**KikA**

~~MTVVSASLVGALSLFSQTAKA~~DDWGCQVLLCLSDPRGPTTESECKPPIHKLWDHLRKGKPFPSCAMATNSRTGKRSYAQLVYDPYDPCPDGTKPAGGYIAQSQSADRKDWRRLQYAFSTHGRRYDSGGAWNMYEGNGPRACVGNHLGSYSVYRGNDDSNISVQVYDQVVWQQPQNPRAIDVFIDEAFHHRVRY

**VirB1/TrwN**

~~MALAEFAVIAAMCAPAIHPTTLS~~AVVTQESRGNIYAIGINGDHKLPRQPQTLEEAIATAEQLRRDGYNFDAGLGQINIKNLEWLGMSIADLFDPCKNLKGAQTVLLDCYERAVPRYGDGQGALQAALSCYNTGNFQRGFSNGYVQKVASHVGVTVPALEPVSGGTQEPAKLQAVPKGAARLAPAQTKPRARACRCLLS

**VirB2/TrwL**

~~MATSILTRKTNMKNLNYLRAKANGKLAAIFGAIAAMLTAQPAAA~~QGLEKARSVLETLQQELTTIVPIAAAVILLCLGIAYAGRFIEKDTFVRWSIGVIIAGSAVQITAMLFT

**VirB3/TrwM**

MKPPQQQHEAFPLFKGATRLPTILGEPMIPLMAMVMGVAVIALTVSIWWWALVPPLWFIMAQITKNDDKAFRIWWLWIDTKFRNRNKGFWGASSYSPANYRKRR

**VirB4/TrwK**

MGAIESRKLLASETPVGQFIPYSHHVTDTIISTKNAEYLSVWKIDGRSHQSASEADVFQWIRELNNTLRGISSANLSLWTHIVRRRVYEYPDAEFDNVFCRQLDEKYRESFTGYNLMVNDLYLTVVYRPVSDKVLSFFAKRERETPDQKKHRQESCIKALEDINRTLGQSFKRYGAELLSVYEKGGHAFSAPLEFLARLVNGEHIPMPICRDRFSDYMAVNRPMFSKWGEVGELRSLTGLRRFGMLEIREYDDATEPGQLNVLLESDYEFVLTHSFSVLSRPAAKEYLQRHQKNLIDARDVATDQIEEIDEALNQLISGHFVMGEHHCTLTVYGETVQQVRDNLAHASAAMLDVAVLPKPVDLALEAGYWAQLPANWQWRPRPAPITSLNFLSFSPFHNFMSGKPTGNPWGPAVTILKTVSGTPLYFNFHASKEEEDATDKRLLGNTMLIGQSSSGKTVLLGFLLAQAQKFKPTIVAFDKDRGMEISIRAMGGRYLPLKTGEPSGFNPFHAPADARKPDFPQTVREEARGCRWRGHAPGRGRNRPGHYAMMSDSIDKSLRRLSLLLQFLPNPRSDDMDARPTVHARLVKWCEGGDYGWLFDNPTDALDLSTHQIYGFDITEFLDNPEARTPVMMYLLYRTESMIDGRRFMYVFDEFWKPLQDEYFEDLAKNKQKTIRKQNGIFVFATQEPSDALESNIAKTLIQQCATYIFLANPKADYEDYTQGFKLTDSEFELVRGLGEFSRRFLIKQGDQSALAEMNLGKFRTIVDGETVERDFDDELLVLSGTPDNAEIAESIIAEVGDSPAVWLPIFLDRVKAERSDV

**VirB5/TrwJ**

~~MKKLVMTAAVAAILGAASPVMA~~QGIPVFDGTRALDFVQQFARMKEQLDTAKDQLAEAQRMYEAVTGGRGLGDLMRNAQLREYLPDDLRTVYDSANGGGYSGISGSINDILRDERLNGSVADMRRSIEERSRTARTTDKAVGCGPTKGHSNASRRLKDEISRTQDQKAIEELQARIAGEQAAIQNETTKLQMIAQLRQAEQALISEQRRERNMPILSSGNQGMPTIQBottom of Form

**Eex**

~~MKKILVPLLMVSALSA~~CKDEPTHDVQYYLDNPKERTEKIAECKNNPGEKALAANCVNATEAQRKAMFQGDGMPKIR

**VirB6/TrwI** MAFELFTPLFNKIDQTTATYVTDISSRAIAAITPVVSVGLTLGFITYGWLIIRGAVEMPVAEFLNRCLRIGIIVSIALAGGLYQGEIANAITTVPDELASALLGNPTEGASAAALVDQSAQQGFDRASEAFEEAGFFSSDGLLYGLFGIIIPAGYGPAGAIGGAFLLLAKIALALLAGLGPLFILALIWQPTHRFFDQWAQQVLNYGLLIVLFAAVFGLLMQIFGSYMADLRFDGAQNVAYAIGGSVILSIVSIVLLMQLPSIASGLAGGIGLGYMWELRSMRSGAGAAMRGGRAMARGARAAPGAARGAAVGAANMAKTVATGGAGVARAAAGYFRGRKAG

**VirB7/TrwH**

~~MKTIIFAILMTGLLSA~~CASAPKPKQPSDFNREPVNKTVPVEIQRGAL

**VirB8/TrwG**

MSKKQPKPVKAEQLKSYYEESRGLERDLIGEFVKSRKTAWRVATASGLFGLLGMVCGIVGFSQPAPAPLVLRVDNATGAVDVVTTLREHESSYGEVVDTYWLNQYVLNREAYDYNTIQMNYDTTALLSAPAVQQDYYKLFDGSNARDRVLGNKARITVRVRSIQPNGRGQATVRFTTQQHNSNGTVERPQHQIATIGYTYIGAPMRSSDRLLNPLGFQVTSYRADPEILNN

**VirB9/TrwF**

~~MKKLAIVALLASLHAVPALA~~LDVPSSSRYDHRIRYVTYNPADVVQVDTVLGVATHIMLEEGEQYLTHAFGIPKPMPLPGRAGIFLSSRTAELANTNLIVVTDRRSYKFRLQMRNDRNGAMYELAFRYPDTQARQTREANARAAVEAAFEQRVGAYYNLKYMMSGDKDIAPVNAWDDGRFTYFKFSANADLPSIYFVDAEGNESLVPRTTVGSSNNIIAVHKVNPKWMIRLGNRALAIFNEAYDPNGVPNDTGTASPAVRRVNKGGN

**VirB10/TrwE**   
MFGRKKGDVIDAGAELERAEQERIEGEYGASELASERRPHTPGARTLLMVLLCVIAVVLVTLSYKAYKVRGVVEDDDAQPQQVVRQVIPGYTPRPIRPEPENVPEPPQPTTSVPAIQPAPVTQPVRPQPTGPREKTPYELARERMLRSGLTAGSGGGEDLPRPQGGDVPAGGLMGGGGGGGELAEKLQPMRLSGSSAGRLGNRDMLITQGTQLDCVLETRLVTTQPGMTTCHLTRDVYSTSGRVVLLDRGSKVVGFYQGGLRQGQARIFVQWSRIETPSGVVINLDSPGTGPLGEAGLGGWIDRHFWERFGGAIMISLIGDLGDWASRQGSRQGNNSIQFSNTANGVESAAAEALRNSINIPPTLYKNQGERVNILVARDLDFSDVYSLESIPTK

**VirB11/TrwD**

MSTVSKASPLSSGNRVGKDQAVAQLLRPLDRFLDAPEVTELSICRPGEVWTKTFEGWQVHEVPELTEPFLQALITAIIVYNGVAPKSVNYVVLPGGQRGTIAQAPAVIDGTLSFLIRKHSLVVKTLEELDAEGAFDTFTDVSFNKPSAEEANHYLTVQDFTRLEPFEVELLKLKRDGTIREFLEKCVLYKRNIIIAGKTGSGKTTFARSLIEKVPPEERIITIEDVHELFLPNHPNRVHMLYGYGAGRVSADECLAACMRQSPDRIFLAELRGNEAWEYLNSLNTGHPGSITTTHANNALQTFERCATLIKKSDVGRQLEMEMIKLVLYTTIDVVLFFKDRKLVEVFYDPIFSKSKMA

**TraI/TrwC**

MLSHMVLTRQDIGRAASYYEDGADDYYAKDGDASEWQGKGAEELGLSGEVDSKRFRELLAGNIGEGHRIMRSATRQDSKERIGLDLTFSAPKSVSLQALVAGDAEIIKAHDRAVARTLEQAEARAQARQKIQGKTRIETTGNLVIGKFRHETSRERDPQLHTHAVILNMTKRSDGQWRALKNDEIVKRTRYLGAVYNAELAHELQKLGYQLRYGKDGNFDLAHIDRQQIEGFSKRTEQIAEWYAARGLDPNSVSLEQKQAAKVLSRAKKTSVDREALRAEWQATAKELGIDFSRREWSGREKGGSEKQAHSFMPSDEAAKRAVRYAINHLTERQSVMDERELVDTAMKHAVGAARLEDIQKELLRQTETGYLIREAPRYRPGGQTGPTDEPGKTRAEWVAELAAKGMKQGAARERVDNAIKTGGLVPIEPRYTTQTALEREKRILQIERDGRGAVAPVIAAEAARERLASTNLNQGQREAAELIVSAANRVVGVQGFAGTGKSHMLDTAKQMIEGEGYHVRALAAYGSQVKALRELNVEANTLASFLRAKDKNIDSRTVLVIDEAGVVPTRLMEQTLKLAEKAGARVVLMGDTAQTKAIEAGRPFDQLQAAGMQTAHMREIQRQKNPELKIAVELAAAGKASSSLERIKDVTEIKNHHERRAAVAEAYIALKPDERDRTLIVSGTNEARREINQIVREGLGTAGKGIEFDTLVRVDTTQAERRHSKNYQVGHVIQPERDYAKTGLQRGELYRVVETGPGNRLTVIGEHDGQRIQFSPMTHTKISVYQPERAELAVGDTIRITRNDKHLDLANGDRMKVVAVEDRKVTVTDGKRNVELPTDKPLHVDHAYATTVHSSQGLTSDRVLIDAHAESRTTRKDVYYVAISRARFEARVFTNDRGKLPAAIARENIKSAAHDLARDRGGRSAAAERQREQQRERERNRQTQQPAHDRQKAAREAERGMEAGR

**VirD4/TrwB**   
MHPDDQRKVSAGIVIVLPLIFWITAVQKTEVLGSPKLLALWELMKLTPQKPILLLSALGGLAVGVLFVWLLNSVGQGEFGGAPFKRFLRGTRIVSGGKLKRMTREKAKQVTVAGVPMPRDAEPRHLLVNGATGTGKSVLLRELAYTGLLRGDRMVIVDPNGDMLSKFGRDKDIILNPYDQRTKGWSFFNEIRNDYDWQRYALSVVPRGKTDEAEEWASYGRLLLRETAKKLALIGTPSMRELFHWTTIATFDDLRGFLEGTLAESLFAGSNEASKALTSARFVLSDKLPEHVTMPDGDFSIRSWLEDPNGGNLFITWREDMGPALRPLISAWVDVVCTSILSLPEEPKRRLWLFIDELASLEKLASLADALTKGRKAGLRVVAGLQSTSQLDDVYGVKEAQTLRASFRSLVVLGGSRTDPKTNEDMSLSLGEHEVERDRYSKNTGKHHSTGRALERVRERVVMPAEIANLPDLTAYVGFAGNRPIAKVPLEIKQFANRQPAFVEGTI

**TraM/TrwA**

MALGDPIQVRLSPEKQALLEDEAARKGKRLATYLRELLESENDLQGELAALRREVVSLHHVIEDLADTGLRSDQSGPGQNAVQIETLLLLRAIAGPERMKPVKGELKRLGIEVWTPEGKED