

Classification	OTU	Number of Sequences		Classification	OTU	Number of Sequences
O JTB23 Proteobacteria*	97	204		O Nitrospina*	960	848
Δ Gammaproteobacteria	737	22		□ Nitrospina*	595	366
O Gammaproteobacteria	448	128		O Nitrospina*	72	135
□ Gammaproteobacteria	306	26		O Acidimicrobiae*	129	999
■ Gammaproteobacteria	209	28		O Acidimicrobiae	924	12
□ Gammaproteobacteria*	413	397		□ Acidimicrobiae	691	4
□ Gammaproteobacteria*	654	36		O Acidimicrobiae*	624	238
□ Alphaproteobacteria	629	84		O Acidimicrobiae	916	25
□ Alphaproteobacteria	644	26		Δ Acidimicrobiae*	838	495
□ Alphaproteobacteria*	970	173		Δ Acidimicrobiae*	835	170
O Alphaproteobacteria*	861	39		□ Acidimicrobiae*	716	53
O Alphaproteobacteria	436	71		□ Chloroflexi*	874	970
O Alphaproteobacteria*	512	230		O Chloroflexi*	932	176
O Alphaproteobacteria	408	111		□ Chloroflexi*	478	511
Δ Deltaproteobacteria*	766	47		□ Chloroflexi	496	47
□ Deltaproteobacteria*	800	96		□ Chloroflexi	425	38
O Deltaproteobacteria*	673	484		□ Chloroflexi	910	224
O Deltaproteobacteria*	678	156		□ Chloroflexi*	57	137
□ Spirochaeta*	602	75		Δ Chloroflexi*	476	41
□ Spirochaeta*	802	61		Δ Chloroflexi	339	31
□ Spirochaeta	603	60		Δ Chloroflexi	668	25
O Gemmatimondetes	619	131		Δ Chloroflexi*	152	16
Δ Gemmatimondetes*	618	281		Δ Chloroflexi	260	33
Δ Gemmatimondetes*	124	138		□ Chloroflexi	9	40
O Acidobacteria*	211	31		□ Chloroflexi*	642	88
□ Acidobacteria*	758	97		□ Chloroflexi*	486	277
■ Acidobacteria	364	109		O Chloroflexi*	416	74
□ Acidobacteria	561	28		Δ Chloroflexi*	812	46
O Acidobacteria	59	48		□ Chloroflexi	54	79
□ Acidobacteria*	883	89		O Chloroflexi*	899	282
□ Acidobacteria*	853	668		Δ Chloroflexi	394	101
Δ Candidate Division OD1	626	39		□ Chloroflexi*	881	311
Δ Candidate Division TM7*	455	12		O Chloroflexi	62	18
□ Cyanobacteria*	415	191		Δ Chloroflexi*	263	71
□ Deinococcus-Thermus*	267	24		Δ Chloroflexi*	96	17

Table S3. Classification of shared OTUs found in all four *Xestospongia* sponges.