WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Oct 3, 2023 – 09:30 AM EDT

PDB ID	:	6U2T
Title	:	Crystal structure of the T-state of maize C4-phosphoenolpyruvate carboxylase in complex with malate
Authors	:	Carrizosa-Carbajal, E.l.; Munoz-Clares, R.A.; Gonzalez-Segura, L.
Deposited on	:	2019-08-20
Resolution	:	2.80 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.80 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.
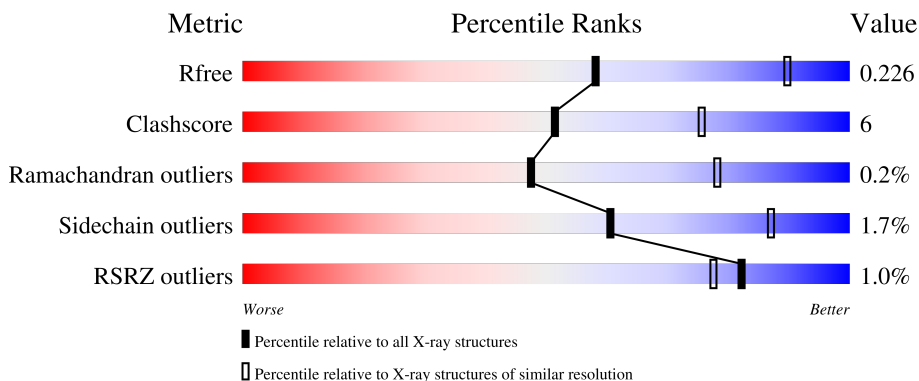
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	970	2%: 76% 18% · 5%
1	B	970	.%: 82% 12% 6%
1	C	970	.%: 82% 12% · 5%
1	D	970	.%: 83% 12% 5%

Full wwPDB X-ray Structure Validation Report

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 29386 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 Phosphoenolpyruvate carboxylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	919	Total 7305	C 4630	N 1276	O 1369	S 30	0	0	0
1	B	915	Total 7296	C 4624	N 1274	O 1368	S 30	0	3	0
1	C	918	Total 7297	C 4625	N 1276	O 1366	S 30	0	0	0
1	D	919	Total 7334	C 4646	N 1282	O 1376	S 30	0	3	0

- Molecule 2 is D-MALATE (three-letter code: MLT) (formula: $C_4H_6O_5$).
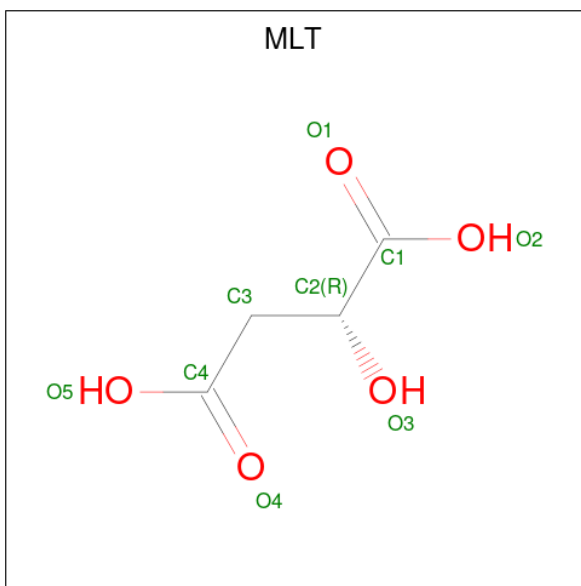
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 9	C 4	O 5	0	0
2	B	1	Total 9	C 4	O 5	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	C	1	Total 9	C 4	O 5	0	0
2	D	1	Total 9	C 4	O 5	0	0

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).
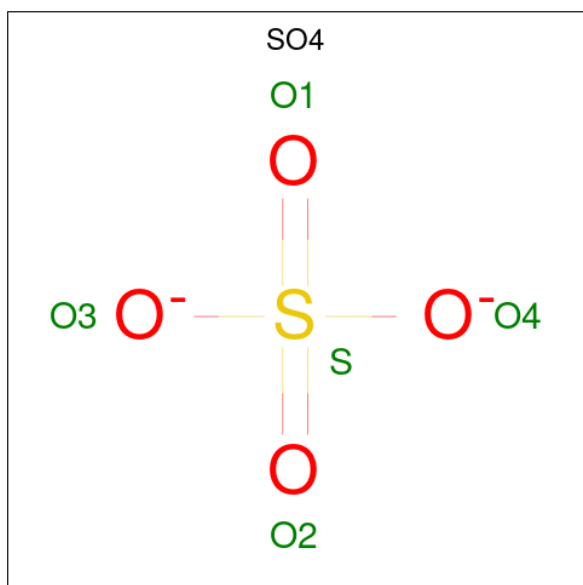
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 5	O 4	S 1	0	0
3	A	1	Total 5	O 4	S 1	0	0
3	B	1	Total 5	O 4	S 1	0	0
3	B	1	Total 5	O 4	S 1	0	0
3	B	1	Total 5	O 4	S 1	0	0
3	C	1	Total 5	O 4	S 1	0	0
3	C	1	Total 5	O 4	S 1	0	0
3	C	1	Total 5	O 4	S 1	0	0
3	D	1	Total 5	O 4	S 1	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total 5	O 4	S 1	0	0
3	D	1	Total 5	O 4	S 1	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
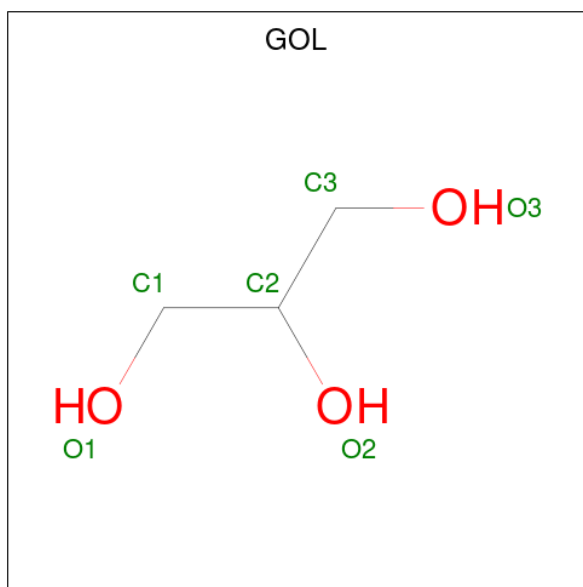
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	D	1	Total 6	C 3	O 3	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	3	Total 3	O 3	0	0
5	B	12	Total 12	O 12	0	0
5	C	21	Total 21	O 21	0	0
5	D	21	Total 21	O 21	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: Phosphoenolpyruvate carboxylase

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V443 S449 L450 V451 D454 I455 R456 D464 V465 R479 E480 W481 K485 K497 L500 I511 I533 E552 V562 E566 R567 L568 Q572 R590 V599 D603 A608 A613 Q616 L617 H653 R669 G674 I677 R693 F694

E712 D718 V722 T725 P747 E748 T749 R753 R759 P760 A761 LYS ARG ARG P765 I775 G795 Q810 V811 L812 K813 E814 M815 P820 V824 T825 L826 K835 I840 L848 T867 L871 L872 I880 T899 F904 L909 K910

D914 P915 N916 F917 T920 P923 P924 L925 S926 LYS GLU PHE ALA ASP GLU ASN LYS PRO ALA GLY LEU VAL LYS LEU ASN PRO ALA SER GLU Y947 P948 P949 G950 D953 T954 T958 M959 G961 M966 G970

• Molecule 1: Phosphoenolpyruvate carboxylase

Chain C:

82%   12%   • 5%

MET ALA SER THR LYS ALA PRO GLY PRO GLY GLU K12 L20 P25 Q50 L57 R58 E59 E63 G73 K74 G75 D76 G89 L97 L103 R121 K125 S141 R149 D171 H177 Q180 S181 A182 K203 D204 R219 D228 GLU ILE

ARG R232 A233 Q234 P235 M241 I248 V252 F259 L260 R261 R293 V307 L310 M314 F328 M332 L339 R340 V341 E344 E345 L346 HIS SER SER GLY SER LYS VAL THR LYS TYR TYR GLU PHE TRP LYS GLN I365 E369 R372 Y383

R386 E387 R388 A389 R390 H391 L392 S395 E399 F406 E411 L418 G434 D438 F446 S449 L450 V451 D454 I455 R456 Q457 E458 S459 H462 Q487 K497 R498 P499 D504 L505 P506 Q507 P531 Y532 R556 Q557 P558 V562 L568

R580 R590 Q596 V599 Q616 L617 Q621 L637 F638 H639 R647 R669 V670 T671 Q692 E700 S708 V732 V733 E740 S744 K762 P765 G768 I775 P776 W777 P789 V790 L828 V832 K835 P838 L847 Y864

L872 I880 L893 F904 Y907 R911 D914 P915 N916 F917 K918 V919 Q922 S926 LYS GLU PHE ALA ASP GLU ASN LYS PRO ALA GLY LEU VAL LYS LEU ASN PRO ALA SER GLU Y947 G961 M966 G970

• Molecule 1: Phosphoenolpyruvate carboxylase

Chain D:

83%   12%   5%

MET ALA SER THR LYS ALA PRO GLY PRO GLY GLU K12 I16 K27 D31 D32 Q50 L57 R58 Y65 K74 G75 D76 S100 L103 R121 S141 R149 H177 P178 T179 Q180 K203 D204 R219 D228 GLU ILE ARG ARG A233 Q234 P235 T236

D239 G244 V252 W253 K254 G255 V256 P257 K258 K268 R293 T304 N317 F328 M332 D337 E338 L339 R340 V341 R342 H347 SER SER SER GLY SER LYS VAL THR LYS TYR TYR ILE GLU PHE TRP LYS GLN I365 P366 P370 R386 E387 R388 A389 R390

H391 L392 F406 E411 E414 G434 D454 I455 R456 D464 V465 R479 P502 I511 A512 D513 V562 L568 Q596 V599 D603 L617 Q621 E622 D662 R669 S708 R714 T725 R729 V732 V733 E740 R743 S744

T749 E750 M754 N755 I756 G757 S758 R759 R763 R773 A774 I775 P776 V790 Q810 E814 V832 L843 L847 E852 E866 L870 L871 L872 I880 F904 D914 P915 N916 F917 K918 V919 T920 P921 S926 LYS GLU PHE ALA ASP GLU ASN LYS

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	103.94Å 140.93Å 376.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.36 – 2.80 48.36 – 2.80	Depositor EDS
% Data completeness (in resolution range)	94.5 (48.36-2.80) 94.5 (48.36-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$< I/\sigma(I) >$ [1]	2.84 (at 2.81Å)	Xtriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.183 , 0.226 0.184 , 0.226	Depositor DCC
R_{free} test set	6538 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	56.8	Xtriage
Anisotropy	0.121	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 37.8	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	29386	wwPDB-VP
Average B, all atoms (Å^2)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.27% 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 (i)

5.1 Standard geometry (i)

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

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	0.29	0/7456	0.46	1/10094 (0.0%)
1	B	0.27	0/7446	0.45	0/10079
1	C	0.27	0/7447	0.45	1/10081 (0.0%)
1	D	0.27	0/7485	0.45	1/10132 (0.0%)
All	All	0.27	0/29834	0.45	3/40386 (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	B	0	1
1	D	0	1
All	All	0	2

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	910	LYS	CD-CE-NZ	-7.74	93.89	111.70
1	C	57	LEU	CB-CG-CD2	-6.40	100.12	111.00
1	D	763	ARG	C-N-CA	5.68	135.90	121.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	298	ARG	Peptide

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Mol	Chain	Res	Type	Group
1	D	244	GLY	Peptide

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	7305	0	7299	127	0
1	B	7296	0	7283	67	0
1	C	7297	0	7299	77	0
1	D	7334	0	7321	69	0
2	A	9	0	4	0	0
2	B	9	0	4	0	0
2	C	9	0	4	0	0
2	D	9	0	4	0	0
3	A	10	0	0	1	0
3	B	15	0	0	0	0
3	C	15	0	0	0	0
3	D	15	0	0	1	0
4	D	6	0	8	0	0
5	A	3	0	0	0	0
5	B	12	0	0	0	0
5	C	21	0	0	0	0
5	D	21	0	0	0	0
All	All	29386	0	29226	329	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 6.

All (329) 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:759:ARG:HH22	1:D:775:ILE:HD13	1.25	0.97
1:A:910:LYS:NZ	1:A:917:PHE:CD2	2.50	0.80
1:C:89:GLY:HA3	1:C:922:GLN:HE21	1.48	0.79
1:C:203:LYS:HD3	1:C:204:ASP:H	1.50	0.76
1:A:910:LYS:NZ	1:A:917:PHE:CG	2.53	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:788:LEU:HD11	1:A:792:LEU:HD12	1.67	0.76
1:B:465:VAL:HG22	1:B:511:ILE:HG23	1.70	0.74
1:A:79:LYS:HA	1:A:82:GLU:HG3	1.71	0.73
1:C:599:VAL:HB	1:C:617:LEU:HD11	1.71	0.73
1:C:57:LEU:HD21	1:C:97:LEU:HD23	1.71	0.73
1:D:622:GLU:OE2	1:D:714:ARG:NH2	2.23	0.71
1:D:464:ASP:OD1	1:D:479:ARG:NH1	2.25	0.70
1:B:568:LEU:O	1:B:572:GLN:HG3	1.92	0.70
1:B:759:ARG:HH22	1:B:775:ILE:HD13	1.56	0.70
1:D:775:ILE:H	1:D:775:ILE:HD12	1.57	0.70
1:B:464:ASP:OD1	1:B:479:ARG:NH1	2.21	0.69
1:D:12:LYS:HG3	1:D:50:GLN:HE22	1.57	0.69
1:D:254:LYS:O	1:D:258:LYS:HD3	1.91	0.69
1:B:76:ASP:HB3	1:B:79:LYS:HE2	1.75	0.68
1:D:759:ARG:NH2	1:D:775:ILE:HD13	2.05	0.68
1:A:756:ILE:HD11	1:A:956:ILE:HD12	1.78	0.66
1:A:762:LYS:HG2	1:A:764:ARG:O	1.96	0.66
1:B:812:LEU:HA	1:B:815:MET:HE3	1.77	0.65
1:D:810:GLN:O	1:D:814:GLU:HG3	1.97	0.65
1:A:55:PRO:O	1:A:59:GLU:HG3	1.97	0.65
1:A:798:PHE:HZ	1:A:826:LEU:HD11	1.60	0.65
1:A:730:SER:HA	1:A:734:LYS:HG2	1.79	0.65
1:B:811:VAL:HG12	1:B:815:MET:HE2	1.77	0.65
1:A:456:ARG:NH2	3:A:1002:SO4:O3	2.30	0.64
1:B:872:LEU:HD21	1:B:880:ILE:HD13	1.79	0.64
1:A:20:LEU:HD22	1:A:893:LEU:HD22	1.78	0.64
1:A:778:ILE:O	1:A:782:THR:HG23	1.98	0.64
1:A:621:GLN:HE22	1:A:659:GLN:HE21	1.45	0.64
1:A:726:GLU:O	1:A:730:SER:OG	2.16	0.63
1:B:203:LYS:HE3	1:B:204:ASP:H	1.64	0.63
1:D:454:ASP:OD2	1:D:669:ARG:NH2	2.27	0.63
1:D:750:GLU:O	1:D:754:MET:HG3	1.97	0.63
1:A:728:TYR:HA	1:A:792:LEU:HD22	1.81	0.63
1:A:399:GLU:N	1:C:399:GLU:OE2	2.27	0.63
1:A:807:ARG:NH1	1:A:807:ARG:HA	2.14	0.63
1:C:203:LYS:HD3	1:C:204:ASP:N	2.14	0.62
1:D:725:THR:O	1:D:729:ARG:HG3	1.99	0.62
1:B:96:ILE:HD11	1:B:953:ASP:HB2	1.82	0.62
1:A:398:SER:HA	1:C:399:GLU:OE2	2.00	0.62
1:A:744:SER:HB2	1:A:849:VAL:HG12	1.82	0.62
1:B:406:PHE:HD1	1:B:411:GLU:HG3	1.65	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:59:GLU:O	1:C:63:GLU:HG3	2.00	0.61
1:A:869:GLN:N	1:A:869:GLN:OE1	2.34	0.61
1:B:599:VAL:HB	1:B:617:LEU:HD11	1.82	0.61
1:B:795:GLY:HA3	1:B:867:THR:HG22	1.82	0.61
1:A:872:LEU:HD21	1:A:880:ILE:HD13	1.83	0.60
1:A:809:PHE:CZ	1:A:813:LYS:HD3	2.35	0.60
1:A:621:GLN:HE22	1:A:659:GLN:NE2	1.98	0.60
1:B:74:LYS:O	1:B:79:LYS:HE3	2.02	0.60
1:D:338[A]:GLU:OE2	1:D:338[A]:GLU:N	2.28	0.60
1:C:639:HIS:O	1:C:671:THR:HG23	2.02	0.59
1:A:599:VAL:HB	1:A:617:LEU:HD11	1.84	0.59
1:C:241:MET:HG2	1:C:307:VAL:HG12	1.84	0.59
1:A:785:ARG:HH12	1:A:899:THR:HG22	1.68	0.59
1:A:639:HIS:O	1:A:671:THR:HG23	2.04	0.58
1:A:194:ARG:O	1:A:198:THR:HG23	2.04	0.58
1:A:910:LYS:NZ	1:A:917:PHE:CE2	2.70	0.58
1:C:57:LEU:HD12	1:C:57:LEU:O	2.04	0.58
1:D:775:ILE:HD12	1:D:775:ILE:N	2.19	0.58
1:A:86:LYS:O	1:A:922:GLN:NE2	2.36	0.57
1:D:236:THR:HG23	1:D:239:ASP:H	1.69	0.57
1:D:406:PHE:HD1	1:D:411:GLU:HG3	1.70	0.57
1:A:910:LYS:NZ	1:A:917:PHE:CD1	2.71	0.57
1:C:462:HIS:HE1	1:C:532:TYR:OH	1.87	0.57
1:A:790:VAL:HG11	1:A:832:VAL:HG21	1.86	0.57
1:A:493:GLU:OE1	1:C:498:ARG:NH2	2.36	0.56
1:C:341:VAL:O	1:C:344:GLU:HG2	2.06	0.56
1:D:317:ASN:OD1	1:D:386:ARG:NH1	2.35	0.56
1:D:617:LEU:O	1:D:621:GLN:HG3	2.06	0.56
1:D:562:VAL:HG22	1:D:596:GLN:HB3	1.88	0.56
1:A:171:ASP:HB3	1:A:669:ARG:HG2	1.86	0.56
1:A:102:ILE:HA	1:A:105:MET:HE3	1.87	0.56
1:A:814:GLU:HG2	1:A:818:GLU:OE1	2.06	0.56
1:B:914:ASP:OD2	1:B:916:ASN:N	2.34	0.55
1:C:498:ARG:HG2	1:C:499:PRO:HD2	1.88	0.55
1:A:236:THR:HG22	1:A:238:GLN:H	1.70	0.55
1:B:180:GLN:HG2	1:B:960:LYS:HE2	1.89	0.55
1:C:57:LEU:CD2	1:C:97:LEU:HD23	2.35	0.55
1:A:141:SER:OG	1:A:149:ARG:NH2	2.39	0.55
1:D:465:VAL:HG22	1:D:511:ILE:HG23	1.88	0.55
1:A:406:PHE:HD1	1:A:411:GLU:HG3	1.71	0.55
1:A:798:PHE:CZ	1:A:826:LEU:HD11	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:647:ARG:HD2	1:C:828:LEU:HD23	1.88	0.55
1:A:252:VAL:O	1:A:256:VAL:HG23	2.06	0.55
1:A:952:GLU:O	1:A:956:ILE:HG12	2.05	0.55
1:C:12:LYS:HG3	1:C:50:GLN:HE22	1.72	0.54
1:A:849:VAL:HG23	1:A:854:LYS:HG2	1.89	0.54
1:B:449:SER:O	1:B:451:VAL:N	2.40	0.54
1:A:12:LYS:HG3	1:A:13:HIS:CE1	2.43	0.54
1:A:737:ARG:HH21	1:A:853:LEU:HD11	1.72	0.54
1:A:236:THR:HG22	1:A:238:GLN:OE1	2.07	0.54
1:B:810:GLN:O	1:B:814:GLU:HG3	2.08	0.53
1:A:168:GLN:HE22	1:A:699:LEU:HA	1.74	0.53
1:C:790:VAL:HG11	1:C:832:VAL:HG21	1.89	0.53
1:D:387:GLU:OE2	1:D:390:ARG:NH1	2.42	0.53
1:A:156:LYS:HE3	1:A:703:MET:HB3	1.91	0.53
1:D:177:HIS:HD2	1:D:178:PRO:HD2	1.74	0.53
1:A:397:VAL:HG13	1:C:399:GLU:HG3	1.91	0.53
1:C:459:SER:HA	1:C:462:HIS:HD2	1.73	0.53
1:C:556:ARG:H	1:C:556:ARG:HD2	1.73	0.53
1:A:219:ARG:HD3	1:B:434:GLY:HA3	1.91	0.53
1:A:720:MET:HB3	1:A:797:ALA:HB1	1.91	0.53
1:C:121:ARG:HH22	1:C:125:LYS:HZ1	1.55	0.53
1:A:70:ASP:HB3	1:A:74:LYS:HE2	1.91	0.52
1:A:814:GLU:O	1:A:818:GLU:HG3	2.09	0.52
1:B:454:ASP:OD2	1:B:669:ARG:NH2	2.35	0.52
1:A:12:LYS:HG3	1:A:13:HIS:ND1	2.24	0.52
1:A:962:ILE:O	1:A:966:MET:HG2	2.09	0.52
1:B:179:THR:O	1:B:960:LYS:HE3	2.09	0.52
1:D:754:MET:HE2	1:D:952:GLU:HG3	1.91	0.52
1:A:720:MET:HE1	1:A:798:PHE:HD1	1.75	0.52
1:B:500:LEU:HB3	1:B:552:GLU:HG3	1.92	0.52
1:D:293:ARG:NH2	1:D:304:THR:OG1	2.37	0.52
1:D:365:ILE:HG23	1:D:366:PRO:HD3	1.90	0.52
1:A:845:ASP:O	1:A:849:VAL:HG22	2.10	0.51
1:C:203:LYS:HE2	1:C:203:LYS:HA	1.93	0.51
1:A:19:GLN:O	1:A:23:LEU:HD13	2.10	0.51
1:A:434:GLY:HA3	1:B:219:ARG:HD3	1.92	0.51
1:A:509:GLU:HA	1:A:509:GLU:OE1	2.09	0.51
1:D:790:VAL:HG11	1:D:832:VAL:HG21	1.93	0.51
1:C:487:GLN:OE1	1:C:580:ARG:NE	2.43	0.51
1:A:720:MET:HE1	1:A:798:PHE:CD1	2.45	0.51
1:A:562:VAL:HG22	1:A:596:GLN:HB3	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:619:ARG:O	1:A:623:GLU:HG3	2.10	0.51
1:D:254:LYS:O	1:D:258:LYS:CD	2.59	0.51
1:A:731:VAL:HG12	1:A:738:PHE:CE1	2.46	0.51
1:B:96:ILE:HD13	1:B:954:THR:HG22	1.93	0.51
1:B:795:GLY:CA	1:B:867:THR:HG22	2.41	0.51
1:D:339:LEU:HD21	1:D:370:PRO:HB2	1.93	0.51
1:C:369:GLU:HB3	1:C:372:ARG:HD2	1.93	0.50
1:D:252:VAL:O	1:D:256:VAL:HG23	2.11	0.50
1:A:317:ASN:OD1	1:A:386:ARG:NH1	2.38	0.50
1:C:20:LEU:HD22	1:C:893:LEU:HD22	1.93	0.50
1:C:406:PHE:HD1	1:C:411:GLU:HG3	1.76	0.50
1:A:737:ARG:NH2	1:A:853:LEU:HD11	2.27	0.50
1:C:562:VAL:HG22	1:C:596:GLN:HB3	1.93	0.50
1:B:55:PRO:O	1:B:59:GLU:HG3	2.12	0.50
1:C:775:ILE:HB	1:C:776:PRO:HD3	1.93	0.50
1:A:809:PHE:CE2	1:A:813:LYS:HD3	2.47	0.50
1:A:807:ARG:O	1:A:807:ARG:HD3	2.11	0.49
1:B:749:THR:O	1:B:753:ARG:HG3	2.12	0.49
1:D:740:GLU:O	1:D:744:SER:OG	2.30	0.49
1:A:369:GLU:OE2	1:A:372:ARG:HD2	2.12	0.49
1:D:141:SER:OG	1:D:149:ARG:NH2	2.44	0.49
1:C:732:VAL:HG23	1:C:733:VAL:HG23	1.93	0.49
1:C:73:GLY:C	1:C:74:LYS:HD2	2.33	0.49
1:D:177:HIS:CE1	1:D:180:GLN:HB3	2.47	0.49
1:A:826:LEU:HD12	1:A:871:LEU:HD13	1.94	0.49
1:B:566:GLU:HB3	1:B:603:ASP:HB3	1.94	0.49
1:C:558:PRO:HD2	1:C:590:ARG:NH2	2.28	0.49
1:A:339:LEU:CD2	1:A:370:PRO:HB2	2.43	0.49
1:A:339:LEU:HD21	1:A:370:PRO:HB2	1.95	0.49
1:A:449:SER:O	1:A:451:VAL:N	2.43	0.49
1:A:754:MET:CE	1:A:955:LEU:HD23	2.43	0.49
1:D:12:LYS:HG3	1:D:50:GLN:NE2	2.27	0.49
1:D:12:LYS:HG2	1:D:12:LYS:O	2.13	0.49
1:D:203:LYS:NZ	1:D:204:ASP:OD2	2.45	0.49
1:A:454:ASP:OD1	1:A:531:PRO:HD2	2.12	0.49
1:C:149:ARG:NH1	1:C:700:GLU:OE1	2.45	0.49
1:A:874:ILE:O	1:A:875:ALA:HB3	2.13	0.48
1:B:74:LYS:O	1:B:76:ASP:N	2.46	0.48
1:B:568:LEU:HD21	1:B:613:ALA:HA	1.94	0.48
1:B:339:LEU:HD21	1:B:370:PRO:HB2	1.95	0.48
1:A:822:PHE:O	1:A:826:LEU:HD23	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:141:SER:OG	1:C:149:ARG:NH2	2.46	0.48
1:D:622:GLU:CD	1:D:714:ARG:HH22	2.17	0.48
1:A:868:GLN:HB3	1:A:869:GLN:OE1	2.13	0.48
1:A:835:LYS:HB3	1:A:966:MET:CE	2.44	0.48
1:C:177:HIS:CD2	1:C:180:GLN:HB3	2.49	0.48
1:C:293:ARG:HG2	1:C:456:ARG:O	2.13	0.48
1:C:740:GLU:O	1:C:744:SER:OG	2.31	0.47
1:D:743:ARG:HH21	1:D:749:THR:HG22	1.79	0.47
1:A:19:GLN:O	1:A:22:GLN:HG2	2.14	0.47
1:A:807:ARG:HA	1:A:807:ARG:CZ	2.43	0.47
1:A:919:VAL:O	1:A:921:PRO:HD3	2.14	0.47
1:B:12:LYS:HD3	1:B:50:GLN:NE2	2.29	0.47
1:C:180:GLN:HE22	1:C:182:ALA:HA	1.79	0.47
1:C:339:LEU:HD12	1:C:418:LEU:HG	1.96	0.47
1:D:103:LEU:HD13	1:D:961:GLY:HA2	1.96	0.47
1:A:140:GLU:OE2	1:A:693:ARG:NH1	2.47	0.47
1:A:732:VAL:HG12	1:A:733:VAL:HG23	1.95	0.47
1:D:843:LEU:O	1:D:847:LEU:HD23	2.14	0.47
1:C:621:GLN:HE21	1:C:637:LEU:HD13	1.80	0.47
1:D:234:GLN:CD	1:D:758:SER:OG	2.52	0.47
1:B:96:ILE:CD1	1:B:953:ASP:HB2	2.45	0.47
1:D:919:VAL:O	1:D:921:PRO:HD3	2.14	0.47
1:A:754:MET:HE3	1:A:955:LEU:HD23	1.97	0.47
1:B:810:GLN:HG3	1:B:814:GLU:OE1	2.15	0.47
1:C:838:PRO:HG3	1:C:864:TYR:CE1	2.49	0.47
1:B:950:GLY:O	1:B:954:THR:HG23	2.14	0.47
1:C:872:LEU:HD21	1:C:880:ILE:HD13	1.96	0.47
1:B:102:ILE:HA	1:B:105:MET:HE3	1.97	0.47
1:C:74:LYS:O	1:C:76:ASP:N	2.47	0.47
1:D:754:MET:HB2	1:D:756:ILE:CD1	2.45	0.47
1:A:293:ARG:HG2	1:A:456:ARG:O	2.15	0.46
1:A:716:LEU:O	1:A:720:MET:HG3	2.15	0.46
1:A:740:GLU:O	1:A:744:SER:OG	2.33	0.46
1:C:171:ASP:HB3	1:C:669:ARG:HG2	1.96	0.46
1:A:321:ASP:O	1:A:325:GLU:HG3	2.15	0.46
1:B:62:GLN:O	1:B:66:GLU:HG3	2.14	0.46
1:B:293:ARG:NH2	1:B:304:THR:OG1	2.36	0.46
1:B:759:ARG:NH2	1:B:775:ILE:HD13	2.27	0.46
1:B:820:PRO:O	1:B:824:VAL:HG13	2.15	0.46
1:A:846:GLU:HA	1:A:854:LYS:HE2	1.98	0.46
1:D:775:ILE:H	1:D:775:ILE:CD1	2.28	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:872:LEU:HD21	1:D:880:ILE:HD13	1.98	0.46
1:A:32:ASP:HA	1:A:116:GLN:NE2	2.31	0.46
1:A:858:LYS:HE2	1:A:861:ARG:HH21	1.80	0.46
1:D:74:LYS:O	1:D:76:ASP:N	2.48	0.46
1:B:140:GLU:OE2	1:B:693:ARG:NH1	2.49	0.46
1:B:910:LYS:HE3	1:B:917:PHE:CD1	2.50	0.46
1:C:310:LEU:O	1:C:314:MET:HG3	2.16	0.46
1:D:954:THR:O	1:D:958:THR:HG23	2.15	0.46
1:A:71:TYR:CG	1:A:80:LEU:HD11	2.51	0.45
1:B:409:ILE:HD11	1:B:443:VAL:HG13	1.98	0.45
1:C:568:LEU:HD13	1:C:616:GLN:HG2	1.97	0.45
1:D:339:LEU:CD2	1:D:370:PRO:HB2	2.45	0.45
1:D:866:GLU:O	1:D:870:LEU:HD23	2.16	0.45
1:B:840:ILE:HD11	1:B:899:THR:HG23	1.98	0.45
1:C:261:ARG:NH2	1:C:438:ASP:OD2	2.43	0.45
1:D:342:ARG:HH12	1:D:414:GLU:CD	2.18	0.45
1:D:256:VAL:HB	1:D:257:PRO:HD3	1.99	0.45
1:C:103:LEU:HD13	1:C:961:GLY:HA2	1.98	0.45
1:D:16:ILE:HB	1:D:65:TYR:CE2	2.52	0.45
1:D:337:ASP:O	1:D:341:VAL:HG23	2.16	0.45
1:A:168:GLN:HE22	1:A:699:LEU:CA	2.30	0.45
1:B:775:ILE:HD12	1:B:775:ILE:H	1.82	0.45
1:C:638:PHE:CE1	1:C:671:THR:HG22	2.51	0.45
1:C:777:TRP:NE1	1:C:789:PRO:HB3	2.32	0.45
1:A:478:TYR:CZ	1:A:486:ARG:HD3	2.51	0.45
1:B:293:ARG:HG2	1:B:456:ARG:O	2.16	0.45
1:B:747:PRO:HB3	1:B:909:LEU:HD11	1.98	0.45
1:D:599:VAL:HB	1:D:617:LEU:HD11	1.98	0.44
1:A:74:LYS:O	1:A:76:ASP:N	2.51	0.44
1:B:103:LEU:HD13	1:B:961:GLY:HA2	1.99	0.44
1:B:339:LEU:CD2	1:B:370:PRO:HB2	2.47	0.44
1:B:835:LYS:HB3	1:B:966:MET:CE	2.46	0.44
1:A:718:ASP:O	1:A:722:VAL:HG23	2.16	0.44
1:C:556:ARG:H	1:C:556:ARG:CD	2.30	0.44
1:C:219:ARG:HD3	1:D:434:GLY:HA3	1.99	0.44
1:C:454:ASP:OD1	1:C:531:PRO:HD2	2.18	0.44
1:D:388:ARG:O	1:D:392:LEU:HG	2.18	0.44
1:A:920:THR:O	1:A:920:THR:OG1	2.29	0.44
1:B:954:THR:O	1:B:958:THR:HG23	2.18	0.44
1:A:785:ARG:HH12	1:A:899:THR:CG2	2.30	0.44
1:A:826:LEU:HD12	1:A:871:LEU:CD1	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:835:LYS:O	1:C:966:MET:HE1	2.18	0.44
1:A:116:GLN:OE1	1:A:120:ARG:NH2	2.47	0.43
1:C:234:GLN:HG3	1:C:235:PRO:HD2	2.00	0.43
1:A:585:ASP:OD1	1:A:586:TRP:N	2.52	0.43
1:B:608:ALA:HB1	1:B:725:THR:HG23	2.00	0.43
1:B:572:GLN:HG2	1:B:616:GLN:OE1	2.19	0.43
1:B:718:ASP:O	1:B:722:VAL:HG23	2.19	0.43
1:B:712:GLU:H	1:B:712:GLU:HG3	1.62	0.43
1:C:449:SER:O	1:C:451:VAL:N	2.47	0.43
1:D:293:ARG:HG2	1:D:456:ARG:O	2.19	0.43
1:A:792:LEU:HD23	1:A:793:GLY:N	2.33	0.43
1:A:808:ASN:O	1:A:811:VAL:HG12	2.18	0.43
1:C:911:ARG:HG2	1:C:917:PHE:CE2	2.54	0.43
1:A:835:LYS:O	1:A:966:MET:HE1	2.18	0.43
1:C:387:GLU:OE2	1:C:390:ARG:NH1	2.52	0.43
1:C:228:ASP:OD1	1:C:228:ASP:N	2.52	0.43
1:D:775:ILE:HB	1:D:776:PRO:HD3	2.00	0.43
1:A:807:ARG:NH1	1:A:810:GLN:HB3	2.34	0.42
1:C:847:LEU:HD11	1:C:907:TYR:CE1	2.54	0.42
1:D:732:VAL:HG23	1:D:733:VAL:HG23	2.00	0.42
1:A:837:ASP:OD2	1:A:840:ILE:HG12	2.19	0.42
1:C:57:LEU:HD21	1:C:97:LEU:CD2	2.46	0.42
1:D:365:ILE:CG2	1:D:366:PRO:HD3	2.49	0.42
1:A:426:CYS:O	1:B:226:ARG:NH2	2.53	0.42
1:B:61:VAL:HG22	1:B:98:VAL:HG13	2.01	0.42
1:B:674:GLY:O	1:B:677:ILE:HG22	2.19	0.42
1:C:388:ARG:O	1:C:392:LEU:HG	2.19	0.42
1:D:914:ASP:OD1	1:D:916:ASN:N	2.41	0.42
1:C:259:PHE:CE1	1:C:692:GLN:HA	2.55	0.42
1:A:653:HIS:HB2	1:A:693:ARG:HG2	2.01	0.42
1:C:762:LYS:NZ	1:C:768:GLY:O	2.51	0.42
1:C:434:GLY:HA3	1:D:219:ARG:HD3	2.00	0.42
1:B:288:TRP:CD1	1:B:454:ASP:HB2	2.55	0.42
1:D:31:ASP:N	1:D:31:ASP:OD1	2.50	0.42
1:A:236:THR:CG2	1:A:238:GLN:OE1	2.68	0.42
1:A:248:ILE:HA	1:A:252:VAL:HB	2.02	0.42
1:C:922:GLN:H	1:C:922:GLN:HG2	1.70	0.42
1:C:248:ILE:HA	1:C:252:VAL:HB	2.02	0.42
1:C:293:ARG:HG3	1:C:457:GLN:NE2	2.35	0.42
1:D:775:ILE:HD11	3:D:1002:SO4:S	2.60	0.42
1:A:683:GLU:OE1	1:A:685:HIS:N	2.51	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:653:HIS:HB2	1:B:693:ARG:HG2	2.01	0.41
1:A:89:GLY:C	1:A:922:GLN:HE21	2.24	0.41
1:A:777:TRP:NE1	1:A:789:PRO:HB3	2.35	0.41
1:C:121:ARG:HH22	1:C:125:LYS:NZ	2.17	0.41
1:A:713:TRP:CD1	1:A:815:MET:HE2	2.55	0.41
1:A:804:LYS:HE3	1:A:804:LYS:O	2.21	0.41
1:B:170:VAL:HG11	1:B:694:PHE:HB3	2.01	0.41
1:B:826:LEU:HD23	1:B:871:LEU:HD12	2.03	0.41
1:A:68:SER:HB3	1:A:899:THR:OG1	2.21	0.41
1:A:775:ILE:HB	1:A:776:PRO:HD3	2.03	0.41
1:B:481:TRP:CG	1:B:485:LYS:HD3	2.56	0.41
1:B:924:PRO:C	1:B:925:LEU:HD12	2.40	0.41
1:D:254:LYS:HB2	1:D:254:LYS:HE2	1.92	0.41
1:A:14:HIS:NE2	1:A:66:GLU:OE2	2.53	0.41
1:A:27:LYS:HB3	1:A:32:ASP:HB3	2.02	0.41
1:A:235:PRO:O	1:A:298:ARG:NH2	2.54	0.41
1:A:673:GLN:NE2	1:A:675:GLU:OE2	2.53	0.41
1:B:533:ILE:HG12	1:B:562:VAL:HG22	2.03	0.41
1:C:505:LEU:O	1:C:507:GLN:HG3	2.20	0.41
1:D:27:LYS:HB3	1:D:32:ASP:HB3	2.03	0.41
1:D:773:ARG:HE	1:D:773:ARG:HB3	1.72	0.41
1:A:264:ASP:O	1:A:268:LYS:HG2	2.21	0.41
1:A:472:HIS:CE1	1:C:497:LYS:HD3	2.56	0.41
1:A:835:LYS:HB3	1:A:966:MET:HE1	2.03	0.41
1:C:259:PHE:CZ	1:C:692:GLN:HA	2.56	0.41
1:D:852:GLU:OE1	1:D:852:GLU:N	2.52	0.41
1:D:969:THR:OG1	1:D:970:GLY:N	2.53	0.41
1:A:617:LEU:O	1:A:621:GLN:HG3	2.21	0.40
1:B:395:SER:OG	1:B:397:VAL:HG12	2.21	0.40
1:C:383:TYR:HD1	1:C:386:ARG:HH21	1.67	0.40
1:B:497:LYS:O	1:D:502:PRO:HB3	2.22	0.40
1:C:446:PHE:HB3	1:C:450:LEU:HA	2.02	0.40
1:D:754:MET:CE	1:D:952:GLU:HG3	2.50	0.40
1:C:762:LYS:HE3	1:C:762:LYS:HB3	1.89	0.40
1:C:918:LYS:HD3	1:C:918:LYS:HA	1.68	0.40
1:A:387:GLU:OE2	1:A:390:ARG:NH1	2.55	0.40
1:A:644:THR:HG21	1:A:824:VAL:HG12	2.03	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	911/970 (94%)	890 (98%)	19 (2%)	2 (0%)	47	78
1	B	908/970 (94%)	882 (97%)	24 (3%)	2 (0%)	47	78
1	C	910/970 (94%)	894 (98%)	15 (2%)	1 (0%)	51	81
1	D	914/970 (94%)	892 (98%)	21 (2%)	1 (0%)	51	81
All	All	3643/3880 (94%)	3558 (98%)	79 (2%)	6 (0%)	47	78

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	203	LYS
1	B	299	VAL
1	A	75	GLY
1	B	75	GLY
1	C	75	GLY
1	D	75	GLY

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	790/832 (95%)	773 (98%)	17 (2%)	52	83
1	B	789/832 (95%)	775 (98%)	14 (2%)	59	86
1	C	789/832 (95%)	779 (99%)	10 (1%)	69	91
1	D	793/832 (95%)	777 (98%)	16 (2%)	55	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	3161/3328 (95%)	3104 (98%)	57 (2%)	60 86

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	LYS
1	A	58	ARG
1	A	116	GLN
1	A	181	SER
1	A	328	PHE
1	A	332	MET
1	A	334	ARG
1	A	590	ARG
1	A	641	ARG
1	A	662	ASP
1	A	744	SER
1	A	758	SER
1	A	804	LYS
1	A	807	ARG
1	A	828	LEU
1	A	904	PHE
1	A	914	ASP
1	B	58	ARG
1	B	100	SER
1	B	121	ARG
1	B	177	HIS
1	B	184	ARG
1	B	328	PHE
1	B	332	MET
1	B	339	LEU
1	B	497	LYS
1	B	590[A]	ARG
1	B	590[B]	ARG
1	B	848	LEU
1	B	904	PHE
1	B	953	ASP
1	C	58	ARG
1	C	177	HIS
1	C	328	PHE
1	C	332	MET
1	C	395	SER
1	C	556	ARG

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Mol	Chain	Res	Type
1	C	568	LEU
1	C	708	SER
1	C	744	SER
1	C	904	PHE
1	D	57	LEU
1	D	58	ARG
1	D	100	SER
1	D	121	ARG
1	D	268	LYS
1	D	328	PHE
1	D	332	MET
1	D	338[A]	GLU
1	D	338[B]	GLU
1	D	513	ASP
1	D	568	LEU
1	D	603	ASP
1	D	662	ASP
1	D	708	SER
1	D	744	SER
1	D	904	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	168	GLN
1	A	177	HIS
1	A	659	GLN
1	A	922	GLN
1	B	19	GLN
1	B	22	GLN
1	B	817	ASN
1	C	188	GLN
1	C	462	HIS
1	C	621	GLN
1	C	922	GLN
1	C	967	GLN
1	D	177	HIS
1	D	787	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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

16 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	$\#|Z| > 2$
3	SO4	D	1003	-	4,4,4	0.13	0	6,6,6	0.09	0
3	SO4	B	1002	-	4,4,4	0.15	0	6,6,6	0.09	0
3	SO4	A	1003	-	4,4,4	0.15	0	6,6,6	0.12	0
3	SO4	A	1002	-	4,4,4	0.13	0	6,6,6	0.21	0
2	MLT	A	1001	-	8,8,8	1.06	0	10,10,10	1.56	1 (10%)
3	SO4	C	1003	-	4,4,4	0.14	0	6,6,6	0.10	0
3	SO4	C	1002	-	4,4,4	0.16	0	6,6,6	0.05	0
3	SO4	C	1004	-	4,4,4	0.14	0	6,6,6	0.06	0
3	SO4	D	1004	-	4,4,4	0.14	0	6,6,6	0.08	0
3	SO4	B	1004	-	4,4,4	0.14	0	6,6,6	0.07	0
3	SO4	D	1002	-	4,4,4	0.16	0	6,6,6	0.46	0
2	MLT	C	1001	-	8,8,8	1.04	0	10,10,10	1.66	2 (20%)
4	GOL	D	1005	-	5,5,5	0.90	0	5,5,5	0.99	0
2	MLT	D	1001	-	8,8,8	1.06	0	10,10,10	1.60	2 (20%)
3	SO4	B	1003	-	4,4,4	0.14	0	6,6,6	0.07	0
2	MLT	B	1001	-	8,8,8	1.06	0	10,10,10	1.77	3 (30%)

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	MLT	A	1001	-	-	4/8/8/8	-
2	MLT	C	1001	-	-	4/8/8/8	-
4	GOL	D	1005	-	-	2/4/4/4	-
2	MLT	D	1001	-	-	4/8/8/8	-
2	MLT	B	1001	-	-	3/8/8/8	-

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1001	MLT	O2-C1-C2	3.55	120.52	112.72
2	C	1001	MLT	O2-C1-C2	3.48	120.37	112.72
2	D	1001	MLT	O2-C1-C2	3.39	120.16	112.72
2	A	1001	MLT	O2-C1-C2	3.36	120.10	112.72
2	B	1001	MLT	C2-C3-C4	-2.22	106.64	112.13
2	C	1001	MLT	O5-C4-C3	2.10	120.80	114.07
2	D	1001	MLT	O5-C4-C3	2.07	120.70	114.07
2	B	1001	MLT	O5-C4-C3	2.00	120.49	114.07

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1001	MLT	O1-C1-C2-O3
2	A	1001	MLT	O2-C1-C2-O3
2	A	1001	MLT	O2-C1-C2-C3
2	B	1001	MLT	O1-C1-C2-O3
2	B	1001	MLT	O2-C1-C2-O3
2	C	1001	MLT	O1-C1-C2-O3
2	C	1001	MLT	O2-C1-C2-O3
4	D	1005	GOL	O1-C1-C2-C3
4	D	1005	GOL	O1-C1-C2-O2
2	D	1001	MLT	O1-C1-C2-O3
2	D	1001	MLT	O2-C1-C2-O3
2	A	1001	MLT	O1-C1-C2-C3
2	B	1001	MLT	O2-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
2	C	1001	MLT	O1-C1-C2-C3
2	C	1001	MLT	O2-C1-C2-C3
2	D	1001	MLT	O1-C1-C2-C3
2	D	1001	MLT	O2-C1-C2-C3

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1002	SO4	1	0
3	D	1002	SO4	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(Å²)	Q<0.9
1	A	919/970 (94%)	-0.02	16 (1%) 70	63	37, 62, 91, 118	0
1	B	915/970 (94%)	-0.23	6 (0%) 87	84	29, 48, 81, 107	0
1	C	918/970 (94%)	-0.16	8 (0%) 84	80	30, 47, 77, 119	0
1	D	919/970 (94%)	-0.21	8 (0%) 84	80	29, 46, 82, 119	0
All	All	3671/3880 (94%)	-0.15	38 (1%) 82	77	29, 51, 85, 119	0

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	916	ASN	4.3
1	C	916	ASN	4.1
1	A	765	PRO	4.1
1	A	919	VAL	3.7
1	D	919	VAL	3.6
1	C	765	PRO	3.6
1	D	75	GLY	3.3
1	C	919	VAL	3.3
1	D	914	ASP	3.3
1	A	922	GLN	3.2
1	C	914	ASP	3.1
1	D	917	PHE	3.0
1	A	917	PHE	3.0
1	A	807	ARG	2.9
1	A	921	PRO	2.9
1	C	25	PRO	2.8
1	A	767	GLY	2.7
1	A	920	THR	2.7
1	A	916	ASN	2.6
1	A	344	GLU	2.5
1	B	920	THR	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	92	PRO	2.4
1	A	926	SER	2.4
1	B	949	PRO	2.4
1	B	923	PRO	2.4
1	B	12	LYS	2.4
1	D	76	ASP	2.3
1	D	918	LYS	2.3
1	D	74	LYS	2.3
1	A	949	PRO	2.2
1	B	233	ALA	2.2
1	C	12	LYS	2.2
1	C	504	ASP	2.1
1	A	674	GLY	2.1
1	A	180	GLN	2.1
1	A	873	GLN	2.1
1	A	764	ARG	2.0
1	C	341	VAL	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
3	SO4	B	1003	5/5	0.79	0.23	102,116,129,130	0
3	SO4	B	1004	5/5	0.86	0.23	104,105,113,118	0
3	SO4	D	1003	5/5	0.89	0.20	92,101,106,121	0
3	SO4	D	1002	5/5	0.90	0.24	77,87,95,97	0
3	SO4	A	1002	5/5	0.91	0.22	94,97,101,104	0
3	SO4	C	1003	5/5	0.91	0.19	83,89,95,103	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	SO4	C	1004	5/5	0.92	0.19	101,106,113,115	0
3	SO4	B	1002	5/5	0.93	0.20	89,91,96,99	0
3	SO4	C	1002	5/5	0.93	0.14	98,100,112,126	0
3	SO4	A	1003	5/5	0.93	0.17	124,124,129,132	0
2	MLT	C	1001	9/9	0.94	0.22	43,48,52,61	0
4	GOL	D	1005	6/6	0.94	0.20	68,71,82,93	0
2	MLT	D	1001	9/9	0.95	0.24	40,43,50,51	0
2	MLT	B	1001	9/9	0.95	0.22	41,49,53,53	0
2	MLT	A	1001	9/9	0.95	0.20	51,61,62,68	0
3	SO4	D	1004	5/5	0.96	0.14	80,91,95,100	0

6.5 Other polymers (i)

There are no such residues in this entry.