Full wwPDB X-ray Structure Validation Report ⓘ

Sep 12, 2023 – 10:26 PM EDT

PDB ID	:	4NO0
Title	:	Crystal structure of non-phosphorylated form of RQA_V phosphopeptide bound to HLA-A2 in complex with LILRB1
Authors	:	Mohammed, F.; Stones, D.H.; Willcox, B.E.
Deposited on	:	2013-11-19
Resolution	:	2.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

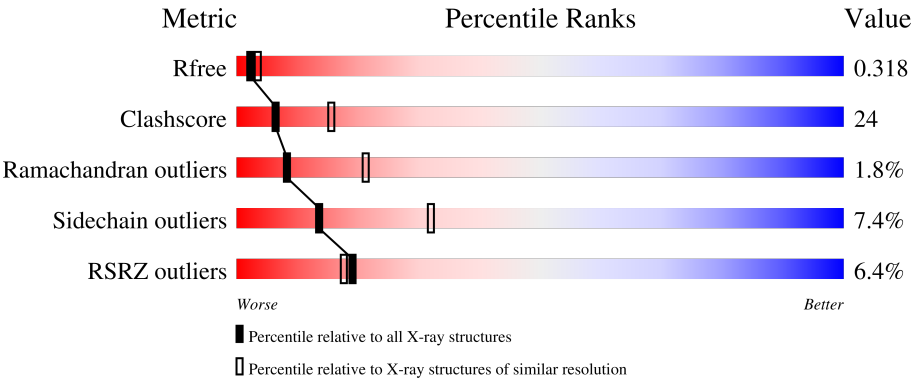
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.70 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	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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	276	6% 58% 38% .
2	B	99	3% 56% 41% .
3	C	12	8% 25% 42% 33%
4	D	195	9% 59% 35% . . .

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 4732 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 HLA class I histocompatibility antigen, A-2 alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	276	Total	C	N	O	S	61	0	0
			2254	1408	410	427	9			

- Molecule 2 is a protein called Beta-2-microglobulin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	99	Total	C	N	O	S	25	0	0
			829	528	140	158	3			

- Molecule 3 is a protein called Lymphocyte-specific protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	12	Total	C	N	O	S	0	0	0
			90	55	16	18	1			

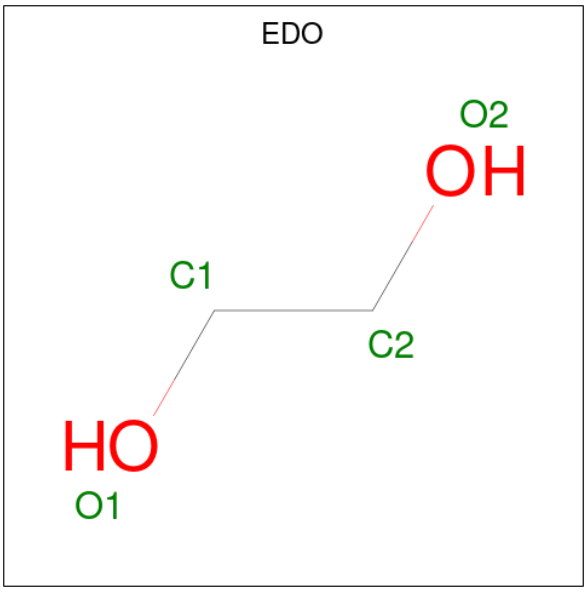
- Molecule 4 is a protein called Leukocyte immunoglobulin-like receptor subfamily B member 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	192	Total	C	N	O	S	36	0	0
			1507	954	261	286	6			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	45	PRO	LEU	SEE REMARK 999	UNP Q8NHL6
D	119	THR	ILE	SEE REMARK 999	UNP Q8NHL6
D	132	ILE	SER	SEE REMARK 999	UNP Q8NHL6

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

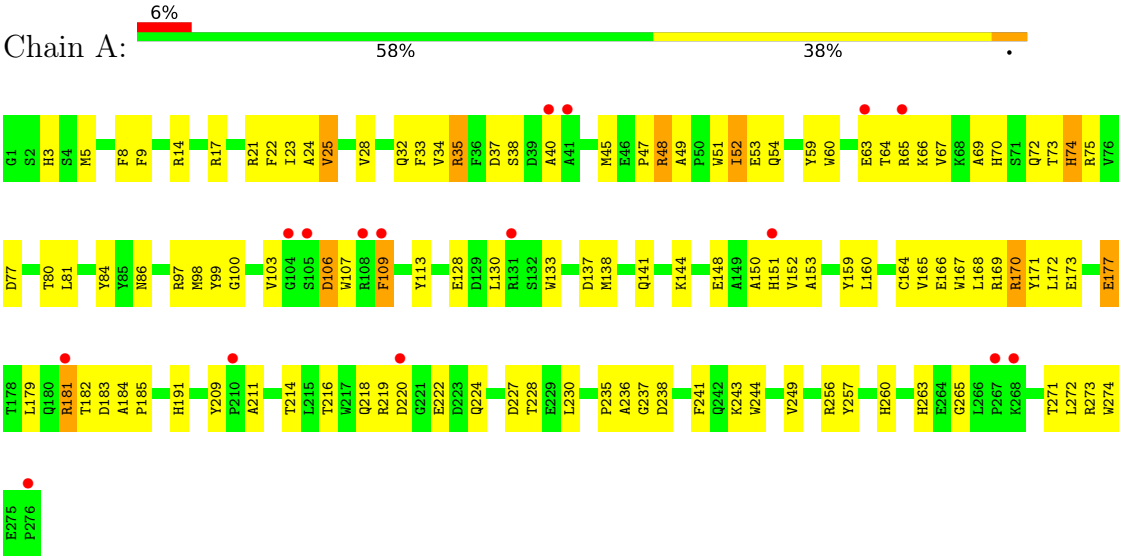
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	13	Total O 13 13	0	0
6	B	14	Total O 14 14	0	0
6	C	1	Total O 1 1	0	0
6	D	20	Total O 20 20	0	0

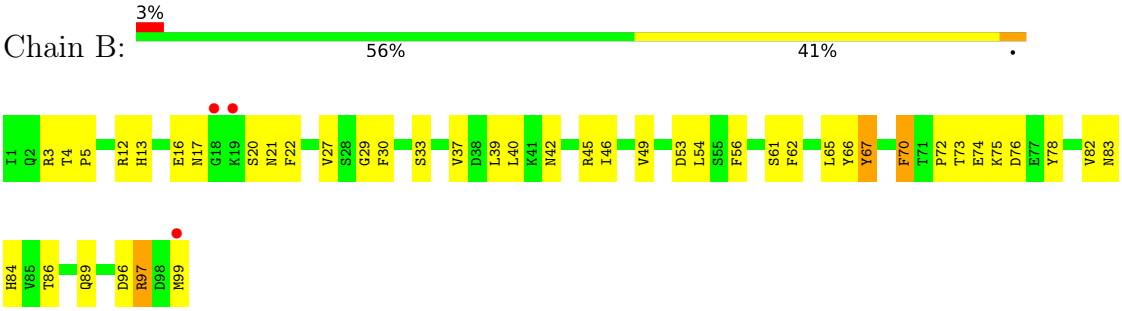
3 Residue-property plots (i)

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.

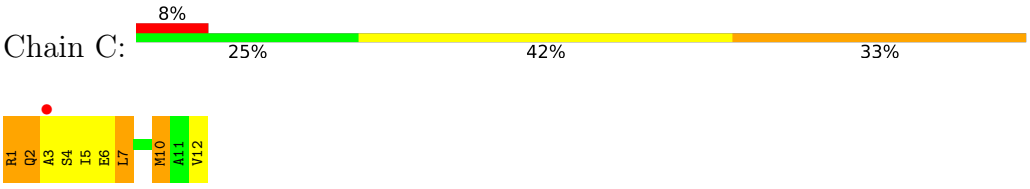
• Molecule 1: HLA class I histocompatibility antigen, A-2 alpha chain



• Molecule 2: Beta-2-microglobulin

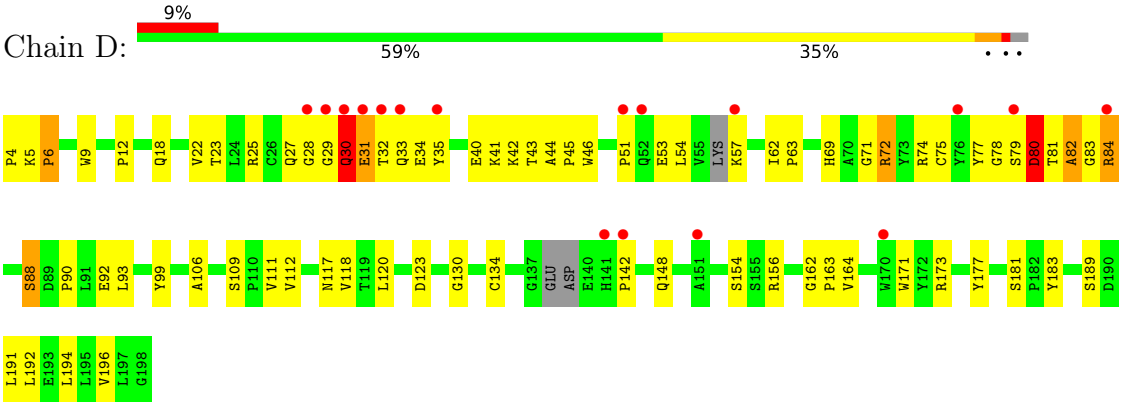


• Molecule 3: Lymphocyte-specific protein 1



• Molecule 4: Leukocyte immunoglobulin-like receptor subfamily B member 1

Chain D:


9%
59%
35%
P4 K5 P6 W9 P12 Q18 V22 T23 L24 R25 C26 Q27 G28 G29 Q30 E31 T32 Q33 E34 Y35 E40 K41 K42 T43 A44 P45 W46 P51 Q52 E53 L54 V55 LYS K57 I62 P63 H69 A70 G71 R72 Y73 R74 C75 Y76 Y77 G78 S79 D80 T81 A82 G83 R84
S88 D89 P90 L91 E92 L93 Y99 A106 S109 P110 V111 V112 N117 V118 T119 L120 D123 G130 C134 G137 GLU ASP E140 H141 P142 Q148 A151 S154 S155 R156 G162 P163 V164 W170 W171 Y172 R173 Y177 S181 P182 Y183 S189 D190
L191 L192 E193 L194 L195 V196 L197 G198

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	117.30Å 117.30Å 96.10Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	29.32 – 2.70 29.33 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.9 (29.32-2.70) 99.0 (29.33-2.70)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.73 (at 2.68Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.269 , 0.309 0.279 , 0.318	Depositor DCC
R_{free} test set	1080 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å^2)	48.9	Xtriage
Anisotropy	0.083	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 56.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.026 for -h,-k,l	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	4732	wwPDB-VP
Average B, all atoms (Å^2)	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.19% 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

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

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	0.77	0/2320	0.82	4/3149 (0.1%)
2	B	0.85	1/852 (0.1%)	0.75	0/1152
3	C	1.10	1/90 (1.1%)	1.10	1/119 (0.8%)
4	D	0.83	1/1551 (0.1%)	0.76	0/2113
All	All	0.81	3/4813 (0.1%)	0.79	5/6533 (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
4	D	0	1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	6	PRO	N-CD	5.82	1.55	1.47
2	B	56	PHE	CE1-CZ	5.82	1.48	1.37
3	C	1	ARG	CZ-NH2	5.09	1.39	1.33

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	177	GLU	CB-CA-C	5.78	121.95	110.40
3	C	1	ARG	NE-CZ-NH2	-5.63	117.48	120.30
1	A	181	ARG	CB-CA-C	-5.62	99.16	110.40
1	A	48	ARG	CB-CA-C	5.58	121.57	110.40
1	A	128	GLU	N-CA-C	5.31	125.33	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	D	30	GLN	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	2254	0	2103	110	7
2	B	829	0	794	44	0
3	C	90	0	96	24	0
4	D	1507	0	1449	55	7
5	B	4	0	6	0	0
6	A	13	0	0	1	0
6	B	14	0	0	0	0
6	C	1	0	0	0	0
6	D	20	0	0	0	0
All	All	4732	0	4448	212	7

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 24.

All (212) 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)
2:B:97:ARG:HG2	2:B:97:ARG:HH11	1.12	1.08
3:C:6:GLU:O	3:C:7:LEU:HB2	1.57	1.01
4:D:79:SER:O	4:D:80:ASP:HB2	1.60	0.98
1:A:177:GLU:O	1:A:181:ARG:HG3	1.61	0.97
2:B:97:ARG:HH11	2:B:97:ARG:CG	1.77	0.97
2:B:97:ARG:HG2	2:B:97:ARG:NH1	1.73	0.95
1:A:182:THR:O	1:A:183:ASP:OD2	1.88	0.91
4:D:75:CYS:H	4:D:88:SER:HB3	1.38	0.86
1:A:37:ASP:HB3	1:A:40:ALA:HB2	1.57	0.85
4:D:79:SER:HB2	4:D:82:ALA:HB3	1.59	0.85
1:A:236:ALA:O	2:B:12:ARG:HG3	1.74	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:30:GLN:O	4:D:32:THR:HG23	1.77	0.85
2:B:70:PHE:HD2	2:B:78:TYR:CE2	1.96	0.83
1:A:109:PHE:HB2	1:A:165:VAL:HG21	1.57	0.83
1:A:28:VAL:HG23	1:A:33:PHE:CE1	2.15	0.81
3:C:10:MET:HA	3:C:10:MET:CE	2.13	0.79
2:B:33:SER:HB3	2:B:62:PHE:CE2	2.19	0.77
1:A:103:VAL:HG22	1:A:168:LEU:HD21	1.66	0.77
1:A:52:ILE:C	1:A:54:GLN:H	1.90	0.74
1:A:74:HIS:HE1	1:A:97:ARG:NH1	1.86	0.73
1:A:159:TYR:CE1	3:C:2:GLN:O	2.41	0.73
3:C:6:GLU:O	3:C:7:LEU:CB	2.35	0.70
4:D:74:ARG:NH1	4:D:90:PRO:HD3	2.08	0.69
1:A:109:PHE:C	1:A:109:PHE:CD2	2.66	0.69
4:D:112:VAL:O	4:D:196:VAL:HA	1.93	0.69
1:A:5:MET:HB2	1:A:168:LEU:HD13	1.75	0.68
1:A:177:GLU:O	1:A:181:ARG:CG	2.42	0.66
1:A:70:HIS:ND1	3:C:5:ILE:HG21	2.11	0.66
2:B:84:HIS:CE1	2:B:86:THR:HG23	2.30	0.66
2:B:33:SER:HB3	2:B:62:PHE:CD2	2.32	0.65
3:C:10:MET:HA	3:C:10:MET:HE2	1.78	0.65
1:A:159:TYR:CZ	3:C:2:GLN:O	2.49	0.65
4:D:79:SER:CB	4:D:82:ALA:HB3	2.25	0.65
1:A:74:HIS:CE1	1:A:97:ARG:NH1	2.65	0.64
1:A:52:ILE:O	1:A:54:GLN:N	2.30	0.64
1:A:70:HIS:HA	3:C:5:ILE:HG22	1.79	0.64
1:A:106:ASP:N	1:A:106:ASP:OD2	2.31	0.63
2:B:46:ILE:O	2:B:49:VAL:HG23	1.99	0.63
1:A:81:LEU:HD21	3:C:12:VAL:HG21	1.81	0.62
4:D:51:PRO:HG2	4:D:54:LEU:HD12	1.81	0.62
1:A:103:VAL:CG2	1:A:168:LEU:HD21	2.29	0.61
2:B:70:PHE:CD2	2:B:78:TYR:CE2	2.85	0.61
1:A:74:HIS:HE1	1:A:97:ARG:HH12	1.48	0.60
2:B:73:THR:HG22	2:B:75:LYS:H	1.66	0.60
1:A:244:TRP:HE1	2:B:99:MET:HG3	1.66	0.60
1:A:52:ILE:C	1:A:54:GLN:N	2.56	0.59
1:A:219:ARG:O	1:A:220:ASP:HB2	2.03	0.59
1:A:249:VAL:HG13	1:A:257:TYR:CE1	2.38	0.59
1:A:22:PHE:HB3	1:A:38:SER:HB3	1.83	0.59
4:D:32:THR:O	4:D:35:TYR:CE1	2.57	0.58
4:D:112:VAL:HG11	4:D:118:VAL:HB	1.85	0.58
4:D:32:THR:O	4:D:35:TYR:CZ	2.57	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:67:TYR:N	2:B:67:TYR:CD1	2.72	0.58
2:B:16:GLU:O	2:B:72:PRO:HG2	2.04	0.57
2:B:67:TYR:H	2:B:67:TYR:HD1	1.50	0.57
2:B:29:GLY:HA2	2:B:61:SER:HB2	1.87	0.57
3:C:10:MET:CA	3:C:10:MET:HE3	2.35	0.57
1:A:166:GLU:HG3	1:A:169:ARG:HH21	1.70	0.57
4:D:79:SER:O	4:D:80:ASP:CB	2.42	0.57
1:A:133:TRP:NE1	1:A:153:ALA:HB2	2.20	0.56
1:A:271:THR:C	1:A:272:LEU:HD23	2.25	0.56
4:D:111:VAL:O	4:D:111:VAL:HG23	2.05	0.56
4:D:83:GLY:O	4:D:84:ARG:HB2	2.06	0.56
1:A:74:HIS:CE1	1:A:97:ARG:HH12	2.21	0.56
2:B:27:VAL:HG23	2:B:27:VAL:O	2.06	0.56
1:A:22:PHE:HE2	1:A:67:VAL:HG22	1.70	0.56
1:A:130:LEU:HD13	1:A:160:LEU:HD12	1.87	0.56
1:A:81:LEU:CD2	3:C:12:VAL:HG21	2.35	0.56
1:A:159:TYR:HD2	1:A:160:LEU:HD23	1.71	0.55
3:C:10:MET:HA	3:C:10:MET:HE3	1.88	0.55
3:C:10:MET:CE	3:C:10:MET:CA	2.84	0.55
1:A:9:PHE:CE2	1:A:99:TYR:CE2	2.95	0.55
2:B:12:ARG:HB2	2:B:22:PHE:HB2	1.88	0.55
1:A:170:ARG:HG3	1:A:170:ARG:HH11	1.72	0.55
1:A:103:VAL:HG13	1:A:168:LEU:HD23	1.88	0.54
4:D:28:GLY:O	4:D:30:GLN:N	2.39	0.54
1:A:21:ARG:NH2	1:A:37:ASP:OD1	2.37	0.54
1:A:35:ARG:O	1:A:35:ARG:HG3	2.06	0.54
4:D:72:ARG:HG2	4:D:92:GLU:HG2	1.89	0.54
1:A:9:PHE:HE2	1:A:99:TYR:CE2	2.26	0.54
1:A:159:TYR:CD2	1:A:160:LEU:HD23	2.43	0.54
2:B:12:ARG:NH1	2:B:22:PHE:CE2	2.76	0.54
4:D:78:GLY:CA	4:D:83:GLY:HA3	2.38	0.54
1:A:107:TRP:O	1:A:169:ARG:HD3	2.09	0.53
4:D:53:GLU:O	4:D:57:LYS:HG3	2.08	0.53
1:A:211:ALA:HB2	1:A:241:PHE:CE2	2.44	0.53
1:A:59:TYR:HE2	1:A:167:TRP:CZ3	2.26	0.53
1:A:77:ASP:OD1	3:C:12:VAL:HG22	2.08	0.53
4:D:43:THR:O	4:D:45:PRO:HD3	2.09	0.53
1:A:103:VAL:CG1	1:A:168:LEU:HD23	2.39	0.53
2:B:40:LEU:HD22	2:B:45:ARG:HA	1.90	0.53
1:A:159:TYR:OH	3:C:1:ARG:O	2.26	0.53
2:B:73:THR:HG22	2:B:74:GLU:N	2.23	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:171:TRP:HB3	4:D:191:LEU:HD11	1.91	0.52
2:B:39:LEU:C	2:B:40:LEU:HD23	2.30	0.52
1:A:184:ALA:HB2	1:A:265:GLY:O	2.09	0.52
1:A:103:VAL:CG1	1:A:165:VAL:HG13	2.38	0.52
1:A:191:HIS:HB2	1:A:274:TRP:CH2	2.44	0.52
4:D:4:PRO:O	4:D:5:LYS:HB2	2.09	0.52
4:D:112:VAL:CG2	4:D:164:VAL:HG21	2.39	0.52
2:B:37:VAL:HB	2:B:66:TYR:CE2	2.44	0.52
4:D:112:VAL:HG21	4:D:164:VAL:HG21	1.92	0.52
1:A:59:TYR:CE2	1:A:167:TRP:CZ3	2.98	0.52
1:A:271:THR:O	1:A:272:LEU:HD23	2.10	0.52
1:A:33:PHE:CD2	1:A:34:VAL:HG13	2.45	0.51
1:A:107:TRP:CZ2	1:A:172:LEU:HD13	2.46	0.51
4:D:71:GLY:HA2	4:D:183:TYR:CD1	2.46	0.51
2:B:96:ASP:O	2:B:97:ARG:C	2.48	0.50
1:A:25:VAL:HG23	1:A:32:GLN:HG3	1.94	0.50
4:D:117:ASN:ND2	4:D:163:PRO:HA	2.27	0.50
1:A:230:LEU:HD22	1:A:243:LYS:HE3	1.93	0.50
4:D:106:ALA:HA	4:D:120:LEU:HD23	1.93	0.50
2:B:29:GLY:HA2	2:B:61:SER:CB	2.40	0.50
1:A:23:ILE:HG12	1:A:37:ASP:OD1	2.12	0.50
2:B:17:ASN:ND2	2:B:97:ARG:HH21	2.10	0.50
4:D:81:THR:O	4:D:82:ALA:HB2	2.12	0.50
1:A:224:GLN:NE2	6:A:312:HOH:O	2.45	0.49
1:A:63:GLU:OE2	3:C:1:ARG:HB2	2.12	0.49
1:A:103:VAL:HG12	1:A:165:VAL:HG13	1.94	0.49
4:D:78:GLY:HA2	4:D:83:GLY:HA3	1.94	0.49
4:D:22:VAL:HG13	4:D:62:ILE:HD12	1.94	0.49
4:D:72:ARG:HG3	4:D:183:TYR:OH	2.13	0.49
2:B:21:ASN:HB3	2:B:70:PHE:CE1	2.47	0.49
1:A:80:THR:HG22	1:A:84:TYR:CE1	2.48	0.49
1:A:33:PHE:O	1:A:48:ARG:N	2.46	0.49
1:A:49:ALA:HB1	1:A:51:TRP:NE1	2.28	0.49
2:B:12:ARG:CB	2:B:22:PHE:HB2	2.43	0.48
4:D:28:GLY:C	4:D:30:GLN:N	2.66	0.48
1:A:59:TYR:CE2	1:A:167:TRP:HZ3	2.32	0.48
2:B:17:ASN:HD21	2:B:97:ARG:HH21	1.61	0.48
2:B:67:TYR:N	2:B:67:TYR:HD1	2.11	0.47
4:D:173:ARG:HD3	4:D:189:SER:O	2.14	0.47
1:A:144:LYS:O	1:A:148:GLU:HG2	2.13	0.47
1:A:224:GLN:OE1	1:A:224:GLN:HA	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:133:TRP:HE1	1:A:153:ALA:HB2	1.78	0.47
4:D:9:TRP:CE2	4:D:25:ARG:HB2	2.49	0.47
1:A:184:ALA:HB1	1:A:185:PRO:HD2	1.97	0.47
1:A:224:GLN:O	1:A:228:THR:OG1	2.27	0.46
4:D:9:TRP:CZ2	4:D:25:ARG:HB3	2.51	0.46
4:D:123:ASP:OD2	4:D:156:ARG:HB2	2.16	0.46
1:A:3:HIS:HB2	1:A:103:VAL:HG23	1.96	0.46
2:B:42:ASN:HD21	2:B:76:ASP:HA	1.81	0.46
4:D:34:GLU:O	4:D:77:TYR:HA	2.16	0.46
2:B:89:GLN:NE2	4:D:18:GLN:OE1	2.49	0.46
1:A:150:ALA:O	1:A:151:HIS:HB2	2.15	0.45
1:A:28:VAL:HG23	1:A:33:PHE:HE1	1.76	0.45
1:A:28:VAL:CG2	1:A:33:PHE:CE1	2.94	0.45
1:A:47:PRO:HB3	1:A:60:TRP:CZ2	2.51	0.45
1:A:235:PRO:HG2	2:B:65:LEU:HD22	1.99	0.45
1:A:263:HIS:CE1	1:A:265:GLY:H	2.34	0.45
1:A:72:GLN:O	1:A:75:ARG:HB3	2.16	0.45
1:A:137:ASP:OD1	1:A:137:ASP:C	2.54	0.45
1:A:168:LEU:O	1:A:171:TYR:N	2.50	0.45
1:A:237:GLY:O	2:B:12:ARG:NH2	2.49	0.45
1:A:3:HIS:HB2	1:A:103:VAL:CG2	2.47	0.45
1:A:47:PRO:HB3	1:A:60:TRP:CH2	2.52	0.45
1:A:37:ASP:HB3	1:A:40:ALA:CB	2.37	0.44
1:A:23:ILE:HG22	1:A:24:ALA:N	2.33	0.44
2:B:13:HIS:HB2	2:B:21:ASN:OD1	2.17	0.44
4:D:117:ASN:ND2	4:D:162:GLY:HA3	2.33	0.44
4:D:75:CYS:O	4:D:88:SER:N	2.39	0.44
1:A:165:VAL:HG12	1:A:169:ARG:CZ	2.47	0.44
1:A:70:HIS:CE1	3:C:5:ILE:HG21	2.53	0.44
1:A:220:ASP:OD2	1:A:256:ARG:NH2	2.48	0.44
1:A:5:MET:O	1:A:100:GLY:HA3	2.17	0.44
1:A:218:GLN:CD	1:A:260:HIS:NE2	2.72	0.43
4:D:62:ILE:HA	4:D:63:PRO:HD2	1.87	0.43
1:A:28:VAL:HG23	1:A:33:PHE:CD1	2.52	0.43
2:B:29:GLY:HA2	2:B:61:SER:OG	2.19	0.43
4:D:42:LYS:HB2	4:D:42:LYS:HE3	1.85	0.43
4:D:44:ALA:HB1	4:D:46:TRP:CD1	2.53	0.43
4:D:134:CYS:HB3	4:D:142:PRO:HB3	2.01	0.43
1:A:77:ASP:OD1	3:C:12:VAL:HG13	2.19	0.43
4:D:69:HIS:O	4:D:93:LEU:HD23	2.19	0.42
4:D:118:VAL:HG11	4:D:194:LEU:HD11	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:70:HIS:CG	3:C:5:ILE:HG21	2.54	0.42
4:D:117:ASN:HD22	4:D:163:PRO:HA	1.83	0.42
1:A:66:LYS:O	1:A:69:ALA:HB3	2.19	0.42
1:A:97:ARG:HG2	1:A:98:MET:N	2.34	0.42
1:A:45:MET:N	1:A:64:THR:OG1	2.39	0.42
1:A:138:MET:SD	1:A:141:GLN:NE2	2.92	0.42
4:D:111:VAL:O	4:D:111:VAL:CG2	2.66	0.42
4:D:51:PRO:CG	4:D:54:LEU:HD12	2.48	0.42
1:A:37:ASP:O	1:A:40:ALA:HB3	2.19	0.42
1:A:179:LEU:H	1:A:179:LEU:HG	1.66	0.42
3:C:2:GLN:HB3	3:C:3:ALA:H	1.64	0.42
2:B:13:HIS:C	2:B:21:ASN:HD21	2.23	0.42
4:D:30:GLN:O	4:D:32:THR:N	2.51	0.42
1:A:69:ALA:HB1	3:C:6:GLU:HA	2.02	0.42
1:A:81:LEU:HA	1:A:84:TYR:HB2	2.02	0.42
1:A:8:PHE:CE2	1:A:98:MET:HG3	2.55	0.41
2:B:5:PRO:HB3	2:B:30:PHE:HB3	2.02	0.41
2:B:84:HIS:ND1	2:B:86:THR:HG23	2.34	0.41
4:D:28:GLY:C	4:D:30:GLN:H	2.23	0.41
2:B:82:VAL:HG12	2:B:83:ASN:N	2.36	0.41
1:A:73:THR:HA	3:C:7:LEU:HD13	2.03	0.41
2:B:29:GLY:CA	2:B:61:SER:HB2	2.51	0.41
1:A:52:ILE:HD12	1:A:52:ILE:HA	1.76	0.41
1:A:14:ARG:HB3	1:A:17:ARG:HB2	2.01	0.41
1:A:165:VAL:O	1:A:168:LEU:HB3	2.20	0.41
2:B:53:ASP:O	2:B:54:LEU:C	2.58	0.41
4:D:40:GLU:O	4:D:41:LYS:HB2	2.20	0.41
4:D:51:PRO:HB2	4:D:53:GLU:CG	2.50	0.41
1:A:33:PHE:HD2	1:A:34:VAL:HG13	1.85	0.41
1:A:152:VAL:HG13	3:C:10:MET:HE1	2.02	0.41
4:D:22:VAL:HG22	4:D:23:THR:N	2.35	0.41
4:D:31:GLU:H	4:D:31:GLU:HG3	1.40	0.41
4:D:130:GLY:HA3	4:D:177:TYR:CZ	2.56	0.41
1:A:159:TYR:OH	3:C:2:GLN:O	2.37	0.40
1:A:5:MET:CE	1:A:164:CYS:SG	3.09	0.40
2:B:29:GLY:C	2:B:61:SER:HB2	2.42	0.40
2:B:73:THR:CG2	2:B:74:GLU:N	2.85	0.40

All (7) 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:65:ARG:NH2	4:D:80:ASP:O[4_655]	1.20	1.00
1:A:65:ARG:NH2	4:D:80:ASP:C[4_655]	1.30	0.90
1:A:65:ARG:CZ	4:D:80:ASP:O[4_655]	1.63	0.57
1:A:65:ARG:NE	4:D:80:ASP:O[4_655]	1.95	0.25
1:A:65:ARG:NE	4:D:81:THR:CA[4_655]	1.97	0.23
1:A:65:ARG:NH2	4:D:81:THR:N[4_655]	2.02	0.18
1:A:65:ARG:CZ	4:D:81:THR:CA[4_655]	2.17	0.03

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	274/276 (99%)	242 (88%)	31 (11%)	1 (0%)	34 60
2	B	97/99 (98%)	90 (93%)	7 (7%)	0	100 100
3	C	10/12 (83%)	5 (50%)	2 (20%)	3 (30%)	0 0
4	D	186/195 (95%)	167 (90%)	13 (7%)	6 (3%)	4 9
All	All	567/582 (97%)	504 (89%)	53 (9%)	10 (2%)	8 21

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	53	GLU
3	C	2	GLN
3	C	4	SER
4	D	6	PRO
4	D	80	ASP
4	D	82	ALA
4	D	84	ARG
4	D	29	GLY
3	C	7	LEU
4	D	12	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	232/232 (100%)	215 (93%)	17 (7%)	14 33
2	B	94/94 (100%)	88 (94%)	6 (6%)	17 39
3	C	10/10 (100%)	9 (90%)	1 (10%)	7 18
4	D	166/169 (98%)	153 (92%)	13 (8%)	12 29
All	All	502/505 (99%)	465 (93%)	37 (7%)	13 32

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

Mol	Chain	Res	Type
1	A	25	VAL
1	A	35	ARG
1	A	52	ILE
1	A	74	HIS
1	A	86	ASN
1	A	106	ASP
1	A	109	PHE
1	A	113	TYR
1	A	170	ARG
1	A	173	GLU
1	A	209	TYR
1	A	214	THR
1	A	216	THR
1	A	222	GLU
1	A	227	ASP
1	A	238	ASP
1	A	273	ARG
2	B	3	ARG
2	B	4	THR
2	B	20	SER
2	B	67	TYR
2	B	70	PHE
2	B	97	ARG
3	C	10	MET

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Mol	Chain	Res	Type
4	D	27	GLN
4	D	30	GLN
4	D	31	GLU
4	D	33	GLN
4	D	72	ARG
4	D	80	ASP
4	D	88	SER
4	D	99	TYR
4	D	109	SER
4	D	148	GLN
4	D	154	SER
4	D	181	SER
4	D	192	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	74	HIS
1	A	86	ASN
1	A	87	GLN
1	A	141	GLN
1	A	174	ASN
1	A	218	GLN
1	A	226	GLN
2	B	13	HIS
2	B	42	ASN
2	B	89	GLN
3	C	2	GLN
4	D	117	ASN
4	D	180	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

1 ligand is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	EDO	B	101	-	3,3,3	1.16	0	2,2,2	0.18	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	EDO	B	101	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	101	EDO	O1-C1-C2-O2

There are no ring outliers.

No monomer is involved in short contacts.

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, 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	276/276 (100%)	0.30	16 (5%) 23 22	17, 55, 96, 112	13 (4%)
2	B	99/99 (100%)	0.05	3 (3%) 50 51	18, 43, 75, 96	6 (6%)
3	C	12/12 (100%)	0.96	1 (8%) 11 9	58, 73, 109, 114	0
4	D	192/195 (98%)	0.29	17 (8%) 9 7	16, 52, 107, 130	7 (3%)
All	All	579/582 (99%)	0.27	37 (6%) 19 18	16, 52, 98, 130	26 (4%)

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	D	28	GLY	5.7
4	D	32	THR	5.7
4	D	29	GLY	4.0
1	A	268	LYS	3.8
1	A	151	HIS	3.8
1	A	41	ALA	3.6
1	A	40	ALA	3.6
4	D	33	GLN	3.5
4	D	30	GLN	3.5
4	D	31	GLU	3.3
4	D	141	HIS	3.3
4	D	142	PRO	3.2
3	C	3	ALA	3.1
2	B	99	MET	3.1
1	A	276	PRO	3.0
1	A	105	SER	2.9
1	A	108	ARG	2.7
4	D	84	ARG	2.6
2	B	18	GLY	2.6
4	D	79	SER	2.5
1	A	65	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
4	D	52	GLN	2.5
4	D	76	TYR	2.4
1	A	181	ARG	2.4
2	B	19	LYS	2.4
1	A	104	GLY	2.4
4	D	35	TYR	2.3
1	A	210	PRO	2.3
1	A	131	ARG	2.3
4	D	170	TRP	2.2
1	A	267	PRO	2.1
1	A	109	PHE	2.1
4	D	51	PRO	2.1
4	D	151	ALA	2.1
1	A	220	ASP	2.1
1	A	63	GLU	2.1
4	D	57	LYS	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	B-factors(Å^2)	Q<0.9
5	EDO	B	101	4/4	0.89	0.27	56,56,56,56	0

6.5 Other polymers (i)

There are no such residues in this entry.