



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 13, 2024 – 12:31 pm BST

PDB ID : 2JJD
Title : Protein Tyrosine Phosphatase, Receptor Type, E isoform
Authors : Elkins, J.M.; Ugochukwu, E.; Alfano, I.; Barr, A.J.; Bunkoczi, G.; King, O.N.F.; Filippakopoulos, P.; Savitsky, P.; Salah, E.; Pike, A.; Johansson, C.; Das, S.; Burgess-Brown, N.A.; Gileadi, O.; von Delft, F.; Arrowsmith, C.H.; Bountra, C.; Edwards, A.M.; Knapp, S.
Deposited on : 2008-03-31
Resolution : 3.20 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Xtriage (Phenix) : 1.13
EDS : 3.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.003 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

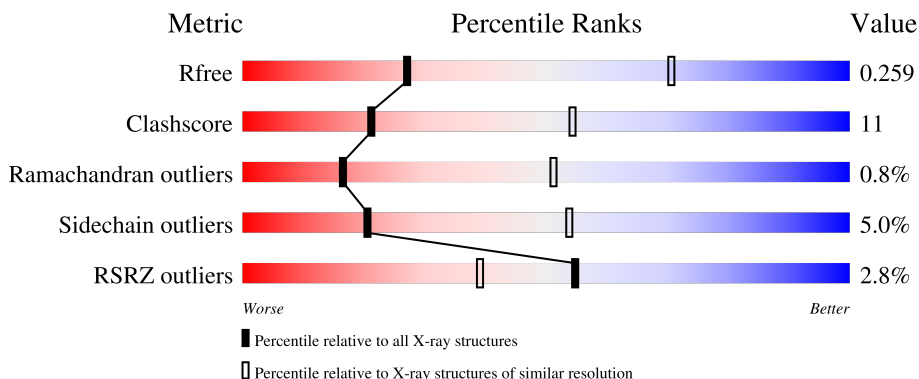
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 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.



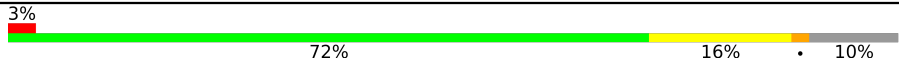
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1370 (3.20-3.20)
Clashscore	180529	1497 (3.20-3.20)
Ramachandran outliers	177936	1479 (3.20-3.20)
Sidechain outliers	177891	1478 (3.20-3.20)
RSRZ outliers	164620	1371 (3.20-3.20)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	599	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 70%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 18%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 10%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">2% 70% 18% • 10%</p>
1	B	599	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 71%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 17%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 10%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">2% 71% 17% • 10%</p>
1	C	599	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 70%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 19%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 10%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">3% 70% 19% • 10%</p>
1	D	599	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 71%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 18%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 10%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">4% 71% 18% • 10%</p>
1	E	599	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 74%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 15%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 10%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">2% 74% 15% • 10%</p>

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Mol	Chain	Length	Quality of chain
1	F	599	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into four segments: a small red segment on the left labeled '3%', a large green segment labeled '72%', a yellow segment labeled '16%', and a small grey segment on the right labeled '10%'.</p>

2 Entry composition i

There are 2 unique types of molecules in this entry. The entry contains 23750 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 RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	537	Total 3973	C 2574	N 689	O 689	S 21	0	0	0
1	B	541	Total 3972	C 2581	N 692	O 677	S 22	0	0	0
1	C	541	Total 3970	C 2582	N 690	O 676	S 22	0	0	0
1	D	539	Total 3936	C 2554	N 690	O 671	S 21	0	0	0
1	E	541	Total 3950	C 2569	N 688	O 672	S 21	0	0	0
1	F	542	Total 3937	C 2560	N 692	O 664	S 21	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	581	GLY	GLU	cloning artifact	UNP P23469
B	581	GLY	GLU	cloning artifact	UNP P23469
C	581	GLY	GLU	cloning artifact	UNP P23469
D	581	GLY	GLU	cloning artifact	UNP P23469
E	581	GLY	GLU	cloning artifact	UNP P23469
F	581	GLY	GLU	cloning artifact	UNP P23469

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Cl 2	0	0
2	B	3	Total 3	Cl 3	0	0
2	C	1	Total 1	Cl 1	0	0

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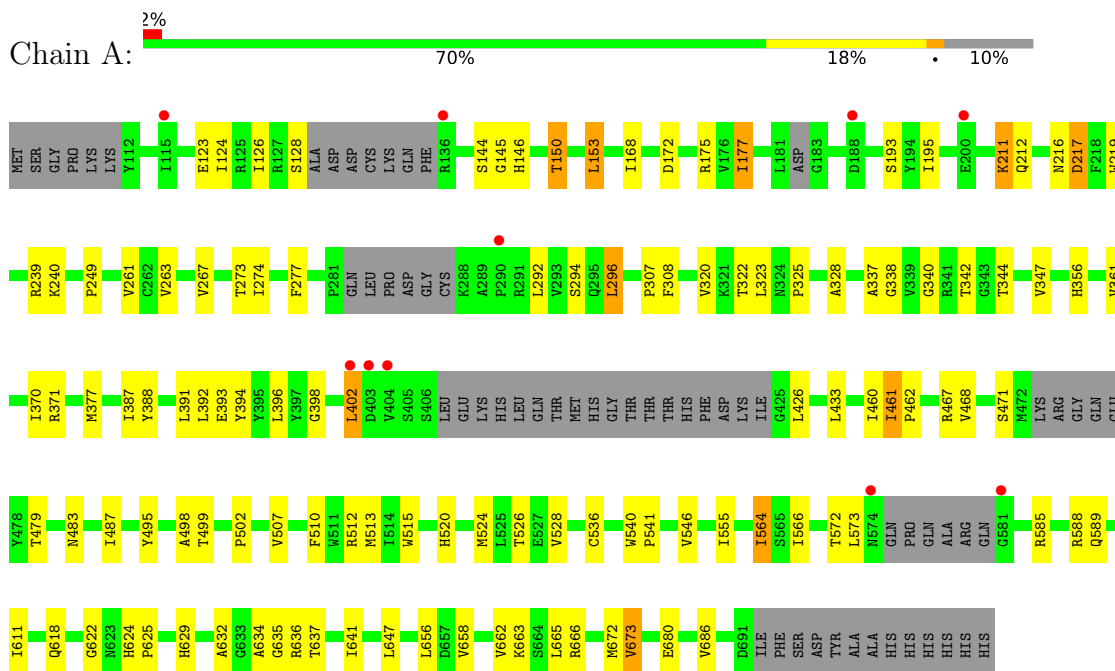
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	D	2	Total 2	Cl 2	0	0
2	E	2	Total 2	Cl 2	0	0
2	F	2	Total 2	Cl 2	0	0

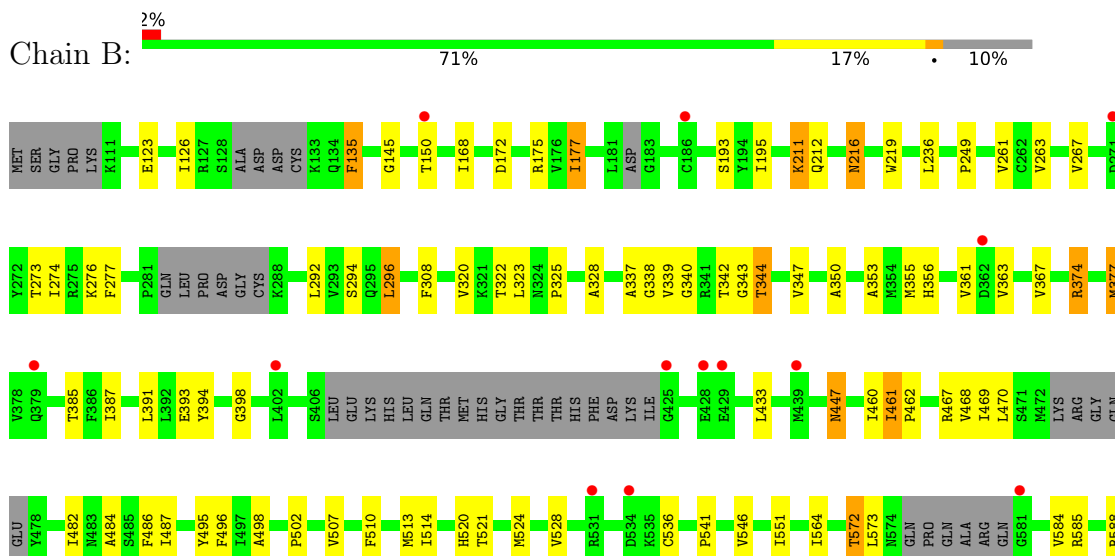
3 Residue-property plots [i](#)

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 and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

• Molecule 1: RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON

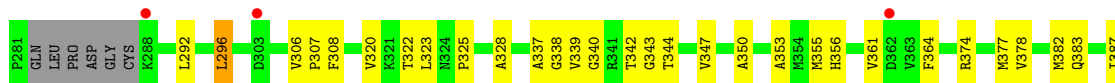


• Molecule 1: RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON



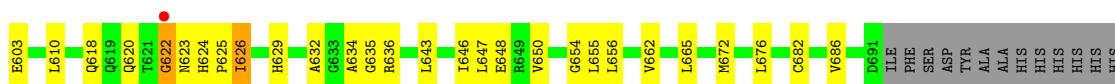
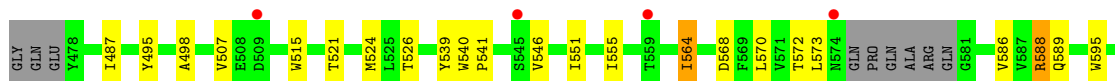
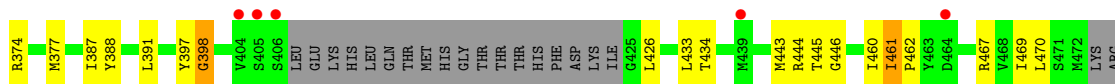
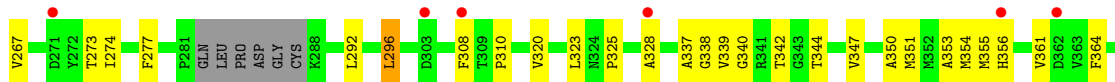


● Molecule 1: RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON

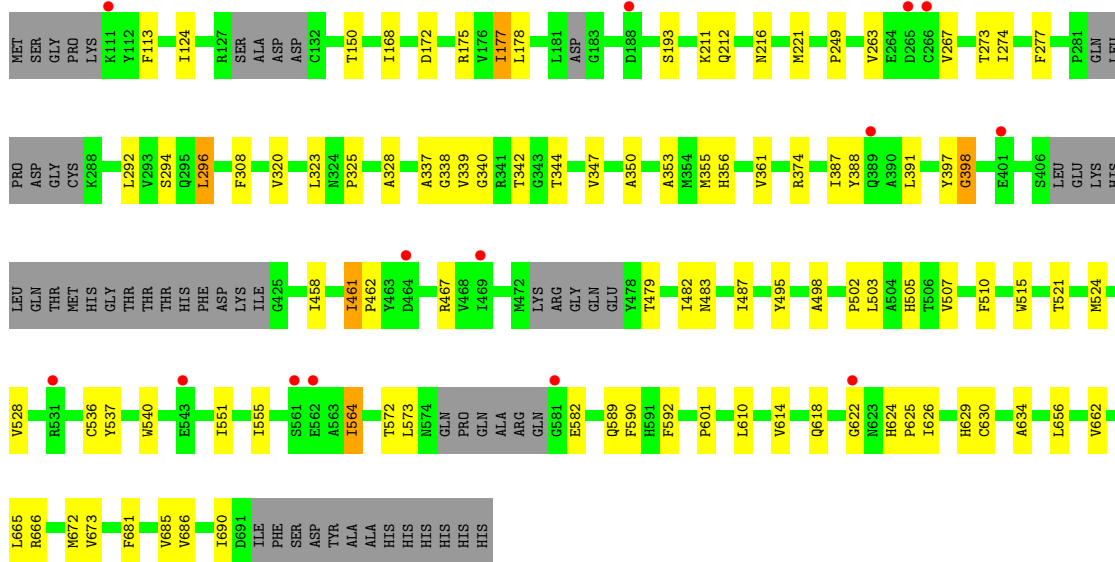
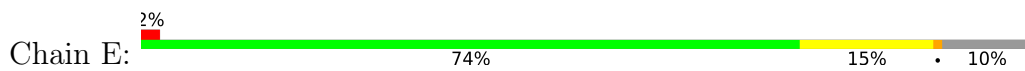


HIS

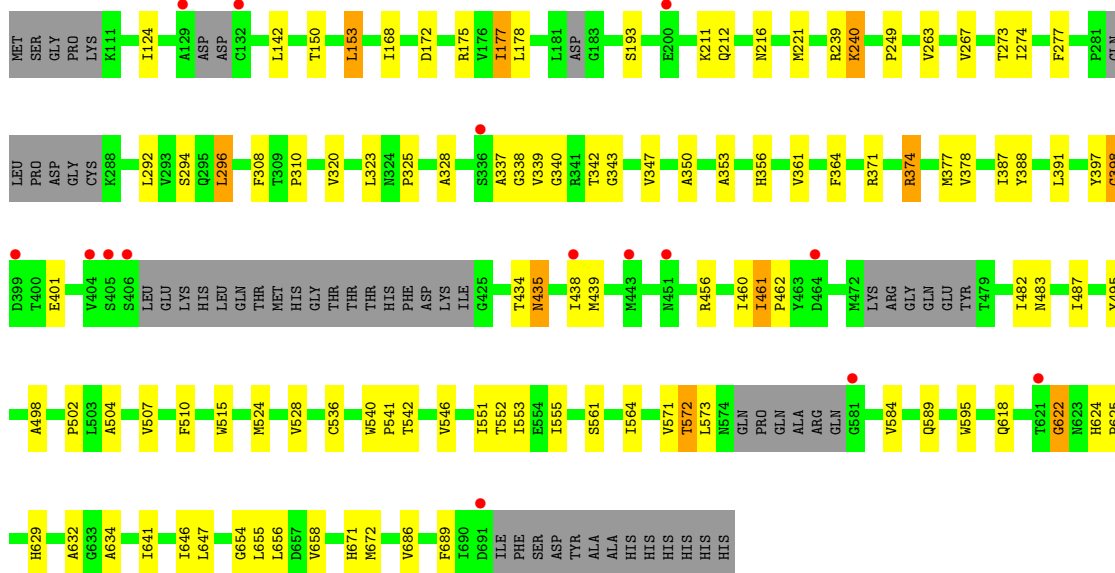
● Molecule 1: RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON



● Molecule 1: RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON



● Molecule 1: RECEPTOR-TYPE TYROSINE-PROTEIN PHOSPHATASE EPSILON



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	126.02Å 123.62Å 219.12Å 90.00° 91.13° 90.00°	Depositor
Resolution (Å)	218.22 – 3.20 218.22 – 3.20	Depositor EDS
% Data completeness (in resolution range)	98.7 (218.22-3.20) 98.7 (218.22-3.20)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.62 (at 3.18Å)	Xtrriage
Refinement program	REFMAC 5.4.0066	Depositor
R, R_{free}	0.221 , 0.256 0.226 , 0.259	Depositor DCC
R_{free} test set	5498 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	76.1	Xtrriage
Anisotropy	0.555	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 94.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	0.026 for k,h,-l 0.027 for -k,-h,-l 0.038 for h,-k,-l	Xtrriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	23750	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.98% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CL

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	0.49	0/4072	0.59	1/5570 (0.0%)
1	B	0.48	0/4074	0.58	0/5575
1	C	0.47	0/4071	0.57	0/5570
1	D	0.44	0/4036	0.55	0/5522
1	E	0.49	0/4051	0.58	0/5544
1	F	0.47	0/4037	0.56	0/5525
All	All	0.47	0/24341	0.57	1/33306 (0.0%)

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	C	0	1
1	F	0	1
All	All	0	2

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	673	VAL	N-CA-C	-5.12	97.19	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	622	GLY	Peptide

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Mol	Chain	Res	Type	Group
1	F	622	GLY	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	3973	0	3575	91	0
1	B	3972	0	3557	73	0
1	C	3970	0	3551	94	0
1	D	3936	0	3491	88	0
1	E	3950	0	3506	68	0
1	F	3937	0	3491	74	0
2	A	2	0	0	0	0
2	B	3	0	0	0	0
2	C	1	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
All	All	23750	0	21171	484	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 11.

All (484) 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:E:656:LEU:HD11	1:E:686:VAL:HG11	1.27	1.17
1:C:656:LEU:CD1	1:C:686:VAL:HG11	1.86	1.05
1:D:656:LEU:HD11	1:D:686:VAL:HG11	1.41	1.02
1:F:656:LEU:HD11	1:F:686:VAL:HG11	1.46	0.97
1:C:564:ILE:HG21	1:C:610:LEU:HD13	1.44	0.96
1:C:665:LEU:HD22	1:C:672:MET:HE3	1.44	0.96
1:A:393:GLU:OE2	1:A:663:LYS:NZ	1.98	0.95
1:A:656:LEU:HD11	1:A:686:VAL:HG11	1.47	0.95
1:B:656:LEU:CD1	1:B:686:VAL:HG11	1.98	0.91
1:C:656:LEU:HD12	1:C:686:VAL:HG11	1.54	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:656:LEU:HD11	1:E:686:VAL:CG1	2.01	0.89
1:C:564:ILE:CG2	1:C:610:LEU:HD13	2.02	0.88
1:C:665:LEU:HD22	1:C:672:MET:CE	2.03	0.88
1:B:656:LEU:HD11	1:B:686:VAL:HG11	1.56	0.86
1:E:551:ILE:HD13	1:E:573:LEU:HD13	1.59	0.85
1:C:551:ILE:HD13	1:C:573:LEU:HD13	1.59	0.85
1:E:634:ALA:HB1	1:E:672:MET:HA	1.59	0.83
1:E:624:HIS:HB3	1:E:625:PRO:HD2	1.59	0.82
1:B:524:MET:HE2	1:B:589:GLN:NE2	1.95	0.82
1:C:656:LEU:HD11	1:C:686:VAL:HG11	1.61	0.81
1:B:340:GLY:O	1:B:344:THR:HG23	1.81	0.80
1:E:339:VAL:HG13	1:E:374:ARG:HH11	1.46	0.80
1:A:153:LEU:HD13	1:A:175:ARG:NH1	1.97	0.79
1:B:541:PRO:HB3	1:B:546:VAL:HG13	1.63	0.79
1:B:634:ALA:HB1	1:B:672:MET:HA	1.65	0.79
1:D:524:MET:HE2	1:D:589:GLN:NE2	1.98	0.79
1:D:361:VAL:HG21	1:D:391:LEU:HD13	1.65	0.78
1:D:665:LEU:HD22	1:D:672:MET:CE	2.13	0.78
1:C:443:MET:HE3	1:C:461:ILE:HG22	1.66	0.78
1:F:656:LEU:CD1	1:F:686:VAL:HG11	2.13	0.77
1:A:524:MET:HG3	1:A:629:HIS:CE1	2.19	0.77
1:F:487:ILE:HD13	1:F:672:MET:HE2	1.68	0.76
1:D:340:GLY:O	1:D:344:THR:HG23	1.85	0.76
1:C:681:PHE:O	1:C:685:VAL:HG23	1.86	0.76
1:D:551:ILE:HD13	1:D:573:LEU:HD13	1.66	0.75
1:B:524:MET:HG3	1:B:629:HIS:NE2	2.01	0.74
1:F:495:TYR:OH	1:F:618:GLN:HG2	1.88	0.74
1:D:521:THR:HB	1:D:626:ILE:HG23	1.69	0.73
1:C:339:VAL:HG13	1:C:374:ARG:HH11	1.53	0.73
1:D:656:LEU:CD1	1:D:686:VAL:HG11	2.17	0.73
1:B:123:GLU:HA	1:B:126:ILE:HD12	1.72	0.72
1:E:340:GLY:O	1:E:344:THR:HG23	1.90	0.71
1:F:634:ALA:HB1	1:F:672:MET:HA	1.71	0.71
1:B:361:VAL:HG21	1:B:391:LEU:HD13	1.72	0.71
1:B:393:GLU:OE2	1:B:663:LYS:NZ	2.24	0.71
1:B:624:HIS:HB3	1:B:625:PRO:HD2	1.72	0.70
1:B:551:ILE:HD13	1:B:573:LEU:HD13	1.74	0.69
1:E:150:THR:HG22	1:E:172:ASP:OD2	1.92	0.69
1:C:551:ILE:CD1	1:C:573:LEU:HD13	2.22	0.69
1:C:551:ILE:HD13	1:C:573:LEU:CD1	2.23	0.68
1:B:150:THR:HG22	1:B:172:ASP:OD2	1.93	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:325:PRO:HG2	1:C:328:ALA:HB2	1.75	0.67
1:E:656:LEU:CD1	1:E:686:VAL:HG11	2.16	0.67
1:F:572:THR:HG23	1:F:584:VAL:HG23	1.77	0.67
1:F:325:PRO:HG2	1:F:328:ALA:HB2	1.77	0.67
1:B:325:PRO:HG2	1:B:328:ALA:HB2	1.76	0.67
1:D:624:HIS:HB3	1:D:625:PRO:HD2	1.76	0.67
1:F:347:VAL:HG11	1:F:387:ILE:HD13	1.76	0.67
1:A:338:GLY:C	1:A:342:THR:HG21	2.15	0.67
1:A:624:HIS:HB3	1:A:625:PRO:HD2	1.77	0.67
1:D:656:LEU:HD11	1:D:686:VAL:CG1	2.23	0.67
1:D:325:PRO:HG2	1:D:328:ALA:HB2	1.75	0.66
1:F:153:LEU:HD13	1:F:175:ARG:NH1	2.09	0.66
1:F:624:HIS:HB3	1:F:625:PRO:HD2	1.77	0.66
1:F:524:MET:HE2	1:F:589:GLN:NE2	2.09	0.66
1:F:150:THR:HG22	1:F:172:ASP:OD2	1.96	0.66
1:F:461:ILE:HG23	1:F:462:PRO:HD2	1.79	0.65
1:C:443:MET:CE	1:C:461:ILE:HG22	2.27	0.65
1:A:153:LEU:HD13	1:A:175:ARG:HH11	1.62	0.65
1:D:460:ILE:HD12	1:D:632:ALA:HB1	1.77	0.65
1:E:325:PRO:HG2	1:E:328:ALA:HB2	1.78	0.64
1:E:347:VAL:HG11	1:E:387:ILE:HD13	1.79	0.64
1:E:665:LEU:HD22	1:E:672:MET:HE2	1.80	0.64
1:A:325:PRO:HG2	1:A:328:ALA:HB2	1.77	0.64
1:B:338:GLY:C	1:B:342:THR:HG21	2.17	0.64
1:A:347:VAL:HG11	1:A:387:ILE:HD13	1.78	0.64
1:D:487:ILE:HD12	1:D:498:ALA:HB2	1.79	0.64
1:F:641:ILE:HD12	1:F:672:MET:HE1	1.80	0.64
1:D:618:GLN:NE2	1:D:626:ILE:HG12	2.12	0.63
1:A:624:HIS:HB3	1:A:625:PRO:CD	2.28	0.63
1:C:361:VAL:HG21	1:C:391:LEU:HD13	1.81	0.63
1:C:515:TRP:NE1	1:C:573:LEU:HD22	2.14	0.63
1:C:564:ILE:HG21	1:C:610:LEU:CD1	2.23	0.63
1:F:338:GLY:C	1:F:342:THR:HG21	2.18	0.63
1:A:402:LEU:HD23	1:A:656:LEU:HB3	1.81	0.62
1:B:296:LEU:HD13	1:B:320:VAL:HG22	1.80	0.62
1:B:460:ILE:HD12	1:B:632:ALA:HB1	1.80	0.62
1:F:339:VAL:HG13	1:F:374:ARG:HH11	1.63	0.62
1:B:347:VAL:HG11	1:B:387:ILE:HD13	1.80	0.62
1:B:528:VAL:HG13	1:B:536:CYS:O	1.99	0.62
1:D:296:LEU:HD13	1:D:320:VAL:HG22	1.81	0.62
1:D:338:GLY:C	1:D:342:THR:HG21	2.20	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:545:SER:HA	1:C:553:ILE:O	2.00	0.62
1:C:634:ALA:HB1	1:C:672:MET:HA	1.81	0.62
1:C:338:GLY:C	1:C:342:THR:HG21	2.20	0.62
1:E:338:GLY:C	1:E:342:THR:HG21	2.20	0.61
1:A:680:GLU:HG2	1:C:147:ILE:HD12	1.82	0.61
1:D:347:VAL:HG11	1:D:387:ILE:HD13	1.83	0.61
1:C:168:ILE:HD13	1:C:337:ALA:HB1	1.82	0.61
1:C:347:VAL:HG11	1:C:387:ILE:HD13	1.81	0.61
1:D:249:PRO:HG2	1:D:263:VAL:HG23	1.82	0.61
1:D:524:MET:HG3	1:D:629:HIS:NE2	2.16	0.61
1:E:551:ILE:CD1	1:E:573:LEU:HD13	2.28	0.60
1:C:520:HIS:HA	1:C:587:VAL:HG22	1.83	0.60
1:E:296:LEU:HD13	1:E:320:VAL:HG22	1.84	0.60
1:B:168:ILE:HD13	1:B:337:ALA:HB1	1.82	0.60
1:B:461:ILE:HG23	1:B:462:PRO:HD2	1.82	0.60
1:B:249:PRO:HG2	1:B:263:VAL:HG23	1.83	0.60
1:E:564:ILE:HG21	1:E:610:LEU:HD13	1.83	0.60
1:A:249:PRO:HG2	1:A:263:VAL:HG23	1.84	0.60
1:A:524:MET:HG3	1:A:629:HIS:NE2	2.17	0.60
1:E:249:PRO:HG2	1:E:263:VAL:HG23	1.82	0.60
1:A:433:LEU:CD1	1:A:662:VAL:HG11	2.31	0.59
1:B:502:PRO:HG3	1:B:510:PHE:CD1	2.36	0.59
1:E:665:LEU:HD22	1:E:672:MET:CE	2.33	0.59
1:C:628:VAL:CG1	1:C:637:THR:HG23	2.33	0.59
1:A:338:GLY:O	1:A:342:THR:HG21	2.01	0.59
1:A:635:GLY:N	1:A:672:MET:O	2.36	0.59
1:D:665:LEU:HD22	1:D:672:MET:HE2	1.82	0.59
1:F:168:ILE:HD13	1:F:337:ALA:HB1	1.85	0.59
1:D:551:ILE:CD1	1:D:573:LEU:HD13	2.32	0.58
1:F:296:LEU:HD13	1:F:320:VAL:HG22	1.85	0.58
1:F:249:PRO:HG2	1:F:263:VAL:HG23	1.85	0.58
1:D:124:ILE:CD1	1:D:388:TYR:HB3	2.34	0.58
1:E:175:ARG:NH2	1:E:177:ILE:HG22	2.19	0.58
1:B:572:THR:HG23	1:B:584:VAL:HG23	1.85	0.58
1:A:524:MET:HE2	1:A:540:TRP:CZ3	2.38	0.58
1:C:249:PRO:HG2	1:C:263:VAL:HG23	1.86	0.58
1:D:487:ILE:HD13	1:D:672:MET:CE	2.33	0.58
1:B:487:ILE:HD13	1:B:672:MET:HE2	1.85	0.57
1:B:175:ARG:NH2	1:B:177:ILE:HG22	2.19	0.57
1:C:306:VAL:HG13	1:C:382:MET:HG2	1.86	0.57
1:A:461:ILE:HG23	1:A:462:PRO:HD2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:340:GLY:O	1:C:344:THR:HG23	2.03	0.57
1:C:541:PRO:HB3	1:C:546:VAL:HG13	1.85	0.57
1:D:175:ARG:NH2	1:D:177:ILE:HG22	2.19	0.57
1:D:634:ALA:HB1	1:D:672:MET:HA	1.85	0.57
1:A:296:LEU:HD13	1:A:320:VAL:HG22	1.87	0.57
1:E:624:HIS:HB3	1:E:625:PRO:CD	2.33	0.57
1:E:681:PHE:O	1:E:685:VAL:HG23	2.05	0.57
1:C:175:ARG:NH2	1:C:177:ILE:HG22	2.20	0.57
1:A:168:ILE:HD13	1:A:337:ALA:HB1	1.87	0.56
1:D:654:GLY:O	1:D:655:LEU:HD23	2.04	0.56
1:E:361:VAL:HG21	1:E:391:LEU:HD13	1.87	0.56
1:E:524:MET:HG3	1:E:629:HIS:CE1	2.40	0.56
1:C:553:ILE:HD13	1:C:571:VAL:HG13	1.88	0.56
1:F:646:ILE:HD13	1:F:658:VAL:HG22	1.87	0.56
1:B:618:GLN:NE2	1:B:624:HIS:O	2.39	0.56
1:D:515:TRP:NE1	1:D:573:LEU:HD22	2.21	0.56
1:F:175:ARG:NH2	1:F:177:ILE:HG22	2.21	0.56
1:B:447:ASN:N	1:B:447:ASN:HD22	2.03	0.56
1:E:168:ILE:HD13	1:E:337:ALA:HB1	1.86	0.56
1:A:495:TYR:OH	1:A:618:GLN:HG2	2.06	0.56
1:A:515:TRP:NE1	1:A:573:LEU:HD22	2.21	0.55
1:A:322:THR:HG22	1:A:323:LEU:HD23	1.87	0.55
1:C:296:LEU:HD13	1:C:320:VAL:HG22	1.87	0.55
1:A:175:ARG:NH2	1:A:177:ILE:HG22	2.21	0.55
1:A:402:LEU:CD2	1:A:656:LEU:HD22	2.37	0.55
1:D:168:ILE:HD13	1:D:337:ALA:HB1	1.89	0.55
1:A:468:VAL:HG11	1:A:513:MET:HG3	1.87	0.55
1:A:665:LEU:HD22	1:A:672:MET:CE	2.36	0.55
1:A:520:HIS:NE2	1:A:585:ARG:HD3	2.22	0.54
1:B:468:VAL:HG22	1:B:486:PHE:CE2	2.43	0.54
1:C:524:MET:HG3	1:C:629:HIS:CE1	2.43	0.54
1:A:499:THR:HG23	1:A:629:HIS:HB3	1.90	0.54
1:C:682:CYS:O	1:C:686:VAL:HG23	2.07	0.54
1:C:628:VAL:HG12	1:C:637:THR:HG23	1.90	0.54
1:B:469:ILE:O	1:B:470:LEU:HD23	2.08	0.54
1:E:524:MET:HG3	1:E:629:HIS:NE2	2.22	0.54
1:E:515:TRP:NE1	1:E:573:LEU:HD22	2.23	0.54
1:B:338:GLY:O	1:B:342:THR:HG21	2.08	0.54
1:A:361:VAL:HG21	1:A:391:LEU:HD13	1.90	0.53
1:F:274:ILE:CG2	1:F:274:ILE:O	2.57	0.53
1:F:528:VAL:HG13	1:F:536:CYS:O	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:495:TYR:OH	1:C:618:GLN:HG2	2.09	0.53
1:B:322:THR:HG22	1:B:323:LEU:HD23	1.90	0.53
1:D:274:ILE:O	1:D:274:ILE:CG2	2.57	0.53
1:B:495:TYR:OH	1:B:618:GLN:HG2	2.08	0.53
1:B:343:GLY:HA2	1:B:377:MET:HE3	1.91	0.53
1:C:374:ARG:O	1:C:377:MET:HG2	2.08	0.53
1:D:274:ILE:HD11	1:D:323:LEU:HD11	1.90	0.53
1:F:401:GLU:HA	1:F:656:LEU:O	2.09	0.53
1:F:502:PRO:HG3	1:F:510:PHE:CD1	2.43	0.53
1:C:322:THR:HG22	1:C:323:LEU:HD23	1.91	0.52
1:C:438:ILE:HD13	1:C:670:PRO:CB	2.39	0.52
1:A:502:PRO:HG3	1:A:510:PHE:CD1	2.43	0.52
1:A:656:LEU:CD1	1:A:686:VAL:HG11	2.31	0.52
1:D:524:MET:CE	1:D:589:GLN:NE2	2.71	0.52
1:D:682:CYS:O	1:D:686:VAL:HG23	2.10	0.52
1:E:524:MET:HE2	1:E:589:GLN:NE2	2.24	0.52
1:F:267:VAL:HB	1:F:274:ILE:HG22	1.90	0.52
1:F:515:TRP:NE1	1:F:573:LEU:HD22	2.24	0.52
1:C:274:ILE:O	1:C:274:ILE:CG2	2.58	0.52
1:C:487:ILE:HD13	1:C:672:MET:CE	2.40	0.52
1:D:665:LEU:HD22	1:D:672:MET:HE3	1.90	0.52
1:B:681:PHE:O	1:B:685:VAL:HG23	2.10	0.52
1:F:524:MET:HG3	1:F:629:HIS:NE2	2.24	0.52
1:A:340:GLY:O	1:A:344:THR:HG23	2.09	0.52
1:C:344:THR:HG21	1:C:383:GLN:HG2	1.92	0.52
1:A:426:LEU:H	1:A:426:LEU:HD12	1.75	0.51
1:A:611:ILE:HD13	1:A:647:LEU:HD12	1.93	0.51
1:F:343:GLY:HA2	1:F:377:MET:HE3	1.91	0.51
1:A:277:PHE:O	1:A:292:LEU:HD23	2.10	0.51
1:A:487:ILE:HD12	1:A:498:ALA:HB2	1.92	0.51
1:C:338:GLY:O	1:C:342:THR:HG21	2.10	0.51
1:A:433:LEU:HD11	1:A:662:VAL:HG11	1.91	0.51
1:C:460:ILE:HD12	1:C:632:ALA:HB1	1.92	0.51
1:A:153:LEU:HD22	1:A:175:ARG:CZ	2.41	0.51
1:D:564:ILE:HG21	1:D:610:LEU:HD13	1.92	0.51
1:E:503:LEU:HD13	1:E:505:HIS:HE1	1.75	0.51
1:A:460:ILE:HD12	1:A:632:ALA:HB1	1.93	0.51
1:F:654:GLY:O	1:F:655:LEU:HD23	2.10	0.51
1:A:217:ASP:N	1:A:217:ASP:OD2	2.44	0.50
1:A:524:MET:CE	1:A:589:GLN:NE2	2.74	0.50
1:D:564:ILE:CG2	1:D:610:LEU:HD13	2.40	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:277:PHE:O	1:C:292:LEU:HD23	2.12	0.50
1:D:620:GLN:C	1:D:622:GLY:H	2.14	0.50
1:A:487:ILE:HG21	1:A:641:ILE:HG21	1.94	0.50
1:A:524:MET:HE3	1:A:589:GLN:NE2	2.27	0.50
1:B:274:ILE:HD11	1:B:323:LEU:HD11	1.92	0.50
1:E:461:ILE:HG23	1:E:462:PRO:HD2	1.94	0.50
1:F:456:ARG:NH2	1:F:536:CYS:HA	2.27	0.50
1:A:239:ARG:O	1:A:240:LYS:CB	2.60	0.50
1:A:370:ILE:HD12	1:A:377:MET:HG3	1.94	0.50
1:B:274:ILE:O	1:B:274:ILE:CG2	2.60	0.50
1:F:618:GLN:O	1:F:622:GLY:HA2	2.11	0.50
1:A:665:LEU:HD22	1:A:672:MET:HE3	1.94	0.50
1:B:363:VAL:O	1:B:367:VAL:HG23	2.12	0.50
1:D:524:MET:HE2	1:D:589:GLN:HE22	1.72	0.50
1:D:267:VAL:HB	1:D:274:ILE:HG22	1.94	0.50
1:E:274:ILE:O	1:E:274:ILE:CG2	2.60	0.50
1:A:274:ILE:HD11	1:A:323:LEU:HD11	1.93	0.50
1:E:690:ILE:HG22	1:E:690:ILE:O	2.12	0.49
1:F:211:LYS:O	1:F:212:GLN:C	2.51	0.49
1:F:274:ILE:HD11	1:F:323:LEU:HD11	1.94	0.49
1:A:144:SER:O	1:A:146:HIS:N	2.43	0.49
1:D:351:MET:HE1	1:D:354:MET:HE1	1.94	0.49
1:D:495:TYR:OH	1:D:618:GLN:HG2	2.13	0.49
1:E:267:VAL:HB	1:E:274:ILE:HG22	1.94	0.49
1:E:338:GLY:O	1:E:342:THR:HG21	2.12	0.49
1:C:524:MET:HG3	1:C:629:HIS:NE2	2.26	0.49
1:D:351:MET:CE	1:D:354:MET:CE	2.91	0.49
1:A:267:VAL:HB	1:A:274:ILE:HG22	1.94	0.49
1:C:461:ILE:HG23	1:C:462:PRO:HD2	1.94	0.49
1:C:624:HIS:HB3	1:C:625:PRO:HD2	1.94	0.49
1:D:340:GLY:N	1:D:377:MET:O	2.46	0.49
1:D:635:GLY:N	1:D:672:MET:O	2.45	0.49
1:A:150:THR:HG22	1:A:172:ASP:CG	2.33	0.49
1:A:656:LEU:HD21	1:A:658:VAL:HG23	1.95	0.49
1:A:541:PRO:HB3	1:A:546:VAL:HG13	1.94	0.49
1:A:618:GLN:O	1:A:622:GLY:HA2	2.13	0.48
1:E:274:ILE:HD11	1:E:323:LEU:HD11	1.94	0.48
1:E:690:ILE:O	1:E:690:ILE:CG2	2.61	0.48
1:A:195:ILE:HD12	1:A:377:MET:HE1	1.96	0.48
1:F:551:ILE:CD1	1:F:573:LEU:HD13	2.44	0.48
1:F:656:LEU:HD21	1:F:658:VAL:HG23	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:487:ILE:HD13	1:C:672:MET:HE1	1.94	0.48
1:C:487:ILE:HD12	1:C:498:ALA:HB2	1.95	0.48
1:D:277:PHE:O	1:D:292:LEU:HD23	2.14	0.48
1:E:666:ARG:NH2	1:E:673:VAL:O	2.46	0.48
1:A:479:THR:O	1:A:479:THR:HG22	2.14	0.48
1:A:666:ARG:NH2	1:A:673:VAL:O	2.46	0.48
1:D:339:VAL:HG13	1:D:374:ARG:HH11	1.78	0.48
1:B:374:ARG:O	1:B:377:MET:HG2	2.14	0.48
1:A:402:LEU:HD21	1:A:656:LEU:HD13	1.96	0.48
1:B:211:LYS:O	1:B:212:GLN:C	2.52	0.48
1:B:487:ILE:HD12	1:B:498:ALA:CB	2.44	0.48
1:C:495:TYR:O	1:C:625:PRO:HA	2.13	0.48
1:E:339:VAL:HG13	1:E:374:ARG:NH1	2.23	0.48
1:A:433:LEU:CD1	1:A:662:VAL:CG1	2.91	0.48
1:F:397:TYR:O	1:F:398:GLY:C	2.52	0.48
1:D:487:ILE:HD12	1:D:498:ALA:CB	2.43	0.47
1:D:643:LEU:HD21	1:D:682:CYS:HA	1.95	0.47
1:E:502:PRO:HG3	1:E:510:PHE:CD1	2.48	0.47
1:D:541:PRO:HB3	1:D:546:VAL:HG13	1.96	0.47
1:A:524:MET:CE	1:A:540:TRP:CZ3	2.97	0.47
1:A:641:ILE:CG2	1:A:665:LEU:HD21	2.45	0.47
1:C:646:ILE:O	1:C:650:VAL:HG23	2.14	0.47
1:D:446:GLY:HA3	1:D:461:ILE:HD13	1.97	0.47
1:D:469:ILE:O	1:D:470:LEU:HD23	2.14	0.47
1:C:150:THR:HG22	1:C:172:ASP:OD2	2.14	0.47
1:B:524:MET:HG3	1:B:629:HIS:CE1	2.50	0.47
1:B:277:PHE:O	1:B:292:LEU:HD23	2.15	0.47
1:D:443:MET:HE3	1:D:461:ILE:HG22	1.97	0.47
1:A:216:ASN:HD22	1:A:216:ASN:N	2.12	0.47
1:A:487:ILE:HD13	1:A:672:MET:HE2	1.95	0.47
1:C:274:ILE:HD11	1:C:323:LEU:HD11	1.97	0.47
1:D:568:ASP:OD1	1:D:588:ARG:HD2	2.15	0.47
1:D:646:ILE:O	1:D:650:VAL:HG23	2.14	0.47
1:E:528:VAL:HG13	1:E:536:CYS:O	2.14	0.47
1:F:524:MET:HG3	1:F:629:HIS:CE1	2.49	0.47
1:B:524:MET:HE1	1:B:591:HIS:CE1	2.49	0.47
1:C:216:ASN:N	1:C:216:ASN:HD22	2.13	0.47
1:F:374:ARG:O	1:F:377:MET:HG2	2.15	0.47
1:B:665:LEU:HD22	1:B:672:MET:HE2	1.96	0.47
1:C:646:ILE:HD13	1:C:658:VAL:HG22	1.97	0.47
1:A:634:ALA:HB1	1:A:672:MET:HA	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:216:ASN:N	1:E:216:ASN:HD22	2.13	0.46
1:F:338:GLY:O	1:F:342:THR:HG21	2.15	0.46
1:A:526:THR:HG22	1:A:636:ARG:NH1	2.30	0.46
1:D:351:MET:HE2	1:D:354:MET:HE3	1.97	0.46
1:D:426:LEU:HD12	1:D:426:LEU:N	2.30	0.46
1:F:541:PRO:HB3	1:F:546:VAL:HG13	1.97	0.46
1:A:433:LEU:HD11	1:A:662:VAL:CG1	2.46	0.46
1:F:461:ILE:HG23	1:F:462:PRO:CD	2.44	0.46
1:F:124:ILE:CD1	1:F:388:TYR:HB3	2.46	0.46
1:D:469:ILE:C	1:D:470:LEU:HD23	2.35	0.46
1:B:267:VAL:HB	1:B:274:ILE:HG22	1.96	0.46
1:C:343:GLY:HA2	1:C:377:MET:HE3	1.98	0.46
1:E:656:LEU:CD1	1:E:686:VAL:CG1	2.85	0.46
1:C:274:ILE:O	1:C:274:ILE:HG22	2.16	0.46
1:A:555:ILE:HG23	1:A:555:ILE:O	2.16	0.46
1:B:520:HIS:NE2	1:B:585:ARG:HD3	2.30	0.46
1:C:438:ILE:HD13	1:C:670:PRO:HB2	1.98	0.46
1:D:338:GLY:O	1:D:342:THR:HG21	2.14	0.46
1:F:239:ARG:O	1:F:240:LYS:CB	2.63	0.46
1:A:564:ILE:HD13	1:A:564:ILE:N	2.31	0.46
1:A:641:ILE:HG22	1:A:665:LEU:HD21	1.97	0.46
1:D:564:ILE:HG21	1:D:610:LEU:CD1	2.45	0.46
1:E:211:LYS:O	1:E:212:GLN:C	2.54	0.46
1:C:124:ILE:CD1	1:C:388:TYR:HB3	2.46	0.45
1:E:277:PHE:O	1:E:292:LEU:HD23	2.15	0.45
1:E:601:PRO:HG2	1:E:681:PHE:CZ	2.50	0.45
1:F:460:ILE:HD12	1:F:632:ALA:HB1	1.98	0.45
1:B:433:LEU:HD13	1:B:662:VAL:HG11	1.98	0.45
1:D:443:MET:CE	1:D:461:ILE:HG22	2.46	0.45
1:B:195:ILE:HD12	1:B:377:MET:HE1	1.98	0.45
1:B:521:THR:HB	1:B:626:ILE:HG23	1.98	0.45
1:C:503:LEU:HB2	1:C:506:THR:HG23	1.96	0.45
1:D:142:LEU:HD23	1:D:364:PHE:CE1	2.50	0.45
1:C:568:ASP:OD1	1:C:588:ARG:HD3	2.17	0.45
1:D:274:ILE:O	1:D:274:ILE:HG22	2.16	0.45
1:D:351:MET:CE	1:D:354:MET:HE1	2.46	0.45
1:C:524:MET:HE1	1:C:540:TRP:CH2	2.51	0.45
1:E:495:TYR:OH	1:E:618:GLN:HG2	2.17	0.45
1:A:175:ARG:CZ	1:A:177:ILE:HG22	2.47	0.45
1:B:216:ASN:N	1:B:216:ASN:HD22	2.14	0.45
1:A:515:TRP:CE2	1:A:573:LEU:HD22	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:219:TRP:CE2	1:B:261:VAL:HG21	2.52	0.45
1:C:142:LEU:HD23	1:C:364:PHE:CE1	2.52	0.45
1:F:361:VAL:HG21	1:F:391:LEU:HD13	1.99	0.45
1:D:434:THR:O	1:D:434:THR:HG22	2.16	0.45
1:F:524:MET:HE1	1:F:540:TRP:CH2	2.52	0.45
1:F:552:THR:C	1:F:553:ILE:HD13	2.38	0.45
1:C:485:SER:HB2	1:C:669:ARG:HD2	1.98	0.45
1:F:150:THR:CG2	1:F:172:ASP:OD2	2.63	0.45
1:F:153:LEU:HD22	1:F:175:ARG:CZ	2.47	0.45
1:A:211:LYS:O	1:A:212:GLN:C	2.54	0.44
1:A:566:ILE:HG22	1:A:566:ILE:O	2.16	0.44
1:B:274:ILE:O	1:B:274:ILE:HG22	2.18	0.44
1:D:676:LEU:HD12	1:D:676:LEU:O	2.18	0.44
1:B:643:LEU:HD11	1:B:685:VAL:HG21	1.99	0.44
1:C:524:MET:HE2	1:C:540:TRP:CZ3	2.52	0.44
1:E:487:ILE:HD12	1:E:498:ALA:HB2	1.99	0.44
1:F:274:ILE:O	1:F:274:ILE:HG22	2.17	0.44
1:B:624:HIS:HB3	1:B:625:PRO:CD	2.44	0.44
1:D:624:HIS:HB3	1:D:625:PRO:CD	2.47	0.44
1:B:514:ILE:HD11	1:B:627:THR:HG21	1.98	0.44
1:D:487:ILE:HD13	1:D:672:MET:HE1	1.98	0.44
1:D:526:THR:HG22	1:D:636:ARG:HH11	1.83	0.44
1:E:175:ARG:CZ	1:E:177:ILE:HG22	2.48	0.44
1:A:528:VAL:HG13	1:A:536:CYS:O	2.18	0.44
1:A:636:ARG:O	1:A:637:THR:C	2.55	0.44
1:D:216:ASN:N	1:D:216:ASN:HD22	2.15	0.44
1:A:656:LEU:CD2	1:A:658:VAL:HG23	2.47	0.43
1:E:150:THR:CG2	1:E:172:ASP:OD2	2.62	0.43
1:F:495:TYR:O	1:F:625:PRO:HA	2.18	0.43
1:F:524:MET:HE2	1:F:589:GLN:HE22	1.81	0.43
1:C:553:ILE:CD1	1:C:571:VAL:HG13	2.47	0.43
1:D:444:ARG:O	1:D:445:THR:C	2.55	0.43
1:F:277:PHE:O	1:F:292:LEU:HD23	2.19	0.43
1:F:435:ASN:N	1:F:435:ASN:HD22	2.16	0.43
1:A:392:LEU:HD11	1:A:396:LEU:HD21	2.01	0.43
1:E:507:VAL:HG11	1:E:537:TYR:CE2	2.54	0.43
1:A:123:GLU:HA	1:A:126:ILE:HD12	2.00	0.43
1:F:142:LEU:HD23	1:F:364:PHE:CE1	2.54	0.43
1:F:175:ARG:CZ	1:F:177:ILE:HG22	2.48	0.43
1:F:541:PRO:HG3	1:F:546:VAL:HG22	2.00	0.43
1:B:339:VAL:HG13	1:B:374:ARG:HH11	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:374:ARG:O	1:D:377:MET:HG2	2.18	0.43
1:D:433:LEU:HD13	1:D:662:VAL:HG12	2.00	0.43
1:D:568:ASP:OD1	1:D:588:ARG:CD	2.66	0.43
1:E:274:ILE:O	1:E:274:ILE:HG22	2.18	0.43
1:E:662:VAL:HG13	1:E:673:VAL:CG2	2.48	0.43
1:E:482:ILE:HG23	1:E:482:ILE:O	2.18	0.43
1:E:564:ILE:CG2	1:E:610:LEU:HD13	2.47	0.43
1:B:482:ILE:HG23	1:B:484:ALA:HB3	1.99	0.43
1:C:267:VAL:HB	1:C:274:ILE:HG22	1.99	0.43
1:C:344:THR:HG22	1:C:378:VAL:HG13	2.00	0.43
1:C:600:ILE:HD13	1:C:681:PHE:HB2	2.01	0.43
1:D:175:ARG:CZ	1:D:177:ILE:HG22	2.49	0.43
1:F:438:ILE:HD11	1:F:671:HIS:CE1	2.53	0.43
1:B:487:ILE:HD13	1:B:672:MET:CE	2.48	0.43
1:C:555:ILE:HG23	1:C:555:ILE:O	2.18	0.43
1:E:350:ALA:O	1:E:353:ALA:HB3	2.19	0.43
1:E:524:MET:CG	1:E:629:HIS:CE1	3.02	0.43
1:E:555:ILE:HG23	1:E:555:ILE:O	2.19	0.43
1:A:153:LEU:CD1	1:A:175:ARG:NH1	2.76	0.43
1:B:135:PHE:CG	1:B:385:THR:HG22	2.53	0.43
1:C:676:LEU:HD12	1:C:676:LEU:O	2.19	0.43
1:A:471:SER:O	1:A:512:ARG:NH2	2.52	0.42
1:C:572:THR:HG23	1:C:584:VAL:HG23	2.01	0.42
1:B:350:ALA:O	1:B:353:ALA:HB3	2.19	0.42
1:E:590:PHE:CD1	1:E:614:VAL:HG22	2.55	0.42
1:F:555:ILE:HG23	1:F:555:ILE:O	2.18	0.42
1:A:426:LEU:HD22	1:C:147:ILE:CD1	2.49	0.42
1:B:524:MET:CG	1:B:629:HIS:CE1	3.03	0.42
1:C:306:VAL:HB	1:C:307:PRO:HD2	2.01	0.42
1:D:350:ALA:O	1:D:353:ALA:HB3	2.20	0.42
1:B:487:ILE:HD12	1:B:498:ALA:HB2	2.01	0.42
1:B:643:LEU:HD21	1:B:682:CYS:HA	2.02	0.42
1:C:656:LEU:HD23	1:C:656:LEU:O	2.18	0.42
1:E:113:PHE:CD2	1:E:113:PHE:N	2.88	0.42
1:E:507:VAL:HG11	1:E:537:TYR:CD2	2.54	0.42
1:A:124:ILE:CD1	1:A:388:TYR:HB3	2.50	0.42
1:A:150:THR:HG22	1:A:172:ASP:HB2	2.02	0.42
1:A:219:TRP:CE2	1:A:261:VAL:HG21	2.54	0.42
1:A:371:ARG:HG2	1:A:377:MET:H	1.83	0.42
1:E:524:MET:HE1	1:E:540:TRP:CH2	2.55	0.42
1:D:211:LYS:O	1:D:212:GLN:C	2.58	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:351:MET:CE	1:D:354:MET:HE3	2.49	0.42
1:E:178:LEU:HD21	1:E:221:MET:HB2	2.02	0.42
1:F:504:ALA:O	1:F:507:VAL:HG22	2.20	0.42
1:A:347:VAL:CG1	1:A:387:ILE:HD13	2.48	0.42
1:B:276:LYS:HG2	1:C:584:VAL:HG11	2.01	0.42
1:C:175:ARG:CZ	1:C:177:ILE:HG22	2.50	0.42
1:F:553:ILE:HD12	1:F:571:VAL:HG22	2.01	0.42
1:B:658:VAL:O	1:B:661:ALA:HB3	2.20	0.42
1:D:539:TYR:OH	1:D:589:GLN:NE2	2.52	0.42
1:E:618:GLN:O	1:E:622:GLY:HA2	2.20	0.42
1:F:347:VAL:CG1	1:F:387:ILE:HD13	2.47	0.42
1:C:211:LYS:O	1:C:212:GLN:C	2.58	0.41
1:D:397:TYR:O	1:D:398:GLY:C	2.59	0.41
1:D:487:ILE:HD13	1:D:672:MET:HE2	2.00	0.41
1:E:355:MET:CE	1:E:391:LEU:HD22	2.50	0.41
1:F:551:ILE:HD13	1:F:573:LEU:HD13	2.01	0.41
1:F:656:LEU:C	1:F:656:LEU:HD23	2.41	0.41
1:C:515:TRP:CE2	1:C:573:LEU:HD22	2.54	0.41
1:F:371:ARG:NH2	1:F:378:VAL:O	2.53	0.41
1:F:487:ILE:HD12	1:F:498:ALA:HB2	2.02	0.41
1:F:647:LEU:HD22	1:F:689:PHE:CD2	2.55	0.41
1:B:496:PHE:CE2	1:B:626:ILE:HD12	2.55	0.41
1:C:526:THR:HG22	1:C:636:ARG:NH1	2.35	0.41
1:D:150:THR:HG23	1:D:152:GLU:H	1.85	0.41
1:A:274:ILE:O	1:A:274:ILE:CG2	2.68	0.41
1:C:507:VAL:HG12	1:C:539:TYR:HB3	2.02	0.41
1:A:433:LEU:HD13	1:A:662:VAL:CG1	2.50	0.41
1:C:444:ARG:O	1:C:445:THR:C	2.59	0.41
1:F:178:LEU:HD21	1:F:221:MET:HB2	2.02	0.41
1:B:175:ARG:CZ	1:B:177:ILE:HG22	2.50	0.41
1:B:355:MET:CE	1:B:391:LEU:HD22	2.51	0.41
1:C:350:ALA:O	1:C:353:ALA:HB3	2.20	0.41
1:C:482:ILE:HD13	1:C:513:MET:SD	2.61	0.41
1:D:355:MET:CE	1:D:391:LEU:HD22	2.51	0.41
1:D:524:MET:HE1	1:D:540:TRP:CH2	2.55	0.41
1:F:350:ALA:O	1:F:353:ALA:HB3	2.21	0.41
1:B:347:VAL:CG1	1:B:387:ILE:HD13	2.50	0.41
1:C:643:LEU:HD21	1:C:682:CYS:HA	2.02	0.41
1:D:570:LEU:HD23	1:D:586:VAL:HG22	2.03	0.41
1:E:124:ILE:CD1	1:E:388:TYR:HB3	2.51	0.41
1:B:482:ILE:HD13	1:B:513:MET:SD	2.60	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:178:LEU:HD21	1:D:221:MET:HB2	2.03	0.41
1:B:276:LYS:HG2	1:C:584:VAL:CG1	2.51	0.40
1:B:394:TYR:O	1:B:394:TYR:CG	2.74	0.40
1:D:647:LEU:O	1:D:648:GLU:C	2.58	0.40
1:E:592:PHE:CD1	1:E:610:LEU:HD22	2.56	0.40
1:C:347:VAL:CG1	1:C:387:ILE:HD13	2.51	0.40
1:C:438:ILE:HD13	1:C:670:PRO:HB3	2.03	0.40
1:C:524:MET:CE	1:C:589:GLN:NE2	2.85	0.40
1:C:524:MET:CE	1:C:540:TRP:CZ3	3.05	0.40
1:F:153:LEU:HD22	1:F:175:ARG:NH2	2.36	0.40
1:F:551:ILE:CG2	1:F:571:VAL:HG13	2.51	0.40
1:A:433:LEU:HD13	1:A:662:VAL:HG11	2.01	0.40
1:D:351:MET:HE1	1:D:354:MET:CE	2.50	0.40
1:E:521:THR:HB	1:E:626:ILE:HG23	2.03	0.40
1:F:216:ASN:HD22	1:F:216:ASN:N	2.18	0.40
1:A:394:TYR:O	1:A:394:TYR:CG	2.74	0.40
1:D:461:ILE:HG23	1:D:462:PRO:HD2	2.03	0.40
1:E:397:TYR:O	1:E:398:GLY:C	2.59	0.40
1:F:340:GLY:N	1:F:377:MET:O	2.55	0.40
1:C:355:MET:CE	1:C:391:LEU:HD22	2.51	0.40
1:C:454:LYS:O	1:C:500:GLN:NE2	2.53	0.40
1:D:555:ILE:O	1:D:555:ILE:HG23	2.21	0.40
1:E:347:VAL:CG1	1:E:387:ILE:HD13	2.50	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	523/599 (87%)	479 (92%)	40 (8%)	4 (1%)	16 51
1	B	527/599 (88%)	486 (92%)	37 (7%)	4 (1%)	16 51

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	527/599 (88%)	493 (94%)	31 (6%)	3 (1%)	22	57
1	D	525/599 (88%)	484 (92%)	37 (7%)	4 (1%)	16	51
1	E	527/599 (88%)	492 (93%)	32 (6%)	3 (1%)	22	57
1	F	528/599 (88%)	498 (94%)	23 (4%)	7 (1%)	10	41
All	All	3157/3594 (88%)	2932 (93%)	200 (6%)	25 (1%)	16	51

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	623	ASN
1	A	398	GLY
1	B	398	GLY
1	C	398	GLY
1	D	398	GLY
1	D	622	GLY
1	E	398	GLY
1	E	483	ASN
1	F	240	LYS
1	F	398	GLY
1	F	483	ASN
1	A	145	GLY
1	E	582	GLU
1	F	439	MET
1	F	561	SER
1	A	483	ASN
1	B	236	LEU
1	C	603	GLU
1	D	603	GLU
1	A	307	PRO
1	B	145	GLY
1	B	603	GLU
1	D	310	PRO
1	F	482	ILE
1	F	310	PRO

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	358/535 (67%)	339 (95%)	19 (5%)	19	52
1	B	352/535 (66%)	331 (94%)	21 (6%)	16	48
1	C	348/535 (65%)	333 (96%)	15 (4%)	25	57
1	D	340/535 (64%)	322 (95%)	18 (5%)	19	52
1	E	341/535 (64%)	327 (96%)	14 (4%)	26	59
1	F	336/535 (63%)	320 (95%)	16 (5%)	21	55
All	All	2075/3210 (65%)	1972 (95%)	103 (5%)	20	54

All (103) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	128	SER
1	A	150	THR
1	A	153	LEU
1	A	177	ILE
1	A	193	SER
1	A	211	LYS
1	A	217	ASP
1	A	273	THR
1	A	294	SER
1	A	296	LEU
1	A	308	PHE
1	A	356	HIS
1	A	402	LEU
1	A	461	ILE
1	A	467	ARG
1	A	507	VAL
1	A	564	ILE
1	A	572	THR
1	A	588	ARG
1	B	135	PHE
1	B	177	ILE
1	B	193	SER
1	B	211	LYS
1	B	216	ASN
1	B	273	THR
1	B	294	SER
1	B	296	LEU

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Mol	Chain	Res	Type
1	B	308	PHE
1	B	344	THR
1	B	356	HIS
1	B	374	ARG
1	B	377	MET
1	B	447	ASN
1	B	461	ILE
1	B	467	ARG
1	B	507	VAL
1	B	564	ILE
1	B	572	THR
1	B	588	ARG
1	B	595	TRP
1	C	177	ILE
1	C	193	SER
1	C	273	THR
1	C	296	LEU
1	C	308	PHE
1	C	356	HIS
1	C	461	ILE
1	C	479	THR
1	C	499	THR
1	C	507	VAL
1	C	564	ILE
1	C	572	THR
1	C	588	ARG
1	C	595	TRP
1	C	615	GLN
1	D	135	PHE
1	D	150	THR
1	D	177	ILE
1	D	180	GLN
1	D	193	SER
1	D	273	THR
1	D	296	LEU
1	D	308	PHE
1	D	356	HIS
1	D	461	ILE
1	D	467	ARG
1	D	507	VAL
1	D	564	ILE
1	D	572	THR

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Mol	Chain	Res	Type
1	D	588	ARG
1	D	595	TRP
1	D	623	ASN
1	D	626	ILE
1	E	177	ILE
1	E	193	SER
1	E	273	THR
1	E	294	SER
1	E	296	LEU
1	E	308	PHE
1	E	356	HIS
1	E	458	ILE
1	E	461	ILE
1	E	467	ARG
1	E	479	THR
1	E	564	ILE
1	E	572	THR
1	E	630	CYS
1	F	153	LEU
1	F	177	ILE
1	F	193	SER
1	F	273	THR
1	F	294	SER
1	F	296	LEU
1	F	308	PHE
1	F	356	HIS
1	F	374	ARG
1	F	434	THR
1	F	435	ASN
1	F	461	ILE
1	F	542	THR
1	F	564	ILE
1	F	572	THR
1	F	595	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	216	ASN
1	A	538	GLN
1	B	216	ASN
1	B	447	ASN

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Mol	Chain	Res	Type
1	B	538	GLN
1	C	146	HIS
1	C	180	GLN
1	C	216	ASN
1	C	376	GLN
1	C	379	GLN
1	C	538	GLN
1	C	589	GLN
1	C	624	HIS
1	D	155	ASN
1	D	216	ASN
1	D	327	HIS
1	D	538	GLN
1	D	589	GLN
1	D	623	ASN
1	D	624	HIS
1	E	216	ASN
1	E	379	GLN
1	E	538	GLN
1	E	624	HIS
1	F	435	ASN
1	F	538	GLN
1	F	671	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 12 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	537/599 (89%)	0.13	10 (1%) 66 50	57, 63, 66, 69	0
1	B	541/599 (90%)	0.18	14 (2%) 57 41	57, 63, 66, 69	0
1	C	541/599 (90%)	0.25	16 (2%) 52 37	57, 63, 66, 69	0
1	D	539/599 (89%)	0.35	23 (4%) 40 27	57, 63, 66, 69	0
1	E	541/599 (90%)	0.22	14 (2%) 57 41	57, 63, 66, 69	0
1	F	542/599 (90%)	0.28	15 (2%) 55 39	57, 63, 66, 69	0
All	All	3241/3594 (90%)	0.24	92 (2%) 55 39	57, 63, 66, 69	0

All (92) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	200	GLU	4.6
1	D	133	LYS	4.5
1	F	581	GLY	4.4
1	A	581	GLY	4.3
1	D	362	ASP	3.9
1	D	328	ALA	3.9
1	F	406	SER	3.5
1	A	404	VAL	3.4
1	F	132	CYS	3.3
1	F	404	VAL	3.3
1	C	271	ASP	3.2
1	C	581	GLY	3.2
1	C	133	LYS	3.2
1	E	266	CYS	3.2
1	D	145	GLY	3.1
1	B	271	ASP	3.0
1	C	464	ASP	3.0
1	A	574	ASN	3.0
1	F	200	GLU	3.0

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Mol	Chain	Res	Type	RSRZ
1	D	404	VAL	3.0
1	D	622	GLY	2.8
1	C	303	ASP	2.8
1	C	402	LEU	2.8
1	B	621	THR	2.7
1	D	574	ASN	2.7
1	B	428	GLU	2.6
1	E	561	SER	2.6
1	D	356	HIS	2.6
1	F	438	ILE	2.5
1	A	188	ASP	2.5
1	A	403	ASP	2.5
1	B	186	CYS	2.5
1	C	172	ASP	2.5
1	B	531	ARG	2.5
1	B	439	MET	2.5
1	F	129	ALA	2.5
1	F	336	SER	2.5
1	D	303	ASP	2.5
1	D	509	ASP	2.5
1	D	464	ASP	2.4
1	A	115	ILE	2.4
1	E	401	GLU	2.4
1	D	405	SER	2.4
1	E	188	ASP	2.4
1	A	200	GLU	2.4
1	C	200	GLU	2.4
1	D	559	THR	2.4
1	D	134	GLN	2.4
1	E	389	GLN	2.4
1	B	402	LEU	2.3
1	F	405	SER	2.3
1	E	464	ASP	2.3
1	A	402	LEU	2.3
1	B	150	THR	2.3
1	E	531	ARG	2.3
1	C	148	GLN	2.3
1	E	543	GLU	2.3
1	D	439	MET	2.2
1	B	429	GLU	2.2
1	D	264	GLU	2.2
1	F	464	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	D	188	ASP	2.2
1	E	562	GLU	2.2
1	C	128	SER	2.2
1	C	362	ASP	2.2
1	F	621	THR	2.2
1	A	290	PRO	2.2
1	F	443	MET	2.2
1	D	271	ASP	2.2
1	B	379	GLN	2.2
1	C	266	CYS	2.1
1	E	111	LYS	2.1
1	D	120	LEU	2.1
1	D	406	SER	2.1
1	F	399	ASP	2.1
1	D	545	SER	2.1
1	B	362	ASP	2.1
1	E	469	ILE	2.1
1	E	622	GLY	2.1
1	C	574	ASN	2.1
1	C	494	ASP	2.1
1	D	308	PHE	2.1
1	F	691	ASP	2.1
1	C	288	LYS	2.0
1	F	451	ASN	2.0
1	B	534	ASP	2.0
1	C	196	ASP	2.0
1	E	265	ASP	2.0
1	A	136	ARG	2.0
1	B	425	GLY	2.0
1	B	581	GLY	2.0
1	E	581	GLY	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	CL	B	1694	1/1	0.95	0.10	82,82,82,82	0
2	CL	F	1692	1/1	0.96	0.09	68,68,68,68	0
2	CL	A	1692	1/1	0.97	0.09	65,65,65,65	0
2	CL	D	1692	1/1	0.97	0.10	78,78,78,78	0
2	CL	E	1692	1/1	0.97	0.12	66,66,66,66	0
2	CL	B	1693	1/1	0.97	0.10	74,74,74,74	0
2	CL	D	1693	1/1	0.98	0.06	40,40,40,40	0
2	CL	C	1692	1/1	0.98	0.05	43,43,43,43	0
2	CL	B	1692	1/1	0.98	0.05	41,41,41,41	0
2	CL	E	1693	1/1	0.99	0.05	40,40,40,40	0
2	CL	A	1693	1/1	0.99	0.05	51,51,51,51	0
2	CL	F	1693	1/1	0.99	0.04	43,43,43,43	0

6.5 Other polymers [i](#)

There are no such residues in this entry.