

A multiple sequence alignment of the glucanase-like proteins in invertebrates

dmGNBP1	..TAPSVCE-PSESVQVSPQ..	IGVSICKQGLLFEETFD.	.QL.NESLWIHDVRLPLDSK	DAEFVLYDG.KAK...VHD	GNLVIEPLLWSSY.....	RPDLSIANS
dmGNBP2	..QQAKRKC.AAQTIVS...	.NGRHTCQGLIFEDNFSE	AQL.NKTTWKHDIRQRMVYD	EEELVAFDD.AAR.NCFVKE	GELHIVPTIAT.....	..EVTGD
agCP3847	..TPPPCP.PTLTTFV...	..GGQPTCAGKLLFEDTFEQ	SSS.FAPKWQHEVRIPLDTP	SAEFVSYQS.SPE.NSYIAA	GRLVIVPTLVLTQT.....	..ADYTD
msGRP2	..GPWRPCE.RSLTESL...	..ARERVCKGSLVFESDFDG	SSLADLNQWTAEEVRFPEEP	DYPPNYLYT..TDG.TVGFES	GRLVIVPVMTESK.....	..YH.EGIIYD
piGRP	..RPDP.PCT.VSATMVD...	..GRKSVCCQGTLLFSEEFEK	ANLKDLANWBAEAVKFPPEEP	DYPPNVYV..VDG.TLELED	GSLVLTPLKLESR.....	..FH.AGLIND
msGRP1	..GPSY.PCE.LSVSEVS...	..VPGFVCKQGLMFLDFNFK	P.LADGRWITPEIMFPEEP	DYPPNVYV..VDG.TLELED	GSLVLTPLKLESR.....	..FH.AGLIND
bmGRP	..SEGY.PCE.LSLSTVS...	..VPGFVCKQGLMFLDFNFK	P.LADGRWITPEIMFPEEP	DYPPNVYV..VDG.TLELED	GSLVLTPLKLESR.....	..FH.AGLIND
dmGNBP3	..DIRLGC.TPKTEVN...	..GAPTRCAGQLVVFDEFNA	AKL.DPNKWAERFRFSQGP	DYEFNVYVDDAPE.TLCLAN	GHLVLTSTNMMKQ.....	..FK.KG.SGE
agP8943	..STSAEHCA.NAQTIVN...	..GRKV.CAGKLLFEDNFNG	RST.DLRKWRIRNFASDP	DNEFVVIAD.FPE.NIMIQN	GLLAIRPTLFEEK.....	..FG.PGATTO
bmGNBP	..SQKPECK.PTKTRVR...	..GGKACAGQTFEEQFD.	.SL.DENVWQIEQYIPIYHP	EYFVFSYQ..RNNLTVSTAD	GNLHINAKLQOHMP.....	..GFLDSSIYG
hcGNBP	..PTPTTCR.PTATKLR...	..SGVACAGQTFEEFNFN.	.TF.REDVWQIEQYIPVYST	EFPFVSYQHLSDQPTVAVTG	GNLRTPKLQORMP.....	..GFTDSSIYG
agCP1153	..NPDTGCA.NSLTTASGR	AKPG.PYCSWDLIFEDNFN.	.SL.DFETWEHENTLSGGG.	NWEFQWYQNNRNSN..SYCEN	GIFYIRPTLLAD.....	..DTGEAFLSSG
agCP1164	..EQSPKCT.VSVTTASGTK	ARAG.PYCTGELIFEDNFN.	.TL.DFETWEHENTLSGGG.	NWEFQWYLNHRNSN..SYCEN	GIFYIRPTLLAD.....	..DTGEAFLSSG
agCP1731	..EAPLACDRASVTTASGTL	VKRS.AFCPGDLIFEDNFN.	.RL.DLERWQHEVTLAGGG.	NWEFQYLLNSRRN..SFVKD	GIFFRIPRTLLAD.....	..ETGEEFLSSG
agGNBP	..TAQSECV.RSVTTASGSL	IDRGRTFCSGELIFEDNFN.	.FF.DFEKWEHVNTLAGGG.	NWEFQWYTNRNSN..SFVED	GALNIRPTLTAD.....	..QFGLDFMTSG
agCP3995	..GSLGCK.RSPTTASGRF	APKG.RICSGQLIFEDNFN.	.GL.DRNVWQHENTLSGGG.	DSEFQWYTNRNSN..SFVRE	GHLNIRPTLTDV.....	..EFGEPFLRSG
aaGBP	..GLISGCK.RSPTTASGRF	APKG.RICSGQLIFEDNFN.	.GL.DRNVWQHENTLSGGG.	NNEFQWYSGSGRN..SYIKN	NHLYIRPTLTDV.....	..EYGAFLKSSG
lsGBP	VQPED.C.C...ASF	..C...MIFEDNFN.	.YL.DNDVWEHELTMSGGG.	NWEFQAYVNNRNSI..SYTRD	STLFIKPELTAN.....	..WKGDDFLTSG
pmGBP	VEPED.C.C...TSFP	..C...MIFEDNFN.	.YL.DNDVWEHELTMSGGG.	NWEFQAYVNNRNSI..SYTRD	STLFIKPELTAN.....	..WKGDDFLTSG
plLGBP	LDPGS.C.C...SSF	..C...LIFNDDFN.	.DL.NRNVWQHEVNTMSGGG.	NWEFQWYLNHRNSN..GYTRD	STLIKPELTAN.....	..WYSEHFLFND
spGLUC	..PCDAACD..MSTFP	..CN.GLIFQEEFD.	.SF.NLDIWEHEMTAGGGG.	NWEFQYTNRNSN..SYVRD	GKLFIKPTLTDV.....	..KLGEGSLSSG
efCCF1	..FTDWD	..CY.QY.HIVWQDEFD.	.YF.DGAKWQHEVTATGGG.	NSEFQYLTQDGAN..SFVRD	GKLFIKPTLTDV.....	..KLGEGSLSSG
dmGNBP1	RDLSE.R...CTGTHN.	..RIKEC.IHSTGSGPSGI	MPPIVTPRISTKETFAFYQG	RIEIRAKLPKGDWIVPLLLL	EPLTEWYQSGYESGQLRVA	LAR.GNSVLR
dmGNBP2	SFKLGD.R...CTAVES.	..PEQECNIAH..GIFYS.I	KPPVSAQIHTRNSFSFKFG	KIVVRAKLPKGDWIFPYLML	QPVST.YAETHY.AKQLRIA	YAR.GNANLR
agCP3847	RIRTEG..LTLAGCTSPTN.	..NYECC.QR..KAARSTI	LPPVSAKLNTHKFFFRFVYV	RVEIRAKLPKGDWIFPYLML	QYENYGYADYASGQMWIA	HIL.GNANRLA
msGRP2	RDL.E.R...CTGQLG.	..T.LEC.RRE.S.SGGQI	VPPVMTAKLATRRSFAPKFG	RIDIKAKMPRGDWLIPELNL	EPLDNIGNQRYASGLMRVA	FVR.GNDVYA
piGRP	ALDLTN.R...CSGQVD.	..T.TEC.RRQ.A.SGAQI	LPVVMGTGKITTNNKFTFKFG	RVEVRAKLPAGNWLLPEINL	EPKDNVFGSRRYESGLMRVA	FAK.GNAVVA
msGRP1	TLDLSD.R...CTGLLG.	..T.AQC.KRD.P.SDAII	VPIVITAKINTKKTFAFYKG	RVEISAKMPRGDWLIPVLIQL	EPVKNYIGIRNYVSGLLRVA	CVK.GNTEYI
bmGRP	SLLDSE.R...CTGTVG.	..T.AQC.LRE.A.SGLI	LPPIITAKISTRHQFAFYKG	RVEIRAKMPKGDWLYPEILL	EPRDNIGYVRNYASGLIKIA	SVK.GNAEFS
dmGNBP3	SLLDGE.E...CTGQAN.	..T.HDC.VRN.GRTLNDG	LPPIITAKIQAQSS.KDFSFYQ	RVEVRAKMPRAQWVTPQIWL	QPRRPYIGVDDYRSGQLRIA	YTRPNGGNLD
agP8943	QRFGE.E...CTGHSS.	..S.RDC.IRD.KIDFDM	IPPVITAKIQAQSS.KDFSFYQ	KVLIRAKLPEGSWIFPQLYI	IPATDFYQDSYASGLMRVA	FV.PGGQFR
bmGNBP	TNLNFS.G...CTSSAE.	..A...C.IKQ.ASGADI	LPPIVSGRITS.TGFAFYTG	TVEIRAKLPQGDWLYPEILL	EPFLKKGYSMMNYASGVVIA	CAR.GNAEYL
hcGNBP	SLNIFS.G...CTAPAE.	..A...C.MKD.AWAGASI	LPPVSGRITS.TGFAFYTG	TVFVKAKLPQGDWLYPEILL	EPFLKKGYSMMNYASGVVIA	CAR.GNAEYL
agCP1153	TLNIHG.SEPANQCTSA...	..MNFGC..ERT..GTATNL	INPIKSARVRTVNSFSFRYG	TMEVRARMPGTGDWLPVAVWL	LPKRQVYGTWP.ASGEIDL	ESR.GNMDYR
agCP1164	TLNIHG.GQPADQCTSA...	..MFWGC..ERT..GSPTNL	INPIKSARVRTVNSFSFRYG	RMEVRAARMPGTGDWLPVAVWL	LPKRQVYGTWP.ASGEIDL	ESR.GNMDYR
agCP1731	NLNWH.GTPYDFCTNP...	..SNYGC..ERQ..GSPTNL	LNPIKSARVRTVNSFSFRYG	KVEIRAKIPTGDWLPVAVWL	MPKINQYGTWP..SSGEIDL	ESR.GNLDYS
agGNBP	TLSLQG.SYPTDHCNTD...	..AFYGC..VRV..GNRQHI	VNVPKSARITSSFNFKYQ	RAEVRAKLPGTGDWLPVAVWL	LPKRQVYGTWP.ASGEIDL	ESR.GNMDYR
agCP3995	VLNVHG.GSPAEQCTKH...	..SPDGC..ERT..GSHQV	LNPKVSAIARTVNSFAFYQ	KVEVRAKLPAGDWLPVAVWL	LPKVNAYGRWP.ASGEIDL	ESK.GNRDLI
aaGBP	VNLNE.GPQSQRCTDAPWG	AEQIHGC.YRR..GSPDRI	LNPVRSARLRTVNSFAFYQ	KVEINAKLPQGDWLPVAVWL	LPKGDYGYWP.KSGEVDL	ESR.GNRNLV
lsGBP	TLDLWGMNRRGDVCTGN...	..SYGCG..SRT..GSSSNL	LNPIKSARLRTVNSFAFYQ	RIEIRAKMPRGDWLPVAVWL	LPKVNAYGRWP.ASGEIDL	ESR.GNNDYR
pmGBP	TLDLWGMNRRGDVCTGN...	..SYGCG..SRT..GSSSNL	LNPIKSARLRTVNSFAFYQ	RELVRAKMPRGDWLPVAVWL	LPKVNAYGRWP.ASGEIDL	ESR.GNNDYR
plLGBP	ELNL....GDKCTDH...	..RDYGC..VRK..GTSEHI	INPIMSARLRTVNSFAFYQ	RVEVRAKMPRGDWLPVAVWL	MPKDSRYGGWP.ASGEIDL	ESR.GNNDYR
spGLUC	TLDLWG.SSPANLCTGN...	..AWYGC..SRT..GSSNDL	LNPIKSARLRTVNSFAFYQ	RLEVRAKLPGTGDWLPVAVWL	LPKHNAYGRWP.ASGEIDL	ESR.GNADIK
efCCF1	VLDVWAMYG..ACTNT...	..DNNGC.YRT..GAANDI	P.PAMARSARVETQKVSFTHG	REVVHAKMPVGDWLPVAVWL	LPEDVYGGWP.ASGEIDI	ETT.GNDFDK
dmGNBP1	...MPPGKLVDRSRLYGG.	PVLSTDAHQR.EDLWLSKRK	IS..H..FGDDFHTYSLDWS	S.NRLLFSVDGQVYGEML..	.....N...GFT..E...	..LDENPRW
dmGNBP2	...TKQDDISGNHLYGG.	GVV...WHHG.NAVQFLKDK	ISNSH..YGDDFHNYTMIWQ	R.DKITLMVDDEVEYGEY..	.....D...GL.....	.....PFF
agCP3847	...AADGRQIDGHRLLRGG.	VLIINTGPVR.SD..FLRSN	LNNEEH..FGDQFHYGLVWVT	P.EQILLTLVDGQVYGAALR..	.....T...NFR..QHAQ	QHNLTOANLW
msGRP2	...KK.....LYGG.	PIMSDADPFR.S..MLLKDK	QGLAN..WNNDYHVYSLLWK	P.NGLELMDVDEVEYGTID.A	.....GD...GFY..QAK	NNLVSHASQW
piGRP	...KK.....LNGG.	PVLADTEPFR.S..LLMKEK	IGIDN..WNRDHYNYTLIWK	Q.DAITDMLVDGEKYSIS.P	.....GE...GFY..ALGR	EHVAVPHAAHW
msGRP1	...KT.....LVGG.	PIMSEAEPRY.T..ANLKEF	ISNEP..WTNEFNHYTLEWS	P.DGITMVDGDIYVGRVTPAP	.....AG...GFY..KEAN	EQNVAAAAARW
bmGRP	...KK.....LYAG.	PIMTGSDEPR.S..FYLKEN	IGYES..WNNDFHNYTLEWR	P.DGITLLVDGEGSYGEIK.P	.....GE...GFY..NVAN	SYKVEAAPQWL
dmGNBP3	...LNGA	VLFAD.EPLR.SVKNLCKPG	TGNNSDWSDFHNYTLEWR	PRELRLW.VDGKEWCYQ.G.S	.....AK...GSFSETAA	GKSLPQAQKL
agP8943	...NQ.....LSGG.	LLVSDSEPLR.CSKMK...	TLNKNVQWSSDYHYVGLKWT	P.EGVWMEVDDEVEYCAID.P	.....GE...GLY.RTIQS	RK..PQIANL
bmGNBP	...SGP.NDYSNTVLYGG.	PIMD...LE.CRENFLSTK	RRRDGTSWGDSPHNTSVQVT	P.DFIALSVDGEEWARVEAP	.....RD...AL.....	PAVCAHAPRH
hcGNBP	...SGY.TDYSNKMFLGG.	PVMN...LQ.CYDTLLESK	ASSNGRQWGDSPHNYVLRWA	P.ERITLSVDGEEWARVEAP	.....AS...GLS...GRF	PTQCSKLRPT
agCP1153	GSNGVHIGTEQFGSTLHFG.	PTPTLN.GW..ESTVAYKNT	AAQGG..WNTGFHNYQLTWT	P.DYIRFVSVDNQVVTQID..	.....AGT...GFWNRGNFG	NIAPGTENPW
agCP1164	GSNGVHIGTEQFGSTLHFG.	PNPSLN.GW..ESTVAYKNT	AAQGG..WNTGFHNYQLTWT	P.DYIRFVSVDNQVVTQID..	.....AGT...GFWNRGNFG	NIAPGTENPW
agCP1731	VNNGQLGVEHVGTLLHFG.	PQWDLN.GY..EMATAVKNP	PKQGG..FNGGFHRYQLEWT	P.EFMFRFSVDDEQVMQVE..	.....G...NFKSLGRFD	ERRPGVQNPW
agGNBP	.LDGVIQTRQVQSTLHFG.	PNPSYN.GY..PTATLTKNA	LEPQE..FSGSFTFGVVTW	P.DNITVTSINGEDLATIG..	.....G...DFWTRGGFD	KHN..LENPW
agCP3995	.KNGINVGIEQVSTLHFG.	PNAAYSGYGAPGTSFTRNS	ESKGG..YHTGFNRYQMEWT	P.HVTFVTSINDIETGTVK..	.....VGT...GFWKGNFN	ISTPGINDPW
aaGBP	.QNNEKIGIQKVVSSCLHFG.	DNPVNR....SSQCGS	VSGNL..FGAMFNRYQLTWT	K.NVIQFINGINDIRFRTVT..	.....PYE...GFWRLLGFS	.....FNPW
lsGBP	...TLGNQYGGTLLHGW.	PFWPYN.FF...EKTHVEYS	ANEGS..FADDFHVWRDLWT	K.DGMEFYVDEVLQTLTD.P	.....GN...SFWDGSMG	...SVYDNPW
pmGBP	...TLGNQYGGTLLHGW.	PFWPYN.FF...EKTHVEYS	ANEGS..FADDFHVWRDLWT	K.DGMEFYVDDVQLTLDV.P	.....GT...SFWDGSMG	...FFPDNPW
plLGBP	...NLGQHAGSTLHGW.	PNPQAN.MF...LKTHTYTS	ANDGS..FANNFHWRDLWT	R.DNMKFYVDQQLTLDV.P	.....GS...NFWDFGGLG	...NSQNPW
spGLUC	DADGLSAGVDQMGSTMHWG.	PFWPLN.GY...PKTHAT.	SDOWN..YGDNFHTFWDWS	.....KFYVDELLNVD.P	.....AT...GFWDFEFE	NDAPGINDPW
efCCF1	NTGGEFLGIQKMGSTMHWG.	PGWDDN.RY...WLTSLPKH	SDOWN..YGDNFHTFWDWS	P.NGLRFFVDDENQALLDVP	YPLIDANPWWDFWEGKRPW	LPQYENDNPW
dmGNBP1	KQGGP..MAPFDKMFYISLG	VSVGGFLD.FVDH.LR.TAT	YE...KPWANYHQ..AKLO	FHQAQDQWLPTW.K.Q....	..PALKIDVVRVAFN.....	.....
dmGNBP2	N.....EKFCII.FG	VTVGGFLD.FDSD.L.LAK	DA...KPYKNRPR..AALS	FHQQRDAWAPTWRG.H....	..SAMVIDYVRVYAE.....	.....
agCP3847	SADAP..LAPFDQFVYVSLG	VTVGGVGD.FPDHSLTGPSR	TV...KPDNNTSPK..AEYF	FYQNRNTWYRAT.T.E....	..PELTVDYVRVYAL.....	.....
msGRP2	LRGTV..MAPFDKFFITL	LRVAGIHD.FTDG.....P	.G...KPEWNGKTK..AMIN	FWNNRFRFWFTWH..D....	..TSLKVDYVRVYAL.....	.....
piGRPt	LRGSV..MAPLDQYFFLSLG	LRVGGVHD.FADS.....P	.D...KPKNRSNK..AVLN	FWNDRFNWFTWH..D....	..ANLKVYVRVYAL.....	.....
msGRP1	IQGSN..IAPFDDMFYISLG	MDVGGVHE.FPDE.....A	IN...KPKWNTATK..AMVN	FWNARSQWNPWTLESE...	..KALLVDYVRVYAL.....	.....
bmGRP	LRGTI..MAPFDQFVYVSLG	LNVAIGRE.FSED.....I	SN...KPKWNSATK..AMLK	FWDARSQWNPWTLESE...	..SALQVDYVRVYAL.....	.....
dmGNBP3	IEGTG..LAPFDQFVYVSLG	LSVGG.FN.EYQH.....E	I...KPKWNERAPQ..AQKA	FWEKVKKIRBDHLD.E....	..GHMKIDYVVKVYSL...	.....
agP8943	WQLSGSRMAPFDKDFYVLGL	VGVGGHYD.FHQF.....N	.G...KPKWDLGVK..AMFT	FWKARDKWYPTWNV.N....	..STMLVDYVRVYAL...	.....
bmGNBP	LLQAGSQMAPFDHDFYITLG	VAAAGSITE.FRDG.SITSG	VT...KPKWRDSARK..ASVH	FWRHMSDWFPFRWS.Q....	..PSLIVDFVVKVIAL...	.....
hcGNBP	FLAAGTKMAPFDHDFYITLG	VAAAGSITE.FPDG.VQTSGS	RP...KPKWNTGSK..AMLH	FWEEDMSWFATRW.Q....	..PQLVDYVVKVIAL...	.....
agCP1153	IHG.T.RMAPFDQFVYIIMN	LAVGGTNGFYFPDVPASNGN	RG...KPKWSNSPT..AARD	FWNGRNSWLPTWRMTDSR.G	KDSSLQIDYVRVWAL...	.....
agCP1164	IHG.T.RMAPFDQFVYIIMN	LAVGGTNGFYFPDVPASNGN	RG...KPKWSNSPT..AARD	FWNGRNSWLPTWRMTDNR.G	KDSSLQIDYVRVWAL...	.....
agCP1731	VTG.G.KMAPFDQFVYIIMN	LAVGGTNGFYFPDVPASNGN	GN...KPKWSNSPT..ALRD	FWLGRSDWLPTWKLQEND.S	AEASFQVDYVRVWAL...	.....
agGNBP	RHG.T.RMAPFDQFVYIIMN	LAVGGV.AFFPDA..ATNP.	TH...KPKWNSNPQ..AATD	FWNGRAQWLPTWNLERDG.G	KSASLLVDYVRVWAL...	.....
agCP3995	RYG.S.IMAPFDQFVYFKIS	VAVGGSE.FN.DINP.	GG...KPKWHNGAPN..AMTE	FWNGKNDWLPTWKLDDAD.S	KDASMQVDYVRVWAL...	.....
aaGBP	PKG.S.KMAPFDQFVYIIMN	VAVGGV..DYFPDN..AWNP.	HP...KPKWRQGNPS..AMTD	FYKAKSNWYSTW.....G	DAALVDEVDVWVAA...	.....
lsGBP	SAG.S.KMAPFDQFVYIIMN	VAVGGTNGFYFPDD.VASN.	.....KPKWSNLSPT..AFLD	FWNARDEWLPSWQAGEGRIS	EGAAMQVDYVRVW..KMSA	EQ.....
pmGBP	AAG.A.KMAPFDQFVYIIMN	VAVGGTNGFYFPDD.IAS...	.....KPKWSNLSPT..AFLD	FWNARDEWLPSWQAGEGRIS	EGAAMQVDYVRVW..KMSA	EQ.....
plLGBP	RDG.S.KMAPFDQFVYIIMN	LAVGGTNGFYFPDD.VSNPFA	.....KPKWNSASP..ASRD	FWNARGSWLPSWEHGEHGIS	ENAAKVDYVRVW..KMSV	EQ.....
spGLUC	AYNPN.KLTFPFDQFVYIIMN	VAVGGVN.YFGDG.LSYTPA	.....KPKWSNSPT..ASKD	FWSDFNTWYPTWV.GE...E	E.AAMQVYVYVRYXEPGQTV	YXLRDR
efCCF1	AGG.T.NLAPFDQNFHFILN	VAVGGTNGFIPDG.CINRGG	DPALQKPKWSNGDWYNDAMRK	FFDARGNKWKTWD.DEG...	DNNAMQVDYIRVY..KRN...	.....