Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 12:46 AM GMT

PDB ID	:	2BHN
Title	:	XPF FROM AEROPYRUM PERNIX
Authors	:	Newman, M.; Murray-Rust, J.; Lally, J.; Rudolf, J.; Fadden, A.; Knowles, P.P.; White, M.F.; Mcdonald, N.Q.
Deposited on	:	2005-01-14
Resolution	:	3.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
http://wwpdb.org/validation/2016/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

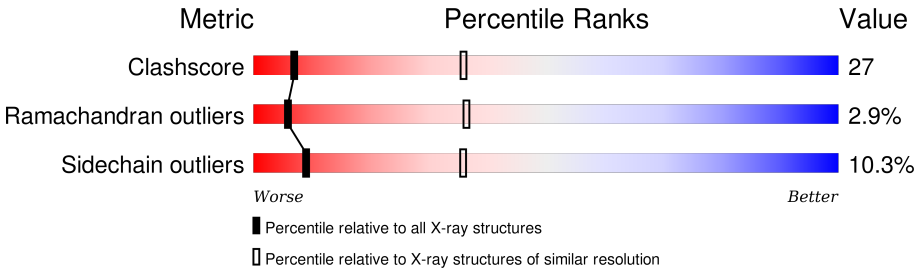
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk26865

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	102246	1024 (3.22-3.18)
Ramachandran outliers	100387	1004 (3.22-3.18)
Sidechain outliers	100360	1003 (3.22-3.18)

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 on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. 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.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	214	54% 40% • •
1	B	214	49% 40% • 7%
1	C	214	50% 33% 8% 9%
1	D	214	48% 44% 6% •

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 5905 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 XPF ENDONUCLEASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	211	Total	C	N	O	S	0	0	0
			1551	1001	258	287	5			
1	B	199	Total	C	N	O	S	0	0	0
			1442	934	230	273	5			
1	C	194	Total	C	N	O	S	0	0	0
			1375	886	222	262	5			
1	D	211	Total	C	N	O	S	0	0	0
			1537	985	259	289	4			

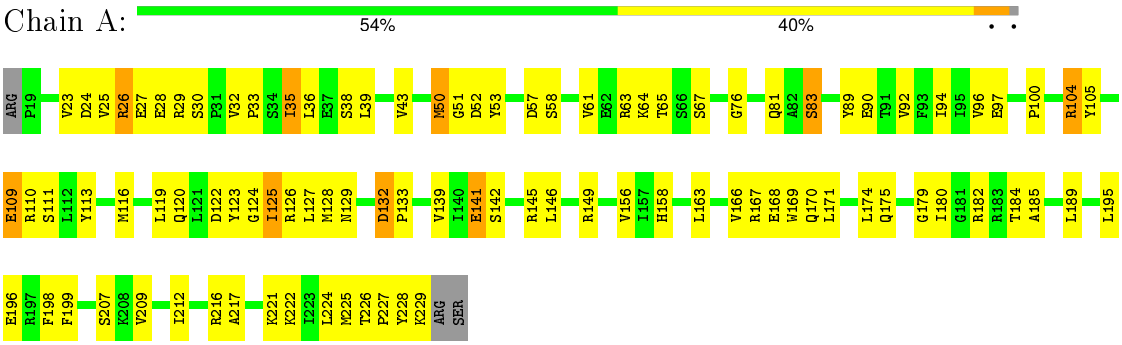
3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

Note EDS was not executed.

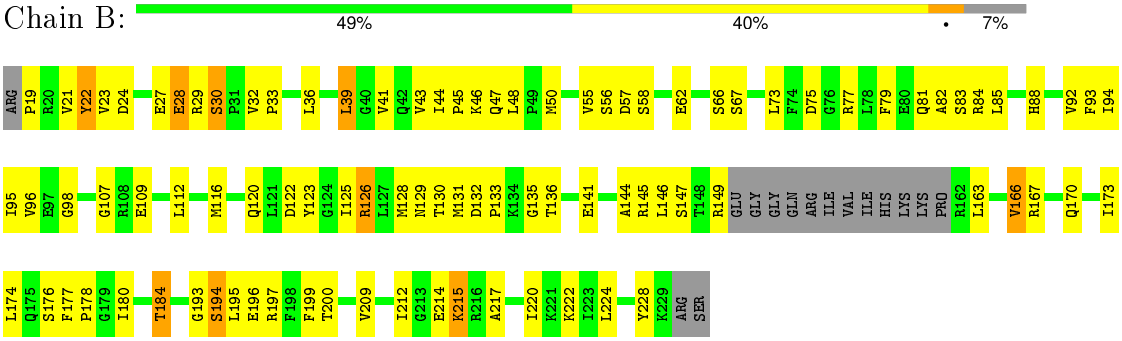
- Molecule 1: XPF ENDONUCLEASE

Chain A:



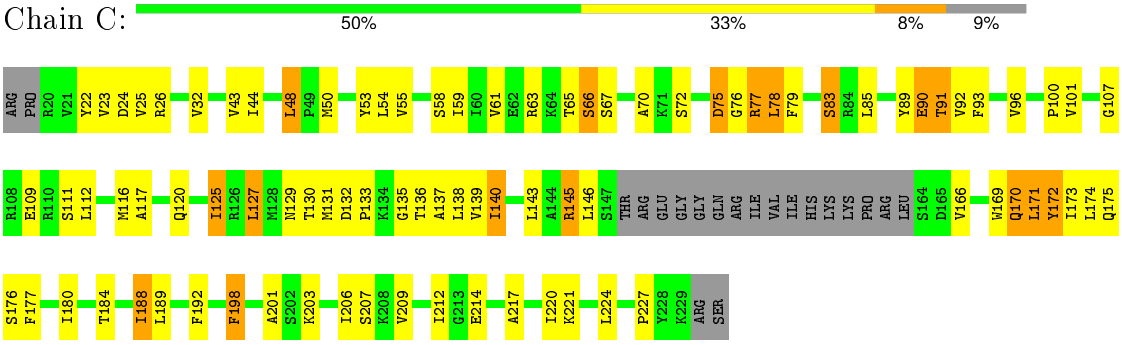
- Molecule 1: XPF ENDONUCLEASE

Chain B:



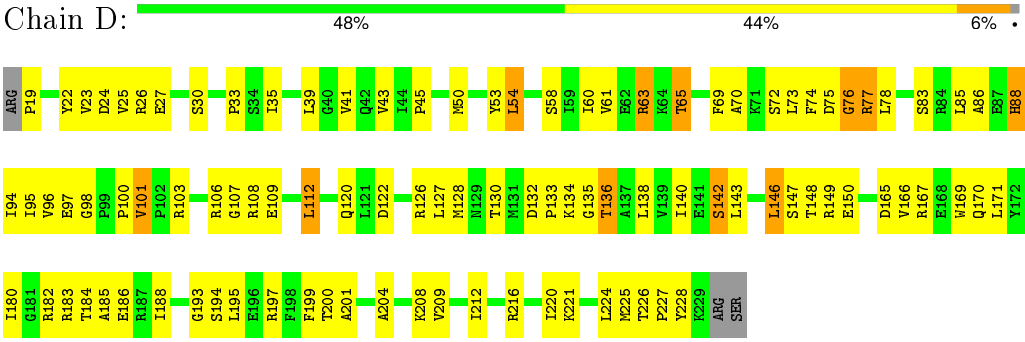
- Molecule 1: XPF ENDONUCLEASE

Chain C:



• Molecule 1: XPF ENDONUCLEASE

Chain D:



4 Data and refinement statistics (i)

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

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	210.32Å 42.75Å 118.74Å 90.00° 121.42° 90.00°	Depositor
Resolution (Å)	25.00 – 3.20	Depositor
% Data completeness (in resolution range)	100.0 (25.00-3.20)	Depositor
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.216 , 0.320	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	5905	wwPDB-VP
Average B, all atoms (Å^2)	67.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.72	0/1582	0.84	1/2153 (0.0%)
1	B	0.71	0/1469	0.89	2/2002 (0.1%)
1	C	0.74	4/1401 (0.3%)	0.78	1/1917 (0.1%)
1	D	0.61	0/1566	0.76	0/2133
All	All	0.69	4/6018 (0.1%)	0.82	4/8205 (0.0%)

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

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

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	172	TYR	C-O	7.60	1.37	1.23
1	C	172	TYR	CA-C	6.57	1.70	1.52
1	C	171	LEU	CA-CB	-5.68	1.40	1.53
1	C	170	GLN	CG-CD	5.24	1.63	1.51

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	126	ARG	NE-CZ-NH1	-8.20	116.20	120.30
1	C	171	LEU	O-C-N	5.62	131.69	122.70
1	A	76	GLY	N-CA-C	-5.13	100.28	113.10
1	B	39	LEU	CA-CB-CG	5.06	126.94	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	172	TYR	Mainchain

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	1551	0	1485	91	0
1	B	1442	0	1354	85	0
1	C	1375	0	1247	73	0
1	D	1537	0	1458	87	0
All	All	5905	0	5544	305	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 27.

All (305) 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:95:ILE:HG21	1:B:136:THR:HG23	1.36	1.01
1:D:50:MET:HE1	1:D:88:HIS:HB2	1.51	0.91
1:D:221:LYS:HE3	1:D:225:MET:HE1	1.53	0.91
1:A:207:SER:HB3	1:A:217:ALA:HB2	1.52	0.90
1:A:24:ASP:OD1	1:A:26:ARG:HG2	1.71	0.90
1:B:112:LEU:O	1:B:116:MET:HG3	1.72	0.89
1:B:62:GLU:CD	1:B:81:GLN:HE22	1.81	0.84
1:D:23:VAL:HG21	1:D:43:VAL:HG13	1.59	0.84
1:D:90:GLU:HG3	1:D:91:THR:H	1.44	0.82
1:B:180:ILE:HD11	1:B:220:ILE:HD11	1.60	0.81
1:D:23:VAL:HG21	1:D:43:VAL:CG1	2.10	0.81
1:D:221:LYS:O	1:D:225:MET:HG2	1.81	0.80
1:C:130:THR:HG21	1:C:136:THR:HA	1.64	0.80
1:B:50:MET:HE3	1:B:85:LEU:HA	1.63	0.79
1:D:50:MET:CE	1:D:85:LEU:HA	2.11	0.79
1:C:23:VAL:HG21	1:C:43:VAL:HG13	1.65	0.78
1:D:221:LYS:HE3	1:D:225:MET:CE	2.12	0.77
1:A:179:GLY:HA3	1:A:216:ARG:HD3	1.67	0.76
1:D:61:VAL:HG22	1:D:93:PHE:HB2	1.67	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:50:MET:HE3	1:D:85:LEU:HA	1.65	0.76
1:D:109:GLU:HA	1:D:112:LEU:HB2	1.68	0.76
1:D:75:ASP:O	1:D:77:ARG:N	2.18	0.75
1:C:180:ILE:HD11	1:C:220:ILE:HD11	1.69	0.74
1:D:90:GLU:HG3	1:D:91:THR:N	2.03	0.73
1:D:169:TRP:O	1:D:173:ILE:HG13	1.89	0.73
1:A:221:LYS:HE3	1:A:225:MET:HE3	1.70	0.73
1:C:50:MET:HE3	1:C:85:LEU:HA	1.71	0.72
1:C:132:ASP:HB2	1:C:133:PRO:HD2	1.71	0.72
1:D:35:ILE:O	1:D:39:LEU:HG	1.90	0.72
1:D:50:MET:HB3	1:D:85:LEU:HD22	1.70	0.72
1:B:19:PRO:HB2	1:B:41:VAL:HG22	1.72	0.71
1:A:33:PRO:O	1:A:36:LEU:HB2	1.91	0.71
1:C:23:VAL:CG2	1:C:43:VAL:HG13	2.21	0.70
1:D:175:GLN:NE2	1:D:182:ARG:HG2	2.05	0.70
1:D:27:GLU:OE2	1:D:63:ARG:HD3	1.90	0.70
1:A:120:GLN:OE1	1:B:93:PHE:HE2	1.74	0.70
1:B:22:TYR:HD1	1:B:22:TYR:N	1.90	0.70
1:A:221:LYS:HE3	1:A:225:MET:CE	2.22	0.69
1:C:23:VAL:HG21	1:C:43:VAL:CG1	2.22	0.68
1:C:48:LEU:HD21	1:C:54:LEU:HB2	1.74	0.68
1:B:98:GLY:O	1:B:129:ASN:ND2	2.24	0.68
1:C:145:ARG:HH11	1:C:145:ARG:HB3	1.60	0.67
1:B:22:TYR:CD1	1:B:22:TYR:N	2.61	0.66
1:A:182:ARG:O	1:A:185:ALA:HB3	1.95	0.66
1:B:173:ILE:O	1:B:176:SER:HB2	1.96	0.65
1:A:120:GLN:OE1	1:B:93:PHE:CE2	2.47	0.65
1:C:92:VAL:HB	1:C:125:ILE:HD12	1.79	0.65
1:B:75:ASP:C	1:B:77:ARG:H	2.00	0.65
1:A:100:PRO:HG2	1:B:131:MET:HG3	1.77	0.65
1:A:128:MET:HE1	1:B:116:MET:CB	2.27	0.65
1:D:179:GLY:HA3	1:D:216:ARG:HD3	1.78	0.65
1:B:46:LYS:C	1:B:47:GLN:CA	2.65	0.65
1:B:96:VAL:O	1:B:129:ASN:ND2	2.29	0.64
1:D:69:PHE:CE1	1:D:78:LEU:HD21	2.32	0.64
1:D:73:LEU:HA	1:D:78:LEU:HD22	1.80	0.64
1:D:171:LEU:O	1:D:175:GLN:HG3	1.97	0.64
1:C:22:TYR:HD1	1:C:54:LEU:HD23	1.63	0.64
1:A:24:ASP:OD1	1:A:26:ARG:CG	2.44	0.63
1:B:180:ILE:HG23	1:B:184:THR:HG22	1.80	0.63
1:C:209:VAL:HB	1:C:212:ILE:HD12	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:117:ALA:HB1	1:D:143:LEU:HD23	1.81	0.62
1:C:22:TYR:HA	1:C:44:ILE:O	1.98	0.62
1:C:135:GLY:HA2	1:C:138:LEU:HD12	1.80	0.62
1:C:140:ILE:HA	1:C:143:LEU:HD12	1.82	0.62
1:B:46:LYS:O	1:B:47:GLN:CA	2.47	0.62
1:A:92:VAL:HG11	1:A:125:ILE:HD13	1.81	0.61
1:C:227:PRO:HA	1:D:193:GLY:O	2.00	0.61
1:B:33:PRO:HB3	1:B:43:VAL:HG11	1.81	0.61
1:A:124:GLY:O	1:B:126:ARG:NH2	2.33	0.61
1:B:209:VAL:HB	1:B:212:ILE:HD12	1.81	0.61
1:A:94:ILE:HB	1:A:127:LEU:HD23	1.82	0.61
1:B:50:MET:CE	1:B:85:LEU:HA	2.29	0.60
1:C:72:SER:HA	1:C:75:ASP:HB2	1.82	0.60
1:A:23:VAL:HG12	1:A:27:GLU:HB3	1.83	0.60
1:A:221:LYS:CE	1:A:225:MET:HE3	2.31	0.60
1:D:76:GLY:C	1:D:78:LEU:H	2.05	0.59
1:C:189:LEU:HD13	1:D:228:TYR:CD1	2.36	0.59
1:A:50:MET:CE	1:A:89:TYR:HE1	2.15	0.59
1:C:79:PHE:O	1:C:83:SER:OG	2.21	0.59
1:D:101:VAL:HG11	1:D:109:GLU:HB3	1.83	0.59
1:C:135:GLY:O	1:C:139:VAL:HG23	2.04	0.58
1:A:221:LYS:O	1:A:225:MET:HG2	2.02	0.58
1:B:79:PHE:HA	1:B:82:ALA:HB3	1.85	0.58
1:A:126:ARG:HH11	1:A:126:ARG:HG2	1.69	0.58
1:C:207:SER:HB3	1:C:217:ALA:HB2	1.86	0.58
1:B:180:ILE:HD12	1:B:180:ILE:N	2.19	0.58
1:D:175:GLN:HE22	1:D:182:ARG:HG2	1.67	0.58
1:A:128:MET:CE	1:B:116:MET:HB3	2.34	0.58
1:D:73:LEU:CA	1:D:78:LEU:HD22	2.34	0.57
1:C:58:SER:CB	1:C:90:GLU:HG2	2.35	0.57
1:C:50:MET:CE	1:C:85:LEU:HA	2.35	0.56
1:D:76:GLY:C	1:D:78:LEU:N	2.58	0.56
1:A:126:ARG:NH1	1:A:126:ARG:HG2	2.20	0.56
1:D:76:GLY:O	1:D:78:LEU:N	2.39	0.56
1:A:126:ARG:NH1	1:B:120:GLN:OE1	2.37	0.56
1:A:39:LEU:O	1:A:145:ARG:NH2	2.38	0.56
1:A:128:MET:HE1	1:B:116:MET:HB3	1.88	0.55
1:C:177:PHE:HB2	1:C:180:ILE:HD12	1.89	0.55
1:A:128:MET:HG3	1:A:139:VAL:HG11	1.87	0.55
1:C:221:LYS:HA	1:C:224:LEU:HD12	1.87	0.55
1:A:25:VAL:O	1:A:26:ARG:C	2.45	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:76:GLY:O	1:C:77:ARG:C	2.45	0.55
1:A:196:GLU:HB2	1:B:224:LEU:O	2.06	0.55
1:A:83:SER:HB3	1:A:123:TYR:HE2	1.73	0.54
1:B:21:VAL:HG12	1:B:55:VAL:HA	1.89	0.54
1:D:30:SER:HB2	1:D:33:PRO:HD3	1.88	0.54
1:D:19:PRO:HG2	1:D:41:VAL:HG22	1.90	0.54
1:D:70:ALA:O	1:D:74:PHE:HD1	1.90	0.54
1:C:171:LEU:O	1:C:175:GLN:HG3	2.06	0.54
1:D:72:SER:OG	1:D:78:LEU:HD13	2.07	0.54
1:D:103:ARG:HA	1:D:106:ARG:CB	2.39	0.54
1:D:130:THR:HG21	1:D:136:THR:N	2.23	0.53
1:C:92:VAL:CB	1:C:125:ILE:HD12	2.37	0.53
1:D:134:LYS:O	1:D:138:LEU:N	2.34	0.53
1:D:23:VAL:CG2	1:D:43:VAL:HG13	2.36	0.53
1:D:95:ILE:HG21	1:D:136:THR:HG23	1.90	0.53
1:A:116:MET:HB3	1:B:128:MET:CE	2.37	0.53
1:D:60:ILE:HG13	1:D:61:VAL:N	2.23	0.53
1:C:133:PRO:HA	1:C:136:THR:HB	1.89	0.53
1:C:63:ARG:HD2	1:C:136:THR:HG21	1.89	0.53
1:C:136:THR:O	1:C:140:ILE:HG13	2.08	0.53
1:B:141:GLU:O	1:B:144:ALA:HB3	2.09	0.52
1:B:36:LEU:O	1:B:39:LEU:HB2	2.09	0.52
1:A:132:ASP:HB2	1:A:133:PRO:CD	2.39	0.52
1:D:23:VAL:O	1:D:45:PRO:HA	2.09	0.52
1:A:53:TYR:HB2	1:A:61:VAL:HB	1.90	0.52
1:B:194:SER:HB3	1:B:197:ARG:H	1.74	0.52
1:D:195:LEU:HB3	1:D:199:PHE:CE1	2.45	0.52
1:D:69:PHE:CD1	1:D:78:LEU:HD11	2.45	0.52
1:A:120:GLN:HE21	1:A:127:LEU:HD12	1.74	0.52
1:D:175:GLN:HA	1:D:180:ILE:HG22	1.92	0.52
1:D:23:VAL:HG13	1:D:53:TYR:CE2	2.46	0.51
1:A:52:ASP:OD2	1:A:63:ARG:N	2.27	0.51
1:B:214:GLU:O	1:B:215:LYS:C	2.48	0.51
1:B:166:VAL:O	1:B:170:GLN:HG3	2.10	0.51
1:D:133:PRO:O	1:D:136:THR:HB	2.11	0.50
1:D:180:ILE:HG13	1:D:184:THR:HG21	1.92	0.50
1:B:163:LEU:O	1:B:166:VAL:HB	2.11	0.50
1:C:192:PHE:CD1	1:C:198:PHE:HB2	2.47	0.50
1:B:50:MET:HE1	1:B:88:HIS:HB2	1.92	0.50
1:A:207:SER:HB3	1:A:217:ALA:CB	2.35	0.50
1:B:132:ASP:HB2	1:B:133:PRO:CD	2.41	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:27:GLU:C	1:A:29:ARG:N	2.65	0.50
1:D:24:ASP:OD1	1:D:26:ARG:HG2	2.12	0.50
1:D:98:GLY:N	1:D:130:THR:O	2.43	0.50
1:A:222:LYS:O	1:A:226:THR:OG1	2.22	0.49
1:B:146:LEU:HD23	1:B:149:ARG:NH1	2.28	0.49
1:C:23:VAL:HG22	1:C:53:TYR:CE2	2.48	0.49
1:D:180:ILE:HG13	1:D:184:THR:CG2	2.42	0.49
1:C:32:VAL:HG13	1:C:137:ALA:HB2	1.95	0.49
1:A:26:ARG:NH1	1:A:52:ASP:OD1	2.42	0.49
1:B:96:VAL:O	1:B:129:ASN:HA	2.13	0.49
1:A:32:VAL:O	1:A:33:PRO:C	2.49	0.49
1:B:27:GLU:O	1:B:29:ARG:N	2.46	0.49
1:A:64:LYS:O	1:A:96:VAL:HA	2.13	0.49
1:C:180:ILE:HD11	1:C:220:ILE:CD1	2.38	0.49
1:B:195:LEU:HD13	1:B:199:PHE:HE1	1.78	0.49
1:D:93:PHE:HA	1:D:126:ARG:O	2.12	0.48
1:B:75:ASP:C	1:B:77:ARG:N	2.66	0.48
1:D:149:ARG:O	1:D:149:ARG:HG3	2.13	0.48
1:B:30:SER:HB2	1:B:32:VAL:H	1.77	0.48
1:C:90:GLU:HG3	1:C:91:THR:N	2.28	0.48
1:A:156:VAL:HG11	1:A:158:HIS:CE1	2.48	0.48
1:C:131:MET:HG3	1:D:100:PRO:HD2	1.95	0.48
1:C:22:TYR:HB2	1:C:54:LEU:HB3	1.95	0.48
1:D:70:ALA:O	1:D:74:PHE:CD1	2.66	0.48
1:C:220:ILE:HG22	1:C:224:LEU:HD11	1.96	0.48
1:A:128:MET:HE1	1:B:116:MET:HB2	1.95	0.48
1:C:130:THR:HG21	1:C:136:THR:CA	2.39	0.48
1:A:50:MET:HE1	1:A:89:TYR:HE1	1.79	0.48
1:B:123:TYR:HB3	1:B:125:ILE:HG13	1.95	0.48
1:D:188:ILE:HD11	1:D:212:ILE:HD11	1.96	0.48
1:A:124:GLY:O	1:A:125:ILE:C	2.52	0.47
1:A:94:ILE:HD12	1:A:125:ILE:HG21	1.95	0.47
1:A:65:THR:HA	1:A:97:GLU:HB3	1.96	0.47
1:B:177:PHE:CB	1:B:180:ILE:HD13	2.44	0.47
1:A:50:MET:CE	1:A:89:TYR:CE1	2.97	0.47
1:D:74:PHE:CZ	1:D:108:ARG:HB3	2.50	0.47
1:A:119:LEU:HD23	1:A:119:LEU:HA	1.73	0.47
1:C:166:VAL:O	1:C:170:GLN:HG3	2.14	0.47
1:C:133:PRO:O	1:C:136:THR:HB	2.14	0.47
1:C:177:PHE:CB	1:C:180:ILE:HD12	2.44	0.47
1:A:92:VAL:HG12	1:A:125:ILE:HG23	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:194:SER:HB2	1:D:197:ARG:HB2	1.96	0.47
1:C:66:SER:HB3	1:C:96:VAL:HG13	1.96	0.47
1:C:66:SER:HB3	1:C:96:VAL:CG1	2.45	0.47
1:C:61:VAL:HG22	1:C:93:PHE:HB2	1.96	0.47
1:D:74:PHE:HZ	1:D:108:ARG:HB3	1.79	0.47
1:B:132:ASP:HB2	1:B:133:PRO:HD2	1.96	0.47
1:A:116:MET:HB3	1:B:128:MET:HE1	1.96	0.47
1:C:170:GLN:O	1:C:173:ILE:HB	2.14	0.47
1:B:141:GLU:O	1:B:145:ARG:HG3	2.14	0.46
1:C:24:ASP:OD1	1:C:26:ARG:HG3	2.15	0.46
1:C:50:MET:HE2	1:C:89:TYR:HE1	1.79	0.46
1:C:96:VAL:HB	1:C:129:ASN:OD1	2.14	0.46
1:A:125:ILE:HG12	1:A:125:ILE:H	1.59	0.46
1:B:23:VAL:CG2	1:B:43:VAL:HG13	2.45	0.46
1:A:132:ASP:N	1:A:132:ASP:OD2	2.48	0.46
1:B:24:ASP:HB2	1:B:48:LEU:HB2	1.97	0.46
1:D:130:THR:HG21	1:D:135:GLY:C	2.36	0.46
1:D:166:VAL:O	1:D:170:GLN:HG3	2.16	0.46
1:A:225:MET:HE2	1:A:225:MET:HB3	1.71	0.45
1:D:182:ARG:NH1	1:D:186:GLU:OE2	2.48	0.45
1:C:67:SER:O	1:C:70:ALA:HB3	2.16	0.45
1:A:167:ARG:O	1:A:170:GLN:HB2	2.16	0.45
1:C:93:PHE:HE2	1:D:120:GLN:OE1	1.99	0.45
1:B:62:GLU:HB3	1:B:94:ILE:HG12	1.98	0.45
1:A:225:MET:HE2	1:B:196:GLU:OE1	2.17	0.45
1:D:86:ALA:HA	1:D:92:VAL:HG21	1.98	0.45
1:D:165:ASP:HB3	1:D:167:ARG:H	1.82	0.45
1:C:192:PHE:CG	1:C:198:PHE:HB2	2.51	0.44
1:C:201:ALA:HB3	1:C:206:ILE:HD11	1.99	0.44
1:A:35:ILE:O	1:A:38:SER:HB2	2.17	0.44
1:C:50:MET:CE	1:C:89:TYR:HE1	2.30	0.44
1:C:77:ARG:O	1:C:78:LEU:C	2.55	0.44
1:D:94:ILE:HG22	1:D:96:VAL:HG23	1.99	0.44
1:A:227:PRO:HA	1:B:193:GLY:O	2.17	0.44
1:B:107:GLY:C	1:B:109:GLU:H	2.21	0.44
1:D:22:TYR:O	1:D:53:TYR:HA	2.18	0.44
1:B:23:VAL:HG23	1:B:43:VAL:HG13	1.98	0.44
1:C:120:GLN:NE2	1:C:127:LEU:HB2	2.33	0.44
1:A:168:GLU:HA	1:A:171:LEU:HD12	1.99	0.44
1:B:166:VAL:O	1:B:167:ARG:C	2.56	0.44
1:A:104:ARG:HG2	1:A:105:TYR:CE1	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:224:LEU:HD23	1:A:224:LEU:HA	1.70	0.44
1:A:198:PHE:HD2	1:A:199:PHE:CD1	2.36	0.44
1:A:228:TYR:CG	1:A:229:LYS:N	2.85	0.44
1:D:167:ARG:O	1:D:171:LEU:HG	2.18	0.43
1:A:141:GLU:OE2	1:A:145:ARG:NE	2.51	0.43
1:B:44:ILE:HA	1:B:45:PRO:HD3	1.90	0.43
1:A:189:LEU:HD13	1:B:228:TYR:CD1	2.53	0.43
1:A:113:TYR:CE1	1:B:135:GLY:HA2	2.53	0.43
1:A:166:VAL:HG21	1:B:222:LYS:HZ2	1.82	0.43
1:A:96:VAL:O	1:A:129:ASN:ND2	2.51	0.43
1:A:174:LEU:HG	1:A:195:LEU:HD21	2.00	0.43
1:D:220:ILE:HG22	1:D:224:LEU:HD12	2.01	0.43
1:A:179:GLY:O	1:A:216:ARG:NH1	2.51	0.43
1:D:27:GLU:CD	1:D:30:SER:OG	2.57	0.43
1:D:50:MET:HE2	1:D:85:LEU:HA	1.93	0.43
1:A:128:MET:CE	1:B:116:MET:CB	2.93	0.43
1:B:123:TYR:CB	1:B:125:ILE:HG13	2.49	0.43
1:C:184:THR:O	1:C:188:ILE:HD12	2.17	0.43
1:A:175:GLN:HA	1:A:180:ILE:HG22	2.00	0.43
1:D:169:TRP:O	1:D:170:GLN:C	2.57	0.43
1:B:23:VAL:HG12	1:B:27:GLU:HB3	2.00	0.43
1:C:120:GLN:NE2	1:D:128:MET:SD	2.86	0.43
1:D:72:SER:C	1:D:78:LEU:HB2	2.39	0.43
1:A:189:LEU:HB3	1:B:228:TYR:CD1	2.53	0.43
1:D:142:SER:O	1:D:146:LEU:HG	2.18	0.43
1:B:214:GLU:O	1:B:217:ALA:N	2.51	0.43
1:A:179:GLY:C	1:A:216:ARG:NH1	2.72	0.43
1:A:120:GLN:HE22	1:B:128:MET:HG2	1.83	0.43
1:C:116:MET:HG2	1:C:127:LEU:HD11	2.01	0.43
1:B:200:THR:HG22	1:B:200:THR:O	2.18	0.43
1:B:130:THR:HG21	1:B:136:THR:HA	2.00	0.42
1:D:201:ALA:O	1:D:221:LYS:NZ	2.45	0.42
1:A:24:ASP:O	1:A:27:GLU:HB3	2.19	0.42
1:D:136:THR:O	1:D:140:ILE:HG13	2.20	0.42
1:C:173:ILE:O	1:C:176:SER:HB2	2.19	0.42
1:B:195:LEU:HD13	1:B:199:PHE:CE1	2.55	0.42
1:D:194:SER:HB2	1:D:197:ARG:H	1.84	0.42
1:A:166:VAL:HG21	1:B:222:LYS:NZ	2.34	0.42
1:A:149:ARG:HH22	1:B:122:ASP:CG	2.22	0.42
1:D:65:THR:HA	1:D:97:GLU:HB3	2.01	0.42
1:A:122:ASP:OD1	1:B:149:ARG:NH2	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:169:TRP:CZ2	1:B:178:PRO:HB3	2.54	0.42
1:D:226:THR:HA	1:D:227:PRO:HD3	1.87	0.42
1:C:53:TYR:HB2	1:C:61:VAL:HB	2.01	0.42
1:C:59:ILE:HG12	1:C:91:THR:HB	2.02	0.42
1:D:209:VAL:HB	1:D:212:ILE:HD12	2.02	0.42
1:B:174:LEU:HG	1:B:195:LEU:HD21	2.01	0.42
1:B:95:ILE:HG21	1:B:136:THR:CG2	2.27	0.41
1:A:27:GLU:C	1:A:29:ARG:H	2.23	0.41
1:B:177:PHE:HB2	1:B:180:ILE:HD13	2.01	0.41
1:C:169:TRP:O	1:C:173:ILE:HG13	2.19	0.41
1:C:214:GLU:O	1:C:217:ALA:HB3	2.20	0.41
1:C:59:ILE:HG12	1:C:91:THR:CG2	2.50	0.41
1:D:200:THR:O	1:D:200:THR:HG22	2.20	0.41
1:C:139:VAL:O	1:C:143:LEU:HG	2.20	0.41
1:D:22:TYR:HB2	1:D:54:LEU:HB3	2.01	0.41
1:C:23:VAL:HG12	1:C:24:ASP:O	2.20	0.41
1:C:101:VAL:HG22	1:C:112:LEU:HD12	2.02	0.41
1:A:170:GLN:HA	1:A:195:LEU:HD11	2.01	0.41
1:C:174:LEU:HD13	1:C:188:ILE:CG2	2.50	0.41
1:B:27:GLU:O	1:B:28:GLU:C	2.59	0.41
1:D:221:LYS:HB3	1:D:225:MET:HE3	2.02	0.41
1:A:25:VAL:C	1:A:27:GLU:N	2.72	0.41
1:A:27:GLU:O	1:A:30:SER:N	2.45	0.41
1:A:132:ASP:HB2	1:A:133:PRO:HD2	2.02	0.41
1:D:174:LEU:HD23	1:D:174:LEU:HA	1.92	0.41
1:A:209:VAL:HB	1:A:212:ILE:HD12	2.02	0.41
1:A:30:SER:HB2	1:A:33:PRO:HD3	2.02	0.41
1:D:182:ARG:O	1:D:185:ALA:HB3	2.20	0.41
1:C:65:THR:O	1:C:67:SER:N	2.54	0.41
1:A:109:GLU:O	1:A:110:ARG:C	2.60	0.40
1:B:83:SER:O	1:B:84:ARG:C	2.60	0.40
1:B:109:GLU:HA	1:B:112:LEU:HD12	2.04	0.40
1:A:128:MET:HE3	1:B:116:MET:HB3	2.01	0.40
1:B:73:LEU:C	1:B:75:ASP:H	2.24	0.40
1:D:61:VAL:HG11	1:D:95:ILE:HD12	2.01	0.40
1:A:83:SER:HB3	1:A:123:TYR:CE2	2.55	0.40
1:B:92:VAL:HG11	1:B:125:ILE:HD13	2.03	0.40
1:C:174:LEU:HD13	1:C:188:ILE:HG21	2.04	0.40
1:A:27:GLU:O	1:A:29:ARG:N	2.54	0.40
1:A:142:SER:O	1:A:146:LEU:HD12	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	209/214 (98%)	179 (86%)	25 (12%)	5 (2%)	7 43
1	B	193/214 (90%)	167 (86%)	22 (11%)	4 (2%)	9 46
1	C	190/214 (89%)	158 (83%)	23 (12%)	9 (5%)	3 22
1	D	209/214 (98%)	172 (82%)	32 (15%)	5 (2%)	7 43
All	All	801/856 (94%)	676 (84%)	102 (13%)	23 (3%)	6 36

All (23) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	125	ILE
1	B	215	LYS
1	C	77	ARG
1	C	78	LEU
1	A	28	GLU
1	A	57	ASP
1	B	57	ASP
1	D	76	GLY
1	D	77	ARG
1	B	28	GLU
1	B	56	SER
1	A	163	LEU
1	C	203	LYS
1	D	107	GLY
1	D	146	LEU
1	C	25	VAL
1	C	66	SER
1	C	100	PRO
1	C	125	ILE
1	D	204	ALA
1	A	51	GLY
1	C	107	GLY
1	C	55	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	150/187 (80%)	135 (90%)	15 (10%)	9 37
1	B	139/187 (74%)	130 (94%)	9 (6%)	21 61
1	C	125/187 (67%)	112 (90%)	13 (10%)	9 35
1	D	148/187 (79%)	127 (86%)	21 (14%)	4 19
All	All	562/748 (75%)	504 (90%)	58 (10%)	9 36

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	ARG
1	A	35	ILE
1	A	43	VAL
1	A	50	MET
1	A	58	SER
1	A	67	SER
1	A	81	GLN
1	A	83	SER
1	A	90	GLU
1	A	104	ARG
1	A	109	GLU
1	A	111	SER
1	A	132	ASP
1	A	141	GLU
1	A	184	THR
1	B	22	TYR
1	B	30	SER
1	B	58	SER
1	B	66	SER
1	B	67	SER
1	B	147	SER
1	B	166	VAL
1	B	184	THR
1	B	194	SER

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Mol	Chain	Res	Type
1	C	48	LEU
1	C	75	ASP
1	C	83	SER
1	C	90	GLU
1	C	91	THR
1	C	109	GLU
1	C	111	SER
1	C	127	LEU
1	C	140	ILE
1	C	145	ARG
1	C	146	LEU
1	C	188	ILE
1	C	198	PHE
1	D	25	VAL
1	D	54	LEU
1	D	58	SER
1	D	63	ARG
1	D	65	THR
1	D	83	SER
1	D	88	HIS
1	D	90	GLU
1	D	91	THR
1	D	101	VAL
1	D	112	LEU
1	D	122	ASP
1	D	127	LEU
1	D	132	ASP
1	D	136	THR
1	D	142	SER
1	D	147	SER
1	D	148	THR
1	D	150	GLU
1	D	183	ARG
1	D	208	LYS

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

Mol	Chain	Res	Type
1	A	120	GLN
1	A	158	HIS
1	D	81	GLN
1	D	120	GLN

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Mol	Chain	Res	Type
1	D	175	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no carbohydrates 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

EDS was not executed - this section will therefore be empty.

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

EDS was not executed - this section will therefore be empty.

6.3 Carbohydrates

EDS was not executed - this section will therefore be empty.

6.4 Ligands

EDS was not executed - this section will therefore be empty.

6.5 Other polymers

EDS was not executed - this section will therefore be empty.