

Supplementary dataset 4

Alignment of KS domain

PKS1-<i>Metarhizium robertsii</i>	SKIAIIGMSGRFPESADVEAFWDL LHQGLDVHRPVPPDRFNGELYYDVTG
PKS1-<i>Metarhizium anisopliae</i>	SKIAIIGMSGRFPESADVEAFWDL LHQGLDVHRPVPPDRFNGELYYDVTG
PKS1-<i>Metarhizium brunneum</i>	SKIAIIGMSGRFPESADVEAFWDL LHQGLDVHRPVPPDRFNGELYYDVTG
PKS1-<i>Metarhizium guizhouense</i>	SKIAIIGMSGRFPESADVEAFWDL LHQGLDVHRPVPPDRYNGELYYDVTG
PKS1-<i>Metarhizium majus</i>	SKIAIIGMSGRFPESADVEAFWDL LHQGLDVHRPVPPDRYNGELYYDVTG
PKS1-<i>Metarhizium acridum</i>	SKIAIIGMSGRFPESADVEAFWDL LYQGLDVHRPVPPDRFNGESYYDVTG
PKS1-<i>Metarhizium album</i>	SKIAIIGMSGRFPEAADVEAFWAVLYKGLDVHRVPKDRYDGELYYDPTG
PKS-<i>Colletotrichum fioriniae</i>	SKIAIVAMSGRFPDAANLDEFWDLVLYQGRDVHRQIPEDRFDAVSHYDATG
PKS-<i>Trichoderma reesei</i>	SKIAIVGMSGRFPESADVEAFWDL LYQGLDVHRRVPADRYNAELYYDPTG
PKS-<i>Fusarium graminearum</i>	SKIAIVAMSGRFPDAADLGEFWDLLYKGRDVHRQIPEDRFNAELHYDATG
PKS2-<i>Metarhizium robertsii</i>	SKIAIIGMSGRFPEAADLDSFWSLLEQGVDAIRPVPPDRFDAHAHHDETG
PKS2-<i>Metarhizium anisopliae</i>	SKIAIIGMSGRFPEAADLDSFWSLLEQGVDAIRPVPPDRFDAHAHHDETG
PKS2-<i>Metarhizium brunneum</i>	SKIAIIGMSGRFPEAADLDSFWSLLEQGVDAIRPVPPDRFDAHAHHDETG
PKS2-<i>Metarhizium guizhouense</i>	-KIAIIGMSGRFPEAADLDSFWSLLEQGVDAIRPVPPDRFDAHAHHDETG
PKS2-<i>Metarhizium majus</i>	SKIAIIGMSGRFPEAADLDSFWSLLEQGVDAIRQVPPDRFDAHAHHDETG
PKS2-<i>Metarhizium acridum</i>	SKIAIIGMSGRFPEAADLDSFWSLLVQGVDAIRPVAPDRFDAHAHYDETG
PKS-<i>Talaromyces marneffe</i>	SKIAIIGLSGRFPDAPSPPEHFWNLLYQGLDVHREVPPDRWNWKTHTVDLTG
PKS-<i>Penicillium oxalicum</i>	SKIAIIGLSGRFPEAQDTEAFWDL LYKGLDVHREVPPDRWDVEAHVDMEG
PKS-<i>Aspergillus fumigatus</i>	SKIAIIGMSGRFPEADGIEAFWDL LYKGLDVHKKVPPERWDVDAHVDLTG
PKS-<i>Aspergillus clavatus</i>	SKIAIIGMSGRFPEADGVEAFWDL LYKGLDVHKTVPDRWDVDAHVDLTG

Conserved motif

PKS1-<i>Metarhizium robertsii</i>	KRKNTCKVMHGCWINDPGLFDAKFFNISPKEAEQS	DPAQRLXL	ATAYEAL
PKS1-<i>Metarhizium anisopliae</i>	KRKNTCKVMHGCWINDPGLFDAKFFNISPKEAEQS	DPAQRLAL	ATAYEAL
PKS1-<i>Metarhizium brunneum</i>	KRKNTCKVMHGCWINDPGLFDAKFFNISPKEAEQS	DPAQRLAL	ATAYEAL
PKS1-<i>Metarhizium guizhouense</i>	KRKNTCKVMHGCWINDPGLFDAKFFNISPKEAEQS	DPAQRLAL	ATAYEAL
PKS1-<i>Metarhizium majus</i>	KRKNTCKVMHGCWINEPGLFDAKFFNISPKEAEQS	DPAQRLAL	ATAYEAL
PKS1-<i>Metarhizium acridum</i>	KRKNTCKVMHGCWINEPGLFDAKFFNISPKEAEQS	DPAQRLAL	ATAYEAL
PKS1-<i>Metarhizium album</i>	KKKNTCKVMHGCWINEPGLFDAKFFNISPKEAEQS	DPAQRLAL	TTAYEAL
PKS-<i>Colletotrichum fioriniae</i>	RRKNTSKVMNGCWIIEPGLFDAKFFNISPKEAEQS	DPAQRLAL	ETAYEAL
PKS-<i>Trichoderma reesei</i>	KRKNTSKIMHGCWINEPGLFDAKFFNISPKEAEQS	DPAQRLAL	ATAYEAL
PKS-<i>Fusarium graminearum</i>	RRKNTSKVMNGCFIKEPGLFDARFFNMSPKAEQS	DPAQRMAL	ETAYEAL
PKS2-<i>Metarhizium robertsii</i>	RRKNTSKVLGGCWINQPGLFDPKFFSISPKEAEQS	DPAQRLAL	QTAYEAL
PKS2-<i>Metarhizium anisopliae</i>	RRKNTSKVLGGCWINQPGLFDPKFFSISPKEAEQS	DPAQRLAL	QTAYEAL
PKS2-<i>Metarhizium brunneum</i>	RRKNTSKVLGGCWINQPGLFDPKFFSISPKEAEQS	DPAQRLAL	QTAYEAL
PKS2-<i>Metarhizium guizhouense</i>	RRKNTSRVLGGCWINQPGLFDPKFFSISPKEAEQS	DPAQRLAL	QTAYEAL
PKS2-<i>Metarhizium majus</i>	RRKNTSRVLGGCWINQPGLFDPKFFSISPKEAEQS	DPAQRLAL	QTAYEAL
PKS2-<i>Metarhizium acridum</i>	RRKNTSKVLGGCWINQPGLFDPKFFSISPKEAEQS	DPAQRLAL	QTAYEAL
PKS-<i>Talaromyces marneffe</i>	KKRNTSQVPYGCWIPEPGLFDPFRFFNMSPREALQA	DPAQRLAL	VTAYEAL
PKS-<i>Penicillium oxalicum</i>	NKRNTSKVQYGCWIPEPGLFDPFRFFNMSPREALQA	DPAQRLAL	LTAYEAF
PKS-<i>Aspergillus fumigatus</i>	TKRNTSKVPYGCWINEPGLFDARFFNMSPREALQA	DPAQRLAL	LSAYEAL
PKS-<i>Aspergillus clavatus</i>	TKRNTSKVPFGCWINEPGMFDARFFNMSPREALQA	DPAQRLAL	LTAYEAL

PKS1-<i>Metarhizium robertsii</i>	EAAGVVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS1-<i>Metarhizium anisopliae</i>	EAAGVVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS1-<i>Metarhizium brunneum</i>	EAAGVVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS1-<i>Metarhizium guizhouense</i>	EAAGVVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS1-<i>Metarhizium majus</i>	EAAGVVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS1-<i>Metarhizium acridum</i>	ESAGVVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS1-<i>Metarhizium album</i>	ESAGVVAGRTPTSTQRDRVGVVFYGMTSDDYREVRASVCKPQCKPFYTKAN
PKS-<i>Colletotrichum fioriniae</i>	EMAGIVPDRTPTSTQRDRVGVVFYGMTSDDWREVN---SGQNVDTY-----
PKS-<i>Trichoderma reesei</i>	EMAGIVADRTPTSTQRDRVGVVFYGMTSDDYREVS---CGQNVDTY-----
PKS-<i>Fusarium graminearum</i>	EMAGIVPDRTPTSTQRDRVGVVFYGMTSDDWREVN---SGQNVDTY-----
PKS2-<i>Metarhizium robertsii</i>	EMAGVVPDRTQSTQRDRVGVVFYGMVSDDWREIN---SGQNIDTY-----
PKS2-<i>Metarhizium anisopliae</i>	EMAGVVPDRTQSTQRDRVGVVFYGMVSDDWREIN---SGQNIDTY-----
PKS2-<i>Metarhizium brunneum</i>	EMAGVVPDRTQSTQRDRVGVVFYGMVSDDWREIN---SGQNIDTY-----
PKS2-<i>Metarhizium guizhouense</i>	EMAGVVPDRTQSTQRDRVGVVFYGMVSDDWREIN---SGQNIDTY-----
PKS2-<i>Metarhizium majus</i>	EMAGVVPDRTQSTQRDRVGVVFYGMVSDDWREIN---SGQNIDTY-----
PKS2-<i>Metarhizium acridum</i>	EMAGMVPDRTQSTQRERVGVVFYGM-----
PKS-<i>Talaromyces marneffeii</i>	EMAGFVPDSTPTSTQKDRVGIIFYGMTSDDYREIN---SGQDIDTY-----
PKS-<i>Penicillium oxalicum</i>	EMAGFIPDSTPTSTQKNRVGVVFYGMTSDDYREIN---SGQDIDTY-----
PKS-<i>Aspergillus fumigatus</i>	EMAGFVPNSSPTSTQRDRVGIIFMGMTSDDYREIN---SGQDIDTY-----
PKS-<i>Aspergillus clavatus</i>	EMAGFIPNSTPTSTQRDRVGIIFYGMTSDDYREIN---SGQDIDTY-----

Conserved motif

	GPS	DTACSSSL
PKS1-<i>Metarhizium robertsii</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS1-<i>Metarhizium anisopliae</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS1-<i>Metarhizium brunneum</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS1-<i>Metarhizium guizhouense</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS1-<i>Metarhizium majus</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS1-<i>Metarhizium acridum</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS1-<i>Metarhizium album</i>	LTTGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS-<i>Colletotrichum fioriniae</i>	FIPGGNRAFTPGR LNYFFKFS GPSASI DTACSSSL TAIHMALNSLWRNDC	
PKS-<i>Trichoderma reesei</i>	FIPGGNRAFTPGKIN YFFKYC GPSVSV DTACSSSL AAIHLACNSIWRNEC	
PKS-<i>Fusarium graminearum</i>	FIPGGNRAFTPGR LNYFFKFS GPSASV DTACSSSL AALHLACNSLWRNDC	
PKS2-<i>Metarhizium robertsii</i>	FIPGGIRAFTPGR INYHFKFS GPSITV DTACSSSL AAIHVACNSLWRGDC	
PKS2-<i>Metarhizium anisopliae</i>	FIPGGIRAFTPGR INYHFKFS GPSITV DTACSSSL AAIHVACNSLWRGDC	
PKS2-<i>Metarhizium brunneum</i>	FIPGGIRAFTPGR INYHFKFS GPSITV DTACSSSL AAIHVACNSLWRGDC	
PKS2-<i>Metarhizium guizhouense</i>	FIPGGIRAFTPGR INYHFKFS GPSITV DTACSSSL AAIHVACNSLWRGDC	
PKS2-<i>Metarhizium majus</i>	FIPGGIRAFTPGR INYHFKFS GPSITV DTACSSSL AAIHVACNSLWRGDC	
PKS2-<i>Metarhizium acridum</i>	FTQGGIRAFTPGR INYHFKFS GPSITV DTACSSSL AAIHVACNSLWRGDC	
PKS-<i>Talaromyces marneffeii</i>	FIPGGNRAFTPGR INYHFKFS GPSVSV DTACSSSL SAIHMALNSLWRNDC	
PKS-<i>Penicillium oxalicum</i>	FIPGGNRAFTPGR INYHFKFS GPSVSV DTACSSSL AAIHVACNSLWRNEC	
PKS-<i>Aspergillus fumigatus</i>	FIPGGNRAFTPGR INYHFKFS GPSVSV DTACSSSL AAIHLACNAIWRNDC	
PKS-<i>Aspergillus clavatus</i>	FIPGGNRAFTPGR INYHFKFS GPSVSV DTACSSSL AAIHLACNAIWRNDC	

Conserved motif

GYCRAD

PKS1-<i>Metarhizium robertsii</i>	DTAIAGGTNVMSNPDSFVGLDRGYFLSRTGNCHTFDDDDADGYCRADAVGT
PKS1-<i>Metarhizium anisopliae</i>	DTAIAGGTNVMSNPDSFVGLDRGYFLSRTGNCHTFDDEADGYCRADAVGT
PKS1-<i>Metarhizium brunneum</i>	DTAIAGGTNVMSNPDSFVGLDRGYFLSRTGNCHTFDDEADGYCRADAVGT
PKS1-<i>Metarhizium guizhouense</i>	DTAIAGGTNVMSNPDSFVGLDRGYFLSRTGNCHTFDDEADGYCRADAVGT
PKS1-<i>Metarhizium majus</i>	DTAIAGGTNVMSNPDSFVGLDRGYFLSRTGNCHTFDDEADGYCRADAVGT
PKS1-<i>Metarhizium acridum</i>	DTAIAGGTNVMTNPDSFVGLDRGYFLSRTGNCHTFDDEADGYCRADAVGT
PKS1-<i>Metarhizium album</i>	DTAVAGGTNVMSNPDSFVGLDRGHFLSRKGNCNFDDDEADGYCRADAVAT
PKS-<i>Colletotrichum fioriniae</i>	DTAIAGGTNVMTNPDNFAGLDRGHFLSRTGNCNTFDDGADGYCRADGVGT
PKS-<i>Trichoderma reesei</i>	DTAVAGGTNVMSNPDSFAGLDRGHFLSRTGNCNTFDDAADGYCRADAVGT
PKS-<i>Fusarium graminearum</i>	DTAIAGGTNVMTNPDNFAGLDRGHFLSRTGNCNTFDDGADGYCRADGVGT
PKS2-<i>Metarhizium robertsii</i>	DTAVAGGVNVLTNPDI FAGLDRGHFLSTTGNCKTFDDDDADGYCRADGVGT
PKS2-<i>Metarhizium anisopliae</i>	DTAVAGGVNVLTNPDI FAGLDRGHFLSTTGNCKTFDDDDADGYCRADGVGT
PKS2-<i>Metarhizium brunneum</i>	DTAVAGGVNVLTNPDI FAGLDRGHFLSTTGNCKTFDDDDADGYCRADGVGT
PKS2-<i>Metarhizium guizhouense</i>	DTAVAGGVNVLTNPDI FAGLDRGHFLSTTGNCKTFDDDDADGYCRADGVGT
PKS2-<i>Metarhizium majus</i>	DTAVAGGVNVLTNPDI FAGLDRGHFLSTTGNCKTFDDDDADGYCRADGVGT
PKS2-<i>Metarhizium acridum</i>	DTAVAGGVNVLTNPDI FAGLDRGHFLSTTGNCKTFDDDDADGYCRADGVGT
PKS-<i>Talaromyces marneffei</i>	DTAIAGGTNVLTNPDNHAGLDRGHFLSRTGNCNTFDDAADGYCRADGVGT
PKS-<i>Penicillium oxalicum</i>	DSAVAGGVNILTNPDNHAGLDRGHFLSRTGNCNTFDDGADGYCRADGIGS
PKS-<i>Aspergillus fumigatus</i>	DTAISGGVNLTLTNPDNHAGLDRGHFLSRTGNCNTFDDGADGYCRADGVGT
PKS-<i>Aspergillus clavatus</i>	DSAITGGVNLTLTNPDNHAGLDRGHFLSRTGNCNTFDDGADGYCRADGVGS

PKS1-<i>Metarhizium robertsii</i>	VILKRLEDAIADHDPILGVISGALTNHSADAVSITRPHSGAQEEIFSKLL
PKS1-<i>Metarhizium anisopliae</i>	VILKRLEDAIADHDPILGVISGALTNHSADAVSITRPHSGAQEEIFSKLL
PKS1-<i>Metarhizium brunneum</i>	VILKRLEDAIADHDPILGVISGALTNHSADAVSITRPHSGAQEEIFSKLL
PKS1-<i>Metarhizium guizhouense</i>	VILKRLEDAIADHDPILGVISGALTNHSADAVSITRPHSGAQEEIFSKLL
PKS1-<i>Metarhizium majus</i>	VILKRLEDAIADHDPILGVISGALTNHSADAVSITRPHSGAQEEIFSKLL
PKS1-<i>Metarhizium acridum</i>	VILKRLEDAIADHDPILGIISGAYTNHSADSIVSITRPHSGAQEEIFSKLL
PKS1-<i>Metarhizium album</i>	VVLKRLEDAMADHDPILGVISGAHTNHSAESVSI TRPHSGAQEEIFSKLL
PKS-<i>Colletotrichum fioriniae</i>	IVLKRLEDAEADNDPILGVIAGAYTNHSAEAVSITRPHAGAQEYIFSKLL
PKS-<i>Trichoderma reesei</i>	VVLKRLEDAVADHDPILGVILGAHTNHSAESVSI TRPHCGAQEEIFSKIL
PKS-<i>Fusarium graminearum</i>	IILKRLEDAEADNDPILGVIILGAYTNHSAEAVSITRPHAGAQEYIFSKLL
PKS2-<i>Metarhizium robertsii</i>	VILKRLEDAVMDKDPILAVLNSAYTNHSAEAVSITRPHAGAQELIFSKLL
PKS2-<i>Metarhizium anisopliae</i>	VILKRLEDAVMDKDPILAILNSAYTNHSAEAVSITRPHAGAQELIFSKLL
PKS2-<i>Metarhizium brunneum</i>	VVLKRLEDAVMDKDPILAVLNSAYTNHSAEAVSITRPHAGAQERIFSKLL
PKS2-<i>Metarhizium guizhouense</i>	VILKRLEDAVMDKDPILAVLNSAYTNHSAEAVSITRPHAGAQELIFSKLL
PKS2-<i>Metarhizium majus</i>	VILKRLEDAVMDKDPILAVLNSAYTNHSAEAVSITRPHAGAQELIFSKLL
PKS2-<i>Metarhizium acridum</i>	VILKRLEDAIMDKDPILAVLNSAYTNHSAEAVSITRPHAGAQELIFSKLL
PKS-<i>Talaromyces marneffei</i>	VVLKRLEDAIADNDPIQAVIAGAYTNHSAEAVSMTRPHSGAQAFIFDKLL
PKS-<i>Penicillium oxalicum</i>	VVLKRLEDAQADNDPIYGV IAGAYTNHSAEAVSITRPHAGAQAFIFDKLL
PKS-<i>Aspergillus fumigatus</i>	IVLKRLEDAEADNDPILGVINAAYTNHSAEAVSITRPHVGAQAFIFNKLL
PKS-<i>Aspergillus clavatus</i>	IVLKRLEDAEADNDPILGVINAAYTNHSAEAVSITRPHVGAQAFIFNKLL

Alignment of AT domain

PKS1-*Metarhizium robertsii* FVFSGQGSQYSAMGQHLLH-FTI FRDEVHAYDILAQRHGFPSIMPLIDGS
PKS1-*Metarhizium anisopliae* FVFSGQGSQYSAMGQHLLH-FTI FRDEVHAYDILAQRHGFPSIMPLIDGS
PKS1-*Metarhizium brunneum* FVFSGQGSQYSAMGQHLLH-FTI FRDEVHAYDILAQRHGFPSIMPLIDGS
PKS1-*Metarhizium guizhouense* FVFSGQGSQYSAMGQHLLH-FTI FRDEVHAYDILAQRHGFPSIMPLIDGS
PKS1-*Metarhizium majus* FVFSGQGSQYSAMGQHLLH-FTI FRDEVHAYDILARRHGFPSIMPLIDGS
PKS1-*Metarhizium acridum* FVFSGQGSQYSAIGRHLLH-FTI FRDEVNSYDILAQRHGFPSIMPLIDGS
PKS1-*Metarhizium album* FVFSGQGSQYGAMGKHLH-YTI FRGEIDSYDILAQRHGFPSIMPLVDGS
PKS-*Trichoderma reesei* FAFSGQGSQYSAMGQHLLQ-FAS FRDEIDSYDRLAQRHGFPSILPLIDGS
PKS-*Colletotrichum fiorinia* FVFSGQGAQYSGMGKEYFNSFSLFRSEIQSYDRIGQSQGFPSILPLITGE
PKS-*Fusarium graminearum* FVFSGQGAQYRGMGKEYFTSFTA FRSEIMSYDSIAQAQGFPSILPLIRGE
PKS2-*Metarhizium robertsii* FVFSGQGAQYAGMGRHLFHNHT FRTQILACNQICLSHGFPSILEIFKQD
PKS2-*Metarhizium anisopliae* FVFSGQGAQYAGMGRHLFQNNHT FRTQILACNQICLSQGFPSILEIFKQD
PKS2-*Metarhizium brunneum* FVFSGQGAQYAGMGRHLFQNNHT FRTQILACNQICLSQGFPSILEIFKQD
PKS2-*Metarhizium guizhouense* FVFSGQGAQYAGMGRHLFQNNHT FRTQILACNRICLSQGFPSILEIFTQD
PKS2-*Metarhizium majus* FVFSGQGAQYAGMGRHLFQNNHAFRTQILACNQICRSQGFPSILEIFEQD
PKS2-*Metarhizium acridum* FVFSGQGAQYAGMGRHLFQNNET FRTQVLACNQICLSQGFPSILDIFNQG
PKS-*Talaromyces marneffe* FIIFTGQGAQYAGMGKQFFESFSQFRSDILRFNGIAQSQGFPSFLPLIDGS
PKS-*Penicillium oxalicum* FVFTGQGAQYTGMGKQLYEDCATFRSTIHRLD CIAQSQGFPSILPLIDGS
PKS-*Aspergillus fumigatus* FVFTGQGAQYSGMGKQLYEDCATFRSIIHRFDCIARSQGFPSIIHLIDGS
PKS-*Aspergillus clavatus* FIIFTGQGAQYAGMGKDLFHHNKQFRDNVEHLDRIALSHGFPSIMPLIDGS

PKS1-*Metarhizium robertsii* VDIEDLEPLVVQLGTVCVQMALASLWMALGMRPAYVVGHSLGHYAALKVA
PKS1-*Metarhizium anisopliae* VDIEDLEPLVVQLGTVCVQMALASLWMALGMRPAYVVGHSLGHYAALKVA
PKS1-*Metarhizium brunneum* VDIEDLEPLVVQLGTVCVQMALASLWMALGMRPAYVVGHSLGHYAALKVA
PKS1-*Metarhizium guizhouense* VDIEDLEPLVVQLGTVCVQMALASLWMALGMRPAYVVGHSLGHYAALKVA
PKS1-*Metarhizium majus* VDIEDLEPLVVQLGTVCVQMALASLWMALGMRPAYVVGHSLGHYAALKVA
PKS1-*Metarhizium acridum* VDIEDLEPLVVQLGTVCVQMALASLWIAFGMRPAYVVGHSLGHYAALKVA
PKS1-*Metarhizium album* VAIEHLEPLVVQLGTVCVQMALASLWIAFGMQPSYVVGHSLGHFAALKVS
PKS-*Trichoderma reesei* SNIDDLEPLVVQLGTTCVQMALASFWMSLGMQPAYVVGHSLGHYAALKVA
PKS-*Colletotrichum fiorinia* AEVESSSPVETQLSLACLQMALAKLWKSFGIEASFVLGHSLGHYAALNVA
PKS-*Fusarium graminearum* VEADSLSPVEIQGLTCLQMALAKLWKSFGVEPGFVLGHSLGHYAALHVA
PKS2-*Metarhizium robertsii* VDMNSLEPLLVLGTTCLQMSLVAFWKS LGVTPDFCI GHSLGEYAALQAA
PKS2-*Metarhizium anisopliae* VDMNSLEPLLVLGTTCLQMSLVSFWKS LGVTPDFCI GHSLGEYAALQAA
PKS2-*Metarhizium brunneum* VDMNSLEPLVVQLGTTCLQMSLVSFWKS LGVTPDFCI GHSLGEYAALQAA
PKS2-*Metarhizium guizhouense* VDMNSLEPLVFQLGTTCLQMSLVSFWKS LGVTPDFCI GHSLGEYAALQAA
PKS2-*Metarhizium majus* VDVNSLEPLLVLGTTCLQMSLVSFWKS LGVTPDFCI GHSLGEYAALQAA
PKS2-*Metarhizium acridum* VEMNNLEPLVVQLGTTCLQMSLVSFWKS LGVTPDFCI GHSLGEYAALQAA
PKS-*Talaromyces marneffe* MPIEEMSPVITQLGTTCLQMALANLWASWETRPTFVMGHSLGEYAALYVS
PKS-*Penicillium oxalicum* MPVEELSPVVTQLGTTCLQMALVDYWKGLGVTPAFVLGHSLGDYAALNSA
PKS-*Aspergillus fumigatus* VPVEGLSPVVTQLGTTCLQMALVDYWRGLGVSPAFLGHSLGDYAALNSA
PKS-*Aspergillus clavatus* VPVEELSPVVTQLGTTCLQMALTKLWISLGVTPSFVLGHSLGEYAALNSA

PKS1-*Metarhizium robertsii* GVL TASDTIYLVAMRARLLQNKCSRGS SHAMLAIRSSAAEIQAHLDEGIHD
PKS1-*Metarhizium anisopliae* GVL TASDTIYLVAMRARLLQNKCSRGS SHAMLAIRSSVAEIQAHLDEGIYD
PKS1-*Metarhizium brunneum* GVL TASDTIYLVATRARLLQNKCSRGS SHAMLAIRSSAAEIQAHLDEGIHD
PKS1-*Metarhizium guizhouense* GVL TASDTIYLVAMRARLLQNKCSRGS SHAMLAIRSSAAAIQAHLDEGIHD
PKS1-*Metarhizium majus* GVL TASDTIYLVAMRARLLQNKCSRGS SHAMLAIRSSADEIQAHLDEGIHD
PKS1-*Metarhizium acridum* GVL TASDTIYLVAMRARLLQNKCSRGS HTMLAIRSSADEMQAYLDEDIYD
PKS1-*Metarhizium album* GALTASDTIYLVGMRARLLQNKCSIGS SHAMLA VRSSAEDVQAYLDADVHD
PKS-*Trichoderma reesei* GVL TASDTIYLVGMRARLLQEKCSRGS SHAMLAIRSSVDQIQPYLDAALHD
PKS-*Colletotrichum fioriniae* GVLSASDTIYLTGTRAQLLLDNCEAGS SHAMLA VRASVLQIRQFLNANIHE
PKS-*Fusarium graminearum* GVLSANDTIYLTGIRAQLLVDKCQAGTHS MLAVRASLLQIQQFLDANIHE
PKS2-*Metarhizium robertsii* GVLSVSDTIYLTGIRARMLQEKCSAGS SHAMLA VRAPLARVNALLDPAIHE
PKS2-*Metarhizium anisopliae* GVLSVSDTIYLTGIRARMLQEKCSAGS SHAMLA VRAPLARVNALLDPAIHE
PKS2-*Metarhizium brunneum* GVLSVSDTIYLTGIRARMLQEKCSAGS SHAMLA VRAPLARVNALLDPAIHE
PKS2-*Metarhizium guizhouense* GVLSVSDTIYLTGIRARMLQEKCSAGS SHAMLA VRAPLARVNALLDPGIHE
PKS2-*Metarhizium majus* GVLSVSDAIYLTGTRARMLQEKCSAGS SHAMLA VRAPLARVNALLDPAIHE
PKS2-*Metarhizium acridum* GVLSVSDTIYLTGIRARLLQKKCSAGS SHAMLA VRAPLAQVHGFFNPSIHE
PKS-*Talaromyces marneffe* GTLTAFDTIYLCGRRQQLLEGKCKVGT HAMLAVRSALSEITPFLNPGIHE
PKS-*Penicillium oxalicum* GVLSTSDTIYLCGRRQQLTQQCQMGT HAMLAVKAAVSEIQHLLDPDVHA
PKS-*Aspergillus fumigatus* GVLSTSDTIYLCGRRQQLTEQQCQMGT HAMLAVKAAVSDIQHLLDAEAHA
PKS-*Aspergillus clavatus* GILTNSDTIFLAGRRQQLTEQCKVGT HAMLAVKSSVAQVKQFLDDGAAE

PKS1-*Metarhizium robertsii* IACINGPQDTVVSGCIDDIDRLS QKLMKGIKATRVNVPFAFHSAQVDPPI
PKS1-*Metarhizium anisopliae* IACINGPQDTVVSGCIDDIDRLS QKLMKGIKATRVNVPFAFHSAQVDPPI
PKS1-*Metarhizium brunneum* IACINGPQDTVVSGCIDDIDRLS QKLMKGIKATRVNVPFAFHSAQVDPPI
PKS1-*Metarhizium guizhouense* IACINGPQDTVVSGCIDDIDRLS QKLMKGIKATRVNVPFAFHSAQVDPPI
PKS1-*Metarhizium majus* IACISGPQDTVVSGCIDDIDRLS QKLTDKGIKATRVNVPFAFHSAQVDPPI
PKS1-*Metarhizium acridum* IACINGPQDTVVSGCIDDIDRLS QKLMNRIK VTRVNVPFAFHSAQVDPPI
PKS1-*Metarhizium album* IACINSPQDTVVSGRVDDIDRLSERLLDKGIKATRVNVPFAFHSSQVEPI
PKS-*Trichoderma reesei* VACINGPQDTVVSGCVDEISSLAQKLT DNGVKATRVEVPFAFHSAQVDPV
PKS-*Colletotrichum fioriniae* VACINGPREVVISGKVADVNQLAERLAADNIKATRVQVPYAFHSAQVDPPI
PKS-*Fusarium graminearum* VACVNGPREVVISGRVADIDQLVGLLSADNIKATRVKVPFAFHSAQVDPPI
PKS2-*Metarhizium robertsii* VTCLNGPQDVVIGGRVADVEELEKELAKQDIKAVKVSVPFAFHSTQVEPI
PKS2-*Metarhizium anisopliae* VTCLNGPQDVVIGGRVADVEALEKELAKQDIKAVKVSVPFAFHSTQVEPI
PKS2-*Metarhizium brunneum* VTCLNGPQDVVIGGRVADVEELERELAKQDIKAVKVSVPFAFHSTQVEPI
PKS2-*Metarhizium guizhouense* VTCLNGPHDVVIGGRVADVEDLEKELAKEDIKAVKVSVPFAFHSTQVDPPI
PKS2-*Metarhizium majus* VTCLNGPRDVVIGGRVADVEELEKELAKQDVKAAKVSVPFAFHSTQVDPPI
PKS2-*Metarhizium acridum* VTCLNSPHDVAIGGLVADIEDLERELAENNI EAVKVSVPFAFHSTQVEPI
PKS-*Talaromyces marneffe* VACINAPGETVISATSQNIDALSEQLV AAGIKVTKLKVPFAFHSSQVEPI
PKS-*Penicillium oxalicum* VACINGPTETVISGLSGRIDE LAQQCSSQN LKSTKLVKVPFAFHSAQVDPPI
PKS-*Aspergillus fumigatus* VACINGPTETVISGLSGHIDE LAEQLTGQSLKSTKLVKVPFAFHSAQVTPPI
PKS-*Aspergillus clavatus* IACINAPSETVISGAVGKIEQLAEKLTN EGFKATKLVKVPFAFHSAQVEPI

PKS1-Metarhizium robertsii LDELEAIASQVEFHAPRVAIGCP LLGKTFTAGETPSLEAKHIRRHCRETV
PKS1-Metarhizium anisopliae LDELEAIASQVEFHAPRVAIGCP LLGKTFKAGETPSLEAKHIRRHCRETV
PKS1-Metarhizium brunneum LDELEAVASQVEFHAPRVAIGCP LLSKTFKAGETPSLEAKHIRRHCRETV
PKS1-Metarhizium guizhouense LDELEAIASQVEFHAPRVAIGCP LLGRTFKAGETPSLEANHIRRHCRETV
PKS1-Metarhizium majus LDELEATASQVEFHAPRVAIGCP LLGKTFKAGETPSLEANHIRRHCRETV
PKS1-Metarhizium acridum LDELEAIASQVEFHAPRVAIGCP LLGKTFFVAGETSSLGADHIKRHCRETV
PKS1-Metarhizium album LDELGAIASQVKFHSPCPVIGCP LQGKSLPGETLTSEASHVKRHCRQTV
PKS-Trichoderma reesei LDELEAIASHVTFHSPRVPIGCP LLGKTFFHIGETPSFDAKHISRHCREAV
PKS-Colletotrichum fioriniae LSDLDVAASRVIFHSPQIPVLCAL EASIFRPGDHGSIGPLHIQRHCRETV
PKS-Fusarium graminearum LSDLDTAASRVTFHSPQIPVLCAL DSSVISPGNHGVIGPLHLQRHCRETV
PKS2-Metarhizium robertsii LGEFCDAARGVPEFQTQNI PVIST LLGEVVQPEATGVFGPYLKRHCREPV
PKS2-Metarhizium anisopliae LGEFCDAARGVPEFQTQTIPV VST LLGEVVQPEAAGVFGPYLKRHCREPV
PKS2-Metarhizium brunneum LGEFCDAARGVPEFQTQTIPV IST LLGEVVHPETTGVFGPYLKRHCREPV
PKS2-Metarhizium guizhouense LGEFCAAARGVPEFQTQNI PVIST LLGEVVQPETTGVFGPEYLKRHCREPV
PKS2-Metarhizium majus LGEFCAAARGVPEFQTQSMPV IST LLGEVVQPETTGVFGPEYLKRHCREPV
PKS2-Metarhizium acridum LDEFCAAASVQFQTQRIPV IST LLGEVVLPEAKAVFGPEYLKRHCREPV
PKS-Talaromyces marneffeii LEELTNAAKGVKFKHKSIP LVSP LLGEVINERNYEQLGKYLRSRHCRETV
PKS-Penicillium oxalicum LESFEESAQGVIFHEPAVPFVSAL NGEVITESNYSVLGPTYMVKHCREAV
PKS-Aspergillus fumigatus LDPFEDKAQGVVFKHKSVPFVSAL TGEVITEENYEV LGPRYMVKHCRETV
PKS-Aspergillus clavatus LESLAEIAQGVIFRKPTIPYVSAL LIGNVIDESNAHMLEASYLTRHCRETV

PKS1-Metarhizium robertsii NFDVLRSAKDDGFVSE--KTAWIEIIGPHTVCSNLVKANINQDITAVPSL
PKS1-Metarhizium anisopliae NFDVLRSAKDDGFVSD--KTAWIEIIGPHTVCSNLVKANINQDITAVPSL
PKS1-Metarhizium brunneum NFDVLRSAKDDGLVSE--KTAWIEIIGPHTVCSNLVKANINQDITAVPSL
PKS1-Metarhizium guizhouense NFDVLRSAKDEGFVSE--KTAWIEIIGPHTVCSNLVKANINQDIVAVPSL
PKS1-Metarhizium majus NFDVLRSAKDDGFVSE--KTAWIEIIGPHTVCSKLVKANISQDIVAVPSL
PKS1-Metarhizium acridum NFRDILRSKAGDGLISE--KTAWIEIIGPHTVCSSTLLRANINQDIVAVPSL
PKS1-Metarhizium album NFERGILQSAKSDGLVSE--KTAWIEIIGPHTVCSMLVKANINHDVTAVPSL
PKS-Trichoderma reesei NFERGILQSAKEEGVISE--KTTWIEVGPHTVCSNLVKANLQDITAVPSL
PKS-Colletotrichum fioriniae NFEALKAAREGLITASG STLWIEIIGPHTVCSSTFLKASLG-----
PKS-Fusarium graminearum NFEALHAAREKIINKT-STLWIEIIGPHVVCSTFLKSS-----
PKS2-Metarhizium robertsii NFAAAVEAARDANVIHA--GTVFVEIIGPHPVCLALLKSNMGPDAVTLASL
PKS2-Metarhizium anisopliae NFAAAVQAARDANVIHA--GTVFVEIIGPHPVCLALLKSNMGPDAVTLASL
PKS2-Metarhizium brunneum NFAAAVQAARDANLIHA--GTVFVEIIGPHPVCSALLKSNMGPDAVTLASL
PKS2-Metarhizium guizhouense NFAAAVQAGRANLIHA--GTVFVEIIGPHPVCLALLKSNMGPDAVTLASL
PKS2-Metarhizium majus DFAAAVRAGRANLIHA--GTVFVEIIGPHPVCLALLKSNMGPDAVTLASL
PKS2-Metarhizium acridum NFTAQAQAGKDANIINS--ASVFIEIIGPHTVCSALLKSNIGPNAVTLPSL
PKS-Talaromyces marneffeii NFLAAIEASRHAKLMSD--KTVWIEIIGSHTICSGMIKSTLGPQANTVASL
PKS-Penicillium oxalicum NFLGALEATRHA KLMD--ATLWVEVGSHPICSGMIKSTFGPQATTVPSL
PKS-Aspergillus fumigatus NFLGGLEATRHA KLME--TTVWLEVGSHPICSGMIKSTFGPQATTVPSL
PKS-Aspergillus clavatus NFLGALEATRHA SLMND--KSLWVEIIGSHPVCSGMVKSTFGPQAATIPSL

PKS1-<i>Metarhizium robertsii</i>	MRNKDQWQVL-----
PKS1-<i>Metarhizium anisopliae</i>	MRNKDQWQVLA-----
PKS1-<i>Metarhizium brunneum</i>	MRNKDQWQVLA-----
PKS1-<i>Metarhizium guizhouense</i>	MRNKDQWQVLA-----
PKS1-<i>Metarhizium majus</i>	MRNKDQWQVLA-----
PKS1-<i>Metarhizium acridum</i>	MRNKDQWQV-----
PKS1-<i>Metarhizium album</i>	MRSQDQWQVL-----
PKS-<i>Trichoderma reesei</i>	VRKQDQ-----
PKS-<i>Colletotrichum fioriniae</i>	-----
PKS-<i>Fusarium graminearum</i>	-----
PKS2-<i>Metarhizium robertsii</i>	HRKD-----
PKS2-<i>Metarhizium anisopliae</i>	HR-----
PKS2-<i>Metarhizium brunneum</i>	HRK-----
PKS2-<i>Metarhizium guizhouense</i>	HR-----
PKS2-<i>Metarhizium majus</i>	HR-----
PKS2-<i>Metarhizium acridum</i>	HRKDDQWKVLADTL-----
PKS-<i>Talaromyces marneffei</i>	RRNEDSW-----
PKS-<i>Penicillium oxalicum</i>	RRDDDPWKILSNLSTLHLAGVE
PKS-<i>Aspergillus fumigatus</i>	RRDEDPWKII SNLSTLHLAGVE
PKS-<i>Aspergillus clavatus</i>	RRQEDTWKVF SNLSALYTSGI-

Alignment of PP-Binding domain

PKS1-<i>Metarhizium robertsii</i>	K---IVAEEI GIPASV-DNGLVFADYGVDLSLSISGR
PKS1-<i>Metarhizium anisopliae</i>	K---IVAEEI GIPASV-DNGLVFADYGVDLSLSISGR
PKS1-<i>Metarhizium brunneum</i>	K---IVAEEI GIPASV-DNGLVFADYGVDLSLSISGR
PKS1-<i>Metarhizium guizhouense</i>	K---IVSEEI GIPASV-DNGLVFADYGVDLSLSISGR
PKS1-<i>Metarhizium majus</i>	K---IVSEEI GIPASV-DNGLVFADYGVDLSLSISGR
PKS1-<i>Metarhizium acridum</i>	ALFKIVSEEI GIPASV-QNDLVFADYGVDLSLSISGR
PKS1-<i>Metarhizium album</i>	AVLRILSEEI GIPLTSL-QYDLVFADYGVDLSLSITISGR
PKS-<i>Trichoderma reesei</i>	AVIKILSEEI GIPLGSI-QDDLAFADYGVDLSLSITISGR
PKS-<i>Colletotrichum fioriniae</i>	PLLRILSEEI GLSLSLDLNDDDLDFADHGVDSLSLSITITGR
PKS-<i>Fusarium graminearum</i>	PLLRILSEEI GLGLDVLSDDELDFADHGVDSLSLSITITGR
PKS2-<i>Metarhizium robertsii</i>	RILAILSKEV GLSMETL-TDDLVFADYGVDLSLSITITGR
PKS2-<i>Metarhizium anisopliae</i>	RILAILSKEV GLSMETL-TDDLVFADYGVDLSLSITITGR
PKS2-<i>Metarhizium brunneum</i>	RILAILSKEV GLSMEIL-TDDLVFADYGVDLSLSITITGR
PKS2-<i>Metarhizium guizhouense</i>	RILAILSKEV GLSLETL-TDDLVFADYGVDLSLSITITGR
PKS2-<i>Metarhizium majus</i>	I-LVMLAAEV GLSLETL-TDDLVFADYGVDLSLSITITGR
PKS2-<i>Metarhizium acridum</i>	RILVILAAEV GLSLETL-TDDLVFADYGVDLSLSITITGR
PKS-<i>Talaromyces marneffeii</i>	I----LAGEV GLSEAEL-SDDLVFSDYGVDLSLALITITGK
PKS-<i>Penicillium oxalicum</i>	L--NILAAEV GLSTSEM-TDDLNFADYGVDLSLSITVITGR
PKS-<i>Aspergillus fumigatus</i>	L--EILAAEV GLSEAEM-TDSLNFADYGVDLSLSITVITGR
PKS-<i>Aspergillus clavatus</i>	L--EILAAEV GLSESEM-TDGLNFADYGVDLSLSITVITGR

PKS1-<i>Metarhizium robertsii</i>	LREELDL DVES SAFETCATLADLAAQ-
PKS1-<i>Metarhizium anisopliae</i>	LREELDL DVES SAFETCATLADLAAHL
PKS1-<i>Metarhizium brunneum</i>	LREELDL DVES SAFETCATLADLAAHL
PKS1-<i>Metarhizium guizhouense</i>	LREELDL DVES SAFETCATLADLATHL
PKS1-<i>Metarhizium majus</i>	LREELDL DVES SAFETCATLADLATHL
PKS1-<i>Metarhizium acridum</i>	LREELDL DVES SVFETCATLADLATHL
PKS1-<i>Metarhizium album</i>	LREELDL DIES SVFETCATVGDFAVH-
PKS-<i>Trichoderma reesei</i>	LREELDL DVES SVFEACATFADFIAHL
PKS-<i>Colletotrichum fioriniae</i>	MREDLGI DVDS SAFITCPTLGQLKKF-
PKS-<i>Fusarium graminearum</i>	MREELGL DVES TAFMNCPTLGSF----
PKS2-<i>Metarhizium robertsii</i>	IREELGL DMDS SIFTHYSTLGELKAFL
PKS2-<i>Metarhizium anisopliae</i>	IREELGL DMDS SIFTHYSTLGELKAFL
PKS2-<i>Metarhizium brunneum</i>	IREELGL DMDS SIFTHYSTLGELKAFL
PKS2-<i>Metarhizium guizhouense</i>	IREELDL DMDS SIFTHYSTLGELKEF-
PKS2-<i>Metarhizium majus</i>	IREELGL DMDS SIFTHYSTLGELKAFL
PKS2-<i>Metarhizium acridum</i>	IREELDL DVDS STFTNCSTLGEL----
PKS-<i>Talaromyces marneffeii</i>	FREQLNL DFESS IFMDYPTVKDFK---
PKS-<i>Penicillium oxalicum</i>	YREEIGL DLDS SVFVDQPTIKDFKQM-
PKS-<i>Aspergillus fumigatus</i>	YREELNL DLESS VFMDYPTIKDFKAYL
PKS-<i>Aspergillus clavatus</i>	YREELNL DLESS VFMDYPTIKDFKAYL

Alignment of PS-DH domain

PKS1-<i>Metarhizium robertsii</i>	H-----VVNGNRVCSSSLYTDFGVTLGSYILEKY
PKS1-<i>Metarhizium anisopliae</i>	H-----VVNGNRVCSSSLYTDFGVTLGSYILEKY
PKS1-<i>Metarhizium brunneum</i>	L-----
PKS1-<i>Metarhizium guizhouense</i>	H-----VVNGNRVCSSSLYTDFGVTLGSYILEKY
PKS1-<i>Metarhizium majus</i>	H-----VVNGNRVCSSSLYTDFGVTLGSYILEKY
PKS1-<i>Metarhizium acridum</i>	Y-----ILEY
PKS1-<i>Metarhizium album</i>	H-----VVNGNRVCTSSLYADFGVTLGTYILDKY
PKS-<i>Trichoderma reesei</i>	H-----VVNGNRVCTSSLYTDFGVTLGNYILEKH
PKS-<i>Colletotrichum fioriniae</i>	A-----
PKS-<i>Fusarium graminearum</i>	H-----RVNGVKVCTSSVYADVGLTLGKYILDNY
PKS2-<i>Metarhizium robertsii</i>	Q-----GHKVNEMLC TSSLYAEIGMTLGRQLLEKY
PKS2-<i>Metarhizium anisopliae</i>	V--TIVVQSDFGSARLADVAQGHKVNEMLC TSSLYAEIGMTLGRHLLLEKY
PKS2-<i>Metarhizium brunneum</i>	V--TIVVQSDFGSARLADVAQGHKVNEMLC TSSLYAEIGMTLGRQLLEKY
PKS2-<i>Metarhizium guizhouense</i>	Q-----GHKVNEMLC TSSLYAEIGMTLGRQLLEKH
PKS2-<i>Metarhizium majus</i>	R-----GHKVNEMLC TSSLYAEIGMTLGRQLLEKY
PKS2-<i>Metarhizium acridum</i>	E-----GHKVNEMLC TSSLYAEIGMTLGRQLLEKY
PKS-<i>Talaromyces marneffeii</i>	K-ATVITETDISDPDLCVILGHKVNGTPLCPSSLYADIAQT LAEYLIDNF
PKS-<i>Penicillium oxalicum</i>	NSASVLIENDIADPELNRVIQGHKVNGAALCPSSLYADIAQT LAEFLVDKY
PKS-<i>Aspergillus fumigatus</i>	P-----ELNRVIQGHKVNQUALTPSSLYADIAQTLVDHLITKY
PKS-<i>Aspergillus clavatus</i>	P-----DLNRVIQGHKVNQUALTPSSLYADIAQTLVDHLITTY
PKS1-<i>Metarhizium robertsii</i>	RPDLQGHAVDVQDMVVKALVHKE-----GPTMLLRIDVVLDTTDSKAASM
PKS1-<i>Metarhizium anisopliae</i>	RPDLQGHAVDVQDMVVKALVHKE-----GPTMLLRIDVVLDTTDSKAASM
PKS1-<i>Metarhizium brunneum</i>	----QGHAVDVQDMVVKALVHKE-----GPTMLLRIDVVLDTTDSKAASM
PKS1-<i>Metarhizium guizhouense</i>	RPDLQDHAVDVQDMVVKALVHKE-----GPTMLLRIDVVLDMTDSKAASM
PKS1-<i>Metarhizium majus</i>	RPDLQDHAVDVQDMVVKALVHKE-----GPTMLLRIDVVLDMTDSKAASM
PKS1-<i>Metarhizium acridum</i>	RPDLKDHSVDVQDMVVKALVHKE-----GSTMLLRINVIDMTDGKAASM
PKS1-<i>Metarhizium album</i>	RADLKDHSVDVQEMVVKPLVHKE-----GLPMLLRIDVVHDMTASKSATM
PKS-<i>Trichoderma reesei</i>	RVDLKDHSVDVQKMHKALVHKE-----GQPMLLRIEVTHDVTLGKDASM
PKS-<i>Colletotrichum fioriniae</i>	-----VNVHHMQVYKPLILKEDASGTS LPTPF SIEVKYRID-TLTASM
PKS-<i>Fusarium graminearum</i>	RTDLEGYAVDVHGVHVKPLLLKEDMNGT PQATPFRIEVRYPIQ-STTALM
PKS2-<i>Metarhizium robertsii</i>	RPDLQGYSTEIKDMSVDKPLILKDE----NKQTLFRAEVVHDKS-THTATM
PKS2-<i>Metarhizium anisopliae</i>	RPDLQGYSTEIKDMSVDKPLILKDE----NKQTLFRAEVVHDKT-THTATM
PKS2-<i>Metarhizium brunneum</i>	RPDLQGYSTEIQDMSVDKPLILKDE----NKQTLFRAEVVHDKS-THTASM
PKS2-<i>Metarhizium guizhouense</i>	RPDLQGYSTEIQDMSVDKPLILKDE----NKQTLFRAEVVHDKS-THTAAM
PKS2-<i>Metarhizium majus</i>	RPDLQGSSTEIQDMSVDRPLILKDE----NKQTLFRAEVVHDKS-TPTATM
PKS2-<i>Metarhizium acridum</i>	RPDLQGYSTEIEDMSVDKPLILKEK----NKETLFRAEVVHDKS-TLTAAM
PKS-<i>Talaromyces marneffeii</i>	KPELKGVGLDVADMAVPKPLIYKN-----AGPQLFRAAATADWD-ARQVSM
PKS-<i>Penicillium oxalicum</i>	KPEWKDRGFDVCDVVPKPLIAK-----GGKQLFRVSATATWA-EESAKM
PKS-<i>Aspergillus fumigatus</i>	KPEYQGLGLDVC DMTVPKPLIAK-----SGDQFFRVS AVMSWA-EQKASV
PKS-<i>Aspergillus clavatus</i>	KPELQGLGLDVC DMTVPKPLIAK-----SGDQFFRISAVM NWA-DKKA AV

PKS1-Metarhizium robertsii SIYSVNSK-GNKTADHAQSSLHFEQPKVWLKSWDSTQYYVERSIEWLKEKA
PKS1-Metarhizium anisopliae SIYSVNSK-GNKTADHAQSSLHFEQPKVWLKSWDSTQYYVERSIEWLKEKA
PKS1-Metarhizium brunneum SIYSVNSK-GNKTADHAQSSLHFEQPKVWLKSWDSTQYYVERSIEWLKEKA
PKS1-Metarhizium guizhouense SIYSVNSK-GNKTADHAQSSLHFEQPKVWLKSWDSTQYYVERSIEWLKEKA
PKS1-Metarhizium majus SIYSVNSK-GNKTAEHAQSSLHFERPKVWLKSWDSTQYYVERSIEWLKEKA
PKS1-Metarhizium acridum SIYSVNSK-GDKTADHAQSSLHFEQPKVWLKSWDSTQYYVERSIEWLKEKA
PKS1-Metarhizium album SIYSINAK-GNKTVDHAKSSLCFGESRAWLRSWDSTQYYVERSIEWLKEKA
PKS-Trichoderma reesei SIYSINPM-GKKTADHAQCTLSFGQPKVWLKSWDSTQYYVERSIEWLKEKA
PKS-Colletotrichum fioriniae TIRSGGSHHDGLGTHVDCELRFENPKDWEAEWDRQAYLIKRSIEYLESRA
PKS-Fusarium graminearum SISTTGP--NQQHIKHANCELRLHPSQWEAEWDRQAYLINRSVNYLLQRS
PKS2-Metarhizium robertsii SIYSVDSA-GNKTVDHARCLLRFADPTSWLDEWERTHYLIDRSVRWLEERA
PKS2-Metarhizium anisopliae SIYSVDSA-GNKTVDHARCLLRFADPTSWLDEWERTYYLIDRSVRWLEERA
PKS2-Metarhizium brunneum SIYSVDSA-GNKTVDHARCLLRFADPNWLEEWERTYYLIDRSVHWLEERA
PKS2-Metarhizium guizhouense SIYSVDSA-GNKTVDHARCLLRFADPNWLEEWERTYYLIDRSVRWLEERA
PKS2-Metarhizium majus SIYSVDSA-GNKTVDHARCLLRFADPTSWLDEWERTYYLIDRSVRWLEERA
PKS2-Metarhizium acridum SIYSVDSA-GKKTVDHACILRFADPKSWLDEWERTYYSIERSVRWLEEARV
PKS-Talaromyces marneffeii QIYSVTPE-GRKMTDHASCIKFFDTKAAREEWKRNAYLIQRSVDRLFESA
PKS-Penicillium oxalicum QIWSVTPE-GKKILDHASCTIKFFDTAAATEWKRSAYLIKRSIEHLKQST
PKS-Aspergillus fumigatus QVWSVNGD-GKKMAEHAHCTVKLFNCAERETEWKRNAYLIKRSVSLLDQKA
PKS-Aspergillus clavatus QVYSVNAE-GKKMIEHANCTVKLFDKADREMEWKRISYLVKRSVSLLDQKA

PKS1-Metarhizium robertsii DQGLNSRMSSGVIYKLFSSLVDYSTA-YKGMQEAIVNTEDFEATALVRFQV
PKS1-Metarhizium anisopliae DQGLNSRMSSGVIYKLFSSLVDYSTA-YKGMQEAIVNTEDFEATALVRFQV
PKS1-Metarhizium brunneum DQGLNSRMSSGVIYKLFSSLVDYSTA-YKGMQEAIVNTEDFEATALVRFQV
PKS1-Metarhizium guizhouense DQGLNSRMSSGVIYKLFSSLVDYSTA-YKGMQEAIVNTEDFEATALVRFQV
PKS1-Metarhizium majus DQGLNSRMSSGVIYKLFSSLVDYSTA-YKGMQEAIVNTEDFEATALVRFQV
PKS1-Metarhizium acridum DQGLNSRMSSGVIYKLFSSLVDYSTA-YKGMQEAIVNTEDFEATALVRFQV
PKS1-Metarhizium album DQGLNSRLSSGVIYKLFSSLVEYSSA-YKGMKEAIVNTEDFEATALVQFQV
PKS-Trichoderma reesei DQGLNSRLSSGVIYKLFSSLVDYSQA-YKGMQEAIVDAEDFEATALVQFQV
PKS-Colletotrichum fioriniae TQGLDSTLATGMIYKVFSSLVDYQQDGFKGLREVVLHSEDLGTAQVRFQV
PKS-Fusarium graminearum AQGLDSMLATGMVYKVFSSLVDYADG-YKGLQEVVLHSSQELEGTAQVRFQV
PKS2-Metarhizium robertsii EQGTDSELLSRGIVYKLFSSLVDYSPS-FKGLQEVILNSGDREAAAKVRLQA
PKS2-Metarhizium anisopliae EQGTDSELLSKGIVYKLFSSLVDYSPS-FKGLQEVILNSGDREAAAKVRLQA
PKS2-Metarhizium brunneum EQGTDSELLSRGIVYKLFSSLVDYSPS-FKGLQEVILNSGDREAAAKVRLQA
PKS2-Metarhizium guizhouense EQGTDSELLSKGIVYKLFSSLVDYSPS-FKGLQEVILNSGDREATAKVRLQA
PKS2-Metarhizium majus EQGTDSELLSKGIVYKLFSSLVDYSPS-FKGLQEVILNSGDREATAKVRLQA
PKS2-Metarhizium acridum EQGTDSELLSKGIVYKLFSSLVDYSPS-FKGLQEVILNSDREATAKVRLQA
PKS-Talaromyces marneffeii ANGDSNKLPGMVYKLFALVDYDKN-YKSMREVIILSDENYEATALVKFQA
PKS-Penicillium oxalicum ESGQAHRMKRGMVYKLFSTLVEYDEN-YKSIQEVILSDSEHEATALVKLQA
PKS-Aspergillus fumigatus QTGEAHRMQRGMVYKLFALVDYDEN-FKAIQEVILSDSNEHEATARVKFQA
PKS-Aspergillus clavatus QTGEAHRMQRGMVYKLFALVDYDEN-FKSIQEVVLDSKQHEATAKVKFQA

PKS1-*Metarhizium robertsii* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PKDQVFINHG WQYFRTVVRKFS
PKS1-*Metarhizium anisopliae* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PKDQVFINHG WQYFRTVVRKFS
PKS1-*Metarhizium brunneum* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PKDQVFINHG WQYFRTVVRKFS
PKS1-*Metarhizium guizhouense* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PKDQVFINHG WQSFRTVVRKFS
PKS1-*Metarhizium majus* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PKDQVFINHG WQSFRTVVRKFS
PKS1-*Metarhizium acridum* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PKDQVFINHG WQSFRTVVRKLS
PKS1-*Metarhizium album* DEGNFRCNPMWVDS CGQLAGFLMNGHAKT - PLDQVFINHG WQSFRTVVRKFC
PKS-*Trichoderma reesei* DEGSFHCNPMWIDS CGQLAGFLMNGHAKT - PKDQVFINHG WQSFMRVVRKFR
PKS-*Colletotrichum fioriniae* PRGGFYCNPLWIDS CGQTTGFLMNCHQTT - PRDYVYVNHG WKSMKLAQDFQ
PKS-*Fusarium graminearum* PSGGFVCNPMWIDS CGQTTGFMNCHQTT - PNDYVYVNHG WKSMRLAKAFR
PKS2-*Metarhizium robertsii* KKGDFDCNPMWIDS FQGTLGFLMNGHDFT - GKDEVFINHG WRSMRCAKPF
PKS2-*Metarhizium anisopliae* EKGDFDCNPMWIDS FQGTLGFLMNGHDFT - GKDEVFINHG WRSMRCAKPF
PKS2-*Metarhizium brunneum* EKGDFDCNPMWIDS FQGTLGFLMNGHDFT - GKDEVFINHG WRSMRCAKPF
PKS2-*Metarhizium guizhouense* EKGDFGCNPMWIDS FQGTLGFLMNGHDFT - GKDEVFINHG WRSMRCAKPF
PKS2-*Metarhizium majus* ERGDFDCNPMWIDS FQGTLGFLMNGHDFT - GKDEVFINHG WRSMRCAKPF
PKS2-*Metarhizium acridum* EKEDFDYNPMWIDS FQGTLGFLMNGHDFT - EKDVFINHG WRSMRCAKQFR
PKS-*Talaromyces marneffeii* EAANFHRNPFWIDS IGHITGFTMNANDATDSANFVYVNHG WDSMRCLTKFS
PKS-*Penicillium oxalicum* SPGNFHRNPFWIDS FGHLSGFIMNASDATDSKNQVYVNHG WDSMRCLKKFD
PKS-*Aspergillus fumigatus* PPGNFHRNPFWIDS FGHLSGFIMNASDATDSKNQVYVNHG WDSMRCLKKFS
PKS-*Aspergillus clavatus* PAGNFHRNPFWIDS FGHLSGFIMNASDATDSKNQVYVNHG WDSMRCLKKFS

PKS1-*Metarhizium robertsii* RDKTYRITYVRMRCVEGTTYAGDVYIFD-DEGIV-----
PKS1-*Metarhizium anisopliae* RDKTYRITYVRMRCVEGTTYAGDVYIFD-DEGIV-----
PKS1-*Metarhizium brunneum* RDKTYRITYVRMRCVEGTTYAGDVYIFD-DDGIV-----
PKS1-*Metarhizium guizhouense* KDKTYRITYVRMRCIEGTTYAGDVYIFD-DEGIV-----
PKS1-*Metarhizium majus* KDKTYRITYVRMRCIEGTTYAGDVYIFD-DEGIV-----
PKS1-*Metarhizium acridum* KDKTYRITYVRMRCIEGTTYAGDVYIFD-NEGIV-----
PKS1-*Metarhizium album* KDKTYRITYVRMRCIEGTTYAGDVYIFD-DEGIV-----
PKS-*Trichoderma reesei* KDQTYRITYVRMRPVEGTLYAGDVYIFD-DDGIV-----
PKS-*Colletotrichum fioriniae* EGTTYRITFIHMRPVDGTYAGDLYILDENSTVIGVYGDITFQGLPRRV
PKS-*Fusarium graminearum* EDGTYRITYIRMRPIDSTKFAGDLYILDEDDTVGVYGDITFQGLPRRV
PKS2-*Metarhizium robertsii* KDAVYRITYIRMQHVEKTKYRGDLYIE-DGVIIVAVFGGMTF-----
PKS2-*Metarhizium anisopliae* KDAVYRITYIRMQHVEKTKYRGDLYIE-DGVIIVAVFGGMTF-----
PKS2-*Metarhizium brunneum* KDAVYRITYIRMQHVEKTKYRGDLYIE-DGVIIVAVFGGMTF-----
PKS2-*Metarhizium guizhouense* KDAVYRITYIRMQHVEKTKYRGDLYIE-DGVIIGVFGGMTF-----
PKS2-*Metarhizium majus* KDAVYRITYIRMQHVEKTKYRGDLYIE-DGVVIIVAVFGGMTFL-----
PKS2-*Metarhizium acridum* KDAVYRITYICMQNVDKTKYCGDLYIE-DGVIIVAVFGGMTVLP-----
PKS-*Talaromyces marneffeii* ADATYRITYVRMQWQGTIYSGDVYVFE-KDEIIAVYGGVKFQGVPRKI
PKS-*Penicillium oxalicum* PNVTYRITYVRMQPWQNAIFAGDVYVFD-GDDIIVAVYGGVQFQALSRI
PKS-*Aspergillus fumigatus* GDATYQTYVKMQPWKDSIWAGDVYVFE-GDDIIVAVYGGVQFQALARKI
PKS-*Aspergillus clavatus* ADATYQTYVKMQPWRDSIWAGDVYVFE-GDDIIVAVYGGVQFQALARKI

Alignment of TE domain

PKS1-*Metarhizium robertsii* TLFLLPDGSGS SFSYAPI-NAVRK--DVCVFG LNCPWLKSAEKL VQFG--
PKS1-*Metarhizium anisopliae* TLFLLPDGSGS SFSYAPI-NAVRK--DVCVFG LNCPWLKSAEKL VQFG--
PKS1-*Metarhizium brunneum* TLFLLPDGSGS SFSYAPI-NAVRK--DVCVFG LNCPWLKSAEKL VQFG--
PKS1-*Metarhizium guizhouense* TLFLLPDGSGS SFSYAPI-NAVRK--DVCVFG LNCPWLKSAEKL VQFG--
PKS1-*Metarhizium majus* TLFLLPDGSGS SFSYAPI-NAVRK--DVCVFG LNCPWLKSAEKL VQFG--
PKS1-*Metarhizium acridum* TLFLLPDGSGS SFSYAPI-NAVRK--DVCVYGLNCPWLKSAEKL VQFG--
PKS1-*Metarhizium album* TLFLLPDGSGSATS YATI-SAVGR--DICVYGLNCPWLKSAEKL VQFG--
PKS-*Trichoderma reesei* TLFLLPDGSGSATSYASL-PPISPNGDI AVYGLNCPWLKDAQHL VEFG--
PKS-*Colletotrichum fiorinia* TLFLLPDGSGSATSYAPI-NAIGK--EVCVYGLT CPWLKSAADKL VQFG--
PKS-*Fusarium graminearum* TLFLLPDGSGSATSYASL-PPISPDGDVA VYGLNCPWLKDASYL VEFG--
PKS2-*Metarhizium robertsii* ILVLF PDGSGSAASYGALAPKIRR--DIAVYALNCPWRTNGEE IRLRGVT
PKS2-*Metarhizium anisopliae* ILVLF PDGSGSAASYGALAPKIRR--DIAVYALNCPWRTNGEE IRLRGVT
PKS2-*Metarhizium brunneum* ILVLF PDGSGSAASYGALAPKIRR--DIAVYALNCPWRTNGEE IRLRGVT
PKS2-*Metarhizium guizhouense* ILVLF PDGSGSAASYGALAPKIRR--DIAVYALNCPWRTNGEE IRLRGVS
PKS2-*Metarhizium majus* ILVLF PDGSGSAASYGALAPKIRR--DTAVYALNCPWRTNGEE IRLRGVS
PKS2-*Metarhizium acridum* ILVLF PDGSGSAASYGALAPKIRK--DIAVYALNCPWRTNGEE IRLRGVS
PKS-*Talaromyces marneffe* TLFLFPDGSGS STSYATI-PKISP--DVCVYGLNCPYMKTP EKL-NCA--
PKS-*Penicillium oxalicum* KLFLFPDGSGS ASSYATI-PALSP--DVCVYGLNCPYMKTP QNL-TCS--
PKS-*Aspergillus fumigatus* KLFLFPDGSGS ASSYATI-PALSP--DICVYGLNCPYMKTP QNL-KCS--
PKS-*Aspergillus clavatus* KLFLFPDGSGSATSYATI-PGISP--DVCVYGLNCPYMRTP EKL-NFP--

PKS1-*Metarhizium robertsii* LKGLATLYVEE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS1-*Metarhizium anisopliae* LKGLATLYVEE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS1-*Metarhizium brunneum* LKGLATLYVEE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS1-*Metarhizium guizhouense* LKGLATLYVEE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS1-*Metarhizium majus* LKGLATLYVEE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS1-*Metarhizium acridum* LKGLATLYVEE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS1-*Metarhizium album* LKGLASLYVGE IRR---RAPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS-*Trichoderma reesei* LRGLAELYVSE ILLR---RQPRGP-----YDLGGWSAGGI **C**AYEVSL
PKS-*Colletotrichum fiorinia* LKGLAALYVEE IRR---RVPHGP-----YNLGGWSAGGI **C**AYEAAI
PKS-*Fusarium graminearum* LKGLTELYVNE ILLR---RKPQGP-----YNLGGWSAGGI **C**AYEAAI
PKS2-*Metarhizium robertsii* LDQMVAKHLVEVGR ILD SHRHGRPGSANASVGLALGGWSAGGI **L**ALEAVR
PKS2-*Metarhizium anisopliae* LDQMVAKHLVEVGR ILD SHQRGRPGSSNASVGLALGGWSAGGI **L**ALEAVR
PKS2-*Metarhizium brunneum* LDQMVAKHLVEVGR ILD SHRHGRPGSGNSSVGLALGGWSAGGI **L**ALEAVR
PKS2-*Metarhizium guizhouense* LDQMVAKHLVEVGR ILD RHQHCRAGSGNASVGLALGGWSAGGI **L**ALEAVR
PKS2-*Metarhizium majus* LDQMVAKHLVEVGR ILD SHQHGRPGSGNASVGLALGGWSAGGI **L**ALEAVR
PKS2-*Metarhizium acridum* LDQMVAKHLIEVRR ILD NHQQSRL---NGSIDLALGGWSAGGI **L**AIIEGVR
PKS-*Talaromyces marneffe* LQDLTASYVTE IRR---RQPKGP-----YNVGGWSAGGI **C**AYDAVR
PKS-*Penicillium oxalicum* LDELTEPYLAE IRR---RQPKGP-----YSFGGWSAGGI **C**AFDAAR
PKS-*Aspergillus fumigatus* LEELTEPYLAE IRR---RQPTGP-----YNFGGWSAGGI **C**AFDAAR
PKS-*Aspergillus clavatus* LQELTFPYVAE IRR---RQPTGP-----YNFGGWSAGGI **C**AYDAAR

PKS1-<i>Metarhizium robertsii</i>	QFT-REGETVERLILLDSPNP-----
PKS1-<i>Metarhizium anisopliae</i>	QFT-REGETVERLILLDSPNP-----
PKS1-<i>Metarhizium brunneum</i>	QFT-REGETVERLILLDSPNP-----
PKS1-<i>Metarhizium guizhouense</i>	QFT-REGETVERLILLDSPNPI-----
PKS1-<i>Metarhizium majus</i>	QFT-REGETVERLILLDSPNPI-----
PKS1-<i>Metarhizium acridum</i>	QFT-REGETVERLILLDSPNPI-----
PKS1-<i>Metarhizium album</i>	QFT-REGEAVERLILLDSPNP-----
PKS-<i>Trichoderma reesei</i>	RLT-RDGEKVERLILLDSPNP-----
PKS-<i>Colletotrichum fioriniae</i>	MLT-RAGHRVDRLVLIDSPSE-----
PKS-<i>Fusarium graminearum</i>	ILT-RAGHQVDRLILIDSPNEVGL-----
PKS2-<i>Metarhizium robertsii</i>	QLG-EAGVAVQKMVLLDAPNPI-----
PKS2-<i>Metarhizium anisopliae</i>	QLR-EAGVAVQKMVLLDAPNPI-----
PKS2-<i>Metarhizium brunneum</i>	QLG-EAGVAVQKMVLLDAPNPI-----
PKS2-<i>Metarhizium guizhouense</i>	QLR-EAGVAVQKMVLLDAPNPI-----
PKS2-<i>Metarhizium majus</i>	QLR-EAGVAVQKMVLLDAPNPI-----
PKS2-<i>Metarhizium acridum</i>	QLR-QTGIVVQKLVLLDAPNPI-----
PKS-<i>Talaromyces marneffei</i>	QLVVEQGETVERIFFLDSPPF-----
PKS-<i>Penicillium oxalicum</i>	HLIFEEGERVERLLLLDSPFFIG-----
PKS-<i>Aspergillus fumigatus</i>	QLILEEGEEVERLLLLDSPFFIGLEKLPPRLYKFFNSIGLFGDGKR
PKS-<i>Aspergillus clavatus</i>	QLILEEGEVVERLLLLDSPFFIG-----