

A

GH27-1 MVS---RLVLALVGLISTVNGLDNGLARTPPMGWMDQRFRCCLNTCTLYPDECISEKLFDRMDRMAADGYLAAGYEYIMIDDCWSSKER
 GH27-2 MYKIWFVLAVVVYFLGIDVTPLENGLARTPPMGWLAWERFRCNTDCKNDPENCISENLFRMTADILVNEGYASVGYEYINVDDCWLEKDR

GH27-1 DSKGRLVPPDRFPSPGIKNLSYIHSKGLKFGIYADYGTLTGAGYPGSKEYLKIADRFAEWEVDYLKFDGCNSDWIFIDKGYIEMGKHL
 GH27-2 SVYGELVPPDRVFRPRGMKSLADYVHSGKLGKFGIYEDYGNVTCAGYPGVLGSLQDAETFASWDVDYVKLDGCYAHPRMDRDRGYPEFGFHL

GH27-1 NATGRPIVYSCSWPAYQEPNMQSNYALAEATCNLWRNWDIDDWSVESVTSIIIEWFSDNQDRIGPFSAPGHWNDDPMLVIGNFGLSFEQS
 GH27-2 NRTGRAMIYSCSWPVYQIYAGMSPNFSATIEHCNMWRNFDDIQDSWTSVESIIDYGNQDVLIANAGPAGHWNDDPMLIIGNFGLSYEQS

GH27-1 KGQMSVWSVMAAPLIMSVDLRTIEPKFRAILLNKDAIAVNQDPLGEMGRVLKKNIIYIWTKKLTAKADGRQPHAIAVLSQRTDGYKYRM
 GH27-2 KTQMAIWAIIAAPLLMSVDLRTIRPEYKAILQNRKIIVADQDPLGIQGRRIYKHKGIEIWSRPIITPLYQSYFSAIAFVNRRTDGTSPSDV

GH27-1 EFTLKDNLITGPNGLIKDIFDEDKSVASIADEPFVLRMAPTGGTLLVATPKK-----
 GH27-2 AVTLKELGLTSPYGYRVEDLY-EDVDYGVLSPPQTKIKVKNVPSGVVILRADVQADFNRRIPIFFTQRPFSSSPLNQVFRVRENGFKPFFT

GH27-1 -----
 GH27-2 TQRPFSSSPLNQVFRVRENGFK

B

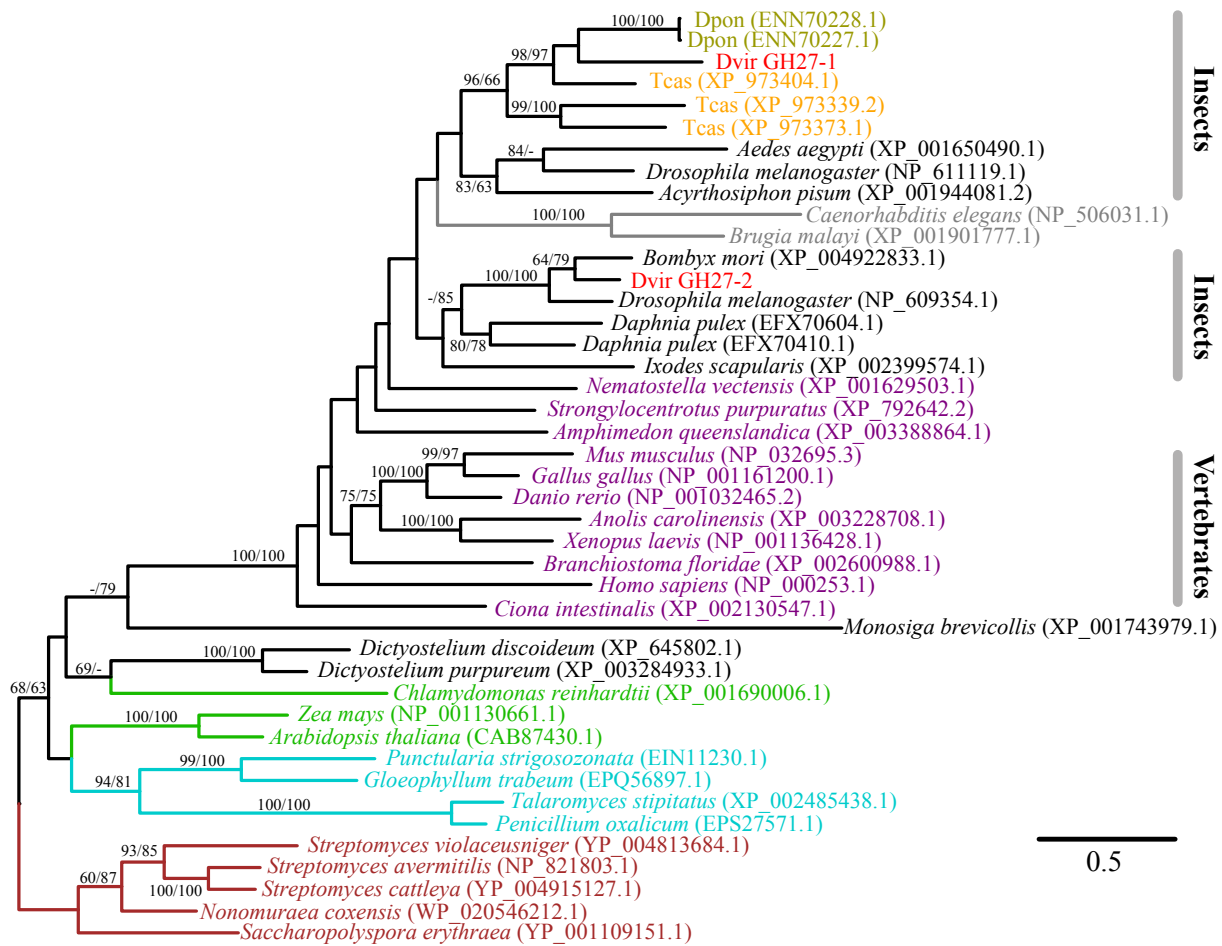


Figure S7. GH27 family gene sequences identified from the *D. v. virgifera* transcriptome (A) and the maximum-likelihood phylogeny including representative GH27 family proteins (B). Labels for the coleopteran species belonging to the superfamily Curculionoidea, *D. v. virgifera*, and other beetle sequences are shown in olive, red, and orange, respectively. Their species abbreviations are found in Table S5. Arthropod, other metazoan, nematode, fungal, plant, and bacterial sequences are indicated by black, purple, grey, cyan, green, and brown, respectively. Bacterial sequences were used as outgroups. The numbers at internal branches show the bootstrap support values (%) for the maximum-likelihood and neighbor-joining phylogenies in this order. Supporting values are shown only when higher than 60%. The scale bar represents the number of amino acid substitutions per site.