



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 02:48 PM GMT

PDB ID : 4AJ9
Title : Catalase 3 from Neurospora crassa
Authors : Zarate-Romero, A.; Rudino-Pinera, E.
Deposited on : 2012-02-16
Resolution : 1.85 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

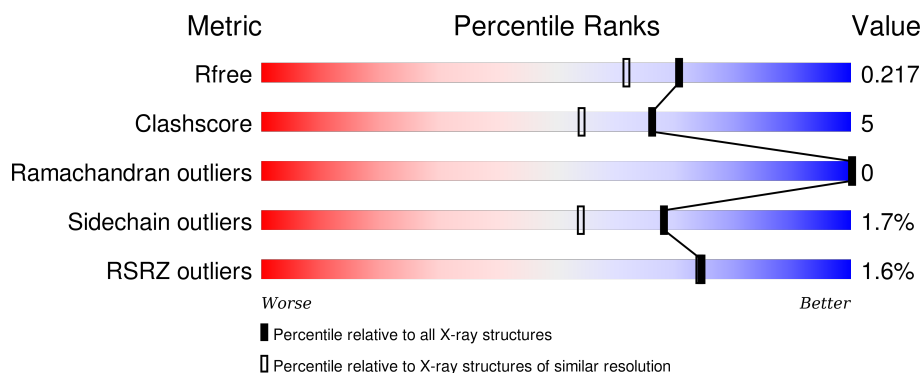
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.85 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	1745 (1.86-1.86)
Clashscore	102246	1898 (1.86-1.86)
Ramachandran outliers	100387	1875 (1.86-1.86)
Sidechain outliers	100360	1875 (1.86-1.86)
RSRZ outliers	91569	1747 (1.86-1.86)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	682	<div> <div>%</div> <div> <div></div> <div>88%</div> <div>11%</div> <div>..</div> </div> </div>
1	B	682	<div> <div>2%</div> <div> <div></div> <div>88%</div> <div>11%</div> <div>.</div> </div> </div>
1	C	682	<div> <div>2%</div> <div> <div></div> <div>90%</div> <div>10%</div> </div> </div>
1	D	682	<div> <div>%</div> <div> <div></div> <div>90%</div> <div>9%</div> <div>..</div> </div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	ACT	A	1717	-	-	-	X
3	ACT	B	1719	-	-	-	X
3	ACT	C	1722	-	-	-	X
3	ACT	D	1718	-	-	-	X
4	1PE	A	1722	-	-	-	X
4	1PE	A	1723	-	-	-	X
4	1PE	A	1724	-	-	-	X
4	1PE	B	1723	-	-	-	X
4	1PE	B	1726	-	-	-	X
4	1PE	C	1724	-	-	-	X
4	1PE	C	1727	-	-	-	X
4	1PE	D	1722	-	-	-	X
4	1PE	D	1723	-	-	-	X

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	C	1	Total	C	O	0	0
			4	2	2		
3	C	1	Total	C	O	0	0
			4	2	2		
3	D	1	Total	C	O	0	0
			4	2	2		
3	D	1	Total	C	O	0	0
			4	2	2		

- Molecule 4 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula: $C_{10}H_{22}O_6$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			3	2	1		
4	A	1	Total	C	O	0	0
			3	2	1		
4	A	1	Total	C	O	0	0
			3	2	1		
4	A	1	Total	C	O	0	0
			6	4	2		
4	A	1	Total	C	O	0	0
			6	4	2		
4	A	1	Total	C	O	0	0
			9	6	3		
4	B	1	Total	C	O	0	0
			3	2	1		
4	B	1	Total	C	O	0	0
			3	2	1		
4	B	1	Total	C	O	0	0
			6	4	2		
4	B	1	Total	C	O	0	0
			6	4	2		
4	B	1	Total	C	O	0	0
			12	8	4		
4	B	1	Total	C	O	0	0
			12	8	4		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	C	1	Total	C	O	0	0
			3	2	1		
4	C	1	Total	C	O	0	0
			3	2	1		
4	C	1	Total	C	O	0	0
			6	4	2		
4	C	1	Total	C	O	0	0
			6	4	2		
4	C	1	Total	C	O	0	0
			9	6	3		
4	D	1	Total	C	O	0	0
			3	2	1		
4	D	1	Total	C	O	0	0
			3	2	1		
4	D	1	Total	C	O	0	0
			3	2	1		
4	D	1	Total	C	O	0	0
			6	4	2		
4	D	1	Total	C	O	0	0
			9	6	3		

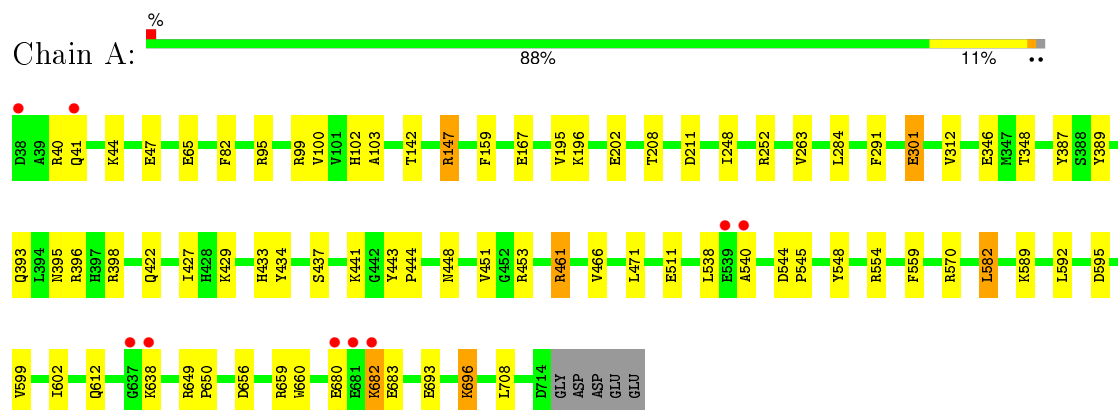
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	630	Total	O	0	0
			630	630		
5	B	553	Total	O	0	0
			553	553		
5	C	487	Total	O	0	1
			488	488		
5	D	445	Total	O	0	0
			445	445		

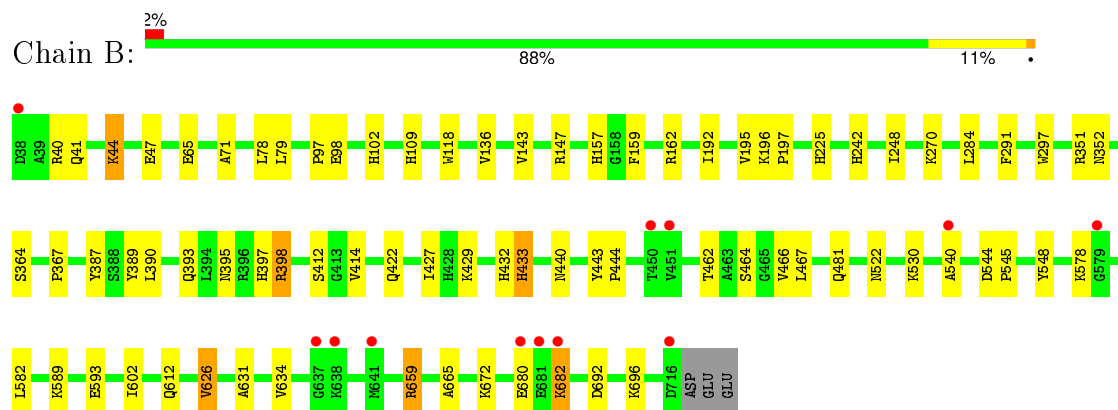
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

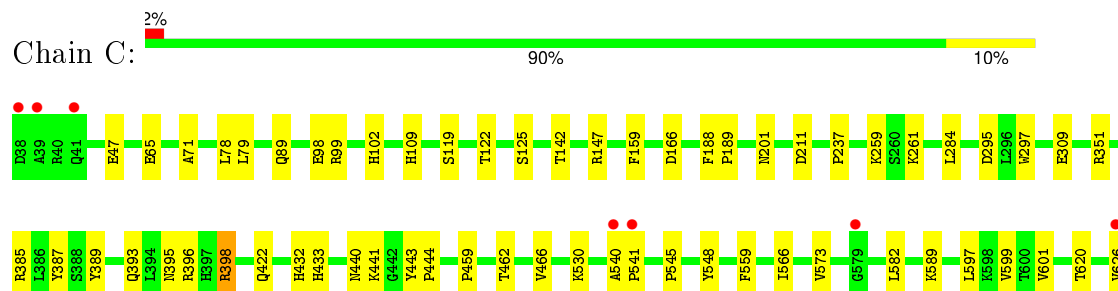
• Molecule 1: CATALASE-3



• Molecule 1: CATALASE-3

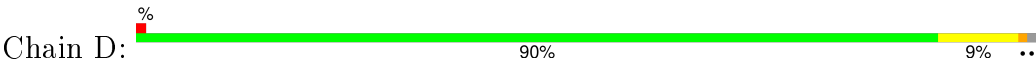


• Molecule 1: CATALASE-3





● Molecule 1: CATALASE-3



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	130.75Å 154.19Å 160.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.70 – 1.85 29.70 – 1.85	Depositor EDS
% Data completeness (in resolution range)	97.8 (29.70-1.85) 97.8 (29.70-1.85)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.08 (at 1.85Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.177 , 0.218 0.178 , 0.217	Depositor DCC
R_{free} test set	13547 reflections (5.31%)	DCC
Wilson B-factor (Å ²)	10.1	Xtriage
Anisotropy	0.046	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 48.9	EDS
Estimated twinning fraction	0.019 for -h,l,k	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	1 of 268614 reflections (0.000%)	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	24066	wwPDB-VP
Average B, all atoms (Å ²)	11.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.22% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: HEM, 1PE, ACT

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	0.37	0/5519	0.55	1/7484 (0.0%)
1	B	0.36	0/5552	0.54	0/7529
1	C	0.35	0/5561	0.51	0/7542
1	D	0.36	0/5521	0.53	0/7485
All	All	0.36	0/22153	0.53	1/30040 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	461	ARG	NE-CZ-NH2	-6.10	117.25	120.30

There are no chirality outliers.

There are no planarity outliers.

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	5383	0	5211	66	0
1	B	5419	0	5231	65	0
1	C	5427	0	5235	58	0
1	D	5385	0	5213	49	0
2	A	43	0	30	2	0
2	B	43	0	30	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	43	0	30	1	0
2	D	43	0	30	3	0
3	A	8	0	6	1	0
3	B	8	0	6	1	0
3	C	8	0	6	1	0
3	D	8	0	6	1	0
4	A	33	0	35	4	0
4	B	48	0	56	2	0
4	C	27	0	30	1	0
4	D	24	0	25	1	0
5	A	630	0	0	13	0
5	B	553	0	0	4	0
5	C	488	0	0	8	0
5	D	445	0	0	6	0
All	All	24066	0	21180	210	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 5.

All (210) 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)
5:C:2154:HOH:O	1:D:147[B]:ARG:O	1.56	1.21
5:A:2227:HOH:O	1:B:147[A]:ARG:O	1.69	1.09
1:A:147[A]:ARG:O	5:A:2112:HOH:O	1.71	1.08
5:A:2426:HOH:O	1:C:398:ARG:NH2	1.93	1.02
1:C:147[A]:ARG:O	1:D:147[A]:ARG:O	1.79	1.01
1:A:398:ARG:HG2	1:B:398:ARG:HH11	1.34	0.93
1:C:147[B]:ARG:O	5:C:2060:HOH:O	1.87	0.91
1:B:40:ARG:NH2	1:B:47:GLU:OE2	2.03	0.90
1:C:398:ARG:NE	1:D:398:ARG:HE	1.71	0.89
1:C:441:LYS:HG2	4:C:1726:1PE:H122	1.53	0.88
1:A:40:ARG:NH2	1:A:47:GLU:OE2	2.08	0.85
1:A:147[B]:ARG:O	1:B:147[B]:ARG:O	2.00	0.80
1:C:633:ARG:HH21	1:C:638:LYS:NZ	1.80	0.79
1:B:530:LYS:HG2	1:B:540:ALA:HB1	1.63	0.79
1:C:626[A]:VAL:HG12	1:C:665:ALA:HB3	1.64	0.79
1:A:398:ARG:HD3	1:D:422:GLN:NE2	1.98	0.78
1:D:544:ASP:OD2	5:D:2353:HOH:O	2.03	0.76
1:C:398:ARG:HE	1:D:398:ARG:HE	1.29	0.76
1:A:398:ARG:CZ	1:B:398:ARG:HD3	2.16	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:398:ARG:HG2	1:B:398:ARG:NH1	2.00	0.74
1:C:398:ARG:NE	1:D:398:ARG:NE	2.37	0.72
1:A:511:GLU:OE2	1:A:538:LEU:HD21	1.88	0.72
1:A:422:GLN:NE2	1:D:398:ARG:HG3	2.05	0.70
1:A:544:ASP:OD2	5:A:2521:HOH:O	2.10	0.70
1:C:633:ARG:HH21	1:C:638:LYS:HZ1	1.40	0.70
1:A:545:PRO:HA	1:A:548:TYR:CD2	2.28	0.68
1:C:530:LYS:HG2	1:C:540:ALA:HB1	1.75	0.68
1:B:589:LYS:O	1:B:593:GLU:HG3	1.94	0.68
1:D:38:ASP:OD2	1:D:44:LYS:NZ	2.25	0.68
1:A:659:ARG:HD2	5:A:2608:HOH:O	1.95	0.67
1:A:395:ASN:O	1:A:398:ARG:HD2	1.96	0.66
1:B:118:TRP:CZ3	4:B:1726:1PE:H141	2.30	0.66
4:A:1724:1PE:H241	5:A:2146:HOH:O	1.95	0.65
1:B:412:SER:O	5:B:2331:HOH:O	2.14	0.65
1:A:195[A]:VAL:HG21	3:A:1716:ACT:H1	1.79	0.65
1:D:692:ASP:OD2	5:D:2438:HOH:O	2.15	0.64
1:D:195[A]:VAL:HG21	3:D:1717:ACT:H1	1.80	0.63
1:A:638:LYS:NZ	1:A:638:LYS:HB3	2.15	0.61
1:A:41:GLN:O	1:A:44:LYS:HG2	2.01	0.61
1:C:309:GLU:OE1	5:C:2257:HOH:O	2.17	0.60
1:B:522:ASN:ND2	1:B:544[B]:ASP:OD1	2.34	0.60
1:A:346:GLU:OE2	1:A:348:THR:OG1	2.10	0.59
1:B:692:ASP:O	1:B:696:LYS:HG3	2.03	0.59
1:B:422:GLN:NE2	1:C:398:ARG:HD3	2.18	0.58
1:B:414:VAL:H	4:B:1720:1PE:C12	2.17	0.58
1:A:167:GLU:OE2	1:A:453:ARG:NE	2.37	0.57
1:C:566:ILE:HD12	1:C:597:LEU:HD21	1.86	0.57
1:B:41:GLN:HA	1:B:44:LYS:HE3	1.87	0.57
1:A:252:ARG:NH1	1:A:461:ARG:HD3	2.19	0.57
1:D:343[A]:VAL:HG22	5:D:2245:HOH:O	2.05	0.56
1:D:672:LYS:HE3	1:D:672:LYS:O	2.06	0.56
1:A:398:ARG:NH2	5:A:2380:HOH:O	2.03	0.55
1:A:659:ARG:HH22	4:A:1722:1PE:H122	1.71	0.55
1:A:47:GLU:OE1	5:A:2013:HOH:O	2.18	0.55
1:D:624:ALA:HB2	1:D:702:LEU:HD21	1.88	0.54
1:B:545:PRO:HA	1:B:548:TYR:CD2	2.43	0.54
1:B:270:LYS:HE2	1:B:270:LYS:HA	1.90	0.54
1:B:544[B]:ASP:N	1:B:544[B]:ASP:OD1	2.41	0.53
1:B:157:HIS:HE1	5:B:2121:HOH:O	1.91	0.53
1:A:680:GLU:O	1:A:683:GLU:HG3	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:387:TYR:HB2	1:C:79:LEU:HD11	1.90	0.53
1:C:297:TRP:CE3	1:D:201:ASN:HB3	2.44	0.53
1:D:102:HIS:CE1	1:D:143:VAL:HG22	2.43	0.53
1:B:98:GLU:HB2	1:B:147[A]:ARG:HG3	1.91	0.53
1:B:680:GLU:HB3	1:B:682:LYS:HZ2	1.74	0.53
1:C:545:PRO:HA	1:C:548:TYR:CD2	2.44	0.53
1:C:559:PHE:HB3	1:C:708:LEU:HD11	1.90	0.52
1:D:545:PRO:HA	1:D:548:TYR:CD2	2.45	0.52
1:D:301:GLU:HG2	1:D:352:ASN:ND2	2.25	0.52
1:A:448:ASN:OD1	1:A:451[A]:VAL:HG12	2.10	0.52
1:A:589:LYS:HG3	1:A:599:VAL:HB	1.91	0.52
1:C:201:ASN:HB3	1:D:297:TRP:CE3	2.44	0.52
1:B:466:VAL:HG22	1:B:467:LEU:O	2.09	0.51
1:B:659:ARG:HD3	5:B:2522:HOH:O	2.11	0.51
1:B:364:SER:HB3	1:B:393:GLN:CD	2.31	0.51
1:C:659:ARG:HD2	5:C:2472:HOH:O	2.10	0.51
1:B:578:LYS:HE3	5:B:2473:HOH:O	2.10	0.50
1:A:103:ALA:O	1:A:147[B]:ARG:HG2	2.12	0.50
1:C:237:PRO:HB3	3:C:1722:ACT:H1	1.93	0.50
1:D:239:SER:HA	1:D:292:HIS:CD2	2.46	0.50
1:A:427:ILE:O	1:D:47:GLU:HA	2.11	0.50
1:B:242:HIS:O	3:B:1719:ACT:H2	2.12	0.50
1:A:693:GLU:O	1:A:696:LYS:HD3	2.12	0.50
1:C:261:LYS:HE2	5:C:2071:HOH:O	2.12	0.50
1:C:677:ILE:HG13	1:C:679:VAL:HG23	1.94	0.49
1:D:591:GLN:O	1:D:594:LYS:HB2	2.13	0.49
1:A:301:GLU:HA	1:A:301:GLU:OE1	2.13	0.49
1:A:99:ARG:HA	1:A:396[A]:ARG:HD3	1.94	0.49
1:D:97:PRO:HG3	1:D:398:ARG:NH2	2.28	0.49
1:B:395:ASN:O	1:B:398:ARG:NH2	2.43	0.49
1:B:432:HIS:HB2	1:B:440:ASN:HB3	1.94	0.49
1:A:570[B]:ARG:HH11	1:A:570[B]:ARG:HB2	1.78	0.48
1:A:147[A]:ARG:HD2	5:A:2158:HOH:O	2.13	0.48
5:A:2226:HOH:O	1:B:147[B]:ARG:HD2	2.13	0.48
1:B:225:HIS:CE1	1:B:481:GLN:HB3	2.48	0.48
1:A:680:GLU:HB3	1:A:682:LYS:CE	2.43	0.48
1:C:630:GLY:O	1:C:633:ARG:HG2	2.13	0.48
1:A:398:ARG:HH21	1:B:97:PRO:HD3	1.79	0.48
1:A:248:ILE:HD12	2:A:1715:HEM:HMB1	1.96	0.48
1:C:389:TYR:O	1:C:393:GLN:HG2	2.14	0.47
1:C:432:HIS:HB2	1:C:440:ASN:HB3	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:697:GLY:O	1:D:700:GLU:HG2	2.14	0.47
1:B:196:LYS:HB3	1:B:197:PRO:CD	2.44	0.47
2:B:1717:HEM:HBB2	2:B:1717:HEM:HMB1	1.97	0.47
1:A:195[B]:VAL:HG13	1:A:208:THR:HG22	1.96	0.47
1:C:541[B]:PRO:HB3	5:C:2170:HOH:O	2.14	0.47
1:C:259:LYS:HD3	1:C:259:LYS:HA	1.77	0.47
1:A:248:ILE:HD12	2:A:1715:HEM:CBB	2.44	0.47
1:A:389:TYR:O	1:A:393:GLN:HG2	2.15	0.47
1:B:433:HIS:ND1	1:B:433:HIS:N	2.60	0.47
1:A:466:VAL:HG12	1:C:462:THR:HG22	1.96	0.47
1:B:466:VAL:HG23	1:D:461:ARG:O	2.15	0.47
1:A:545:PRO:HA	1:A:548:TYR:CG	2.49	0.46
1:B:367:PRO:HD3	1:B:389:TYR:CD2	2.50	0.46
1:C:98:GLU:OE1	1:C:147[B]:ARG:HG3	2.15	0.46
1:B:397:HIS:HA	1:C:422:GLN:NE2	2.29	0.46
1:B:44:LYS:N	1:B:44:LYS:HD3	2.31	0.46
1:C:395:ASN:O	1:C:398:ARG:HD2	2.15	0.46
1:D:582:LEU:O	1:D:586:LYS:HG3	2.15	0.46
1:A:540:ALA:N	5:A:2537:HOH:O	2.27	0.46
1:C:573:VAL:HG22	1:C:626[A]:VAL:CG2	2.45	0.46
1:A:434:TYR:CE2	1:A:437:SER:HB2	2.51	0.46
1:B:71:ALA:HB2	1:B:78:LEU:HD21	1.98	0.45
1:C:188:PHE:HB3	1:C:189:PRO:HD3	1.98	0.45
1:B:429:LYS:HB2	1:B:429:LYS:HE3	1.73	0.45
1:C:443:TYR:HA	1:C:444:PRO:C	2.36	0.45
1:B:464:SER:HA	1:D:463:ALA:O	2.16	0.45
1:C:589:LYS:HG3	1:C:599:VAL:HB	1.98	0.45
1:A:682:LYS:H	1:A:682:LYS:HZ3	1.64	0.45
1:C:99:ARG:HA	1:C:396[A]:ARG:HD3	1.98	0.45
1:A:659:ARG:NH2	4:A:1722:1PE:H122	2.31	0.45
1:C:582:LEU:HB2	5:C:2427:HOH:O	2.16	0.45
1:C:98:GLU:HB3	1:C:147[B]:ARG:HG3	1.99	0.45
1:B:395:ASN:OD1	1:B:398:ARG:NH2	2.50	0.45
1:B:136:VAL:HA	1:B:162:ARG:O	2.17	0.45
1:B:672:LYS:HA	1:B:672:LYS:HD2	1.88	0.44
1:A:95:ARG:HH21	1:B:196:LYS:HE3	1.82	0.44
1:C:71:ALA:HB2	1:C:78:LEU:HD21	1.98	0.44
1:B:284:LEU:HD21	1:B:291:PHE:CD2	2.53	0.44
1:B:79:LEU:HD11	1:C:387:TYR:HB2	2.00	0.44
1:D:262:LEU:HB2	1:D:315:ILE:HG12	1.99	0.44
1:A:461:ARG:O	1:C:466:VAL:HG23	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:389:TYR:O	1:B:393:GLN:HG2	2.18	0.44
1:D:389:TYR:O	1:D:393:GLN:HG2	2.17	0.44
1:B:297:TRP:CZ3	1:B:352:ASN:HB3	2.53	0.44
1:A:649:ARG:HB3	1:A:650:PRO:HD3	1.99	0.44
1:A:656:ASP:HB3	1:A:660:TRP:CZ3	2.53	0.44
1:D:586:LYS:NZ	1:D:586:LYS:HB3	2.34	0.43
1:D:429:LYS:HB2	1:D:429:LYS:HE3	1.70	0.43
1:C:385:ARG:HG2	2:C:1720:HEM:C2C	2.53	0.43
1:D:483:ARG:HD3	1:D:524:ILE:O	2.18	0.43
1:A:441:LYS:NZ	4:A:1718:1PE:H221	2.32	0.43
1:C:109:HIS:HB2	1:C:351:ARG:HB2	2.00	0.43
1:A:398:ARG:CZ	1:B:398:ARG:CD	2.91	0.43
1:C:297:TRP:CZ3	1:D:201:ASN:HB3	2.53	0.43
1:B:462:THR:HA	1:D:466:VAL:HA	2.01	0.43
1:B:427:ILE:O	1:C:47:GLU:HA	2.18	0.43
1:C:201:ASN:HB3	1:D:297:TRP:CZ3	2.54	0.43
2:B:1717:HEM:HBB2	2:B:1717:HEM:CMB	2.49	0.43
1:B:248:ILE:HD12	2:B:1717:HEM:CBB	2.49	0.43
1:D:448:ASN:OD1	1:D:451:VAL:HG12	2.19	0.43
1:C:125:SER:OG	1:C:166:ASP:OD1	2.31	0.43
1:C:119:SER:HA	1:C:122:THR:O	2.18	0.42
1:A:602:ILE:HA	1:A:612:GLN:O	2.19	0.42
1:D:551:ASN:HB3	4:D:1723:1PE:H132	2.02	0.42
1:A:559:PHE:HB3	1:A:708:LEU:HD11	2.01	0.42
1:B:390:LEU:HG	1:C:89:GLN:OE1	2.19	0.42
1:A:82:PHE:HB2	5:D:2259:HOH:O	2.19	0.42
1:C:284:LEU:HD13	1:C:620:THR:HB	2.01	0.42
1:B:626:VAL:HB	1:B:665:ALA:HB3	2.00	0.42
1:A:284:LEU:HD21	1:A:291:PHE:CD2	2.54	0.42
1:D:248:ILE:HD12	2:D:1716:HEM:HMB1	2.00	0.42
1:D:147[A]:ARG:NH2	5:D:2084:HOH:O	2.52	0.42
1:A:429:LYS:HB2	1:A:429:LYS:HE2	1.46	0.42
1:B:398:ARG:HD2	1:C:422:GLN:OE1	2.19	0.42
5:A:2386:HOH:O	1:C:398:ARG:NH2	2.41	0.42
1:A:638:LYS:HB3	1:A:638:LYS:HZ2	1.83	0.42
1:C:589:LYS:HD2	1:C:601:VAL:HG23	2.01	0.42
1:A:398:ARG:NH2	1:B:398:ARG:CD	2.83	0.42
1:B:192:ILE:HA	1:B:195[A]:VAL:HG22	2.02	0.42
1:D:649:ARG:HB3	1:D:650:PRO:HD3	2.02	0.41
1:D:102:HIS:HA	1:D:142:THR:O	2.20	0.41
1:D:498:ILE:HD11	1:D:528:VAL:HG22	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:102:HIS:CE1	1:B:143:VAL:HG22	2.55	0.41
1:D:287:LYS:HE3	1:D:618:ASP:OD1	2.20	0.41
1:C:459:PRO:O	5:C:2346:HOH:O	2.22	0.41
1:C:672:LYS:O	1:C:672:LYS:HD3	2.21	0.41
1:A:263:VAL:HG23	1:A:312:VAL:HB	2.02	0.41
2:D:1716:HEM:CMB	2:D:1716:HEM:HBB2	2.51	0.41
1:A:443:TYR:HA	1:A:444:PRO:C	2.40	0.41
1:D:589:LYS:HG3	1:D:599:VAL:HB	2.02	0.41
1:B:443:TYR:HA	1:B:444:PRO:C	2.41	0.41
1:A:582:LEU:HD12	1:A:582:LEU:HA	1.92	0.41
1:A:387:TYR:HB2	1:D:79:LEU:HD11	2.03	0.41
1:B:631:ALA:O	1:B:634:VAL:HG22	2.21	0.41
1:D:530:LYS:O	1:D:534:VAL:HG23	2.20	0.41
2:D:1716:HEM:HMB1	2:D:1716:HEM:HBB2	2.02	0.41
1:A:202:GLU:O	1:A:202:GLU:HG2	2.21	0.41
1:B:602:ILE:HA	1:B:612:GLN:O	2.21	0.41
1:B:682:LYS:HB3	1:B:682:LYS:HE3	1.94	0.40
1:D:578:LYS:HD3	1:D:578:LYS:HA	1.76	0.40
1:A:102:HIS:HA	1:A:142:THR:O	2.21	0.40
1:D:659:ARG:HD3	5:D:2425:HOH:O	2.20	0.40
5:A:2085:HOH:O	1:B:398:ARG:NH2	2.53	0.40
1:A:47:GLU:HA	1:D:427:ILE:O	2.21	0.40
1:A:680:GLU:HB3	1:A:682:LYS:CD	2.52	0.40
1:B:109:HIS:HB2	1:B:351:ARG:HB2	2.04	0.40
1:A:100:VAL:O	1:A:196:LYS:HE3	2.22	0.40
1:C:398:ARG:NH1	1:C:398:ARG:HG3	2.37	0.40
1:C:102:HIS:HA	1:C:142:THR:O	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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	684/682 (100%)	665 (97%)	19 (3%)	0	100	100
1	B	689/682 (101%)	670 (97%)	19 (3%)	0	100	100
1	C	690/682 (101%)	667 (97%)	23 (3%)	0	100	100
1	D	685/682 (100%)	662 (97%)	23 (3%)	0	100	100
All	All	2748/2728 (101%)	2664 (97%)	84 (3%)	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	564/560 (101%)	549 (97%)	15 (3%)	52	34
1	B	568/560 (101%)	559 (98%)	9 (2%)	70	57
1	C	569/560 (102%)	561 (99%)	8 (1%)	74	63
1	D	564/560 (101%)	555 (98%)	9 (2%)	70	57
All	All	2265/2240 (101%)	2224 (98%)	41 (2%)	68	52

All (41) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	65	GLU
1	A	147[A]	ARG
1	A	147[B]	ARG
1	A	159	PHE
1	A	211	ASP
1	A	301	GLU
1	A	433	HIS
1	A	471	LEU
1	A	554[A]	ARG
1	A	554[B]	ARG
1	A	582	LEU
1	A	592	LEU
1	A	595	ASP

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Mol	Chain	Res	Type
1	A	682	LYS
1	A	696	LYS
1	B	44	LYS
1	B	65	GLU
1	B	159	PHE
1	B	398	ARG
1	B	433	HIS
1	B	582	LEU
1	B	626	VAL
1	B	659	ARG
1	B	682	LYS
1	C	65	GLU
1	C	159	PHE
1	C	211	ASP
1	C	295	ASP
1	C	398	ARG
1	C	433	HIS
1	C	638	LYS
1	C	692	ASP
1	D	65	GLU
1	D	159	PHE
1	D	211	ASP
1	D	315	ILE
1	D	347	MET
1	D	433	HIS
1	D	582	LEU
1	D	659	ARG
1	D	672	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	157	HIS
1	D	422	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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

36 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	HEM	A	1715	1	30,50,50	2.13	7 (23%)	24,82,82	2.68	12 (50%)
3	ACT	A	1716	-	1,3,3	1.43	0	0,3,3	0.00	-
3	ACT	A	1717	-	1,3,3	1.36	0	0,3,3	0.00	-
4	1PE	A	1718	-	2,2,15	0.35	0	1,1,14	0.33	0
4	1PE	A	1719	-	2,2,15	0.34	0	1,1,14	0.34	0
4	1PE	A	1720	-	2,2,15	0.35	0	1,1,14	0.30	0
4	1PE	A	1721	-	2,2,15	0.36	0	1,1,14	0.27	0
4	1PE	A	1722	-	5,5,15	0.55	0	4,4,14	1.14	0
4	1PE	A	1723	-	5,5,15	0.51	0	4,4,14	1.27	0
4	1PE	A	1724	-	8,8,15	0.57	0	7,7,14	1.37	0
2	HEM	B	1717	1	30,50,50	2.23	5 (16%)	24,82,82	2.45	10 (41%)
3	ACT	B	1718	-	1,3,3	0.95	0	0,3,3	0.00	-
3	ACT	B	1719	-	1,3,3	1.82	0	0,3,3	0.00	-
4	1PE	B	1720	-	2,2,15	0.35	0	1,1,14	0.34	0
4	1PE	B	1721	-	2,2,15	0.35	0	1,1,14	0.37	0
4	1PE	B	1722	-	5,5,15	0.56	0	4,4,14	1.37	1 (25%)
4	1PE	B	1723	-	5,5,15	0.55	0	4,4,14	1.36	0
4	1PE	B	1724	-	5,5,15	0.53	0	4,4,14	1.42	1 (25%)
4	1PE	B	1725	-	11,11,15	0.91	0	10,10,14	1.56	2 (20%)
4	1PE	B	1726	-	11,11,15	0.92	1 (9%)	10,10,14	1.54	1 (10%)
2	HEM	C	1720	1	30,50,50	2.15	8 (26%)	24,82,82	2.53	12 (50%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	ACT	C	1721	-	1,3,3	1.52	0	0,3,3	0.00	-
3	ACT	C	1722	-	1,3,3	1.99	0	0,3,3	0.00	-
4	1PE	C	1723	-	2,2,15	0.36	0	1,1,14	0.27	0
4	1PE	C	1724	-	2,2,15	0.36	0	1,1,14	0.33	0
4	1PE	C	1725	-	5,5,15	0.55	0	4,4,14	1.35	0
4	1PE	C	1726	-	5,5,15	0.52	0	4,4,14	1.32	0
4	1PE	C	1727	-	8,8,15	0.62	0	7,7,14	1.41	0
2	HEM	D	1716	1	30,50,50	2.09	6 (20%)	24,82,82	2.49	10 (41%)
3	ACT	D	1717	-	1,3,3	0.94	0	0,3,3	0.00	-
3	ACT	D	1718	-	1,3,3	1.64	0	0,3,3	0.00	-
4	1PE	D	1719	-	2,2,15	0.34	0	1,1,14	0.40	0
4	1PE	D	1720	-	2,2,15	0.36	0	1,1,14	0.25	0
4	1PE	D	1721	-	2,2,15	0.35	0	1,1,14	0.29	0
4	1PE	D	1722	-	5,5,15	0.48	0	4,4,14	1.43	1 (25%)
4	1PE	D	1723	-	8,8,15	0.59	0	7,7,14	1.51	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	HEM	A	1715	1	-	0/10/54/54	0/0/8/8
3	ACT	A	1716	-	-	0/0/0/0	0/0/0/0
3	ACT	A	1717	-	-	0/0/0/0	0/0/0/0
4	1PE	A	1718	-	-	0/0/0/13	0/0/0/0
4	1PE	A	1719	-	-	0/0/0/13	0/0/0/0
4	1PE	A	1720	-	-	0/0/0/13	0/0/0/0
4	1PE	A	1721	-	-	0/0/0/13	0/0/0/0
4	1PE	A	1722	-	-	0/3/3/13	0/0/0/0
4	1PE	A	1723	-	-	0/3/3/13	0/0/0/0
4	1PE	A	1724	-	-	0/6/6/13	0/0/0/0
2	HEM	B	1717	1	-	0/10/54/54	0/0/8/8
3	ACT	B	1718	-	-	0/0/0/0	0/0/0/0
3	ACT	B	1719	-	-	0/0/0/0	0/0/0/0
4	1PE	B	1720	-	-	0/0/0/13	0/0/0/0
4	1PE	B	1721	-	-	0/0/0/13	0/0/0/0
4	1PE	B	1722	-	-	0/3/3/13	0/0/0/0
4	1PE	B	1723	-	-	0/3/3/13	0/0/0/0
4	1PE	B	1724	-	-	0/3/3/13	0/0/0/0
4	1PE	B	1725	-	-	0/9/9/13	0/0/0/0
4	1PE	B	1726	-	-	0/9/9/13	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEM	C	1720	1	-	0/10/54/54	0/0/8/8
3	ACT	C	1721	-	-	0/0/0/0	0/0/0/0
3	ACT	C	1722	-	-	0/0/0/0	0/0/0/0
4	1PE	C	1723	-	-	0/0/0/13	0/0/0/0
4	1PE	C	1724	-	-	0/0/0/13	0/0/0/0
4	1PE	C	1725	-	-	0/3/3/13	0/0/0/0
4	1PE	C	1726	-	-	0/3/3/13	0/0/0/0
4	1PE	C	1727	-	-	0/6/6/13	0/0/0/0
2	HEM	D	1716	1	-	0/10/54/54	0/0/8/8
3	ACT	D	1717	-	-	0/0/0/0	0/0/0/0
3	ACT	D	1718	-	-	0/0/0/0	0/0/0/0
4	1PE	D	1719	-	-	0/0/0/13	0/0/0/0
4	1PE	D	1720	-	-	0/0/0/13	0/0/0/0
4	1PE	D	1721	-	-	0/0/0/13	0/0/0/0
4	1PE	D	1722	-	-	0/3/3/13	0/0/0/0
4	1PE	D	1723	-	-	0/6/6/13	0/0/0/0

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1717	HEM	C3B-C4B	-7.66	1.45	1.51
2	C	1720	HEM	C3B-C4B	-7.22	1.45	1.51
2	D	1716	HEM	C3B-C4B	-6.61	1.46	1.51
2	A	1715	HEM	C3B-C4B	-6.34	1.46	1.51
2	B	1717	HEM	C3D-C4D	-5.75	1.44	1.51
2	D	1716	HEM	C3D-C4D	-5.19	1.44	1.51
2	A	1715	HEM	C3D-C4D	-5.18	1.44	1.51
2	C	1720	HEM	C3D-C4D	-5.05	1.45	1.51
2	B	1717	HEM	C2C-C1C	-3.90	1.45	1.52
2	A	1715	HEM	C2C-C1C	-3.79	1.45	1.52
2	D	1716	HEM	C2C-C1C	-3.64	1.45	1.52
2	C	1720	HEM	C2C-C1C	-3.47	1.46	1.52
2	C	1720	HEM	C2D-C1D	-2.26	1.44	1.51
2	D	1716	HEM	C2D-C1D	-2.25	1.44	1.51
2	A	1715	HEM	C2D-C1D	-2.11	1.44	1.51
2	A	1715	HEM	C2B-C1B	-2.04	1.45	1.51
4	B	1726	1PE	OH4-C13	-2.02	1.33	1.42
2	B	1717	HEM	C4C-NC	2.01	1.38	1.36
2	C	1720	HEM	C3B-CAB	2.07	1.55	1.51
2	C	1720	HEM	CAA-C2A	2.14	1.55	1.52
2	D	1716	HEM	C3B-CAB	2.28	1.55	1.51
2	B	1717	HEM	C3B-CAB	2.29	1.55	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1715	HEM	FE-ND	2.33	2.09	1.97
2	C	1720	HEM	FE-NC	2.44	2.05	1.95
2	C	1720	HEM	FE-ND	2.50	2.10	1.97
2	D	1716	HEM	FE-ND	2.91	2.12	1.97
2	A	1715	HEM	FE-NC	3.41	2.09	1.95

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1715	HEM	CAA-CBA-CGA	-4.32	104.83	112.75
2	B	1717	HEM	CAA-CBA-CGA	-3.71	105.94	112.75
2	A	1715	HEM	C3C-CAC-CBC	-3.46	119.15	124.46
2	C	1720	HEM	C3C-CAC-CBC	-3.39	119.26	124.46
2	B	1717	HEM	C3C-CAC-CBC	-3.17	119.59	124.46
2	D	1716	HEM	CAA-CBA-CGA	-3.08	107.10	112.75
2	D	1716	HEM	CBD-CAD-C3D	-2.92	105.06	113.55
2	D	1716	HEM	C3C-CAC-CBC	-2.86	120.06	124.46
2	A	1715	HEM	CBD-CAD-C3D	-2.72	105.63	113.55
2	C	1720	HEM	C3B-CAB-CBB	-2.49	120.64	124.46
2	B	1717	HEM	CBD-CAD-C3D	-2.42	106.52	113.55
2	A	1715	HEM	C3B-C4B-NB	-2.41	107.02	111.63
2	C	1720	HEM	CAA-CBA-CGA	-2.41	108.33	112.75
2	C	1720	HEM	CBD-CAD-C3D	-2.30	106.86	113.55
2	C	1720	HEM	CMA-C3A-C4A	-2.29	124.58	128.36
4	D	1722	1PE	C23-OH3-C22	2.01	120.50	112.80
4	B	1726	1PE	C25-OH5-C14	2.02	120.55	112.80
4	B	1725	1PE	OH5-C14-C24	2.05	119.46	110.36
4	B	1724	1PE	C23-OH3-C22	2.05	120.66	112.80
2	B	1717	HEM	C2C-C1C-CHC	2.08	126.85	123.68
4	B	1722	1PE	C23-OH3-C22	2.12	120.90	112.80
4	B	1725	1PE	C25-OH5-C14	2.23	121.34	112.80
2	C	1720	HEM	C3B-C4B-CHC	2.35	126.47	123.16
2	D	1716	HEM	C2C-C1C-CHC	2.40	127.33	123.68
2	A	1715	HEM	C2C-C1C-CHC	2.43	127.37	123.68
2	B	1717	HEM	C2D-C3D-C4D	2.49	105.73	101.50
2	A	1715	HEM	C2D-C3D-C4D	2.52	105.77	101.50
2	D	1716	HEM	C2D-C3D-C4D	2.64	105.98	101.50
2	C	1720	HEM	C2D-C3D-C4D	2.78	106.22	101.50
2	D	1716	HEM	CMD-C2D-C3D	2.90	127.20	114.35
2	B	1717	HEM	CMD-C2D-C3D	3.00	127.61	114.35
2	A	1715	HEM	CMD-C2D-C3D	3.05	127.83	114.35
2	A	1715	HEM	C3B-C4B-CHC	3.05	127.46	123.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1720	HEM	CMD-C2D-C3D	3.27	128.81	114.35
2	B	1717	HEM	CAD-C3D-C4D	4.10	126.92	112.47
2	A	1715	HEM	CAD-C3D-C4D	4.13	127.04	112.47
2	C	1720	HEM	CAD-C3D-C4D	4.14	127.07	112.47
2	B	1717	HEM	CMB-C2B-C3B	4.16	126.92	116.53
2	A	1715	HEM	CMC-C2C-C3C	4.18	126.97	116.53
2	C	1720	HEM	CMC-C2C-C3C	4.18	126.98	116.53
2	D	1716	HEM	CMC-C2C-C3C	4.21	127.04	116.53
2	D	1716	HEM	CAD-C3D-C4D	4.40	127.98	112.47
2	D	1716	HEM	CAD-C3D-C2D	4.46	126.03	113.22
2	B	1717	HEM	CMC-C2C-C3C	4.51	127.80	116.53
2	C	1720	HEM	CAD-C3D-C2D	4.69	126.70	113.22
2	D	1716	HEM	CMB-C2B-C3B	4.79	128.48	116.53
2	A	1715	HEM	CAD-C3D-C2D	4.86	127.18	113.22
2	B	1717	HEM	CAD-C3D-C2D	4.91	127.33	113.22
2	C	1720	HEM	CMB-C2B-C3B	5.03	129.09	116.53
2	A	1715	HEM	CMB-C2B-C3B	5.13	129.34	116.53

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

15 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1715	HEM	2	0
3	A	1716	ACT	1	0
4	A	1718	1PE	1	0
4	A	1722	1PE	2	0
4	A	1724	1PE	1	0
2	B	1717	HEM	3	0
3	B	1719	ACT	1	0
4	B	1720	1PE	1	0
4	B	1726	1PE	1	0
2	C	1720	HEM	1	0
3	C	1722	ACT	1	0
4	C	1726	1PE	1	0
2	D	1716	HEM	3	0
3	D	1717	ACT	1	0
4	D	1723	1PE	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

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	677/682 (99%)	-0.23	9 (1%) 79 79	2, 8, 24, 51	0
1	B	679/682 (99%)	-0.22	12 (1%) 71 71	2, 8, 25, 55	0
1	C	682/682 (100%)	-0.15	14 (2%) 67 65	3, 9, 29, 50	0
1	D	678/682 (99%)	-0.18	9 (1%) 79 79	3, 9, 26, 55	0
All	All	2716/2728 (99%)	-0.19	44 (1%) 74 74	2, 8, 26, 55	0

All (44) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	540	ALA	4.3
1	D	641	MET	4.0
1	B	716	ASP	3.9
1	D	680	GLU	3.8
1	C	540	ALA	3.7
1	A	637	GLY	3.5
1	A	680	GLU	3.4
1	D	715	GLY	3.4
1	C	39	ALA	3.3
1	C	38	ASP	3.3
1	C	638	LYS	3.2
1	A	638	LYS	3.1
1	B	637	GLY	3.1
1	C	718	GLU	3.1
1	C	641	MET	3.0
1	C	579	GLY	3.0
1	A	41	GLN	3.0
1	C	637	GLY	3.0
1	C	41	GLN	2.8
1	D	682	LYS	2.8
1	B	451	VAL	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	682	LYS	2.6
1	B	641	MET	2.5
1	C	541[A]	PRO	2.5
1	D	637	GLY	2.5
1	A	681	GLU	2.5
1	B	680	GLU	2.5
1	B	450	THR	2.5
1	C	719	GLU	2.3
1	D	638	LYS	2.3
1	A	540	ALA	2.3
1	B	682	LYS	2.3
1	B	579	GLY	2.3
1	C	626[A]	VAL	2.3
1	B	638	LYS	2.3
1	B	38	ASP	2.3
1	B	681	GLU	2.3
1	D	464	SER	2.3
1	C	681	GLU	2.2
1	A	539	GLU	2.2
1	C	692	ASP	2.1
1	D	38	ASP	2.1
1	A	38	ASP	2.1
1	D	41	GLN	2.1

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 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	LLDF	B-factors(\AA^2)	Q<0.9
4	1PE	D	1723	9/16	0.80	0.20	7.57	22,33,37,40	0
3	ACT	B	1719	4/4	0.91	0.16	6.79	5,7,19,23	0
3	ACT	D	1718	4/4	0.86	0.17	6.34	6,12,17,20	0
3	ACT	A	1717	4/4	0.92	0.16	5.48	5,8,13,18	0
4	1PE	B	1726	12/16	0.90	0.14	4.47	12,20,28,37	0
4	1PE	A	1722	6/16	0.93	0.15	4.08	15,24,26,31	0
4	1PE	A	1723	6/16	0.82	0.22	4.06	28,31,31,32	0
4	1PE	B	1723	6/16	0.86	0.15	3.61	16,25,32,37	0
4	1PE	D	1722	6/16	0.74	0.20	3.31	23,28,34,34	0
4	1PE	A	1724	9/16	0.81	0.17	3.28	19,26,33,34	0
3	ACT	C	1722	4/4	0.94	0.12	2.41	8,8,21,25	0
4	1PE	C	1724	3/16	0.80	0.16	2.19	22,22,23,36	0
4	1PE	C	1727	9/16	0.89	0.13	2.17	21,25,35,40	0
4	1PE	B	1725	12/16	0.86	0.15	1.64	16,23,36,41	0
4	1PE	D	1720	3/16	0.82	0.17	1.25	26,26,27,39	0
4	1PE	B	1720	3/16	0.82	0.13	1.05	14,14,27,33	0
2	HEM	B	1717	43/43	0.98	0.10	0.92	0,2,6,7	0
4	1PE	C	1723	3/16	0.83	0.13	0.81	18,18,22,31	0
4	1PE	A	1719	3/16	0.86	0.13	0.62	24,24,25,27	0
4	1PE	D	1719	3/16	0.79	0.13	0.47	26,26,30,31	0
4	1PE	A	1721	3/16	0.84	0.11	0.33	24,24,25,35	0
3	ACT	C	1721	4/4	0.93	0.10	0.26	7,7,10,15	0
2	HEM	C	1720	43/43	0.97	0.09	0.01	0,4,8,11	0
2	HEM	A	1715	43/43	0.98	0.09	-0.02	0,3,6,8	0
4	1PE	B	1724	6/16	0.94	0.10	-0.26	16,22,24,44	0
2	HEM	D	1716	43/43	0.98	0.08	-0.60	1,4,5,7	0
3	ACT	D	1717	4/4	0.97	0.08	-1.05	5,6,8,11	0
3	ACT	B	1718	4/4	0.97	0.07	-1.25	8,10,12,13	0
3	ACT	A	1716	4/4	0.98	0.07	-1.40	6,6,7,8	0
4	1PE	B	1721	3/16	0.88	0.12	-	16,16,25,32	0
4	1PE	A	1720	3/16	0.82	0.18	-	23,23,30,31	0
4	1PE	D	1721	3/16	0.93	0.09	-	16,16,21,30	0
4	1PE	B	1722	6/16	0.84	0.15	-	26,37,40,42	0
4	1PE	C	1726	6/16	0.89	0.14	-	17,24,35,37	0
4	1PE	C	1725	6/16	0.89	0.11	-	24,29,33,38	0
4	1PE	A	1718	3/16	0.88	0.10	-	25,25,28,33	0

6.5 Other polymers ⓘ

There are no such residues in this entry.