

ProQinase™ 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: 004

Description: Human PIK3CA, full length, amino acids M₁-N₁₀₆₈ (as in [NCBI/Protein](#) entry NP_006209.2), N-terminal HIS₆ fusion protein with a Thrombin/TEV cleavage site and PIK3R1 full length, amino acids M₁-R₇₂₄ (as in [NCBI/Protein](#) entry NP_852664.1), N-terminal fused to a MYC-tag, coexpressed in Sf9 insect cells

Product identity: PIK3CA/PIK3R1 Lot 004, has been verified by mass spectrometry LC-ESI-MS/MS

Theoretical MW_{PIK3CA}: 130237 Da
Theoretical MW_{PIK3R1}: 85371 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 10 µl are not advisable. Avoid repeated freeze-thaw cycles!

Protein concentration: 0.257 µg/µl

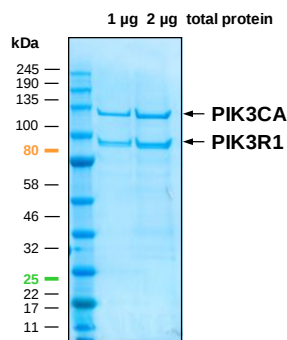
(Bradford method using BSA [Sigma, cat# A-7638, Lot 79H7641] as standard protein)

Biochemical Parameters:

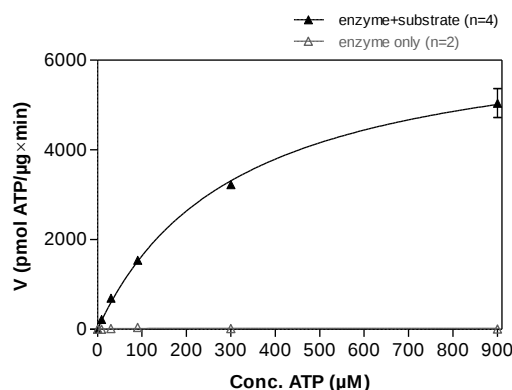
Specific kinase activity (P_i transfer): 6747 pmol/µg x min

ATP-K_M: 311 µM

PIK3CA/PIK3R1 Lot 004:
Coomassie stain



PIK3CA/PIK3R1 Lot 004:
Determination of V_{max} and K_M value for ATP



- Assay conditions:
60 mM HEPES-NaOH, pH 7.5
3 mM MgCl₂/MnCl₂
1 mM EGTA
100 mM NaCl
0.03% CHAPS
2 mM DTT
ATP (variable)
1% (v/v) DMSO
Substrate: PIP₂: 50 µM / PS: 950 µM
PIP₂: 08:0 PI(4,5)P₂ (1,2-Dioctanoyl-sn-Glycero-3-(Phosphoinositol-4,5-Bisphosphate))
PS: 1-Palmitoyl-2-Oleoyl-sn-Glycero-3-[Phospho-L-Serine])
Kinase: 1 µg/ml
- Assay technology: ADP-Glo (Promega)

Sequence information

HIS-PIK3CA Recombinant Fusion Protein Amino Acid Sequence

1	MSPIDPMG	HH	HHHH	GRRRAS	VAAGI	LIVPRG	SPGLDGIYAR	TENLYFQ	GAM	GARGR	MPPRP	60
61	SSGELWGIHL	MPPRILVECL	LPNGMIVTLE	CLREATLITI	KHELFKEARK	YPLHQLLQDE						120
121	SSYIFVSVTQ	EAEREFFDE	TRRLCDLRLF	QPFLKVIEPV	GNREEKILNR	EIGFAIGMPV						180
181	CEFDVMKDPE	VQDFRRNINL	VCKEAVDLRD	LNSPHSRAMY	VYPPNVESP	ELPKHIYNKL						240
241	DKGQIIVVIW	VIVSPNNDKQ	KYTLKINHDC	VPEQVIAEAI	RKKTRSMILS	SEQLKLCVLE						300
301	YQGKYILKVC	GCDEYFLEKY	PLSQYKYIRS	CIMLGMPNL	MLMAKESLYS	QLPMDCFEMP						360
361	SYSRRISTAT	PYMNETSTK	SLWVINSALR	IKILCATYVN	VNIRDIDKIY	VRTGIYHGGE						420
421	PLCDNVNTQR	VPNSPRWNE	WLNVDIYIPD	LPRAARLCLS	ICSVKGRKGA	KEEHCPPLAWG						480
481	NINLFDYTD	LVSGKMAI	NLWVPHGLE	DLNPIGVTGSN	PNKETPCLEL	EFDFWSSSVK						540
541	FPDMSVIEEH	ANWSVSREAG	FSYSHAGLSN	RLARDNELRE	NDKEQLKAI	TRDPLSEITE						600
601	QEKDFLWSHR	HYCVTIPEIL	PKLLSVKWN	SRDEVAQMYC	LVKDWPPIKP	EQAMELLDCN						660
661	YPDPMVRGFA	VRCLKYLTD	DKLSQYLIQL	VQVLKYEYQL	DNLLVRFLK	KALTNQRIGH						720
721	FFFVHLKSEM	HNKTVSQRFG	LLLESYCRAC	GMYLKHLNRQ	VEAMEKLINL	TDILKQEKD						780
781	ETQKVQMKFL	VEQMRPDM	DALQGFSLP	NPAHQGLNLR	LEECRIMSSA	KRPLWLWEN						840
841	PDIMSELLFQ	NNEIIFKNGD	DLRQDMLTLQ	IIRIMENIWQ	NQGLDLRLMLP	YGCLSIGDCV						900
901	GLIEVVRNSH	TIMQIQCKGG	LKGALQFNH	TLHQWLKDN	KGEIYDAAID	LFTRSCAGYC						960
961	VATFILGIGD	RHNSNIMVKD	DGQLFHIDFG	HFLDHKKKKE	GYKREVPFV	LTQDFLIVIS						1020
1021	KGAQECTKTR	EFERFQEMCY	KAYLAIRQHA	NLFINLFSMM	LGSGMPQLQS	FDDIAYIRKT						1080
1081	LALDKTEQEA	LEYFMKQMD	AHHGGWTTKM	DWIFHTIKQH	ALN							1140

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

PIK3CA wt¹ Amino Acid Sequence

1	MPPRPSSGEL	WGIHLMPPRI	LVECLLPNGM	IVTLECLREA	TLITIKHELF	KEARKYPLHQ	60
61	LLQDESSYIF	VSVTQEAERE	EFFDETTRLC	DLRLFQPFK	VIEPVGNREE	KILNREIGFA	120
121	IGMPVCEFD	MVKDEVDQFR	RNINLVCKEA	VDLRDLNSPH	SRAMYVYPPN	VESSPELPKH	180
181	IYNKLDKQI	IVVIWVIVSP	NNDKQKYTLK	INHDCVPEQV	IAEAIRKKT	SMLLSSEQLK	240
241	LCVLEYQGY	ILKVCGCDEY	FLEKYPLSQY	KYIRSCIMLG	RMPNLMLMAK	ESLYSQLPMD	300
301	CFTMPSYSRR	ISTATPYMNG	ETSTKSLWVI	NSALRIKILC	ATYVNVNIRD	IDKIYVRTGI	360
361	YHGGEPLCDN	VNTQVRVPCSN	PRWNEWLNVD	IYIPDLPRAA	RLCLSICSVK	GRKGAKEEHC	420
421	PLAWGNINLF	DYTDTLVSGK	MALNLWPVPH	GLEDLLNPIG	VTGSNPNKET	PCLELEFDWF	480
481	SSVVKFPDMS	VIEEHANWSV	SREAGFSYSH	AGLSNRLARD	NELRENDKEQ	LKAISTRDPL	540
541	SEITEQEKDF	LWSHRHYCVT	IPEILPKLLL	SVKWSNRDEV	AQMYCLVKDW	PPIKPEQAME	600
601	LLDCNYPDPM	VRGFAVRCLE	KYLTDDKLSQ	YLIQLVQVLK	YEQYLDNLV	RFLKALTN	660
661	QRIGHFFFWH	LKSEMHNKT	VQRFGLLLES	YCRACGMYLK	HLNRQVEAME	KLINLTDLK	720
721	QEKKDETQKV	QMKFLVEQMR	RPDFMDALQG	FLSPLNPAHQ	LGNLRLEECR	IMSSAKRPLW	780
781	LNWENPDIMS	ELLFQNEII	FKNGDDLQD	MLTLQIIRIM	ENIWQNQGLD	LRMLPYGCLS	840
841	IGDCVGLIEV	VRNSHTIMQI	QCKGGLKGL	QFNSHTLHQW	LKDKNKGEIY	DAAIDLFTRS	900
901	CAGYCVATFI	LGIGDRHNSN	IMVKDDGQLF	HIDFGHFLDH	KKKFGYKRE	RVPFVLTQDF	960
961	LIVISKGAQE	CTKTREFERF	QEMCYKAYLA	IRQHANLFIN	LFSMMLGSGM	PELQSFDDIA	1020
1021	YIRKTLALDK	TEQEALEYFM	QOMNDAHGG	WTTKMDWIFH	TIQHALN		1080

blue: PIK3CA sequence expressed in recombinant protein

¹NCBI/Protein accession number NP_006209.2

Recombinant Proteins

MYC-PIK3R1 Recombinant Fusion Protein Amino Acid Sequence

1	MEEQKLISEE	DLPMVMSAEG	YQYRALYDYK	KEREEDIDLH	LGDILTVMKG	SLVALGFSDG	60
61	QEARPEEIGW	LNGYNETTGE	RGDFPGTYVE	YIGRKKISPP	TPKPRPPRPL	PVAPGSSKTE	120
121	ADVEQQALT	PDIAEQFAPP	DIAPPLLIK	VEAIEKKGLE	CSTLYRTQSS	SNLAELRQLL	180
181	DCDTPSVLE	MIDVHVLADA	FKRYLLDLPN	PVIPAAYVSE	MISLAPEVQS	SEEYIQLLKK	240
241	LIRSPSIPHQ	YWLTLQYLLK	HFFKLSQTSS	KNLLNARVLS	EIFSPMLFRF	SAASSDNTEN	300
301	LIKVIEILIS	TEWNERQPAP	ALPPKPPKPT	TVANNGMNN	MSLQDAEWYW	GDISREEVNE	360
361	KLRDTADGTF	LVRDASTKMH	GDYTLTLRKG	GNNKLIKIFH	RDGKYGFSDP	LTFSSVVELI	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	QKGVRRQKLN	EWLGNENTED	QYSLVEDDED	LPHHDEKTWN	VGSSNRNKAE	NLLRGKRDGT	660
661	FLVRESSKQG	CYACSVVVDG	EVKHCVINKT	ATGYGFAEPY	NLYSSLKELV	LHYQHTSLVQ	720
721	HNDSLNVTLA	YPVYAQQRR					780

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

PIK3R1 wt² Amino Acid Sequence

1	MSAEGYQYRA	LYDYKKEREE	DIDLHLGDIL	TVNKGSLVAL	GFSDGQEARP	EEIGWLNGYN	60
61	ETTGERGDFP	GTIVEYIGRK	KISPPTPKPR	PPRPLPVAPG	SSKTEADVEQ	QALTLPDLAE	120
121	QFAPPDIAPP	LLIKLVEAIE	KGLEECSTLY	RTQSSSNLAE	LRQLLCDTFP	SVDLEMIDVH	180
181	VLADAFKRYL	LDLPNFPVIPA	AVYSEMISLA	PEVQSSEFYI	QLLKKLIRSP	SIPHQYWLTL	240
241	QYLLKHFFKL	SQTSSKNLLN	ARVLSEIFSP	MLFRFSAASS	DNTENLIKVI	EILISTEWNE	300
301	RQPAPALPPK	PPKPTTVANN	GMNNMSLQD	AEWYWGDISR	EEVNEKLRDT	ADGTFLVRDA	360
361	STKMHGDYTL	TLRKGGNNKL	IKIFHRDGKY	GFSDPLTFSS	VVELINHYRN	ESLAQYNPKL	420
421	DVKLLYPVSK	YQQDQVVKED	NIEAVGKKLH	EYNTQFQEK	REYDRLYEEY	TRTSQEIOMK	480
481	RTAIEAFNET	IKIFEEQCQT	QERYSKYIE	KFKREGNEKE	IQRIMHNYDK	LKSRISEIID	540
541	SRRLEEDLK	KQAAEYREID	KRMNSIKPDL	IQLRKTRDQY	LMWLTQKGV	QKKLNEWLGN	600
601	ENTEDQYSLV	EDDEDLPHHD	EKTWNVGSSN	RNKAENLLRG	KRDGTFLVRE	SSKQGCYACS	660
661	VVDGEVKHC	VINKTATGYG	FAEPYNLYSS	LKELVLHYQH	TSLVQHNDL	NVTLAYPVYA	720
721	QQRR						780

blue: PIK3R1 sequence expressed in recombinant protein Red: variant in recombinant protein

²NCBI/Protein accession number NP_852664.1

E451K: SNP variation see NCBI/dbSNP ID: rs17852841

HGNC identifier: PIK3R1