Full wwPDB X-ray Structure Validation Report ⓘ

Sep 9, 2024 – 10:13 am BST

PDB ID	:	8RTX
Title	:	Crystal Structure of an Anti-idiotype Fab Fragment
Authors	:	Eronen, V.; Parkkinen, T.; Hakulinen, N.; Rouvinen, J.
Deposited on	:	2024-01-29
Resolution	:	2.70 Å(reported)

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	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.002 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.2

1 Overall quality at a glance ⓘ

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	Percentile Ranks	Value
Rfree		0.276
Clashscore		7
Ramachandran outliers		0.1%
Sidechain outliers		2.3%
RSRZ outliers		0

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
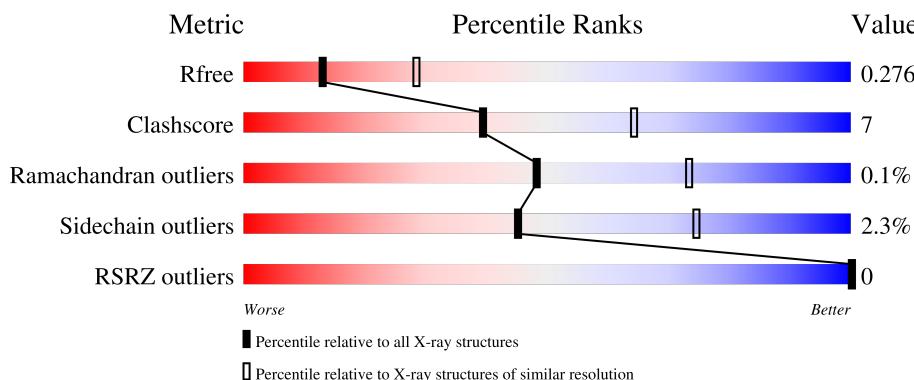
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	3333 (2.70-2.70)
Clashscore	180529	3684 (2.70-2.70)
Ramachandran outliers	177936	3633 (2.70-2.70)
Sidechain outliers	177891	3633 (2.70-2.70)
RSRZ outliers	164620	3333 (2.70-2.70)

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	214	86% 11% ·
1	C	214	79% 21%
1	E	214	83% 16% ·
2	B	227	77% 17% · ·
2	D	227	78% 18% · ·

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Mol	Chain	Length	Quality of chain
2	F	227	

79%   16%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 9738 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 Anti-IC Fab fragment B12 light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	214	Total	C	N	O	S	0	0	0
			1625	1016	273	330	6			
1	C	214	Total	C	N	O	S	0	0	0
			1625	1016	273	330	6			
1	E	214	Total	C	N	O	S	0	0	0
			1625	1016	273	330	6			

- Molecule 2 is a protein called Anti-IC Fab fragment B12 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	221	Total	C	N	O	S	0	0	0
			1621	1013	277	324	7			
2	D	221	Total	C	N	O	S	0	0	0
			1621	1013	277	324	7			
2	F	221	Total	C	N	O	S	0	0	0
			1621	1013	277	324	7			

3 Residue-property plots ⓘ

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: Anti-IC Fab fragment B12 light chain
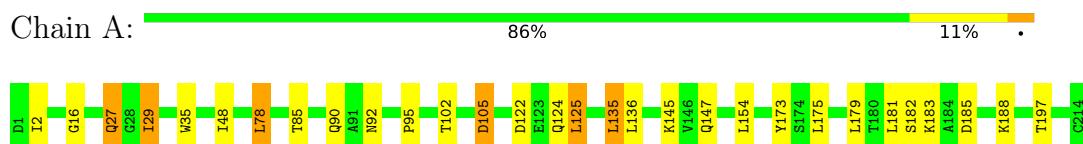
Chain A:

• Molecule 1: Anti-IC Fab fragment B12 light chain

Chain C:

• Molecule 1: Anti-IC Fab fragment B12 light chain

Chain E:

• Molecule 2: Anti-IC Fab fragment B12 heavy chain
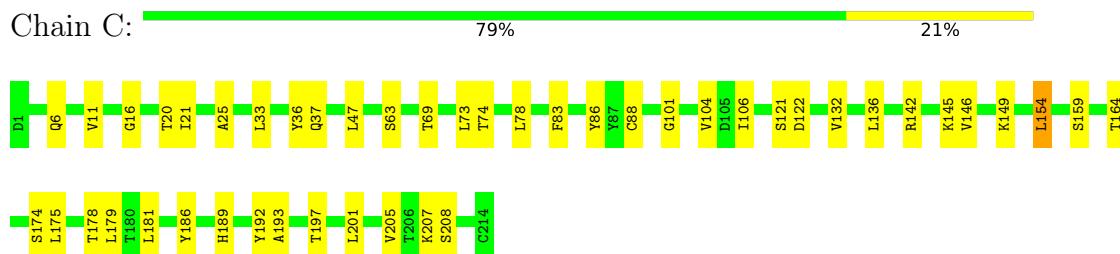
Chain B:
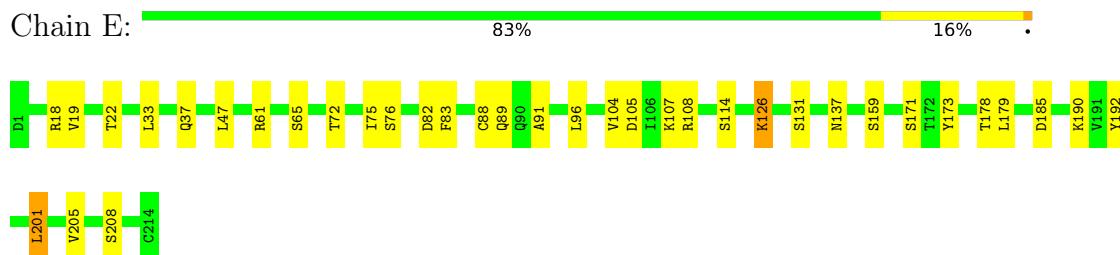
• Molecule 2: Anti-IC Fab fragment B12 heavy chain
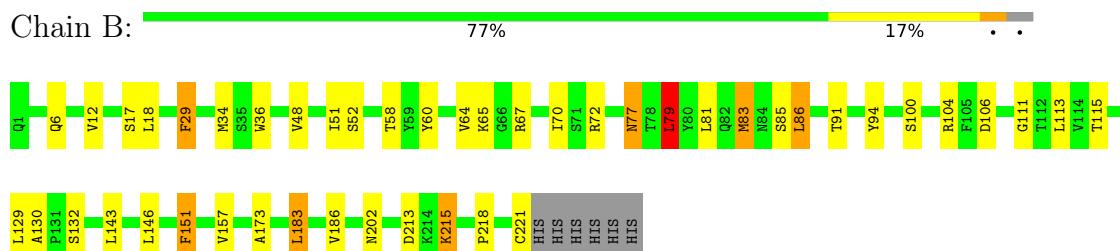
Chain D:

• Molecule 2: Anti-IC Fab fragment B12 heavy chain

Chain F:
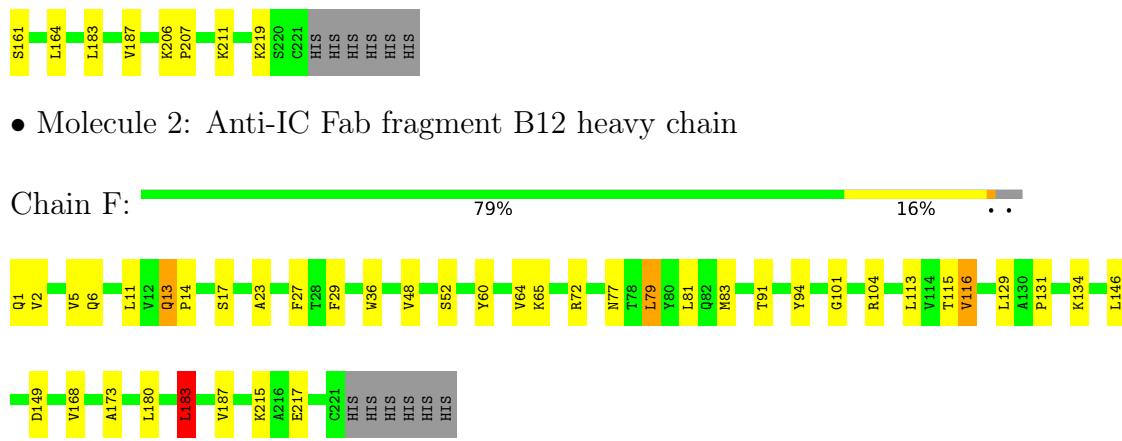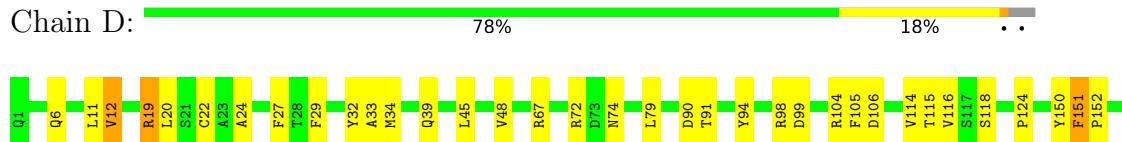
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α, β, γ	81.86Å　81.86Å　181.93Å 90.00°　90.00°　120.00°	Depositor
Resolution (Å)	40.93　–　2.70 40.93　–　2.70	Depositor EDS
% Data completeness (in resolution range)	94.5 (40.93-2.70) 85.0 (40.93-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.54 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.247　,　0.269 0.250　,　0.276	Depositor DCC
R_{free} test set	30009 reflections (5.78%)	wwPDB-VP
Wilson B-factor (Å²)	69.9	Xtriage
Anisotropy	0.508	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.31 , 60.3	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.016 for -h,-k,l 0.459 for h,-h-k,-l 0.023 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	9738	wwPDB-VP
Average B, all atoms (Å²)	93.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.85% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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	0.46	0/1660	0.86	5/2254 (0.2%)
1	C	0.50	0/1660	0.83	4/2254 (0.2%)
1	E	0.45	0/1660	0.82	2/2254 (0.1%)
2	B	0.54	0/1658	1.04	11/2255 (0.5%)
2	D	0.47	0/1658	0.93	6/2255 (0.3%)
2	F	0.47	0/1658	0.90	3/2255 (0.1%)
All	All	0.48	0/9954	0.90	31/13527 (0.2%)

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
2	D	0	1

There are no bond length outliers.

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	106	ASP	CB-CG-OD1	11.37	128.53	118.30
2	B	29	PHE	CB-CG-CD1	9.12	127.19	120.80
2	F	79	LEU	CA-CB-CG	8.97	135.93	115.30
1	A	29	ILE	CG1-CB-CG2	-8.71	92.23	111.40
2	B	29	PHE	CB-CG-CD2	-8.30	114.99	120.80
1	E	201	LEU	CA-CB-CG	7.75	133.14	115.30
2	F	113	LEU	CA-CB-CG	7.38	132.27	115.30
1	A	181	LEU	CA-CB-CG	7.17	131.78	115.30
2	B	113	LEU	CA-CB-CG	7.14	131.73	115.30
2	B	79	LEU	CB-CG-CD1	-6.82	99.41	111.00
1	C	154	LEU	CA-CB-CG	6.67	130.63	115.30
2	B	151	PHE	CB-CG-CD1	6.64	125.45	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	34	MET	CA-CB-CG	6.51	124.36	113.30
2	D	19	ARG	CA-CB-CG	6.48	127.66	113.40
2	B	86	LEU	CB-CG-CD2	-6.11	100.61	111.00
2	F	183	LEU	CB-CG-CD2	-5.93	100.92	111.00
2	D	183	LEU	CA-CB-CG	5.83	128.72	115.30
2	B	183	LEU	CA-CB-CG	5.75	128.52	115.30
2	D	151	PHE	CB-CG-CD1	5.72	124.80	120.80
2	B	143	LEU	CA-CB-CG	5.66	128.32	115.30
1	A	29	ILE	CA-CB-CG2	5.56	122.01	110.90
1	A	135	LEU	CA-CB-CG	5.55	128.06	115.30
1	C	181	LEU	CA-CB-CG	5.48	127.90	115.30
1	C	136	LEU	CA-CB-CG	5.29	127.48	115.30
2	D	118	SER	N-CA-CB	-5.28	102.58	110.50
1	C	154	LEU	CB-CG-CD2	-5.27	102.03	111.00
2	B	106	ASP	CB-CG-OD2	-5.16	113.66	118.30
1	E	126	LYS	CD-CE-NZ	5.14	123.53	111.70
1	A	78	LEU	CB-CG-CD2	-5.11	102.31	111.00
2	D	32	TYR	CB-CG-CD1	5.07	124.04	121.00
2	B	77	ASN	CB-CG-OD1	-5.02	111.56	121.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	D	104	ARG	Sidechain

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1625	0	1579	17	0
1	C	1625	0	1579	26	0
1	E	1625	0	1580	18	0
2	B	1621	0	1585	29	0
2	D	1621	0	1585	21	0
2	F	1621	0	1586	20	0
All	All	9738	0	9494	127	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 7.

All (127) 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:130:ALA:HB1	2:B:218:PRO:HA	1.74	0.68
2:D:11:LEU:HA	2:D:115:THR:O	1.95	0.67
1:C:6:GLN:HG2	1:C:21:ILE:HD11	1.76	0.66
2:F:17:SER:HA	2:F:83:MET:O	1.95	0.65
2:F:13:GLN:HG3	2:F:14:PRO:HD2	1.81	0.63
1:C:63:SER:HG	1:C:74:THR:HG1	1.47	0.63
2:B:67:ARG:NH2	2:B:85:SER:O	2.33	0.62
2:B:52:SER:O	2:B:72:ARG:NH1	2.33	0.62
1:C:33:LEU:HD11	1:C:88:CYS:HB2	1.82	0.61
2:D:91:THR:HG22	2:D:115:THR:HA	1.82	0.61
1:C:36:TYR:OH	2:D:105:PHE:HB2	2.02	0.59
1:A:2:ILE:HD13	1:A:29:ILE:HD11	1.84	0.59
2:B:17:SER:HA	2:B:83:MET:O	2.02	0.59
1:E:201:LEU:HD21	1:E:205:VAL:HG22	1.84	0.59
2:B:29:PHE:HE1	2:B:34:MET:HG3	1.68	0.59
2:B:51:ILE:HG12	2:B:58:THR:HG22	1.85	0.58
1:C:20:THR:HG22	1:C:74:THR:HG22	1.85	0.57
2:D:12:VAL:HG13	2:D:116:VAL:HG22	1.87	0.57
2:D:211:LYS:HB2	1:E:107:LYS:HE2	1.85	0.56
2:F:48:VAL:HG22	2:F:64:VAL:HG11	1.87	0.56
2:D:29:PHE:O	2:D:72:ARG:NH2	2.39	0.56
2:B:202:ASN:ND2	2:B:213:ASP:OD1	2.37	0.56
2:B:60:TYR:HD2	2:B:65:LYS:HA	1.71	0.56
1:C:192:TYR:O	1:C:208:SER:HA	2.06	0.56
1:A:136:LEU:HD23	1:A:175:LEU:HD22	1.89	0.56
1:C:193:ALA:HA	1:C:207:LYS:O	2.06	0.55
2:F:60:TYR:HD2	2:F:65:LYS:HA	1.71	0.55
2:B:36:TRP:NE1	2:B:81:LEU:HB2	2.21	0.55
1:C:201:LEU:HD13	1:C:205:VAL:HG13	1.88	0.54
1:A:2:ILE:HG12	1:A:27:GLN:HG3	1.89	0.54
2:D:161:SER:O	2:D:161:SER:OG	2.26	0.53
1:C:21:ILE:HG23	1:C:73:LEU:HB3	1.90	0.53
1:C:25:ALA:O	1:C:69:THR:OG1	2.27	0.53
2:F:215:LYS:HD2	2:F:217:GLU:HG3	1.91	0.53
1:A:105:ASP:OD1	1:A:173:TYR:OH	2.27	0.52
2:D:6:GLN:NE2	2:D:94:TYR:O	2.40	0.52
1:E:37:GLN:HB2	1:E:47:LEU:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:90:GLN:NE2	1:A:95:PRO:O	2.43	0.52
2:B:12:VAL:HG11	2:B:18:LEU:HB2	1.91	0.52
2:B:34:MET:CG	2:B:79:LEU:HD11	2.40	0.51
1:C:11:VAL:HG13	1:C:104:VAL:HG23	1.92	0.51
1:A:16:GLY:N	1:A:78:LEU:O	2.37	0.51
2:F:173:ALA:HA	2:F:183:LEU:HB3	1.93	0.51
2:B:34:MET:HG3	2:B:79:LEU:HD11	1.94	0.50
1:E:61:ARG:NE	1:E:82:ASP:OD2	2.37	0.50
1:E:65:SER:OG	1:E:72:THR:OG1	2.30	0.50
1:C:186:TYR:O	1:C:192:TYR:OH	2.31	0.49
1:E:22:THR:HG22	1:E:72:THR:HG22	1.94	0.49
2:B:48:VAL:HG13	2:B:64:VAL:HG21	1.95	0.49
2:D:98:ARG:NE	2:D:106:ASP:O	2.45	0.49
2:F:11:LEU:HA	2:F:115:THR:O	2.12	0.49
1:E:114:SER:HB2	1:E:137:ASN:HB3	1.94	0.48
1:A:136:LEU:HB2	1:A:175:LEU:HB3	1.96	0.48
2:B:132:SER:HB2	2:B:221:CYS:HB2	1.95	0.48
2:D:124:PRO:HB3	2:D:150:TYR:HB3	1.96	0.47
1:E:83:PHE:HA	1:E:104:VAL:HG23	1.97	0.47
1:E:91:ALA:HA	1:E:96:LEU:HD23	1.96	0.47
2:D:22:CYS:HB3	2:D:79:LEU:HB3	1.97	0.47
2:B:77:ASN:OD1	2:B:77:ASN:N	2.46	0.47
2:B:215:LYS:HB3	2:B:215:LYS:HE3	1.63	0.47
2:D:67:ARG:NH2	2:D:90:ASP:OD2	2.47	0.47
2:F:149:ASP:HA	2:F:180:LEU:HB3	1.97	0.47
1:A:135:LEU:HD12	2:B:186:VAL:HG11	1.96	0.47
1:C:16:GLY:N	1:C:78:LEU:O	2.34	0.47
1:A:35:TRP:HB2	1:A:48:ILE:HB	1.97	0.46
2:F:29:PHE:HZ	2:F:79:LEU:HB2	1.80	0.46
2:F:52:SER:O	2:F:72:ARG:NH1	2.48	0.46
1:C:37:GLN:HB2	1:C:47:LEU:HD11	1.96	0.46
2:F:36:TRP:NE1	2:F:81:LEU:HB2	2.31	0.46
2:B:94:TYR:O	2:B:111:GLY:HA2	2.16	0.46
2:F:6:GLN:NE2	2:F:94:TYR:O	2.41	0.46
1:A:147:GLN:NE2	1:A:154:LEU:HD21	2.31	0.46
2:F:29:PHE:HD2	2:F:77:ASN:HA	1.79	0.46
1:A:27:GLN:O	1:A:29:ILE:HD13	2.16	0.46
1:E:105:ASP:OD1	1:E:173:TYR:OH	2.34	0.45
1:C:146:VAL:HG21	1:C:175:LEU:HD22	1.98	0.45
1:A:182:SER:OG	1:A:185:ASP:OD1	2.34	0.45
1:C:132:VAL:HG23	1:C:179:LEU:HB3	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:83:PHE:HA	1:C:104:VAL:HG13	1.98	0.45
2:F:2:VAL:HG23	2:F:27:PHE:CD1	2.51	0.45
1:C:122:ASP:OD1	2:D:219:LYS:NZ	2.50	0.45
2:B:51:ILE:HD12	2:B:70:ILE:HG12	2.00	0.44
2:F:91:THR:HG22	2:F:116:VAL:H	1.81	0.44
1:C:83:PHE:HD1	1:C:104:VAL:HG13	1.81	0.44
2:F:168:VAL:HG22	2:F:187:VAL:HG12	1.99	0.44
2:D:151:PHE:HD1	2:D:152:PRO:HA	1.82	0.44
2:D:39:GLN:HB2	2:D:45:LEU:HD23	1.98	0.44
1:C:159:SER:HA	1:C:178:THR:O	2.18	0.44
1:C:164:THR:HG22	1:C:174:SER:H	1.82	0.44
2:B:173:ALA:HA	2:B:183:LEU:HB3	2.00	0.44
1:E:18:ARG:HG3	1:E:76:SER:HA	2.00	0.44
2:D:206:LYS:HG2	2:D:207:PRO:HD3	2.00	0.44
1:E:19:VAL:HG13	1:E:75:ILE:HB	2.00	0.43
1:E:33:LEU:HD11	1:E:88:CYS:HB2	2.00	0.43
1:E:131:SER:HA	1:E:179:LEU:O	2.17	0.43
1:E:192:TYR:O	1:E:208:SER:HA	2.18	0.43
2:B:12:VAL:HG21	2:B:86:LEU:HD13	1.99	0.43
2:B:129:LEU:HD21	2:B:146:LEU:HB2	2.00	0.43
2:B:51:ILE:HD13	2:B:51:ILE:HG21	1.83	0.43
2:D:164:LEU:HD21	2:D:187:VAL:HG21	1.99	0.43
2:F:129:LEU:HD21	2:F:146:LEU:HB2	2.00	0.43
2:B:83:MET:SD	2:B:86:LEU:HD21	2.58	0.43
1:C:149:LYS:HE2	1:C:154:LEU:HD13	2.00	0.43
2:B:34:MET:HB2	2:B:79:LEU:HD21	2.01	0.42
2:D:24:ALA:HB1	2:D:27:PHE:CE1	2.54	0.42
1:C:83:PHE:CE2	1:C:106:ILE:HB	2.55	0.42
1:A:125:LEU:O	1:A:183:LYS:HD2	2.20	0.42
2:F:5:VAL:HG22	2:F:23:ALA:HB3	2.01	0.42
2:D:20:LEU:HD11	2:D:114:VAL:HG21	2.02	0.42
2:F:91:THR:HG23	2:F:116:VAL:HG13	2.01	0.42
1:E:33:LEU:HD12	1:E:89:GLN:O	2.20	0.42
1:A:29:ILE:HG23	1:A:92:ASN:HB2	2.02	0.41
1:E:159:SER:HA	1:E:178:THR:O	2.21	0.41
1:A:145:LYS:HB3	1:A:197:THR:HB	2.02	0.41
2:B:157:VAL:HA	2:B:202:ASN:O	2.21	0.41
1:E:108:ARG:HD3	1:E:171:SER:HB2	2.03	0.41
1:A:85:THR:HA	1:A:102:THR:O	2.20	0.41
2:B:100:SER:HB2	2:B:104:ARG:HE	1.86	0.41
2:D:72:ARG:NE	2:D:74:ASN:OD1	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:86:TYR:O	1:C:101:GLY:HA2	2.21	0.40
1:A:147:GLN:HE21	1:A:154:LEU:HD21	1.86	0.40
1:C:145:LYS:HB3	1:C:197:THR:HB	2.02	0.40
2:B:6:GLN:NE2	2:B:94:TYR:O	2.43	0.40
1:C:78:LEU:HD21	1:C:83:PHE:HE1	1.86	0.40
2:F:101:GLY:O	2:F:104:ARG:HG2	2.21	0.40
2:B:91:THR:HG23	2:B:115:THR:HA	2.03	0.40
2:D:33:ALA:HB3	2:D:99:ASP:HB3	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	212/214 (99%)	206 (97%)	6 (3%)	0	100	100
1	C	212/214 (99%)	206 (97%)	6 (3%)	0	100	100
1	E	212/214 (99%)	205 (97%)	7 (3%)	0	100	100
2	B	219/227 (96%)	214 (98%)	5 (2%)	0	100	100
2	D	219/227 (96%)	213 (97%)	6 (3%)	0	100	100
2	F	219/227 (96%)	215 (98%)	3 (1%)	1 (0%)	25	49
All	All	1293/1323 (98%)	1259 (97%)	33 (3%)	1 (0%)	48	73

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	F	131	PRO

5.3.2 Protein sidechains ⓘ

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	185/185 (100%)	178 (96%)	7 (4%)	28	56
1	C	185/185 (100%)	182 (98%)	3 (2%)	58	82
1	E	185/185 (100%)	182 (98%)	3 (2%)	58	82
2	B	182/188 (97%)	178 (98%)	4 (2%)	47	76
2	D	182/188 (97%)	179 (98%)	3 (2%)	58	82
2	F	182/188 (97%)	177 (97%)	5 (3%)	40	69
All	All	1101/1119 (98%)	1076 (98%)	25 (2%)	45	74

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	GLN
1	A	105	ASP
1	A	122	ASP
1	A	124	GLN
1	A	125	LEU
1	A	179	LEU
1	A	188	LYS
2	B	79	LEU
2	B	83	MET
2	B	151	PHE
2	B	215	LYS
1	C	121	SER
1	C	142	ARG
1	C	189	HIS
2	D	12	VAL
2	D	19	ARG
2	D	48	VAL
1	E	126	LYS
1	E	185	ASP
1	E	190	LYS
2	F	1	GLN
2	F	13	GLN

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Mol	Chain	Res	Type
2	F	116	VAL
2	F	134	LYS
2	F	183	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 oligosaccharides 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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	214/214 (100%)	-1.20	0	100	100	67, 87, 108, 136	0
1	C	214/214 (100%)	-1.22	0	100	100	68, 88, 107, 164	0
1	E	214/214 (100%)	-1.19	0	100	100	65, 89, 110, 154	0
2	B	221/227 (97%)	-1.05	0	100	100	77, 101, 133, 169	0
2	D	221/227 (97%)	-1.10	0	100	100	75, 95, 116, 188	0
2	F	221/227 (97%)	-1.09	0	100	100	69, 93, 119, 214	0
All	All	1305/1323 (98%)	-1.14	0	100	100	65, 92, 117, 214	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.