Full wwPDB X-ray Structure Validation Report ⓘ

Nov 20, 2023 – 04:36 PM JST

PDB ID	:	7CS2
Title	:	Apo structure of dimeric IiPLR1
Authors	:	Shao, K.; Zhang, P.
Deposited on	:	2020-08-14
Resolution	:	2.69 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:

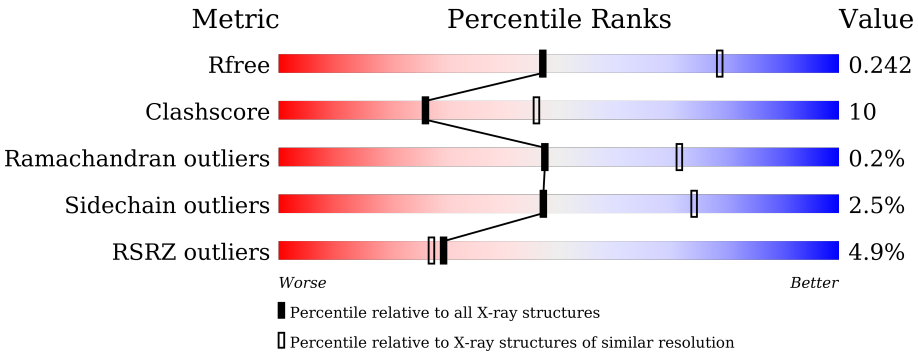
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.69 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	3863 (2.70-2.66)
Clashscore	141614	4210 (2.70-2.66)
Ramachandran outliers	138981	4141 (2.70-2.66)
Sidechain outliers	138945	4141 (2.70-2.66)
RSRZ outliers	127900	3780 (2.70-2.66)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% 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	317	8% 74% 17% 6%
1	B	317	3% 76% 15% 6%
1	C	317	5% 67% 21% 11%
1	D	317	3% 71% 16% 11%
1	E	317	2% 77% 15% 6%
1	F	317	5% 68% 21% 11%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 13846 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 Pinoresinol-lariciresinol reductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	298	Total	C	N	O	S	0	0	0
			2357	1500	399	448	10			
1	C	283	Total	C	N	O	S	0	0	0
			2232	1424	374	424	10			
1	B	298	Total	C	N	O	S	0	0	0
			2357	1500	399	448	10			
1	D	282	Total	C	N	O	S	0	0	0
			2224	1419	373	423	9			
1	E	298	Total	C	N	O	S	0	0	0
			2357	1500	399	448	10			
1	F	282	Total	C	N	O	S	0	0	0
			2228	1422	373	423	10			

- Molecule 2 is water.

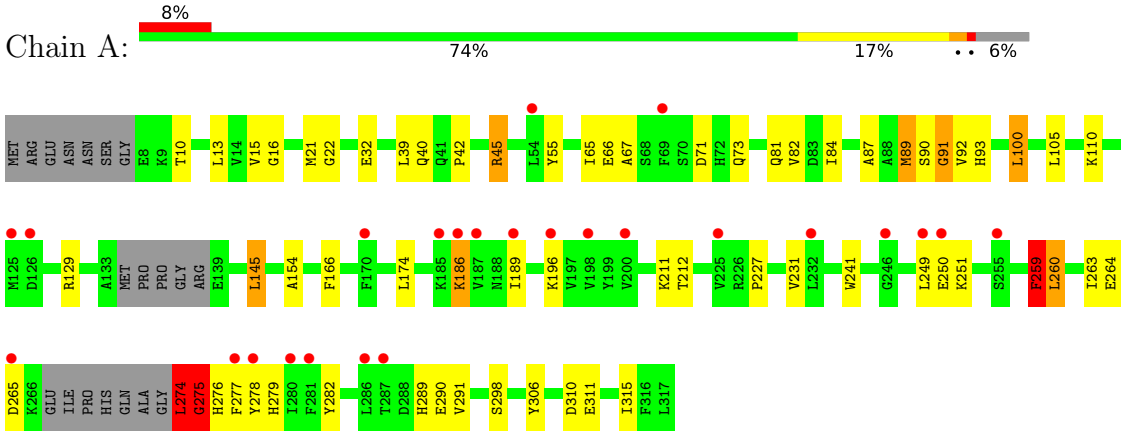
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	16	Total	O	0	0
			16	16		
2	C	17	Total	O	0	0
			17	17		
2	B	17	Total	O	0	0
			17	17		
2	D	13	Total	O	0	0
			13	13		
2	E	19	Total	O	0	0
			19	19		
2	F	9	Total	O	0	0
			9	9		

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.

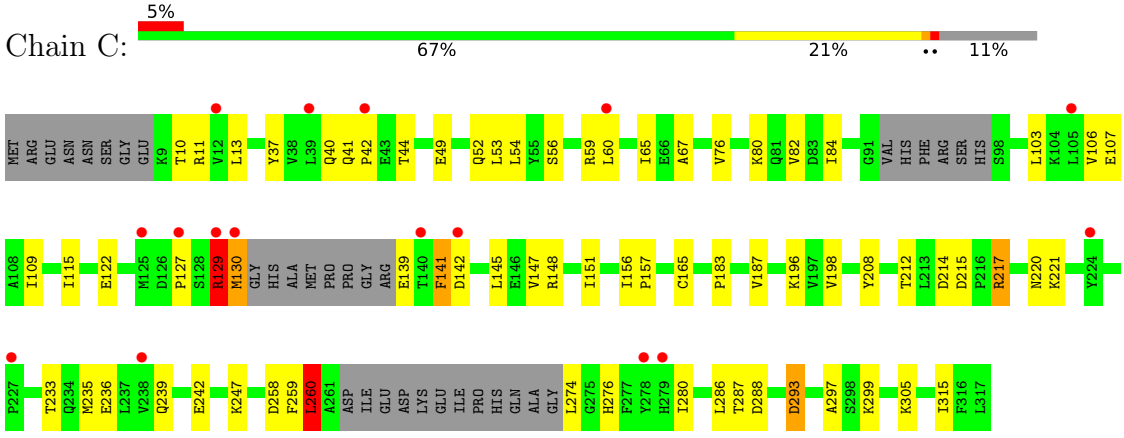
• Molecule 1: Pinoresinol-lariciresinol reductase

Chain A:



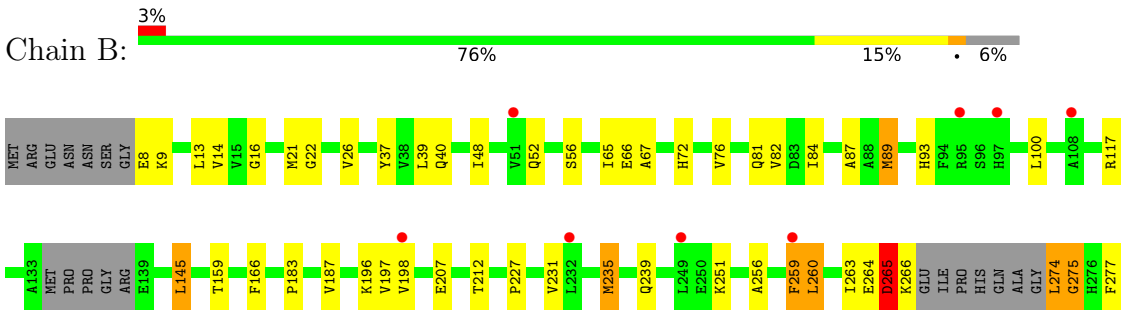
• Molecule 1: Pinoresinol-lariciresinol reductase

Chain C:



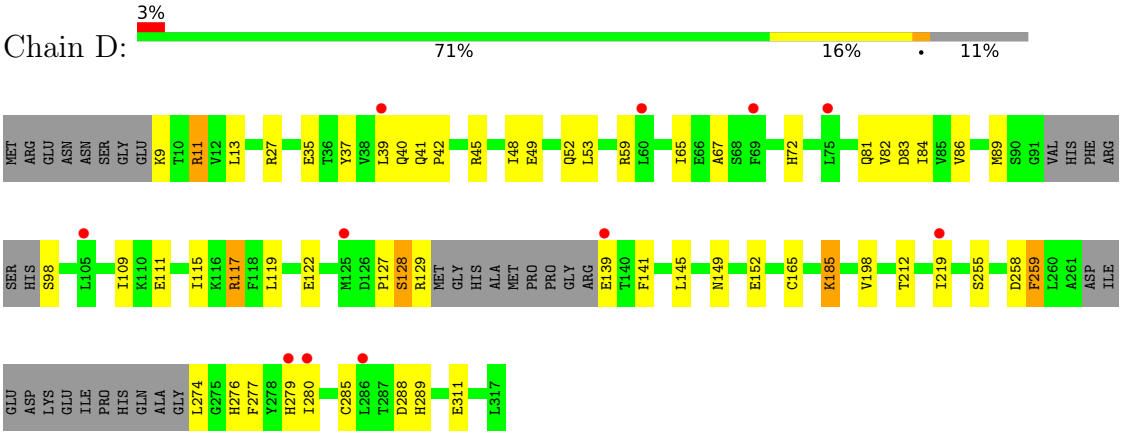
• Molecule 1: Pinoresinol-lariciresinol reductase

Chain B:



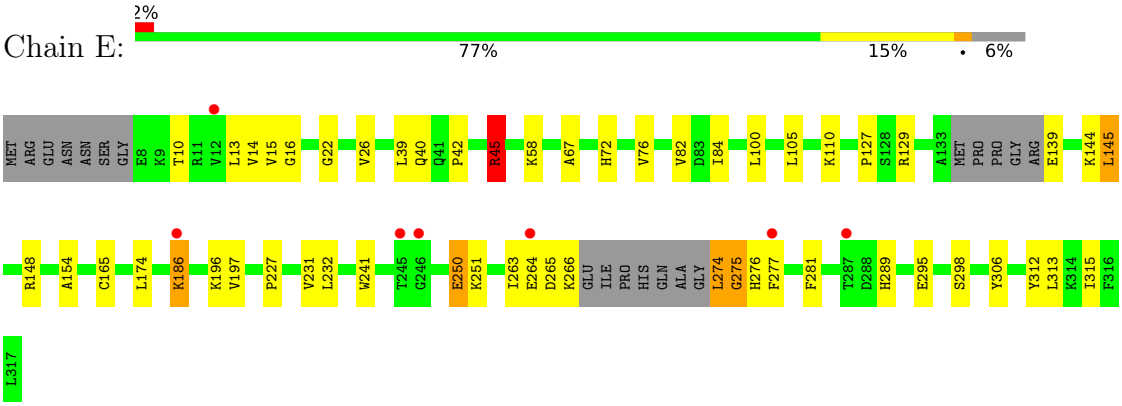
• Molecule 1: Pinoresinol-lariciresinol reductase

Chain D:



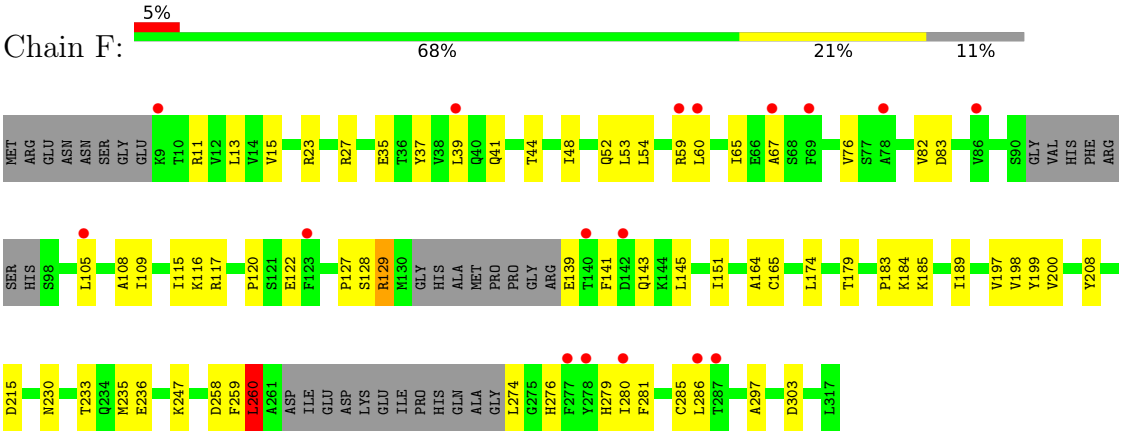
• Molecule 1: Pinoresinol-lariciresinol reductase

Chain E:



• Molecule 1: Pinoresinol-lariciresinol reductase

Chain F:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	148.76Å 242.46Å 77.56Å 90.00° 110.53° 90.00°	Depositor
Resolution (Å)	31.40 – 2.69 43.26 – 2.69	Depositor EDS
% Data completeness (in resolution range)	99.0 (31.40-2.69) 94.8 (43.26-2.69)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.04 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.10_2155	Depositor
R, R_{free}	0.201 , 0.242 0.201 , 0.242	Depositor DCC
R_{free} test set	1998 reflections (2.83%)	wwPDB-VP
Wilson B-factor (Å^2)	63.4	Xtriage
Anisotropy	0.133	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 31.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.438 for 1/2*h+1/2*k+l,3/2*h-1/2*k+l,-l 0.437 for 1/2*h-1/2*k+l,-3/2*h-1/2*k-l,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13846	wwPDB-VP
Average B, all atoms (Å^2)	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.32% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.53	1/2399 (0.0%)	0.68	3/3241 (0.1%)
1	B	0.50	0/2399	0.67	2/3241 (0.1%)
1	C	0.52	1/2269 (0.0%)	0.74	6/3065 (0.2%)
1	D	0.43	0/2261	0.67	1/3055 (0.0%)
1	E	0.56	5/2399 (0.2%)	0.68	1/3241 (0.0%)
1	F	0.44	0/2265	0.63	2/3060 (0.1%)
All	All	0.50	7/13992 (0.1%)	0.68	15/18903 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	3
1	B	0	3
1	C	0	1
1	D	0	3
1	E	0	3
1	F	0	2
All	All	0	15

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	250	GLU	CB-CG	6.34	1.64	1.52
1	E	250	GLU	CD-OE2	6.13	1.32	1.25
1	C	130	MET	CB-CG	6.09	1.70	1.51
1	E	186	LYS	CE-NZ	5.77	1.63	1.49
1	A	259	PHE	CG-CD2	-5.29	1.30	1.38
1	E	250	GLU	CD-OE1	5.20	1.31	1.25
1	E	165	CYS	CB-SG	-5.12	1.73	1.81

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	129	ARG	NE-CZ-NH1	9.70	125.15	120.30
1	C	130	MET	CA-CB-CG	8.20	127.24	113.30
1	D	11	ARG	NE-CZ-NH1	-7.82	116.39	120.30
1	C	130	MET	CB-CG-SD	7.02	133.45	112.40
1	A	186	LYS	CD-CE-NZ	-6.12	97.62	111.70
1	F	260	LEU	CA-CB-CG	5.99	129.08	115.30
1	C	60	LEU	CA-CB-CG	5.96	129.02	115.30
1	E	45	ARG	CG-CD-NE	-5.48	100.29	111.80
1	F	60	LEU	CA-CB-CG	5.44	127.82	115.30
1	B	260	LEU	CB-CA-C	5.41	120.48	110.20
1	A	274	LEU	CA-CB-CG	5.37	127.64	115.30
1	C	260	LEU	CA-CB-CG	5.35	127.60	115.30
1	C	141	PHE	CB-CA-C	-5.22	99.95	110.40
1	A	275	GLY	N-CA-C	-5.12	100.31	113.10
1	B	265	ASP	CB-CG-OD2	5.11	122.90	118.30

There are no chirality outliers.

All (15) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	274	LEU	Peptide
1	A	275	GLY	Peptide
1	A	91	GLY	Peptide
1	B	265	ASP	Peptide
1	B	274	LEU	Peptide
1	B	275	GLY	Peptide
1	C	129	ARG	Peptide
1	D	122	GLU	Peptide
1	D	128	SER	Peptide
1	D	89	MET	Peptide
1	E	263	ILE	Peptide
1	E	274	LEU	Peptide
1	E	275	GLY	Peptide
1	F	122	GLU	Peptide
1	F	129	ARG	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	2357	0	2353	57	0
1	B	2357	0	2353	41	0
1	C	2232	0	2243	74	0
1	D	2224	0	2234	42	0
1	E	2357	0	2353	34	0
1	F	2228	0	2240	52	0
2	A	16	0	0	3	0
2	B	17	0	0	2	0
2	C	17	0	0	4	0
2	D	13	0	0	2	0
2	E	19	0	0	1	0
2	F	9	0	0	2	0
All	All	13846	0	13776	287	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 10.

All (287) 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:C:129:ARG:NH2	1:C:130:MET:SD	2.09	1.25
1:C:129:ARG:NH1	1:C:130:MET:HA	1.64	1.13
1:A:42:PRO:O	1:A:45:ARG:NE	1.85	1.09
1:C:129:ARG:HH11	1:C:130:MET:HA	1.16	1.01
1:C:274:LEU:HA	1:C:276:HIS:H	1.24	1.00
1:C:109:ILE:HD11	1:C:115:ILE:HB	1.42	0.98
1:F:274:LEU:HA	1:F:276:HIS:H	1.31	0.96
1:D:149:ASN:HD21	1:E:264:GLU:HB2	1.28	0.95
1:C:109:ILE:HD11	1:C:115:ILE:CG1	1.99	0.92
1:C:109:ILE:HD11	1:C:115:ILE:CB	1.98	0.92
1:C:130:MET:SD	1:C:141:PHE:HB3	2.20	0.82
1:F:259:PHE:O	2:F:401:HOH:O	1.97	0.81
1:C:259:PHE:O	2:C:401:HOH:O	2.00	0.79
1:C:130:MET:HB3	1:C:141:PHE:CD2	2.20	0.77
1:C:274:LEU:HA	1:C:276:HIS:N	2.01	0.74
1:A:13:LEU:HD13	1:A:65:ILE:HD11	1.68	0.74
1:F:274:LEU:HA	1:F:276:HIS:N	2.03	0.73
1:A:186:LYS:HE3	1:A:250:GLU:HB3	1.70	0.72
1:D:274:LEU:HA	1:D:276:HIS:H	1.52	0.72

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:40:GLN:HG3	1:A:66:GLU:HG3	1.71	0.72
1:C:129:ARG:CZ	1:C:130:MET:SD	2.78	0.72
1:C:109:ILE:CD1	1:C:115:ILE:CG1	2.68	0.70
1:B:207:GLU:OE1	2:B:401:HOH:O	2.09	0.69
1:A:91:GLY:O	2:A:401:HOH:O	2.09	0.69
1:D:149:ASN:ND2	1:E:264:GLU:HB2	2.06	0.69
1:B:183:PRO:HG2	1:B:187:VAL:HG12	1.75	0.68
1:C:129:ARG:NH1	1:C:130:MET:CA	2.51	0.68
1:B:84:ILE:HD13	1:B:117:ARG:HB3	1.76	0.67
1:E:265:ASP:OD2	1:E:265:ASP:N	2.27	0.67
1:F:48:ILE:O	1:F:52:GLN:HG3	1.94	0.67
1:A:93:HIS:NE2	1:C:49:GLU:OE2	2.28	0.67
1:D:165:CYS:HB2	1:D:198:VAL:O	1.95	0.67
1:C:76:VAL:O	1:C:80:LYS:HG3	1.95	0.67
1:B:117:ARG:NH1	1:B:159:THR:OG1	2.27	0.66
1:A:186:LYS:CE	1:A:250:GLU:HB3	2.25	0.66
1:D:48:ILE:O	1:D:52:GLN:HG3	1.94	0.66
1:C:109:ILE:HG23	1:C:156:ILE:HD13	1.75	0.66
1:E:42:PRO:HA	1:E:45:ARG:NH2	2.10	0.66
1:E:186:LYS:CD	1:E:250:GLU:HB3	2.26	0.66
1:F:15:VAL:HG22	1:F:39:LEU:HD12	1.78	0.65
1:B:39:LEU:HD11	1:B:67:ALA:HB3	1.78	0.65
1:E:196:LYS:HD2	1:E:231:VAL:HG12	1.79	0.65
1:D:152:GLU:OE2	2:D:401:HOH:O	2.14	0.65
1:A:264:GLU:OE2	1:A:265:ASP:N	2.31	0.64
1:D:255:SER:OG	1:D:258:ASP:OD2	2.13	0.64
1:E:39:LEU:HD21	1:E:67:ALA:HB3	1.78	0.64
1:F:280:ILE:HG23	1:F:286:LEU:HD12	1.79	0.63
1:A:186:LYS:NZ	1:A:250:GLU:OE1	2.25	0.63
1:B:266:LYS:HD3	1:B:274:LEU:HG	1.80	0.63
1:A:81:GLN:HG2	1:B:81:GLN:HG2	1.81	0.62
1:C:109:ILE:HG23	1:C:156:ILE:CD1	2.29	0.62
1:F:109:ILE:HG13	1:F:115:ILE:HG13	1.80	0.62
1:C:109:ILE:CD1	1:C:115:ILE:HG13	2.30	0.61
1:F:105:LEU:O	1:F:109:ILE:HG22	2.01	0.61
1:D:86:VAL:HG22	1:D:119:LEU:HB2	1.83	0.61
1:D:35:GLU:HG2	1:D:37:TYR:HE1	1.65	0.61
1:A:10:THR:HG21	1:A:84:ILE:HD12	1.83	0.60
1:D:274:LEU:HA	1:D:276:HIS:N	2.16	0.60
1:F:260:LEU:HB3	2:F:401:HOH:O	2.01	0.60
1:A:186:LYS:HZ1	1:A:250:GLU:CD	2.04	0.60

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:109:ILE:HD11	1:C:115:ILE:HG13	1.84	0.60
1:C:141:PHE:HD1	1:C:141:PHE:H	1.48	0.60
1:C:258:ASP:O	1:C:260:LEU:HD13	2.01	0.60
1:B:87:ALA:HB1	1:B:89:MET:HE2	1.84	0.60
1:E:110:LYS:HG3	1:E:154:ALA:HB1	1.84	0.59
1:A:290:GLU:OE2	1:A:291:VAL:N	2.33	0.59
1:C:165:CYS:HB2	1:C:198:VAL:O	2.03	0.59
1:E:315:ILE:HD13	1:F:59:ARG:HG3	1.84	0.59
1:D:11:ARG:HD2	1:D:82:VAL:HA	1.85	0.59
1:B:256:ALA:O	1:B:259:PHE:CE2	2.56	0.58
1:D:279:HIS:HB3	1:D:285:CYS:SG	2.43	0.57
1:A:42:PRO:O	1:A:45:ARG:CZ	2.51	0.57
1:C:217:ARG:NH2	2:C:404:HOH:O	2.34	0.57
1:A:186:LYS:NZ	1:A:250:GLU:HB3	2.20	0.57
1:E:139:GLU:OE2	2:E:401:HOH:O	2.18	0.56
1:A:55:TYR:O	1:C:315:ILE:HD11	2.05	0.56
1:D:11:ARG:HB2	1:D:83:ASP:H	1.69	0.56
1:C:214:ASP:OD2	2:C:402:HOH:O	2.16	0.56
1:C:235:MET:O	1:C:239:GLN:HG2	2.06	0.56
1:F:13:LEU:N	1:F:82:VAL:HG21	2.21	0.56
1:F:279:HIS:HB3	1:F:285:CYS:SG	2.46	0.55
1:A:196:LYS:HD2	1:A:231:VAL:HG12	1.87	0.55
1:C:41:GLN:HA	1:C:67:ALA:O	2.07	0.55
1:C:109:ILE:CG2	1:C:156:ILE:HD13	2.37	0.55
1:C:139:GLU:CD	1:C:141:PHE:HE1	2.09	0.55
1:B:37:TYR:CD2	1:B:65:ILE:HD11	2.41	0.55
1:B:183:PRO:CG	1:B:187:VAL:HG12	2.36	0.55
1:D:35:GLU:HG2	1:D:37:TYR:CE1	2.41	0.55
1:E:186:LYS:HD2	1:E:250:GLU:HB3	1.88	0.55
1:A:39:LEU:HD11	1:A:67:ALA:HB3	1.89	0.55
1:F:120:PRO:HG3	1:F:151:ILE:CD1	2.37	0.55
1:F:165:CYS:HB2	1:F:198:VAL:O	2.07	0.55
1:A:10:THR:CG2	1:A:84:ILE:HD12	2.38	0.54
1:F:37:TYR:CD2	1:F:65:ILE:HD11	2.42	0.54
1:B:235:MET:HE1	1:B:251:LYS:HD3	1.88	0.54
1:C:13:LEU:HB2	1:C:82:VAL:HG11	1.90	0.54
1:C:122:GLU:OE2	1:C:148:ARG:NH2	2.33	0.53
1:C:260:LEU:HB3	2:C:401:HOH:O	2.08	0.53
1:C:109:ILE:HD11	1:C:115:ILE:HG12	1.87	0.53
1:D:13:LEU:H	1:D:82:VAL:HG11	1.74	0.53
1:F:141:PHE:O	1:F:145:LEU:HD12	2.09	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:259:PHE:O	1:B:260:LEU:HD13	2.09	0.53
1:F:127:PRO:HB2	1:F:145:LEU:HD11	1.90	0.53
1:E:13:LEU:HB2	1:E:82:VAL:HG11	1.90	0.53
1:A:186:LYS:HZ2	1:A:250:GLU:HB3	1.73	0.53
1:B:84:ILE:CD1	1:B:117:ARG:HB3	2.39	0.53
1:F:197:VAL:HG21	1:F:281:PHE:CE1	2.44	0.53
1:A:227:PRO:HB2	1:A:306:TYR:CE1	2.44	0.52
1:C:233:THR:OG1	1:C:236:GLU:HG3	2.09	0.52
1:F:117:ARG:NH2	1:F:215:ASP:O	2.33	0.52
1:D:40:GLN:HG3	1:D:40:GLN:O	2.09	0.52
1:C:129:ARG:CZ	1:C:130:MET:CG	2.88	0.52
1:D:117:ARG:NE	1:D:219:ILE:HD12	2.25	0.52
1:A:186:LYS:N	1:A:186:LYS:HD2	2.24	0.51
1:C:183:PRO:HG3	1:C:187:VAL:HG23	1.92	0.51
1:D:13:LEU:N	1:D:82:VAL:HG11	2.24	0.51
1:F:35:GLU:HG2	1:F:37:TYR:CE1	2.45	0.51
1:A:13:LEU:HB2	1:A:82:VAL:HG11	1.91	0.51
1:E:227:PRO:HB2	1:E:306:TYR:CE1	2.45	0.51
1:F:129:ARG:HD3	1:F:129:ARG:N	2.25	0.51
1:D:37:TYR:CD2	1:D:65:ILE:HD11	2.46	0.51
1:F:109:ILE:HD11	1:F:115:ILE:HG21	1.93	0.51
1:A:315:ILE:HD13	1:C:59:ARG:HG3	1.93	0.51
1:D:288:ASP:OD1	1:D:289:HIS:N	2.43	0.50
1:C:37:TYR:CD2	1:C:65:ILE:HD11	2.46	0.50
1:C:139:GLU:CG	1:C:141:PHE:HE1	2.24	0.50
1:C:196:LYS:HB2	1:C:287:THR:HG21	1.93	0.50
1:B:93:HIS:NE2	1:D:49:GLU:OE2	2.42	0.50
1:C:10:THR:HG21	1:C:84:ILE:HD12	1.94	0.50
1:C:106:VAL:HA	1:C:109:ILE:HG22	1.93	0.50
1:B:40:GLN:HG3	1:B:66:GLU:HG3	1.94	0.50
1:F:35:GLU:HG2	1:F:37:TYR:HE1	1.77	0.49
1:A:259:PHE:HA	2:A:403:HOH:O	2.12	0.49
1:A:263:ILE:O	1:A:263:ILE:HG22	2.12	0.49
1:F:174:LEU:HD12	1:F:183:PRO:HD2	1.94	0.49
1:E:10:THR:HG21	1:E:84:ILE:HD12	1.95	0.49
1:E:40:GLN:O	1:E:40:GLN:HG3	2.11	0.49
1:F:76:VAL:HG12	1:F:108:ALA:HA	1.94	0.49
1:A:15:VAL:HG21	1:A:105:LEU:HD21	1.94	0.49
1:C:109:ILE:CD1	1:C:115:ILE:HG12	2.42	0.49
1:B:13:LEU:HB2	1:B:82:VAL:HG11	1.94	0.49
1:B:263:ILE:HG22	1:F:145:LEU:HD23	1.95	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:274:LEU:HB2	1:E:276:HIS:H	1.78	0.49
1:C:11:ARG:HB2	1:C:82:VAL:HG23	1.96	0.48
1:B:256:ALA:O	1:B:259:PHE:CD2	2.66	0.48
1:A:45:ARG:H	1:A:45:ARG:HD2	1.78	0.48
1:A:71:ASP:OD1	1:A:73:GLN:HG2	2.12	0.48
1:E:197:VAL:HG21	1:E:281:PHE:CE1	2.48	0.48
1:F:41:GLN:HA	1:F:67:ALA:O	2.13	0.48
1:C:145:LEU:HD23	1:C:148:ARG:HD2	1.96	0.48
1:A:21:MET:HE3	1:A:166:PHE:CZ	2.48	0.48
1:A:42:PRO:HA	1:A:45:ARG:HH21	1.77	0.48
1:C:215:ASP:OD1	1:C:217:ARG:HD3	2.14	0.48
1:A:32:GLU:OE1	1:A:211:LYS:HG2	2.14	0.48
1:E:129:ARG:NH1	1:E:289:HIS:HB3	2.29	0.48
1:F:11:ARG:HB3	1:F:82:VAL:HG23	1.96	0.48
1:A:129:ARG:NH2	1:A:289:HIS:HB3	2.29	0.48
1:C:103:LEU:O	1:C:107:GLU:HG3	2.14	0.48
1:F:23:ARG:O	1:F:27:ARG:HD2	2.14	0.47
1:B:9:LYS:HB3	1:B:9:LYS:HE2	1.61	0.47
1:B:196:LYS:HD2	1:B:231:VAL:HG12	1.95	0.47
1:F:233:THR:OG1	1:F:236:GLU:HG3	2.14	0.47
1:B:16:GLY:O	1:B:22:GLY:HA3	2.14	0.47
1:F:44:THR:HG21	1:F:54:LEU:HD12	1.96	0.47
1:D:165:CYS:SG	1:D:280:ILE:HD13	2.54	0.47
1:A:189:ILE:HD12	1:A:251:LYS:HD3	1.96	0.47
1:A:278:TYR:HA	1:A:282:TYR:HD2	1.80	0.47
1:B:227:PRO:HB2	1:B:306:TYR:CE1	2.50	0.47
1:D:72:HIS:HE1	1:D:111:GLU:OE2	1.98	0.47
1:E:144:LYS:O	1:E:148:ARG:HG3	2.15	0.47
1:E:266:LYS:HZ3	1:E:274:LEU:HD12	1.80	0.46
1:B:315:ILE:HD13	1:D:59:ARG:HG3	1.98	0.46
1:E:15:VAL:HG21	1:E:105:LEU:HD21	1.97	0.46
1:F:258:ASP:O	1:F:260:LEU:HD13	2.14	0.46
1:E:186:LYS:HD3	1:E:250:GLU:HB3	1.98	0.46
1:B:235:MET:O	1:B:239:GLN:HG3	2.16	0.46
1:E:275:GLY:H	1:E:277:PHE:H	1.63	0.46
1:F:53:LEU:HD12	1:F:53:LEU:HA	1.74	0.46
1:D:11:ARG:HD2	1:D:81:GLN:O	2.16	0.46
1:A:174:LEU:HD11	1:A:241:TRP:CD1	2.51	0.46
1:E:72:HIS:O	1:E:76:VAL:HG23	2.15	0.46
1:F:260:LEU:HD22	1:F:260:LEU:O	2.15	0.46
1:C:141:PHE:CG	1:C:142:ASP:N	2.84	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:208:TYR:CD1	1:C:297:ALA:HB1	2.50	0.46
1:C:40:GLN:O	1:C:40:GLN:HG3	2.16	0.45
1:A:315:ILE:CD1	1:C:59:ARG:HG3	2.46	0.45
1:D:37:TYR:HD2	1:D:65:ILE:HD11	1.81	0.45
1:B:21:MET:HE3	1:B:166:PHE:CZ	2.51	0.45
1:F:139:GLU:O	1:F:143:GLN:HG3	2.16	0.45
1:B:197:VAL:HG21	1:B:281:PHE:CE1	2.52	0.45
1:D:53:LEU:HD12	1:D:53:LEU:HA	1.78	0.45
1:A:259:PHE:HD1	2:A:403:HOH:O	1.98	0.45
1:C:44:THR:HG21	1:C:54:LEU:HD12	1.99	0.45
1:B:266:LYS:HE2	1:B:274:LEU:O	2.16	0.45
1:E:45:ARG:H	1:E:45:ARG:HE	1.63	0.45
1:E:315:ILE:CD1	1:F:59:ARG:HG3	2.47	0.45
1:C:37:TYR:HD2	1:C:65:ILE:HD11	1.80	0.45
1:A:40:GLN:HG3	1:A:40:GLN:O	2.16	0.45
1:D:9:LYS:HE3	1:D:9:LYS:HB2	1.77	0.45
1:D:13:LEU:HD11	1:D:39:LEU:HD12	1.98	0.45
1:A:186:LYS:CE	1:A:250:GLU:CD	2.85	0.45
1:D:109:ILE:HG23	1:D:115:ILE:HB	1.99	0.44
1:C:141:PHE:CD1	1:C:141:PHE:N	2.85	0.44
1:C:42:PRO:HD3	1:C:67:ALA:O	2.18	0.44
1:E:127:PRO:HB2	1:E:145:LEU:HD13	1.98	0.44
1:A:39:LEU:HD12	1:A:39:LEU:HA	1.84	0.44
1:D:259:PHE:O	2:D:402:HOH:O	2.21	0.44
1:A:87:ALA:HB1	1:A:89:MET:CE	2.48	0.44
1:A:186:LYS:NZ	1:A:250:GLU:CD	2.70	0.44
1:A:186:LYS:NZ	1:A:250:GLU:CB	2.81	0.44
1:A:186:LYS:HZ2	1:A:250:GLU:CB	2.31	0.44
1:F:145:LEU:HD12	1:F:145:LEU:H	1.83	0.44
1:C:242:GLU:HG2	1:C:247:LYS:O	2.18	0.44
1:F:37:TYR:HD2	1:F:65:ILE:HD11	1.80	0.44
1:B:235:MET:HE2	1:B:251:LYS:HE2	1.99	0.43
1:D:13:LEU:HD11	1:D:39:LEU:CD1	2.48	0.43
1:D:127:PRO:O	1:D:129:ARG:N	2.51	0.43
1:D:139:GLU:HG2	1:D:141:PHE:H	1.83	0.43
1:F:83:ASP:HB3	1:F:116:LYS:HD2	2.00	0.43
1:E:16:GLY:O	1:E:22:GLY:HA3	2.19	0.43
1:E:45:ARG:HG2	1:F:179:THR:HA	1.99	0.43
1:F:164:ALA:HB1	1:F:200:VAL:HG22	1.99	0.43
1:C:129:ARG:CZ	1:C:130:MET:HG2	2.48	0.43
1:F:185:LYS:NZ	1:F:247:LYS:HD3	2.33	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:145:LEU:HD12	1:A:145:LEU:HA	1.87	0.43
1:C:147:VAL:O	1:C:151:ILE:HG13	2.18	0.43
1:C:127:PRO:HA	1:C:130:MET:HG3	2.01	0.43
1:D:41:GLN:HA	1:D:67:ALA:O	2.19	0.43
1:C:109:ILE:HD12	1:C:109:ILE:HA	1.74	0.43
1:B:197:VAL:HG12	1:B:198:VAL:N	2.34	0.43
1:A:265:ASP:N	1:A:265:ASP:OD2	2.52	0.42
1:A:16:GLY:O	1:A:22:GLY:HA3	2.18	0.42
1:C:41:GLN:O	1:C:44:THR:HB	2.19	0.42
1:C:52:GLN:O	1:C:56:SER:HB3	2.19	0.42
1:C:139:GLU:CD	1:C:141:PHE:CE1	2.92	0.42
1:B:8:GLU:OE1	1:B:8:GLU:N	2.52	0.42
1:A:260:LEU:HD22	1:A:260:LEU:H	1.84	0.42
1:A:276:HIS:HA	1:A:279:HIS:HD2	1.85	0.42
1:A:100:LEU:HD12	1:A:100:LEU:HA	1.81	0.42
1:A:274:LEU:HB2	1:A:276:HIS:H	1.84	0.42
1:C:130:MET:SD	1:C:141:PHE:CB	3.01	0.42
1:B:235:MET:HE1	1:B:251:LYS:CD	2.49	0.42
1:B:275:GLY:H	1:B:277:PHE:H	1.68	0.42
1:B:100:LEU:HD23	1:B:100:LEU:HA	1.90	0.42
1:D:42:PRO:O	1:D:45:ARG:HG3	2.19	0.42
1:F:39:LEU:HD22	1:F:67:ALA:HB3	2.02	0.42
1:C:293:ASP:OD1	1:C:299:LYS:HD2	2.19	0.42
1:F:41:GLN:O	1:F:44:THR:HB	2.20	0.42
1:C:109:ILE:HD13	1:C:115:ILE:HG13	1.99	0.41
1:C:239:GLN:HA	1:C:242:GLU:HB2	2.01	0.41
1:C:280:ILE:HG23	1:C:286:LEU:HD12	2.01	0.41
1:D:27:ARG:HH22	1:D:53:LEU:HD11	1.85	0.41
1:D:311:GLU:O	1:D:311:GLU:HG2	2.20	0.41
1:A:241:TRP:HD1	1:A:249:LEU:HD11	1.86	0.41
1:E:14:VAL:HG11	1:E:26:VAL:HG23	2.03	0.41
1:B:14:VAL:HG11	1:B:26:VAL:HG23	2.03	0.41
1:C:221:LYS:HB3	1:C:221:LYS:HE2	1.80	0.41
1:D:82:VAL:HG12	1:D:84:ILE:N	2.35	0.41
1:E:174:LEU:HD11	1:E:241:TRP:CD1	2.55	0.41
1:C:53:LEU:HD12	1:C:53:LEU:HA	1.82	0.41
1:B:264:GLU:O	1:B:265:ASP:OD2	2.38	0.41
1:E:266:LYS:NZ	1:E:274:LEU:HD12	2.35	0.41
1:A:275:GLY:H	1:A:277:PHE:H	1.67	0.41
1:B:40:GLN:HG3	1:B:40:GLN:O	2.20	0.41
1:B:48:ILE:O	1:B:52:GLN:HB2	2.20	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:259:PHE:HA	2:B:402:HOH:O	2.20	0.41
1:D:82:VAL:HG12	1:D:84:ILE:H	1.86	0.41
1:E:312:TYR:HD1	1:E:313:LEU:HD12	1.84	0.41
1:F:199:TYR:O	1:F:230:ASN:HB3	2.20	0.41
1:F:303:ASP:OD1	1:F:303:ASP:N	2.47	0.41
1:A:110:LYS:HD3	1:A:154:ALA:HB1	2.03	0.41
1:C:157:PRO:HA	1:C:220:ASN:OD1	2.21	0.41
1:C:208:TYR:CG	1:C:297:ALA:HB1	2.56	0.41
1:F:128:SER:C	1:F:129:ARG:HD3	2.41	0.41
1:F:189:ILE:HD12	1:F:235:MET:HE2	2.03	0.40
1:C:293:ASP:OD2	1:C:293:ASP:N	2.54	0.40
1:D:145:LEU:HD23	1:D:145:LEU:HA	1.83	0.40
1:D:185:LYS:HD3	1:D:185:LYS:HA	1.91	0.40
1:F:109:ILE:HG13	1:F:115:ILE:CG1	2.50	0.40
1:F:208:TYR:CD1	1:F:297:ALA:HB1	2.56	0.40
1:F:233:THR:HG23	1:F:236:GLU:OE1	2.22	0.40
1:A:259:PHE:HA	1:A:259:PHE:HD1	1.69	0.40
1:B:72:HIS:O	1:B:76:VAL:HG23	2.22	0.40
1:B:145:LEU:HD12	1:B:145:LEU:HA	1.81	0.40
1:E:250:GLU:HG2	1:E:251:LYS:N	2.36	0.40
1:A:310:ASP:OD1	1:A:311:GLU:N	2.54	0.40
1:F:184:LYS:O	1:F:185:LYS:HE2	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	292/317 (92%)	282 (97%)	9 (3%)	1 (0%)	41 64
1	B	292/317 (92%)	277 (95%)	15 (5%)	0	100 100
1	C	275/317 (87%)	266 (97%)	9 (3%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	D	274/317 (86%)	264 (96%)	8 (3%)	2 (1%)	22 44
1	E	292/317 (92%)	279 (96%)	13 (4%)	0	100 100
1	F	274/317 (86%)	263 (96%)	11 (4%)	0	100 100
All	All	1699/1902 (89%)	1631 (96%)	65 (4%)	3 (0%)	47 71

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	92	VAL
1	D	259	PHE
1	D	128	SER

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	255/271 (94%)	245 (96%)	10 (4%)	32 58
1	B	255/271 (94%)	248 (97%)	7 (3%)	44 71
1	C	242/271 (89%)	235 (97%)	7 (3%)	42 69
1	D	241/271 (89%)	236 (98%)	5 (2%)	53 78
1	E	255/271 (94%)	248 (97%)	7 (3%)	44 71
1	F	242/271 (89%)	241 (100%)	1 (0%)	91 96
All	All	1490/1626 (92%)	1453 (98%)	37 (2%)	47 74

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	ARG
1	A	89	MET
1	A	90	SER
1	A	100	LEU
1	A	145	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	212	THR
1	A	259	PHE
1	A	260	LEU
1	A	274	LEU
1	A	298	SER
1	C	129	ARG
1	C	212	THR
1	C	217	ARG
1	C	260	LEU
1	C	288	ASP
1	C	293	ASP
1	C	305	LYS
1	B	56	SER
1	B	89	MET
1	B	145	LEU
1	B	212	THR
1	B	235	MET
1	B	259	PHE
1	B	298	SER
1	D	98	SER
1	D	117	ARG
1	D	185	LYS
1	D	212	THR
1	D	277	PHE
1	E	45	ARG
1	E	58	LYS
1	E	100	LEU
1	E	145	LEU
1	E	232	LEU
1	E	295	GLU
1	E	298	SER
1	F	260	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	52	GLN
1	B	239	GLN
1	D	52	GLN
1	D	72	HIS
1	D	149	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

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, 95^{th} 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	298/317 (94%)	0.63	25 (8%)	11	9	44, 64, 98, 117	0
1	B	298/317 (94%)	0.58	9 (3%)	50	49	43, 61, 90, 108	0
1	C	283/317 (89%)	0.67	16 (5%)	23	22	45, 65, 97, 132	0
1	D	282/317 (88%)	0.56	11 (3%)	39	37	45, 63, 91, 112	0
1	E	298/317 (94%)	0.51	7 (2%)	60	60	43, 62, 92, 109	0
1	F	282/317 (88%)	0.69	17 (6%)	21	20	45, 66, 95, 113	0
All	All	1741/1902 (91%)	0.61	85 (4%)	29	27	43, 64, 94, 132	0

All (85) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	69	PHE	6.8
1	F	286	LEU	5.3
1	A	187	VAL	4.4
1	A	255	SER	4.1
1	F	105	LEU	3.6
1	C	129	ARG	3.5
1	A	287	THR	3.5
1	C	39	LEU	3.5
1	F	142	ASP	3.4
1	C	279	HIS	3.4
1	C	125	MET	3.4
1	A	281	PHE	3.3
1	D	39	LEU	3.3
1	E	277	PHE	3.3
1	E	245	THR	3.3
1	F	78	ALA	3.3
1	A	125	MET	3.2
1	C	130	MET	3.1
1	A	277	PHE	3.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	F	280	ILE	2.9
1	F	39	LEU	2.9
1	A	280	ILE	2.9
1	C	127	PRO	2.8
1	C	140	THR	2.8
1	D	69	PHE	2.8
1	C	278	TYR	2.8
1	A	246	GLY	2.7
1	F	60	LEU	2.7
1	E	287	THR	2.7
1	F	86	VAL	2.6
1	F	67	ALA	2.6
1	D	105	LEU	2.6
1	D	286	LEU	2.6
1	D	125	MET	2.6
1	B	97	HIS	2.5
1	B	259	PHE	2.5
1	A	69	PHE	2.5
1	A	185	LYS	2.5
1	D	139	GLU	2.5
1	C	238	VAL	2.5
1	A	232	LEU	2.5
1	C	60	LEU	2.4
1	D	60	LEU	2.4
1	C	224	TYR	2.4
1	B	108	ALA	2.4
1	F	140	THR	2.4
1	A	198	VAL	2.4
1	A	250	GLU	2.3
1	D	219	ILE	2.3
1	F	277	PHE	2.3
1	F	123	PHE	2.3
1	C	227	PRO	2.3
1	A	54	LEU	2.3
1	E	246	GLY	2.3
1	F	9	LYS	2.3
1	A	286	LEU	2.3
1	D	279	HIS	2.3
1	F	59	ARG	2.2
1	A	225	VAL	2.2
1	A	189	ILE	2.2
1	A	170	PHE	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	E	186	LYS	2.2
1	F	278	TYR	2.2
1	E	12	VAL	2.2
1	C	42	PRO	2.2
1	E	264	GLU	2.2
1	B	95	ARG	2.2
1	B	232	LEU	2.1
1	B	51	VAL	2.1
1	A	249	LEU	2.1
1	A	265	ASP	2.1
1	F	287	THR	2.1
1	A	126	ASP	2.1
1	B	317	LEU	2.1
1	C	142	ASP	2.1
1	B	249	LEU	2.1
1	A	196	LYS	2.1
1	B	198	VAL	2.1
1	D	75	LEU	2.1
1	C	12	VAL	2.0
1	D	280	ILE	2.0
1	A	186	LYS	2.0
1	A	278	TYR	2.0
1	A	200	VAL	2.0
1	C	105	LEU	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.