Full wwPDB X-ray Structure Validation Report (i)

Feb 4, 2024 – 07:22 AM EST

PDB ID	:	1NL3
Title	:	CRYSTAL STRUCTURE OF THE SECA PROTEIN TRANSLOCATION ATPASE FROM MYCOBACTERIUM TUBERCULOSIS in APO FORM
Authors	:	Sharma, V.; Arockiasamy, A.; Ronning, D.R.; Savva, C.G.; Holzenburg, A.; Braunstein, M.; Jacobs Jr., W.R.; Sacchettini, J.C.; TB Structural Genomics Consortium (TBSGC)
Deposited on	:	2003-01-06
Resolution	:	2.80 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (i)) were used in the production of this report:

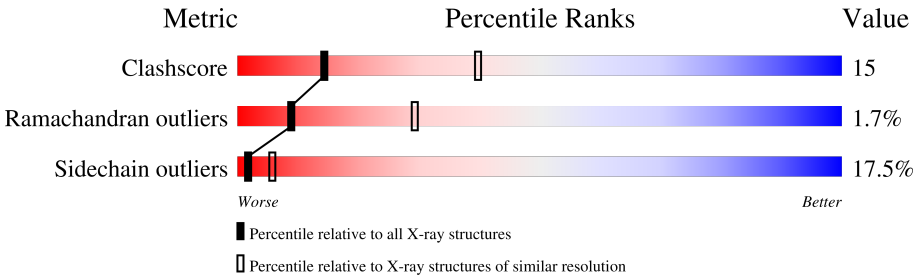
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	922	60% 25% 6% • 9%
1	B	922	56% 27% 7% • 9%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 14209 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called PREPROTEIN TRANSLOCASE SECA 1 SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	839	Total	C	N	O	S	0	0	0
			6639	4157	1169	1288	25			
1	B	838	Total	C	N	O	S	0	0	0
			6640	4157	1171	1287	25			

There are 62 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-29	MET	-	cloning artifact	UNP P0A5Y8
A	-28	LYS	-	cloning artifact	UNP P0A5Y8
A	-27	GLU	-	cloning artifact	UNP P0A5Y8
A	-26	THR	-	cloning artifact	UNP P0A5Y8
A	-25	ALA	-	cloning artifact	UNP P0A5Y8
A	-24	ALA	-	cloning artifact	UNP P0A5Y8
A	-23	ALA	-	cloning artifact	UNP P0A5Y8
A	-22	LYS	-	cloning artifact	UNP P0A5Y8
A	-21	PHE	-	cloning artifact	UNP P0A5Y8
A	-20	GLU	-	cloning artifact	UNP P0A5Y8
A	-19	ARG	-	cloning artifact	UNP P0A5Y8
A	-18	GLN	-	cloning artifact	UNP P0A5Y8
A	-17	HIS	-	cloning artifact	UNP P0A5Y8
A	-16	MET	-	cloning artifact	UNP P0A5Y8
A	-15	ASP	-	cloning artifact	UNP P0A5Y8
A	-14	SER	-	cloning artifact	UNP P0A5Y8
A	-13	PRO	-	cloning artifact	UNP P0A5Y8
A	-12	ASP	-	cloning artifact	UNP P0A5Y8
A	-11	LEU	-	cloning artifact	UNP P0A5Y8
A	-10	GLY	-	cloning artifact	UNP P0A5Y8
A	-9	THR	-	cloning artifact	UNP P0A5Y8
A	-8	LEU	-	cloning artifact	UNP P0A5Y8
A	-7	VAL	-	cloning artifact	UNP P0A5Y8
A	-6	PRO	-	cloning artifact	UNP P0A5Y8
A	-5	ARG	-	cloning artifact	UNP P0A5Y8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	GLY	-	cloning artifact	UNP P0A5Y8
A	-3	SER	-	cloning artifact	UNP P0A5Y8
A	-2	MET	-	cloning artifact	UNP P0A5Y8
A	-1	ALA	-	cloning artifact	UNP P0A5Y8
A	0	ASP	-	cloning artifact	UNP P0A5Y8
A	1	ILE	-	cloning artifact	UNP P0A5Y8
B	-29	MET	-	cloning artifact	UNP P0A5Y8
B	-28	LYS	-	cloning artifact	UNP P0A5Y8
B	-27	GLU	-	cloning artifact	UNP P0A5Y8
B	-26	THR	-	cloning artifact	UNP P0A5Y8
B	-25	ALA	-	cloning artifact	UNP P0A5Y8
B	-24	ALA	-	cloning artifact	UNP P0A5Y8
B	-23	ALA	-	cloning artifact	UNP P0A5Y8
B	-22	LYS	-	cloning artifact	UNP P0A5Y8
B	-21	PHE	-	cloning artifact	UNP P0A5Y8
B	-20	GLU	-	cloning artifact	UNP P0A5Y8
B	-19	ARG	-	cloning artifact	UNP P0A5Y8
B	-18	GLN	-	cloning artifact	UNP P0A5Y8
B	-17	HIS	-	cloning artifact	UNP P0A5Y8
B	-16	MET	-	cloning artifact	UNP P0A5Y8
B	-15	ASP	-	cloning artifact	UNP P0A5Y8
B	-14	SER	-	cloning artifact	UNP P0A5Y8
B	-13	PRO	-	cloning artifact	UNP P0A5Y8
B	-12	ASP	-	cloning artifact	UNP P0A5Y8
B	-11	LEU	-	cloning artifact	UNP P0A5Y8
B	-10	GLY	-	cloning artifact	UNP P0A5Y8
B	-9	THR	-	cloning artifact	UNP P0A5Y8
B	-8	LEU	-	cloning artifact	UNP P0A5Y8
B	-7	VAL	-	cloning artifact	UNP P0A5Y8
B	-6	PRO	-	cloning artifact	UNP P0A5Y8
B	-5	ARG	-	cloning artifact	UNP P0A5Y8
B	-4	GLY	-	cloning artifact	UNP P0A5Y8
B	-3	SER	-	cloning artifact	UNP P0A5Y8
B	-2	MET	-	cloning artifact	UNP P0A5Y8
B	-1	ALA	-	cloning artifact	UNP P0A5Y8
B	0	ASP	-	cloning artifact	UNP P0A5Y8
B	1	ILE	-	cloning artifact	UNP P0A5Y8

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	475	Total O 475 475	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	455	Total	O	0	0
			455	455		

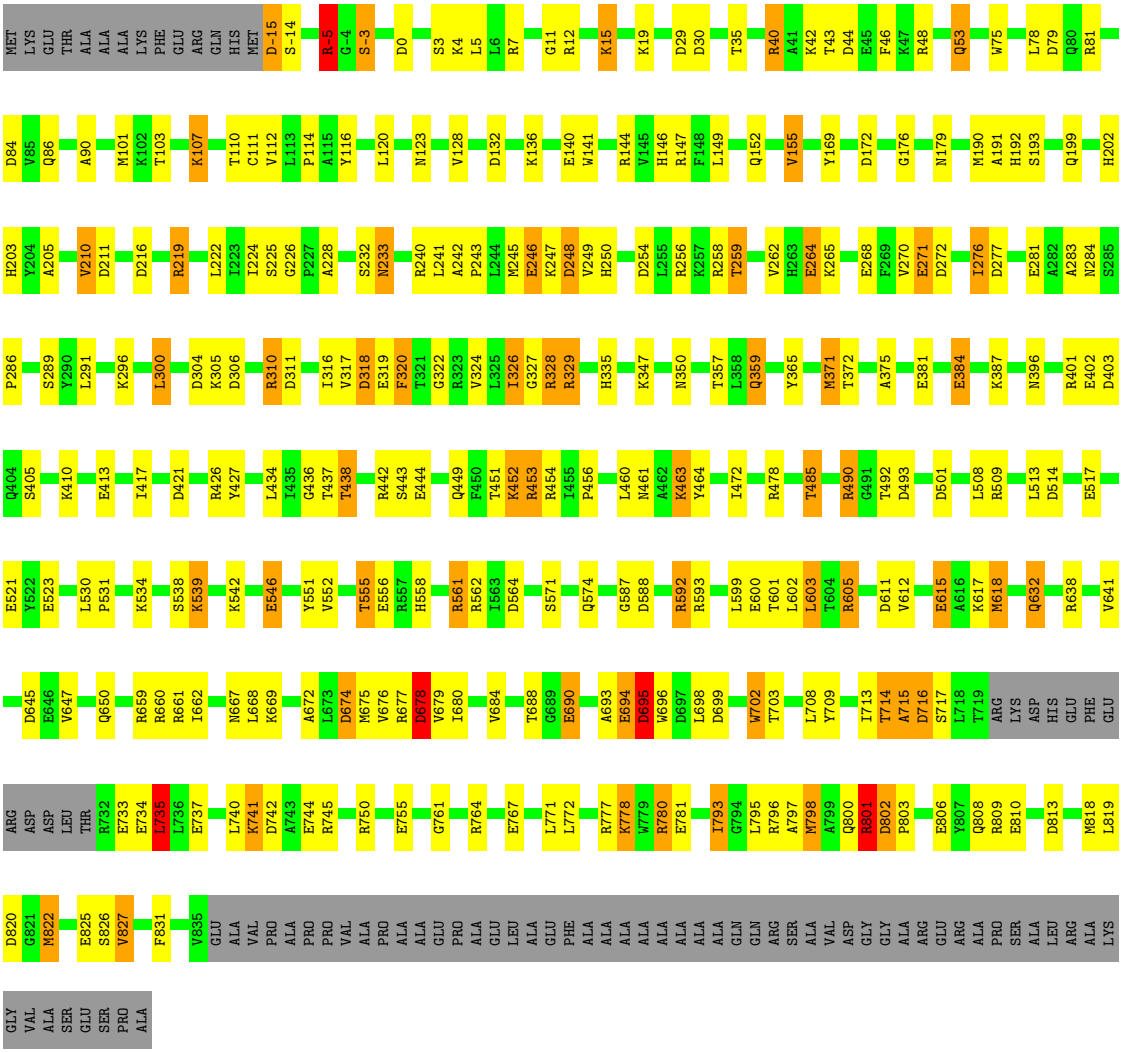
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS was not executed.

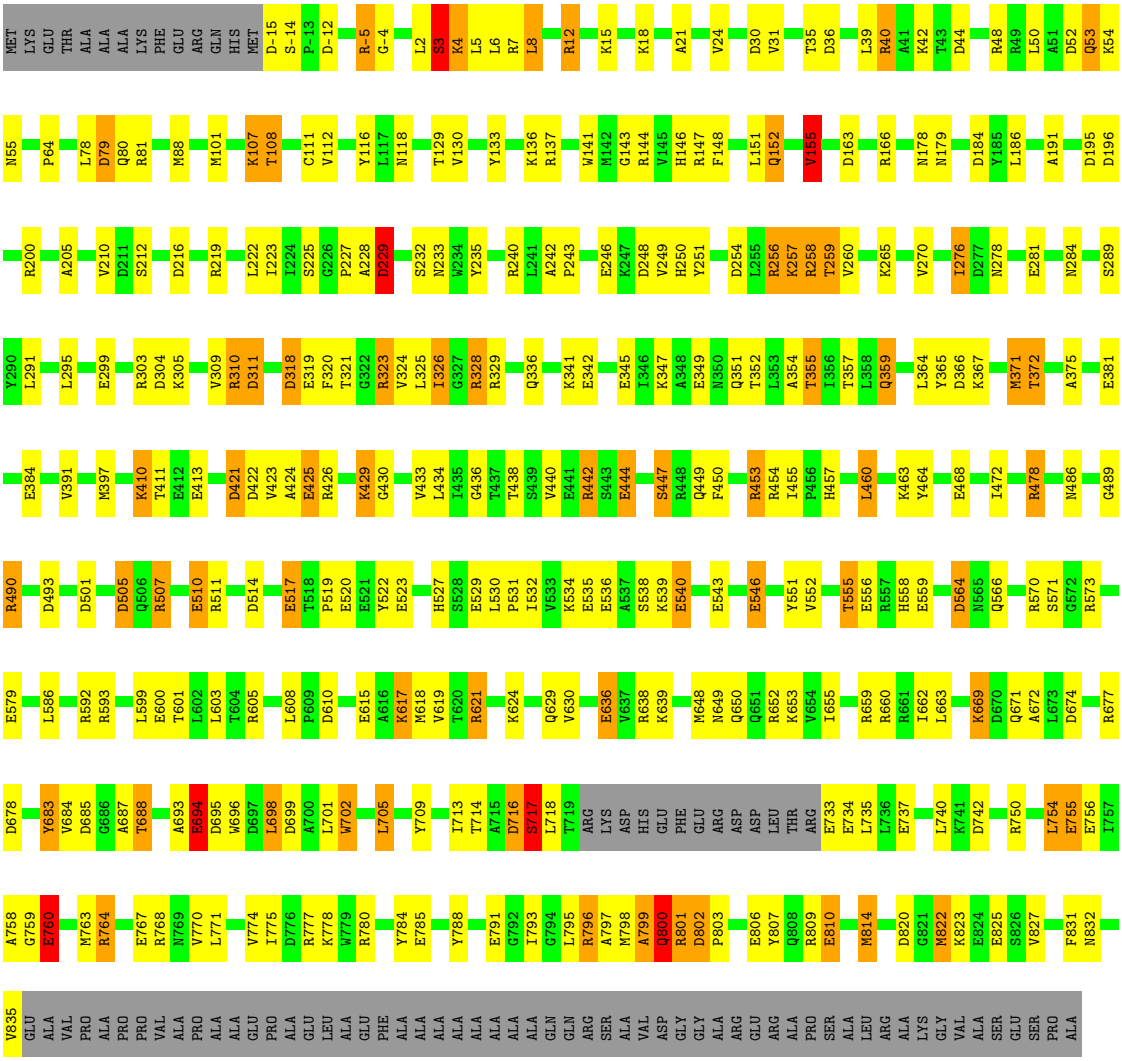
• Molecule 1: PREPROTEIN TRANSLOCASE SECA 1 SUBUNIT

Chain A:



• Molecule 1: PREPROTEIN TRANSLOCASE SECA 1 SUBUNIT

Chain B:


MET LYS GLU THR ALA ALA ALA LYS PHE GLU ARG GLN HIS MET D-15 S-14 P-13 D-12 R-5 G-4 L2 S3 K4 L5 L6 R7 L8 R12 K15 K18 A21 V24 D30 V31 T35 D36 L39 R40 A41 K42 T43 D44 R48 R49 L50 A51 D52 Q53 K54
N55 P64 L78 D79 Q80 R81 M88 M101 K107 T108 C111 V112 Y116 L117 N118 T129 V130 Y133 K136 R137 W141 M142 G143 R144 V145 H146 R147 F148 L151 Q152 V155 D163 R166 N178 N179 D184 Y185 L186 A191 D195 D196
R200 A205 V210 D211 S212 D216 R219 L222 I223 I224 S225 G226 P227 A228 D229 S232 N233 W234 Y235 R240 L241 A242 P243 E246 K247 D248 V249 H250 Y251 D254 L255 R256 K257 R258 T259 V260 K265 V270 I276 D277 N278 E281 N284 S289
Y290 L291 L295 E299 R303 D304 K305 V309 R310 D311 D318 E319 F320 T321 G322 R323 V324 L325 I326 G327 R328 R329 Q336 K341 E342 E345 I346 K347 A348 E349 N350 Q351 T352 L353 A354 T355 I356 T357 L358 Q359 L364 Y365 D366 K367 M371 T372 A375 E381
E384 V391 M397 K410 T411 E412 E413 D421 D422 V423 A424 E425 R426 K429 G430 V433 L434 I435 G436 T437 T438 S439 V440 E441 R442 S443 E444 S447 R448 Q449 F450 R453 R454 I455 P456 H457 L460 K463 Y464 E468 I472 R478 N486 G489
R490 D493 D501 D505 Q506 R507 E510 R511 D514 E517 T518 P519 E520 E521 Y522 E523 H527 S528 E529 L530 P531 I532 V533 K534 E535 E536 A537 S538 K539 E540 E543 E546 Y551 V552 T555 E556 R557 H558 E559 D564 N565 Q566 R570 S571 G572 R573
E579 L586 R592 R593 L599 E600 T601 L602 L603 T604 R605 L608 P609 D610 E615 A616 K617 M618 V619 T620 R621 K624 Q629 V630 E636 V637 R638 K639 M648 N649 Q650 Q651 R652 K653 V654 I655 R659 R660 R661 I662 L663 K669 D670 Q671 A672 L673 D674 R677
D678 Y683 V684 D685 G686 A687 T688 A693 E694 D695 W696 D697 L698 D699 A700 L701 W702 L705 Y709 I713 T714 A715 D716 S717 L718 T719 ARG LYS ASP HIS GLU PHE GLU ARG ASP ASP LEU THR ARG E733 E734 L735 L736 E737 L740 K741 D742 R750 L754 E755 E756 I757
A758 G759 E760 M763 R764 E767 R768 N769 V770 L771 V774 I775 D776 R777 K778 W779 R780 Y784 E785 Y788 E791 G792 I793 G794 L795 R796 A797 M798 A799 Q800 R801 D802 P803 E806 Y807 Q808 R809 E810 M814 D820 G821 M822 K823 E824 E825 S826 V827 F831 N832
V835 GLU ALA VAL PRO ALA PRO PRO VAL ALA PRO ALA ALA GLU PRO ALA GLU LEU ALA GLU PHE ALA ALA ALA ALA ALA ALA ALA ALA GLN GLN ARG SER ALA VAL ASP GLY GLY ALA ARG GLU ARG ALA PRO SER ALA LEU ARG ALA LYS GLY VAL ALA SER GLU SER PRO ALA

4 Data and refinement statistics (i)

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 62 2 2	Depositor
Cell constants a, b, c, α, β, γ	206.20Å 206.20Å 295.41Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	8.00 – 2.80	Depositor
% Data completeness (in resolution range)	99.4 (8.00-2.80)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
Refinement program	REFMAC 5.1.25	Depositor
R, R_{free}	0.193 , 0.259	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	14209	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.59	0/6743	0.87	26/9116 (0.3%)
1	B	0.59	0/6744	0.88	25/9116 (0.3%)
All	All	0.59	0/13487	0.87	51/18232 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	820	ASP	CB-CG-OD2	7.49	125.04	118.30
1	B	79	ASP	CB-CG-OD2	7.42	124.98	118.30
1	A	248	ASP	CB-CG-OD2	7.18	124.76	118.30
1	A	820	ASP	CB-CG-OD2	6.83	124.45	118.30
1	A	318	ASP	CB-CG-OD2	6.68	124.31	118.30
1	B	716	ASP	CB-CG-OD2	6.66	124.29	118.30
1	A	645	ASP	CB-CG-OD2	6.65	124.29	118.30
1	B	685	ASP	CB-CG-OD2	6.58	124.22	118.30
1	A	678	ASP	CB-CG-OD2	6.38	124.04	118.30
1	A	306	ASP	CB-CG-OD2	6.26	123.94	118.30
1	A	674	ASP	CB-CG-OD2	6.23	123.91	118.30
1	A	216	ASP	CB-CG-OD2	6.22	123.90	118.30
1	A	172	ASP	CB-CG-OD2	6.20	123.88	118.30
1	B	184	ASP	CB-CG-OD2	6.12	123.80	118.30
1	A	79	ASP	CB-CG-OD2	6.09	123.78	118.30
1	A	84	ASP	CB-CG-OD2	6.02	123.72	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	674	ASP	CB-CG-OD2	6.01	123.71	118.30
1	A	813	ASP	CB-CG-OD2	5.73	123.46	118.30
1	B	364	LEU	CA-CB-CG	5.73	128.48	115.30
1	B	44	ASP	CB-CG-OD2	5.64	123.38	118.30
1	A	272	ASP	CB-CG-OD2	5.59	123.33	118.30
1	A	44	ASP	CB-CG-OD2	5.57	123.32	118.30
1	B	216	ASP	CB-CG-OD2	5.54	123.29	118.30
1	B	391	VAL	CB-CA-C	-5.51	100.93	111.40
1	B	-15	ASP	CB-CG-OD2	5.48	123.24	118.30
1	A	311	ASP	CB-CG-OD2	5.46	123.21	118.30
1	A	493	ASP	CB-CG-OD2	5.46	123.21	118.30
1	B	196	ASP	CB-CG-OD2	5.40	123.16	118.30
1	B	366	ASP	CB-CG-OD2	5.39	123.15	118.30
1	B	318	ASP	CB-CG-OD2	5.36	123.12	118.30
1	A	132	ASP	CB-CG-OD2	5.35	123.11	118.30
1	B	36	ASP	CB-CG-OD2	5.35	123.11	118.30
1	B	155	VAL	CB-CA-C	-5.35	101.24	111.40
1	B	30	ASP	CB-CG-OD2	5.32	123.09	118.30
1	B	610	ASP	CB-CG-OD2	5.29	123.06	118.30
1	A	-15	ASP	CB-CG-OD2	5.27	123.04	118.30
1	B	195	ASP	CB-CG-OD2	5.26	123.03	118.30
1	A	588	ASP	CB-CG-OD2	5.24	123.02	118.30
1	A	304	ASP	CB-CG-OD2	5.21	122.99	118.30
1	B	-12	ASP	CB-CG-OD2	5.17	122.96	118.30
1	A	210	VAL	CB-CA-C	-5.15	101.62	111.40
1	A	699	ASP	CB-CG-OD2	5.10	122.89	118.30
1	A	403	ASP	CB-CG-OD2	5.08	122.87	118.30
1	B	486	ASN	C-N-CA	-5.08	109.01	121.70
1	A	155	VAL	CB-CA-C	-5.06	101.79	111.40
1	B	699	ASP	CB-CG-OD2	5.05	122.84	118.30
1	B	505	ASP	CB-CG-OD2	5.04	122.83	118.30
1	B	564	ASP	CB-CG-OD2	5.03	122.82	118.30
1	B	742	ASP	CB-CG-OD2	5.02	122.82	118.30
1	A	695	ASP	CB-CG-OD2	5.02	122.81	118.30
1	A	30	ASP	CB-CG-OD2	5.01	122.81	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	320	PHE	Peptide

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	6639	0	6576	197	0
1	B	6640	0	6585	220	0
2	A	475	0	0	57	0
2	B	455	0	0	67	0
All	All	14209	0	13161	409	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 15.

All (409) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:615:GLU:HG3	1:B:323:ARG:HG3	1.37	1.06
1:A:702:TRP:NE1	1:A:714:THR:HA	1.73	1.03
1:A:660:ARG:HG2	2:A:1748:HOH:O	1.60	1.01
1:B:359:GLN:H	1:B:359:GLN:HE21	1.08	1.00
1:A:734:GLU:O	1:A:735:LEU:HB3	1.64	0.94
1:B:141:TRP:HZ2	1:B:501:ASP:HB3	1.29	0.94
1:A:436:GLY:O	1:A:555:THR:HB	1.69	0.93
1:B:780:ARG:HD2	2:B:1298:HOH:O	1.70	0.92
1:A:702:TRP:HE1	1:A:714:THR:HA	1.34	0.91
1:A:359:GLN:H	1:A:359:GLN:HE21	1.04	0.91
1:A:777:ARG:NH2	1:A:825:GLU:OE1	2.03	0.90
1:B:755:GLU:HA	1:B:759:GLY:HA3	1.53	0.89
1:B:53:GLN:H	1:B:53:GLN:HE21	1.22	0.87
1:B:777:ARG:NH2	1:B:825:GLU:OE1	2.07	0.87
1:A:328:ARG:HG3	1:A:328:ARG:HH11	1.40	0.86
1:B:141:TRP:CZ2	1:B:501:ASP:HB3	2.11	0.86
1:A:421:ASP:OD1	1:A:453:ARG:NH2	2.09	0.85
1:A:806:GLU:HG3	2:A:1885:HOH:O	1.77	0.85
1:A:328:ARG:HH11	1:A:328:ARG:CG	1.92	0.82
1:B:447:SER:HB2	1:B:457:HIS:NE2	1.95	0.82
1:B:453:ARG:HG3	2:B:1847:HOH:O	1.81	0.81
1:A:384:GLU:HG3	2:A:1788:HOH:O	1.81	0.81
1:A:780:ARG:HD3	2:A:1593:HOH:O	1.79	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:246:GLU:H	1:A:250:HIS:HD2	1.29	0.80
1:B:3:SER:HB3	2:B:1795:HOH:O	1.82	0.80
1:B:558:HIS:HD2	1:B:564:ASP:OD2	1.65	0.79
2:A:1362:HOH:O	1:B:615:GLU:HG3	1.80	0.79
1:B:227:PRO:HD2	2:B:1863:HOH:O	1.83	0.79
1:B:683:TYR:HE2	2:B:1094:HOH:O	1.64	0.79
1:A:733:GLU:HA	2:A:1533:HOH:O	1.83	0.79
1:B:650:GLN:HG3	2:B:1306:HOH:O	1.81	0.79
1:A:734:GLU:HA	2:A:1698:HOH:O	1.84	0.77
1:A:246:GLU:H	1:A:250:HIS:CD2	2.03	0.76
1:B:191:ALA:O	1:B:659:ARG:NH2	2.18	0.76
1:B:558:HIS:CD2	1:B:564:ASP:OD2	2.39	0.76
1:A:558:HIS:HD2	1:A:564:ASP:OD2	1.70	0.75
1:B:759:GLY:O	1:B:760:GLU:HB2	1.85	0.75
1:A:86:GLN:HG2	1:A:110:THR:OG1	1.87	0.74
1:B:141:TRP:HE3	2:B:1713:HOH:O	1.71	0.73
1:B:705:LEU:HD23	1:B:709:TYR:CE1	2.24	0.73
1:B:705:LEU:HD23	1:B:709:TYR:HE1	1.52	0.73
1:B:636:GLU:HG3	2:B:1560:HOH:O	1.89	0.72
1:B:801:ARG:HD2	1:B:802:ASP:H	1.54	0.72
1:A:780:ARG:CD	2:A:1593:HOH:O	2.35	0.72
1:B:507:ARG:CG	1:B:507:ARG:HH11	2.03	0.71
1:B:592:ARG:HD2	2:B:1682:HOH:O	1.90	0.71
1:A:40:ARG:HG2	2:A:1665:HOH:O	1.90	0.71
1:A:144:ARG:HD2	1:A:523:GLU:OE2	1.91	0.70
1:A:780:ARG:HD2	2:A:1503:HOH:O	1.90	0.70
1:A:461:ASN:OD1	1:A:485:THR:HG21	1.92	0.69
1:A:611:ASP:HB3	2:A:1380:HOH:O	1.92	0.69
1:A:801:ARG:H	1:A:801:ARG:HE	1.38	0.69
1:A:461:ASN:HA	1:A:485:THR:HG23	1.73	0.69
1:A:381:GLU:OE1	1:A:638:ARG:NH1	2.25	0.69
1:A:75:TRP:HB2	1:A:81:ARG:HB2	1.75	0.69
1:A:669:LYS:HD3	1:A:764:ARG:NH2	2.08	0.68
1:B:246:GLU:HB3	1:B:249:VAL:HB	1.75	0.68
1:B:507:ARG:HD3	2:B:1832:HOH:O	1.91	0.68
1:A:764:ARG:HA	1:A:767:GLU:OE1	1.94	0.67
1:B:507:ARG:HH11	1:B:507:ARG:CB	2.07	0.67
1:B:775:ILE:HG12	1:B:822:MET:CE	2.24	0.67
1:B:714:THR:O	1:B:717:SER:HB2	1.93	0.67
1:A:615:GLU:CG	1:B:323:ARG:HG3	2.21	0.67
1:B:660:ARG:HG3	2:B:1740:HOH:O	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:570:ARG:HD2	2:B:1063:HOH:O	1.95	0.67
1:A:318:ASP:OD1	1:A:319:GLU:N	2.28	0.66
1:B:178:ASN:ND2	2:B:1702:HOH:O	2.23	0.66
1:A:741:LYS:HE3	2:A:1715:HOH:O	1.95	0.66
1:B:229:ASP:HB2	2:B:1746:HOH:O	1.96	0.66
1:B:179:ASN:HB2	2:B:1749:HOH:O	1.94	0.66
1:A:801:ARG:HE	1:A:801:ARG:N	1.92	0.66
1:A:15:LYS:HD3	2:A:1869:HOH:O	1.95	0.65
1:A:248:ASP:HA	2:A:1609:HOH:O	1.96	0.65
1:A:708:LEU:HD13	1:A:827:VAL:CG2	2.26	0.65
1:B:257:LYS:HG3	2:B:1639:HOH:O	1.97	0.65
1:A:326:ILE:HD13	1:B:608:LEU:HD12	1.79	0.65
1:A:546:GLU:HG3	2:A:1763:HOH:O	1.95	0.65
1:B:559:GLU:HG2	1:B:630:VAL:CG1	2.27	0.65
1:B:359:GLN:H	1:B:359:GLN:NE2	1.90	0.64
1:A:688:THR:O	1:A:688:THR:HG22	1.98	0.64
1:A:801:ARG:HD2	1:A:802:ASP:N	2.12	0.64
1:A:798:MET:HA	1:B:621:ARG:HH12	1.63	0.63
1:B:309:VAL:O	1:B:310:ARG:HD3	1.98	0.63
1:A:322:GLY:HA3	2:A:1642:HOH:O	1.98	0.63
1:B:490:ARG:HA	2:B:1818:HOH:O	1.99	0.63
1:B:801:ARG:HD2	1:B:802:ASP:N	2.14	0.63
1:B:511:ARG:NH2	1:B:529:GLU:OE2	2.32	0.62
1:B:4:LYS:C	1:B:6:LEU:H	2.01	0.62
1:A:668:LEU:HD13	1:A:771:LEU:HD12	1.80	0.62
1:B:80:GLN:HG2	2:B:1209:HOH:O	1.98	0.62
1:B:53:GLN:HE21	1:B:53:GLN:N	1.93	0.61
1:A:228:ALA:HB3	2:A:1405:HOH:O	2.00	0.61
1:A:326:ILE:HG13	1:A:327:GLY:N	2.15	0.61
1:A:632:GLN:HA	1:A:632:GLN:NE2	2.16	0.61
1:B:775:ILE:HG12	1:B:822:MET:HE2	1.81	0.61
1:B:806:GLU:HG2	2:B:1188:HOH:O	2.00	0.61
1:A:618:MET:HG3	2:B:1389:HOH:O	1.99	0.61
1:A:508:LEU:O	1:A:513:LEU:HB2	2.01	0.60
1:B:639:LYS:HD3	2:B:1438:HOH:O	1.99	0.60
1:B:683:TYR:CE2	2:B:1094:HOH:O	2.47	0.60
1:B:530:LEU:HB3	1:B:531:PRO:HD3	1.83	0.60
1:B:520:GLU:HG2	2:B:1911:HOH:O	2.02	0.60
1:B:429:LYS:HG2	2:B:1606:HOH:O	2.01	0.59
1:B:436:GLY:O	1:B:555:THR:HB	2.02	0.59
1:A:521:GLU:OE1	2:A:1766:HOH:O	2.16	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:440:VAL:O	1:B:444:GLU:HG2	2.03	0.59
1:B:453:ARG:HH11	1:B:453:ARG:CG	2.14	0.59
1:A:246:GLU:HG3	2:A:1358:HOH:O	2.03	0.59
1:A:259:THR:HG23	2:A:1346:HOH:O	2.01	0.59
1:A:514:ASP:HB3	1:A:517:GLU:HB2	1.84	0.59
1:B:112:VAL:HG13	1:B:146:HIS:CE1	2.38	0.59
1:B:248:ASP:HA	2:B:1725:HOH:O	2.02	0.59
1:A:112:VAL:HG13	1:A:146:HIS:CE1	2.38	0.58
1:B:116:TYR:HD1	1:B:151:LEU:HD11	1.68	0.58
1:A:219:ARG:HB3	2:A:1874:HOH:O	2.02	0.58
1:A:461:ASN:HA	1:A:485:THR:CG2	2.34	0.58
1:B:797:ALA:HB1	1:B:801:ARG:HD3	1.86	0.58
1:B:116:TYR:CD1	1:B:151:LEU:HD11	2.39	0.58
1:B:357:THR:HB	1:B:359:GLN:NE2	2.18	0.58
1:B:426:ARG:HA	2:B:1813:HOH:O	2.03	0.58
1:A:539:LYS:HE2	2:A:1814:HOH:O	2.05	0.57
1:A:680:ILE:O	1:A:684:VAL:HG23	2.04	0.57
1:A:650:GLN:HG3	2:A:1371:HOH:O	2.05	0.57
1:B:254:ASP:CG	1:B:257:LYS:HB2	2.25	0.57
1:B:144:ARG:HD2	1:B:523:GLU:OE2	2.05	0.57
1:B:235:TYR:CE2	1:B:336:GLN:HG2	2.39	0.57
1:A:141:TRP:HZ2	2:A:1786:HOH:O	1.88	0.56
1:A:742:ASP:OD1	1:A:745:ARG:NH1	2.37	0.56
1:B:256:ARG:CB	1:B:256:ARG:HH11	2.18	0.56
1:B:39:LEU:HD23	1:B:148:PHE:HE1	1.70	0.56
1:A:410:LYS:HD2	1:A:603:LEU:HB3	1.86	0.56
1:B:108:THR:HG23	2:B:1651:HOH:O	2.04	0.56
1:B:256:ARG:HH11	1:B:256:ARG:HB2	1.71	0.56
1:A:245:MET:CE	1:A:270:VAL:HG22	2.37	0.55
1:B:649:ASN:HD22	1:B:652:ARG:HE	1.52	0.55
1:B:799:ALA:O	1:B:800:GLN:HB2	2.05	0.55
1:B:318:ASP:HB3	1:B:321:THR:HB	1.88	0.55
1:A:140:GLU:HA	1:A:147:ARG:HH22	1.71	0.55
1:B:359:GLN:HE21	1:B:359:GLN:N	1.92	0.55
1:B:137:ARG:HD2	2:B:1836:HOH:O	2.05	0.55
1:A:192:HIS:HD2	2:A:1694:HOH:O	1.89	0.55
1:A:233:ASN:HB3	2:A:1057:HOH:O	2.06	0.55
1:A:472:ILE:HG21	1:A:492:THR:HB	1.87	0.55
1:A:764:ARG:HD3	1:A:767:GLU:OE1	2.06	0.54
1:B:460:LEU:HB3	1:B:468:GLU:HG2	1.89	0.54
1:B:422:ASP:O	1:B:426:ARG:HG2	2.06	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:101:MET:HE3	1:A:371:MET:HE2	1.88	0.54
1:A:233:ASN:N	1:A:233:ASN:HD22	2.04	0.54
1:A:612:VAL:HG13	1:B:323:ARG:HH22	1.71	0.54
1:B:775:ILE:HG12	1:B:822:MET:HE3	1.90	0.54
1:A:245:MET:HE1	1:A:270:VAL:CG2	2.38	0.54
1:B:507:ARG:HH11	1:B:507:ARG:HG3	1.71	0.54
1:A:501:ASP:HB3	2:A:1786:HOH:O	2.07	0.54
1:A:243:PRO:HG2	2:A:1382:HOH:O	2.07	0.54
1:B:425:GLU:HG2	2:B:1707:HOH:O	2.07	0.54
1:A:328:ARG:HG3	1:A:328:ARG:NH1	2.17	0.54
1:A:793:ILE:HG22	2:A:1117:HOH:O	2.08	0.54
1:A:437:THR:HG22	1:A:555:THR:HG21	1.89	0.54
1:A:755:GLU:HB3	2:A:1925:HOH:O	2.08	0.54
1:B:4:LYS:C	1:B:6:LEU:N	2.62	0.54
1:B:429:LYS:HG3	2:B:1893:HOH:O	2.08	0.54
1:B:251:TYR:OH	1:B:299:GLU:OE2	2.18	0.53
1:A:662:ILE:HG21	1:A:772:LEU:HB2	1.90	0.53
1:B:303:ARG:O	1:B:304:ASP:HB2	2.08	0.53
1:B:53:GLN:H	1:B:53:GLN:NE2	2.00	0.53
1:B:694:GLU:O	1:B:696:TRP:N	2.41	0.53
1:B:801:ARG:HB3	2:B:1437:HOH:O	2.09	0.53
1:A:558:HIS:CD2	1:A:564:ASP:OD2	2.56	0.53
1:A:669:LYS:HD3	1:A:764:ARG:HH21	1.74	0.53
1:A:81:ARG:HD3	2:A:1319:HOH:O	2.08	0.53
1:B:801:ARG:NH2	2:B:1899:HOH:O	2.41	0.52
1:A:-14:SER:H	1:A:-3:SER:HB2	1.72	0.52
1:B:246:GLU:OE2	1:B:249:VAL:HG21	2.08	0.52
1:B:527:HIS:HB2	2:B:1513:HOH:O	2.08	0.52
1:B:447:SER:HA	1:B:450:PHE:HB2	1.91	0.52
1:B:684:VAL:O	1:B:688:THR:HB	2.10	0.52
1:B:372:THR:HG21	1:B:375:ALA:HB2	1.91	0.52
1:A:733:GLU:CB	2:A:1739:HOH:O	2.58	0.52
1:B:559:GLU:HG2	1:B:630:VAL:HG11	1.92	0.52
1:A:463:LYS:HB2	2:A:1859:HOH:O	2.09	0.52
1:B:246:GLU:H	1:B:250:HIS:HD2	1.57	0.51
1:A:329:ARG:HB3	1:A:335:HIS:CE1	2.45	0.51
1:A:490:ARG:NH1	2:A:1802:HOH:O	2.44	0.51
1:A:667:ASN:ND2	1:A:764:ARG:HD2	2.26	0.51
1:B:227:PRO:HA	1:B:349:GLU:O	2.10	0.51
1:B:243:PRO:HG2	2:B:1347:HOH:O	2.10	0.51
1:A:359:GLN:H	1:A:359:GLN:NE2	1.89	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:602:LEU:HD11	1:B:791:GLU:O	2.11	0.51
1:A:669:LYS:HE2	2:A:1860:HOH:O	2.10	0.51
1:A:708:LEU:HD13	1:A:827:VAL:HG22	1.92	0.51
1:A:289:SER:HB3	2:A:1842:HOH:O	2.09	0.51
1:A:240:ARG:O	1:A:243:PRO:HD2	2.11	0.51
1:A:675:MET:O	1:A:679:VAL:HG23	2.11	0.51
1:A:819:LEU:HD23	1:A:822:MET:CE	2.41	0.51
1:A:53:GLN:H	1:A:53:GLN:CD	2.14	0.51
1:A:693:ALA:C	1:A:695:ASP:H	2.15	0.51
1:B:228:ALA:HB3	2:B:1706:HOH:O	2.11	0.50
1:A:372:THR:CG2	1:A:375:ALA:HB2	2.40	0.50
1:B:278:ASN:HD21	1:B:832:ASN:ND2	2.09	0.50
1:B:118:ASN:HD21	1:B:367:LYS:NZ	2.10	0.50
1:B:129:THR:HB	2:B:1366:HOH:O	2.11	0.50
1:A:702:TRP:HE1	1:A:714:THR:CA	2.17	0.50
1:B:341:LYS:HE2	1:B:342:GLU:OE2	2.11	0.50
1:A:140:GLU:HA	1:A:147:ARG:NH2	2.26	0.50
1:A:328:ARG:CG	1:A:328:ARG:NH1	2.61	0.50
1:A:15:LYS:CD	2:A:1869:HOH:O	2.57	0.50
1:A:793:ILE:CG2	2:A:1117:HOH:O	2.60	0.50
1:B:810:GLU:O	1:B:814:MET:HG2	2.12	0.50
1:B:593:ARG:HD2	2:B:1701:HOH:O	2.10	0.50
1:B:660:ARG:CG	2:B:1740:HOH:O	2.57	0.50
1:B:136:LYS:HA	1:B:155:VAL:HG11	1.93	0.50
1:B:677:ARG:HD3	2:B:1289:HOH:O	2.11	0.50
1:A:254:ASP:HB3	1:A:259:THR:HG22	1.94	0.50
1:B:78:LEU:O	1:B:79:ASP:HB2	2.12	0.50
1:A:558:HIS:HE1	2:A:1297:HOH:O	1.93	0.49
1:A:258:ARG:HA	1:A:300:LEU:HD11	1.93	0.49
1:B:784:TYR:CE2	1:B:788:TYR:HE2	2.30	0.49
1:B:5:LEU:N	2:B:1569:HOH:O	2.45	0.49
1:B:42:LYS:NZ	2:B:1195:HOH:O	2.44	0.49
1:B:223:ILE:HG12	1:B:355:THR:HG22	1.95	0.49
1:A:101:MET:HE1	1:A:371:MET:HE3	1.94	0.49
1:B:733:GLU:O	1:B:735:LEU:N	2.46	0.49
1:A:715:ALA:O	1:A:717:SER:N	2.46	0.48
1:A:128:VAL:HA	1:A:176:GLY:O	2.13	0.48
1:B:254:ASP:HB3	1:B:259:THR:HG22	1.95	0.48
1:A:42:LYS:NZ	2:A:1285:HOH:O	2.46	0.48
1:A:490:ARG:HG2	2:A:1751:HOH:O	2.11	0.48
1:A:674:ASP:OD1	1:A:677:ARG:NH1	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:276:ILE:HG13	1:A:281:GLU:OE2	2.12	0.48
1:A:688:THR:HG23	1:A:696:TRP:CZ2	2.48	0.48
1:B:421:ASP:OD1	1:B:453:ARG:NH2	2.46	0.48
1:A:11:GLY:HA2	2:A:1133:HOH:O	2.13	0.48
1:A:357:THR:HB	1:A:359:GLN:NE2	2.29	0.48
1:B:453:ARG:CG	1:B:453:ARG:NH1	2.77	0.48
1:A:169:TYR:CZ	1:A:199:GLN:HG2	2.49	0.48
1:A:778:LYS:HE2	2:A:1431:HOH:O	2.14	0.48
1:B:328:ARG:HH11	1:B:796:ARG:HD2	1.79	0.47
1:B:372:THR:CG2	1:B:375:ALA:HB2	2.43	0.47
1:A:116:TYR:CZ	1:A:149:LEU:HD13	2.50	0.47
1:B:714:THR:O	1:B:717:SER:CB	2.61	0.47
1:B:2:LEU:C	1:B:4:LYS:H	2.18	0.47
1:B:472:ILE:HG13	1:B:489:GLY:HA3	1.97	0.47
1:B:764:ARG:HD3	1:B:764:ARG:HA	1.45	0.47
1:B:328:ARG:HG2	2:B:1598:HOH:O	2.14	0.47
1:B:648:MET:HG3	2:B:1537:HOH:O	2.14	0.47
1:B:345:GLU:HG3	2:B:1412:HOH:O	2.13	0.47
1:A:246:GLU:OE1	1:A:249:VAL:HG21	2.14	0.47
1:A:672:ALA:O	1:A:676:VAL:HG23	2.14	0.47
1:A:677:ARG:HD3	2:A:1341:HOH:O	2.14	0.47
1:B:24:VAL:HG22	1:B:64:PRO:HA	1.96	0.47
1:A:326:ILE:HG21	2:B:1884:HOH:O	2.14	0.47
1:B:15:LYS:HD3	2:B:1434:HOH:O	2.14	0.47
1:A:713:ILE:O	1:A:714:THR:O	2.32	0.47
1:B:321:THR:HG22	1:B:323:ARG:HB2	1.96	0.47
1:B:546:GLU:OE2	1:B:546:GLU:HA	2.15	0.47
1:A:509:ARG:HD2	2:A:1828:HOH:O	2.14	0.47
1:A:310:ARG:HA	1:A:310:ARG:HE	1.79	0.47
1:A:819:LEU:HD23	1:A:822:MET:HE2	1.97	0.47
1:B:543:GLU:HB3	2:B:1692:HOH:O	2.14	0.47
1:A:426:ARG:HD3	1:A:551:TYR:CD2	2.50	0.46
1:A:463:LYS:HE2	2:A:1768:HOH:O	2.14	0.46
1:A:75:TRP:CE2	2:A:1783:HOH:O	2.56	0.46
1:A:123:ASN:HB3	1:A:203:HIS:CD2	2.51	0.46
1:B:793:ILE:HG12	1:B:807:TYR:HB2	1.97	0.46
1:A:-5:ARG:HD3	1:A:-5:ARG:HA	1.65	0.46
1:A:233:ASN:H	1:A:233:ASN:ND2	2.14	0.46
1:A:647:VAL:HG22	1:A:808:GLN:HG3	1.97	0.46
1:A:191:ALA:O	1:A:659:ARG:NH2	2.38	0.46
1:B:716:ASP:O	1:B:717:SER:C	2.54	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:245:MET:HE1	1:A:270:VAL:HG22	1.96	0.46
1:B:12:ARG:NH1	2:B:1295:HOH:O	2.48	0.45
1:B:258:ARG:HG2	2:B:1493:HOH:O	2.15	0.45
1:B:662:ILE:HG23	1:B:768:ARG:HG2	1.97	0.45
1:A:226:GLY:O	1:A:350:ASN:HA	2.17	0.45
1:A:587:GLY:O	1:A:592:ARG:NH1	2.48	0.45
1:B:163:ASP:OD1	1:B:166:ARG:NH1	2.50	0.45
1:B:323:ARG:HD2	1:B:323:ARG:HA	1.73	0.45
1:B:39:LEU:O	1:B:40:ARG:CB	2.64	0.45
1:B:276:ILE:HG13	1:B:281:GLU:OE2	2.16	0.45
1:A:211:ASP:OD2	1:A:562:ARG:NH1	2.46	0.45
1:A:427:TYR:CZ	1:A:456:PRO:HD2	2.51	0.45
1:B:129:THR:CB	2:B:1366:HOH:O	2.64	0.45
1:B:444:GLU:HG2	1:B:444:GLU:H	1.64	0.45
1:A:372:THR:HG21	1:A:375:ALA:HB2	1.99	0.45
1:A:552:VAL:HG23	1:A:571:SER:HB2	1.97	0.45
1:B:4:LYS:HG3	2:B:1069:HOH:O	2.16	0.45
1:A:46:PHE:HB3	1:A:120:LEU:HD13	1.99	0.45
1:A:270:VAL:HG21	1:A:291:LEU:HD22	1.99	0.45
1:B:510:GLU:HG2	2:B:1916:HOH:O	2.17	0.45
1:A:359:GLN:HE21	1:A:359:GLN:N	1.89	0.45
1:A:546:GLU:HB3	2:A:1726:HOH:O	2.17	0.45
1:B:118:ASN:HD21	1:B:367:LYS:HZ1	1.63	0.45
1:B:246:GLU:N	1:B:250:HIS:HD2	2.14	0.45
1:A:179:ASN:HB2	2:A:1827:HOH:O	2.16	0.45
1:A:605:ARG:NH1	1:B:791:GLU:OE2	2.49	0.45
1:B:532:ILE:O	1:B:535:GLU:HB2	2.15	0.45
1:B:615:GLU:HA	2:B:1514:HOH:O	2.17	0.45
1:A:463:LYS:HB3	1:A:464:TYR:CD1	2.52	0.44
1:A:617:LYS:HB2	2:A:1872:HOH:O	2.17	0.44
1:B:101:MET:HE1	1:B:371:MET:HE2	1.98	0.44
1:B:586:LEU:HD21	1:B:619:VAL:HG13	1.98	0.44
1:A:764:ARG:HA	1:A:764:ARG:HD3	1.62	0.44
1:B:270:VAL:HG21	1:B:291:LEU:HD22	1.98	0.44
1:B:505:ASP:OD1	1:B:522:TYR:OH	2.21	0.44
1:A:802:ASP:HA	1:A:803:PRO:HD2	1.87	0.44
1:B:698:LEU:O	1:B:702:TRP:HB2	2.18	0.44
1:B:709:TYR:HB3	1:B:831:PHE:CD2	2.52	0.44
1:B:205:ALA:HB2	1:B:365:TYR:CE2	2.51	0.44
1:B:423:VAL:HG11	1:B:450:PHE:CZ	2.53	0.44
1:A:286:PRO:HG3	1:A:777:ARG:NH2	2.31	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:81:ARG:HG2	2:B:1378:HOH:O	2.18	0.44
1:A:219:ARG:HD2	2:A:1678:HOH:O	2.16	0.44
1:A:709:TYR:HB3	1:A:831:PHE:CD2	2.53	0.44
1:A:798:MET:HG2	2:A:1385:HOH:O	2.17	0.44
1:B:367:LYS:HA	2:B:1557:HOH:O	2.18	0.43
1:B:669:LYS:HB2	1:B:764:ARG:NH1	2.33	0.43
1:B:694:GLU:H	1:B:694:GLU:HG2	1.61	0.43
1:A:530:LEU:HB3	1:A:531:PRO:HD3	2.00	0.43
1:A:661:ARG:NH2	2:A:1576:HOH:O	2.51	0.43
1:B:242:ALA:N	1:B:243:PRO:HD2	2.33	0.43
1:B:519:PRO:HD2	2:B:1374:HOH:O	2.18	0.43
1:B:531:PRO:HB3	2:B:1584:HOH:O	2.17	0.43
1:B:4:LYS:CG	2:B:1069:HOH:O	2.66	0.43
1:B:559:GLU:HG2	1:B:630:VAL:HG12	2.01	0.43
1:B:200:ARG:O	1:B:200:ARG:HG3	2.19	0.43
1:B:430:GLY:O	1:B:478:ARG:HB2	2.19	0.43
1:A:241:LEU:O	1:A:245:MET:HG3	2.18	0.43
1:B:205:ALA:HB2	1:B:365:TYR:CD2	2.53	0.43
1:B:260:VAL:HG11	1:B:295:LEU:HB2	2.00	0.43
1:B:442:ARG:HA	1:B:442:ARG:HD2	1.59	0.43
1:B:687:ALA:HB3	1:B:701:LEU:HD13	2.00	0.43
1:A:246:GLU:N	1:A:250:HIS:HD2	2.08	0.43
1:A:451:THR:C	1:A:453:ARG:H	2.22	0.43
1:B:328:ARG:NH1	1:B:796:ARG:HD2	2.34	0.43
1:B:463:LYS:HB3	1:B:464:TYR:CD1	2.53	0.43
1:B:678:ASP:OD1	1:B:823:LYS:HE2	2.18	0.43
1:A:90:ALA:HB1	1:A:114:PRO:HD3	2.00	0.43
1:A:233:ASN:N	1:A:233:ASN:ND2	2.66	0.43
1:A:761:GLY:O	1:A:764:ARG:HB2	2.19	0.43
1:A:798:MET:O	1:A:801:ARG:HG3	2.18	0.43
1:B:40:ARG:HD3	2:B:1825:HOH:O	2.18	0.43
1:A:438:THR:HB	1:A:556:GLU:CG	2.49	0.42
1:A:329:ARG:HB3	1:A:335:HIS:ND1	2.34	0.42
1:B:6:LEU:C	1:B:8:LEU:N	2.73	0.42
1:A:233:ASN:HD22	1:A:233:ASN:H	1.65	0.42
1:B:464:TYR:CD1	1:B:464:TYR:N	2.87	0.42
1:B:809:ARG:HD3	2:B:1189:HOH:O	2.20	0.42
1:A:612:VAL:CG1	1:B:323:ARG:HH22	2.33	0.42
1:B:223:ILE:HG12	1:B:355:THR:CG2	2.49	0.42
1:B:559:GLU:CG	1:B:630:VAL:HG11	2.49	0.42
1:B:617:LYS:HB3	2:B:1908:HOH:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:103:THR:HA	2:A:1132:HOH:O	2.18	0.42
1:A:169:TYR:CE1	1:A:199:GLN:HG2	2.55	0.42
1:A:797:ALA:HA	1:A:801:ARG:HD3	2.01	0.42
1:A:381:GLU:CD	1:A:638:ARG:HH11	2.23	0.42
1:B:410:LYS:HD2	1:B:603:LEU:HB3	2.02	0.42
1:A:205:ALA:HB2	1:A:365:TYR:CE2	2.54	0.42
1:B:107:LYS:HD3	2:B:1001:HOH:O	2.18	0.42
1:B:540:GLU:O	1:B:540:GLU:HG3	2.19	0.42
1:B:770:VAL:O	1:B:774:VAL:HG23	2.20	0.42
1:A:190:MET:HE1	1:A:224:ILE:HD13	2.01	0.42
1:A:674:ASP:O	1:A:678:ASP:HB2	2.20	0.42
1:B:655:ILE:HD13	1:B:655:ILE:HA	1.87	0.42
1:A:660:ARG:O	1:A:661:ARG:C	2.58	0.42
1:B:-5:ARG:HD3	1:B:-5:ARG:HA	1.65	0.42
1:B:39:LEU:HD23	1:B:148:PHE:CE1	2.53	0.42
1:A:561:ARG:O	1:A:561:ARG:HG3	2.19	0.41
1:B:222:LEU:O	1:B:355:THR:HG22	2.20	0.41
1:B:223:ILE:HG23	1:B:352:THR:HG23	2.02	0.41
1:A:451:THR:C	1:A:453:ARG:N	2.74	0.41
1:A:660:ARG:NH1	2:A:1929:HOH:O	2.51	0.41
1:B:133:TYR:CZ	1:B:137:ARG:HD3	2.55	0.41
1:B:453:ARG:HG3	1:B:453:ARG:HH11	1.84	0.41
1:A:796:ARG:HG2	2:A:1785:HOH:O	2.19	0.41
1:B:21:ALA:HB2	1:B:88:MET:HG3	2.03	0.41
1:A:202:HIS:O	1:A:365:TYR:HA	2.21	0.41
1:B:116:TYR:HD1	1:B:151:LEU:CD1	2.31	0.41
1:B:424:ALA:HB2	1:B:455:ILE:HD11	2.01	0.41
1:B:802:ASP:HA	1:B:803:PRO:HD2	1.95	0.41
1:B:6:LEU:C	1:B:8:LEU:H	2.24	0.41
1:B:381:GLU:OE2	1:B:638:ARG:HD2	2.20	0.41
1:B:507:ARG:CG	1:B:507:ARG:NH1	2.75	0.41
1:B:754:LEU:HD13	1:B:763:MET:SD	2.61	0.41
1:A:247:LYS:C	1:A:249:VAL:H	2.23	0.41
1:B:143:GLY:O	1:B:147:ARG:HB2	2.20	0.41
1:A:796:ARG:HD3	2:A:1885:HOH:O	2.21	0.41
1:A:268:GLU:HA	1:A:271:GLU:HB2	2.03	0.41
1:A:381:GLU:OE2	1:A:638:ARG:HD2	2.21	0.41
1:B:152:GLN:HG2	2:B:1365:HOH:O	2.21	0.41
1:B:552:VAL:HG23	1:B:571:SER:HB2	2.03	0.41
1:B:556:GLU:HG2	2:B:1862:HOH:O	2.21	0.41
1:A:242:ALA:N	1:A:243:PRO:HD2	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:771:LEU:HD23	1:B:771:LEU:HA	1.84	0.40
1:A:801:ARG:NE	1:A:802:ASP:H	2.20	0.40
1:B:186:LEU:HD22	1:B:354:ALA:HB1	2.03	0.40
1:B:326:ILE:HG13	1:B:795:LEU:HD13	2.04	0.40
1:B:653:LYS:HE3	2:B:1235:HOH:O	2.21	0.40
1:A:245:MET:CE	1:A:270:VAL:CG2	2.98	0.40
1:B:325:LEU:HD13	1:B:328:ARG:NH2	2.36	0.40
1:B:397:MET:HE2	2:B:1413:HOH:O	2.21	0.40
1:B:514:ASP:HB3	1:B:517:GLU:HB2	2.03	0.40
1:A:283:ALA:O	1:A:284:ASN:CB	2.68	0.40
1:B:551:TYR:HD1	1:B:579:GLU:HB3	1.86	0.40
1:B:785:GLU:HG3	2:B:1130:HOH:O	2.20	0.40
1:A:101:MET:CE	1:A:371:MET:CE	2.99	0.40
1:A:317:VAL:HG12	1:A:324:VAL:HA	2.04	0.40
1:A:603:LEU:HD12	1:A:603:LEU:HA	1.96	0.40
1:A:702:TRP:CD1	1:A:714:THR:HG23	2.57	0.40
1:B:672:ALA:HB2	1:B:767:GLU:HG2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	835/922 (91%)	765 (92%)	57 (7%)	13 (2%)	9 31
1	B	834/922 (90%)	758 (91%)	60 (7%)	16 (2%)	8 26
All	All	1669/1844 (90%)	1523 (91%)	117 (7%)	29 (2%)	9 29

All (29) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	264	GLU

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Mol	Chain	Res	Type
1	A	714	THR
1	A	715	ALA
1	A	716	ASP
1	B	695	ASP
1	B	734	GLU
1	B	760	GLU
1	A	735	LEU
1	B	229	ASP
1	B	693	ALA
1	A	-5	ARG
1	A	452	LYS
1	B	3	SER
1	B	111	CYS
1	B	717	SER
1	B	758	ALA
1	B	799	ALA
1	B	800	GLN
1	A	107	LYS
1	A	574	GLN
1	A	801	ARG
1	A	802	ASP
1	A	690	GLU
1	A	694	GLU
1	B	311	ASP
1	B	802	ASP
1	B	-4	GLY
1	B	694	GLU
1	B	324	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	696/755 (92%)	577 (83%)	119 (17%)	2 6
1	B	697/755 (92%)	572 (82%)	125 (18%)	2 5
All	All	1393/1510 (92%)	1149 (82%)	244 (18%)	2 6

All (244) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	-15	ASP
1	A	-5	ARG
1	A	-3	SER
1	A	0	ASP
1	A	3	SER
1	A	4	LYS
1	A	5	LEU
1	A	7	ARG
1	A	12	ARG
1	A	15	LYS
1	A	19	LYS
1	A	29	ASP
1	A	35	THR
1	A	40	ARG
1	A	43	THR
1	A	48	ARG
1	A	53	GLN
1	A	78	LEU
1	A	107	LYS
1	A	111	CYS
1	A	136	LYS
1	A	152	GLN
1	A	155	VAL
1	A	193	SER
1	A	210	VAL
1	A	219	ARG
1	A	222	LEU
1	A	225	SER
1	A	232	SER
1	A	233	ASN
1	A	246	GLU
1	A	256	ARG
1	A	259	THR
1	A	262	VAL
1	A	264	GLU
1	A	265	LYS
1	A	271	GLU
1	A	276	ILE
1	A	277	ASP
1	A	296	LYS
1	A	300	LEU
1	A	305	LYS

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Mol	Chain	Res	Type
1	A	310	ARG
1	A	316	ILE
1	A	320	PHE
1	A	326	ILE
1	A	328	ARG
1	A	329	ARG
1	A	347	LYS
1	A	359	GLN
1	A	371	MET
1	A	384	GLU
1	A	387	LYS
1	A	396	ASN
1	A	401	ARG
1	A	402	GLU
1	A	405	SER
1	A	413	GLU
1	A	417	ILE
1	A	434	LEU
1	A	438	THR
1	A	442	ARG
1	A	443	SER
1	A	444	GLU
1	A	449	GLN
1	A	452	LYS
1	A	453	ARG
1	A	454	ARG
1	A	460	LEU
1	A	463	LYS
1	A	478	ARG
1	A	485	THR
1	A	490	ARG
1	A	534	LYS
1	A	538	SER
1	A	539	LYS
1	A	542	LYS
1	A	546	GLU
1	A	555	THR
1	A	561	ARG
1	A	592	ARG
1	A	593	ARG
1	A	599	LEU
1	A	600	GLU

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Mol	Chain	Res	Type
1	A	601	THR
1	A	603	LEU
1	A	605	ARG
1	A	615	GLU
1	A	618	MET
1	A	632	GLN
1	A	641	VAL
1	A	678	ASP
1	A	690	GLU
1	A	694	GLU
1	A	695	ASP
1	A	698	LEU
1	A	702	TRP
1	A	703	THR
1	A	716	ASP
1	A	735	LEU
1	A	737	GLU
1	A	740	LEU
1	A	741	LYS
1	A	744	GLU
1	A	750	ARG
1	A	778	LYS
1	A	780	ARG
1	A	781	GLU
1	A	793	ILE
1	A	795	LEU
1	A	798	MET
1	A	800	GLN
1	A	801	ARG
1	A	809	ARG
1	A	810	GLU
1	A	818	MET
1	A	822	MET
1	A	826	SER
1	A	827	VAL
1	B	-14	SER
1	B	-5	ARG
1	B	3	SER
1	B	4	LYS
1	B	7	ARG
1	B	8	LEU
1	B	12	ARG

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Mol	Chain	Res	Type
1	B	18	LYS
1	B	31	VAL
1	B	35	THR
1	B	40	ARG
1	B	48	ARG
1	B	50	LEU
1	B	52	ASP
1	B	53	GLN
1	B	54	LYS
1	B	55	ASN
1	B	107	LYS
1	B	108	THR
1	B	130	VAL
1	B	152	GLN
1	B	155	VAL
1	B	210	VAL
1	B	212	SER
1	B	219	ARG
1	B	225	SER
1	B	229	ASP
1	B	232	SER
1	B	233	ASN
1	B	240	ARG
1	B	256	ARG
1	B	257	LYS
1	B	258	ARG
1	B	259	THR
1	B	265	LYS
1	B	276	ILE
1	B	284	ASN
1	B	289	SER
1	B	305	LYS
1	B	310	ARG
1	B	311	ASP
1	B	319	GLU
1	B	320	PHE
1	B	323	ARG
1	B	326	ILE
1	B	328	ARG
1	B	329	ARG
1	B	347	LYS
1	B	351	GLN

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Mol	Chain	Res	Type
1	B	355	THR
1	B	359	GLN
1	B	371	MET
1	B	372	THR
1	B	384	GLU
1	B	410	LYS
1	B	411	THR
1	B	413	GLU
1	B	421	ASP
1	B	425	GLU
1	B	429	LYS
1	B	433	VAL
1	B	434	LEU
1	B	438	THR
1	B	442	ARG
1	B	444	GLU
1	B	447	SER
1	B	449	GLN
1	B	453	ARG
1	B	454	ARG
1	B	460	LEU
1	B	478	ARG
1	B	490	ARG
1	B	493	ASP
1	B	507	ARG
1	B	510	GLU
1	B	517	GLU
1	B	534	LYS
1	B	536	GLU
1	B	538	SER
1	B	539	LYS
1	B	540	GLU
1	B	546	GLU
1	B	555	THR
1	B	566	GLN
1	B	573	ARG
1	B	599	LEU
1	B	600	GLU
1	B	601	THR
1	B	605	ARG
1	B	617	LYS
1	B	618	MET

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Mol	Chain	Res	Type
1	B	621	ARG
1	B	624	LYS
1	B	629	GLN
1	B	636	GLU
1	B	663	LEU
1	B	669	LYS
1	B	671	GLN
1	B	683	TYR
1	B	688	THR
1	B	694	GLU
1	B	698	LEU
1	B	702	TRP
1	B	705	LEU
1	B	713	ILE
1	B	717	SER
1	B	718	LEU
1	B	737	GLU
1	B	740	LEU
1	B	750	ARG
1	B	754	LEU
1	B	755	GLU
1	B	756	GLU
1	B	760	GLU
1	B	764	ARG
1	B	778	LYS
1	B	796	ARG
1	B	798	MET
1	B	800	GLN
1	B	801	ARG
1	B	810	GLU
1	B	814	MET
1	B	822	MET
1	B	827	VAL
1	B	835	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	118	ASN
1	A	146	HIS
1	A	203	HIS
1	A	233	ASN

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Mol	Chain	Res	Type
1	A	250	HIS
1	A	284	ASN
1	A	293	ASN
1	A	359	GLN
1	A	396	ASN
1	A	506	GLN
1	A	558	HIS
1	A	632	GLN
1	A	649	ASN
1	B	53	GLN
1	B	118	ASN
1	B	146	HIS
1	B	250	HIS
1	B	284	ASN
1	B	293	ASN
1	B	359	GLN
1	B	396	ASN
1	B	461	ASN
1	B	558	HIS
1	B	649	ASN
1	B	671	GLN
1	B	765	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.