Full wwPDB X-ray Structure Validation Report ⓘ

Dec 25, 2024 – 02:08 PM JST

PDB ID	:	8ZO4
Title	:	Crystal structure of Tfh TCR ectodomain thermostable mutant
Authors	:	Mori, S.; Nagae, M.; Yamasaki, S.
Deposited on	:	2024-05-28
Resolution	:	2.60 Å(reported)

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)	:	1.21
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

Full wwPDB X-ray Structure Validation Report
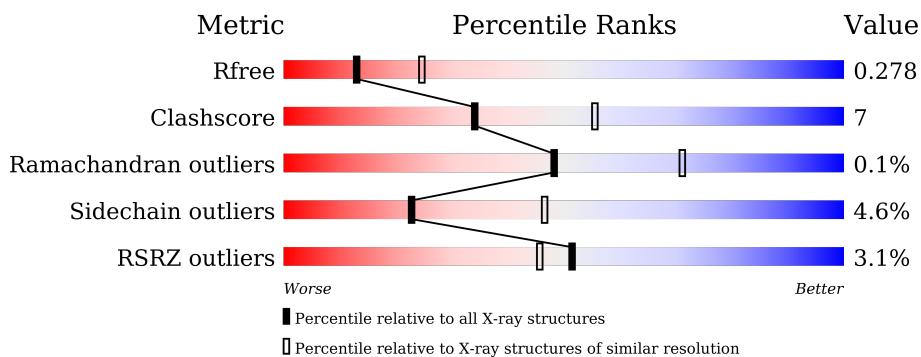
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION
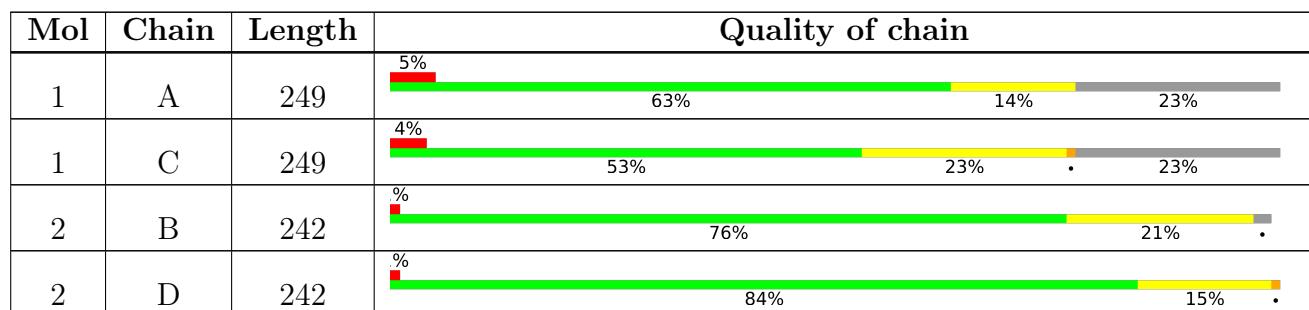
The reported resolution of this entry is 2.60 Å.

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		0.278
Clashscore		7
Ramachandran outliers		0.1%
Sidechain outliers		4.6%
RSRZ outliers		3.1%

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	3775 (2.60-2.60)
Clashscore	180529	4181 (2.60-2.60)
Ramachandran outliers	177936	4129 (2.60-2.60)
Sidechain outliers	177891	4129 (2.60-2.60)
RSRZ outliers	164620	3775 (2.60-2.60)

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	249	5% / 63% / 14% / 23%
1	C	249	4% / 53% / 23% / • / 23%
2	B	242	% / 76% / 21% / •
2	D	242	% / 84% / 15% / •

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 6931 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.
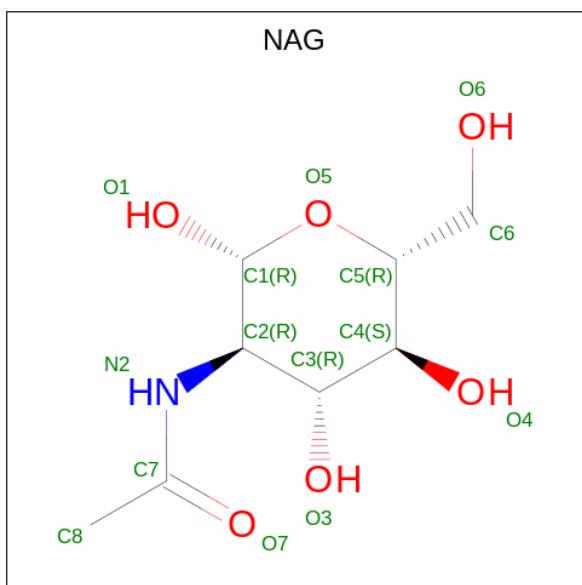
- Molecule 1 is a protein called TCR stable mutant Alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	192	Total	C	N	O	S	0	0	0
			1510	941	254	305	10			
1	C	191	Total	C	N	O	S	0	0	0
			1502	937	252	303	10			

- Molecule 2 is a protein called TCR stable mutant Beta chian.
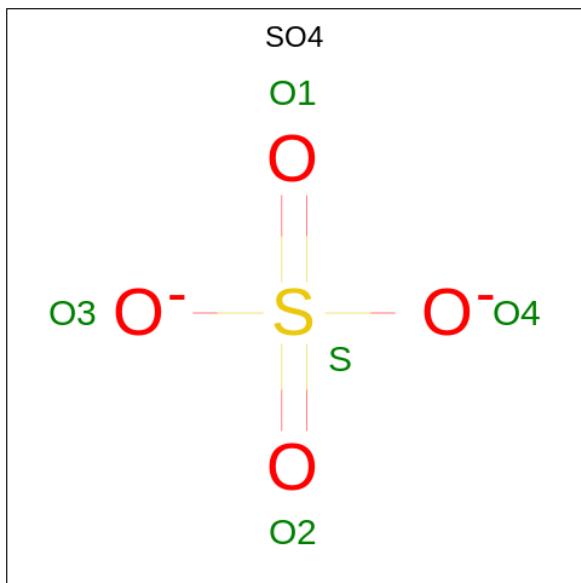
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	238	Total	C	N	O	S	0	0	0
			1902	1196	338	361	7			
2	D	242	Total	C	N	O	S	0	0	0
			1926	1209	342	368	7			

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	O	S	0	0
			5	4	1		
4	A	1	Total	O	S	0	0
			5	4	1		
4	A	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		
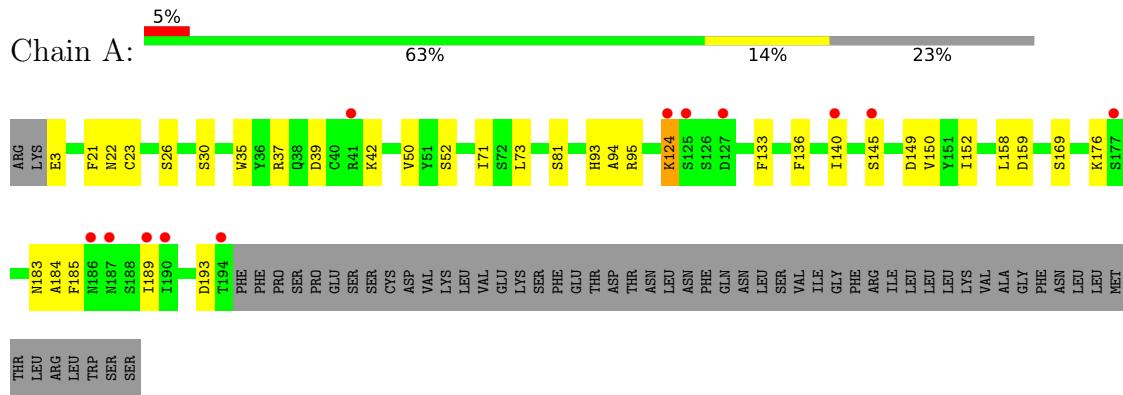
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	13	Total	O	0	0
			13	13		
5	B	8	Total	O	0	0
			8	8		
5	C	11	Total	O	0	0
			11	11		
5	D	20	Total	O	0	0
			20	20		
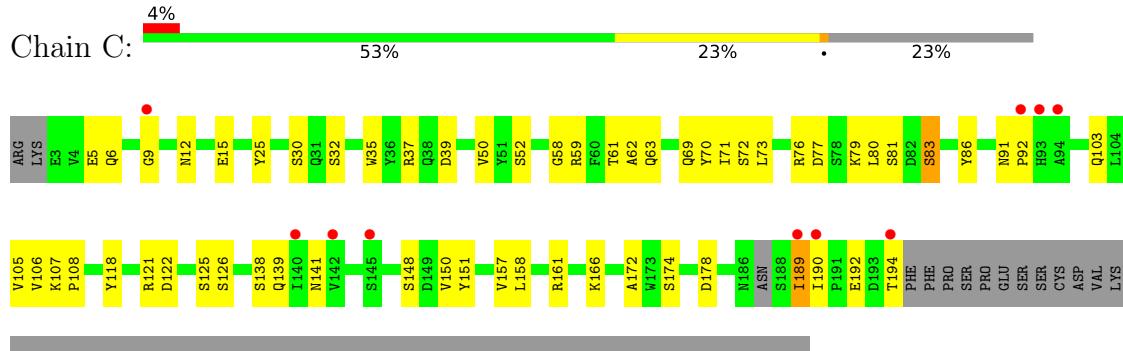
3 Residue-property plots ⓘ

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.
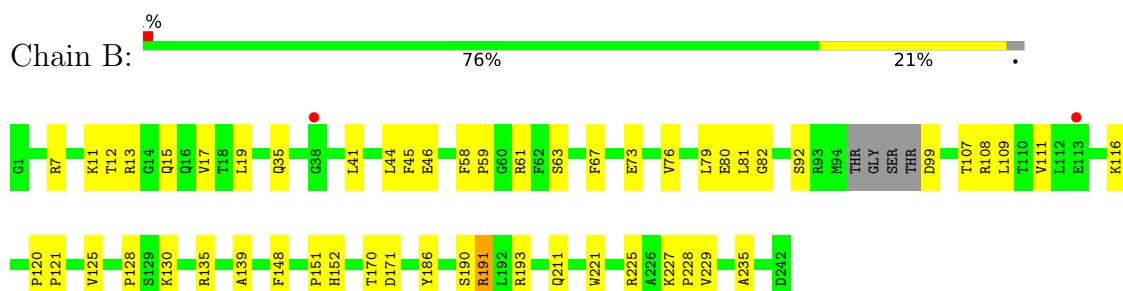
• Molecule 1: TCR stable mutant Alpha chain
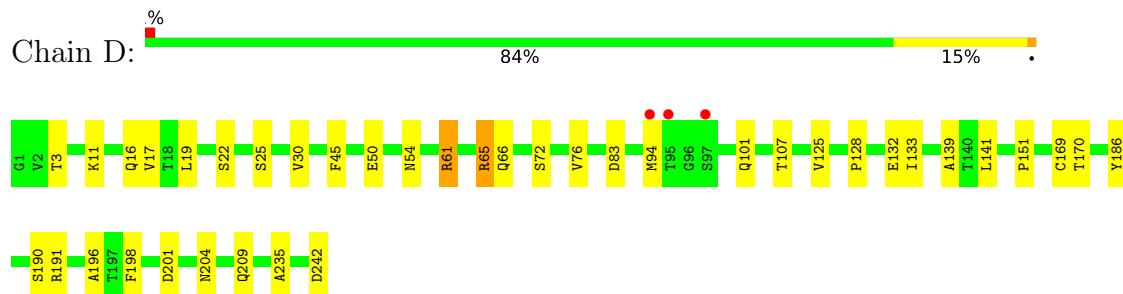
• Molecule 1: TCR stable mutant Alpha chain

• Molecule 2: TCR stable mutant Beta chian

• Molecule 2: TCR stable mutant Beta chian

Chain D:

%

84%

15%

G1 V2 T3 K11 Q16 V17 T18 L19 S22 S25 V30 F45 E50 N54 R61 R65 Q66 S72 V76 D83 M94 T95 G96 S97 Q101 T107 V125 P128 E132 I133 A139 T140 L141 P151 C169 T170 Y186

S190 R191 A196 T197 F198 D201 N204 Q209 A235 D242

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α, β, γ	89.16Å 89.16Å 208.68Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	44.58 – 2.60 44.58 – 2.60	Depositor EDS
% Data completeness (in resolution range)	100.0 (44.58-2.60) 100.0 (44.58-2.60)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.10 (at 2.61Å)	Xtriage
Refinement program	REFMAC 1.20.1_4487	Depositor
R, R_{free}	0.226 , 0.276 0.235 , 0.278	Depositor DCC
R_{free} test set	1449 reflections (4.77%)	wwPDB-VP
Wilson B-factor (Å^2)	56.1	Xtriage
Anisotropy	0.062	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 47.8	EDS
L-test for twinning[2]	$< |L| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.026 for -h,-k,l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	6931	wwPDB-VP
Average B, all atoms (Å^2)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.50% 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 ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, SO4

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	0.28	0/1542	0.54	0/2091
1	C	0.27	0/1533	0.54	0/2077
2	B	0.26	0/1952	0.52	0/2651
2	D	0.26	0/1977	0.53	0/2687
All	All	0.26	0/7004	0.53	0/9506

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	1510	0	1427	24	0
1	C	1502	0	1421	33	0
2	B	1902	0	1821	30	0
2	D	1926	0	1844	18	0
3	A	14	0	13	1	0
4	A	15	0	0	1	0
4	B	10	0	0	0	0
5	A	13	0	0	1	0
5	B	8	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	11	0	0	0	0
5	D	20	0	0	1	0
All	All	6931	0	6526	100	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 (100) 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:C:30:SER:HA	1:C:92:PRO:HA	1.59	0.84
1:A:39:ASP:HB2	1:A:42:LYS:HB2	1.73	0.70
1:C:37:ARG:NH2	1:C:81:SER:O	2.26	0.69
2:B:116:LYS:O	2:B:225:ARG:NH2	2.27	0.68
1:C:189:ILE:HG22	1:C:190:ILE:H	1.60	0.66
1:A:93:HIS:CD2	1:A:94:ALA:H	2.13	0.66
1:C:9:GLY:HA3	1:C:103:GLN:HB2	1.78	0.66
2:B:19:LEU:HD22	2:B:107:THR:HG21	1.81	0.63
2:B:221:TRP:HB2	2:B:227:LYS:HD3	1.83	0.60
1:A:52:SER:OG	4:A:302:SO4:O4	2.18	0.60
1:C:83:SER:OG	1:C:106:VAL:HG22	2.02	0.59
1:C:6:GLN:NE2	1:C:86:TYR:O	2.36	0.59
1:A:145:SER:HB2	1:A:150:VAL:HG13	1.85	0.58
2:B:13:ARG:HG3	2:B:80:GLU:HA	1.84	0.58
1:C:189:ILE:HG22	1:C:190:ILE:N	2.18	0.58
1:A:23:CYS:HB3	1:A:71:ILE:HG23	1.84	0.58
1:A:149:ASP:OD2	1:A:176:LYS:NZ	2.35	0.58
1:A:37:ARG:NH2	1:A:39:ASP:OD1	2.36	0.57
1:C:107:LYS:HB3	1:C:138:SER:HB3	1.86	0.57
2:B:12:THR:OG1	2:B:15:GLN:OE1	2.18	0.57
2:B:17:VAL:HG12	2:B:76:VAL:HB	1.87	0.57
1:C:58:GLY:O	1:C:76:ARG:NH2	2.37	0.56
2:B:80:GLU:HG2	2:B:82:GLY:H	1.71	0.55
1:C:50:VAL:HG11	1:C:71:ILE:HG23	1.87	0.55
1:C:80:LEU:HD12	1:C:106:VAL:HG23	1.89	0.55
2:D:3:THR:HB	2:D:22:SER:HB2	1.87	0.55
2:D:151:PRO:HB3	2:D:186:TYR:CG	2.41	0.55
1:A:124:LYS:NZ	2:B:125:VAL:HG22	2.21	0.55
2:D:101:GLN:NE2	5:D:303:HOH:O	2.41	0.54
1:C:35:TRP:CE2	1:C:73:LEU:HB2	2.44	0.53
1:A:158:LEU:HD12	1:A:159:ASP:N	2.24	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:32:SER:HB2	1:C:91:ASN:HB3	1.90	0.52
2:B:151:PRO:HB3	2:B:186:TYR:CG	2.45	0.52
2:D:17:VAL:HG12	2:D:76:VAL:HB	1.92	0.52
1:C:80:LEU:HD22	1:C:166:LYS:HD3	1.92	0.51
2:B:79:LEU:HD21	2:B:109:LEU:HD21	1.91	0.51
2:B:125:VAL:HG13	2:B:235:ALA:HB3	1.92	0.51
2:B:227:LYS:HG2	2:B:229:VAL:HG13	1.93	0.50
1:C:80:LEU:HA	1:C:106:VAL:HG21	1.92	0.50
1:C:121:ARG:HD3	1:C:126:SER:O	2.12	0.50
1:A:37:ARG:NH1	1:A:81:SER:O	2.44	0.49
2:D:198:PHE:O	2:D:204:ASN:ND2	2.42	0.48
2:D:50:GLU:HA	2:D:66:GLN:HB3	1.96	0.47
2:B:58:PHE:HD2	2:B:59:PRO:HD2	1.80	0.47
1:A:124:LYS:HZ1	2:B:125:VAL:H	1.63	0.47
2:D:19:LEU:HD22	2:D:107:THR:HG21	1.96	0.47
2:B:108:ARG:HD2	2:B:152:HIS:CE1	2.50	0.46
2:B:130:LYS:HD2	2:B:130:LYS:H	1.79	0.46
1:C:79:LYS:HD3	1:C:81:SER:OG	2.15	0.46
1:C:80:LEU:HA	1:C:106:VAL:CG2	2.46	0.46
1:C:150:VAL:HA	1:C:174:SER:HB2	1.97	0.46
1:A:158:LEU:HD21	2:B:193:ARG:HB2	1.97	0.46
2:B:120:PRO:HD3	2:B:228:PRO:HB3	1.96	0.46
2:B:11:LYS:HE2	2:B:17:VAL:HG23	1.98	0.46
1:C:192:GLU:OE1	1:C:194:THR:OG1	2.33	0.46
2:D:30:VAL:HG11	2:D:72:SER:HB3	1.97	0.46
2:B:128:PRO:HG2	2:B:139:ALA:HB1	1.98	0.46
2:B:67:PHE:HE2	2:B:73:GLU:HG3	1.79	0.45
1:C:12:ASN:HA	1:C:105:VAL:O	2.16	0.45
1:C:122:ASP:HB3	1:C:125:SER:O	2.16	0.45
1:A:133:PHE:HB2	1:A:185:PHE:CE2	2.52	0.45
1:A:21:PHE:HB2	1:A:73:LEU:HB3	1.98	0.45
1:A:93:HIS:CD2	1:A:94:ALA:N	2.83	0.45
1:A:136:PHE:CD1	1:A:140:ILE:HD11	2.51	0.45
1:A:3:GLU:N	1:A:26:SER:HG	2.14	0.44
1:C:15:GLU:OE2	1:C:166:LYS:NZ	2.50	0.44
2:B:170:THR:HG23	2:B:190:SER:HB2	1.99	0.44
2:B:130:LYS:HD2	2:B:130:LYS:N	2.33	0.44
2:D:133:ILE:HG23	2:D:196:ALA:HB1	1.98	0.44
1:C:62:ALA:HA	1:C:72:SER:O	2.17	0.43
2:D:128:PRO:HG2	2:D:139:ALA:HB1	2.01	0.43
2:D:170:THR:HG23	2:D:190:SER:HB2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:22:ASN:HD22	3:A:301:NAG:C7	2.30	0.43
1:A:35:TRP:CE2	1:A:73:LEU:HB2	2.54	0.43
1:C:61:THR:HG23	1:C:76:ARG:HH12	1.83	0.43
1:C:118:TYR:CE2	2:D:132:GLU:HG3	2.54	0.43
1:A:95:ARG:NH2	5:A:404:HOH:O	2.52	0.43
2:B:59:PRO:HB2	2:B:61:ARG:HG2	2.01	0.42
2:D:61:ARG:NH1	2:D:83:ASP:OD2	2.52	0.42
2:D:16:GLN:HG2	2:D:17:VAL:N	2.33	0.42
2:B:67:PHE:CE2	2:B:73:GLU:HG3	2.55	0.42
2:B:35:GLN:HB2	2:B:41:LEU:HD23	2.02	0.42
1:C:108:PRO:HG3	1:C:157:VAL:HG11	2.01	0.42
2:B:121:PRO:HB3	2:B:148:PHE:HB3	2.02	0.42
1:A:50:VAL:HG21	1:A:71:ILE:HD11	2.02	0.42
1:C:59:ARG:HD2	1:C:77:ASP:HB2	2.01	0.42
2:D:125:VAL:HG23	2:D:235:ALA:HB3	2.01	0.42
2:B:171:ASP:OD1	2:B:191:ARG:NH1	2.43	0.42
1:C:151:TYR:O	1:C:172:ALA:HA	2.19	0.41
2:D:201:ASP:HB3	2:D:204:ASN:ND2	2.36	0.41
1:A:124:LYS:N	1:A:124:LYS:HD3	2.36	0.41
1:C:139:GLN:H	1:C:139:GLN:HG2	1.60	0.41
2:B:81:LEU:HA	2:B:111:VAL:HB	2.01	0.41
1:C:158:LEU:HB3	2:D:169:CYS:HB2	2.02	0.41
1:A:93:HIS:CG	1:A:94:ALA:H	2.38	0.41
2:B:12:THR:H	2:B:12:THR:HG1	1.64	0.41
1:C:25:TYR:O	1:C:69:GLN:NE2	2.51	0.41
1:C:52:SER:O	1:C:63:GLN:NE2	2.54	0.41
2:D:65:ARG:HG3	2:D:66:GLN:N	2.36	0.40
1:A:152:ILE:HD11	1:A:184:ALA:O	2.21	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	190/249 (76%)	179 (94%)	11 (6%)	0	100	100
1	C	187/249 (75%)	177 (95%)	9 (5%)	1 (0%)	25	47
2	B	234/242 (97%)	229 (98%)	5 (2%)	0	100	100
2	D	240/242 (99%)	230 (96%)	10 (4%)	0	100	100
All	All	851/982 (87%)	815 (96%)	35 (4%)	1 (0%)	48	71

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	189	ILE

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	174/228 (76%)	168 (97%)	6 (3%)	32	58
1	C	173/228 (76%)	165 (95%)	8 (5%)	23	46
2	B	209/212 (99%)	199 (95%)	10 (5%)	21	44
2	D	212/212 (100%)	201 (95%)	11 (5%)	19	41
All	All	768/880 (87%)	733 (95%)	35 (5%)	23	46

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	SER
1	A	124	LYS
1	A	169	SER
1	A	183	ASN
1	A	189	ILE
1	A	193	ASP
2	B	7	ARG
2	B	44	LEU
2	B	45	PHE
2	B	46	GLU

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Mol	Chain	Res	Type
2	B	63	SER
2	B	92	SER
2	B	99	ASP
2	B	135	ARG
2	B	191	ARG
2	B	211	GLN
1	C	5	GLU
1	C	39	ASP
1	C	70	TYR
1	C	83	SER
1	C	141	ASN
1	C	148	SER
1	C	161	ARG
1	C	178	ASP
2	D	11	LYS
2	D	25	SER
2	D	45	PHE
2	D	54	ASN
2	D	61	ARG
2	D	65	ARG
2	D	94	MET
2	D	141	LEU
2	D	191	ARG
2	D	209	GLN
2	D	242	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	93	HIS
1	A	139	GLN
2	D	117	ASN
2	D	152	HIS

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 ⓘ

6 ligands are 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	$\#|Z| > 2$
4	SO4	B	302	-	4,4,4	0.15	0	6,6,6	0.09	0
4	SO4	A	302	-	4,4,4	0.14	0	6,6,6	0.05	0
4	SO4	B	301	-	4,4,4	0.14	0	6,6,6	0.07	0
3	NAG	A	301	1	14,14,15	0.19	0	17,19,21	0.42	0
4	SO4	A	304	-	4,4,4	0.14	0	6,6,6	0.05	0
4	SO4	A	303	-	4,4,4	0.14	0	6,6,6	0.05	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
3	NAG	A	301	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	301	NAG	O5-C5-C6-O6
3	A	301	NAG	C4-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	302	SO4	1	0
3	A	301	NAG	1	0

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	192/249 (77%)	0.28	12 (6%)	27	22	32, 53, 88, 104	0
1	C	191/249 (76%)	0.45	10 (5%)	34	28	40, 60, 93, 108	0
2	B	238/242 (98%)	0.31	2 (0%)	82	79	39, 61, 87, 108	0
2	D	242/242 (100%)	-0.08	3 (1%)	76	72	31, 49, 75, 98	0
All	All	863/982 (87%)	0.22	27 (3%)	51	46	31, 57, 88, 108	0

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	127	ASP	3.4
1	A	187	ASN	3.3
2	D	94	MET	3.2
2	D	95	THR	3.0
1	A	177	SER	3.0
1	A	145	SER	2.8
1	A	125	SER	2.8
1	C	93	HIS	2.7
1	C	142	VAL	2.6
1	A	140	ILE	2.6
1	C	9	GLY	2.6
2	B	38	GLY	2.6
1	A	186	ASN	2.5
1	A	189	ILE	2.5
1	A	190	ILE	2.4
1	C	92	PRO	2.4
1	A	194	THR	2.4
2	D	97	SER	2.4
1	C	190	ILE	2.3
1	A	124	LYS	2.2
1	C	145	SER	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	189	ILE	2.2
1	C	94	ALA	2.1
2	B	113	GLU	2.1
1	C	194	THR	2.1
1	C	140	ILE	2.1
1	A	41	ARG	2.1

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
3	NAG	A	301	14/15	0.69	0.17	70,81,87,91	0
4	SO4	B	302	5/5	0.79	0.35	78,79,87,130	0
4	SO4	A	304	5/5	0.85	0.13	70,75,96,124	0
4	SO4	A	303	5/5	0.90	0.11	57,61,77,88	0
4	SO4	B	301	5/5	0.96	0.08	46,55,55,67	0
4	SO4	A	302	5/5	0.98	0.06	44,46,55,60	0

6.5 Other polymers ⓘ

There are no such residues in this entry.