

**Human Cytomegalovirus Strain Specific Differences in Protein Expression of Type I IFN  
Pathway Proteins Do Not Impact Virus Replication.**

Katie A Latham<sup>a</sup>, Timothy K Soh<sup>b,c,d,e</sup>, Richard J Stanton<sup>f</sup>, Jens B Bosse<sup>b,c,d,e</sup>,  
Steve Goodbourn<sup>a</sup> & Blair L Strang<sup>a</sup>

Institute of Infection & Immunity, St George's School of Health and Medical Sciences, City St George's University of London, UK<sup>a</sup>. Centre for Structural Systems Biology, Hamburg, Germany<sup>b</sup>. Hannover Medical School, Institute of Virology, Hannover, Germany<sup>c</sup>. Cluster of Excellence RESIST (EXC 2155), Hannover Medical School, Hannover, Germany<sup>d</sup>. Leibniz Institute of Virology (LIV), Hamburg, Germany<sup>e</sup>. Centre for Structural Systems Biology, Hamburg, Germany<sup>b</sup>. Division of Infection and Immunity, Cardiff University School of Medicine, UK<sup>f</sup>.

### **Supplementary Data 1**

(A) HCMV protein US9. (B) HCMV protein UL23. (C) HCMV protein UL26. (D) HCMV protein UL31. (E) HCMV protein UL82. (F) HCMV protein UL83. (G) HCMV protein UL122. (H) HCMV protein U123. (i) Two strain alignment using NCBI BLAST, Merlin(R1111) (pink) and AD169 (green). Mutations present in AD169 are highlighted in yellow. (ii) Phylogenetic tree of 10 HCMV strains, low passage strains in blue and high passage strains in orange. (iii) Ten strain alignment using Clustal $\omega$ , low passage strains in blue and high passage strains in orange. Mutations differing to Merlin(R1111) sequence are highlighted in yellow. Mutations are characterised by the key: \* (asterisk) indicates fully conserved residues, : (colon) indicates strongly similar properties, . (period) indicates conversation of weakly similar properties and empty space indicates no similarity. (iv) Alphafold monomer predictions; structured aligned with Merlin(R1111) in pink and AD169 in green. (v) Predicted IDDT plots for five different models for each predicted protein structures. Predicted IDDT value >70 is a high confidence structural prediction.

### **Supplementary Data 2**

(A) (i) Time course of treatment and infection. (ii) HFFF-TERT cells were cultured in 0% or 10% FBS and with or without Dexamethasone for 24 hours prior to infection. Cells were infected with Merlin(R1111) or AD169 at an MOI of 1. Cell lysates were prepared for western blotting from uninfected cell at 0h.p.i., and from HFF and HFFF-TERT cells infected with Merlin(R1111) and AD169 at 96 h.p.i. Proteins recognised by the antibodies are indicated to the left of each panel. Positions of molecular mass markers (kDa) are indicated on the outer side of each respective blot. (B) (i) Time course of treatment and infection. (ii) HFFF-TERT cells were cultured in 0% or 10% FBS for 24 hours prior to infection. Cells were infected with Merlin(R1111) or AD169 at an MOI of 1. Cell lysates were prepared for western blotting from uninfected cell at 0h.p.i., and from HFF and HFFF-TERT cells infected with Merlin(R1111) and AD169 at 96 h.p.i. Proteins recognised

by the antibodies are indicated to the left of each panel. Positions of molecular mass markers (kDa) are indicated on the outer side of each respective blot.

# Supplementary Figure 1

## A- US9

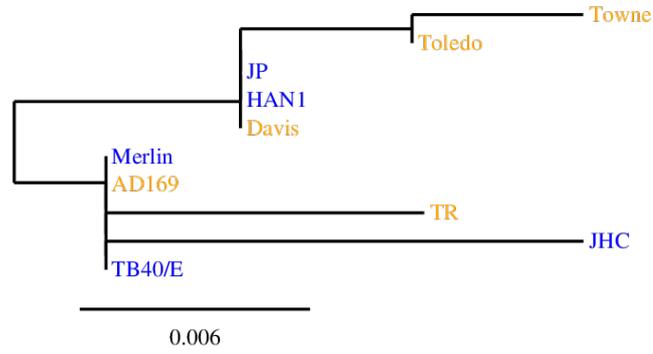
i)

Merlin	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSNSKSVRLP	60
AD169	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSNSKSVRLP	60
	*****	
Merlin	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
AD169	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
	*****	
Merlin	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSACNRSVLHCRPASRLPWLPLRVTPS	180
AD169	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSACNRSVLHCRPASRLPWLPLRVTPS	180
	*****	
Merlin	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVRGRHRATGRTSR	240
AD169	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVRGRHRATGRTSR	240
	*****	
Merlin	EEEAKDD	247
AD169	EEEAKDD	247
	*****	

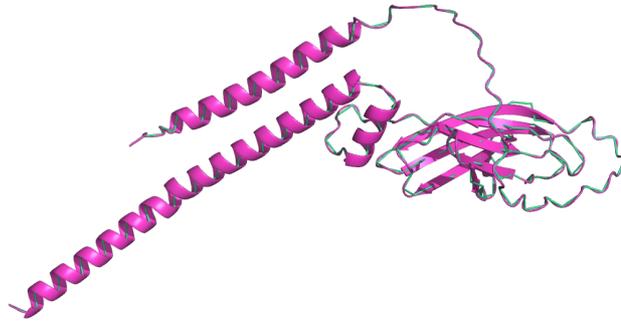
ii)

Merlin	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSNSKSVRLP	60
TB40/E	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSNSKSVRLP	60
JP	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSDSKSVRLP	60
JHC	MILWSPSTCSFFWHWCLIAVSVLSNRSKQLRLSWSSDESSASSSSRICPLSNSKSVRLP	60
HAN1	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSDSKSVRLP	60
AD169	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSNSKSVRLP	60
Toledo	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSDSKSVRLP	60
Davis	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSDSKSVRLP	60
Towne	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSDSKSVRLP	60
TR	MILWSPSTCSFFWHWCLIAVSVLSSRSKESLRLSWSSDESSASSSSRICPLSNSKSVRLP ***** . *** : ***** . ***** : *****	60
Merlin	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
TB40/E	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
JP	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
JHC	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
HAN1	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
AD169	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
Toledo	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
Davis	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
Towne	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV	120
TR	QYPRGFGDVSGYRVSSSVSECYVQHGVLVAAWLVRGNFSDTAPRAYGTWGNERSATHFKV ***** . ***** : ***** : *****	120
Merlin	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
TB40/E	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
JP	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
JHC	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
HAN1	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
AD169	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
Toledo	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
Davis	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
Towne	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS	180
TR	GAPQLENDGALRYETELPQVDARLSYVMLTVYPCSNRSLHCRPASRLPWLPLRVTPS ***** . ***	180
Merlin	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
TB40/E	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
JP	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
JHC	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
HAN1	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
AD169	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
Toledo	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRG -----	232
Davis	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR	240
Towne	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRG -----	232
TR	DLERLFAERRYLTFLYVVLVQFVKHVALFSFGVQVACCVYLRWIRPWVGRHRATGRTSR ***** . ***** : ***** : *****	240
Merlin	EEEEAKDD	247
TB40/E	EEEEAKDD	247
JP	EEEEAKDD	247
JHC	EEEEAKDD	247
HAN1	EEEEAKDD	247
AD169	EEEEAKDD	247
Toledo	-----	232
Davis	EEEEAKDD	247
Towne	-----	232
TR	EEEEAKDD	247

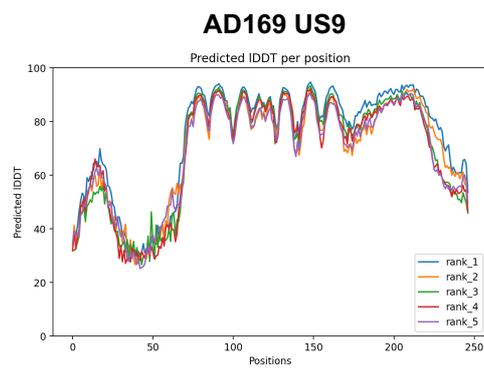
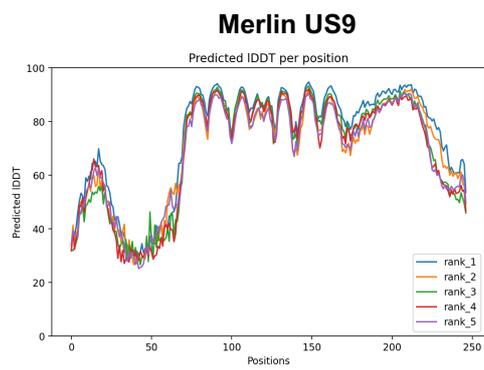
iii)



iv)



v)



## B- UL26

i)

<b>Merlin</b>	MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTPRDVEYWKLLVVTQ	60
<b>AD169</b>	MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTPRDVEYWKLLVVTQ	60
	*****	
<b>Merlin</b>	GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLSY	120
<b>AD169</b>	GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLSY	120
	*****	
<b>Merlin</b>	FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG	180
<b>AD169</b>	FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRVLLRHRVTPGKQEITDAMFEAG	180
	*****	
<b>Merlin</b>	NVPSALLP	188
<b>AD169</b>	NVPSALLP	188
	*****	

ii)

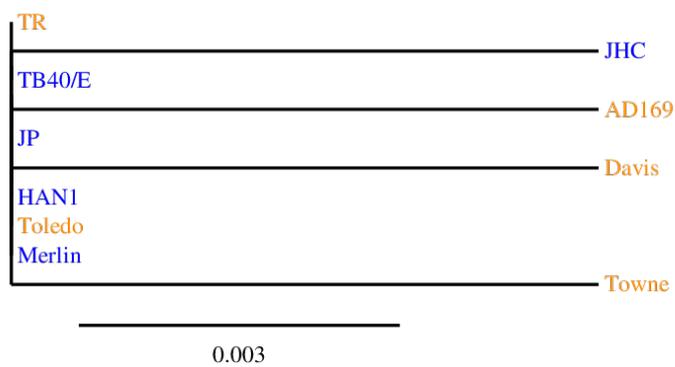
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TB40/E MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
JP MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
JHC MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
HAN1 MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
AD169 MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
Toledo MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
Davis MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
Towne MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
TR MTSRRAPDGGNLDDFMRRQRGRHLDLPYPRGYTLFVCDVEETILTTPRDVEYWKLLVVTQ 60  
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Merlin GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
TB40/E GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
JP GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
JHC GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
HAN1 GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
AD169 GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
Toledo GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
Davis GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
Towne GQLRVIGTIGLANLFSWDRSVAGVAADGSVLCYEISRENFVRAADSLPQLLERGLLHSY 120  
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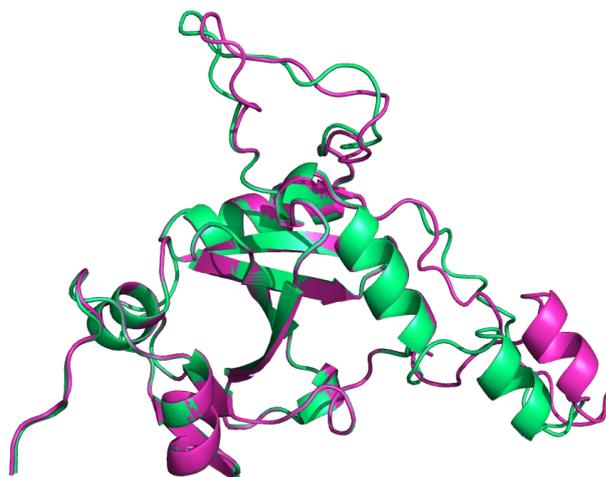
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JP FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
JHC FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
HAN1 FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
AD169 FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
Toledo FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
Davis FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
Towne FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
TR FEDVERAAQGRLRHGNSGLRRDADGQVIREASACYVSRALLRHRVTPGKQEITDAMFEAG 180  
\*\*\*\*\*

Merlin NVPSALLP 188  
TB40/E NVPSALLP 188  
JP NVPSALLP 188  
JHC NVPSALLP 188  
HAN1 NVPSALLP 188  
AD169 NVPSALLP 188  
Toledo NVPSALLP 188  
Davis NVPSALLP 188  
Towne NVPSALLP 188  
TR NVPSALLP 188  
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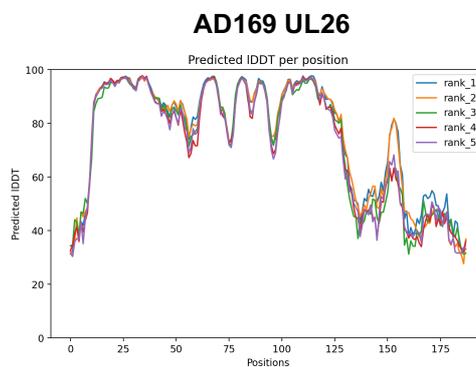
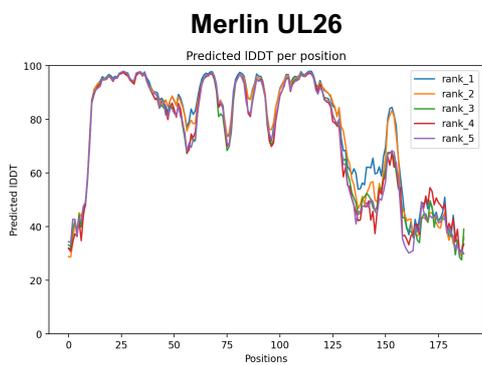
iii)



iv)



v)



# C- UL31

i)

<b>Merlin</b>	MGDKPTLVTLTAVAVSSPPSSPLPLVSFTELLLPSPSVAAAAVAATATSEVGEKTAEQE	60
<b>AD169</b>	MGDKPTLVTLTAVAVSSPPSSPLPLVSFTELLLPSPSVAAAAVAATATSEVGEKTAEQE *****	60
<b>Merlin</b>	VAAAGPETRNERRENREDEGGETRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL	120
<b>AD169</b>	VAAADPETGNERRENRENEGGETRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL ****.*** *****:*****	120
<b>Merlin</b>	PAQDVVTSWIEALRDADRDNYGRCVRHAKIHRASASHLTAYESYLVSITEQYNTASNVTEK	180
<b>AD169</b>	PAQDVVTSWIEALRDADRDNYGRCVRHAKIHRASASHLTAYESYLVSITEQYNTASNVTEK *****	180
<b>Merlin</b>	ASYVQGCIFLSPVVIYNNNTQGCYKYDWSNVVTPKAAAYAEFLFLLCSTSESSVVLQPLIT	240
<b>AD169</b>	ASYVQGCIFLSPVVIYNNNTQGCYKYDWSNVVTPKAAAYAEFLFLLCSTSESSVVLQPLIT *****	240
<b>Merlin</b>	KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVPFVPHACPHYAVPFTTPGKPGCGGAP	300
<b>AD169</b>	KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVPFVPHACPHYAVPFTTPGKPGCGGAP *****	300
<b>Merlin</b>	SGVAGLEETAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGTMDDD	360
<b>AD169</b>	SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGTMDDD *****:*****	360
<b>Merlin</b>	EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLVCVDAEQRQLLGTVATSFCHRVS DKITA	420
<b>AD169</b>	EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLVCVDAEQRQLLGTVATSFCHRVS DKITA *****	420
<b>Merlin</b>	RNMPRAFS FYLLTSAQRGYDLRFSRNP SLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG	480
<b>AD169</b>	RNMPRAFS FYLLTSAQRGYDLRFSRNP SLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG *****	480
<b>Merlin</b>	VQPRQTVELDLRYVQITDRCLVANLPHEDAFYTGLSVWRGGEPLKVTLWTRTRS IVIPQ	540
<b>AD169</b>	VQPRQTVELDLRYVQITDRCLVANLPHEDAFYTGLSVWRGGEPLKVTLWTRTRS IVIPQ *****	540
<b>Merlin</b>	GTPIATLYQITEGDGNVSYNHHTVFRQMHAAGATTFFLGDMQLPADNFLTSPHP	595
<b>AD169</b>	GTPIATLYQITEGDGNVSYNHHTVFRQMHAAGTTTFFLGDMQLPADNFLTSPHP *****:*****	595

ii)

Merlin MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
TB40/E MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
JP MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
JHC MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
HAN1 MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
AD169 MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
Toledo MGDKPALVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
Davis MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
Towne MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
TR MGDKPTLVTLTAVSSPPSSPLPLVSFTELLPPPSVAAAAVAATATSEVGEKTAEQE 60  
\*\*.\*:\*\*\*\*\*.\*

Merlin VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
TB40/E VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
JP VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
JHC VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
HAN1 VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
AD169 VAAADPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
Toledo VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
Davis VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
Towne VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
TR VAAAGPETGNERRENREDEGGETRRTTGTAVKRSHDGI PRQLAERLRLCRHMDPEQDYRL 120  
\*\*\*.\* \*\*\*\*\*.\* \*\*\*\*\*.\*

Merlin PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
TB40/E PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
JP PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
JHC PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
HAN1 PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
AD169 PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
Toledo PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
Davis PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
Towne PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
TR PAQDVVTSWIEALRDADRNYGRCVRHAKIHRASASHTAYESYLVSITEQYNTASNVTEK 180  
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TB40/E ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
JP ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
JHC ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
HAN1 ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
AD169 ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
Toledo ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
Davis ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
Towne ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
TR ASYVQGCIFLSFPVIYNNQTQCGYKYDWSNVVTPKAAYAELFFLLCSTSESSVVLQPLIT 240  
\*\*\*\*\*

Merlin KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
TB40/E KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
JP KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
JHC KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
HAN1 KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
AD169 KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
Toledo KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
Davis KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
Towne KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
TR KGGLCSSMAVYDEETMRQSQAVQIGFLHTQLVMVFFVPHACPHYAVPFTTPGKPGCGGAP 300  
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Merlin SGVAGLEETAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
TB40/E SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
JP SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
JHC SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
HAN1 SGVAGLEETAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
AD169 SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
Toledo SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
Davis SGVAGLEETAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
Towne SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
TR SGVAGLEEAAPFGRVSVTRHGATLLCRVDHLTWISKRVTTYGHKKITRYLAQFRGMTDDD 360  
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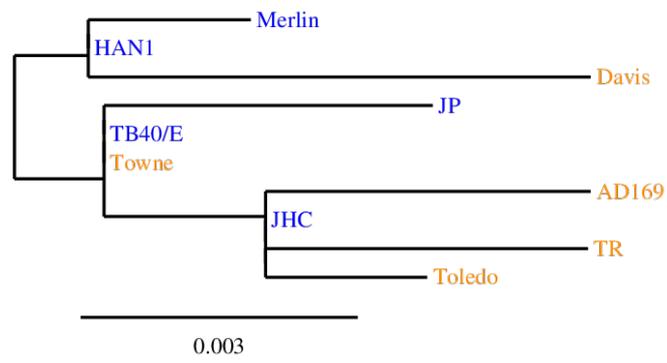
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JP EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
JHC EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
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AD169 EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
Toledo EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
Davis EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
Towne EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
TR EAALPGEDEAWIASKNVQYEFMGLIFTVNVDSLCVDAEQRQLLGTVATSFCHRVS DKITA 420  
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Merlin RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
TB40/E RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
JP RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
JHC RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
HAN1 RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
AD169 RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
Toledo RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
Davis RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
Towne RNMPRAFSFYLLTSAQRGYDLRFSRNPSLFFSGDALNCP LLNEPNVFSLTVHAPYDIHFG 480  
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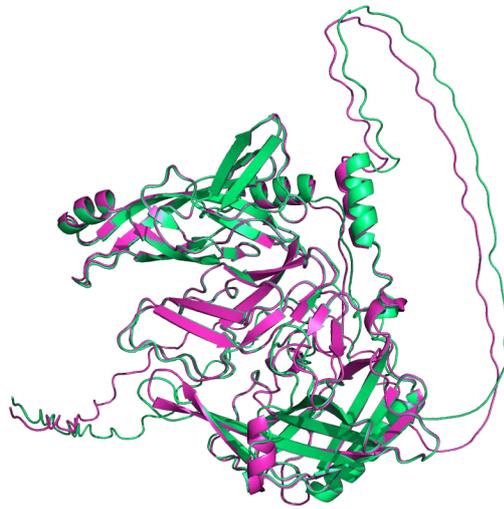
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TB40/E VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
JP VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
JHC VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
HAN1 VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
AD169 VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
Toledo VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
Davis VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
Towne VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
TR VQPRQTVELDLRYVQITDRCFLVANLP HEDAFYTGLSVWRGGEPLKVTLWTRTRSIVIPQ 540  
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Merlin GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
TB40/E GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
JP GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
JHC GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
HAN1 GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
AD169 GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
Toledo GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
Davis GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
Towne GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
TR GTP IATLYQITEGDGNVSYNHHTVFRQMHAAGATTF FLGDMQLPADNFLTSPHP 595  
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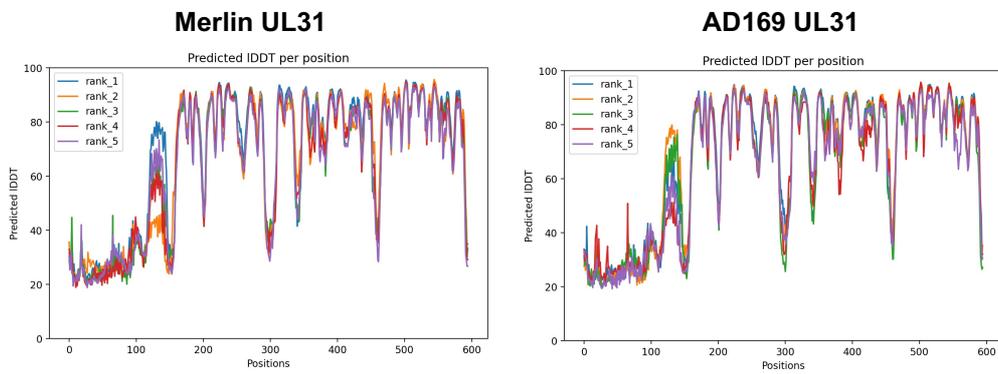
iii)



iv)



v)



# D- UL82

i)

<b>Merlin</b>	MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLDRLT	60
<b>AD169</b>	MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLDRLT *****	60
<b>Merlin</b>	NIEVSRPSVLCFFQENKSPHDTVDLTDLNKGRCVVGEQDRLLVLDLNNFGPRRLTPGSEN	120
<b>AD169</b>	NIEVSRPSVLCFFQENKSPHDTVDLTDLNKGRCVVGEQDRLLVLDLNNFGPRRLTPGSEN *****	120
<b>Merlin</b>	NTVSVLAFALPLDRVPVSGLHLFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW	180
<b>AD169</b>	NTVSVLAFALPLDRVPVSGLHLFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW *****	180
<b>Merlin</b>	RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKTEETDERGQWIMLF	240
<b>AD169</b>	RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKTEETDERGQWIMLF *****	240
<b>Merlin</b>	LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPY	300
<b>AD169</b>	LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPY *****	300
<b>Merlin</b>	IVQIQNAFETNQTHDTIFFPENIPGVSIEAGPLPDRVRITLRVTLTGDQAVHLEHRQPLG	360
<b>AD169</b>	IVQIQNAFETNQTHDTIFFPENIPGVSIEAGPLPDRVRITLRVTLTGDQAVHLEHRQPLG *****	360
<b>Merlin</b>	RIHFFRRGFWTLTGPKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE	420
<b>AD169</b>	RIHFFRRGFWTLTGPKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE *****	420
<b>Merlin</b>	EEEEDEDDLSSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNGA	480
<b>AD169</b>	EEEEDEDDLSSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNGA *****	480
<b>Merlin</b>	LTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSDMDGDVVRTAADISSTLRSVPAPR	540
<b>AD169</b>	LTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSDMDGDVVRTAADISSTLRSVPAPR *****	540
<b>Merlin</b>	PSPISTASTSSTPRSRPRI	559
<b>AD169</b>	PSPISTASTSSTPRSRPRI *****	559

ii)

Merlin MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
TB40/E MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
JP MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
JHC MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
HAN1 MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
AD169 MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
Toledo MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
Davis MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
Towne MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
TR MSQASSSPGEGPSSEAAAISEAEAASGSFGRLLHCQVLRRLITNVEGGSLEAGRLRLDLLRT 60  
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Merlin NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
TB40/E NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
JP NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
JHC NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
HAN1 NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
AD169 NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
Toledo NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
Davis NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
Towne NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
TR NIEVSRPSVLCCFQENKSPHDTVLDLTDLNKGRVVEQDRLLVDLNNFGPRRLTPGSEN 120  
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Merlin NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
TB40/E NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
JP NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
JHC NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
HAN1 NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
AD169 NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
Toledo NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
Davis NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
Towne NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
TR NTVSVLAFALPLDRVPVSGHLHFQSQRRGGEENRPRMEARAIIRRTAHHWAVRLTVTPNW 180  
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Merlin RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
TB40/E RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
JP RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
JHC RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
HAN1 RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
AD169 RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
Toledo RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
Davis RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
Towne RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
TR RRRTDSSLEAGQIFVSQFAFRAGAIPLTLVDALEQLACSDPNTYIHKETDERGQWIMLF 240  
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Merlin LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
TB40/E LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
JP LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
JHC LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
HAN1 LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
AD169 LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
Toledo LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
Davis LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
Towne LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
TR LHHDSPHPPTSVFLHFSVYTHRAEVVARHNPYPHLRRLPDNGFQLLIPKSFTLTRIHPHY 300  
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Merlin IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
TB40/E IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
JP IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
JHC IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
HAN1 IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
AD169 IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
Toledo IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
Davis IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
Towne IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
TR IVQIQNAFETNQTHDTIFFPENIPGVSEIAGPLPDRVRITLRVTLTGQAVHLEHRQPLG 360  
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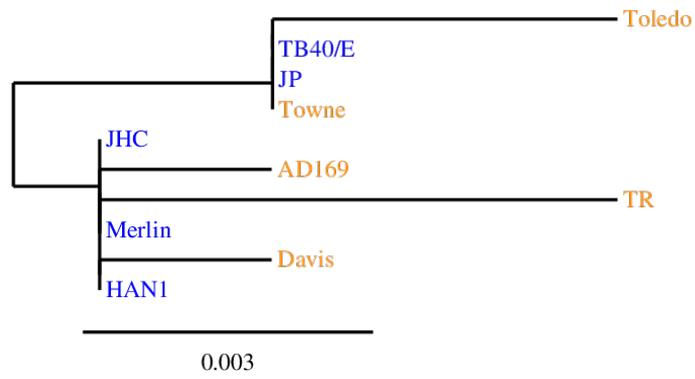
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JHC RIHFFRRGFWTLTPGKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE 420  
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AD169 RIHFFRRGFWTLTPGKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE 420  
Toledo RIHFFRRGFWTLTPGKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE 420  
Davis RIHFFRRGFWTLTPGKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE 420  
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TR RIHFFRRGFWTLTPGKPKIKRPQVQLRAGLFPRSNVMRGAVSEFLPQSPGLPPTTEEEEE 420  
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Merlin E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
TB40/E E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
JP E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
JHC E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
HAN1 E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
AD169 E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
Toledo EEEEDD-DDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 480  
Davis E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
Towne E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
TR E-EEEDDEDLSTPTPTPLSEAMFAGFEEASGDESDTQAGLSRALILTGQRRRSGNNG 479  
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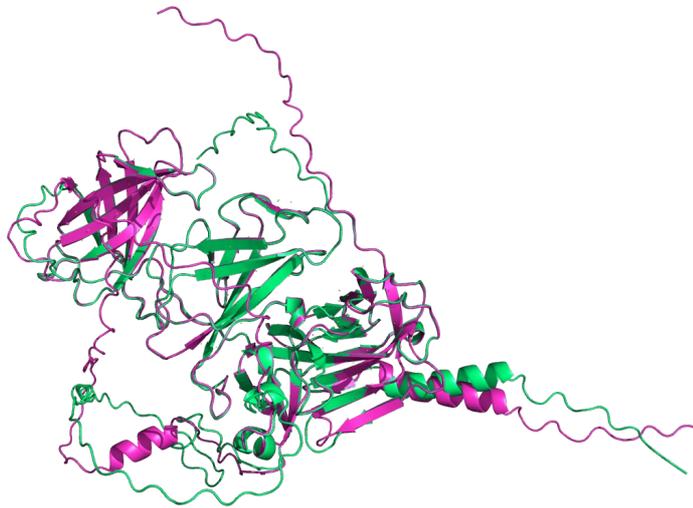
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JP ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
JHC ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
HAN1 ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
AD169 ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
Toledo ALTLVIPSWHVFASLDDLVLPLTVSVQH-GALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 540  
Davis ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
Towne ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
TR ALTLVIPSWHVFASLDDLVLPLTVSVQHAALRPTSYLRSMDMGDVRTAADISSTLRSVPAP 539  
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Merlin RPSPISTASTSSTPRSRPRI 559  
TB40/E RPSPISTASTSSTPRSRPRI 559  
JP RPSPISTASTSSTPRSRPRI 559  
JHC RPSPISTASTSSTPRSRPRI 559  
HAN1 RPSPISTASTSSTPRSRPRI 559  
AD169 RPSPISTASTSSTPRSRPRI 559  
Toledo RPSPISTASTSSTPRSRPRI 560  
Davis RPSPISTASTSSTPRSRPRI 559  
Towne RPSPISTASTSSTPRSRPRI 559  
TR RPSPISTASTSSTPRSRPRI 559  
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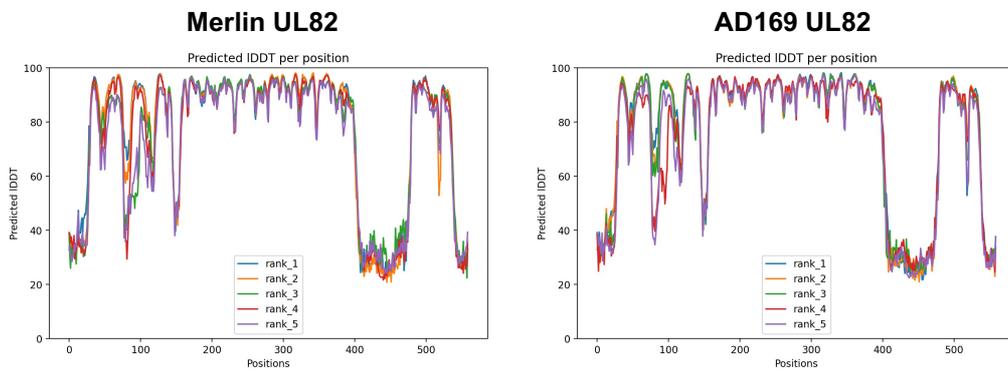
iii)



iv)



v)



# E- UL83

i)

<b>Merlin</b>	MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSQPSLILVSQ	60
<b>AD169</b>	MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSQPSLILVSQ *****	60
<b>Merlin</b>	YTPDSTPCHRGDNQLQVQHTYFTGSEVENVSVNVHNPTGRSICPSQEPMSIYVYALPLKM	120
<b>AD169</b>	YTPDSTPCHRGDNQLQVQHTYFTGSEVENVSVNVHNPTGRSICPSQEPMSIYVYALPLKM *****	120
<b>Merlin</b>	LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV	180
<b>AD169</b>	LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV *****	180
<b>Merlin</b>	YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL	240
<b>AD169</b>	YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL *****	240
<b>Merlin</b>	FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLC PKNMI IKPGKISHIMLDVAFTSHE	300
<b>AD169</b>	FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLC PKNMI IKPGKISHIMLDVAFTSHE *****	300
<b>Merlin</b>	HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAIRETVELRQYDPVAALFFFDIDLLLQRG	360
<b>AD169</b>	HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAIRETVELRQYDPVAALFFFDIDLLLQRG *****	360
<b>Merlin</b>	PQYSEHPTFTSQYRIQGKLEYRHTWDRHDEGAAQGDDDVWTS GSDSDEELVTTERKT PRV	420
<b>AD169</b>	PQYSEHPTFTSQYRIQGKLEYRHTWDRHDEGAAQGDDDVWTS GSDSDEELVTTERKT PRV *****	420
<b>Merlin</b>	TGGGAMASASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA	480
<b>AD169</b>	TGGGAMASASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA *****	480
<b>Merlin</b>	VFTWPPWQAGILARNLVP MVATVQGQNLKYQEFFWDANDIYRIFAELEGVWPAAQPKRR	540
<b>AD169</b>	VFTWPPWQAGILARNLVP MVATVQGQNLKYQEFFWDANDIYRIFAELEGVWPAAQPKRR *****	540
<b>Merlin</b>	RHRQDALPGPCIASTPKKHRG	561
<b>AD169</b>	RHRQDALPGPCIASTPKKHRG *****	561

ii)

Merlin MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
TB40/E MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
JP MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
JHC MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
HAN1 MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
AD169 MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
Toledo MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
Davis MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
Towne MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
TR MESRGRRCPEMISVLGPISGHVLKAVFSRGDTPVLPHETRLLQTGIHVRVSPSLILVSQ 60  
\*\*\*\*\*

Merlin YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
TB40/E YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
JP YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
JHC YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
HAN1 YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
AD169 YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
Toledo YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
Davis YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
Towne YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
TR YTPDSTPCHRGNQLQVQHTYFTGSEVENSVNVHNPTGRSICPSQEPMSIYVYALPLKM 120  
\*\*\*\*\*

Merlin LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
TB40/E LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
JP LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
JHC LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
HAN1 LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
AD169 LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
Toledo LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
Davis LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
Towne LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
TR LNIP SINVHHYPSAAERKHRHLPVADAVIHASGKQMWQARLTVSGLAWTRQQNQWKEPDV 180  
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Merlin YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
TB40/E YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
JP YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
JHC YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
HAN1 YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
AD169 YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
Toledo YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
Davis YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
Towne YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
TR YYTSAFVFPTKDVALRHVVCAHELVCSEMENTRATKMQVIGDQYVKVYLESFCEDVPSGKL 240  
\*\*\*\*\*:\*\*\*\*\*

Merlin FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
TB40/E FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
JP FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
JHC FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
HAN1 FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
AD169 FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
Toledo FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
Davis FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
Towne FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
TR FMHVTLGSDVEEDLTMTRNPQPFMRPHERNGFTVLCPKNMI IKPGKISHIMLDVAFTSHE 300  
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Merlin HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
TB40/E HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
JP HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
JHC HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
HAN1 HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
AD169 HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
Toledo HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
Davis HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
Towne HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
TR HFGLLCPKSI PGLSISGNLLMNGQQIFLEVQAI RETVELRQYDPVAALFFFDIDL LQRG 360  
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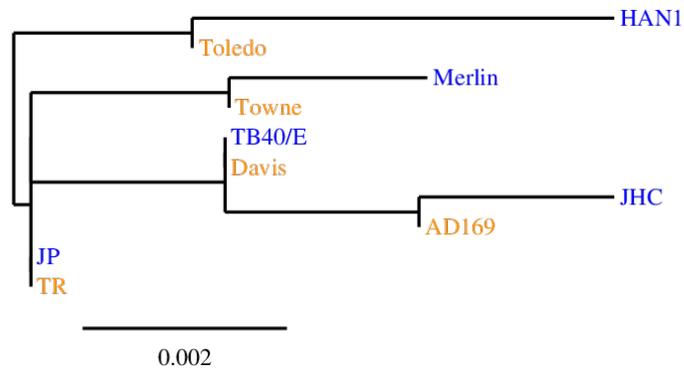
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TB40/E PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
JP PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
JHC PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
HAN1 PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
AD169 PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
Toledo PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
Davis PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
Towne PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
TR PQYSEHPTFTSQYRIQ GKLEYRHTWDRHDEGAAQ GDDVWTS GSDSDEELVTTERKT PRV 420  
\*\*\*\*\*

Merlin TGGGAMASASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
TB40/E TGGGAMAGASTSAGRKRKSASSATACTSGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
JP TGGGAMAGASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
JHC TGGGAMAGASTSAGRKRKSASSATACTSGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
HAN1 TGGGAMAGASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
AD169 TGGGAMAGASTSAGRKRKSASSATACTSGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
Toledo TGGGAMAGASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
Davis TGGGAMAGASTSAGRKRKSASSATACTSGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
Towne TGGGAMAGASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
TR TGGGAMAGASTSAGRKRKSASSATACTAGVMTRGRLKAESTVAPEEDTDEDS DNEIHNPA 480  
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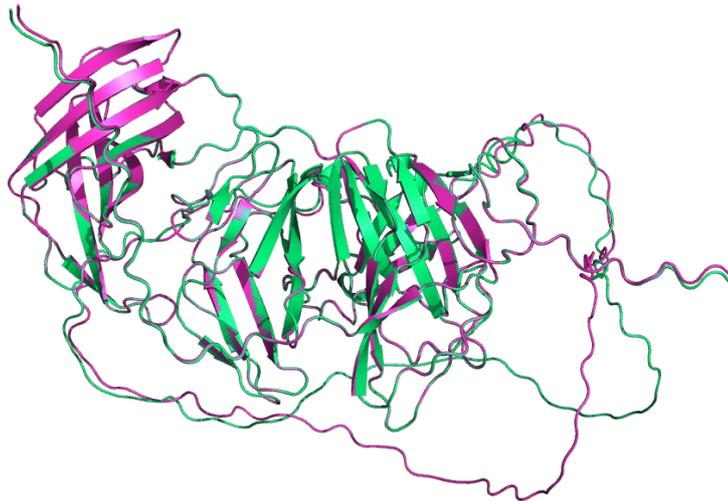
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TB40/E VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
JP VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
JHC VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
HAN1 VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
AD169 VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
Toledo VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
Davis VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
Towne VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
TR VFTWPPWQAGILARNL VPMVATVQGQNLKYQEFFWDANDIYRIFAELEGVWQPAAQPKRR 540  
\*\*\*\*\*

Merlin RHRQDALPGPCIASTPKKHRG 561  
TB40/E RHRQDALPGPCIASTPKKHRG 561  
JP RHRQDALPGPCIASTPKKHRG 561  
JHC RHRQDALPGPCIASTPKKHRG 561  
HAN1 RHRQDALPGPCIASTPKKHRG 561  
AD169 RHRQDALPGPCIASTPKKHRG 561  
Toledo RHRQDALPGPCIASTPKKHRG 561  
Davis RHRQDALPGPCIASTPKKHRG 561  
Towne RHRQDALPGPCIASTPKKHRG 561  
TR RHRQDALPGPCIASTPKKHRG 561  
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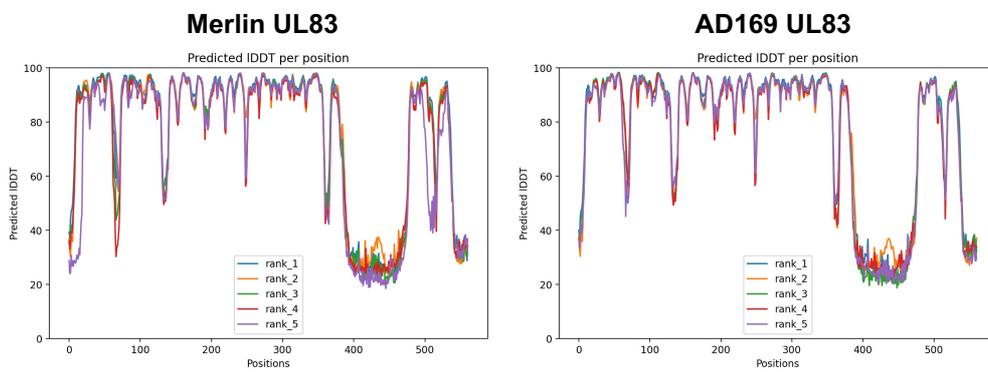
iii)



iv)



v)



# F- UL122

i)

Merlin	MESSAKRKMDPDNPDEGPSSKVPRPETPVTKATTFMQTMLRKEVNSQLSLGDPLFPPELAE	60
AD169	MESSAKRKMDPDNPDEGPSSKVPRPETPVTKATTFMQTMLRKEVNSQLSLGDPLFPPELAE *****	60
Merlin	ESLKTFEQVTEDCNENPEKDVLELGDILAQAVNHAGIDSSSTGPTLTTHSCSVSSAPLN	120
AD169	ESLKTFEQVTEDCNENPEKDVLELGDILAQAVNHAGIDSSSTGPTLTTHSCSVSSAPLN *****	120
Merlin	KPTPTSVAVTNTPLPGASATPELSRKKPRKTTRPFKVIKPPVPPAPIMLPLIKQEDIK	180
AD169	KPTPTSVAVTNTPLPGASATPELSRKKPRKTTRPFKVIKPPVPPAPIMLPLIKQEDIK *****	180
Merlin	PEPDFTIQYRNKIIDTAGCIVISDSEEEQGEEVETRGATASSPSTGSGTTPRVTSPTHPLS	240
AD169	PEPDFTIQYRNKIIDTAGCIVISDSEEEQGEEVETRGATASSPSTGSGTTPRVTSPTHPLS *****	240
Merlin	QMNHPPLPDLGRPDEDSSSSSSSSSSSADSESESEEMKCSSGGGASVTSSHHGRGGFG	300
AD169	QMNHPPLPDLGRPDEDSSSSSSSSSSSADSESESEEMKCSSGGGASVTSSHHGRGGFG *****	300
Merlin	GAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMKDKNTPFCTPNVQTRRGR	360
AD169	GAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMKDKNTPFCTPNVQTRRGR *****	360
Merlin	VKIDEVSRMFRHTNRSLEYKNLFFMIPSMHQVLEEAIVKCKTMQVNNKGIQIIYTRNHEV	420
AD169	VKIDEVSRMFRHTNRSLEYKNLFFMIPSMHQVLEEAIVKCKTMQVNNKGIQIIYTRNHEV *****	420
Merlin	KNEVDQVRCRLGSMCNLALSTPFLMEHTMPVTHPPDVAQRTADACNDGVKAVWNLKELHT	480
AD169	KNEVDQVRCRLGSMCNLALSTPFLMEHTMPVTHPPDVAQRTADACNDGVKAVWNLKELHT *****	480
Merlin	HQLCPRSSDYRNMI IHAATPVDLLGALNLCLPLMQKFPKQVMVRI FSTNQGGFMLPIYET	540
AD169	HQLCPRSSDYRNMI IHAATPVDLLGALNLCLPLMQKFPKQVMVRI FSTNQGGFMLPIYET *****	540
Merlin	AAKAYAVGQFEKPTETPPEDLDLTLAIEAAIQDLRNSQ	580
AD169	AAKAYAVGQFEKPTETPPEDLDLTLAIEAAIQDLRNSQ *****	580

ii)

Merlin	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
TB40/E	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
JP	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
JHC	MESSAKRKMDDPNPDEGPSSKVPREPETPVSKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
HAN1	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
AD169	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
Toledo	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
Davis	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
Towne	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE	60
TR	MESSAKRKMDDPNPDEGPSSKVPREPETPVTKATTFLLQTMLRKEVNSQLSLGDPFLFPELAE *****.*****	60
Merlin	ESLKTFEQVTEDCNENPEKDVLTTELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
TB40/E	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
JP	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
JHC	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
HAN1	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
AD169	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
Toledo	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
Davis	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
Towne	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN	120
TR	ESLKTFEQVTEDCNENPEKDVLAELGDILAQAVNHAGIDSSSTGPTLTHSCSVSSAPLN *****.*****.*****	120
Merlin	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
TB40/E	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
JP	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
JHC	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
HAN1	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
AD169	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
Toledo	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
Davis	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
Towne	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI	179
TR	KPTPTSVAVTNTPLPGASATPELSPRKKPRKTRPFKVIKPPVPPAPIMLPL- IKQEDI *****.*****	180
Merlin	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
TB40/E	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
JP	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
JHC	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
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Toledo	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
Davis	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
Towne	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL	239
TR	KPEPDFTIQYRNKI IDTAGCIVISDSEEEQGEVETRGATASSPSTGSGT-PRVTSPTHPL *****	240
Merlin	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
TB40/E	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
JP	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
JHC	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
HAN1	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
AD169	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
Toledo	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
Davis	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	299
Towne	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF	298
TR	SQMNHPPLPDPLGRPDEDSSSSSSSSSSASDSESESEEMKCSSGGGASVTS-SSHHGRGGF *****.*****	300

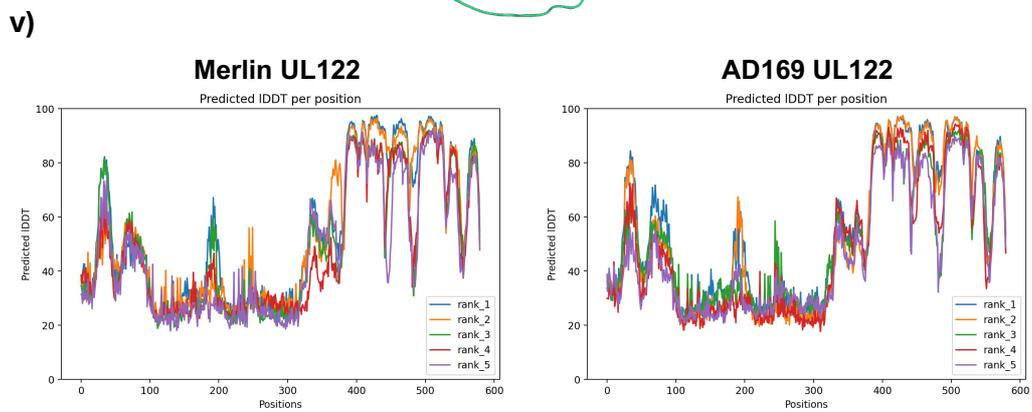
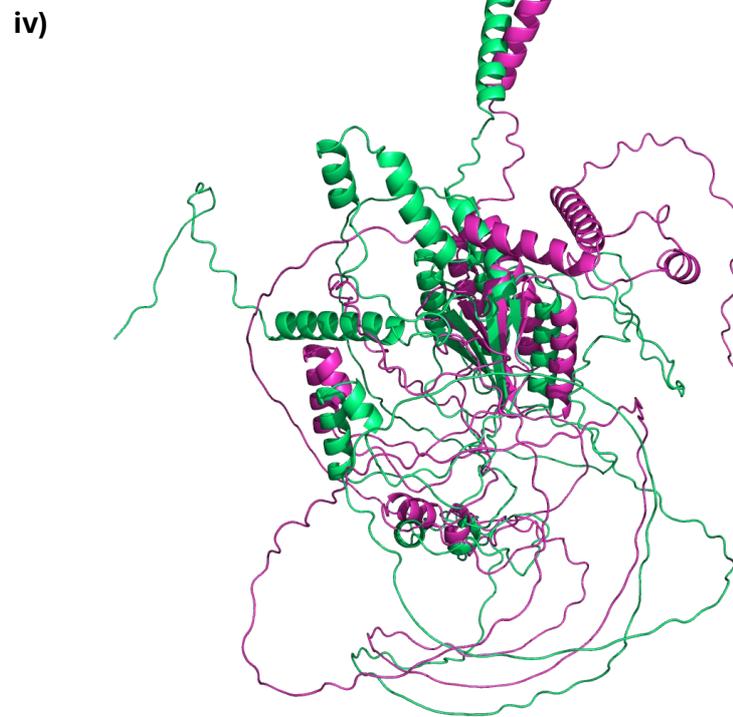
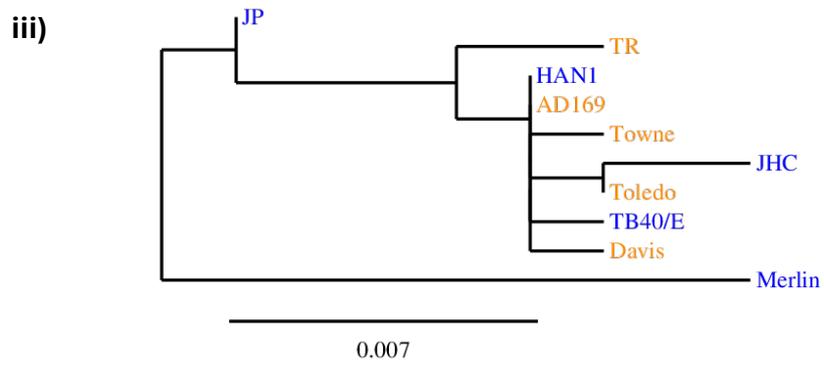
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JP GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 359  
JHC GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 359  
HAN1 GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 359  
AD169 GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 359  
Toledo GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 359  
Davis GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 359  
Towne GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 358  
TR GGAASSLLSCGHQSSGGASTGPRKKKSKRISELDNEKVRNIMDKNTPFCTPNVQTRRG 360  
\*\*\*\*\*

Merlin RVKIDEVSRMFRHTNRSLEYKNLPFMIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
TB40/E RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
JP RVKIDEVSRMFRNTNRSLEYKNLPFMIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
JHC RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
HAN1 RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
AD169 RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
Toledo RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
Davis RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 419  
Towne RVKIDEVSRMFRNTNRSLEYKNLPFTIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 418  
TR RVKIDEVSRMFRNTNRSLEYKNLPFMIPSMHQVLDEAIKCKTMQVNNKGIQI IYTRNHE 420  
\*\*\*\*\*

Merlin VKNEVDVRCRLGSMCNLALSTPFLMEHTMPVTHPPVAQRTADACNDGVKAVWNLKELH 479  
TB40/E VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
JP VKNEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
JHC VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
HAN1 VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
AD169 VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
Toledo VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
Davis VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 479  
Towne VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 478  
TR VKSEVDVRCRLGTMCNLALSTPFLMEHTMPVTHPPEVAQRTADACNEGVKAWSLKEH 480  
\*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\* \*\*.\*

Merlin THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
TB40/E THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
JP THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
JHC THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
HAN1 THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
AD169 THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
Toledo THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
Davis THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 539  
Towne THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 538  
TR THQLCPRSSDYRNMI IHAATPVDLLGALNLCPLMQKFKPKQVMVRI FSTNQQGFMLPIYE 540  
\*\*\*\*\*

Merlin TAAKAYAVGQFEKPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
TB40/E TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
JP TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
JHC TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
HAN1 TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
AD169 TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
Toledo TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
Davis TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 580  
Towne TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 579  
TR TAAKAYAVGQFEQPTETPPEDLDLTLAIEAAIQDLRNKSQ 581  
\*\*\*\*\*







# Supplementary Figure 2

