

Pfam analysis of core saponin biosynthesis enzyme:

Enzyme	Pfam	Start	End	E-value
Thiolase	Thiolase_N	11	271	8.3e-84
	Thiolase_C	278	400	3.1e-47
HMG CoA_Synthase	HMG_CoA_synt_N	14	187	7.8e-101
	HMG_CoA_synt_C	188	471	2.9e-105
HMG CoA reductase	Transmembrane region	20	42	N/A
	Patched	56	287	1.6e-9
	Sterol-sensing	86	235	1.6e-18
	Low complexity	405	420	N/A
	Low complexity	435	454	N/A
	HMG-CoA_red	506	886	2.3e-149
Mevalonate kinase	GHMP_kinases_N	3	80	2.8e-18
Phosphomevalonate_kinase	P-mevalo_kinase	12	124	4.2e-47
	P-mevalo_kinase	14	125	4.5e-46
Squalene synthase	SQS_PSY	46	319	2.8e-42
	Transmembrane region	378	400	N/A
Farnesyl pyrophosphate	Polyprenyl_synt	52	318	2.9e-81
Squalene epoxidase	FAD_binding_3	51	254	1.5e-8
	SE	97	368	3.8e-110

>Thiolase-A_Lepeophtheirus_salmonis

MTVGRALEKAIFVVGAKRTAFGAFFGSLKSQTPVDLQTIAGKAALESQKVNPEVDSVVVGNVLSACSSDAPYIAR
HVGLRLGIRERVPALTVNRLCGSGFQSIIVNGVQEMMMGDASVLTGGSDNMSACPFALRDVRFHGKLGSDMK
MEDMMWASLTDAHIKSPMGITAENLAVKYNITRAEVDAYALRSQTTWAAAHEAGIFKHEITPIEMKSRKGTIVFQ
VDENPKPKTTIESITKLPPVFKKDGVTCAASASGICDGAGAVVLASEEAVKAHGYEPLARIVGYGITGCDPNIMGIGP
VPSIRALCDKTGISLEQVDYIEINEAFAAQVLACQKELGIPDEKFNTCGGGISIGHPLAASGSRISAHLVHKLKHNNKR
YGIGSACIGGGQGIAILFESL

>HMGCoA_Synthase-1

MPGFQRMTSPSGHWPDPNVGIAALEIYFPSQYVDQTELETFDGASAGKYTVGLGQGKMGFCSDREDINSLCLTVIQ
NLMENNQIPFDAIGRLEVGTETIIDKSKSVKTVLMQLFEDSGNTDLEGIDTTNACYGGTAALFNALSWVESSAWDG
RYALVVAGDIAVYATGNARPTGGAGAVAMLVGPHAPLVIERGLRSTHMQHVYDFYKPDMSSEYPRVDGKLSIQC
YLGALDKCYERYIAKAEALQKVGEAGRITVDSFDGMCHSPFCKLVQKSLARLVNDFLHDPSPDTSEGSRYASVEA
FRDVKLKDTFFDKNVEKAFMTASKEVYQQKTHPSRLANQVGNMYTPSLYGGVSVIASVPLDELPNKRIALFSYGS

GMASLYSIRVVKDASPGSPLAKVRNSLNDLEARLESRRVCVPGVFADTMKLREDTHHLAKYTPQGSIEDLFPGTW
YLTYVDEMQRQYNRSSSQQAQVDSQQIIQETLKEKSVEDMETAEQVTVS

>HMGCoA_reductase

MLSRLFLAQGRFCSSHPWEVIVCTLTLTICMLSMNYFTGLPRICGWNIECAPQVKESLSSDVLVCMIMRTLAVAY
LYLQFTKLRTTGSKYILGIAGLFTIFSSFLSSAVIHLFGLELTGLNEALPFFLLIDLTAKASALTKFALSSTTQNEVVDNIAR
GMAILGPTITLDTVVTTLVISIGTMSSIRKMEVFCCFGILSIANYFVFMFTFFPACLSLVLELSNSNKYGRPVWHLGRF
AEVLEEEEDRKNPNPVVQRVKMIMRGLVLVHAHSYWLASNDTELMSRDMLYDGNLLTDKKIDPTMPLWEFYATRL
WPPTLDYILTALATVLASHYIFFSDLATYPEKRVSIMEGHEVVNPGSDHEDASEVETIGTLSSSPSTSDVRVIESMTSR
TQACQTDPTASPRNSRSSSPVSSHVKPARFTIGSSGSGSEDEEEVIKEEEVEWVLETELKAPRPMPELLEILNVG
KGPNALTDDEVQLLVGAKHIPAYKLENILDNPERGVAVRRQIISKLLPITDALEKLPYASYDYFSVSGACCENVIGYMP
VPVGVAGPLLLDGQEFQVPMATTEGCLVASTNRCRALRSAGGIHSLVIGDGMTRGPLVRLPSAQEAGAIKQWLE
VPENFAAIKERFESTSRFAKLKSIQTALAGRYMFLRFKALTGDAMGMNMISKGTEQALHALQTMFPNIEIMSLSGN
YCTDKKVAAINWIEGRGKSVVCEATVPAHIVQQVLKTSASALVDLNIHKNLVGSAMAGSIGGFNAHAANIVTAIYIA
TGQDAAQNIASSNCMTLMETRGPKGGLYLSCTMPSIELGTVGGGTVLPQSACLQMMDVKGSNIHGSGLNAS
QLARIVCATVMAGELSLMSALAAGHLVKSHMKHNRSALNIASPLSIDEVATHRRSKSVDFSAKESSAAAPGTCTA
NAS

>Mevalonate kinase

MNALAASNLPAGAGLSSAAFSASLVSGLLIFSGKLQMPVPGCDWTGQELELINKWAFEGEKVIHGNPSGVDNAV
SVFGGALRYKSKIFERLHEMPSLRVLLINTKVPRSTKVLVAGVKGKLEKYPGVIPVFDSDIEDISQRCEALLSSLWHLEK
EDDSAEGVTHNQVKL

>Phosphomevalonate_kinase

MDSSHPKAVLVFSGKRKSGKDFTCALLKERLGXDVTILTSAPLKQCQFAEIHGLDYEQLLSASSYKERYRHDMVVW
GEKKRNEDPSIFCRLATLDVSTQHKVWLISDARRKTDVAYFKETYSRAKLVRVQADESIRASRGYVFKKGVDSET
ECGLDEGVSWDYVITNNGDEDDLDRLQLQLISSIQDGLINEINTDVS

>Phosphomevalonate kinase

MASRANSRPRVIFVSGKRKSGKDYVTSLLQERLGSSCIILRLSGPLKKQYASENNLDFQKLLDASEYKERYRDDMIKW
GEKIRRKDSGYFCRLATDEAKSDHTIWIVSDARRPSDIEYFKKLYPKETVTVRVDTDLEVRARRGFVFTPGIDDAASE
CGLDSYSKWNVVLNRNGNQADLENQLQLLTYMAKGDGDVKR

>Squalene synthase

MDIQALLHPDDLNFRLFKCGGGQHILPKQDLSSLSPPVAQKCYYYLKKTSRSFAAVIQALDGDRLRHAVCIFYLVLRAL
DTVEDDMTIDMKEKVVLLQTFYQKLEIQEWSYHKSQEKDKAVLEDFPVISCEYRNLAEGYRIVISDITRRMGCGMSE
FIQREVTTMADWNMYCHYVAGLVGIGLSRLFSASELEDKIVGEDKKLANSMGLFLQKTNIIRDYLEDVREQREFWP
KEAWSKYAAELGDLQKPENITQAVHCLNELITNALCHVPDVLVYMSRIKNQSVNFCAIPQVMAAATLAKCYNNP
DVFSGVVKIRRGQTVGLMMESTSMKKLRQVMRQYAEIGEKPSPDNFMATKQMCLLISDLRPEVNFQKQV
MQQTLLGVVIAIVLVVLWYF

>Farnesyl pyrophosphate

MNGVAQKIAQMALDARKDSDFGELFEKLVDDLTADDAANPEITEAANRFKEVLRYNVPHGKRNRGLSVVSSFRY
LANSSQLTETNLKAMVLGWCVELLQSYFLIADDMMDQSKTRRGQQCWYLVKVGNDAINSIFYEASIKLLKKY
FREEPYVNLLELFHETNYQTIVGQALDLSSTSEYGNVLDLDRFTQERYDAIVKWKTAFYSFYLPVALAMYMAGNSQP
EAHKSAKIILLKMGHFFQVQDDFLDCYGDPDVIGKIGTDIEEQKCGWLVVQALKVVTPEQRKILENNYGVDDKDKV
SAVKQLYKDLDESIFYKYEEESYEDLMKLIDEHSKNLPKEMFIAYAKRIFKRKK

>Squalene epoxidase

>MDCAENIDARSVGYVIHDLDSKSKVDISYPKDEGDHVKSGRAFHGHGRFVMGLRRAAMKQESVTYIEGTVTKILE
QDNCVIGVIYKKKGQEQEQEIYAPLTVVADGCFSKFRKSLITTNVKTTSHFVGTIMKNCPQIKDNHAELVLANPSPVL
IYRIAEKDTRVLVDVRGTM PKDMKGYMSQKIHPQLPEHIKEPFLDSLQNDIRSMPSFLPPAPIEKPGVLLGDAM
NMRHPLTGGGMSVALNDVRIWRELLKGIPDLDDHDKIIQSMRTFWLRKNSHSFVVNVLAQALYELFAATDRHL
MQLRRACFH YFKLGGQAVSGPVGLLSVLQPRPFVLIGHFFAVALYAIYFAFKSQSWLTKPFALVESVWIFAKACMVL
FPLIRSEMHSIK