Species	Definition of essentiality	Reference database or pmid
Lists of species with reference databases		
Arabidopsis thaliana	Embryo defective vs confirmed	Seed Genes & TAIR
Aspergillus spp.	Viable vs Inviable	AspGD
Caenorhabditis elegans	Lethal vs NOT phenotypes	WormBase
Danio rerio	Lethal Genes	ZFIN
Drosophila melanogaster	Lethal vs Viable Phenotypes	FlyBase
Mus musculus	Lethal vs Viable Phenotypes	IMPC and MGD
Saccharomyces cerevisiae	Viable vs Inviable	SGD
Schizosaccharomyces pombe	Viable vs Inviable	PomBase
Plasmodium spp.	Essential vs dispensable genes	PlasmoDB
Toxoplasma gondii	Essential vs dispensable genes	ToxoDB
Trypanosoma brucei	Lethal vs Normal growth	TritrypDB
Escherichia coli k12	Genes whose mutants cannot be obtained from the mutagenesis library are essential	PEC
Lists of species collected from PubMed		
Bacteroides fragilis 638R	Genes Required by B. fragilis for Survival in BHI medium (growth)	24899126
Bacteroides thetaiotaomicron VPI-5482	Genes required for maximal exponential growth in rich medium (TYG medium) *in vitro*	19748469
Burkholderia pseudomallei K96243	Genes required for bacterial growth	24520057
Burkholderia thailandensis E264	Genes received fewer than three insertions per kB in the 5–90% region in mutant pools.	23382856
Campylobacter jejuni subsp. 81-176	Genes required for optimal growth on MH agar plates under microaerophilic conditions	28806924
Campylobacter jejuni subsp. *jejuni* NCTC 11168	Genes required for optimal growth on MH agar plates under microaerophilic conditions	28806924, 22044676
Methanococcus maripaludis S2	Genes essential for growth with fewer insertions	23487778
Rhodopseudomonas palustris CGA009	Genes required for viability under specialized growth conditions	26712940
Streptococcus agalactiae A909	Gene fitness assignments	27229469
Streptococcus pyogenes M1T1 5448	Tn-seq analyses of GAS fitness and *in vitro* growth condition	25996237
Streptococcus pyogenes NZ131	Tn-seq analyses of GAS fitness and *in vitro* growth condition	25996237
Streptococcus sanguinis	Genes not mutagenized after five independent attempts	22355642

Supplementary Table 1: List of databases or sources of datasets collected for OGEE v3.

Cell lines	RNAi			CRISPR-Cas9			Common genes
	Essential genes	Non-essential genes	Total tested genes	Essential genes	Non-essential genes	Total tested genes	
22RV1	266	11144	11410	312	17683	17995	20
2313287	660	16420	17080	885	17110	17995	307
769P	245	16835	17080	1067	16928	17995	105
A172	334	11076	11410	777	17218	17995	33
A2058	512	10898	11410	906	17089	17995	218
A375	490	16590	17080	1508	16487	17995	188
A549	297	11113	11410	1038	16957	17995	72
AGS	684	10726	11410	1314	16681	17995	317
AM38	203	11207	11410	581	17414	17995	23
ASPC1	410	11000	11410	399	17596	17995	64
AU565	361	16719	17080	841	17154	17995	54
BHY	407	16673	17080	889	17106	17995	152
BICR22	510	16570	17080	1199	16796	17995	178
BXPC3	290	11120	11410	592	17403	17995	71
C2BBE1	267	11102	11369	1051	16944	17995	63
CAL27	312	16768	17080	1283	16712	17995	66
CAL33	482	16598	17080	1260	16735	17995	187
CAL51	441	10969	11410	480	17515	17995	45
CAOV4	244	11166	11410	632	17363	17995	25
CAS1	319	11091	11410	492	17503	17995	7
COLO205	347	11063	11410	1185	16810	17995	99
COLO680N	644	16436	17080	935	17060	17995	338
COLO684	496	16584	17080	486	17509	17995	157
CORL23	427	10983	11410	1251	16744	17995	118
DBTRG05MG	187	11223	11410	1018	16977	17995	24
DKMG	214	11196	11410	687	17308	17995	31
DU145	227	16853	17080	638	17357	17995	87
EBC1	401	16679	17080	513	17482	17995	77
ECGI10	352	16728	17080	648	17347	17995	34
EFO21	437	10932	11369	111	17884	17995	44
EFO27	213	11197	11410	540	17455	17995	27
EPLC272H	206	16874	17080	585	17410	17995	26
ES2	223	16857	17080	1018	16977	17995	79
ESS1	252	16828	17080	1279	16716	17995	117
FADU	448	16632	17080	1386	16609	17995	144
GB1	254	11156	11410	859	17136	17995	34
HCC1143	251	16829	17080	872	17123	17995	43
HCC1187	419	10991	11410	849	17146	17995	102
HCC1395	188	11222	11410	453	17542	17995	42

HCC15	274	16806	17080	622	17373	17995	56
HCC1806	706	16374	17080	906	17089	17995	363
HCC1937	561	16519	17080	539	17456	17995	161
HCC1954	498	10912	11410	350	17645	17995	87
HCC38	173	16907	17080	879	17116	17995	32
HCC70	534	10876	11410	857	17138	17995	226
HCT116	556	10854	11410	996	16999	17995	172
HGC27	299	16781	17080	964	17031	17995	24
HOP62	265	16815	17080	1035	16960	17995	97
HPAFII	394	11016	11410	536	17459	17995	88
HS578T	205	16875	17080	653	17342	17995	29
HS683	205	11205	11410	746	17249	17995	16
HSC3	403	16677	17080	1211	16784	17995	193
HT55	749	10661	11410	1008	16987	17995	212
HUPT3	817	16263	17080	708	17287	17995	324
IGROV1	231	11138	11369	518	17477	17995	46
IM95	389	16691	17080	619	17376	17995	77
JHOS2	400	16680	17080	976	17019	17995	141
KATOIII	602	16478	17080	388	17607	17995	103
KM12	363	11006	11369	732	17263	17995	71
KNS62	437	16643	17080	784	17211	17995	148
KP4	226	11184	11410	1114	16881	17995	35
KURAMOCHI	478	10932	11410	425	17570	17995	140
KYSE140	408	16672	17080	857	17138	17995	205
KYSE150	239	11171	11410	952	17043	17995	29
KYSE450	383	11027	11410	1179	16816	17995	103
KYSE510	284	11126	11410	1008	16987	17995	62
KYSE520	399	16681	17080	981	17014	17995	131
KYSE70	366	16714	17080	916	17079	17995	173
L363	334	11076	11410	1760	16235	17995	63
LCLC97TM1	303	16777	17080	827	17168	17995	81
LK2	425	10985	11410	876	17119	17995	149
LN229	241	11169	11410	755	17240	17995	34
LNCAPCLONEFGC	413	16667	17080	1005	16990	17995	108
LOUNH91	327	16753	17080	555	17440	17995	14
LOVO	310	11100	11410	1067	16928	17995	88
LS180	294	16786	17080	1349	16646	17995	78
LS411N	292	11118	11410	1069	16926	17995	54
LS513	338	11072	11410	1186	16809	17995	114
LU65	373	16707	17080	793	17202	17995	164
LXF289	229	16851	17080	1146	16849	17995	126
MCF7	569	10841	11410	738	17257	17995	126

MDAMB231	572	16508	17080	871	17124	17995	209
MDAMB361	308	16772	17080	355	17640	17995	81
MDAMB415	172	16908	17080	411	17584	17995	23
MDAMB436	421	16659	17080	822	17173	17995	175
MDAMB453	767	10643	11410	434	17561	17995	138
MDAMB468	476	16604	17080	1141	16854	17995	216
MFE280	414	16666	17080	255	17740	17995	30
MHHES1	182	16898	17080	1021	16974	17995	26
MIAPACA2	373	11037	11410	677	17318	17995	125
NCIH1155	309	16771	17080	932	17063	17995	54
NCIH1299	546	10864	11410	924	17071	17995	194
NCIH1355	499	16581	17080	662	17333	17995	181
NCIH1568	1176	15904	17080	387	17608	17995	251
NCIH1650	524	10886	11410	687	17308	17995	102
NCIH1915	188	16892	17080	568	17427	17995	15
NCIH1944	704	16376	17080	666	17329	17995	270
NCIH1975	162	11248	11410	776	17219	17995	15
NCIH2023	236	16844	17080	1049	16946	17995	90
NCIH2087	470	16610	17080	654	17341	17995	144
NCIH2170	217	16863	17080	791	17204	17995	58
NCIH23	445	10965	11410	1110	16885	17995	205
NCIH358	563	16517	17080	596	17399	17995	208
NCIH520	355	16725	17080	733	17262	17995	26
NCIH650	265	16815	17080	288	17707	17995	35
NCIN87	352	11058	11410	948	17047	17995	121
NUGC3	365	16715	17080	970	17025	17995	151
OAW42	349	11020	11369	0	17995	17995	0
OC314	312	16768	17080	1366	16629	17995	97
OCIAML2	429	10981	11410	1161	16834	17995	91
OCIAML3	348	11062	11410	585	17410	17995	27
OE33	349	11061	11410	978	17017	17995	88
OPM2	344	11066	11410	874	17121	17995	28
OV90	210	11200	11410	781	17214	17995	26
OVCAR8	527	10883	11410	980	17015	17995	164
OVISE	508	10902	11410	895	17100	17995	233
PANC0327	422	10988	11410	855	17140	17995	145
PANC0813	701	10709	11410	601	17394	17995	232
PANC1005	390	11020	11410	295	17700	17995	23
PC14	233	16847	17080	899	17096	17995	72
PSN1	337	11073	11410	1157	16838	17995	125
RKN	316	11094	11410	318	17677	17995	42
RKO	672	10738	11410	1251	16744	17995	365

RL952	245	16835	17080	1022	16973	17995	32
RMGI	260	11109	11369	416	17579	17995	39
SCC4	414	16666	17080	910	17085	17995	81
SF126	169	11241	11410	870	17125	17995	18
SF295	195	11215	11410	1089	16906	17995	9
SJSA1	280	11130	11410	1074	16921	17995	44
SKMEL2	421	16659	17080	1251	16744	17995	156
SKMES1	335	16745	17080	532	17463	17995	94
SNUC1	504	10906	11410	859	17136	17995	138
SU8686	518	10892	11410	693	17302	17995	187
SUDHL10	396	16684	17080	1050	16945	17995	21
SW1573	463	16617	17080	923	17072	17995	112
SW48	167	11243	11410	1112	16883	17995	39
SW620	374	16706	17080	1030	16965	17995	41
SW837	364	16716	17080	769	17226	17995	103
T47D	257	16823	17080	755	17240	17995	49
T98G	350	11060	11410	823	17172	17995	18
TC71	262	11148	11410	1127	16868	17995	29
TE10	469	10941	11410	1293	16702	17995	237
TE4	597	16483	17080	1006	16989	17995	288
TE8	286	16794	17080	942	17053	17995	96
TE9	402	11008	11410	718	17277	17995	52
TOV112D	268	11142	11410	840	17155	17995	48
TOV21G	440	10929	11369	1152	16843	17995	181
TT	253	11116	11369	1344	16651	17995	23
TYKNU	335	11075	11410	1016	16979	17995	50
U87MG	312	11098	11410	668	17327	17995	31

Supplementary Table 2: List of 150 cell lines tested by both CRISPR-Cas9 and RNAi screening. Common genes (8th column) denotes the numbers of overlapping essential genes between CRISPR-Cas9 and RNAi datasets.