The following supplement accompanies the article

Microbial distribution in different spatial positions within the walls of a black sulfide hydrothermal chimney

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Supplement. Morphologies of typical sulfide minerals and possible microbe-like micro-structures (Fig. S1), phylogenetic tree of part bacterial populations (Fig. S2), the distribution of representative archaeal and bacterial 16S rRNA gene phylotypes (Table S1 and S2), and the abundance of microbial 16S rRNA genes (Table S3) in different subsampling positions.

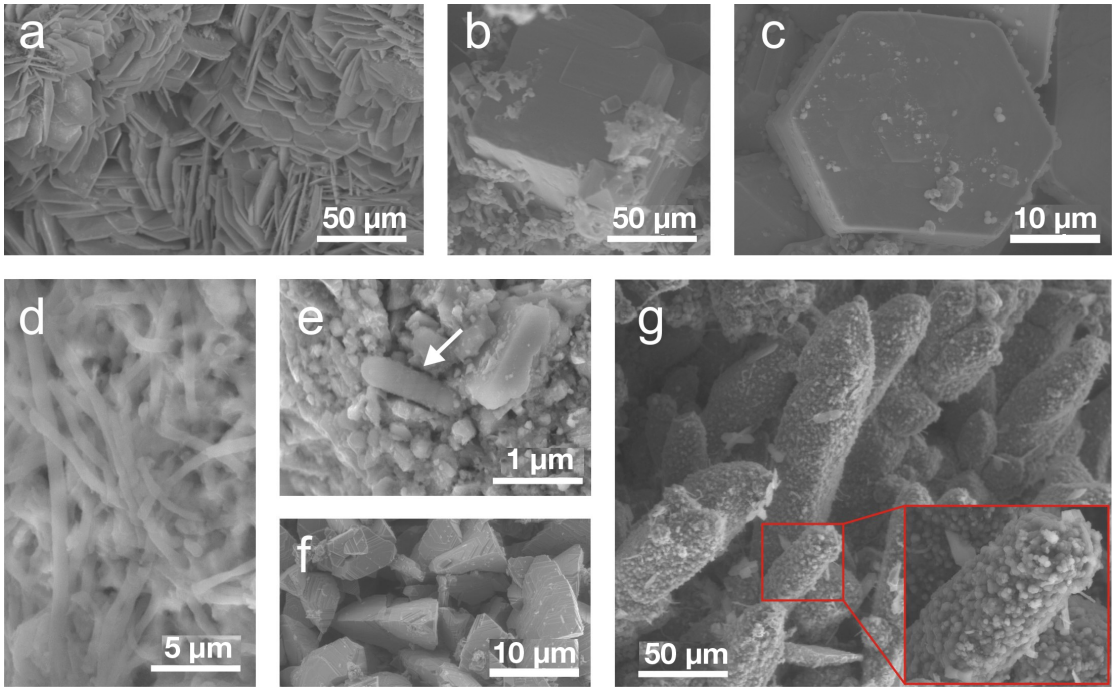

Fig. S1. Scanning electron microscope images of mineral particles and possible microbe-like structures detected in the Dudley hydrothermal sulfide chimney. Typical crystal structures included (a) barite, (b) pyrite, (c) sphalerite/wurtzite, (f) chalcopyrite, and (g) amorphous silica spherules (SiO_2) in the spaces among mineral grains or on the surface. (d), (e) Possible microbe-like structures which were filamentous or rod-shaped (arrow in panel (e))

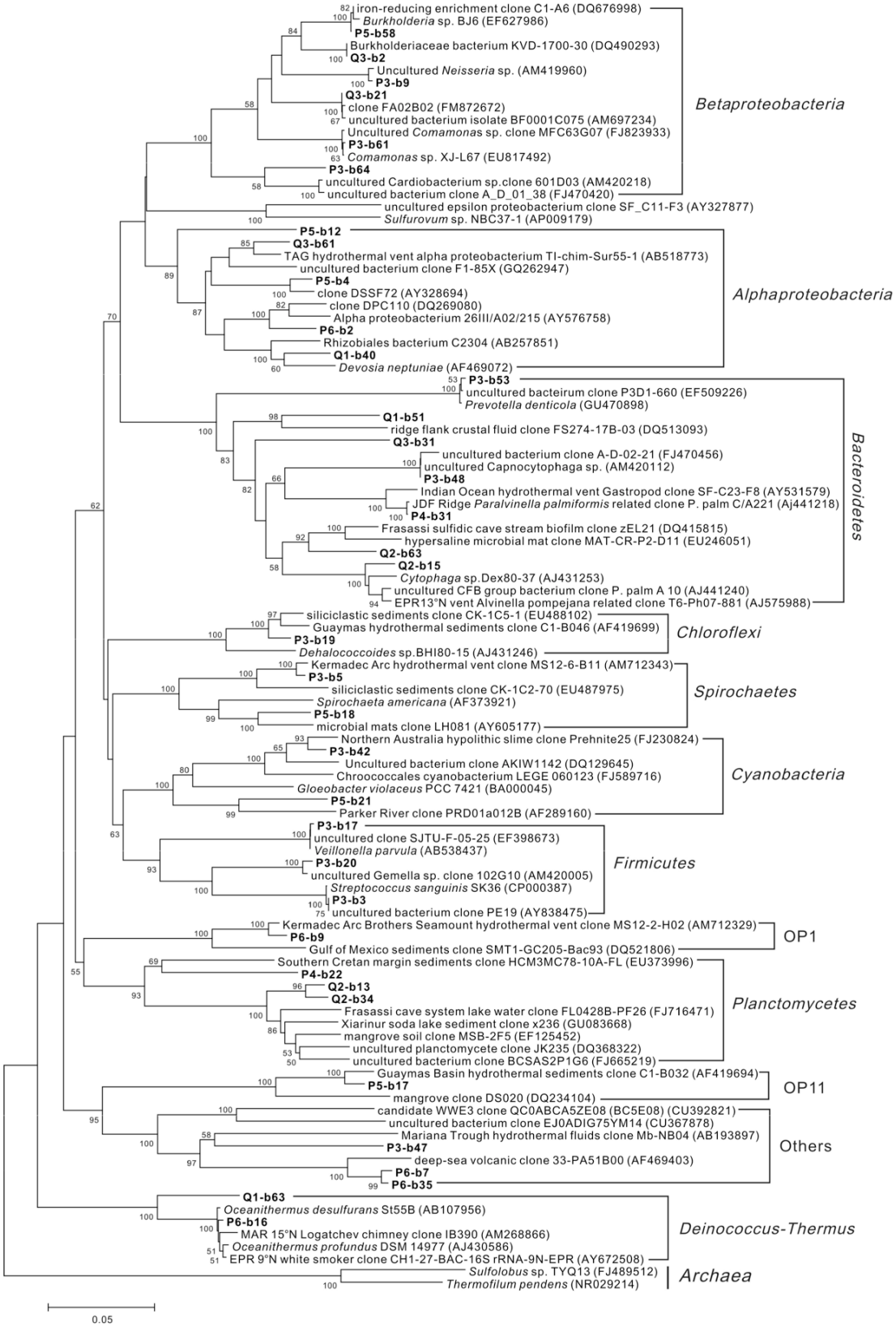

Fig. S2. Phylogenetic tree of bacterial populations, not including *Epsilon*-, *Delta*-, and *Gammaproteobacteria* groups. The scale bar represents the expected number of changes per nucleotide position

Table S1. Distribution of representative archaeal 16S rRNA gene phylotypes and corresponding clone numbers analyzed in different subsampling positions of the Dudley hydrothermal sulfide chimney. See Fig. 2 in the main text for details on the subsampling positions. MGI: marine group I, UC: unclassified *Crenarchaeota*, DHVE: deep-sea hydrothermal vent *Euryarchaeota*

	Position									
	P1	P2	P3	P4	P5	P6	Q1	Q2	Q3	GenBank accession number
Korarchaeota										
P5-a70					2					JQ073034
Crenarchaeota										
Desulfurococcales										
P1-a4	1			1	3					JQ073014
P3-a9			13		1					JQ073027
Q2-a69								2		JQ073045
P4-a15				3	3			3	3	JQ073028
P2-a40		3								JQ073016
P5-a5					3					JQ073032
P3-a28		1	1			2			2	JQ073022
P5-a2					1					JQ073031
P4-a52	4			3						JQ073030
Q3-a8									2	JQ073047
P6-a9						2				JQ073038
P6-a8		2	12	3	6	18	2	9	15	JQ073037
Thermoproteales										
Q1-a7									1	JQ073042
Q1-a52			2				1	2		JQ073041
MGI										
P3-a58			1							JQ073025
UC										
P2-a6		1								JQ073018
Euryarchaeota										
Thermococcales										
Q1-a42							1			JQ073040
Q2-a15								4		JQ073043
P4-a51				2						JQ073029
P3-a27			3							JQ073021
P6-a41	15	31	26	26	20	27	12	18	41	JQ073036
Archaeoglobales										
P2-a47		1								JQ073017
DHVE group										
DHVE1										
P1-a2	2			1						JQ073013

DHVE2										
P3-a8			1							JQ073026
Q2-a38								1		JQ073044
P5-a7					3		2	6		JQ073033
P3-a30			3						1	JQ073023
DHVE9										
P1-a42	26	3	3	1			30	3	1	JQ073015
Q1-a21							1			JQ073039
DHVE10										
P3-a16			1							JQ073020
DHVE11										
P2-a71		3								JQ073019
P6-a26						2				JQ073035
P3-a4			2							JQ073024
Q3-a51							1		1	JQ073046
Total	**48**	**45**	**68**	**40**	**42**	**51**	**50**	**48**	**67**	

Table S2. Distribution of representative bacterial 16S rRNA gene phylotypes and corresponding clone numbers analyzed in different subsampling positions of the Dudley hydrothermal sulfide chimney. See Fig. 2 in the main text for details on the subsampling positions

	Position									
	P1	P2	P3	P4	P5	P6	Q1	Q2	Q3	GenBank accession number
Epsilonproteobacteria										
Group A										
Q3-b13									1	JQ073001
P6-b51						5				JQ072977
P6-b22						1				JQ072970
Group B										
Q1-b23				1			4	8		JQ072983
P1-b1	7									JQ072906
P2-b33	2	40		1	5			17	9	JQ072915
Group E										
P6-b37						4				JQ072975
P6-b63				9	7	8				JQ072979
Q1-b3							1			JQ072985
Q2-b4						1		6		JQ072998
Q1-b4		5					9			JQ072988
P6-b24				1	1	9				JQ072971
Q2-b36								1		JQ072997
P2-b31		1					1			JQ072913
Q1-b27							3			JQ072984

Q3-b17								9	JQ073002
Q3-b4								6	JQ073007
Q1-b30	5					5			JQ072986
Q1-b39						1			JQ072987
Q1-b56						2			JQ072991
Group F									
Q1-b19						2			FR853043
P1-b33	5								JQ072911
P4-b34			1						JQ072944
P4-b66			1						JQ072950
P1-b18	1								JQ072908
Q2-b18							5		JQ072995
P4-b4			6				4	5	JQ072945
P4-b69			1						JQ072951
Q3-b55								4	JQ073009
P4-b1			1						JQ072939
P4-b15		1	8						JQ072941
P4-b13			1						JQ072940
P6-b49					4				JQ072976
P4-b56			1						JQ072948
P6-b26					1				JQ072972
P6-b36					1				JQ072974
P6-b68				4	1				JQ072980
P4-b58			1						JQ072949
P5-b27			2	6			1		JQ072959
P5-b1				4					JQ072952
P5-b41				1					JQ072962
Deltaproteobacteria									JQ07290
P2-b15		1							JQ072912
P2-b44		3	2				2		JQ072916
P6-b18				1	1			2	JQ072968
P3-b6		6							JQ072934
P5-b7				1					JQ072965
P3-b34		1							JQ072926
P5-b43				1					JQ072963
P6-b60					1				JQ072978
Q3-b45								1	JQ073008
P3-b12		2					1	5	JQ072917
P3-b30		3							JQ072925
Q3-b57								1	JQ073010
P3-b13		3							JQ072918
Q3-b38								1	JQ073006
P3-b22		1							JQ072923
P3-b52		1							JQ072932

Q2-b7								1	1	JQ073000
Q3-b66									1	JQ073012
Gammaproteobacteria										
P3-b7			9							JQ072937
P3-b36			1							JQ072927
P3-b2			2							JQ072921
P4-b43	1									JQ072946
P5-b36	14			8	3	5	20		2	JQ072960
P1-b20	1									JQ072909
P6-b13						1				JQ072966
P5-b23					1					JQ072958
P6-b27						1			1	JQ072973
P4-b51				1						JQ072947
P5-b11					1					JQ072953
P1-b13	1									JQ072907
P1-b23	1	5					2			JQ072910
P2-b32		1								JQ072914
Alphaproteobacteria										
P5-b12					1					JQ072954
Q3-b61									1	JQ073011
P5-b4					1					JQ072961
P6-b2						1				JQ072969
Q1-b40							1			JQ072989
Betaproteobacteria										
P5-b58			2		1					JQ072964
Q3-b2			2						1	JQ073003
P3-b9			6							JQ072938
Q3-b21									1	JQ073004
P3-b61			1							JQ072935
P3-b64			1							JQ072936
Bacteroidetes										
P3-b53			1							JQ072933
Q1-b51							1			JQ072990
Q3-b31									1	JQ073005
P3-b48			1							JQ072930
P4-b31				1						JQ072943
Q2-b63								1		JQ072999
Q2-b15								1		JQ072994
Deinococcus-Thermus										
Q1-b63							1			JQ072992
P6-b16						1				JQ072967
Cyanobacteria										
P3-b42			1							JQ072928
P5-b21					1					JQ072957

Firmicutes										
P3-b17			2							JQ072919
P3-b20			4							JQ072922
P3-b3			7							JQ072924
Planctomycetes										
P4-b22				2						JQ072942
Q2-b13								1		JQ072993
Q2-b34								7		JQ072996
OP1										
P6-b9						1				JQ072982
Spirochaetes										
P5-b18					1					JQ072956
P3-b5			1							JQ072931
OP11										
P5-b17					1					JQ072955
Chloroflexi										
P3-b19			1							JQ072920
Others										
P6-b35						1				FR853032
P6-b7						1				JQ072981
P3-b47			1							JQ072929
Total	**38**	**57**	**60**	**49**	**42**	**49**	**53**	**56**	**53**	

Table S3. Estimation of archaeal and bacterial 16S rRNA genes (copies g^{-1} of sample) in different subsampling positions of the Dudley hydrothermal sulfide chimney. See Fig. 2 in the main text for details on the subsampling positions

	Position								
	P1	P2	P3	P4	P5	P6	Q1	Q2	Q3
Archaea	2.68×10^{6}	4.59×10^{5}	2.49×10^{5}	4.57×10^{6}	3.30×10^{6}	5.62×10^{6}	5.09×10^{6}	3.56×10^{6}	2.22×10^{5}
Bacteria	5.55×10^{7}	5.73×10^{6}	3.27×10^{4}	2.93×10^{7}	1.60×10^{6}	7.74×10^{6}	7.15×10^{7}	5.83×10^{6}	2.97×10^{4}