

Immunoinformatics-driven design and *in silico* evaluation of a multi-epitope vaccine candidate against *orientia tsutsugamushi* causing *scrub typhus*

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Supplementary data

Table 1 — Uniprot ID, sequence length and sequence of seven target protein sequences representing the 56 kDa type-specific antigen of *Orientia tsutsugamushi*, retrieved from the UniProtKB database

Uniprot ID	Sequence Length (in amino acids)	Protein Sequence (in FASTA Format)
Q02938	532	>sp Q02938 TSAB_ORITB 56 kDa type-specific antigen OS=Orientia tsutsugamushi (strain Boryong) OX=357244 GN=OTBS_0602 PE=3 SV=2 MKKIMLIASAMSALSLPFSASAIIELEDEVGLECGPYAKVGVVGGMITGAESTRLDSTDSEGGKKH LSLTGLPFGGTAAAGMTIAPGFRAELGVMYLRNISAEEVVGKGEVDSKGEIKADSGGGTDAPI RKPFKLTPPQPTMMPISIAADRDGIDIPNIPQAQAQAQAPPLNDQKRAAARI AWLKNACAGIDYMKDPNPNPGHMMVNPVLLNIPQGNPNPVGQPPQRANQPANFAIHNHEQWR SLVVGLAALSNANKPSASPVKVLSDKIIQIYSDIKPFADIAGINVPDTPGLPNSASIEQIQSKIQELG DTLEELRDSFDGYINNAFVNQIHLNFVMPQQAQQQGGQGGQQAQATAQEAVAAAARVLLNG SDQIAQLYKDLVKLQRHAGIRKAMEKLAAQQEEDAKNQGGKGDCKQQQGASEKSKEGKVKET EFDLSMVVGQVKLYADLVTESFSIYGGVAGLAYTYGKIDNKDVKGYTGMVASGALGVAIN AAEGVCVDLEAGYMHSFSKVEDKYQVNAFIASACVRYNF
P22940	524	>sp P22940 TSAG_ORITS 56 kDa type-specific antigen OS=Orientia tsutsugamushi OX=784 PE=1 SV=1 MKKIMLIASAMSALSLPFSASAIIELEGGLECGPYGKVGIVGGMITGAESTRLDSTDSEGGKKH SLTTGLPFGGTAAAGMTIAPGFRAELGVMYLRNISAEEVVGKGVDSKGEIKADSGGGTDTPIR KRFLKTPPQPTIMPISIAADRDVGVDTDILAQAAGQPQLTVEQRAADRIAW LKNYAGIDYMPDPQNPARNVINPVLNITQGPPNVQPRPRQNLIDLDHGGQWRHLVVGVTALS HANKPSVTPVKVLSDKITKIYSDIKPFADIAGIDVPDTPGLPNSASVEIQSKMQELNDVLEDLRD SFDGYMGNAFANQIQLNFVMPQQAQQQGGQGGQQAQATAQEAVAAAARVLLNGNDQIAQ LYKDLVKLQRHAGVKKAMEKLAAQQEEDAKNQGGEDCKQQQGASEKSKEGKGTETFDLS MIVGQVKLYADLFTTESFSIYAGVAGLAHTYGIKDDKDIKGHTGMVASGALGVAINAAEGVY VDLEGSYMHFSKIEEKYSINPLMASVGVRYNF
P37915	532	>sp P37915 TSAK_ORITS 56 kDa type-specific antigen OS=Orientia tsutsugamushi OX=784 PE=3 SV=1 MKKIMLIASAMSALSLPFSASAIIELEGGLECGPYAKVGVVGGMITGVESARLDPADAEGKKH LSLTNGLPFGGTAAAGMTIAPGFRAEIGVMYLTNITAQVEEGKVKADSVGETKADSVGGKDAPI RKRFKLTPPQPTIMPISIAVRDFGIDIPNQTSAASTSRSLRLNDEQRAAARIAWLKNACAGIDYRVK NPNDPNGMPVINPILLNIPQGNPNPVGNPPQRANPPAGFAIHNHEQWRHLVVGLAALSNANKPS ASPVKVLSDKITKIYSDIKHLADIAGIDVPDTPGLPNSASVEIQI QNKMQELNDLLEELRESFDGYLGNAFANQIQLNFVMPQQAQQQGGQGGQQAQATAQEAVA AAAVRLLNGNDQIAQLYKDLVKLQRHAGIKKAMEKLAAQQEEDAKNQGGEDCKQQGTSEK SKGKDKAEFDLSMIVGQVKLYADVMITESVSIYAGVAGLAYTSGKIDNKDIKGHTGMVAS GALGVAINAAEGVYVDIEGSYMSFSKIEEKYSINPLMASVSVRYNF

P37918	529	>sp P37918 TSAT_ORITS 56 kDa type-specific antigen OS=Orientia tsutsugamushi OX=784 PE=1 SV=1 MKKIMLIASAMSALSPLFSASAIELGDEGGLECGPYAKVGVVGGMITGVESTRLDPADAGGKK QLPLTTSMPFGGTLAAGMTIAPGFRAELGVMYLANVKAEVESGKTGSDADIRSGADSPMPQRY KLTPPQPTIMPISIADRDLDGVDIPNPQGGANHLGDNLGANDIRRADDRITWLKNYAGVDYMPV DPNNPQARIVNPVLLNIPQGPPNANPRQAMQPCSLNHDHWRHLVVGITAMSNANKPSVSPKIV LSEKIVQIYRDVKPFARVAGIEVPSDPLPNSASVEQIQNKMQELNDILDEIRDSFDGCIGGNAFAN QIQLNFRIPQAQQQGGQGGQQAQATAQEAAAAA VRVLNNNDQIIKLYKDLVKLKRHAGIK KAMEELAAQDGGCNGGGDNKKKRGASEDSAGGASKGGKGKETKETEFDLMSIVGQVKLYA DLFTTESFSIYAGLGAGLAYTSGKIDGVDIKANTGMVASGALGVAINAAEGVYVDIEGSYMHFS SKIEEKYSINPLMASFGVRYNF
P37916	532	>sp P37916 TSAR_ORITS 56 kDa type-specific antigen OS=Orientia tsutsugamushi OX=784 PE=3 SV=1 MKKIMLIASAMSALSPLFSASAIIELEDEVGLECGPYAKVGVVGGMITGAESTRLDSTDSEGKKH LSLTTGLPFGGTLAAGMTIAPGFRAELGVMYLRNISAEEVVGKGEVDSKGEIKADSGGGTDAPI RKPFKLTPPQPTMMPISIADRDLDGVDIPNPQAQAQAQAPPLNDQKRAAARIAWLKNCAGIDYM VKDPNNPGHMMVNPVLLNIPQGNPNPVGQPPQRANQPANFAIHNHEQWRSVLVGLAALSNNAN KPSASPVKVLSDKIIQIYSDIKPFADIAGINVDPDTGLPNSASIEQIQSKIQELGDTLEELRDSFDGYI NNAFVNQIHLNFMPPQAQQQGGQGGQQAQATAQEAVAAAA VRLLNGSDQIAQLYKDLVK LQRHAGIRKAMEKLAAQEEADKNQKGDCQKQQGASEKSKEGKVKETEFDLMSVVGQVKL YADLVTTESFSIYGGVGAGLAYTYGKIDNKDVKGYTGMVASGALGVAINAAEGVCVDLEAGY MHSFSKVEDKYQVNAFIASACVRYNF
P37917	521	>sp P37917 TSAS_ORITS 56 kDa type-specific antigen OS=Orientia tsutsugamushi OX=784 PE=3 SV=1 MRKIMLIASAMSALSPLFSANAIEFDENSLECGPYAKVGIVGGVLSGVESARLDPADSEGKKHL PLIKGMPFGVTLAAGMTITPGVRAEISAMYL MNVKAEEVLEGMGSDANTGTTADASAGVIRK HKKLTPPQPNIMPISIADRDIAVDIPNAAGQGNVDVRAAARIAWLKNYAGIDYYVPDSNNPQGR VVNPVLLNIPQGNPNPAGGGGRAAPAAFDILDHAQWRDVVVGITALSANKPNVSAVKILSDK ISQIYADIKPFANVASVQISETPLPDSASVDQIQNKVQELNKVLEDVRESFDGFILNAFAQPVRLN FQIPQVVQGGQGPQAATAQEAAAAAIRALNDGENNGIQLYKDLYKLQRNVALKKSMKQ LGDELGVDQGGEGGCSKDKKQSDTTAEESKKEGKKGKEIEFDLHMAVGQVKLYADLFTIDSFS VYAGIGAGLAYTHGKIDGDKAHTGMVGSALGVAAANVADGVYMDVDAGYLYSFSKIEEKY QMNAFVASAGIRYNF
P37919	522	>sp P37919 TSAW_ORITS 56 kDa type-specific antigen OS=Orientia tsutsugamushi OX=784 PE=3 SV=1 MKKIMLIASAMSALSPLFSASAIELGDEGVLECGPYAKIGVVGGMVTGVESARLDPADVD CKKHLSLTTMLPFGGTLAAGMTIAPGFRAELGVMYLRNINAEVELGEGKTGSGAANAIDTGA PIRKRFLKTPPQPTIMPISIADRDLDGVDTDILAQAQAVGQQQLTVEQRAEDRIAWLKNYAGIDYM VPDSQNPANRVVNPVLLNITQGAPNVNPRRQNLNILDHDQWRYLVVGVTALSANKPSVSSV KVLSDKITQIYSDIRQFAKIANIEVPGAPLPNSASVEQIQTKMQELNDVLEELRESFDGYLANAFA NQIQLNFQIQAQQQGGQGGQVTAQEAAAAA VRALNGNEQIIQLYKDLVKLQRHAGIRK AMEKLAAQEEGDDQSQVSCNDKKQQA VAEDSKAGSSKEGKNKEVELDLMSIVAQVKLYADV VATESFSIYIGGGVGVARITYGDIDGKSVKHIGVVASGVLGVAINVADGVCVDIDGGYMHFSKI EDKYSVNAFIANAGVRYNF