



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 26, 2023 – 06:53 PM EDT

PDB ID : 3FER
Title : Crystal structure of n-terminal actin-binding domain from human filamin b (tandem ch-domains). northeast structural genomics consortium target hr5571a.
Authors : Kuzin, A.P.; Abashidze, M.; Seetharaman, R.; Shastry, R.; Sahdev, S.; Ciccosanti, C.; Xiao, R.; Everett, J.K.; Huang, Y.; Acton, T.; Rost, B.; Montelione, G.T.; Tong, L.; Hunt, J.F.; Northeast Structural Genomics Consortium (NESG)
Deposited on : 2008-11-30
Resolution : 2.40 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
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)

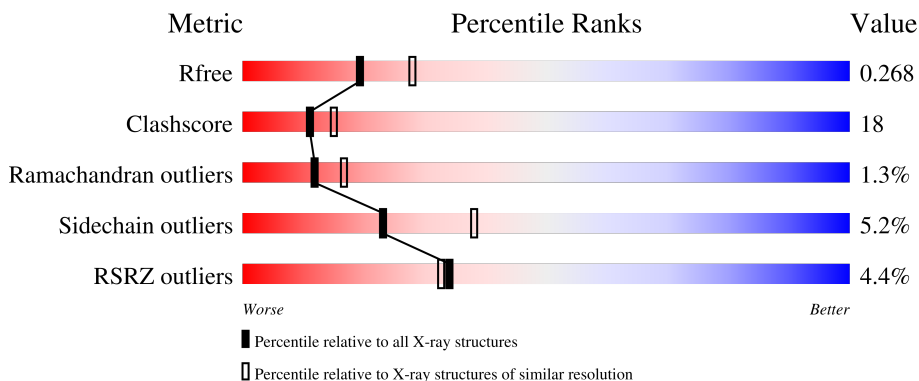
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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}	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

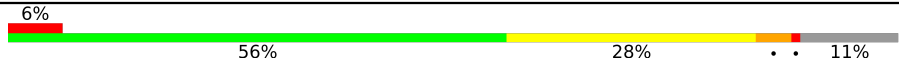
The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. 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	262	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 61%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 27%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="font-size: small; margin-top: 5px;">2% 61% 27% • 11%</p>
1	B	262	<div style="display: flex; align-items: center;"> <div style="width: 0%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 55%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 32%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="font-size: small; margin-top: 5px;">% 55% 32% • 11%</p>
1	C	262	<div style="display: flex; align-items: center;"> <div style="width: 7%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 61%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 23%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 14%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="font-size: small; margin-top: 5px;">7% 61% 23% • 14%</p>

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Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35

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Mol	Chain	Length	Quality of chain
1	D	262	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into four segments: a small red segment at the beginning labeled '6%', a large green segment labeled '56%', a yellow segment labeled '28%', and a small grey segment at the end labeled '11%'. There are two small black dots between the yellow and grey segments.</p>

2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 7688 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 Filamin-B.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	234	1900	1219	330	342	4	5	0	0	0
1	B	234	1900	1219	330	342	4	5	0	0	0
1	C	225	1827	1172	320	327	4	4	0	0	0
1	D	234	1900	1219	330	342	4	5	0	0	0

There are 40 discrepancies between the modelled and reference sequences:

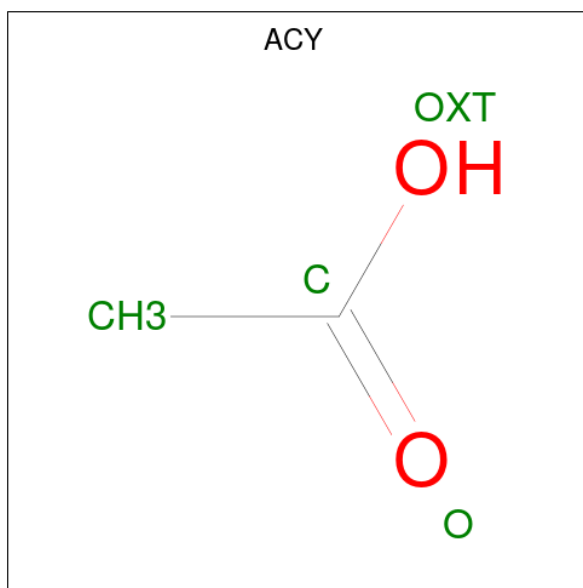
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MSE	-	expression tag	UNP O75369
A	2	GLY	-	expression tag	UNP O75369
A	3	HIS	-	expression tag	UNP O75369
A	4	HIS	-	expression tag	UNP O75369
A	5	HIS	-	expression tag	UNP O75369
A	6	HIS	-	expression tag	UNP O75369
A	7	HIS	-	expression tag	UNP O75369
A	8	HIS	-	expression tag	UNP O75369
A	9	SER	-	expression tag	UNP O75369
A	10	HIS	-	expression tag	UNP O75369
B	1	MSE	-	expression tag	UNP O75369
B	2	GLY	-	expression tag	UNP O75369
B	3	HIS	-	expression tag	UNP O75369
B	4	HIS	-	expression tag	UNP O75369
B	5	HIS	-	expression tag	UNP O75369
B	6	HIS	-	expression tag	UNP O75369
B	7	HIS	-	expression tag	UNP O75369
B	8	HIS	-	expression tag	UNP O75369
B	9	SER	-	expression tag	UNP O75369
B	10	HIS	-	expression tag	UNP O75369
C	1	MSE	-	expression tag	UNP O75369

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Chain	Residue	Modelled	Actual	Comment	Reference
C	2	GLY	-	expression tag	UNP O75369
C	3	HIS	-	expression tag	UNP O75369
C	4	HIS	-	expression tag	UNP O75369
C	5	HIS	-	expression tag	UNP O75369
C	6	HIS	-	expression tag	UNP O75369
C	7	HIS	-	expression tag	UNP O75369
C	8	HIS	-	expression tag	UNP O75369
C	9	SER	-	expression tag	UNP O75369
C	10	HIS	-	expression tag	UNP O75369
D	1	MSE	-	expression tag	UNP O75369
D	2	GLY	-	expression tag	UNP O75369
D	3	HIS	-	expression tag	UNP O75369
D	4	HIS	-	expression tag	UNP O75369
D	5	HIS	-	expression tag	UNP O75369
D	6	HIS	-	expression tag	UNP O75369
D	7	HIS	-	expression tag	UNP O75369
D	8	HIS	-	expression tag	UNP O75369
D	9	SER	-	expression tag	UNP O75369
D	10	HIS	-	expression tag	UNP O75369

- Molecule 2 is ACETIC ACID (three-letter code: ACY) (formula: C₂H₄O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	B	1	Total	C	O	0	0
			4	2	2		
2	C	1	Total	C	O	0	0
			4	2	2		

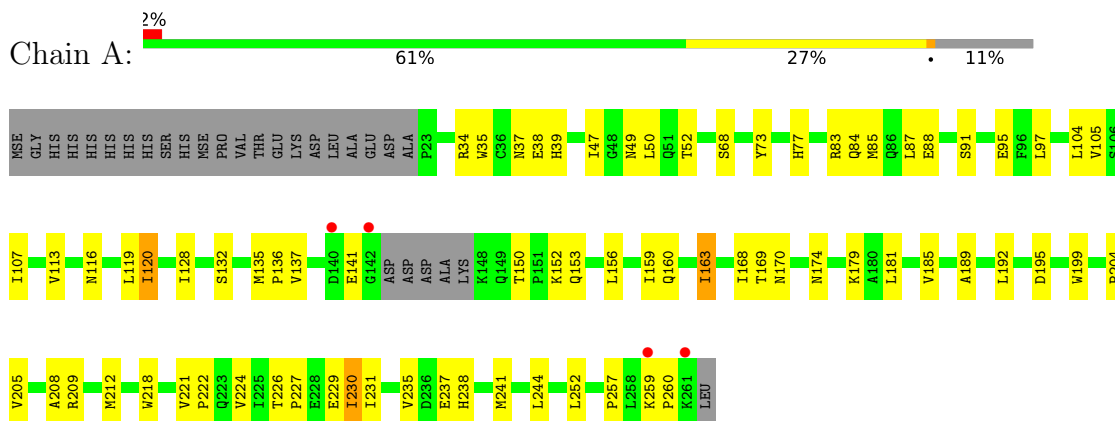
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	54	Total O 54 54	0	0
3	B	47	Total O 47 47	0	0
3	C	22	Total O 22 22	0	0
3	D	30	Total O 30 30	0	0

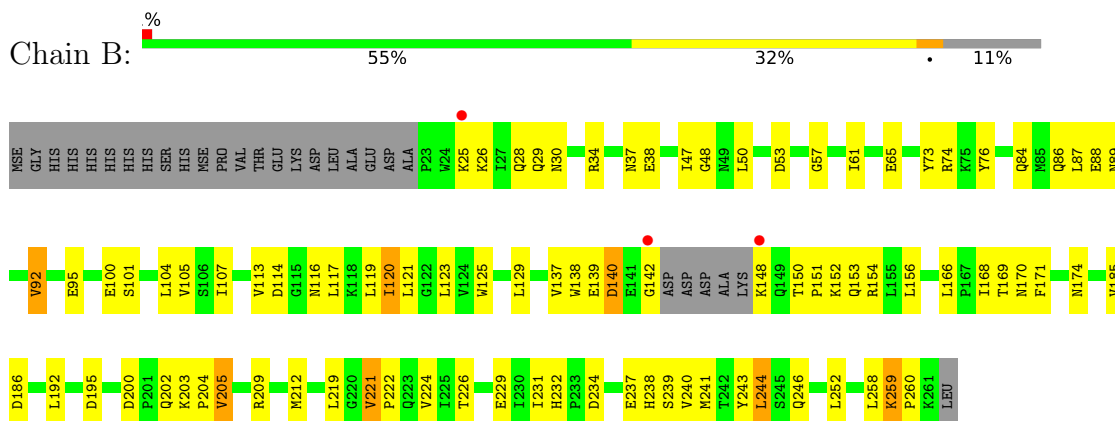
3 Residue-property plots [i](#)

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.

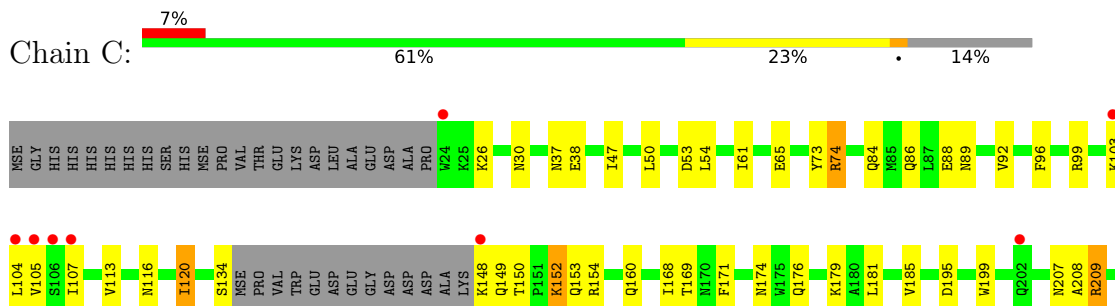
• Molecule 1: Filamin-B

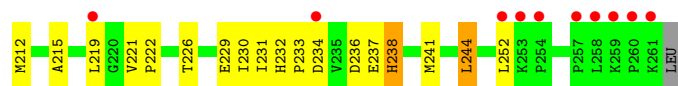


• Molecule 1: Filamin-B

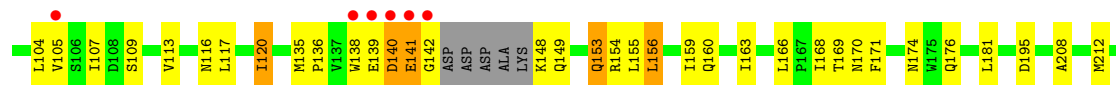
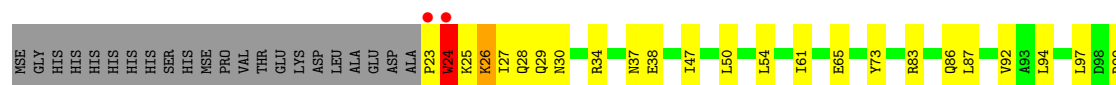


• Molecule 1: Filamin-B





- Molecule 1: Filamin-B



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	116.85Å 82.41Å 132.25Å 90.00° 94.14° 90.00°	Depositor
Resolution (Å)	19.86 – 2.40 41.20 – 2.40	Depositor EDS
% Data completeness (in resolution range)	72.0 (19.86-2.40) 87.8 (41.20-2.40)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.06 (at 2.39Å)	Xtrriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.215 , 0.259 0.225 , 0.268	Depositor DCC
R_{free} test set	4228 reflections (4.90%)	wwPDB-VP
Wilson B-factor (Å ²)	30.8	Xtrriage
Anisotropy	0.601	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 34.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	7688	wwPDB-VP
Average B, all atoms (Å ²)	38.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 45.53 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.3033e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: ACY

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	0.39	0/1943	0.62	0/2630
1	B	0.41	0/1943	0.63	0/2630
1	C	0.38	0/1867	0.59	0/2527
1	D	0.40	0/1943	0.65	1/2630 (0.0%)
All	All	0.40	0/7696	0.62	1/10417 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	234	ASP	N-CA-C	-6.65	93.04	111.00

There are no chirality outliers.

There are no planarity outliers.

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	1900	0	1919	64	0
1	B	1900	0	1919	67	0
1	C	1827	0	1857	59	0
1	D	1900	0	1919	82	0
2	B	4	0	3	1	0
2	C	4	0	3	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	54	0	0	3	0
3	B	47	0	0	4	0
3	C	22	0	0	1	0
3	D	30	0	0	2	0
All	All	7688	0	7620	272	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 18.

All (272) 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:B:50:LEU:HG	1:B:120:ILE:HD11	1.35	1.09
1:D:171:PHE:HB2	1:D:237:GLU:HG3	1.35	1.03
1:C:37:ASN:HD21	1:C:47:ILE:H	1.05	1.02
1:B:169:THR:H	1:B:174:ASN:HD21	1.12	0.98
1:D:37:ASN:HD21	1:D:47:ILE:H	1.05	0.98
1:B:37:ASN:HD21	1:B:47:ILE:H	1.03	0.96
1:D:37:ASN:ND2	1:D:47:ILE:H	1.63	0.95
1:A:37:ASN:HD21	1:A:47:ILE:H	1.10	0.93
1:A:208:ALA:HB1	1:A:212:MSE:CE	2.02	0.89
1:C:148:LYS:HE2	1:C:153:GLN:HB3	1.55	0.87
1:D:50:LEU:HG	1:D:120:ILE:HD11	1.55	0.86
1:C:50:LEU:HG	1:C:120:ILE:HD11	1.58	0.86
1:B:104:LEU:HB3	1:B:107:ILE:HD12	1.59	0.85
1:C:37:ASN:ND2	1:C:47:ILE:H	1.74	0.84
1:C:237:GLU:HB3	1:C:241:MSE:HE2	1.59	0.84
1:A:84:GLN:O	1:A:88:GLU:HG3	1.79	0.83
1:B:37:ASN:ND2	1:B:47:ILE:H	1.76	0.83
1:D:208:ALA:HB1	1:D:212:MSE:CE	2.10	0.82
1:C:169:THR:H	1:C:174:ASN:HD21	1.27	0.82
1:C:116:ASN:O	1:C:120:ILE:HG23	1.79	0.81
1:A:37:ASN:ND2	1:A:47:ILE:H	1.78	0.81
1:A:209:ARG:HD3	3:A:288:HOH:O	1.81	0.80
1:B:37:ASN:HD21	1:B:47:ILE:N	1.81	0.78
1:C:104:LEU:HB3	1:C:107:ILE:HD12	1.65	0.78
1:B:237:GLU:HB3	1:B:241:MSE:HE2	1.66	0.77
1:A:204:PRO:HB2	1:A:231:ILE:HD12	1.65	0.77
1:B:169:THR:H	1:B:174:ASN:ND2	1.81	0.77
1:A:150:THR:HG22	1:A:153:GLN:HG3	1.67	0.77
1:D:208:ALA:HB1	1:D:212:MSE:HE3	1.65	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:181:LEU:HD13	1:D:212:MSE:HE2	1.66	0.75
1:D:37:ASN:HD21	1:D:47:ILE:N	1.82	0.75
1:C:37:ASN:HD21	1:C:47:ILE:N	1.82	0.74
1:D:135:MSE:HE2	1:D:135:MSE:HA	1.71	0.72
1:C:212:MSE:HE1	1:C:230:ILE:HG21	1.70	0.72
1:D:97:LEU:HD13	1:D:104:LEU:HD21	1.69	0.71
1:A:208:ALA:HB1	1:A:212:MSE:HE3	1.73	0.71
1:B:222:PRO:HG2	1:B:246:GLN:OE1	1.88	0.71
1:A:181:LEU:HD13	1:A:212:MSE:HE2	1.72	0.71
1:A:160:GLN:HE22	1:A:168:ILE:H	1.39	0.70
1:D:116:ASN:O	1:D:120:ILE:HG23	1.91	0.70
1:A:212:MSE:HE1	1:A:227:PRO:HA	1.73	0.70
1:A:205:VAL:HG12	1:A:231:ILE:HD11	1.74	0.70
1:D:136:PRO:HB3	1:D:249:LYS:HE3	1.76	0.68
1:B:87:LEU:HD23	1:B:113:VAL:HG21	1.74	0.68
1:A:50:LEU:HG	1:A:120:ILE:HD11	1.76	0.68
1:D:237:GLU:HG2	1:D:241:MSE:HE2	1.74	0.68
1:A:169:THR:H	1:A:174:ASN:HD21	1.42	0.67
1:B:148:LYS:HE2	1:B:153:GLN:HB3	1.75	0.67
1:B:107:ILE:HD13	1:B:123:LEU:HD13	1.77	0.67
1:C:103:LYS:HB2	1:C:103:LYS:NZ	2.10	0.67
1:C:169:THR:H	1:C:174:ASN:ND2	1.92	0.66
1:B:226:THR:OG1	1:B:229:GLU:HG3	1.96	0.66
1:A:205:VAL:HG22	3:A:265:HOH:O	1.95	0.65
1:D:148:LYS:HE2	1:D:153:GLN:HG2	1.79	0.65
1:D:231:ILE:C	1:D:233:PRO:HD2	2.16	0.65
1:A:163:ILE:HG12	1:A:163:ILE:O	1.97	0.64
1:A:150:THR:HG22	1:A:153:GLN:CG	2.26	0.64
1:B:139:GLU:O	1:B:140:ASP:HB2	1.98	0.64
1:C:221:VAL:HG23	1:C:221:VAL:O	1.98	0.63
1:D:148:LYS:N	1:D:154:ARG:HA	2.13	0.63
1:B:89:ASN:O	1:B:92:VAL:HG13	1.99	0.63
1:C:226:THR:OG1	1:C:229:GLU:HG3	1.99	0.63
1:D:212:MSE:HE1	1:D:230:ILE:HG21	1.79	0.62
1:D:240:VAL:HG12	1:D:244:LEU:HD22	1.81	0.62
1:C:179:LYS:HE2	1:C:199:TRP:O	2.00	0.62
1:A:104:LEU:HB3	1:A:107:ILE:HD12	1.82	0.61
1:C:89:ASN:O	1:C:92:VAL:HG22	2.00	0.61
1:D:169:THR:H	1:D:174:ASN:ND2	1.98	0.61
1:D:38:GLU:HG3	3:D:276:HOH:O	2.00	0.60
1:D:176:GLN:HB2	1:D:233:PRO:HG2	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:240:VAL:HG12	1:B:244:LEU:HD22	1.83	0.59
1:A:237:GLU:HB3	1:A:241:MSE:HE2	1.85	0.59
1:D:169:THR:H	1:D:174:ASN:HD21	1.51	0.59
1:A:37:ASN:HD21	1:A:47:ILE:N	1.92	0.58
1:C:176:GLN:NE2	1:C:233:PRO:HG3	2.18	0.58
1:B:105:VAL:HG23	1:B:105:VAL:O	2.03	0.58
1:A:150:THR:HG23	1:A:153:GLN:H	1.69	0.58
1:B:30:ASN:O	1:B:34:ARG:HG3	2.02	0.58
1:A:38:GLU:HG2	1:A:222:PRO:HG3	1.86	0.58
1:A:238:HIS:HA	1:A:241:MSE:HE3	1.85	0.57
1:B:34:ARG:HD2	1:B:224:VAL:O	2.05	0.57
1:B:185:VAL:HG23	1:B:186:ASP:N	2.20	0.57
1:A:49:ASN:HB3	1:A:52:THR:HG22	1.86	0.57
1:D:260:PRO:HG2	1:D:261:LYS:HG3	1.87	0.57
1:B:100:GLU:O	1:B:101:SER:HB2	2.05	0.56
1:B:156:LEU:HD13	1:B:171:PHE:CE2	2.40	0.56
1:C:86:GLN:HE21	1:C:113:VAL:HG13	1.69	0.56
1:C:148:LYS:HB2	1:C:153:GLN:HB3	1.86	0.56
1:C:160:GLN:NE2	1:C:168:ILE:H	2.03	0.56
1:D:135:MSE:HB2	1:D:136:PRO:HD3	1.87	0.56
1:A:205:VAL:CG1	1:A:231:ILE:HD11	2.35	0.56
1:B:47:ILE:HG23	1:B:53:ASP:HB2	1.88	0.56
1:B:170:ASN:H	1:B:174:ASN:ND2	2.04	0.56
1:C:199:TRP:HB3	1:C:207:ASN:HD21	1.71	0.56
1:A:170:ASN:H	1:A:174:ASN:ND2	2.04	0.55
1:D:86:GLN:HE21	1:D:113:VAL:HG13	1.69	0.55
1:D:238:HIS:HA	1:D:241:MSE:HE3	1.87	0.55
1:C:152:LYS:HD3	1:C:171:PHE:HE2	1.71	0.55
1:A:73:TYR:CZ	1:A:95:GLU:HG2	2.41	0.55
1:D:155:LEU:O	1:D:159:ILE:HG12	2.06	0.55
1:C:176:GLN:HE21	1:C:233:PRO:HG3	1.71	0.55
1:C:181:LEU:HD13	1:C:212:MSE:CE	2.36	0.55
1:B:29:GLN:NE2	1:B:117:LEU:HD21	2.20	0.55
1:B:84:GLN:O	1:B:88:GLU:HG3	2.07	0.54
1:A:181:LEU:CD1	1:A:212:MSE:HE2	2.37	0.54
1:D:141:GLU:HG2	1:D:142:GLY:N	2.21	0.54
1:D:54:LEU:HD12	1:D:120:ILE:HD13	1.90	0.54
1:D:160:GLN:NE2	1:D:168:ILE:H	2.05	0.54
1:A:226:THR:OG1	1:A:229:GLU:HG3	2.08	0.54
1:C:160:GLN:HG2	1:C:168:ILE:HB	1.88	0.54
1:B:116:ASN:O	1:B:120:ILE:HG23	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:233:PRO:O	1:C:234:ASP:HB2	2.07	0.53
1:D:221:VAL:CG2	1:D:221:VAL:O	2.55	0.53
1:C:26:LYS:HE3	1:C:30:ASN:HD21	1.73	0.53
1:D:232:HIS:N	1:D:233:PRO:CD	2.71	0.53
1:D:23:PRO:O	1:D:27:ILE:HG13	2.09	0.53
1:D:29:GLN:NE2	1:D:117:LEU:HD21	2.24	0.53
1:A:212:MSE:CE	1:A:230:ILE:HG21	2.39	0.52
1:C:84:GLN:O	1:C:88:GLU:HG3	2.09	0.52
1:A:159:ILE:O	1:A:163:ILE:HD13	2.10	0.52
1:B:137:VAL:HG12	3:B:297:HOH:O	2.09	0.52
1:D:176:GLN:CG	1:D:233:PRO:HG2	2.39	0.52
1:B:73:TYR:CZ	1:B:95:GLU:HG2	2.44	0.52
1:B:169:THR:N	1:B:174:ASN:ND2	2.56	0.52
1:A:169:THR:H	1:A:174:ASN:ND2	2.05	0.52
1:C:47:ILE:HD11	1:C:54:LEU:HD21	1.92	0.52
1:C:237:GLU:CB	1:C:241:MSE:HE2	2.35	0.52
1:B:86:GLN:HE21	1:B:113:VAL:HG13	1.75	0.52
1:B:221:VAL:HG22	1:B:221:VAL:O	2.09	0.51
1:A:150:THR:CG2	1:A:153:GLN:H	2.24	0.51
1:A:150:THR:CG2	1:A:153:GLN:HG3	2.39	0.51
1:B:139:GLU:O	1:B:140:ASP:CB	2.58	0.51
1:C:38:GLU:HG2	1:C:222:PRO:HG3	1.93	0.51
1:B:76:TYR:HB2	1:B:89:ASN:OD1	2.09	0.51
1:A:212:MSE:HE1	1:A:230:ILE:HG21	1.91	0.51
1:B:25:LYS:NZ	1:B:25:LYS:HB3	2.25	0.51
1:A:105:VAL:HG23	1:A:105:VAL:O	2.10	0.51
1:D:83:ARG:NH1	1:D:87:LEU:HD11	2.26	0.51
1:B:209:ARG:HD3	3:B:294:HOH:O	2.11	0.51
1:A:116:ASN:ND2	1:A:119:LEU:HD12	2.25	0.51
1:B:150:THR:HG22	1:B:152:LYS:H	1.74	0.50
1:A:160:GLN:NE2	1:A:168:ILE:H	2.09	0.50
1:D:27:ILE:HG21	1:D:235:VAL:HG23	1.94	0.50
1:A:181:LEU:O	1:A:185:VAL:HG23	2.12	0.50
1:C:221:VAL:HG23	3:C:279:HOH:O	2.10	0.50
1:D:181:LEU:CD1	1:D:212:MSE:HE2	2.40	0.50
1:D:24:TRP:HB2	1:D:234:ASP:OD2	2.12	0.50
1:D:87:LEU:HD23	1:D:113:VAL:HG21	1.93	0.50
1:B:114:ASP:HA	3:B:299:HOH:O	2.12	0.49
1:D:171:PHE:HB2	1:D:237:GLU:CG	2.25	0.49
1:B:212:MSE:HE2	1:B:243:TYR:CE2	2.48	0.49
1:D:47:ILE:HD11	1:D:54:LEU:HD21	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:116:ASN:ND2	1:B:119:LEU:HD12	2.27	0.49
1:C:237:GLU:O	1:C:241:MSE:HG3	2.12	0.49
1:D:73:TYR:CE2	1:D:99:ARG:HD2	2.47	0.49
1:B:150:THR:HG22	1:B:152:LYS:N	2.27	0.49
1:A:120:ILE:O	1:A:120:ILE:HD12	2.13	0.49
1:B:231:ILE:HD12	1:B:232:HIS:N	2.28	0.49
1:B:238:HIS:HA	1:B:241:MSE:HE3	1.94	0.49
1:B:48:GLY:N	1:B:53:ASP:OD2	2.43	0.49
1:A:83:ARG:NH1	1:A:87:LEU:HD11	2.27	0.49
1:D:218:TRP:O	1:D:253:LYS:HG2	2.12	0.49
1:C:199:TRP:HB3	1:C:207:ASN:ND2	2.28	0.49
1:D:176:GLN:CB	1:D:233:PRO:HG2	2.43	0.49
1:C:181:LEU:O	1:C:185:VAL:HG22	2.13	0.48
1:C:209:ARG:HH11	1:C:209:ARG:HB2	1.78	0.48
1:C:150:THR:OG1	1:C:153:GLN:HG3	2.12	0.48
1:B:142:GLY:O	1:B:154:ARG:HG3	2.14	0.48
1:A:35:TRP:O	1:A:39:HIS:HD2	1.97	0.48
1:C:209:ARG:HH11	1:C:209:ARG:CB	2.26	0.48
1:C:148:LYS:HB2	1:C:153:GLN:CB	2.44	0.48
1:D:163:ILE:O	1:D:163:ILE:HG13	2.12	0.48
1:B:169:THR:HG22	1:B:169:THR:O	2.14	0.48
1:D:25:LYS:C	1:D:27:ILE:H	2.16	0.48
1:D:212:MSE:CE	1:D:230:ILE:HG21	2.42	0.47
1:D:236:ASP:OD2	1:D:238:HIS:HB2	2.14	0.47
1:D:218:TRP:CE3	1:D:256:ALA:HA	2.49	0.47
1:D:212:MSE:HE1	1:D:227:PRO:HA	1.96	0.47
1:A:73:TYR:CE2	1:A:95:GLU:HG2	2.49	0.47
1:C:152:LYS:HD3	1:C:171:PHE:CE2	2.50	0.47
1:A:97:LEU:HD13	1:A:104:LEU:HD21	1.97	0.47
1:A:179:LYS:HE2	1:A:199:TRP:O	2.15	0.47
1:B:28:GLN:HA	1:B:239:SER:OG	2.15	0.47
1:B:200:ASP:OD2	1:B:203:LYS:HG3	2.13	0.47
1:C:103:LYS:HB2	1:C:103:LYS:HZ2	1.80	0.47
1:B:156:LEU:HD13	1:B:171:PHE:CZ	2.49	0.47
1:D:170:ASN:H	1:D:174:ASN:ND2	2.13	0.47
1:B:61:ILE:O	1:B:65:GLU:HG3	2.15	0.47
1:C:73:TYR:HE2	1:C:99:ARG:HB2	1.80	0.46
1:D:218:TRP:CE2	1:D:257:PRO:HD3	2.50	0.46
1:D:241:MSE:O	1:D:245:SER:HB3	2.14	0.46
1:B:125:TRP:NE1	1:B:129:LEU:HD22	2.30	0.46
1:A:135:MSE:HB2	1:A:136:PRO:HD3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:152:LYS:HG2	1:C:241:MSE:SE	2.65	0.46
1:A:152:LYS:O	1:A:156:LEU:HB2	2.15	0.46
1:D:215:ALA:O	1:D:219:LEU:HB2	2.16	0.46
1:D:231:ILE:C	1:D:231:ILE:HD12	2.36	0.46
1:A:208:ALA:HB1	1:A:212:MSE:HE1	1.90	0.46
1:D:38:GLU:HG2	1:D:222:PRO:HG3	1.97	0.46
1:C:221:VAL:O	1:C:221:VAL:CG2	2.64	0.45
1:D:156:LEU:HD13	1:D:171:PHE:CE2	2.52	0.45
1:A:218:TRP:CE2	1:A:257:PRO:HD2	2.51	0.45
1:C:73:TYR:CE2	1:C:96:PHE:HA	2.52	0.45
1:D:218:TRP:CZ2	1:D:257:PRO:HD3	2.52	0.45
1:D:231:ILE:HD12	1:D:231:ILE:O	2.16	0.45
1:B:105:VAL:HG22	3:B:269:HOH:O	2.17	0.45
1:C:236:ASP:OD2	1:C:238:HIS:HB2	2.17	0.45
1:A:189:ALA:HB3	1:A:192:LEU:HD22	1.99	0.45
1:B:150:THR:HB	1:B:153:GLN:HG3	1.98	0.45
1:D:156:LEU:HD13	1:D:171:PHE:CZ	2.52	0.45
1:B:150:THR:HG23	1:B:151:PRO:HD2	1.99	0.45
1:D:232:HIS:ND1	1:D:232:HIS:O	2.49	0.45
1:D:37:ASN:HD21	1:D:47:ILE:HB	1.82	0.44
1:A:221:VAL:O	1:A:221:VAL:CG2	2.65	0.44
1:B:120:ILE:HG13	1:B:121:LEU:N	2.31	0.44
1:B:57:GLY:O	1:B:61:ILE:HG12	2.17	0.44
1:C:208:ALA:O	1:C:212:MSE:HB2	2.18	0.44
1:C:215:ALA:HA	1:C:219:LEU:HD12	2.00	0.44
1:D:29:GLN:HE22	1:D:117:LEU:HD21	1.82	0.44
1:D:232:HIS:N	1:D:233:PRO:HD2	2.33	0.44
1:B:138:TRP:CZ3	1:B:154:ARG:HG2	2.52	0.44
1:D:61:ILE:O	1:D:65:GLU:HG3	2.17	0.44
1:D:26:LYS:HB2	1:D:26:LYS:HE3	1.65	0.44
1:B:100:GLU:O	1:B:101:SER:CB	2.64	0.43
1:D:212:MSE:HE1	1:D:230:ILE:CG2	2.46	0.43
1:D:237:GLU:CG	1:D:241:MSE:HE2	2.47	0.43
1:A:116:ASN:O	1:A:120:ILE:HG23	2.17	0.43
1:C:74:ARG:NH1	1:C:74:ARG:HG2	2.32	0.43
1:D:221:VAL:O	1:D:221:VAL:HG22	2.17	0.43
1:A:221:VAL:O	1:A:221:VAL:HG23	2.18	0.43
1:C:61:ILE:O	1:C:65:GLU:HG3	2.18	0.43
1:D:226:THR:HB	1:D:227:PRO:HD2	2.01	0.43
1:A:34:ARG:HD2	1:A:224:VAL:O	2.18	0.43
1:A:230:ILE:O	1:A:230:ILE:HD13	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:38:GLU:HG2	1:B:222:PRO:HG3	2.01	0.43
1:C:215:ALA:HB1	1:C:221:VAL:CG2	2.48	0.43
1:A:50:LEU:CG	1:A:120:ILE:HD11	2.47	0.43
1:D:251:LYS:HA	3:D:285:HOH:O	2.17	0.43
1:A:88:GLU:O	1:A:91:SER:HB2	2.18	0.42
1:B:259:LYS:HA	1:B:260:PRO:HD3	1.88	0.42
1:C:238:HIS:HA	1:C:241:MSE:HE3	2.01	0.42
1:B:125:TRP:CZ2	1:B:129:LEU:HD13	2.54	0.42
1:D:227:PRO:O	1:D:231:ILE:HG13	2.19	0.42
1:A:68:SER:HB2	3:A:266:HOH:O	2.18	0.42
1:D:25:LYS:HB3	1:D:25:LYS:HE2	1.83	0.42
1:D:28:GLN:HA	1:D:239:SER:OG	2.20	0.42
1:A:77:HIS:CG	1:A:85:MSE:HE2	2.55	0.42
1:D:30:ASN:O	1:D:34:ARG:HG3	2.19	0.42
1:D:138:TRP:CZ3	1:D:154:ARG:HG2	2.55	0.42
1:C:231:ILE:HG13	1:C:232:HIS:N	2.35	0.42
1:B:192:LEU:HD13	1:B:258:LEU:HD21	2.02	0.41
1:B:204:PRO:HG2	1:B:205:VAL:H	1.86	0.41
1:C:86:GLN:NE2	1:C:113:VAL:HG13	2.34	0.41
1:D:86:GLN:NE2	1:D:113:VAL:HG13	2.34	0.41
1:C:244:LEU:HD12	1:C:244:LEU:HA	1.81	0.41
1:A:87:LEU:HD23	1:A:113:VAL:HG21	2.02	0.41
1:A:169:THR:O	1:A:169:THR:HG22	2.20	0.41
1:B:154:ARG:HD2	2:B:263:ACY:O	2.21	0.41
1:C:215:ALA:O	1:C:219:LEU:HB2	2.20	0.41
1:D:105:VAL:O	1:D:107:ILE:HG13	2.21	0.41
1:A:128:ILE:O	1:A:132:SER:HB2	2.21	0.41
1:C:105:VAL:O	1:C:107:ILE:HG13	2.21	0.41
1:C:232:HIS:ND1	1:C:233:PRO:O	2.48	0.41
1:D:94:LEU:HD11	1:D:109:SER:N	2.36	0.41
1:B:168:ILE:HA	1:B:174:ASN:ND2	2.36	0.41
1:B:219:LEU:HD23	1:B:219:LEU:HA	1.96	0.40
1:D:218:TRP:C	1:D:253:LYS:HG2	2.42	0.40
1:A:235:VAL:O	1:A:235:VAL:HG13	2.20	0.40
1:B:231:ILE:HD12	1:B:231:ILE:C	2.41	0.40
1:C:233:PRO:O	1:C:234:ASP:CB	2.68	0.40
1:A:259:LYS:HA	1:A:260:PRO:HD3	1.96	0.40
1:D:140:ASP:O	1:D:141:GLU:HG2	2.21	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	230/262 (88%)	217 (94%)	12 (5%)	1 (0%)	34	48
1	B	230/262 (88%)	215 (94%)	14 (6%)	1 (0%)	34	48
1	C	221/262 (84%)	212 (96%)	7 (3%)	2 (1%)	17	25
1	D	230/262 (88%)	208 (90%)	14 (6%)	8 (4%)	3	3
All	All	911/1048 (87%)	852 (94%)	47 (5%)	12 (1%)	12	17

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	139	GLU
1	D	140	ASP
1	D	233	PRO
1	C	53	ASP
1	D	234	ASP
1	D	260	PRO
1	A	141	GLU
1	C	149	GLN
1	D	24	TRP
1	D	26	LYS
1	B	140	ASP
1	D	232	HIS

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	212/229 (93%)	205 (97%)	7 (3%)	38	57
1	B	212/229 (93%)	199 (94%)	13 (6%)	18	30
1	C	204/229 (89%)	194 (95%)	10 (5%)	25	40
1	D	212/229 (93%)	198 (93%)	14 (7%)	16	26
All	All	840/916 (92%)	796 (95%)	44 (5%)	23	38

All (44) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	120	ILE
1	A	137	VAL
1	A	163	ILE
1	A	195	ASP
1	A	230	ILE
1	A	244	LEU
1	A	252	LEU
1	B	26	LYS
1	B	74	ARG
1	B	92	VAL
1	B	120	ILE
1	B	166	LEU
1	B	195	ASP
1	B	202	GLN
1	B	205	VAL
1	B	221	VAL
1	B	234	ASP
1	B	244	LEU
1	B	252	LEU
1	B	259	LYS
1	C	74	ARG
1	C	120	ILE
1	C	134	SER
1	C	152	LYS
1	C	154	ARG
1	C	195	ASP
1	C	209	ARG
1	C	238	HIS
1	C	244	LEU
1	C	252	LEU
1	D	24	TRP
1	D	92	VAL
1	D	120	ILE

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Mol	Chain	Res	Type
1	D	141	GLU
1	D	149	GLN
1	D	153	GLN
1	D	156	LEU
1	D	166	LEU
1	D	195	ASP
1	D	221	VAL
1	D	233	PRO
1	D	238	HIS
1	D	244	LEU
1	D	252	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	28	GLN
1	A	30	ASN
1	A	37	ASN
1	A	39	HIS
1	A	86	GLN
1	A	160	GLN
1	A	174	ASN
1	A	214	GLN
1	A	223	GLN
1	B	28	GLN
1	B	29	GLN
1	B	30	ASN
1	B	37	ASN
1	B	39	HIS
1	B	86	GLN
1	B	174	ASN
1	B	176	GLN
1	C	28	GLN
1	C	29	GLN
1	C	30	ASN
1	C	37	ASN
1	C	39	HIS
1	C	86	GLN
1	C	130	HIS
1	C	160	GLN
1	C	173	GLN
1	C	174	ASN

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Mol	Chain	Res	Type
1	C	176	GLN
1	C	207	ASN
1	C	223	GLN
1	C	246	GLN
1	D	29	GLN
1	D	30	ASN
1	D	37	ASN
1	D	39	HIS
1	D	86	GLN
1	D	149	GLN
1	D	160	GLN
1	D	174	ASN

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	ACY	C	263	-	3,3,3	0.64	0	3,3,3	0.77	0
2	ACY	B	263	-	3,3,3	0.58	0	3,3,3	0.87	0

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.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	263	ACY	1	0

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

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	229/262 (87%)	-0.12	4 (1%) 70 68	15, 31, 60, 83	0
1	B	229/262 (87%)	-0.13	3 (1%) 77 75	14, 31, 59, 76	0
1	C	221/262 (84%)	0.32	18 (8%) 12 11	21, 42, 77, 103	0
1	D	229/262 (87%)	0.20	15 (6%) 18 17	19, 37, 75, 92	0
All	All	908/1048 (86%)	0.07	40 (4%) 34 33	14, 34, 69, 103	0

All (40) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	23	PRO	7.3
1	D	233	PRO	5.4
1	D	260	PRO	5.1
1	D	261	LYS	5.1
1	C	260	PRO	5.0
1	C	148	LYS	4.4
1	D	259	LYS	4.3
1	C	106	SER	4.3
1	C	253	LYS	3.8
1	A	261	LYS	3.7
1	C	105	VAL	3.7
1	D	105	VAL	3.3
1	C	261	LYS	3.3
1	C	258	LEU	3.2
1	A	140	ASP	3.2
1	D	258	LEU	3.2
1	C	24	TRP	3.1
1	D	142	GLY	3.1
1	C	234	ASP	2.9
1	D	257	PRO	2.8
1	A	259	LYS	2.8

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Mol	Chain	Res	Type	RSRZ
1	C	257	PRO	2.8
1	C	107	ILE	2.7
1	C	103	LYS	2.7
1	C	259	LYS	2.7
1	A	142	GLY	2.7
1	C	104	LEU	2.6
1	C	254	PRO	2.5
1	D	234	ASP	2.5
1	B	142	GLY	2.3
1	C	219	LEU	2.3
1	D	24	TRP	2.3
1	D	139	GLU	2.3
1	D	140	ASP	2.2
1	D	138	TRP	2.2
1	D	141	GLU	2.2
1	C	202	GLN	2.2
1	B	148	LYS	2.1
1	C	252	LEU	2.1
1	B	25	LYS	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	ACY	C	263	4/4	0.77	0.25	55,57,57,57	0
2	ACY	B	263	4/4	0.86	0.25	55,55,56,56	0

6.5 Other polymers [i](#)

There are no such residues in this entry.