Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 05:09 AM GMT

PDB ID	:	2PKD
Title	:	Crystal structure of CD84: Insite into SLAM family function
Authors	:	Yan, Q.; Malashkevich, V.N.; Fedorov, A.; Cao, E.; Lary, J.W.; Cole, J.L.; Nathenson, S.G.; Almo, S.C.
Deposited on	:	2007-04-17
Resolution	:	2.04 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:

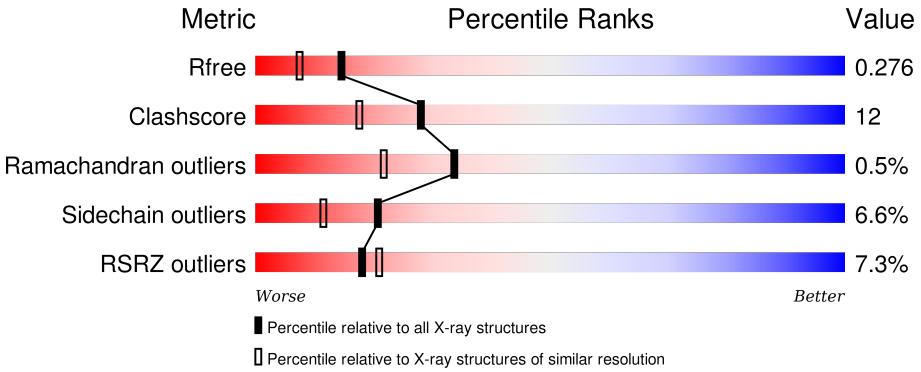
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 2.04 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	1192 (2.04-2.04)
Clashscore	102246	1269 (2.04-2.04)
Ramachandran outliers	100387	1258 (2.04-2.04)
Sidechain outliers	100360	1258 (2.04-2.04)
RSRZ outliers	91569	1194 (2.04-2.04)

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	111	7% 77% 18%
1	B	111	9% 74% 19%
1	C	111	7% 72% 22%
1	D	111	4% 77% 17%
1	E	111	8% 75% 18% 5%

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Mol	Chain	Length	Quality of chain
1	F	111	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 5638 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 SLAM family member 5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	107	Total	C	N	O	S	0	1	0
			873	553	149	170	1			
1	B	108	Total	C	N	O	S	0	1	0
			879	556	150	172	1			
1	C	107	Total	C	N	O	S	0	1	0
			873	553	149	170	1			
1	D	107	Total	C	N	O	S	0	0	0
			861	544	148	168	1			
1	E	109	Total	C	N	O	S	0	1	0
			887	560	151	175	1			
1	F	107	Total	C	N	O	S	0	1	0
			870	549	150	170	1			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	INITIATING METHIONINE	UNP Q9UIB8
B	1	MET	-	INITIATING METHIONINE	UNP Q9UIB8
C	1	MET	-	INITIATING METHIONINE	UNP Q9UIB8
D	1	MET	-	INITIATING METHIONINE	UNP Q9UIB8
E	1	MET	-	INITIATING METHIONINE	UNP Q9UIB8
F	1	MET	-	INITIATING METHIONINE	UNP Q9UIB8

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	C	1	Total	Cl	0	0
			1	1		
2	E	1	Total	Cl	0	0
			1	1		

- Molecule 3 is water.

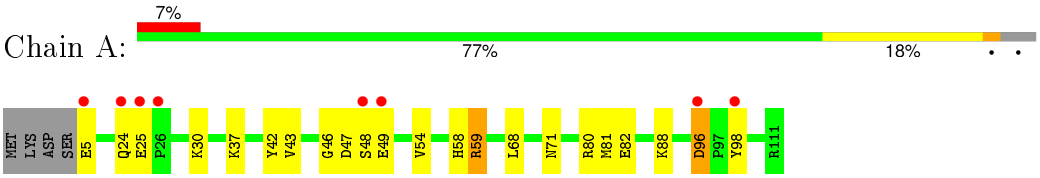
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	79	Total O 79 79	0	0
3	B	61	Total O 61 61	0	0
3	C	73	Total O 73 73	0	0
3	D	53	Total O 53 53	0	0
3	E	74	Total O 74 74	0	0
3	F	53	Total O 53 53	0	0

3 Residue-property plots

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.

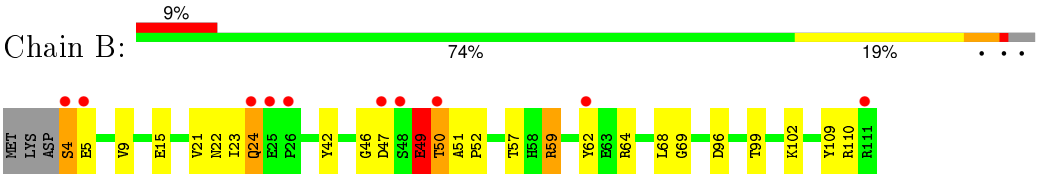
- Molecule 1: SLAM family member 5

Chain A:



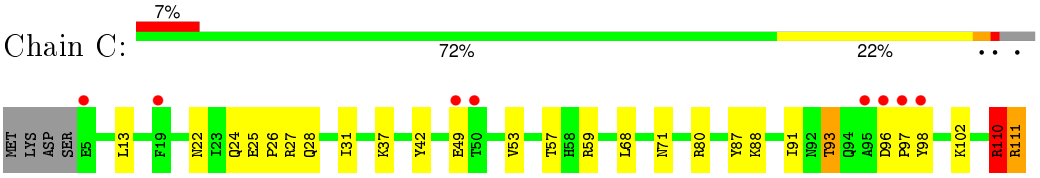
- Molecule 1: SLAM family member 5

Chain B:



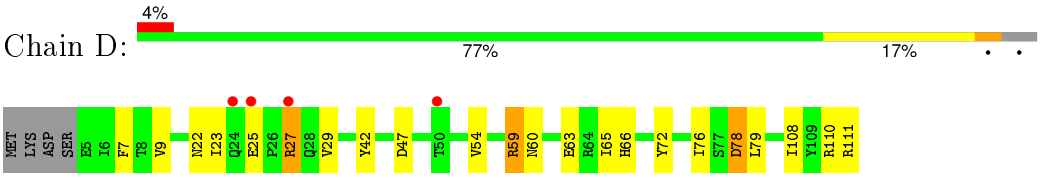
- Molecule 1: SLAM family member 5

Chain C:



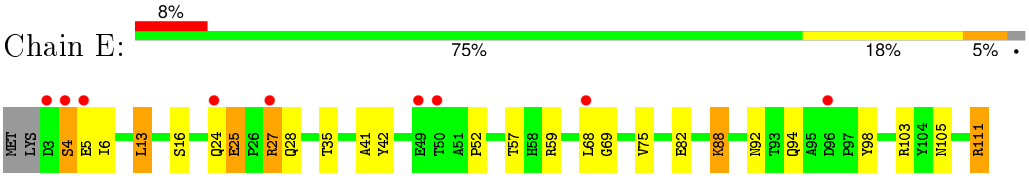
- Molecule 1: SLAM family member 5

Chain D:



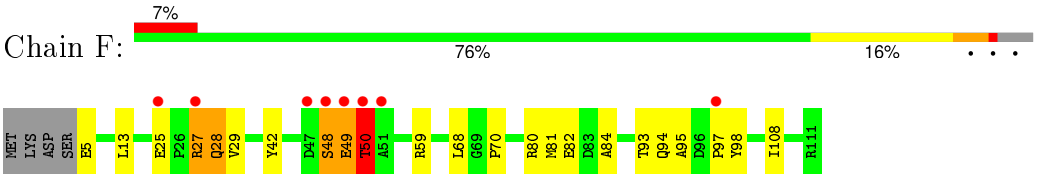
- Molecule 1: SLAM family member 5

Chain E:



- Molecule 1: SLAM family member 5

Chain F:


7%
76%
16%
MET
LYS
ASP
SER
E5
L13
E25
P26
R27
Q28
V29
Y42
D47
S48
E49
T50
A51
R59
L68
G69
P70
R80
M81
E82
D83
A84
T93
Q94
A95
D96
P97
Y98
I108
R111

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	61.01Å 170.98Å 148.53Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.04 19.90 – 2.04	Depositor EDS
% Data completeness (in resolution range)	80.0 (20.00-2.04) 80.0 (19.90-2.04)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.94 (at 2.04Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.197 , 0.277 0.196 , 0.276	Depositor DCC
R_{free} test set	1999 reflections (5.31%)	DCC
Wilson B-factor (Å^2)	38.4	Xtriage
Anisotropy	0.056	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 58.8	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Outliers	0 of 39654 reflections	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	5638	wwPDB-VP
Average B, all atoms (Å^2)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 29.58 % of the origin peak, indicating pseudo translational symmetry.The chance of finding a peak of this or larger height randomly in a structure without pseudo translational symmetry is equal to 1.5114e-03.The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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	1.15	2/893 (0.2%)	0.97	1/1219 (0.1%)
1	B	1.07	0/899	0.92	0/1227
1	C	1.12	1/893 (0.1%)	0.98	1/1219 (0.1%)
1	D	1.06	2/880 (0.2%)	0.89	0/1201
1	E	1.06	3/907 (0.3%)	0.95	1/1238 (0.1%)
1	F	1.02	1/889 (0.1%)	0.92	0/1213
All	All	1.08	9/5361 (0.2%)	0.94	3/7317 (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	A	0	2
1	B	0	2
1	F	0	1
All	All	0	5

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	82	GLU	CG-CD	6.03	1.61	1.51
1	E	41	ALA	CA-CB	5.82	1.64	1.52
1	D	25	GLU	CG-CD	5.38	1.60	1.51
1	D	63	GLU	CG-CD	5.37	1.60	1.51
1	A	88	LYS	CD-CE	5.36	1.64	1.51
1	A	82	GLU	CG-CD	5.35	1.59	1.51
1	C	87	TYR	CD1-CE1	5.23	1.47	1.39
1	E	82	GLU	CD-OE2	5.17	1.31	1.25
1	E	88	LYS	CD-CE	5.13	1.64	1.51

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	13	LEU	CA-CB-CG	6.22	129.61	115.30
1	C	110	ARG	CB-CA-C	-5.08	100.25	110.40
1	A	68	LEU	CA-CB-CG	5.05	126.92	115.30

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	48	SER	Peptide
1	A	49	GLU	Peptide
1	B	49	GLU	Peptide
1	B	50	THR	Peptide
1	F	48	SER	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	873	0	851	18	0
1	B	879	0	856	22	0
1	C	873	0	851	26	0
1	D	861	0	844	25	0
1	E	887	0	860	25	0
1	F	870	0	851	19	0
2	C	1	0	0	1	0
2	E	1	0	0	0	0
3	A	79	0	0	7	0
3	B	61	0	0	1	0
3	C	73	0	0	6	0
3	D	53	0	0	1	0
3	E	74	0	0	3	1
3	F	53	0	0	0	1
All	All	5638	0	5113	121	1

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 12.

All (121) 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:F:27:ARG:HH21	1:F:27:ARG:HG2	1.02	1.11
1:E:27:ARG:H	1:E:27:ARG:HD2	1.12	1.08
1:C:93:THR:CG2	1:C:96:ASP:HB2	1.95	0.97
1:C:93:THR:HG23	1:C:96:ASP:HB2	1.50	0.93
1:F:27:ARG:NH2	1:F:27:ARG:HG2	1.83	0.93
1:E:27:ARG:HD2	1:E:27:ARG:N	1.84	0.92
1:D:23:ILE:HD13	1:D:29:VAL:HG21	1.52	0.92
1:C:25:GLU:HG3	1:C:28:GLN:HG2	1.52	0.91
1:D:27:ARG:H	1:D:27:ARG:HD2	1.39	0.88
1:E:27:ARG:H	1:E:27:ARG:CD	1.81	0.86
3:A:169:HOH:O	1:C:22:ASN:HB3	1.74	0.86
1:D:27:ARG:HH11	1:D:27:ARG:CG	1.92	0.83
1:C:71:ASN:HB3	3:C:533:HOH:O	1.79	0.82
1:F:27:ARG:HH21	1:F:27:ARG:CG	1.91	0.81
1:D:59:ARG:HG3	1:D:60:ASN:N	1.97	0.80
1:B:49:GLU:HB3	1:B:51:ALA:H	1.48	0.79
1:D:27:ARG:HH11	1:D:27:ARG:HG3	1.50	0.76
1:E:27:ARG:N	1:E:27:ARG:CD	2.41	0.76
1:D:27:ARG:N	1:D:27:ARG:HD2	2.01	0.75
1:D:27:ARG:CD	1:D:27:ARG:H	1.99	0.75
1:E:25:GLU:HG3	1:E:27:ARG:HE	1.53	0.73
1:C:93:THR:HG21	1:C:96:ASP:HB2	1.71	0.73
1:C:88:LYS:HE2	3:C:519:HOH:O	1.90	0.70
1:A:5:GLU:HA	3:A:154:HOH:O	1.92	0.70
1:F:25:GLU:HG3	1:F:27:ARG:HH22	1.56	0.69
1:C:25:GLU:CG	1:C:28:GLN:HG2	2.23	0.69
1:C:97:PRO:O	1:E:59:ARG:NE	2.28	0.66
1:B:42[A]:TYR:CE1	1:B:57:THR:HG21	2.31	0.66
1:A:96:ASP:HA	1:A:98:TYR:N	2.11	0.65
1:F:13:LEU:HB2	1:F:81:MET:CE	2.26	0.65
1:B:50:THR:HG22	1:B:69:GLY:HA3	1.80	0.64
1:E:105:ASN:ND2	3:E:639:HOH:O	2.30	0.64
1:B:109:TYR:HB3	1:D:111:ARG:HG2	1.81	0.63
1:B:22:ASN:ND2	1:D:22:ASN:OD1	2.31	0.63
1:A:30:LYS:NZ	3:A:160:HOH:O	2.32	0.62
1:D:54:VAL:HG11	1:D:65:ILE:HG22	1.80	0.61
1:F:48:SER:H	1:F:49:GLU:HA	1.66	0.61
1:B:59:ARG:HA	1:B:62:TYR:CD2	2.36	0.61
1:C:91:ILE:HD11	1:C:102:LYS:HD2	1.84	0.60
1:F:48:SER:N	1:F:49:GLU:HA	2.17	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:27:ARG:NH2	1:F:27:ARG:CG	2.60	0.59
1:D:110:ARG:O	1:D:111:ARG:HD2	2.03	0.59
1:A:58:HIS:CD2	1:B:99:THR:HG21	2.38	0.59
1:B:24:GLN:O	1:B:24:GLN:HG3	2.03	0.58
1:C:42[B]:TYR:CE2	1:C:57:THR:HG21	2.39	0.57
1:D:27:ARG:NH1	1:D:27:ARG:HG3	2.18	0.57
1:C:59:ARG:NH2	3:C:544:HOH:O	2.35	0.57
1:E:111:ARG:HH11	1:E:111:ARG:HG3	1.71	0.56
1:E:94:GLN:OE1	1:E:94:GLN:HA	2.07	0.55
1:C:91:ILE:CD1	1:C:102:LYS:HD2	2.37	0.55
1:B:102:LYS:HD2	3:B:161:HOH:O	2.06	0.55
1:F:93:THR:HG22	1:F:95:ALA:O	2.07	0.54
1:A:24:GLN:OE1	1:C:24:GLN:HG3	2.08	0.54
1:E:88:LYS:HE2	1:E:103:ARG:HE	1.72	0.54
1:B:49:GLU:HB3	1:B:51:ALA:N	2.22	0.54
1:E:28:GLN:HG3	1:E:94:GLN:HB2	1.89	0.53
1:D:23:ILE:HD13	1:D:29:VAL:CG2	2.34	0.53
1:A:59:ARG:HD2	1:B:99:THR:HB	1.91	0.53
1:C:53:VAL:HG12	3:C:540:HOH:O	2.09	0.52
1:F:80:ARG:O	1:F:108:ILE:HD13	2.09	0.52
1:A:46:GLY:O	1:A:47:ASP:OD2	2.28	0.52
1:A:43:VAL:HG22	1:A:54:VAL:HG22	1.91	0.52
1:D:110:ARG:O	1:D:111:ARG:CD	2.58	0.51
1:B:62:TYR:O	1:B:64:ARG:HG3	2.10	0.51
1:C:42[A]:TYR:HB3	1:E:42[A]:TYR:CZ	2.46	0.51
1:E:42[A]:TYR:CE1	1:E:57:THR:HG21	2.45	0.50
1:E:25:GLU:HG3	1:E:27:ARG:NE	2.24	0.50
1:D:27:ARG:HG2	1:D:27:ARG:HH11	1.76	0.50
1:E:4:SER:HB3	1:E:6:ILE:HG13	1.92	0.50
1:D:23:ILE:HD12	1:D:72:TYR:HB2	1.93	0.50
1:A:42[B]:TYR:CZ	1:B:42[B]:TYR:HB3	2.47	0.49
1:B:21:VAL:HG12	1:B:23:ILE:HG12	1.94	0.49
1:A:96:ASP:HA	1:A:98:TYR:H	1.76	0.49
1:B:59:ARG:HA	1:B:62:TYR:CG	2.49	0.48
1:F:28:GLN:O	1:F:94:GLN:HG2	2.13	0.48
1:D:42:TYR:HB3	1:F:42:TYR:OH	2.14	0.48
1:F:13:LEU:HD13	1:F:81:MET:CE	2.43	0.47
1:F:84:ALA:N	1:F:108:ILE:HD12	2.29	0.47
1:D:42:TYR:HB3	1:F:42:TYR:CZ	2.50	0.47
1:A:42[A]:TYR:CD2	3:A:124:HOH:O	2.67	0.47
1:A:80:ARG:NH1	3:A:170:HOH:O	2.38	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:49:GLU:H	1:C:49:GLU:CD	2.18	0.47
1:F:28:GLN:HG3	1:F:28:GLN:O	2.14	0.46
1:D:27:ARG:NH1	1:D:27:ARG:CG	2.62	0.46
1:A:42[B]:TYR:OH	1:B:42[B]:TYR:HB3	2.16	0.46
1:B:4:SER:HB3	1:B:5:GLU:H	1.62	0.45
1:F:13:LEU:HD13	1:F:81:MET:HE3	1.98	0.45
1:E:4:SER:C	1:E:6:ILE:H	2.19	0.45
1:C:110:ARG:HD3	2:C:500:CL:CL	2.54	0.45
1:A:37:LYS:HE2	1:A:37:LYS:HB2	1.62	0.45
1:D:7:PHE:CD1	1:D:9:VAL:HG23	2.51	0.45
1:C:13:LEU:HD23	1:C:111:ARG:HH21	1.82	0.45
1:D:78:ASP:OD1	1:D:78:ASP:N	2.50	0.45
1:A:81:MET:HE3	3:A:162:HOH:O	2.17	0.45
1:B:51:ALA:HA	1:B:52:PRO:HD3	1.79	0.44
1:A:42[A]:TYR:CE2	3:A:124:HOH:O	2.56	0.44
1:C:96:ASP:C	1:C:98:TYR:H	2.22	0.43
1:A:42[B]:TYR:CE2	1:B:42[B]:TYR:HB3	2.54	0.43
1:E:68:LEU:CD1	1:E:75:VAL:HG23	2.47	0.43
1:F:50:THR:HB	1:F:70:PRO:HB3	1.99	0.43
1:C:111:ARG:O	3:C:536:HOH:O	2.21	0.43
1:C:25:GLU:HA	1:C:26:PRO:HD2	1.86	0.43
1:A:42[A]:TYR:HB3	1:B:42[A]:TYR:CZ	2.53	0.43
1:D:59:ARG:NH2	3:D:161:HOH:O	2.45	0.43
1:D:79:LEU:HB3	1:D:108:ILE:HD12	2.00	0.42
1:C:27:ARG:NH2	1:C:49:GLU:HG2	2.34	0.42
1:D:7:PHE:HD1	1:D:9:VAL:HG23	1.84	0.42
1:E:52:PRO:HD3	1:E:69:GLY:HA3	2.02	0.42
1:D:65:ILE:CD1	1:D:76:ILE:HG12	2.49	0.42
1:B:46:GLY:O	1:B:47:ASP:C	2.58	0.42
3:C:511:HOH:O	1:E:59:ARG:HB3	2.20	0.42
1:C:31:ILE:CD1	1:E:42[B]:TYR:HE2	2.32	0.42
1:C:42[B]:TYR:HE2	1:C:57:THR:HG21	1.83	0.41
1:E:111:ARG:NH1	1:E:111:ARG:HG3	2.35	0.41
1:E:68:LEU:HD12	1:E:68:LEU:N	2.35	0.41
1:B:64:ARG:HH11	1:B:64:ARG:HD2	1.75	0.41
1:F:97:PRO:O	1:F:98:TYR:HB2	2.21	0.41
1:E:28:GLN:NE2	3:E:613:HOH:O	2.54	0.40
1:E:92:ASN:HA	1:E:98:TYR:O	2.20	0.40
1:C:37:LYS:HB2	1:C:37:LYS:HE2	1.90	0.40
1:E:68:LEU:CD2	3:E:647:HOH:O	2.69	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the sym-

metry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:641:HOH:O	3:F:128:HOH:O[5_345]	2.16	0.04

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	106/111 (96%)	96 (91%)	10 (9%)	0	100	100
1	B	107/111 (96%)	93 (87%)	14 (13%)	0	100	100
1	C	106/111 (96%)	100 (94%)	5 (5%)	1 (1%)	21	10
1	D	105/111 (95%)	93 (89%)	12 (11%)	0	100	100
1	E	108/111 (97%)	97 (90%)	10 (9%)	1 (1%)	21	10
1	F	106/111 (96%)	98 (92%)	7 (7%)	1 (1%)	21	10
All	All	638/666 (96%)	577 (90%)	58 (9%)	3 (0%)	34	22

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	110	ARG
1	E	5	GLU
1	F	50	THR

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	96/99 (97%)	92 (96%)	4 (4%)	36 28
1	B	97/99 (98%)	88 (91%)	9 (9%)	11 4
1	C	96/99 (97%)	92 (96%)	4 (4%)	36 28
1	D	95/99 (96%)	90 (95%)	5 (5%)	28 17
1	E	98/99 (99%)	90 (92%)	8 (8%)	14 6
1	F	96/99 (97%)	88 (92%)	8 (8%)	14 6
All	All	578/594 (97%)	540 (93%)	38 (7%)	21 11

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

Mol	Chain	Res	Type
1	A	25	GLU
1	A	59	ARG
1	A	71	ASN
1	A	96	ASP
1	B	4	SER
1	B	9	VAL
1	B	15	GLU
1	B	24	GLN
1	B	49	GLU
1	B	59	ARG
1	B	68	LEU
1	B	96	ASP
1	B	110	ARG
1	C	68	LEU
1	C	80	ARG
1	C	93	THR
1	C	111	ARG
1	D	27	ARG
1	D	47	ASP
1	D	59	ARG
1	D	66	HIS
1	D	78	ASP
1	E	4	SER
1	E	13	LEU
1	E	16	SER
1	E	24	GLN
1	E	25	GLU
1	E	27	ARG
1	E	35	THR
1	E	111	ARG

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Mol	Chain	Res	Type
1	F	5	GLU
1	F	27	ARG
1	F	28	GLN
1	F	29	VAL
1	F	49	GLU
1	F	50	THR
1	F	59	ARG
1	F	68	LEU

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

Mol	Chain	Res	Type
1	C	28	GLN
1	C	60	ASN
1	C	94	GLN
1	D	28	GLN
1	F	60	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no carbohydrates in this entry.

5.6 Ligand geometry

Of 2 ligands modelled in this entry, 2 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	107/111 (96%)	0.31	8 (7%)	17	20	23, 34, 69, 75	0
1	B	108/111 (97%)	0.48	10 (9%)	11	12	24, 45, 69, 79	0
1	C	107/111 (96%)	0.25	8 (7%)	17	20	27, 36, 63, 71	0
1	D	107/111 (96%)	0.15	4 (3%)	45	51	32, 47, 66, 72	0
1	E	109/111 (98%)	0.35	9 (8%)	14	16	26, 39, 65, 77	0
1	F	107/111 (96%)	0.36	8 (7%)	17	20	29, 41, 70, 84	0
All	All	645/666 (96%)	0.32	47 (7%)	18	21	23, 41, 68, 84	0

All (47) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	50	THR	8.6
1	E	4	SER	7.8
1	E	3	ASP	6.4
1	B	47	ASP	6.4
1	B	48	SER	5.5
1	B	4	SER	5.3
1	F	48	SER	5.2
1	D	50	THR	5.1
1	A	24	GLN	4.9
1	E	50	THR	4.4
1	F	51	ALA	4.2
1	C	95	ALA	4.2
1	B	24	GLN	3.7
1	A	25	GLU	3.6
1	F	49	GLU	3.6
1	B	5	GLU	3.5
1	B	62	TYR	3.4
1	C	50	THR	3.4
1	A	26	PRO	3.3

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Mol	Chain	Res	Type	RSRZ
1	B	50	THR	3.1
1	A	49	GLU	3.1
1	B	26	PRO	3.1
1	F	97	PRO	3.0
1	D	25	GLU	2.9
1	E	96	ASP	2.8
1	A	5	GLU	2.8
1	F	25	GLU	2.8
1	C	98	TYR	2.6
1	D	24	GLN	2.6
1	A	48	SER	2.5
1	F	27	ARG	2.4
1	F	47	ASP	2.4
1	C	96	ASP	2.4
1	E	27	ARG	2.4
1	C	5	GLU	2.4
1	E	49	GLU	2.4
1	E	68	LEU	2.3
1	A	96	ASP	2.3
1	C	97	PRO	2.3
1	B	25	GLU	2.3
1	D	27	ARG	2.3
1	C	19	PHE	2.2
1	E	24	GLN	2.2
1	A	98	TYR	2.2
1	C	49	GLU	2.2
1	E	5	GLU	2.1
1	B	111	ARG	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	C	500	1/1	0.99	0.08	-	37,37,37,37	0
2	CL	E	600	1/1	0.98	0.08	-	41,41,41,41	0

6.5 Other polymers (i)

There are no such residues in this entry.