$ hr^{-1}		0.19	7	37	3.05	[0.04-0.17] [[0.27]]	Krzemiński et al. 1972 [Watson et al. 1998, diam 0.41 µm for long-starved cells, 0.69 µm for exponential phase cells] [[Montesinos et al. 1983, Coulter counter]]	Cells harvested after 20 hr growth at 37 C and starved for 3 hr; respiration decreases from 0.68 to 0.43 to 0.19 µmol O_2 (mg DM)$^{-1}$ h^{-1} for the 1st, 2nd and 3rd hrs at 37 C, respectively.	Respiration decreases with starvation time; it also depends on growth phase: maximum at approx. 10 hr and then decreases towards the stationary phase
Staphylococcus (albus) aureus	212.Staphylococcus aureus	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		3	5	30	3.54	[0.04-0.17] [[0.27]]	Jurtshuk & McQuitty 1976 [Watson et al. 1998, diam 0.41 µm for long-starved cells, 0.69 µm for exponential phase cells] [[Montesinos et al. 1983, Coulter counter]]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration); respiration was 3, 4 and 5 µl O_2 (mg DM)$^{-1}$ hr^{-1} for strains S. (albus) aureus, S. aureus (University of Houston) and S. aureus ATCC 6538, respectively (5-8.3 W/kg), at 30 C	
Staphylococcus epidermidis (AT2)	213.Staphylococcus epidermidis	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	16	27	30	19.09	[0.5]	Jacobs & Conti 1965 [BM]	Cells grown for 8 hr at 37 C harvested at the end of the log phase	Cell mass estimated from linear dimensions given in BM
Staphylococcus albus (Micrococcus pyogenes var. albus)	214.Staphylococcus simulans	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	6	10	37	4.35		Bishop et al. 1962	Respiration measured immediately after harvesting the cells (aerobic culture) at the end of the logarithmic growth phase; endogenous respiration of anaerobic culture was 4 orig. units	Max. resp. (in the presence of lactate) was 111 orig. units
Gaffkya tetragena (ATCC 10875)	215.Staphylococcus sp.	"Bacilli": Bacillales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	10	17	30	12.02		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration); strain ATCC 10875	

											respired at 14 µl O_2 (mg DM)$^{-1}$ hr^{-1} = 23 W/kg	
Streptococcus mastitidis (70b)	216.Streptococcus agalactiae	"Bacilli": "Lactobacillales"	µl O_2 (mg N)$^{-1}$ (120 min)$^{-1}$	MIN	10	1.7	37	0.74	[0.3]	Greisen & Gunsalus 1944 [BM]	Cells grown for 12 hr	N/DM≈0.1
Streptococcus agalactiae	217.Streptococcus agalactiae	"Bacilli": "Lactobacillales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}		5	8.3	37	3.61	[0.3]	Mickelson 1961 [BM]	Cells harvested after 10-15 hr incubation; respiration measured for 5 hr	
Streptococcus pneumoniae (ATCC 6360)	218.Streptococcus pneumoniae	"Bacilli": "Lactobacillales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	1	1.7	30	1.20	[0.4]	Jurtshuk & McQuitty 1976 [Kowalski et al. 1999, diam 0.8-1 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Streptococcus pyogenes (ATCC 10389)	219.Streptococcus pyogenes	"Bacilli": "Lactobacillales"	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33	[0.2]	Jurtshuk & McQuitty 1976 [Kowalski et al. 1999, diam 0.6-1 µm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Streptomyces coelicolor	220.Streptomyces coelicolor	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	24	40	30	28.28		Niederpruem & Hackett 1961	Respiration of mycellium	
Streptomyces fradiae (ATCC 11903)	221.Streptomyces fradiae	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	13	22	30	15.56		Niederpruem & Hackett 1961	Respiration of mycellium	
Streptomyces griseus (3475 Waksman)	222.Streptomyces griseus	Actinobacteria: Actinomycetales	µl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	105	18	30	12.73		Gilmour et al. 1955	Cells grown for 24 hr	
Streptomyces griseus (ATCC 10137)	223.Streptomyces griseus	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}		12	20	30	14.14		Jurtshuk & McQuitty 1976	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration) Niederpruem & Hackett 1961: Respiration of mycellium was 21 µl O_2 (mg DM)$^{-1}$ hr^{-1} = 35 W/kg at 30 C	
Actinomyces longispororuber	224.Streptomyces longispororuber	Actinobacteria: Actinomycetales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33		Feofilova et al. 1966	Respiration of 24-hr-old mycelium	Endogenous respiration was minimal (around 2 µl O_2 (mg DM)$^{-1}$ hr^{-1}) in the beginning of growth before the exponential phase (lag phase); at maximal growth rate it increased up to 14 µl O_2 (mg DM)$^{-1}$ hr^{-1} (48 hr) and then started to decline gradually to 7-11 µl O_2 (mg DM)$^{-1}$ hr^{-1} at 72 hr and 4-8 µl O_2 (mg DM)$^{-1}$ hr^{-1} at 96 hr
Streptomyces olivaceus (NRRL B-1125)	225.Streptomyces olivaceus	Actinobacteria: Actinomycetales	µmol O_2 (mg N)$^{-1}$ hr^{-1}	MIN	54	9	37	3.92		Maitra & Roy 1961	Cells harvested at the end of growth at 24 hr; respiration measured for 60 min; pH 5.5; at pH 7.2 endogenous	

											respiration was 201.1 orig. units	
Sulfolobus acidocalcadareus	226.Sulfolobus acidocalcadareus	Archaea: Thermoprotei (Crenarchaeota): Sulfolobales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	13.5	15	60	1.33	[0.4]	Schäfer 1996 [Takayanagi et al. 1996, lobed cells, diam 0.8-1.0 µm]	Steady-state respiration on endogenous substrate	
Contagious equine metritis bacterium (E-CMO)	227.Taylorella equigenitalis	Betaproteobacteria: Burkholderiales	pmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	82	0.1	30	0.07	[0.4]	Lindmark et al. 1982 [BM9, genus, 0.7×0.7-1.8 µm]	Cells (English E-CMO strain) harvested from late log phase after 24 hr	Contagious equine metritis bacterium
Ferrobacillus ferrooxidans (Thiobacillus ferrooxidans)	228.Thiobacillus ferrooxidans	Betaproteobacteria: Hydrogenophilales	µmol O_2 (5.6 mg protein)$^{-1}$ hr^{-1}	MIN	0.12	0.5	25	0.50	[0.25]	Silver 1970 [Kelly & Wood 2000, rods 0.4×2.0 µm]	respiration of cells during 60 min of substrate deprivation	
Thiobacillus intermedius	229.Thiobacillus intermedius	Betaproteobacteria: Hydrogenophilales	µmol O_2 (mg protein)$^{-1}$ hr^{-1}	MIN	0.6	11	30	7.78	[0.4]	London & Rittenberg 1966 [BM9, genus, 0.5-1.0-4.0 µm]	Cells were grown in the presence of glucose to the stationary phase; respiration of cells grown without glucose was "nil"	Facultative autotroph oxidizing thiosulfate
Thiobacillus thiooxidans	230.Thiobacillus thiooxidans	Betaproteobacteria: Hydrogenophilales	µl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	4-10	1.5	28	1.22	[0.25]	Vogler 1942b [Kelly & Wood 2000, rods 0.4×2.0 µm]	young cultures (as cited by Newburgh 1954) Vogler 1942a: late cultures respire at 10-40 µl O_2 (mg N)$^{-1}$ hr^{-1}	Autotroph growing on sulfur; in the presence of sulfur respiration increases by 20-100 times
Thiocapsa roseopersicina (M1)	231.Thiocapsa roseopersicina	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	5.0	5.6	30	3.96	[1]	Overmann & Pfennig 1992 nmol O_2 [Montesinos et al. 1983, Coulter counter]	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 µM; respiration rates of phototrophically (anaerobically) and chemotrophically (microaerobically) grown cells do not differ; the species is capable of chemotrophic growth in the dark.	Purple sulfur bacteria Endogenous respiration of cells with visible sulfur globules is higher, up to 15 nmol O_2 (mg protein)$^{-1}$ min^{-1}
Thiocystis violacea (2711)	232.Thiocystis violacea	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	2.2	2.5	30	1.77	[11]	Overmann & Pfennig 1992 [BM9, genus, spherical or ovoid, 2.5-3.0 µm diam]	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 µM; respiration rates of phototrophically (anaerobically) and chemotrophically (microaerobically) grown cells do not	Purple sulfur bacteria Endogenous respiration of cells with visible sulfur globules is higher, up to 30 orig. units

											differ; the species is capable of chemotrophic growth in the dark.	
Thiorhodovibrio winogradskyi (SSP1)	233.Thiorhodovibrio winogradskyi	Gammaproteobacteria: Chromatiales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	5.9	6.6	30	4.67		Overmann & Pfennig 1992	Respiration of cells without microscopically visible sulfure globules at oxygen concentrations of 11-67 µM; respiration rates of phototrophically (anaerobically) and chemotrophically (microaerobically) grown cells do not differ; the species is capable of chemotrophic growth in the dark.	Purple sulfur bacteria isolated from the littoral sediment of meromictic Mahoney Lake (British Columbia, Canada) Maximum respiration in the presence of substrate (H_2S) is 264 orig. units
Pseudomonas butanovora (ATCC 43655)	234.Unidentified bacterium	Gammaproteobacteria: Pseudomonadales	nmol O_2 (mg protein)$^{-1}$ min^{-1}	MIN	10-25	11	30	7.78	[0.6]	Vangnai et al. 2002 and personal communication with Dr. Luis A. Sayavedra-Soto (7 Nov 2006) [BM, species, rods, 0.6-0.8×1.1-2.4 µm]	Bacteria grown to the stationary phase (35-40 hr); kept at 25 C for at least 1 hr to lower endogenous respiration With a cell suspension kept at room temperature, the cells would show less endogenous respiration as time passes, down to 1-5 nmol O_2 (mg protein)$^{-1}$ min^{-1}	Classification made for the Pseudomonas genus as described at www.bacterio.cict.fr. There is no such species at www.bacterio.cict.fr; strain ATCC 43655 is an "unidentified bacterium"
Unknown sp. (A-50)	235.Unknown	Unknown	µl O_2 (16 mg DM)$^{-1}$ (30 min)$^{-1}$	MIN	32	6.7	30	4.74		Trudinger 1967	Cells grown for 16 hr at 28 C; respiration measured for 30 min	"Where necessary to reduce endogenous respiration, the bacteria were shaken at 30 C for 1 to 2 hr" The organism was isolated from percolation units containing garden soil and elemental sulfur.
Unknown sp. (C-3)	236.Unknown	Unknown	µl O_2 (3.1 mg DM)$^{-1}$ (30 min)$^{-1}$	MIN	28	30	30	21.21		Trudinger 1967	Cells grown for 16 hr at 28 C; respiration measured for 30 min	"Where necessary to reduce endogenous respiration, the bacteria were shaken at 30 C for 1 to 2 hr" The organism was isolated from percolation units containing garden soil and elemental sulfur.
Achromobacter hartlebii (NCIB 8129)	237.Unnamed rhizobiaceae	Alphaproteobacteria: Rhizobiales	µl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	25	42	25	42.00		Bishop et al. 1962	Respiration measured immediately after harvesting the cells at	Max. resp. (in the presence of lactate) was 220 µl O_2 (mg DM)$^{-1}$ hr^{-1}

											the end of the logarithmic growth phase	
Vibrio parahaemolyticus (biotype alginolyticus 156-70)	238.Vibrio alginolyticus	Gammaproteobacteria: “Vibrionales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33	[0.6]	Jurtshuk & McQuitty 1976[BM9, genus, rods 0.5-0..8×1.4-2.6 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Vibrio fischeri (MAC 401)	239.Vibrio fischeri	Gammaproteobacteria: “Vibrionales”	n atoms O (mg DM)$^{-1}$ min^{-1}	MIN	20	22	20	31.11	[0.6]	Droniuk et al. 1987 [Allen & Baumann 1971, Fig. 16, 0.7×1.5 μm]	Respiration at 100 mM Na^+	Marine bacterium
Vibrio (metschnikovii) cholerae biotype proteus (ATCC 7708)	240.Vibrio metschnikovii	Gammaproteobacteria: “Vibrionales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	2	3.3	30	2.33	[0.6]	Jurtshuk & McQuitty 1976[BM9, genus, rods 0.5-0..8×1.4-2.6 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration); respiration 1 orig. unit both studied strains, FC1011 and SAK3	
Vibrio parahaemolyticus (FC1011, SAK3)	241.Vibrio parahaemolyticus	Gammaproteobacteria: “Vibrionales”	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	1	1.7	30	1.20	[0.6]	Jurtshuk & McQuitty 1976 [BM9, genus, rods 0.5-0..8×1.4-2.6 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration); respiration 1 orig. unit both studied strains, FC1011 and SAK3	
Vibrio sp. (Ant-300)	242.Vibrio sp.	Gammaproteobacteria: “Vibrionales”	% cellular carbon hr^{-1}	MIN	0.0071	0.11	5	0.44	0.14	Novitsky & Morita 1977 [Novitsky & Morita 1976, Figs. 3b,c, cells starved for several weeks, cocci, diam 0.6-0.7 μm; unstarved cells, rods, 1×2-4 μm = 2 μm^3]	Stable respiration of cells starved for several weaks; viability 50-100% judged by plate counts; during the first week of starvation, respiration is reduced by over 99%	Cell size estimated from linear dimensions of starved cells as shown in Fig. 3b of Novitsky & Morita 1976 During starvation, cells first increase in numbers at the expense of internal genetic material (nuclear bodies); as testified by Amy and Morita 1983 for 16 other marine bacterial isolates, this property of Ant-300 is not unique
Vitreoscilla stercoraria (ATCC 15218)	243.Vitreoscilla stercoraria	Betaproteobacteria: Neisseriales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	21	35	30	24.75		Jurtshuk & McQuitty 1976 [BM9, genus, filaments 1-3 μm diam]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Xanthomonas phaseoli (ATCC 9563)	244.Xanthomonas axonopodis	Gammaproteobacteria: Xanthomonadales	μl O_2 (mg DM)$^{-1}$ hr^{-1}	MIN	22	37	30	26.16	[0.25]	Jurtshuk & McQuitty 1976 [BM9, genus, rods 0.4-0.7×0.7-1.8 μm]	Cells harvested at the late-logarithmic growth phase (two thirds of the maximal growth concentration)	
Pasteurella pestis (virulent Alexander strain)	245.Yersinia pestis	Gammaproteobacteria: Enterobacteriales	μl O_2 (mg N)$^{-1}$ hr^{-1}	MIN	29	4.8	28	3.90	[0.55]	Wessman & Miller 1966 [Kowalski et al.	Cells (virulent Alexander strain) harvested after 24 to 30 hr	Respiration decreased by approx. 1.5-fold during the first 1-2 hr of starvation and then stabilized for 72 hr

1999, μm]	0.5-1×1-2	growth; stable respiration after 1.5 hr of starvation

Notes on additional data not included into Table **S1a**:

1) Listeria monocytogenes (Friedman & Alm 1962) resting cells from cultures grown for 16 hr had no measurable endogenous respiration. The lowest reported values were 17.7 and 8.1 μl O_2 (mg N)$^{-1}$ hr^{-1} for growth in the presence of pyruvate. The same result was obtained by Welch et al. 1979.

2) Data needing verification (can be unrealistic): Gaudy et al. 1963, E.coli 500 mg DM/l consumed 10 mg O_2 in 7 hr (Fig. 3) = 0.003 W/kg at 25 C.

3) Goldshmidt & Wiss 1966: "Since the high endogenous respiration of 24-hr Azotobacter cultures can be reduced markedly by aerating in saline, washed vegetative cells were shaken for 4 hr before exposure to the EDTA-Tris system."

4) Neisseria meningitidis (Yu & deVoe 1980): washed whole cells were devoid of detectable endogenous respiration; Mallavia & Weiss 1970 obtained the same result (typical rates in the presence of substrates were about 5 μmol O_2 (mg protein) hr^{-1} = 93 W/kg)

5) Data needing verification (can be unrealistic): Mårdén et al. 1985 studied the decline of endogenous respiration of marine bacteria during several days' starvation and observed values of the order of 0.5×10^{-10} mg O_2 (μm^3)$^{-1}$ hr^{-1} ~ 200 W/kg. Since this value is in the upper range of respiration values in the presences of substrates (!) (Makarieva et al. 2005), there should be some error in the reported respiration units. Moreover, in the inlet to Fig. 2 showing respiration rate per biosurface the units are again similar (μm^{-3}) instead of (μm^{-2}) again indicating an inconsistency. Finally, Morton et al. 1994 characterize these rates as "low but detectable", which could hardly be plausible if they were indeed in the vicinity of several hundred W/kg. In the related work by Kjelleberg et al. 1982 it is stated that after five days of starvation a marine *Vibrio* respired at a rate of not less than 9 ng atoms O_2 (10^9 viable cells)$^{-1}$ min^{-1} and cell volume was 0.4 μm^3. This gives a mass-specific rate of 90 W/kg. Even taking a conservative estimate of energy content of the living matter of 4×10^6 J/kg, we conclude that the bacterium should have eaten itself about ten times in five days, had it possessed such a high respiration rate. The data of Mårdén et al. 1985 and Kjelleberg et al. 1982 were not included into the present analysis.

6) Acidophilic bacterium PW2 (Goulbourne et al. 1986) starved at pH 3 or 4 progressively lost both respiration and viability, with no stabilization. In the presence of Mg^+ ions half-life of cells was 72 hr and respiration dropped from 84 nmol O_2 (mg protein)$^{-1}$ min^{-1} = 94 W/kg to virtually zero.

7) Data needing verification (can be unrealistic): Azospirillum brasiliense Sp7 and Azospirillum lipoferum Sp59b respired endogeneously at 0.73 and 0.98 μmol O_2 (mg protein)$^{-1}$ min^{-1}, respectively (820 and 1100 W/kg) (Martinez-Drets et al. 1984)

References to Table S1a:

Abu-Amero K.K., Halablab M.A., Miles R.J. (1996) Nisin resistance distinguishes *Mycoplasma* spp. from *Acholeplasma* spp. and provides a basis for selective growth media. Applied and Environmental Microbiology 62: 3107-3111.

Adriaens P., Focht D.D. (1991) Cometabolism of 3,4-dichlorobenzoate by *Acinetobacter* sp. strain 4-CB1. Applied and Environmental Microbiology 57: 173-179.

Adriaens P., Kohler H.P., Kohler-Staub D., Focht D.D. (1989) Bacterial dehalogenation of chlorobenzoates and coculture biodegradation of 4,4'-dichlorobiphenyl. Applied and Environmental Microbiology 55: 887-892.

Allen R.D., Baumann P. (1971) Structure and arrangement of flagella in species of the genus *Beneckea* and *Photobacterium fischeri*. Journal of Bacteriology 107: 295-302.

Altekar W.W., Rao M.R. (1963) Microbiological dissimilation of tricarballylate and trans-aconitate. Journal of Bacteriology 85: 604-613.

Amy P.S., Morita R.Y. (1983) Starvation-survival patterns of sixteen freshly isolated open-ocean bacteria. Applied and Environmental Microbiology 45: 1109-1115.

Bauer S., Tholen A., Overmann J., Brune A. (2000) Characterization of abundance and diversity of lactic acid bacteria in the hindgut of wood- and soil-feeding termites by molecular and culture-dependent techniques. Archives of Microbiology 173: 126-137.

Baumann P., Baumann L., Mandel M. (1971) Taxonomy of marine bacteria: the genus *Beneckea*. Journal of Bacteriology 107: 268-294.

Baumann P., Doudoroff M., Stanier R.Y. (1968) Study of the *Moraxella* Group. I. Genus *Moraxella* and the *Neisseria catarrhalis* group. Journal of Bacteriology 95: 58-73.
Berg I.A., Filatova L.V., Ivanovsky R.N. (2002) Inhibition of acetate and propionate assimilation by itaconate via propionyl-CoA carboxylase in isocitrate lyase-negative purple bacterium Rhodospirillum rubrum. FEMS Microbiology Letters 216: 49-54.
Biberstein E.L., Spencer P.D. (1962) Oxidative metabolism of *Haemophilus* species grown at different levels of hemin supplementation. Journal of Bacteriology 84: 916-920.
Bishop D.H., Pandya K.P., King H.K. (1962) Ubiquinone and vitamin K in bacteria. Biochemical Journal 83: 606-614.
Bisset K.A. (1953) Do bacteria have mitotic spindles, fusion tubes and mitochondria? Journal of General Microbiology 8: 50-57.
Blizzard J.L., Peterson G.E. (1963) Selective inhibition of proline-induced pigmentation in washed cells of *Serratia marcescens*. Journal of Bacteriology 85: 1136-1140.
Bluhm L., Ordal Z.J. (1969) Effect of sublethal heat on the metabolic activity of *Staphylococcus aureus*. Journal of Bacteriology 97: 140-150.
Bohach G.A., Snyder I.S. (1983) Cyanobacterial stimulation of growth and oxygen uptake by *Legionella pneumophila*. Applied and Environmental Microbiology 46: 528-531.
Bohin J.P., Rigomier D., Schaeffer P. (1976) Ethanol sensitivity of sporulation in *Bacillus subtilis*: a new tool for the analysis of the sporulation process. Journal of Bacteriology 127: 934-940.
Bongers L. (1970) Energy generation and utilization in hydrogen bacteria. Journal of Bacteriology 104: 145-151.
Boylen C.W. (1973) Survival of *Arthrobacter crystallopoietes* during prolonged periods of extreme desiccation. Journal of Bacteriology 113: 33-37.
Boylen C.W., Ensign J.C. (1970) Intracellular substrates for endogenous metabolism during long-term starvation of rod and spherical cells of *Arthrobacter crystallopoietes*. Journal of Bacteriology 103: 578-587.
Breznak J.A., Potrikus C.J., Pfennig N., Ensign J.C. (1978) Viability and endogenous substrates used during starvation survival of *Rhodospirillum rubrum*. Journal of Bacteriology 134: 381-388.
Bruheim P., Bredholt H., Eimhjellen K. (1999) Effects of surfactant mixtures, including Corexit 9527, on bacterial oxidation of acetate and alkanes in crude oil. Applied and Environmental Microbiology 65: 1658-1661.
Bryan-Jones D.G., Whittenbury R. (1969) Haematin-dependent oxidative phosphorylation in *Streptococcus faecalis*. Journal of General Microbiology 58: 247-260.
Burleigh I.G., Dawes E.A. (1967) Studies on the endogenous metabolism and senescence of starved *Sarcina lutea*. Biochemical Journal 102: 236-250.
Buswell J.A. (1975) Metabolism of phenol and cresols by *Bacillus stearothermophilus*. Journal of Bacteriology 124: 1077-1083.
Cain R.B., Tranter E.K., Darrah J.A. (1968) The utilization of some halogenated aromatic acids by *Nocardia*. Oxidation and metabolism. Journal of Bacteriology 106: 211-227.
Cartwright N.J., Cain R.B. Bacterial degradation of the nitrobenzoic acids. Biochemical Journal 71: 248-261.
Chakrabarty A.M., Roy S.C. (1964) Nature of endogenous reserve material in a strain of *Pseudomonas fluorescens-putida* intermediate. Biochemical Journal 92: 105-112.

Chapman P.J., Ribbons D.W. (1976) Metabolism of resorcinylic compounds by bacteria: alternative pathways for resorcinol catabolism in *Pseudomonas putida*. Journal of Bacteriology 125: 985-998.
Chester B., Cooper L.H. (1979) *Achromobacter* species (CDC group Vd): morphological and biochemical characterization. Journal of Clinical Microbiology 9: 425-436.
Cho H.W., Eagon R.G. (1967) Factors affecting the pathways of glucose catabolism and the tricarboxylic acid cycle in *Pseudomonas natriegens*. Journal of Bacteriology 93: 866-873.
Church B.D., Halvorson H. (1957) Intermediate metabolism of aerobic spores: I. Activation of glucose oxidation in spores of *Bacillus cereus* var *terminalis*. Journal of Bacteriology 73: 470-476.
Clifton C.E., Cherry J. (1966) Influence of glutamic acid on the endogenous respiration of *Bacillus subtilis*. Journal of Bacteriology 91: 546-550.
Conn H.J., Dimmick I.J. (1947) Soil bacteria similar in morphology to *Mycobacterium* and *Corynebacterium*. Journal of Bacteriology 54: 291-303. Luscombe B.M., Gray T.R.G. (1974) Characteristics of Arthrobacter grown in continuous culture. Journal of General Microbiology 82: 213-222.
Cooper R.A., Itiaba K., Kornberg H.L. (1965) The utilization of aconate and itaconate by *Micrococcus* sp. Biochemical Journal 94: 25-31.
Cooper R.A., Kornberg H.L. (1964) The utilization of itaconate by *Pseudomonas* sp. Biochemical Journal 91: 82-91.
Coulter C., Hamilton J.T., McRoberts W.C., Kulakov L., Larkin M.J., Harper D.B. (1999) Halomethane:bisulfide/halide ion methyltransferase, an unusual corrinoid enzyme of environmental significance isolated from an aerobic methylotroph using chloromethane as the sole carbon source. Applied and Environmental Microbiology 65: 4301-4312.
Crawford I.P. (1954) A new fermentative pseudomonad, *Pseudomonas formicans*, n. sp. Journal of Bacteriology 68: 734-738.
Crook P.G. (1952) The effect of heat and glucose on endogenous endospore respiration utilizing a modified Scholander microrespirometer. Journal of Bacteriology 63: 193-198.
Dagley S., Gibson D.T. (1965) The bacterial degradation of catechol. Biochemical Journal 95: 466-474.
Davis M.S., Bateman J.B. (1960) Relative humidity and the killing of bacteria II. Selective changes in oxidative activity associated with death. Journal of Bacteriology 80: 580-584.
Dawes E.A., Holms W.H. (1958) Metabolism of *Sarcina lutea* I. Carbohydrate oxidation and terminal respiration. Journal of Bacteriology 75: 390-399.
Dawes E.A., Ribbons D.W. (1965) Studies on the endogenous metabolism of *Escherichia coli*. Biochemical Journal 95: 332-343.
Dawson M.J., Jones C.W. (1981) Respiration-linked proton translocation in the obligate methylotroph *Methylophilus methylotrophus*. Journal of Biochemical Journal 194: 915-924.
De Ley J., Schell J. (1959) Oxidation of several substrates by *Acetobacter aceti*. Journal of Bacteriology 77: 445-451.
Decker S.J., Lang D.R. (1977) *Bacillus megaterium* mutant deficient in membrane-bound adenosine triphosphatase activity. Journal of Bacteriology 131: 98-104.
Devi N.A., Kutty R.K., Vasantharajan V.N., Rao P.V.S. (1975) Microbial metabolism of phenolic amines: Degradation of *dl*-synephrine by an unidentified arthrobacter. Journal of Bacteriology 122: 866-873.
Dietrich S.M., Burris R.H. (1967) Effect of exogenous substrates on the endogenous respiration of bacteria. Journal of Bacteriology 93: 1467-1470.

Donnelly M.I., Chapman P.J., Dagley S. (1981) Bacterial degradation of 3,4,5-trimethoxyphenylacetic and 3-ketoglutaric acids. Journal of Bacteriology 147: 477-481.
Donnelly M.I., Dagley S. (1980) Production of methanol from aromatic acids by *Pseudomonas putida*. Journal of Bacteriology 142: 916-924.
Doudoroff M., Palleroni N.J., MacGee J., Ohara M. (1956) Metabolism of carbohydrates by *Pseudomonas saccharophila* I. Oxidation of fructose by intact cells and crude cell-free preparations. Journal of Bacteriology 71: 196-201.
Droniuk R., Wong P.T., Wisse G., MacLeod R.A. (1987) Variation in quantitative requirements for Na^+ for transport of metabolizable compounds by the marine bacteria *Alteromonas haloplanktis* 214 and *Vibrio fischeri*. Applied and Environmental Microbiology 53: 1487-1495.
Dworkin M., Niederpruem D.J. (1964) Electron transport system in vegetative cells and microcysts of *Myxococcus xanthus*. Journal of Bacteriology 87: 316-322.
Eagon R.G. (1962) *Pseudomonas natriegens*, a marine bacterium with a generation time of less than 10 minutes. Journal of Bacteriology 83: 736-737.
Eisenberg R.C., Butters S.J., Quay S.C., Friedman S.B. (1974) Glucose uptake and phosphorylation in *Pseudomonas fluorescens*. Journal of Bacteriology 120: 147-153.
Engelhard W.E., Uyeno S., Pivnick H. (1957) Some modifications of mycobacteria effected with trypsin. Journal of Bacteriology 73: 206-210.
Ensign J.C. (1970) Long-term starvation survival of rod and spherical cells of *Arthrobacter crystallopoietes*. Journal of Bacteriology 103: 569-577.
Erlandson A.L. Jr., Ruhl R.F. (1956) Oxidative dissimilation of amino acids and related compounds by *Shigella flexneri*. Journal of Bacteriology 72: 708-712.
Euzéby J.P. (1997) List of bacterial names with standing in nomenclature: a folder available on the Internet. International Journal of Systematic Bacteriology (List of prokaryotic names with standing in nomenclature. Last full update November 03, 2006. URL: http://www.bacterio.net).
Faulkner G., Garduño R.A. (2002) Ultrastructural analysis of differentiation in *Legionella pneumophila*. Journal of Bacteriology 184: 7025-7041.
Feofilova E.P., Lebedeva N.E., Taptykova S.D., Kirillova N.F. (1966) Study on respiration of pigmented and leuco-variants of *Actinomyces longispororuber*. Mikrobiologija 35: 651-659.
Forbes M., Kuck N.A., Peets E.A. (1962) Mode of action of ethambutol. Journal of Bacteriology 84: 1099-1103.
Frederick J.J., Corner T.R., Gerhardt P. (1974) Antimicrobial actions of hexachlorophene: inhibition of respiration in *Bacillus megaterium*. Antimicrobial Agents and Chemotherapy 6: 712-721.
Friedberg D., Friedberg I. (1976) Membrane-associated, energy-linked reactions in *Bdellovibrio bacteriovorus*. Journal of Bacteriology 127: 1382-1388.
Friedman M.E., Alm W.L. (1962) Effect of glucose concentration in the growth medium on some metabolic activities of *Listeria monocytogenes*. Journal of Bacteriology 84: 375-376.
Frustaci J.M., Sangwan I., O'Brian M.R. (1991) Aerobic growth and respiration of a δ-aminolevulinic acid synthase (*hemA*) mutant of *Bradyrhizobium japonicum*. Journal of Bacteriology 173: 1145-1150.
Fu Y., O’Kelly C., Sieracki M., Distel D.L. (2003) Protistan grazing analysis by flow cytometry using prey labeled by in vivo expression of fluorescent proteins. Applied and Environmental Microbiology 69: 6848-6855.
Gary N.D., Bard R.C. (1952) Effect of nutrition on the growth and metabolism of *Bacillus subtilis*. Journal of Bacteriology 64: 501-512.

Gaudy A.F. Jr., Gaudy E.T., Komolrit K. (1963) Multicomponent substrate utilization by natural populations and a pure culture of *Escherichia coli*. Applied Microbiology 11: 157-162.

Gerhardt P., Levine H.B., Wilson J.B. (1950) The oxidative dissimilation of amino acids and related compounds by Brucella abortus. Journal of Bacteriology 60: 459-467.

Gilmour C.M., Butterworth E.M., Noble E.P., Wang C.H. (1955) Studies on the biochemistry of the streptomyces I. Terminal oxidative metabolism in *Streptomyces griseus*. Journal of Bacteriology 69: 719-724.

Goldschmidt M.C., Wyss O. (1966) Chelation effects on *Azotobacter* cells and cysts. Journal of Bacteriology 91: 120-124.

Goulbourne E. Jr., Matin M., Zychlinsky E., Matin A. (1986) Mechanism of ΔpH maintenance in active and inactive cells of an obligately acidophilic bacterium. Journal of Bacteriology 166: 59-65.

Gray C.T. (1952) The respiratory metabolism of murine leprosy bacilli. Journal of Bacteriology 64: 305-313.

Greisen E.C., Gunsalus I.C. (1944) An alcohol oxidation system in streptococci which functions without hydrogen peroxide accumulation. Journal of Bacteriology 48: 515-525.

Gronlund A.F., Campbell J.J. (1961) Nitrogenous compounds as substrates for endogenous respiration in microorganisms. Journal of Bacteriology 81: 721-724.

Gronlund A.F., Campbell J.J. (1963) Nitrogenous substrates of endogenous respiration in *Pseudomonas aeruginosa*. Journal of Bacteriology 86: 58-66.

Gronlund A.F., Campbell J.J. (1966) Influence of exogenous substrates on the endogenous respiration of *Pseudomonas aeruginosa*. Journal of Bacteriology 91: 1577-1581.

Groupé V., Pugh L.H., Levine A.S., Herrmann E.C. Jr. (1954) Suppression of certain viral lesions by a microbial product, xerosin, lacking in demonstrable antiviral properties and produced by *Achromobacter xerosis*, n. sp. Journal of Bacteriology 68: 10-18.

Gunter S.E., Kohn H.I. (1956) Effect of X-rays on the survival of bacteria and yeast II. Relation of cell concentration and endogenous respiration to sensitivity. Journal of Bacteriology 72: 422-428.

Gunter S.E., Kohn H.I. (1956) Effect of X-rays on the survival of bacteria and yeast II. Relation of cell concentration and endogenous respiration to sensitivity. Journal of Bacteriology 72: 422-428.

Hareland W.A., Crawford R.L., Chapman P.J., Dagley S. (1975) Metabolic function and properties of 4-hydroxyphenylacetic acid 1-hydroxylase from *Pseudomonas acidovorans*. Journal of Bacteriology 121: 272-285.

Harper D.B. (1977) Microbial metabolism of aromatic nitriles. Enzymology of C-N cleavage by *Nocardia* sp. (*Rhodochrous* group) N.C.I.B. 11216. Biochemical Journal 165: 309-319.

Hayase N., Yano H., Kudoh E., Tsutsumi C., Ushio K., Miyahara Y., Tanaka S., Katsuhiko N. (2004) Isolation and characterization of poly(butylene succinate-*co*-butylene adipate)-degrading microorganism. Journal of Bioscience and Bioengineering 97: 131-133.

Hespell R.B., Rosson R.A., Thomashow M.F., Rittenberg S.C. (1973) Respiration of Bdellovibrio bacteriovorus strain 109J and its energy substrates for intraperiplasmic growth. Journal of Bacteriology 113: 1280-1288.

Hoffee P., Englesberg E. (1962) Effect of metabolic activity of the glucose permease of bacterial cells. Proceedings of the National Academy of Sciences USA 48: 1759-1765.

Hollocher T.C., Kumar S., Nicholas D.J. (1982) Respiration-dependent proton translocation in *Nitrosomonas europaea* and its apparent absence in *Nitrobacter agilis* during inorganic oxidations. Journal of Bacteriology 149: 1013-1020.
Holt J.G. (ed.) (1984, 1986, 1989) *Bergey's Manual of Systematic Bacteriology*, Vols. 1-4. Williams & Wilkins, Baltimore.
Holt J.G., Krieg N.R., Sneath P.H.A., Staley J.T., Williams S.T. (eds.) (1994) Bergey's Manual of Determinative Bacteriology, Ninth Edition. Williams & Wilkins, Baltimore.
Hou C.I., Gronlund A.F., Campbell J.J. (1966) Influence of phosphate starvation on cultures of *Pseudomonas aeruginosa*. Journal of Bacteriology 92: 851-855.
Huang C.-Y., Garcia J.-L., Patel B.K.C., Cayol J.-L., Baresi L., Mah R.A. (2000) *Salinivibrio costicola* subsp. *vallismortis* subsp. nov., a halotolerant facultative anaerobe from Death Valley, and emended description of *Salinivibrio costicola*. International Journal of Systematic and Evolutionary Microbiology 50: 615-622
Huber T.W., Schuhardt V.T. (1970) Lysostaphin-induced, osmotically fragile *Staphylococcus aureus* cells. Journal of Bacteriology 103: 116-119.
Hughes D.E. (1965) The metabolism of halogen-substituted benzoic acids by *Pseudomonas fluorescens*. Biochemical Journal 96: 181-188.
Hulcher F.H., King K.W. (1958a) Metabolic basis for disaccharide preference in a *Cellvibrio*. Journal of Bacteriology 76: 571-577.
Hulcher F.H., King K.W. (1958b) Disaccharide preference of an aerobic cellulolytic bacterium, *Cellvibrio gilvus* n. sp. Journal of Bacteriology 76: 565-570.
Hunter G.J. (1953) The oxidation of glycerol by mycobacteria. Biochemical Journal 55: 320-328.
Ingram M. (1940) The endogenous respiration of *Bacillus cereus*: III. The changes in the rate of respiration caused by sodium chloride, in relation to hydrogen-ion concentration. Journal of Bacteriology 40: 683-694.
Isenberg H.D., Schatz A., Angrist A.A., Schatz V., Trelawny G.S. (1954) Microbial metabolism of carbamates II.Nitrification of urethan by *Strepto-myces nitrificans*. Journal of Bacteriology 68: 5-9.
Jacobs N.J., Conti S.F. (1965) Effect of hemin on the formation of the cytochrome system of anaerobically grown *Staphylococcus epidermidis*. Journal of Bacteriology 89: 675-679.
Jacoby GA. (1964) The induction and repression of amino acid oxidation in *Pseudomonas fluorescens*. Biochemical Journal 92: 1-8.
Jenkins O., Byrom D., Jones D. (1987) *Methylophilus*: a new genus of methanol-utilizing bacteria. International Journal of Systematic Bacteriology 37: 446-448.
Jigami Y., Kawasaki Y., Omori T., Minoda Y. (1979) Coexistence of different pathways in the metabolism of *n*-propylbenzene by *Pseudomonas* sp. Applied and Environmental Microbiology 38: 783-788.
Johnson E.J., Sobek J.M., Clifton C.E. (1958) Oxidative assimilation by *Azotobacter agilis*. Journal of Bacteriology 76: 658-661.
Jones A., Turner J.M. (1979) Microbial metabolism of amino alcohols. 1-Aminopropan-2-ol and ethanolamine metabolism via propionaldehyde and acetaldehyde in a species of *Pseudomonas*. Biochemical Journal 134: 167-182.
Jurtshuk P. Jr., Marcucci O.M., McQuitty D.N. (1975) Tetramethyl-p-phenylenediamine oxidase reaction in *Azotobacter vinelandii*. Applied Microbiology 30: 951-958.
Jurtshuk P. Jr., McQuitty D.N. (1976) Use of a quantitative oxidase test for characterizing oxidative metabolism in bacteria. Applied and Environmental Microbiology 31: 668-679.

Kahn M.E., Gromkova R. (1981) Occurrence of pili on and adhesive properties of *Haemophilus parainfluenzae*. Journal of Bacteriology 145: 1075-1078.

Kanso S., Greene A.C., Patel B.K.C. (2002) *Bacillus subterraneus* sp. nov., an iron- and manganese-reducing bacterium from a deep subsurface Australian thermal aquifer. International Journal of Systematic and Evolutionary Microbiology 52: 869-874.

Keevil C.W., Anthony C. (1979) Effect of growth conditions on the involvement of cytochrome c in electron transport, proton translocation and ATP synthesis in the facultative methylotroph *Pseudomonas* AM1. Biochemical Journal 182: 71-79.

Kelly D.P., Wood A.P. (2000) Reclassification of some species of *Thiobacillus* to the newly designated genera *Acidithiobacillus* gen. nov., *Halothiobacillus* gen. nov. and *Thermithiobacillus* gen. nov. International Journal of Systematic and Evolutionary Microbiology 50: 511-516.

Kenimer E.A., Lapp D.F. (1978) Effects of elected inhibitors on electron transport in *Neisseria gonorrhoeae*. Journal of Bacteriology 134: 537-545.

Kjelleberg S. Humphrey B.A. Marshall K.C. (1982) Effect of interfaces on small, starved marine bacteria. Applied and Environmental Microbiology 43: 1166-1172.

Kornberg H.L. (1958) The metabolism of C_2 compounds in micro-organisms. 1. The incorporation of 2-^{14}Cacetate by *Pseudomonas fluorescens*, and by a *Corynebacterium*, grown on ammonium acetate. Biochemical Journal 68: 535-542.

Kornberg H.L., Gotto A.M. (1961) The metabolism of C_2 compounds in micro-organisms. 6. Synthesis of cell constituents from glycollate by *Pseudomonas* sp. Biochemical Journal 78: 69-82.

Kornberg H.L., Morris J.G. (1965) The utilization of glycollate by *Micrococcus denitrificans*: the β-hydroxyaspartate pathway. Biochemical Journal 95: 577-586.

Kowalski W., Bahnfleth W., Whittam T. (1999) Filtration of airborne microorganisms: modeling and prediction. ASHRAE Transactions 105: 4-17.

Kratz W.A., Myers J. (1955) Photosynthesis and respiration of three blue-green algae. Plant Physiology 30: 275-280.

Krieg R. (1976) Biology of the chemoheterotrophic spirilla. Bacteriological Reviews 40: 55-115.

Krzemiński Z., Mikucki J., Szarapińska-Kwaszewska J. (1972) Endogenous metabolism of *Staphylococcus aureus*. Folia Microbiologica 17: 46-54.

Kubitschek H.E. (1969) Growth during the bacterial cell cycle: analysis of cell size distribution. Biophysical Journal 9: 792-809.

Kumazawa S., Izawa S., Mitsui A. (1983) Proton efflux coupled to dark H2 oxidation in whole cells of a marine sulfur photosynthetic bacterium (*Chromatium* sp. strain Miami PBS1071). Journal of Bacteriology 154: 185-191.

Kunz D.A., Chapman P.J. (1981) Catabolism of pseudocumene and 3-ethyltoluene by *Pseudomonas putida* (*arvilla*) mt-2: evidence for new functions of the TOL (pWWO) plasmid. Journal of Bacteriology 146: 179-191.

Kushner D.J., Hamaide F., MacLeod R.A. (1983) Development of salt-resistant active transport in a moderately halophilic bacterium. Journal of Bacteriology 153: 1163-1171.

Lawford H.G., Haddock B.A. (1973) Respiration-driven proton translocation in *Escherichia coli*. Biochemical Journal 136: 217-220.

Lee M., Chandler A.C. (1941) A study of the nature, growth and control of bacteria in cutting compounds. Journal of Bacteriology 41: 373-386.

Levine S., Krampitz L.O. (1952) The oxidation of acetone by a soil diphtheroid. Journal of Bacteriology 64: 645-650.

Lindmark D.G., Jarroll E.L., Timoney P.J., Shin S.J. (1982) Energy metabolism of the contagious equine metritis bacterium. Infection and Immunity 36: 531-534.

Loh W.H.-T. (1984) Intermediary carbon metabolism of *Azospirillum braziliense*. Journal of Bacteriology 158: 264-268.

London J., Rittenberg S.C. (1966) Effects of organic matter on the growth of *Thiobacillus intermedius*. Journal of Bacteriology 91: 1062-1069.
Lontoh S., DiSpirito A.A., Semrau J.D. (1999) Dichloromethane and trichloroethylene inhibition of methane oxidation by the membrane-associated methane monooxygenase of *Methylosinus trichosporium* OB3b. Archives of Microbiology 171: 301-308.
Maitra P.K., Roy S.C. (1961) Tricarboxylic acid-cycle activity in *Streptomyces olivaceus*. Biochemical Journal 79: 446-456.
Majtán V., Majtánová Ľ. (1999) The effect of new disinfectant substances on the metabolism of *Enterobacter cloacae*. International Journal of Antimicrobial Agents 11: 59-64.
Majtán V., Majtánová Ľ., Hoštacká A., Hybenová D., Mlynarčik D. (1995) Effect of quaternary ammonium salts and amine oxides on *Pseudomonas aeruginosa*. Microbios 84: 41-51.
Makarieva A.M., Gorshkov V.G., Li B.-L. (2005) Energetics of the smallest: Do bacteria breathe at the same rate as whales? Proceedings of the Royal Society of London, Biological Series 272: 2219-2224.
Mallavia L.P., Weiss E. (1970) Catabolic activities of *Neisseria meningitidis*: Utilization of glutamate. Journal of Bacteriology 101: 127-132.
Mårdén P., Tunlid A., Malmcrona-Friberg K., Odham G., Kjelleberg S. (1985) Physiological and morphological changes during short term starvation of marine bacterial isolates. Archives of Microbiology 142: 326-332.
Marquis R.E. (1965) Nature of the bactericidal action of antimycin A for *Bacillus megaterium*. Journal of Bacteriology 89: 1453-1459.
Martinez-Drets G., Del Gallo M., Burpee C., Burris R.H. (1984) Catabolism of carbohydrates and organic acids and expression of nitrogenase by *Azospirilla*. Journal of Bacteriology 159: 80-85.
Mas J., Pedrós-Alió C., Guerrero R. (1985) Mathematical model for determining the effects of intracytoplasmic inclusions on volume and density of microorganisms. Journal of Bacteriology 164: 749-756.
Mathews M.M., Sistrom W.R. (1959) Intracellular location of carotenoid pigments and some respiratory enzymes in *Sarcina lutea*. Journal of Bacteriology 78: 778-787.
McVittie A., Messik F., Zahler S.A. (1962) Developmental biology of *Myxococcus*. Journal of Bacteriology 84: 546-551.
Meagher R.B., McCorkle G.M., Ornston M.K., Ornston L.N. (1972) Inducible uptake system for β-carboxy-*cis*, *cis*-muconate in a permeability mutant of *Pseudomonas putida*. Journal of Bacteriology 111: 465-473.
Mescher M.F., Strominger J.L. (1976) Structural (shape-maintaining) role of the cell surface glycoprotein of *Halobacterium salinarium*. Proceedings of the National Academy of Sciences of the United States of America 73: 2687-2691.
Mickelson M.N. (1967) Aerobic metabolism of *Streptococcus agalactiae*. Journal of Bacteriology 94: 184-191.
Midwinter G.G., Batt R.D. (1960) Endogenous respiration and oxidative assimilation in *Nocardia corallina*. Journal of Bacteriology 79: 9-17.
Minami K. (1957) Bactericidal action of oleic acid for tubercle bacilli: I. Quantitative and analytical survey of the action. Journal of Bacteriology 73: 338-344.
Jayasuriya G.C.N. (1956) The oxidative properties of an oxalate-decomposing organism, *Pseudomonas* OD1, with particular reference to the synthesis of citrate from glycollate. Biochemical Journal 64: 469-477.
Mitruka B.M., Costilow R.N., Black S.H., Pepper R.E. (1967) Comparisons of cells, refractile bodies, and spores of *Bacillus popilliae*. Journal of Bacteriology 94: 759-765.

Montesinos E., Esteve I., Guerrero R. (1983) Comparison between direct methods for determination of microbial cell volume: electron microscopy and electronic particle sizing. Applied and Environmental Microbiology 45: 1651-1658.
Morawski B., Eaton R.W., Rossiter J.T., Guoping S., Griengl H., Ribbons D.W. (1997) 25: 2-Naphthoate catabolic pathway in *Burkholderia* strain JT 1500. Journal of Bacteriology 179: 115-121.
Mori T., Miyata Y., Kohsaka K., Makino M. (1985) Respiration in *Mycobacterium leprae*. International Journal of Leprosy 53: 600-609.
Morton D.S., Oliver J.D. (1994) Induction of carbon starvation-induced proteins in *Vibrio vulnificus*. Applied and Environmental Microbiology 60: 3653-3659.
Nagata T. (1986) Carbon and nitrogen content of natural planktonic bacteria. Applied and Environmental Microbiology 52: 28-32.
Nickerson W.J., Sherman F.G. (1952) Metabolic aspects of bacterial growth in the absence of cell division II. Respiration of normal and filamentous cells of *Bacillus cerrus*. Journal of Bacteriology 64: 667-678.
Niederpruem D.J., Hackett D.P. (1961) Respiratory chain of *Streptomyces*. Journal of Bacteriology 81: 557-563.
Novitsky J.A., Morita R.Y. (1976) Morphological characterization of small cells resulting from nutrient starvation of a pyschrophilic marine vibrio. Applied and Environmental Microbiology 32: 617-622.
Novitsky J.A., Morita R.Y. (1977) Survival of a psychrophilic marine vibrio under long-term nutrient starvation. Applied and Environmental Microbiology 33: 635-641.
O'Keeffe D.T., Anthony C. (1978) The microbial metabolism of C_1 compounds. The stoicheiometry of respiration-driven proton translocation in *Pseudomonas* AM1 and in a mutant lacking cytochrome *c*. Biochemical Journal 170: 561-567.
Ougham H.J., Trudgill P.W. (1982) Metabolism of cyclohexaneacetic acid and cyclohexanebutyric acid by *Arthrobacter* sp. strain CA1. Journal of Bacteriology 150: 1172-1182.
Overmann J., Pfennig N. (1992) Continuous chemotrophic growth and respiration of Chromatiaceae species at low oxygen concentrations. Archives of Microbiology 158: 59-67.
Packer L., Vishniac W. (1955) Chemosynthetic fixation of carbon dioxide and characteristics of hydrogenase in resting cell suspensions of *Hydrogenomonas ruhlandii* nov. spec. Journal of Bacteriology 70: 216-223.
Palese L.L., Gaballo A., Technikova-Dobrova Z., Labonia N., Abbrescia A., Scacco S., Micelli L., Papa S. (2003) Characterization of plasma membrane respiratory chain and ATPase in the actinomycete *Nonomuraea* sp. ATCC 39727. FEMS Microbiology Letters 228: 233-239.
Yu E.K., DeVoe I.W. (1980) Terminal branching of the respiratory electron transport chain in *Neisseria meningitidis*. Journal of Bacteriology 142: 879-887.
Pan P.H.C. (1971) Lack of distinction between *Nitrobacter agilis* and *Nitrobacter winogradskyi*. Journal of Bacteriology 108: 1416-1418.
Peel D., Quayle J.R. (1961) Microbial growth on C1 compounds. 1. Isolation and characterization of *Pseudomonas* AM1. Biochemical Journal 81: 465-469.
Pepper R.E., Costilow R.N. (1964) Glucose catabolism by *Bacillus popilliae* and *Bacillus lentimorbus*. Journal of Bacteriology 87: 303-310.
Peterson J.A. (1970) Cytochrome content of two pseudomonads containing mixed-function oxidase systems. Journal of Bacteriology 103: 714-721.
Peterson J.B., LaRue T.A. (1982) Soluble aldehyde dehydrogenase and metabolism of aldehydes by soybean bacteroids. Journal of Bacteriology 151: 1473-1484.

Ramsey H.H. (1962) Endogenous respiration of *Staphylococcus aureus*. Journal of Bacteriology 83: 507-514.

Raymond R.L., Jamison V.W., Hudson J.O. (1967) Microbial hydrocarbon co-oxidation: I. Oxidation of mono- and dicyclic hydrocarbons by soil isolates of the genus *Nocardia*. Applied Microbiology 15: 857-865.

Reed W.M., Dugan P.R. (1979) Study of developmental stages of *Methylosinus trichosporium* with the aid of fluorescent-antibody staining techniques. Applied and Environmental Microbiology 38: 1179-1183.

Rittenberg SC, Shilo M. (1970) Early host damage in the infection cycle of *Bdellovibrio bacteriovorus*. Journal of Bacteriology 102: 149-160.

Robertson J.G., Batt R.D. (1973) Survival of *Nocardia corallina* and degradation of constituents during starvation. Journal of General Microbiology 78: 109-117.

Rogoff M.H. (1962) Chemistry of oxidation of polycyclic aromatic hydrocarbons by soil pseudomonads. Journal of Bacteriology 83: 998-1004.

Sabina L.R., Pivnick H. (1956) Oxidation of soluble oil emulsions and emulsifiers by *Pseudomonas oleovorans* and *Pseudomonas formicans*. Applied Microbiology 4: 171-175.

Sariaslani F.S., Sudmeier T.J.L., Focht D.D. (1982) Degradation of 3-phenylbutyric acid by *Pseudomonas* sp. Journal of Bacteriology 152: 411-421.

Schatz A., Bovell C. Jr. (1952) Growth and hydrogenase activity of a new bacterium, *Hydrogenomonas facilis*. Journal of Bacteriology 63: 87-98.

Schleper C., Puehler G., Holz I., Gambacorta A., Janekovic D., Santarius U., Klenk H.-P., Zillig W. (1995) *Picrophilus* gen. nov., fam. nov.: a novel aerobic, heterotrophic, thermoacidophilic genus and family comprising archaea capable of growth around pH 0. Journal of Bacteriology 177: 7050-7059.

Sebek O.K., Barker H.A. (1968) Metabolism of β-methylaspartate by a pseudomonad. Journal of Bacteriology 96: 2094-2098.

Segal W., Bloch H. (1956) Biochemical differentiation of *Mycobacterium tuberculosis* grown in vivo and in vitro. Journal of Bacteriology 72: 132-141.

Shaw DR. (1956) Polyol dehydrogenases. 3. Galactitol dehydrogenase and D-iditol dehydrogenase. Biochemical Journal 64: 394-405.

Sierra G., Gibbons N.E. (1962) Role and oxidation pathway of poly-β-hydroxybutyric acid in *Micrococcus halodenitrificans*. Canadian Journal of Microbiology 8: 255-269.

Silver M. (1970) Oxidation of elemental sulfur and sulfur compounds and CO_2 fixation by *Ferrobacillus ferrooxidans* (*Thiobacillus thiooxidans*). Canadian Journal of Microbiology 16: 845-848.

Smith A., Tranter E.K., Cain R.B. (1968) The utilization of some halogenated aromatic acids by *Nocardia*. Effects on the growth and enzyme induction. Journal of Bacteriology 106: 203-209.

Smith A.J., Hoare D.S. (1968) Acetate assimilation by *Nitrobacter agilis* in relation to its "obligate autotrophy". Journal of Bacteriology 95: 844-855.

Sobek J.M., Charba J.F., Foust W.N. (1966) Endogenous metabolism of *Azotobacter agilis*. Journal of Bacteriology 92: 687-695.

Sobek J.M., Talburt D.E. (1968) Effects of the rare earth cerium on *Escherichia coli*. Journal of Bacteriology 95: 47-51.

Sorokin D.Y., Jones B.E., Kuenen J.G. (2000) An obligate methylotrophic, methane-oxidizing *Methylomicrobium* species from a highly alkaline environment. Extremophiles 4: 145-155.

Sparnins V.L., Chapman P.J. (1976) Catabolism of L-tyrosine by the homoprotocatechuate pathway in gram-positive bacteria. Journal of Bacteriology 127: 362-366.

Sparnins V.L., Chapman P.J., Dagley S. (1974) Bacterial degradation of 4-hydroxyphenylacetic acid and homoprotocatechuic acid. Journal of Bacteriology 120: 159-167.

Spendlove R., Weiser H.H., Harper W.J. (1957) Factors affecting the initiation of respiration of *Streptococcus lactis*. Applied Microbiology 5: 281-285.

Stevenson J. (1966) The specific requirement for sodium chloride for the active uptake of l-glutamate by *Halobacterium salinarium*. Journal of Bacteriology 99: 257-260.

Stokes J.L. (1954) Studies on the filamentous sheathed iron bacterium *Sphaerotilus natans*. Journal of Bacteriology 67: 278-291.

Straley S.C., LaMarre A.G., Lawrence L.J., Conti S.F. (1979) Chemotaxis of *Bdellovibrio bacteriovorus* toward pure compounds. Journal of Bacteriology 140: 634-642.

Subba-Rao R.V., Alexander M. (1977) Products formed from analogues of 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (DDT) metabolites by *Pseudomonas putida*. Applied and Environmental Microbiology 33: 101-108.

Subba-Rao R.V., Alexander M. (1985) Bacterial and fungal cometabolism of 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane (DDT) and its breakdown products. Applied and Environmental Microbiology 49: 509-516.

Takayanagi S., Kawasaki H., Sugimori K., Yamada T., Sugai A., Ito T., Yamasato K., Shioda M. (1996) *Sulfolobus hakonensis* sp. nov., a novel species of acidothermophilic archaeon. International Journal of Systematic Bacteriology 46: 377-382.

Takeo K., Uesaka I. (1975) Existence of a simple configuration in the wall surface of Nocardia mycellium. Journal of General Microbiology 87: 373-376.

Tappe W., Laverman A., Bohland M., Braster M., Rittershaus S., Groeneweg J., van Verseveld H.W. (1999) Maintenance energy demand and starvation recovery dynamics of *Nitrosomonas europaea* and *Nitrobacter winogradskyi* cultivated in a retentostat with complete biomass retention. Applied and Environmental Microbiology 65: 2471-2477.

Taylor B.F. (1983) Aerobic and anaerobic catabolism of vanillic acid and some other methoxy-aromatic compounds by *Pseudomonas* sp. strain PN-1. Applied and Environmental Microbiology 46: 1286-1292.

Tepper B.S. (1968) Differences in the utilization of glycerol and glucose by *Mycobacterium phlei*. Journal of Bacteriology 95: 1713-1717.

Tesh M.J., Morse S.A., Miller R.D. (1983) Intermediary metabolism in *Legionella pneumophila*: Utilization of amino acids and other compounds as energy sources. Journal of Bacteriology 154: 1104-1109.

Tisa L.S., Ensign J.C. (1987) Isolation and nitrogenase activity of vesicles from Frankia sp. strain $EANI_{pec}$. Journal of Bacteriology 169: 5054-5059.

Tomlinson G.A., Campbell J.J. (1963) Patterns of oxidative assimilation in strains of *Pseudomonas* and *Achromobacter*. Journal of Bacteriology 86: 434-444.

Tros M.E., Bosma T.N.P., Schraa G., Zehnder A.J.B. (1996) Measurement of minimum substrate concentration (S_{min}) in a recycling fermentor and its prediction from the kinetic parameters of *Pseudomonas* sp. strain B13 from batch and chemostat cultures. Applied and Environmental Microbiology 62: 3655-3661.

Trudinger P.A. (1967) Metabolism of thiosulfate and tetrathionate by heterotrophic bacteria from soil. Journal of Bacteriology 93: 550-559.

Tsai J.C., Aladegbami S.L., Vela G.R. (1979) Phosphate-limited culture of *Azotobacter vinelandii*. Journal of Bacteriology 139: 639-645.

Van de Vossenberg J.L.C.M., Driessen A.J.M., Zillig W., Konings W.N. (1998) Bioenergetics and cytoplasmic membrane stability of the extreme acidophilic thermophilic archaeon *Picrophilus oshimae*. Extremophiles 2: 67-74.

Van Ginkel C.G., Van Dijk J.B., Kroon A.G.M. (1992) Metabolism of hexadecyltrimethylammonium chloride in *Pseudomonas* strain B1. Applied and Environmental Microbiology 58: 3083-3087.
Van Niel E.W.J., Gottschal J.C. (1998) Oxygen consumption by *Desulfovibrio* strains with and without polyglucose. Applied and Environmental Microbiology 64: 1034-1039.
Van Veen H.W., Abee T., Kortstee G.J., Konings W.N., Zehnder A.J. (1993) Characterization of two phosphate transport systems in *Acinetobacter johnsonii* 210A. Journal of Bacteriology 175: 200-206.
Vangnai A.S., Sayavedra-Soto S.A., Arp D.J. (2002) Roles for the two 1-butanol dehydrogenases of *Pseudomonas butanovora* in butane and 1-butanol metabolism. Journal of Bacteriology 184: 4343-4350.
Ventosa A., Nieto J.N.J., Oren A. (1998) Biology of moderately halophilic aerobic bacteria. Microbiology and Molecular Biology Reviews 62: 504-544.
Vogler K.G. (1942a) The presence of an endogenous respiration in the autotrophic bacteria. Journal of General Physiology 25: 617-622.
Vogler K.G. (1942b) Studies on the metabolism of autotrophic bacteria. II. The nature of the chemosynthetic reaction. Journal of General Physiology 26: 103-117.
Walker J.R. (1959) Pyruvate metabolism in *Lactobacillus brevis*. Biochemical Journal 72: 188-192.
Warren R.A., Ells A.F., Campbell J.J. (1960) Endogenous respiration of *Pseudomonas aeruginosa*. Journal of Bacteriology 79: 875-879.
Watson G.K., Cain R.B. (1975) Microbial metabolism of the pyridine ring. Metabolic pathways of pyridine biodegradation by soil bacteria. Biochemical Journal 146: 157-172.
Weinstein I., Guss M.L., Altenbern R.A. (1962) Pyruvate oxidation by *Pasteurella tularensis* strains of graded virulence. Journal of Bacteriology 83: 1010-1016.
Welch D.F., Sword C.P., Brehm S., Dusanic D. (1979) Relationship between superoxide dismutase and pathogenic mechanisms of *Listeria monocytogenes*. Infection and Immunity 23: 863-872.
Wen A., Fegan M., Hayward C., Chakraborty S., Sly L.I. (1999) Phylogenetic relationships among members of the *Comamonadaceae*, and description of *Delftia acidovorans* (den Dooren de Jong 1926 and Tamaoka et al. 1987) gen. nov., comb. nov. International Journal of Systematic Bacteriology 49: 567-576.
Wessman G.E., Miller D.J. (1966) Biochemical and physical changes in shaken suspensions of *Pasteurella pestis*. Applied Microbiology 14: 636-642.
White D.C. (1962) Cytochrome and catalase patterns during growth of *Haemophilus parainfluenzae*. Journal of Bacteriology 83: 851-859.
Wieslander A., Nordström S., Dahlqvist A., Rilfors L., Lindblom G. (1987) Membrane lipid composition and cell size of *Acholeplasma laidlawii* strain A are strongly influenced by lipid acyl chain length. European Journal of Biochemistry 227: 734-744.
Yotis W.W. (1963) Absorption of the antibacterial serum factor by staphylococci. Journal of Bacteriology 85: 911-917.
Yotis W.W., Ekstedt R.D. (1959) Studies on staphylococci I. Effect of serum and coagulase on the metabolism of coagulase positive and coagulase negative strains. Journal of Bacteriology 78: 567-574.
Youmans A.S., Youmans G.P. (1962a) Effect of mycosuppressin on the course of experimental tuberculosis in mice. Journal of Bacteriology 84: 701-707.

Youmans A.S., Youmans G.P. (1962b) Effect of mycosuppressin on the respiration and growth of *Mycobacterium tuberculosis*. Journal of Bacteriology 84: 708-715.

Youmans A.S., Youmans G.P., Hegre A. Jr. (1960) Effect of homogenates of organs from immunized guinea pigs on the respiration of *Mycobacterium tuberculosis*. Journal of Bacteriology 80: 394-399.

Zubkov M.V. Fuchs B.M., Eilers H., Burkill P.H., Amann R. (1999) Determination of total protein content of bacterial cells by SYPRO staining and flow cytometry. Applied and Environmental Microbiology 65: 3251-3257.

Table **S1b**. Numeric values used in the analyses presented in Figures 1-3 and Table 1 in the paper (after Table S1a). Log is decimal logarithm of the corresponding variable.

	Valid name	Class: Order	MIN	qWkg	LogqWkg	TC	q25Wkg	Logq25Wkg	Mpg	LogMpg
1.	Acetobacter aceti	Clostridia: Clostridiales	MIN	0.6	-0.222	30	0.42	-0.377	0.75	-0.125
2.	Acholeplasma laidlawii	Mollicutes: Acholeplasmatales	MIN	1.4	0.146	37	0.61	-0.215	0.04	-1.398
3.	Achromobacter ruhlandii	Betaproteobacteria: Burkholderiales	MIN	15	1.176	30	10.61	1.026	0.2	-0.699
4.	Achromobacter sp.	Betaproteobacteria: Burkholderiales	MIN	8.4	0.924	30	5.94	0.774	0.6	-0.222
5.	Achromobacter viscosus	Betaproteobacteria: Burkholderiales	MIN	35	1.544	30	24.75	1.394	0.6	-0.222
6.	Achromobacter xerosis	Betaproteobacteria: Burkholderiales	MIN	23	1.362	30	16.26	1.211	0.5	-0.301
7.	Acidovorax facilis	Betaproteobacteria: Burkholderiales	MIN	7	0.845	30	4.95	0.695	0.3	-0.523
8.	Acinetobacter baumannii	Gammaproteobacteria: Pseudomonadales	MIN	12	1.079	30	8.49	0.929	2	0.301
9.	Acinetobacter calcoaceticus	Gammaproteobacteria: Pseudomonadales	MIN	6.7	0.826	30	4.74	0.676	2	0.301
10.	Acinetobacter johnsonii	Gammaproteobacteria: Pseudomonadales	MIN	46	1.663	30	32.53	1.512	2	0.301
11.	Acinetobacter sp.	Gammaproteobacteria: Pseudomonadales	MIN	3.3	0.519	25	3.30	0.519	2	0.301
12.	Acinetobacter sp.	Gammaproteobacteria: Pseudomonadales	MIN	6	0.778	30	4.24	0.627	2	0.301
13.	Acinetobacter sp.	Gammaproteobacteria: Pseudomonadales	MIN	8	0.903	30	5.66	0.753	2	0.301
14.	Aeromonas hydrophila	Gammaproteobacteria: Aeromonadales	MIN	38	1.580	30	26.87	1.429		
15.	Aeromonas veronii	Gammaproteobacteria: Aeromonadales	MIN	20	1.301	30	14.14	1.150		
16.	Agrobacterium tumefaciens	Alphaproteobacteria: Rhizobiales	MIN	20	1.301	30	14.14	1.150	1.5	0.176
17.	Alcaligenes eutrophus	Betaproteobacteria: Burkholderiales	MIN	83	1.919	33	47.67	1.678	0.8	-0.097
18.	Alcaligenes faecalis	Betaproteobacteria: Burkholderiales	MIN	27	1.431	30	19.09	1.281		
19.	Alcaligenes sp.	Betaproteobacteria: Burkholderiales	MIN	2.1	0.322	30	1.48	0.170		
20.	Aminobacter lissarensis	Alphaproteobacteria: Rhizobiales	MIN	1.6	0.204	25	1.60	0.204	0.6	-0.222
21.	Amoebobacter purpureus	Gammaproteobacteria: Chromatiales	MIN	11	1.041	30	7.78	0.891	36	1.556
22.	Amoebobacter roseus	Gammaproteobacteria: Chromatiales	MIN	5.4	0.732	30	3.82	0.582	5	0.699
23.	Amoebobaeter pendens	Gammaproteobacteria: Chromatiales	MIN	8.5	0.929	30	6.01	0.779	5	0.699
24.	Aquaspirillum itersonii	Betaproteobacteria: Neisseriales	MIN	10	1.000	30	7.07	0.849	0.9	-0.046
25.	Arthrobacter crystallopoietes	Actinobacteria: Actinomycetales	MIN	0.2	-0.699	30	0.14	-0.854	1.7	0.230
26.	Arthrobacter globiformis	Actinobacteria: Actinomycetales	MIN	8.3	0.919	30	5.87	0.769	0.5	-0.301
27.	Arthrobacter sp.	Actinobacteria: Actinomycetales	MIN	1.2	0.079	30	0.85	-0.071	1.5	0.176
28.	Arthrobacter sp.	Actinobacteria: Actinomycetales	MIN	0.75	-0.125	25	0.75	-0.125	0.2	-0.699
29.	Arthrobacter sp.	Actinobacteria: Actinomycetales	MIN	6	0.778	30	4.24	0.627		
30.	Arthrobacter sp.	Actinobacteria: Actinomycetales	MIN	14	1.146	30	9.90	0.996		

31.	Azomonas agilis?	Gammaproteobacteria: Pseudomonadales	MIN	21	1.322	26	19.59	1.292	13	1.114
32.	Azorhizobium caulinodans	Alphaproteobacteria: Rhizobiales	MIN	38	1.580	30	26.87	1.429	0.5	-0.301
33.	Azospirillum brasiliense	Alphaproteobacteria: Rhodospirillales	MIN	27	1.431	37	11.75	1.070	1	0.000
34.	Azospirillum lipoferum	Alphaproteobacteria: Rhodospirillales	MIN	39	1.591	37	16.98	1.230	4	0.602
35.	Azotobacter chroococcum	Gammaproteobacteria: Pseudomonadales	MIN	25	1.398	30	17.68	1.247	14	1.146
36.	Azotobacter vinelandii	Gammaproteobacteria: Pseudomonadales	MIN	1.5	0.176	30	1.06	0.025	0.5	-0.301
37.	Bacillus cereus	“Bacilli”: Bacillales	MIN	14	1.146	37	6.09	0.785	3.7	0.568
38.	Bacillus firmus	“Bacilli”: Bacillales	MIN	13	1.114	30	9.19	0.963	0.9	-0.046
39.	Bacillus megaterium	“Bacilli”: Bacillales	MIN	3.3	0.519	30	2.33	0.367	7	0.845
40.	Bacillus popilliae	“Bacilli”: Bacillales	MIN	0.8	-0.097	30	0.57	-0.244	0.8	-0.097
41.	Bacillus pumilus	“Bacilli”: Bacillales	MIN	5	0.699	30	3.54	0.549	0.7	-0.155
42.	Bacillus stearothermophilus	“Bacilli”: Bacillales	MIN	8.2	0.914	50	1.45	0.161	0.7	-0.155
43.	Bacillus subtilis	“Bacilli”: Bacillales	MIN	3.3	0.519	30	2.33	0.367	1.4	0.146
44.	Bdellovibrio bacteriovorus	Deltaproteobacteria: Bdellovibrionales	MIN	25	1.398	30	17.68	1.247	0.3	-0.523
45.	Beneckea natriegens	Gammaproteobacteria: “Vibrionales”	MIN	265	2.423	30	187.38	2.273	1.5	0.176
46.	Bradyrhizobium japonicum	Alphaproteobacteria: Rhizobiales	MIN	1.0	0.000	29	0.76	-0.119	0.7	-0.155
47.	Branhamella catarrhalis	Gammaproteobacteria: Pseudomonadales	MIN	1.7	0.230	37	0.74	-0.131	1.3	0.114
48.	Brucella melitensis	Alphaproteobacteria: Rhizobiales	MIN	6.5	0.813	34	3.48	0.542	0.3	-0.523
49.	Burkholderia sp.	Betaproteobacteria: Burkholderiales	MIN	21	1.322	30	14.85	1.172	0.7	-0.155
50.	Cellvibrio gilvus	Gammaproteobacteria: Pseudomonadales	MIN	37	1.568	30	26.16	1.418	2	0.301
51.	Chromatium sp.	Gammaproteobacteria: Chromatiales	MIN	11	1.041	25	11.00	1.041		
52.	Chromatium vinosum	Gammaproteobacteria: Chromatiales	MIN	2.2	0.342	30	1.56	0.193	1.5	0.176
53.	Corynebacterium diphtheriae	Actinobacteria: Actinomycetales	MIN	6.7	0.826	30	4.74	0.676		
54.	Corynebacterium sp.	Actinobacteria: Actinomycetales	MIN	10	1.000	30	7.07	0.849		
55.	Delftia acidovorans	Betaproteobacteria: Burkholderiales	MIN	13	1.114	30	9.19	0.963	0.8	-0.097
56.	Desulfovibrio salexigens	Deltaproteobacteria: Desulfovibrionales	MIN	13	1.114	30	9.19	0.963	1.5	0.176
57.	Enterobacter aerogenes	Gammaproteobacteria: “Enterobacteriales”	MIN	10	1.000	30	7.07	0.849	0.3	-0.523
58.	Enterobacter cloacae	Gammaproteobacteria: “Enterobacteriales”	MIN	31	1.491	30	21.92	1.341	0.9	-0.046
59.	Enterococcus cecorum	“Bacilli”: “Lactobacillales”	MIN	3.8	0.580	30	2.69	0.430	0.4	-0.398
60.	Enterococcus faecalis	“Bacilli”: “Lactobacillales”	MIN	0.3	-0.523	30	0.21	-0.678	0.2	-0.699
61.	Enterococcus hirae	“Bacilli”: “Lactobacillales”	MIN	1.5	0.176	30	1.06	0.025		
62.	Enterococcus sp.	“Bacilli”: “Lactobacillales”	MIN	33	1.519	30	23.33	1.368	0.8	-0.097
63.	Escherichia coli	Gammaproteobacteria: “Enterobacteriales”	MIN	32	1.505	37	14	1.146	0.7	-0.155
64.	Flavobacterium capsulatum	Flavobacteria: Flavobacteriales	MIN	63	1.799	30	44.55	1.649	0.3	-0.523
65.	Francisella tularensis	Gammaproteobacteria: Thiotrichales	MIN	3.7	0.568	37	1.61	0.207	0.01	-2.000
66.	Frankia sp.	Actinobacteria: Actinomycetales	MIN	9	0.954	25	9.00	0.954		
67.	Haemophilus influenzae	Gammaproteobacteria: Pasteurellales	MIN	0.5	-0.301	37	0.22	-0.658	0.14	-0.854
68.	Haemophilus parahaemolyticus	Gammaproteobacteria: Pasteurellales	MIN	3.5	0.544	37	1.52	0.182		
69.	Haemophilus parainfluenzae	Gammaproteobacteria: Pasteurellales	MIN	3.5	0.544	37	1.52	0.182	0.4	-0.398
70.	Halobacterium salinarum	Archaea: Halobacteria: Halobacteriales	MIN	17	1.230	30	12.02	1.080	3.9	0.591
71.	Halomonas halodenitrificans	Gammaproteobacteria: Oceanospirillales	MIN	67	1.826	25	67.00	1.826	0.4	-0.398
72.	Klebsiella pneumoniae	Gammaproteobacteria: “Enterobacteriales”	MIN	3.3	0.519	30	2.33	0.367	0.4	-0.398
73.	Lactobacillus brevis	“Bacilli”: “Lactobacillales”	MIN	0.2	-0.699	30	0.14	-0.854	1.6	0.204
74.	Lactobacillus casei	“Bacilli”: “Lactobacillales”	MIN	1.7	0.230	30	1.20	0.079		
75.	Lactococcus lactis	“Bacilli”: “Lactobacillales”	MIN	0.6	-0.222	30	0.42	-0.377	0.2	-0.699
76.	Lactococcus sp.	“Bacilli”: “Lactobacillales”	MIN	2.3	0.362	30	1.63	0.212	0.8	-0.097

77. Legionella pneumophila	Gammaproteobacteria: Legionellales	MIN	20	1.301	37	8.71	0.940	0.3	-0.523
78. Methylobacterium extorquens	Alphaproteobacteria: Rhizobiales	MIN	6	0.778	30	4.24	0.627	1	0.000
79. Methylomicrobium sp.	Gammaproteobacteria: Methylococcales	MIN	11	1.041	30	7.78	0.891	3	0.477
80. Methylophilus methylotrophus	Betaproteobacteria: Methylophiliales	MIN	1.6	0.204	40	0.57	-0.244	0.15	-0.824
81. Methylosinus trichosporium	Alphaproteobacteria: Rhizobiales	MIN	42	1.623	30	29.70	1.473	1	0.000
82. Micrococcus luteus	Actinobacteria: Actinomycetales	MIN	1.2	0.079	37	0.52	-0.284	1.1	0.041
83. Micrococcus sp.	Actinobacteria: Actinomycetales	MIN	10	1.000	30	7.07	0.849		
84. Micrococcus sp.	Actinobacteria: Actinomycetales	MIN	17	1.230	30	12.02	1.080		
85. Moraxella osloensis	Gammaproteobacteria: Pseudomonadales	MIN	13	1.114	30	9.19	0.963	2.3	0.362
86. Mycobacterium fortuitum	Actinobacteria: Actinomycetales	MIN	17	1.230	30	12.02	1.080		
87. Mycobacterium leprae	Actinobacteria: Actinomycetales	MIN	3.3	0.519	37	1.44	0.158		
88. Mycobacterium lepraemurium	Actinobacteria: Actinomycetales	MIN	3.3	0.519	37	1.44	0.158		
89. Mycobacterium phlei	Actinobacteria: Actinomycetales	MIN	14	1.146	37	6.09	0.785	0.4	-0.398
90. Mycobacterium smegmatis	Actinobacteria: Actinomycetales	MIN	24	1.380	37	10.45	1.019		
91. Mycobacterium tuberculosis	Actinobacteria: Actinomycetales	MIN	2.2	0.342	37	0.96	-0.018	0.2	-0.699
92. Myxococcus xanthus	Deltaproteobacteria: Myxococcales	MIN	4.6	0.663	30	3.25	0.512	1	0.000
93. Neisseria elongata	Betaproteobacteria: Neisseriales	MIN	8.3	0.919	30	5.87	0.769	0.2	-0.699
94. Neisseria flava	Betaproteobacteria: Neisseriales	MIN	12	1.079	30	8.49	0.929	0.2	-0.699
95. Neisseria gonorrhoeae	Betaproteobacteria: Neisseriales	MIN	0.6	-0.222	37	0.26	-0.585	0.2	-0.699
96. Neisseria mucosa	Betaproteobacteria: Neisseriales	MIN	15	1.176	30	10.61	1.026	0.2	-0.699
97. Neisseria sicca	Betaproteobacteria: Neisseriales	MIN	13	1.114	30	9.19	0.963	0.2	-0.699
98. Nitrobacter winogradskyi	Alphaproteobacteria: Rhizobiales	MIN	10	1.000	30	7.07	0.849	0.24	-0.620
99. Nitrosomonas europaea	Betaproteobacteria: Nitrosomonadales	MIN	11	1.041	25	11.00	1.041	0.6	-0.222
100. Nocardia corallina	Actinobacteria: Actinomycetales	MIN	1.7	0.230	30	1.20	0.079	2.1	0.322
101. Nocardia farcinica	Actinobacteria: Actinomycetales	MIN	8.3	0.919	30	5.87	0.769	0.1	-1.000
102. Nocardia sp.	Actinobacteria: Actinomycetales	MIN	2.2	0.342	30	1.56	0.193		
103. Nocardia sp.	Actinobacteria: Actinomycetales	MIN	3	0.477	30	2.12	0.326		
104. Nonomuraea sp.	Actinobacteria: Actinomycetales	MIN	1	0.000	25	1.00	0.000		
105. Paracoccus denitrificans	Alphaproteobacteria: Rhodobacterales	MIN	8.3	0.919	30	5.87	0.769	0.16	-0.796
106. Pasteurella pseudotuberculosis	Gammaproteobacteria: Enterobacteriales	MIN	12	1.079	25	12.00	1.079		
107. Pediococcus acidilactici	"Bacilli": "Lactobacillales"	MIN	3.3	0.519	30	2.33	0.367	2.2	0.342
108. Phaeospirillum fulvum	Alphaproteobacteria: Rhodospirillales	MIN	28	1.447	28	22.74	1.357	2	0.301
109. Picrophilus oshimae	Thermoplasmata (Archaea): Thermoplasmatales	MIN	25	1.398	60	2.21	0.344	1	0.000
110. Proteus morganii	Gammaproteobacteria: "Enterobacteriales"	MIN	5	0.699	30	3.54	0.549	0.4	-0.398
111. Proteus vulgaris	Gammaproteobacteria: "Enterobacteriales"	MIN	5	0.699	37	2.18	0.338	0.4	-0.398
112. Pseudomonas aeruginosa	Gammaproteobacteria: Pseudomonadales	MIN	6.7	0.826	30	4.74	0.676	0.5	-0.301
113. Pseudomonas fluorescens	Gammaproteobacteria: Pseudomonadales	MIN	4.4	0.643	28	3.57	0.553	1	0.000
114. Pseudomonas formicans	Gammaproteobacteria: Pseudomonadales	MIN	10	1.000	30	7.07	0.849	7	0.845
115. Pseudomonas oleovorans	Gammaproteobacteria: Pseudomonadales	MIN	3.3	0.519	30	2.33	0.367	0.16	-0.796
116. Pseudomonas putida	Gammaproteobacteria: Pseudomonadales	MIN	1	0.000	30	0.71	-0.149	1.7	0.230
117. Pseudomonas saccharophila	Gammaproteobacteria: Pseudomonadales	MIN	33	1.519	30	23.33	1.368		
118. Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	2.2	0.342	30	1.56	0.193		
119. Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	8	0.903	30	5.66	0.753		
120. Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	3.3	0.519	25	3.30	0.519		
121. Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	8.3	0.919	30	5.87	0.769		
122. Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	15	1.176	30	10.61	1.026		

123.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	18	1.255	30	12.73	1.105		
124.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	35	1.544	20	49.50	1.695		
125.Pseudomonas sp.	Gammaproteobacteria: Pseudomonadales	MIN	17	1.230	30	12.02	1.080		
126.Pseudonocardia nitrificans	Actinobacteria: Actinomycetes	MIN	2.5	0.398	30	1.77	0.248		
127.Rhizobium japonicum	Alphaproteobacteria: Rhizobiales	MIN	16	1.204	23	18.38	1.264	0.7	-0.155
128.Rhizobium leguminosarum	Alphaproteobacteria: Rhizobiales	MIN	9.5	0.978	30	6.72	0.827	0.6	-0.222
129.Rhizobium meliloti	Alphaproteobacteria: Rhizobiales	MIN	12	1.079	30	8.49	0.929	0.7	-0.155
130.Rhodobacter sphaeroides	Alphaproteobacteria: Rhodobacterales	MIN	17	1.230	28	13.81	1.140	0.8	-0.097
131.Rhodococcus rhodochrous	Actinobacteria: Actinomycetales	MIN	17	1.230	30	12.02	1.080		
132.Rhodococcus sp.	Actinobacteria: Actinomycetales	MIN	2.2	0.342	25	2.20	0.342		
133.Rhodococcus sp.	Actinobacteria: Actinomycetales	MIN	7	0.845	30	4.95	0.695		
134.Rhodococcus sp.	Actinobacteria: Actinomycetales	MIN	7.4	0.869	25	7.40	0.869		
135.Rhodospirillum rubrum	Alphaproteobacteria: Rhodospirillales	MIN	3.8	0.580	28	3.09	0.490	9	0.954
136.Sallinivibrio costicola	Gammaproteobacteria: “Vibrionales”	MIN	7	0.845	25	7.00	0.845	0.4	-0.398
137.Salmonella typhimurium	Gammaproteobacteria: "Enterobacteriales"	MIN	15	1.176	37	6.53	0.815	0.66	-0.180
138.Serratia marcescens	Gammaproteobacteria: “Enterobacteriales”	MIN	4	0.602	37	1.74	0.241	0.4	-0.398
139.Shigella flexneri	Gammaproteobacteria: “Enterobacteriales”	MIN	10	1.000	37	4.35	0.638		
140.Sphaerotilus natans	Betaproteobacteria: Burkholderiales	MIN	45	1.653	28	36.55	1.563	6.5	0.813
141.Sporosarcina ureae	“Bacilli”: Bacillales	MIN	12	1.079	30	8.49	0.929	3.8	0.580
142.Staphylococcus aureus	“Bacilli”: Bacillales	MIN	16	1.204	37	7	0.845	0.27	-0.569
143.Staphylococcus epidermidis	“Bacilli”: Bacillales	MIN	27	1.431	30	19.09	1.281	0.5	-0.301
144.Staphylococcus simulans	“Bacilli”: Bacillales	MIN	10	1.000	37	4.35	0.638		
145.Staphylococcus sp.	“Bacilli”: Bacillales	MIN	17	1.230	30	12.02	1.080		
146.Streptococcus agalactiae	“Bacilli”: “Lactobacillales”	MIN	1.7	0.230	37	0.74	-0.131	0.3	-0.523
147.Streptococcus pneumoniae	“Bacilli”: “Lactobacillales”	MIN	1.7	0.230	30	1.20	0.079	0.4	-0.398
148.Streptococcus pyogenes	“Bacilli”: “Lactobacillales”	MIN	3.3	0.519	30	2.33	0.367	0.2	-0.699
149.Streptomyces coelicolor	Actinobacteria: Actinomycetales	MIN	40	1.602	30	28.28	1.451		
150.Streptomyces fradiae	Actinobacteria: Actinomycetales	MIN	22	1.342	30	15.56	1.192		
151.Streptomyces griseus	Actinobacteria: Actinomycetales	MIN	18	1.255	30	12.73	1.105		
152.Streptomyces longispororuber	Actinobacteria: Actinomycetales	MIN	3.3	0.519	30	2.33	0.367		
153.Streptomyces olivaceus	Actinobacteria: Actinomycetales	MIN	9	0.954	37	3.92	0.593		
154.Sulfolobus acidocalcadareus	Archaea: Thermoprotei (Crenarchaeota): Sulfolobales	MIN	15	1.176	60	1.33	0.124	0.4	-0.398
155.Taylorella equigenitalis	Betaproteobacteria: Burkholderiales	MIN	0.1	-1.000	30	0.07	-1.155	0.4	-0.398
156.Thiobacillus ferrooxidans	Betaproteobacteria: Hydrogenophilales	MIN	0.5	-0.301	25	0.50	-0.301	0.25	-0.602
157.Thiobacillus intermedius	Betaproteobacteria: Hydrogenophilales	MIN	11	1.041	30	7.78	0.891	0.4	-0.398
158.Thiobacillus thiooxidans	Betaproteobacteria: Hydrogenophilales	MIN	1.5	0.176	28	1.22	0.086	0.25	-0.602
159.Thiocapsa roseopersicina	Gammaproteobacteria: Chromatiales	MIN	5.6	0.748	30	3.96	0.598	1	0.000
160.Thiocystis violacea	Gammaproteobacteria: Chromatiales	MIN	2.5	0.398	30	1.77	0.248	11	1.041
161.Thiorhodovibrio winogradskyi	Gammaproteobacteria: Chromatiales	MIN	6.6	0.820	30	4.67	0.669		
162.Unidentified bacterium	Gammaproteobacteria: Pseudomonadales	MIN	11	1.041	30	7.78	0.891	0.6	-0.222
163.Unknown	Unknown	MIN	6.7	0.826	30	4.74	0.676		
164.Unknown	Unknown	MIN	30	1.477	30	21.21	1.327		
165.Unnamed rhizobiaceae	Alphaproteobacteria: Rhizobiales	MIN	42	1.623	25	42.00	1.623		
166.Vibrio alginolyticus	Gammaproteobacteria: “Vibrionales”	MIN	3.3	0.519	30	2.33	0.367	0.6	-0.222
167.Vibrio fischeri	Gammaproteobacteria: “Vibrionales”	MIN	22	1.342	20	31.11	1.493	0.6	-0.222
168.Vibrio metschnikovii	Gammaproteobacteria: “Vibrionales”	MIN	3.3	0.519	30	2.33	0.367	0.6	-0.222

169. Vibrio parahaemolyticus	Gammaproteobacteria: “Vibrionales”	MIN	1.7	0.230	30	1.20	0.079	0.6	-0.222
170. Vibrio sp.	Gammaproteobacteria: “Vibrionales”	MIN	0.11	-0.959	5	0.44	-0.357	0.14	-0.854
171. Vitreoscilla stercoraria	Betaproteobacteria: Neisseriales	MIN	35	1.544	30	24.75	1.394		
172. Xanthomonas axonopodis	Gammaproteobacteria: Xanthomonadales	MIN	37	1.568	30	26.16	1.418	0.25	-0.602
173. Yersinia pestis	Gammaproteobacteria: Enterobacteriales	MIN	4.8	0.681	28	3.90	0.591	0.55	-0.260