10.1071/FP09024_AC

Accessory Publication: Functional Plant Biology, 2009, 36(7), 600–612.

Accessory Publication

αQ siRNA (*AtPLDα1* amino acids 937-957)

```
Atα1  CCGGATGACGGTGGTA--------GCATA 21
Atα2  CCTGATGATGGTGGAA--------GCATT 17
Atα3  CCGGATGATGGTGGAA--------GCATT 18
Ghα   CCAGATGATGGTGGAA--------GTTTT 15
Psα   CCTGATGATGGAGGCA--------GCTTT 15
Osα1  CCTGATGACTCAGGCA--------GCATT 15
Osα2  CCCGACGCCGGCCGGA--------GCGCC 9
Zmα1  CCTGATGATTCTGGCA--------GCTTT 14
Atβ1  -------TGCTGGAAA--------GCGAC 4
Atβ2  -------TGCTGGAAA--------GCGAC 4
Osβ2  -------TGCTGGGAA--------ACGGC 4
Atγ1  -------TGGAGGGAAAGGTCACAGCTTC 7
Atγ2  -------TGGGGGGAAAGGTCACAGCTTC 8
Atγ3  -------TGGAGGGAAAGGTCACAGCTTC 7
Atδ   ----------TATGCCA--------GCAGT 6
Osδ   -------TGCCAGCAGTAAGCTGAGCATT 5
Atε   ----------AAGATT--------GC-AC 4
Atζ1  -------TGGGTGGCTTC--TATTAACGA 6
Atζ2  -------TGGGTTAAGGCC---------- 3
```

βQ siRNA (*AtPLDβ1* amino acids 2879-2899)

```
Atα1  CAAGAGACTCTGAGATAGCAA 17
Atα2  CAAGAGACTCAGAGATAGCAA 18
Atα3  GTCGAGACACAGAGATCGCCA 15
Ghα   CTAGAGACTCTGAAATAGCCA 14
Psα   CAAGAGATTCTGAAATTGCCA 17
Osα1  CTAGGGACTCTGAGATCGCCA 14
Osα2  AAGGAGACTCCGAGATCGCCA 14
Taα   CCCGGGACTCCGAGATTGCCA 14
Zmα1  CCAGGGACTCCGAGATCGCCA 14
Atβ1  CAAGAGATACAGAGATTGCAA 21
Atβ2  CAAGAGATACAGAGATTGCAA 21
Acβ2  CCAGAGATACTGAGATTGCCA 18
Apβ   CCAGGGATACTGAGATTGCCA 17
Osβ2  TCAGAGATACTGAGATTGCGA 17
Atγ1  CTAGAGATACTGAAATCGCCA 16
Atγ2  CTAGAGACACTGAAATCGCTA 15
Atγ3  CTAGAGACACTGAAATCGCTA 15
Atδ   CCAAAGATACTGAAATCGCCA 15
Apδ   CAAGAGATACAGAGATTGCCA 20
Osδ   CCAGAGATACTGAAATTGCCA 17
Atε   GTCGGGACACCGAGATTGCAA 15
Atζ1  CAAGAGATTCTGAGATTGGAG 17
Atζ2  CACGAGACTCTGAGATCGGTG 13
```

γQ siRNA (*AtPLDγ1* amino acids 1658-1678)

```
Atα1   TCA-GACGTGCTAAGGATTTCA 14
Atα2   TTA-GACGAGCTAAAGACTTCA 13
Atα3   TAA-GGAGAGCCAAAACTTCA 12
Ghα    TAC-GACGAGCAAAGAATTTA 13
Psα    TTC-GAAGAGCAAAGGACTTCA 14
Acα1   TAC-GCAGAGCGAAGAATTTA 12
Apα    TAC-GCCGAGCGAAGAATTTA 12
Osα1   TCC-GGAGGGCAAAGAACTTCA 13
Osα2   TTC-GCCGGCGCAAGAACTTCA 13
Zmα1   TAC-GGAGGGCGAAGAACTTCA 14
Atβ1   TTC-GTGCAGCCCAACATTCA 14
Atβ2   TTC-GTGCAGCTCAACACTTCA 16
Acβ2   AACAAGTTTGTACAAAAAGCA 10
Osβ2   TTC-GTGGAGCGCAGCACTTCA 15
Atγ1   TAC-GATCTGCTCAGCACTTCA 21
Atγ2   TAC-GATCTGCTCAGCACTTCA 21
Atγ3   TAC-GATCTGCTCAGCACTTCA 21
Atδ    TCA-GATCTGCTCAGCATTTCA 18
Osδ    TCA-GATCCGCCCAGCATTTCA 16
Atε    TTC-GAAAGGCTGAGAGGTTTA 12
Atζ1   TTG-ACAAAGCTGAACATTTTA 10
Atζ2   TCC-AGAACGCTGAACATTTTA 11
```

δQ1 siRNA (*AtPLDδ* amino acids 1645-1665)

```
Atα1   AAAGATAACATCATTGATAGG 9
Atα2   AAAGATAATATAATTGATAGG 10
Atα3   AAAGATAACGTGATCGAAAGA 10
Ghα    AAGGACAATATCATTGACCGA 9
Psα    AAAGACAACATCATCGACCGC 6
Acα1   AAAGACAATATAATCGATCGA 9
Apα    AAAGACAATATAATCGATCGA 9
Osα1   AAGGATCAAATCATTGACAGG 10
Osα2   AAGAACAACACCATTGACAGG 7
Zmα1   AAGGATCAAATCATCGACCGG 9
Atβ1   AAGAACGTGCTGATTGATATG 10
Atβ2   AAGAATGTGCTCATTGACATG 10
Osβ2   AAGAATGTACTGATTGATATG 10
Atγ1   AAGAATATTCTCATAGATATG 11
Atγ2   AAGAACATTCTCATAGATATG 11
Atγ3   AAGAACATTCTCATAGATATG 11
Atδ    AAGCGTCTTGTTGTAGATAAA 21
Acδ    AAGAATTTAGTAACCGACAAG 11
Osδ    AAGGACCTGATAATTGATAAG 11
Atε    AGAGGTTTGCCGGTAGAGAAG 10
Atζ1   GGTACAAGCCAAGTTGAAGAG 5
Atζ2   GGGACGAGCCAGCCTGAAGAT 4
```

δQ2 siRNA (*AtPLDδ* amino acids 37-57)

```
At α1  CACGGGACTTTACATGCTACCATC  9
At α2  CATGGAAGATTGCACGCGACAATC  8
At α3  CATGGAACTCTT------------  4
Gh α   CATGCTACGATCTAT---------  5
Ps α   CATGGAACTCTACATGTTACGATC  9
Os α1  CATGGACGCTGCACGCCACCATC  8
Os α2  CACGGCACGCTCGAGGCCACCATC  8
Zm α1  CACGGCACGCTCCACGCCACCATC 10
At β1  ------------------------ 0
At β2  ------------------------ 0
Ac β2  ------------------------ 0
Ap β   ------------------------ 0
Os β2  ------------------------ 0
At γ1  ------------------------ 0
At γ2  ------------------------ 0
At γ3  ------------------------ 0
At δ   CACGGT---GACCTCGATTTGAAA 21
Os δ   GAGTCTCCGCCTCCGGCGAAGCCC 5
At ε   CATGGAACACTA------------ 4
At ζ1  GGTGGACGCTACTTTCAGATGCAG 9
At ζ2  GACGGAGTCATCAG---------- 5
```

ζQ siRNA (*AtPLDζ2* amino acids 298-318)

```
At α1  TATGAGTCGTTTCATATTTAC  7
At α2  TTTGAGTCTTTTCATATTTAC  7
At α3  -------------------- 0
Gh α   AAAGGACCGCAACTGGGCCCG  5
Ps α   TACGAGTCTTTTCACATCTAC  9
Os α1  TATGAGTCGTTCCACATCTAT  8
Os α2  TACGAGGTGTTCCACATCTAC  8
Ta α   -------------------- 0
Zm α1  TACGAGTCCTTCCACATCTAC  8
At β1  ATGCAACATTTTTATGTTCCT 10
At β2  CAGCAGCATTTTTATGTCCCT  8
Os β2  ACGCAGAATTTCCTTGTCCCT  8
At γ1  ATGCAGCATTTTGATGTACCG  8
At γ2  ATGCAGCATTTCGATGTACCC  8
At γ3  ATGCAGCATTTTGATGTACCA  9
At δ   -------------------- 0
Os δ   GACGAGCGCTTCGCCGTGCCC  8
At ε   -------------------- 0
At ζ1  AAGAAACGTGCTTTTATTGAA 16
At ζ2  AAGAAACGTTTGATCATTGAA 21
```

Fig. S1. Nucleotide sequence alignments of *Arabidopsis* phospholipase D siRNA targets with monocot and eudicot orthologs. Bold letters and numbers on the right indicate nt identities. *Ac*, *Allium cepa*; *Ap*, *Allium porrum*; *At*, *Arabidopsis thaliana*; *Gh*, *Gossypium hirsutum*; *Os*, *Oryza sativa*; *Ps*, *Papaver somniferum*; *Ta*, *Triticum aestivum*; *Zm*, *Zea mays*. Accession numbers are given in Fig. S2.

Ac α_1, *Allium cepa PLD*α_1-like (TA6879_4679)
Ap α, *Allium porrum PLD*α-like (EU982404)
At α_3, *Arabidopsis thaliana PLD*α_3 (NM_122446)
At α_1, *Arabidopsis thaliana PLDa*$_1$ (NM_112443)
At α_2, *Arabidopsis thaliana PLD*α_2 (NM_104135)
Gh α, *Gossypium hirsutum PLD*α (EF378946)
Os α_1, *Oryza sativa PLD*α_1 (D73411)
Os α_2, *Oryza sativa PLD*α_2 (AB001919)
Ps α, *Papaver somniferum PLD*α (AF451980)
Ta α, *Triticum aestivum PLD*α (AJ880008)
Zm α_1, *Zea mays PLD*α_1 (D73410)

Ac β_2, *Allium cepa PLD*β_2-like (CF435023)
Ap β, *Allium porrum PLD*β-like (EU982403)
At β_1, *Arabidopsis thaliana PLD*β_1 (U84568)
At β_2, *Arabidopsis thaliana PLD*β_2 (NM_116245)
Os β_2, *Oryza sativa PLD*β_2 (AC078894)

At γ_1, *Arabidopsis thaliana PLD*γ_1 (NM_117255)
At γ_2, *Arabidopsis thaliana PLD*γ_2 (NM_179208)
At γ_3, *Arabidopsis thaliana PLD*γ_3 (NM_117254)

Ac δ, *Allium cepa PLD*δ-like (CF648854)
At δ, *Arabidopsis thaliana PLD*δ (AF322228)
Os δ *Oryza sativa PLD*δ (NM_001070361)

At ε, *Arabidopsis thaliana PLD*ε (NM_104391)

At ζ_1, *Arabidopsis thaliana PLD*ζ_1 (NM_112553)
At ζ_2, *Arabidopsis thaliana PLD*ζ_2 (NM_111436)

Fig. S2. Codes, names and accession numbers for species used for nucleotide sequence alignments of phospholipase D isotypes in Figs 2–5.

Allium cepa

Acα, *Allium cepa* PLDα (TA6879_4679); Acβ, *Allium cepa* PLDβ (CF435023); Acδ, *Allium cepa* PLDδ (CF448854);

Allium porrum

Apα, *Allium porrum* PLDα (ACM16811); Apβ, *Allium porrum* PLDβ (ACM16810); Apδ, *Allium porrum* PLDδ (ACM16809);

Arabidopsis thaliana

Atα1, *Arabidopsis thaliana* PLDα1 (NP_188194); Atα2, *Arabidopsis thaliana* PLDα2 (NP_175666); Atα3, *Arabidopsis thaliana* PLDα3 (NP_197919); Atε, *Arabidopsis thaliana* PLDε (NP_175914); Atβ1, *Arabidopsis thaliana* PLDβ1 (NP_565963); Atβ2, *Arabidopsis thaliana* PLDβ2 (NP_567160); Atγ1, *Arabidopsis thaliana* PLDγ1 (NP_192922); Atγ2, *Arabidopsis thaliana* PLDγ2 (NP_849539); Atγ3, *Arabidopsis thaliana* PLDγ3 (NP_192921); Atδ, *Arabidopsis thaliana* PLDδ (NP_567989); Atζ1, *Arabidopsis thaliana* PLDζ1 (NP_188302); Atζ2, *Arabidopsis thaliana* PLDζ2 (NP_187214);

Medicago truncatula

Mtα1, *Medicago truncatula* PLDα1 (ABD28731); Mtα2, *Medicago truncatula* PLDα2 (ABE88474); Mtα3, *Medicago truncatula* PLDα3 (ABE88470); Mtε, *Medicago truncatula* PLDε (AC167330); Mtβ1, *Medicago truncatula* PLDβ1 (AC169173); Mtβ2, *Medicago truncatula* PLDβ2 (CU326392); Mtβ3, *Medicago truncatula* PLDβ3 (CU326392); Mtδ1, *Medicago truncatula* PLDδ1 (CR962130); Mtδ3, *Medicago truncatula* PLDδ3 (CU013531); Mtν, *Medicago truncatula* PLDν (AC153000); Mtζ1, *Medicago truncatula* PLDζ1 (AC166898);

Oryza sativa

Osα1, *Oryza sativa* PLDα1 (NP_001042153); Osα2, *Oryza sativa* PLDα2 (NP_001054773); Osβ1, *Oryza sativa* PLDβ1 (NP_001065108); Osβ2, *Oryza sativa* PLDβ2 (NP_001048777); Osδ *Oryza sativa* PLDδ (NP_001063826); Osη1, Oryza sativa PLDη1 (NP_001058017); Osη2, Oryza sativa PLDη2 (NP_001058015); Osη3, Oryza sativa PLDη3 (NP_001058016); Osκ *Oryza sativa* PLDκ (NP_001045707); Osλ *Oryza sativa* PLDλ (NP_001063203);

Osμ *Oryza sativa* PLDμ (NP_001050281), Osθ *Oryza sativa* PLDθ (NP_001061758); Osν1 *Oryza sativa* PLDν1 (NP_001051849); Osν2 *Oryza sativa* PLDν2 (NP_001059324); Osζ1 *Oryza sativa* PLDζ1 (NP_001055304); Osζ2 *Oryza sativa* PLDζ2 (NP_001042854);

Populus trichocarpa

Ptα1, *Populus trichocarpa* PLDα1 (XP_002299756); Ptα2, *Populus trichocarpa* PLDα2 (XP_002308663); Ptα3, *Populus trichocarpa* PLDα3 (XP_002325225); Ptα4, *Populus trichocarpa* PLDα4 (XP_002327529); Ptε, *Populus trichocarpa* PLDε (XP_002327429); Ptβ1, *Populus trichocarpa* PLDβ1 (XP_002301317); Ptβ2, *Populus trichocarpa* PLDβ2 (XP_00232008); Ptβ3, *Populus trichocarpa* PLDβ3 (XP_002299568); Ptδ1, *Populus trichocarpa* PLDδ1 (XP_002306960); Ptδ2, *Populus trichocarpa* PLDδ2 (XP_002331748); Ptδ3, *Populus trichocarpa* PLDδ3 (XP_002327624); Ptδ4, *Populus trichocarpa* PLDδ4 (XP_002301946); Ptν, *Populus trichocarpa* PLDν (XP_002304050); Ptζ1, *Populus trichocarpa* PLDζ1 (XP_002319499); Ptζ2, *Populus trichocarpa* PLDζ2 (XP_002328619);

Sorghum bicolor

Sbα1, *Sorghum bicolor* PLDα1 (142971); Sbα2, *Sorghum bicolor* PLDα2 (4893392); Sbα3, *Sorghum bicolor* PLDα3 (129832); Sbβ1, *Sorghum bicolor* PLDβ1 (123654); Sbβ2, *Sorghum bicolor* PLDβ2 (4780883); Sbδ *Sorghum bicolor* PLDδ (5051569); Sbη1, *Sorghum bicolor* PLDη1 (130625); Sbη2, *Sorghum bicolor* PLDη2 (4886858); Sbκ *Sorghum bicolor* PLDκ (5037418); Sbλ *Sorghum bicolor* PLDλ (4970832); Sbμ *Sorghum bicolor* PLDμ (4743947); Sbν *Sorghum bicolor* PLDν (5033008); Sbζ1 *Sorghum bicolor* PLDζ1 (4853720); Sbζ2 *Sorghum bicolor* PLDζ2 (125502).

Fig. S3. Codes, names and accession numbers for species used for molecular phylogenetic analysis of phospholipase D protein sequences in Fig. 6.

Amino acids 1-50

```
AtPLDα1   SQR----QGCKVSLYQDAWEDIFDAISNAKHLIYITGWSVIALVRTIGEL
AtPLDα2   SQR----RGCKVSLYQDAWEDIFDAITNAKHLIYITGWSVISLVRTVGEL
AtPLDβ1   PLR----KGGTVRLYQDAWHDMFDAIRQARRLIYITGWSVVKLIRTLGEL
AtPLDβ2   PLR----EGGSVTLYQDAWHDMFHAICQARRLIYITGWSVVRLVRRLGEL
AtPLDγ1   PLR----KGGRVTLYQDAWEDMADAIRQARRLIYITGWSVVRLVRTLGEL
AtPLDγ2   PLR----KGGRVTLYQDAWEDMADAIRRARRLIYITGWSVVRLVRTLGEL
AtPLDγ3   PLR----KGGRVTLYQDAWEDMADAIRRARRLIYITGWSVVRLVRTLGEL
AtPLDδ    PVR----KGSQVRLYQDAWEDICYAISEAHHMIYIVGWSIIKLVRTLGEL
AtPLDε    PQR----SNCRVVLYQDAWEDVYKAIESARHLVYIAGWALLVLVRTVGEL
AtPLDα3   NQR----EGCKVTLYQDAWEEIFDAIWEAKHLIYIAGWSVVTLVRKLGEL
OsPLDα1   SQR----QGCKVTLYQDAWEDIFDAISNAQHLIYITGWSVITLVRTLGEL
OsPLDα2   SQR----QGCKVTLYQDAWEDIFDAINGARHFIYITGWSVIALIRTLGEL
OsPLDη1   SQR----PGCRVTLYQDAWEDVFDAISNAKHLIYLTGWSVITLIRTLGEL
OsPLDη2   KQH----TGCGVTLYQDAWEDVFDAISNAKHLIYITGWSVITLIRTIGEL
OsPLDη3   KQH----AGCRVTLYQDAWEDVFDAISNAKHLIYITGWSVITLIRTIGEL
OsPLDν1   PLR----RGGGVTLYQDAWEDICHSIVEAHHLVYMVGWSIVKLVRTLGEL
OsPLDν2   PLR----KGGMVTLYQDAWEDICHAIAEAHHLIYIIGWSLVKLVRTLGGL
OsPLDβ1   PMR----RGNRVTLYQDAWRDIYDAICQARRLIYIVGWSVIHLIRSLGEL
OsPLDβ2   PLR----RGGRVTLYQDAWHDVYDAISQARRLIYITGWSVIQLVRSLGDL
OsPLDλ    PER----SGCRVTLYQNSWEDMYVAIRDARRFVYVAGWSVITLVRTLGEL
OsPLDμ    PQR----RGCRVRLYQDAWEDVFDAISSARRMVYVAGWSVVVLVRTLGEL
OsPLDδ    PLR----HGGRVTLYQDAWEDICHAILEAHHMIYIVGWSVVRLVRNLGEL
OsPLDκ    --A----SGVQ-KLYQDAWEDMCLAVLGAQHLVYVAGWSVVRLVRSLGAL
OsPLDθ    GQH----RGCKVTLYQDAWEDVFDAVANARSLVYIAGWSVVALVRTLGHL
PtPLDα1   SQR----QGCRVSLYQDAWEDVFDAITNAKHLIYITGWSVISLVRTLGEL
PtPLDα2   NQR----QGCRVTLYQDAWEDIFDAISDAKHLIYITGWSVITLIRKLGEL
PtPLDα3   SQR----SGCRVTLYQDAWEDIFDAIFNAKHLIYITGWSVITLVRILGEL
PtPLDα4   PQR----QGCKVSLYQDAWEDVFDSITNAKHFIYITGWSVISLVRTLGEL
PtPLDβ1   PLR----KGGTVTLYQDAWQDIFDAIRQARRLIYITGWSVVALVRPLGDL
PtPLDβ2   PLR----KGGTVTLYQDAWQDIFDAIRQARRLIYITGWSVVTLVRTLGDL
PtPLDβ3   PIR----RGGKVTLYQDAWDDIFNAISQARRLIYITGWSVVKLVRTLGDL
PtPLDδ1   PVR----HGGNVTLYQDAWEDICHAIVEAHHLVYIVGWSIVRLVRNLGEL
PtPLDδ2   PVR----KGCHVTLYQDAWEDICYAISEAHHMIYIVGWSVIKLVRTLGEL
PtPLDδ3   PVR----KGGHVTLYQDAWEDICYAISEAHHMIYIVGWSVIKLVRTLGEL
PtPLDδ4   PVR----HGGNVTLYQDAWEDICHAIVEAHHLVYIAGWSIVKLVRNLGEL
PtPLDν    PLR----KGGSVTLYQDAWEDICHAILEAHNLIYIVGWSVVKLVRTLGEL
PtPLDε    PQR----SNCHVTLYQDAWEDVYKAVEGAKHLIYIAGWSFMVLVRMLGEL
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MtPLDα1   TQR----QGCKVSLYQDSWEDVFDAITKARHLIYITGWSVISLVRTLGEL
MtPLDα2   DQR----QGCSVTLYQDAWEDIYNAIMNAKVFIYITGWSVITLIRTLGEM
MtPLDα3   KQN----NGCQITLYQDAWEDTCNAINDAKHFICITGWSVITLIRTLGEL
MtPLDβ1   PLR----KGGNVTLYQDAWHDIFDAISQARRLIYITGWSVVRLIRTLGDL
MtPLDβ2   PLR----KGGKVTLYQDAWQDIFDAISQARRLVYIVGWSVVSLIRTLGDL
MtPLDβ3   PLR----KGGKVTLYQDAWHDIFDAISQARRLVYIVGWSVVSLIRTLGDL
MtPLDδ1   PVR----KGSSVRLYQDAWEDICYAITEAHHMVYLAGWSIVKLVRTLGDL
MtPLDν    PLR----RGGNVTLYQDAWEDICHAILEAHHMIYIIGWSIVKLVRSLGEL
MtPLDδ3   PVR----RGGSVTLYQDAWEDICHAILEAHHLVYIVGWSIVKLVRNLGEL
MtPLDε    PQR----SNCHVKLYHDAWEDVYKAIEGAKYLVYIAGWSFMVLVRKLGEL
SbPLDα1   SQR----QGCKVTLYQDAWEDIFDAISKAQHLIYITGWSVITLVRTLGEL
SbPLDα2   SQR----QGCKVTLYQDAWEDIFDAISKAQHLIYITGWSVITLVRTLGEL
SbPLDα3   SQR----QGCRVTLYQDAWEDIFDAISGAKHLIYITGWSVITLLRTLGEL
SbPLDη1   SQR----PGCRVTLYQDAWEDVFDAISNARHLIYITGWSVITLLRTLGEL
SbPLDη2   KQR----QGCRVTLYQDAWEDVYDAIDGARHFVYVTGWSVTTLVRTVGEL
SbPLDμ    KQR----RGCRVRLYEDAWVDVFDAINRARRMVYVAGWSVVVLVRNLGEL
SbPLDλ    PER----TNCSVTLYQNAWEDLFAAIRDARRFVYVAGWSVITLVRTLGEL
SbPLDν    PLR----KGGRVTLYQDAWEDICHAIIEAHHLIYIVGWSLVKLVRTIGEI
SbPLDβ1   PLR----RGMRVTLYQDAWRDIYDAICQARKLIYIVGWSVIHLVRSLGDL
SbPLDβ2   PLR----RGGKVTLYQDAWRDVYDAISQARRLIYITGWSVIHLVRALGDL
SbPLDδ    PLR----HGGQVTLYQDAWEDICHAILEAHHMIYIVGWSVVRLVRTLGDL
SbPLDκ    PLR----RGCDVRLYQDAWEDLCMAVLCAQRLVYVAGWSVVQLLRSLGEL
SbPLDζ1   PPRGLLEDGSMVQWFVDGFKAIASSIEEAKSEIFITGWWLLYLRRRLDAL
SbPLDζ2   PPRGLTEDGSVVQWFIDGFDAIASSIEEAKSEIFITDWWLLYLRRRLDSL
AtPLDζ2   PPRGLTSDGSQAQWFVDGFEAIAFAIQNATSEIFMTGWWLLYLKRRLDAL
AtPLDζ1   PPRGLTDDGSQAQWFVDGFAAIAAAIENAKSEIFICGWWVLYLRRRLDNL
OsPLDζ2   PPRGLTEDGSVVQWFLDGFNAIASSIEEAKSEIFITDWWLLYLRRRLDIL
OsPLDζ1   PPRGLMPDGSMVQWFIDGFQAIASSIEQAKSEIFITGWWLLFLRRRLDAL
PtPLDζ1   PPRGLAEDGSQAQWFVDGFEAIASAIENARSEIFITGWWLLYLRRRLDSL
PtPLDζ2   PPRGLSEDGSQAQWFVDGFEAIALSIEDAKSEIFICGWWLLYLRRRLDSL
MtPLDζ1   PIRGLTGDGSQAQWFVDGFEAIASSIQDAKSEIFITGWWLLYLRRRLDSL
ApPLDα    ??????????????????????????????????????????????????
ApPLDβ    ??????????????????????????????????????????????????
ApPLDδ    ??????????????????????????????????????????????????
AcPLDδ    ??????????????????????????????????????????????????
AcPLDβ    ??????????????????????????????????????????????????
AcPLDα    ??????????????????????????????????????????????????
```

Amino acids 51-100

At*PLDα*1 LKKKASEGVRVLLLVWDDCILCPMFTHHQKIVVVDVSFVGGIDLCDGRYD

At*PLDα*2 LKKKASEGVKVILLVWDDCILCPMFTHHQKIVVVDVSFVGGLDLCDGRYD

At*PLDβ*1 LRSKSQEGVRVLLLIWDDVLLCPIYTHHQKNVIVDIAFVGGLDLCDGRYD

At*PLDβ*2 LRSKSQEGVRVLLLVWDDVLLCPIYTHHQKNLIVDVAFVGGLDLCDGRYD

At*PLDγ*1 LKVKSQEGVRVLVLVWDDVLLCPIYTHHQKTVIVDVAFVGGLDLCNGRFD

At*PLDγ*2 LKVKSQEGVRVLVLVWDDVLLCPIYTHHQKTMIVDVAFVGGLDLCNGRFD

At*PLDγ*3 LKVKSQEGVRVLVLVWDDVLLCPIYTHHQKTMIVDVAFVGGLDLCNGRFD

At*PLDδ* LKYKSQEGVRVLLLVWDDCVLSPLFTHHQKCVLVDTAFIGGLDLCDGRYD

At*PLDε* LKRKSEEGVAVRVMLWNDCRLCPAFAHHQKTITLDMSFLGGFDLCDGRYD

At*PLDα*3 LKKKAEENVTVLMLVWDDCVLCPMFTHHQKTIVVDVSFLGGIDLCDGRYD

OsPLD*α*1 LKKKASEGVRVLMLVWDDCVLCPMFTHHQKIVVVDVSFVGGLDLCDGRYD

OsPLD*α*2 LKKKAGEGVRVLMLVWDDCVLCPMFTHHQKIVVVDVSFVGGLDLCDGRYD

OsPLD*η*1 LKRKASEGVRVLLLVWDDCVLCPMITHHQKTVIVDVSFVGGLDLCDGRYD

OsPLD*η*2 LKRKASEGVRVLMLVWNDCVVCAASTHHQKTVIVDVSFVGGLDLCDGRYD

OsPLD*η*3 LKRKASEGVRVLMLVWNDCVLCPLATHHQKTVIVDVSFVGGLDLCDGRYD

OsPLDν1 LKKKAREGVRIVILLWDDCVLVPLFTHHQKCVLVDTAFIGGLDLCDGRYD

OsPLDν2 LKTKVQEGVRVIVLLWDDCVLAPLFTHHQKCVIVDTAFIGGLDLCDGRYD

OsPLD*β*1 LKMKSQEGVRVLLLVWDDVLLCPIFTHHQKTVILDIAFVGGLDLCGGRYD

OsPLD*β*2 LKRKSQEGVRVLLLVWDDILLCPIFTHHQKTVILDVAFVGGLDLCGGRYD

OsPLDλ LRRKADEGVAVLVMPWQDCFLCPEFTHHQKTVTLDVSFIGGIDLCDGRYD

OsPLDμ LKRKAEQGVMVLLLVWNDCVLCPMFTHHQKTVIVDVSFLGGIDLCDGRYD

OsPLD*δ* LKFKSQEGVRVCLLVWDDCVLSPLFTHHQKCVLVDTAFIGGLDLCDGRYD

OsPLDκ LKYKSQEGVRVCLLVWDDCLLSPMYTQHQKCLLVDTAFLGGLDLAAGRYD

OsPLDθ LKSKAGERVAVLLLVWDDCVVCPVFTHHQKAVVADVAFLGGIDLCGGRYD

PtPLD*α*1 LKKKASEGVRVLMLIWDDCILCPMFTHHQKIVVVDVSYIGGIDLCDGRYD

PtPLD*α*2 LKKKAEEGVTVLMLVWDDCILCPMFTHHQKTVVVDVSFIGGIDLCDGRYD

PtPLD*α*3 LKKKANEGVRVLMLVWDDCVLCPMFTHHQKTLVVDVSFIGGIDLCDGRYD

PtPLD*α*4 LKKKASEGVRVLILIWDDCVLCPMFTHHQKIVVVDVSYVGGIDLCDGRYD

PtPLD*β*1 LRSKSQEGVRVLLLLWDDVLLCPIYTHHQKTVIVDIAFVGGLDLCDGRYD

PtPLD*β*2 LRSKSQEGVRVLLLVWDDVLLCPIYTHHQKTVIVDIAFVGGLDLCDGRYD

PtPLD*β*3 LKTKSQEGVRVLLLVWDDVLLCPIYTHHQKTVIVDTAFVGGLDLCKGRYD

PtPLD*δ*1 LKYKSQEGVRVLLLVWDDCVLSPLYTHHQKCVIVDTAFIGGLDLCDGRYD

PtPLD*δ*2 LRYKSEEGVRVLLLVWDDCVLAPIFTHHQKCVLVDTAFIGGIDLCDGRYD

PtPLD*δ*3 LKYKSEEGVRVLLLVWDDCVLAPMFTHHQKCVLVDTAFIGGIDLCDGRYD

PtPLD*δ*4 LKYKSQEGVRVLLLVWDDCVLSPLYTHHQKCVLVDTAFIGGLDLCDGRYD

PtPLD*ν* LKYKSEEGVRVVMLLWDDCVLAPLFSHHQKCVILDTSFIGGLDLCDGRYD

PtPLD*ε* LKRKGEEGVAVRVMLWDDCKLCPLFAHHQKTITVDMSFVGGLDLCDGRYD

MtPLD*α*1 LKKKAQEGVRVLMLVWDDCVLCPMFTHHQKILVVDVSFVGGIDLCDGRYD

MtPLDα2 LKKKANEGVNVLVLVWDDCVLCPMFTHHQKTIVVDISFIGGIDLCDGRYD

MtPLDα3 LKKKANEGVNVLMLVWDDCVLCPMFTHHQKTIIVDTSFVGGIDLCDGRYD

MtPLDβ1 LKTKSQEGVRVLLLIWDDVLLCPIYTHHQKTVIVDVAFVGGLDLCDGRYD

MtPLDβ2 LKAKSQEGVRVLLLVWDDVLLCPIYTHHQKTVIVDVAFIGGLDLCLGRYD

MtPLDβ3 LKAKSQEGVRVLLLVWDDVLLCPIYTHHQKTVIVDVAFIGGLDLCLGRYD

MtPLDδ1 LKYKSEEGVRVLLLVWDDCVLAPVFTHHQKCVIVDATFIGGLDLCDGRYD

MtPLDν LKYKSQEGLRVVMLIWDDCILSPLFTHHQKCVLVDTAFIGGLDLCDGRYD

MtPLDδ3 LKYKSQEGLRVLLLVWDDCVLSPLFTHHQKCVIVDTAFIGGLDLCDGRYD

MtPLDε LKKKAEEGVAVRVMIWDDCRRCPIFAHHQKTITVDMSFLGGLDLCDGRYD

SbPLDα1 LKRKASEGVRVNMLVWDDCVLCPMFTHHQKIVVVDVSFIGGIDLCDGRYD

SbPLDα2 LKRKASEGVRVLMLVWDDCVLCGMFTHHQKIVVVDVSFIGGIDLCDGRYD

SbPLDα3 LKKKAGEGVRVLMLVWDDCVLCPMFTHHQKIVVVDLSFVGGLDLCDGRYD

SbPLDη1 LKRKASEGVRVLMLVWDDCVLCPMITHHQKIIVVDLSFVGGLDLCDGRYD

SbPLDη2 LKRKAKEGVRVLMLVWDDCVPCPALSHHQKTVIVDVSFVGGIDLTNGRYD

SbPLDμ LIRKANEGVAVLMLVWDDCVLCPMFTHHQKTVIVDVSFLGGIDLCDGRYD

SbPLDλ LKRKADEGVAVLVMPWQDCFLCPEFTHHQKTVTLDVSFIGGIDLCDGRYD

SbPLDν LKRKVQEGVRVIVLLWDDCVLSPLFTHHQKCVIVDTAFIGGLDLCDGRYD

SbPLDβ1 LKMKSQEGVRVLLLVWDDVLLCPIFTHHQKTVIVDVAFVGGLDLCGGRYD

SbPLDβ2 LRKKSQEGVRVLLLVWDDILLCPIFTHHQKTVILDVAFVGGLDLCGGRYD

SbPLDδ LKFKSQEGVRVCLLVWDDCVLSPLFTHHQKCVLVDTAFIGGLDLCDGRYD

SbPLDκ LKYKSQEGVRVLLLVWDDCVLSPLYTHHQKCVLVDTAFLGGLDLCGGRYD

SbPLDζ1 LEARAKQGVQIYILLYKEVLRYPLWSHHEKIVIVDVCYIGGLDLCFGRYD

SbPLDζ2 LESRAKQGVQIYILLYKEVLRYPLWSHHEKIVVVDVCYVGGLDLCFGRYD

AtPLDζ2 LETKAKQGVKIYILLYKEVLRYPLWSHHEKIVIVDVCFIGGLDLCFGRYD

AtPLDζ1 LENKAKQGVQIYILIYKEVLRYPLWSHHEKLVIVDVCFIGGLDLCFGRYD

OsPLDζ2 LESRAKQGVQIYILLYKEVLRYPLWSHHEKIVIVDVCYIGGLDLCFGRYD

OsPLDζ1 LEARAKQGVQIYILLYKEVLRYPLWSHHEKIVIVDVCYLGGLDLCFGRYD

PtPLDζ1 LEAKAKEGVQIYILLYKEVLRHPSWSHHEKLVIIDICFIGGLDLCFGRYD

PtPLDζ2 LEAKAKQGVQIYILLYKEVLRYPLWSHHEKLVIVDICFIGGLDLCFGRYD

MtPLDζ1 LEEKAKQGVQIYVLIYKEVLRSPLWSHHEKLVIIDICFLGGLDLCFGRYD

Ap*PLDα* ??

Ap*PLDβ* ??

Ap*PLDδ* ??

AcPLDδ ??

AcPLDβ ??

Ac*PLDα* ??

Amino acids 101-150

At*PLDα*1 TPFHSLFRTLDTPREPWH-DIHSRLEGPIAWDVMYNFEQRWSVQLFRSID

At*PLDα*2 TPFHSLFRTLDTPREPWH-DIHCRLEGPIAWDVLYNFEQRWSVQLFRSID

At*PLDβ*1 TPQHPLFRTLQTPREPWH-DLHSKIDGPAAYDVLTNFEERWLVQIFRSID

At*PLDβ*2 TPQHPLFRTLQTPREPWH-DLHSKIDGPAAYDVLTNFEERWLVQIFRSID

At*PLDγ*1 TPKHPLFRTLKTPREPWH-DLHSKIDGPAAYDVLANFEERWMVQVFRSID

At*PLDγ*2 TPKHSLFGTLKTPREPWH-DLHSKIDGPAAYDVLANFEERWMVQVFRSID

At*PLDγ*3 TPKHPLFRTLKTPREPWH-DLHSKIDGPAAYDVLANFEERWMVQVFRSID

At*PLDδ* TPEHRILHDLDTPRQPWH-DLHCRIDGPAAYDVLINFEQRWRVQIFRSID

At*PLDε* TEEHSLFRTLGTPREPWH-DCHVSVVGGAAWDVLKNFEQRWTVQVLRSID

At*PLDα*3 TVEHPLFGTLNSPREPWH-DIHCKLDGPAAWDVLYNFEQRWMVQVFRSID

OsPLD*α*1 TQYHSLFRTLDSPREPWH-DIHSRLEGPIAWDVLYNFEQRWRVQLFRSID

OsPLD*α*2 TPFHSLFRTLGTPREPWH-DIHCRLEGPVAWDVLYNFEQRWRVQLFRSID

OsPLD*η*1 TQFHSLFRTLDTPREPWH-DIHSKIEGPAAWDVLYNFEQRWRVQLFRSID

OsPLD*η*2 TQSHSLFRTLDAPREPWH-DIHSRLEGPVAWDVLYNFEQRWRVQVFRSID

OsPLD*η*3 TQSHSLFRTLDAPREPWH-DIHSKLEGPIAWDVLYNFEQRWRVQLFRSID

OsPLDν1 TPEHRLFKDLDTPRQPWH-DLHCKIEGPAAFDILTNFEQRWRVQVFRSID

OsPLDν2 TPEHRLFKDLDTPRQPWH-DLHCKIEGPAAYDILTNFEQRWRVQIFRSID

OsPLD*β*1 TPSHPLFRSLQTPREPWH-DLHSKIDGPAAYDVLQNFQERWLVQVFRSID

OsPLD*β*2 TPTHPLFRSLQTPREPWH-DLHSKIDGPAAYDVLTNFEERWLVQIFRSID

OsPLDλ DENHTLFRDLDTPREPWH-DVHCRLEGRAAWDVLANFEQRWRVQVFRSID

OsPLDμ TQEHPLFRTLDTPREPWH-DIHCRVEGPAAWDVLDNFEQRWRVQVFRSID

OsPLD*δ* TPEHRLFKDLDTPRQPWH-DLHCRIDGPAAYDVLKNFEQRWRVQVFRSID

OsPLDκ TPSHRLFADLGTPRQPWH-DMHCRVDGPAAYDVLENFEQRWRAQVFRSVD

OsPLDθ TQEHPLFRTLATPREPWH-DVHCRIEGPAAWDVLDNFEQRWRVQVFRSID

PtPLD*α*1 TPFHSLFRTLDTPREPWH-DIHSRLEGPIAWDVLFNFEQRWKVQLFRSID

PtPLD*α*2 TQDHPLFKTLDSPREPWH-DIHCKLEGPVAWDVLYNFEQRWTVQLFRSID

PtPLD*α*3 TPSHPIFRTLDTPREPWH-DVHCRLEGSIAWDVLVNFEQRWRVQLFRSID

PtPLD*α*4 TPFHSLFRTLDTPREPWH-DIHSRLEGPIAWDVLFNFEQRWKVQLFRSID

PtPLD*β*1 NPDHSLFRTLQTQREPWH-DLHSRIDGPAAYDVLTNFEDRWMVQIFRSID

PtPLD*β*2 TPDHPLFRTLQNPREPWH-DLHSRIDGPAAYDVLTNFEERWMVQIFRSID

PtPLD*β*3 TPQHPLFRTLQTPRQPWH-DLHCQIDGPAAYDILTNFEERWLVQVFRSID

PtPLD*δ*1 TPEHRLFQDLDTPRQPWH-DLHCKIEGPAAYDVLTNFEQRWRVQVFRSID

PtPLD*δ*2 TPEHRLFHDLNTPRQPWH-DLHCKIDGPAAYDVLINFEQRWRVQIFRSID

PtPLD*δ*3 TPGHRLFHDLNTPRQPWH-DLHCKIDGPAAYDALINFEQRWRVQIFRSID

PtPLD*δ*4 TPEHRLFRGLDTPRQPWH-DLHCKIEGPAAYDVLTNFEQRWRVQVFRSID

PtPLDν TPEHRLFRDLHTPRQPWH-DLHCKIEGPAAYDILTNFEQRWKVQVFRSID

PtPLDε TERHSLFHTLNTPREPWH-DAHACIVGQAALDVLTNFEQRWNVQVFRSID

MtPLDα1 TPFHSLFRTLDTPREPWH-DIHSRLEGPIAWDVLFNFEQRWRVQLFRSID

MtPLDα2 TMEHPLFSTLNTPREPWH-DIHCKLEGPIAWDVLYNFEQRWEVQLFRSID

MtPLDα3 TMEHPLFSTLNTPREPWH-DIHCKLEGPVAWDVLCNFEQRWEVQLFRSID

MtPLDβ1 TPQHPLFKTLQTPREPWH-DLHTKIDGPAAYDVLTNFEERWLVQIFRSID

MtPLDβ2 TPAHSLFRTLQTPRQPWH-DLHSKVDGPAAYDILTNFEERWLVQIFRSID

MtPLDβ3 TPAHSLFRTLQTPRQPWH-DLHSKVDGPAAYDILTNFEERWLVQIFRSID

MtPLDδ1 TPEHRLFRDLDTPRQPWH-DLHCRIDGPAAYDVLINFEQRWRVQIFRSID

MtPLDν TPEHRLFSDLDTPRQPWH-DLHCKIEGPAAYDILTNFEQRSRVQVFRSID

MtPLDδ3 TPEHRLFRDLDTPRQPWH-DLHCKIEGPAAYDILTNFEQRWKIQVFRSID

MtPLDε TEKHSLFETLTQPREPWH-DAHACVTGEAAWDVLTNFEQRWTVQVYRSID

SbPLDα1 TQYHSLFRTLDSPREPWH-DIHSRLEGPIAWDVLYNFEQRWRVQLFRSID

SbPLDα2 TQYHSLFRTLDTPREPWH-DIHSRLEGPIAWDVLYNFEQRWRVQLFRSID

SbPLDα3 TPCHPLFRTLDGPREPWH-DIHCRLEGPVAWDVLYNFEQRWRVQLFRSID

SbPLDη1 TQFHSLFRTLDTPREPWH-DIHSKIEGPAAWDVLYNFEQRWRVQLFRSID

SbPLDη2 TQSHSLFSTLNTPREPWH-DIHCKIEGPAAWDVLHNFEQRWRVQVFRSID

SbPLDμ TQDHPLFRTLGTPREPWH-DIHCRVEGPAAWDVLENFEQRWKVQVFRSID

SbPLDλ DENHTLFRDLDTPREPWH-DVHCRLEGPAAWDVLANFEQRWRVQVFRSID

SbPLDν TPEHRLFKDLDTPRQPWH-DLHCKIEGPAAYDILTNFEQRWRVQVFRSID

SbPLDβ1 TPWHPLFRTLQNPREPWH-DLHSKIDGPAAYDVLQNFQERWLVQVFRSID

SbPLDβ2 TPRHTLFRTLETPREPWH-DLHSKIDGPAAYDVLKNFEERWLVQIFRSID

SbPLDδ TPEHRLFKDLDTPRQPWH-DLHCRIDGPAAYDVLLNFEQRWRVQVFRSID

SbPLDκ TPSHRLFRDLNTPRQPWH-DLHCRLDGPAAYDVLKNFEQRWRAQVFRSVD

SbPLDζ1 SPEHK----VADPRMPWH-DVQCALYGPPCRDVARHFVQRWNCQVVRSVG

SbPLDζ2 SPEHK----VADPRMPWH-DVQCALYGPACRDVARHFVQRWNCQVVRSVG

AtPLDζ2 TAEHK----IGDPRMPWH-DVHCALWGPPCRDVARHFVQRWNCQIIRSVS

AtPLDζ1 TFEHK----VGDPRMPWH-DVHCALWGPPCRDVARHFVQRWNCQIIRSVS

OsPLDζ2 TPEHK----VVDPRMPWH-DVQCALYGPACRDIARHFVQRWNCQVVRSVG

OsPLDζ1 NSAHK----LSDPRMPWH-DVQCALYGPPCRDVARHFVQRWNCQVIRSVG

PtPLDζ1 TIEHR----VGDPRMPWH-DVHCSLWGPPCRDIARHFVQRWNCQVIRSVS

PtPLDζ2 TCEHR----VGDPRMPWH-DVHCALWGPPCRDVARHFVQRWNCQVIRSVS

MtPLDζ1 TPEHK----VGDPRMPWH-DVHCALWGPPCRDIARHFVQRWNCQVIRSVS

Ap*PLDα* ??

Ap*PLDβ* ??

Ap*PLDδ* ??

AcPLDδ ??????????????????????????????????????KWNVQIFRSID

AcPLDβ ??

Ac*PLDα* ??

Amino acids 151-200

At*PLDα*1 GGAAAGDRSIQDAYIHAIRRAKDFIYVENQYFLGALHLIPKELSLKIVSK

At*PLDα*2 GGAAAGDRSIQDAYIHAIRRAKDFIYIENQYFLGALHLIPKELSLKIVSK

At*PLDβ*1 SNSVKGDMSIHTAYVKAIRAAQHFIYIENQYFIGANNLIPMEIALKIAEK

At*PLDβ*2 SNSVKGDMSIHTAYVKAIRAAQHFIYIENQYFIGANNLIPMEIALKIADK

At*PLDγ*1 SSSVKGDMSIHAAYVKAIRSAQHFIYIENQYFLGANNLIPMEIALKIANK

At*PLDγ*2 STSVKGDMSIHAAYVKAIRSAQHFIYIENQYFLGANNLIPMEIALKIANK

At*PLDγ*3 SSSVKGDMSIHAAYVKAIRSAQHFIYIENQYFLGANNLIPMEIALKIANK

At*PLDδ* SGSVKGDKSIQTAYIQTIRSAQHFIYIENQYFLGADNLIPMELALKIVSK

At*PLDε* HISATEEKSVHDGYVAAIRKAERFIYIENQYFMGCTNLIPVEIALKIAAK

At*PLDα*3 DGAVEGERSIQDAYVNAIRRAKNFIYIENQYFLGALQLIPKEISLKIVSK

OsPLD*α*1 GGAAFGDRSIQDAYIHAIRRAKNFIYIENQYFLGALHLIPKELALKVVSK

OsPLD*α*2 GGAAFGDRSIQDAYIAAIRRARSFIYIENQYFLGALHLIPKELSMKVVSK

OsPLD*η*1 GGACFGDRSIQDAYIHAIRRAKNFIYIENQYFLGALHLIPREISLKIVNK

OsPLD*η*2 GGACDGERSIQDAYIHAIRRARDFIYIENQYFIGAVNLIPRELSLKIMSK

OsPLD*η*3 GGACDGERSIQDAYIHAIRRARDFIYIENQYFIGAVNLIPRELSLKIVSK

OsPLDν1 SGSVKGDKSIHSAYVKAIRSAQHFIYIENQYFIGADNLIPVELALKIASK

OsPLDν2 SGSVKGDKSIHNAYVKAIRSAQHYIYIENQYFIGAENLIPIELAIKIARK

OsPLD*β*1 SNSAKGDMSIHTAYVNAIRGAQHFIYIENQYFIGANNLIPIEIALKIANK

OsPLD*β*2 SNSVKGDMSVQTAYVNAIRGAQHFIYIENQYFLGANNLIPIEIALKIANK

OsPLDλ DASVVGDRSIQAGYVEAIRRARRFIYVENQYFLGCLNLVPVEIALKVAAK

OsPLDμ GGAAAGERSIQDAYIHAIRRARDFIYVENQYFLGALHLVPRELSLKIASK

OsPLD*δ* SGSLKGDKSIHTAYVRAIRSAQHFIYIENQYFLGADNLVPIELALKIASK

OsPLDκ SGSVKGEQSIHTAYVRAIRSAKRFIYIENQYFIGAGNLVPMEIALKVASK

OsPLDθ SRAVDRERSIQDGYIHAIRRAKYFIYIESQCFLGAPHTIPKELSLKLASK

PtPLD*α*1 GGAAFGDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

PtPLD*α*2 DGAVVGDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

PtPLD*α*3 GGAAFGDRSIQDAYINAIQRAKSFIYIENQYFLGALHLIPKELSLKIVSK

PtPLD*α*4 GGAAFGDRSIQDAYVNAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

PtPLD*β*1 SNSVKDDMSIHTAYVKAIRAAQHFIYIENQYFIGANNLIPMEIALKIANK

PtPLD*β*2 SNSVKDDMSIHTAYVMAIRAAQHFIYIENQYFIGANNLIPMEIALKIANK

PtPLD*β*3 SNSVKGDMSIHTAYVNAIRAAQHFIYIENQYFLGANNLIPMEIALKIADK

PtPLDδ1 SGSLKGDKSIQTAYVQAIRLAQHFIYIENQYFLGAENLIPMELALKIASK

PtPLDδ2 SGSLKGDKSIQTAYIQAIRSAQHFIYIENQYFLGADNLIPMELALKIASK

PtPLDδ3 SGSLKGDKSIQTAYIQAIRSAQHFIYIENQYFLGADNLIPMELALKIVSK

PtPLDδ4 SGSLKGDKSIQTAYIQAIRSAQHFIYIENQYFLGAENLIPMELALKIASK

PtPLDν SGSVKGDKSIHTAYVKAIRSAQHFIYIENQYFLGADNLVPMELALKIASK

PtPLDε HVSAIHERSIHEAYVEAIRRAERFIYIENQYFIGCTNLIPIEIALKVVNK

MtPLDα1 GGAAFGDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

MtPLDα2 GGAVSNDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIISK

MtPLDα3 AGAASGDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

MtPLDβ1 SGSVKGDMSIHTAYVKAIRAAQHYIYIENQYFIGANNLIPMEIALKIAEK

MtPLDβ2 SNSVKGDMSIHSAYVKAIRAAQKFIYIENQYFLGANNLIPMEIALKIANK

MtPLDβ3 SNSVKGDMSIHSAYVKAIRAAQKFIYIENQYFLGANNLIPIEIALKIANK

MtPLDδ1 SGSLKGEKSIQTGYIQAIRSAQHFIYIENQYFIGADNLIPMELALKIASK

MtPLDν SGSVKGDQSIHAAYVKAIRSAQRFVYIENQYFLGANHLIPMELALKIASK

MtPLDδ3 SGSLKGDKSIQTAYIHAIRSAQHFIYIENQYFIGADNLIPMELALKIVSK

MtPLDε HVSASQESSIHEAYVEAIRRADRFVYIENQYFIGCTNLIPIEIALKVVNK

SbPLDα1 GGAAFGDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

SbPLDα2 GGAAFGDRSIQDAYINAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

SbPLDα3 GGAAFGDRSIQDAYIHAIRRARSFIYIENQYFLGALHLIPKELSMKVVSK

SbPLDη1 GGACYGDRSIQDAYIHAIRRAKHFIYIENQYFLGALHLIPRELSLKIVSK

SbPLDη2 GSACSGDRSIQDAYIHAIRRAKRFIYIENQYFLGALQLVPRELSLKIVSK

SbPLDμ GGAAAGERSIQDAYIHAIRRARDFVYIENQYFLGALHLIPKELSLKIVSK

SbPLDλ DASVVGDRSIQIGYVEAVRRARRFIYIENQYFLGCLNLVPVEIALKVAAK

SbPLDν SGSVKGDKSIHNAYVKAIRSAQHFVYIENQYFIGAENLIPIELAIKIARK

SbPLDβ1 SNSAKGDMSIHTAYVHAIRAAQHYIYIENQYFIGANNLIPIEIALKIANK

SbPLDβ2 SNSVKGDMSVHTAYVNAIRGAQHFIYIENQYFLGANNLIPIEIALKIANK

SbPLDδ SGSLKGDKSIHTAYVRAIRSAQHFIYIENQYFLGADNLIPIELALKIASK

SbPLDκ AGSVKREQSIHAAYVAAIRSAERFVYVENQYFIGACNLVPMEIALKVASK

SbPLDζ1 QWSA-GEGSIHNAYFSLIEKAEHFVYIENQFFISIKNRVLEALYRRILRA

SbPLDζ2 PWSA-GEGSIHNAYFSLIEKAEHFVYIENQFFISIKNRVLEALYRRILRA

AtPLDζ2 QWSA-GEDSIHRAYCSLIQNAEHFIYIENQFFISILNRVLEALYRRILKA

AtPLDζ1 QWSA-GEESIHSAYRSLIDKAEHFIYIENQFFISVKNRVLEALYKRILRA

OsPLDζ2 PWSA-GEGSIHNAYFSLIEKAEHFVYIENQFFISIKNRVLEALYRRILRA

OsPLDζ1 QWSA-GEGSIHNAYFSLIEKAEHFVYIENQFFISIKNRVLEALYRRILRA

PtPLDζ1 QWST-GEESIHKAYCSLIEKAEHFIYIENQFFISIQNRVLDAIYKRVIQA

PtPLDζ2 QWSA-GEESIHCAYCSLIEKAEHFVYIENQFLISIRNRVLEALYRRIMRA

MtPLDζ1 QWSV-GEESIHTAYCSLIEKAKHFIYIENQFFISIQNRILEAIYRRILKA

Ap*PLDα* ??????DRSIQDAYIHAIRRAKNFIYIENQSFLGALHLIPKELSLKTVSK

Ap*PLDβ* ??????????????????????????????????GANNLIPMEIALKIANK

Ap*PLDδ* ??????????????????????????????????EADNLIPMEIALKVASK

AcPLD*δ* SGSVKGDKSIHAAYVNAIRAAEHFIYVENQYFIEADNLIPMEIALKVASK

AcPLD*β* ??????????????????????????????????GANNLIPMEIALKIANK

Ac*PLDα* ??????DRSIQDAYIHAIRRAKNFIYIENQYFLGALHLIPKELSLKIVSK

Amino acids 201-250

At*PLDα*1 IEKGEKFRVYVVVPMWP--EGSGSVQAILDWQRRTMEMMYKDVIQALRA-

At*PLDα*2 IKAGEKFKVYVVVPMWP--EGSGSVQAILDWQKRTMEMMYKDVIKALRE-

At*PLDβ*1 IRANERFAAYIVIPMWP--EGGAATQRILYWQHKTIQMMYETIYKALVE-

At*PLDβ*2 IRAKERFAAYIVIPMWP--EGGAATQRILYWQHKTMQMMYGTIYNALVE-

At*PLDγ*1 IRAREKFAAYIVIPMWP--EGSNPIQRILYWQHKTMQMMYQTIYKALVE-

At*PLDγ*2 IRARENFAAYIVIPMWP--EGSKPIQRILYWQHKTMQMMYQTIYKALLE-

At*PLDγ*3 IRAREKFAAYIVIPMWP--EGSNPIQRILYWQHKTMQMMYQTIYKALVE-

At*PLDδ* IRAKERFAVYVVIPLWP--EGSGPVQEILYWQSQTMQMMYDVIAKELKA-

At*PLDε* IRARERFAVYIVIPMWP--EGSETVEEILHWTRETMSMMYQIIGEAIWE-

At*PLDα*3 IEAGERFSVYIVIPLWP--EGSASVQAILDWQRRTMEMMYTDIIIALRK-

OsPLD*α*1 IEAGERFTVYVVVPMWP--EGSGSVQAILDWQRRTMEMMYTDITEALQA-

OsPLD*α*2 IEAGERFTVYVVVPMWP--EGSGSVQAILDWQRRTMEMMYTDIAHAIQA-

OsPLD*η*1 IEAGERFAVYVVLPMWP--EGSGSVQAILDWQRRTMEMMYYDIAVALEA-

OsPLD*η*2 IAAGERFTVYVVVPMWP--EGSQAMQAILDWQRRTMEMMYADIAGALKA-

OsPLD*η*3 IAAGERFAVYVVVPMWP--EGNEAMQAILDWQRRTMEMMYYDIAVALKA-

OsPLDν1 IKANEQFAVYIVLPMWP--EGAAPMQQILFWQGQTMSMMYKIIADALRM-

OsPLDν2 IKARERFAAYIVIPMWP--EGTAAMQEILFWQGQTMSMMYKIVAEALQK-

OsPLD*β*1 IKAKERFSAYIVIPMWP--EGGAPTQRILYWQHKTMQMMYETIYRALKE-

OsPLD*β*2 IYANERFSAYIVIPMWP--EGGAPTQRILYWQKKTMQMMYEVIHKALKE-

OsPLDλ IRRGERFAAYVVTPMWP--EGGDSVQAILRWNRLTVEMMYGIVTKAIDD-

OsPLDμ IAAGERFAVYVVVPMWP--EGSDSVQAILDWQRRTMEMMYRDVDAAIQA-

OsPLD*δ* IRAGERFAVYVVIPMWP--EGAASVQEILFFQ--TMEMMYRIIAQELKA-

OsPLDκ IAAGERFAVYIVIPMWP--EGSGPIQEILFWQRQTMQAMYEVIAAAIRA-

OsPLDθ IRSGDSFRVYVVLPMWP--EGSATVQAVLDWQRRTMEMMYKDVAAALAA-

PtPLD*α*1 IEAGERFTVYVVVPMWP--EGSASVQAILDWQRRTMDMMYKDVIQALRA-

PtPLD*α*2 IEAGERFTVYIVIPMWP--EGSGSVQAILDWQRRTMDMMYSDITEALVK-

PtPLD*α*3 IKAGERFSVYVVIPMWP--EGSGSVQAILNWQKRTMEMMYSDIAEALQD-

PtPLDα4 IEAGERFTVYVVVPMWP--EGSGSVQAILDWQRRTLEMMYKDVIEALRA-

PtPLDβ1 IRANERFAAYIIVPMWP--EGGAATQRILFWQHKTMQMMYETIYKALDE-

PtPLDβ2 IRAHERFAAYIVVPMWP--EGGAATQRILFWQHKTMQMMYETIYKALVE-

PtPLDβ3 IRAHERFSAYILIPMWP--EGSAPIQRILFWQHKTMQMMYETIYKALVE-

PtPLDδ1 IRAKERFAVYVVIPMWP--EGSASVQEILFWQGQTMQMMYEVIAKELKS-

PtPLDδ2 IRAKERFAVYVVIPLWP--EGTNTVQEILFWQSQTMQAMYEKIAQELKS-

PtPLDδ3 IRAKERFAVYVVIPLWP--EGTNTVQEILFWQSQTMQAMYEKIAQELKS-

PtPLDδ4 IRAKERFAVYVVIPMWP--EGSASVQEILFWQGQTMQMMYEVIANELKS-

PtPLDν IRANERFSVYIVIPMWP--EGSASVQEILYWQGQTMAMMYKIIAKELEK-

PtPLDε IRAKERFAVYILMPMWP--EGSEPVQDILHWTRQTMAMMYKLVGEALQE-

MtPLDα1 IEAGERFTVYVVVPMWP--EGSSSVQAILDWQRRTMDMMYKDIIEALNA-

MtPLDα2 IEAGERFVVYVVIPMWP--EGSASVQAILDWQRRTMEMMYTEIADAIKK-

MtPLDα3 IEAGERFSVYIVIPMWP--EGSASVQAILDWQRRTMEMMYSDIAEALQR-

MtPLDβ1 IKANERFAVYIVIPMWP--EGGAATQRILFWQNKTMQMMYETISKALVE-

MtPLDβ2 IKHKERFCVYIVIPMWP--EGSTATQRILFWQFKTMQMMYGTIYKALEE-

MtPLDβ3 IKQKERFSVYIVIPMWP--EGSTATQRILFWQFKTMQMMYGTIYKALEE-

MtPLDδ1 IKAKERFAIYIVLPMWP--EGSGAVQEILFWQAQTMQMMYNVVAKELKS-

MtPLDν IIAHERFSVYIVIPMWP--EGSAAVQEILFWQGQTMSMMYKIVADALAK-

MtPLDδ3 IRSRERFTVYIVIPMWP--EGSGSVQEILYFQGQTMQMMYEIIARELRF-

MtPLDε IKARERFAVYIVIPMWP--EGSEPVQDILHWTRETMTMMYKLIGEAIIE-

SbPLDα1 IEAGERFTVYVVVPMWP--EGSASVQAILDWQRRTMDMMYTDITQALQA-

SbPLDα2 IEAGERFTVYVVVPMWP--EGSFSVQPILDWQRRTMEMMYTDITQALHA-

SbPLDα3 IEAGERFAVYVVVPMWP--EGSGSVQAILDWQRRTMEMMYTDIAQAIQA-

SbPLDη1 IEAGEHFAVYVVLPMWP--EGGGSVQAILDWQRRTMDMMYNDISVALEA-

SbPLDη2 IEAGEPFVVYIVVPMWP--EGAWNIQAMLSWQSRTMEMMYTDVSRALKA-

SbPLDμ IEAGERFAVYVVVPLWP--EGSGSVQAILDWQRRTMEMMYRDVTLAIRA-

SbPLDλ IRRGERFAVYVVTPMWP--EGGEAVQAILLWNRRTVEMMYGVVAKAIDD-

SbPLDν IKAKERFAAYIVIPMWP--EGTAAMQEILYWQGHTMSMMYKIVADALRK-

SbPLDβ1 IKANERFSAYIVVPMWP--EGGAATQRILYWQNKTMQMMYETIYRALKE-

SbPLDβ2 IYSNERFSAYIVVPMWP--EGGTPTQRILYWQKKTMQMMYEIIYKALKE-

SbPLDδ IRAGERFAVYVVIPMWP--EGAASVQEILFFQAQTMEMMYKIIADELKA-

SbPLDκ IRAGEPFAAYVVMPMWP--EGSGPAQEILFWQNQTMEMMYRVVAAAAME-

SbPLDζ1 EREKKRFKAIIIIPLLPGFQGAASVRAIMHWQYRTICRGSNSILQNLFD-

SbPLDζ2 EKEKKRFRVIIVIPLLPGFQGAASVRAIMHWQYRTICRGPNSILKNLYD-

AtPLDζ2 HEENKCFRVVIVIPLLPGFQGAATVRALMHWQYRTISREGTSILDNLNA-

AtPLDζ1 HNEKKIFRVVVVIPLLPGFQGAASVRAIMHWQYRTIYRGHNSILTNLYN-

OsPLDζ2 EKEKRCFRVIIVIPLLPGFQGAASVRAIMHWQYRTICRGPNSILKNLYD-

OsPLDζ1 EREKKRFKAIIIIPLLPGFQGAASVRAIMHWQYRTICRGPNSILQNLYD-

PtPLDζ1 YKENKCFRVIIVIPLSPGFQGAATVRAIMHWQYRTISRKKTSILYNLNT-

PtPLDζ2 FNDKKCFRVIIVIPLLPGFQGAASVRAIMHWQYRTICRGQNSILHNLYD-

MtPLDζ1 HKEQEDFRVIVVLPLLPGFQGAATVRALTHWQYRTISRERHSILHNLDA-

Ap*PLDα* IEAGERFTVYVVVPMWP--EGSGSVQAILNWPRRTMEMMYTDIAEALQAK

Ap*PLDβ* IKANERFSVYIVIPMWP--EGGAATQRILYWQKKTMQMMYETIYKALKEE

Ap*PLDδ* IRARKRFAVYIIIPMWP--EGSAAAQEILFWQNQTMRMMYKIIGQELRSM

AcPLDδ IRARERFAVYIIIPMWP--EGSPAVQEILFWQNQTMQMMYKIVGQELRSM

AcPLDβ IKANERFSVYIVIPMWP--EGGAATQRILYWQKKTMQMMYETIYKALKEE

Ac*PLDα* IEAGERFTVYVVVPMWP--EGSGSVQAILDWQRRTMEMMYTDIAEALQAK

Amino acids 251-300

At*PLDα*1 GLE--EDPRNYLTFFCLGNIYVHTKMMIVDDEYIIIGSANINQRSMDGAR

At*PLDα*2 GLEG-EDPRDYLTFFCLGNIYVHTKMMIVDDEYIIIGSANINQRSMDGAR

At*PLDβ*1 GLEGAFSPQDYLNFFCLGNVYVHSKGMVVDDEYVVIGSANINQRSMEGTR

At*PLDβ*2 GLEDEYSPQDYLNFFCLGNIYVHSKGMVVDDEYVVIGSANINQRSMEGTR

At*PLDγ*1 GLDSQFEPQDFLNFFCLGTIYVHSKGMVVDDEFVLIGSANINQRSLEGTR

At*PLDγ*2 GLDGQLEPQDFLNFFCLGNIYVHSKGMVVDDEFVLIGSANINQRSLEGTR

At*PLDγ*3 GLDGQLEPQDFLNFFCLGTIYVHSKGMVVDDEFVLIGSANINQRSLEGTR

At*PLDδ* QSD--AHPLDYLNFYCLGKIYVHAKGMIVDDEYVLMGSANINQRSMAGTK

At*PLDε* GDK--SHPRDYLNFFCLANVYVHSKLMIVDDTYILIGSANINQRSMDGCR

At*PLDα*3 GLD--ANPRDYLTFFCLGNIYVHSKMMIVDDEYIIIGSANINQRSMDGGR

OsPLDα1 GIE--ANPKDYLTFFCLGNIYVHTKMMIVDDEYIIIGSANINQRSMDGAR

OsPLDα2 GID--ADPKDYLTFFCLGNIYVHTKMMIVDDEYIIVGSANINQRSMDGAR

OsPLDη1 RIN--ADPRDYLTFFCLGNIYVHSKMMIVDDEYIIVGSANINQRSMDGGR

OsPLDη2 RMD--ADPRDYLTFFCLGNIYVHSKMMIVDDEYIIVGSANINQRSMDGGR

OsPLDη3 HSD--ADPRDYLTFFCLGNIYVHSKMMIVDDEYIIVGSANINQRSMDGGR

OsPLDν1 GLVE-AHPQDYLNFYCLGKIYVHSKGMVVDDEYVIIGSANINQRSMEGCR

OsPLDν2 GLDD-THPQDYLNFYCLGKIYVHSKGMIVDDEYVLIGSANINQRSMDGSR

OsPLDβ1 GLDDLYEPQDYLNFFCLGNVYVHSKGMIVDDEYVIIGSANINQRSMEGIR

OsPLDβ2 GLDNTYEPQDYLNFFCLGNVYVHSKGMIVDDEYVIIGSANINQRSMEGTR

OsPLDλ GLRGQAHPCDYLNFFCLGNIYVHAKLMIVDDEYVMVGSANLNERSLAGNR

OsPLDμ GIR--ADPTDYLNFFCLGNIYVHAKTMIVDDEYIIVGSANINQRSMDGGR

OsPLDδ NIKN-AHPQDYLNFYCLGNIYVHAKGMIVDDEYVILGSANINQRSLAGSR

OsPLDκ GMEGAAHPRDYLNFYCLGKIYVHSKGMIVDDEYVIVGSANINQRSLAGSR

OsPLDθ GST--QNPREYLSFFCLGNINVNANIMIVDDEYIIVGSANVNQRSMDGGR

PtPLDα1 GLE--EDPRNYLTFFCLGNIYVHAKMMIVDDEYIIIGSANINQRSMDGAR

PtPLDα2 GLN--TDPREYLAFFCLGNIYVHAKMMIVDDEYIIIGSANINQRSMDGSR

PtPLDα3 GVE--ANPKDYLTFFCLGKIYIHAKMMIVDDEYIITGSANINQRSMDGGR

PtPLDα4 GLE--EDPRNYLTFFCLGNIYVHAKMMIVDDEYIIIGSANINQRSMDGAR

PtPLDβ1 GLEDAFSPQDFLNFFCLGNIYVHSKGMIVDDEYVILGSANINQRSMEGTR

PtPLDβ2 GLEEAFSPQDFLNFFCLGNIYVHSKGMIVDDEYVILGSANINQRSMEGTR

PtPLDβ3 GLENTYEPQDYLNFFCLGNIYIHSKGIIVDDEYVILGSANINQRSMEGTR

PtPLDδ1 NLEN-SHPQDYLNFYCLGNVYVHAKGMIVDDEYIILGSANINERSMAGSR

PtPLDδ2 DLVD-SHPQDYLNFYCIGKIYVHAKGMIVDDEYVIVGSANINQRSMAGSK

PtPLDδ3 NLVD-SHPQDYLNFYCIGKIYVHAKGMVVDDEYVIMGSANINQRSMAGSK

PtPLDδ4 NLEN-SHPQDYLNFYCLGNIYVHAKGMVVDDEYVILGSANINQRSMAGSR

PtPLDν GLSYQYHPQYYLNFYCLGKIYVHAKGMVVDDEYVIMGSANINQRSLDGSR

PtPLDε GEP--GHPRDYLNFFCLANVYVHSKLMIVDDAYMLIGSANVNQRSMDGRR

MtPLDα1 GLE--ENPRDYLTFFCLGNIYVHAKMMIVDDEYIIVGSANINQRSMDGAR

MtPLDα2 NIE--AHPRDYLTFYCLGKIYVHSKMMIVDDEYIVIGSANINQRSMDGGR

MtPLDα3 GIR--ANPRDYLSFYCLGNIYVHAKMMIVDDEYIIIGSANINQRSMDGAR

MtPLDβ1 GLEAAFSVQDYLNFFCLGNIYVHSKGMIVDDEYVIVGSANINQRSMEGTR

MtPLDβ2 GLENEYEPQDYLNFFCLGNIYVHSKGMIVDDEYVLMGSANINQRSMEGTR

MtPLDβ3 GLANEYEPQDYLNFFCLGNIYVHSKGMIVDDEYVLMGSANINQRSMEGTR

MtPLDδ1 QLSD-VHPQDYLNFYCLGNIYVHAKGMIVDDEYVILGSANINQRSMAGTK

MtPLDν GLSECYHPQDYLNFYCLGKIYVHAKGMIVDDGYVIIGSANINQRSMDGSR

MtPLDδ3 KLND-SHPQDYLNFYCLGNIYVHAKGMVVDDEYAMVGSANINQRSLAGSR

MtPLDε GEP--GHPRDYLNFFCLANVYVHSKLMIVDDLYILIGSANVNQRSMDGQR

SbPLDα1 GIE--ANPKEYLTFFCLGNIYVHTKMMIVDDEYIIIGSANINQRSMDGAR

SbPLDα2 GIE--ANPKDYLTFFCLGNIYVHSKMMIVDDEYIIVGSANINQRSMDGAR

SbPLDα3 GID--ANPRDYLTFFCLGNIYVHTKMMMVDDEYIIVGSANINQRSMDGAR

SbPLDη1 RID--RNPRDYLTFFCLGNIYVHSKMMIVDDEYIIVGSANINQRSMDGGR

SbPLDη2 NID--ANPKDYLSFFCLGNIYVHSKLMIVDDEYIIIGSANINQRSMDGAR

SbPLDμ GLQ--DDPRDYLTFFCLGNIYVHAKTMIVDDEYIIVGSANINQRSMDGGR

SbPLDλ GLRGQAHPCDYLNFFCLGNIYVHAKLMIVDDEYVMVGSANLNERSLAGNR

SbPLDν GLHE-SHPQEYLNFYCLGKIYVHSKGMIVDDEYVLIGSANINQRSMDGSR

SbPLDβ1 GLDDMYEPQDYLNFFCLGNVYVHSKGMIVDDEYVIVGSANINQRSMEGIR

SbPLDβ2 GLDGTYEPQDYLNFFCLGNVYVHSKGMIVDDEYVIIGSANINQRSMEGTR

SbPLDδ DIKD-MQLEDYLNFFCLGNIYVHAKGMIVDDEYVILGSANINQRSLAGSR

SbPLDκ GKSG--HPTDYLNFYCLGNVYVHSKGMIVDDEYVIIGSANINQRSLAGSR

SbPLDζ1 GPK----AHDYISFYGLRAIYVHSKLMIVDDRITLIGSANINDRSLLGSR

SbPLDζ2 GSK----AHDYISFYGLRAIYVHSKLMIIDDRMALIGSANINDRSLLGSR

AtPLDζ2 GPK----TQDYISFYGLRSIYVHSKLMIVDDRIAVIGSSNINDRSLLGSR

AtPLDζ1 GVK----AHDYISFYGLRAVYVHSKIMIVDDRAALIGSANINDRSLLGSR

OsPLDζ2 GSK----AHDYISFYGLRAIYVHSKLMIIDDRMTLIGSANINDRSLLGSR

OsPLDζ1 GPK----AHDYISFYGLRAIYVHSKLMIIDDRITLIGSANINDRSLLGSR

PtPLDζ1 GPK----THDYISFCGLRTVYVHSKVMIVDDRIAYIGSSNINDRSLLGSR

PtPLDζ2 GPK----THDYISFYGLRSVYVHSKIMIIDDRTTLIGSANINDRSLLGSR

MtPLDζ1 GRK----THDYISFYGLRSVYVHSKLMIIDDRVALIGSSNINDRSLLGSR

Ap*PLDα* GLE--DNPQDYLTFFCLGN??????????????????????????????

Ap*PLDβ* GLEDIYGPQDYLNFFCLGNIYVHSKGMIVDDEYVIVGSANINQRSLEGTR

Ap*PLDδ* NMEE-AHPQDYLNFFCLGNIYVHSKGMIVDDEFVLLGSANINQRSMDGSR

AcPLDδ NMEG-AHPHEYLNFYCLGNIYVHSKGMIVDDEVVLLGSANINQRSMDGIR

AcPLDβ GLEDIYGPQDYLNFFCLGNIYVHSKGMIVDDEYVIVGSANINQRSLEGTR

Ac*PLDα* GLE--DNPKDYLTFFCLGNIYVHAKMMIVDDEKIIVGSANINQR??????

Amino acids 301-350

At*PLDα*1 DSEIAMGGYQPHH-LSHR----QPARGQI-HGFRMSLWYEHL-GFLDPSS

At*PLDα*2 DSEIAMGGYQPYH-LSTR----QPARGQI-HGFRMSLWYEHL-GFLDPSS

At*PLDβ*1 DTEIAMGAYQPQH-TWAR--KHSGPRGQI-YGYRMSLWAEHM-AFTQPES

At*PLDβ*2 DTEIAMGAYQPQH-TWAR--RQSGPRGQI-YGYRMSLWAEHM-AFVEPES

At*PLDγ*1 DTEIAMGGYQPHY-SWAM--KGSRPHGQI-FGYRMSLWAEHL-GFEEPEN

At*PLDγ*2 DTEIAMGGYQPHH-SWAK--KGSRPRGQI-FGYRMSLWAEHL-GFEEPEN

At*PLDγ*3 DTEIAMGGYQPHH-SWAK--KGSRPRGQI-FGYRMSLWAEHL-GFEEPEN

At*PLDδ* DTEIAMGAYQPNH-TWAH--KGRHPRGQV-YGYRMSLWAEHL-GFVEPSD

At*PLDε* DTEIAIGCYQTNT-NNTN---------EI-QAYRLSLWYEHT-GSSEPES

At*PLDα*3 DTEIAMGAYQPSHLLSTN---NMRPVGQI-FSFRISLWLEHL-RFQCPES

OsPLDα1 DSEIAMGGYQPYH-LATR----QPARGQI-HGFRMALWYEHL-GFQRPES

OsPLDα2 DSEIAMGAYQPHH-LAAA---GRPARGQV-HGFRMALWYEHL-GFQRPES

OsPLDη1 DSEIAMGAFQPCH-LNTK---GLVARGQI-HGFRMSLWYEHL-GFLNPES

OsPLDη2 DSEIAMGAFQPHH-LNIG---GQLARGQI-HGFRMSLWYEHLGGFLHPGS

OsPLDη3 DSEIAMGAFQPHH-LNVN---GQAARGQI-HGFRMSLWYEHL-GFVHPGS

OsPLDν1 DTEIAMGAYQPHY-KWSADHDQGPPRGQV-YGYRMSLWAEHL-GFGRPET

OsPLDν2 DTEIAMGAYQPHY-SWAG--RKKAPRGQV-YGYRMSLWAEHL-GFRWPHS

OsPLDβ1 DTEIAMGAYQPQY-TWAS--KVSAPRGQI-YGYRMSLWAEHI-GFNYPET

OsPLDβ2 DTEIAMGAYQPQY-TWAN--MLSAPRGQI-YGYRMSLWAEHI-GFSCPES

OsPLDλ DSEIAQGSYQPAH-LNGG--PSGRARGLV-HAFRMSLWHEHL-MFLEPES

OsPLDμ DTEIAMGAYQPSH-LASV---NRPARGQV-HGFRLALWHEHL-GLLRPSS

OsPLDδ DTEIAMGAYQPHH-TWST--KGGHPRGQV-YGYRTSLWAEHL-GFKDPSS

OsPLDκ DTEIAVGAYQPNL-RAGA---G-AGDGQV-FGFRMLLWEEHL-GLRSPES

OsPLDθ DTEMAMGAYQPRH-LDTP---NSWPRGQV-HQFRLALWREHL-GMIYPSR

PtPLDα1 DSEIAMGGYQPYH-LATR----QPARGQI-HGFRLGLWYEHL-GFLKPEN

PtPLDα2 DSEIAMGGYQPHH-LATS----QPARGQI-YGFRMALWYEHL-GFQHPES

PtPLDα3 DTEIAMGAYQPYH-LATN----QPARGQI-HGFRMSLWYEHL-GFCHPES

PtPLDα4 DSEIAMGGYQPYH-LATR----QPARGQI-HGFRLGLWYEHL-GFLHPES

PtPLDβ1 DTEIAMGAYQPQH-TWAK--KQSNPLGQI-HGYRMSLWAEHT-GFTKPES

PtPLDβ2 DTEIAMGAYQPQH-TWAR--KQSNPLGQI-HGYRMSLWAEHT-GFTKPES

PtPLDβ3 DTEIAMGAYQPNH-TLAR--KNSRSHGQV-YGYRMSLWAEHI-GFEQPET

PtPLDδ1 DTEIAMGAYQPHH-TWSN--KKRHPLGQV-YGYRMSLWAEHL-GFKEPGS

PtPLDδ2 DTEIAMGSYQPHH-TWVT--KKKHPRGQV-YGYRMSLWREHL-GFMEPDN

PtPLDδ3 DTEIAMGSYQPRH-TWAA--RKKHPRGQI-YGYRMSLWVEHL-GFMEPED

PtPLDδ4 DTEIAMGAYQPHH-TWSN--KKRHPLGQV-YGYRMSLWAEHL-GFKEPES

PtPLDν DTEIAMGAYQPTY-TWAR--KNSHPHGQV-YGYRMSLWAEHL-GFDEPQS

PtPLDε DTEIAIGCYQPKNGENTR-----NPRDIL--AYRMSLWYEHT-GFLEPES

MtPLDα1 DSEIAMGAYQPYH-LANR----QPARGQI-HGFRMSLWYEHL-GFLHPES

MtPLDα2 DTEIAMGAFQPHH-LASTSNGSQRPQGQV-YGFRRALWYEHI-GFDEPER

MtPLDα3 DSEIAIGAFQPNH-IATN---NRPPKGQI-YGFRRALWHEHL-GYENPES

MtPLDβ1 DSEIAMGAYQPHH-TWAR--KHSNPLGQI-HGYRMSLWAEHT-GFLQPES

MtPLDβ2 DTEIAMAAYQPNH-TWAT--KKSNPHGQV-HGYRMSLWSEHI-GFKQPES

MtPLDβ3 DTEIAMGAYQPNH-TWAT--KKSNPHGQV-HGYRMSLWSEHI-GFKQPES

MtPLDδ1 DTEIAMGSYQPHY-TWSA--RKKHPHGQI-YGYRMSLWAEHL-GFKEPER

MtPLDν DTEIAMGAYQPKH-TLAE--KNSLPRGQV-YGYRMSLWAEHL-GFTEPHT

MtPLDδ3 DTEIAMGAYQPHH-TWSK--KNGHPRGQV-YGYRMSLWAEHL-GFKEPES

MtPLDε DTEIAIGGYQSHQ-DGVD---HPISKGDI-HEYRMSMWYEHT-GFLEPES

SbPLDα1 DSEIAMGAYQPYH-LATR----QPARGQI-HGFRMSLWYEHL-GFQRPES

SbPLDα2 DSEIAMGAYQPYH-LATK----QPARGQI-HGFRMSLWYEHL-GFQHPES

SbPLDα3 DSEIAMGAYQPHH-LAAA---SRPARGQV-HGFRMSLWYEHL-GFTRPDS

SbPLDη1 DSEIAMGAYQPCH-LNTK---GQVARGQV-HGFRMSLWYEHL-GFLNPGS

SbPLDη2 DSEIAMGAYQPSH-LNTN---GDVARGQV-HGLRMSLWYEHL-GFKDPGS

SbPLDμ DTEIAMGAYQPGY-LATR---NRPARGQV-HGFRVSLWQEHL-ALLRPSS

SbPLDλ DSEIAQGSYQPAH-LNGP---CRRARGQV-HGFRMSLWHEHFIMFLEPES

SbPLDν DTEIAMGAYQPHY-SWAG--SGSPPKGQV-YGYRMSLWAEHL-GFRRPES

SbPLDβ1 DTEIAMGAYQPQY-TWAN--KLSAPRGQI-YGYRMSLWAEHI-GFHYPES

SbPLDβ2 DTEIAMAAYQPQH-TWAN--TLSAPRGQI-FGYRMSLWAEHI-GFTMPES

SbPLDδ DTEIAMGAYQPHY-AWST--KNGHPHGQV-YGYRTSLWAEHL-GFKDPSS

SbPLDκ DTEIAVGAYQPDH-TGAD---GDAPRGKV-HAYRMSLWEEHL-GVQRPES

SbPLDζ1 DSEIAVVIEDKEV-VNSKMDGRPWEAGKFSLSLRLSLWAEHL-GIMDPID

SbPLDζ2 DSEIGIVIEDKEV-VSSIMDGRPWEAGKFSLSLRLSLWAEHL-GIMDPVD

AtPLDζ2 DSEIGVVIEDKEF-VESSMNGMKWMAGKFSYSLRCSLWSEHL-GIEDPIK

AtPLDζ1 DSEIGVLIEDTEL-VDSRMAGKPWKAGKFSSSLRLSLWSEHL-GIIDPVS

OsPLDζ2 DSEIGMIIEDKEV-VSSIMDGRHWEAGKFSLSLRLSLWAEHL-GIMDPVD

OsPLDζ1 DSEIAVVIEDKEV-VSSKMNGKPWEAGKFSLSLRLSLWAEHL-GIMDPID

PtPLDζ1 DSEIGIVTEDKEF-VESSMNGETWKAGKFAYSLRRSLWSEHL-GISDPVA

PtPLDζ2 DSEIGVLIEDKEL-VDSLMGGKPRKAGKFTLSLRLSLWSEHL-GVIDPVI

MtPLDζ1 DSEIGVVIEDKEY-VESLMNGKPWKAGKFSHSLRCSLWSEHL-GIMDPVA

Ap*PLDα* ETKQQTGEYQPEQ??????????????????????????????????????

Ap*PLDβ* DTEIAMGA??

Ap*PLDδ* DTEIAMGA??

AcPLDδ DTEIAMGAYPPHH-TWAG????????????????????????????????

AcPLDβ DTEIAMGAYQPEY-TWAR--KHSRPYGQI-YSYRMSLWAEHL-GFLEPEK

Ac*PLDα* ??

Amino acids 3561-380

At*PLDα*1 LECIEKV-NRISDKYWDFYLPG-HLLRYPI

At*PLDα*2 QECIQKV-NRVADKYWDLYLPG-HLLRYPI

At*PLDβ*1 IECVRKV-RTMGERNWKQFMRG-HLLKYPV

At*PLDβ*2 LGCVRKV-RTVAEENWEQFMRG-HLMKYPV

At*PLDγ*1 MECVRRV-RQLSELNWRQYMSG-HLLKYPV

At*PLDγ*2 MECVRRV-RQLSELNWGQYMSG-HLLKYPV

At*PLDγ*3 MECVRRV-RQLSELNWRQYMPG-HLLKYPV

At*PLDδ* LECLKKV-NTISEENWKRFLQG-HLIKYPL

At*PLDε* LECVRGL-RTIGEQMWEIYMLGIHLVAYPI

At*PLDα*3 EECIRMV-NATADELWGLYLPG-HLLSYPI

OsPLDα1 LECVQKV-NRIAEKYWDMYLPG-HLLSYPI

OsPLDα2 LDCVRKV-NAMADRCWDLYLPG-HLLTYPV

OsPLDη1 LECVQRV-NKMADKYWDLYLPG-HLLTYPV

OsPLDη2 LECVRRV-NEMANKHWELYLPG-HLLTYPI

OsPLDη3 LECVRRV-NAMADRHWQLYLPG-HLLTYPV

OsPLDν1 GECVRRV-REMAEENWRAYTKG-HLMCYPL

OsPLDν2 VECVRQV-NEMAEENWARYMRG-HLMRYPI

OsPLDβ1 MECMRRV-RQIGEQNWERFMRG-HLMKYPV

OsPLDβ2 LECTRQV-RHIGEQNWRQFMRG-HLVKYPV

OsPLDλ AECVRAV-RRAAEATWDAYLLG-HLLPFPI

OsPLDμ LASVRLV-NQAARRHWDAFLPG-HLMAYPV

OsPLDδ LECVNYV-NEIAEENWRRFLQG-HLLKYPV

OsPLDκ PECVKRV-NEIAAENWRRYMQG-HLMRYPV

OsPLDθ HGCMSRV-NQAARQHWDMYLPG-HLMAYPV

PtPLDα1 EDCIRKV-NQIADKYWDLYLPG-HLLRYPI

PtPLDα2 VQCIQLV-NQVANENWEKYLMS-HLLRYPI

PtPLDα3 LECVRKV-NHIAEKNWQLYLPG-HLLAYPI

PtPLDα4 EECVTKV-NQITDKYWDLYLPG-HLLRYPI

PtPLDβ1 LECVRRI-RTMGEMNWKQFMRG-HLLKYPV

PtPLDβ2 LECVRRI-KAMGEMNWKQFMTG-HLLKYPV

PtPLDβ3 IECVRRV-RSLGEQNWRQYMKG-HLLKYPV

PtPLDδ1 LDCVKSV-NKIAEDNWKKFLQG-HLLKYPV

PtPLDδ2 LLCVKRV-NHTAEENWKKFLKG-HLLKYPL

PtPLDδ3 LHCVKKV-NKIAEDNWRKFLQG-HLLKYPL

PtPLDδ4 LDCVKSV-NKIAEDNWKKFLQG-HLLKYPV

PtPLDν LECMKLV-NKTSRHNWKAYMRG-HLMQYPI

PtPLDε LACAQRM-RLVGEQMWNVYMEGVHLVNYPL

MtPLDα1 EECIRKV-NQIADKYWDLYLPG-HLLRYPI

MtPLDα2 LECVKLL-NRVAERNWKLYVNT-HLLRYPV

MtPLDα3 LDCINLV-NGFAKTNWDIYRSFHHLMQYPI

MtPLDβ1 LECVRKV-RAIGEMNWKQFMRG-HLLKYPV

MtPLDβ2 IECVRRI-RSLSEYNWRQYMNG-HLLKYPL

MtPLDβ3 IECVRRI-RSLSEYNWRQYMNG-HLLKYPL

MtPLDδ1 LECVRKV-NEIADDNWRKYLQG-HLLKYPV

MtPLDν LECVRRV-NRIARKNWSIYMKG-NLMHYPV

MtPLDδ3 LECVESV-NKIAEDNWRKFLQG-HIMKYPI

MtPLDε LKCVQRM-CSIGDKMWKIYMEGVHLVTYPM

SbPLDα1 VECVQKV-NRIAEKYWDLYLPG-HLLMYPI

SbPLDα2 MECVQKV-NRIADKYWDLYLPG-HLLSYPI

SbPLDα3 VECIRKV-NAMADRYWDLYLPG-HLLTYPV

SbPLDη1 LECVQRV-NQMADKYWDLYLPG-HLLRYPV

SbPLDη2 LKCVRKV-NKRAEEFWKMYLHG-HLLSYPI

SbPLDμ LACVRRM-NQVAKQHWDMFLPG-HLMAYPV

SbPLDλ LECVRAV-RRAAERLWDAYLPG-HLLPFPI

SbPLDν EECVQLV-NQMADDNWASYMKG-HLMKYPV

SbPLDβ1 LECMRRV-RHLGEENWKQFMRG-HLMKYPV

SbPLDβ2 LECTRQV-RHIGQQNWEKFMKG-HLLKYPV

SbPLDδ LECVRRV-NQIAVENWQRFLQG-HLLKYPV

SbPLDκ PGCVKLV-NGI??????????G-HLMRYPV

SbPLDζ1 DSTFKNIWMATAKTNTMIYVRG-HLVSFPL

SbPLDζ2 DSVYKSIWMATAKENTMIYVRG-HIVCFPL

AtPLDζ2 DATYKDLWMATAKKNTDIYTRG-NLVCFPL

AtPLDζ1 DSTYKEIWMATAKTNTMIYIKG-HLVSFPL

OsPLDζ2 DLTYNNIWMGTAKANTKIYVRG-HLVSFPL

OsPLDζ1 DSTFKNIWMATAKTNTMIYIKG-HLVSFPL

PtPLDζ1 ETTYRDLWLATAKENSKIYVKG-HLVSFPL

PtPLDζ2 DSTYKDIWMSTAKTNTMIYTRG-HLVSFPL

MtPLDζ1 DSTYKELWAATAKENTRIYIKG-LLVSFPL

Ap*PLDα* ????????????????????????????????

Ap*PLDβ* ????????????????????????????????

Ap*PLDδ* ????????????????????????????????

AcPLDδ ????????????????????????????????

AcPLDβ PQCMRRI-RELGEYNWKQF???????????

Ac*PLDα* ????????????????????????????????

Fig. S4. Alignment of phospholipase D amino acid sequences of species used for molecular phylogenetic analysis in Fig. 6. At, *Arabidopsis thaliana*; Os, *Oryza sativa*; Pt, *Populus trichocarpa*; Mt, *Medicago truncatula*; Sb, *Sorghum bicolor*; Ap, *Allium porrum*; Ac, *Allium cepa*.