WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2025 – 10:03 AM EDT

PDB ID	:	2FPZ / pdb_00002fpz
Title	:	Human tryptase with 2-amino benzimidazole
Authors	:	Somoza, J.R.
Deposited on	:	2006-01-17
Resolution	:	2.00 Å(reported)

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

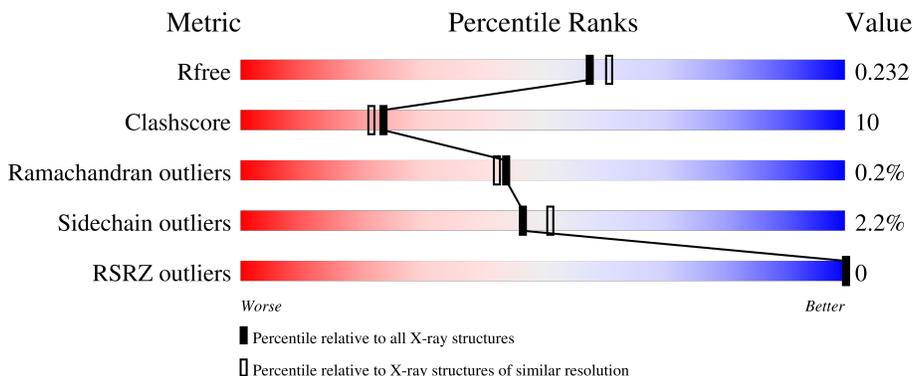|		
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 2.00 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		0.232
Clashscore		10
Ramachandran outliers		0.2%
Sidechain outliers		2.2%
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	9409 (2.00-2.00)
Clashscore	180529	10737 (2.00-2.00)
Ramachandran outliers	177936	10628 (2.00-2.00)
Sidechain outliers	177891	10627 (2.00-2.00)
RSRZ outliers	164620	9409 (2.00-2.00)

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.

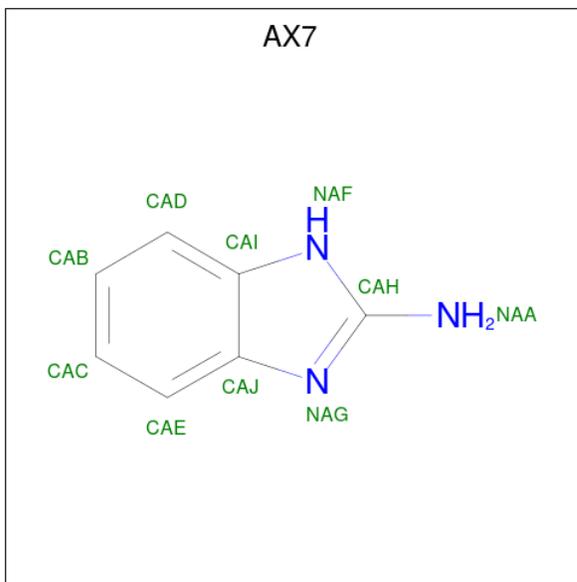| Mol	Chain	Length	Quality of chain
1	A	245	75% 23% ••
1	B	245	78% 20% ••
1	C	245	75% 22% ••
1	D	245	82% 17% •

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 8240 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 Tryptase beta-2.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	243	Total	C	N	O	S		0	0	0
			1920	1230	338	340	12				
1	B	243	Total	C	N	O	S		0	0	0
			1920	1230	338	340	12				
1	C	243	Total	C	N	O	S		0	0	0
			1920	1230	338	340	12				
1	D	243	Total	C	N	O	S		0	0	0
			1920	1230	338	340	12				

- Molecule 2 is 1H-benzimidazol-2-amine (CCD ID: AX7) (formula: $C_7H_7N_3$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	N	0	0
			10	7	3		
2	B	1	Total	C	N	0	0
			10	7	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	C	1	Total 10	C 7	N 3	0	0
2	D	1	Total 10	C 7	N 3	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	131	Total 131	O 131	0	0
3	B	159	Total 159	O 159	0	0
3	C	120	Total 120	O 120	0	0
3	D	110	Total 110	O 110	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.
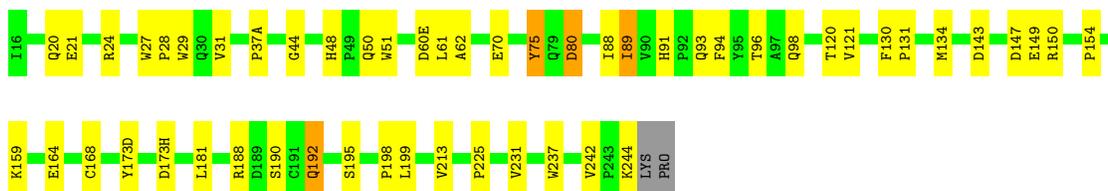
- Molecule 1: Tryptase beta-2

Chain A:
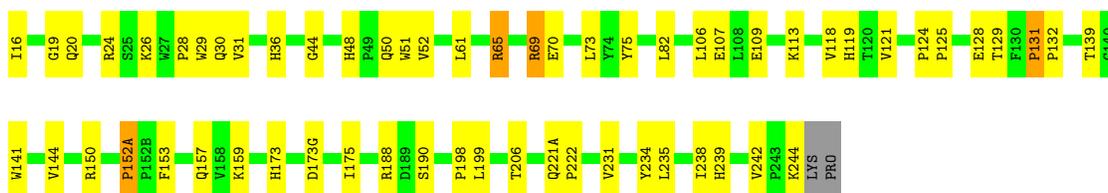
- Molecule 1: Tryptase beta-2

Chain B:

- Molecule 1: Tryptase beta-2

Chain C:

- Molecule 1: Tryptase beta-2

Chain D:

L181 Q192 P198 L199 K202 G211 P225 V231 K244 LYS PRO

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α, β, γ	78.89Å　78.89Å　165.98Å 90.00°　90.00°　120.00°	Depositor
Resolution (Å)	19.97　–　2.00 19.97　–　2.00	Depositor EDS
% Data completeness (in resolution range)	90.9 (19.97-2.00) 91.1 (19.97-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.35 (at 2.01Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.207　,　0.240 0.198　,　0.232	Depositor DCC
R_{free} test set	7741 reflections (10.08%)	wwPDB-VP
Wilson B-factor (Å^2)	19.2	Xtriage
Anisotropy	0.099	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 23.3	EDS
L-test for twinning [2]	$< |L| > = 0.51, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.017 for -h,-k,l 0.477 for h,-h-k,-l 0.017 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	8240	wwPDB-VP
Average B, all atoms (Å^2)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.41% 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: AX7

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	0.42	0/1985	0.93	8/2720 (0.3%)
1	B	0.41	0/1985	0.93	9/2720 (0.3%)
1	C	0.42	0/1985	0.95	7/2720 (0.3%)
1	D	0.40	0/1985	0.93	5/2720 (0.2%)
All	All	0.41	0/7940	0.94	29/10880 (0.3%)

There are no bond length outliers.

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	205	GLY	N-CA-C	-8.28	96.61	112.02
1	C	175	ILE	N-CA-C	-7.69	104.94	111.56
1	A	175	ILE	N-CA-C	-7.14	105.42	111.56
1	A	131	PRO	N-CA-C	6.92	117.99	110.58
1	D	199	LEU	N-CA-C	-6.25	98.23	108.41
1	C	131	PRO	N-CA-C	6.12	117.13	110.58
1	B	94	PHE	N-CA-C	6.07	119.79	110.20
1	D	94	PHE	N-CA-C	6.01	119.70	110.20
1	B	199	LEU	N-CA-C	-5.88	97.73	108.02
1	A	152(A)	PRO	N-CA-C	-5.83	104.87	110.47
1	A	190	SER	N-CA-C	-5.77	102.23	110.59
1	B	242	VAL	N-CA-C	5.65	113.47	107.76
1	B	80	ASP	N-CA-C	5.50	118.21	110.23
1	B	120	THR	N-CA-C	5.50	117.80	110.53
1	C	152(A)	PRO	N-CA-C	-5.49	105.20	110.47
1	D	152(A)	PRO	N-CA-C	-5.47	105.22	110.47
1	C	242	VAL	N-CA-C	5.40	113.81	107.77
1	B	190	SER	N-CA-C	-5.35	102.54	110.46
1	D	124	PRO	N-CA-C	5.25	116.19	110.58
1	B	231	VAL	N-CA-C	5.22	116.57	110.62

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	51	TRP	N-CA-C	5.22	117.95	109.24
1	A	69	ARG	N-CA-C	5.21	118.11	110.30
1	A	231	VAL	N-CA-C	5.20	115.82	110.36
1	B	75	TYR	N-CA-C	5.19	117.84	111.82
1	C	190	SER	N-CA-C	-5.17	102.36	110.17
1	C	231	VAL	N-CA-C	5.16	115.78	110.36
1	D	100	GLY	N-CA-C	5.16	117.56	111.63
1	A	242	VAL	N-CA-C	5.15	113.53	107.77
1	A	199	LEU	N-CA-C	-5.11	99.08	108.02

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	1920	0	1855	38	0
1	B	1920	0	1855	41	0
1	C	1920	0	1855	44	0
1	D	1920	0	1855	34	0
2	A	10	0	7	0	0
2	B	10	0	7	0	0
2	C	10	0	7	0	0
2	D	10	0	7	0	0
3	A	131	0	0	1	0
3	B	159	0	0	3	0
3	C	120	0	0	4	0
3	D	110	0	0	1	0
All	All	8240	0	7448	152	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 10.

All (152) 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:D:147:ASP:HA	1:D:150:ARG:HH12	1.21	1.02
1:A:65:ARG:HG2	1:A:82:LEU:HB3	1.37	1.01
1:D:163:MET:HE1	1:D:171:LYS:HD2	1.52	0.90
1:D:147:ASP:HA	1:D:150:ARG:NH1	1.89	0.87
1:D:69:ARG:HH12	1:D:71:GLN:HE21	1.26	0.83
1:C:48:HIS:HD2	1:C:50:GLN:H	1.26	0.83
1:B:48:HIS:HE1	1:B:50:GLN:HE21	1.31	0.78
1:B:131:PRO:HD2	1:B:134:MET:HE2	1.69	0.75
1:B:21:GLU:HG3	1:B:154:PRO:HB2	1.70	0.74
1:B:192:GLN:HE21	1:B:192:GLN:H	1.35	0.71
1:C:48:HIS:CD2	1:C:50:GLN:H	2.08	0.70
1:C:202:LYS:NZ	1:C:205:GLY:HA2	2.07	0.68
1:C:147:ASP:HA	1:C:150:ARG:HH21	1.57	0.68
1:D:21:GLU:HG3	1:D:154:PRO:HB2	1.75	0.68
1:C:188:ARG:HH11	1:C:188:ARG:HG2	1.57	0.67
1:B:192:GLN:H	1:B:192:GLN:NE2	1.93	0.66
1:C:75:TYR:CE2	1:D:75:TYR:HB2	2.30	0.66
1:B:48:HIS:HE1	1:B:50:GLN:NE2	1.92	0.66
1:C:114:VAL:HG23	1:C:119:HIS:HB3	1.78	0.65
1:D:163:MET:CE	1:D:168:CYS:HA	2.28	0.64
1:C:147:ASP:HA	1:C:150:ARG:NH2	2.14	0.63
1:A:48:HIS:HD2	1:A:50:GLN:H	1.45	0.62
1:C:60(B):ASP:O	1:C:60(D):LYS:HE2	2.00	0.62
1:D:24:ARG:CZ	1:D:71:GLN:HG3	2.29	0.62
1:D:150:ARG:HD2	1:D:150:ARG:N	2.13	0.62
1:B:31:VAL:HG22	1:B:44:GLY:C	2.25	0.60
1:D:134:MET:HG3	1:D:135:PRO:HD2	1.83	0.60
1:C:37(B):TYR:OH	1:C:39:MET:HE2	2.01	0.60
1:A:48:HIS:CD2	1:A:50:GLN:H	2.19	0.60
1:B:24:ARG:HB2	1:B:24:ARG:NH1	2.17	0.59
1:A:24:ARG:NH1	1:A:24:ARG:HB2	2.17	0.59
1:C:221(A):GLN:HG3	1:C:222:PRO:HD2	1.84	0.59
1:C:177:ARG:NH1	3:C:1041:HOH:O	2.36	0.58
1:C:188:ARG:HG2	1:C:188:ARG:NH1	2.19	0.58
1:B:89:ILE:HD11	1:B:237:TRP:CZ2	2.39	0.57
1:B:61:LEU:CD2	1:B:88:ILE:HG13	2.34	0.57
1:C:125:PRO:HG2	1:C:128:GLU:HB2	1.85	0.57
1:D:69:ARG:HH12	1:D:71:GLN:NE2	1.99	0.56
1:D:192:GLN:NE2	1:D:192:GLN:H	2.04	0.56
1:B:91:HIS:HD2	1:B:93:GLN:H	1.52	0.56
1:D:192:GLN:H	1:D:192:GLN:HE21	1.53	0.56
1:C:60(D):LYS:HE3	3:C:1117:HOH:O	2.04	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:239:HIS:CE1	1:A:244:LYS:HE2	2.41	0.55
1:B:244:LYS:HB3	1:B:244:LYS:NZ	2.22	0.54
1:C:28:PRO:HG3	1:C:119:HIS:CE1	2.42	0.54
1:B:60(E):ASP:OD2	1:B:62:ALA:HB3	2.08	0.54
1:C:171:LYS:HA	1:C:173(A):LEU:HD23	1.89	0.54
1:C:202:LYS:HZ3	1:C:205:GLY:HA2	1.72	0.54
1:B:147:ASP:HA	1:B:150:ARG:HH12	1.73	0.53
1:B:173(H):ASP:HB2	3:B:1080:HOH:O	2.08	0.53
1:B:89:ILE:HD11	1:B:237:TRP:HZ2	1.74	0.53
1:A:70:GLU:OE2	1:A:73:LEU:HA	2.09	0.53
1:A:30:GLN:NE2	1:A:139:THR:OG1	2.42	0.53
1:C:205:GLY:O	1:C:206:THR:O	2.27	0.53
1:C:93:GLN:NE2	3:C:1036:HOH:O	2.43	0.52
1:D:24:ARG:NH1	1:D:71:GLN:HG3	2.24	0.52
1:A:24:ARG:HB2	1:A:24:ARG:HH11	1.74	0.51
1:C:31:VAL:HG22	1:C:44:GLY:C	2.35	0.51
1:B:143:ASP:OD2	1:B:150:ARG:NH1	2.43	0.51
1:B:20:GLN:HB2	3:B:1043:HOH:O	2.11	0.51
1:D:36:HIS:ND1	1:D:37:GLY:N	2.58	0.51
1:C:114:VAL:HG23	1:C:119:HIS:CB	2.41	0.51
1:D:163:MET:HE2	1:D:168:CYS:HA	1.92	0.50
1:D:61:LEU:HD23	1:D:88:ILE:CD1	2.41	0.50
1:A:31:VAL:HG22	1:A:44:GLY:C	2.37	0.50
1:A:125:PRO:HD2	1:A:128:GLU:HB2	1.94	0.50
1:D:61:LEU:CD2	1:D:88:ILE:HG13	2.42	0.49
1:A:28:PRO:HG3	1:A:119:HIS:CE1	2.47	0.49
1:A:16:ILE:O	1:A:144:VAL:HA	2.13	0.49
1:B:147:ASP:HA	1:B:150:ARG:NH1	2.27	0.49
1:D:27:TRP:N	1:D:28:PRO:HD3	2.28	0.48
1:A:36:HIS:HD2	3:A:1118:HOH:O	1.95	0.48
1:C:70:GLU:OE1	1:C:80:ASP:OD1	2.31	0.48
1:D:69:ARG:NH1	1:D:71:GLN:HE21	2.03	0.48
1:D:31:VAL:HG13	1:D:66:VAL:HG13	1.95	0.48
1:B:150:ARG:HD3	1:B:150:ARG:N	2.29	0.47
1:D:211:GLY:HA2	1:D:231:VAL:HG23	1.95	0.47
1:D:147:ASP:CA	1:D:150:ARG:NH1	2.70	0.47
1:C:177:ARG:HH11	1:C:177:ARG:HG3	1.78	0.47
1:D:29:TRP:CG	1:D:121:VAL:HB	2.49	0.47
1:B:195:SER:HA	1:B:213:VAL:HG12	1.96	0.47
1:C:29:TRP:CG	1:C:121:VAL:HB	2.49	0.47
1:C:69:ARG:HG2	1:C:69:ARG:HH11	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:29:TRP:CG	1:A:121:VAL:HB	2.50	0.47
1:A:28:PRO:HA	1:A:69:ARG:HD2	1.96	0.47
1:C:73:LEU:HG	1:C:141:TRP:CD1	2.51	0.46
1:D:23:PRO:HB2	1:D:26:LYS:HG3	1.97	0.46
1:A:52:VAL:HB	1:A:106:LEU:HB2	1.96	0.46
1:C:230:ARG:NH1	3:C:1103:HOH:O	2.49	0.46
1:B:27:TRP:N	1:B:28:PRO:HD3	2.30	0.46
1:C:224:ARG:N	1:C:225:PRO:HD3	2.31	0.46
1:A:65:ARG:CG	1:A:82:LEU:HB3	2.27	0.46
1:C:37(B):TYR:CZ	1:C:39:MET:HE2	2.51	0.46
1:A:150:ARG:HH11	1:A:150:ARG:HG3	1.80	0.46
1:C:173:HIS:CD2	1:C:173(G):ASP:HA	2.51	0.45
1:B:168:CYS:SG	1:B:225:PRO:HG2	2.57	0.45
1:C:28:PRO:HA	1:C:69:ARG:HD2	1.99	0.45
1:D:31:VAL:CG1	1:D:66:VAL:HG13	2.46	0.45
1:B:143:ASP:OD1	1:B:150:ARG:HD2	2.17	0.45
1:A:75:TYR:HB2	1:B:75:TYR:CE1	2.52	0.45
1:B:37(A):PRO:HD2	3:B:1079:HOH:O	2.17	0.45
1:B:98:GLN:HG2	1:C:96:THR:HG21	1.99	0.45
1:A:69:ARG:HH11	1:A:69:ARG:HG2	1.81	0.45
1:B:96:THR:HG21	1:C:98:GLN:HG2	1.98	0.45
1:A:61:LEU:N	1:A:61:LEU:HD12	2.33	0.44
1:B:159:LYS:O	1:B:188:ARG:HD3	2.17	0.44
1:B:89:ILE:O	1:B:89:ILE:HG13	2.17	0.44
1:C:203:VAL:HG21	1:C:208:LEU:HD12	2.00	0.44
1:A:73:LEU:HG	1:A:141:TRP:CD1	2.53	0.44
1:A:129:THR:O	1:A:129:THR:HG23	2.17	0.44
1:B:24:ARG:HB2	1:B:24:ARG:HH11	1.81	0.44
1:D:225:PRO:HA	3:D:1037:HOH:O	2.17	0.44
1:A:109:GLU:HA	1:A:109:GLU:OE1	2.17	0.44
1:B:181:LEU:C	1:B:181:LEU:HD23	2.43	0.43
1:C:131:PRO:HA	1:C:132:PRO:HD3	1.89	0.43
1:A:29:TRP:CD2	1:A:121:VAL:HB	2.54	0.43
1:A:118:VAL:HG13	1:A:118:VAL:O	2.18	0.43
1:A:221(A):GLN:HG3	1:A:222:PRO:HD2	2.00	0.43
1:C:37:GLY:C	1:C:37(B):TYR:N	2.74	0.43
1:D:181:LEU:C	1:D:181:LEU:HD23	2.44	0.43
1:A:124:PRO:O	1:A:235:LEU:HD21	2.18	0.43
1:A:150:ARG:HH11	1:A:150:ARG:CG	2.31	0.43
1:B:70:GLU:OE1	1:B:80:ASP:OD1	2.36	0.43
1:B:48:HIS:CE1	1:B:50:GLN:NE2	2.81	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:202:LYS:CE	1:C:205:GLY:HA2	2.49	0.42
1:B:29:TRP:CG	1:B:121:VAL:HB	2.54	0.42
1:C:158:VAL:CG2	1:C:188:ARG:HB3	2.49	0.42
1:A:51:TRP:CZ3	1:A:107:GLU:HB2	2.54	0.42
1:B:173(D):TYR:CE2	1:C:60(C):VAL:HA	2.54	0.42
1:C:30:GLN:NE2	1:C:139:THR:OG1	2.53	0.42
1:D:24:ARG:HD3	1:D:71:GLN:HG2	2.01	0.42
1:A:159:LYS:O	1:A:188:ARG:HD3	2.20	0.42
1:A:131:PRO:HA	1:A:132:PRO:HD3	1.89	0.41
1:B:61:LEU:HD21	1:B:88:ILE:HG13	2.02	0.41
1:A:152(A):PRO:HG3	1:A:153:PHE:CZ	2.55	0.41
1:B:61:LEU:HD23	1:B:88:ILE:CD1	2.49	0.41
1:C:118:VAL:O	1:C:118:VAL:HG13	2.20	0.41
1:D:24:ARG:HD3	1:D:71:GLN:CG	2.51	0.41
1:B:91:HIS:CD2	1:B:93:GLN:H	2.35	0.41
1:D:69:ARG:HH22	1:D:71:GLN:NE2	2.18	0.41
1:D:163:MET:HE3	1:D:167:ILE:HG22	2.02	0.41
1:A:19:GLY:HA3	1:A:157:GLN:O	2.20	0.41
1:A:26:LYS:HE3	1:A:26:LYS:HB3	1.98	0.41
1:A:124:PRO:HA	1:A:125:PRO:HD3	1.93	0.41
1:A:173:HIS:CD2	1:A:173(G):ASP:HA	2.56	0.41
1:B:130:PHE:HA	1:B:134:MET:HE2	2.02	0.41
1:C:84:PRO:HG2	1:C:109:GLU:CB	2.51	0.41
1:C:221(A):GLN:HG3	1:C:222:PRO:CD	2.50	0.41
1:A:234:TYR:O	1:A:238:ILE:HG13	2.21	0.41
1:D:132:PRO:HG2	1:D:164:GLU:HG3	2.03	0.41
1:B:195:SER:HA	1:B:213:VAL:CG1	2.51	0.40
1:D:150:ARG:N	1:D:150:ARG:CD	2.83	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	241/245 (98%)	228 (95%)	13 (5%)	0	100	100
1	B	241/245 (98%)	227 (94%)	14 (6%)	0	100	100
1	C	241/245 (98%)	228 (95%)	11 (5%)	2 (1%)	16	12
1	D	241/245 (98%)	231 (96%)	10 (4%)	0	100	100
All	All	964/980 (98%)	914 (95%)	48 (5%)	2 (0%)	44	42

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	206	THR
1	C	203	VAL

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	208/210 (99%)	203 (98%)	5 (2%)	44	47
1	B	208/210 (99%)	203 (98%)	5 (2%)	44	47
1	C	208/210 (99%)	206 (99%)	2 (1%)	73	78
1	D	208/210 (99%)	202 (97%)	6 (3%)	37	39
All	All	832/840 (99%)	814 (98%)	18 (2%)	47	51

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	GLN
1	A	65	ARG
1	A	113	LYS
1	A	198	PRO
1	A	206	THR
1	B	89	ILE
1	B	149	GLU
1	B	164	GLU
1	B	192	GLN

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Mol	Chain	Res	Type
1	B	198	PRO
1	C	129	THR
1	C	198	PRO
1	D	20	GLN
1	D	82	LEU
1	D	192	GLN
1	D	198	PRO
1	D	202	LYS
1	D	244	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	30	GLN
1	A	36	HIS
1	A	48	HIS
1	A	71	GLN
1	A	79	GLN
1	A	93	GLN
1	A	119	HIS
1	A	221(A)	GLN
1	A	223	ASN
1	B	30	GLN
1	B	50	GLN
1	B	91	HIS
1	B	93	GLN
1	B	166	HIS
1	B	192	GLN
1	B	240	HIS
1	C	30	GLN
1	C	48	HIS
1	C	50	GLN
1	C	71	GLN
1	C	93	GLN
1	C	119	HIS
1	C	221(A)	GLN
1	C	239	HIS
1	D	20	GLN
1	D	30	GLN
1	D	71	GLN
1	D	79	GLN
1	D	119	HIS

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Mol	Chain	Res	Type
1	D	166	HIS
1	D	192	GLN
1	D	223	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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

4 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	$\#|Z| > 2$
2	AX7	C	1002	-	11,11,11	1.93	3 (27%)	8,15,15	0.61	0
2	AX7	D	1003	-	11,11,11	1.95	3 (27%)	8,15,15	0.72	0
2	AX7	B	1001	-	11,11,11	1.90	3 (27%)	8,15,15	0.66	0
2	AX7	A	1000	-	11,11,11	1.95	3 (27%)	8,15,15	0.64	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
2	AX7	C	1002	-	-	-	0/2/2/2
2	AX7	D	1003	-	-	-	0/2/2/2
2	AX7	B	1001	-	-	-	0/2/2/2
2	AX7	A	1000	-	-	-	0/2/2/2

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1000	AX7	CAB-CAD	3.68	1.44	1.36
2	C	1002	AX7	CAC-CAE	3.68	1.44	1.36
2	D	1003	AX7	CAC-CAE	3.60	1.44	1.36
2	C	1002	AX7	CAB-CAD	3.56	1.44	1.36
2	A	1000	AX7	CAC-CAE	3.53	1.44	1.36
2	B	1001	AX7	CAB-CAD	3.51	1.44	1.36
2	D	1003	AX7	CAB-CAD	3.44	1.44	1.36
2	B	1001	AX7	CAC-CAE	3.44	1.43	1.36
2	D	1003	AX7	CAC-CAB	3.02	1.44	1.38
2	B	1001	AX7	CAC-CAB	2.90	1.44	1.38
2	A	1000	AX7	CAC-CAB	2.81	1.44	1.38
2	C	1002	AX7	CAC-CAB	2.79	1.44	1.38

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	243/245 (99%)	-1.63	0	100	100	12, 21, 38, 54	0
1	B	243/245 (99%)	-1.66	0	100	100	12, 20, 36, 58	0
1	C	243/245 (99%)	-1.63	0	100	100	12, 21, 39, 58	0
1	D	243/245 (99%)	-1.64	0	100	100	13, 20, 37, 51	0
All	All	972/980 (99%)	-1.64	0	100	100	12, 20, 38, 58	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 oligosaccharides 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
2	AX7	A	1000	10/10	0.99	0.03	20,22,25,30	0
2	AX7	B	1001	10/10	0.99	0.02	18,21,24,24	0
2	AX7	C	1002	10/10	0.99	0.03	22,25,28,30	0
2	AX7	D	1003	10/10	0.99	0.03	20,23,25,29	0

6.5 Other polymers ⓘ

There are no such residues in this entry.