

ATGGATCGTG GCCTCTCAAC AGGCACCAAT CAGTCCGGTG CTGGAACGCT GGAACGAGCT GTGACTTCTC AGGCCGATTT  
 AAACGTCAAT ACTGAGAACC CAACCGTTAC CAATGCGAGC AATGGAAAGG ACAAAGCTGG CAAGACATTT GGTCCGACTC  
 CAGATGGGAC AGGTGTGTCT TCCTCACTTC CACGCCTTCA AACGGGCTTT GCTGTGTCTA TACTACCCAT TGTATGTCTG  
 TATGTTAACC CAAACTGCCT CAGTCTTCAC GGTGCCTCAG ACGCATGATA TGGTCTCCCA GCTCTTGTCTG CCCTCTGAGC  
 CCAAGAACCT TTCCGACCTC GTTGTCTCTGA CAATACTCGC GGGCCATATT TTCTGTCTGT GGATACTTCC TTCAGGTGCC  
 AAAATACCCG TATTCGCGGT GATTTATCTC TTCTGGCGCT CATGTTACAA TGCTGGGATT GGATGGTTAC TTCACAACCA  
 GTCTCACCAC AAGACTCTTG TCCGATGGGC TGAAAAGTCT CAGATCTTTG TGAACCCAGC TACGGGCAAG AACCCCTATC  
 CCCAGTTATA CCATTTGATC AAGCGCGAGC TAGAGATCAA AATCTCCAAG GACTATTCTT TCGAGGAGC GCCGCTTGAG  
 TATAACACCT GGCTTGTCTT TAGACGCCTT GTGGACCTGA TCTTGATGTG CGACTTTGCC TCTTACTGCC TCTTTGCAAT  
 AGCCTGTAGT CGCCACCTG CTAACGAAAG CGTGTGTATG ACTGTCATTC GATGGACATC CGGCATCGCT TTAGTCTCTG  
 TCAATCTCTG GGTCAAATA GACGCGCACC GGGTAACTCT AGACTATGCT TGGTACTGGG GTGATTTCTT CTACCCATC  
 GACCAAGAGT TGACCTTTGA CGGGGTTTTT GAGATGGCAC CCCATCCCAT GTATTCCGTT GGGTATGCCG GATACTACGG  
 TATTTGCTG ATGGCGGCAA GCTATAAAGT GCTGTTCATC TCTATTATCG CCCATGCAGC CCAATTGCGG TTCCTCGTGT  
 TGGTTGAGAA CCCACATATT GACAAAACGT ACAATCTCTC TCCACCTCGG AACCGTACTA TCACAGAGCA TGACCGCAGC  
 TCTCAGCAT CGCAGGATC GACGCTCCA AACGGCTCCA CCGTGTCCGA AGAAAATGTC CCCAACGCGA CCAACGTGAC  
 CAGCCACCT CCGGCAGTTC ACAACCTACT CGGGTTCCAC AATCTAGACC TGATAGAAAT CACGGATACT TCTTCTATCC  
 TCGTCCAGTT CCTCATGTTT TCTCTGACTG TTCTGACGCC TTGACGCC TGGTATCAGT TCTTTTCTGT GGCTAATGCG  
 GCCATCTGGA GGCTCTGGTA CTCAGTCGGC ATCGGCTATC TTCTCAACAG ACAGTCCAAT TGTAAATCGT GGACCCGGCA  
 CTTTGTCAAG TAGGGCGAAA GGCCTCATGA GGCATGGAAC CAATGGAAAG GCACGTATCA CCTAAGTATG GTTATGCTATC  
 ACGCTAGCTT CATTTCTGCT GTATGGAAGA TGTACACCCCT GCCGTCCAAC TGGGGCTATG GTCTTGGCCAT CCTGCGTCAC  
 GTGCTTGAG CTGGGCTTAT CTCGCTGCAA ATCTGGACCT CAGTGAGCAT TTACGAGTCA CTCGGCGAGT TTGGTGGTT  
 TTACGGGGAC TTCTTTTTTC ATGAATCCCC TAAGTTGACC TACAATGGCA TCTATCGCTT CCTCAACAAT CCTGAGCGCG  
 TCTTAGGGCT CGCAGGAGT TGGGGTGGG TTCTCATAAC GGCCAGCGGA ACAGTCGCAT TTCTCGCCTT TTTGAGCCAT  
 ATCCTTAGCC TGGGCTTCAT TCAGTTCGTG GAGCGACCCC ACATGCAGAA ACTGTATGGC CGAAGCTTGC GTCAGGATGC  
 AGGTCTCGTG AAAAGCCTGA AGCGGTCTTT GCCGCGTCTG CTCAGACAAC TGCATGGAAG CGTGGACAAG ATATTTGACG  
 AATCATACGA ATTTATTGAA GAAATCATCG ATACTGCGCG ACCAAAATC GCCGCAGGCG TAAATACATT CGTTCGAGAC  
 ACAACGGCAC TTTTCCAGAA ATATCCTGCC CGTGTACCA TCTCACGCAT TGATGCCGAC TTAGCCGGAT ACGACCTACG  
 AGATTACTCG CTTACTGTTG AAGCAAGCCA GTTGCCCTTA GACGAAGGTG ACCTTAGCAA AGAGGGTGAT AACGCTCGCA  
 CACCTCTCGA TCGCCCGGT GACTTGAAA ACCTGGTTTT CCCATACGGC ACACCAGTAA AGGTCAAGTG GACTGCACCG  
 CTCACCATA GCAAGAAGGA TTGGATTGGT CTTTACAAG TCACCGACAA TACTTCTAGA GAGGTGACCC CGGTATCTTC  
 ACAAGGAAGA TGGGTGGCCG TCAACGAGGG CTTTACGAT AACCTCACCT GCGAGCGGG CATCCTCATC AGCGATGTGG  
 TCGTATCCAC GTCCCAAGGC GATAACGGGG AGAAGCATGA TATCGCAACT GCGGAGGTTG TTTTCTCTGG CGACAAGCTT  
 TTCTGGACTC AAGGTGTATT TGAATTCCGC TACCACCACA ATGGTAAGCA CAATGTCTATG GCCATTTTAC GACCATTTGA  
 AGTCCGGATC CCCCCTTCG AAGAGGAAGA TCACTTCGAC ATGTCCCAA CCGCAGTCGA AACGAGCCTT CTGCCTGTGA  
 TCCAGAAGTG CTTTGACCGG GATCCGAAA TCGCACCTGA AACTCCGGA GAGCAGTACG GTAGTTGGT TGAGCGAGAT  
 GGTAAATTTG CCAAACGGGT TGTTTTTGCT GTTCATCAA TGTGCGTACC ATCATCCTCT CGTATACTAA ACGATACTAA  
 CATGCTTAAC CCTAGGTTCT GCGTCAATT CGCCCTGAG GTCTGCGCT CAGATGGCAA CGTCCGCAAC CTCGCCTGGA  
 GGATCTGCAA CGCAAAGAGG GTCTTGTA GCGGTTCCCG AGCTTCTATG AACTTTCTTT GGTCCCTCTC AAATCCAACA  
 AAATGGTTTA GCGTCCGCA TCGTTAATAT CGTCTGTTCT CAATACCTAG GCCCATAACA GTATGTCTCG AGATGGCGCT  
 ACGACACCAA CTGAAAACAA AGAGTGA

Fig. S1 Revised sequence of the *choA* gene. Introns are shaded.

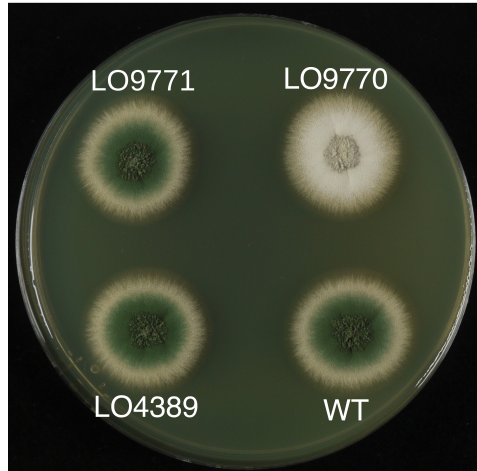


Fig. S2. Growth of multi-marker strains and controls on complete medium (YAG). The seven-marker strain LO9771, and LO9770 which carries the same seven markers but has *AfriboB* inserted at the *wA* locus, grow as well as the parental strain LO4389 and a wild-type (WT) strain (FGSC4).

gene	coordinates of gene	coordinates of deleted region	from.....to (sequences flanking deletions)	size of deletion
<i>choA</i>	3,049,596 - 3,052,743	3,049,404 - 3,052,903 (inclusive)	CACCTTGACGAGTTCCTGC.....CGGCTTCATGGCG GTGTG	3500 bp
<i>pabaA</i>	2,431,796 - 2,434,267	2,431,601 - 2,434,453 (inclusive)	CATGCCCATCTCACATCAGA.....GATAACCTTGAATC AGTACCC	2853 bp
<i>lysB</i>	1,483,680 - 1,484,947	1,483,488 - 1,485,009 (inclusive)	CCTATATCTCGCTGCAAGTTT.....TTACAACCCTGTT CGGTCAAG	1522 bp
<i>biA</i>	2,716,545 - 2,719,138	2,716,328 - 2,719,335 (inclusive)	CAAAGGGCTCGAGAGTCGA.....ATCTTACAGAGACA CACTAGC	3008 bp

Table S1. Regions deleted for each gene including sequences flanking the deleted regions. Coordinates are from AspGD version 5 ([www.aspgd.org](http://www.aspgd.org)). The *choA* deletion extends from 160 bp upstream of the coding sequence to 193 bp downstream of the stop codon. The *pabaA* deletion extends from 186 bp upstream of the start codon to 195 bp downstream of the termination codon. The *lysB* deletion extends from 192 bp upstream of the coding region to 62 bp downstream of the coding region. The *biA* deletion extends from 197 bp upstream of the coding region to 217 bp downstream of the coding region.

caatgctcttcaccctcttcTGGCGGGTTCTTTTGGTTT GCCCAGGCTGGTCTCTGGGCACTGAG  
TGTGTTTCGGCGTGGGGCGGGACTTGATTTCTTCCTGAACTGAAAAGTGATGTATATTTGACTGG  
CGACGACAATTTGTGATAACGCTGCTACCCGGTAGTTGAATAATAATGATGATCGGAATTTGTT  
ACTTCTCTCTTGGAGTTTTTGTTTTTGTTTACGCTTGTATTGCCTCGGCCGAGGTGTGGCTGCC  
CCACCTTCGAAATGTGGCTGGTGCATGTGGCGGATGCCGCGTCTTATCGAGATCGATATCGATT  
TTTTGCCGGGCATTGAAGGTGCTTCAGCCTGCGGACCAAGTTGCCAGCACCGAACCATTGCTTG  
AGTTCGACTAAGTTTCTTTGCTTTTTCTAATCCTCTCAATTTAGGTCTGTCTACCCATAAGCCC  
GTCCTTTCCAGCTCCCTCATTAACGCCACATCCCACAGCTGCACCCCGCATTACCCCTCCATCG  
CCGACCATGTCGTCCAAGTCTCAATTGACCTACGGCACTCGCGCCCGCACGCACCCGAACCCGC  
TGGTGAAGCGCCTGTTTCGAGGTGGCGGAGGCGAAGAAAACGAACGTGACGGTCTCGGCGGACGT  
GTCGACAACGAAAGAGCTGCTGGATTTGGCTGACCGTAGGACTCCCGCCGACCCATAGACTCG  
GGATACTAAACGCGGACGACAGGCCTCGGACCGCACATTTGCCGTGATCAAGACGCACATCGACA  
TCCTCTCGGACTTTAGCGACGAGACGATCCGCGGGCTGAAGGCGCTCGCGGAGAAGCACAACCTT  
CCTCATCTTCGAAGACCGCAAGTTCATCGACATCGGCAACACGGTGCAGAAGCAGTACCATGGC  
GGCGCGCTGCGCATCTCCGAGTGGGCGCACATCATCAACTGCAGCGTGCTGCCCGGCGAGGGCA  
TCGTGGAGGCTCTCGCCAGACCGCCGCGGCGCAGGACTTCCCCTACGGCCCGGAGCGTGGCCT  
GCTCATCCTTGCCGAGATGACCTCCAAGGGATCGCTGGCGACGGGCCAGTACACGACCGCGTCG  
GTGGACTACGCGCGCAAGTACAAGAACTTTGTTCATGGGCTTCGTGTGACCCGCTCGTTGGGCG  
AGGTGAGGTTCGGATGTGAGCGCGCCGTTCGGACGAGGAGGACTTTGTGGTGTTTACTACGGGCGT  
GAACCTCTCGTCCAAGGGGGATAAGCTCGGCCAGCAGTATCAGACTCCCGAGTCGGCGATTGGC  
CGCGGAGCCGACTTCATCATTGCGGGTTCGCGGCATCTATGCGGCGGCTGATCCGGTGAAGCTG  
TCCAGCGGTACCAGAAGGAGGGATGGGAGGCTTACTTGAAGCGGGTTCGGGGGTAACGGTAACTA  
ATTTAGTATAGCATCGATGATGAGCATGAAGAATTATGCTGGTTGGAAGTCCGTTGAAGCGTGT  
TGATAGGATAGATAGGTAACTCGTACTACTTGATAGTagtgcctcctctcagacag

Figure S3. Sequence of *AtpyrG* in pLO103. Underlined red sequences are not *A. terreus* DNA but are tails added during PCR amplification to facilitate subsequent cloning. Red and green sequences at the top are, together, the sequence of one of the two primers used to amplify the DNA fragment from *A. terreus* genomic DNA. The other primer used to amplify the fragment is the reverse complement of the red and green sequences at the bottom.

caatgctcttcaccctcttc**AAGGACCCAGTCAGGAACC**GCTGGGTTCAACAAGTCGGGGAGACGG  
AGTACGGAGTAACCTGATCCTCATGACCAACATATGAGAGCAATTGACTAATTCAACGGATGATG  
AAGAATTGGTTGCCTTATGTCGTGTTGGATGTTGTACGGAGGCGAATGTCATCCAACGTGTATG  
ACTGTGTCAGGCCTCCAGGTGAACGGAGTACATACTCCTAGCCGGGACGCCTGGCGGCCTTACA  
AGTGGATAAACCTGAGGTAATGCTTAACAATCCAATTCCTTTCAGGTGGCAATTGATGCTCAAGT  
AAACTGAAGAGAGCTGTATAGTTATTTCTGTCTTGTGCTGGTGTGCTGGTGGCCGTTGCTGC  
CTCAGGCACCCTCAGCCTACCGCGGCTCTTCTTCGGCGTCATTCCTACTCCATCGACTCATTCT  
CTCCATGTAGTTCTGTAGTCCTTCTGTTTTCTCCTTCCATTGCTAATCTTTCAATATTGCCATG  
CCGCCAGTGGGAGCTGCTCTGTGGCGCTCGCTGCGTGCCCACCAGGTCTACGGCGCCAACACCG  
ATGTCGGCAAGACTATAGTCTCGACGGTGTCTGCAACGCCGTCCAGCGCCAGAAGACCCAGGG  
ACAGGCTGCATTCCTGAAACCAGTCTCAACCGGCCCTCTAGACGATGCGGATGATCGGTATGTA  
TGCTGTTCTTCTCTTGGATCCATTGACTCACCTCGACAGCCACATCCAGCGCTACGCCGCAGG  
CACCATCACCAAATGTCTATATCAATTCAACGAGCCCGTCAGCCCGCATCTCGCCGTGCAAGGC  
TTCTCTGTAAATCCTCTGCCATTTACAGTCCCCGGGCTATCAAGTGCTGACAACAAAGGTACCC  
CCCGACGATGATATCATCACGTCCGTCCACTCGACCCTCTCCGACTGGGCGAGCAACGGCGTCA  
ACTTCGCCCTGGTAGAGACCGCCGGCGGCGTGCATTTCGCCCGGACCAAATGGAAACTCCCAGGC  
AGATCTCTACCGCCCGCTGCGGCTGCCAATCGTGCTGGTTCGCCGACTCTCGCCTGGGCGGGATT  
TCCTCGTCCATCTCCGCGTACGAGTCGCTGTTGCTGCGGGGCTACGACGTCCACTCTGTCTCTGC  
TCTTCCGCGACGACTACTACAAAACCACGAGTATCTGCGCGACTACTTCCAGAAAAAGAGCAT  
CCCGTTGCTGCCGCTACCTGCGCCGCCCGCGCGACCGGCGGTCCAAGATCCAGACGCCGCCGCG  
CGCGATGCCGAGGCTATGGCTGAGTACTACCACCGCGTCGCGCAGGGCACCGACACAGCCGGAC  
TGCTGGAGGAGCTGGCGACGAAGAACGCGAGCCGCATCGAGCGTCTCGAGGCGATGGCCGGTTCG  
CGCCACGATGCCATCTGGTACCCGTTACGCAGCACCACGGCATGGCGCCCAAGGACATCACG  
CCGATCGACTCGGCCTACGACGACTACTTCCAGACCTACGCGGGGGGCAAGCTGCAGGCGACGT  
TTGATGGGTTCGGCGTCTGGTGGACGCAGGGCCTGGGCCATGGCAACCCCGAGCTGGCGCTGTC  
CGCGGCCCTACGCGGCCGGCCGCTACGGGCACGTCATGTTCCCCGGGAACATCCACGAGCCGGCG  
CTGACGCTCGCGGAGACGCTGCTCAATGAGATGGGCAACCCGCGTCTGGGTAAGGTGTTCTACA  
CGGACAAATGGGAGTACGGGCATGGAGGTTCGCGGTGAAGATGGGCCTGCGGGCGGCGTGTGCGCG  
CTACGGATGGGACGCCAGCGCCGAGCAGATCAGCATCCTCGGGCTCAAGGGCAGCTACCATGGG  
GATACCATTGGGGTGATGGACTGCTCAGAGCCGTCGACGTACAACAAAAGGTTCGAGTGGTACC  
GCGGGCGCGGGTACTGGTTTGATTTCCCGCAGGTCAAGATGGCGCAGGGGGTGTGGAAGATCCA  
GATGCCACCCGAGGTGGACGGCGCATTAGGCGCGGACCTGGAATTCCTACGCTGAGCAGCGTC  
TTTGATGTGGAGGAGCGGGTGCAGTCGGACGCCGGGAAACGCTATCACAAGTACATCCGACGCA  
CGATCGAGGGCCTGGTGCAGCAGGGGATGAAATTCGGATCGCTCATTATGGAGCCCGTTCAT  
TCTGGGCGCTGGGGGCATGCTCTTCTGGTTTCGTACCAGCCTATCCATATTATCCCGTCCATGAC  
TGCGCATACTAACGGATCAGTGACCCCTCTTCCAGCGCTGTCTGGCCGACGTCGTCCGCGGG  
CATCCAGAACTCTTCGCCGCTAACGCCGCCGCCGCCCGCGGAGAAAGACTCCTGGTCTGGCC  
TCCCGGTGATCCTGGACGAGGTCTTTACAGGTCTCTACCGGCTCGGGCGCCGATCCTCCGCGTC  
GTTCTGAACATCGACAGCGACATTGTGGTCAACGCCAAGCTGCTCACCGGGGGCCTGGTGCCG  
CTGTGCACGACCATGGCCAGCAACGAGATCTTCGCGGGGTTTTCCAGCCCGGAAAAGAGCGACG  
CGCTCCTGCATGGCCATAGCTACACCGCCCATGCGGTGGGCTGCCAGGTGGCGGTGGATTTCGCT  
CCGACGATGATGCAGATGGAGCGCCGTGGGGCCTGGGACGCCTACCGTCCGGATTGGCAGTCG  
ACTGCGGCCATGGCCAGCGAGGCCTCCCGCTGCGGGGATGCCCTGAGGTCTGGAGTGTGTGGT  
CGCAGGGGCTGGTGAAGGATCTGTGCTTTGCGCCGGGGGTGGAGGGGGTGTTTGCCATTGGGAC  
GGTGTGGTGATTGCGTTGAAGGATGCGCATGGCGGTGGTACGTCTACCTTTCTCACTTTTCTT  
CTCTTTCTACTCATCTCTCTTCCCTGCCCTGAAACGATGTGACGACTAACATGTGATGACCCA

CAGGATACTTTCGACGGCGGCCAAGGGTCTCCAAGAGATCCTTCTGACGGGTGGCCCAGGCTT  
CAACGTTTCATTCCCGGGTGCTCGGAAACGTGCTCTACCTAATGTCTAGTGTGACCTCCAGGCC  
GAGGCACTGCGGGTGATTGAGGAGCGGCTGCGGGCGGGCTTGGTAGGGTAGTGTACGGAGTAGC  
GGCCCAGTGAGTCATTGTACAGAGTAAGATTTGTCTAGTAGTGGTGAACATGGTCCATGCACA  
TCTATGGAGTATTCGGAGCAAAGAA**CCGCCTGTCAAGAGACTGT**agtgcctcctctcagacag

Figure S4. Sequence of *AtbiA* in pLO101. Underlined red sequences are not *A. terreus* DNA but are tails added during PCR amplification to facilitate subsequent cloning. Red and green sequences at the top are, together, the sequence of one of the two primers used to amplify the DNA fragment from *A. terreus* genomic DNA. The other primer used to amplify the fragment is the reverse complement of the red and green sequences at the bottom.

caatgctcttcaccctcttc**TAGCAGATCAATATAGCTCCC**ACAGATGCTTATTGTTTAGACGA  
TCGGACAATATTTTAAACATTCAATATACAACAGACAGGTGAGATAACAATTAATAATTGGATATAT  
TCGAACTATCCTATGTTTGGACATAAACAGACCTTTGAAATAACAACCAACACCAGCATTTAAG  
TGCACTAAGTCCAGTTGCTGCTCATTCTACAAAGTATTTCTAATAGATGAGCTTGTAGAATCTG  
TAAGCAGTCTACACGTCCATATATATACTCCTCCACAAGACTCCAAGCTTACATTCCTTTGCAG  
GTTGACGGATCTTACAGGGCAGTCCATGGCATAACGGGCTCAGTCTTCGCATGCTGGCTAGATTA  
TCTGTAAAGTTATCAGTACCGACCAAGGGCAGTTCCAATAGCACGTTTATTGTGTCCACCATAG  
GGAATATACACGTACTCCGTAGGTATTCCGTAGATCAGAAGGACGAGGCGAACAATGGTAAAGA  
CACACCCGGCTATTACCGCCGGAGCCACGTTGATCCGGGCCGTTGGATTTCTCTTGCTCCGAT  
TGTCGGGGAGACCTTTTTCTCTGTCCAGTTCACCTCCAGTCGACATTATTGCGCAATGGCTGCT  
GCTAGGACGCTTCGCATAGGTCAATTGGCTCCTTTTCCGATCAAAGTAAACTGTAGCTGACATT  
CTCCATTCTAGGTCTCATCCCCGGTGACGGTATCGGACGGGAGGTCATTCCGGTATGGAGAAC  
GTCCAACCCCGGATTTCTCCACATGACAATTGAAGGTCAATGCTAACCATGCGGTTCTGTTAGG  
CTGGTCGCCGCTGCTGGAATCCCTTCCCTCCTCTCAACCTGAAGTTCAGCTTCGTTGACCT  
GGATGCCGGTTTTGACACCTTCAAGCGCACCGGTACCGCTCTCCCTGACAAGACCGTTGAGATC  
TTGAAAAGGAGTGCGATGGAGCTCTTTTCGGAGCCGTCAGGTAAAGTGAAACCATACTGATTG  
TCTTCTGCATTCTAAACGTGTCATCTCCAGCTCCCCTAGCACCAAGGTCGCTGGCTACTCCTCC  
CCATTGTGCTCTCCGCAAGAAGCTCGACCTGTACGCCAACGTCCGTCCAGTCAAGACTACCA  
GCGGCGACAGCAAGGGCAACCCATCGATCTGGTCATCGTCCGGGAGAACACTGAGGACCTCTA  
TGTGAAGGAGGAGCAGACCAAGGACACCCCCAACGGCAAGGTGGCCGAGGCCATCAAGCGCATC  
TCCGAGAACGCTTCCCTCCCGCATCTCCACCATCGCTGGTGAGATCGCTCTGCGCCGTCAGAAGA  
TCCGCGACGTTGCCGCCACCCCCGGCTCCGCTCCAAACCCATGGTTACTATCACCCACAAGTC  
CAACGTTCTGTGCGCAGACCGACGGTCTCTTCCGTGAGACCGCCCGCAAGGCCCTCTCCGCCGAC  
CGCTTCTCCTCCGTGCGAGGTGAGGAGCAGATCGTGCAGTCCATGGTCTACAAGCTCTTCCGTC  
AGCCCCGAGTACTATGATGTGATTGTGCCCCCAATCTCTACGGTGACATTCTGTCCGACGGCGC  
TGCCGCCCTGGTGGCAGTCTGGGTCTGGTGCCAGCGCCAACGTCCGTGACGGCTTTGCCATC  
GGTGAGCCTTGCCACGGCTCCGCCCCCGACATCGAGGGCAAGGGCATTGCCAACCCCATCGCTA  
CCCTGCGCAGTGTGCGCCCTGATGCTGGAGTTCCTTGGCGAAGAGAACGCCGCCGCAAGATCTA  
CACCGCTGTGATGCCAACCTCGACGAGGGCAAGTACCTCTCCCCTGACATGGGCGGAAAGGCT  
ACCACCCAGCAGGTTCTCGACGATGTCCTGAAGAGACTTTAGAGGTGCTTACGTAAAAGCGGAT  
GTCTTATTGCGAACTGTGTGATGCTTGTATAGAGCGACTGTATATCTAAATAAACCATGACTAC  
CTGCGTCTT**GAATTCTTCCCATCTCCAT**agtgcctcctctcagacag

Figure S5. Sequence of *AtlysB* in pLO99. Underlined red sequences are not *A. terreus* DNA but are tails added during PCR amplification to facilitate subsequent cloning. Red and green sequences at the top are, together, the sequence of one of the two primers used to amplify the DNA fragment from *A. terreus* genomic DNA. The other primer used to amplify the fragment is the reverse complement of the red and green sequences at the bottom.

caatgctcttcaccctcttcGTCTTTGTATAGATCGTCCTGAATTTTTGTATACTTCTATTTAAAC  
TGAGACGAAAGATGAATAAATGGCCAGAAAGAGAAGTCTGACAAAGATAAACGGCGAAAAGGTT  
ATCGAGGGCGTTCCAGGGTACCACCGCGCAGCGTTCCGTTGATTGCCGCTCCGCTCTCCGACTA  
TCTTTTTTCGCCGTCAGCGGCAAACCTCATTTTGACTCAGGAGATCAATTCCTCTCAAACCTTTT  
GTATTGTGGGCACTTCACAACCTCTTCGTGCGTGAGGATAACATCGGTACTCTTCTCCTCCCAA  
TATGGCGTCGTTTTGAGCGGTTCTAAGCCCATATTGAATCCGATATACGCCTAGCCATTTTTTCA  
ACGTCTCGCCACTCCCTCTAAGTGGACTATGAATTTGACATAGTATCCCGCCTTTCAAGTGGA  
GAACGCCCGCCTGTTTTGATAGGCCTTTATAGGCCTTGAAGCCTCGATCATTATCATCTTTTTCCA  
GCTTCTCGCATTTTTCTCTTGATAACAATCGAACCCACTTCATGGCGCCTTTACTGGGGCCTTGG  
GGCAAATATGAGGCTGTAAATGAATCCAACAGCCTCAGAACCACCGGAAAAACATTTCTATATG  
TCGACGCATATGACTCGTTTTCTTACAACGTCGTTGCGATGCTCGAGGAGGTCCTTGACGTA  
AGTCACCGTCATGATGATCGACTCCGAATGGCCAGACGGCAACATGGTCCAGTTTCTACAGCAC  
TACGAAGCTGTGCTTCTGGGTCCGGGACCAGGGGACCCAAATATTTCCAGGATATCGGCATCA  
TGAAGGATATTTGGGACCTAGGCGATGCGGATTTACTCCCGGTTTTTGGTATCTGCTTGGGCTT  
CCAGACGTTATGCCTTCGCCAGGGTATCAGTATCGGGCGGTTGCCGTATCCCCTTCATGGGCAA  
GTTACCCGGATCTCCACGACTCAGAAAGATATATTCGAGAACATCCCAGATGTCGAAGTCACTC  
TCTACCATTCCCCTGTACGCCAAACTGGATGAGCCAGCGAGTGGCATCTCGGGAAAGAGTCTAAA  
CGGCGAGCTTCATGACAAGTTTGATCTTGATATCTTGGCCTGGCTTTCCTTAGGCCAAGGAGAT  
CAATTCCAAAGATGGGAGATTCCCATGGCGGTCCGTCACACACGAAAGCCGTTCTGGGGTGTTC  
AGTTCACCCCGGAGTCATGCAAATCAAACCGGGAGGCATGCACCGAGATTCTGAGAAGATGGTG  
GGAGCTGTCCCTCGTATAACAAGATAAATGGCCGCGCGGGTATGGTTGCCTACCCGACGAT  
ATCATAACATCAATCGAGTGGCATGGCCTCGCTTCCCTGGTATTGCATACACGATGTTGAACTGGA  
GCTCGTCGACATCGAATAAATCTGCCTTCCGGACGATCCCAGTACATAAATTGAGTGCAGAAGA  
TATCTGTGAGAAGCTCAATGTTCCGGGGTCGCCAACCGTGTGTTGTTTCAGTCAAATGGAAGATAC  
AGCGTCATCTCTGCGCCGAGTCCCAGTGCCTGGAGGTTGGAGTATTACACGCAGTCTGAGAAGC  
TTCTTTTTGGAAAAGCTTTCGACTCAGATGAACGCCAAATCAACCCAGGATGCAGTTGCTGGAAA  
GCAC TTATCAGTATCTGAGCTCTGGGATGTCTTGAGATATGTGATGGATATGAAACATGTCGTG  
ACGGGAGATTCTACGACACCTTTTTGGGGAGGCTTCTTGGGTTATTTCTCCTATGAATTGGGGC  
TGGCATGCTTGAACCGACCGAAAACGCACAACGATAGTTACCACCATCCCCTCGGGGAATCACGC  
TTCTATGGAGAATCCGGCAGATGTGAGTCTGTTGTGGACGGAAAGAAGCGTCTGTCCTTGATAAT  
GAGACCGGGAACATCACGATACAATCCACGAGGAAAGATGATGACTTGCCGGGCGGTTGGCTTG  
ACGAAACCCATCGGTCAATTGGTCTCGTCCCATCAATCTGCGGACGAGATGCACGTCAGTGCAGA  
TTCAGAGTTTTTGGATCCGATCCTTAAACGCGGCGTGATCCAGTTTCTGATGAGGAAACCTAC  
CTAGAACAAGTCAAGGCTTGTGAGACGGAACTCAAAGCTGGGGAGTCATACGAACTCTGCCTCA  
CCTGTGAGACTTCCATCACACTTCCCTCTTCAAGTTCTCCAGACAGCCGGCTCTACTTCCCTTG  
GGAGTTGTACAAACGTCTGCGTCAGTACAATCCGGCGGCCTTCAGTGCCTATGCAAAGCTTGGT  
AATATGAAGGTCGTCAGCAGCAGCCCTGAATGCTTCCCTCAACTGGGACCGCTCCTCCACGCTAG  
AAATGAAGCCGATGAAGGGCACTGTCCGAAAGTCCGATACCATGACGCTGGAGAAGGGCAAGGA  
AATTCCTCGGGACGACAAAAGAGATGGCTGAAAATCTGATGATCGCAGATTTGATCAGACATGAT  
CTATACGGTATATGTGGCTCCGGCGGCGTTCATGTGGAAAAGCTACTAGAGGTCGAAGATCATG  
GGCGGGTCTATCAGATGATCACCCATGTGAAAGGGAACATTGACCCGAGTCGACCTGGCTTCGC  
GGTGCGAGGCATGCCACAACCTTCATCAGTCATCGAATATGTCTGTATACGGACTTACGGCTCTC  
CAACGATGTCTTCCACCGGGTTCGATGACTGGCGCGCCCAAGGAGCGGTCATGCATGCACCTAA  
GCACCATTGAGGCTCGCAATCGGGGAGTTTACTCTGGCGTCATGGGATTTCTCGATCTTGGAGG  
TGCGGGAAGCTTTTTCGGTA CTATCCGGACTGCCTTCTCCAGCTCCGATGACCAAAGCACTGAG  
GAACAGAAGTGGCGGATCGGTGCTGGAGGAGCTGTGACCATTCTGAGCACCGCCGAGGGCGAAT



GGGACGAGATGTTGACCAAGCTGAAAACAGTGTGTGGTATATTTTCGCCATTGAACACCTAGTG  
ACCTAAGAGTGTCTAAAGATCTGCTCTTTATGCATTTTCGGAGCAACGCTTTTCAACAGTTGCAT  
GGTTTGGAGTTAGCTAGAGGTCGATTCAACACTGAGCGTTTGGAAATTAAGCGGCTTGGGTTCTG  
TTGGCATTTTGGATTCTATCGAGCATTGAATATATTCTGCAGAGCTATGCGTGTCAAATAGTTA  
TCGCTGTCAGAACGACACTGATAGATCATAGAAATGATGTCGTCCAGTTGGTCTCGATGCAAAC  
ATGTCAAACAGCGCTCTATTATCCGCGGAGAGCAACAGAGCTCCGGCATGGCATCACCATCTAC  
ATTCATTATAACGCCGCATGTTAAAGCGAATGCTCAGTGCCTCTGTCTGATATTATCCCGCTGC  
ATATATCCGGTCTACTTTGAAGAAATCTTCTTCCATGGCAGGCACCCAGGATGCACCGTTGGA  
GGAGATTCTATGGCGGTGCGCGTCCCACGTCCAGATGATGGGAGGCTTCCCTCCACTCGAATAAC  
AGTAAGACACCCTAACTTACGGCTCTTATCATTCTTGTCTCACATGTATTCTCTCAAATAGTCC  
TGTTCTACTTCGCCGAATCTCCCTTCTTCGATGCGACCTCGAATAATGCCTCGCTCGCGATTCA  
AGCGAACTACAACGAGACCTTCCGCCATTTTCGTGGAAACTCGGGAAGCTTTCGAAGGACGGTTG  
AAAACAATGCAAGGCCTGGAGTTTGTGGTTTCATATGATCCCCTTCAAGCTGCCGCGCAGTCGA  
ACGGCCAGTTCGCGCATGAGCCGTCCAACATCTGGGTAATCCACAAGCAGACACGGCGGAAGAG  
GCCCCGGCCTCGAAGACGAGGTGGAAGTTCTGTCCACATTTCTTCGTTCGTGGGGGACTGTATCTAC  
ATGGCTCCGTCTGTGGCGAGCGTTGTGGGCAACCGCATTTGTATGTTCTAGTCGGATCTCTGGGC  
TGGATATTGCCCCGTACAGATTGGCTAACGGATTTCTGACTTTCTGGATAGCTTTCGGCCGTCA  
CCTCCCTCACAAACCTCATGAAGACGGCAGCGTCACTGCCCAATTTACCCCTGCACATGGACA  
CACCTACATGCCGCCGTCTCCAAGTCCACAGACACCGCTCAACCCAGCGCGCAACCGAGCAAG  
GAGAACACGCCTATGCCTGACGCCGACTCGACTAAGGCATCTCTCGTCGGGGGTGCCAGTCCA  
CCAATGCAGGTTCCGTATTTTCAGCATAACAAGGACACTCGCGGAATCGTTCAGTTTGCTTACGCA  
GTACGGTGATGAGTTCATGGACGAAAACCGCTGGTCGGAGAACCAGGTTTCATTATGTCT  
CGAAACAATGAAGGGGCGGCGTCTAAGCAACCGCCAGTGGGCACAACCCGCCCTGGGACTGTCC  
CTGTAAGAGCTGGGACCCACAGGTCAAGGTGGACACACCAGGGAAGACGCCGACAAAGGGCT  
CACGCCGGGGCCGGACGAGAATAAACTGCGGAAGAAGAAAGGCAAGAGCGGAGTCTGAGGATTT  
TCATTATTCTTTTCTGTGATACCCTTACAAGCGCATACTGTTGCATGGTGGATACGTCCAATCG  
CATTTCTTTGTAACCTTGATAGAGAGATTCTAGGCCATATGGATAAGCATTGTGGATGGGAT  
GAAATCGCGGACGACGCTATCTCCTGCAagtgctcctctcagacag

Figure S6. Sequence of *AtpabaA* in pLO100. Underlined red sequences are not *A. terreus* DNA but are tails added during PCR amplification to facilitate subsequent cloning. Red and green sequences at the top are, together, the sequence of one of the two primers used to amplify the DNA fragment from *A. terreus* genomic DNA. The other primer used to amplify the fragment is the reverse complement of the red and green sequences at the bottom.

*ctgtctgagaggaggact***GTGTGGAGTCGGCGCTAG**TTTTTCCTCTCACTTTTTCTCTTTTTCT  
TCTCCTCCTCCTTTCTTCTTCTCCTCGCTTCTCTTCCACACAACATCCGCTTTATCTCTGGCGA  
ATTGACCTTTTAATGACGAAGGCTCAATCCAGCTACATTAGCACCTTTTCTTCTCTTCCAGGAT  
ACTAACCTTTACTGTAAGTTGTCCCATCATCGCTTCCACCGCACAAATGCATTCTATGAGGAAAA  
CGATCCAAAAATCTTAGTTCGGCGACAAACAAATGGGCCGTGAACAACATGCACTACCATCTGA  
AAATGCTTTCTCATCTCACTTTTTATCTTAGCCTGTTCTTGGGAACTGTTGGCTAACTTAATATC  
AGACAGGTAGCTGAGCTCTCAGTGGCTATTTACATCAAACCTGTAGACTCTTCGAAAGGTATG  
CCTTTTATTCTTTTTCTTTTTCGGCCTCGTCTTTCCCCACCCGTTTCCATGATGAGAAACATTT  
TTTACAGTTCTGCTTCTGCAAACCTCATTGAAGAAAACCAAATACCTTACCAAATCTACTGATAT  
GGAAACTCCCTTCTTGTTCATCACGACACAATCACATCACCCATGCCGACCCAAGCTAACAGCT  
TCAAGATACAGATATCGTAGTCTCAGCTCGCATCACGTCAGCCACTAGCACACTAGCATAGGTA  
TGAACTACCACGCAGACAATCCTCCCTCACACCCTCCTTGATGATGACAACAAGTCAATCCAT  
TCAATGATTCTCTTCGGAGAAACCGCCCTCGAGCCTGCATCGGCTTCCACACATCGCACTTGA  
AGTGCAACGATCCGCTTGCCACCTCCCTTGTACTGGACATTTTCGTTCGTCCATGTCTTTCTCGG  
AAGACACGGTCGATGAAATGGAGGATGGTTGTGGAGCGTTGGGTGGCGGGCTCCCTCGTTGTGT  
CTTCCGCGTTTGTTCCTGGCTGCGTGTGCTGTGCTTGACTIONTGTGTCTTTGTTCGGTTTCTCGGC  
TTGTTCGTCCGTCCGATGGATGGCTCGCGGGGGGGTCGAAATTGGCAGGGGATGGGATGAATTTACC  
GGCTTGGCTGATCCTTTTCGCTATACTACCGGTGCCTTCTATCTGGCGGCAGGTGGTTTCTGGC  
TTCTACCACTCGACAGGATTGCGAGCTTATGCTAACTGTCTTTGTAGATTTCGTGTCAGCTTTCA  
TATAGTACCCCTAGGTAGATAACTTGGAAATGAAACATAGCCATTCTACGAACTATATCTTTAT  
CTAGAAAACGATAATTCATTCATAATATATAACCACGAAGCTCAATGTAGTACTTTACATAACCC  
CCAGCAAGCTCCGGCAGAAGCTCACAACATCAGGTCTCATCAGGAAACCCCTGCAGGCAACCAT  
CTTCTCCACATCCCATCCGTCTCCATCTATTTCGGATTTTATTTCGCCATGTAGCTTCACCATTTCG  
GGTTCAAAGCAATCGTATGTGATCAAGGCAGGTGAAAGGAAAGAAAACGACCGATGCGACAAA  
CAGACACGCAGCATCTAAGACCTATCTATGAAAAGCTTTTCGTGGCTCATATTCAAAGAAACAGC  
AGAGAAGCAAATCGTTCGTGATAGCATTTGTTCAATAGGGAGGGAGGACACGCAAGGTGTAGGCG  
TATCCGCTTTATTCTTTTTCTTTTCGGTTCGGGGTGGACGCACCGTTGCGCGACATACTGTAAGGCG  
CCTGTCTATAGGAGCAGTTATTAGAAGCCACGCTGGTGATTTATACGTGGAGAAAAACTTACCAA  
AACCTTCTTTGCATTGCATATTCGCCAAGCAAGGTTGCGTACAGTTCCATCGGCGCGGACGACT  
TCCGGGGCGAATTCGATGCCGAACCTGAACACCGTGTTAACATGCACTCGGTAGACGATATTAT  
GATAGGAAAATAGGAAGCCTTACATCTGATGCACGGCAAAAACAACCCGCTTGGCATACTTGCC  
GTCACGTTTCGACCAGGGATCCAAACTGTTTCGTGACGGTCTCAGGCGCGACCTCTGGGTCTCGG  
TCAAAGCAGTTGCGAACGACTGGCAACAGACTATTTTCAACAGAGGTCTGCATCATCTCATGGT  
GGCCTTCTTCTCAAACCGGCGGATGCGGATTTCAAACGGTCTTGAGATCGCCATCACGTTATG  
CTTGCCATTGTGGTGGTACCGGAACTCGAAGACGCCTTGGGTCCAGAATAGCTTGTTCGCTGGAG  
AAGATGACTTCCCCCGAGGCCATCTCGCGGTTGTCCCATGCGGAGCTGGGATGACCACATCGC  
TCGAAACAATCCCCTTTTCGCAGGTCAAATTGTCGTAGGATCCTTCATTACCGCGATCCATCG  
TCCTTGGGAAGAAACCTTTGTGATCTCCCGGGAAGTGTATTCGGTTCACGCGATAAAGTCCAATC  
CAATCTTTCTTGCTGTGATTGAGAGGCGCAGTCCATTTGACCTTGATCGGGGCTCCGTATTGGA  
ATACCAAGTTTTTTCAGATCACCGCGTCTATCAAGGGGCATGCGGGCATTAGCACCCCTCTCTACC  
ACTACTTTGGTTCGATTCGGCAAGAGCTGATGAATCGGTGCCTTCAACCTCCAGAGAGTAATCT  
CGGAATCATATCCGGCCACGTCCTCATCGATGCGGGTATGGTAACACGGGCGGGGTACTTCT  
GGAAGAGGGCGGTTGTATCCTTACGAACGTGTCAACACCGGCAGCAAGCTTGGGGCGGGCATT  
TTCCAAGAAATCCTCTATAAACTCGAAAGAACCGTCGACGATTTTGTCCATACTCCCATGAAGT  
TGCTTGAGAGGAGGAGGCAAGGACCGTTTTCAGGTTCTTAACAAGACCGGCATCGCGACGGATAC  
TCTGGCCATAGAGCTTTTGCATGTGTGGACGCTCAATGAACTGAATGAACGCCAGGCTGAGGAT

GTGGCTCAGAAGCGCGAGGAACGTGATTGCTCCACTACTAGTGATAAAGGACCGCACCCCAGACC  
CCGGCAAGACCAAGGACTCGCTCTGGGTGTTCAGGAAGCGATAGATCCCCGTTGTACGTCAACT  
TGGGCGACTCGTCTAGAAAGTCTCCGTAGAACCAGCCAAATTCTCCAAGGGACTCATAGAT  
ACTAACGGACGTCCAGATTTGTAGGCAGATCAGCCCTGCCCCGAGAACGTGCCGGAGTAAGACA  
AGGCCATAGCCCCAGTCGGAGGGGAGAGTATACATTTCCATACAGCAGCAATGAAGCTCGCGT  
AGCACATGATCATGCTTAGGTGATACGTGCCCTTCCACTGGTTCACGCCTCATGGGGTGTTC  
GCCATACTTGACGAAATGCCGGTCCAAGCTTTGCAGTTGGATTGGCGATTGAGGAGGTATCCA  
ATGCCAACAGAGTACCAGAGCCTCCACACCGCTGCATTGGCCACGAACAGGAACGTGATACCAGG  
GCGTGGAGGGCGTAAGGACAGTGACAGCGAATACTAGGAATTGGACCAGCATGGACGAAGTATC  
GGTTATGCGATACAGATCCAAATTGTGGAAGCCTAACAGATTGTGGACCGATGGAGGAGGCCGG  
CTTGAAAACGTTGGTGCCTGGGGCACATTTTCATCAACGGGTGCTGGCGCGATGGGAGAGTCCG  
TGGTGTGGGTAGTCGTGGAAGCCGTATCCTGGTCGATTGTACGTTTTCGGGGTGGTGGGGGATT  
GTACGTCTTGTCAATGTGTGGGTTTTTCGACGAAGACCAAGAAAGCGAACTGAGCTGCGTGGGCG  
ATGATAGAGATGAACAGCACCTTGTAGCTAGCGGCCATTAGCGAGATACCGTAGTACCCCGCGT  
AACCAACCGAGTACATCGGGTGGGGCGCCATCTCGAAGACACCGTCGAATGTCAATTCCTGGTC  
GATCAGGTAGAAGAAGTCGCCCCAGTACCACGCATAGTCCTTTACCACACGATGCGCGTCTAAC  
TTGACCCAGAGGTTGAAGAGCACCAGCACAATGCCGGAGAACCACCTCAGCACGGTCATTAGCA  
GGCTCTCATTGACAGGATGGTGACTACAGGCTATCGCAAAGAGACAGTACGATGTAAAGTCACA  
CATCAAGATCAAATCGACCAGGCGCCTAAAAACGAGCCAGGTGTTGTACTCGAGAGGTGCCTTC  
TCGAAAGAATAGTCGTGGGGGATCTTGGTTTTCCAGTTCCCGTTTGATCAGGTTGTACAGATGAG  
GGTGGGATTCTGTCCCGTCGCAGGATTGACGAAGATCTTGGTTTTCTCAGCCCAGCGAACGAG  
GGTTTTGTGGTGGGATTGGTTGTGAAGAAGCCATCCAATCCCCGCATTGTAGCCCGCACGCCAG  
AAGAGATACAAGACCCGACAGAGACAGGAACCTTCGCACCTTTGGGCAGCGCCCAGATAAGGAGAA  
TATGAGCACCCAAGATAGCCAGGACGATGATATCTGATAGGTTCTTCGGCTCTGAAGGCGACAG  
GAGCTGGGAAACCATGTATGTGTTTTGGGGCACAGTAAATACTGAGAATCCATCATGGTTAGCA  
CTGAGTATAGGTGAGGATGCCAGCCAAACGCCGAGAGGCGACAAAATTGACCGGCCCAACAGA  
TTTATAGATGTACAGAGCAAGGACTTACCTGTGCCATCCGGGGTGCCTCCATAGGTCTTCAATT  
CCTTCCCAGTGTCTTTCGGCTCTACGTCACCAGTGGCGGTAAGAGCCTCGGGACTGAGCGTTGA  
AGCCGATTGAGAGGCAACGGGTCTCTCCCGAAGCCCCCTCGTTATCATTGTGAGTGCCTGTTGAA  
AGGCCACGATCCATGATTGTGGTTTTGGGTTGATGAAGAAAGAGAGGGGGAATCAAAGCCAAAA  
ACACGACCAGGATTCAACCACGAGGTCACCAGCATGTGACAGCCGAAAGGGTTGGGGTACTTA  
AGCGGCCAGATCTTGATTGGTTTTACGTCATGTGAGACGCCAGTCCCGATTTAGTTAGCCGCGGC  
CGTGGTGGTATGTCGAATTCGACTTCTTTGAAAGTTGAAAACCTGCGATGGTCAAGACAGAGGGA  
AAGGGGAACCAGAAGGGGATTAATATGGCGGGCGAGAGGAAGAAGAGGAGAGGACGAGGAGGA  
AACTTGTGTGCAGAAAACAGGGGAGAAGGAGGGGTGTTGACGATTTACATCGAGAGGGACAACC  
GAGACAGGCCCGTGTATTTTTAGCACCATAACCGTAATGACCAAATGCCACAATCCCCTACCT  
AGTCGGTACGGGTATCAATAAGGGACTACACCGTAAGTAACTCATACTACCTAACGGTAATCGC  
GCAGTCAGCTATCCATTCAAGTGCTCTCTAGCTGCTGCGTACAGGTAACTATTCTCGCCGACTC  
TCGGAGTGGAACCCCCCTCCGCTGGGGCAGAGAAACGGGGCTCCGTTGAGTCGAAAACGCCAA  
TCAGAGCAGCCATGAGGGCTACAGCGAAGAATGAGACGGAAATAGAGAGAAGGGCAACTAGTAA  
TGTCATAGCACGCTACGAATAATGCATCTTATTCTGCGTATTAACAACGCAAGAACAACCGGC  
AGGAAACCAAGCCCTGAGATAGCTACCTAGCTTAGTCCGCATCTACCCGAAGGTTGGACATGGC  
ATACGTAGTAATTCTGTTCTCTACAGCGGTAAGAGGCGACAAAAAAAAGGAGGGCTAAAGCAT  
AGACGCAAAAAGGTTTTCGCGACAACGGCAGGATTGCAACCTACGCCTCCTAAGAGACAGCCTTA  
GCAGGGCTGCGTGTTAACCCTCCACCACGTTGTCATTACGTAGGCAAAATGAGTGCTTAAGCA  
ATTGTAGGGGTAGGGGCTTCAGGTCCGACGATTGGCATGCCGCACTAGACCGCCTACCGTTTTAA

AGAGAACTGTTACTCTGCATACCCCATAGTAGTAAAAGAATGTCGACGCCGCTCCAACCGGATA  
GTTAAGAAACGAGACTTCCGGGAATTTCTCCGATGCTATGCTTGTTTCGTGCGAAGGCCGTTGA  
ACCGAAATTACCATACACGATAAACTGCATACCGATTGATGTTGTTAGGTAGGTTCTGGTTGGC  
AAAATTGTGTCGCCAGCTTTTCCAGTCTGCCCTCCCGTCAAAATCAACCTGCTCCCCTGTACG  
GAATAACCTCCTACCATGACATGGCGATGCGTTGGGCAAACAAAAATATGCGACAACGGCAGGA  
TTCGAACCTACGCCTCCTAAGAGACAGCCTTACGAAATAGCAGGGCTGCGTGTTAACCCTCCA  
CCACGTTGTCTATTATTACTAATCCATGACGTTAATTCACCATCTACAGTCCCACCTTGGCAga  
agagggtgaagagcattg

Figure S7. Sequence of *AtpabaA* in pLO102. Underlined red sequences are not *A. terreus* DNA but are tails added during PCR amplification to facilitate subsequent cloning. Red and green sequences at the top are, together, the sequence of one of the two primers used to amplify the DNA fragment from *A. terreus* genomic DNA. The other primer used to amplify the fragment is the reverse complement of the red and green sequences at the bottom.

**CCTGGGATTGATTGCTTGAAG**CTCTACGATGATGATGATACCCTTGGCTACGACGAGATCATG  
ATGATGTTTGGATTCTGGATGTGGGAGTCTGGTTATTGTTTGGGATTGCTACCCCGTATGTTTGG  
ATTATACTCCGTAGGAATATGAAAATGAAAATGATAGAAGATGCTAGATAATCATCCTGTCAGC  
GTGACTAAGGCGGGATGAGTCAGCCCCTCTCGGTTTTCCCCCGCGGCCCATCGAAGCAAAGCAA  
GAAGCGTAATTCCCGAGGGTCCGAGAACCCTTACACATGTCACGGAATTATTAACCTACCTTCTA  
CCTGTAACCTATTGAATATCTTTCTTGTCTGTGCTACCTCCTCCCTCCCTTCGACCGCTACTCCT  
GTCTTCCCTCCTTCATGCGTCTTCTTAATCCCCTGATATGAACTTCGTCCGTCCGTAATCTCCAT  
CCTCGCCGCTTATCACGCAATGTCGTGCAACCTGCCATCCCACGCTTCCCCGACCTTCGCACC  
GCAAGAACCCTCTCCTTCCACTCCGACTGTCGACGATGACCTCTCGCTCCATGACGCAAAGGAC  
GCTCCTCCCTCTCTGAACCAGAGAATCCAGGATATCCGGTTCAATGCCGCAGACCAACCTGGGG  
GCTCAGAGAGCCCCAGTGGGAGCGCAACCCCTCTGTCCC GCCATCGATCCTGTCCCCCTCCTT  
CACCCCTCCGCAGACCCCCGGGGGTTTCGTTAAACCCTATCCAACCTTACCAACAACGCAATCG  
ACCGCCCATTCCAAGCCTCCCAAACCTCCTCTCCTGTCTCCCCAAGGTGGAATGTATTGTTTCGCG  
CACGCATTTCCACCACCAATGGCGCCGAGATGTTTCTCCACTTATACCACAACGACCTCGACAA  
TAAAGAACACCTCGCGATCGTGTTCGGCAACACCATCCGAAGTCGCAGCTTGGACGCAGTGAGA  
CCGGGGGAGACGGAGATGGACCGGATGATCCGTGGCGCCTATGTAGGCAAGCTTACCCTGGTC  
GAGTCAGCAGCTGGTATGACGAGACAGGCGCTGCGGAAAGCGTCGGGGGCGCACAGAGCCGGGC  
CACCTCGTCTGCAGACGGACCCGTATCAGATACCCCGGACCTGGCGCGAAGCCATCCCAGCCAA  
GCGCCATTGGTGCGGATTCACTCGGAATGTTACACAGGCGAGACGGCGTGGTCCGCTCGTTGCG  
ACTGTGGAGAGCAGCTGGATGAAGCCGCTCGATTGATGTCACTGCCCATGGAGACGCTTGCCGA  
GGTCGCCTCCCAGCAGAGTAGGACCGTCCCATCCAACGCCTCTGGGGGTGTTATCATTACCTA  
CGCCAAGAAGGTCGCGGCATCCGGTCTGGGGGAGAAGTTGAAGGCTTATAATTTACAAGATCTCG  
GGTCCGACACGGTTGAGGCGAATCTGCTCTTGCGGCACCCCGCCGATGCCCGCAGCTACGGTCT  
CGCCACCGCGATGCTGGTGGATCTTGGTCTGGGGGTGGATGCCAATCCCACGGCATCCGACTG  
CTCACCAACAATCCGGATAAGGTGCGCGCGGTGGAGGGACCCAATCGGGAGGTGGTAGTGAAGG  
AGCGGGTTGCGATGGTGCCGCTGGCGTGGAAAGACGGGCGGAAAGATGGGCATTAAGAGTTCAGA  
GGTCGAGGGTTACTTGAGGACAAAGGTGAGGTCTCCCACAATCCATGGTGGCATTGCGTCTGTT  
CGGAATCCGCCGTATCGCCTGATGTCTTTTGTCTACGTGCCAAGGGCTAACGCGCTCCACAGAT  
TTCCAAGATGGGCCACATGATACAGTAGTCTTGTTCGAGCATTATATATCTGCTTTGGCGCCTT  
CTCTCTCGCTACGTCTTGCATCTGATGTCTTTGGGTATTTATGGGATCTACGTTGTGACGCTTT  
TGAATGCTCCGATATACGACCGTCATTGTTTCGTTCTTCATCTCAGCCACCACACTTTCTTCAT  
CTTCTT**GGCTGCGACATAGTCCGG***gcatcagtgctcctctcagacag*

Figure S8. Sequence of *AtriboB* in pLO104. For this gene no tail was added at the 5' end of the fragment. This is because the insert begins immediately after the stop codon of an adjacent gene. This creates a useful 3' untranslated region for any additional gene added upstream of *AtriboB*. The green sequence at the top was one of the primers used to amplify the gene from *A. terreus* genomic DNA and the reverse complement of the red and green sequences at the bottom was the other primer.

GENE	F primer 5' - 3'	R primer 5' - 3'
<i>biA</i> (AN6644)	TCCACGATCTCTACGAACTC	CAATCTTCACTGCATCCACC
<i>pabaA</i> (AN6550)	GATTAAAGAGCGCTCAAGGC	TAGAAAACGGCATGGCGGG
<i>lysB</i> (AN5206)	TCAACTGCCAACCACAGGG	CCGATCGATCTTTGATCTTAC
<i>choA</i> (AN2154)	TTCCAACGCCACCTTTGCC	GTTGTCCGTCTTGGGTGAC

Table S2. Primers used to verify deletions.