

Figure 1A

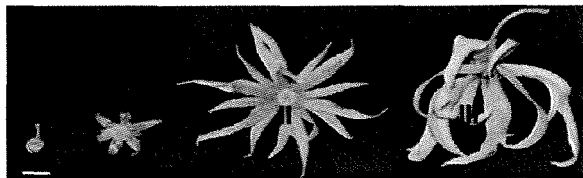


Figure 1B

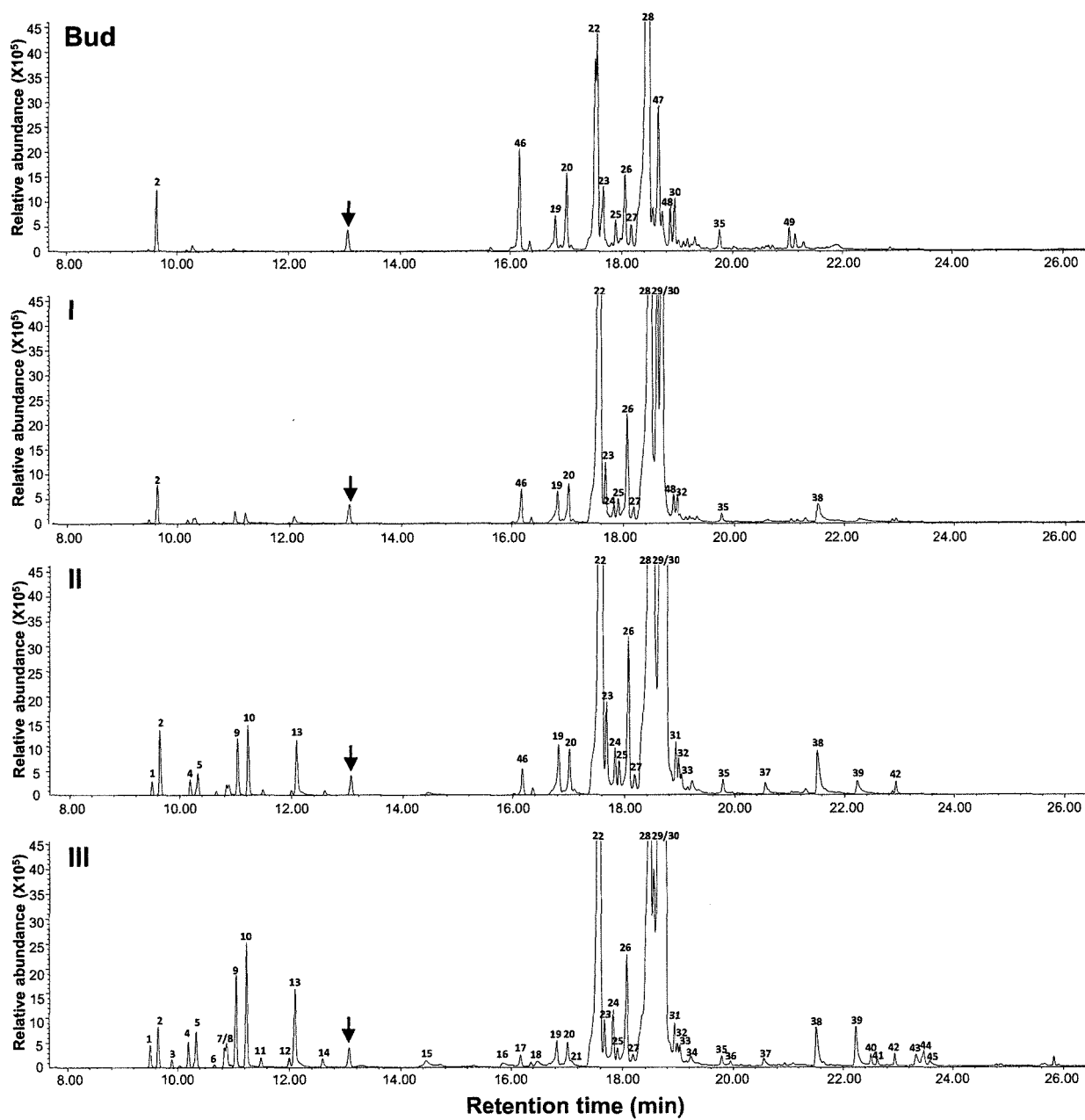


Figure 2

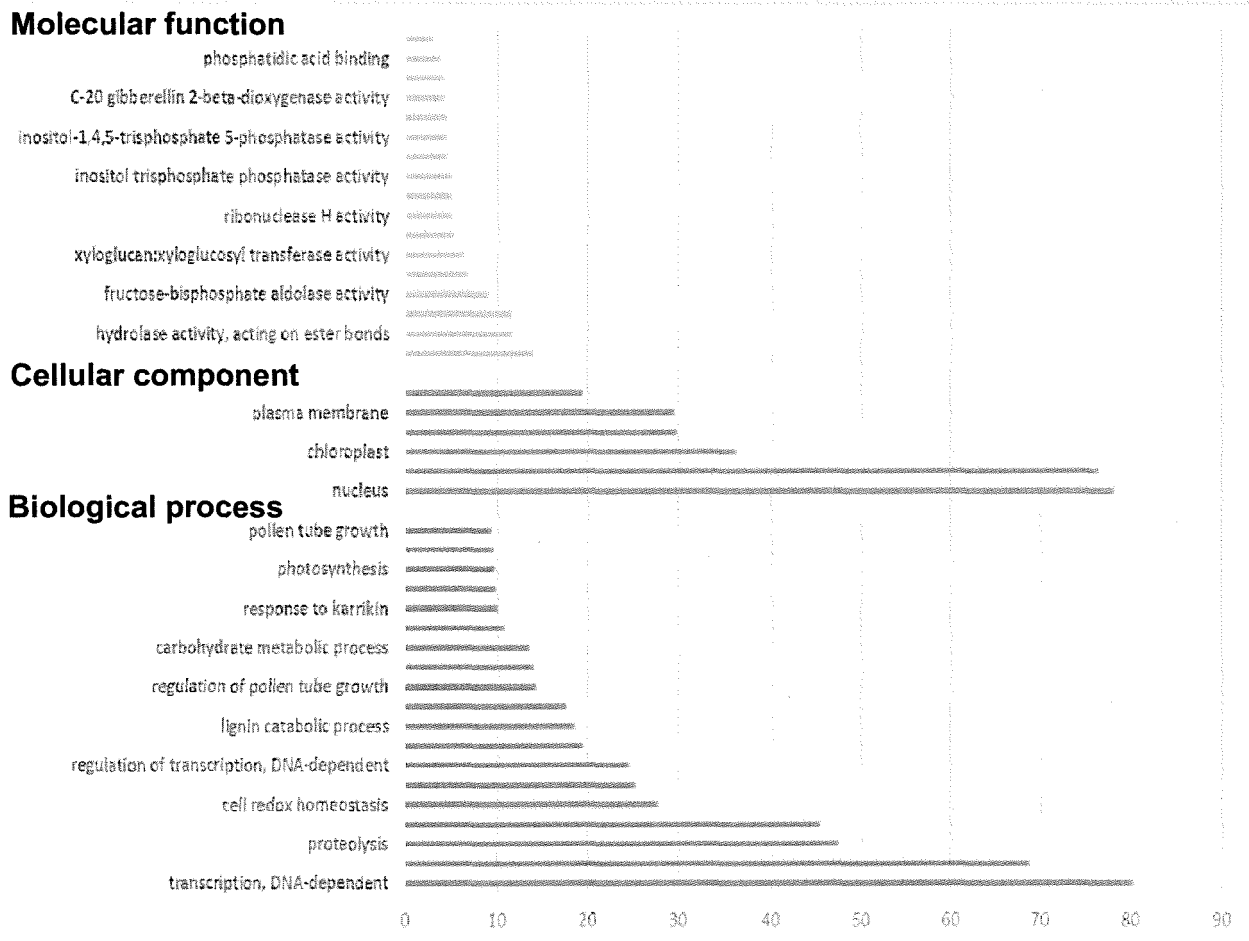
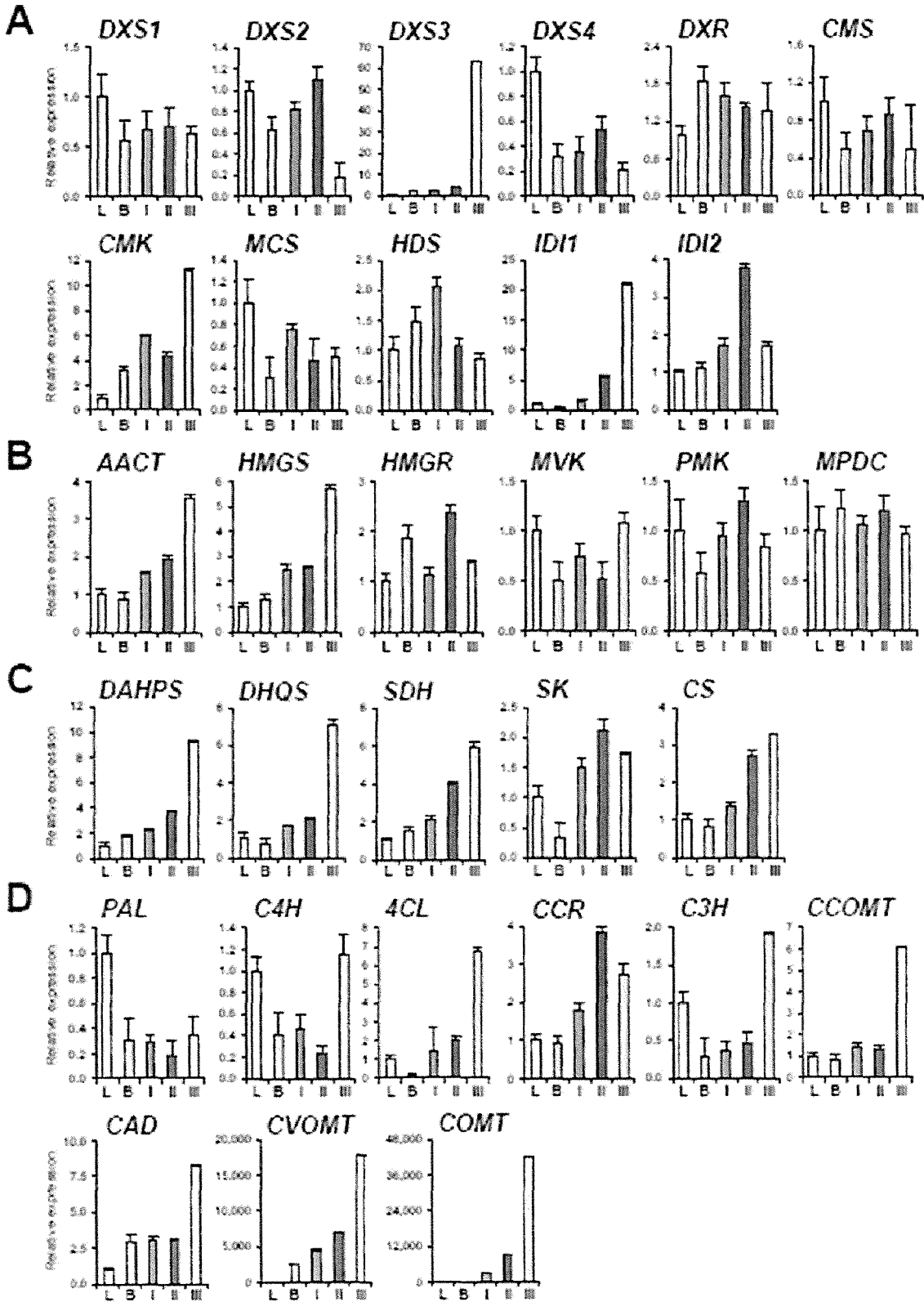


Figure 3



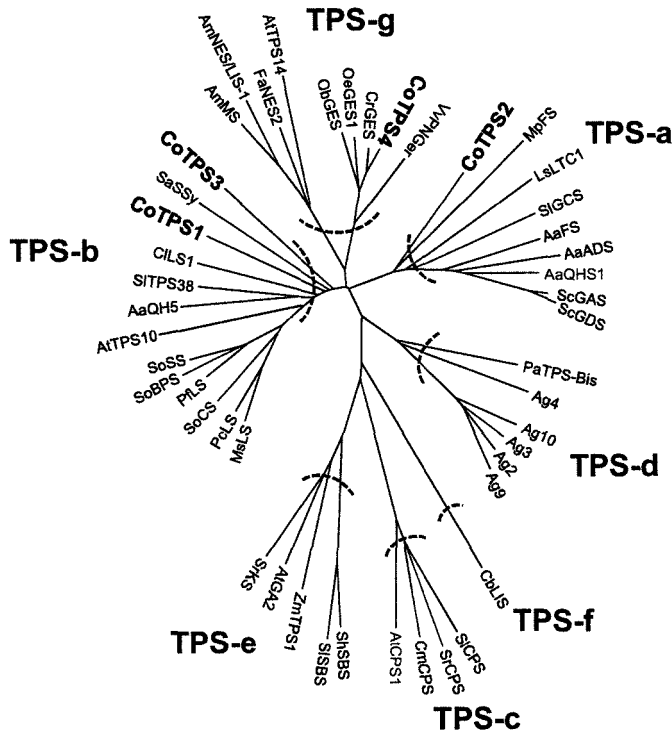
[illegible]

Figure 5

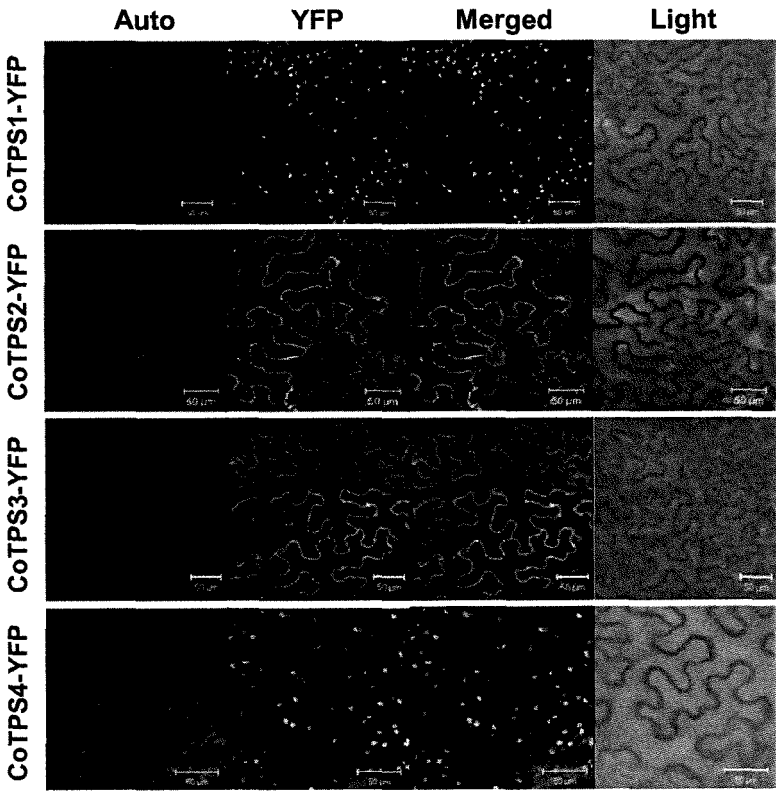


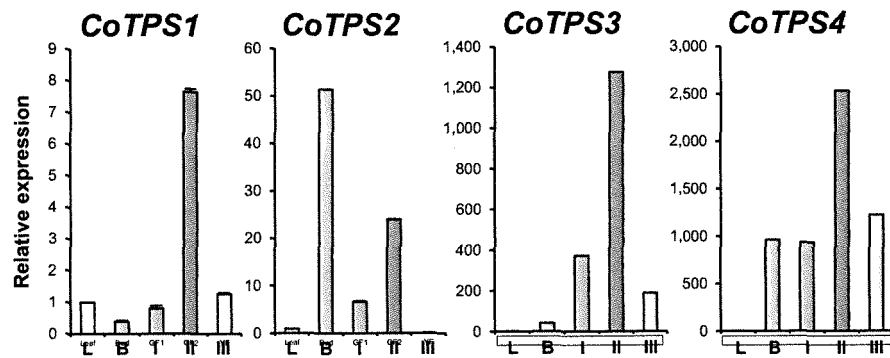
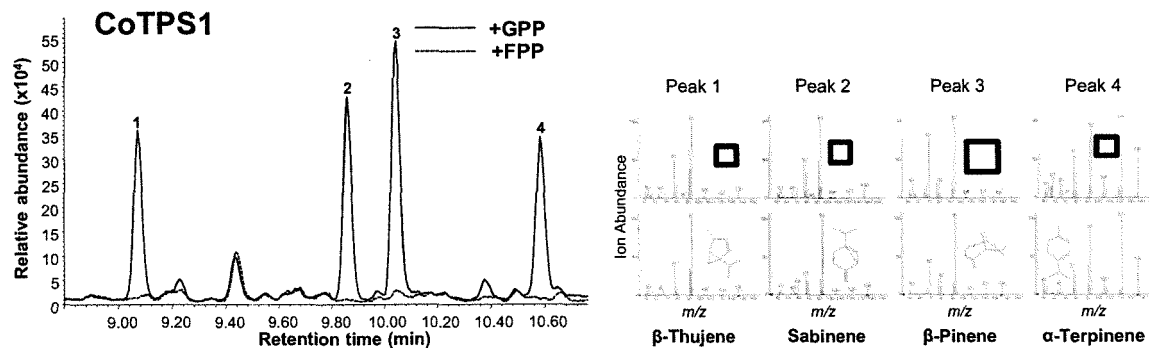
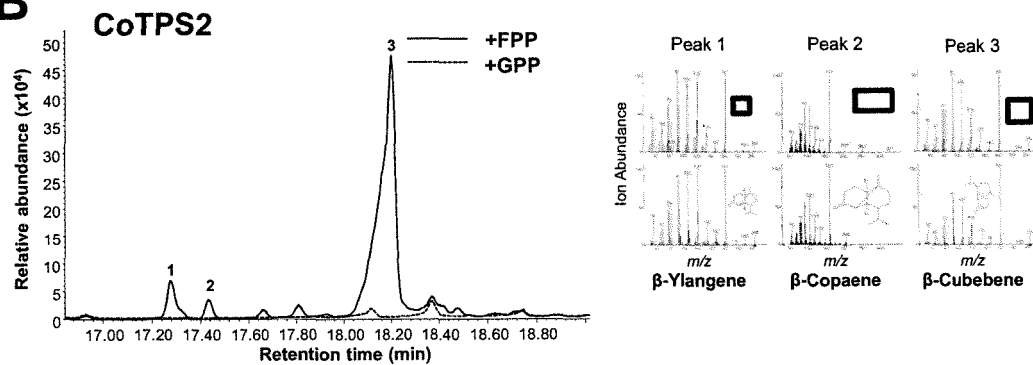
Figure 6

Figure 7

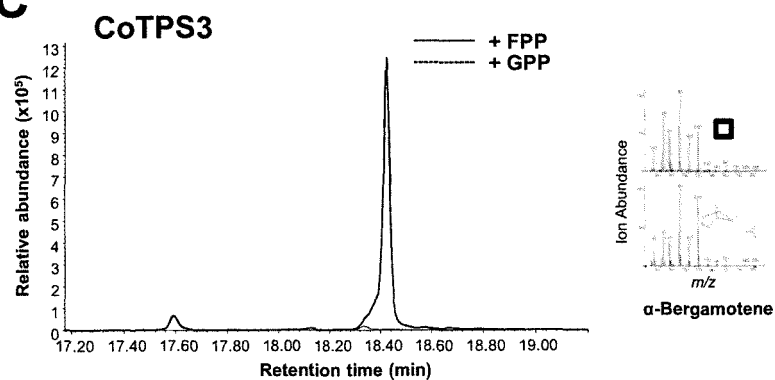
A



B



C



D

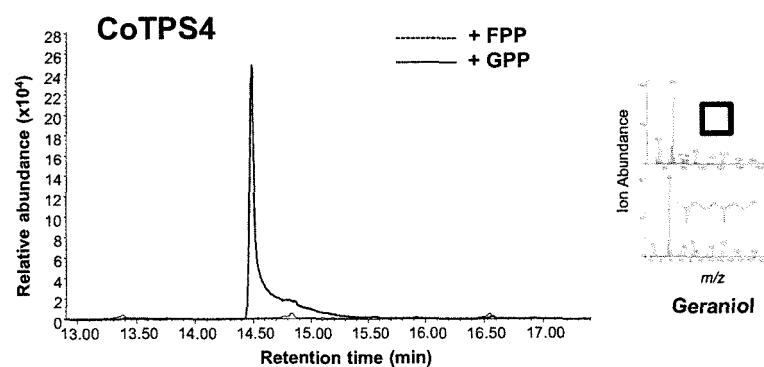


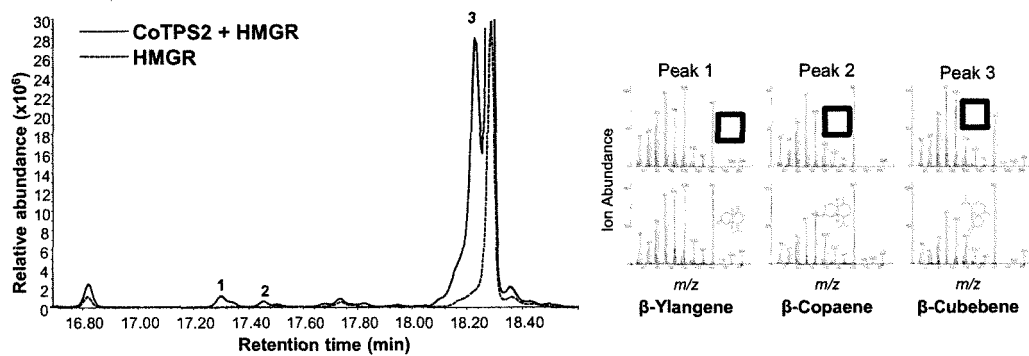
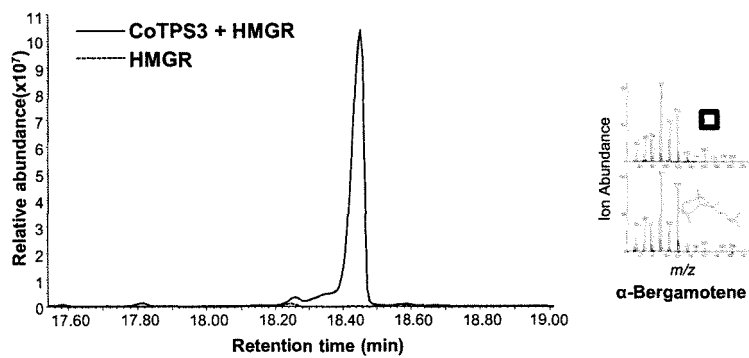
Figure 8A**Figure 8B**

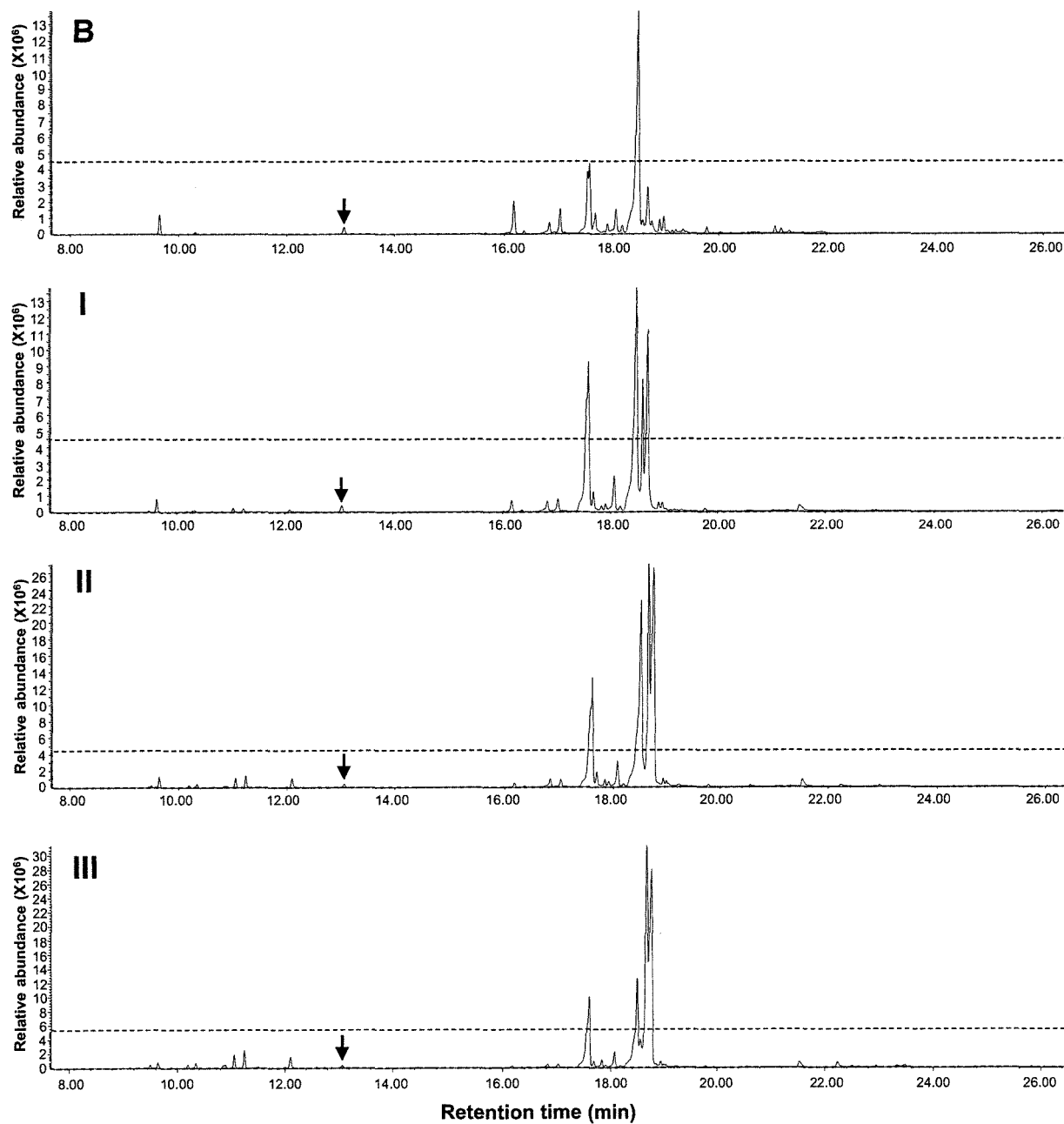
Figure 9

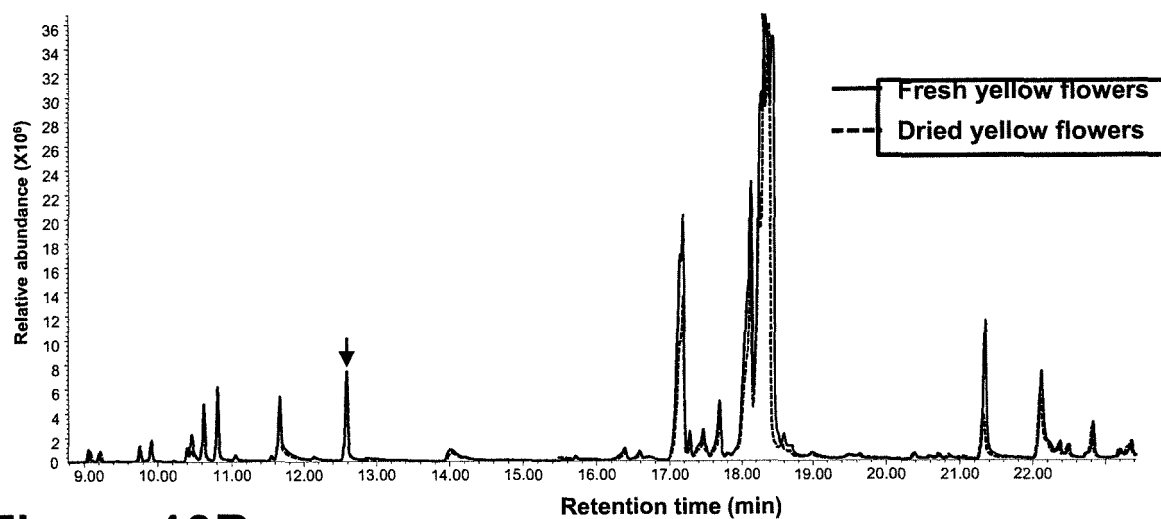
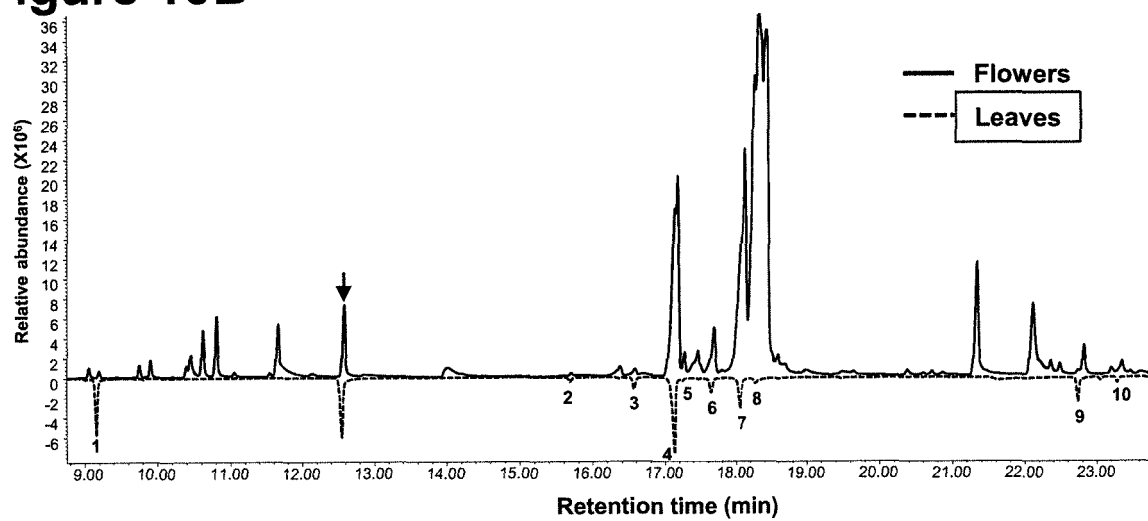
Figure 10A**Figure 10B**

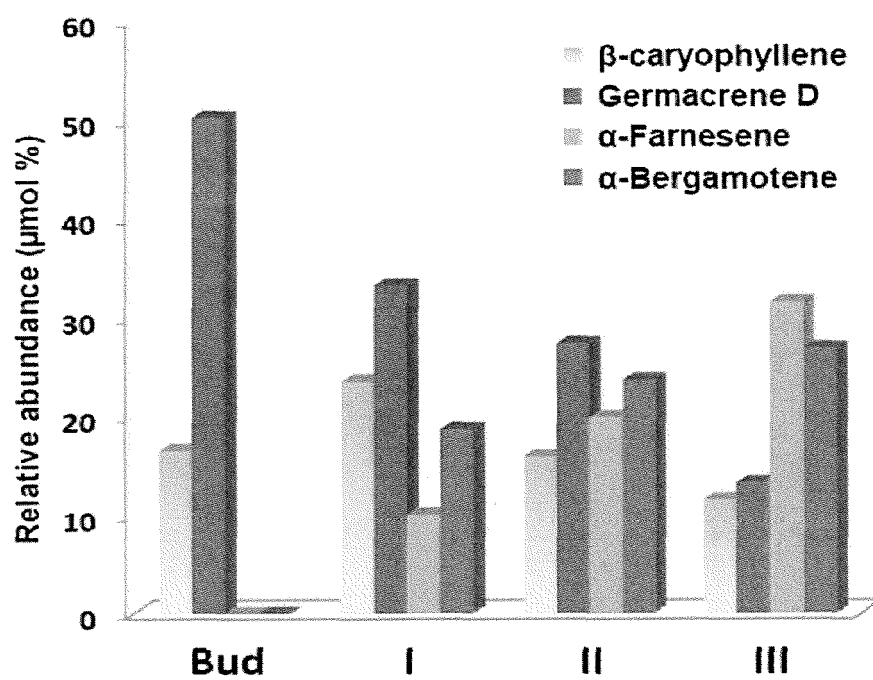
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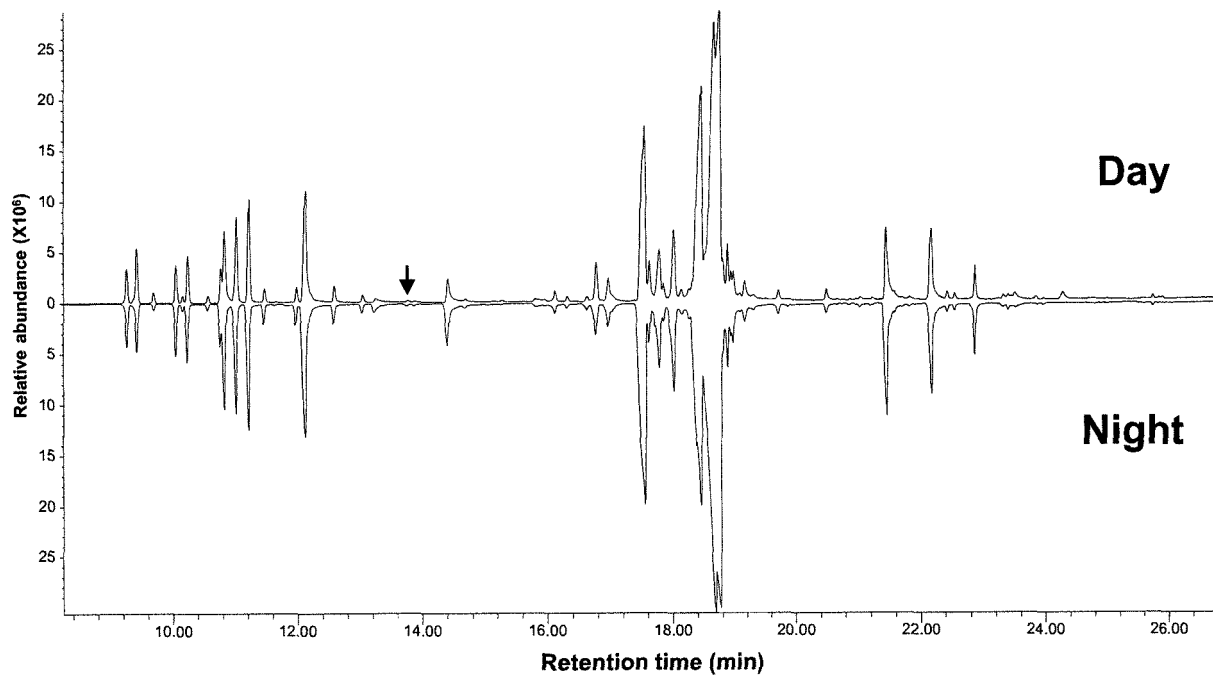
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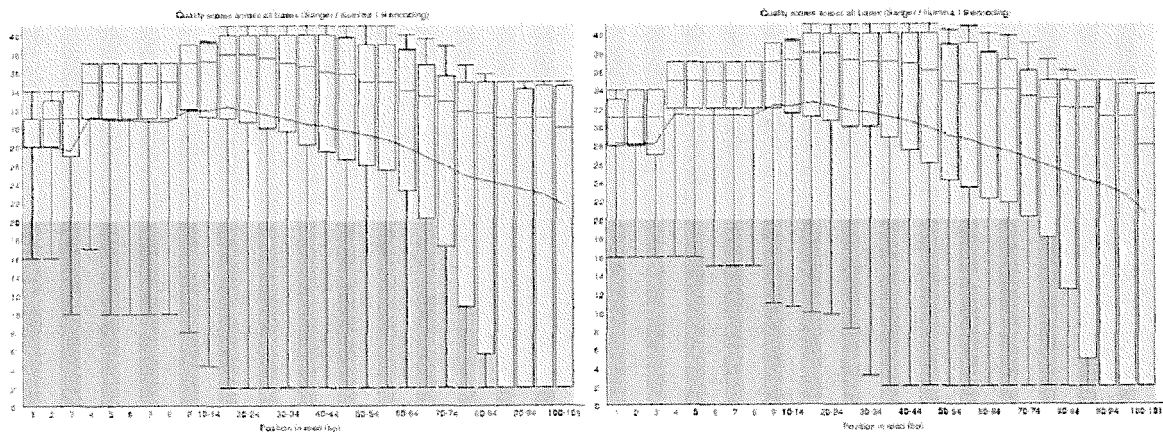
Figure 13

Figure 14A

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EuDXR 1 -----MALNLLPRTFNPVSEFHTSKSRNLPNLQGGFAFKKIDIGATNGLRVHCSA
ZmDXR 1 -----MALLKASFRGELSAASFLDSSRG--LVQHKVDETFQRKGRKISLRRTCS-

CoDXR 58 -----AKAPPPAWPGRAVPEFSKRTVGGPKFISIVGSTGSIGTQTLDIVAENPDKFKVVA
RcDXR 47 -----AQAPPPAWPGRAVAEPGRKTNDGPKFISIVGSTGSIGTQTLDIVAENPDKFKVVA
EuDXR 53 BEVGVAVAPPPAWPGRAVVEPGRKSWDGGPKFISIVGSTGSIGTQTLDIVAENPDKFKVVA
ZmDXR 51 ----MQAPPPAWPGRAVAEPGRKSWDGGPKFISIVGSTGSIGTQTLDIVAENPDKFKVVA

CoDXR 113 LAAGSNVTLLADQVKTFEPOLVSIRNESLIGELKEALADADYKPEIIPGHEGLIEVARHP
RcDXR 102 LAAGSNVTLLADQVKTFEPOLVSIRNESLIGELKEALADADYKPEIIPGHEGLIEVARHP
EuDXR 113 LAAGSNVTLLADQVKTFEPOLVAVRNESLIGELKEALADADYKPEIIPGHEGLIEVARHP
ZmDXR 107 LAAGSNVTLLADQVKTFEPOLVAVRNESLIGELKEALADADYKPEIIPGHEGLIEVARHP

CoDXR 173 DAVTVVTGIVGCAGLKPTVAALRAGKDIALLANKETLIAGGPFVLPALAHKHKVILPADSE
RcDXR 162 DAVTVVTGIVGCAGLKPTVAALRAGKDIALLANKETLIAGGPFVLPALAHKHKVILPADSE
EuDXR 173 DAVTVVTGIVGCAGLKPTVAALRAGKDIALLANKETLIAGGPFVLPALAHKHKVILPADSE
ZmDXR 167 DAVTVVTGIVGCAGLKPTVAALRAGKDIALLANKETLIAGGPFVLPALAHKHKVILPADSE

CoDXR 223 HSAIPQCIQGLPEGALRRRIILTASGGAFRELVPVEKLEKDVKVADALKHPNWNMGKITVDS
RcDXR 222 HSAIPQCIQGLPEGALRRRIILTASGGAFRELVPVEKLEKDVKVADALKHPNWNMGKITVDS
EuDXR 233 HSAIPQCIQGLPEGALRRRIILTASGGAFRELVPVEKLEKDVKVADALKHPNWNMGKITVDS
ZmDXR 227 HSAIPQCIQGLPEGALRRRIILTASGGAFRELVPVEKLEKDVKVADALKHPNWNMGKITVDS

CoDXR 293 ATLPMKGLEVIEAHYLPGAEDYDRIIVIHAGSIHSMIETQDSSVLAQLGLPDMRLPILY
RcDXR 282 ATLPMKGLEVIEAHYLPGAEDYDRIIVIHAGSIHSMIETQDSSVLAQLGLPDMRLPILY
EuDXR 293 ATLPMKGLEVIEAHYLPGAEDYDRIIVIHAGSIHSMIETQDSSVLAQLGLPDMRLPILY
ZmDXR 287 ATLPMKGLEVIEAHYLPGAEDYDRIIVIHAGSIHSMIETQDSSVLAQLGLPDMRLPILY

CoDXR 353 TLSWFERIPCEVTPRLDLCKLGLSLTPRAPDNKYPSEMLAYAGAGGTTMTGVLGAAN
RcDXR 342 TMSWEDRIYCEITWRLDLCKLGLSLTPKAPDNVKKYPSMELAYAGAGGTTMTGVLGAAN
EuDXR 353 TMSWFERIPCEITWRLDLCKLGLSLTPKMPDNVKKYPSMDLAYAGAGGTTMTGVLGAAN
ZmDXR 347 TLSWEDRIYCEVTPRLDLCKLGLSLTPRAPDNVKKYPSMDLAYAGAGGTTMTGVLGAAN

CoDXR 413 EKAVEMFIDKIKSYLDIPIITHEATCAHCSSELYTSPSLEEVHYDLWARDYAASLOPSSD
RcDXR 402 EKAVEMFIDKIKSYLDIPIITHEATCAHCSSELYTSPSLEEVHYDLWARDYAASLOPSSD
EuDXR 413 EKAVEMFIDKIKSYLDIPIITHEATCAHCSSELYTSPSLEEVHYDLWARDYAASLOPSSD
ZmDXR 407 EKAVEMFIDKIKSYLDIPIITHEATCAHCSSELYTSPSLEEVHYDLWARDYAASLOPSSD

CoCMK 1 MASTHFVQCQHFLLSSFGNKNTPGSLSYKNSSLFTPLR-HRRASLGKSTCKQYYPHVRA
CrCMK 1 MASTSGLCGVQDYTC--SGKTQLNSFKKGSISVSSATPHGFLSPGQMPQFQALFVRA
SmCMK 1 MAST--SSQFLCAH--NPKPHFNSTYTNATLPQSFSEFKPNSSSLRKEICSSIHILRA
LjCMK 1 MASTHPLCGQHLYSS--HRTKISFKKGLFQSSSECRPNSSFPDKKTQYQTLQVKS

CoCMK 50 TAS-DSKASKKQVEIYVDPDERLNRLEADVDKNAGLQRLSLFSPCKINVFRLITRKREDG
CrCMK 59 TASDSKTKGRKQVEIYDPEELNKLADVDKNAGLQRLSLFSPCKINVFRLITRKREDG
SmCMK 55 TAS-DETTGRKQVEIYVDLENKLNKLADVDNRDAGISRLTLFSPCKINVFRLITRKREDG
LjCMK 59 MAA-DSKTKGRKQVEIYVDEDEKMNSLADVDKNAGLQRLSLFSPCKINVFRLITRKREDG

CoCMK 119 FHDLASLPHVISLGDRTIKFSLSPSTRKKDQLSTNVPGVPLDDRNLITKALNLYRKKTGTDN
CrCMK 119 YHDLASLPHVISLGDRTIKFSLSPSTRKKDQLSTNVPGVPLDDRNLITKALNLYRKKTGTDN
SmCMK 114 FHDLASLPHVISLGDRTIKFSLSPSTRKKDQLSTNVPGVPLDDRNLITKALNLYRKKTGTDN
LjCMK 118 FHDLASLPHVISLGDRTIKFSLSPSTRKKDQLSTNVPGVPLDDRNLITKALNLYRKKTGTDN

CoCMK 179 YFWIHLDRKVPPTGAGLGGGSSNAATALWAANQFSGGLATEKELOEWSGEGSDCFFPFSH
CrCMK 179 YFWIHLDRKVPPTGAGLGGGSSNAATALWAANQFSGGLATEKELOEWSGEGSDCFFPFSH
SmCMK 174 YFWIHLDRKVPPTGAGLGGGSSNAATALWAANQFSGGLATEKELOEWSGEGSDCFFPFSH
LjCMK 178 YFWIHLDRKVPPTGAGLGGGSSNAATALWAANQFSGGLATEKELOEWSGEGSDCFFPFSH

CoCMK 239 GAAYCTGRGEVVEDLPTPIPLDIPMVLIKPQACPTGEVYERLRLDQNSVDPLTILENI
CrCMK 239 GAAYCTGRGEVVEDLPTPIPLDIPMVLIKPQACPTGEVYERLRLDQNSVDPLTILENI
SmCMK 234 GAAYCTGRGEVVEDLPTPIPLDIPMVLIKPQACPTGEVYERLRLDQNSVDPLTILENI
LjCMK 238 GAAYCTGRGEVVEDLPTPIPLDIPMVLIKPQACPTGEVYERLRLDQNSVDPLTILENI

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CrCMK 299 SEAGISQDVCVNDLEPPAFENVLPSSLKLLKRIILAAGRGEDAVFMMSGSGSTIVGIGSPDE
SmCMK 294 SKGGISQDVCVNDLEPPAFENVLPSSLKLLKRIILAAGRGEDAVFMMSGSGSTIVGIGSPDE
LjCMK 298 BLNGLISPDVCVNDLEPPAFENVLPSSLKLLKRIILAAGRGEDAVFMMSGSGSTIVGIGSPDE

CoCMK 359 PQFVYDDEDEHRDTEVSEARFLTRGENOWTTEMSSTASSFESREDLASTVQ
CrCMK 359 PQFVYDDEDEYKDVSLSEASFLTRPPNQWYSEPLSTACESSGTFDSQSSSE
SmCMK 354 PQFVYDDEDEYKDVSLSEASFLTRPPNQWYSEPLSTACESSGTFDSQSSSE
LjCMK 358 PQFVYDDEDEYKDVSLSEASFLTRPPNQWYSEPLSTACESSGTFDSQSSSE

```

Figure 14B

CoHMGs 1 MDSQ-EDVGLAMDTYPPPTCVLEDALEDDHGASKGKYTTIGLQDQCMAPCTEVEDVISM
NtHMGs 1 METKADVGLAVDITPPPTCVQCAELERYDGASKGKYTTIGLQDQCLAPCTELEDVISM
GSHMGs 1 MA---ENVGILADITPPPTCIGQELLEARDGASKGKYTTIGLQDQCMAPCTEVEDVISM
PnHMGs 1 MASQ-ENVGILAMETYPPTCIGQELLEARDGASKGKYTTIGLQDQCMGPCTEVEDVISM

CoHMGs 60 LTVVTSLLEKYGVDPKQIGRLVGSSETVIDKSKSIKTWLMQIPEKHGNTDIEGVDSNAC
NtHMGs 61 LTVVTSLLEKYGVDPKQIGRLVGSSETVIDKSKSIKTWLMQIPEKHGNTDIEGVDSNAC
GSHMGs 58 LTVVSSLEKYGVDPKQIGRLVGSSETVIDKSKSIKTWLMQIPEKHGNTDIEGVDSNAC
PnHMGs 60 LTVVTSLLEKYGVDPKQIGRLVGSSETVIDKSKSIKTWLMQIPEKHGNTDIEGVDSNAC

CoHMGs 120 YGGTAALFNCVNWVRESSWDGHPGLVVCANSAVYARGPARPTGGAAAVAMLIQPHAPIV
NtHMGs 121 YGGTAALFNCVNWVRESSWDGHPGLVVCANSAVYARGPARPTGGAAAVAMLIQPHAPIV
GSHMGs 118 YGGTAALFNCVNWVRESSWDGHPGLVVCANSAVYARGPARPTGGAAAVAMLIQPHAPIV
PnHMGs 120 YGGTAALFNCVNWVRESSWDGHPGLVVCANSAVYARGPARPTGGAAAVAMLIQPHAPIV

CoHMGs 180 ENKYRGTMAHVDYFKPNLASEYPPVDDGLSOTCYLMAALDSCYKRFSSKYEKLKHPFS
NtHMGs 181 ENKYRGTMAHVDYFKPNLASEYPPVDDGLSOTCYLMAALDSCYKRFSSKYEKLKHPFS
GSHMGs 178 ENKLRSHMAHVDYFKPNLASEYPPVDDGLSOTCYLMAALDSCYKRFSSKYEKLKHPFS
PnHMGs 180 ENKLRSHMAHVDYFKPNLASEYPPVDDGLSOTCYLMAALDSCYKRFSSKYEKLKHPFS

CoHMGs 240 ISDADYFVPHSPYKLVQESPARLYNDELNHPFVENDARIKLESFSSLSQDESTONRO
NtHMGs 241 ISDADYFVPHSPYKLVQESPARLYNDELNHPFVENDARIKLESFSSLSQDESTONRO
GSHMGs 238 ISDADYFVPHSPYKLVQESPARLYNDELNHPFVENDARIKLESFSSLSQDESTONRO
PnHMGs 240 ISDADYFVPHSPYKLVQESPARLYNDELNHPFVENDARIKLESFSSLSQDESTONRO

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NtHMGs 301 LKRVSQQVAKQLYDAKVPSTILPKQVGNMYTASLYAATVTLHNKSTLEBKVMPFSY
GSHMGs 298 LKRVSQQVAKQLYDAKVPSTILPKQVGNMYTASLYAATVTLHNKSTLEBKVMPFSY
PnHMGs 300 LKRVSQQVAKQLYDAKVPSTILPKQVGNMYTASLYAATVTLHNKSTLEBKVMPFSY

CoHMGs 360 GSGLESTNPSFGLQEGHPPLSLNIVSLDDYRKLSEHTFPPEKPVETMLMEHYGK
NtHMGs 361 GSGLESTNPSFGLQEGHPPLSLNIVSLDDYRKLSEHTFPPEKPVETMLMEHYGK
GSHMGs 358 GSGLESTNPSFGLQEGHPPLSLNIVSLDDYRKLSEHTFPPEKPVETMLMEHYGK
PnHMGs 360 GSGLESTNPSFGLQEGHPPLSLNIVSLDDYRKLSEHTFPPEKPVETMLMEHYGK

CoHMGs 420 DFTVIDITGLTSLSPGTFFYLTQVDSMYRPPYAKKAGEKPFSTISYENGSLPGR
NtHMGs 421 DFTVIDITGLTSLSPGTFFYLTQVDSMYRPPYAKKAGEKPFSTISYENGSLPGR
GSHMGs 418 DFTVIDITGLTSLSPGTFFYLTQVDSMYRPPYAKKAGEKPFSTISYENGSLPGR
PnHMGs 420 DFTVIDITGLTSLSPGTFFYLTQVDSMYRPPYAKKAGEKPFSTISYENGSLPGR

CoPMK 1 MAEYVISAAGKVLVTGGYLVLERSNPGIVLSTTARYTAIVKELYEAVDPSWAWANTDYK
PnPMK 1 -MAEYVISAAGKVLVTGGYLVLERSNPGIVLSTTARYTAIVKELYEAVDPSWAWANTDYK
ZnPMK 1 -MEYVISAAGKVLVTGGYLVLERSNPGIVLSTTARYTAIVKELYEAVDPSWAWANTDYK
AePMK 1 -MAEYVISAAGKVLVTGGYLVLERSNPGIVLSTTARYTAIVKELYEAVDPSWAWANTDYK

CoPMK 61 LSSPQLPFRSTYKLSLERNLTQCIAPRDPNPPFIQAVQYSVAARHSMCSDEKMDGLHK
PnPMK 60 LSSPQLPFRSTYKLSLERNLTQCIAPRDPNPPFIQAVQYSVAARHSMCSDEKMDGLHK
ZnPMK 60 LSSPQLPFRSTYKLSLERNLTQCIAPRDPNPPFIQAVQYSVAARHSMCSDEKMDGLHK
AePMK 60 LSSPQLPFRSTYKLSLERNLTQCIAPRDPNPPFIQAVQYSVAARHSMCSDEKMDGLHK

CoPMK 121 LLLQGLDITLIGCNDYFYSYRQIEARGLPITPEVLSLPPFSSITFNSVANGTMTGK
PnPMK 119 LLLQGLDITLIGCNDYFYSYRQIEARGLPITPEVLSLPPFSSITFNSVANGTMTGK
ZnPMK 120 LLLQGLDITLIGCNDYFYSYRQIEARGLPITPEVLSLPPFSSITFNSVANGTMTGK
AePMK 119 LLLQGLDITLIGCNDYFYSYRQIEARGLPITPEVLSLPPFSSITFNSVANGTMTGK

CoPMK 181 KPEVATGLGSSAAMTTAVVAALQVGLVNLSDTAGNPHGTICNPDLVHVAQTANC
PnPMK 175 KPEVATGLGSSAAMTTAVVAALQVGLVNLSDTAGNPHGTICNPDLVHVAQTANC
ZnPMK 180 KPEVATGLGSSAAMTTAVVAALQVGLVNLSDTAGNPHGTICNPDLVHVAQTANC
AePMK 175 KPEVATGLGSSAAMTTAVVAALQVGLVNLSDTAGNPHGTICNPDLVHVAQTANC

CoPMK 241 LAQGVGSGPDVSAAYVGSQRYVFPSPVLSAPAVVTGQPLEEVISHIKKENDREKIQ
PnPMK 235 LAQGVGSGPDVSAAYVGSQRYVFPSPVLSAPAVVTGQPLEEVISHIKKENDREKIQ
ZnPMK 240 LAQGVGSGPDVSAAYVGSQRYVFPSPVLSAPAVVTGQPLEEVISHIKKENDREKIQ
AePMK 229 LAQGVGSGPDVSAAYVGSQRYVFPSPVLSAPAVVTGQPLEEVISHIKKENDREKIQ

CoPMK 301 FSLPPLMTLLLGEPGTGGSTPSPMVGAVKQKORSEFOKSAETWTRIAKANSMPFIOLAA
PnPMK 295 FSLPPLMTLLLGEPGTGGSTPSPMVGAVKQKORSEFOKSAETWTRIAKANSMPFIOLAA
ZnPMK 299 FSLPPLMTLLLGEPGTGGSTPSPMVGAVKQKORSEFOKSAETWTRIAKANSMPFIOLAA
AePMK 288 FSLPPLMTLLLGEPGTGGSTPSPMVGAVKQKORSEFOKSAETWTRIAKANSMPFIOLAA

CoPMK 361 KRYAQEKMETYKIVIGSCSAHSHKWLQATDPCQEGTIRSLAVEDAMLDIFPHMRQMG
PnPMK 355 KRYAQEKMETYKIVIGSCSAHSHKWLQATDPCQEGTIRSLAVEDAMLDIFPHMRQMG
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AePMK 347 KRYAQEKMETYKIVIGSCSAHSHKWLQATDPCQEGTIRSLAVEDAMLDIFPHMRQMG

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PnPMK 415 QAGAGIPEPESQTLRLDATHNLEGVLPAGVPGAGGPDATVTVVLGDTR-NHYANVWCQG
ZnPMK 419 QAGAGIPEPESQTLRLDATHNLEGVLPAGVPGAGGPDATVTVVLGDTR-NHYANVWCQG
AePMK 407 QAGAGIPEPESQTLRLDATHNLEGVLPAGVPGAGGPDATVTVVLGDTR-NHYANVWCQG

CoPMK 480 VLPMLVREDPFGCLRESGDPPTKEISSAPBAIQV-
PnPMK 475 VLPMLVREDPFGCLRESGDPPTKEISSAPBAIQV-
ZnPMK 478 VLPMLVREDPFGCLRESGDPPTKEISSAPBAIQV-
AePMK 466 VLPMLVREDPFGCLRESGDPPTKEISSAPBAIQV-

Figure 14C

CoDAHPS 1 **MA**LSSTSSSSLSIKTPLOSSIFPASKAHQHSLPLPTK----PKKPISSAVHAAEFSKNHVVV
VvDAHPS 1 **MA**LSN-ASTSSRSVYQTHSLFSSLSHOPSSSLVSKTHLSLHPISSAVHAAEFAKKEVV
MtdAHPS 1 **MS**LSSTSSSTSLIP---TKSLLOPTKPNPSPFPIGLKPMKPKKGSILAVHAAEFAKKEVV
HbdAHPS 1 **MS**PTSTS---LIP---TKALITSNKPHQSPFVA--NKAPSRSLVQLSSAVYSSPFSKNIIV

CoDAHPS 57 **AD**KPVKTSPPPAATAPAF-----CKWTLDCNKSSEKALQLPEYFKREED
VvDAHPS 60 **VD**KPKTSSP--SVFAGS-----GKWIVDSWKTAKALQLPEYFNESDLE
MtdAHPS 58 **TE**MPSEPOPTTIPRNAS-----KWTIDSWKSEKALQLPEYFSQEDLE
HbdAHPS 53 **SD**ESCTQQTTKTSTSAATSAAPAAAAAPTNNVVPKNSVDSWSEKALQLPEYFNKEELE

CoDAHPS 101 **AV**LKTHESPPPIVFAGEAEHLEDRIADAAMGKAPLLQGGDCAESFKFNANNIETDFIL
VvDAHPS 102 **SV**LQTHLAPPIVFACEARSLEERLGDAAMGNAPLLQGGDCAESFKFNANNIETDFIL
MtdAHPS 101 **AV**LKTHDAPPIVFACEAKTLEHLEGEAAMGNAPLLQGGDCAESFKFNANNIETDFIL
HbdAHPS 113 **SV**LRTIDAPPIVFACEARSLEERLSEAAAMGNAPLLQGGDCAESFKFNANNIETDFIL

CoDAHPS 161 **LM**GVLMFGGOMPVYVGMAGQPAKPSDAPFEKNGVLLPSYKCDNINGDAFNKESRI
VvDAHPS 162 **LM**GVLMFGGOMPVYVGMAGQPAKPSDAPFEKNGVLLPSYKCDNINGDAFNKESRI
MtdAHPS 161 **LM**SVVMFGGOMPVYVGMAGQPAKPSDNPFEKNGVLLPSYKCDNINGDAFNKESRI
HbdAHPS 173 **LM**GVLMFGGOMPVYVGMAGQPAKPSDAPFEKNGVLLPSYKCDNINGDAFNKESRI

CoDAHPS 221 **PD**QRMIRAYCQAATINLLAPATCGYAAQRTQWNLDFTEHQSGDRYRELAAHVDE
VvDAHPS 222 **PD**QRMIRAYCQAATINLLAPATCGYAAQRTQWNLDFTEHQSGDRYRELAAHVDE
MtdAHPS 221 **PD**QRMIRAYCQAATINLLAPATCGYAAQRTQWNLDFTEHQSGDRYRELAAHVDE
HbdAHPS 233 **PD**QRMIRAYCQAATINLLAPATCGYAAQRTQWNLDFTEHQSGDRYRELAAHVDE

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VvDAHPS 282 **AL**OPMSAAGLTVDHPIITTEFPWTSHECLLPYEQSLTEKOSTGCLYDCSAHMLVGER
MtdAHPS 281 **AL**GPMAAAGLTVDHPIITNTDFWTSHECLLPYEQSLTEKOSTGCLYDCSAHMLVGER
HbdAHPS 293 **AL**GPMSAAGLTVDHPIITTEFPWTSHECLLPYEQSLARLDESGLYDCSAHMLVGER

CoDAHPS 341 **TR**OLDGAHVFLRGVANPLGIKVSXNDMPNELVNLIELNFTNKPGRTITITRMGAENMR
VvDAHPS 342 **TR**OLDGAHVFLRGVANPLGIKVSXNDMPNELVNLIELNFTNKPGRTITITRMGAENMR
MtdAHPS 341 **TR**OLDGAHVFLRGVANPLGIKVSXNDMPNELVNLIELNFTNKPGRTITITRMGAENMR
HbdAHPS 353 **TR**OLDGAHVFLRGVANPLGIKVSXNDMPNELVNLIELNFTNKPGRTITITRMGAENMR

CoDAHPS 401 **VL**PLHLIRAYRAGQIVTVSDPMHGNTIKAPCGKLTTPFDSRAEVRAFPDVHEQEGSH
VvDAHPS 402 **VL**PLHLIRAYRAGQIVTVSDPMHGNTIKAPCGKLTTPFDSRAEVRAFPDVHEQEGSH
MtdAHPS 401 **VL**PLHLIRAYRAGQIVTVSDPMHGNTIKAPCGKLTTPFDSRAEVRAFPDVHEQEGSH
HbdAHPS 413 **VL**PLHLIRAYRAGQIVTVSDPMHGNTIKAPCGKLTTPFDSRAEVRAFPDVHEQEGSH

CoDAHPS 461 **PG**GVHLEMTQGNVTECIGGRTVTFDDLSRYHTHCDPRLNASQSLAPILAEKLRKE
VvDAHPS 462 **PG**GVHLEMTQGNVTECIGGRTVTFDDLSRYHTHCDPRLNASQSLAPILAEKLRKE
MtdAHPS 461 **PG**GVHLEMTQGNVTECIGGRTVTFDDLSRYHTHCDPRLNASQSLAPILAEKLRKE
HbdAHPS 473 **PG**GVHLEMTQGNVTECIGGRTVTFDDLSRYHTHCDPRLNASQSLAPILAEKLRKE

CoDAHPS 521 **IG**QFATASVALGL
VvDAHPS 522 **MS**-TQRLALGL
MtdAHPS 521 **IR**-EQPLESTGF
HbdAHPS 533 **IN**-EQFKIASSTF

CoCS 1 --**M**ASSSISSSPFLKGTKEGPNWIGFPHADLGLTYPSTVOISIRAPERRKLEVHAAGE
ReCS 1 **M**ASCSLSLVKPFGLGASLNGS-----DNKLSISTWISPSFAPR-KLQIHAAGE
HbCS 1 --**M**ASSLSLSEKPFGLGAYRLDGS-----SLNLEDLISATVOISPRPT-KLQIHAAGE
PtCS 1 --**M**ASLTLSKSLGSSRIDGAS-----ISSDLCLSISSVOISPRRIE-KLQIHAAGE

CoCS 59 **S**FGNFPIITTYGSHGGGVGCVIDGCEFCPLSEADLQVLDERRPGOSRIITPRKETDT
ReCS 52 **T**FGTHPVTTTFGSHGGGVGCTIDGCEPRVFLSEADMQVLDERRPGOSRIITPRKETDT
HbCS 54 **T**YTYPVTTTFGSHGGGVGCVIDGCEPRIPLSEADLQVLDERRPGOSRIITPRKETDT
PtCS 54 **T**FGTNPVTTTFGSHGGGVGCTIDGCEPRIPLSEADMQVLDERRPGOSRIITPRKETDT

CoCS 119 **CK**IYSGVSEGLTTGTPIHVSPNTDQRGHDISEMSIAYRPSHADATYDMKYGVSVGGG
ReCS 112 **CK**IYSGVSEGLTTGTPIHVSPNTDQRGHDISEMSIAYRPSHADATYDMKYGVSVGGG
HbCS 114 **CK**IYSGVSEGLTTGTPIHVSPNTDQRGHDISEMSIAYRPSHADATYDMKYGVSVGGG
PtCS 114 **CK**IYSGVSEGLTTGTPIHVSPNTDQRGLYSEMSIAYRPSHADATYDMKYGVSVGGG

CoCS 179 **RS**SARETIGRVIPGAVAKKILKMVSETEVLAYVSQVHKVILPEGVVDHNDVLEQIESNI
ReCS 172 **RS**SARETIGRVASGAIKILKQPSGTEVLAYVSQVHKVILPEDMVDHETLTDQIESNI
HbCS 174 **RS**SARETIGRVASGAIKILKQPSGTEVLAYVSQVHKVILPEQDQIDHQSITDQIESNI
PtCS 174 **RS**SARETIGRVASGAVAKKILKLYAGTEVLAYVSQVHKVILPEGVVDHDSLTLDQIESNI

CoCS 239 **VR**CPDPEYAEKMIASIDAVRVGDSVGGVVTICIVNVFRLGSPVFDKLEAELAKAVLSL
ReCS 232 **VR**CPDPEYAEKMIASIDKIRVGRDSVGGVVTICIVNVFRLGSPVFDKLEAELAKAVLSL
HbCS 234 **VR**CPDPEYAEKMIASIDTVRVGRDSVGGVVTICIVNAPRGLGSPVFDKLEAELAKAVLSL
PtCS 234 **VR**CPDPEYAEKMIASIDAVRVKSDSVGGVVTICIVNAPRGLGSPVFDKLEAELAKAVLSL

CoCS 299 **PA**TKGPEHIGSGFGSTPLTGSSEHNDEFFYIDEGRIKRTKTNRSGGIQGGISNGETITMRVAF
ReCS 292 **PA**TKGPEFGSGFAGTFLTGSSEHNDEFFYMEHKGKIRTRTNRSGGIQGGISNGETIYMRVAF
HbCS 294 **PA**TKGPEFGSGFAGTFLTGSSEHNDEFFYVDHKGKIRTRTNRSGGIQGGISNGETINIRVAF
PtCS 294 **PA**TKGPEFGSGFAGTLLTGSSEHNDEFFYTDKNGKIRTRTNRSGGIQGGISNGETIINMRVAF

CoCS 359 **K**PTSTIGKQHTVTRDKETIELLAGRHDPVVPRAVPMVEANVALVLDQMLMAHQYACQ
ReCS 352 **K**PTSTIGKQHTVTRDEVTETLIAGRHDPVVPRAVPMVEANVALVLDQMLMAHQYACQ
HbCS 354 **K**PTSTIGKQHTVTRDKETETLIAGRHDPVVPRAVPMVEANVALVLDQMLMAHQYACQ
PtCS 354 **K**PTSTIGKQHTVTRDEKETDLIAGRHDPVVPRAVPMVEANVALVLDQMLMAHQYACQ

CoCS 419 **LL**FINPSLQEPLEAF-KLEAAHVPL
ReCS 412 **M**FFINPELQEPLEAF-EKSVNMTI
HbCS 414 **M**FFVNPPELQEPILPPSIKATNMSI
PtCS 414 **LL**FINSELQEPLEAF-KLEAANASV

Figure 14D

```
CcPAL 1 NEPCQRAQNNHNGSLCIA-----DPLNMGVVAEAKKSRRLDEVEINVEYEFKESIK
PtPAL 1 NEPCQDSRNGCGLQSF-----TKDPLNMGMAAEKESRLDEVEINVEYEFKESIK
MbPAL 1 NEPCAKAQVVRHSEAF-----LKADPLNMGMAAEKESRLDEVEINVEYEFKESIK
RcPAL 1 NEPSKDDNNHNGSSLSRSFCTATAGHEDPLNMGMLDSLKSRRLDEVEINVEYEFKESIK

CcPAL 51 LGGATLTIAQVAVAN-RAGVYVLSSEARAGVYKASDDVNMSENKGTDSYGVTTGPGAT
PtPAL 53 LGGATLTIAQVAVAN-RAGVYVLSSEARAGVYKASDDVNMSENKGTDSYGVTTGPGAT
MbPAL 54 LGGATLTIAQVAVAN-RAGVYVLSSEARAGVYKASDDVNMSENKGTDSYGVTTGPGAT
RcPAL 61 LGGATLTIAQVAVAN-RAGVYVLSSEARAGVYKASDDVNMSENKGTDSYGVTTGPGAT

CcPAL 110 SRRRTKGGALQKELIRFLNAGISTPDRSGNLTPTPTAAMLVHINTLLOQYSGIYFE
PtPAL 113 SRRRTKGGALQKELIRFLNAGISTPDRSGNLTPTPTAAMLVHINTLLOQYSGIYFE
MbPAL 114 SRRRTKGGALQKELIRFLNAGISTPDRSGNLTPTPTAAMLVHINTLLOQYSGIYFE
RcPAL 121 SRRRTKGGALQKELIRFLNAGISTPDRSGNLTPTPTAAMLVHINTLLOQYSGIYFE

CcPAL 170 LLEATTSFLNHEETPCPLNGTITAGGLVPLVLTITAGLITHTMPSYANTABEKEMDAEA
PtPAL 173 LLEATTSFLNHEETPCPLNGTITAGGLVPLVLTITAGLITHTMPSYANTABEKEMDAEA
MbPAL 174 LLEATTSFLNHEETPCPLNGTITAGGLVPLVLTITAGLITHTMPSYANTABEKEMDAEA
RcPAL 181 LLEATTSFLNHEETPCPLNGTITAGGLVPLVLTITAGLITHTMPSYANTABEKEMDAEA

CcPAL 230 BRAGIESSEFLOPFEKGLALVNGTAYGSGLASMYLFEANVLAVLEAVYAVAKYVOCG
PtPAL 233 BRAGIESSEFLOPFEKGLALVNGTAYGSGLASMYLFEANVLAVLEAVYAVAKYVOCG
MbPAL 234 BRAGIESSEFLOPFEKGLALVNGTAYGSGLASMYLFEANVLAVLEAVYAVAKYVOCG
RcPAL 241 BRAGIESSEFLOPFEKGLALVNGTAYGSGLASMYLFEANVLAVLEAVYAVAKYVOCG

CcPAL 290 PEPTDHLTHLKHHPGQIEAAAINHEILDGSSYEMAKKLEHLOPFOKPFODRTALTSF
PtPAL 293 PEPTDHLTHLKHHPGQIEAAAINHEILDGSSYEMAKKLEHLOPFOKPFODRTALTSF
MbPAL 294 PEPTDHLTHLKHHPGQIEAAAINHEILDGSSYEMAKKLEHLOPFOKPFODRTALTSF
RcPAL 301 PEPTDHLTHLKHHPGQIEAAAINHEILDGSSYEMAKKLEHLOPFOKPFODRTALTSF

CcPAL 350 QWGLLIEVITSTSLCTERRINSEVNDPLIDVSRKALGCGNFQGTPIGVSMNTRIAIA
PtPAL 353 QWGLLIEVITSTSLCTERRINSEVNDPLIDVSRKALGCGNFQGTPIGVSMNTRIAIA
MbPAL 354 QWGLLIEVITSTSLCTERRINSEVNDPLIDVSRKALGCGNFQGTPIGVSMNTRIAIA
RcPAL 361 QWGLLIEVITSTSLCTERRINSEVNDPLIDVSRKALGCGNFQGTPIGVSMNTRIAIA

CcPAL 410 SIGELVPAQPSILVNDPFYHNGLPENLSGGNPSILYGFPGARIAMAYCSELQPLANFYI
PtPAL 413 SIGELVPAQPSILVNDPFYHNGLPENLSGGNPSILYGFPGARIAMAYCSELQPLANFYI
MbPAL 414 SIGELVPAQPSILVNDPFYHNGLPENLSGGNPSILYGFPGARIAMAYCSELQPLANFYI
RcPAL 421 SIGELVPAQPSILVNDPFYHNGLPENLSGGNPSILYGFPGARIAMAYCSELQPLANFYI

CcPAL 470 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY
PtPAL 473 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY
MbPAL 474 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY
RcPAL 481 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY

CcPAL 530 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY
PtPAL 533 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY
MbPAL 534 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY
RcPAL 541 HNYQARQNNHNGSLGSLISAKTAAVLEGLNMAATLVVALCOAVDGHLEHLEKSTY

CcPAL 590 VDHALLNGSKKEDASTIFPKIGAFEDDKTOLPEVYKAAADFEENLLEHLEKSTY
PtPAL 593 VDHALLNGSKKEDASTIFPKIGAFEDDKTOLPEVYKAAADFEENLLEHLEKSTY
MbPAL 594 VDHALLNGSKKEDASTIFPKIGAFEDDKTOLPEVYKAAADFEENLLEHLEKSTY
RcPAL 601 VDHALLNGSKKEDASTIFPKIGAFEDDKTOLPEVYKAAADFEENLLEHLEKSTY

CcPAL 650 YPEYELVYDVEDLGLTSGKVRPGRDDEYVFAKICDELKLPKLEKRCNNHAPFIC
PtPAL 653 YPEYELVYDVEDLGLTSGKVRPGRDDEYVFAKICDELKLPKLEKRCNNHAPFIC
MbPAL 654 YPEYELVYDVEDLGLTSGKVRPGRDDEYVFAKICDELKLPKLEKRCNNHAPFIC
RcPAL 661 YPEYELVYDVEDLGLTSGKVRPGRDDEYVFAKICDELKLPKLEKRCNNHAPFIC

CcC4H 1 MDLLLEOKTIFALFFSIUVATVYKSLGKRRKLPPLPGLIFVFGNWLQVGDOLNHNLT
GmC4H 1 MDLLLEOKTIFALFFSIUVATVYKSLGKRRKLPPLPGLIFVFGNWLQVGDOLNHNLT
TcC4H 1 MDLLLEOKTIFALFFSIUVATVYKSLGKRRKLPPLPGLIFVFGNWLQVGDOLNHNLT
GacC4H 1 MDLLLEOKTIFALFFSIUVATVYKSLGKRRKLPPLPGLIFVFGNWLQVGDOLNHNLT

CcC4H 61 LAKKFGDIFLLMGQENLVVVSDFYKAEVLTQGVFGSRTNRYVDFITFGGQDNVYF
GmC4H 61 LAKKFGDIFLLMGQENLVVVSDFYKAEVLTQGVFGSRTNRYVDFITFGGQDNVYF
TcC4H 61 LAKKFGDIFLLMGQENLVVVSDFYKAEVLTQGVFGSRTNRYVDFITFGGQDNVYF
GacC4H 61 LAKKFGDIFLLMGQENLVVVSDFYKAEVLTQGVFGSRTNRYVDFITFGGQDNVYF

CcC4H 121 VYGERHKKKRRKINTVPEPTNKVYQVYHGWEDRAASVYEDYKKHFAATNGVLEHLEK
GmC4H 121 VYGERHKKKRRKINTVPEPTNKVYQVYHGWEDRAASVYEDYKKHFAATNGVLEHLEK
TcC4H 121 VYGERHKKKRRKINTVPEPTNKVYQVYHGWEDRAASVYEDYKKHFAATNGVLEHLEK
GacC4H 121 VYGERHKKKRRKINTVPEPTNKVYQVYHGWEDRAASVYEDYKKHFAATNGVLEHLEK

CcC4H 181 MNYNMYRIMPDORRPFESDDEPLVKKALNGEERSLAQSPRYNYGDFIPILRPFKQYK
GmC4H 181 MNYNMYRIMPDORRPFESDDEPLVKKALNGEERSLAQSPRYNYGDFIPILRPFKQYK
TcC4H 181 MNYNMYRIMPDORRPFESDDEPLVKKALNGEERSLAQSPRYNYGDFIPILRPFKQYK
GacC4H 181 MNYNMYRIMPDORRPFESDDEPLVKKALNGEERSLAQSPRYNYGDFIPILRPFKQYK

CcC4H 241 LCKEYKIRLOLPREQLERKILATERRIDNN-ALKCAIDHILDAOKGREDNRYLYI
GmC4H 241 LCKEYKIRLOLPREQLERKILATERRIDNN-ALKCAIDHILDAOKGREDNRYLYI
TcC4H 241 LCKEYKIRLOLPREQLERKILATERRIDNN-ALKCAIDHILDAOKGREDNRYLYI
GacC4H 241 LCKEYKIRLOLPREQLERKILATERRIDNN-ALKCAIDHILDAOKGREDNRYLYI

CcC4H 301 VENINVAALITTLWSIEWGIAELVNHPEIQOKLENEIDTVLGVSHOITEPDTKLPYLOA
GmC4H 301 VENINVAALITTLWSIEWGIAELVNHPEIQOKLENEIDTVLGVSHOITEPDTKLPYLOA
TcC4H 300 VENINVAALITTLWSIEWGIAELVNHPEIQOKLENEIDTVLGVSHOITEPDTKLPYLOA
GacC4H 300 VENINVAALITTLWSIEWGIAELVNHPEIQOKLENEIDTVLGVSHOITEPDTKLPYLOA

CcC4H 361 VIKETILKRMALPLVPHMNLDAKLGQYDIPAEKILVNAWYLANNPANNNKSEFPEF
GmC4H 361 VIKETILKRMALPLVPHMNLDAKLGQYDIPAEKILVNAWYLANNPANNNKSEFPEF
TcC4H 360 VIKETILKRMALPLVPHMNLDAKLGQYDIPAEKILVNAWYLANNPANNNKSEFPEF
GacC4H 360 VIKETILKRMALPLVPHMNLDAKLGQYDIPAEKILVNAWYLANNPANNNKSEFPEF

CcC4H 421 EPEERHSHVANGNDPRYLPFGVGRSCPGIILALVILGTLGRLVONPELLPFPQSK
GmC4H 421 EPEERHSHVANGNDPRYLPFGVGRSCPGIILALVILGTLGRLVONPELLPFPQSK
TcC4H 420 EPEERHSHVANGNDPRYLPFGVGRSCPGIILALVILGTLGRLVONPELLPFPQSK
GacC4H 420 EPEERHSHVANGNDPRYLPFGVGRSCPGIILALVILGTLGRLVONPELLPFPQSK

CcC4H 481 DTSEKGGQPSLHILKHSITVVRFAE
GmC4H 481 DTSEKGGQPSLHILKHSITVVRFAE
TcC4H 480 DTSEKGGQPSLHILKHSITVVRFAE
GacC4H 480 DTSEKGGQPSLHILKHSITVVRFAE
```

Figure 15

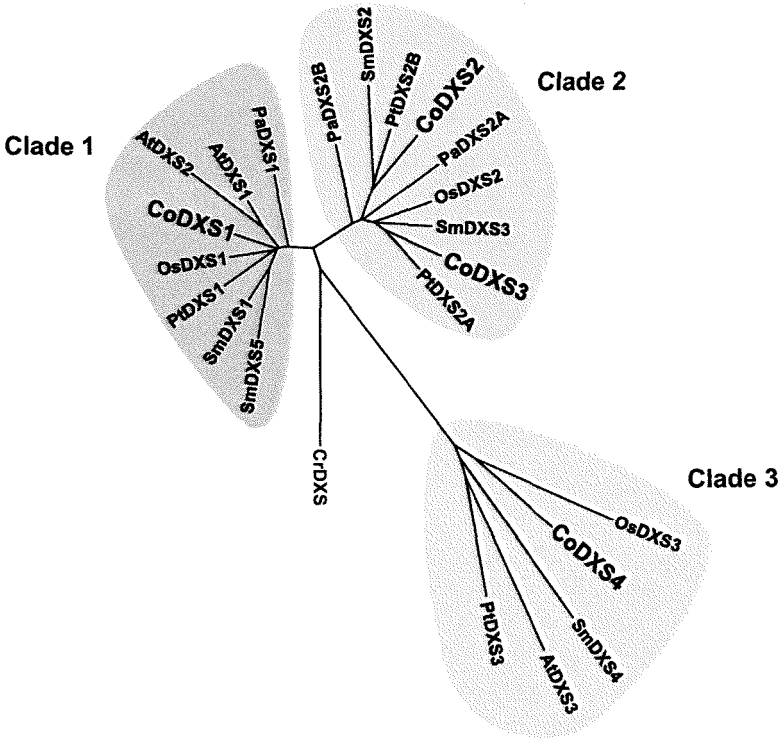


Figure 16

```

CoDXS1 1 ----MLMALAAFEHPCHFIG-----SAASILQKSTFHCSELLGGEADLQLSEHHKPPK
CoDXS2 1 MAASAVFMHSSSLPSDFTQEHSSIRKLRSISRPAARKNTFKFYIAACSEDSSESTSAIS
CoDXS3 1 -----MLAKLPALCPFS-----PLPRPAATCKK-----QWCVKASASDDEGRLLA
CoDXS4 1 -----MQVSALDLD-----

CoDXS1 49 GKKVPWICASLSETGEYYSORPETELADITINYPIHMKNLSTKELTQLADELRSDVIPNVE
CoDXS2 61 VNKDVPESQENSLNFTGKPKETPIENTVNYPIHMKNLTIKELARLADELREIIVYTVS
CoDXS3 40 IRK-----EKGGWKIDFTEKRPATLADITINYPIHMKNLRVHDLEQLAAEIRADIVETVS
CoDXS4 11 -----DFFWEKAPFIVLDMVKNEMHLKNLSSKELKQLAEEIRSEISFSMS

CoDXS1 109 KTCCHLGSLLGVVELITVALEHYFNAPQKILWDVGHQAYPHKILTCRRDKMPINQTNGL
CoDXS2 121 KTCCHLSSLLGVASITVALEHVNTPEDRIWMDVGHQAYAHKILTCRRSRMHTIRQTSGL
CoDXS3 95 KTCCHLSASLLGVVELSIALEHVFNAPDDKIINDVGHQAYPHKILTCRRSKMHTIRKTSGL
CoDXS4 56 KTRKPPKASLLGVVELSIALHYVFNAPMCKILWDVGEOTKAKILTCRRSLMHTLRQKNGL

CoDXS1 169 SGTIRASSRYDCFGAHSSTSIHALGMVGRDLKGRKNHVAVIGDGAMTAGQAYEAM
CoDXS2 181 AGPKRDESKHDAPGVGHSSTSIACGLMAIGKDLLRENHVVAVIGDGAMTAGQAYEAM
CoDXS3 155 AGPKRDESIYDAFGAHSSTSIACGLMAVARDLLCKKNHVISIGDGAMTAGQAYEAM
CoDXS4 116 SGTIRASSRYDCFGAHSSTSIACGLMAVARDLLKGEKRIIVTSIGDGAMTAGQAYEAM

CoDXS1 229 NNAGYLDNMIIVLNDNKQVSLPTATIDGPVPPVGCALSRALSSRPLRELEHVAKGV
CoDXS2 241 NNAGYLDNLIIVLNDNKQVSLPTATIDGPAPPVGCALSKALTRQSSRKLRLREHVAKGI
CoDXS3 215 NNAGYLDNLIIVLNDNKQVSLPTATIDGPATPVGCALSSALSNLQASTEPKILSAKRSI
CoDXS4 176 NNAGYLDNMIIVLNDNKRHCLHFKLD-EGSKMSISALSTLSKIQSSKSPRLREHVAKVV

CoDXS1 269 TRQICGPMHSLAAKVDHYARGMISGEGSTLPBELGLYYIGPVDGHNIDDLVSIKEVKNAT
CoDXS2 301 TRSICGQTHEIAAKVDHYARCLMGAPATLPBELGLYYIGPVDGHNVEELVHIFPKVKAT
CoDXS3 275 TRQICGEAHEAARKMDHYARGMISPSKELPBELGLYYIGPVDGHNMEGLITILQVKAM
CoDXS4 235 TRIRGRGMHSLAAKVDHFARGMMPGLGSTLPBELGLYYIGPVDGHNIDDLICVQLQEVASL

CoDXS1 349 KITGPVLVHVVTGKRCYPPAERASDEYHGVTFDPATCKQPKCESPTQSTMTAFABALI
CoDXS2 361 PATGPVLINIIITEKGCYPPAERAAADKMHGVVAFDPKTKQTKVKAPTLSYTOYPAEGLI
CoDXS3 335 PAPGPVLIVHVTEKGCYPPAERAAADKMHGVVAFDPATCKQPKQSSSTLSYTOYPAESLI
CoDXS4 295 DSGGPVLIVVITDEG---SEEDQKSLVGRHQGLTSYSRVMSSESLPRTYNDQVVALV

CoDXS1 409 AEAHAKDKIVGIHAANGCGGTGMNLELRNFTTRCFDVGIAEQHAVTFAAGLACEGLKPPCA
CoDXS2 421 AEAQKDEKIVAIHAANGCGGTGLNVEQKQPERCFDVGIAEQHAVTFAAGLAEGLEKPPCA
CoDXS3 395 KEAEVDDKIVAIHAANGCGGTGLNVEQKQPERCFDVGIAEQHAVTFAAGLATEGLKPPCA
CoDXS4 352 AGEREDKDIVVHAGMGMDPSLELPORTPHDNFTGIGMAEQHAVTFAAGLSEGLEKPPCV

CoDXS1 469 IYSFPLQRAYDQVIHDVQLQKLPVRFAADRAGLVGADGPTHSSSFDVTYMACLPNNVUMA
CoDXS2 481 IYSFPLQRYDQVVEDVQLQKLPVRFAADRAGLVGADGPTHCGAFDTAYMACLPNNVVMG
CoDXS3 455 IYSFPLQRYDQVVEDVQLQKLPVRFAADRAGLVGADGPTHCGAFDITAYMACLPNMIVMA
CoDXS4 412 IPETPLQRAYDQIVQVVDLQKIPVRFAITSAGLVGSDGPTHCGAFDITFMSCLENKICMA

CoDXS1 529 PSDHAHLFRMVATAAAINDRPSCFYPRGNGIGVFLPDGNGKGVPLBICKGRVLIGSERVA
CoDXS2 541 PSDETHLIHMIATAAADRPSCFYPRGNGVGVFLPDYKGTPLBICKGRVLVGSERVA
CoDXS3 515 PSDHAELMHMVATAATIDQPCCFYPRGNGVGVFLPDYKGTPLBICKGRVLVGSERVA
CoDXS4 472 PADEDELVMVATAACINDRPSCFYPRGNGVGVFLPDYKGTPLBICKGRVLVGSERVA

CoDXS1 589 LGCYGTAVQSCLAASLVGQGLQITVADARFCKPLDQDLIRSIAKSHVVLITVBSGSIG
CoDXS2 601 ILGFGTIVQNCMLAQQMLREMGVSATVADARFCKPLDQDLIRLANEHHLITVBSGSIG
CoDXS3 552 -----LIAAKNRPKPAFLVANSSEH-----
CoDXS4 521 LGCYGTAVQNCMLAKSLLANPGIHTVADARFCKPLDIELVRIICQEHFLITVBSGSIG

CoDXS1 649 GPGSHVAQFMSLDGLDGTTKWRPLILPDRIYIEHGSFVDQMVHAGLMPSHVAATVFNVLG
CoDXS2 661 GPGSHVSHFLALNGLDGTTKWRPMTLPDRIYIEHGSFVDQMVHAGLMPSHVAATVFNVLG
CoDXS3 -----
CoDXS4 591 GPGSHVSHFISLDGLDENVKWRPILVFNPIYIEHGSFVDQMVHAGLMPSHVAATVFNVLG

CoDXS1 709 KTRBALNIMS
CoDXS2 721 ENKEAFNLLT
CoDXS3 -----
CoDXS4 651 RTRDALLMR

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Figure 17A

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CoTPS1    1  ---MALNTFLHFPPCSLSFSCAVFKLPLAIFHK--TMAQCIRCPRASSQT-----SER
Mg17      1  ---MALKLLFPCCSPCSPSSSLAPLQEVLVLVREPPSGAKARARNLR-CASTQV-----TEL
SoSS      1  ---MSSISINIAMPLNSLHNFEREPSKAWSTECTAPARLRA-SSSLQQ-----EKF
PSSS      1  MSVISIVPLASHSCLYKSLMSSTHELKALCRPIATLGMCRGRKSVMASMSLSLTTAVSDD

CoTPS1    50 ALAARRSANFQRTITNDFIQSLNSDYSSDVYVQRIEKLKKSVRQSLREA-----
Mg17      51 MTARRSANYPNINIDYDSVQSLTSDYKAYTYLERVEKLKEDVARTLQEA-----
SoSS      49 HQIARRSGDYQPSLNDFNYSQSLNTPYKEQRHFNQAEILMQVRMLLKVK-----
PSSS      61 GVQSSIGHHHSNLWDNFIQSLSSPNCASSYAESAKKIGEVKEIFNLSLMAAGGLMSPV

CoTPS1    99 DGPLAQLELIDDLQRLGVGRLEEREINEMNGIYMDYKET-QAQW-----NHFTSMYF
Mg17     100 VGLLDQLELVDCIHRLGTVGYHEDERIKKILKTISETPNMGLIDG-----DIYAMALYF
SoSS      98 MEATQLELIDDLQYLCGLSYFFQDRKQILSSIHNEPR--YFHN-----DIYPTALGF
PSSS     121 DDLLQHLMSVNVNVERLQIDRHFTETIKVSLDYVYSYWSKXGIGSGRDIVCTDINTIALGF

CoTPS1    152 RLLRAREFDVSPRIISRF---MDETGNFQTSISNDPIGMSLYEASYLCPMGETTLDEAQ
Mg17     154 RLLRQHGYEVPQGVNRF---MDDSSSPKASLCNDVKGMLSLYEASYLESETTLDEAK
SoSS     150 RILRQHGFNVSEDEVDCFK--TEKCDENANLAQDTKGMLOLYEASFLRREGDTLELAR
PSSS     181 RILRLHGYTVFPDVEEHFEDQMGRIACSANHTERQISSILNLFRAFLIAPPGEKVMEEAE

CoTPS1    209 APTCKHLKYWK---EKDVHPTIALQIEHALELPIHWRMPREDSRWYIKLYEE-----KE
Mg17     211 APTYRHLRGLK---G-NIDSNLKGVLHHALELPLEHWVLELEARNWYIDTYER-----ME
SoSS     208 RPTSTSLREKFDREGDEIDEDLSSWIRHSEDLPLHWRVQGLEARNWFLDAYAR-----RF
PSSS     241 ISATYLKEAL---QTIPVSLSGEMQYVEDYRWHSNLPREHETETIYIDILGETTINQMCD

CoTPS1    260 GTAPLLELAKLDFNMVQSAHTELKRVSRWWSFCLAEKASFARDRLMEGXQWAIGTVF
Mg17     261 DMNPLLELAKLDFNIVQNVYQGVREMSGWNEDLGLGQKLGARDELMEGFLWTIGVKE
SoSS     262 DMNPLIFKLAKLDFNIVQATYQELKDISRWNSCLAEKLPFVDEIVECFNAILAAFE
PSSS     299 VNIQKLELAKLDFNIFHILQNELKICISRWKESGSPF-LTFISREHIEFYTLASGIDM

DDXXD

CoTPS1    320 EPEFGQCREVLAKLAQLTAVIDDMIDVYGSFDELELFTDAVDENNTINGEDYMKLCF
Mg17     321 EPQFAQCREVLTKINQLITTTDDVDVYGSLEELELFTKAVDRMDTNAMEELDEYMKICF
SoSS     322 PHQYSYQEKMAAVIITFTIIDDVDVYGTIEELELFTDMIRRMNDKNSISQLPYMQVCY
PSSS     357 EPKHSAPFLSFVEMCHLITVLDIYDTFTGTMDELRLFTSAVKRWDRSEIECLDEYMEGVY

CoTPS1    380 LSIYNTTNQGGYEFLEKHGVDIIPHLEKAWADYCKALRTEARNVNSKNTPTLDEYLNNAW
Mg17     381 LALYNTVNEIAYDTLEQGVDPVYPYLQKSWADLCKAYLVEARWYYSGYTPTLDEYLNNAW
SoSS     382 LALYNTVNERAYDILEDQHFNSIPYLRQSWVSLVEGYLREAYWYNYGKPSLEBYLNNAK
PSSS     417 IILYETVNEAREARESGRDTLNARLALEDYIGAYLKEAEMISMVLEPTFERYFKNCK

NSE/DTE

CoTPS1    440 TASGPIILIHAFPFSGQEPWKEAIDCFVSNKDIIRLSATIFELTDDLETSAEIERGD
Mg17     441 ISIAEPVILVHAYVSMIQMITKEALLDCVGSYESIMQWESMILRLADDLATSTDELERGD
SoSS     442 ISISAPTIISQLYFTLANSIDETAIESLY-QYHNILYLSCTILRLADDLGTSQELERGD
PSSS     477 VESCHRIATLQFILTLDIPFPFHILQKIDFP-SKFNEELACSLRLRGDTRCYQADRDRGE

CoTPS1    500 VPKSIQCYMHEA-GASEAVSAHIRGKISEVVRKMNXYLTAPAT-EHKTENAAAFNLART
Mg17     501 VPKSIQCYMHEA-TASEVVAHQMRARISDIWKKMNKDVALSP--LPQPFKAAAVNLARM
SoSS     501 VPKAIQCYMNDT-NASEREAVEHVFLIREAWKEMNTVTASDCPFTDDLVAANLARA
PSSS     536 KASCISCYMKDNPSTEDALNHINGMLEDITIKQLWEELRPDNNVPISSKHSFDISA

CoTPS1    558 STCVNLYGDCYGVFNGKNEENITSLTVEPIVLE--
Mg17     558 AQCMYQHGDCGHNPHRESEDRILSLVVEPIQLMES
SoSS     560 AQFIYLDGDCGQVQHSFIHQMGGLFQPIYV----
PSSS     596 FHHLRYRDCYTVSSNETENLVVTVLEDLPM---
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Figure 17B

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CoTPS2      1  MALIFANGHSDVPESTQPPIGKQKKRIGEEVNYHPSVWGDRFAILTAEIEVDEITKQRA
RcSetPS1    1  MSLQVSAVPKSTSTQN-----ATSAVKHESSTYHPTIWGDHFLANLSHSKIIDGSIQQF
Mg25        1  -----MDSPTTQ-----RPNMEIGAFVNYHPSINGEHFIAASPDVMRLDAH-KGRG
HaCS        1  MATTEANTMAQANSQT-----TIEPVRELANFPDSINGDQFLSFLDNSQLEAYSK-AM

CoTPS2      61  EKLHEDVLMKMLNVS-VSLQDLNLEDEIQRLGVGYHFEETETENAMKRIYNSRDHDDDD--
RcSetPS1    56  EGLKQKVRKNIIDLNNETCKKLGLIDAVQRLGVGYHFKSEIEDVLQKVYHEDYSCDEDD--
Mg25        47  SELKEVVRNMFSTVN-DPELKMNLIDAIQRLGVATHEMEIDKALGQMYDDHNGKDDGF
HaCS        54  EQPKENVERMILNPAIDTNEKLGLEYCYVYELGLTNESKLDGQDLDELKQLNLQSYNEA

CoTPS2      118  -LHAVALERFLLRQHGYNVS SDVKKKFEDEK-GEFKASLRENVRGLLGFVEAAYLGTTADD
RcSetPS1    114  -LNTVALERFLLRQHGKVS CAIFERFKDSE-GNFKTSLINDALGMLSLYEATHLSIRGE
Mg25        106  DLQTLALQFRLLRQCGYNVS SGVFAKFEDE-GNFSILSEKDTGHLLSLYEAFPGCTHGD
HaCS        114  DLYTISIEHQVFEHFGYRFS CDVFNKFEDESSGKFEEDMTEDVRGMISLYESAQLRIRGE

CoTPS2      176  TILDQKIDFTTDQKSVLPNLPPESELVELALDVPLHKKIERLQSEYFISIIYQEEKEN
RcSetPS1    172  DVLDEALAFPTTTLNLSVLPQLNTHLAAQISRALNRIRKYLPLREARNVIDIYATESYN
Mg25        165  DILDEATFTTTHLEKSTLHVSAPETKLVELALEIPLHKKMERLQTRFYISIIYEEDREKN
HaCS        174  SILDEAGAFAESKLEKTIETKTDGTLAQQVHVLEREPNRCGQMVEARKLPLFEEISRY

CoTPS2      236  EVLLEFAKLDENVLOSLEKKEELSQLEENWEDNDFARKLPFIEDLVLCYFWILGVYYFR
RcSetPS1    232  TTLNFAKLDENMLQEDHQRLNVVTENESLDVATELPHYAEDEVVECFMMVGVYFEPQ
Mg25        225  DVLLEFSKLEPLRLOSLEHQRLEDISLWKEEMOLLAKLPFTEDAVLEGENTVGVYFEPH
HaCS        234  DSEMLAVRERNYQLQKKEELRSVSKNWDLDLPATLTVVADRVPELVAILAFLEAY
                                DDXD
CoTPS2      296  YSRCEMMTTEVIELTSIMDDTYDVYCKLDELELLLTATERMEWAAMDELDDYMKLHFSAL
RcSetPS1    292  YSPARIMMKRIIAITSLLDDTYDNATGEELEILTEREAWDIKAKDALPEYMKIYYTTL
Mg25        285  YSRARMIMTKMIAFATVMDDTYDVYGTLELELELLLTATERMNRGDMDQLDYMKVIFIAL
HaCS        294  YSEVRIITRIIVLLVLVLDPTYDANATIESRLLTHATNRMEVSANLQPEYMKPLYEIL

CoTPS2      356  ETAVENFEERLSKEGEA--YRISYFENAYTKLAKAYLEEARWASADYVFTLERYMEBAQV
RcSetPS1    352  LDIYNEYEENIAKEEKSLLSVYYAKEVMERVVRAYLAHVWEDNCTDTMEHYMQSALL
Mg25        345  LDQVDATEDDDLTCGEKS--YRIYILKEAVEDLAKAYLAEARWVSSQYVFTSEHYMEVALI
HaCS        354  LNEYDC----FYKHGRT--NVIETSEKAPQDLARSYHQSEMRHAKEVSEFEYMKIGTT
                                NSE/DTE
CoTPS2      414  SSAYPVVTLSSLLGMGATAEKAPEWAINNPHAINAISVVCRLEKDDITSAELEQQEVHVA
RcSetPS1    412  TTCSPMLATASFLGLKEIATKEAYEWASEDKIIRASSIVCRLEMDDIVSEFEQTEKHVA
Mg25        403  SAVYPMELFVAFLLGMDEVVPEKVLWMAIHMTMLTETCSIVAKLMDDIPENKLEQSEKHVS
HaCS        408  TSAHNVLSEKTAIGMGNVVERHALAWYESYKIVQLSELICRLEDDVAVVEFERERAPTA

CoTPS2      474  TAVECTIKENATTYEETCKLFFKQKADDANEELEKEWMEAIQVPEKIFKHVVNLARVIEFL
RcSetPS1    472  SGVECYIKQYAGSEEEVILFRKEVTNANKDLNEECLENTPPMPMPLERVVNLTRAIDVI
Mg25        463  SSVECYMEHGTSYHESIQKLERMVNASGMKDINKECLKPTPUPTAVINVLNFTVLEIIS
HaCS        468  TSEDAVMKTYGVSENVAVKILKKLVENGWEDLNEACLEKPTESLDLLAPIGLTNMTDVA

CoTPS2      534  YRYEDMYTESDGETKECTIMLLDDFFV
RcSetPS1    532  YKDDGQYTN-SHIMKDYVASVLKDPVPV
Mg25        523  YQHRDGYTDAVETKEHIASLPVDPIPL
HaCS        528  YRHNDGLFFPEKTLKEYITLLFCVFPVM

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Figure 17C

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CoTPS3      1  -----MNPVSLLSLSGERRSANNKPSWDS
LcTOS       1  MSLIIQSLPHWSRIPPRPPQLSQFQNSSRPKPLIQAGQVQHNAIQIARRSANYHPSIWDP
LaBERS      1  -----MEARRSGNPFESSIWDD
LdTPS7      1  -----MEARRSGNPFASIWDD

CoTPS3      26  NQIHQSLKSDPNDLQEKWHTLEKQAVEQMLEAVAEPLQKLTIDDIGRLGVAYRFEKQID
LcTOS       61  QVIESLKSPNGDECFGTRLEKLEFEAKRLLEATIEPLSWDELVDISIQRLGVAYHFEDEIK
LaBERS      17  DYIQSLTSSYTGKMYVDKSEKLEIEVKMMDEATDELEQELINDLQRLGISYHFKDGLA
LdTPS7      17  DFLQSLTSPYTAKEYLKQADKLEWQKVIKETKQRIDQDLIDNIQRLGISHHFRDEIQ

CoTPS3      86  DAESSIVSN----YAAEVSSKKDLAASVYFELLRQHGCVSPDITIQIDEAGQPKASL
LcTOS       121  EGLDGVYG-----VGAHAGDDLYTAALQFRLLRQHGCVTPDIFNKPLEKERTPKACT
LaBERS      77  KMLNNIYK-----SDSKYMEKDLHLTAKFALLRQHGCVYPQDVFSFMDDEGNFEAWV
LdTPS7      77  RVYQNIYEKMRVECFERMLMEKDIYSTSQFELLRQHGCVYSPQDVFCSEMDGAGNFGQA--

CoTPS3      142  GDDVEGLLSLYEASYLEGIKGETILDDAKAFSTSTLENLMPHV-EADIASRISHAHLPLH
LcTOS       174  SLDAKGLLSLYEASHTMIHGEENVLEDAKEFSVKHLNLYLMGNLQN-NREQVQHAEMLPH
LaBERS      131  VEDVSVLVSLYEASHISVEGESILDMAKDPSSHLLTEMVEQIGEACLAQVKRTLELPLH
LdTPS7      135  VDDLKGILALYEASFLSREGENILGSRDPSSTRHLKQKLEETDPILAEKIRRAELPLH

CoTPS3      201  WNRAMEARLYIDVYRENNKRRNDNLFPARLDENMLQVIHARDLKDVSFWWDFLDLPRY
LcTOS       233  WRMPRLAKHYIDVN-GRSDERNMVLELARDENFVQSHEBELKEVSRNRWDLGLAKK
LaBERS      191  WRVGELEAEWVQAY-ETEPNSNPTVELAKLDENMVQAKYODELRCSSRYEETGLPEK
LdTPS7      195  WRLQKLEAIWFNIX-ESRFDANLILQLAKLEFNMVQAKYEDLAWLSRYETGLPEK
                                         DDXXD

CoTPS3      261  LCFIDRLMESPIFSVGLNFEPQFSECKAATRDILLITVLDDIYDIYGSMDVEHFNNA
LcTOS       292  LCFSDRLVENYLNWAGIAPERKESNCKEGLTKLISILTVIDDIYDVYGSIDLELEFTEA
LaBERS      250  MSPARHRLAECPLWSLGFIPDPHGYSEZIMTKIAVLITITDDIYDIYCALELQETEA
LdTPS7      254  MNPANDRLAECPLWALGPPEAHLGQARKILTIAVLIVIMDDFYDINGTLDLKIIVPTEE

CoTPS3      321  VNRWDLGAVDELPEYMQLCYLGLLSVNSLAVVTMKTDRNVLDPLKLLKRFNAAVKE
LcTOS       352  VKRWDLAELETPEYMKICYLALFNFVHEVSYDTLKDYGNILPPIREWERLCMSYLVE
LaBERS      310  PERWDINSLDLPEYMCICFLAIFNSANELGQCILRDOGLNIIPNLKRSWAEISRAYYLE
LdTPS7      314  LQRWDINALDNLPYEMRICFLAIPNTANETIAYDILRDOGINIISNLRLRAEGRVYYTE

CoTPS3      381  SRWPHRQYTTLEETMENAQISIGALVLTHAYVKMLKYMPNEDVNHVDKYLKLSMMCY
LcTOS       412  NEMPGNGKFPALDEYLRNGWISVGGVAMVHAYELQGRPTREKDSINFLDHGSELVWSSV
LaBERS      370  ARWPHNGFVPTTDOYLNWAWISISCPILLSYGYLTTTNPINNIELKSLEKHFSTIRWPSM
LdTPS7      374  AKWYHSGYFSTEEYLNWAWISITGEVLLPHAYFSIMNPIDMKELQYLEQYFGIERWPSM
                                         NSE/DTE

CoTPS3      441  VFRHYDDWGTSKATENGDDVPKAIQCYMHSAKVSEETAREHIKNITINERWELNEECLKA
LcTOS       472  ATRINDDLGTSKAEKMGDDVPKAVECYMIQTGESYEDAREHIQGLVRDCWKMMNEECLKC
LaBERS      430  VLRLADDLGTSSSEIFKGDVSKSIQCYMNETGCCGDAHHVKSILIEVALERMNDEILME
LdTPS7      434  VLRLADDLGTASDEIKRGDVPKSIQCYMHETGCCSEEAAREYVQLIDTTLEKMKFELME

CoTPS3      501  TDLNRKFVAAVLDALAAAFYHHDROGFGEEDHKPFESQAMAFSQQV-----
LcTOS       532  CLPK-SYVETVLNMVHTAQCIHQHGDGIETSTGVTQDRVISLICEFVPSQWP
LaBERS      490  KPFK-SFDTAMNLAHISLCFYQYGDGPKPHSDTIKNLVSLIVLPFHPMP--
LdTPS7      494  EPTN-DFGATAMNLAHISLFFYQYGDGFGVPHNQTKENLVSLIVKPICLT--

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Figure 17D

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CoTPS4 1 MAATR-NLSLLAQ--SQPWAGIYCSHCSPPISSWLRRQSIAKTSYICMCTPLSMQSLIA
OeGES1 1 MDCTMTSISLFSQS-----SNGISGTASPPQWPINHRFSSGQORDFICKSLPVSSPSA
ObGES 1 MSCARITVTLPYR-----AKTSIQGITHYPALIRPRFSACTPLASAMPLE---S
CrGES 1 MAATISNLSFLAKRALSRPSSSSSLWLERPXTSTTICMSMPSSSSSSSSSS--SMELPLA

CoTPS4 59 TPLITDIE-SLLKYLROQVLPHEIDDSKREE-LLERTRELOT-TLEPLQAMKMIDTL
OeGES1 54 TPLIPAENCAMYNKIROPVIVTPFVDDCTHSE-LVERTRELOT-STKPVETLELDNL
ObGES 49 TPLINGDN-SQKNTRO-----HMEESSEKREYLLERTTRKLGQNDTESVEKLLIDNI
CrGES 59 TPLIKDNE-SLIKPLROPLVLPHEVDDSKREE-LLERTRELOT-ELNAEKPLEALKMIDII

CoTPS4 116 QRLGLAYHPEDDINSILTC-PS--NGQPDDELITASLRFLLLRHNGHRINPNIPQKPMDE
OeGES1 112 QRLGLIAYFPEDDINAILDQ-PS--DGLPDEDLFTTALCFRLLRDQRLQTCSDVLEKPMEX
ObGES 103 QQLGICYFPEDAINAVLRSPFS----TGEEDLFTTALRFLLLRHNGHIEISPEIFLEKDE
CrGES 117 QRLGLSHPEDDINSILTC-PSNISSQTHEDLITASLRFLLLRHNGHKINPDIPQKPMDN

CoTPS4 173 QGKPIDSLKEDTRGLFSLYEASYLGANGEDIILQALRFTKAHLKESLPSLAPPLAKKVSQ
OeGES1 169 NMKPKZHLAQDTICLVSLYEASSMCANGEEILSEAKFTTEMHLRQSMPLAPQLRRQVSS
ObGES 159 RCKPDE---SDTLGLLSLYEASNLGVAGEEILSEAMEFAEARLRSLSEPAAPLHGEVAQ
CrGES 176 NGKPKDSLEDDTLGLMSLYEASYLGANGEEILMEAQEFTKTELKNSLPAMAPSLSKKVSQ

CoTPS4 233 ALPLPREREMARLEARYIEEYGCENGHSFDLLELAKLDYNKVSQSLHQLSELSEIRWVKQ
OeGES1 229 ALPLPRELEMARLEAREYIEEYGNESDHDPALEELARLDYNKVQLCHOMELAEITEWVKQ
ObGES 216 ALDVPRRLMARLEARRFIEQYCKQSDHGDLELAILDYNQVQACHQSELTEIRWVKQ
CrGES 236 ALQPREREMRLLEARRFIEEYGAENDHNPDLLELAKLDYNKVSQSLHOMELSEIRWVKQ

CoTPS4 293 LGLVDKLTFAARDPLECPLWTVGILPEPKYSSCHIELAKTIAILLVIDDIPDTHGTLDEL
OeGES1 289 LGLVEKLSFAARDPLECPLWTVGLLPEPKYSSCHIELAKTIAILLVIDDIPDTHGKMEEL
ObGES 276 LGLVDKLSFGDRDPLECPLWTVGLLPEPKYSSVRIELAKAISILLVIDDIPDTHGEMDDE
CrGES 296 LGLVDKLTFAARDPLECPLWTVGLLPEPKYSGCRIELAKTIAILLVIDDIPDTHGTLDEL

CoTPS4 353 ILFTNAIREWDLEAMEDLPEYMRICYMALYNTTNEICYKILKQNGWSVLPYLKATWIDMI
OeGES1 349 VLFTNAIQRWDLDELETLPYMRICYMALYNTTNEICYKILKEYGFCVLPYLKSTWIDMI
ObGES 336 ILFTDAIRWDLEAMEGLPEYMKICYMALYNTTNEVCYKVLRTDRIVLLNLKSTWIDMI
CrGES 356 LLFTNAIKRWDLAMEDLPEYMRICYMALYNTTNEICYKVLKENGWSVLPYLKATWIDMI

CoTPS4 413 EGFMLEASWLNLTGYVPMMEYVENCVTTAGAYMALVHLFPLIGQCVTEEN-VKLLVKPYP
OeGES1 409 EGFMVEANMFNGCHCPNLEEYIENGVSSTAGAYMALVHLFPLIGEGVTNENIAKLLRKPYP
ObGES 396 EGFMEEAKWFNGGSAPKLEEYIENGVSSTAGAYMAFAHIFPLIGEGVTHQNSQLFTQKPYP
CrGES 416 EGFMVEAEWFMNSDYVPMMEYVENCVTTAGSYMALVHLFPLIGQCVTEEN-VKLLIKPYP

CoTPS4 472 ELFSYSGRILRLWDDLGTAKEEQERGDLASSIDLFMRENNITSEDECRKCIKLIIDNLK
OeGES1 469 ELFSAACRILRLWDDLGTAKEEERGDLASCMQILMRKNIDCENECNYILKAINGLK
ObGES 456 EVPSAAGRILRLWDDLGTAKEEQERGDLASCVQLFMKEKSLT-EEEAARSILEEIKGLWR
CrGES 475 ELFSSSGRILRLWDDLGTAKEEQERGDLASIQLFMRKEKIKSREECRKCIKLIIDNLK

CoTPS4 532 ELNGELVSRHALPLATIKAFNMARASQVYQHEEDSYFSSVDNYVOALPFTTFN
OeGES1 529 DNLDELISPNAPLATIKVALNMAFAFEVYKHEEDSYFSSVDNYVOALPFTTFN
ObGES 515 DLNGELVYNKNPLSITIKVALNMAARASQVYKHDQDTYFSSVDNYDALPFTQ--
CrGES 535 ELNGELVYREEMPLATIKTAFNMARASQVYQHEEDSYFSSVDNYVALPFTPCF

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Figure 18

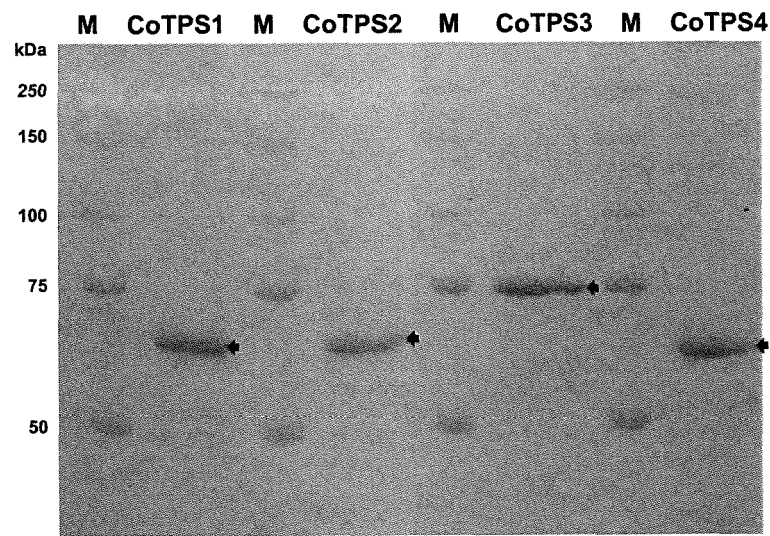


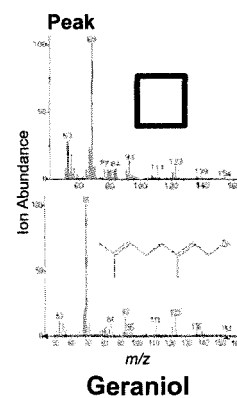
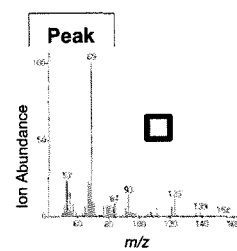
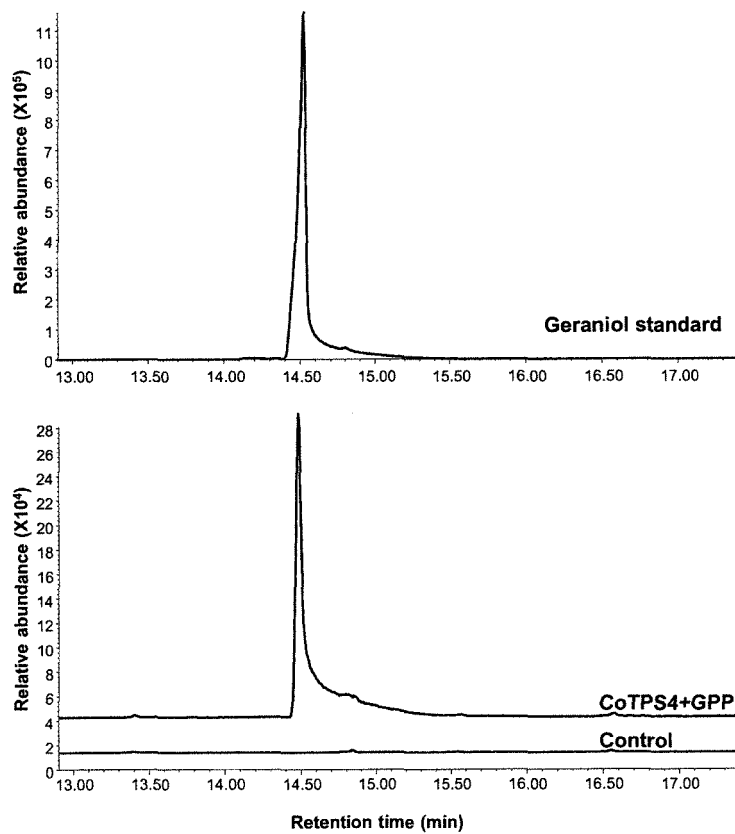
Figure 19

Figure 20