

Figure S1 Identification of the recombinant *B.subtilis*. (A) PCR identification of the strains WT, DR1956/1985, DR2000/1985 and DR2000/2020 using the primers sleB-1/sleB-2 (Lanes 1, 3, 5, 7) and the primers cwIJ-1/cwIJ-2(Lanes 2, 4, 6, 8), as well as the strain DR700 and DR1947 using the primer amyE-1/amyE-2 (lanes 10 and 11). (B) Amylase activity analysis of the strain DR700 and DR1947 on the starch plate stained with iodine solution.

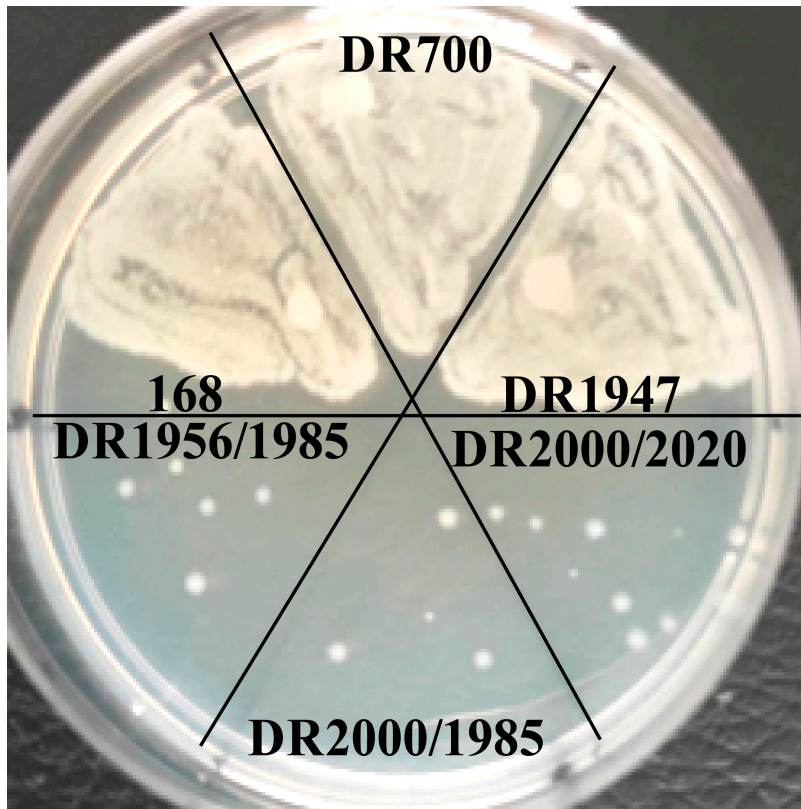


Figure S2 Spore germination of recombinant strains and wild-type strain 168 on LB plates.

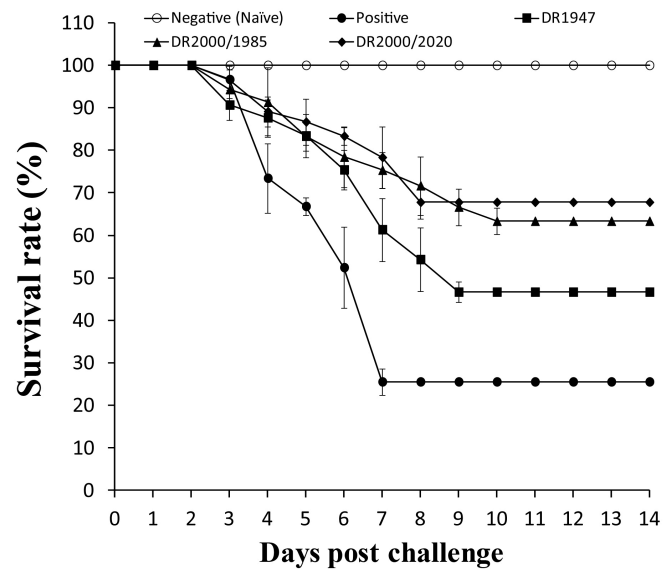


Figure S3 Cumulative survival rate of grass carp after GCRV challenge. Data are means for three assays and presented as the means \pm SD (n=30).

Table S1 The primers used in this study

Primer	Sequence (5'-3')*	Accession number	Restriction site
pUC18-R1	GAGAGAGG <u>AGATCT</u> GCGTAATAGCGAAGAGGCC		BglII
pUC18-R2	GAGAGAGG <u>AGATCT</u> CGGCGGTTTGCCTATTGGGCG		BglII
cwIJ-1	GAGAGAGG <u>AGATCT</u> CAAAGCCCAGACCAAGCACCAG	BSU02600	BglII
cwIJ-2	GAGAGAGG <u>AGATCT</u> CCCATAACATCCAGCAAACCG		BglII
cwIJ-R1	GAGAGAGG <u>ACTG</u> CAGTGAGCAATTCGCCCCGAGCC		PstI
cwIJ-R2	GAGAGAGGAG <u>AGCTC</u> GCGAGATAGCGAGCGTGCCC		SacI
sleB-1	GAGAGAGG <u>AGATCT</u> GAGGCTTGAAAAGATGAAGTCC	BSU22930	BglII
sleB-2	GAGAGAGG <u>AGATCT</u> CCTGGTGTCTTTGTATCCCC		BglII
sleB-R1	GAGAGAGG <u>ACTG</u> CAGGCATTTCGCTTTAGGCTTCTGCG		PstI
selB-R2	GAGAGAGGAG <u>AGCTC</u> AACAGGATGCGGTAGCAGCG		SacI
cotB-1	AGTTTACATAATATATATATTCTAGGAAGTCGGATTAGGC CGTTTGTCTC	BSU36050	
cotB-2	<u>CATATG</u> GGATGATTGATCATCTGAAGAT		NdeI
cotC-1	CCGGAGTTTACATAATATATATATTCTAGGAAGTCCGGTT CAAAATAAATGCATTCCC	BSU17700	
cotC-2	<u>CATATG</u> GTGTTTTTTATGCTTTTTATACTCTACAAC		NdeI
emr-1	GACTTCCTAGAATATATATTATGTAAACTCGAAAAGTG CCACCTGACGTC		
emr-2	AGTTTACATAATATATATATTCTAGGAAGTAGCTCCTTGG AAGCTGTCAG		
npt-1	GGACTTCCTAGAATATATATATTATGTAAACTCCGTTAAT GCGCCATGACAG		
npt-2	GGAGTTTACATAATATATATATTCTAGGAAGTGACGAAAC TGCAAAATATCC		
vp7-1	GGAGAGAC <u>ATATG</u> CCACTTCACATGATTCCGC		NdeI
vp7-2	GGAGAGAG <u>AGCTC</u> TGATGGTTCCACGTGCAAGTCGAG	AF403396	SacI
IL-11F	GCTGAGGCATCGGAGGCACAT	DQ417927	
IL-11R	TTGGGTCTCGCACCATTTTCTC		
β -actin -1	GATGATGAAATTGCCGCACTG	M25013	
β -actin -2	ACCGACCATGACGCCCTGATGT		
TNF- α -1	TGTGCCGCCGTGTCTGCTTCACGCT	EU047718	
TNF- α -2	GATGAGGAAAGACACCTGGCTGTAGA		
IL-1 β -1	GGAGAATGTGATCGAAGAGCGT	EU047716	
IL-1 β -2	GCTGATAAACCATCCGGGA		
MHC II-1	TACTACCAGATTCACCTCGG	GU441573	
MHC II-2	CGGGTTCCAGTCAAAGAT		
CD4L-1	ATGTGTCCAGGTGTCATAGT	KX033448	
CD4L-2	GGAATTTTGACTGTATAGGAT		

*Underlined are the recognition sites for the restriction enzymes indicated in the table.