## **Supplementary Materials**

## Structural and biochemical characterization of the nucleoside hydrolase from C.

## elegans reveals the role of two active site cysteine residues in catalysis

Ranjan Kumar Singh<sup>1,2</sup>, Jan Steyaert<sup>1,2</sup>, Wim Versées<sup>1,2,3</sup>

<sup>1</sup> Structural Biology Brussels, Vrije Universiteit Brussel (VUB), Pleinlaan 2, 1050 Brussels, Belgium

<sup>2</sup> VIB-VUB Center for Structural Biology, Pleinlaan 2, 1050 Brussels, Belgium
<sup>3</sup> Corresponding author. Structural Biology Brussels, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussel, Belgium. Tel.: +32 2 629 18 49; fax: +32 2 629 19 63.
E-mail address: <u>wim.versees@vib-vub.be</u>

## **Supplementary Information: Figures and Table**

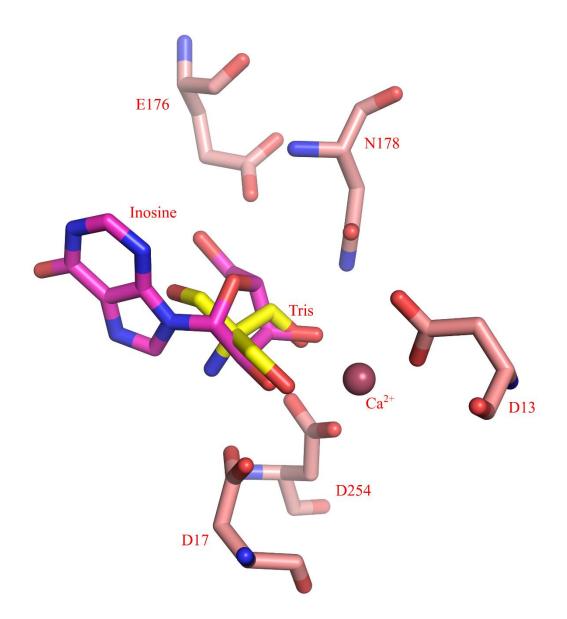
Figure S1-S3

Table S1

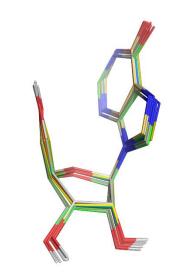
						82		
C.elegans	,	* 200000	α2 	*		β3	η1 2.22	TT TT
1 yeiK 3	I.VA <mark>G</mark>				NVE	VY AGMP QP I	MRQQIVADI	
YbeK 4 yaaF 3				LN.R.T WNA		PVAS <mark>G</mark> AVKP <mark>I</mark> PLAQGAAVPI	MRNLIIADI VRAPRDAA	
L.major_G1 3	5 T.VVG	NQSLEKVTQ	NARLVADV	A <b>G</b> .I.V	G <mark>V</mark> E	VAAGCTKP <mark>I</mark>	VRGVRNASI	<mark>IIH</mark> GETGMG
L.donovani 3 P.patens 5				AG.I.V AG.R.E			VRGVRNAS	
Z.mays 33	3 T.IFG	NCTTEHATR	NALILCEK	A <mark>S</mark> .H.L	E V B	<b>VAEGSHEP</b> I	KGGKPHVADI	<mark>V H</mark> G P D G L G
S.cerevisiae 70 C.fasciculata 3				MG.KAQ AG.I.T			KREPHYAPI	DIHGISGLD HIHGESGMG
S.musiva 42	2 T.IY <mark>G</mark>	NATLTHTTY	N TRA I LKA	I <mark>K</mark> .R.E	D <mark>VC</mark>	G V H V <mark>G</mark> A S K P <mark>F</mark>	CRAAAVAAI	D I H G E S G L D
M.tuberculosis 34 S.rimosus 33				CG.A.A AG.I.T			GGRWPDHPI	
A.bicolorata 3	5 T.VVG	NQTLEKVTR	NALAVAEI	A <b>G</b> .I.V	G <mark>VE</mark>	PFAA <mark>G</mark> CPRP <mark>I</mark>	VRTIEVAA	D I H G E S G M D
A.deanei_G1 3 M.morganii 3				AG. M. T			VRPVTTAG	DIHGESGLG DIHGDSGLD
2 T.vivax 3	5 C.TDA	D C F V E N G F N	VTGKIMCL	MH.N.N	MNLPL <mark>F</mark>	PIGK <mark>S</mark> AA.T <mark>7</mark>	VNPFPKE	VRCLAKNMD
T.brucei 3 C.acanthocephali 3				MH.R.L			VNAFPTE	VRFSAKNLD VRWNAKNME
A.deanei_G2 3	V.TDA	DCFVEHGFS	ITGKLMTL	MH.A.E	EGLPL <mark>F</mark>	PIGK <mark>S</mark> SL.G <mark>C</mark>	VNPFPSD	VRW SAKNME
L.major_G2 3 S.oncopelti 3				MH.A.R			VNPFPSE	VRWSAKNMD VRWSAKNME
B.saltans 5	5 V.LDA	<mark>d c y v n</mark> d a y r	VSGKLTST	VR.R.AAAAKRG	VHIKPF <mark>F</mark>	PILK <mark>S</mark> TLSH <mark>C</mark>	GHPFPHE	VRVDAKKMD
S.warneri 34 F.muscicola 39			ASVKIINR ATRKILDL	FS.N.Q			KNPFPKE	KRHAFFMD
S.radiotolerans 3	V.TPA	DCYIEPALD	STYKLLQL	ME.Q.E	HVE	PLGR <mark>G</mark> DY.Y <mark>G</mark>	INAFPGE	V R A R P E I I N
T.campylonemoides 3 C.watsonii 3			ATRKILDL VTRKLLDL		HIE		INPFPRL	(RRDSFVVD (RRDSLIID
M.repens 3	5 V.TPA	<mark>d</mark> c y a e p a v s	ATRKILDL	MG.C.S	H I I	VAESSV.R <mark>C</mark>	INPFPRL	( R R D S F V V D
N.punctiforme 3 H.byssoidea 3			ATRKILDL ATRKILDL				SINPFPTL	(RRDSFIVD (RRDSFIVD
3 C.elegans 3	A.VHG	<mark>C</mark> VTVDQACA	NIKRTIRA	ND.R.S	NIE	v y k <mark>g</mark> a a k s <mark>i</mark>	LSLP.KDDTVS	D F F G I D G I G
D.melanogaster 60 H.contortus 33				CK.R.T			IPSL. EDEKK IRKPFVMNI	FHGRDGFG FFGIDGVG
A.aegypti 63	. C.TH <mark>G</mark>	NTDLENSVT	NAARILEG	LG.R.R	DVE	P L Y R G A S E R <mark>I</mark>	ITPAPRRDVNR	<b>(FW</b> GVDGFG
C.gigas 30 N.vectensis 30		NTEVDHVCR NTSLDQVCI		CD.H.I CQ.R.T			VDHGK.HAKI	YHGLDGLC HFHGYDGLG
L.anatina 3	5 C.VNG	NTMLDQVYI	NTLRVLKT	CD.R.M	DIE	• V Y K <mark>G</mark> T Y K S <mark>I</mark>	IGHD.LSSEGQ1	RYHGSDGLG
A.darlingi 3 P.caudatus 8				ID.R.T		? V Y R G A S E A I ? V Y R G S A V S I	LGEIPOKSI	FHGMNGFG YHMLDGLG
P.formosa 34		NTLLENVLT	NTLRVLKV	CN.R.L	DIE	? V Y E G F S K P <mark>I</mark>	LDR. KQ. HASI	Y Q G K D G L G
O.niloticus 93 C.variegatus 34		N T S VE N V C K N T S L D N V L K		CS.H.L CN.R.L		PVFKGAAMPI PVYKGFSRPI	LGDS.GI.SSGI LASKQ.HASI	
L.polyphemus 4 O.mykiss 10				CG.K.H			VSNELLGSI	
O.mykiss 103 A.mississippiensis 33				CN.R.L			LGNVI.SAGI LGASA.KND	
								~
								$\rightarrow$
			<b>6</b> 0			α10	63-α3	-
C.elegans	٤.		<u>α9</u> 2000-2000	٥٩	. ★Q	α10 000000	β3-α3	
1 yeiK 208	.AGGP.	.AGELFSDI	MNFTLKTQ	FENYGLA	GGPVHD		β3-α3	▶
-	.AGGP. .IGNP. .LNRT.	.AGELFSDI .VSTIVAEL .GKML	OOOOOOOO MNFTLKTQ LDFFLEYH HALFSHYR	FENYGLA KDEKWGFV SGSMQS	GGPVHD GAPLHD GLRMHD	eeeee	β3-α3	<b>→</b>
1 yeiK 208 YbeK 219 yaaF 207 L.major_G1 210	.AGGP. .IGNP. .LNRT. .VGTK.	.AGELFSDI .VSTIVAEL .GKML .PAAFMLQI	MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY	FENYGLA KDEKWGFV SGSMQS EKEHD.T	G P V H D G A P L H D G L R M H D Y G K V H D	QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY	β3-α3	>
1 yeiK 208 YbeK 219 yaaF 207 L.major_G1 210 L.donovani 210 P.patens 226	. AGGP. . IGNP. . LNRT. . VGTK. . VGTK. . SDSK.	. AGELFSDI . VSTIVAEL .GKML .PAAFMLQI .PAAFMLQI .FGKYLYAA	MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY SHFYATYH	FENYGLA KDEKWGFV SGSMQS EKEHD.T EKERN.T REAYDID	GGPVHD GAPLHD GLRMHD YGKVHD YATVHD AIYLHD	QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY PCAVAY PCAVAY PATMVA	β3-α3	→
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208	. AGGP. . IGNP. . LNRT. . VGTK. . VGTK. . SDSK. . SQGK.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV	MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY SHFYATYH CKFYLDWH	FDEKWGFV SGSMQS EKEHD.T EEARD.T REAYDID TESYGAP	GGPVHD GAPLHD GLRMHD YGKVHD YATVHD AIYLHD	QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY PCAVAY PCAVAY PCAVAY PCAYAA	β3-α3	>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210	. AGGP. . IGNP. . UNRT. . VGTK. . VGTK. . SDSK. . SQGK. . KNNSK. . VDTN.	. AGELFSDI . VSTIVAEL . G KML . PAAFMLQI . PAAFMLQI . FGKYLYAA . YAQFLCDV . LRELFLEL . PARFMLEI	0000000 MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY SHFYATYH CKFYLDWH FQFFAHTY MDYYTKIY	F ENYGLA K DEKWGFV S GSMQS E KEHD.T E KERN.T R EAYDID T ESYGAP K DMQGFES Q SNRYMA	GGPVHD GAPLHD GLRMHD YGKVHD AIYLHD AIYLHD VIFLHD GPPIHD AAAVHD	QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY PCAVAY PATMVA PVSFAA PVSIMP PVALMP PCAVAY	β3-α3	
1 yeiK         208           YbeK         219           yaaF         207           .major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259	. AGGP. . IGNP. . LNRT. . VGTK. . VGTK. . SDSK. . SQGK. . KNNSK. . VDTN. . TTITT.	AGELFSDI VSTIVAEL GKML PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI	0000000 MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY SHFYATYH CKFYLDWH FQFFAHTY MDYYTKIY LTFFAKTY	F ENYGLA K DEKWGFV S GSMQS E KEHD.T E KERN.T R EAYDID T ESYGAP K DMQGFES Q SNRYMA	GGPVHD GAPUHD GLRMHD YGKVHD YATVHD AIYLHD GPPIHD AAAVHD GPPAHD	QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY PCAVAY PATMVA PVSFAA PVSFAA PVSFAA PVALMP PCAVAY PCAVAY	β3-α3	
1 yeiK         208           YbeK         219           yaaF         207           1.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.rimosus         209	. AGGP. .IGNP. .LNRT. .VGTK. .SDSK. .SQGK. KNNSK. .VDTN. TTITT. .GSSP. .VGTK.	AGELFSDI VSTIVAEL GKML PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI YMRVIEDA FARFVLEL	MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY CKFYLDWH CKFYLDWH MDYYTKIY LTFFAKTY LRFYFESH LDFFRDAY	F ENYGLA K DEKWGFV S GSMQS E KEHD.T E KERN.T R EAYDID T ESYGAP K DMQGFES Q SNRYMA A DVFGLTQ E ARGHGY R ENQGFE	GGPVHD GAPLHD GLRMHD YGKVHD AIYLHD VIFLHD GPPIHD GPPAHD GPPAHD LAYMHD	QQQQQQ ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PYSIMP PVAIMP PVAIMP PLAVAA PLAVAY PLAVAY	β3-α3	
1 yeiK         208           YbeK         219           yaaF         207           J.major_G1         210           L.donovani         210           F.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.rimosus         209           A.bicolorata         209           A.bicalorata         210	. AGGP. . IGNP. . VGTK. . VGTK. . SQGK. . SQGK. . SQGK. . TIITT. . GSSP. . VGTK. . VGTA. . VNTN.	AGELFSDI VSTIVAEL GKML PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL VRKLYSQI VRKVIEDA PARFVLEL PSRFVGEL VSSFVLQL	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY SHFYATYH CKFYLDWH MDYYTKIY LTFFAKTY LDFYFAKTY LDFFFASTY LEFFASTY LEFFASTY	FENYGLA KDEKWGFV SGSMQS EKEHD.T EKERN.T REAYDID TESYGAP KDMQGFES QSNRYMA ADVFGLTQ EARGHGY RENQGFE LETQGFT	G G P V H D G A P L H D G L R M H D Y G K V H D A I Y L H D V I F L H D V I F L H D G P P I H D G P P A H D L A Y M H D Y P P V H D F A A V H D	QQQQQQ ATCIGY PCTIAW PCTIAW PCAVAY PCAVAY PATMVA PVSIMP PVALMP PVALMP PLAVAY PLAVAY PCAVAY PCAVAY	β3-α3	
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.rimosus         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209	. AGGP. . IGNP. . VGTK. . VGTK. . SDSK. . SDSK. . SDSK. . SDSK. . SDSK. . SDSK. . VGTK. . VGTA. . VGTA.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVLEL PSRFVGEL VSSFVLQL PAQFVLEL	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY CKFYLDWH FQFFAHTY LTFFAKTY LTFFAKTY LCFFRDAY LEFFASTY FEFYNEMY LEFFGTMY	F ENYGLA K DEKWGFU S GSMQS E KEHD.T E KEHD.T E EAYDID T ESYGAD T ESYGAD V DMQGFES Q SNRYMA A DVFGLTQ E ARGHGY R ENQGFE L ETQGFT K KAG.LT K KAG.LT		QQQQQQ ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PATMVA PVALMP PCAVAY PLAVAA PLAAAV PLAAAV PCAVAY PCAVAY PCAVAY	β3-α3	
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           S.rimosus         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           2 T.vivax         231	AGGP. IGNP. VGTK. VGTK. SDSK. SQGK. VDTN. TTITT. GSSP. VGTK. VGTA. VGTA	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLE PARFMLEI VRKLYSQI VMRVIEDA PARFVLEL PSRFVGEL VSSFVLQL VSSFVLQI NFLL NFLL	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY LTFFAKTY LTFFAKTY LTFFFAKTY LEFFFASTY LEFFGTMY SILVGTMW	F ENYGLA KDEKWGFV S GSMQS EKEHD.T EKERN.T RESYGAP KDMQGFES QSNRYMA ADVFGLTQ EARGHGY RENQGFE LETQGFT KKKG.LT KSAQGFD AMCTHCELLRDGD	GGP VH         D           GAPLH         D           GLRMH         D           YGKVH         D           YATVH         D           AIYLH         D           GOPPH         H           GOPPH         H           GPPH         H           GPPH         H           GPPH         H           HPW         D           HPPVH         D           HPPVH         D           YPVH         D           YPVH         D           YPVH         D           YYAW         D           AYYAW         D	QQQQQQ ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PCAVAY PVSIMP PVSIMP PVAIMP PLAAAV PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY	β3-α3	
1 yeiK         208           YbeK         219           yaaF         207           L.major_Gl         210           L.donovani         210           L.donovani         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.rimosus         209           A.deanei_Gl         210           M.morganii         209           2 T.vivax         231	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT. GSSP. VGTA. VGTA. VGTA.	AGELFSDI VSTIVAEL PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVGEL PSRFVGEL PSSFVGEL PAQFVLEL PAQFVLEL PAQFVLEL CAQYLL	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LSHFYATYH CKFYLDWH FQFFAHTY LTFFAKTY LTFFAKTY LDFFRDAY LEFFASTY FEFYNEMY SILEFFGTMY SQMVGTMW SQFVGATW	F ENYGLA K DEKMGFU S GSMQS E KEHD. T E KERN. T R EAYDID T ESYGAP K DMQGFES Q SNRYMA A DVFGLTQ E ARGHGY R ENQGFE L ETQGFT K KKG. LT K SAQGFD AMCTHCELLRDGU	GGP VE         D           GGP VE         D           GGLRME         D           YGKVE         D           YATVE         D           AIYLE         D           GEP VE         D           GEP VE         D           GEP VE         D           GEP VE         D           YFFVE         D           YPFVE         D           YPYE         D           YFYE         D           GYAW         D           GYAW         D           GYAW         D           GYAW         D           GYAW         D	QQQQQQ ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PATMVA PVALMP PCAVAY PLAVAA PLAAAV PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY	β3-α3	>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           S.musiva         268           A.bicolorata         209           A.bicolorata         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           2 T.vivax         231           T.brucei         231           C.acanthocephali         233           A.deanei_G2         233	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSSP. VGTA. VGTA. VGTA.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVLEL PSRFVGEL PAQFVLEL PAQFVLEL NFLL EYLL EYLL EFLL EFLL	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LTFFAHTY NDYYTKIY LTFFFAHTY LTFFFAKTY LDFFRDAY LEFFGTMY SILVGTMW SQFVGATW SQFVGSAW	F ENYGLA K DEKWGFV S KEHD.T E KEHD.T E KEHD.T E EAYDID T ESYGAP K DMQGFES Q SNRYMA A DVFGLTQ E ARGHGY R ENQGFE L ETQGFT K SAQGFD AMSTHEEILRDGD AMSTHEEILRDGD ASCTHYELMRPGD ASCTHHELMRPGD	GGP VE         D           GGP VE         D           GGLRMF         D           YGKVHD         YATVE           YATVE         D           VIFLE         D           GPPNE         D           YPPVE         D           YPPVE         D           YPPVE         D           YPPVE         D           YPYPVE         D           GYPX         D           GYPX         D           GYPX         D           GYPX         D           GYPX         D	QQQQQQ ATCIGY PCTIAW PCTIAW PCAVAY PCAVAY PCAVAY PVALMP PVALMP PVALMP PLAAAV PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY	β3-α3	>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           L.donovani         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.rimosus         209           A.deanei_G1         210           M.morganii         209           A.deanei_G1         210           M.morganii         209           A.deanei_G2         234           L.major_G2         233           S.oncopelti         234           B.saltans         270	. AGGP. . IGNP. . VGTK. . VGTK. . SQGK. KNNSK. . VUTN. . TTITT. . GSSP. . VGTA. . VGTA. . VGTA.	AGELFSDI VSTIVAEL PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL VRKLYSQI VRKVISQI VRKVIEDA PARFVLEI PSRFVGEL VSSFVLQL PSSFVLQL SSFVLQL 	QOOOQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY MDYYTKIY LTFFAKTY LTFFFAKTY LEFFASTY LEFFASTY LEFFGTMY SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW	F ENYGLA K DEKWGFV S GSMQS E KEHD.T E KERN.T R EAYDID T ESYGAP K DMQGFES Q ARGHGY R DVFGLTQ E ARGHGY R ENQGFE L ENQGFE L ENQGFE L ENQGFD AMCTHCELLRDGD ASCTHFELIRPGD ASCTHFELIRPGD ASCTHFELIRPGD ASCTHFELIRPD	GGP VE         D           GGP VE         D           GLRME         D           YGKVE         D           YATVE         D           AIYLE         D           GPPAE         D           GPPAE         D           GPPAE         D           GPPAE         D           GPPAE         D           YPPVE         D           FAAVE         D           GYPAE         D           GYPAE <th>QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY PCAVAY PATMVA PVALMP PVALMP PLAVAY PLAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAH</th> <th>β3-α3</th> <th><b>&gt;</b></th>	QQQQQQ ATCIGY PCTIAW LCAIAW PCAVAY PCAVAY PATMVA PVALMP PVALMP PLAVAY PLAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAH	β3-α3	<b>&gt;</b>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.musiva         209           A.bicolorata         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           A.deanei_G1         213           C.acanthocephali         233           A.deanei_G2         233           S.oncopelti         234           B.saltans         270	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. SQGK. VDTN. TTITT GSSP. VGTA. VGTA. VGTA.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL VRKLYSQI VMRVIEDA PARFVGEL VSSFVLQL PAQFVLEL PAQFVLEL PAQFVLEL NFLL EFLL EFLL EFLL EFLL EFVG	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LTFFAHTY LTFFAKTY LTFFAKTY LTFFAKTY LEFFATY LEFFGTMY SQLVGTMW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SQFVGSAW	F ENYGLA K DEKWGFV S KEHD.T E KEHD.T E KEHD.T E EAYDID T ESYGAP K DMQGFES Q SNRYMA A DVFGLTQ E ARGHGY R ENQGFE L ENQGFE L ENQGFL K SAQGFD AMSTHEELIRPGD ASCTHFELIRPGD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD AMCTHELIRPDD	GGP VE         D           GGP VE         D           GGLRMF         D           YGKVHD         YATVE           YATVE         D           AIYLE         D           GPPNE         D           GPPNE         D           GPPNE         D           GPYNE         D           FFANVE         D           GYAND         GYAND	QQQQQQ ATCIGY PCTIAW PCTIAW PCAVAY PCAVAY PCAVAY PVALMP PVALMP PVALMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAH VLTAAH	β3-α3	>
1 yeiK 208 YbeK 219 yaaF 207 L.major_G1 210 L.donovani 2100 P.patens 226 Z.mays 208 S.cerevisiae 259 C.fasciculata 2100 S.musiva 266 M.tuberculosis 2100 M.tuberculosis 2100 A.bicolorata 209 A.bicolorata 209 A.bicolorata 209 A.bicolorata 209 A.deanei_G1 2100 M.morganii 209 Z T.vivax 231 T.brucei 233 A.deanei_G2 233 S.oncopelti 234 B.saltans 2700 S.warneri 218 F.muscicola 222 S.radiotolerans 218	AGGP. IGNP. VGTK. VGTK. SDSK. SQGK. KNNSK. VDTN. TTITT. GSSP. VGTK. VGTA. VGTA	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVLEL VSSFVGEL VSSFVLQI PAQFVLEL NFLL SYLL EFLL KYLL QFLL QFLL SLI EFVG HYPI BLI BLI BYR	Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LTFFATY MDYYTKIY LTFFAKTY LLFFFAKTY LEFFASTY LEFFASTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW	F ENYGLA K DEKWGFV S (SMQS E KEHD.T E KEHD.T E EAYDID T ESYGAP K DMQGFES Q SNRYMA A DVFGLTQ E ARGHGY R ENQGFE L ETQGFT K KKG.LT K SAQGFD AMCTHCELLRDGD ASCTHVELMRPGD ASCTHFELIRPGD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFELIRPDD ASCTHFFINS ALVIP Q ALTIDTIPSY.QY	GGP VIE         D           GGP VIE         D           GGLRMH         D           Y GKVH         D           Y ATVED         D           VIFLH         D           QPPAH         D           LAYME         D           GPPAH         D           YPVED         HPVED           GYPXH         D           GYPXH         D           GYPXH         D           GYYAND         GYYAND           GYYAND         CYYAND           GYYAND         CYYAND           GYYAND         CYYAND           GYYAND         CYYAND           GYYAND         CYYAND           GYYAND         D           GYYAND         D           TYFNND         D	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVALMP PVALMP PVALMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLTAAY VLTAAH VVLTAAH VVLTAAY VLTAAY VLTAAY ILATSY	β3-α3	>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           S.mosiva         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           2 T.vivax         231           T.brucei         231           C.acathcoephali         233           A.deanei_G2         234           L.major_G2         233           S.oncopelti         234           B.saltans         270           S.warneri         218	AGGP. IGNP. VGTK. VGTK. SDSK. SQGK. VDTN. TTITT. GSSP. VGTK. VGTA. VGTA.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI PGKYLYAA YAQFLCDV LRELFLE PARFMLEI VRKLYSQI VRKLYSQI PARFVLEL VSSFVGEL VSSFVLQL VSSFVLQL VSSFVLQL SYL	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY MDYYTKIY LTFFAKTY LTFFFAKTY LEFFASTY LEFFASTY LEFFGTMY SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFVGSAW SQFVGSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQFUSAW SQLAGCY SDLAGCY SDLAGCY	F ENYGLA         K DEKWGFV         S CSMQS         E KEHD.T         F ESYGAP         M DNYGLTQ         YR ENQGFES         Q SNRYMA         A DVFGLTQ         E ARGHGY         R ENQGFES         Q SNRYMA         A DVFGLTQ         E ARGHGY         R ENQGFE         L ETQGFT         K SAQGFD         AMCTHCELLRDGD         ASCTHHELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELTRPGD         ASCTHFELTRPGD         ASCTHFELTRPGD         AMCTHLELGGYGKK         ALVIP         Q         ALTIDTIPSY.QY	GGP V VE         D           GGP VE         D           GGP VE         D           GGP VE         D           Y GKVE         D           Y GKVE         D           VIF         D           VIF         D           QFP         F           GP         P           GP         P           GP         P           GP         P           GP         P           GY         P           D         Y           D         Y           D         Y <th>QQQQQQ ATCIGY ATCIGY PCTIAW PCTIAW PCAVAY PCAVAY PATMVA PVSIMP PVALMP PLAVAY PLAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAY VLTAY VLATSY</th> <th>β3-α3</th> <th>&gt;</th>	QQQQQQ ATCIGY ATCIGY PCTIAW PCTIAW PCAVAY PCAVAY PATMVA PVSIMP PVALMP PLAVAY PLAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAY VLTAY VLATSY	β3-α3	>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           M.morganii         209           A.deanei_G1         210           M.morganii         209           2.r.vivax         231           C.acanthocephali         233           A.deanei_G2         233           S.oncopelti         234           B.saltans         270           S.warneri         218           F.muscicola         222           S.radiotolerans         218           T.campylonemoides         222           C.watsonii         221	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. SQGK. VDTN. TTITT GSSP. VGTA. VGTA. VGTA.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIVEDA PARFVGEL PSRFVGEL SSRFVGEL SAGY VSFVLQI SAGY VSFVLQI SAGY VSFVLQI SAGY VSFVLQI SAGY SAGY SAGY SAGY SAGY SAGY SAGY SAGY	Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY MDYYTKIY LTFFAKTY LTFFAKTY LTFFFAKTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDFLGSSW IDFLGVSY SDLAGQCY SDLAGQCY SDLAGQCY	F ENYGLA         K DEKWGFV         S KEHD.T         E KEHD.T         E KEHD.T         E KEHD.T         E KEHD.T         E KEN.T         B EAYDID         J ESYGAP         K DMQGFES         Q SNRYMA         A DVFGLTQ         E ENQGFE         Q SNRYMA         A DVFGLTQ         E ENQGFE         L ETQGFT         K SAQGFD         AMSTHEELIRDGD         ASCTHVELMRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPDD         AMCTHLELGGYGK         AAVPPLTHFFTNS         ALVIP	GGP VE         D           GGP VE         D           GGLRMH         D           YAKVE         D           YPYE         D           YPYE         D           YYAK         D           GYAK         D           CYAK         D           TYFK         D           DYFK         D           DYFK         D           DYFK         D           DYFK         D	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVALMP PVALMP PVALMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY	β3-α3	<b>&gt;</b>
1 yeiK 208 YbeK 219 yaaF 207 L.major_G1 210 L.donovani 210 P.patens 226 Z.mays 208 S.cerevisiae 259 C.fasciculata 210 S.musiva 268 M.tuberculosis 210 S.rimosus 209 A.bicolorata 209 A.bicolorata 209 A.bicolorata 209 A.bicolorata 209 A.bicolorata 209 Z.T.vivax 231 T.brucei 233 G.acanthocephali 233 S.oncopelti 234 L.major_G2 233 S.oncopelti 234 L.major_G2 233 S.oncopelti 225 C.swarneri 218 F.muscicola 222 C.watsonii 221 M.repens 222 N.punctiforme 222 N.punctiforme 222	AGGP. IGNP. VGTK. VGTK. SDSK. SQGK. VDTN. TTITT. GSSP. VGTK. VGTA. VGTA.	. AGELFSDI USTIVAEL GKML PAAFMLQI PAAFMLQI PAAFMLQI PARFMLQI PARFMLQI VAQFLCDV LRELFLE PARFVLEI VRKLYSQI VRKLYSQI VRVIEDA PARFVLEL VSSFVGEL VSSFVGEL USSFVGEL SEFL SEFL SEFL SEFL SEFL SEFL SEFL SE	Q Q Q Q Q Q Q MNF TLKTQ LDFFLEYH HALFSHYR LDFYIKVY SHFYATYH CKFYLDWH MDYYTKIY LTFFAKTY LTFFFAKTY LTFFFAKTY LEFFASTY LEFFASTY LEFFGIMY SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY	FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         FESYGAP         MDMQGFES         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFES         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         LETQGFT         KSAQGFD         AMSTHEEILRDGD         ASCTHVELMRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ALVIP         Q         ALVIP         Q         ALVIP         Q         ALVIP         Q         ALVIP       Q         ALVIP       Q         ALVIP       Q         ALVIP       Q         ALVIP       Q	GGP VIE         D           GGP VIE         D           GGLRMH         D           YAKVE         D           YAVE         D           GP YAK         D           YP YE         D           YP YE         D           YYAVE         D           GYYAVE         D           DYYE         D           DYYE         D           DYYE         D           DYYE         D	QQQQQ ATCIGY ATCIGY PCTIAW PCTIAW PCAVAY PCAVAY PPCAVAY PPCAVAY PPLAAAV PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLTAAY VLTAAY VLTAY VLTAY VLATAY VLATAY VLATAY VLATAY	β3-α3	>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           L.donovani         210           P.patens         226           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           S.musiva         209           A.deanei_G1         210           M.morganii         209           Z.acanthocephali         233           S.oncopelti         233           S.oncopelti         234           B.saltans         270           S.warneri         218           T.campylonemoides         222           C.watsonii         211           M.repens         222           N.punctiforme         222           M.puscidea         223           C.elegans         223 <th>AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSSP. VGTA. VGTA. VGTA.</th> <th>. AGELFSDI . VSTIVAEL . G KML . PAAFMLQI . PAAFMLQI . FGKYLYAA . YAQFLCDV . LRELFLEL . VRKLYSQI . VRKLYSQI . VRKLYSQI . VRKLYSQI . VRKLYSQI . PARFVGEL . PARFVGEL </th> <th>Q Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY LTFFAKTY LTFFAKTY LTFFFAKTY LTFFFAKTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGSAW QFVGSAW SQFVGSAW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY</th> <th>FENYGLA         KDEKWGFV         SKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERN.T         REAYDID         JSYGAP         KDWGGFES         QSNRYMA         ADVFGLTO         EKEG.LT         KSAQGFD         AMSTHEELIRDGD         AMSTHEELIRDGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPDD         AMCTHLELGGYGK         AAVPPLTHFFTNS         ALVIPQ         ALTIDTIPSY.QY         ALVIPQ         ALVIPQ</th> <th>GGP VE         D           GGP VE         D           GGLRME         D           YATVE         D           YATVE         D           VIFLE         D           QPVE         D           VIFLE         D           QPVE         D           QPVE         D           QPVE         D           YPVE         D           YPVE         D           YPYE         D           GYAW         D           GYAW         D           GYAW         D           CYAW         D           QYAW         D           QYAW         D           QYAW         D           QYAW         D           DYYE         D           DYYE         D           DYYE         D           DYYE         D           DYYE         D</th> <th>QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVAIMP PVAIMP PVAIMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAY VLTAAY VLTAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY ELAVAT</th> <th>β3-α3</th> <th><b>&gt;</b></th>	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSSP. VGTA. VGTA. VGTA.	. AGELFSDI . VSTIVAEL . G KML . PAAFMLQI . PAAFMLQI . FGKYLYAA . YAQFLCDV . LRELFLEL . VRKLYSQI . VRKLYSQI . VRKLYSQI . VRKLYSQI . VRKLYSQI . PARFVGEL . PARFVGEL 	Q Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY LTFFAKTY LTFFAKTY LTFFFAKTY LTFFFAKTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGSAW QFVGSAW SQFVGSAW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY	FENYGLA         KDEKWGFV         SKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERN.T         REAYDID         JSYGAP         KDWGGFES         QSNRYMA         ADVFGLTO         EKEG.LT         KSAQGFD         AMSTHEELIRDGD         AMSTHEELIRDGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPDD         AMCTHLELGGYGK         AAVPPLTHFFTNS         ALVIPQ         ALTIDTIPSY.QY         ALVIPQ	GGP VE         D           GGP VE         D           GGLRME         D           YATVE         D           YATVE         D           VIFLE         D           QPVE         D           VIFLE         D           QPVE         D           QPVE         D           QPVE         D           YPVE         D           YPVE         D           YPYE         D           GYAW         D           GYAW         D           GYAW         D           CYAW         D           QYAW         D           QYAW         D           QYAW         D           QYAW         D           DYYE         D           DYYE         D           DYYE         D           DYYE         D           DYYE         D	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVAIMP PVAIMP PVAIMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAY VLTAAY VLTAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY ELAVAT	β3-α3	<b>&gt;</b>
1 yeik         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           J.donovani         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           M.tuberculosis         210           M.deanei_G1         210           M.morganii         209           A.deanei_G2         233           A.deanei_G2         233           S.oncopelti         234           L.major_G2         233           S.oncopelti         218           F.muscicola         212           S.warneri         218           T.campylonemoides         222           C.watsonii         211           M.repens         222           N.punctiforme         222           J.melanogaster         243           H.contortus         220	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSSP. VGTK. VGTA. VGTA. VGTA. KGTA. KYGTP. AARAKE KLDTP.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIVEDA PARFVGEL VSSFVGEL VSSFVGEL .VSFVLQI VSSFVLQI 	Q Q Q Q Q Q Q MNF TLKT Q LDF FLEYH HALFSHYR LDF YTKVY LDF YTKVY LDF YTKVY LDF YTKVY LTFFAKTY LTFFAKTY LTFFAKTY LTFFFAKTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY TSIGRVKC NQVEAAQW	FENYGLA         KDEKWGFV         SCSMQS         EKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERN.T         REAYDID         TESYGAP         KDMQGFES         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         LETQGFT         KKKG.LT         K	GGP VE         D           YATVE         D           VIFLE         D           VIFLE         D           VIFLE         D           QPPVE         D           QPVE         D           QPVE         D           GYPA         D           DYFN         D           DYFN         D           DYFN         D	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PPCAVAY PPATMVA PVSIMP PVALMP PVALMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY VLATAY	β3-α3	<b>&gt;</b>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           A.deanei_G2         233           S.oncopelti         233           S.oncopelti         234           J.saltans         270           S.watneri         218           F.muscicola         222           S.radiotolerans         218           T.campylonemoides         222           N.punctiforme         222           N.punctiforme         222           J.melanogaster         243           H.contortus         240	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSSP. VGTA. VGTA. VGTA. VGTA. VGTA. KGTA. AGSP. AGSP. AGSP. AGGP.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VRKLYSQI VRKLYSQI PARFVGEL PARFVGEL PARFVGEL PAQFVLEL PAQFVLEL PAQFVLEL KYLL QYLL QYLL QYLL QYLL QFLL QYLL QYPI 	Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY MDYYTKIY LTFFAHTY LTFFFAHTY LLFFFFAHTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SDLAGQCY SDLAGCY SDLAGCY SDLAGQCY SDLAGCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGV SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGCY SDLAGQCY SDLAGCY SDLAGQCY SDLAGQCY SDLAGCY SDLAGCY SDCY SDLAGCY	FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         EKEHD.T         EKERN.T         REAYDID         TSYGAP         KDWGGFES         QSNRYMA         ADVFGLTQ         ERGFES         QSNRYMA         ADVFGLTQ         ERGFE         QSNRYMA         ADVFGLTQ         ERGGFE         QSARYMA         ADVFGLTQ         EREQGFE         LSAQGFD         AMSTHEELIRDGD         AMSTHEELIRPGD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ALVIPQ         SANGR         ANIS	GGP VE         D           GGP VE         D           GGP VE         D           GGP VE         D           YGKVE         D           YATVE         D           AIYLE         D           GPP VE         D           GPP VE         D           GPP VE         D           GPP VE         D           GYAW         D           CYAW         D           CYAW         D           DYFE         D           DYFE         D           DYFE         D           DYFE         D           DYFE         D           QYFE         D           QYFE         D           QYFE         D           QYFE         D           QYFE         D<	QQQQQ ATCIGY ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVSIMP PVSIMP PVAIMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLATAY VLATAY	β3-α3	<b>&gt;</b>
1 yeiK         208           YbeK         219           yaaF         207           Jumajor_G1         210           L.donovani         210           J.donovani         210           P.patens         226           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           M.morganii         209           A.deanei_G1         210           M.morganii         209           2.r.vivax         231           C.acanthocephali         233           A.deanei_G2         233           S.oncopelti         234           J.major_G2         233           S.varneri         218           F.muscicola         222           S.warneri         218           T.campylonemoides         222           C.watsonii         211           M.repens         222           M.punctiforme         222           J.melanogaster         243           J.aegypti         242     <	. AGGP. . IGNP. . UGTK. . VGTK. . SQGK. KNNSK. . SQGK. . VDTN. TTITTT. . GSSP. . VGTA. . VGTA. . VGTA. . VGTA. 	AGELFSDI VSTIVAEL G. KML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVGEL VSSFVGEL VSSFVGEL VSSFVGEL SAGY VSFL VSSFVGEL SAGY VSFL VSSFVGEL SAGY VSFV SG VSF VGEL SAGY SG SG SG SG SG SG SG SG SG SG SG SG SG	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY MDYYTKIY LTFFAKTY LTFFAKTY LTFFFAKTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY TSIGRVKC NQVEENIY LRTSLDKH	FENYGLA         KDEKWGFV         SKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERN.T         REXYGAP         KDMQGFES         QSNRYMA         ADVFGLTQ         ERGHGY         RENQGFE         QSNRYMA         ADVFGLTQ         ERGGHGY         RSAQGFD         AMSTHEELIRDGD         AMSTHEELIRDGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPDD         AMCTHLELGGYGK         AAVPPLTHFFINS         ALVIPQ         ALVIPQ         ALVIPQ         ALVIPQ         ALVIPQ         ALVIPQ         ALVIPQ         S	GGP VIE         D           GGP VIE         D           GGP VIE         D           GGP VIE         D           YATVE         D           GYAT         D           DYYAT         D           DYYF         D           QYYF <t< th=""><th>QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVALMP PVALMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY</th><th>β3-α3</th><th><b>&gt;</b></th></t<>	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVALMP PVALMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY	β3-α3	<b>&gt;</b>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           L.donovani         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           A.bicolorata         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           A.deanei_G1         210           M.morganii         209           A.deanei_G2         233           C.acanthocephali         233           A.deanei_G2         234           L.major_G2         233           S.nocopelti         234           B.saltans         270           S.radiotolerans         218           T.cmpylonemoides         222           N.punctiforme         222           N.punctiforme         222           M.centus         220	AGGP. IGNP. VGTK. SQGK. KNNSK. SQGK. KNNSK. VGTA. VGTA. VGTA. VGTA. VGTA. VGTA. VGTA. KGTA. SQGP. KGTA. SQGSP. VGTA. SQSP. SQSP. SQSP. SQSP. SQSP. SQSS. SQSSN. SQSSN. SQSSN. SQC	. AGELFSDI . VSTIVAEL . G KMI . PAAFMLQI . PAAFMLQI . FGKYLYAA . YAQFLCDV . LRELFLEL . VRKLYSQI . VRKLYSQI 	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY SHFYATYH CKFYLDWH MDYYTKIY LTFFAKTY LTFFAKTY LTFFAKTY LEFFASTY FEFYNEMY SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY TSIGRVKC SDLAGQCY TSIGRVKC TSIGNGVK NQVEAAQW	FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         EKEHD.T         REAYDID         TEAYDID         TEAYDID         TEAYDID         TEAYDID         TEAYDID         CSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         QSNRYMA         ADVFGLTQ         ADVFGLTQ         ADVFGLTQ         ASAQGFD         AMCTHCELLRDGD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         AMCTHLELGGYGK         ALVIPQ         S	GGP VIE         D           GGP VIE         D           GGP RM         D           YGK VIE         D           YATVE         D           AIYLE         D           GOP PIE         D           GOP PAE         D           YPVE         D           YPYVE         D           YPYVE         D           YPYVE         D           GYAW         D           CYAW         D           DYYEW         D           QYYEW	QQQQQ ATCIGY ATCIGY LCAIAW PCTIAW PCAVAY PCAVAY PPCAVAY PPCAVAY PPLAVAA PPLAVAA PPLAVAA PPLAVAA PPLAVAA PPLAVAA PPCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAY VLATAY	β3-α3	<b>&gt;</b>
1 yeik         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           S.musiva         209           A.deanei_G1         210           M.morganii         209           2.tocacathocephali         233           A.deanei_G2         233           S.oncopelti         234           B.saltans         270           S.warneri         218           T.campylonemoides         222           C.watsonii         211           M.repens         222           N.punctiforme         223           C.elegans         223           D.melanogaster         243           M.aegypti         242           C.gigas         211 <th>AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TIITT GSSP. VGTA. VGTA. VGTA. VGTA. KGTA. KGTA. KGTA. SQGK. KGTA. SQGK. KGTA. SQGK.</th> <th>AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL VRKLYSQI VRKLYSQI VRKLYSQI VRKLYSQI PARFVGEL PSRFVGEL PARFVGEL VSSFVGU PAQFVLEL KYLL QYL</th> <th>Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY MDYYTKIY LTFFAKTY LTFFAKTY LTFFFAKTY LFFFASTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SDLAGQCY SCLAGA SCY SDLAGCY SCY SDLAGCY SCY SDLAGCY SCY SDLAGCY SCY SDLAGCY SCY SCY SDLAGCY SCY SDLAGCY SCY SCY SDLAGCY SCY SCY SDLAGCY SCY SCY SCY SCY SCY SCY SCY SCY SCY S</th> <th>FENYGLA           KDEKWGFV           SGSMQS           EKEHD.T           EKEHD.T           EKEHD.T           EKEHD.T           EKERN.T           EKERN.T           EKERN.T           EEAYDID           JSYGAP           KDWFGLTO           ESNRYMA           ADVFGLTO           ESARYMA           ADVFGLTO           ERAGGFES           QSNRYMA           ADVFGLTO           ERAGGFES           QSARYMA           ASAQGFD           AMCTHCELLRDGD           AMSTHEELIRPDD           ASCTHFELIRPDD           ASCTHFELIRPDD           ASCTHFELIRPDD           ASCTHFELIRPDD           ALVIPQ           &lt;</th> <th>GGP VE         D           GGP VE         D           GGP VE         D           GGP VE         D           GGP VE         D           YATVE         D           AIYLE         D           GP VE         D           GP YE         D           GP YE         D           GP YE         D           GY YE         D           GY YE         D           GY YAW         D           CY YAW         D           CY YAW         D           DY YF         D           DY YF         D           DY YF         D           DY YF         D           QY SYC         D           QY GYC         D           QY GYC         D           QY SYC         D           QY SYC         D           QY SYC         D</th> <th>QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVAIMP PVAIMP PVAIMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLATAY</th> <th>β3-α3</th> <th><b>→</b></th>	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TIITT GSSP. VGTA. VGTA. VGTA. VGTA. KGTA. KGTA. KGTA. SQGK. KGTA. SQGK. KGTA. SQGK.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL VRKLYSQI VRKLYSQI VRKLYSQI VRKLYSQI PARFVGEL PSRFVGEL PARFVGEL VSSFVGU PAQFVLEL KYLL QYL	Q Q Q Q Q Q Q MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY MDYYTKIY LTFFAKTY LTFFAKTY LTFFFAKTY LFFFASTY LEFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SDLAGQCY SCLAGA SCY SDLAGCY SCY SDLAGCY SCY SDLAGCY SCY SDLAGCY SCY SDLAGCY SCY SCY SDLAGCY SCY SDLAGCY SCY SCY SDLAGCY SCY SCY SDLAGCY SCY SCY SCY SCY SCY SCY SCY SCY SCY S	FENYGLA           KDEKWGFV           SGSMQS           EKEHD.T           EKEHD.T           EKEHD.T           EKEHD.T           EKERN.T           EKERN.T           EKERN.T           EEAYDID           JSYGAP           KDWFGLTO           ESNRYMA           ADVFGLTO           ESARYMA           ADVFGLTO           ERAGGFES           QSNRYMA           ADVFGLTO           ERAGGFES           QSARYMA           ASAQGFD           AMCTHCELLRDGD           AMSTHEELIRPDD           ASCTHFELIRPDD           ASCTHFELIRPDD           ASCTHFELIRPDD           ASCTHFELIRPDD           ALVIPQ           <	GGP VE         D           YATVE         D           AIYLE         D           GP VE         D           GP YE         D           GP YE         D           GP YE         D           GY YE         D           GY YE         D           GY YAW         D           CY YAW         D           CY YAW         D           DY YF         D           DY YF         D           DY YF         D           DY YF         D           QY SYC         D           QY GYC         D           QY GYC         D           QY SYC         D           QY SYC         D           QY SYC         D	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVAIMP PVAIMP PVAIMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY ALTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLTAAY VLATAY	β3-α3	<b>→</b>
1 yeik         208           YbeK         219           yaaF         207           l.major_G1         210           L.donovani         210           J.donovani         210           L.donovani         210           J.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           M.morganii         209           A.deanei_G1         210           M.morganii         209           A.deanei_G2         233           S.oncopelti         233           S.oncopelti         234           L.major_G2         233           S.varneri         218           T.campylonemoides         222           C.watsonii         222           N.punctiforme         222           N.punctiforme         222           J.melanogaster         243           M.vectensis         211           L.matina         214 <th>AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSQGK. VDTN. TTITT GSQGK. VOTA. VGTA. VGTA. VGTA. VGTA. VGTA. KGTA. SUGTA. SQGS. KAGTA. SQASN. ERQA. KADTR. SQASN. ERQA. KADTR. SQASN.</th> <th>AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLE PARFMLEI VRKLYSQI VMRVIEDA PARFVLEL VSSFVGEL VSSFVGEL VSSFVGEL YIL QYLL </th> <th>Q Q Q Q Q Q Q MNF TLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY HDYTKIY LTFFAKTY LTFFFAKTY LTFFFAKTY LEFFASTY LEFFASTY LEFFGTMY SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDLAGQCY SDLAGCY SDLAGQCY SDLAGCY SDLAGCY SDLAGQCY SDLAGCY</th> <th>FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERNT         REXYGAP         KDWGGFES         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         LETQGFT         KKKG.LT         KSAQGFD         AMCTHCELLRPGD         ASCTHHELIRPGD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIQURY         Q         ALVIPQ         SKNGFGY         YRERNKNVIKR         RKNGFGY         YRERNKNVIKR         RKQEW</th> <th>GGP VIE         D           GGP VIE         D           GGP VIE         D           GGP VIE         D           GGP VIE         D           YGKVHD         V           VIFIE         D           VIFIE         D           GP VIE         D           GY YAW         D           DY YFW         D           DY YFW         D           DY YFW         D           DY YFW         D           QY GYC         D           GYYFW         D           GYYFW         D           GYYFW         D           GYYFW         D           GYYFW         D</th> <th>QQQQQ ATCIGY ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PPCAVAY PPCAVAY PPLAVAP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY</th> <th>β3-α3</th> <th><b>→</b></th>	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT GSQGK. VDTN. TTITT GSQGK. VOTA. VGTA. VGTA. VGTA. VGTA. VGTA. KGTA. SUGTA. SQGS. KAGTA. SQASN. ERQA. KADTR. SQASN. ERQA. KADTR. SQASN.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLE PARFMLEI VRKLYSQI VMRVIEDA PARFVLEL VSSFVGEL VSSFVGEL VSSFVGEL YIL QYLL 	Q Q Q Q Q Q Q MNF TLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY HDYTKIY LTFFAKTY LTFFFAKTY LTFFFAKTY LEFFASTY LEFFASTY LEFFGTMY SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDLAGQCY SDLAGCY SDLAGQCY SDLAGCY SDLAGCY SDLAGQCY SDLAGCY	FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERNT         REXYGAP         KDWGGFES         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         QSNRYMA         ADVFGLTQ         EARGHGY         RENQGFE         LETQGFT         KKKG.LT         KSAQGFD         AMCTHCELLRPGD         ASCTHHELIRPGD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIQURY         Q         ALVIPQ         SKNGFGY         YRERNKNVIKR         RKNGFGY         YRERNKNVIKR         RKQEW	GGP VIE         D           YGKVHD         V           VIFIE         D           VIFIE         D           GP VIE         D           GY YAW         D           DY YFW         D           DY YFW         D           DY YFW         D           DY YFW         D           QY GYC         D           GYYFW         D           GYYFW         D           GYYFW         D           GYYFW         D           GYYFW         D	QQQQQ ATCIGY ATCIGY PCTIAW PCAVAY PCAVAY PCAVAY PPCAVAY PPCAVAY PPLAVAP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY	β3-α3	<b>→</b>
1 yeik         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           P.patens         226           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           S.musiva         268           M.tuberculosis         209           A.bicolorata         209           A.bicolorata         209           A.deanei_G1         210           M.morganii         209           A.deanei_G2         233           S.oncopelti         233           S.oncopelti         234           B.saltans         270           S.watneri         218           F.muscicola         222           S.radiotolerans         218           T.campylonemoides         222           N.punctiforme         222           N.punctiforme         223           D.melanogaster         243           H.contortus         240           A.darlingi         214           N.vectensis         2	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TIIST. VGTA. VGTA. VGTA. VGTA. VGTA. KGSSP. VGTA. VGTA. SGSP. AGSSP. SGSSP. SGSSP. SGSSP. SGSSP. SGSSP. STNTK. STNTK.	AGELFSDI VSTIVAEL GKML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL VRKLYSQI VRKLYSQI VRKLYSQI VRKLYSQI PARFVLEL PARFMLEI VSSFVGEL PAQFVLEL SSRFVGEL PAQFVLEL VSSFVGEL PAQFVLEL SSRFVGEL CKYLL CGYLL C	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKYY MDYYTKIY LTFFAKTY LTFFAKTY LTFFFAKTY LFFFGTMY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY SDLAGQCY MRST NEIERKVX MRST NEIERKVX SSTLSMKKA	FENYGLA         KDEKWGFV         SKEHD.T         EKEHD.T         EKEHD.T         EKEHD.T         EKERN.T         REAYDID         TESYGAP         KDMQGFES         QSNRYMA         ADVFGLTO         EKEG.LT         KSAQGFD         AMSTHEELIRDGD         AMSTHEELIRDGD         ASCTHFELIRPGD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIRPDD         ASCTHFELIGGYGK         AAVPPLTHFFTNS         ALVIPQ         S		QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PVAIMP PVAIMP PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY V VA	β3-α3	<b>&gt;</b>
1 yeik         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           J.donovani         210           P.patens         226           S.cerevisiae         259           C.fasciculata         210           S.musiva         266           M.tuberculosis         210           S.musiva         268           M.tuberculosis         210           M.morgani         209           A.deanei_G1         210           M.morganii         209           A.deanei_G1         210           M.morganii         209           A.deanei_G2         233           S.oncopelti         233           S.oncopelti         244           B.saltans         270           S.warneri         218           T.campylonemoides         222           S.warneri         218           T.campylonemoides         222           S.varopatter         243           M.punctiforme         222           S.celegans         233           D.melanogaster         243	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT. GSSP. VGTA. VGTA. VGTA. VGTA. VGTA. KGSP	AGELFSDI VSTIVAEL G. KML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVGEL VSSFVGEL VSSFVGEL VSSFVGEL VSSFVGEL SAGV VSSFVGEL SAGV VSSFVGEL SAGV VSSFVGEL SAGV VSSFVGEL SAGV SSFVGEL SAGV SSFVGEL SSL SSL SSNRAVGES SSNRAVQMI KAAFIRKI KAAFIKKI KAAFIKKI KAAFIKKI KAAFIKKI KAAFIKKI	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY LTFFAKTY LTFFFAKTY LTFFFAKTY LFFFASTY LEFFASTY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDLAGQCY SDLAGCY SDLAGDCY SSLSADFY MRST	FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         EKEHD.T         EKEHD.T         EKERN.T         REXYGAP         KDMQGFES         QSNRYMA         ADVFGLTQ         EKEGLTQ         EKGLTT         KKG.LT         KSAQGFD         AMSTHEELRAGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPGD         ASCTHFELIRPDD         AMCTHLELGGYGK         AVPPLTHFFTNS         ALVIPQ         SKNGR         MCHLEQGYGID         SKNGFGY         RERNKNVIKR         RKQEW         RSDEYQKEVVAGK         RSAEYQKEVVAGK         NSERFQAENVYGK	GGP VIE         D           GGP VIE         D           GGP VIE         D           GGP VIE         D           YATVE         D           YATVE         D           VIFIE         D           VIFIE         D           YATVE         D           VIFIE         D           YATVE         D           YATVE         D           YATVE         D           YATVE         D           YATVE         D           GYAT         D           DYYF         D           DYYF         D           DYYF         D           DYYF         D           DYYF         D           QYYF         D           QYYF         D           QYYF         D           QYYF         D           QYYF         D           QYYF <t< th=""><th>QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PPCAVAY PPLAVAV PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY</th><th>β3-α3</th><th><b>→</b></th></t<>	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PPCAVAY PPLAVAV PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY	β3-α3	<b>→</b>
1 yeiK         208           YbeK         219           yaaF         207           L.major_G1         210           L.donovani         210           L.donovani         210           L.donovani         210           P.patens         226           Z.mays         208           S.cerevisiae         259           C.fasciculata         210           S.musiva         268           M.tuberculosis         210           M.deanei_G1         210           C.acanthocephali         233           S.oncopelti         234           M.cenei_G2         233           S.nocopelti         234           M.cenei_G2         222           S.radiotolerans         212           M.punctiforme         222           Nuetiforme         222	AGGP. IGNP. VGTK. VGTK. SQGK. KNNSK. VDTN. TTITT. GSSP. VGTA. VGTA. VGTA. VGTA. VGTA. KGSP	AGELFSDI VSTIVAEL G. KML PAAFMLQI PAAFMLQI FGKYLYAA YAQFLCDV LRELFLEL PARFMLEI VRKLYSQI VMRVIEDA PARFVGEL VSSFVGEL VSSFVGEL VSSFVGEL VSSFVGEL SAGV VSSFVGEL SAGV VSSFVGEL SAGV VSSFVGEL SAGV VSSFVGEL SAGV SSFVGEL SAGV SSFVGEL SSL SSL SSNRAVGES SSNRAVQMI KAAFIRKI KAAFIKKI KAAFIKKI KAAFIKKI KAAFIKKI KAAFIKKI	QQQQQQQ MNFTLKTQ LDFFLEYH HALFSHYR LDFYTKVY LDFYTKVY LDFYTKVY LDFYTKVY LTFFAKTY LTFFAKTY LTFFFAKTY LTFFFAKTY LFFFASTY LEFFASTY SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGATW SQFVGSAW SQFVGSAW SQFVGSAW SQFVGSAW SDLAGQCY SDLAGCY SDLAGDCY SSLSADFY MRST	FENYGLA         KDEKWGFV         SGSMQS         EKEHD.T         EKEHD.T         EKEHD.T         TEXYGID         TEXYGID         TEXYGID         TEXYGID         TEXYGID         TEXYGID         TEXYGID         TSYGE         CSNRYMA         ADVFGLTQ         EARGHGY         REXQGFT         KSAQGFD         AMCTHCELIRDGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ASCTHFELIRNGD         ALVIPQ         SNIS         R	GGP VIE         D           GGP VIE         D           GGP VIE         D           GGP VIE         D           YATVE         D           YATVE         D           VIFIE         D           VIFIE         D           YATVE         D           VIFIE         D           YATVE         D           YATVE         D           YATVE         D           YATVE         D           YATVE         D           GYAT         D           DYYF         D           DYYF         D           DYYF         D           DYYF         D           DYYF         D           QYYF         D           QYYF         D           QYYF         D           QYYF         D           QYYF         D           QYYF <t< th=""><th>QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PPCAVAY PPLAVAV PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY</th><th>β3-α3</th><th><b>→</b></th></t<>	QQQQQ ATCIGY ATCIGY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PPCAVAY PPLAVAV PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY PCAVAY VLTAAY VLATAY	β3-α3	<b>→</b>

 $\leftarrow$  C-ter  $\alpha 9$ 

**Figure S1.** Sequence alignment of representatives of the three homology groups of nucleoside hydrolases. 15 organisms of each group are selected and aligned separately. The first 15 (starting from Yeik), second 15 (starting from *T.vivax*) and the last 15 (starting from *C.elegans*) correspond to group I, II and III NHs respectively. Residues within an orange colored box correspond to either the  $\beta$ 3- $\alpha$ 3 loop (loop 1) or the C-terminus of  $\alpha$ 9 (loop2). Residues highlighted in yellow correspond to C42 of CeNH. This position corresponds to an asparagine in group I, an aspartate in group II and is variable in group III NHs. Residues highlighted in green are the conserved histidine, tryptophan and cysteine for group I, II and III NHs respectively.



**Figure S2**. Overlay of the best docking conformation of inosine and the active site-bound Tris molecule observed in the CeNH structure. The residues within interaction distance of the 2', 3'and 5' hydroxyl groups of inosine and the corresponding hydroxyl groups of Tris are shown as sticks.  $Ca^{2+}$  is shown as a red sphere. The Tris and inosine molecules are shown as sticks with yellow and magenta carbons respectively.



**Figure S3.** Superposition of 17 out of 20 minimum energy conformations of inosine docked to the CeNH active site, starting from an inosine conformation taken from the Yeik-inosine crystal structure (PDB 3B9X). 3 higher energy outliers with an entirely different conformation are rejected and are not shown here.

Table S1. SAXS dat	ta collection statis	stics and derived	parameters.
--------------------	----------------------	-------------------	-------------

Data-collection parameters	
X-Ray Source	BioSAXS (Rigaku)
Wavelength	1.54 Å
q range (Å <sup>-1</sup> )*	0.0094-0.6880
Protein concentrations (mg/ml)- volume (µl)	1.5-8.0 mg/ml -70 μl
Temperature (K)	283
Structural parameters	
I(0) (relative) from P(R)	$24.46\pm0.05$
$R_{g}$ (Å) from P(R)	$37.7 \pm 0.1$
I(0) (relative) from Guinier	$24.56\pm0.07$
R <sub>g</sub> (Å) from Guinier	$37.7 \pm 0.1$
D <sub>max</sub> (Å)	$125 \pm 5$
Porod volume (Å <sup>3</sup> )	277109
Molecular mass determination (kDa)	
From Porod volume (V <sub>porod</sub> /1.7)	163.0
From $Q_R$ (q=0.25 Å <sup>-1</sup> )	135.0
From Sequence (including tag)	154.0
Data processing software	
Primary data reduction	ATSAS for BioSAXS (Rigaku)
Data Processing	PRIMUS, SCATTER, GNOM
Computation of model intensities	CRYSOL

Abbreviations: I(0), extrapolated scattering intensity at zero angle;  $R_g$ , radius of gyration calculated using either Guinier approximation (from Guinier) or the indirect Fourier transform package GNOM [from P(R)],  $D_{max}$ , maximal particle dimension;  $V_p$ , Porod volume.

\*Momentum transfer  $|q| = 4\pi \sin(\theta)/\lambda$ .