Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 01:41 PM GMT

PDB ID	:	3UMG
Title	:	Crystal Structure of the Defluorinating L-2-Haloacid Dehalogenase Rha0230
Authors	:	Chan, P.W.Y.; Savchenko, A.; Yakunin, A.F.; Edwards, E.A.; Pai, E.F.
Deposited on	:	2011-11-13
Resolution	:	2.25 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 (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

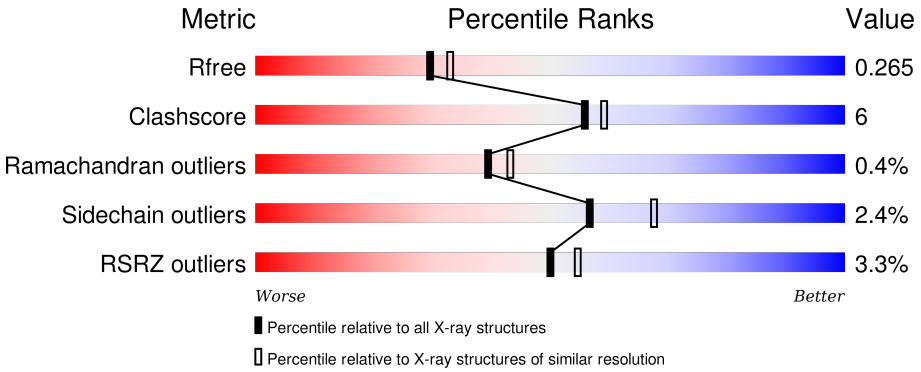
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 2.25 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}	91344	1640 (2.28-2.24)
Clashscore	102246	1095 (2.26-2.26)
Ramachandran outliers	100387	1063 (2.26-2.26)
Sidechain outliers	100360	1063 (2.26-2.26)
RSRZ outliers	91569	1647 (2.28-2.24)

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.

Mol	Chain	Length	Quality of chain
1	A	254	6% 85% 11%
1	B	254	2% 78% 18%
1	C	254	4% 78% 17%
1	D	254	89% 9%
1	E	254	2% 87% 10%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	254	3% 83% 13%
1	G	254	% 84% 12%
1	H	254	8% 70% 25%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	CL	A	255	-	-	-	X
2	CL	C	255	-	-	-	X
2	CL	D	255	-	-	-	X
2	CL	E	255	-	-	-	X
2	CL	G	255	-	-	-	X

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 15601 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 Haloacid dehalogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	247	Total	C	N	O	S	0	0	0
			1894	1194	337	360	3			
1	B	247	Total	C	N	O	S	0	1	0
			1897	1196	338	360	3			
1	C	245	Total	C	N	O	S	0	0	0
			1884	1189	335	357	3			
1	D	248	Total	C	N	O	S	0	1	0
			1903	1199	339	362	3			
1	E	248	Total	C	N	O	S	0	0	0
			1901	1198	338	362	3			
1	F	245	Total	C	N	O	S	0	0	0
			1884	1189	335	357	3			
1	G	246	Total	C	N	O	S	0	0	0
			1888	1191	336	358	3			
1	H	245	Total	C	N	O	S	0	0	0
			1881	1186	335	357	3			

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	G	1	Total	Cl	0	0
			1	1		
2	D	1	Total	Cl	0	0
			1	1		
2	E	1	Total	Cl	0	0
			1	1		
2	H	1	Total	Cl	0	0
			1	1		
2	C	1	Total	Cl	0	0
			1	1		
2	A	1	Total	Cl	0	0
			1	1		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	F	1	Total Cl 1 1	0	0

- Molecule 3 is water.

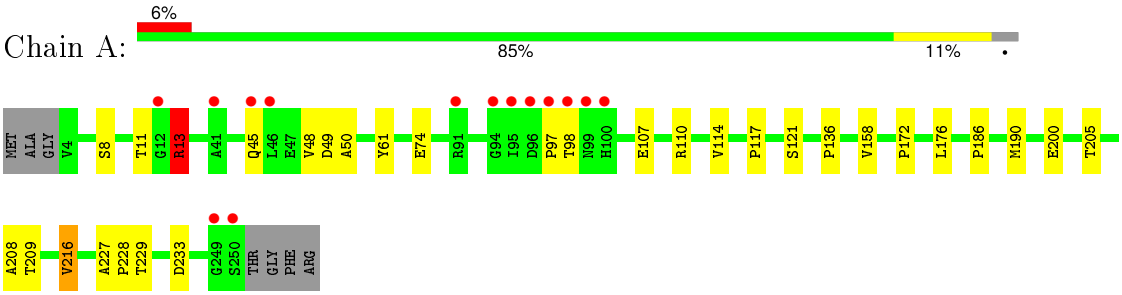
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	40	Total O 40 40	0	0
3	B	41	Total O 41 41	0	0
3	C	61	Total O 61 61	0	0
3	D	107	Total O 107 107	0	0
3	E	85	Total O 85 85	0	0
3	F	48	Total O 48 48	0	0
3	G	48	Total O 48 48	0	0
3	H	32	Total O 32 32	0	0

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.

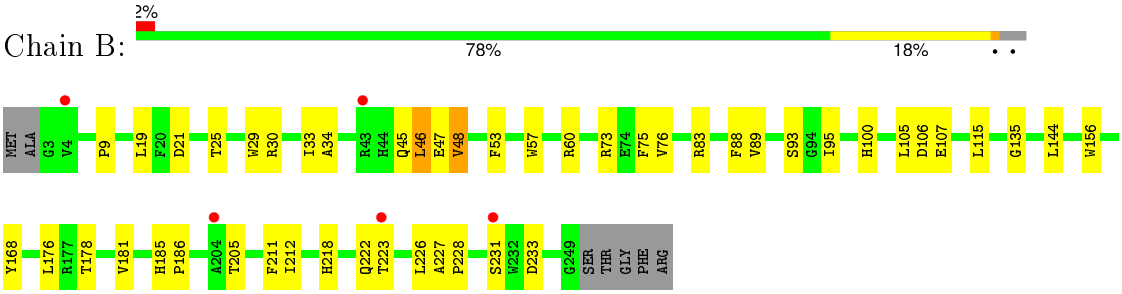
- Molecule 1: Haloacid dehalogenase

Chain A:



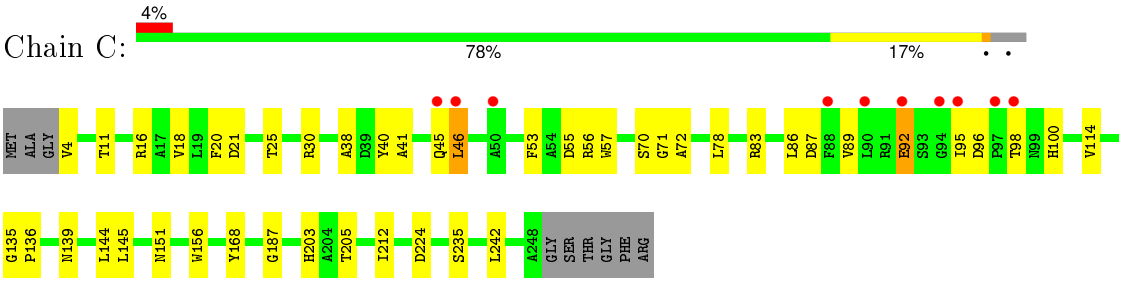
- Molecule 1: Haloacid dehalogenase

Chain B:



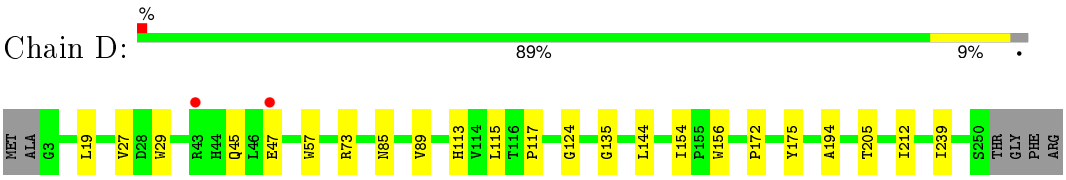
- Molecule 1: Haloacid dehalogenase

Chain C:



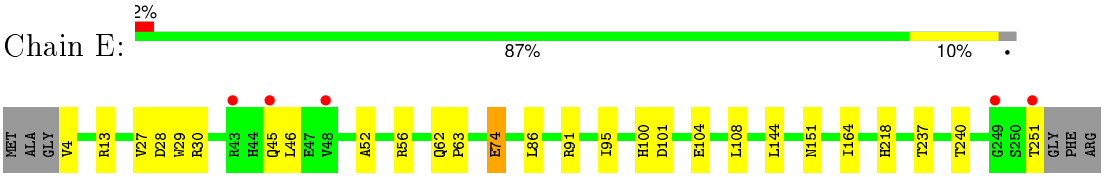
- Molecule 1: Haloacid dehalogenase

Chain D:



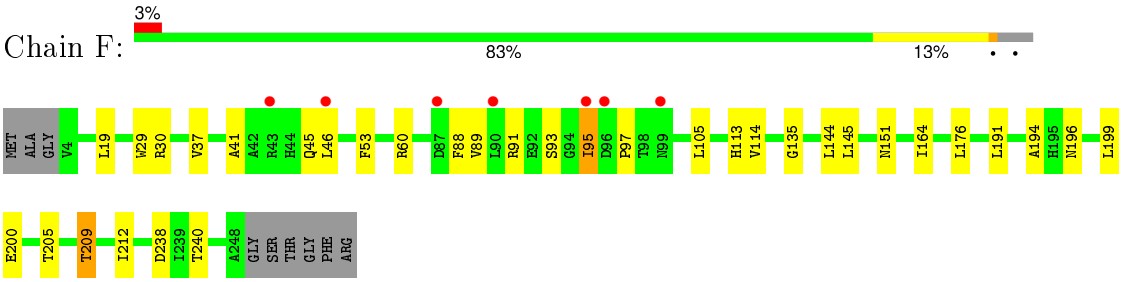
• Molecule 1: Haloacid dehalogenase

Chain E:



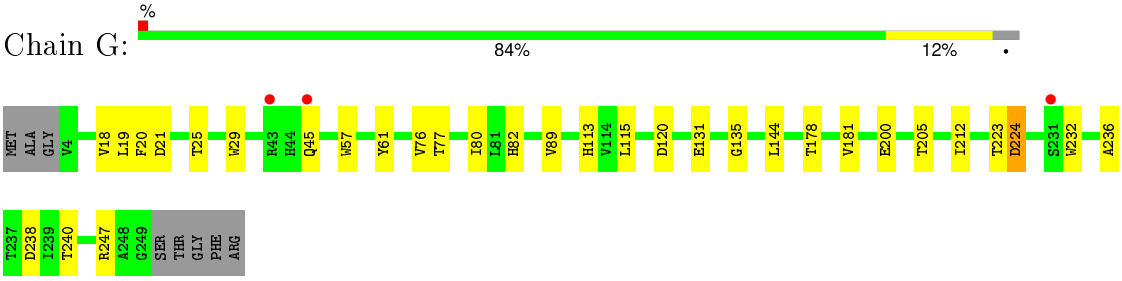
• Molecule 1: Haloacid dehalogenase

Chain F:



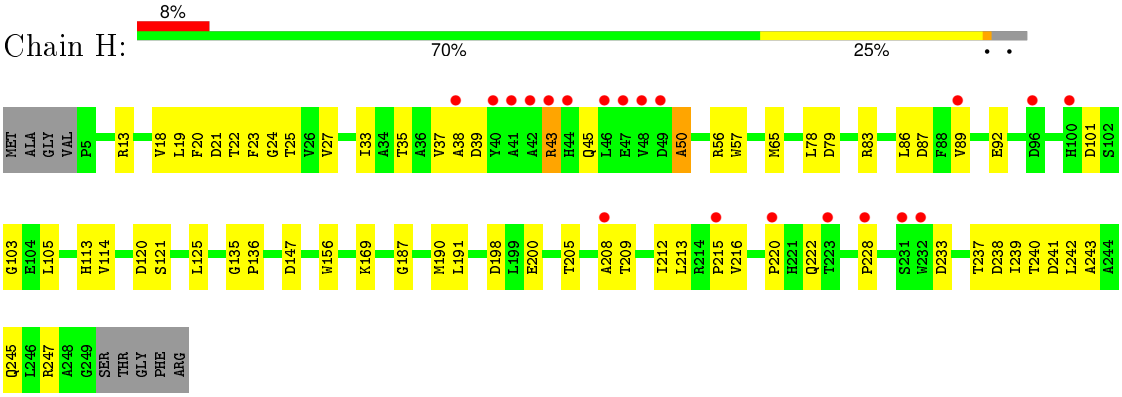
• Molecule 1: Haloacid dehalogenase

Chain G:



• Molecule 1: Haloacid dehalogenase

Chain H:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	102.18Å 148.65Å 152.55Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.49 – 2.25 38.49 – 2.25	Depositor EDS
% Data completeness (in resolution range)	96.6 (38.49-2.25) 96.6 (38.49-2.25)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.81 (at 2.24Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.212 , 0.272 0.211 , 0.265	Depositor DCC
R_{free} test set	5480 reflections (5.41%)	DCC
Wilson B-factor (Å^2)	30.0	Xtriage
Anisotropy	0.411	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 35.4	EDS
Estimated twinning fraction	0.016 for -h,l,k	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Outliers	0 of 107054 reflections	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	15601	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.94% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.83	0/1941	0.84	2/2656 (0.1%)
1	B	0.80	0/1947	0.80	0/2664
1	C	0.86	0/1931	0.81	0/2643
1	D	0.89	0/1953	0.84	1/2672 (0.0%)
1	E	0.91	3/1948 (0.2%)	0.85	2/2666 (0.1%)
1	F	0.83	0/1931	0.80	0/2643
1	G	0.82	1/1935 (0.1%)	0.84	3/2648 (0.1%)
1	H	0.84	1/1928 (0.1%)	0.79	0/2637
All	All	0.85	5/15514 (0.0%)	0.82	8/21229 (0.0%)

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	74	GLU	CB-CG	5.89	1.63	1.52
1	E	27	VAL	CB-CG2	5.70	1.64	1.52
1	E	74	GLU	CG-CD	5.41	1.60	1.51
1	G	131	GLU	CG-CD	5.10	1.59	1.51
1	H	200	GLU	CB-CG	5.07	1.61	1.52

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	247	ARG	NE-CZ-NH1	-7.98	116.31	120.30
1	G	247	ARG	NE-CZ-NH2	7.05	123.83	120.30
1	A	13	ARG	NE-CZ-NH2	6.58	123.59	120.30
1	A	61	TYR	CA-CB-CG	5.62	124.07	113.40
1	E	28	ASP	CB-CG-OD2	-5.33	113.50	118.30
1	G	61	TYR	CA-CB-CG	5.27	123.42	113.40
1	D	73	ARG	NE-CZ-NH2	-5.14	117.73	120.30
1	E	28	ASP	CB-CG-OD1	5.12	122.91	118.30

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	1894	0	1842	17	0
1	B	1897	0	1846	29	0
1	C	1884	0	1834	28	0
1	D	1903	0	1851	14	0
1	E	1901	0	1849	16	0
1	F	1884	0	1834	25	0
1	G	1888	0	1837	17	0
1	H	1881	0	1829	43	0
2	A	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	1	0
2	H	1	0	0	0	0
3	A	40	0	0	1	0
3	B	41	0	0	1	0
3	C	61	0	0	2	0
3	D	107	0	0	0	0
3	E	85	0	0	3	0
3	F	48	0	0	0	0
3	G	48	0	0	1	0
3	H	32	0	0	3	0
All	All	15601	0	14722	185	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 6.

All (185) 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:H:114:VAL:O	1:H:114:VAL:HG12	1.74	0.85
1:F:53:PHE:CE1	1:F:89:VAL:HG12	2.10	0.85
1:B:29:TRP:HA	1:B:115:LEU:HD13	1.62	0.80
1:A:114:VAL:O	1:A:114:VAL:HG12	1.81	0.79
1:H:38:ALA:HB2	1:H:50:ALA:HB2	1.64	0.78
1:H:27:VAL:HG23	3:H:272:HOH:O	1.82	0.78
1:D:57:TRP:HA	1:D:89:VAL:HG21	1.68	0.76
1:H:114:VAL:O	1:H:114:VAL:CG1	2.35	0.74
1:H:135:GLY:HA2	1:H:156:TRP:CE3	2.25	0.72
1:A:13:ARG:HH21	1:A:13:ARG:HG3	1.54	0.72
1:F:144:LEU:HD23	1:F:144:LEU:C	2.11	0.70
1:H:22:THR:O	1:H:27:VAL:HG22	1.92	0.68
1:H:212:ILE:HD11	1:H:242:LEU:HD22	1.75	0.67
1:B:100:HIS:HB2	1:B:105:LEU:HD11	1.77	0.66
1:E:237:THR:O	3:E:298:HOH:O	2.13	0.66
1:F:199:LEU:HD22	1:F:209:THR:HG22	1.78	0.66
1:A:176:LEU:HG	1:A:205:THR:CG2	2.27	0.64
1:C:41:ALA:HA	1:C:46:LEU:HD12	1.78	0.64
1:A:107:GLU:OE1	1:A:110:ARG:NH2	2.32	0.63
1:C:53:PHE:CE1	1:C:89:VAL:HG12	2.34	0.62
1:F:53:PHE:CE1	1:F:89:VAL:CG1	2.82	0.62
1:H:57:TRP:CH2	1:H:86:LEU:HD13	2.36	0.61
1:A:200:GLU:HB2	1:H:220:PRO:CG	2.30	0.61
1:C:144:LEU:C	1:C:144:LEU:HD23	2.22	0.60
1:C:40:TYR:HH	1:C:100:HIS:HD1	1.50	0.59
1:F:238:ASP:OD1	1:F:240:THR:HB	2.03	0.59
1:H:23:PHE:HA	3:H:272:HOH:O	2.02	0.58
1:B:205:THR:HG22	1:B:205:THR:O	2.04	0.57
1:A:227:ALA:HB1	1:A:228:PRO:HD2	1.87	0.57
1:G:178:THR:O	1:G:181:VAL:HG12	2.03	0.57
1:E:144:LEU:C	1:E:144:LEU:HD23	2.25	0.57
1:H:39:ASP:HB3	1:H:43:ARG:NH2	2.20	0.57
1:B:227:ALA:HB1	1:B:228:PRO:HD2	1.87	0.57
1:A:216:VAL:HB	3:A:555:HOH:O	2.04	0.56
1:E:164:ILE:HD13	1:F:164:ILE:HD13	1.88	0.55
1:H:13:ARG:HD2	1:H:187:GLY:HA3	1.88	0.55
1:H:241:ASP:O	1:H:245:GLN:HG3	2.06	0.55
1:E:13:ARG:NH2	3:E:305:HOH:O	2.33	0.54
1:H:83:ARG:HH12	1:H:87:ASP:CG	2.10	0.54
1:E:240:THR:OG1	1:H:240:THR:HG22	2.06	0.54
1:H:38:ALA:HB2	1:H:50:ALA:CB	2.34	0.54
1:G:205:THR:O	1:G:205:THR:HG22	2.08	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:30:ARG:NH2	1:C:55:ASP:OD2	2.28	0.54
1:A:48:VAL:HG22	1:A:49:ASP:C	2.28	0.54
1:B:83:ARG:NH2	1:B:106:ASP:OD1	2.41	0.54
1:A:8:SER:OG	1:A:233:ASP:OD2	2.25	0.53
1:F:114:VAL:HG12	1:F:114:VAL:O	2.09	0.53
1:F:176:LEU:HD21	1:F:205:THR:HG22	1.91	0.53
1:F:191:LEU:HD23	1:F:199:LEU:HD23	1.89	0.53
1:A:114:VAL:O	1:A:114:VAL:CG1	2.52	0.53
1:B:176:LEU:HG	1:B:205:THR:HG21	1.91	0.53
1:G:57:TRP:HA	1:G:89:VAL:HG21	1.91	0.53
1:F:46:LEU:HD22	1:F:95:ILE:HD13	1.90	0.53
1:H:35:THR:HG22	1:H:39:ASP:OD2	2.10	0.52
1:B:176:LEU:HG	1:B:205:THR:CG2	2.39	0.52
1:D:85:ASN:O	1:D:89:VAL:HG23	2.10	0.52
1:E:4:VAL:O	1:E:4:VAL:HG12	2.11	0.51
1:C:135:GLY:HA2	1:C:156:TRP:CE3	2.45	0.51
1:H:190:MET:HA	1:H:208:ALA:HB3	1.92	0.51
1:D:113:HIS:CD2	1:D:144:LEU:HG	2.46	0.51
1:F:41:ALA:HB1	1:F:46:LEU:HB2	1.93	0.50
1:G:238:ASP:OD1	1:G:240:THR:HB	2.11	0.50
1:B:93:SER:O	1:B:95:ILE:HD12	2.12	0.50
1:B:19:LEU:HA	1:B:135:GLY:O	2.11	0.49
1:H:101:ASP:OD2	1:H:103:GLY:N	2.44	0.49
1:H:120:ASP:CG	1:H:238:ASP:HB2	2.32	0.49
1:C:41:ALA:HA	1:C:46:LEU:CD1	2.42	0.49
1:B:135:GLY:HA2	1:B:156:TRP:CE3	2.47	0.49
1:H:65:MET:HE2	1:H:78:LEU:CD1	2.42	0.49
1:H:213:LEU:HD11	1:H:215:PRO:HB3	1.95	0.49
1:F:114:VAL:HG13	1:F:151:ASN:ND2	2.28	0.48
1:G:113:HIS:CD2	1:G:144:LEU:HG	2.48	0.48
1:B:47:GLU:O	1:B:48:VAL:HG13	2.13	0.48
1:H:136:PRO:HD3	1:H:156:TRP:CE2	2.48	0.48
1:B:178:THR:O	1:B:181:VAL:HG12	2.14	0.48
1:F:113:HIS:CD2	1:F:144:LEU:HG	2.48	0.48
1:C:95:ILE:HG22	1:C:96:ASP:O	2.13	0.48
1:H:19:LEU:O	1:H:191:LEU:HA	2.12	0.47
1:H:209:THR:O	1:H:233:ASP:HB2	2.13	0.47
1:D:29:TRP:HA	1:D:115:LEU:HD22	1.95	0.47
1:D:194:ALA:HA	1:D:212:ILE:O	2.14	0.47
1:G:82:HIS:NE2	3:G:274:HOH:O	2.34	0.47
1:B:9:PRO:HD2	1:B:233:ASP:OD1	2.15	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:83:ARG:NH1	1:C:87:ASP:OD1	2.46	0.47
1:D:27:VAL:HA	1:D:117:PRO:HA	1.97	0.47
1:H:43:ARG:O	1:H:45:GLN:NE2	2.48	0.46
1:B:211:PHE:O	1:B:212:ILE:HD13	2.15	0.46
1:H:243:ALA:O	1:H:247:ARG:HG3	2.15	0.46
1:E:62:GLN:HB3	1:E:63:PRO:HD3	1.97	0.46
1:C:57:TRP:CZ2	1:C:86:LEU:HB2	2.50	0.46
1:G:18:VAL:HG12	1:G:20:PHE:CE2	2.51	0.46
1:B:73:ARG:NH1	3:B:267:HOH:O	2.47	0.46
1:F:144:LEU:C	1:F:144:LEU:CD2	2.83	0.46
1:A:229:THR:O	1:H:216:VAL:HG11	2.15	0.46
1:E:101:ASP:HB3	1:E:104:GLU:HB2	1.97	0.46
1:H:33:ILE:O	1:H:37:VAL:HG23	2.15	0.46
1:D:19:LEU:HA	1:D:135:GLY:O	2.16	0.46
1:E:29:TRP:CE3	1:E:30:ARG:HA	2.51	0.46
1:H:86:LEU:HD21	1:H:105:LEU:HD22	1.98	0.46
1:E:151:ASN:HA	3:E:314:HOH:O	2.15	0.46
1:G:76:VAL:HB	1:G:80:ILE:HD12	1.98	0.46
1:H:20:PHE:CE1	1:H:125:LEU:HD21	2.51	0.46
1:F:176:LEU:HG	1:F:205:THR:HG21	1.97	0.45
1:H:21:ASP:O	1:H:25:THR:HB	2.17	0.45
1:B:21:ASP:O	1:B:25:THR:HB	2.16	0.45
1:D:124:GLY:HA3	1:D:239:ILE:HG22	1.99	0.45
1:G:120:ASP:OD2	1:G:238:ASP:HB2	2.16	0.45
1:B:144:LEU:C	1:B:144:LEU:HD23	2.36	0.45
1:C:224:ASP:N	1:C:224:ASP:OD2	2.46	0.45
1:H:136:PRO:HD3	1:H:156:TRP:CD2	2.52	0.45
1:G:223:THR:HG22	1:G:224:ASP:N	2.31	0.45
1:H:169:LYS:HD2	1:H:198:ASP:OD1	2.16	0.45
1:D:144:LEU:HD23	1:D:144:LEU:C	2.37	0.45
1:G:21:ASP:OD1	2:G:255:CL:CL	2.72	0.45
1:A:190:MET:HB2	1:A:208:ALA:HB3	1.98	0.45
1:C:205:THR:O	1:C:205:THR:HG22	2.17	0.45
1:C:38:ALA:O	1:C:41:ALA:HB3	2.16	0.44
1:H:20:PHE:O	1:H:21:ASP:C	2.56	0.44
1:H:205:THR:HG22	1:H:205:THR:O	2.17	0.44
1:D:205:THR:O	1:D:205:THR:HG22	2.17	0.44
1:C:89:VAL:CG1	1:C:89:VAL:O	2.65	0.44
1:C:16:ARG:NH2	3:C:268:HOH:O	2.50	0.44
1:A:117:PRO:HB3	1:A:121:SER:HB2	1.99	0.44
1:G:29:TRP:HA	1:G:115:LEU:HD22	1.99	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:21:ASP:O	1:G:25:THR:HB	2.18	0.44
1:H:24:GLY:N	3:H:272:HOH:O	2.21	0.44
1:B:100:HIS:CB	1:B:105:LEU:HD11	2.46	0.44
1:C:18:VAL:HG12	1:C:20:PHE:CE2	2.53	0.44
1:E:86:LEU:HD21	1:E:108:LEU:HD23	1.98	0.44
1:B:185:HIS:ND1	1:B:186:PRO:HD2	2.33	0.44
1:C:40:TYR:OH	1:C:100:HIS:ND1	2.39	0.43
1:H:18:VAL:HG12	1:H:20:PHE:CE2	2.53	0.43
1:F:196:ASN:O	1:F:200:GLU:HG2	2.18	0.43
1:F:194:ALA:HA	1:F:212:ILE:O	2.17	0.43
1:E:95:ILE:N	1:E:95:ILE:HD12	2.34	0.43
1:F:199:LEU:CD2	1:F:209:THR:HG22	2.47	0.43
1:F:91:ARG:NH2	1:F:97:PRO:HG2	2.34	0.43
1:E:46:LEU:HD11	1:E:100:HIS:HE1	1.84	0.43
1:H:135:GLY:CA	1:H:156:TRP:CE3	2.98	0.43
1:C:203:HIS:HD2	3:C:269:HOH:O	2.02	0.42
1:B:75:PHE:CE1	1:B:168:TYR:CE2	3.07	0.42
1:G:212:ILE:HD13	1:G:236:ALA:HB3	2.00	0.42
1:C:139:ASN:OD1	1:C:168:TYR:HD1	2.02	0.42
1:D:175:TYR:HB2	1:D:205:THR:HG21	2.01	0.42
1:B:46:LEU:HD23	1:B:46:LEU:H	1.84	0.42
1:C:114:VAL:HG13	1:C:151:ASN:OD1	2.20	0.42
1:B:46:LEU:N	1:B:46:LEU:HD23	2.35	0.42
1:H:121:SER:OG	1:H:239:ILE:HD12	2.20	0.42
1:C:21:ASP:O	1:C:25:THR:HB	2.19	0.42
1:F:19:LEU:HA	1:F:135:GLY:O	2.19	0.42
1:H:89:VAL:HA	1:H:92:GLU:HB3	2.02	0.42
1:B:60:ARG:HD3	1:B:88:PHE:CE2	2.55	0.42
1:F:29:TRP:CE3	1:F:30:ARG:N	2.88	0.42
1:B:33:ILE:O	1:B:34:ALA:C	2.59	0.42
1:B:57:TRP:HA	1:B:89:VAL:HG21	2.01	0.42
1:C:212:ILE:HD11	1:C:242:LEU:HD22	2.02	0.42
1:G:77:THR:H	1:G:80:ILE:HD12	1.84	0.41
1:C:136:PRO:CG	1:C:145:LEU:HD13	2.50	0.41
1:H:65:MET:HE2	1:H:78:LEU:HD13	2.01	0.41
1:B:222:GLN:O	1:B:226:LEU:HD11	2.20	0.41
1:D:135:GLY:HA2	1:D:156:TRP:CE3	2.56	0.41
1:F:60:ARG:NH1	1:F:88:PHE:CZ	2.89	0.41
1:G:19:LEU:HA	1:G:135:GLY:O	2.21	0.41
1:B:30:ARG:HD2	1:B:218:HIS:HA	2.03	0.41
1:A:190:MET:HA	1:A:208:ALA:HB3	2.02	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:144:LEU:HD23	1:F:145:LEU:N	2.34	0.41
1:A:48:VAL:HG22	1:A:50:ALA:N	2.35	0.41
1:E:30:ARG:HD2	1:E:218:HIS:HA	2.03	0.41
1:E:52:ALA:O	1:E:56:ARG:HG3	2.21	0.41
1:B:29:TRP:CE3	1:B:30:ARG:HA	2.55	0.41
1:A:209:THR:O	1:A:233:ASP:HB2	2.21	0.41
1:F:205:THR:O	1:F:205:THR:HG22	2.20	0.41
1:E:29:TRP:CE3	1:E:30:ARG:N	2.88	0.41
1:G:200:GLU:HG3	1:G:232:TRP:HH2	1.86	0.41
1:C:56:ARG:HH11	1:C:92:GLU:HB3	1.86	0.40
1:A:136:PRO:HD2	1:A:158:VAL:O	2.21	0.40
1:F:37:VAL:HG21	1:F:53:PHE:CD2	2.56	0.40
1:C:78:LEU:HA	1:C:78:LEU:HD12	1.87	0.40
1:H:79:ASP:CG	1:H:113:HIS:HE2	2.24	0.40
1:D:205:THR:CG2	1:D:205:THR:O	2.70	0.40
1:C:11:THR:HG21	1:C:187:GLY:HA2	2.03	0.40
1:C:70:SER:O	1:C:72:ALA:N	2.55	0.40
1:C:89:VAL:HG12	1:C:89:VAL:O	2.22	0.40
1:B:227:ALA:HB1	1:B:228:PRO:CD	2.52	0.40
1:D:154:ILE:HG21	1:D:156:TRP:CE2	2.57	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	245/254 (96%)	232 (95%)	11 (4%)	2 (1%)	24 21
1	B	246/254 (97%)	235 (96%)	11 (4%)	0	100 100
1	C	243/254 (96%)	233 (96%)	9 (4%)	1 (0%)	39 43
1	D	247/254 (97%)	243 (98%)	4 (2%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	246/254 (97%)	241 (98%)	5 (2%)	0	100	100
1	F	243/254 (96%)	231 (95%)	11 (4%)	1 (0%)	39	43
1	G	244/254 (96%)	240 (98%)	3 (1%)	1 (0%)	39	43
1	H	243/254 (96%)	226 (93%)	15 (6%)	2 (1%)	24	21
All	All	1957/2032 (96%)	1881 (96%)	69 (4%)	7 (0%)	39	43

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	93	SER
1	G	45	GLN
1	H	50	ALA
1	A	186	PRO
1	C	71	GLY
1	A	172	PRO
1	H	228	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	196/200 (98%)	189 (96%)	7 (4%)	42	51
1	B	196/200 (98%)	188 (96%)	8 (4%)	37	44
1	C	195/200 (98%)	189 (97%)	6 (3%)	47	58
1	D	197/200 (98%)	194 (98%)	3 (2%)	72	82
1	E	197/200 (98%)	193 (98%)	4 (2%)	63	73
1	F	195/200 (98%)	191 (98%)	4 (2%)	61	71
1	G	195/200 (98%)	194 (100%)	1 (0%)	92	95
1	H	194/200 (97%)	189 (97%)	5 (3%)	54	65
All	All	1565/1600 (98%)	1527 (98%)	38 (2%)	57	67

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	THR
1	A	13	ARG
1	A	45	GLN
1	A	74	GLU
1	A	97	PRO
1	A	98	THR
1	A	216	VAL
1	B	45	GLN
1	B	46	LEU
1	B	48	VAL
1	B	53	PHE
1	B	76	VAL
1	B	107	GLU
1	B	223	THR
1	B	231	SER
1	C	4	VAL
1	C	45	GLN
1	C	46	LEU
1	C	92	GLU
1	C	98	THR
1	C	235	SER
1	D	45	GLN
1	D	47	GLU
1	D	172	PRO
1	E	45	GLN
1	E	74	GLU
1	E	91	ARG
1	E	251	THR
1	F	45	GLN
1	F	95	ILE
1	F	105	LEU
1	F	209	THR
1	G	224	ASP
1	H	43	ARG
1	H	56	ARG
1	H	147	ASP
1	H	222	GLN
1	H	237	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	100	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	203	HIS
1	D	45	GLN
1	E	99	ASN
1	F	151	ASN
1	F	203	HIS
1	H	45	GLN
1	H	62	GLN
1	H	180	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

Of 7 ligands modelled in this entry, 7 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	247/254 (97%)	0.10	14 (5%) 27 30	16, 33, 54, 60	0
1	B	247/254 (97%)	0.03	5 (2%) 68 72	20, 34, 52, 59	0
1	C	245/254 (96%)	0.05	10 (4%) 41 44	13, 29, 55, 61	0
1	D	248/254 (97%)	-0.32	2 (0%) 87 88	11, 19, 41, 57	0
1	E	248/254 (97%)	-0.20	5 (2%) 68 72	11, 20, 49, 59	0
1	F	245/254 (96%)	-0.03	7 (2%) 55 60	13, 30, 57, 61	0
1	G	246/254 (96%)	-0.09	3 (1%) 81 83	16, 30, 51, 59	0
1	H	245/254 (96%)	0.43	20 (8%) 14 15	23, 39, 59, 66	0
All	All	1971/2032 (96%)	-0.00	66 (3%) 50 55	11, 30, 54, 66	0

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	46	LEU	5.0
1	H	40	TYR	4.5
1	C	92	GLU	4.4
1	A	99	ASN	4.4
1	C	45	GLN	4.0
1	C	97	PRO	3.9
1	H	231	SER	3.8
1	E	251	THR	3.8
1	H	41	ALA	3.7
1	A	98	THR	3.7
1	H	47	GLU	3.5
1	A	12	GLY	3.3
1	A	94	GLY	3.3
1	H	38	ALA	3.2
1	E	45	GLN	3.2
1	C	95	ILE	3.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	H	223	THR	3.2
1	A	41	ALA	3.1
1	C	46	LEU	2.9
1	C	94	GLY	2.8
1	H	89	VAL	2.8
1	H	49	ASP	2.7
1	H	48	VAL	2.7
1	E	43	ARG	2.6
1	G	43	ARG	2.6
1	F	96	ASP	2.6
1	A	100	HIS	2.6
1	B	231	SER	2.6
1	H	228	PRO	2.5
1	A	96	ASP	2.5
1	H	215	PRO	2.5
1	E	48	VAL	2.5
1	A	91	ARG	2.5
1	H	100	HIS	2.4
1	H	42	ALA	2.4
1	B	4	VAL	2.4
1	C	88	PHE	2.4
1	A	97	PRO	2.4
1	A	46	LEU	2.3
1	A	250	SER	2.3
1	F	95	ILE	2.3
1	A	95	ILE	2.3
1	H	43	ARG	2.3
1	F	90	LEU	2.2
1	H	96	ASP	2.2
1	B	43	ARG	2.2
1	A	45	GLN	2.2
1	B	223	THR	2.2
1	F	43	ARG	2.2
1	C	50	ALA	2.2
1	D	47	GLU	2.2
1	C	98	THR	2.2
1	H	44	HIS	2.2
1	C	90	LEU	2.2
1	G	231	SER	2.1
1	D	43	ARG	2.1
1	F	87	ASP	2.1
1	E	249	GLY	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	H	232	TRP	2.1
1	F	46	LEU	2.1
1	F	99	ASN	2.1
1	G	45	GLN	2.1
1	H	220	PRO	2.1
1	B	204	ALA	2.1
1	H	208	ALA	2.0
1	A	249	GLY	2.0

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

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

6.3 Carbohydrates (i)

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95^{th} 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	LLDF	B-factors(Å^2)	Q<0.9
2	CL	E	255	1/1	0.94	0.26	8.15	43,43,43,43	0
2	CL	A	255	1/1	0.96	0.26	5.75	51,51,51,51	0
2	CL	C	255	1/1	0.94	0.25	5.72	47,47,47,47	0
2	CL	G	255	1/1	0.95	0.21	5.46	50,50,50,50	0
2	CL	D	255	1/1	0.95	0.19	2.83	44,44,44,44	0
2	CL	F	255	1/1	0.94	0.16	0.88	42,42,42,42	0
2	CL	H	255	1/1	0.93	0.11	-2.43	54,54,54,54	0

6.5 Other polymers (i)

There are no such residues in this entry.