Full wwPDB X-ray Structure Validation Report ⓘ

Sep 17, 2023 – 11:02 AM EDT

|		
PDB ID	:	4ZIA
Title	:	Crystal Structure of STAT3 N-terminal domain
Authors	:	Hu, T.; Chopra, R.
Deposited on	:	2015-04-28
Resolution	:	2.70 Å(reported)

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	Percentile Ranks	Value
Rfree		0.265
Clashscore		13
Ramachandran outliers		0
Sidechain outliers		3.5%
RSRZ outliers		5.5%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
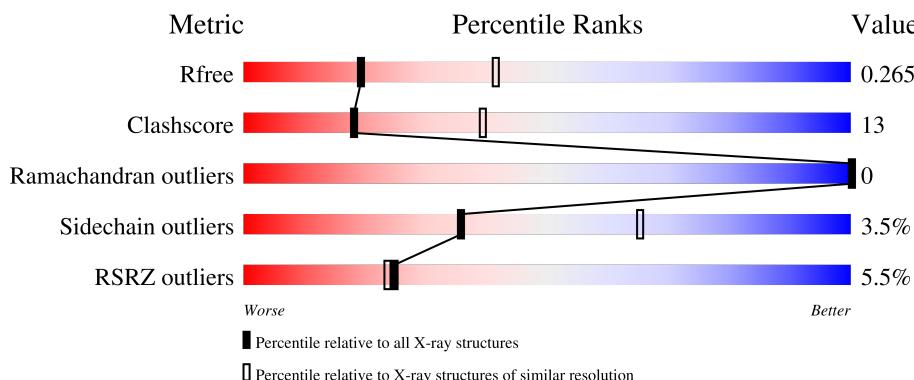
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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	129	2% 74% 20% · ·
1	B	129	7% 56% 40% · ·
1	C	129	8% 43% 36% · 19%
1	D	129	2% 76% 21% · ·
1	E	129	6% 67% 26% · 5%
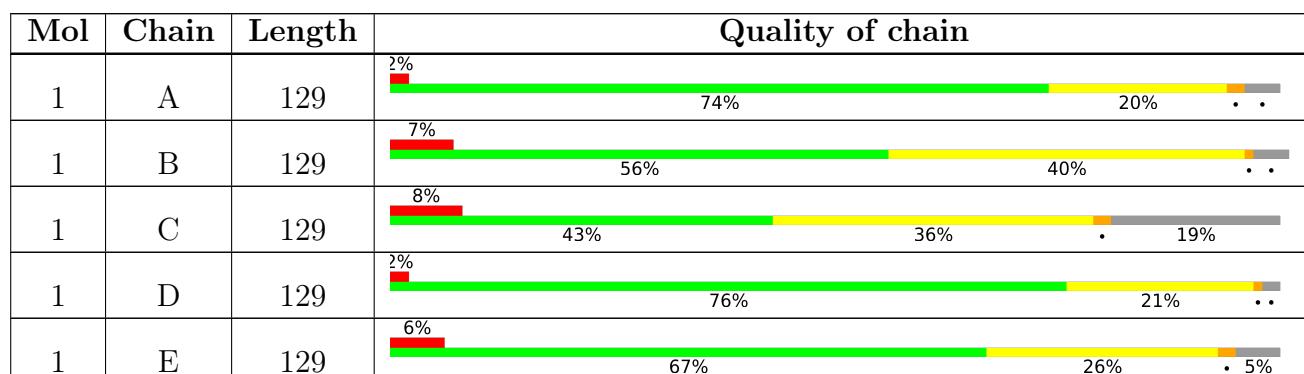
2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 5149 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 Signal transducer and activator of transcription 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	124	Total 1046	C 665	N 186	O 192	S 3	0	0	0
1	B	124	Total 1046	C 665	N 186	O 192	S 3	0	0	0
1	C	104	Total 893	C 571	N 159	O 160	S 3	0	0	0
1	D	126	Total 1057	C 672	N 188	O 194	S 3	0	0	0
1	E	123	Total 1039	C 662	N 184	O 190	S 3	0	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP P42227
A	0	PRO	-	expression tag	UNP P42227
A	1	GLY	-	expression tag	UNP P42227
A	2	SER	-	expression tag	UNP P42227
B	-1	GLY	-	expression tag	UNP P42227
B	0	PRO	-	expression tag	UNP P42227
B	1	GLY	-	expression tag	UNP P42227
B	2	SER	-	expression tag	UNP P42227
C	-1	GLY	-	expression tag	UNP P42227
C	0	PRO	-	expression tag	UNP P42227
C	1	GLY	-	expression tag	UNP P42227
C	2	SER	-	expression tag	UNP P42227
D	-1	GLY	-	expression tag	UNP P42227
D	0	PRO	-	expression tag	UNP P42227
D	1	GLY	-	expression tag	UNP P42227
D	2	SER	-	expression tag	UNP P42227
E	-1	GLY	-	expression tag	UNP P42227
E	0	PRO	-	expression tag	UNP P42227
E	1	GLY	-	expression tag	UNP P42227

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
E	2	SER	-	expression tag	UNP P42227

- Molecule 2 is NICKEL (II) ION (three-letter code: NI) (formula: Ni).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total 1	Ni 1	0	0

- Molecule 3 is FORMIC ACID (three-letter code: FMT) (formula: CH_2O_2).
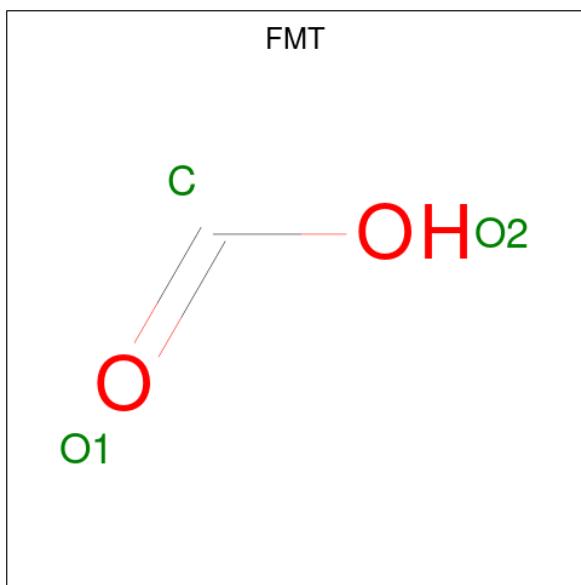
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total 3	C 1	O 2	0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	E	1	Total 1	Mg 1	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	18	Total 18	O 18	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	11	Total 11	O 11	0	0
5	C	12	Total 12	O 12	0	0
5	D	22	Total 22	O 22	0	0

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: Signal transducer and activator of transcription 3
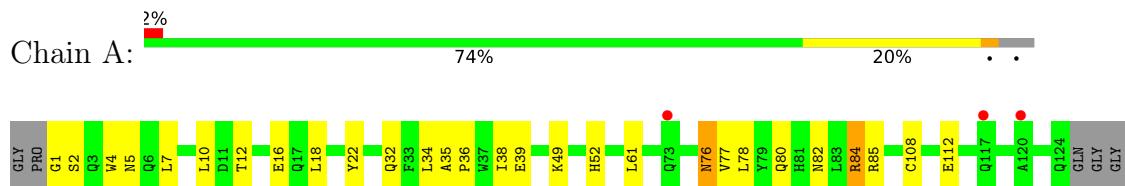
Chain A:

- Molecule 1: Signal transducer and activator of transcription 3

Chain B:

- Molecule 1: Signal transducer and activator of transcription 3

Chain C:

- Molecule 1: Signal transducer and activator of transcription 3

Chain D:

- Molecule 1: Signal transducer and activator of transcription 3

Chain E:

6%

67% 26% • 5%

GLY P0 G1 W4 T12 R13 Y14 L15 L18 Y22 M28 Q32 F33 L34 A35 P36 Y45 A46 A47 S48 K49 E50 S51 H52 A53 V56 F57 L72 S75 N76 V77 N82 L83 R84 R85 I86 K87 Q91 Y94 L95 E96 K97 I101 A102 R103 I104

V105 A106 R107 C108 E112 S113 R114 Q117 A120 T121 A122 ALA GLN GLN GLY GLY
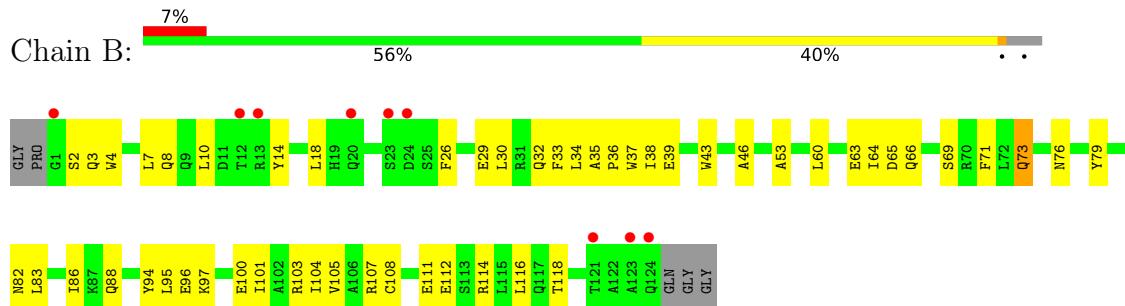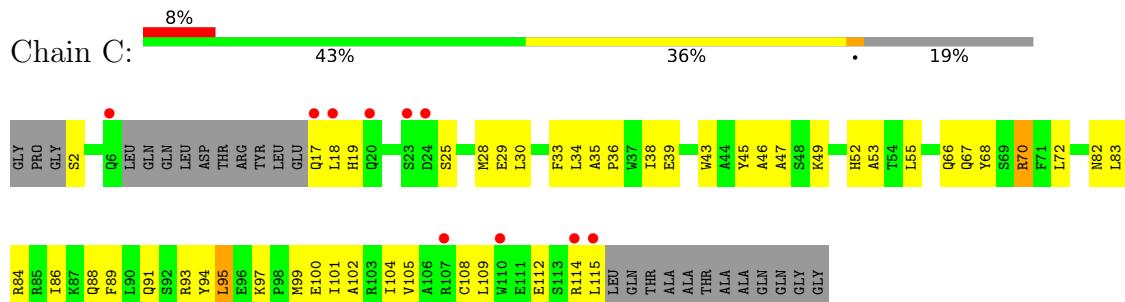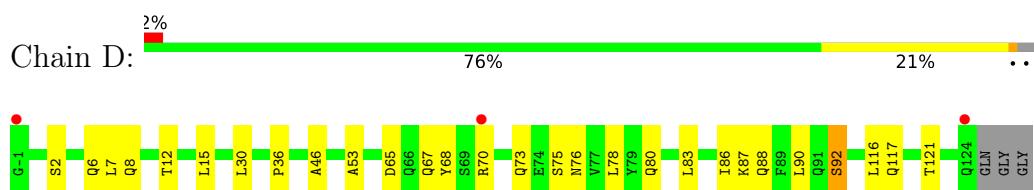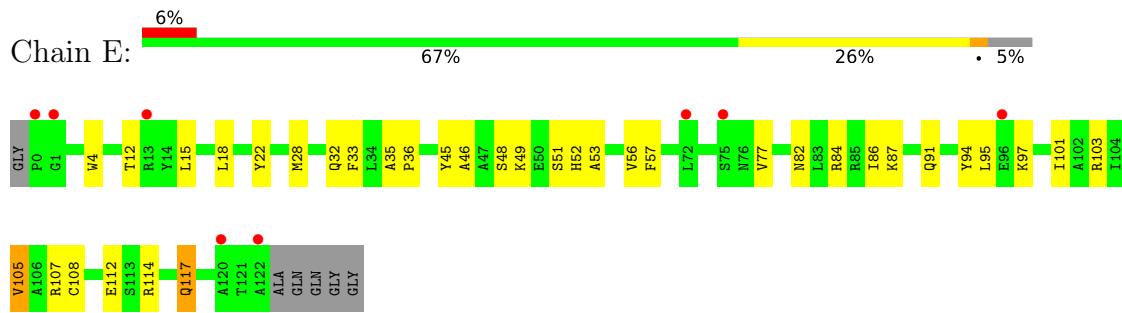
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 41 2 2	Depositor
Cell constants a, b, c, α, β, γ	109.01Å 109.01Å 154.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.70 19.75 – 2.70	Depositor EDS
% Data completeness (in resolution range)	100.0 (20.00-2.70) 100.0 (19.75-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	4.97 (at 2.71Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.236 , 0.270 0.227 , 0.265	Depositor DCC
R_{free} test set	1329 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å^2)	51.1	Xtriage
Anisotropy	0.275	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 47.7	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	5149	wwPDB-VP
Average B, all atoms (Å^2)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 16.06% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< \lvert L \rvert >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: NI, MG, FMT

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	0.45	0/1071	0.58	0/1450
1	B	0.49	0/1071	0.57	0/1450
1	C	0.46	0/916	0.60	0/1237
1	D	0.61	0/1083	0.58	0/1467
1	E	0.41	0/1065	0.48	0/1442
All	All	0.49	0/5206	0.56	0/7046

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	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	22	TYR	Sidechain

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	1046	0	1016	16	0
1	B	1046	0	1016	47	1
1	C	893	0	860	34	1
1	D	1057	0	1026	18	0
1	E	1039	0	1010	29	0
2	B	1	0	0	0	0
3	D	3	0	1	0	0
4	E	1	0	0	0	0
5	A	18	0	0	0	0
5	B	11	0	0	1	0
5	C	12	0	0	2	0
5	D	22	0	0	2	0
All	All	5149	0	4929	134	2

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 13.

All (134) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:118:THR:HG22	1:E:48:SER:HA	1.31	1.08
1:B:97:LYS:HG2	1:B:100:GLU:HG2	1.22	1.06
1:B:97:LYS:HG2	1:B:100:GLU:CG	2.02	0.90
1:B:29:GLU:HG2	1:B:82:ASN:HD22	1.46	0.80
1:C:70:ARG:HD3	5:C:207:HOH:O	1.85	0.77
1:A:4:TRP:HE1	1:A:32:GLN:HE21	1.35	0.74
1:E:4:TRP:NE1	1:E:32:GLN:HG3	2.03	0.73
1:A:82:ASN:HD22	1:A:85:ARG:HH12	1.36	0.72
1:B:101:ILE:O	1:B:105:VAL:HG12	1.95	0.67
1:C:18:LEU:HD13	1:C:18:LEU:O	1.94	0.67
1:C:83:LEU:HD23	1:C:86:ILE:HD12	1.78	0.66
1:C:30:LEU:HD13	1:C:86:ILE:HG21	1.77	0.65
1:B:107:ARG:HD3	1:E:107:ARG:NH2	2.12	0.65
1:C:84:ARG:O	1:C:88:GLN:HG3	1.96	0.65
1:B:95:LEU:O	1:B:95:LEU:HD13	1.97	0.65
1:E:101:ILE:O	1:E:105:VAL:HG12	1.96	0.64
1:E:57:PHE:HE1	1:E:95:LEU:HA	1.63	0.62
1:E:45:TYR:CZ	1:E:49:LYS:HG3	2.35	0.62
1:B:30:LEU:HD13	1:B:86:ILE:HG21	1.82	0.62
1:A:10:LEU:HD12	1:A:18:LEU:HD22	1.82	0.62
1:C:35:ALA:HB3	1:C:36:PRO:HD3	1.81	0.62
1:A:82:ASN:ND2	1:A:85:ARG:HH12	1.96	0.62

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:83:LEU:HA	1:C:86:ILE:HD12	1.82	0.61
1:C:94:TYR:CG	1:C:101:ILE:HB	2.37	0.59
1:B:3:GLN:HG3	1:B:116:LEU:HD11	1.83	0.59
1:C:91:GLN:HG2	5:C:206:HOH:O	2.01	0.59
1:C:46:ALA:O	1:C:53:ALA:HB2	2.03	0.58
1:A:108:CYS:O	1:A:112:GLU:HG3	2.02	0.58
1:B:46:ALA:O	1:B:53:ALA:HB2	2.04	0.58
1:B:10:LEU:HD23	1:B:14:TYR:HB3	1.86	0.58
1:C:108:CYS:O	1:C:112:GLU:HB2	2.04	0.58
1:E:4:TRP:HE1	1:E:32:GLN:HG3	1.69	0.58
1:A:77:VAL:HG11	1:B:18:LEU:HD23	1.86	0.57
1:B:76:ASN:ND2	1:B:79:TYR:CD2	2.73	0.57
1:B:94:TYR:CG	1:B:101:ILE:HB	2.39	0.57
1:B:37:TRP:CD1	1:B:63:GLU:HG3	2.39	0.57
1:B:34:LEU:O	1:B:38:ILE:HG13	2.06	0.56
1:E:114:ARG:O	1:E:117:GLN:HG2	2.05	0.56
1:E:46:ALA:O	1:E:53:ALA:HB2	2.06	0.55
1:A:78:LEU:HB2	1:B:32:GLN:OE1	2.06	0.55
1:A:7:LEU:HD11	1:A:112:GLU:HB3	1.89	0.55
1:C:89:PHE:CZ	1:C:93:ARG:HD3	2.42	0.55
1:C:91:GLN:O	1:C:95:LEU:HB2	2.07	0.54
1:B:118:THR:CG2	1:E:48:SER:HA	2.23	0.54
1:E:91:GLN:O	1:E:95:LEU:HB2	2.07	0.54
1:B:107:ARG:HD3	1:E:107:ARG:HH21	1.71	0.53
1:E:94:TYR:CG	1:E:101:ILE:HB	2.43	0.53
1:E:22:TYR:CE2	1:E:28:MET:HE2	2.45	0.52
1:D:36:PRO:HD2	5:D:316:HOH:O	2.10	0.52
1:B:96:GLU:HG2	1:B:96:GLU:O	2.09	0.52
1:B:32:GLN:HG2	5:B:301:HOH:O	2.09	0.51
1:E:52:HIS:O	1:E:56:VAL:HG23	2.10	0.51
1:C:82:ASN:O	1:C:86:ILE:HG13	2.10	0.51
1:E:35:ALA:HB3	1:E:36:PRO:HD3	1.93	0.51
1:D:30:LEU:HD13	1:D:86:ILE:HG21	1.93	0.50
1:D:117:GLN:HE21	1:D:121:THR:CG2	2.23	0.50
1:E:82:ASN:O	1:E:86:ILE:HG13	2.12	0.50
1:D:12:THR:HA	1:D:15:LEU:HD12	1.94	0.50
1:A:80:GLN:O	1:A:84:ARG:HB2	2.11	0.49
1:B:2:SER:HB2	1:B:39:GLU:OE1	2.13	0.49
1:B:83:LEU:HD23	1:B:86:ILE:HD12	1.95	0.49
1:D:2:SER:O	1:D:6:GLN:HG3	2.13	0.49
1:D:76:ASN:O	1:D:80:GLN:HG3	2.13	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:43:TRP:CE3	1:B:105:VAL:HG11	2.48	0.48
1:C:47:ALA:O	1:C:99:MET:HE2	2.14	0.48
1:D:46:ALA:O	1:D:53:ALA:HB2	2.13	0.48
1:B:7:LEU:HD11	1:B:112:GLU:HB3	1.95	0.48
1:B:33:PHE:O	1:B:34:LEU:HD23	2.13	0.48
1:E:57:PHE:CE1	1:E:95:LEU:HA	2.47	0.48
1:B:26:PHE:HD1	1:B:30:LEU:HD23	1.79	0.48
1:B:66:GLN:O	1:B:69:SER:HB3	2.14	0.48
1:B:103:ARG:O	1:B:107:ARG:HG3	2.14	0.48
1:C:68:TYR:O	1:C:72:LEU:HB2	2.14	0.48
1:B:30:LEU:HD11	1:B:60:LEU:HD11	1.95	0.47
1:B:104:ILE:HA	1:B:107:ARG:HD2	1.96	0.47
1:B:34:LEU:HD11	1:B:64:ILE:HG13	1.96	0.47
1:B:107:ARG:HH11	1:E:107:ARG:HH21	1.62	0.47
1:C:30:LEU:HD13	1:C:86:ILE:CG2	2.45	0.47
1:D:73:GLN:C	1:D:75:SER:H	2.19	0.47
1:B:114:ARG:O	1:B:118:THR:HG23	2.14	0.47
1:C:34:LEU:HG	1:C:67:GLN:NE2	2.30	0.46
1:C:43:TRP:CD2	1:C:105:VAL:HG21	2.51	0.46
1:C:114:ARG:C	1:C:115:LEU:HD12	2.35	0.46
1:B:35:ALA:HB3	1:B:36:PRO:HD3	1.98	0.46
1:D:88:GLN:O	1:D:92:SER:HB3	2.16	0.46
1:E:4:TRP:HE1	1:E:32:GLN:HE21	1.64	0.46
1:B:108:CYS:O	1:B:112:GLU:HG3	2.16	0.45
1:C:19:HIS:ND1	1:C:19:HIS:O	2.50	0.45
1:D:65:ASP:OD1	1:D:87:LYS:NZ	2.49	0.45
1:E:45:TYR:OH	1:E:49:LYS:HG3	2.17	0.45
1:A:76:ASN:O	1:A:80:GLN:HG3	2.17	0.45
1:B:4:TRP:O	1:B:8:GLN:HG3	2.17	0.45
1:C:49:LYS:HB2	1:C:52:HIS:HB3	1.99	0.45
1:C:94:TYR:OH	1:C:104:ILE:HD12	2.17	0.45
1:C:94:TYR:CD1	1:C:101:ILE:HB	2.52	0.45
1:B:111:GLU:OE2	1:E:103:ARG:HD2	2.17	0.45
1:B:94:TYR:CD2	1:B:101:ILE:HB	2.51	0.44
1:C:105:VAL:O	1:C:109:LEU:HD13	2.16	0.44
1:A:1:GLY:HA2	1:A:39:GLU:OE2	2.17	0.44
1:A:35:ALA:N	1:A:36:PRO:CD	2.81	0.44
1:C:34:LEU:O	1:C:38:ILE:HG13	2.17	0.44
1:E:103:ARG:HH11	1:E:103:ARG:HG3	1.82	0.43
1:B:34:LEU:HD12	1:B:60:LEU:HD11	2.00	0.43
1:D:67:GLN:HE22	1:D:70:ARG:NH1	2.16	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:49:LYS:HB2	1:A:52:HIS:CD2	2.54	0.43
1:B:83:LEU:HD23	1:B:83:LEU:HA	1.70	0.43
1:C:97:LYS:HB3	1:C:100:GLU:HG3	2.00	0.43
1:D:7:LEU:HD23	1:D:116:LEU:HD21	2.00	0.43
1:D:68:TYR:HA	1:D:83:LEU:HD12	2.00	0.43
1:E:108:CYS:O	1:E:112:GLU:HG3	2.19	0.43
1:E:87:LYS:O	1:E:91:GLN:HG2	2.19	0.43
1:C:17:GLN:C	1:C:19:HIS:H	2.20	0.42
1:B:94:TYR:CE1	1:B:101:ILE:HD13	2.54	0.42
1:B:95:LEU:HD13	1:B:95:LEU:C	2.39	0.42
1:C:101:ILE:HG23	1:C:102:ALA:N	2.34	0.42
1:B:34:LEU:HD12	1:B:60:LEU:CD1	2.50	0.42
1:C:2:SER:N	1:C:39:GLU:OE1	2.53	0.42
1:C:43:TRP:CE3	1:C:105:VAL:HG21	2.54	0.42
1:E:103:ARG:HG3	1:E:103:ARG:NH1	2.35	0.42
1:A:16:GLU:OE1	1:A:16:GLU:HA	2.19	0.42
1:D:86:ILE:O	1:D:90:LEU:HG	2.20	0.42
1:E:86:ILE:HG13	1:E:86:ILE:H	1.70	0.41
1:D:73:GLN:C	1:D:75:SER:N	2.74	0.41
1:B:71:PHE:CD2	1:B:79:TYR:HB3	2.56	0.41
1:B:73:GLN:HG2	1:C:45:TYR:OH	2.20	0.41
1:C:28:MET:SD	1:D:78:LEU:HA	2.60	0.41
1:D:8:GLN:NE2	5:D:301:HOH:O	2.53	0.41
1:A:34:LEU:O	1:A:38:ILE:HG13	2.21	0.41
1:C:29:GLU:O	1:C:33:PHE:HD1	2.03	0.41
1:E:12:THR:HA	1:E:15:LEU:HG	2.03	0.41
1:A:2:SER:O	1:A:5:ASN:HB2	2.21	0.41
1:B:107:ARG:HH11	1:B:107:ARG:HG2	1.86	0.40
1:D:117:GLN:O	1:D:121:THR:HG23	2.21	0.40
1:E:49:LYS:HE3	1:E:51:SER:OG	2.21	0.40

All (2) 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:B:88:GLN:OE1	1:B:88:GLN:OE1[6_566]	1.84	0.36
1:C:88:GLN:NE2	1:C:88:GLN:NE2[6_566]	1.84	0.36

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	122/129 (95%)	118 (97%)	4 (3%)	0	100	100
1	B	122/129 (95%)	117 (96%)	5 (4%)	0	100	100
1	C	100/129 (78%)	91 (91%)	9 (9%)	0	100	100
1	D	124/129 (96%)	114 (92%)	10 (8%)	0	100	100
1	E	121/129 (94%)	119 (98%)	2 (2%)	0	100	100
All	All	589/645 (91%)	559 (95%)	30 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	111/113 (98%)	107 (96%)	4 (4%)	35	64
1	B	111/113 (98%)	109 (98%)	2 (2%)	59	83
1	C	96/113 (85%)	91 (95%)	5 (5%)	23	49
1	D	112/113 (99%)	111 (99%)	1 (1%)	78	92
1	E	111/113 (98%)	104 (94%)	7 (6%)	18	40
All	All	541/565 (96%)	522 (96%)	19 (4%)	36	65

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	THR
1	A	61	LEU
1	A	76	ASN
1	A	84	ARG
1	B	65	ASP
1	B	73	GLN
1	C	25	SER
1	C	55	LEU
1	C	66	GLN
1	C	70	ARG
1	C	95	LEU
1	D	92	SER
1	E	18	LEU
1	E	33	PHE
1	E	77	VAL
1	E	84	ARG
1	E	97	LYS
1	E	105	VAL
1	E	117	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	ASN
1	A	20	GLN
1	A	32	GLN
1	A	73	GLN
1	A	80	GLN
1	A	81	HIS
1	A	82	ASN
1	B	5	ASN
1	B	6	GLN
1	B	19	HIS
1	B	67	GLN
1	B	82	ASN
1	B	88	GLN
1	B	91	GLN
1	B	124	GLN
1	C	3	GLN
1	C	5	ASN
1	D	5	ASN
1	D	6	GLN
1	D	8	GLN

Continued from previous page...

Mol	Chain	Res	Type
1	D	67	GLN
1	D	80	GLN
1	D	117	GLN
1	E	17	GLN
1	E	19	HIS
1	E	32	GLN
1	E	82	ASN
1	E	117	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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 for Mogul analysis.

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	$\#|Z| > 2$
3	FMT	D	201	-	2,2,2	1.01	0	1,1,1	0.49	0

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, 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	124/129 (96%)	-0.12	3 (2%)	59	60	25, 47, 86, 106	0
1	B	124/129 (96%)	0.15	9 (7%)	15	13	30, 55, 101, 109	0
1	C	104/129 (80%)	0.23	10 (9%)	8	6	29, 61, 105, 109	0
1	D	126/129 (97%)	-0.09	3 (2%)	59	60	22, 42, 84, 98	0
1	E	123/129 (95%)	0.39	8 (6%)	18	17	52, 75, 94, 98	0
All	All	601/645 (93%)	0.11	33 (5%)	25	24	22, 58, 97, 109	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	124	GLN	4.1
1	B	13	ARG	3.8
1	C	18	LEU	3.7
1	C	23	SER	3.5
1	B	121	THR	3.3
1	E	120	ALA	3.3
1	B	123	ALA	3.2
1	C	20	GLN	3.2
1	D	70	ARG	3.0
1	C	24	ASP	3.0
1	E	0	PRO	3.0
1	A	120	ALA	3.0
1	D	-1	GLY	2.9
1	E	96	GLU	2.8
1	C	110	TRP	2.7
1	B	12	THR	2.7
1	E	122	ALA	2.6
1	C	115	LEU	2.5
1	B	24	ASP	2.5
1	E	75	SER	2.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	107	ARG	2.5
1	A	117	GLN	2.4
1	E	1	GLY	2.3
1	B	20	GLN	2.3
1	B	124	GLN	2.3
1	E	72	LEU	2.2
1	E	13	ARG	2.2
1	C	17	GLN	2.2
1	C	6	GLN	2.1
1	B	1	GLY	2.1
1	C	114	ARG	2.1
1	B	23	SER	2.0
1	A	73	GLN	2.0

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 ⓘ

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, 95th 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
4	MG	E	201	1/1	0.83	0.20	48,48,48,48	1
3	FMT	D	201	3/3	0.93	0.28	48,48,50,51	0
2	NI	B	201	1/1	1.00	0.06	38,38,38,38	1

6.5 Other polymers ⓘ

There are no such residues in this entry.