

Additional file 1: Table S1. List of thioester containing proteins, amino acid sequences used for sequence comparison.

Name	Amino Acid Sequences
AsTEP15	MIVTNISPTKKEFECEIVDSNDVIVGWYPMAYPPYGLKKALMRVEGLEGGYKLQVWDKHKRLLNSTALECIRKSYLVLFQTDKPAYKPGDR VQFRVILIYPNAAPVIRIQPDFFITDPDLRMQKWLNATLTSGVFEGSFQLAEQTTVGLWTISTSLFDQQYKDSFLVEEYTLPLFKIETQSPVKRLL HCKDPKMSLKLRSASYVQGGAVRGNATVIVRTHFNPNYSQTKEVARKNLPINGVALVNFPTDLVAKNCDEERTVWFDVKVSESSTGVSYNATS TMTVHNSEGVMTMEVLGDKDAFYPGQPMRVKVKVATILDERPLVRRNVRIYRVVDEDHDERDEAMPNVLVLQTNNGNVHFTVNTTIKTVEV NVEGMYNNTQIPLVFAYPMYEDKSFDYLEMHSRDAYHTLDRNITIDLYSNVMLQRIYYVGYCMSRIAVHGVHEAKNPVKVHHRLEIEPIRLMNP RMKLLAYAMKDDGKILSSAIIIRFKPTSSTALNITATLKEPNSGKYEFNVTTTEEEAFVGLLGVDERILQRSTIDNNISQRKLDKEMQDFEDPSGVW SPYDSFGSVGMTILTDGYLPDVGVPHLSELAAGTAPEQDYSTREDFPESWIWESAQAPNGKALFEKSLPDTITTVITVGFVSQRNGLQILKEP LKINSKKWIFAQLHMPPSIKRFEEVTVHCLVHNYGAAANVTVEVRPKLKA VTPFLAQAQATETVRIKLKSASVGLAEVIEVLRGPTGKVIDALHQ TIPVRPEGLIKTIVEDVRVLSFPRHGKQNFSLSLPAIEKDRGTSSGEVTL SVIGTILNLFDFLEHMVKSSEHNGEENLLFLQTMAVYDLDYKTNR LPPASKEKLLTYMEVAYQQMLSHRLEDGSYSTFKRIHKCGDVWFTASALVALQKLAKYIPVEDSLLTDSLWLVLNSAEDGGYNESTVPHPHI QRTGGRELSLASSVLFAFVGGGSSKQYEQLTKKTVSLLSSPIEDVYLLAKTTYLLSLMGHPESVGMVLVTLNTMAVTDGKYRFRVARRESTSL VDMRDQEATAYALLANLKQNTIDQVEMVRVAQWLQKHSFAGDRCTPSLERVIALEALATVAHLIPISVPMYIAVGNVRFVNATNKELLQTV TLPKGTRSVSVYRGSGLVLKLSYRYSLANATTTGKTASNRVPNGKPIGVNIKKKAVKNSMLALHMFCSLIQPLYYYESIDLWKAIDPTGYEI DEQQQRYDNTTKSAILLENNSHLELVWDVRHVTEVCYAVTAISRLLPVDMLPGLIYLSFDTKDIVAFKQCFLRDVEYHLVVKCELLPIRKTI KMGKPSHYSIIGSRILRPNNSVYCVQVSTFDTKSPVAFRISIVAKEKSIKSEIITLTGNESRLLRFTIDSIPEDEYELMAEGSLGVFKTKAHIDFDNKF CSVLIQTDKSVYKPGD TVRYRVLVLD RYMKPLPVDDGGMVYIRDGKGNRVKQWNDASLGECCGVFQSELTSTEPVLGAWDINVDVLGLKH TKSFDDVEYVLPITYEVTLESPGHTFLDDELLKL VINSKYTYGKPVGELTVSIKVGQSMCFGRPGNTSSICQKVVPTEGRTVVEFNLKEILLNMK YIRELQIEAEVCEALTGRYQQGSTTVTLHENRFEVRFIEESSYFGLPYNAWIQVTNLDGSPVREGTREVIEALRNYTLDFTKQTMAVYDLDYKTNR LNVQLDELTFDYVSVEVKFRGKDYYVQGITKPRADQEA FMKAMPLEKLTIPGTLEKFDVACTKPLQLVAYSLLARGELLAGGAVQGDANKQT SITIPSSYCMVPRAKLLVHYSIPTGYIVSTYTEVKFGRLFENQIQLTSLKDEVKPGESLDIDVRTEEGSFVGLLAVDQSVLLKSGNDIGREQIEL EMYESSQSHHRYWNNNSTDCSQSGAVLLSNRFIPKIDIFPRGVMFACRAAPMGGVFGAAPQMMLKRANPMMEADMMMEASQRELYLTKHGDGFSAFGES ETWIWESINSKETESIRKIVPDTITSWITGFSLSKSSQGFLMDSPSKVNVFMPFFVTIDL PYSVKLGETVRIPVIVFVNMEDQTAGDVFFENDNE FEFFSDDAADQQDKHRQEKLPVSRGGGKTLTFMIKPTKVGHITLKLTA KACLAGDGIERQLLVEPEGLPYQINKALIDRLTSKVSQSTFEVQVP ADAVPDSKTVEVSIGDVLGSSIELNDSLIRMPFGCEQGNMLNFVPCIVVDLYLKACRRLTVEIESKAKKCMVEVGYQRELYLTKHGDGFSAFGES DKSGSTWLTAFVAKSFQAAA AHITIEEDVIDKALQWLSKIQSADGAFPEVGSICHKDMQGGAGSGIALTAYTVVAFLENAKLGEKFSTVDKAL AYIQQHIAELDDVYAHALAAAYALQIAKHSKDEVLAGLQSKATKEGDMQWWTKSLPEKTETDCWHRPKNVAVEMSAVGLLATLETCTGLE GLPIMKWLYSQNRNDKGGFESTQD TVVGLQALSKMAAQSSSEADVSIKVTAPNGQERNISVNKHNTLVLPQKHELAVIDYKMDVMAATGTGCGAL FQLSYKYNIKDVKAPRFMLKSEAKKGSIKSCIDLTVTTSFIPQEDQAVSNMAVMEVDMPSGFIVEADV LKQLKELELVKKVETKRGNTTVVLY FDNVSEDEVILRMSAFQKHEVENAKPANVIIDYDYSNHYSIGVAKLLRPNSEYHVAVTNQDVSPIRFLAITDASNAKIEKITLNTGETRLV PFVIGDIPESSYKLVAEGLSGLTFKNETDLEYQKQSFSV VQTDKSIYKPGD TVRFRVLVLDPNTKPLPKADSNVHMDAKNRIKWKEGKLV KGVFESELTLSTAPVLGAWTINVEVLGTKHNVFEVDEYVLPKFEVTVESPGITTFKDGKVKAIIRSKYTYGKPVKGEATVYSASPEFQHHYVQPF AKDVITRKVVPIDGKGSVEFDLREELRLLEGDYTRNVIEAVVEEELTGRKQNASAKVMYIDRRYKMLIKSDDNFKPLPYTAWLKVTVQDGAP VQDQTNPVVEVKQSTYESTQFLRNYTLDQNGMAKLEINTDVNSTYINVVGYYLGQEFYLSGISKADSDVDSYIARVLTEMPLVGDSDVVEVSA TAPMKFFTYQLLGRGDVLLSNTVAVPESKTHKFKPATFAMVPRAKLNVFVYIAPNGDMVSDSKVITFDSLEQNMK VSLSKDQTKPGQDVGEISIS TNPDYSVYGLLGDVQSVLLKSGNDITKEQVTFSELEYEERSYGYRRKKRFAWNPHIEHQDNTVFGAFVLSNADNDPPHIDVIDDKGKSVSFMVKP LQYAPSTSSLPAGDASSPTPAVRKSFPEWSIWHITIAREFQLQYSHAHVMSAIKFSASQSGTGRFLCMRPGERANNTLPEVPIYKFHRA PNGTV LYTTIEKPRSMQNQRQVLKNTNRPLLAGPFAFSRIPRPHRIDPRIFLSQEIQNTWLFEDNTYSGFSGEKLTKQKKVPTDITTSWIITGFSVNPVYGLGLDQ QPRKLVLPFFVSTNLPYSVKRGEVVAIPIPVFNVMEDDQTAEVVLHNDEQEFEFADVENEVVESSKVELFRQKRLDIASNTGDKGKSVSFMVKP KLGHITIKVTA KTKIAGDAVERQLLVEPEGLPQFINKAAFI DLRAVPEATKTFEVEIPKNAVDPDSTRIEVAVIDGMQSTIQNLDSLIRMPYCGCEQ NMLNFVNPVILVDYLKATNKLTANIEAKAKKFMEAGYQRELSYKHQDGSFSAFGESDKSGSTWLTAFVARSFKQAANHITIDEKVIDKSLWLS DHQAPNGSFPEVGVVSHKDMQGGSGSGVALTAYTLIAFLENINLVDKYKNTINKAIDYVYRNTESLDQTYALALAAAYALQLADHSSKQLILSKL DAKATTDSDSKWWHKPIPEVEQKNPWYSRPNVNVEMSAYGLLAFLEAGLDTDALPIMKWLGIGQRNDKGGFQSTQD TVVGLQALAKLAAKIT SPNNDVAIVAKINENQEKRMVSNVAENGIMLQKFE LPSAARNIEKATGSGFAVVQLSYKYNNMNVTEGWEPTRFLVDPQVNAANTNPDHLHLSVCAS FVPSAGQVSNMAVMEVFGPSGFTADSDTLPSLENMPFIKKVETKDGDTTVVL YFDSLQDRELCTISAFRTHKVAKQKPA PVVIYDYDYSRI ARQFYEGPKASLCDICENEDCSEACSIKQKQSSDSPSREPTVDNGP T LSSSSPTVRISFFTLFATVLVTIHH
Hu CD109	MQGPPLLTA AHLLCVCTAALAVAPGRFLVTAAGIIRPGGNVTIGVELLEHCPSQVTVKAE LLKTAASNLTVSVLEAEGVFEEKSFKLTLP LPLN SADEIYELRVTGRQTDEILFNSNTRLSFETKRISVFIQTDKALYKPKQEVKFRIVTLFSDFKPYKTSNLILKDPKSNLIQWLWSQSDLGVISKTFQL SSHPILGDWISIQVQVNDQTYYSQSFVSEYVLPKFEVTLQTPLYCSMNSKHLNGTITAKYTYGKPVKGDTLTFPLSFWGGKKNKITKTFKINGS NFSFNDDEEMKNVMDSSNGLSEYLLDSSPGPVIELTTVTESVTGISRNVSTNVFFKQHDYIIIEFFDYTTVLKPSLNFTATVKVTRADG NQLTLEERR NNNVITVTQRNYTEYWSGNSNGKMEAVQKINYTVPSQSGTFKIEFPILEDSSSELQLKAYFLGSKSSMAVHSLFKSPSKTYIQ LKTRDENIKVGSP FELVSGNKRKLKELSYMVVRGQLVAVGKQNSTMFSLTPENSWTPKACVIVYIIEDDGEIISDVLIKPIPVFNKIKLYWSKVKAEPSEKGVSLR ISVTPQDSIVGIVAVDKSVNLMNASNDITMENV VHELELYNTGYLLGMFMNSFAVFQECGLWVLTDANLTKDYIDGYVDAEYAE RFMEENE GHIVDIHDFSLGSSPHVRKHFPETWILDTNMGYRIYQEFEVTPDSITSWA TGFVISEDGLGLLTTTPVELQAFQFPFFILNLPYSVIRGEFALE ITIFNYLKDATEVKVIEKSDKFDILMTSNEINATGHQQTLLVPSEDGATVLFPIRPTHLEGEIPTV TALSPTASDAVTHMLVKAEGIEKSYSQSILL DLTDNRLQSTLKTLSFSFPNTVTGSE RVQITAGDVLGPSINGLASLIRMPYGCGEQNMINFAPNIYILDYLTKKKQLTDNLKEKALS FMRQGYQ RELLYQREDDGFSAFGNYPDPSGTWLSAFVLRCLFLEADPYIDIDQNVLHRTYTWLKGHKQSGNEGFWDPRGRIHSELQGGKNKSPVTLTAYIVTSSL GYRKYQPNIDVQESIHFLESEFSRGISDNYTLALITYALSSVGS PKAKEALNMLTWRAEQEGGMQFVWSSES KLSDSQWQPSRLDIEVAAYALLSH FLQFQTSEGIPMRWLSRQRNLSGGFASTQD TTVALKALSEFAALMNTERTNIQVTVTGSPSSPVKFLIDTHNRLLLQTAE LA VQVPMVANNISAN GFGFAICQLNVVYNVKA SGSSRRRRSIQNEAFDLDA VKENKDDLNHVDLVNCTSFSGPGRSGMALMEVNLGRFMPVSEAISLSETVKVKE YDHGKLNLYLDSVNETQFCVNIPAVRNFKNVSDQASVSIVDYEP RRQAVRSYNSVKLLSSCDLCSDVQPCFEDGASGSHHSSVIFIFCFK LLYFMELWL
Hu A2M	MGKNKLLHPSLVLLLLVLLPTDASVSGKPYMVLPVSLHTTETTEKGCVLVSYLNETVTVSASLESVRGNRSLFTDLEAENDVLHCVAFAPVKS SSNEEVMLTVQVKGPTQEFKRRITVMVKNEDSL VFVQTDKSIYKPGQTVKFRVSM DENFHLNELIPLVYIQDPKGNRIAQWQSFLQEGGLK QFSFPLSSEPFQSGYKVVVQKSGGRTEHPFTVEEFVLPKFEVQVTVPKIITILEEEMNVS VCGLYTYGKPVPGHVTYSICKYS DASDCHGEDSQ AFCEKFSQGLNSHGCFYQVQVTKV FQLKRKEYEMKLHTEAQIQEEGT VVELTGRQSEITRITITLSFVKVDSHFRQGPFFGQVRLVDGKGVP PNKVIFIRGNEANYYSNAT TDEHGLVQFSINTTNVMGTS LTVRVNYKDRSPCYGYQWVSEEHAAHITAYLVFSPSPKSFVHLEPMHSLPCGHT QTVQAHYILNGGTLGLKKLSFYILIMAKGGIVRTGTHGLLVKQEDMKGHFSISIPVKSADIAPVARLLIYAVLTPGDVIGDSAKYDVENCLANKV DLSFSPSQSLPASHAHLRVTAA PQSVCALRAVDQSVLLMKPDAELSSASSVYNLLPEKDLTGFPGLNDQDNEDCINRHVNYINGITYTVPSNSTE KDMYSLFEDMGLKAFNTSKIRPKMCPQLQOYEHMGPGLRVGFYESDV MGRGHARLVHVEEPHTETV RKYFETPWIDL VVVNSAGVAEV GVTVPDTITTEWKA GAFCLSEDAGLGISSTASLRAFQPFVELTMPYSVIRGEAFTLKATVLNLYLPKCIRVSVQLEASPAFLAVPVEKEQA PHCICA NGRQTVSWAVTPKSLGNVNTVSAEALSESQELCGTEVPSVEPHGRKDTVIKPLLVEPEGLEKETTFNSLLCPSGGVESEELS LKLPNNVVEESAR ASVSVLGDLIGSAMQNTQLLQMPYGCGEQNMVLFAPNIYLDYLNETQQLTPEIKSKAIGYLTNGVQRQLNYKHYDGYSSTFGERYGRNQGN TWLTA FVLKTF AQAARAYIFIDEAHITQALIWLSQRQKDNCGFRSSGSLLNNAIKGGVEDEVTLTSAYITIALLEIPLTVTHPVNRNALFCLES AWKT AQEGDHGSHVYTKALLAYAFALAGNQDKRKEVLKSLNEEA VKKDNSVHWERPQKPKAPVGHFYEQAPSAEVMSTSYLLAYLTAQAPTSE DLTSATNIVKQZQQAQGGFSSTQD TVYALHALSKYGAATFTRTGAAAQVTIQSSGTFSSKQVDNNNRLLLQQVSLPELPGEYSMKVTGEG CVYLTQSLKYNILPEKEEFPFALGVQTLPQTCDEPKAHTSFQISLSVSYTGSRSASNMAIVDKMVSGFIPKPTVKMLERSNHVSRTEVSSNHVL IYLDKSVNQTLSLFFTVLQDVPVRDLKPAIVKVYYDYETDEFAIAEYNAPCSKDLGNA