

## Table S1. n-PTEN peptides identified by LC-MS/MS

UniProt ID: P60484

Protein Description: Phosphatidylinositol 3,4,5-trisphosphate 3-phos

Coverage: 91.32%

# Unique peptides: 213

# PSMs: 588

<u>Sequence</u>	<u># PSMs</u>
DKmFHFVWNTFFIPGPEETSEK	12
ADNDKEYLVLTlTKNDLDKANK	2
ADNDKEYLVLTlTKNDLDK	3
TVEEPSNPEASSSTSVTPDVSDNEPDHYR	7
EDKFmYFEFPQPLPVcGDIKVEFFHK	1
RYQEDGFDLDTYIYPNIIAmGFPAER	2
NPEASSSTSVTPDVSDNEPDHYR	4
HFWVNTFFIPGPEETSEK	2
DLDTYIYPNIIAMGFPAER	4
EPSNPEASSSTSVTPDVSDNEPDHYR	7
VKIYSSNSGPTR	2
EPSNPEASSSTSVtPDVSDNEPDHYR	8
STSVTPDVSDNEPDHYR	2
LVLTlTKNDLDKANK	2
ADNDKEYLVLTlTK	20
MFHFVWNTFFIPGPEETSEK	8
ADNDKEYLVLTlTKNDLDK	1
KDKmFHFVWNTFFIPGPEETSEK	1
NHLDYRPVALLFHK	25
HLDYRPVALLFHK	8
REDKFmYFEFPQPLPVcGDIK	2
DNDKEYLVLTlTK	3
SSTSVTPDVSDNEPDHYR	5
cSDTTSDPENEPFDEDQHTQITK	1
cEDLDQWLSEDDNHVAAIHcK	1
DLDTYIYPNIIAmGFPAER	5
DIKVEFFHKQNK	2
cSDTTSDPENEPFDEDQHTQITKV	2
DKmFHFVWNTFFIPGPE	1
DTTSDPENEPFDEDQHTQITKV	2
DKkGVTIPSQR	4
FmYFEFPQPLPVcGDIK	3
TVEEPSNPEASsSTSVTPDVSDNEPDHYR	9
TSVTPDVSDNEPDHYR	1
DHNPPQLELIKPF	3
GDIKVEFFHKQNK	1
NDKEYLVLTlTK	7
EPFDEDQHTQITKV	3
NDLDKANKdKANR	2
IKPFcEDLDQWLSEDDNHVAAIH	1
RYVYYYSYLLK	6
TGVmIcAYLLHR	1
SVTPDVSDNEPDHYR	1

EPFDEDQHTQITK	5
DTTSDPENEPFDEDQHTQITK	1
cSDTTSDPENEPFDEDQHTQITkV	3
LVLTLTKNDLKD	2
DKMFHFVWNTFFIPGPEETSEK	3
VAQYPFEDHNPPQLELIK	2
DLDLTYIYPNIIAmGFPAERLEGVYR	1
DKmFHFVWNTFFIPGPEET	1
YRPVALLFHK	6
GKFLKAQEAL	1
DKEYLVLTLTK	4
GDIKVEFFHK	9
DEDQHTQITKV	2
EDHNPPQLELIK	4
YPFEDHNPPQLELIKPF	2
RYQEDGFDLTLTYIYPN	2
DIKVEFFHK	7
VKIYSSNSGPTRR	2
NHLDYRPVALLFH	1
DYRPVALLFHK	3
IPGPEETSEKVENGLc	1
EDKfMYFEFPQPLPVcGDIK	1
DHNPPQLELIK	5
AERLEGVYR	3
VSDNEPDHYR	3
VNTFFIPGPEETSEK	1
IPGPEETSEKVE	1
EDKfMYFEFPQPLPVcGDIK	1
VAQYPFEDHNPPQLEL	2
SSTSVtPDVSDNEPDHYR	2
YIYPNIIAMGFPAER	1
kkGVTIPSQR	2
TLTKNDLKDANK	1
DGFDLTLTYIYPNIIAmGFPAER	4
AQEALDFYGEVR	10
NLDKANKDK	2
EDQHTQITKV	2
DEDQHTQITkV	4
FWVNTFFIPGPEETSEK	1
HYDTAKFNcR	1
NHLDYRPVALL	8
DKKGVVTIPSQR	3
WVNTFFIPGPEETSEK	1
NHLDYRPVALLF	3
DHNPPQLELIKPFc	2
KGVTIPSQR	4
FDEDQHTQITkV	2
NLDKANKDkANR	1
MFHFVWNTFFIPGPEETS	1
FPAERLEGVYR	4
HYDTAkFNcR	2
IYSSNSGPTRR	3

NHLDYRPVAL	8
DQEIDSIcSIER	2
PENEPFDEDQHTQITkV	4
YPNIIAmGFPAER	1
DKmFHFVWNTF	3
IYSSNSGPTR	4
MFHFVWNTFFIPGPE	1
NTFFIPGPEETSEK	1
LYIYPNIIAmGFPAER	2
NLDLKDANK	1
GPEETSEKVE	1
LDLYIYPNIIAmGFPAER	2
PAERLEGVYR	3
GFPAERLEGVYR	3
PGPEETSEK	5
EPFDEDQHTQITkV	1
LTLTKNDLKD	1
VAQYPFEDHNPPQ	4
LVLTLTKND	1
VTLTKNDLKD	1
ADNDKEYL	5
PVALLFHK	1
IYPNIIAmGFPAER	2
IIkEIVSR	2
DEDQHTQITK	1
RYQEDGFDDLTY	1
NLDLkANKDK	1
EALDFYGEVR	1
NHLDYRPVA	5
DTTSDPENEPFDEDQHTQITkV	4
VAQYPFEDHNPPQLE	1
TFFIPGPEETSEK	2
ADNDKEYLVLT	4
EDHNPPQLEL	2
YQEDGFDDLTYIYPNIIAmGFPAER	2
YPFEDHNPPQLEL	2
YPFEDHNPPQ	2
IYNLcAER	3
HYDTAK	2
YSSNSGPTR	1
LDYRPVALLFHK	3
RYVYYYSY	2
ADNDKEYLV	1
YFSPNFKVK	3
EDHNPPQLELIKPF	1
YIYPNIIAmGFPAER	3
EkVENGSLe	1
TPDVSDNEPDHYR	1
FEDHNPPQL	1
DSDPENEPFDEDQHTQITkV	2
DPENEPFDEDQHTQITkV	1
IPGPEETSEK	3

EDQHTQITkV	1
KIYSSNSGPTR	1
GVTIPSQRR	2
VAQYPFEDHNPPQL	1
KVEFFHK	2
DNEPDHYR	4
YPFEDHNPPQLE	2
FEDHNPPQ	2
VAQYPFEDHN	1
SGGTcNPQF	1
NNIDDVVR	4
EPSNPEASSSTS	1
DHNPPQLELIKp	1
DHNPPQLEL	3
LELIKPFc	2
FIPGPEETSEKVE	2
HLDYRPVAL	2
REDKFMYF	2
YVYYYSYLLK	2
YPFEDHNPPQL	2
FFIPGPEETSEK	3
EDLDQWLSE	1
REDkFmYF	3
LDYRPVALL	1
EPFDEDQH	1
RYQEDGFDDL	1
LPVcGDIK	1
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NHLDYR	1
LDYRPVAL	1
DKmFHFwVN	3
YFSPNFK	4
EDHNPPQL	2
LYIYPNIIAm	1
IKVEFFHK	1
REDKFmYF	4
EYLVLTlTK	2
DQHTQITkV	1
IIKEIVSR	3
GVTIPSQR	7
IIAmGFPAER	3
HKNHYK	1
LYIYPNIIAmG	1
SDPENEPFDEDQHTQITkV	1
EFPQPLPvCg	3
NIIAmGFPAER	1
FIPGPEETSEK	3
YFSPNFkVK	2
EDHNPPQLE	1
EFPQPLPvC	1
MFHFwVNTF	2
SDTTDSPENEPFDEDQHTQITkV	1

LDFYGEVR	1
NHLDYRPV	1
DGFDDLTYIYPN	1
DLDLTYIYPNIIAmG	1
IYSSNSGPTRRE	1
LVLTLTK	2
EPFDEDQHTQ	2
RYVYYYS	2
NHLDYRP	2
VAQYPFE	1
YSSNSGPTRR	1
YPNIIAm	1
IIAmGFPAERLEGVYR	1
VAQYPFEDHNPPQLELIKPFc	1
DYRPVALL	1
NDKEYLVLT	1
LELIKPF	1
DKmFHFVW	1
DKmFHF	1
KLYFTK	1
LYFTkTVE	1
YIYPNIIAm	1
RYQEDGF	2
DKmFHFVWNT	1
REDKFmYFE	2
DKmFHFVWNTFFIPGPEETS	1
YYSYLLK	2
DYRPVAL	1
FSPNFKVK	1
QYPFEDHNPPQ	1
EPSNPEASSS	1
FMYFEFPQPLPVcGDIK	1
FSGGTcNPQF	1
FPAERLE	1
DIKVEFF	1

### 3 from the NEDD4-1 ubiquitylation experiment.

phatase and dual-specificity protein phosphatase PTEN OS=Homo sapiens GN=PTEN PE=1 SV=1 - [PTEN\_

<u>Modifications</u>	<u>Xcorr score</u>	<u>Charge</u>	<u>MH+ [Da]</u>
M3(Oxidation)	6.58	3	2702.26389
	6	3	2521.32163
	5.84	3	2208.14096
	5.74	4	3146.36538
M5(Oxidation); C16(Carbamidomethyl)	5.67	4	3263.56728
M21(Oxidation)	5.51	3	3223.54428
	5.47	3	2504.08225
	5.34	2	2165.04033
	4.93	2	2312.16655
	4.89	3	2817.21054
	4.86	3	1308.68937
T14(Phospho)	4.82	3	2897.17875
	4.82	3	1918.84256
	4.8	3	1685.97873
	4.8	2	1622.8676
	4.74	3	2443.14365
K14(GlyGly)	4.68	3	2322.18143
M4(Oxidation)	4.65	3	2830.36411
	4.65	4	1722.95156
	4.63	3	1608.9058
M6(Oxidation); C17(Carbamidomethyl)	4.62	4	2632.25942
	4.59	2	1551.83013
	4.58	2	2005.87358
C1(Carbamidomethyl)	4.55	3	2809.13944
C1(Carbamidomethyl); C20(Carbamidomethyl)	4.52	4	2555.09829
M14(Oxidation)	4.47	2	2328.16533
	4.4	3	1532.82099
C1(Carbamidomethyl)	4.39	3	2908.21653
M3(Oxidation)	4.34	3	2128.00669
	4.13	3	2661.13987
K3(GlyGly)	4.1	3	1342.74277
M2(Oxidation); C13(Carbamidomethyl)	4.06	2	2104.00224
S12(Phospho)	4.05	3	3226.34287
	4.02	3	1831.81217
	4.01	3	1547.82383
	4.01	3	1589.84342
	3.98	2	1436.804
	3.98	2	1686.79656
K8(GlyGly)	3.97	4	1615.81386
C5(Carbamidomethyl)	3.88	4	2752.27382
	3.85	2	1530.80351
M4(Oxidation); C6(Carbamidomethyl)	3.83	3	1449.73743
	3.81	2	1730.7614

	3.78	2	1587.7282
	3.78	3	2562.07651
C1(Carbamidomethyl); K24(GlyGly)	3.77	3	3022.25095
	3.76	3	1372.80283
	3.75	4	2686.24624
	3.74	3	2138.08536
M14(Oxidation)	3.74	3	3045.55094
M3(Oxidation)	3.72	3	2358.08896
	3.71	3	1243.73124
	3.69	2	1104.64275
	3.67	2	1322.76042
	3.65	3	1219.64664
	3.65	2	1313.6281
	3.6	3	1432.74469
	3.59	3	2084.05973
	3.58	2	2121.97075
	3.58	3	1162.62915
	3.58	3	1464.79364
	3.57	3	1594.84897
	3.53	3	1358.7601
C17(Carbamidomethyl)	3.53	2	1845.85674
M5(Oxidation); C16(Carbamidomethyl)	3.53	3	2476.16471
	3.51	2	1303.70195
	3.51	3	1092.57676
	3.49	2	1231.53264
	3.46	2	1694.82976
	3.44	2	1314.64116
C16(Carbamidomethyl)	3.43	3	2460.17026
	3.42	2	1896.92082
T6(Phospho)	3.4	2	2085.83208
	3.4	2	1754.89507
K1(Acetyl); K2(GlyGly)	3.39	3	1269.72699
	3.38	3	1360.74149
M17(Oxidation)	3.35	3	2647.27622
	3.32	2	1397.67253
	3.32	3	1160.59055
	3.26	2	1198.606
K10(GlyGly)	3.26	2	1427.67534
	3.26	2	2027.97698
C9(Carbamidomethyl)	3.21	3	1311.58985
	3.18	2	1310.72453
	3.17	2	1228.7
	3.16	2	1880.9063
	3.15	3	1457.79306
C14(Carbamidomethyl)	3.15	2	1707.85417
	3.14	2	985.57836
K11(GlyGly)	3.12	2	1574.74309
K8(GlyGly); K10(GlyGly)	3.11	4	1729.85671
	3.11	2	2186.00517
	3.07	2	1336.70232
K6(GlyGly); C9(Carbamidomethyl)	3.06	3	1425.63398
	3.05	3	1237.62842

	3.02	2	1197.63713
C8(Carbamidomethyl)	3.01	2	1464.66277
K16(GlyGly)	2.99	3	2140.97898
M7(Oxidation)	2.97	2	1494.7415
M3(Oxidation)	2.97	2	1487.6779
	2.93	2	1081.52641
	2.93	2	1868.88506
	2.91	2	1595.76311
M11(Oxidation)	2.9	2	1985.02031
	2.89	2	917.46849
	2.87	2	1104.50432
M13(Oxidation)	2.87	2	2213.12358
	2.87	2	1189.63335
	2.86	2	1393.72038
	2.85	2	973.44957
K13(GlyGly)	2.84	2	1800.84209
	2.83	2	1160.65288
	2.82	2	1541.7011
	2.8	2	1016.60076
	2.73	2	1259.72099
	2.71	2	967.43712
	2.71	2	924.56725
M8(Oxidation)	2.7	2	1607.82244
K3(GlyGly)	2.69	3	1071.64826
	2.68	2	1214.56499
	2.67	2	1634.7332
K5(Acetyl)	2.65	2	1202.60149
	2.64	2	1198.57829
	2.64	2	1084.55315
K22(GlyGly)	2.62	2	2775.18633
	2.61	2	1783.83379
	2.6	2	1481.7188
	2.6	2	1280.63835
	2.6	2	1191.56609
M20(Oxidation)	2.59	2	3067.45244
	2.57	2	1598.74797
	2.55	2	1243.54057
C5(Carbamidomethyl)	2.55	2	1038.49785
	2.54	2	734.34691
	2.52	2	968.44249
	2.52	2	1471.8449
	2.5	2	1176.53728
	2.49	2	1066.50481
	2.48	2	1129.60503
	2.48	2	1676.87187
M9(Oxidation)	2.46	2	1770.89311
K2(GlyGly); C9(Carbamidomethyl)	2.46	2	1149.52129
	2.45	2	1544.65984
	2.45	2	1096.50517
K19(GlyGly)	2.43	2	2458.06743
K17(GlyGly)	2.42	2	2256.02007
	2.42	2	1086.53057



K9(GlyGly)	2.42	2	1312.6508
	2.41	2	1209.622
	2.41	2	1013.58574
	2.4	2	1654.78887
	2.39	2	934.515
	2.39	2	1045.43315
	2.38	2	1485.66338
	2.36	2	983.4232
	2.35	2	1219.53862
	C5(Carbamidomethyl)	2.32	2
2.32		2	944.48125
2.31		2	1192.49529
2.31		3	1400.75653
2.27		2	1062.52263
C8(Carbamidomethyl)	2.27	2	1019.55516
	2.27	2	1461.71025
	2.26	2	1083.59465
	2.26	2	1135.52788
	2.26	2	1374.69805
	2.25	2	1356.62456
	2.25	2	1380.67021
K4(GlyGly); M6(Oxidation)	2.21	2	1134.49883
	2.21	2	1265.56658
	2.2	2	1059.61833
	2.18	2	1016.39562
	2.18	2	1257.53826
C4(Carbamidomethyl)	2.18	2	901.48149
	2.14	2	993.52916
	2.13	2	817.39507
	2.12	2	946.53685
M3(Oxidation)	2.1	3	1239.56229
	2.1	2	902.44188
M11(Oxidation)	2.09	2	949.43761
	2.09	2	1327.69853
	2.09	2	1047.59905
M6(Oxidation)	2.09	3	1151.52436
	2.09	2	1079.63591
K8(GlyGly)	2.06	2	1183.60222
	2.05	2	957.60729
	2.04	2	857.48198
M4(Oxidation)	2.03	2	1120.58159
	2.02	2	826.43187
M11(Oxidation)	2.01	2	1384.72002
K18(GlyGly)	2.01	3	2343.03971
C9(Carbamidomethyl)	2.01	2	1143.55022
M5(Oxidation)	2	2	1234.62822
	1.99	2	1233.60271
K7(GlyGly)	1.99	2	1243.64946
	1.99	2	1078.47746
C9(Carbamidomethyl)	1.98	2	1086.52495
	1.98	2	1228.56108
K23(GlyGly)	1.98	3	2862.21402

	1.98	2	998.4959
	1.97	2	1013.51592
	1.96	2	1545.71282
M14(Oxidation)	1.96	3	1727.85898
	1.95	3	1366.67182
	1.95	2	787.52959
	1.95	2	1245.50005
	1.95	2	1013.47276
	1.94	2	914.44652
	1.94	2	853.40978
	1.91	2	1124.54424
M7(Oxidation)	1.9	2	837.4193
M4(Oxidation)	1.9	3	1837.96598
C21(Carbamidomethyl)	1.89	3	2542.25388
	1.88	2	946.53728
	1.88	2	1094.57305
	1.88	2	859.52751
M3(Oxidation)	1.87	2	1026.45281
M3(Oxidation)	1.87	2	840.37071
	1.86	2	799.4699
K5(GlyGly)	1.83	2	1114.57964
M9(Oxidation)	1.83	2	1113.5645
	1.83	2	914.40105
M3(Oxidation)	1.83	2	1340.61296
M6(Oxidation)	1.83	2	1280.56243
M3(Oxidation)	1.82	2	2445.13628
	1.82	2	949.50389
	1.81	2	833.45531
	1.8	2	966.53752
	1.79	2	1371.59624
	1.76	2	1004.41686
C13(Carbamidomethyl)	1.76	2	2087.99419
C6(Carbamidomethyl)	1.76	2	1114.46367
	1.75	2	861.4475
	1.75	2	897.47362

\_HUMAN]

**$\Delta M$  [ppm]**

1.56  
2.81  
0.66  
-0.51  
2.79  
1.14  
0.55  
2.96  
1.44  
0.8  
-1.01  
1.43  
0.61  
-0.57  
2.44  
0.33  
-0.43  
3.34  
4.45  
3  
0.7  
2.32  
0.08  
0.57  
2.2  
3.09  
-0.69  
3.54  
3.24  
-1.39  
-0.77  
4.9  
2.96  
1.53  
1.36  
-0.07  
3.08  
-0.28  
-0.55  
2.38  
2.87  
2.26  
-0.17

-0.25  
0.53  
0.59  
-1.34  
-6.9  
-2.99  
3.87  
-0.47  
0.16  
1.37  
2.86  
-0.33  
-3.91  
1.09  
5.23  
-2.68  
3.08  
1.26  
0.03  
1.56  
1.71  
3.33  
1.09  
-2.68  
-0.98  
1.47  
-0.96  
3.55  
4.27  
-3.68  
0.89  
-0.33  
-1.21  
0.47  
2.08  
-0.09  
-0.23  
-0.57  
0.97  
-0.05  
2.25  
-0.71  
-0.16  
2.09  
1.05  
-0.6  
-0.95  
-0.56  
-0.04  
1.08  
0.8  
0.01

-0.32  
-0.54  
0.34  
0.31  
0.14  
-0.81  
1.12  
2.67  
0.07  
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-1.14  
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0.75  
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2.3  
1.19  
0.6  
-0.57  
2.04  
0.31  
0.38  
0.71  
-1.66  
-3.6  
0.15  
-0.09  
0.23  
3.64  
-0.28  
-0.06  
2.88  
1.94  
1.12  
1.68  
4.22  
-0.39  
2.18  
-5.66  
0.16  
-0.75  
1.93  
1.08  
-0.34  
0.83  
4.5  
2.65  
0.67  
-0.91  
-0.61  
1.32  
6.59  
-0.77

1.22  
-0.22  
0.63  
1.7  
0.48  
-0.23  
-0.78  
1.46  
0.62  
1.45  
1.71  
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2.31  
1.07  
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-0.4  
0.06  
3.29  
0.03  
1.94  
1.43  
3.36  
3.63  
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0  
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0.31  
4.02  
-0.09  
1.24  
0.56  
1.31  
0.2  
1.4  
0.41  
4.6  
1.1  
-3.71  
-1.99  
-2.33  
-0.38  
0.02  
1.35  
1.06  
-0.13  
2.65  
2.34  
1.96  
-2.37  
-3.63  
0.18  
-1.57

1.69  
-0.41  
1.3  
1.66  
0.59  
1  
-1.47  
0.07  
-1.52  
0.83  
-0.09  
2.1  
1.61  
4.04  
1.69  
0.18  
-1.51  
2.49  
-0.25  
-1.72  
1.53  
-0.38  
0.82  
2.75  
0.6  
5.8  
1  
4.44  
-3.36  
-0.15  
0.1  
-1.35  
1.26  
1.11  
2.15