

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

dmGNBP1	..TAPSVCE-PSESVQVSPQ..	..IGVSICKQGLLFEETFD..	..QL.NESLWIHDVRLPLDLSK	DAEFVLYDG.KAK...VHD	GNLVIEPLLWSSY.....	..RPDLSIANS
dmGNBP2	..QQAKRKC.AAQTIVS...	..NGRHTCQGLLIFEDNFSE	AQL.NKTTWKHDIRQRMYPD	EEELVAFDD.AAR.NCFVKE	GELHIVPTIAT.....	..EVTDD
agCP3847	..TPPPCP.PLTITFN...	..GGQPTCAGKLLFEDTFEQ	SSS.FAPKWQHEVRIPLDTP	SAEFVSYQS.SPE.NSYIAA	GRLVIVPTLVLTQT.....	..ADYTDG
msGRP2	..GPWRPCE.RSLTESL...	..ARERVCKGSLVFESDFDG	SSLADLNQWTAEVRFPEEP.	DYPPNYLYT..TDG.TVGFES	GRLVIVPTLVLTQT.....	..YH.EGIIYD
piGRP	..RDPD.PCT.VSATMVD...	..GRKSVCCQGLLFESEEFK	ANLKDLANWBAEVKFPPEEP.	DYPPNFVYM..VDG.TLELED	GSLVLTLPKLLSR.....	..FH.AGLIND
msGRP1	..GFSY.PCE.LSVSEVS...	..VPGFVCKGQMLFEDFNFK	P.LADGRWITPEIMFPEEP.	DYPPNFVYMETDN..LHVGN	GNLVIEPLLWSSY.....	..FG.GDAIWK
bmGRP	..SEGY.PCE.LSLSTVS...	..VPGFVCKGQMLFEDQFNI	P.IHRGKIWVPEVKFPPEEP.	DFFPNVYL..SDN..AEVND	GKLIKIPATLESK.....	..YG.EDFVRQ
dmGNBP3	..DIRLGC.TPKTEVN...	..GAPTRCAGQLVVFDEFNA	AKL.DPNKWAERRRFSGQP.	DYEFNVYVDDAPE.TLCLAN	GHVVLSTNTMMKQ.....	..FK.KG.SGE
agP8943	..STSAEHC.ANAQTIVN...	..GRKV.CAGKLLFEDNFNG	RST.DLRKWRIRNFASDP.	DNEFVVIAD.FPE.NIMIQN	GLLAIRPTLFEEK.....	..FG.PGATTO
bmGNBP	..SQKPECK.PTKTRVR...	..GGKACAGQTIFFEEQFD.	..SL.DENVWQIEQYIPIYHP	EYFPVSYQ..RNNLTVSTAD	GNLHINAKLQOHMP.....	..GFLDSSIYG
hcGNBP	..PTPTTCR.PTATKLR...	..SGVACAGQTIFFENFN.	..TF.REDVWQIEQYIPVYST	EFPFVSYQHLSDQPTVAVTG	GNLRTIPKLOQRM.....	..GFTDSSIYSG
agCP1153	..NPDTGCA.NSLTTASGR	AKPG.PYCSWDLIFEDNFN.	..SL.DFETWEHENTLSGGG.	NWEFQWYQNNRSN..SYCEN	GIFYIRPTLLAD.....	..DTGEAFLSSG
agCP1164	..EQSPKCT.VSVTTASGTK	ARAG.PYCTGELIFEDNFN.	..TL.DFETWEHENTLSGGG.	NWEFQWYLNHRSN..SYCEN	GIFYIRPTLLAD.....	..DTGEAFLSSG
agCP1731	..EAPLACDRASVTTASGTL	VKRS.AFCPGDLIFEDNFN.	..RL.DLERWQHEVTLAGGG.	NWEFQYLNHRSN..SFVKD	GIFFRIRPTLLAD.....	..ETGEEFLSSG
agGNBP	..TAQSECV.RSVTTASGSL	IDRGRTFCSGELIFEDNFN.	..FF.DFEKWEHVNTLAGGG.	NWEFQWYNNRSN..SFVED	GALNIRPTLLAD.....	..QFGLDFMTSG
agCP3995	..GSLGCK.RSPTTASGFR	APKG.RICSGQLIFEDNFN.	..RF.DLDTWQHEHNTLAGNT.	DSEFQWYNNRSN..SFVRE	GMLNIRPTLLAD.....	..EFGEPFLSSG
aaGBP	..GLISGCK.RSPTTASGFR	APKG.RICSGQLIFEDNFN.	..RF.DLDTWQHEHNTLAGNT.	NWEFQWYNNRSN..SFVRE	GMLNIRPTLLAD.....	..EFGEPFLSSG
lsGBP	..VQPED.C...ASF...	..C...MIFEDNFN.	..YL.DNDVWEHELTMSGGG.	NWEFQAYVNNRSI..SYTRD	STLFIKKPELTAN.....	..WKGDDFLTSG
pmGBP	..VEPED.C...TSFP...	..C...MIFEDNFN.	..YL.DNDVWEHELTMSGGG.	NWEFQAYVNNRSI..SYTRD	STLFIKKPELTAN.....	..WKGDDFLTSG
plLGBP	..LDPGS.C...SFP...	..C...LIFEDNFN.	..DL.NRNVMVEPVTMSGGG.	NWEFQWYLNHRSN..GYTRD	STLIKPELTAN.....	..WGEHFLFND
spGLUC	..PCDAACD..MSTFP...	..CN.GLIFQEEFD.	..SF.NLDIWEHEMTAGGGG.	NWEFQYNNRSN..SYVRD	GKLFIKPTLLAD.....	..KLGEGSLSSG
efCCF1	..FTDWD.....	..CY.HIVWQDEFD.	..YF.DGAKWQHEVTTATGGG.	NSEFQYLTQDGAN..SFVRD	GKLFIKPTLLADINPQTA	..PFGTDFMYNG
dmGNBP1	RDLSE..R...CTGTHN..	..RIKEC.IHSTGSGPSGI	MPIVTPRISTKETFAFYQG	RIEIRAKLPKGDWIVPLLLL	EPLTEWYQSGYESGQLRVA	LAR.GNSVLR
dmGNBP2	SFKLGD..R...CTAVES..	..PEQECNIAH..GIFYS.I	KPPVSAQIHTRNSFSFKFG	KIVVRAKLPKGDWIVPLLLL	QPVST.YAETHY.AKOLRIA	YAR.GNANLR
agCP3847	RIRTEG..LTLAGCTSPTN.	..NYECC.QR..KAARSTI	LPPVSAKLNTHKFFRFYKIV	RVEIRAKLPKGDWIVPLLLL	QYENYGYADYASGQMWIA	HIL.GNANRLA
msGRP2	RDL.E..R...CTGQLG..	..T.LEC..RRE.S.SGGQI	VPPVMTAKLATRRSFAPKFG	RIDIKAKMPRGDWLIPELNL	EPLDNIGYQRYASGLMRVA	FVR.GNDVYA
piGRP	ALDLTN..R...CSGQVD..	..T.TEC..RRQ.A.SGAQI	LPVMTGKIITTKNFTFKFG	RVEVRAKLPAGNWLPEINL	EPKDNVFGSRRYESGLMRVA	FAK.GNAVVA
msGRP1	TLDLSD..R...CTGLLG..	..T.AQC..KRD.P.SDAII	VPIVITAKINTKKTFAFYKG	RVEISAKMPRGDWLIPELNL	EPVKNYGRINRYVSGLLRVA	CVK.GNTEYI
bmGRP	SLLDSE..R...CTGTVG..	..T.AQC..LRE.A.SGLI	LPPIITAKISTRHQFAFYKG	RVEIRAKMPKGDWLYPEILL	EPRDNIYGVRYASGLIKRIA	SVK.GNAEFS
dmGNBP3	SLLDGE..K...CTGQAN..	..T.HDC..VRN.GRTLNDG	LPPIITAKIQAQSS.KDFSFYK	RVEVRAKMPRAQWVTPQIWL	QPRRPYIGVDDYRSGQLRIA	YTRPNGGNDL
agP8943	QRFGE..E...CTGHSS..	..S.RDC..IRD.KIDFDM	IPPVITAKIITTSFKFTFG	KVLIRAKLPEGSWIFPQLYI	IPATDFYQDSYASGLMRVA	YV.PGGQFR
bmGNBP	TNLNFS..G...CTSSAE..	..A...C.IKQ..ASGADI	LPPIVSGRITS.TGFAFTYG	TVEIRAKLPQGDWLYPEILL	EPFLKGYGSMNYASGVVVKIA	CAR.GNAEYL
hcGNBP	SLNIFS..G...CTAPAE..	..A...C.MKD..AWGASI	LPPVSGRITS.TGFAFTYG	TVFVKAKLPQGDWLYPEILL	EPFLKGYGSMNYASGVVVKIA	SAR.GNRELT
agCP1153	TLNIHG.SEPANQCTSA...	..MNFGC..ERT..GTATNL	INPIKSARVRTVNSFSFRYG	TMEVRARMPGTGDWLPVAVWL	LPKRQVYGTWP.ASGEIDL	ESR.GNMDYR
agCP1164	TLNIHG.GQPADQCTSA...	..MFWGC..ERT..GSPNTL	INPIKSARVRTVNSFSFRYG	RMEVRAARMPGTGDWLPVAVWL	LPKRQVYGTWP.ASGEIDL	ESR.GNMDYR
agCP1731	NLNVHG.GTPYDFCTNP...	..SNYGC..ERQ..GSPNTL	LNPIKSARVRTVNSFSFRYG	KVEIRAKIPTGDWLPVAVWL	MPKINQYGTWP..SSGEIDL	ESR.GNLDYS
agGNBP	TLNHLG.SYPTDHCNTD...	..AFYGC..VRV..GNRQHI	VNPVKSARITISSFNFKYG	RAEVRAKLPGTGDWLPVAVWL	LPKRQVYGTWP.ASGEIDL	ESR.GNLDYS
agCP3995	VLNVHG.GSPAEQCTKH...	..SPDGC..ERT..GSHQV	LNPIKSARITISSFNFKYG	KVEVRAKLPAGDWLPVAVWL	LPKQVYGTWP.ASGEIDL	ESR.GNLDYS
aaGBP	VNLNE.GPQSRQCTDAPWG	AEQIHGC..YRR..GSPDRI	LNPVRSARLRTVNSFAFYKG	KVEINAKLPQGDWLPVAVWL	LPKQVYGTWP.ASGEIDL	ESR.GNLDYS
lsGBP	TLDLWGMNGRGDVCFTGN	..SYGCG..SRT..GSSSNL	LNPIKSARLRTVNSFAFYKG	RIEIRAKMPRGDWLPVAVWL	LPKQVYGTWP.ASGEIDL	ESR.GNLDYS
pmGBP	TLDLWGMNGRGDVCFTGN	..SYGCG..SRV..GSSSNL	LNPIKSARLRTVNSFAFYKG	RELVRAKMPRGDWLPVAVWL	LPKQVYGTWP.ASGEIDL	ESR.GNLDYS
plLGBP	ELNL...GDKCTDH...	..RDYGC..VRK..GTSEHI	INPIMSARLRTVNSFAFYKG	RVEVRAKMPRGDWLPVAVWL	MPKDSRYGGWP.ASGEIDL	ESR.GNLDYS
spGLUC	TLDLWG.SSPANLCTGN...	..AWYGC..SRT..GSSNDL	LNPIKSARLRTVNSFAFYKG	RVEVRAKLPGTGDWLPVAVWL	LPKQVYGTWP.ASGEIDL	ESR.GNLDYS
efCCF1	VLDVWAMYG..ACTNT...	..DNNGC..YRT..GAANDI	P.PAMSARVETQKVSFTHG	RELVRAKMPRGDWLPVAVWL	LPKQVYGTWP.ASGEIDL	ESR.GNLDYS
dmGNBP1	...MPPGKLVDRSRLYGG.	PVLSTDAHQR.EDLWLSKRR	IS..H..FGDDFHTYSLDWS	S.NRLLFSVDGQVYGEML..	...N...GFT..E...L	..LDENPRW
dmGNBP2	...TKQDDISGNHLYGG.	GVV...WHHG.NAVQFLDKD	ISNSH..YGDDFHNYTMIWQ	R.DKTIITLMVDDEYGEGLY..	...D...GL...L...P	..PFF
agCP3847	...AADGRQIDGHRLLRGG.	VLIINTGTPVR.SD..FLRSN	LNNEEH..FGDQFHYGLVWVT	P.EQILLTLVDGQVYGAALR..	...T...NFR..QHAQ	..QHNLTQANLW
msGRP2	...KK.....LYGG.	PIMSDADPFR.S..MLLKDK	QGLAN..WNNDRYHVYSLWKK	P.NGLELMDVDEYVGTID.A	...GD...GFY..QAK	..NHLVSHAASW
piGRP	...KK.....LNGG.	PVLADTEPFR.S..LLMKEK	IGIDN..WNRDHYNYTLIWK	Q.DAIDMLVDGEKYGYSIS.P	...GE...GFY..ALGR	..EHVAPHAASW
msGRP1	...KT.....LVGG.	PIMSEAEPRY.T..ANLKEF	ISNEP..WTNEFNHYTLEWS	P.DGITMVDGDIYVGRVTPAP	...AG...GFY..KEAN	..EQNVAAAAARW
bmGRP	...KK.....LYAG.	PIMTGSDEPR.S..FYLKEN	IGYES..WNRDHYNYTLEWR	P.DGITLLVDGEGSYGEIK.P	...GE...GFY..NVAN	..SYKVEAAPQW
dmGNBP3	...N.....LYGAA	VLFAD.EPLR.SVKNCLKPG	TGNNSDWSDFHNYTLEWR	P.LRTRLWL.VDGKEWCYQG.S	...AK...GSFSETAA	..GKSLPQAQKL
agP8943	...NQ.....LSGG.	LLVSDSEPLR.CSKMK...	TLNKNVQWSSDYHYVGLKWT	P.EGVWMEVDDEYCAID.P	...GE...GLY..RTIQS	..RK..PQIANL
bmGNBP	...SGP.NDYSNTVLYGG.	PIMD...LE.CRENFLSTK	RRRDGTSWGDSPHYSVQVT	P.DFIALSVDGEEWARVEAP	...RD...AL...L...	..PVCAPAPRH
hcGNBP	...SGY.TDYSNKMFLGG.	PVMN...LQ.CYDTLLESK	ASSNGRQWGDSPHYSVQVT	P.ERITLSVDGEEWARVEAP	...AS...GLS...GRF	..PQCSKLPRT
agCP1153	GSNGVHIGTEQFGSTLHFG.	PTPTLN.GW..ESTVAYKNT	AAGQG..WNTGFHNYQLTWT	P.DYIRFVSVDNQVVTQID..	...AGT...GFWNRGNFG	..NIAPGTENPW
agCP1164	GSNGVHIGTEQFGSTLHFG.	PNPSLN.GW..ESTVAYKNT	AAGQG..WNTGFHNYQLTWT	P.DYIRFVSVDNQVVTQID..	...AGT...GFWNRGNFG	..NIAPGTENPW
agCP1731	..VNGNLQVGEVHVTLLHFG.	PQWDLN.GY..EMATAVKNP	PKQGG..FNGKPHRYQLEWT	P.EYFRMFSVDDEQVMQVE..	...G...NFSWLRGRFD	..ERRPGVQNPW
agGNBP	..LDGVIQTRQVQSTLHFG.	PNPSYN.GY..PTATLTKNA	LEPQE..FNSKFSFTFGVWT	P.DNITVTSINGEDLATIG..	...G...DFWTRGGFD	..KHN..LENPW
agCP3995	..KNGINVGIEQVSTLHFG.	PNAAYSGYGAGPSTFRNS	ESKGG..YHTGFNRYQMEWT	P.HDVTFSDINDIETGTVK..	...VGT...GFWQKGNFN	..ISTPGINDPW
aaGBP	..QNEKIGIQKVVSSCLHFG.	DNPVNR...SSQCGS	VSGNL..FGAMFNRYQLTWT	K.NVIQFINGINDIRFRTVT..	...PYE...GFWRLLGFS	..FNPNW
lsGBP	..TLGNQYGGTTLHFG.	PFWYFN.FF..EKTHVEYS	ANEGS..FADDFHWRDLWT	K.DGMEFYVDEVLQTLID.P	...GN...SFDWFSGMD	..SVYDNPW
pmGBP	..TLGNQYGGTTLHFG.	PFWYFN.FF..EKTHVEYS	ANEGS..FADDFHWRDLWT	K.DGMEFYVDDVQLQTLVD.P	...GT...SFDWFDAGM	..PFFDNPW
plLGBP	..NLGQVHIGTTLHFG.	PNPQAN.MF..LKTHTYTS	ANDGS..FANNFHWRDLWT	R.DNMKFYVDDVQLQTLVD.P	...GS...NFDWFDGGLG	..NSQNDPW
spGLUC	DADGLSAGVDQMSSTMHWG.	PFWDLN.GY..PKTHAT.	SDOWN..YGDNFHTFWDWS	...K.FYVDELLNVD.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...	..PALKIDVVRVFAN...	..
dmGNBP2	N.....EKCFII.FG	VTVGGFLD.FDSD.L.LAK	DA...KPYKNRPR..AALS	FWQHRDAPWAPTWR.H...	..SAMVIDYVRVYAE...	..
agCP3847	SADAP..LAPFDFEYFVSLG	VTVGGVGD.FPDHSLTGPSR	TV...KPDNNTSPK..AEYF	FYQNRNTWYRTW.T.E...	..PELTVDYVRVYAL...	..
msGRP2	LRGTV..MAPFDEKFFITLG	LRVAGIHD.FTDG.....P	.G..KPEWNGKTK..AMIN	FWNRRFRFWFTWH..D...	..TSLKVDYVRVYAL...	..
piGRP	LRGSV..MAPLQYFFLSLG	LRVGGVHD.FADS.....P	.D..KPKWNRSNK..AVLN	FWNDRFNWFTWH..D...	..ANLKVYVRVYAL...	..
msGRP1	IQGSN..IAPFDDMFYISLG	MDVGGVHE.FPDE.....A	IN...KPKWNTATK..AMVN	FWNARSQWNTWLESE...	..KALLVDYVRVYAL...	..
bmGRP	LRGTV..MAPFDEYFVSLG	LNVAIGRE.FSED.....I	SN...KPKWNSATK..AMLK	FWDARSQWFTWDE.D...	..SALQVDYVRVYAL...	..
dmGNBP3	IEGTG..LAPFDFEYFVSLG	LSVGG.FN.EYQH.....E	I...KPKWNERAPQ..AQKA	FWKEVKKIRBDHLD.E...	..GHMKIDYVRVYAL...	..
agP8943	WQLSGSRMAPFDKDFYLLGL	VGVGGHYD.FHQF.....N	.G..KPKWDLGVK..AMFT	FWKARDKWYPTWNV.N...	..STMLVDYVRVYAL...	..
bmGNBP	LLQAGSQMAPFDHDFYITLG	VAAAGITE.FRDG.SITSG	VT...KPKWRDSARK..ASVH	FWRHMSDWFPFRWS.Q...	..PSLIVDFVKVIAL...	..
hcGNBP	FLAAGTKMAPFDHDFYITLG	VAAAGITE.FPDG.VQTSGS	RP...KPKWNTGSK..AMLH	FWEEDMSWFATWS.Q...	..PQLVDYVRVYAL...	..
agCP1153	IHG.T.RMAPFDQEFYIIMN	LAVGGTNGYFPDVPASNGN	RG...KPKWSNSPT..AARD	FWNGRNSWLPTRWMTDSR.G	..KDSLLQIDYVRVYAL...	..
agCP1164	IHG.T.RMAPFDQEFYIIMN	LAVGGTNGYFPDVPASNGN	RG...KPKWSNSPT..AARD	FWNGRNSWLPTRWMTDSR.G	..KDSLLQIDYVRVYAL...	..
agCP1731	VTG.G.KMAPFDQEFYIIMN	LAVGGTNGYFPDVPASNGN	GN...KPKWSNSPT..ALRD	FWLGRSDWLPTRWKLQEND.S	..AEASFQVDYVRVYAL...	..
agGNBP	RHG.T.RMAPFDQEFYIIMN	LAVGGV.AFFPDA..ATNP.	TH...KPKWNSNPQ..AATD	FWNGRAQWLPTRWNLERDG.G	..KSASLLVDYVRVYAL...	..
agCP3995	RYG.S.IMAPFDQEFYFKIS	VAVGGSE.YFSDD..DINP.	GG...KPKWHNAGP..AMTE	FWNGKNDWLPTRWKLDDAD.S	..KDSMQVDYVRVYAL...	..
aaGBP	PKG.S.KMAPFDQEFYIIMN	VAVGGV..DYFPDN..AWNP.	HP...KPKWRQGNPS..AMTD	FYKAKSNWYSTW.....G	..DAAALEVDWVWVAA...	..
lsGBP	SAG.S.KMAPFDQEFYIIMN	VAVGGTNGYFPDVPASNGN	...KPKWSNSLPT..AFLD	FWNARDEWLPSTWQAGEGRIS	..EGAAQVDYVRVYAL...	..KMSA
pmGBP	AAG.A.KMAPFDQEFYIIMN	VAVGGTNGYFPDVPASNGN	...KPKWSNSLPT..AFLD	FWNARDEWLPSTWQAGEGRIS	..EGAAQVDYVRVYAL...	..KMSA
plLGBP	RDG.S.KMAPFDQEFYIIMN	LAVGGTNGYFPDVPASNGN	...KPKWNSASP..ASRD	FWNARDEWLPSTWQAGEGRIS	..ENAAKVDYVRVYAL...	..KMSV
spGLUC	AYNPN.KLTPFDQEFYIIMN	VAVGGVN.YFGDG.VSNTPA	...KPKWSNSPT..ASKD	FWSDFNTWYPTWV.GE...	..E.AAMQVYVTRVYXPEPGQTV	..YXLRDR
efCCF1	AGG.T.NLAPFDQEFYIIMN	VAVGGTNGYFPDVPASNGN	DPALQKPKWSNGDWNAMDRK	FFDARGNKWKTWD.DEG...	..DNNAMQVDYIRVY..KRN...	..