

| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|-----------|------------|------------------|-----------------|--------------|-----------------|----------------|--------------------------|----------|-----------|------------------|
| | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TcFMOa | AIIGAGKAGL | CAGKHCLKENISFD | --IFEQTNLGGTWFY | DLVGHDENGAPI | IHTSMYKGLR | TNLPNELMTF | EDFPYPKQIR | -SYLLQE | EVLDY | ----- |
| TcFMOb | AIIGAGAAGL | CAGRHCLRENIAFD | --IFEQTNLGGTWN | YDVLGDCDE | NGVPIHSSMYKGL | RNLPKELMAF | EDFPYPKQNR | -SYLLQ | DEVLDY | VRSYSD |
| AgFMOa | CVIGAGTAGL | CAARHALQAGGIVT | --VFEMGKQLGGT | WVFNEATGKNE | YCIDVHSSMYKGL | KTNLPKEIMGYP | DFPIPEEQ | -ESSYIP | AEDMLT | FFQQFAE |
| AgFMOb | CIIGAGMAGL | LAARRVLEIGAQVT | --IFERMDQLGGT | WTIYTDEVGV | DRYGLPVHTSMYRGL | RNLPKEVMGYP | DFPIPAQ | -RDSYIV | SDDILS | FLRLYAD |
| DmFMO3006 | CIIGAGTAGL | CCARHSIANGFETT | --VFELSDRIGGT | WVYNEATGAVN | -GIDVHSSMYK | NLRNLPKEVMGF | PDFEIGAN | -EASYVRS | DEICDF | LNQYAN |
| DmFMO3174 | CVIGAGTAGL | CALKNSLEAGLDAV | --AYERGTEIGGT | WIFSEEMP | KDEYD-EVHSSMY | EGLRNLPKEVMGYP | PDYSYPDD | ITITES | FSITSN | QVLEFLRSYAE |
| TcFMOc | AIVGAGAAGL | ASARHVSAQQIDCD | --VLEMGP | ELGGTWVYTD | NVGSDQYGF | PVYSAMYKGL | RNLPKEVMGYP | DFPIPEEQ | -NKSYLT | QAEILD |
| TcFMOd | AIIGAGAAGL | ASARHVSAQQIECE | --VLEMGSEVGGT | WVYDDEVGT | DRFGYPVHTAMYKGL | RANLPKEIMGF | PDFPIPEP | -NGSYLD | QATILR | FLNLAYE |
| BmFMO3 | CVIGAGAAGV | CAARHLLVPCVDHVD | IFEQASQLGGT | WVYTEKVG | YDDFGLPIHSSMYK | SLRNLPKEIMGF | PDFPVPES | -EKSYLP | AKEMLS | FLQLYAD |
| HaFMO3 | GLIGAGAAGL | CAARHLLLEPCVSHVD | ILEQAPQLGGT | WVYTENVG | YDDFGLPIHTSMYK | SLRNLPKEIMGF | PDFPVPES | -EQSYLP | AKDMLA | FLKLYAD |
| AcFMO | CIIGAGYSGL | LATARHMIDYGLNLT | --VFEVPNYIGGT | WYTPRVGT | DEYGAFLFTSAYK | NLRNLSFYQ | TMEFLPDY | PF | PAGPVSS | FLSGPCIYKYLEGYTK |
| TjFMO | CIIGAGYSGL | LATARHMIDYGLNLT | --VFEVPNYIGGT | WYTPRVGT | DEYGAFLFTSAYK | NLRNLSFYQ | TMEFLPDY | PF | PAGPVSS | FLSGPCIYKYLEGYTK |
| AcPNO | CIIGSGYSGL | AAARYMQNYGLNYT | --VFEATRNI | GGTWRYD | PRVGTDEDGLPI | FSSQYK | LRNLSFYQ | IM | EFHDYS | FPEG-TRSFIS |
| GgPNO | CIIGSGYSGL | AAAKYMDYGLNYT | --VFEATRNI | GGTWRYD | PRVGTDEDGLPI | FSSQYK | LRNLSFYQ | IM | EFHDYS | FPEG-TRSFIT |
| TjSNO | CIIGAGYSGL | LATARYLDYGLNYT | --IFEATPNI | GGTWRYD | PRVGTDEDGLPI | YSSNYK | LRNLSFYQ | IM | EFHDYS | FPEG-TRSFIS |
| BmFMO1 | CIIGAGYSGL | GAARYMKQYHVNF | --VFEATRNF | GGTWYDF | PHVGTDEDGLPI | FSSMYN | LRNLSFYQ | IM | EYDF | PFPEG-TPSYPS |
| HaFMO1 | CIIGAGYSGL | GATARYMREYGLNFT | --VFEASRH | I | GGTWYDFPHVGT | DEDGLPLFTS | MYKLRN | LSFYQ | IM | EYAGFP |
| BmFMO2 | CVIGAGIAGL | SSARYLKEEGIDFV | --VFEATKY | I | GGTWRYDPRVGT | DENGLPLHTS | MYKHL | LRNLPK | PTMEL | LRGFP |
| HaFMO2 | CVIGAGIAGL | SSARYLKEEGIDFT | --VFESTRY | I | GGTWRYDTHVGT | DENGLPLHTS | MYKLRN | LRNLPK | PTMEL | LRGFP |
| ZvFMOa | AVIGAGPCGL | LATARHLKHAGFEVT | --VFERSRH | VGGTWN | YDDET | WMSE | DRPIY | TSLYQ | NLV | NLPKEIMAF |
| ZvFMOc | AVIGAGPSGL | VAARYLKDAGFEVT | --VYERL | HHVGGTWN | YDDET | WMAE | DRPIY | SSMYQ | NLV | NLPKEIMAF |
| ZvPNO | AVIGAGPSGL | TAARYLKQAGFEVM | --VFER | YHHVGGTWN | YDDET | WMAE | DRPVY | SSMYQ | NLV | NLPKELMAF |
| | 110 | 120 | 130 | 140 | 150 | 160 | FMO identifying sequence | | 190 | NADP-site |
| | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| TcFMOa | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| TcFMOb | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| AgFMOa | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| AgFMOb | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| DmFMO3006 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| DmFMO3174 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| TcFMOc | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| TcFMOd | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| BmFMO3 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| HaFMO3 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| AcFMO | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| TjFMO | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| AcPNO | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| GgPNO | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| TjSNO | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| BmFMO1 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| HaFMO1 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| BmFMO2 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| HaFMO2 | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| ZvFMOa | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| ZvFMOc | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |
| ZvPNO | ---- | YFKRVI | WI | ER---- | QNFLWSV | HYEDV | VKNKQK | EMEHYDAV | IICNGHYSD | PFIPDP |

210 220 230 240 250 260 270 280 290 300
TcFMOa EISQQISNVATKVFISHRSKDA---LP---VSDALYQKCLVKEFV-ENRAIFEDGTSEEIDDVVFCTGYNYNFPFLSK-RCGVKITNNYVHPLYKQIISI
TcFMOb DISQQISNVATKVFLSHRSKDP---LP---VPDILHQKCLIKEFV-ENKAIFEDGTSEEIDDVVFCTGYNYNFPFLST-NCGVKITDNYVHPLYKQIISI
AgFMOa DMAYEISKKAIRVTLSSHLLKD----KPQTVFPPSNVTLKPDVTRLT-ETGVEYADGTSEDFSVICYSTGYKYTFPFLSV-DCGITVEENYVQPLYKHCINI
AgFMOb DIALELAKTARRVTISHHME-----RLTFPPPSNLSQQSDVSMLT-ETGAKFTNGSEESFDVVLVYCTGFRYNFPFLGA-DCGIEVQDNHVQPLYKHCINI
DmFMO3006 DLSNIISRTADRVTISHHLTD----IGQHSFFENVQQKPDVRELD-EKGAFVVDGSGYQEFDTVVFCTGYKYAFPFLTV-DSGIYVEDNYVQELYKQCINI
DmFMO3174 DITNVHRLAAKQVFLSHHLST----TPNTAFMGNVTQKPDVKRFT-KDGAVFTDGTSEFDFHVMFCTGYKYTFPCLST-DVGVQVIDNFVQPLWKHCINI
TcFMOc DLALHISSVAKQVVLSSHHTKE----AVNTEYPCNVSKKPDVSAIKGEEEEVEFVDGSCCRFDTIYCTGYRYSFPFLHE-SCGVTVDNHIQPLYKMHIMI
TcFMOd DVAFQVAEIAQQVVLSDMTTK---EVKGEYPSNLVKKPQVLRVKDKHEHVEFVDGSCCSFDTIYCTGYRYNFPFLHH-DCGVSVDGFHVRPLYKHLIHI
BmFMO3 DIALEVTNVAHKVILSHHL-KE---QPRTVFPDNLTKPDVKRLDGKK-VHFADESEDEVVVFVFLCTGYLYNFPFLHE-SCNISVEDNCVEPLYKHLVNI
HaFMO3 DIALELTSVSKKVLSHHL-KD---QPRTVFPENLEKQPDVERLDGHK-ACFLDGTEDVDVVFVFLCTGYLYNFPFLHE-SCGIVVEDNCVEPLYKHVVNM
AcFMO DLAAHLINVTSMFIHSHHLDAKI-----QKVYGNKYRKPDIKHFT-PTGAVFVDDTTEQFDVAALCTGYKYSFPFLNYQSSGVTAASAKYIMPLYNLQINI
TjFMO DLATHLINVTSMFIHSHHLDAKL-----PEVYGNKYRKPDIKHFT-PTGAVFVDDTTEQFDVAALCTGYKYSFPFLNYKSSGVTAASAKYIMPLYNLQINI
AcPNO DLAVQLSNVTSKLVHSQHIKSFKIYNQPDFPFGNYISKPNVKYFT-PNGAVFEDDTSEEFDIIYCTGFYYNHPFLSTQSSGVTTTENYVMPLYQAVVNI
GgPNO DLAVQLSNVTSKLVHSHHIKSFKIYNQPDFPFGNYISKPNVKYFT-STGAVFEDGTTEDFDIVYCTGFYYNHPFLSTQSSGVTTTENYVMPLYQAVVNI
TjSNO DVVMQLSNITSKLVHSQHILKSWHIFNQPDFPFGNFISKPNVKHFT-ANGAVFEDDTVEEFDMVIYCTGFYYNHPFLSTLSSGITATENYVMPLYQQVNI
BmFMO1 DLAIQLSNVTAKLVHSHHLVYN-----EPKFFDGYVKKPDIMAFT-PKGVIFRDESEFEELDDVIFCTGYDFNHPFLD-ESCGVTSTAKFVLPPLHKQLVNI
HaFMO1 DLAMQLSNVTSQLFHSHHLNYN----QPDFSK-TYVKKPDIDSFT-PTGAVFVDDTTEQFDVAALCTGYKYSFPFLNYQSSGVTAASAKYIMPLYNLQINI
BmFMO2 DIGLDVAECSKSLLSHSHS-KVN--FRTPFPP-HYVRKPDVKEFN-ETGVIFVDGTYEEIDDVYCTGFQYDYPFLD-KTCGLDIDPHSVVPLYKYMVNI
HaFMO2 DIGLEVADVASALIHSHHS-KI--NWTTFPP-HYHKKPDIKEFN-ETGVIFEDGSEFEEDDVYCTGFYYDFPFLD-ESSGLTMEPKSVVPLYRYTVNI
ZvFMOa DLALNISYVAKQVVISRRELK----TVEGLFDPNVTBKPLLTSL- EYTAHFSDGTSTIDDIYCTGYRFRFPFLSP-ECGVIVDEKRVHPLYLHVLNI
ZvFMOc ELALII SYVAKQVFLSRRELK----IVEGLFDPNVTBKPLLTSLT-EYTAYFSDGSSIDIDDIYCTGYRFRFPFLSP-ECGIIADEKRVHPLYMHVLNI
ZvPNO DMALHISYVSKVFLSRKELK----PVEGLFDPNVTBKPLLTSL- EYTAHFSDGTSTDVDEIYCTGYRFRFPFLSP-ECGVTVDEKYVPLYLHMLNI

310 320 330 340 350 360 370 380 390 400
TcFMOa ENPTLAFIGIPFKACPCPLFDIQVRFLASLTGHFKLPKKDVMLKELVEE--EKRKPGPP-SSQYHQLGGAQGSYFDNLAETAKIRKIPVVIQKLYLRLVI
TcFMOb ENPTLAFILGIPFKVCPFFPLFDIQVRFFLATLTGHFKLPKKEDMLQELVEE--EKRKSGLP-RPKYHELKGAQGSYFNDLSETAKIKMVPQVVQKLYVRVM
AgFMOa RYPTMAFVGLPFFYVCAAQMMDLQARFCLKFFSGAKTLPTQEEMSADTAAEMEERWKRGLK-KRQAHMMGPVEDRYDDLAQTAEIDPIKPVIKLHKISA
AgFMOb NHPTMAFVGLPFFYVCAAQMMDLQARFCLAYLTGRQLRPPAHEMLDDAAQEFEDRLQRGYK-KRHAHMMGPEQGRYDDLAQTAQIETIPLVMTKLHNESS
DmFMO3006 RNPSMALIGLPPFYVCAAQMMDIQARFIMSYYNGSNELPSTEDMLKDRDRMGKLWAEGLR-KRHAHMLGPKQIDYFTDLSQTAGVKNIKPVMTKLHNESS
DmFMO3174 NHPTMAFVGLPFPNVIPTHIFDMQVRFTLKFFTGQRKFP SREQMIADLEQEI GERWGCGRVNRQKKAHQMGERQFVYYNELASIAGIENIKPVIHKLMKDCG
TcFMOc ERPTMCFIGIPFNVCAFQMFDLQARFFCQYLNQSMSLPSCNMMRMDTEKDMQNRWAKGYT-KRQAHLMGPDQQGYEDLAAAANTTPIAPVIVKLRDES
TcFMOd EKPTMCFIGIPYYVGAQMFQDIQARFYCQYLNQSMSLPTKEMMYKDEEDVVKRKNKGYSEKQMHLLGHDQQTTFEELASTAKITPILPVICKIWSDS
BmFMO3 HHPMTCFIGVPPYYVCAFQMFQDIQARFYCQYLNQSMSLPTKEMMYKDEEDVVKRKNKGYSEKQMHLLGHDQQTTFEELASTAKITPILPVICKIWSDS
HaFMO3 NHPSMCFIGVPPYYVCAFQMFQDIQARFYCQYLNQSMSLPTKEMMYKDEEDVVKRKNKGYSEKQMHLLGHDQQTTFEELASTAKITPILPVICKIWSDS
AcFMO NHPTMTFVG-TGKYSIGLVRDRQGHYSAQLAAGLVKLP SKDEMFEQWFDDHA---KHQTPK---EINLIGYENTANYMDTLLNGTDIPGVPLVFTTILRNH
TjFMO NYPTMTFVG-TGKYSIGLVRDRQGHYSAQLAAGLVKLP SQDEMFKQWFDTY---KHQTA---EINLIGYSNTESYMETLLNGTDIPRPPVFTTILRNH
AcPNO NQPTMTFIG-ICKPFFAKILDQQAQYSAALAAQFKLP TKDTMLRHWHLEHVHMLKESQYK-ITDVNSVGINIDKYFEALHKEAGVPLLPVYTSMTFSG
GgPNO NQPTMTFVG-ICKPFFAKILLDQQAQYSAALAAQFKELP SKDSMLRHWHLEHVHMLKESQYK-ITDVNSVGINIDKYFEALHKEAGVPLLPVYTSMTFSG
TjSNO NQPTMTFVG-ICKPFFAKILLDQQAQYSAALAAQFKLP SQDKMLRHWHLEHVHMLKESQYK-ITDVNSVGINIDKYFEALHKEAGVPLLPVYTSMTFSG
BmFMO1 KHPSMVFLG-IAKKIITRVMDAQAEYAAALLASGKLP SQEEMLNLSWLKHISLQVKGMK-IIDLNVVSGSEMDQYFGNLTEEAGVVRAPPVLTARDFNG
HaFMO1 KHPSMTFVG-VSKKVINRVMDAQGGYAAALASGKLP SQEEMLRNWHLEHVYAQQNKGMK-IVDVNVI-SDMSYFGNLTLAEAITPAPPVLTKIARFNG
BmFMO2 RQPSMVLGLVVRACLVALDAQARYATALIKGNFTLPSAEEMMDEWQRRADAIRSKGLR-MSHIHTLAKEDEYYAELSEQSGIERVPPVMFKIRAMD
HaFMO2 NQPSMFMGAFIRACLVALDAQARYATAYIKGNFTLPTREDEMMLWQKRMDSIRSKGLP-TSYHILGEKEDEFYAELTRESGIERVPPVMFKIRMTD
ZvFMOa NKPTMGFVGVPHDACFSILFDLQAQWF TAVLAGRCTLPDAETMRKEEEEEELERQLAAGF----RPHFMYNRQWKYFKQLEDMAGAKPMPPLYMKMFDDLA
ZvFMOc NNPTMGFVGVPPAACFVSLFDLQAQLF TAVLTGRCNLPTDAETMRKEEEEEELERQLAAGF----QPHFMANRQWKYFKQLEDMAGAKPMPPLYMKMFDDVV
ZvPNO NKPTMLFVGVSYNACYSIMFDLQAQWVTAVLAGRCTLPDAETMRKEEAEMEYKQRAEAV----HPHVLNMHQWEYFKKLEEMSGAKTMPVYMKMFDDVA

| | | Organism | Acc. No. |
|-----------|-------------------|-------------------------|--------------|
| TcFMOa | KHRKLRPAFNKLLAW | Tribolium castaneum | XP_001810900 |
| TcFMOb | MNRNRNNCFEIIDDD | Tribolium castaneum | XP_969414 |
| AgFMOa | MRYSEDLVNFNRDKF | Anopheles gambiae | XP_311551 |
| AgFMOb | QRFVDDLIHFREDVF | Anopheles gambiae | XP_311550 |
| DmFMO3006 | KCFNENLLHFREDNF | Drosophila melanogaster | NP_611859 |
| DmFMO3174 | KKYIFELDTYRSNKY | Drosophila melanogaster | NP_610217 |
| TcFMOc | KRLYDDLLNFREDRY | Tribolium castaneum | XP_973683 |
| TcFMOd | NSFYKDLKNFRKYKY | Tribolium castaneum | XP_969340 |
| BmFMO3 | QKFLDNLTSYRDDVY | Bombyx mori | ADH16749 |
| HaFMO3 | IRFLHNLKHYRQDVY | Helicoverpa armigera | ADH16754 |
| AcFMO | IDLWYTEFLTFRNYQ | Arctia caja | CBI83750 |
| TjFMO | IDIWYTEFLTFRNYQ | Tyria jacobaeae | CBI83753 |
| AcPNO | KTLLLEDLLHYRDYDY | Arctia caja | CBI83746 |
| GgPNO | KTLLLEDLLNYREYDY | Grammia geneura | CBI83748 |
| TjSNO | KTLLLEDLQNYREYDY | Tyria jacobaeae | CAD12369 |
| BmFMO1 | VNRLDDLLNYREYDY | Bombyx mori | ADH16746 |
| HaFMO1 | KNRLEDLLNYRDYDY | Helicoverpa armigera | ADH16751 |
| BmFMO2 | EAKLENLYTYRHVYVY | Bombyx mori | ADH16748 |
| HaFMO2 | EAKIENLYTYRNYAY | Helicoverpa armigera | ADH16752 |
| ZvFMOa | PGLTKDLQHRYRKNKY | Zonocerus variegatus | CBX26643.1 |
| ZvFMOc | FDWAKDLQHFRNNY | Zonocerus variegatus | CBX26644.1 |
| ZvPNO | SDLVKDLQNFRRNNY | Zonocerus variegatus | CBX26645.1 |