



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 31, 2017 – 09:58 AM EDT

PDB ID : 3P9P
Title : Structure of I274V variant of E. coli KatE
Authors : Loewen, P.C.; Jha, V.; Louis, S.; Chelikani, P.; Carpena, X.; Fita, I.
Deposited on : unknown
Resolution : 1.50 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 : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20030345
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
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) : rb-20030345

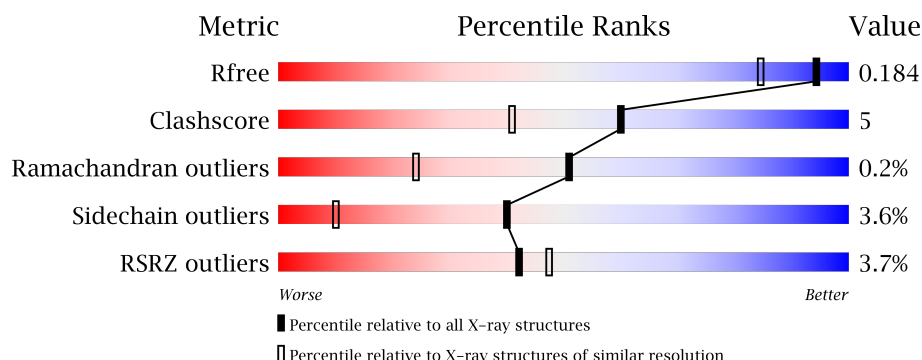
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.50 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}	100719	2279 (1.50-1.50)
Clashscore	112137	2503 (1.50-1.50)
Ramachandran outliers	110173	2445 (1.50-1.50)
Sidechain outliers	110143	2443 (1.50-1.50)
RSRZ outliers	101464	2305 (1.50-1.50)

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	753	<div> <div>3%</div> <div> <div></div> <div>84%</div> <div>10%</div> <div>• •</div> </div> </div>
1	B	753	<div> <div>5%</div> <div> <div></div> <div>82%</div> <div>12%</div> <div>• •</div> </div> </div>
1	C	753	<div> <div>4%</div> <div> <div></div> <div>84%</div> <div>11%</div> <div>• •</div> </div> </div>
1	D	753	<div> <div>2%</div> <div> <div></div> <div>84%</div> <div>12%</div> <div>• •</div> </div> </div>

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 27001 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 Catalase HPIL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	726	Total	C	N	O	S	0	5	0
			5764	3658	1011	1083	12			
1	B	726	Total	C	N	O	S	0	3	0
			5749	3649	1007	1081	12			
1	C	726	Total	C	N	O	S	0	5	0
			5766	3661	1008	1085	12			
1	D	726	Total	C	N	O	S	0	6	0
			5757	3652	1008	1085	12			

There are 4 discrepancies between the modelled and reference sequences:

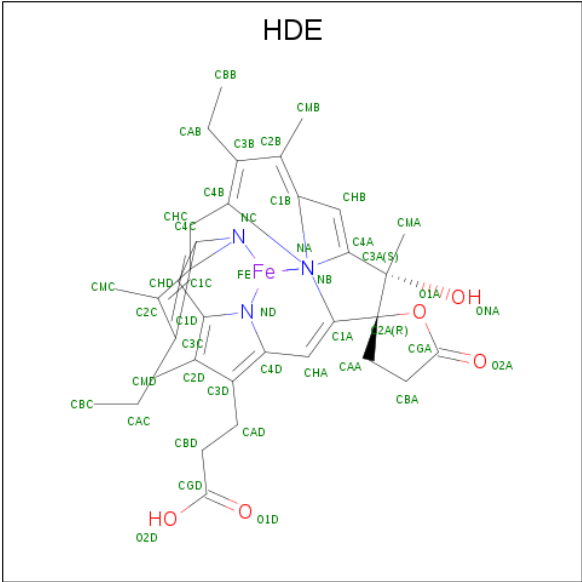
Chain	Residue	Modelled	Actual	Comment	Reference
A	274	VAL	ILE	ENGINEERED MUTATION	UNP P21179
B	274	VAL	ILE	ENGINEERED MUTATION	UNP P21179
C	274	VAL	ILE	ENGINEERED MUTATION	UNP P21179
D	274	VAL	ILE	ENGINEERED MUTATION	UNP P21179

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



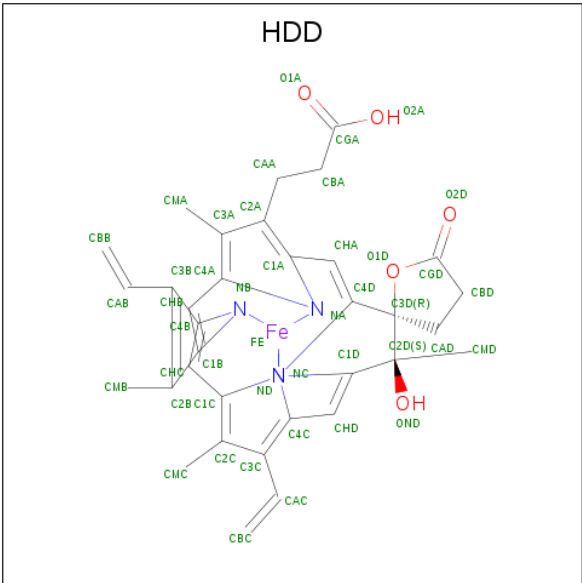
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	1
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	1
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	1
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	1
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	1
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	1
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0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

- Molecule 3 is CIS-HEME D HYDROXYCHLORIN GAMMA-SPIROLACTONE 17R, 18S (three-letter code: HDE) (formula: C₃₄H₃₈FeN₄O₅).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
3	B	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
3	C	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
3	D	1	Total 44	C 34	Fe 1	N 4	O 5	0	1

- Molecule 4 is CIS-HEME D HYDROXYCHLORIN GAMMA-SPIROLACTONE (three-letter code: HDD) (formula: C₃₄H₃₂FeN₄O₅).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
4	B	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
4	C	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
4	D	1	Total 44	C 34	Fe 1	N 4	O 5	0	1

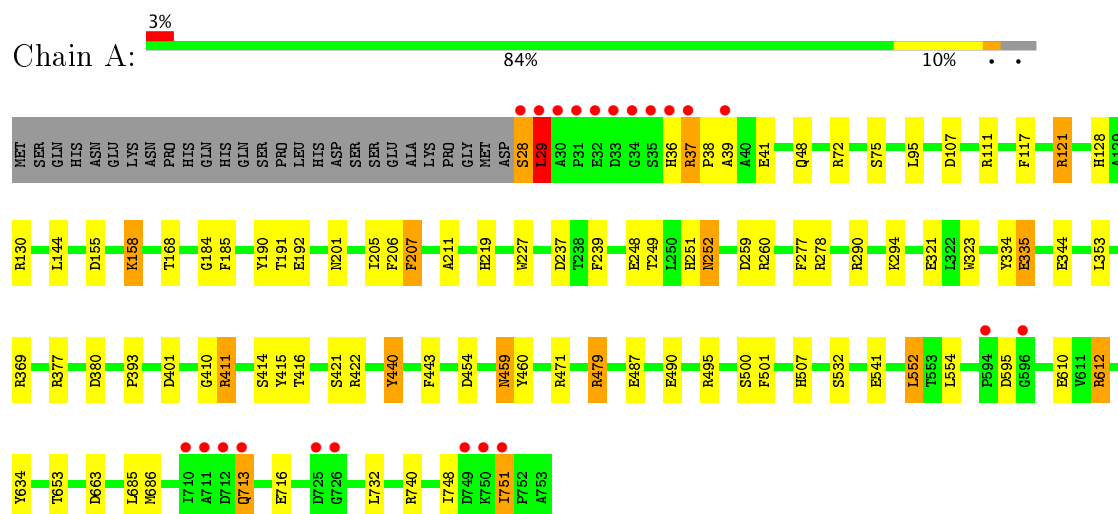
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	842	Total 842	O 842	0	0
5	B	754	Total 754	O 754	0	0
5	C	807	Total 807	O 807	0	0
5	D	866	Total 866	O 866	0	0

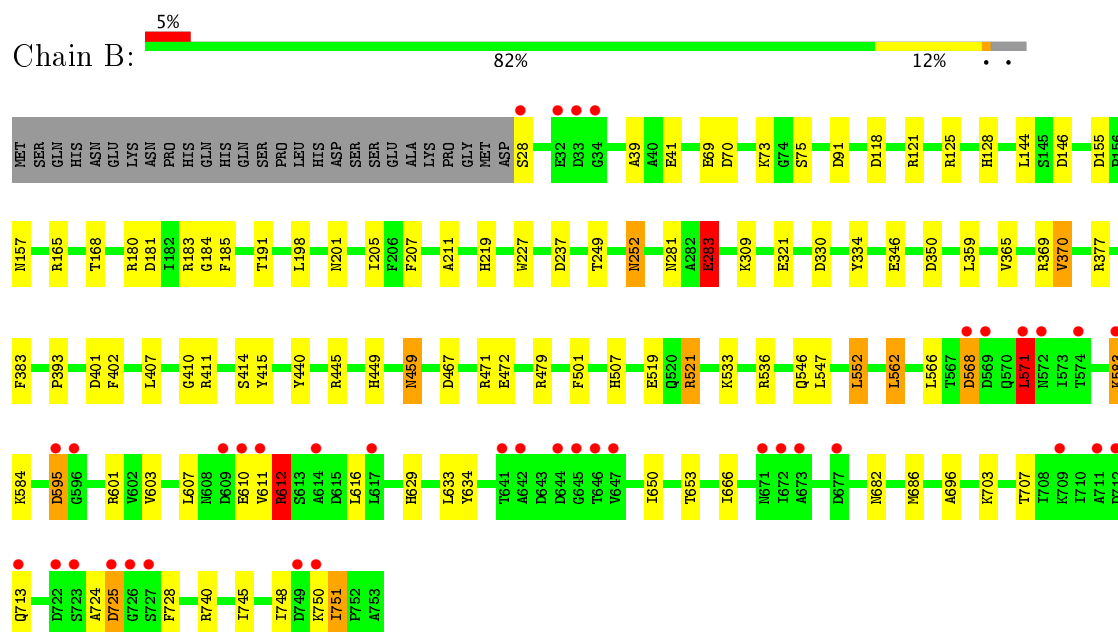
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of 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.

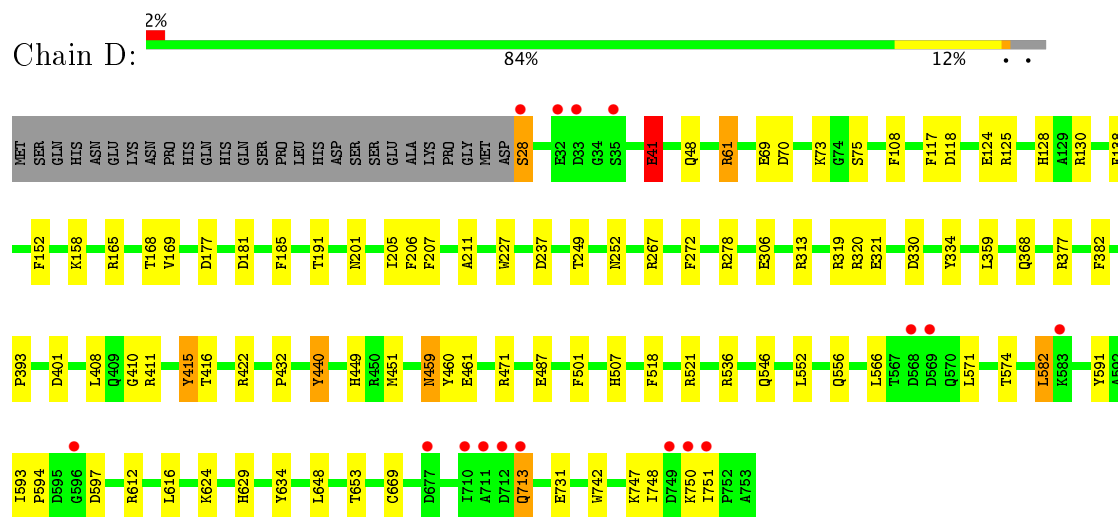
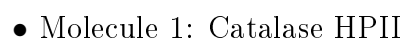
• Molecule 1: Catalase HP11



• Molecule 1: Catalase HP11



• Molecule 1: Catalase HP11



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	93.50 Å 132.82 Å 122.59 Å 90.00° 109.47° 90.00°	Depositor
Resolution (Å)	29.16 – 1.50 29.16 – 1.50	Depositor EDS
% Data completeness (in resolution range)	94.8 (29.16-1.50) 94.8 (29.16-1.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.12	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.81 (at 1.50 Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.149 , 0.185 0.148 , 0.184	Depositor DCC
R_{free} test set	21394 reflections (5.29%)	DCC
Wilson B-factor (Å ²)	9.4	Xtriage
Anisotropy	0.048	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 40.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.024 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	27001	wwPDB-VP
Average B, all atoms (Å ²)	13.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.43% 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, 0.333 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: HEM, HDE, HDD

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	1.31	19/5937 (0.3%)	1.21	39/8071 (0.5%)
1	B	1.27	12/5918 (0.2%)	1.19	35/8046 (0.4%)
1	C	1.27	10/5940 (0.2%)	1.18	31/8076 (0.4%)
1	D	1.33	22/5938 (0.4%)	1.20	30/8073 (0.4%)
All	All	1.30	63/23733 (0.3%)	1.20	135/32266 (0.4%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	1	2
All	All	1	3

All (63) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	440	TYR	CE1-CZ	9.19	1.50	1.38
1	D	41	GLU	CG-CD	8.82	1.65	1.51
1	B	321	GLU	CB-CG	8.13	1.67	1.52
1	A	321	GLU	CD-OE1	6.96	1.33	1.25
1	A	440	TYR	CE1-CZ	6.91	1.47	1.38
1	B	283	GLU	CG-CD	6.79	1.62	1.51
1	A	334	TYR	CD1-CE1	6.56	1.49	1.39
1	A	377	ARG	CZ-NH1	6.49	1.41	1.33
1	B	521	ARG	CG-CD	6.43	1.68	1.51
1	C	530	GLU	CD-OE1	6.37	1.32	1.25
1	D	272	PHE	CG-CD1	6.33	1.48	1.38
1	C	137	TYR	CD2-CE2	6.31	1.48	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	321	GLU	CD-OE1	6.26	1.32	1.25
1	D	518	PHE	CD2-CE2	6.25	1.51	1.39
1	D	69	GLU	CG-CD	5.93	1.60	1.51
1	B	69	GLU	CB-CG	5.83	1.63	1.52
1	A	323	TRP	CE3-CZ3	5.76	1.48	1.38
1	C	344	GLU	CG-CD	5.70	1.60	1.51
1	A	460	TYR	CD2-CE2	5.66	1.47	1.39
1	C	344	GLU	CD-OE1	5.66	1.31	1.25
1	D	591	TYR	CE2-CZ	5.65	1.45	1.38
1	D	28	SER	CB-OG	5.60	1.49	1.42
1	C	159	ILE	CB-CG1	-5.57	1.38	1.54
1	A	184	GLY	N-CA	5.57	1.54	1.46
1	B	402	PHE	CD2-CE2	5.56	1.50	1.39
1	B	568	ASP	CB-CG	5.48	1.63	1.51
1	A	595	ASP	CB-CG	5.45	1.63	1.51
1	D	382	PHE	CE1-CZ	5.41	1.47	1.37
1	A	500	SER	CB-OG	5.39	1.49	1.42
1	A	443	PHE	CE2-CZ	5.37	1.47	1.37
1	D	306	GLU	CD-OE2	5.37	1.31	1.25
1	A	239	PHE	CE1-CZ	5.37	1.47	1.37
1	B	472	GLU	CD-OE2	5.34	1.31	1.25
1	D	440	TYR	CD2-CE2	5.33	1.47	1.39
1	D	165	ARG	CZ-NH2	5.31	1.40	1.33
1	A	190	TYR	CD1-CE1	5.30	1.47	1.39
1	C	193	GLU	CD-OE1	5.30	1.31	1.25
1	B	365	VAL	CB-CG1	5.29	1.64	1.52
1	C	278	ARG	CZ-NH2	5.28	1.40	1.33
1	A	344	GLU	CD-OE1	5.26	1.31	1.25
1	A	248	GLU	CD-OE2	5.26	1.31	1.25
1	C	430	GLU	CB-CG	5.24	1.62	1.52
1	B	519	GLU	CD-OE1	5.22	1.31	1.25
1	A	490	GLU	CG-CD	5.21	1.59	1.51
1	A	206	PHE	CE2-CZ	5.20	1.47	1.37
1	B	334	TYR	CD2-CE2	5.19	1.47	1.39
1	B	181	ASP	CB-CG	5.16	1.62	1.51
1	B	346	GLU	CD-OE1	5.15	1.31	1.25
1	D	206	PHE	CD1-CE1	5.15	1.49	1.39
1	D	181	ASP	CB-CG	5.15	1.62	1.51
1	D	742	TRP	CB-CG	-5.14	1.41	1.50
1	D	377	ARG	CZ-NH1	5.12	1.39	1.33
1	D	669	CYS	CB-SG	5.12	1.91	1.82
1	D	108	PHE	CE2-CZ	5.10	1.47	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	70	ASP	CB-CG	5.07	1.62	1.51
1	A	29	LEU	N-CA	-5.07	1.36	1.46
1	C	181	ASP	CB-CG	5.07	1.62	1.51
1	D	272	PHE	CE2-CZ	5.06	1.47	1.37
1	D	124	GLU	CG-CD	5.05	1.59	1.51
1	D	334	TYR	CD1-CE1	5.03	1.46	1.39
1	A	335	GLU	CB-CG	5.02	1.61	1.52
1	C	57	ALA	CA-CB	5.01	1.62	1.52
1	A	421	SER	CB-OG	5.00	1.48	1.42

All (135) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	130	ARG	NE-CZ-NH2	-9.82	115.39	120.30
1	C	37	ARG	NE-CZ-NH2	-9.15	115.72	120.30
1	D	377	ARG	NE-CZ-NH1	-8.71	115.94	120.30
1	A	495	ARG	NE-CZ-NH1	8.69	124.65	120.30
1	C	501	PHE	CB-CG-CD2	-8.64	114.75	120.80
1	D	130	ARG	NE-CZ-NH2	-8.54	116.03	120.30
1	B	125	ARG	NE-CZ-NH2	-8.38	116.11	120.30
1	C	471	ARG	NE-CZ-NH2	-8.36	116.12	120.30
1	B	445	ARG	NE-CZ-NH1	8.27	124.44	120.30
1	B	377	ARG	NE-CZ-NH1	-8.07	116.26	120.30
1	B	383	PHE	CB-CG-CD2	-8.04	115.17	120.80
1	B	536	ARG	NE-CZ-NH2	-8.03	116.28	120.30
1	B	521	ARG	NE-CZ-NH1	8.01	124.31	120.30
1	A	377	ARG	NE-CZ-NH2	-7.98	116.31	120.30
1	B	445	ARG	NE-CZ-NH2	-7.97	116.31	120.30
1	A	411	ARG	NE-CZ-NH1	7.85	124.22	120.30
1	D	411	ARG	NE-CZ-NH1	7.66	124.13	120.30
1	C	159	ILE	CB-CG1-CD1	-7.66	92.46	113.90
1	A	612	ARG	NE-CZ-NH2	7.60	124.10	120.30
1	C	278	ARG	NE-CZ-NH1	-7.54	116.53	120.30
1	A	121	ARG	NE-CZ-NH2	-7.50	116.55	120.30
1	A	686	MET	CG-SD-CE	7.39	112.03	100.20
1	D	401	ASP	CB-CG-OD2	7.39	124.95	118.30
1	C	320	ARG	NE-CZ-NH2	-7.35	116.62	120.30
1	C	740	ARG	NE-CZ-NH2	-7.31	116.64	120.30
1	A	130	ARG	NE-CZ-NH2	-7.21	116.69	120.30
1	C	445	ARG	NE-CZ-NH1	7.20	123.90	120.30
1	C	636	ARG	NE-CZ-NH1	7.19	123.89	120.30
1	D	177	ASP	CB-CG-OD1	-7.06	111.95	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	260	ARG	NE-CZ-NH2	-7.01	116.80	120.30
1	D	125	ARG	NE-CZ-NH2	-6.93	116.83	120.30
1	D	582	LEU	CB-CG-CD1	6.90	122.74	111.00
1	C	660	LEU	CB-CG-CD1	6.86	122.67	111.00
1	A	111	ARG	NE-CZ-NH2	-6.86	116.87	120.30
1	C	59	ASP	CB-CG-OD2	-6.84	112.15	118.30
1	B	467	ASP	CB-CG-OD2	-6.71	112.26	118.30
1	A	663	ASP	CB-CG-OD1	6.71	124.34	118.30
1	C	159	ILE	CG1-CB-CG2	6.71	126.15	111.40
1	A	501	PHE	CB-CG-CD2	-6.66	116.14	120.80
1	A	37	ARG	NE-CZ-NH1	6.58	123.59	120.30
1	B	471	ARG	NE-CZ-NH2	-6.52	117.04	120.30
1	B	595	ASP	CB-CG-OD2	-6.52	112.44	118.30
1	A	380	ASP	CB-CG-OD2	-6.50	112.45	118.30
1	D	377	ARG	CG-CD-NE	-6.49	98.17	111.80
1	A	552	LEU	CB-CG-CD2	6.49	122.03	111.00
1	D	408	LEU	CB-CG-CD2	-6.46	100.01	111.00
1	B	562	LEU	CB-CG-CD1	6.46	121.99	111.00
1	D	377	ARG	NH1-CZ-NH2	6.38	126.42	119.40
1	D	152	PHE	CB-CG-CD2	-6.36	116.34	120.80
1	D	521	ARG	NE-CZ-NH1	6.36	123.48	120.30
1	A	290	ARG	NE-CZ-NH2	-6.32	117.14	120.30
1	C	125	ARG	NE-CZ-NH1	6.30	123.45	120.30
1	B	369	ARG	NE-CZ-NH1	-6.27	117.17	120.30
1	A	401	ASP	CB-CG-OD2	6.25	123.92	118.30
1	A	294	LYS	CD-CE-NZ	-6.19	97.47	111.70
1	A	259	ASP	CB-CG-OD2	6.18	123.86	118.30
1	A	740	ARG	NE-CZ-NH2	-6.15	117.22	120.30
1	A	353	LEU	CB-CG-CD1	-6.14	100.56	111.00
1	C	377	ARG	NE-CZ-NH2	-6.12	117.24	120.30
1	D	313	ARG	NE-CZ-NH2	-6.12	117.24	120.30
1	B	370	VAL	CA-CB-CG2	-6.11	101.74	110.90
1	D	165	ARG	NE-CZ-NH2	-6.11	117.25	120.30
1	C	443	PHE	CB-CG-CD1	-6.10	116.53	120.80
1	A	144	LEU	CB-CG-CD1	-6.08	100.66	111.00
1	A	277	PHE	CB-CG-CD1	-6.07	116.55	120.80
1	D	401	ASP	CB-CG-OD1	-6.06	112.84	118.30
1	A	72	ARG	NE-CZ-NH2	-6.04	117.28	120.30
1	B	118	ASP	CB-CG-OD1	-6.03	112.88	118.30
1	A	207	PHE	CB-CG-CD1	-6.02	116.59	120.80
1	B	401	ASP	CB-CG-OD2	6.02	123.72	118.30
1	B	118	ASP	CB-CG-OD2	5.99	123.69	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	571	LEU	CA-CB-CG	5.98	129.06	115.30
1	A	471	ARG	NE-CZ-NH1	-5.95	117.32	120.30
1	B	146	ASP	CB-CG-OD2	5.94	123.65	118.30
1	C	725	ASP	N-CA-C	5.94	127.04	111.00
1	C	606	LEU	CB-CG-CD2	5.92	121.07	111.00
1	C	633	LEU	CB-CG-CD1	5.91	121.04	111.00
1	A	495	ARG	NE-CZ-NH2	-5.87	117.36	120.30
1	A	554	LEU	CB-CG-CD2	-5.87	101.02	111.00
1	A	29	LEU	CB-CA-C	5.87	121.35	110.20
1	D	501	PHE	CB-CG-CD1	5.86	124.90	120.80
1	A	479	ARG	NE-CZ-NH1	5.82	123.21	120.30
1	A	685	LEU	CB-CG-CD1	-5.82	101.11	111.00
1	A	501	PHE	CB-CG-CD1	5.79	124.85	120.80
1	B	309	LYS	CD-CE-NZ	-5.77	98.42	111.70
1	C	165	ARG	NE-CZ-NH2	-5.77	117.42	120.30
1	D	181	ASP	CB-CG-OD2	5.76	123.48	118.30
1	D	320	ARG	NE-CZ-NH2	-5.76	117.42	120.30
1	B	479	ARG	NE-CZ-NH2	-5.74	117.43	120.30
1	D	501	PHE	CB-CG-CD2	-5.73	116.79	120.80
1	C	467	ASP	CB-CG-OD2	-5.71	113.16	118.30
1	C	501	PHE	CB-CG-CD1	5.71	124.80	120.80
1	D	377	ARG	NE-CZ-NH2	-5.69	117.46	120.30
1	D	138	PHE	CB-CG-CD2	-5.68	116.82	120.80
1	A	454	ASP	CB-CG-OD1	-5.67	113.20	118.30
1	D	422	ARG	NE-CZ-NH2	-5.64	117.48	120.30
1	C	121	ARG	NE-CZ-NH2	-5.63	117.48	120.30
1	A	260	ARG	NE-CZ-NH1	5.61	123.11	120.30
1	B	165	ARG	NE-CZ-NH1	-5.57	117.52	120.30
1	B	198	LEU	CB-CG-CD2	-5.53	101.61	111.00
1	B	612	ARG	NE-CZ-NH1	5.52	123.06	120.30
1	A	595	ASP	CB-CG-OD2	5.50	123.25	118.30
1	B	595	ASP	CB-CG-OD1	5.49	123.24	118.30
1	C	435	ARG	NE-CZ-NH1	5.47	123.03	120.30
1	D	471	ARG	NE-CZ-NH2	-5.47	117.57	120.30
1	D	536	ARG	NE-CZ-NH2	-5.46	117.57	120.30
1	B	595	ASP	CB-CA-C	5.42	121.24	110.40
1	C	117	PHE	CB-CG-CD2	-5.41	117.01	120.80
1	B	183	ARG	NE-CZ-NH2	5.40	123.00	120.30
1	A	117	PHE	CB-CG-CD1	-5.40	117.02	120.80
1	B	501	PHE	CB-CG-CD2	-5.38	117.03	120.80
1	D	415	TYR	CG-CD1-CE1	-5.36	117.01	121.30
1	D	319	ARG	NE-CZ-NH1	5.36	122.98	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	454	ASP	CB-CG-OD2	5.36	123.12	118.30
1	B	70	ASP	CB-CG-OD1	5.34	123.11	118.30
1	C	139	GLN	N-CA-CB	-5.34	100.99	110.60
1	D	118	ASP	CB-CG-OD2	5.28	123.05	118.30
1	B	601	ARG	NE-CZ-NH2	-5.26	117.67	120.30
1	D	117	PHE	CB-CG-CD1	-5.25	117.12	120.80
1	A	411	ARG	NE-CZ-NH2	-5.21	117.69	120.30
1	C	660	LEU	CB-CG-CD2	5.21	119.85	111.00
1	C	155	ASP	CB-CG-OD2	5.20	122.98	118.30
1	D	61	ARG	NE-CZ-NH2	-5.18	117.71	120.30
1	B	121	ARG	NE-CZ-NH2	-5.18	117.71	120.30
1	B	547	LEU	CB-CG-CD1	-5.17	102.22	111.00
1	C	125	ARG	NE-CZ-NH2	-5.16	117.72	120.30
1	A	37	ARG	NE-CZ-NH2	-5.16	117.72	120.30
1	B	740	ARG	NE-CZ-NH2	-5.15	117.72	120.30
1	C	118	ASP	CB-CG-OD1	-5.14	113.67	118.30
1	B	369	ARG	NE-CZ-NH2	5.08	122.84	120.30
1	C	413	PHE	CB-CG-CD2	-5.07	117.25	120.80
1	B	350	ASP	CB-CG-OD1	-5.06	113.75	118.30
1	A	121	ARG	NE-CZ-NH1	5.06	122.83	120.30
1	B	180	ARG	NE-CZ-NH2	-5.05	117.78	120.30
1	D	368	GLN	CA-CB-CG	-5.00	102.39	113.40

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	C	159	ILE	CB

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	121	ARG	Sidechain
1	C	724	ALA	Peptide
1	C	725	ASP	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	5764	0	5599	43	0
1	B	5749	0	5577	62	0
1	C	5766	0	5595	52	0
1	D	5757	0	5585	50	0
2	A	86	0	60	8	0
2	B	86	0	60	10	0
2	C	86	0	60	8	0
2	D	86	0	60	4	0
3	A	44	0	37	7	0
3	B	44	0	37	4	0
3	C	44	0	37	7	0
3	D	44	0	37	4	0
4	A	44	0	31	5	0
4	B	44	0	31	6	0
4	C	44	0	31	6	0
4	D	44	0	31	4	0
5	A	842	0	0	12	0
5	B	754	0	0	15	0
5	C	807	0	0	19	0
5	D	866	0	0	17	1
All	All	27001	0	22868	247	1

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:449[B]:HIS:CE1	5:C:3363:HOH:O	1.74	1.36
5:A:2649:HOH:O	1:C:28:SER:HA	1.44	1.16
1:D:451:MET:SD	5:D:3617:HOH:O	1.99	1.15
1:A:369[B]:ARG:HG3	1:A:369[B]:ARG:HH21	1.12	1.15
1:B:157:ASN:HB2	5:B:3138:HOH:O	1.48	1.11
5:B:2705:HOH:O	1:D:73:LYS:HD3	1.49	1.10
1:D:41:GLU:HG2	5:D:3312:HOH:O	1.52	1.06
1:D:267:ARG:HG3	5:D:1920:HOH:O	1.57	1.04
1:B:546:GLN:HG3	5:B:3324:HOH:O	1.58	1.03
1:A:369[B]:ARG:CG	1:A:369[B]:ARG:HH21	1.73	1.00
1:C:267:ARG:HG3	5:C:2916:HOH:O	1.62	0.99
3:C:761[B]:HDE:HBBB	3:C:761[B]:HDE:HMB	1.47	0.97
1:A:713:GLN:HG2	5:A:3248:HOH:O	1.65	0.94
1:A:28:SER:OG	1:A:28:SER:O	1.84	0.93

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:748:ILE:O	1:A:751:ILE:HG22	1.69	0.93
1:B:521:ARG:HH21	1:B:745:ILE:HG21	1.33	0.91
3:A:761[B]:HDE:HBBB	3:A:761[B]:HDE:HMB	1.55	0.88
1:D:28:SER:HB3	5:D:2467:HOH:O	1.76	0.85
1:A:541:GLU:OE2	5:A:2550:HOH:O	1.94	0.85
3:D:761[B]:HDE:HMB	3:D:761[B]:HDE:CBB	2.07	0.84
2:B:754[A]:HEM:CMB	2:B:754[A]:HEM:HBB2	2.05	0.83
1:B:521:ARG:NH2	1:B:745:ILE:HG21	1.94	0.82
1:A:416[B]:THR:HG22	5:A:901:HOH:O	1.79	0.81
1:C:751:ILE:HB	5:C:2367:HOH:O	1.81	0.80
2:B:755[C]:HEM:HMC2	2:B:755[C]:HEM:HBC2	1.63	0.79
1:B:155:ASP:OD1	5:B:3138:HOH:O	1.98	0.79
1:D:416[B]:THR:CG2	5:D:1415:HOH:O	2.30	0.78
1:D:416[B]:THR:HG22	5:D:1415:HOH:O	1.83	0.77
3:C:761[B]:HDE:HBCB	3:C:761[B]:HDE:HMC	1.68	0.76
1:D:552:LEU:CD1	1:D:556:GLN:NE2	2.49	0.75
3:D:761[B]:HDE:HBBB	3:D:761[B]:HDE:HMB	1.67	0.75
1:C:636:ARG:HD3	5:C:2717:HOH:O	1.87	0.75
2:B:754[A]:HEM:HMB1	2:B:754[A]:HEM:HBB2	1.70	0.74
1:C:748:ILE:O	1:C:751:ILE:HG22	1.86	0.74
1:B:546:GLN:CG	5:B:3324:HOH:O	2.27	0.74
3:B:761[B]:HDE:HBBB	3:B:761[B]:HDE:HMB	1.69	0.74
1:B:533:LYS:HE2	5:B:3100:HOH:O	1.88	0.73
1:D:552:LEU:HD13	1:D:556:GLN:NE2	2.04	0.72
1:B:201:ASN:CG	4:B:760[D]:HDD:HMB2	2.09	0.72
2:A:755[C]:HEM:HBC2	2:A:755[C]:HEM:HMC1	1.71	0.71
1:B:144:LEU:HD11	1:B:370:VAL:HG13	1.71	0.71
1:B:330:ASP:OD1	1:B:629:HIS:HE1	1.73	0.71
1:D:201:ASN:CG	4:D:760[D]:HDD:HMB2	2.11	0.71
1:D:449[A]:HIS:HD2	5:D:3615:HOH:O	1.72	0.70
1:A:201:ASN:CG	4:A:760[D]:HDD:HMB2	2.13	0.69
2:A:755[C]:HEM:HBB2	2:A:755[C]:HEM:CMB	2.22	0.69
3:C:761[B]:HDE:HMB	3:C:761[B]:HDE:CBB	2.21	0.69
1:C:70:ASP:OD1	5:C:2554:HOH:O	2.09	0.69
2:A:755[C]:HEM:HMB2	2:A:755[C]:HEM:HBB2	1.75	0.68
1:C:578[A]:ASP:OD1	5:C:3157:HOH:O	2.11	0.68
1:D:748:ILE:O	1:D:751:ILE:HG22	1.93	0.68
1:B:607:LEU:HD12	1:B:650[B]:ILE:CD1	2.23	0.68
1:A:612:ARG:NH1	5:A:3360:HOH:O	2.26	0.67
1:A:369[B]:ARG:HG3	1:A:369[B]:ARG:NH2	1.96	0.66
3:A:761[B]:HDE:HBCB	3:A:761[B]:HDE:HMC	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:201:ASN:CG	4:C:760[D]:HDD:HMB2	2.16	0.66
1:D:597:ASP:OD1	5:D:3292:HOH:O	2.14	0.66
3:D:761[B]:HDE:HBBA	3:D:761[B]:HDE:HMB	1.78	0.65
1:B:449[B]:HIS:HD2	5:B:3613:HOH:O	1.79	0.65
1:C:486:GLN:OE1	5:C:2892:HOH:O	2.13	0.65
1:C:583:LYS:O	1:C:584:LYS:HB3	1.97	0.65
1:C:449[A]:HIS:HD2	5:C:3611:HOH:O	1.79	0.65
1:C:612:ARG:HB2	1:C:612:ARG:CZ	2.27	0.65
5:B:2705:HOH:O	1:D:73:LYS:CD	2.23	0.64
2:B:754[A]:HEM:CBB	2:B:754[A]:HEM:HMB1	2.26	0.64
1:A:411:ARG:HG3	3:A:761[B]:HDE:HBBA	1.78	0.64
1:B:407:LEU:HD12	2:B:755[C]:HEM:HBB1	1.79	0.63
4:C:760[D]:HDD:HBC1	4:C:760[D]:HDD:HMC1	1.79	0.63
1:C:556:GLN:NE2	5:C:2533:HOH:O	2.31	0.63
2:C:755[C]:HEM:HBB2	2:C:755[C]:HEM:HMB2	1.80	0.63
1:B:546:GLN:CD	5:B:3324:HOH:O	2.36	0.63
1:A:416[B]:THR:CG2	5:A:901:HOH:O	2.43	0.62
1:C:634:TYR:O	1:C:653:THR:HA	1.99	0.62
1:C:330:ASP:OD1	1:C:629:HIS:HE1	1.83	0.62
1:D:629:HIS:HD2	5:D:1554:HOH:O	1.83	0.62
3:B:761[B]:HDE:HMB	3:B:761[B]:HDE:CBB	2.29	0.62
1:B:583:LYS:NZ	1:B:583:LYS:H	1.98	0.61
1:D:552:LEU:HD11	1:D:556:GLN:NE2	2.14	0.61
1:C:211:ALA:CB	2:C:755[C]:HEM:HBB1	2.30	0.61
1:A:29:LEU:HB2	5:C:2405:HOH:O	2.01	0.60
1:A:532[A]:SER:OG	5:A:3443:HOH:O	2.12	0.60
1:D:556:GLN:NE2	5:D:2773:HOH:O	2.33	0.60
2:B:755[C]:HEM:HBC2	2:B:755[C]:HEM:CMC	2.30	0.60
1:B:748:ILE:O	1:B:751:ILE:HG22	2.02	0.60
4:C:760[D]:HDD:HMC1	4:C:760[D]:HDD:CBC	2.30	0.60
1:D:330:ASP:OD1	1:D:629:HIS:HE1	1.84	0.59
1:A:369[B]:ARG:CG	1:A:369[B]:ARG:NH2	2.44	0.59
4:B:760[D]:HDD:HMC1	4:B:760[D]:HDD:HBC1	1.83	0.59
1:D:552:LEU:HD13	1:D:556:GLN:HE21	1.68	0.58
1:A:479:ARG:NH2	5:A:2607:HOH:O	2.18	0.57
1:C:449[B]:HIS:NE2	5:C:3363:HOH:O	2.04	0.57
1:B:201:ASN:ND2	4:B:760[D]:HDD:HMB2	2.18	0.57
1:B:411:ARG:HG3	3:B:761[B]:HDE:HBBA	1.85	0.57
1:A:201:ASN:ND2	4:A:760[D]:HDD:HMB2	2.19	0.57
1:C:578[A]:ASP:HB2	1:C:582:LEU:O	2.04	0.57
1:A:713:GLN:HA	1:A:713:GLN:HE21	1.68	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:411:ARG:HG3	3:C:761[B]:HDE:HBBA	1.86	0.57
1:D:211:ALA:HB2	2:D:755[C]:HEM:HBB1	1.86	0.56
1:C:359:LEU:H	1:C:507:HIS:HD2	1.52	0.56
1:B:634:TYR:O	1:B:653:THR:HA	2.05	0.56
1:B:521:ARG:NH2	1:B:745:ILE:HD13	2.21	0.56
1:C:201:ASN:ND2	4:C:760[D]:HDD:HMB2	2.21	0.55
1:B:359:LEU:H	1:B:507:HIS:HD2	1.53	0.55
1:C:636:ARG:NH2	1:C:639:GLU:O	2.39	0.55
2:C:754[A]:HEM:CMB	2:C:754[A]:HEM:HBB2	2.37	0.55
4:A:760[D]:HDD:HMC1	4:A:760[D]:HDD:HBC1	1.88	0.54
1:B:629:HIS:HD2	5:B:1052:HOH:O	1.92	0.53
1:B:724:ALA:O	1:B:725:ASP:O	2.27	0.53
1:D:158:LYS:HB3	5:D:3367:HOH:O	2.08	0.53
4:A:760[D]:HDD:HBC1	4:A:760[D]:HDD:CMC	2.39	0.52
1:D:211:ALA:CB	2:D:755[C]:HEM:HBB1	2.40	0.52
1:C:440[B]:TYR:CZ	5:C:1792:HOH:O	2.54	0.52
3:C:761[B]:HDE:HBAA	5:C:964:HOH:O	2.09	0.52
4:B:760[D]:HDD:HMC1	4:B:760[D]:HDD:CBC	2.40	0.51
3:A:761[B]:HDE:CBB	3:A:761[B]:HDE:HMB	2.36	0.51
1:B:533:LYS:HE3	5:C:2623:HOH:O	2.12	0.50
1:B:552:LEU:HD21	1:B:571:LEU:HD12	1.93	0.50
1:C:535:VAL:O	1:C:537:PRO:HD3	2.11	0.50
1:A:36:HIS:H	1:A:36:HIS:CD2	2.30	0.49
1:A:192:GLU:OE1	1:A:479:ARG:NH2	2.45	0.49
1:B:603:VAL:HG11	1:B:666:ILE:HD12	1.95	0.49
4:C:760[D]:HDD:HBD2	5:C:964:HOH:O	2.12	0.49
4:C:760[D]:HDD:HBC1	4:C:760[D]:HDD:CMC	2.43	0.49
2:A:755[C]:HEM:HBC2	2:A:755[C]:HEM:CMC	2.41	0.49
1:D:201:ASN:ND2	4:D:760[D]:HDD:HMB2	2.26	0.49
1:B:583:LYS:O	1:B:584:LYS:HB3	2.13	0.49
1:D:61:ARG:NH2	5:D:3239:HOH:O	2.36	0.49
1:B:449[B]:HIS:HE1	5:B:1789:HOH:O	1.96	0.48
1:D:359:LEU:H	1:D:507:HIS:HD2	1.61	0.48
1:A:414:SER:OG	2:A:754[A]:HEM:HHH	2.13	0.48
1:D:713:GLN:O	1:D:713:GLN:HG2	2.14	0.48
1:B:612:ARG:CZ	1:B:612:ARG:HB2	2.43	0.48
1:A:278:ARG:HH12	1:A:487:GLU:CD	2.17	0.48
1:B:546:GLN:NE2	5:B:3324:HOH:O	2.47	0.47
1:C:128:HIS:HA	1:C:168:THR:O	2.13	0.47
1:C:748:ILE:O	1:C:751:ILE:CG2	2.58	0.47
1:B:281:ASN:OD1	1:B:283:GLU:HG3	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:459:ASN:HD22	1:A:459:ASN:H	1.63	0.47
4:B:760[D]:HDD:CMC	4:B:760[D]:HDD:HBC1	2.44	0.47
1:C:488:ARG:HB2	1:C:488:ARG:HE	1.39	0.47
1:B:73:LYS:NZ	5:B:1110:HOH:O	2.47	0.47
1:B:407:LEU:CD1	2:B:755[C]:HEM:HBB1	2.45	0.47
1:B:359:LEU:H	1:B:507:HIS:CD2	2.31	0.47
3:C:761[B]:HDE:CBC	3:C:761[B]:HDE:HMC	2.41	0.47
1:D:207:PHE:O	1:D:249:THR:HA	2.14	0.47
4:D:760[D]:HDD:HMC1	4:D:760[D]:HDD:CBC	2.44	0.47
1:A:612:ARG:CZ	5:A:3400:HOH:O	2.62	0.47
1:C:583:LYS:O	1:C:584:LYS:CB	2.63	0.47
1:C:629:HIS:HD2	5:C:1129:HOH:O	1.98	0.47
1:D:731:GLU:OE2	5:D:3028:HOH:O	2.20	0.47
2:D:755[C]:HEM:HBC2	2:D:755[C]:HEM:CMC	2.46	0.47
1:B:583:LYS:HZ2	1:B:583:LYS:H	1.62	0.46
1:A:155:ASP:HB3	1:A:158:LYS:HB2	1.97	0.46
1:B:603:VAL:HG11	1:B:666:ILE:CD1	2.46	0.46
1:B:634:TYR:HB2	1:B:650[B]:ILE:HD12	1.96	0.46
1:D:128:HIS:HA	1:D:168:THR:O	2.15	0.46
1:C:411:ARG:HG2	2:C:755[C]:HEM:C3B	2.50	0.46
4:A:760[D]:HDD:HMC1	4:A:760[D]:HDD:CBC	2.45	0.46
1:B:521:ARG:NH2	1:B:745:ILE:CG2	2.74	0.45
1:C:612:ARG:HG3	5:C:3087:HOH:O	2.15	0.45
1:B:184:GLY:HA3	4:B:760[D]:HDD:HMA2	1.98	0.45
1:A:211:ALA:CB	1:A:410:GLY:HA3	2.46	0.45
1:D:552:LEU:HD21	1:D:571:LEU:HD23	1.97	0.45
1:B:696:ALA:HB1	1:B:728:PHE:CZ	2.51	0.45
2:A:754[A]:HEM:CMB	2:A:754[A]:HEM:HBB2	2.47	0.45
1:C:137:TYR:HB2	1:C:159:ILE:HD11	1.97	0.45
1:D:359:LEU:HD21	5:D:2971:HOH:O	2.17	0.45
1:B:211:ALA:HA	2:B:755[C]:HEM:HBB1	1.98	0.45
1:B:414:SER:OG	2:B:754[A]:HEM:HHD	2.16	0.45
1:B:533:LYS:CE	5:C:2623:HOH:O	2.65	0.45
1:B:39:ALA:HB1	1:B:41:GLU:HG2	1.98	0.45
1:C:165:ARG:HD3	2:C:755[C]:HEM:O1D	2.16	0.45
5:A:1788:HOH:O	1:C:449[A]:HIS:HE1	1.99	0.45
1:C:704:PHE:O	1:C:707:THR:HG22	2.17	0.45
2:C:755[C]:HEM:HBB2	2:C:755[C]:HEM:CMB	2.46	0.45
1:A:128:HIS:HA	1:A:168:THR:O	2.17	0.45
1:A:634:TYR:O	1:A:653:THR:HA	2.16	0.45
1:A:411:ARG:CG	3:A:761[B]:HDE:HBBA	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:393:PRO:HD2	1:D:415:TYR:CG	2.52	0.45
1:B:459:ASN:H	1:B:459:ASN:HD22	1.65	0.44
1:B:211:ALA:CB	1:B:410:GLY:HA3	2.47	0.44
1:B:686:MET:HB3	1:B:751:ILE:HD11	1.98	0.44
1:C:488:ARG:NH1	5:C:2379:HOH:O	2.25	0.44
1:C:717:GLY:HA3	1:C:741:VAL:HG11	1.99	0.44
1:B:157:ASN:CB	5:B:3138:HOH:O	2.28	0.44
1:D:556:GLN:HG2	1:D:566:LEU:HD12	1.98	0.44
1:C:552:LEU:HD22	1:C:556:GLN:HG3	2.00	0.44
1:C:705:LYS:HG2	1:C:710:ILE:HB	2.00	0.44
1:B:128:HIS:HA	1:B:168:THR:O	2.18	0.44
2:B:754[A]:HEM:HMB3	2:B:754[A]:HEM:HBB2	1.93	0.44
1:C:28:SER:OG	1:C:28:SER:O	2.35	0.44
1:C:309:LYS:HB3	1:C:660:LEU:HD21	1.98	0.44
1:C:128:HIS:CE1	1:C:169:VAL:HG22	2.53	0.44
1:C:551:ASP:OD1	1:C:553:THR:HB	2.18	0.44
1:D:278:ARG:HH12	1:D:487:GLU:CD	2.21	0.44
1:A:393:PRO:HD2	1:A:415:TYR:CG	2.53	0.43
1:C:359:LEU:H	1:C:507:HIS:CD2	2.32	0.43
1:B:393:PRO:HD2	1:B:415:TYR:CG	2.54	0.43
2:A:755[C]:HEM:HMB2	2:A:755[C]:HEM:CBB	2.46	0.43
1:B:521:ARG:NH2	1:B:745:ILE:CD1	2.81	0.43
2:D:755[C]:HEM:HBC2	2:D:755[C]:HEM:HMC2	2.00	0.43
1:A:252:ASN:HA	1:A:252:ASN:HD22	1.69	0.43
4:D:760[D]:HDD:HMC1	4:D:760[D]:HDD:HBC1	2.00	0.43
1:D:128:HIS:CE1	1:D:169:VAL:HG22	2.54	0.43
5:B:1789:HOH:O	1:D:449[A]:HIS:HE1	2.02	0.43
1:B:583:LYS:HZ3	1:B:583:LYS:H	1.65	0.43
2:C:754[A]:HEM:HMB1	2:C:754[A]:HEM:HBB2	2.00	0.43
1:C:552:LEU:HD21	1:C:571:LEU:HD12	2.00	0.42
1:D:393:PRO:HD2	1:D:415:TYR:CD2	2.54	0.42
1:D:48:GLN:HB3	1:D:48:GLN:HE21	1.69	0.42
1:A:335:GLU:OE1	1:A:369[B]:ARG:HD3	2.20	0.42
1:B:252:ASN:HA	1:B:252:ASN:HD22	1.75	0.42
1:D:416[B]:THR:HG21	5:D:1415:HOH:O	2.07	0.42
3:A:761[B]:HDE:HABA	3:A:761[B]:HDE:HHCA	1.86	0.42
1:D:597:ASP:OD2	5:D:2709:HOH:O	2.21	0.42
1:A:414:SER:OG	3:A:761[B]:HDE:HHB	2.20	0.42
1:A:610:GLU:HG2	5:A:2551:HOH:O	2.19	0.42
1:C:211:ALA:HB2	2:C:755[C]:HEM:HBB1	2.02	0.42
1:A:422:ARG:NE	2:A:754[A]:HEM:O1D	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:682:ASN:HB3	1:B:707:THR:HG21	2.02	0.41
1:A:38:PRO:HA	1:A:48:GLN:OE1	2.19	0.41
1:D:593:ILE:HA	1:D:594:PRO:HD3	1.94	0.41
1:C:219:HIS:HB3	1:D:459:ASN:ND2	2.36	0.41
1:C:459:ASN:H	1:C:459:ASN:HD22	1.68	0.41
1:D:211:ALA:CB	1:D:410:GLY:HA3	2.51	0.41
1:D:459:ASN:HD22	1:D:459:ASN:H	1.68	0.41
1:A:459:ASN:ND2	1:B:219:HIS:HB3	2.36	0.41
1:A:219:HIS:HB3	1:B:459:ASN:ND2	2.36	0.41
1:A:716:GLU:HG2	5:A:1656:HOH:O	2.21	0.41
1:B:207:PHE:O	1:B:249:THR:HA	2.21	0.41
1:C:583:LYS:HB2	1:C:583:LYS:HE3	1.90	0.41
1:B:91:ASP:OD1	1:D:461:GLU:OE1	2.39	0.41
1:D:556:GLN:CG	1:D:566:LEU:HD12	2.51	0.41
1:D:634:TYR:O	1:D:653:THR:HA	2.20	0.41
1:B:521:ARG:HH22	1:B:745:ILE:CD1	2.34	0.40
1:B:607:LEU:HD22	1:B:611:VAL:HG21	2.02	0.40
1:A:207:PHE:O	1:A:249:THR:HA	2.21	0.40
1:A:39:ALA:HB1	1:A:41:GLU:HG2	2.04	0.40
1:C:238:THR:HB	1:D:460:TYR:CE2	2.56	0.40
1:D:61:ARG:NH1	5:D:3245:HOH:O	2.53	0.40
1:A:95:LEU:HB3	1:A:107:ASP:HB2	2.03	0.40
1:A:251:HIS:CE1	1:A:507:HIS:HB3	2.56	0.40
1:B:411:ARG:HG2	3:B:761[B]:HDE:C3B	2.51	0.40
1:C:407:LEU:HD12	3:C:761[B]:HDE:HBB	2.04	0.40
1:B:144:LEU:HD11	1:B:370:VAL:CG1	2.48	0.40
3:D:761[B]:HDE:HBBB	3:D:761[B]:HDE:CMB	2.44	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:2178:HOH:O	5:D:2976:HOH:O[1_655]	2.13	0.07

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	729/753 (97%)	713 (98%)	15 (2%)	1 (0%)	55 26
1	B	727/753 (96%)	706 (97%)	19 (3%)	2 (0%)	44 19
1	C	729/753 (97%)	717 (98%)	11 (2%)	1 (0%)	55 26
1	D	730/753 (97%)	716 (98%)	13 (2%)	1 (0%)	55 26
All	All	2915/3012 (97%)	2852 (98%)	58 (2%)	5 (0%)	51 24

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	725	ASP
1	A	75	SER
1	B	75	SER
1	C	75	SER
1	D	75	SER

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	616/636 (97%)	600 (97%)	16 (3%)	51 18
1	B	614/636 (96%)	589 (96%)	25 (4%)	35 7
1	C	616/636 (97%)	587 (95%)	29 (5%)	30 5
1	D	617/636 (97%)	598 (97%)	19 (3%)	45 13
All	All	2463/2544 (97%)	2374 (96%)	89 (4%)	40 10

All (89) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	SER

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Mol	Chain	Res	Type
1	A	29	LEU
1	A	37	ARG
1	A	158	LYS
1	A	185	PHE
1	A	191	THR
1	A	205	ILE
1	A	227	TRP
1	A	237	ASP
1	A	252	ASN
1	A	440	TYR
1	A	459	ASN
1	A	552	LEU
1	A	713	GLN
1	A	732	LEU
1	A	751	ILE
1	B	28	SER
1	B	185	PHE
1	B	191	THR
1	B	205	ILE
1	B	227	TRP
1	B	237	ASP
1	B	252	ASN
1	B	283	GLU
1	B	440	TYR
1	B	459	ASN
1	B	552	LEU
1	B	562	LEU
1	B	566	LEU
1	B	568	ASP
1	B	571	LEU
1	B	583	LYS
1	B	595	ASP
1	B	610	GLU
1	B	612	ARG
1	B	616	LEU
1	B	633	LEU
1	B	703	LYS
1	B	713	GLN
1	B	750	LYS
1	B	751	ILE
1	C	61	ARG
1	C	159	ILE

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Mol	Chain	Res	Type
1	C	185	PHE
1	C	191	THR
1	C	205	ILE
1	C	213	LYS
1	C	227	TRP
1	C	252	ASN
1	C	283	GLU
1	C	285	LYS
1	C	377	ARG
1	C	440[A]	TYR
1	C	440[B]	TYR
1	C	459	ASN
1	C	478	LYS
1	C	488	ARG
1	C	552	LEU
1	C	571	LEU
1	C	594	PRO
1	C	606	LEU
1	C	612	ARG
1	C	616	LEU
1	C	633	LEU
1	C	648	LEU
1	C	660	LEU
1	C	725	ASP
1	C	733	LEU
1	C	747	LYS
1	C	750	LYS
1	D	41	GLU
1	D	185	PHE
1	D	191	THR
1	D	205	ILE
1	D	227	TRP
1	D	237	ASP
1	D	252	ASN
1	D	432	PRO
1	D	440	TYR
1	D	459	ASN
1	D	574	THR
1	D	582	LEU
1	D	612	ARG
1	D	616	LEU
1	D	624	LYS

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Mol	Chain	Res	Type
1	D	648	LEU
1	D	713	GLN
1	D	747	LYS
1	D	750	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	36	HIS
1	A	252	ASN
1	A	459	ASN
1	A	515	GLN
1	A	713	GLN
1	B	252	ASN
1	B	459	ASN
1	B	507	HIS
1	B	546	GLN
1	B	629	HIS
1	C	252	ASN
1	C	459	ASN
1	C	486	GLN
1	C	507	HIS
1	C	556	GLN
1	C	572	ASN
1	C	629	HIS
1	C	671	ASN
1	D	48	GLN
1	D	252	ASN
1	D	459	ASN
1	D	507	HIS
1	D	556	GLN
1	D	629	HIS
1	D	671	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 carbohydrates 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$
2	HEM	A	754[A]	1,5	28,50,50	2.36	11 (39%)	17,82,82	2.40	6 (35%)
2	HEM	A	755[C]	1,5	28,50,50	2.22	8 (28%)	17,82,82	1.81	4 (23%)
4	HDD	A	760[D]	1,5	39,52,52	2.49	12 (30%)	25,89,89	2.47	7 (28%)
3	HDE	A	761[B]	1,5	41,52,52	2.61	16 (39%)	35,89,89	3.13	17 (48%)
2	HEM	B	754[A]	1,5	28,50,50	2.30	9 (32%)	17,82,82	2.63	7 (41%)
2	HEM	B	755[C]	1,5	28,50,50	2.14	8 (28%)	17,82,82	2.39	5 (29%)
4	HDD	B	760[D]	1,5	39,52,52	2.29	15 (38%)	25,89,89	2.37	10 (40%)
3	HDE	B	761[B]	1,5	41,52,52	2.70	14 (34%)	35,89,89	3.03	16 (45%)
2	HEM	C	754[A]	1,5	28,50,50	2.17	7 (25%)	17,82,82	2.76	10 (58%)
2	HEM	C	755[C]	1,5	28,50,50	2.07	9 (32%)	17,82,82	2.10	5 (29%)
4	HDD	C	760[D]	1,5	39,52,52	2.35	12 (30%)	25,89,89	2.35	10 (40%)
3	HDE	C	761[B]	1,5	41,52,52	2.74	15 (36%)	35,89,89	2.49	16 (45%)
2	HEM	D	754[A]	1	28,50,50	2.16	9 (32%)	17,82,82	2.16	6 (35%)
2	HEM	D	755[C]	1	28,50,50	2.20	5 (17%)	17,82,82	2.42	5 (29%)
4	HDD	D	760[D]	1	39,52,52	2.41	10 (25%)	25,89,89	1.83	8 (32%)
3	HDE	D	761[B]	1	41,52,52	2.85	15 (36%)	35,89,89	3.06	16 (45%)

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	754[A]	1,5	-	0/6/54/54	0/0/8/8
2	HEM	A	755[C]	1,5	-	0/6/54/54	0/0/8/8
4	HDD	A	760[D]	1,5	-	0/3/89/89	0/1/9/9
3	HDE	A	761[B]	1,5	-	0/7/89/89	0/1/9/9
2	HEM	B	754[A]	1,5	-	0/6/54/54	0/0/8/8
2	HEM	B	755[C]	1,5	-	0/6/54/54	0/0/8/8
4	HDD	B	760[D]	1,5	-	0/3/89/89	0/1/9/9
3	HDE	B	761[B]	1,5	-	1/7/89/89	0/1/9/9
2	HEM	C	754[A]	1,5	-	0/6/54/54	0/0/8/8
2	HEM	C	755[C]	1,5	-	0/6/54/54	0/0/8/8
4	HDD	C	760[D]	1,5	-	0/3/89/89	0/1/9/9
3	HDE	C	761[B]	1,5	-	0/7/89/89	0/1/9/9
2	HEM	D	754[A]	1	-	0/6/54/54	0/0/8/8
2	HEM	D	755[C]	1	-	0/6/54/54	0/0/8/8
4	HDD	D	760[D]	1	-	0/3/89/89	0/1/9/9
3	HDE	D	761[B]	1	-	1/7/89/89	0/1/9/9

All (175) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	761[B]	HDE	CHC-C1C	-6.90	1.44	1.51
3	A	761[B]	HDE	CHD-C1D	-6.76	1.44	1.51
3	D	761[B]	HDE	CHC-C4B	-6.72	1.44	1.51
4	A	760[D]	HDD	O1D-C3D	-6.60	1.35	1.46
3	D	761[B]	HDE	CHC-C1C	-6.51	1.45	1.51
3	B	761[B]	HDE	CHC-C4B	-6.46	1.45	1.51
2	D	755[C]	HEM	C3B-C2B	-6.32	1.32	1.40
3	D	761[B]	HDE	CHD-C4C	-6.21	1.45	1.51
4	B	760[D]	HDD	C3B-C2B	-5.98	1.32	1.40
3	D	761[B]	HDE	CHD-C1D	-5.92	1.45	1.51
4	D	760[D]	HDD	C3C-C2C	-5.81	1.32	1.40
3	A	761[B]	HDE	CHC-C4B	-5.80	1.45	1.51
4	A	760[D]	HDD	C3C-C2C	-5.69	1.32	1.40
2	B	754[A]	HEM	C3B-C2B	-5.57	1.33	1.40
3	C	761[B]	HDE	CHD-C1D	-5.55	1.45	1.51
2	A	754[A]	HEM	C3C-C2C	-5.47	1.33	1.40
4	C	760[D]	HDD	C3B-C2B	-5.40	1.33	1.40
2	A	755[C]	HEM	C3B-C2B	-5.39	1.33	1.40
4	C	760[D]	HDD	O1D-C3D	-5.27	1.38	1.46
3	C	761[B]	HDE	CHD-C4C	-5.21	1.46	1.51
4	D	760[D]	HDD	C3B-C2B	-5.04	1.33	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	754[A]	HEM	C3C-C2C	-5.02	1.33	1.40
4	A	760[D]	HDD	C3B-C2B	-5.01	1.33	1.40
3	B	761[B]	HDE	CHD-C4C	-4.92	1.46	1.51
3	A	761[B]	HDE	CHD-C4C	-4.89	1.46	1.51
2	C	755[C]	HEM	C3C-C2C	-4.86	1.33	1.40
2	C	754[A]	HEM	C3B-C2B	-4.84	1.34	1.40
4	C	760[D]	HDD	C3C-C2C	-4.75	1.34	1.40
4	B	760[D]	HDD	O1D-C3D	-4.72	1.38	1.46
2	D	755[C]	HEM	C3C-C2C	-4.68	1.34	1.40
3	B	761[B]	HDE	CHD-C1D	-4.61	1.46	1.51
2	B	755[C]	HEM	C3C-C2C	-4.54	1.34	1.40
4	D	760[D]	HDD	O1D-C3D	-4.47	1.39	1.46
2	D	754[A]	HEM	C3B-C2B	-4.46	1.34	1.40
2	D	754[A]	HEM	C3C-C2C	-4.42	1.34	1.40
3	A	761[B]	HDE	CHC-C1C	-4.33	1.47	1.51
2	B	754[A]	HEM	C3C-C2C	-4.29	1.34	1.40
4	B	760[D]	HDD	C3C-C2C	-4.26	1.34	1.40
3	C	761[B]	HDE	CHC-C4B	-4.23	1.47	1.51
2	C	755[C]	HEM	C3B-C2B	-4.14	1.34	1.40
2	A	754[A]	HEM	C3B-C2B	-4.14	1.34	1.40
3	B	761[B]	HDE	CHC-C1C	-3.87	1.47	1.51
2	B	755[C]	HEM	C3B-C2B	-3.64	1.35	1.40
2	A	755[C]	HEM	C3C-C2C	-3.51	1.35	1.40
2	C	755[C]	HEM	C2A-C3A	-2.19	1.31	1.37
3	D	761[B]	HDE	CAD-C3D	-2.13	1.48	1.52
4	B	760[D]	HDD	C2A-C3A	-2.10	1.31	1.37
3	A	761[B]	HDE	O1A-C2A	-2.05	1.43	1.46
2	B	755[C]	HEM	C2A-C3A	-2.02	1.31	1.37
4	B	760[D]	HDD	CMC-C2C	2.02	1.55	1.51
4	B	760[D]	HDD	CAA-C2A	2.02	1.55	1.52
4	C	760[D]	HDD	C4A-NA	2.03	1.40	1.36
2	B	754[A]	HEM	CAA-C2A	2.04	1.55	1.52
2	A	754[A]	HEM	CAA-C2A	2.07	1.55	1.52
4	B	760[D]	HDD	C4D-ND	2.08	1.41	1.38
2	A	755[C]	HEM	C4B-NB	2.09	1.40	1.36
2	B	755[C]	HEM	C1C-NC	2.11	1.39	1.36
2	A	754[A]	HEM	C4B-NB	2.13	1.40	1.36
4	C	760[D]	HDD	C4B-NB	2.15	1.39	1.36
2	B	754[A]	HEM	CMA-C3A	2.16	1.56	1.51
2	C	754[A]	HEM	CAA-C2A	2.18	1.55	1.52
4	A	760[D]	HDD	C1A-NA	2.18	1.40	1.36
4	C	760[D]	HDD	CMD-C2D	2.19	1.56	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	754[A]	HEM	C4A-NA	2.20	1.40	1.36
4	C	760[D]	HDD	CAA-C2A	2.21	1.55	1.52
2	A	754[A]	HEM	C4A-NA	2.23	1.40	1.36
3	C	761[B]	HDE	C1C-C2C	2.25	1.41	1.38
3	B	761[B]	HDE	C3D-C2D	2.26	1.44	1.37
2	C	755[C]	HEM	C1D-ND	2.27	1.41	1.36
2	D	754[A]	HEM	CMC-C2C	2.29	1.56	1.51
4	A	760[D]	HDD	C1C-NC	2.34	1.41	1.36
4	A	760[D]	HDD	CAA-C2A	2.35	1.56	1.52
2	B	754[A]	HEM	C1D-ND	2.36	1.41	1.36
2	A	754[A]	HEM	C1D-ND	2.37	1.41	1.36
4	D	760[D]	HDD	OND-C2D	2.39	1.47	1.42
3	B	761[B]	HDE	C1B-NB	2.42	1.41	1.36
2	A	755[C]	HEM	C1D-ND	2.46	1.41	1.36
3	D	761[B]	HDE	C1B-CHB	2.47	1.46	1.40
2	C	755[C]	HEM	C1C-NC	2.47	1.39	1.36
2	D	754[A]	HEM	C4D-ND	2.53	1.39	1.36
4	B	760[D]	HDD	CMD-C2D	2.58	1.57	1.53
2	B	754[A]	HEM	C3C-CAC	2.59	1.52	1.47
3	D	761[B]	HDE	C3D-C2D	2.60	1.45	1.37
3	A	761[B]	HDE	C1C-C2C	2.61	1.41	1.38
3	C	761[B]	HDE	C4D-CHA	2.62	1.47	1.40
2	C	755[C]	HEM	C4D-ND	2.63	1.39	1.36
4	B	760[D]	HDD	CHD-C1D	2.63	1.40	1.36
4	B	760[D]	HDD	C1A-NA	2.64	1.41	1.36
3	A	761[B]	HDE	C1B-NB	2.64	1.41	1.36
4	A	760[D]	HDD	C3B-CAB	2.65	1.53	1.47
2	C	755[C]	HEM	C3C-CAC	2.66	1.53	1.47
4	B	760[D]	HDD	C3C-CAC	2.66	1.53	1.47
4	D	760[D]	HDD	CHA-C4D	2.67	1.40	1.36
3	B	761[B]	HDE	C1B-CHB	2.70	1.47	1.40
2	D	754[A]	HEM	C3B-CAB	2.71	1.53	1.47
4	B	760[D]	HDD	C4B-NB	2.71	1.40	1.36
4	A	760[D]	HDD	CHD-C1D	2.75	1.40	1.36
2	B	754[A]	HEM	C3B-CAB	2.80	1.53	1.47
2	D	755[C]	HEM	C3C-CAC	2.80	1.53	1.47
2	C	755[C]	HEM	C3B-CAB	2.81	1.53	1.47
2	D	754[A]	HEM	C1C-NC	2.83	1.40	1.36
4	B	760[D]	HDD	CHA-C4D	2.85	1.40	1.36
3	C	761[B]	HDE	C1B-CHB	2.88	1.47	1.40
3	C	761[B]	HDE	C1B-NB	2.89	1.42	1.36
3	A	761[B]	HDE	C1B-CHB	2.90	1.47	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	761[B]	HDE	C4D-CHA	2.90	1.47	1.40
3	D	761[B]	HDE	C1B-NB	2.92	1.42	1.36
4	A	760[D]	HDD	C3C-CAC	2.95	1.53	1.47
3	A	761[B]	HDE	C4D-CHA	2.98	1.48	1.40
2	C	754[A]	HEM	C1C-NC	3.01	1.40	1.36
4	D	760[D]	HDD	CMD-C2D	3.02	1.57	1.53
4	C	760[D]	HDD	C3C-CAC	3.02	1.53	1.47
2	A	754[A]	HEM	C3B-CAB	3.03	1.53	1.47
4	C	760[D]	HDD	C3B-CAB	3.03	1.53	1.47
2	B	755[C]	HEM	C3C-CAC	3.04	1.53	1.47
2	C	754[A]	HEM	C3B-CAB	3.10	1.54	1.47
2	A	755[C]	HEM	C3B-CAB	3.12	1.54	1.47
2	C	754[A]	HEM	C3C-CAC	3.15	1.54	1.47
2	D	755[C]	HEM	C3B-CAB	3.17	1.54	1.47
3	A	761[B]	HDE	C3C-C2C	3.20	1.47	1.37
3	A	761[B]	HDE	C3B-C2B	3.28	1.47	1.37
2	D	754[A]	HEM	C3C-CAC	3.28	1.54	1.47
3	A	761[B]	HDE	C4A-NA	3.30	1.43	1.38
4	A	760[D]	HDD	CHA-C4D	3.31	1.41	1.36
2	A	755[C]	HEM	C3C-CAC	3.32	1.54	1.47
4	C	760[D]	HDD	CHD-C1D	3.34	1.41	1.36
3	C	761[B]	HDE	C3C-C2C	3.35	1.47	1.37
3	D	761[B]	HDE	C4D-CHA	3.37	1.49	1.40
3	C	761[B]	HDE	C4A-NA	3.40	1.43	1.38
3	A	761[B]	HDE	C3D-C2D	3.41	1.47	1.37
3	D	761[B]	HDE	C3B-C2B	3.44	1.47	1.37
3	D	761[B]	HDE	C1A-NA	3.45	1.43	1.38
4	B	760[D]	HDD	C3B-CAB	3.47	1.54	1.47
2	B	755[C]	HEM	C4D-ND	3.47	1.40	1.36
2	A	754[A]	HEM	C1C-NC	3.47	1.40	1.36
3	C	761[B]	HDE	C1A-NA	3.49	1.44	1.38
3	C	761[B]	HDE	C3D-C2D	3.50	1.48	1.37
4	D	760[D]	HDD	C3B-CAB	3.52	1.54	1.47
4	C	760[D]	HDD	CHA-C4D	3.55	1.41	1.36
4	D	760[D]	HDD	C3C-CAC	3.55	1.54	1.47
2	A	754[A]	HEM	C3C-CAC	3.59	1.54	1.47
3	B	761[B]	HDE	C3B-C2B	3.59	1.48	1.37
4	D	760[D]	HDD	CHD-C1D	3.64	1.41	1.36
2	A	754[A]	HEM	C4D-ND	3.64	1.41	1.36
3	D	761[B]	HDE	C3C-C2C	3.68	1.48	1.37
3	C	761[B]	HDE	C3B-C2B	3.73	1.48	1.37
3	A	761[B]	HDE	C1A-NA	3.76	1.44	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	760[D]	HDD	C4B-NB	3.77	1.41	1.36
3	B	761[B]	HDE	C3C-C2C	3.78	1.48	1.37
3	D	761[B]	HDE	O1A-CGA	3.78	1.42	1.35
3	A	761[B]	HDE	O1A-CGA	4.03	1.42	1.35
3	D	761[B]	HDE	C4A-NA	4.07	1.45	1.38
3	B	761[B]	HDE	C1A-NA	4.20	1.45	1.38
2	B	755[C]	HEM	C3B-CAB	4.34	1.56	1.47
3	B	761[B]	HDE	O1A-CGA	4.42	1.43	1.35
2	A	755[C]	HEM	C4D-ND	4.44	1.42	1.36
2	B	754[A]	HEM	C4D-ND	4.46	1.42	1.36
3	C	761[B]	HDE	O1A-CGA	4.49	1.43	1.35
3	B	761[B]	HDE	C4A-NA	4.51	1.45	1.38
2	B	755[C]	HEM	C3D-C2D	4.65	1.51	1.37
2	A	755[C]	HEM	C3D-C2D	4.68	1.51	1.37
2	C	755[C]	HEM	C3D-C2D	4.74	1.51	1.37
2	B	754[A]	HEM	C3D-C2D	4.80	1.51	1.37
2	D	755[C]	HEM	C3D-C2D	4.86	1.52	1.37
2	C	754[A]	HEM	C3D-C2D	4.88	1.52	1.37
2	A	754[A]	HEM	C3D-C2D	5.00	1.52	1.37
2	D	754[A]	HEM	C3D-C2D	5.17	1.53	1.37
3	A	761[B]	HDE	C4C-C3C	5.77	1.46	1.38
4	B	760[D]	HDD	FE-ND	5.89	2.18	1.95
4	A	760[D]	HDD	FE-ND	6.76	2.22	1.95
4	C	760[D]	HDD	FE-ND	6.77	2.22	1.95
3	D	761[B]	HDE	C4C-C3C	6.84	1.47	1.38
4	D	760[D]	HDD	FE-ND	6.94	2.22	1.95
3	C	761[B]	HDE	C4C-C3C	7.68	1.48	1.38
3	B	761[B]	HDE	C4C-C3C	8.17	1.49	1.38

All (148) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	761[B]	HDE	CHC-C4B-C3B	-7.48	120.65	129.68
3	A	761[B]	HDE	CHC-C4B-C3B	-7.47	120.66	129.68
3	B	761[B]	HDE	CAC-C3C-C4C	-7.42	118.27	127.19
3	B	761[B]	HDE	CHC-C4B-C3B	-6.74	121.54	129.68
2	C	754[A]	HEM	CBD-CAD-C3D	-6.68	99.73	112.47
3	A	761[B]	HDE	CHD-C4C-C3C	-6.55	121.78	129.68
2	D	754[A]	HEM	CBD-CAD-C3D	-6.46	100.15	112.47
3	D	761[B]	HDE	CAC-C3C-C4C	-6.39	119.51	127.19
2	B	755[C]	HEM	CAD-CBD-CGD	-6.36	101.80	112.66
2	B	754[A]	HEM	CBD-CAD-C3D	-6.28	100.49	112.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	761[B]	HDE	CHD-C1D-C2D	-6.25	119.07	129.53
2	A	754[A]	HEM	CBD-CAD-C3D	-6.05	100.92	112.47
3	A	761[B]	HDE	CAD-CBD-CGD	-6.03	102.36	112.66
2	D	755[C]	HEM	CAD-CBD-CGD	-5.63	103.05	112.66
3	D	761[B]	HDE	CAD-CBD-CGD	-5.61	103.08	112.66
3	A	761[B]	HDE	CHD-C1D-C2D	-5.56	120.23	129.53
3	B	761[B]	HDE	CHD-C1D-C2D	-5.41	120.48	129.53
4	A	760[D]	HDD	CMC-C2C-C1C	-5.30	120.32	128.46
3	A	761[B]	HDE	CAC-C3C-C4C	-5.29	120.83	127.19
3	B	761[B]	HDE	CAD-CBD-CGD	-5.12	103.92	112.66
4	A	760[D]	HDD	CAD-CBD-CGD	-5.07	96.32	104.57
3	C	761[B]	HDE	CHD-C1D-C2D	-5.05	121.09	129.53
3	B	761[B]	HDE	CHD-C4C-C3C	-5.04	123.59	129.68
3	D	761[B]	HDE	CHD-C4C-C3C	-5.04	123.59	129.68
4	B	760[D]	HDD	CAA-CBA-CGA	-4.96	104.18	112.66
3	C	761[B]	HDE	CAD-CBD-CGD	-4.82	104.42	112.66
2	A	755[C]	HEM	CAD-CBD-CGD	-4.71	104.62	112.66
3	C	761[B]	HDE	CHD-C4C-C3C	-4.59	124.14	129.68
2	B	754[A]	HEM	CAA-CBA-CGA	-4.56	104.87	112.66
3	C	761[B]	HDE	CHC-C4B-C3B	-4.51	124.24	129.68
2	D	755[C]	HEM	C1D-C2D-C3D	-4.44	103.91	107.00
4	A	760[D]	HDD	CMA-C3A-C4A	-4.42	121.68	128.46
3	D	761[B]	HDE	C1B-C2B-C3B	-4.27	104.02	107.00
2	C	755[C]	HEM	CBA-CAA-C2A	-4.22	104.42	112.48
2	D	755[C]	HEM	CBA-CAA-C2A	-4.21	104.44	112.48
4	C	760[D]	HDD	CAD-C3D-C4D	-4.08	109.20	115.87
4	A	760[D]	HDD	O1D-CGD-CBD	-4.07	105.83	110.17
3	B	761[B]	HDE	CHC-C1C-C2C	-4.03	122.79	129.53
3	A	761[B]	HDE	CAA-C2A-C1A	-4.00	109.34	115.87
3	A	761[B]	HDE	C1B-CHB-C4A	-3.96	122.27	130.12
4	A	760[D]	HDD	CAA-CBA-CGA	-3.95	105.91	112.66
2	C	755[C]	HEM	CAD-CBD-CGD	-3.92	105.97	112.66
3	D	761[B]	HDE	CHC-C1C-C2C	-3.86	123.08	129.53
4	B	760[D]	HDD	CAD-C3D-C4D	-3.74	109.76	115.87
3	A	761[B]	HDE	CAB-C3B-C4B	-3.74	122.69	127.19
4	D	760[D]	HDD	CAD-C3D-C4D	-3.69	109.84	115.87
4	C	760[D]	HDD	CAA-CBA-CGA	-3.66	106.42	112.66
2	C	754[A]	HEM	CBA-CAA-C2A	-3.64	105.52	112.48
2	A	754[A]	HEM	CMA-C3A-C4A	-3.61	122.92	128.46
3	A	761[B]	HDE	C1C-C2C-C3C	-3.54	101.55	105.82
4	D	760[D]	HDD	CAA-CBA-CGA	-3.38	106.89	112.66
4	B	760[D]	HDD	O1D-CGD-CBD	-3.31	106.64	110.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	754[A]	HEM	CBA-CAA-C2A	-3.30	106.18	112.48
4	B	760[D]	HDD	CMC-C2C-C1C	-3.27	123.44	128.46
3	A	761[B]	HDE	C4D-CHA-C1A	-3.25	123.67	130.12
3	B	761[B]	HDE	C4D-CHA-C1A	-3.23	123.72	130.12
2	B	755[C]	HEM	CBA-CAA-C2A	-3.14	106.47	112.48
3	C	761[B]	HDE	C1B-CHB-C4A	-3.13	123.92	130.12
2	B	754[A]	HEM	CMA-C3A-C4A	-3.13	123.66	128.46
3	B	761[B]	HDE	C1B-CHB-C4A	-3.13	123.93	130.12
3	A	761[B]	HDE	CHC-C1C-C2C	-3.12	124.32	129.53
2	D	754[A]	HEM	C3B-C4B-NB	-3.09	105.21	109.21
3	D	761[B]	HDE	CAB-C3B-C4B	-3.04	123.53	127.19
2	C	754[A]	HEM	CMA-C3A-C4A	-3.03	123.81	128.46
4	B	760[D]	HDD	CBA-CAA-C2A	-3.02	106.71	112.48
4	C	760[D]	HDD	CMA-C3A-C4A	-2.99	123.88	128.46
4	B	760[D]	HDD	C3C-C4C-NC	-2.98	105.36	109.21
2	C	754[A]	HEM	C1D-C2D-C3D	-2.90	104.98	107.00
4	B	760[D]	HDD	CMA-C3A-C4A	-2.90	124.01	128.46
2	A	755[C]	HEM	CBA-CAA-C2A	-2.87	107.00	112.48
4	C	760[D]	HDD	C3B-C4B-NB	-2.87	105.53	110.94
2	A	754[A]	HEM	CAA-CBA-CGA	-2.83	107.82	112.66
3	D	761[B]	HDE	C1B-CHB-C4A	-2.82	124.53	130.12
2	A	754[A]	HEM	C3B-C4B-NB	-2.79	105.61	109.21
2	A	755[C]	HEM	CAA-CBA-CGA	-2.78	107.91	112.66
2	B	755[C]	HEM	CAA-CBA-CGA	-2.77	107.93	112.66
3	B	761[B]	HDE	C1C-C2C-C3C	-2.69	102.57	105.82
4	C	760[D]	HDD	C3C-C4C-NC	-2.66	105.77	109.21
3	B	761[B]	HDE	CHB-C4A-NA	-2.66	119.99	124.18
3	C	761[B]	HDE	C1D-C2D-C3D	-2.64	102.64	105.82
2	C	754[A]	HEM	CAA-CBA-CGA	-2.60	108.21	112.66
3	C	761[B]	HDE	C1C-C2C-C3C	-2.53	102.77	105.82
2	C	754[A]	HEM	C3B-C4B-NB	-2.53	105.94	109.21
3	C	761[B]	HDE	CAA-CBA-CGA	-2.53	100.46	104.57
4	D	760[D]	HDD	CMC-C2C-C1C	-2.47	124.67	128.46
3	C	761[B]	HDE	CHC-C1C-C2C	-2.44	125.44	129.53
3	C	761[B]	HDE	CAC-C3C-C4C	-2.44	124.26	127.19
2	B	754[A]	HEM	C3B-C4B-NB	-2.43	106.07	109.21
3	D	761[B]	HDE	C4D-CHA-C1A	-2.41	125.34	130.12
2	C	754[A]	HEM	C3C-C4C-NC	-2.38	106.45	110.94
3	C	761[B]	HDE	C4D-CHA-C1A	-2.36	125.44	130.12
3	A	761[B]	HDE	C1D-C2D-C3D	-2.35	102.98	105.82
4	D	760[D]	HDD	O1D-CGD-CBD	-2.35	107.66	110.17
4	A	760[D]	HDD	C3B-C4B-NB	-2.33	106.54	110.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	761[B]	HDE	CBD-CAD-C3D	-2.31	108.07	112.48
2	D	754[A]	HEM	CAA-CBA-CGA	-2.28	108.76	112.66
2	D	754[A]	HEM	C1D-C2D-C3D	-2.27	105.42	107.00
3	D	761[B]	HDE	C1C-C2C-C3C	-2.23	103.12	105.82
3	C	761[B]	HDE	CHB-C4A-NA	-2.20	120.72	124.18
4	B	760[D]	HDD	C1A-CHA-C4D	-2.19	125.79	130.12
3	B	761[B]	HDE	C1B-C2B-C3B	-2.18	105.48	107.00
2	B	754[A]	HEM	C1D-C2D-C3D	-2.16	105.49	107.00
4	D	760[D]	HDD	C3B-C4B-NB	-2.13	106.92	110.94
4	C	760[D]	HDD	O1D-CGD-CBD	-2.09	107.94	110.17
4	D	760[D]	HDD	CMA-C3A-C4A	-2.07	125.28	128.46
4	C	760[D]	HDD	CHA-C4D-ND	-2.06	120.93	124.18
2	B	755[C]	HEM	C1D-C2D-C3D	-2.02	105.59	107.00
2	D	755[C]	HEM	C4A-C3A-C2A	2.04	108.41	107.00
2	D	754[A]	HEM	CMB-C2B-C3B	2.05	128.70	124.89
3	D	761[B]	HDE	CBC-CAC-C3C	2.14	118.15	112.23
2	C	755[C]	HEM	CMC-C2C-C3C	2.15	128.88	124.89
3	A	761[B]	HDE	CBC-CAC-C3C	2.18	118.27	112.23
3	D	761[B]	HDE	CMD-C2D-C3D	2.26	129.20	124.94
4	D	760[D]	HDD	CMB-C2B-C3B	2.36	129.27	124.89
2	C	754[A]	HEM	CMB-C2B-C3B	2.51	129.55	124.89
3	A	761[B]	HDE	C4C-C3C-C2C	2.55	109.73	105.93
2	A	754[A]	HEM	C4C-C3C-C2C	2.56	108.69	106.90
2	A	754[A]	HEM	C4A-C3A-C2A	2.65	108.84	107.00
2	D	754[A]	HEM	CMC-C2C-C3C	2.68	129.87	124.89
3	C	761[B]	HDE	CMC-C2C-C3C	2.77	130.17	124.94
3	A	761[B]	HDE	C4B-CHC-C1C	2.78	119.04	112.83
2	D	755[C]	HEM	CMB-C2B-C3B	2.85	130.18	124.89
2	C	755[C]	HEM	C4C-C3C-C2C	2.93	108.95	106.90
3	B	761[B]	HDE	O1A-CGA-O2A	2.95	123.44	120.81
2	B	754[A]	HEM	C4A-C3A-C2A	2.99	109.08	107.00
2	A	755[C]	HEM	CMB-C2B-C3B	3.00	130.46	124.89
3	B	761[B]	HDE	C4B-CHC-C1C	3.08	119.71	112.83
4	C	760[D]	HDD	C4A-C3A-C2A	3.33	109.31	107.00
4	D	760[D]	HDD	O1D-CGD-O2D	3.43	123.87	120.81
3	D	761[B]	HDE	C4B-CHC-C1C	3.48	120.62	112.83
3	D	761[B]	HDE	CMC-C2C-C3C	3.49	131.52	124.94
2	B	755[C]	HEM	CMB-C2B-C3B	3.49	131.37	124.89
3	B	761[B]	HDE	CMC-C2C-C3C	3.50	131.53	124.94
2	C	754[A]	HEM	C4C-C3C-C2C	3.51	109.35	106.90
2	C	755[C]	HEM	CMB-C2B-C3B	3.53	131.44	124.89
3	C	761[B]	HDE	CMD-C2D-C3D	3.59	131.70	124.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	754[A]	HEM	C4A-C3A-C2A	3.79	109.63	107.00
3	A	761[B]	HDE	C4C-CHD-C1D	3.84	121.42	112.83
3	A	761[B]	HDE	CMD-C2D-C3D	3.93	132.35	124.94
4	A	760[D]	HDD	C4A-C3A-C2A	4.04	109.81	107.00
4	B	760[D]	HDD	O1D-CGD-O2D	4.11	124.48	120.81
4	B	760[D]	HDD	C4A-C3A-C2A	4.24	109.95	107.00
3	C	761[B]	HDE	C4B-CHC-C1C	4.34	122.54	112.83
4	C	760[D]	HDD	O1D-CGD-O2D	4.38	124.72	120.81
3	B	761[B]	HDE	C4C-CHD-C1D	4.45	122.77	112.83
4	C	760[D]	HDD	C4B-C3B-C2B	4.54	110.07	106.90
3	C	761[B]	HDE	C4C-CHD-C1D	4.54	122.99	112.83
3	D	761[B]	HDE	C4C-CHD-C1D	4.78	123.52	112.83

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	761[B]	HDE	C2B-C3B-CAB-CBB
3	D	761[B]	HDE	C2B-C3B-CAB-CBB

There are no ring outliers.

15 monomers are involved in 73 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	754[A]	HEM	3	0
2	A	755[C]	HEM	5	0
4	A	760[D]	HDD	5	0
3	A	761[B]	HDE	7	0
2	B	754[A]	HEM	5	0
2	B	755[C]	HEM	5	0
4	B	760[D]	HDD	6	0
3	B	761[B]	HDE	4	0
2	C	754[A]	HEM	2	0
2	C	755[C]	HEM	6	0
4	C	760[D]	HDD	6	0
3	C	761[B]	HDE	7	0
2	D	755[C]	HEM	4	0
4	D	760[D]	HDD	4	0
3	D	761[B]	HDE	4	0

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å ²)	Q<0.9
1	A	726/753 (96%)	-0.34	22 (3%)	51	57	3, 10, 28, 48	1 (0%)
1	B	726/753 (96%)	-0.17	38 (5%)	28	32	3, 11, 34, 50	1 (0%)
1	C	726/753 (96%)	-0.26	31 (4%)	36	41	3, 11, 33, 50	1 (0%)
1	D	726/753 (96%)	-0.34	16 (2%)	62	68	3, 9, 28, 48	0
All	All	2904/3012 (96%)	-0.28	107 (3%)	42	47	3, 10, 31, 50	3 (0%)

All (107) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	726	GLY	7.2
1	D	28	SER	5.5
1	B	32	GLU	5.0
1	A	32	GLU	4.7
1	B	673	ALA	4.5
1	B	647	VAL	4.5
1	B	712	ASP	4.5
1	D	749	ASP	4.4
1	A	726	GLY	4.2
1	D	750	LYS	4.2
1	B	28	SER	4.1
1	B	711	ALA	4.1
1	B	677	ASP	4.0
1	B	645	GLY	3.8
1	B	611	VAL	3.8
1	B	713	GLN	3.7
1	C	711	ALA	3.7
1	B	646	THR	3.6
1	A	33	ASP	3.6
1	C	641	THR	3.6
1	C	712	ASP	3.5

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Mol	Chain	Res	Type	RSRZ
1	C	726	GLY	3.5
1	A	749	ASP	3.5
1	B	596	GLY	3.5
1	D	712	ASP	3.4
1	A	29	LEU	3.4
1	D	33	ASP	3.4
1	C	645	GLY	3.4
1	B	725	ASP	3.3
1	C	594	PRO	3.3
1	D	751	ILE	3.3
1	B	609	ASP	3.3
1	B	641	THR	3.1
1	C	677	ASP	3.1
1	B	749	ASP	3.1
1	B	568	ASP	3.1
1	A	28	SER	3.1
1	C	750	LYS	3.1
1	B	727	SER	3.1
1	C	643	ASP	3.1
1	C	751	ILE	3.1
1	D	713	GLN	3.0
1	A	34	GLY	3.0
1	C	28	SER	3.0
1	B	33	ASP	3.0
1	A	713	GLN	2.9
1	A	710	ILE	2.9
1	B	750	LYS	2.9
1	C	673	ALA	2.9
1	A	39	ALA	2.9
1	A	37	ARG	2.9
1	C	644	ASP	2.9
1	B	610	GLU	2.8
1	D	32	GLU	2.8
1	C	725	ASP	2.8
1	C	568	ASP	2.8
1	D	711	ALA	2.8
1	A	712	ASP	2.7
1	C	595	ASP	2.7
1	D	596	GLY	2.7
1	A	31	PRO	2.7
1	B	572	ASN	2.7
1	A	750	LYS	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	583	LYS	2.7
1	B	642	ALA	2.6
1	B	644	ASP	2.6
1	C	675	ILE	2.6
1	C	596	GLY	2.6
1	C	552	LEU	2.6
1	C	703	LYS	2.5
1	A	35	SER	2.5
1	C	727	SER	2.5
1	B	617	LEU	2.5
1	A	725	ASP	2.5
1	C	646	THR	2.5
1	A	594	PRO	2.4
1	A	596	GLY	2.4
1	D	583	LYS	2.4
1	C	647	VAL	2.4
1	C	713	GLN	2.4
1	C	714	GLY	2.4
1	B	672	ILE	2.4
1	A	751	ILE	2.4
1	B	722	ASP	2.3
1	B	723	SER	2.3
1	A	711	ALA	2.3
1	B	614	ALA	2.3
1	B	709	LYS	2.2
1	C	583	LYS	2.2
1	B	574	THR	2.2
1	B	34	GLY	2.2
1	C	569	ASP	2.2
1	C	722	ASP	2.1
1	B	571	LEU	2.1
1	C	749	ASP	2.1
1	D	569	ASP	2.1
1	B	671	ASN	2.1
1	D	35	SER	2.1
1	B	569	ASP	2.1
1	D	677	ASP	2.1
1	A	30	ALA	2.1
1	C	674	ASP	2.1
1	C	572	ASN	2.1
1	D	710	ILE	2.0
1	D	568	ASP	2.0

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Mol	Chain	Res	Type	RSRZ
1	A	36	HIS	2.0
1	B	595	ASP	2.0

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(Å ²)	Q<0.9
2	HEM	B	754[A]	43/43	0.99	0.07	0.94	2,4,7,9	43
4	HDD	B	760[D]	44/44	0.99	0.07	0.82	2,3,5,7	44
3	HDE	B	761[B]	44/44	0.99	0.07	0.66	2,3,6,11	44
2	HEM	B	755[C]	43/43	0.99	0.07	0.39	2,4,9,12	43
3	HDE	D	761[B]	44/44	0.99	0.06	0.18	2,2,6,10	44
2	HEM	D	754[A]	43/43	0.99	0.06	0.11	2,2,6,8	43
4	HDD	A	760[D]	44/44	0.99	0.06	0.07	2,2,3,6	44
2	HEM	A	754[A]	43/43	0.99	0.06	0.06	2,3,4,5	43
3	HDE	A	761[B]	44/44	0.99	0.06	-0.01	2,2,4,7	44
2	HEM	C	754[A]	43/43	0.99	0.06	-0.09	2,4,6,8	43
4	HDD	D	760[D]	44/44	0.99	0.06	-0.09	2,2,4,7	44
2	HEM	D	755[C]	43/43	0.99	0.06	-0.10	2,2,7,8	43
3	HDE	C	761[B]	44/44	0.99	0.06	-0.11	2,2,4,12	44
4	HDD	C	760[D]	44/44	0.99	0.06	-0.12	2,3,7,9	44
2	HEM	A	755[C]	43/43	0.99	0.06	-0.21	2,4,7,10	43
2	HEM	C	755[C]	43/43	0.99	0.06	-0.48	2,5,8,11	43

6.5 Other polymers

There are no such residues in this entry.