042 11368 APECO78 BW2952 CE10 E2348/69 **EDL933** IAI1 IAI39 MG1655 REL606 S88 Sakai DNA SMS-3-5 TW14359 UMN026 UTI89 consensus

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110 AETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHE<u>LRIACLRETTDNPLYERLLEEIDDKAQ</u>A MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLY<mark>K</mark>RLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLY<mark>KH</mark>LLEEIDDKAQA MSDVAETLDPLRLP**F**QGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLY<u>ER</u>LLEEIDDKAQA ${ t MSDVAETLDPLRLP\overline{ t L}}{ t QGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA$ MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLY<mark>K</mark>RLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLY<mark>K</mark>RLLEEIDDKAQA MSDVAETLDPLRLP<mark>F</mark>QGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA ${ t MSDVAETLDPLRLP\overline{ t L}}{ t QGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA$ MSDVAETLDPLRLP<mark>F</mark>QGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA MSDVAETLDPLRLPLQGERLIEASAGTGKTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLYERLLEEIDDKAQA <u>MSDVAETLDPLRLPLQGERLIEASAGTG</u>KTFTIAALYLRLLLGLGGSAAFPRPLTVEELLVVTFTEAATAELRGRIRSNIHELRIACLRETTDNPLY<mark>K</mark>RLLEEIDDKAQA

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AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIA<mark>L</mark>VVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIA<mark>L</mark>VVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAEROMDEAAVFTIHGFCORMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLL<mark>H</mark>YQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS <u>AKWLLLAERQMDEAAVFTIHGFCQRMLN</u>LNAFESGMLFEQQLIEDESLLKYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIA<mark>L</mark>VVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS <u>AQWLLLAERQMDEAAVFTIHGFCQRMLN</u>LNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS ${\sf AK}$ WLLL ${\sf AERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS$ $\mathsf{A} \overline{\mathsf{Q}} \mathsf{W} \mathsf{L} \mathsf{L} \mathsf{A} \mathsf{E} \mathsf{R} \mathsf{Q} \mathsf{M} \mathsf{D} \mathsf{E} \mathsf{A} \mathsf{V} \mathsf{F} \mathsf{T} \mathsf{I} \mathsf{H} \mathsf{G} \mathsf{F} \mathsf{C} \mathsf{Q} \mathsf{R} \mathsf{M} \mathsf{L} \mathsf{N} \mathsf{A} \mathsf{F} \mathsf{E} \mathsf{G} \mathsf{Q} \mathsf{L} \mathsf{I} \mathsf{E} \mathsf{D} \mathsf{E} \mathsf{L} \mathsf{L} \mathsf{R} \mathsf{Y} \mathsf{Q} \mathsf{A} \mathsf{C} \mathsf{A} \mathsf{D} \mathsf{F} \mathsf{W} \mathsf{R} \mathsf{H} \mathsf{C} \mathsf{Y} \mathsf{P} \mathsf{P} \mathsf{P} \mathsf{E} \mathsf{I} \mathsf{A} \mathsf{Q} \mathsf{V} \mathsf{V} \mathsf{F} \mathsf{E} \mathsf{T} \mathsf{W} \mathsf{K} \mathsf{G} \mathsf{P} \mathsf{Q} \mathsf{A} \mathsf{L} \mathsf{R} \mathsf{D} \mathsf{I} \mathsf{N} \mathsf{R} \mathsf{Y} \mathsf{L} \mathsf{Q} \mathsf{G} \mathsf{E} \mathsf{A} \mathsf{P} \mathsf{V} \mathsf{I} \mathsf{K} \mathsf{A} \mathsf{P} \mathsf{P} \mathsf{P} \mathsf{D} \mathsf{D} \mathsf{E} \mathsf{T} \mathsf{L} \mathsf{A} \mathsf{S}$ <u>AKWLLLAERQMDEAAVFTIHGFCQRMLN</u>LNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS <u>AQWLLLAERQMDEAAVFTIHGFCQRMLN</u>LNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS AQWLLLAERQMDEAAVFTIHGFCQRMLNLNAFESGMLFEQQLIEDESLLRYQACADFWRRHCYPLPREIAQVVFETWKGPQALLRDINRYLQGEAPVIKAPPPDDETLAS



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consensus

RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI<u>e</u>KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI<u>e</u>QLLAEPLSIRDLVITRE

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 ${\tt IVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIEKISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAID QLLAEPLSIRDLVITR$ $\mathtt{RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIE$ KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI \mathbf{E} QLL $\mathtt{AEPLSIRDLVITR}$ $\mathtt{RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI\overline{\mathtt{D}}\mathtt{KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI\overline{\mathtt{D}}\mathtt{QLLAEPLSIRDLVITR}$ RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIDKISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR $\mathtt{RHAQIVARID}_{\mathtt{A}}\mathtt{VKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI}_{\mathtt{E}}\mathtt{KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI}_{\mathtt{E}}\mathtt{QLLAEPLSIRDLVITR}$ RHAQIVARID $\overline{1}$ VKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI $\overline{1}$ KISAWAEEE $\overline{1}$ NSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI $\overline{1}$ QLLAEPLSIRDLVITR RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI**E**KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI**E**QLLAEPLSIRDLVITR RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI $\overline{ extsf{D}}$ KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAI $\overline{ extsf{D}}$ QLLAEPLSIRDLVITR RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIDKISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIDKISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR $\mathtt{RHAQIVARID}_{\mathtt{A}}\mathtt{VKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI}_{\mathtt{E}}\mathtt{KISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR$ $\mathtt{RHAQIVARID}\overline{\mathtt{T}}\mathtt{V}\mathtt{KQQ}\mathtt{W}\mathtt{RDA}\mathtt{V}\mathtt{G}\mathtt{ELDALIESSGIDRRKFNRSNQAK\mathtt{W}I}\overline{\mathtt{D}}\mathtt{K}\mathtt{ISA}\mathtt{W}\mathtt{A}\mathtt{E}\mathtt{EE}\overline{\mathtt{R}}\mathtt{NS}\mathtt{V}\mathtt{Q}\mathtt{LPESLEKFSQRFLEDRT}\mathtt{K}\mathtt{A}\mathtt{G}\mathtt{G}\mathtt{ETPRHPLFEAIDQLL}\mathtt{A}\mathtt{EPLSIRDL}\mathtt{V}\mathtt{ITR}$ RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIDKISAWAEEETNSYQLPESLEKFSQ<mark>C</mark>FLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIDKISAWAEEE<mark>R</mark>NSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR RHAQIVARIDTVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWIDKISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR $\mathtt{RHAQIVARID}^{\mathtt{AVKQQWRDAVGELDALIESSGIDRRKFNRSNQAKWI}^{\mathtt{EKISAWAEEETNSYQLPESLEKFSQRFLEDRTKAGGETPRHPLFEAIDQLLAEPLSIRDLVITR}$

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consensus

ALAE IRETVAREKRRRGELGFDDVLSRLDSALRSESGEVLAAA IRTRFPVANIDEFQDTDPQQYR I FRR I WHHQPETALLL I GDPKQA I YAFRGAD I FTYNKARSEVHAH E

ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH <u>ALAEIRETVAREKRRRGELGFDDMLSRL</u>DSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIĞDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH <u>ALAEIRETVAREKRRRGELGFDDMLSRL</u>DSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIĞDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH ALAEIRETVAREKRRRGELGFDDMLSRLDSALRSESGEVLAAAIRTRFPVAMIDEFQDTDPQQYRIFRRIWHHQPETALLLIGDPKQAIYAFRGADIFTYMKARSEVHAH

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YTLDTNWRSAPGMNSVNKLFSQTDDAFMFRE I PF I PVKSAGKNQALRFVFKGETQPAMMUMEGESCGVGDYQSTMAQVQAAQ I RDWLQAGQRGEAL LIMIGDDARPVRE

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<u>YTLDTNWRSAPGMVNSVNKLFSQTDDAF</u>MFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQV<mark>S</mark>AAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQI<mark>C</mark>DWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQV<mark>S</mark>AAQIRDWLQAGQRGEALLMNGDDARPVR $\mathtt{YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQV\overline{CAAQIRDWLQAGQRGEALLMNGDDARPVR}$ YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQV<mark>S</mark>AAQIRDWLQAGQRGEALLMNGDDARPVR YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQIRDWLQAGQRGEALLMNGDDARPVR $\mathtt{YTLDTNWRSAPGMVNSVNKLFSQTDDAFMFREIPFIPVKSAGKNQALRFVFKGETQPAMKMWLMEGESCGVGDYQSTMAQVCAAQI<math>{f C}$ DWLQAGQRGEALLMNGDDARPVR

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ASD I SVLVRSRQEAAQVRDALTLLE I PSVYLSNRDSVFETLEAQEVLWLLQAVMTPERENTLRSALATSMGLNALD I ETLNNDEHAWDAWEEFDGYRQ I WRKRGM/PME

 $\mathtt{ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<math>\overline{\mathtt{A}}\mathtt{VVEEFDGYRQIWRKRGVMPM}$ <u>ASDISVLVRSRQEAAQVRDALTLLEIP</u>ŠVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<mark>V</mark>VVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<mark>V</mark>VVEEFDGYRQIWRKRGVMPN ${ t ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<math>\overline{ t A}$ V ${ t VEEFDGYRQIWRKRGVMPM}$ ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<mark>V</mark>VVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM ${ t ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<math>{ t V}$ V ${ t V}$ EEFDG ${ t V}$ R ${ t Q}$ I ${ t W}$ R ${ t R}$ R ${ t S}$ V ${ t M}$ P ${ t N}$ ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<mark>V</mark>VVEEFDGYRQIWRKRGVMPM ${ t ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWD<math>\overline{ t A}$ V ${ t VEEFDGYRQIWRKRGVMPM}$ ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPN ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM ASDISVLVRSRQEAAQVRDALTLLEIPSVYLSNRDSVFETLEAQEMLWLLQAVMTPERENTLRSALATSMMGLNALDIETLNNDEHAWDAVVEEFDGYRQIWRKRGVMPM

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consensus

LRAL<mark>MS</mark>ARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLWLPFITNFRVQDQAFYHDE

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MSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD. LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD ${ t LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>{f E}$ Q ${f A}$ FYHD ${ t LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>\overline{ t D}$ QAFYHD LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD MRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD $\overline{\mathsf{L}}\mathsf{R}\mathsf{A}\mathsf{L}\mathsf{MSA}\mathsf{RNIA}\mathsf{ENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD$ LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD ${ t LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>{ t E}$ Q ${ t RALMSARNIAENLATAGGERRLTDILHISELLQEAGTQLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>{ t E}$ Q ${ t RALMSARNIAENLATAGGERRLTDILHISELQEAGTQLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>{ t E}$ Q ${ t RALMSARNIAENLATAGGERRLTDILHISELQEAGTQLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>{ t E}$ Q ${ t RALMSARNIAENLATAGGERRLTDILHISELQEAGTQLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>{ t E}$ Q ${ t RALMSARNIAENLATAGGERRLTDILHISELQEAGTQLESDKHLVQIVTIHTS$ LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<mark>E</mark>QAFYHD ${ t LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQ<math>\overline{ t D}$ QAFYHD MRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD $\overline{ t L}$ RALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD <u>M</u>RALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD LRALMSARNIAENLLATAGGERRLTDILHISELLQEAGTQLESEHALVRWLSQHILEPDSNASSQQMRLESDKHLVQIVTIHKSKGLEYPLVWLPFITNFRVQDQAFYHD

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RHSFEAVLDLNAAPESVDLAE&ERLAEDLRLLYVALTRSWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTC1EALCDDD1AWQTAQTGDNQPWQVE

RHSFEAVLDLNAAPESVDLAE<mark>V</mark>ERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHOSALGRLLQKGEPQDAAGLRTCIEALCDDDIA RHSFEAVLDLNAAPESV**E**LAE<mark>V</mark>ERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAE<mark>V</mark>ERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEĀERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGE<mark>A</mark>QDAAGLRTCIEALCDDDIAWQTAQ<mark>I</mark>GDNQPWQV RHSFEAVLDLNAAPESVDLAE<mark>V</mark>ERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAE<mark>V</mark>ERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEĀERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQ<mark>I</mark>GDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALC<mark>N</mark>DDIAWQTAQ<mark>I</mark>GDNQPWQV RHSFEAVLDLNAAPESVDLAEf VERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCar DDDIAWQTAQar TGDNQPWQV <u>RHSFEAVLDLNAAPESVDLAEĀERLAED</u>LRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAG<u>LRTCIEALCDDDIAWQTAQTGDNQPWQ</u>V RHSFEAVLDLNAAPESVDLAE<mark>V</mark>ERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALCDDDIAWQTAQTGDNQPWQV RHSFEAVLDLNAAPESVDLAEAERLAEDLRLLYVALTRSVWHCSLGVAPLVRRRGDKKGDTDVHQSALGRLLQKGEPQDAAGLRTCIEALC<mark>N</mark>DDIAWQTAQ<mark>I</mark>GDNQPWQV

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NDALTAELNARTLQRLPGDWRVTSYSGLQQRGHG I AQDLWPRLDVDAAGV&SWEEPTLTPHQFPRGASPGTFLHSLFEDLRFTQPVDPNWVQEKLELGGFE&QWEEVLE

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.TAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWVQEKLELGGFESQWEPVI NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWVQEKLELGGFESQWEPVL ND<mark>VS</mark>TAELNA<mark>K</mark>TLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGV<mark>A</mark>SVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWV<mark>R</mark>EKLELGGFESQWEPVI NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGV\\VSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWV\\QEKLELGGFE\\PQWEPVL NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWVQEKLELGGFE<mark>P</mark>QWEPVL ${ t NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDL{ t N}FTQPVDPNWVQEKLELGGFE<math>{ t S}$ QWEPVL $\mathtt{NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDL\overline{\mathsf{DFNQ}PVDPNWVQEKLELGGFESQWEPVL}$ $\mathtt{NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDF\overline{1}QPVDPNWVQEKLELGGFE<math>\mathbf{P}$ QWEPVL ${ t NDVS}$ TAEL ${ t$ ND<mark>VS</mark>TAELNA<mark>K</mark>TLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGV<mark>A</mark>SVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWV<mark>R</mark>EKLELGGFESQWEPVL NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQP<mark>I</mark>DPNWVQEKLELGGFE<mark>P</mark>QWE<mark>L</mark>VI ${ t NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDL{ t NFTQPVDPNWVQEKLELGGFE<math>{ t S}$ QWE ${ t P}$ VL NDALTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWVQEKLELGGFE**P**QWEPVL <u>NDALTAELNARTLQRLPGDNWRVTSYSĞ</u>LQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDL<mark>N</mark>FTQPVDPNWVQEKLELGGFESQWEPVL NDA<mark>T</mark>TAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQPVDPNWVQEKLELGGFESQWEPVL NDAĪTAELNARTLQRLPGDNWRVTSYSGLQQRGHGIAQDLMPRLDVDAAGVVSVVEEPTLTPHQFPRGASPGTFLHSLFEDLDFTQP<mark>I</mark>DPNWVQEKLELGGFE<mark>P</mark>QWE<mark>L</mark>VL

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consensus

TEWITAVLQAPLNETGYSL&QLSDRDKQVEVEFYLP ISEPLIASQLDALIRQFDPLSAGCPPLEFNQYRGVLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAVAAE

TEWITAVLQAPLNETGVSLSQLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMA*A* <u>TEWITAVLQAPLNETGVSLSQLSDRDK</u>QVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRH<u>EGRYYLLDYKSNWLGEDSSAYTQQAMAA</u> TEWITAVLQAPLNETGVSLSQLS<mark>A</mark>R<mark>N</mark>KQVEMEFYLPISEPLIASQLD<mark>T</mark>LIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL<mark>N</mark>QLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWIT**T**VL<mark>l</mark>aplnetg**i**slSqlsdrdkqvemefylpisepliasqldalirqfdplsagcpplefmqvrgmlkgfidlvfrhegryylldyksnwlgedssaytqqamaa TEWITAVLQAPLNETGVSLSQLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQ<mark>A</mark>RGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA ${ t TEWITAVLQAPLNETGVSLSQLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQ\overline{ t V}RGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA$ TEWITAVLQAPLNETGVSL<mark>N</mark>QLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL\QLSARNKQVEMEFYLPISEPLIASQLDTLIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSLSQLS<mark>A</mark>R<mark>N</mark>KQVEMEFYLPISEPLIASQLD<mark>T</mark>LIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL<mark>N</mark>QLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL\QUENTROLOGYEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQ<mark>A</mark>RGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL<mark>N</mark>QLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQ\RGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL\QLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQ<mark>A</mark>RGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSLSQLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA TEWITAVLQAPLNETGVSL<mark>N</mark>QLSDRDKQVEMEFYLPISEPLIASQLDALIRQFDPLSAGCPPLEFMQVRGMLKGFIDLVFRHEGRYYLLDYKSNWLGEDSSAYTQQAMAA

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