

File S3: Alignment of the canine wildtype and predicted mutant RAB3GAP1 protein

Wildtype	1	MAADSEPESEVFEITDFTTASEWERFISKVEEVLNDWKLIGNSLGKPLEKGIFTSGAWEE	60
Mutant	1	MAADSEPESEVFEITDFTTASEWERFISKVEEVLNDWKLIGNSLGKPLEKGIFTSGAWEE	60
Wildtype	61	KSDEISFADFKFSVTHHYLVQDSADKEGKDEVLEDVIPQSMQDLLCMNNDFFPPRAHCLVR	120
Mutant	61	KSDEISFADFKFSVTHHYLVQDSADKEGKDEVLEDVIPQSMQDLLCMNNDFFPPRAHCLVR	120
Wildtype	121	WYGLREFVVIAPAANHDAVLSESKCNLLSSVSIALGNTGCQVPLFVQIHHKWRMYVGE	180
Mutant	121	WYGLREFVVIAPAANHDAVLSESKCNLLSSVSIALGNTGCYRERERQRHRQ--REKQAP	178
Wildtype	181	CQGHGVRTDF-----EMVHLRKVPN---QYTHLSGLLDIFKSKIGCPLTPLPPVSIAIR	231
Mutant	179	CTGSLTWDSIPGLQDRALGQRQAPNRCATQYTHLSGLLDIFKSKIGCPLTPLPPVSIAIR	238
Wildtype	232	FTYVLQDWQQYFWPQQPPDIDALVGGEVGGLEFGKLPFGACEDPISELHLATTWPHLTEG	291
Mutant	239	FTYVLQDWQQYFWPQQPPDIDALVGGEVGGLEFGKLPFGACEDPISELHLATTWPHLTEG	298
Wildtype	292	IIVDNDVYSDDLPIQAPHWSVRVRKADNPQCLLGDFVTEFFKICRRKESTDEILGRSTFE	351
Mutant	299	IIVDNDVYSDDLPIQAPHWSVRVRKADNPQCLLGDFVTEFFKICRRKESTDEILGRSTFE	358
Wildtype	352	EEGREIADITHALSKLTEPAPVPIHKLSVSNMVHTAKKKIRKHRGVEESPLNNDVLNTIL	411
Mutant	359	EEGREIADITHALSKLTEPAPVPIHKLSVSNMVHTAKKKIRKHRGVEESPLNNDVLNTIL	418
Wildtype	412	LFLFPDAASEKPLDGSSTDSNNPLSESEEYNLYNQFKSAPSDSLTYKLALCLCMINFYH	471
Mutant	419	LFLFPDAASEKPLDGSSTDSNNPLSESEEYNLYNQFKSAPSDSLTYKLALCLCMINFYH	478
Wildtype	472	GGLKGVVAHLWQEFVLEMRFRWENNFLIPGLTSGPPDLRCCLLHQKLQMLNCCIERKKARD	531
Mutant	479	GGLKGVVAHLWQEFVLEMRFRWENNFLIPGLTSGPPDLRCCLLHQKLQMLNCCIERKKARD	538
Wildtype	532	EGRKTNTSEIYPGDTGKAGDQLGPDNLKMDMKEKGEIGKSWDSWSDSEEEFFECLSDTEE	591
Mutant	539	EGRKTNTSEIYPGDTGKAGDQLGPDNLKMDMKEKGEIGKSWDSWSDSEEEFFECLSDTEE	598
Wildtype	592	LKNGQESGKKGPKKEVASLKPEGRHLHQHGKLTLLHNGEPLYIPVTQEPA PMTEDLLEEQ	651
Mutant	599	LKNGQESGKKGPKKEVASLKPEGRHLHQHGKLTLLHNGEPLYIPVTQEPA PMTEDLLEEQ	658
Wildtype	652	SEVLAKLGTSAEGAHLRARMQSACLLSDMESFKAANPGCFLEDFVRWYSPRDYIEEEVVD	711
Mutant	659	SEVLAKLGTSAEGAHLRARMQSACLLSDMESFKAANPGCFLEDFVRWYSPRDYIEEEVVD	718
Wildtype	712	EKGNMVLKGELSARMKIPSNMWVEAWETAKPIPARQRRLFDDTREAEKVLHYLAVQKPA	771
Mutant	719	EKGNMVLKGELSARMKIPSNMWVEAWETAKPIPARQRRLFDDTREAEKVLHYLAVQKPA	778
Wildtype	772	DLARHLLPCVIHAAVLKVKEEENLENISSVKKI IKQIITHSSKVLHFPNPEDKKLEEIIH	831
Mutant	779	DLARHLLPCVIHAAVLKVKEEENLENISSVKKI IKQIITHSSKVLHFPNPEDKKLEEIIH	838
Wildtype	832	QITNVEAIIARARSLKAKFGTEKCEQEEEEKEDLERFVSCLEQPEVLVVGAGRGHAGKII	891
Mutant	839	QITNVEAIIARARSLKAKFGTEKCEQEEEEKEDLERFVSCLEQPEVLVVGAGRGHAGKII	898
Wildtype	892	HKLFVNAQRLTESSEDEAAAVAPPEEELKRMGSPEERRHNSVSDFP PPAGRELILRTTVPR	951
Mutant	899	HKLFVNAQRLTESSEDEAAAVAPPEEELKRMGSPEERRHNSVSDFP PPAGRELILRTTVPR	958
Wildtype	952	PAPYSRALPQRMYSVLTKEDFRLAGAFSSDTTFF	985
Mutant	959	PAPYSRALPQRMYSVLTKEDFRLAGAFSSDTTFF	992