



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 27, 2024 – 06:44 PM EDT

PDB ID : 2FBE
Title : Crystal Structure of the PRYSPRY-domain
Authors : Gruetter, C.; Briand, C.; Capitani, G.; Mittl, P.R.; Gruetter, M.G.
Deposited on : 2005-12-09
Resolution : 2.52 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 : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.20.1
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

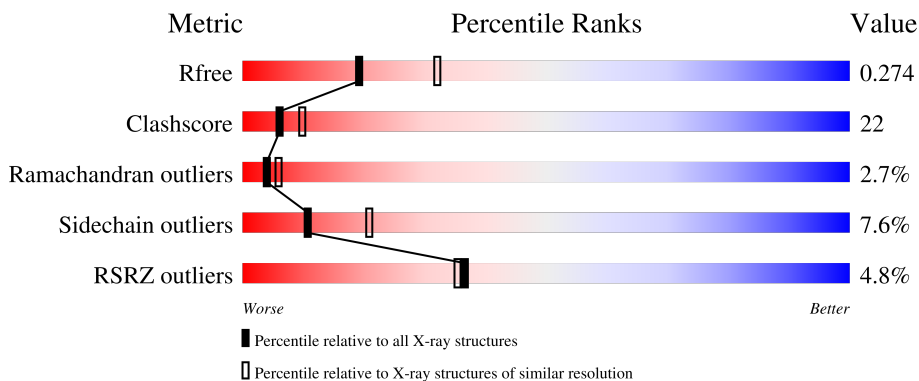
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.52 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	6935 (2.54-2.50)
Clashscore	180529	7778 (2.54-2.50)
Ramachandran outliers	177936	7674 (2.54-2.50)
Sidechain outliers	177891	7676 (2.54-2.50)
RSRZ outliers	164620	6935 (2.54-2.50)

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	201	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 65%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 25%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">5% 65% 25% .. 6%</p>
1	B	201	<div style="display: flex; align-items: center;"> <div style="width: 8%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 58%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 30%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 9%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">8% 58% 30% 9% ..</p>
1	C	201	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 62%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 31%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">4% 62% 31% </p>
1	D	201	<div style="display: flex; align-items: center;"> <div style="width: 0%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 67%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 23%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">% 67% 23% .. 5%</p>

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 6286 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 PREDICTED: similar to ret finger protein-like 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	188	1484	938	257	280	6	3	12	0	0
1	B	198	1544	974	267	294	6	3	4	0	0
1	C	199	1553	979	268	297	6	3	7	0	0
1	D	190	1497	946	259	283	6	3	3	0	0

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	cloning artifact	GB 51474829
A	2	PRO	-	cloning artifact	GB 51474829
A	3	LEU	-	cloning artifact	GB 51474829
A	4	GLY	-	cloning artifact	GB 51474829
A	5	SER	-	cloning artifact	GB 51474829
A	6	PRO	-	cloning artifact	GB 51474829
A	7	GLU	-	cloning artifact	GB 51474829
A	12	MSE	MET	modified residue	GB 51474829
A	93	GLU	VAL	cloning artifact	GB 51474829
A	118	MSE	MET	modified residue	GB 51474829
A	138	MSE	MET	modified residue	GB 51474829
B	1	GLY	-	cloning artifact	GB 51474829
B	2	PRO	-	cloning artifact	GB 51474829
B	3	LEU	-	cloning artifact	GB 51474829
B	4	GLY	-	cloning artifact	GB 51474829
B	5	SER	-	cloning artifact	GB 51474829
B	6	PRO	-	cloning artifact	GB 51474829
B	7	GLU	-	cloning artifact	GB 51474829
B	12	MSE	MET	modified residue	GB 51474829
B	93	GLU	VAL	cloning artifact	GB 51474829
B	118	MSE	MET	modified residue	GB 51474829

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Chain	Residue	Modelled	Actual	Comment	Reference
B	138	MSE	MET	modified residue	GB 51474829
C	1	GLY	-	cloning artifact	GB 51474829
C	2	PRO	-	cloning artifact	GB 51474829
C	3	LEU	-	cloning artifact	GB 51474829
C	4	GLY	-	cloning artifact	GB 51474829
C	5	SER	-	cloning artifact	GB 51474829
C	6	PRO	-	cloning artifact	GB 51474829
C	7	GLU	-	cloning artifact	GB 51474829
C	12	MSE	MET	modified residue	GB 51474829
C	93	GLU	VAL	cloning artifact	GB 51474829
C	118	MSE	MET	modified residue	GB 51474829
C	138	MSE	MET	modified residue	GB 51474829
D	1	GLY	-	cloning artifact	GB 51474829
D	2	PRO	-	cloning artifact	GB 51474829
D	3	LEU	-	cloning artifact	GB 51474829
D	4	GLY	-	cloning artifact	GB 51474829
D	5	SER	-	cloning artifact	GB 51474829
D	6	PRO	-	cloning artifact	GB 51474829
D	7	GLU	-	cloning artifact	GB 51474829
D	12	MSE	MET	modified residue	GB 51474829
D	93	GLU	VAL	cloning artifact	GB 51474829
D	118	MSE	MET	modified residue	GB 51474829
D	138	MSE	MET	modified residue	GB 51474829

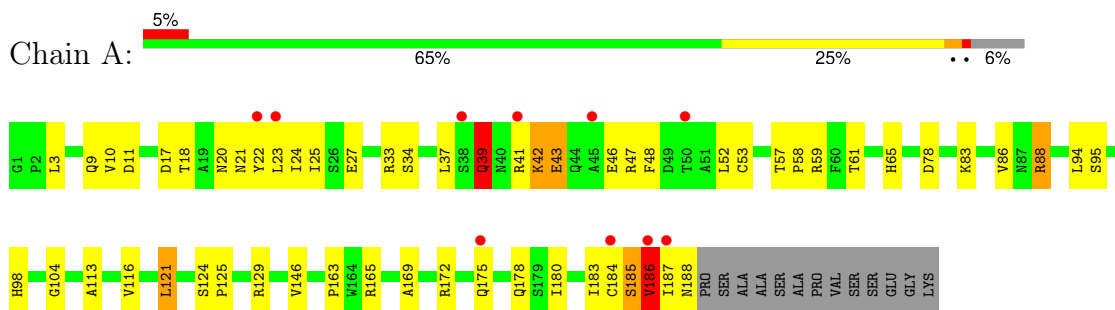
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	44	Total O 44 44	0	0
2	B	48	Total O 48 48	0	0
2	C	50	Total O 50 50	0	0
2	D	66	Total O 66 66	0	0

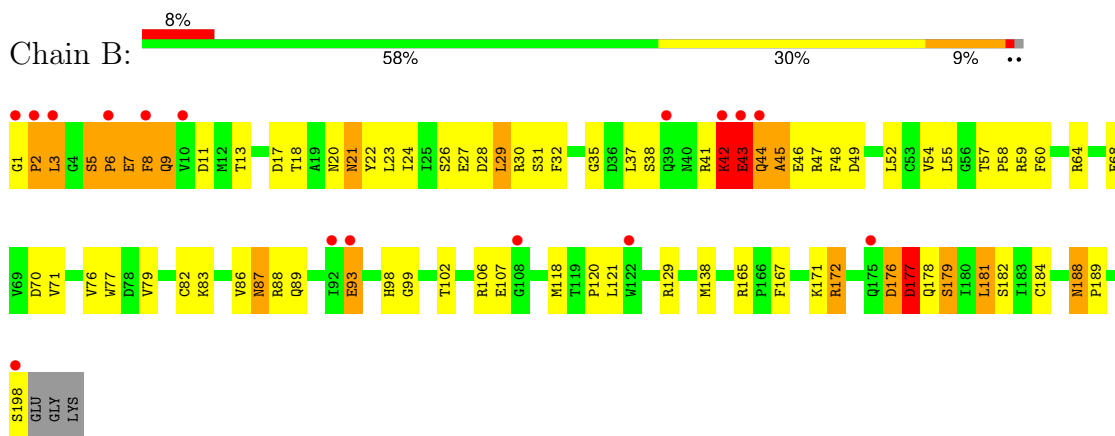
3 Residue-property plots [i](#)

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.

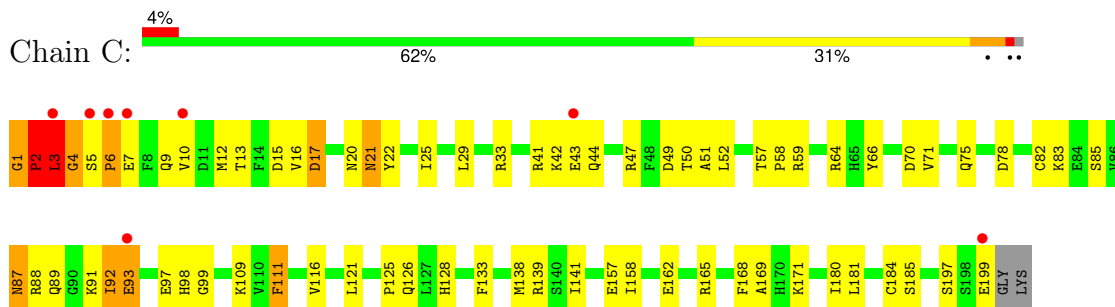
- Molecule 1: PREDICTED: similar to ret finger protein-like 1



- Molecule 1: PREDICTED: similar to ret finger protein-like 1

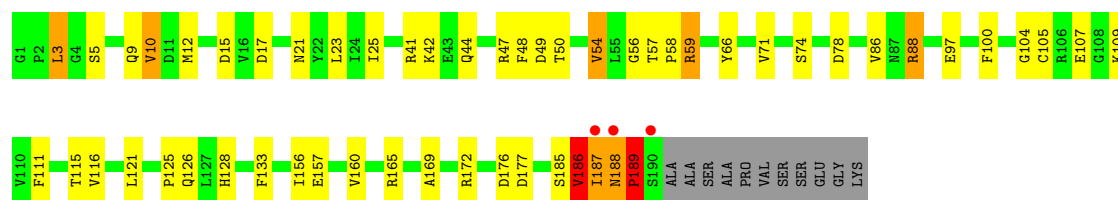


- Molecule 1: PREDICTED: similar to ret finger protein-like 1



- Molecule 1: PREDICTED: similar to ret finger protein-like 1

Chain D:  %



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 2 2	Depositor
Cell constants a, b, c, α , β , γ	77.22Å 77.22Å 297.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.46 – 2.52 30.46 – 2.52	Depositor EDS
% Data completeness (in resolution range)	96.1 (30.46-2.52) 96.0 (30.46-2.52)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.97 (at 2.51Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.227 , 0.277 0.225 , 0.274	Depositor DCC
R_{free} test set	1502 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å ²)	48.5	Xtrriage
Anisotropy	0.108	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 54.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6286	wwPDB-VP
Average B, all atoms (Å ²)	48.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.38% 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

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	0.42	0/1518	0.80	4/2055 (0.2%)
1	B	0.54	1/1580 (0.1%)	0.93	6/2142 (0.3%)
1	C	0.52	1/1589 (0.1%)	0.82	8/2154 (0.4%)
1	D	0.48	0/1532	0.83	2/2075 (0.1%)
All	All	0.49	2/6219 (0.0%)	0.85	20/8426 (0.2%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	1	GLY	N-CA	6.58	1.55	1.46
1	B	8	PHE	CD2-CE2	-5.01	1.29	1.39

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	189	PRO	N-CA-C	13.85	148.10	112.10
1	C	2	PRO	C-N-CA	8.47	142.89	121.70
1	A	185	SER	N-CA-C	8.31	133.45	111.00
1	A	185	SER	N-CA-CB	-7.49	99.26	110.50
1	B	42	LYS	CA-C-N	-7.46	100.78	117.20
1	C	1	GLY	C-N-CD	-7.35	104.44	120.60
1	B	177	ASP	CA-C-N	-7.08	101.63	117.20
1	C	3	LEU	CA-C-N	-6.40	103.40	116.20
1	A	188	ASN	N-CA-C	-6.39	93.76	111.00
1	C	3	LEU	N-CA-C	-5.63	95.80	111.00
1	C	2	PRO	N-CA-C	-5.63	97.47	112.10
1	D	186	VAL	N-CA-C	5.59	126.10	111.00
1	B	42	LYS	C-N-CA	5.58	135.66	121.70
1	C	2	PRO	CA-CB-CG	-5.56	93.44	104.00
1	C	2	PRO	O-C-N	5.47	131.46	122.70
1	B	176	ASP	CB-CA-C	5.40	121.21	110.40
1	C	7	GLU	N-CA-C	-5.40	96.42	111.00
1	B	176	ASP	CA-CB-CG	5.32	125.11	113.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	177	ASP	N-CA-CB	5.21	119.98	110.60
1	A	116	VAL	C-N-CD	-5.03	109.53	120.60

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	1484	0	1431	41	3
1	B	1544	0	1489	94	3
1	C	1553	0	1495	84	0
1	D	1497	0	1443	53	0
2	A	44	0	0	4	0
2	B	48	0	0	6	0
2	C	50	0	0	6	0
2	D	66	0	0	2	0
All	All	6286	0	5858	264	3

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 22.

All (264) 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:42:LYS:O	1:B:47:ARG:NH1	1.70	1.23
1:C:97:GLU:CD	1:D:189:PRO:HB3	1.60	1.22
1:B:42:LYS:HE3	1:B:44:GLN:OE1	1.39	1.20
1:C:4:GLY:HA2	2:C:244:HOH:O	1.42	1.15
1:B:22:TYR:CE1	1:B:38:SER:OG	2.01	1.12
1:C:1:GLY:O	1:C:3:LEU:HG	1.51	1.10
1:C:2:PRO:C	1:C:4:GLY:H	1.31	1.09
1:C:2:PRO:C	1:C:4:GLY:N	2.03	1.08
1:B:2:PRO:HG2	1:B:8:PHE:CZ	1.87	1.08
1:D:188:ASN:N	1:D:188:ASN:HD22	1.51	1.07

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1:GLY:O	1:C:3:LEU:N	1.88	1.05
1:B:1:GLY:C	1:B:3:LEU:H	1.51	1.05
1:B:176:ASP:OD2	1:B:178:GLN:OE1	1.77	1.02
1:C:93:GLU:HG3	1:C:98:HIS:CD2	1.95	1.02
1:D:44:GLN:HE21	1:D:47:ARG:HH12	1.06	1.01
1:B:87:ASN:C	1:B:87:ASN:HD22	1.65	0.97
1:B:2:PRO:HG2	1:B:8:PHE:HZ	1.31	0.95
1:D:42:LYS:O	1:D:47:ARG:NH1	2.02	0.92
1:A:11:ASP:OD1	1:A:185:SER:O	1.87	0.92
1:C:2:PRO:O	1:C:4:GLY:N	2.05	0.90
1:D:188:ASN:N	1:D:188:ASN:ND2	2.17	0.88
1:B:2:PRO:C	1:B:3:LEU:HG	1.91	0.88
1:D:186:VAL:HG22	1:D:186:VAL:O	1.72	0.88
1:B:42:LYS:CE	1:B:44:GLN:OE1	2.22	0.87
1:B:1:GLY:C	1:B:3:LEU:N	2.26	0.87
1:B:2:PRO:CG	1:B:8:PHE:CZ	2.57	0.87
1:B:93:GLU:CD	1:B:93:GLU:H	1.78	0.86
1:B:45:ALA:HA	2:B:227:HOH:O	1.75	0.85
1:B:2:PRO:CG	1:B:8:PHE:HZ	1.88	0.84
1:C:2:PRO:O	1:C:4:GLY:CA	2.25	0.84
1:C:2:PRO:O	1:C:4:GLY:HA3	1.78	0.83
1:B:23:LEU:O	1:B:41:ARG:NH2	2.11	0.83
1:C:97:GLU:OE1	1:D:189:PRO:HB3	1.77	0.82
1:A:172:ARG:HH21	1:A:175:GLN:HA	1.45	0.81
1:C:44:GLN:HE21	1:C:47:ARG:HH12	1.28	0.81
1:C:1:GLY:O	1:C:3:LEU:CG	2.29	0.81
1:D:44:GLN:HE21	1:D:47:ARG:NH1	1.79	0.81
1:C:1:GLY:C	1:C:3:LEU:H	1.79	0.79
1:B:87:ASN:ND2	1:B:89:GLN:H	1.81	0.79
1:A:42:LYS:H	1:A:42:LYS:HD2	1.48	0.78
1:B:2:PRO:CB	1:B:8:PHE:CZ	2.66	0.78
1:C:97:GLU:CD	1:D:189:PRO:CB	2.50	0.77
1:C:138:MSE:HE2	1:C:138:MSE:HA	1.65	0.76
1:C:1:GLY:C	1:C:3:LEU:N	2.35	0.76
1:B:22:TYR:HE1	1:B:38:SER:OG	1.70	0.75
1:C:44:GLN:NE2	1:C:47:ARG:HH12	1.84	0.75
1:D:188:ASN:HB3	1:D:189:PRO:HD3	1.68	0.74
1:B:2:PRO:CB	1:B:8:PHE:HZ	2.01	0.73
1:B:93:GLU:OE1	1:B:98:HIS:ND1	2.22	0.73
1:B:87:ASN:HD22	1:B:88:ARG:N	1.86	0.73
1:B:20:ASN:ND2	1:B:52:LEU:HD23	2.05	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:51:ALA:HB2	1:C:92:ILE:HD12	1.72	0.72
1:C:1:GLY:O	1:C:3:LEU:CA	2.37	0.71
1:D:23:LEU:HD13	1:D:54:VAL:HG22	1.71	0.71
1:D:23:LEU:CD1	1:D:54:VAL:HG22	2.20	0.71
1:C:93:GLU:HG3	1:C:98:HIS:CG	2.25	0.71
1:B:1:GLY:O	1:B:3:LEU:N	2.24	0.71
1:C:82:CYS:HA	1:C:99:GLY:O	1.91	0.71
1:B:93:GLU:N	1:B:93:GLU:OE2	2.24	0.70
1:B:87:ASN:C	1:B:87:ASN:ND2	2.38	0.70
1:C:125:PRO:HB2	1:C:126:GLN:HE22	1.56	0.69
1:B:93:GLU:CD	1:B:93:GLU:N	2.45	0.69
1:D:156:ILE:HG23	1:D:157:GLU:HG3	1.74	0.69
1:C:64:ARG:HD2	1:C:133:PHE:HZ	1.57	0.68
1:C:125:PRO:HB2	1:C:126:GLN:NE2	2.08	0.68
1:D:188:ASN:HB3	1:D:189:PRO:CD	2.22	0.68
1:C:97:GLU:HG3	1:C:116:VAL:HG21	1.75	0.68
1:B:87:ASN:ND2	1:B:89:GLN:N	2.41	0.67
1:D:49:ASP:OD2	1:D:50:THR:HG22	1.94	0.67
1:D:186:VAL:O	1:D:186:VAL:CG2	2.43	0.66
1:C:21:ASN:HD21	1:C:41:ARG:H	1.44	0.66
1:A:185:SER:O	1:A:186:VAL:HG13	1.96	0.66
1:C:50:THR:HG22	1:C:91:LYS:HE2	1.78	0.66
1:A:34:SER:HB2	1:A:52:LEU:HD22	1.79	0.65
1:A:23:LEU:HD21	1:A:52:LEU:HB3	1.79	0.65
1:C:171:LYS:NZ	2:C:215:HOH:O	2.29	0.65
1:D:78:ASP:HB2	1:D:169:ALA:HB3	1.79	0.64
1:D:187:ILE:C	1:D:188:ASN:HD22	2.01	0.64
1:B:138:MSE:HA	1:B:138:MSE:HE2	1.80	0.63
1:C:6:PRO:HG3	1:C:66:TYR:HB2	1.81	0.63
1:A:18:THR:HA	1:A:46:GLU:O	1.99	0.62
1:C:59:ARG:HG2	1:C:165:ARG:HD3	1.81	0.62
1:C:21:ASN:HD21	1:C:41:ARG:N	1.97	0.61
1:D:25:ILE:N	1:D:25:ILE:HD12	2.14	0.61
1:D:187:ILE:C	1:D:188:ASN:ND2	2.53	0.61
1:B:2:PRO:C	1:B:3:LEU:CG	2.64	0.61
1:C:44:GLN:HE21	1:C:47:ARG:NH1	1.99	0.61
1:C:78:ASP:HB2	1:C:169:ALA:HB3	1.82	0.60
1:B:93:GLU:CD	1:B:98:HIS:HD1	2.04	0.60
1:B:9:GLN:OE1	1:B:60:PHE:HE2	1.84	0.59
1:C:109:LYS:O	1:C:111:PHE:CE1	2.55	0.59
1:D:188:ASN:HD22	1:D:188:ASN:H	1.41	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:44:GLN:NE2	1:D:47:ARG:HH12	1.90	0.58
1:A:20:ASN:H	1:A:23:LEU:HD12	1.69	0.58
1:C:91:LYS:HD3	1:C:92:ILE:H	1.68	0.58
1:C:111:PHE:N	1:C:111:PHE:CD1	2.72	0.57
1:B:2:PRO:HB3	1:B:8:PHE:CE2	2.40	0.57
1:C:64:ARG:HD2	1:C:133:PHE:CZ	2.39	0.57
1:B:2:PRO:CB	1:B:8:PHE:CE2	2.88	0.57
1:B:176:ASP:CG	1:B:178:GLN:OE1	2.44	0.56
1:C:9:GLN:HG3	2:C:210:HOH:O	2.05	0.56
1:A:129:ARG:HB3	1:A:146:VAL:HB	1.87	0.56
1:C:109:LYS:HE3	2:C:236:HOH:O	2.05	0.56
1:B:82:CYS:HA	1:B:99:GLY:O	2.07	0.55
1:B:172:ARG:HG2	1:D:176:ASP:OD1	2.07	0.55
1:B:129:ARG:NH1	2:B:244:HOH:O	2.40	0.55
1:A:10:VAL:HG21	1:A:65:HIS:HB3	1.89	0.55
1:C:6:PRO:HG3	1:C:66:TYR:CB	2.36	0.55
1:B:177:ASP:OD1	1:B:179:SER:OG	2.18	0.55
1:C:2:PRO:HB3	2:C:241:HOH:O	2.06	0.55
1:B:48:PHE:HA	1:B:88:ARG:O	2.06	0.54
1:D:23:LEU:HD13	1:D:54:VAL:CG2	2.38	0.54
1:D:188:ASN:CB	1:D:189:PRO:CD	2.85	0.54
1:C:21:ASN:ND2	1:C:41:ARG:H	2.06	0.54
1:C:1:GLY:O	1:C:3:LEU:CB	2.57	0.53
1:B:44:GLN:O	1:B:47:ARG:N	2.41	0.53
1:D:115:THR:HB	2:D:267:HOH:O	2.08	0.53
1:A:17:ASP:HA	2:A:242:HOH:O	2.09	0.53
1:A:25:ILE:HD12	1:A:25:ILE:N	2.24	0.53
1:B:178:GLN:H	1:B:178:GLN:CD	2.11	0.53
1:C:5:SER:N	1:C:6:PRO:HD3	2.23	0.53
1:C:51:ALA:CB	1:C:92:ILE:HD12	2.38	0.52
1:B:28:ASP:C	1:B:29:LEU:HD22	2.29	0.52
1:B:76:VAL:HG11	1:B:171:LYS:HD3	1.92	0.52
1:B:83:LYS:O	1:B:86:VAL:HG13	2.10	0.52
1:B:2:PRO:O	1:B:3:LEU:HD12	2.10	0.51
1:B:188:ASN:ND2	1:B:189:PRO:HD2	2.26	0.51
1:C:52:LEU:HD12	1:C:171:LYS:HA	1.92	0.51
1:A:37:LEU:CD1	1:A:39:GLN:OE1	2.58	0.51
1:A:185:SER:HB2	2:A:240:HOH:O	2.11	0.51
1:C:50:THR:CG2	1:C:91:LYS:HE2	2.40	0.51
1:D:12:MSE:HE1	1:D:56:GLY:HA3	1.93	0.51
1:A:57:THR:N	1:A:58:PRO:CD	2.73	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:95:SER:HB3	1:A:98:HIS:HD2	1.77	0.50
1:B:2:PRO:O	1:B:3:LEU:CG	2.60	0.50
1:A:78:ASP:OD1	1:A:104:GLY:HA3	2.11	0.50
1:A:178:GLN:HG2	2:A:230:HOH:O	2.11	0.50
1:B:9:GLN:OE1	1:B:60:PHE:CE2	2.64	0.50
1:C:85:SER:OG	1:C:162:GLU:OE1	2.20	0.50
1:A:37:LEU:HD13	1:A:39:GLN:OE1	2.12	0.50
1:D:48:PHE:HA	1:D:88:ARG:O	2.12	0.50
1:B:188:ASN:HD22	1:B:189:PRO:CD	2.24	0.49
1:D:3:LEU:HD22	1:D:5:SER:H	1.77	0.49
1:D:59:ARG:HG3	1:D:165:ARG:HD3	1.95	0.49
1:A:43:GLU:OE1	1:A:43:GLU:O	2.30	0.49
1:B:17:ASP:HA	1:B:47:ARG:NH2	2.28	0.49
1:B:71:VAL:HG12	1:B:181:LEU:HD11	1.95	0.49
1:C:5:SER:O	1:C:64:ARG:NE	2.42	0.49
1:D:172:ARG:HB2	1:D:177:ASP:HB3	1.94	0.49
1:B:3:LEU:HB3	2:B:240:HOH:O	2.12	0.49
1:B:18:THR:HA	1:B:46:GLU:O	2.13	0.49
1:B:54:VAL:HG22	1:B:55:LEU:N	2.27	0.49
1:C:6:PRO:HD3	2:C:244:HOH:O	2.13	0.49
1:A:183:ILE:HG22	1:A:184:CYS:N	2.28	0.49
1:C:87:ASN:HD21	1:C:89:GLN:HG2	1.77	0.49
1:B:46:GLU:HB3	1:B:88:ARG:NH1	2.28	0.48
1:C:5:SER:N	1:C:6:PRO:CD	2.75	0.48
1:B:71:VAL:HG11	1:B:77:TRP:CD2	2.48	0.48
1:B:9:GLN:HE21	1:B:9:GLN:N	2.11	0.48
1:B:26:SER:O	1:B:29:LEU:N	2.34	0.48
1:C:21:ASN:HD21	1:C:41:ARG:HG3	1.79	0.48
1:D:105:CYS:HB2	1:D:111:PHE:CE2	2.48	0.48
1:B:120:PRO:O	1:B:121:LEU:HD12	2.14	0.48
1:A:48:PHE:HA	1:A:88:ARG:O	2.14	0.48
1:B:26:SER:O	1:B:28:ASP:N	2.47	0.48
1:B:70:ASP:HB2	1:B:184:CYS:SG	2.53	0.47
1:A:34:SER:CB	1:A:52:LEU:HD22	2.44	0.47
1:B:13:THR:HB	1:B:29:LEU:HB2	1.96	0.47
1:C:16:VAL:O	1:C:47:ARG:NH2	2.47	0.47
1:B:5:SER:H	1:B:6:PRO:HD2	1.79	0.47
1:B:7:GLU:HB3	1:B:64:ARG:O	2.14	0.47
1:C:87:ASN:HD22	1:C:88:ARG:N	2.12	0.47
1:B:2:PRO:HB2	1:B:8:PHE:CZ	2.49	0.47
1:C:20:ASN:ND2	1:C:22:TYR:H	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:49:ASP:OD2	1:B:89:GLN:HA	2.15	0.47
1:B:76:VAL:CG1	1:B:171:LYS:HB2	2.45	0.47
1:D:78:ASP:OD1	1:D:104:GLY:HA3	2.14	0.47
1:B:188:ASN:HD22	1:B:189:PRO:N	2.13	0.47
1:B:87:ASN:HD21	1:B:89:GLN:N	2.10	0.46
1:C:97:GLU:OE2	1:D:189:PRO:CB	2.63	0.46
1:A:78:ASP:HB2	1:A:169:ALA:HB3	1.97	0.46
1:C:87:ASN:HD21	1:C:89:GLN:CG	2.28	0.46
1:B:31:SER:OG	1:B:182:SER:HB3	2.16	0.46
1:B:59:ARG:HG2	1:B:165:ARG:HD3	1.97	0.46
1:B:2:PRO:HG2	1:B:8:PHE:CE1	2.45	0.46
1:B:21:ASN:OD1	1:B:41:ARG:HB2	2.15	0.46
1:B:118:MSE:HG3	2:B:208:HOH:O	2.15	0.45
1:C:47:ARG:NH1	1:C:47:ARG:HB2	2.31	0.45
1:D:86:VAL:HG11	1:D:100:PHE:CZ	2.50	0.45
1:A:58:PRO:O	1:A:165:ARG:NE	2.48	0.45
1:B:57:THR:N	1:B:58:PRO:HD2	2.31	0.45
1:C:57:THR:N	1:C:58:PRO:HD2	2.32	0.45
1:B:79:VAL:O	1:B:102:THR:HB	2.15	0.45
1:D:10:VAL:HG13	1:D:66:TYR:O	2.17	0.45
1:D:25:ILE:HD13	1:D:41:ARG:NH2	2.31	0.45
1:A:41:ARG:HD3	1:A:47:ARG:HH21	1.81	0.45
1:A:146:VAL:HG12	1:A:146:VAL:O	2.16	0.45
1:B:2:PRO:HB2	1:B:8:PHE:HZ	1.79	0.45
1:A:83:LYS:O	1:A:86:VAL:HG22	2.16	0.45
1:C:70:ASP:HB2	1:C:184:CYS:SG	2.57	0.45
1:C:33:ARG:HB3	1:C:180:ILE:HD13	1.97	0.44
1:B:7:GLU:HG2	1:B:9:GLN:HE22	1.81	0.44
1:C:15:ASP:OD1	1:C:17:ASP:HB2	2.17	0.44
1:C:97:GLU:OE2	1:D:189:PRO:HB3	2.07	0.44
1:B:28:ASP:OD2	1:B:30:ARG:HB2	2.17	0.44
1:A:33:ARG:HD2	1:A:180:ILE:HG22	2.00	0.44
1:D:109:LYS:NZ	1:D:125:PRO:O	2.50	0.44
1:C:141:ILE:HG23	1:C:141:ILE:O	2.18	0.44
1:C:13:THR:HB	1:C:29:LEU:HB2	2.00	0.44
1:C:109:LYS:HE2	1:C:125:PRO:O	2.18	0.44
1:B:26:SER:OG	1:B:28:ASP:OD1	2.30	0.44
1:A:23:LEU:HD11	1:A:53:CYS:N	2.33	0.44
1:B:43:GLU:CD	1:B:43:GLU:H	2.15	0.44
1:C:138:MSE:HA	1:C:138:MSE:CE	2.41	0.44
1:A:124:SER:HA	1:A:125:PRO:HD3	1.89	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:57:THR:N	1:D:58:PRO:CD	2.81	0.43
1:B:21:ASN:OD1	1:B:41:ARG:N	2.44	0.43
1:B:87:ASN:HD22	1:B:89:GLN:H	1.59	0.43
1:A:37:LEU:C	1:A:37:LEU:HD12	2.38	0.43
1:C:83:LYS:HE2	1:C:162:GLU:CD	2.38	0.43
1:D:128:HIS:HE1	2:D:236:HOH:O	2.02	0.43
1:C:109:LYS:O	1:C:111:PHE:HE1	2.00	0.43
1:D:12:MSE:CE	1:D:56:GLY:HA3	2.49	0.43
1:A:61:THR:HG22	1:A:163:PRO:HG3	2.01	0.43
1:A:125:PRO:HA	2:A:207:HOH:O	2.19	0.43
1:D:21:ASN:OD1	1:D:41:ARG:HB2	2.18	0.43
1:C:139:ARG:O	1:C:158:ILE:HG23	2.19	0.42
1:D:71:VAL:HG22	1:D:128:HIS:O	2.19	0.42
1:D:187:ILE:HG22	1:D:188:ASN:H	1.84	0.42
1:B:188:ASN:HD22	1:B:189:PRO:HD2	1.83	0.42
1:C:3:LEU:HG	1:C:3:LEU:H	1.27	0.42
1:C:21:ASN:ND2	1:C:41:ARG:HG3	2.34	0.42
1:A:186:VAL:HB	1:A:187:ILE:H	1.11	0.42
1:B:20:ASN:HD22	1:B:52:LEU:HD23	1.83	0.42
1:A:78:ASP:OD2	1:A:94:LEU:HD11	2.20	0.42
1:C:44:GLN:HG2	1:C:47:ARG:NH1	2.35	0.42
1:A:21:ASN:O	1:A:39:GLN:HB2	2.20	0.41
1:C:168:PHE:CD1	1:C:168:PHE:N	2.88	0.41
1:B:7:GLU:HG2	1:B:7:GLU:O	2.19	0.41
1:C:75:GLN:HA	1:C:75:GLN:HE21	1.85	0.41
1:A:95:SER:HB3	1:A:98:HIS:CD2	2.55	0.41
1:C:9:GLN:HG2	1:C:12:MSE:HE3	2.02	0.41
1:B:3:LEU:CB	2:B:240:HOH:O	2.68	0.41
1:B:23:LEU:HG	1:B:32:PHE:CD1	2.55	0.41
1:B:24:ILE:O	1:B:32:PHE:HA	2.21	0.41
1:D:25:ILE:N	1:D:25:ILE:CD1	2.83	0.41
1:D:160:VAL:O	1:D:160:VAL:HG23	2.21	0.41
1:B:68:GLU:OE1	1:B:129:ARG:HD3	2.21	0.41
1:C:59:ARG:HG3	1:C:59:ARG:HH11	1.85	0.41
1:D:15:ASP:OD2	1:D:17:ASP:HB2	2.21	0.41
1:B:35:GLY:HA3	2:B:226:HOH:O	2.20	0.41
1:C:71:VAL:HG22	1:C:128:HIS:O	2.20	0.41
1:D:97:GLU:HB2	1:D:116:VAL:HG21	2.03	0.41
1:A:59:ARG:HG2	1:A:165:ARG:HD3	2.03	0.41
1:C:93:GLU:H	1:C:93:GLU:HG2	1.42	0.41
1:C:97:GLU:CG	1:D:189:PRO:HB3	2.46	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:58:PRO:O	1:D:165:ARG:HD2	2.22	0.40
1:D:71:VAL:O	1:D:74:SER:HB3	2.21	0.40
1:B:42:LYS:HA	1:B:43:GLU:CD	2.41	0.40
1:B:79:VAL:HA	1:B:167:PHE:O	2.21	0.40
1:C:49:ASP:OD2	1:C:89:GLN:HA	2.22	0.40
1:C:157:GLU:HG3	1:D:133:PHE:CE1	2.56	0.40
1:A:83:LYS:HB2	1:A:86:VAL:HG13	2.03	0.40
1:A:113:ALA:HB2	1:A:121:LEU:HD21	2.03	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:22:TYR:OH	1:B:43:GLU:OE2[1_655]	1.64	0.56
1:A:22:TYR:OH	1:B:43:GLU:CD[1_655]	2.10	0.10
1:A:22:TYR:OH	1:B:43:GLU:OE1[1_655]	2.11	0.09

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	186/201 (92%)	165 (89%)	18 (10%)	3 (2%)	8	14
1	B	196/201 (98%)	176 (90%)	11 (6%)	9 (5%)	2	2
1	C	197/201 (98%)	173 (88%)	17 (9%)	7 (4%)	3	3
1	D	188/201 (94%)	178 (95%)	8 (4%)	2 (1%)	12	21
All	All	767/804 (95%)	692 (90%)	54 (7%)	21 (3%)	4	6

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	186	VAL
1	B	43	GLU
1	B	45	ALA
1	C	3	LEU
1	C	6	PRO
1	D	189	PRO
1	A	42	LYS
1	B	6	PRO
1	B	7	GLU
1	B	27	GLU
1	C	4	GLY
1	C	10	VAL
1	C	43	GLU
1	D	186	VAL
1	A	39	GLN
1	B	107	GLU
1	C	42	LYS
1	B	177	ASP
1	C	2	PRO
1	B	21	ASN
1	B	2	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	166/172 (96%)	157 (95%)	9 (5%)	18	35
1	B	173/172 (101%)	156 (90%)	17 (10%)	6	12
1	C	174/172 (101%)	160 (92%)	14 (8%)	10	19
1	D	168/172 (98%)	156 (93%)	12 (7%)	12	23
All	All	681/688 (99%)	629 (92%)	52 (8%)	11	21

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LEU

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Mol	Chain	Res	Type
1	A	9	GLN
1	A	24	ILE
1	A	27	GLU
1	A	39	GLN
1	A	43	GLU
1	A	88	ARG
1	A	121	LEU
1	A	186	VAL
1	B	3	LEU
1	B	5	SER
1	B	9	GLN
1	B	11	ASP
1	B	29	LEU
1	B	37	LEU
1	B	42	LYS
1	B	43	GLU
1	B	44	GLN
1	B	87	ASN
1	B	93	GLU
1	B	106	ARG
1	B	172	ARG
1	B	179	SER
1	B	181	LEU
1	B	188	ASN
1	B	198	SER
1	C	2	PRO
1	C	3	LEU
1	C	17	ASP
1	C	21	ASN
1	C	25	ILE
1	C	87	ASN
1	C	92	ILE
1	C	93	GLU
1	C	111	PHE
1	C	121	LEU
1	C	181	LEU
1	C	185	SER
1	C	197	SER
1	C	199	GLU
1	D	3	LEU
1	D	9	GLN
1	D	10	VAL

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Mol	Chain	Res	Type
1	D	54	VAL
1	D	59	ARG
1	D	88	ARG
1	D	107	GLU
1	D	121	LEU
1	D	126	GLN
1	D	185	SER
1	D	187	ILE
1	D	188	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	9	GLN
1	A	21	ASN
1	A	44	GLN
1	A	89	GLN
1	A	98	HIS
1	B	9	GLN
1	B	20	ASN
1	B	87	ASN
1	B	188	ASN
1	C	9	GLN
1	C	20	ASN
1	C	21	ASN
1	C	44	GLN
1	C	75	GLN
1	C	87	ASN
1	C	98	HIS
1	C	126	GLN
1	D	9	GLN
1	D	44	GLN
1	D	89	GLN
1	D	126	GLN
1	D	170	HIS
1	D	178	GLN
1	D	188	ASN

5.3.3 RNA

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](#)

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

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	185/201 (92%)	0.27	10 (5%) 32 31	23, 45, 86, 115	7 (3%)
1	B	195/201 (97%)	0.48	16 (8%) 19 19	29, 52, 86, 100	3 (1%)
1	C	196/201 (97%)	0.13	8 (4%) 42 40	24, 47, 84, 106	4 (2%)
1	D	187/201 (93%)	-0.28	3 (1%) 70 68	18, 34, 59, 127	3 (1%)
All	All	763/804 (94%)	0.16	37 (4%) 36 35	18, 45, 85, 127	17 (2%)

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	43	GLU	5.0
1	B	1	GLY	5.0
1	A	187	ILE	4.4
1	D	187	ILE	4.1
1	D	190	SER	3.9
1	B	3	LEU	3.8
1	C	5	SER	3.7
1	C	3	LEU	3.6
1	B	175	GLN	3.5
1	B	42	LYS	3.1
1	B	10	VAL	3.1
1	B	2	PRO	3.0
1	A	186	VAL	3.0
1	A	38	SER	3.0
1	B	198	SER	2.9
1	A	41	ARG	2.8
1	B	44	GLN	2.8
1	A	175	GLN	2.7
1	A	184	CYS	2.6
1	C	199	GLU	2.6
1	B	8	PHE	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	122	TRP	2.5
1	C	6	PRO	2.5
1	C	7	GLU	2.5
1	B	6	PRO	2.3
1	B	93	GLU	2.3
1	C	10	VAL	2.3
1	A	45	ALA	2.3
1	A	50	THR	2.2
1	B	39	GLN	2.2
1	C	93	GLU	2.2
1	A	23	LEU	2.1
1	B	108	GLY	2.1
1	C	43	GLU	2.1
1	B	92	ILE	2.1
1	D	188	ASN	2.1
1	A	22	TYR	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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.