

Gene Cluster ID	Atp6v1D	
Drosophila melanogaster gene	Vha36-1 (CG8186)	
FlyBase ID	FBgn0022097	
Predicted function	ATPase, H+ transporting, V1 subunit D	
Atp6v1D CLEAR element conservation:		
	<u>5' / 5' UTR</u>	<u>intron1</u>
Mdom\Atp6v1D	AAGACCCAATAA TCACATATGA CCGTATTGTAGA	
Ccap\Atp6v1D-1	AGCTTTTGTGG TCATA TGA CATTTCTGCTGA	
Ccap\Atp6v1D-1	TGCTGACATTT GTCAGCTGA CCCAACGACGAC	
Gmor\Atp6v1D-1	TCACAAGACAAGTCAGCTGA CCTCGAAAGAAA	-----
Llon\Atp6v1D	GAA CATCA CAAGTCAGCTGA CTTT CTGGTAA	GGAAAAGCAGGGTCATGTGAGGGATTTCAATA
Ppap\Atp6v1D	TTG CAGTTCAAGTCAGCTGA CTTT CTGTGGCA	TGGGAATCAGTGTCATGTGAGTATCTTGTTTA
Agam\Atp6v1D	GGTATGATATGGTCTTGTGACCAGAGTAATCT	
Aara\Atp6v1D	GGTATGATATGGTCTTGTGACCAGAGTAATCT	
Aqan\Atp6v1D	GGTATGATATGGTCTTGTGACCAGAGTAATCT	
Achr\Atp6v1D	GTTGTTATATGGTCTTGTGACCAGAGCAATCT	
Aepi\Atp6v1D	GTTGTTACATGGTCTTGTGATCAGTACAATCT	
Amin\Atp6v1D	GTGGTTATATGGTCTTGTGATCAGTGGAACTT	
Afun\Atp6v1D	GTTGTTGTATGGTCTTGTGACCAGAGAACTCTG	
Aste\Atp6v1D	GTTGTTATGTGGTCTTGTGACCAGAGAGCCCT	
Adir\Atp6v1D	TGTGTTCTGTGGTCTTGTGACCATAA TTTGCG	
Anil\Atp6v1D	GTGTGTAACGAG TCTTGTGACCATAA TTTGCG	
Aalb\Atp6v1D	ATCACGTAGGGTCTTGTGATCAT CGGGTTTG	
Adar\Atp6v1D	CATCACTGTAGGTCTTGTGACTGGGT TTGCTG	
Aaeg\Atp6v1D	AAATTCATTTGATCTTGTGACCCGTTT TGCGC	
Cqui\Atp6v1D	GTCTCGATTTGATCTTGTGACTTGAATTT TGG	
Mdes\Atp6v1D	GCTGACTACTTCCTTGTGACCA TACACAGAA	
Aaeg\Atp6v1D	GATCCATCAAAA TCACATGA CATG TGTCAAAC	
Cqui\Atp6v1D	TCACACAGTTCGTCATGTGA CATTTT GCTGCC	
Mdes\Atp6v1D	TTTTCTTTAGTGTACAGCTGA CTACTTT CTCTTG	
Bmor\Atp6v1D	TGTCTTCTGTCA TCAGGTGA TTT GGGTTTGGG	
Msex\Atp6v1D-1	TGTCTGCTGTCA TCAGGTGA TTTAGGTTT TGG	
Dple\Atp6v1D-1	TGTCTTCTGTCA TCAGGTGA TCGAGAATTAGG	
Hmel\Atp6v1D-1	TGTCTTCTGTCA TCAGGTGA TTGAAATTGGA	
Pxyl\Atp6v1D	TGTCTTCTGTCA TCAGGTGA T CGTGAGCAAAA	
Tcas\Atp6v1D	TATGTCACGCGT TCAGCTGA CTGATCT CGTGA	
Dpon\Atp6v1D	CTGATTTTCATGTCAGCTGA CTAGTCT TGTGA	
Amel\Atp6v1D	CGGTCTTACGAGTCAGCTGA TCAATTT CAATTC	
Aflo\Atp6v1D	CGGTCTTACGAGTCAGCTGA TCAATTT CAATTC	
Bter\Atp6v1D	CGGTCCTACGAGTCAGCTGA TCAATTT CAATTC	
Bimp\Atp6v1D	CGGTCCTACGAGTCAGCTGA TCAATTT CAATTC	
Mrot\Atp6v1D	CGGTCCCA CAAGTCAGCTGA TCAATCT TATTC	
Aech\Atp6v1D	CGGTCTCTCGTGTACAGCTGA TCAATTC CAATTC	
Acep\Atp6v1D	CGGTCTCTCATGTACAGCTGA TCAATCC CGTTC	
Lhum\Atp6v1D	CGGTCTCTCGTGTACAGCTGA TCAATCC CGTTC	
Sinv\Atp6v1D	CGGTCTCTCACGTACAGCTGA TCAATCC CAATTC	
Pbar\Atp6v1D	-----	
Hsal\Atp6v1D	CGGTG CGCCGAGTCAGCTGA TCAATCC CAATTC	
Cflo\Atp6v1D	G TCAG CTCGAGTCAGCTGA TCAATCC CGTTC	

Nvit\Atp6v1D TTTCCGTCAAAGTCAGCTGATCAATCGTATTC
 Ngir\Atp6v1D TTTCCGTCAAAGTCAGCTGATCAATCGTATTC
 Nlon\Atp6v1D TTTCCGTCAAAGTCAGCTGATCAATCGTATTC

Rpro\Atp6v1D tacacattataaTCAGCTGAtgtaccttcct
 Phum\Atp6v1D tggaaataatagTCAGCTGActttagctctga
 Lful\Atp6v1D tacctaattgtgTCAGCTGActttacgcctac
 Dpul\Atp6v1D cttctcttgttgTCACATGAtcagatgattct

Atp6v1D gene structure comparison:

Key: UTR region, CDS region INTRON

Order	Species	Atp6v1D orthologs	5'exon	intron	exon	intron	exon	intron	exon	intron	exon	intron	exon3'	Extended CLEAR region	Position	bps from TSS		
Diptera (Drosophilidae)	<i>Drosophila_melanogaster</i>	Dmel\Vha36-1	120	741										221	ttgcaaaaagggTCATCTGActgtttttatac acaattgcacagTCACATGAcagcaaacatat	3' 3'	1142 1193	
		Dmel\Vha36-2	73	525					75	597					101	ND		
		Dmel\Vha36-3	83	41	60	118	55	364			61	227		45	ND			
Diptera (Muscidae)	<i>Musca_domestica</i>	Mdom\Atp6v1D-1		41	110	118	96	364			67	218			aagaccaataaTCACATATGAccgtattgtaga	5'	>-125	
		Mdom\Atp6v1D-2		969											ND			
Diptera (Tephritidae)	<i>Ceratitis_capitata</i>	Ccap\Atp6v1D-1		41	132	118	132	364			58	218			agcttttgtggTCATATGAcatttctgctga tgctgacattgTCAGCTGAccaacgacgac	5' 5'	>-128 >-102	
		Ccap\Atp6v1D-2		951											ND			
Diptera (Glossinidae)	<i>Glossina_morsitans</i>	Gmor\Atp6v1D-1 TMP011652	124	41	73	118	69	364			3174	218 (95+123)		56	tcacaagacaagTCAGCTGAcctcgaagaaaa	5'UTR	3	
		Gmor\Atp6v1D-2 TMP010970		1062											ND			
Diptera (Psychodidae)	<i>Lutzomyia_longipalpis</i>	Llon\Atp6v1D		41	123	700 (118+364+95+123)									gaacatcacaaTCAGCTGActttctggttaa ggaaaaagcaggTCATGTGAgggattcaata	5' intron1	>-47 >138	
	<i>Phlebotomus_papatasi</i>	Ppap\Atp6v1D		41	135	459				63	241				ttgcagttcaagTCAGCTGActtctgtggca tgggaatcagtgTCATGTGAgtaicttgttta	5' intron1	>-48 >147	
Diptera (Culicidae)	<i>Anopheles_gambiae</i>	Agam\Atp6v1D AGAP010298	224	41	83	118	75	364			67	95	82	123	250	ggtatgatatggTCTTGTGAccagagtaact	5'UTR	108
	<i>Anopheles_arabiensis</i>	Aara\Atp6v1D		41	83	118	75	364			67	95	82	123		ggtatgatatggTCTTGTGAccagagtaact	5'	>-110
	<i>Anopheles_quadriannulatus</i>	Aqan\Atp6v1D		41	83	118	75	364			67	95	82	123		ggtatgatatggTCTTGTGAccagagtaact	5'	>-110
	<i>Anopheles_christyi</i>	Achr\Atp6v1D		41	86	118	77	364			72	95	82	123		gttgttatggTCTTGTGAccagagcaact	5'	>-108
	<i>Anopheles_epiroticus</i>	Aepi\Atp6v1D		41	84	118	74	364			68	95	65	123		gttgttacatggTCTTGTGAtcagtacaact	5'	>-104
	<i>Anopheles_minimus</i>	Amin\Atp6v1D		41	79	118	92	364			64	95	79	123		gtgtgtatatggTCTTGTGAtcagtgaacct	5'	>-110
	<i>Anopheles_funestus</i>	Afun\Atp6v1D		41	78	118	74	364			64	95	64	123		gttgttgatggTCTTGTGAccagagaactcg	5'	>-109
	<i>Anopheles_stephensi</i>	Aste\Atp6v1D		41	79	118	80	364			71	95	76	123		gttgttatgtggTCTTGTGAccagaagacct	5'	>-110
	<i>Anopheles_dirus</i>	Adir\Atp6v1D	98	41	73	118	73	364			294	95	71	123		tgtgttctgtggTCTTGTGAccataattgcg	5'	>-108

	<i>Anopheles_nili</i>	Anil\Atp6v1D		41	64	118	68	364			87	95	87	123		gtgtgaacgagTCTTGTGAccataattgcg	5'	>-90	
	<i>Anopheles_albimanus</i>	Aalb\Atp6v1D	98	41	66	118	71	364			58	95	87	123		atcactgtaggTCTTGTGAtcatcggtttg	5'	>-74	
	<i>Anopheles_darlingi</i>	Adar\Atp6v1D		41	68	118	71	364			77	95	87	123		catcactgtaggTCTTGTGActgggttgcctg	5'	>-79	
	<i>Aedes_aegypti</i>	Aaeg\Atp6v1D AAEL009808	98	41	68	118	19182	364			8305	95	58	123	301	gatccatcaaaaTCACATGAcattgtgcaaac aaattcatttgaTCTTGTGAcccggttttgcgc	5' 5'UTR	-15 27	
	<i>Culex_pipiens_qui.</i>	Cqui\Atp6v1D-1 CPIJ015086	84	741												tcacacagttcgTCATGTGAcattttgctgcc gtctcgatttgaTCTTGTGActtgaatttgg	5' 5'UTR	-46 29	
Cqui\Atp6v1D-2 CPIJ009338			741												ND				
Diptera (Cecidomyiidae)	<i>Mayetiola_destructor</i>	Mdes\Atp6v1D		41	282	118	103	180		72	184		94	95	85	123	ttttcttagtgTCAGCTGActacttctcttg gctgactacttcTCTTGTGAccatacacagaa	5' 5'	>-103 >-89
Lepidoptera	<i>Bombyx_mori</i>	Bmor\Atp6v1D LOC692984	57	41	87	118	281	148	1308	216		1472	131	993	90	544	tgtcttctgtcaTCAGGTGAttgggtttggg	5'UTR	-5
	<i>Manduca sexta</i>	Msex\Atp6v1D-1		41	100	118	ND	148	272	216		866	131	212	87		tgtctgctgtcaTCAGGTGAtttaggttttgg	5'	>-65
	<i>Danaus_plexippus</i>	Dple\Atp6v1D-1		41	77	118	666	148	1020	216		509	131	450	96		tgtcttctgtcaTCAGGTGAtcgagaattagg	5'	>-59
	<i>Heliconius_melpomene</i>	Hmel\Atp6v1D-1		41	96	118	857	148	382	216		933	131	573	93		tgtcttctgtcaTCAGGTGAttgaaattggga	5'	>-61
	<i>Plutella_xylostella</i>	Pxyl\Atp6v1D		41	99	118	367	148	1515	216		571	131	432	87		tgtcttctgtcaTCAGGTGAtcgtgagcaaaa	5'	>-56
	<i>Manduca sexta</i>	Msex\Atp6v1D-2		267			524	239	91	82		67	100	513	170?		tgtctgctgtcaTCAGGTGAtttaggttttgg	5'?	ND
	<i>Danaus_plexippus</i>	Dple\Atp6v1D-2		267			86	239	72	82		83	106	114	155		 tgtcttctgtcaTCAGGTGAtcgagaattagg	5'?	ND
	<i>Heliconius_melpomene</i>	Hmel\Atp6v1D-2		267			89	239	134	82		77	115	608	155		tgtcttctgtcaTCAGGTGAttgaaattggga	5' ?	ND
Strepsiptera	<i>Mengenilla_moldrzyki</i>	Mmol\Atp6v1D		41		118	86	364			ND	227				ND			
Coleoptera	<i>Tribolium_castaneum</i>	Tcas\Atp6v1D LOC660332		41	108	118	46	148	57	216		46	215 (131 + 84)				tatgtcacgcggTCAGCTGActgatctcgtga	5'	>-37
	<i>Dendroctonus_ponderosae</i>	Dpon\Atp6v1D		41	204	118	59	148	60	216		59	224				ggcaaaataaggTCAGCTGAttttcatgtcag ctgattttcatgTCAGCTGActagtcttgtga	5'	>-113 >-97
Hymenoptera	<i>Apis_mellifera</i>	Ame\Atp6v1D GB15226	44	41	342	118	109	486					74	93		572	cggctcttacgagTCAGCTGAtcaatttcattc	5'UTR	6
	<i>Apis_florea</i>	Aflo\Atp6v1D		41	331	118	122	486					72	93			cggctcttacgagTCAGCTGAtcaatttcattc	5'	>-38
	<i>Bombus_terrestris</i>	Bter\Atp6v1D LOC100643813	47	41	349	118	72	486					80	96		748	cggctctacgagTCAGCTGAtcagtttcattc	5'UTR	2
	<i>Bombus_impatiens</i>	Bimp\Atp6v1D		41	741	118	72	486					82	96			cggctctacgagTCAGCTGAtcagtttcattc	5'	>-38
	<i>Megachile_rotundata</i>	Mrot\Atp6v1D		41	371	118	79	486					76	93			cggctcccacaagTCAGCTGAtcaatttcattc	5'	>-36
	<i>Acromyrmex_echinator</i>	Aech\Atp6v1D		41	547	118	185	486					192	93			cggctctctgtgTCAGCTGAtcaattccattc	5'	>-39
	<i>Atta_cephalotes</i>	Acep\Atp6v1D		41	555	118	173	486					180	93			cggctctctatgTCAGCTGAtcaatcccgttc	5'	>-39
	<i>Solenopsis_invicta</i>	Sinv\Atp6v1D		41	526	118	961	486					131	93			cggctctctacgTCAGCTGAtcaatcccattc	5'	>-38

