

Tf6OMT -----MEMINK---ENLSSQAKLWN-----FIYGFASLVLKSAVOLDLANILHNN---GSPMTLSELSL---H--LP---SQPVNDAIYRVRMLFTKSS-----IDGELRYGLAPPALKLV
 Cj6OMT -----MEVK-----ENLSSQAKLWN-----FIYGFASLVLKSAVOLDLANILHNN---GSPMTLSELSS---R--LP---SQPVNEDAIIYRVRMLFTKAS-----IDGELRYGLAPPALKLV
 Cc6OMT2 -----MVVK-----ENLSSQAKLWN-----FIYGFASLVLKSAVOLDLANILHNN---GSPMTLSELSS---R--LP---SQPVNEDAIIYRVRMLFTKAS-----IDGELRYGLAPPALKLV
 Ps6OMT -----METVSK-----IDQONQAKINK-----FIYGFASLVLKCAVOLDLAETLHNN---GPKMSLSELAS---K--LP---VCPVNSDRYIYRVMYLDWMLFLNKKEKTS-----QKSYSLAPPALKLL
 GfLOM2 -----MEATK-----SDQANQANIK-----LIYGFASLVLKCAVOLDLAETLHNN---GPKMSLSELAS---K--LP---VCPVNSDRYIYRVMYLDWMLFLNKKEKTS-----QKSYSLAPPALKLL
 PsSOMT3 -----VKKMEVSK-----IDQONQAKINK-----QIFGFASLVLKCAVOLDLAETLHNN---GPKMSLSELAS---K--LP---VCPVNSDRYIYRVMYLDWMLFLNKKEKTS-----QKSYSLAPPALKLL
 PsOMT3b -----MEVVK-----IDQONQAKINK-----QIFGFASLVLKCAVOLDLAETLHNN---GPKMSLSELAS---K--LP---VCPVNSDRYIYRVMYLDWMLFLNKKEKTS-----QKSYSLAPPALKLL
 PsN7OMT -----MEVVSQ-----IDQENQAIINK-----QIYGFSESSLILKCAVCBIAETLHNN---GTPMSILEAA---K--LPIDQPVNIDRIVYRVMYLDWMLFLNKKEKTS-----INGGTQVTEKYWLAPPALKLIR
 Cj4'OMT -----MAFHGKDDV-----LDIKAQAHVWK-----IYGFADSLVERCAVELGFDIIDNN---NQFALADLAS---K--LP---PSDVNCNDIYRILRLYDVKMEILRVEKSD-----D-GQKTYALEPIATLSSLR
 Tf4'OMT -----MAAFQGKDAS-----VDIKAQAHVWK-----IYGFADSLVERCAVELGFDIIDNN---NQFPLADLAS---K--LP---ISVNVLNDFRILRLYDVKMELLSYA-----ADDKYALEPIAKLVLR
 GfLOM1' -----MGVSIDAETHE-----VDKIQLDQALNN-----IYGYADSLVERCAVELGADIIDNN---NGSISVTELEVS---K--LP---LSNVNSDNRYRILRLYDVKLNLQQTCA-----SNEVAKLYSLAPPALKL
 Ps4'OMT1 -----MGSSIDAETHE-----VDKIQLDQALNN-----IYGYADSLVERCAVELGADIIDNN---NGSISVTELEVS---K--LP---LSNVNSDNRYRILRLYDVKLNLQQTCA-----AGDVRVSLAPPVGLLKK
 Ps4'OMT2 -----MGSLDAKPAFTQND-----DEIKAQAOVWK-----HMFGAETIMLSTSVGJPDIDNN---NGAIIQDQALNN-----IYGYADSLVERCAVELGADIIDNN---NGSISVTELEVS---K--LP---ITNVNSDYYRILRLYDVKLNLQQTCA-----GGVDEVVSLAPPVGLLKK
 Cj6COMT -----MDTNTFNFQND-----DEIKAQAOVWK-----HMFGAETIMLSTSVGJPDIDNN---GPVTLQLVTH-----LP-LKSTSIDRHHFHMMLYDVKLNLQQTCA-----ITKEDKYLTDPLPALKL
 Cc6OMT1 -----M-QDMSHQAQIILN-----HMCIVDSVSLCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----NDETFSLTDLAKLKKL
 GfLOM4' -----MEIQMGEQE-----QEMKMQGLVWN-----KICGSVDSVSLKCTIEGLLGD-----INSSSSPKMITLELSS---T--SPSLHSIKTNQYRILRLYDVKLNLQQTCA-----ATESFSLTDLAKLKKL
 PsSOMT2 -----MEIHLLESQE-----QEMKYSQSIWN-----QICGTVDTSLVERCAVLCIOLGFDIIDNN-----GPKMIPITLSSIVS---SPSSSIEPCNLYRILRLYDVKLNLQQTCA-----NEATSVLDTGSKLKKL
 PsOMT2b -----MEIHLLESQE-----QEMKYSQSIWN-----QICGTVDTSLVERCAVLCIOLGFDIIDNN-----GPKMIPITLSSIVS---SPSSSIEPCNLYRILRLYDVKLNLQQTCA-----NEATSVLDTGSKLKKL
 Ecg11OMT -----MNQST-----EMELVLSQVCK-----LMFSYNSMSMSL-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----EEPTERTHNRNLLRFIISL-----LNEEGIDLTPLSSLLKK
 Ct67OMT -----ME-----TIQLGQGNIT-----LLFAFADTMAKLCVVELRADIINSH-----LFLISLSEASL-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ON-----EETLYGLTQNSKWLKL
 GfLOM3' -----MKVQDDRREDEE-----ERLRQEAINE-----HMFVAFDSMALKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----PEAGETDETMLNLYLPSKSKWLL
 Ps7OMT -----MDTAE-----ERLKQEAINE-----HMFVAFDSMALKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----QES-----NQNLNLTNSRSKWLKL
 Ec7OMT -----ARYPGIDYHMD-----EITLQGADICK-----YMYGFVDSMTRLCVVELGPDIDN-----HSH-----GRFTLTELNGINPLSS---SFINDYQGIMTILYRILRLYDVKLNLQQTCA-----PROGNTNLITEIYRGLPFSKCLLKK
 Ecsomt -----MEKGKLEVGEE-----MELGQGADICK-----LMLAF1DSMALKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----LKDGGTKTLYPLPSKSKWLK
 GfLOM5' -----MGSTQNQ-----FNATTEDEEACQCMY-----AMQASATAVFVMVLTAVE-----LDELI-----KTKAGFQASLSEASL-----SQCIPN-----KNPEARVMDFRMLRLIASYKLTLSKLDL-----EGG-----KVERVYGLAPVCKFL-T
 Eg2GOMT -----MGSTENQ-----IKN-TQDEEEVACAMY-----AMQASATAVFVMVLTAVE-----LDELI-----KTKAGFQASLSEASL-----SQCIPN-----KNPDAFVMDFRMLRLIASYKLTLSKLDL-----EGG-----KVERVYGLAPVCKFL-T
 GfLOM7' -----MGSTQDQ-----FKGTP-----EEEACAMY-----AMQASAVFVMVLAEEAV-----LNEI-----KTKAGFQASLSEASL-----SQCIPN-----KNPNAFVMDFRMLRLIASYKLTLSKLDL-----DDQGLVQQLYGLVQGLVCKFL-V
 PsSOMT1 -----MATNGE-----IPTNTYGHNQRT-----ATVTKITASNESSNGVUCYSET-----LKFPLISKFDTAKVASLASEKSMRMA-----KNNPEAMYDORILRMGASSILSVTTK-----GDDVYVHEKLYGNTNSCSSLV
 GfLOM6' -----ME-----TKEGMANCSSYIEAHLGKLCPLMPALARAEAV-----LNFV-----SCEFGPQASLSPD-----LVAKIPT-----TPNPAHYERILRLAASAFSLSVSTRTKSSPEISNTNGHNGDNTGVNHDNEKVERTVGLTKEKHLV
 Tf5OMT -----MAQEGVNYLS-----GLGLSRSLICLPMALARAEAV-----LNFV-----SCEFGPQASLSPD-----LVAKIPT-----KNPSAAISDORILRMGASSILSVTTK-----SGRVVYGINNECSRCLV
 Cj5OMT -----MCDSLSELKCPVFSTKRKLLEFLARTSVDAEGVNYLS-----GLGLSRSLICLPMALARAEAV-----LNFV-----SCEFGPQASLSPD-----LVAKIPT-----KNPSAAISDORILRMGASSILSVTTK-----SGRVVYGINNECSRCLV
 Ct5OMT -----MAAEGVNYLS-----GLGLSRSLICLPMALARAEAV-----LNFV-----SCEFGPQASLSPD-----LVAKIPT-----KNPSAAISDORILRMGASSILSVTTK-----SGRVVYGINNECSRCLV

Motif I Motif II Motif III Motif IV
 -----SAM & BIA BINDING-----
 120 140 160 180 200 220 240
 Tf6OMT G-WDKCMLGAIIN-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Cj6OMT G-WDKCMVGSIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Cc6OMT2 G-WDKCMVGSIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Ps6OMT G-WEKSMVDSIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 GfLOM2' G-WEKSMVDSIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 PsSOMT3 G-WEKSMVDSIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 PsOMT3b G-SQGSVMSVIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 PsN7OMT G-SQGSVMSVIL-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Cj4'OMT N-AKRSKMLVMI-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Tf4'OMT N-EKRSKMLVMI-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 GfLOM1' D-AERSKMLVMI-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Ps4'OMT1 D-SERSMVPML-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Ps4'OMT2 D-AERSMVPML-----QIYGFSESSLILKCAVNEFLDVTNSKDPKIALN-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----CTLDLPHVIAIDSPGIVTEINSI-----DQG-----TIPNADAIMM
 Cj6COMT G-HQKSLAYPYM-----TPEEFPSVWSHVINVLDGK-----KPYNESTDNTSM-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cc6OMT1 D-QNRSLWDL-----TETDIDWGLHELSCCTGTPGTPTFHRVKGWS-----VLAGENAGNMQVND-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Gf10M4' T-QERSLKDWL-----DDEHRSWNGWHELSL-----LDEAEEVPEVNLNQ-----CSDP-----GKQDFMLPWHYLGKCVQEG-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsSOMT2 N-QEKS1LWDL-----SCMSEWVWHELSS-----TADEPFIFQVKGKNA-----LDEAEEVPEVNLNQ-----CSDP-----GKQDFMLPWHYLGKCVQEG-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsOMT2b N-QEKS1LWDL-----SCMSEWVWHELSS-----TADEPFIFQVKGKNA-----LDEAEEVPEVNLNQ-----CSDP-----GKQDFMLPWHYLGKCVQEG-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ecg11OMT G-NPHMTSLSV-----VNPVLFITPMLFQW-----GKQDFMLPWHYLGKCVQEG-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ct67OMT D-ANPDKLPIQ-----TCHCSMDSFHFLNKNCV-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM3' D-SEFSLVPMLV-----UHNPMLMAPW-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ps7OMT D-SKFLNLPV-----UHNPMLMAPW-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ec7OMT D-SKFLNLPV-----UHNPMLMAPW-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ecsomt D-SKFLNLPV-----UHNPMLMAPW-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM5' D-SKISLWPLV-----UHNPMLMAPW-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM7' D-SKISLWPLV-----UHNPMLMAPW-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsSOMT1 D-KNGVSVVPM-----LSDKAVVESFYNIDKDVLEEG-----VIFPDRTRGMDF-----YQAGKEEVNRNSQ-----QAGG-----TIAFDEVFVYK-----G-FN-DNLK-ELV-----DGGGIGTSLSNIVAKHPHIR-----GIFNELPHVIGDADPY-FGVHVF-----D
 GfLOM6' D-KNGVSVVPM-----LSDKAVVESFYNIDKDVLEEG-----VIFPDRTRGMDF-----YQAGKEEVNRNSQ-----QAGG-----TIAFDEVFVYK-----G-F-HDLK-ELV-----DGGGIGTSLSNIVAKHPHIR-----GIFNELPHVIGDADPY-FGVHVF-----D
 Tf5OMT S-EDKVSVVPM-----LSDKAVVESFYNIDKDVLEEG-----VIFPDRTRGMDF-----YQAGKEEVNRNSQ-----QAGG-----TIAFDEVFVYK-----G-F-NNLK-ELV-----DGGGIGTSLSNIVAKHPHIR-----GIFNELPHVIGDADPY-FGVHVF-----D
 Cj5OMT S-EDKVSVVPM-----LSDKAVVESFYNIDKDVLEEG-----VIFPDRTRGMDF-----YQAGKEEVNRNSQ-----QAGG-----TIAFDEVFVYK-----G-F-NNLK-ELV-----DGGGIGTSLSNIVAKHPHIR-----GIFNELPHVIGDADPY-FGVHVF-----D
 Ct5OMT S-EDKVSVVPM-----LSDKAVVESFYNIDKDVLEEG-----VIFPDRTRGMDF-----YQAGKEEVNRNSQ-----QAGG-----TIAFDEVFVYK-----G-F-NNLK-ELV-----DGGGIGTSLSNIVAKHPHIR-----GIFNELPHVIGDADPY-FGVHVF-----D
 xx

260 280 300 320 340
 Tf6OMT DKECIEILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cj6OMT DKECIEILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cc6OMT2 DKECIEILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ps6OMT DDECICILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM2' DDECICILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsSOMT3 DDECICILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsOMT3b DDECICILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsN7OMT DDECICILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cj4'OMT DEDS1KILRKCRNAWP-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Tf4'OMT DEDS1KILRKCRNAWP-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM1' DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ps4'OMT1 DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ps4'OMT2 DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cj6COMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cc6OMT1 DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Gf10M4' DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsSOMT2 DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsOMT2b DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ecg11OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ct67OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM3' DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ps7OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ec7OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ecsomt DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM5' DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM7' DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 PsSOMT1 DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 GfLOM6' DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Tf5OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Cj5OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD
 Ct5OMT DECVNILRKCKDAVPR-----DGGKVIIIDILDVKS-----EHPYKMRILTLDD-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----KTYLEGNDQFDPNQI-----TPEEFPSVWSHVINVLDGK-----IYQGFLVQVTCYRILRLYDVKLNLQQTCA-----ISD

Supplementary Figure 3. Amino acid sequence alignment of BIA O-methyltransferases characterized *in vitro*.
 Protein sequences were obtained by translation of nucleotide sequences deposited in Genbank (Accession numbers listed in Supplementary Table 1) and aligned using Clustal Omega under default parameters (Chojnacki et al., 2017). Major domains and key residues are adapted from structural studies of PsSOMT1 and Tf6OMT (Cabry et al., 2019; Robin et al., 2016). Residues shaded in grey are highly conserved features of the dimerization domain. Residues shaded in pink

(continued on next page)

represent the canonical SAM-binding motifs, within which residues directly interacting with SAM are bolded and residues interacting with the alkaloid substrate are underlined. Residues shaded in *purple* contribute to a “closed” conformation upon SAM binding. Residues shaded in *red* form sulfur-aromatic, aromatic-aromatic or hydrophobic interactions the alkaloid substrate’s rings. Residues shaded in *yellow* form hydrogen bonds with the alkaloid substrate’s hydroxyl groups, and those interacting with the target hydroxyl group are underlined. Residues shaded in *green* are the “gatekeeper” residues proposed by Cabry et al (2019). The residue forming a hydrogen bond with the alkaloid substrate’s nitrogen atom is shaded in *cyan*. “X” indicates residues subjected to mutational analysis. Percentage identities are provided in Supplementary Figure 1.

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