

## PIK3CA/PIK3R1

phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha

**Recombinant Human Active Lipid Kinase**

**HGNC Symbol:** PIK3CA

**Synonyms PIK3CA:** p110-alpha, PI3K, PI3K-alpha

**Synonyms PIK3R1:** GRB1, p85, p85-ALPHA

**Lipid Kinase Family:** PI3K Class I

(according to: Phylogenomics of phosphoinositide lipid kinases: perspectives on the evolution of second messenger signaling and drug discovery: James R Brown & Kurt R Auger; BMC Evolutionary Biology 11, 4-14 (2011))

**Product No.:** 1161-1165-1

**Lot:** 003

**Description:** Human PIK3CA, full length, amino acids M<sub>1</sub>-N<sub>1068</sub> (as in [NCBI/Protein](#) entry NP\_006209.2), N-terminal HIS<sub>6</sub> fusion protein with a Thrombin/TEV cleavage site and PIK3R1 full length, amino acids M<sub>1</sub>-R<sub>724</sub> (as in [NCBI/Protein](#) entry NP\_852664.1), N-terminal fused to a MYC-tag, coexpressed in Sf9 insect cells

**Product identity:** PIK3CA/PIK3R1-SV1 Lot 003, was confirmed as PIK3CA/PIK3R1 by mass spectroscopy LC-ESI-MS/MS

**Theoretical MW<sub>PIK3CA</sub>** : 130,237 Da

**Theoretical MW<sub>PIK3R1</sub>** : 85,371 Da

**Expression host:** Sf9 insect cells

**Purification:** Immobilized Metal Affinity Chromatography

**Activation:** This kinase was not activated by special procedures

**Storage buffer:** 50 mM HEPES pH 7.5, 100 mM NaCl, 5 mM DTT, 20 % glycerol

**Storage temperature:** -80°C

For complete recovery, mix well and spin before use. Product must not be stored in diluted solutions, aliquots below 10µl are not advisable. Avoid repeated freeze-thaw cycles!

**Protein concentration:** 0.380 µg/µl

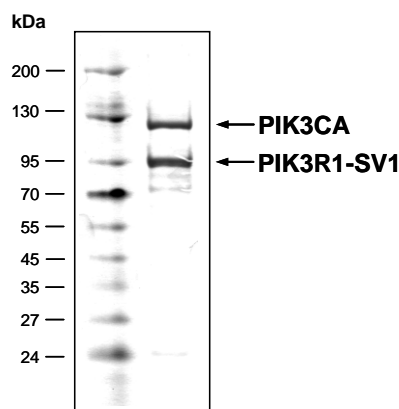
(Bradford method using BSA [Sigma, cat# A-7638, Lot 79H7641] as standard protein)

**Biochemical Parameters:**

Specific kinase activity (P<sub>i</sub> transfer): 15189 pmol/µg × min

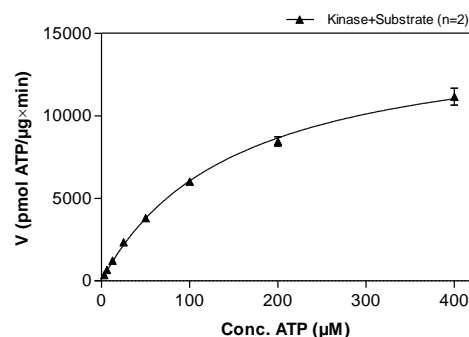
ATP-K<sub>M</sub>: 151 µM

**PIK3CA/PIK3R1 Lot 003:**  
**Coomassie stain**



4 µg PIK3CA/PIK3R1-SV1

**PIK3CA/PIK3R1 Lot 003:**  
**Determination of V<sub>max</sub> and K<sub>M</sub> value for ATP**



**Determination of K<sub>M</sub> value & Specific activity:**

• Assay conditions:

50 mM HEPES-NaOH, pH 7.5

3 mM MgCl<sub>2</sub>

1 mM EGTA

100 mM NaCl

0,03% CHAPS

2 mM DTT

ATP (variable)

1 % (v/v) DMSO

Substrate: PIP<sub>2</sub>: 50 µM / PS: 950 µM

PIP<sub>2</sub>: 08:0 PI(4,5)P<sub>2</sub> (1,2-Dioctanoyl-sn-Glycero-3-(Phosphoinositol-4,5-Bisphosphate))

PS: 1-Palmitoyl-2-Oleoyl-sn-Glycero-3-Phospho-L-Serine)

PIK3CA/PIK3R1: 1 µg/ml

• Assay technology:

ADP-Glo (Promega)

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# PIK3CA/PIK3R1

Product No.: 1161-1165-1

HIS-PIK3CA Recombinant Fusion Protein Amino Acid Sequence												
1	MSPIDPMG	HH	HHH	GRRRAS	VAAGI	LVPRG	SPGLDGIYAR	TENLYFQ	GAM	GARGR	MPPRP	60
61	SSGELWGIHL	MPPRILVECL	LPNGMIVTLE	CLREATLITI	KHELFEARK	YPLHQLLQDE						120
121	SSYIFVSVTQ	EAEREEFFDE	TRRLCDLRLF	QPFLKVIEPV	GNREEKILNR	EIGFAIGMPV						180
181	CEFDVMKDPE	VQDFRRNILN	VCKEAVDLRD	LNSPHSRAMY	VYPPNVESP	ELPKHIYNKL						240
241	DKGQIIVVIW	VIVSPNNDKQ	KYTLKINHDC	VPEQVIAEAI	RKKTRSMLLS	SEQLKLCVLE						300
301	YQGYILKVC	GCDEYFLEKY	PLSQYKIRS	CIMLGRMPNL	MLMAKESLYS	QLPMDCFTMP						360
361	SYSRRISTAT	PYMNGETSTK	SLWVINSALR	IKILCATYVN	VNIRDIDKIY	VRTGIYHGGE						420
421	PLCDNVNTQR	VPCSNPRWNE	WLNYDIYPD	LPRAARCLS	ICSVKGRKGA	KEEHCP LAWG						480
481	NINLFDYTD	LVSQKMALNL	WPVPHGLEDL	LNPIGVTGSN	PNKETPCLEL	EFDWFSSVVK						540
541	FPDMSVIEEH	ANWSVSREAG	FSYSHAGLSN	RLARDNELRE	NDKEQLKATS	TRDPLSEITE						600
601	QEKDFLWSHR	HCVTPEIL	PKLLSVKWN	SRDEVAQMYC	LVKDWPPIKP	EQAMELLDCN						660
661	YPDPMVRGFA	VRCKEYLT	DKLSQYLIQL	VQVLKYEYQL	DNLLVRFLLK	KALTNQRIGH						720
721	FFFWHLKSEM	HNKTSQRFG	LLLESYCRAC	GMYLKHNLNRQ	VEAMEKLINL	TDILKQEKD						780
781	ETQKVQMKFL	VEQMRPDM	DALQGFSLP	NPAHQGLNLR	LEECRIMSSA	KRPLWLNWEN						840
841	PDIMSELLFQ	NNEIIFKNGD	DLRQDMLTLQ	IIRIMENIWQ	NOGLDLRMLP	YGCLSIGDCV						900
901	GLIEVVRNSH	TIMQIQCKGG	LKGALQFNH	TLHQWLKDKN	KGEIYDAAD	LFTRSCAGYC						960
961	VATFILGIGD	RHNSNIMVKD	DGQLFHIDFG	HFLDHKKKKF	GKREVRVPFV	LTQDFLIVIS						1020
1021	KGAQECTKTR	EFERFQEMCY	KAYLAIRQHA	NLFINLFSMM	LGSMPPELQS	FDDIAYIRKT						1080
1081	LALDKTEQEA	LEYFMQOND	AHGGWTTKM	DWIFHTIKQH	ALN							1140

1-218: GST Red: HIS6-tag Pink: Thrombin cleavage site Green: TEV cleavage site blue: PIK3CA

PIK3CA wt <sup>1</sup> Amino Acid Sequence							
1	MPPRPSSGEL	WGIHLMPPRI	LVECLLPNGM	IVTLECLREA	TLITIKHELF	KEARKYPLHQ	60
61	LLQDESSYIF	VSVTQEAERE	EFFDETRRLC	DLRLFQPF	VIEPVGNREE	KILNREIGFA	120
121	IGMPVCEFD	VKDPEVQDFR	RNILNVCKEA	VDLRDLNSPH	SRAMYVYPPN	VESSPELPKH	180
181	IYNKLDKGQI	IVVIWVIVSP	NNDKQKYLK	INHDCVPEQV	IAEAIRKTR	SMLLSSEQLK	240
241	LCVLEYQGY	ILKVCDCDEY	FLEKYPLSQY	KYIRSCIMLG	RMPNLMLMAK	ESLYSQLPMD	300
301	CFTMPSYSRR	ISTATPYMNG	ETSTKSLWVI	NSALRIKILC	ATYVNVNIRD	IDKIYVRTGI	360
361	YHGGEPLCDN	VNTQRVPCSN	PRWNEWLNVD	IYIPDLPRAA	RLCLSICSVK	GRKGAKEEHC	420
421	PLAWGNINLF	DYTDTLVSGK	MALNLWPVPH	GLEDLLNPIG	VTGSNPNET	PCLELEFDWF	480
481	SSVVKFPDMS	VIEEHANWSV	SREAGFSYSH	AGLSNRLARD	NELRENDKEQ	LKAISTRDPL	540
541	SEITEQEKDF	LWSHRHYCVT	IPEILPKLL	SVKWSRDEV	AQMYCLVKDW	PPIKPEQAME	600
601	LLDCNYPPDM	VRGFAVRCL	KYLTDKLSQ	YLIQLVQVLK	YEQYLDNLLV	RFLKALTN	660
661	QRIGHFFFWH	LKSEMHNKTV	SQRFGLLES	YCRACGMYLK	HLNRQVEAME	KLINLTDILK	720
721	QEKKDETQKV	QMKFLVEQMR	RPDFMDALQ	FLSPLNPAHQ	LGNLRLIECR	IMSSAKRPLW	780
781	LNWENPDIMS	ELLFQNEII	FKNGDDLQD	MLTLQIIRIM	ENIWQNQGLD	LRMLPYGCLS	840
841	IGDCVGLIEV	VRNSHTIMQI	QCKGGLK GAL	QFNSHTLHQW	LKDKNKGEIY	DAAIDLFRS	900
901	CAGYCVATFI	LGIGDRHNSN	IMVKDDGQLF	HIDFGHFLDH	KKKFGYKRE	RVPFVLTQDF	960
961	LIVISKGAQE	CTKREFEFERF	QEMCYKAYLA	IRQHANLFIN	LFSMMLGSGM	PELQSFDDIA	1020
1021	YIRKTLALDK	TEQEALEYFM	QOMNDAHGG	WTTKMDWIFH	TIQHALN		1080

blue: PIK3CA sequence expressed in recombinant protein

<sup>1</sup>NCBI/Protein accession number NP\_006209.2

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**MYC-PIK3R1 Recombinant Fusion Protein Amino Acid Sequence**

1	MEEQKLISEE	DL	PMVMSAEG	YQYRALYDYK	KEREEDIDLH	LGDILTVNKG	SLVALGFSDG	60
61	QEARPEEIGW	LNGYNETTGE	RGDFPGTYVE	YIGRKKISPP	TPKPRPPRPL	PVAPGSSKTE		120
121	ADVEQQALTL	PDLAEQFAPP	DIAPPLLIK	VEAIEKKGLE	CSTLYRTQSS	SNLAELRQLL		180
181	DCDTPSVGLE	MIDVHVLADA	FKRYLLDLPN	PVIPAAYVSE	MISLAPEVQS	SEEYIQLLKK		240
241	LIRSPSIPHQ	YWLTLQYLLK	HFFKLSQTSS	KNLLNARVLS	EIFSPMLFRF	SAASSDNTEN		300
301	LIKVIEILIS	TEWNERQPAP	ALPPKPPKPT	TVANNGMNNN	MSLQDAEWYW	GDISREEVNE		360
361	KLRDTADGTF	LVRDASTKMH	GDYTLTLRKG	GNNKLIKIFH	RDGKYGFSDP	LTFSVVVELI		420
421	NHYRNESLAQ	YNPKLDVKLL	YPVSKYQQDQ	VVKEDNIEAV	GKKLHKYNTQ	FQEKRSREYDR		480
481	LYEEYTRTSQ	EIQMKRTAIE	AFNETIKIFE	EQCQTQERY	KEYIEKFKRE	GNEKEIQRIM		540
541	HNYDKLKSRI	SEIIDSRRRL	EEDLKKQAAE	YREIDKRMNS	IKPDLIQLRK	TRDQYLMWLT		600
601	QKQVVRQKLN	EYLVNEDT	QYSLVEDDED	LPHHDEKTN	VGSSNRNKAE	NLLRQKRDGT		660
661	FLVRESSKQG	CYACSVVDG	EVKHCVINKT	ATGYGFAEPE	NLYSSLKELV	LHYQHTSLVQ		720
721	HNDLNLVTLA	YPVYAQQRR						780

1-218: GST **Red**: MYC-tag **blue**: PIK3R1 **boxed**: variation from RefSeq

**PIK3R1 wt<sup>2</sup> Amino Acid Sequence**

1	MSAEGYQYRA	LYDYKKEREE	DIDLHLGDIL	TVNKGSLVAL	GFSQGQEARP	EEIGWLNQYN	60
61	ETTGERGDFP	GTIVEYIGRK	KISPPTPKPR	PPRPLPVAPG	SSKTEADVEQ	QALTLPLDLAE	120
121	QFAPPDIAPP	LLIKLVEAIE	KGLEECSTLY	RTQSSSNLAE	LRQLDCDTP	SVDLEMIDVH	180
181	VLADAFKRYL	LDLNPVIPA	AVYSEMISLA	PEVQSSEEYI	QLLKKLIRSP	SIPHQYWLTL	240
241	QYLLKHFFKL	SQTSSKNLLN	ARVLSEIFSP	MLFRFSAASS	DNTENLIKVI	EILISTEWNE	300
301	RQPAPALPPK	PPKPTTVANN	GMNNMSLQD	AEWYWGDISR	EEVNEKLRDT	ADGTFVLRDA	360
361	STKMHGDYTL	TLRKGNNKL	IKIFHRDGKY	GFSDDLTFSS	VVELINHYRN	ESLAQYNPKL	420
421	DVKLLYPVSK	YQDQVVKED	NIEAVGKKLH	EYNTQFQEK	REYDRLYEY	TRTSQEIOMK	480
481	RTAIEAFNET	IKIFEEQCQT	QERYKEYIE	KFKREGNEKE	IQRIMHNYDK	LKSRISEIID	540
541	SRRLEEDLK	QAAEYREID	KRMNSIKPDL	IQLRKTRDQY	LMWLTQKQV	QKKLNEWLGN	600
601	ENTEDQYSLV	EDDEDLPHHD	EKTWNVGSSN	RNKAENLLRG	KRDGTFVRE	SSKQGCYACS	660
661	VVDGGEVVKH	VINKTATGYG	FAEPYNYLSS	LKELVLHYQH	TSLVQHNDL	NVTLAYPVYA	720
721	QQRR						780

**blue**: PIK3R1 sequence expressed in recombinant protein

<sup>2</sup>[NCBI/Protein](#) accession number NP\_852664.1  
E451K: SNP variation see [NCBI/dbSNP](#) ID: rs17852841