

BSK3<sup>K86R</sup> (kinase dead)

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BSK3      EYIVSEHGKAPNVVYKQKLE---NQKKIAVKRFRTRMAWPDSRQFLLEEARVSVGQLRSERM 57
BSK4      ENVVSEHGGETAPNVVYQKLE---NHMKIAIKKRFSGTAWPDPDRQFLLEEARLVGQLRSKRM 57
BSK7      -----VKKLQMLCIKGNWI---IKDVLLLKGLIGKLGILVSVFWRK-KAVGQLRNRYR 49
BSK8      ENIVSEHGERAPNVVYKQKLE---NQRRIAVKKRFNRKSWPDSRQFLLEAKAVGQLRNHRM 57
BSK5      -----VVYKGRLE---DDRRIAVVKRFNRSAWPDTRQFLLEAKAVGQLRNRL 44
BSK6      DNIVSEHGKAPNVVYRGRLD---DGRLIAVKKRFNRLAWADHRQFLDEAKAVGSLRSRDL 57
BSK9      -----IVYKQQLN---DGRKIAVKKRFQRLSWPDSLEFIEEAQAVGRCRSEHM 44
BSK10     -----IVYKQKLG---DGRRIAVVKRFQRLSWPDPPEFIEEAQAVGRLRSEHM 44
BSK2      -----VVYRQKLE---GNHLVAIKKRFSRQSWPDAQQFVVEATGVGKLRNKRI 44
BSK11     -----VYQGCIRSDKDKRLIAVKKFSKTTWDPDKQFATEARAIGSLRHVRL 46
BSK1      -----VYKGRQLQ---NRRVIAVKKFTKMAWPEPKQFAEEAWGVGKLRHNL 43
BSK12     -----VVFQKRLQ---NGGFVAIKKRFNNMAWSDPKFLLEEAQRVGLRHKRL 44

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BSK3<sup>R156K</sup> (*bsk3-3*)

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BSK3      ANLLGCCCEGDERLLVAEFMPNETLAKHLFWHETQPMKWTMLLRVVLYLAQALEYCTSKG 117
BSK4      ANLLGYCCEGGERLLVAEFMPNETLAKHLFWHDETPMKWAMRLRVALYISEALEYCSNNG 117
BSK7      ANLLGCCYEGEERLLVAEFMPNETLAKHLFWHESQPMKAMRLRVALHIAQALEYCTGKG 109
BSK8      ANLLGCCYEDEERLLIAEFMPNETLAKHLFWHESQPMKAMRLRVALHIAQALEYCTSKG 117
BSK5      ANLIGFCCEGDERLLVAEFMPFETLSKHLFWHDSQPMKWSMRLRVALYLAQALEYCSSKG 104
BSK6      ANLIGCCFEGEERLLVAEFMPHETLAKHLFWHENNPMKAMRLRVALCLAQALEYCSNKG 117
BSK9      ANLIGCCSEGHERLLVAEYMPNETLAKHLFWHEKRPMKWEMRLRVALHTATALEYCNDWG 104
BSK10     ANLIGCCDDNERLLVAEYMPNETLAKHLFWHEKRPMKWEMRLKVALHTARALEYCNKG 104
BSK2      VSLIGCCAEGDERLLVAEYMPNDTLSKHLFWHEKQPLPWDMRVRIADYIAEALDYCNIN 104
BSK11     VNLIGCCEGDERLLVSEYMPNESLTKHLFWHEKQTMEWAMRLRVALVVAEALDYCRSQG 106
BSK1      ANLIGCCDGDERLLVAEYMPNDTLAKHLFWHENQTIEWAMRLRVGYIAEALDYCSTEG 103
BSK12     VNLIGCCDGKRFLVADFMANDTLAKRLFQRKYQTMDWSIRLRVAYFVAEALDYCNTAG 104

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BSK3<sup>N182A</sup>QAL insertion (*bsk3-5*)

BSK3<sup>G226E</sup> (*bsk3-4*)

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BSK3      RTLYHDLNAYRVLFDEECNPRLSTFGLMKNSRDGKSYSTNLAFTPPEYLRTGRITPESVI 177
BSK4      HTLYHDLNAYRVLFDEECNPRLSTFGLMKNSRDGKSYSTNLAFTPPEYLRTGRITASVI 177
BSK7      RALYHDLNAYRVLFDDDSNPRLSCFGLMKNSRDGKSYSTNLAFTPPEYLRTGRVTPESVM 169
BSK8      RALYHDLNAYRVLFDDDDANPRLSCFGLMKNSRDGKSYSTNLAFTPPEYLRTGRVTPESVI 177
BSK5      RALYHDLNAYRILFDQDGNPRLSCFGLMKNSRDGKSYSTNLAFTPPEYLRTGRVIPESV 164
BSK6      RALYHDLNAYRVLFDKDGNPRLSCFGLMKNSRDGKSYSTNLAFTPPEYLRTGRVTPESV 177
BSK9      IDLYHDLNAYRILFDKVGNPRLSCFGLMKCSREGKSYSTNLAFAPPEYLRLGTVIPESVT 164
BSK10     IDLYHDLNAYRIMFDKTGIPKLSCFGLMKNSHEGKIYSTNLAFAPPEYLRLGTVIAESVT 164
BSK2      RKLYHDLNAYRILFDEEGDPRLSTFGLMKNSRDGKSYSTNLAFTPPEFLRTGRVIPESVI 164
BSK11     LKLYHDLNAYRILFDENSPRLSCFGLMKNSRDGKNFSTNLAFTPPEYLRS-----ESV 161
BSK1      RPLYHDLNAYRVLFDEDGDPRLSCFGLMKNSRDGKSYSTNLAFTPPEYLRNGRVTPESVT 163
BSK12     FASYNNLSAYKVLFDEDGDACLSCFGLMKEINNDQ-----ITTGSVNPENVI 151

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BSK3<sup>G238S</sup> (*bsk3-6*)

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BSK3      YSFGTLLLDLLSGKHIPPSHALDLIRDRNLQTLTDSCLDGQFSDSDGTELVRLASRCLQY 237
BSK4      YSFGTLLLDLLTGKHIPPSHALDLIRDRNLQTLTDSCLEGQFSDSDGTELVRLTSCCLQY 237
BSK7      YSFGTLLLDLLSGKHIPPSHALDLIRDRNIQMLIDSCLEGQFSDDGTELIRLASRCLQY 229
BSK8      YSFGTLLLDLLSGKHIPPSHALDLIRDRNIQMLMDSGLEGQFSDDGTELIRLASRCLQY 237
BSK5      YSFGTLLLDLLSGKHIPPSHALDLIRGKNFLMLMDSCLDGHFSNDDGTDLVRLASRCLQY 224
BSK6      FSGFTLLLDLMSGKHIPPSHALDLIRGKNCAMLMDSALEGHFSNEDGTELVRLATRCLQY 237
BSK9      FSGFTLLLDLMSGRHIPPNHALDLFRGKNYLVLMDSALDGQFSDEDRTELIHLASRCLRP 224
BSK10     FSGFTLLLDLMSGRHIPPNHALDLFRGKNYLVLMDSALDGQFSDEDRTELIHVASRCFKT 224
BSK2      FSYGTILLDLLSGKHIPPSHALDLIRGKNALLLMDSSLEGQYANDDATKLVDLASKCLQS 224
BSK11     FSGFTLLLDLLSGKHIPPSHAVGTIQKQNLNVLMDSHLEGNYPEEAAMVFDLASKCLHN 221
BSK1      YSFGTVLLDLLSGKHIPPSHALDMIRGKNIILLMDSHLEGKFSTEEATVVVELASQCLQY 223
BSK12     YRFGTVLVNLLSGKQIPPSHAPEMIHRKNVFKLMDPYLKGKFSIDEANVVYKLASQCLQY 211

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BSK3      EARERPNTKSLVTALTPL----- 255
BSK4      EARERPNIKSLVTAL----- 252
BSK7      EPRERPNPKSLVTAMI----- 245
BSK8      EPRERPNPKSLVSAM----- 252
BSK5      EARERPNVKSLVSSL----- 239
BSK6      EARERPNVKSLVTSL----- 252
BSK9      EPDERPSIKFLMSALSRL----- 242
BSK10     EPEERPSIKFLKATLSRLQKRA 246
BSK2      EAKDRPDTKFLLSAV----- 239
BSK11     NPNERPEIGDIISVI----- 236
BSK1      EPRERPNTKDLVATL----- 238
BSK12     EGQESPNTKEIVATL----- 226

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