



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 08:07 AM GMT

PDB ID : 3DDR
Title : Structure of the *Serratia marcescens* hemophore receptor HasR-Ile671Gly mutant in complex with its hemophore HasA and heme
Authors : Krieg, S.; Diederichs, K.
Deposited on : 2008-06-06
Resolution : 2.80 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

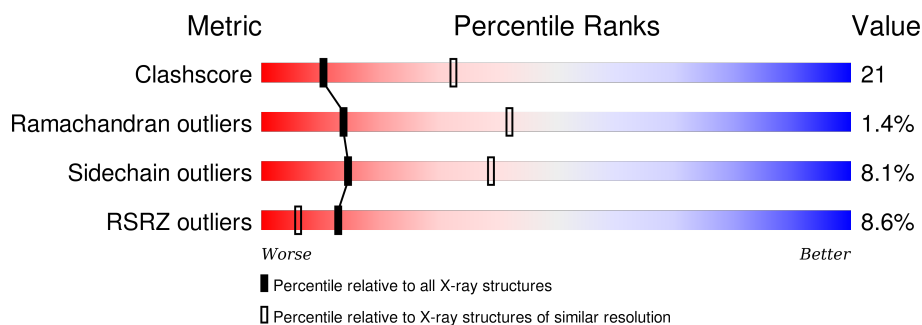
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	102246	2827 (2.80-2.80)
Ramachandran outliers	100387	2782 (2.80-2.80)
Sidechain outliers	100360	2784 (2.80-2.80)
RSRZ outliers	91569	2404 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	865	<div> <div>5%</div> <div>53% 30% 13%</div> </div>
1	B	865	<div> <div>9%</div> <div>52% 32% 13%</div> </div>
2	C	206	<div> <div>9%</div> <div>57% 20% 21%</div> </div>
2	D	206	<div> <div>10%</div> <div>56% 20% 21%</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
5	GOL	B	870	-	-	-	X
5	GOL	B	871	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 14259 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 HasR protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	753	Total	C	N	O	S	0	0	0
			5885	3670	1043	1159	13			
1	B	753	Total	C	N	O	S	0	0	0
			5885	3670	1043	1159	13			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	ALA	-	EXPRESSION TAG	UNP Q79AD2
A	2	GLN	-	EXPRESSION TAG	UNP Q79AD2
A	3	ALA	-	EXPRESSION TAG	UNP Q79AD2
A	4	GLU	-	EXPRESSION TAG	UNP Q79AD2
A	5	ALA	-	EXPRESSION TAG	UNP Q79AD2
A	6	SER	-	EXPRESSION TAG	UNP Q79AD2
A	7	SER	-	EXPRESSION TAG	UNP Q79AD2
A	8	ALA	-	EXPRESSION TAG	UNP Q79AD2
A	9	GLN	-	EXPRESSION TAG	UNP Q79AD2
A	10	ALA	-	EXPRESSION TAG	UNP Q79AD2
A	11	ALA	-	EXPRESSION TAG	UNP Q79AD2
A	12	GLN	-	EXPRESSION TAG	UNP Q79AD2
A	13	GLN	-	EXPRESSION TAG	UNP Q79AD2
A	645	ALA	GLY	SEE REMARK 999	UNP Q79AD2
A	671	GLY	ILE	ENGINEERED	UNP Q79AD2
B	1	ALA	-	EXPRESSION TAG	UNP Q79AD2
B	2	GLN	-	EXPRESSION TAG	UNP Q79AD2
B	3	ALA	-	EXPRESSION TAG	UNP Q79AD2
B	4	GLU	-	EXPRESSION TAG	UNP Q79AD2
B	5	ALA	-	EXPRESSION TAG	UNP Q79AD2
B	6	SER	-	EXPRESSION TAG	UNP Q79AD2
B	7	SER	-	EXPRESSION TAG	UNP Q79AD2
B	8	ALA	-	EXPRESSION TAG	UNP Q79AD2
B	9	GLN	-	EXPRESSION TAG	UNP Q79AD2
B	10	ALA	-	EXPRESSION TAG	UNP Q79AD2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	11	ALA	-	EXPRESSION TAG	UNP Q79AD2
B	12	GLN	-	EXPRESSION TAG	UNP Q79AD2
B	13	GLN	-	EXPRESSION TAG	UNP Q79AD2
B	645	ALA	GLY	SEE REMARK 999	UNP Q79AD2
B	671	GLY	ILE	ENGINEERED	UNP Q79AD2

- Molecule 2 is a protein called Hemophore HasA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	162	Total	C	N	O	S	0	0	0
			1176	739	188	248	1			
2	D	162	Total	C	N	O	S	0	0	0
			1176	739	188	248	1			

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-17	MET	-	EXPRESSION TAG	UNP Q54450
C	-16	ARG	-	EXPRESSION TAG	UNP Q54450
C	-15	GLY	-	EXPRESSION TAG	UNP Q54450
C	-14	SER	-	EXPRESSION TAG	UNP Q54450
C	-13	HIS	-	EXPRESSION TAG	UNP Q54450
C	-12	HIS	-	EXPRESSION TAG	UNP Q54450
C	-11	HIS	-	EXPRESSION TAG	UNP Q54450
C	-10	HIS	-	EXPRESSION TAG	UNP Q54450
C	-9	HIS	-	EXPRESSION TAG	UNP Q54450
C	-8	HIS	-	EXPRESSION TAG	UNP Q54450
C	-7	GLY	-	EXPRESSION TAG	UNP Q54450
C	-6	ILE	-	EXPRESSION TAG	UNP Q54450
C	-5	ARG	-	EXPRESSION TAG	UNP Q54450
C	-4	MET	-	EXPRESSION TAG	UNP Q54450
C	-3	ARG	-	EXPRESSION TAG	UNP Q54450
C	-2	ALA	-	EXPRESSION TAG	UNP Q54450
C	-1	ARG	-	EXPRESSION TAG	UNP Q54450
C	0	TYR	-	EXPRESSION TAG	UNP Q54450
C	1	PRO	-	EXPRESSION TAG	UNP Q54450
D	-17	MET	-	EXPRESSION TAG	UNP Q54450
D	-16	ARG	-	EXPRESSION TAG	UNP Q54450
D	-15	GLY	-	EXPRESSION TAG	UNP Q54450
D	-14	SER	-	EXPRESSION TAG	UNP Q54450
D	-13	HIS	-	EXPRESSION TAG	UNP Q54450
D	-12	HIS	-	EXPRESSION TAG	UNP Q54450

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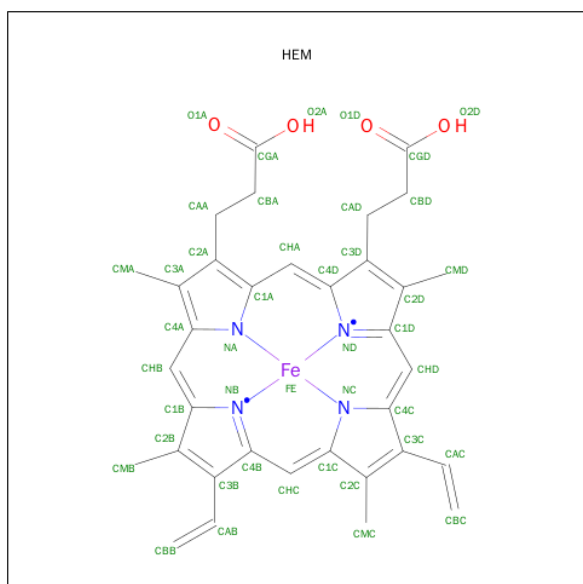
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Chain	Residue	Modelled	Actual	Comment	Reference
D	-11	HIS	-	EXPRESSION TAG	UNP Q54450
D	-10	HIS	-	EXPRESSION TAG	UNP Q54450
D	-9	HIS	-	EXPRESSION TAG	UNP Q54450
D	-8	HIS	-	EXPRESSION TAG	UNP Q54450
D	-7	GLY	-	EXPRESSION TAG	UNP Q54450
D	-6	ILE	-	EXPRESSION TAG	UNP Q54450
D	-5	ARG	-	EXPRESSION TAG	UNP Q54450
D	-4	MET	-	EXPRESSION TAG	UNP Q54450
D	-3	ARG	-	EXPRESSION TAG	UNP Q54450
D	-2	ALA	-	EXPRESSION TAG	UNP Q54450
D	-1	ARG	-	EXPRESSION TAG	UNP Q54450
D	0	TYR	-	EXPRESSION TAG	UNP Q54450
D	1	PRO	-	EXPRESSION TAG	UNP Q54450

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

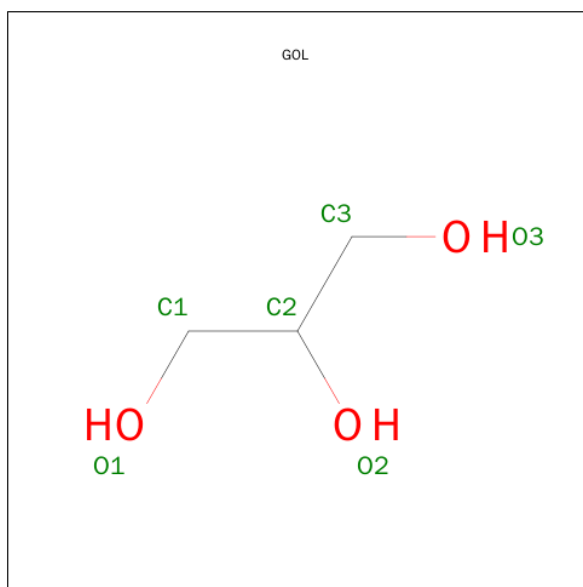
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total Na 1 1	0	0
3	A	1	Total Na 1 1	0	0

- Molecule 4 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



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

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O		
			6	3	3	0	0
5	B	1	Total	C	O		
			6	3	3	0	0
5	B	1	Total	C	O		
			6	3	3	0	0
5	B	1	Total	C	O		
			6	3	3	0	0
5	B	1	Total	C	O		
			6	3	3	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	6	Total	O		
			6	6	0	0
6	B	6	Total	O		
			6	6	0	0

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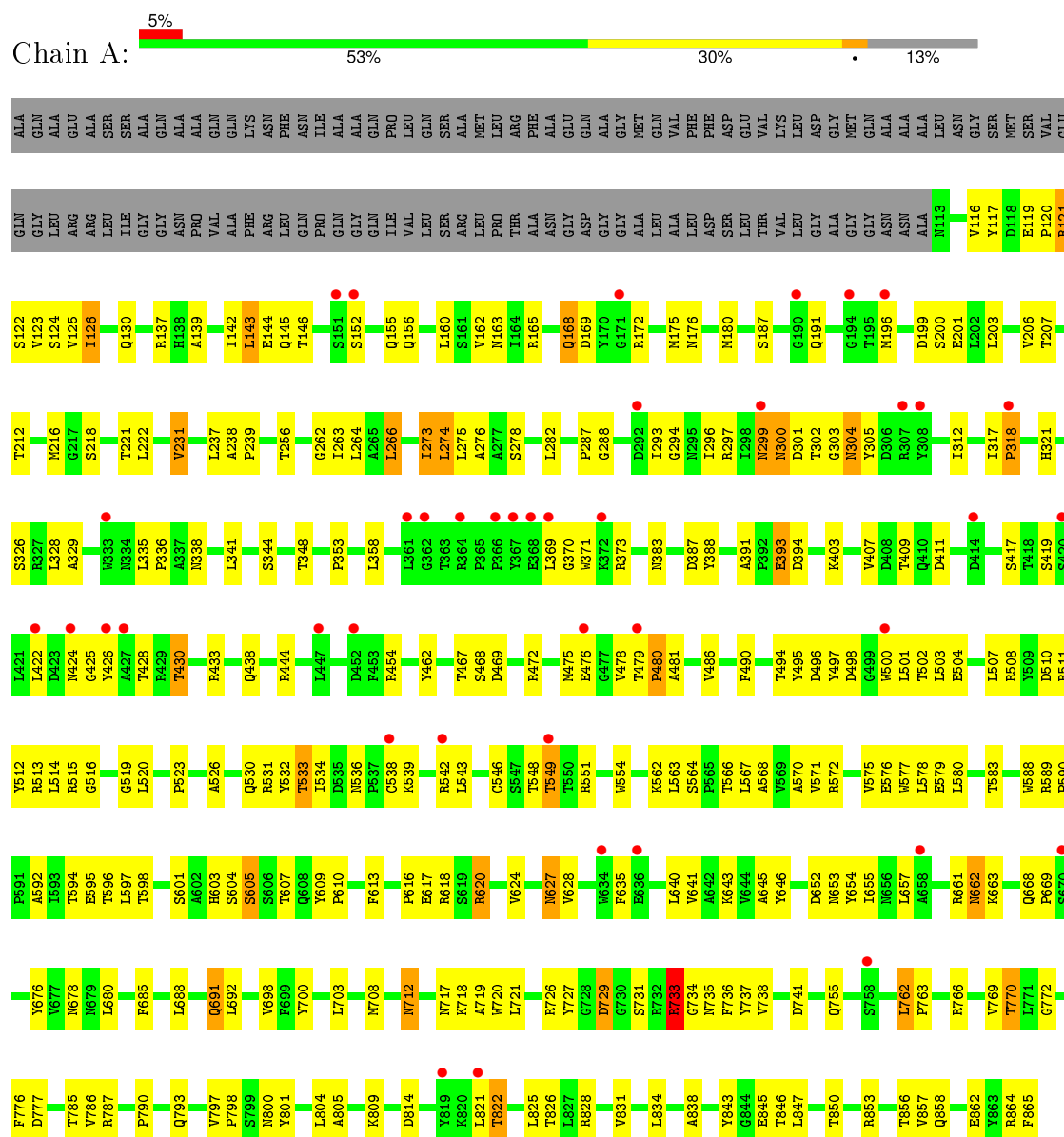
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	D	1	Total	O	0	0
			1	1		

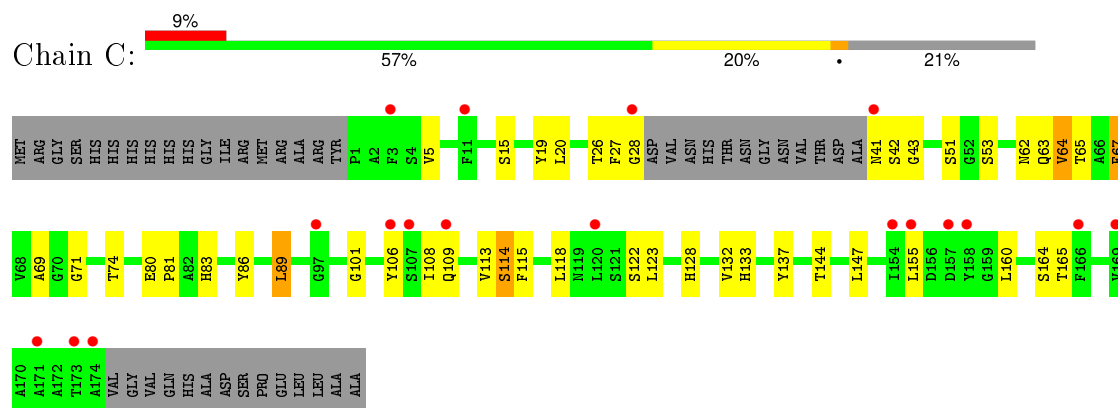
3 Residue-property plots

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.

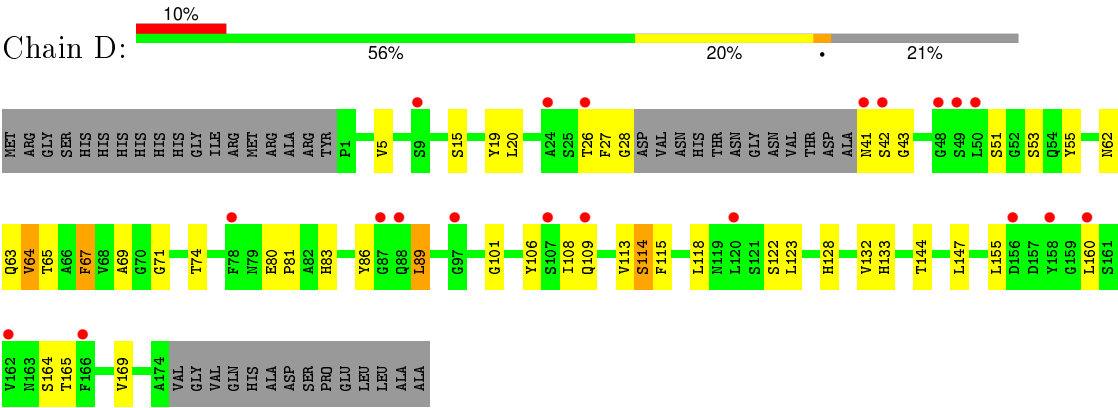
• Molecule 1: HasR protein



• Molecule 1: HasR protein



● Molecule 2: Hemophore HasA



4 Data and refinement statistics

Property	Value	Source
Space group	F 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	157.41Å 162.72Å 597.01Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.25 – 2.80 39.25 – 2.80	Depositor EDS
% Data completeness (in resolution range)	98.1 (39.25-2.80) 98.1 (39.25-2.80)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.51 (at 2.81Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.226 , 0.262 (Not available) , (Not available)	Depositor DCC
R_{free} test set	NotAvailable	DCC
Wilson B-factor (Å ²)	70.5	Xtriage
Anisotropy	0.733	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 93.2	EDS
Estimated twinning fraction	0.026 for -k,-h,-l	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	2 of 92482 reflections (0.002%)	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	14259	wwPDB-VP
Average B, all atoms (Å ²)	104.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.06% 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: GOL, HEM, NA

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	0.35	0/6023	0.57	0/8182
1	B	0.35	0/6023	0.57	0/8182
2	C	0.29	0/1203	0.46	0/1638
2	D	0.30	0/1203	0.47	0/1638
All	All	0.34	0/14452	0.56	0/19640

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [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	5885	0	5589	250	0
1	B	5885	0	5589	264	0
2	C	1176	0	1073	36	0
2	D	1176	0	1073	32	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	C	43	0	30	16	0
4	D	43	0	30	13	0
5	A	6	0	8	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	30	0	40	13	0
6	A	6	0	0	0	0
6	B	6	0	0	0	0
6	D	1	0	0	0	0
All	All	14259	0	13432	593	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 21.

All (593) 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:A:137:ARG:HD3	1:A:853:ARG:HD2	1.35	1.08
1:B:137:ARG:HD3	1:B:853:ARG:HD2	1.37	1.06
1:B:300:ASN:HB3	1:B:302:THR:HG23	1.41	1.01
1:A:300:ASN:HB3	1:A:302:THR:HG23	1.41	0.99
1:A:733:ARG:CG	1:A:734:GLY:H	1.72	0.99
1:B:575:VAL:HG22	1:B:577:TRP:H	1.26	0.99
4:C:200:HEM:HHD	4:C:200:HEM:HBC2	1.44	0.98
1:B:733:ARG:CG	1:B:734:GLY:H	1.75	0.97
4:D:200:HEM:HHD	4:D:200:HEM:HBC2	1.45	0.96
1:A:575:VAL:HG22	1:A:577:TRP:H	1.27	0.96
4:C:200:HEM:HBA2	4:C:200:HEM:HHA	1.48	0.93
1:B:318:PRO:HG2	1:B:371:TRP:HB2	1.50	0.93
1:A:218:SER:O	1:A:221:THR:HB	1.68	0.92
1:A:733:ARG:HG2	1:A:734:GLY:H	1.33	0.92
1:B:218:SER:O	1:B:221:THR:HB	1.70	0.92
1:A:318:PRO:HG2	1:A:371:TRP:HB2	1.52	0.89
1:A:592:ALA:HB3	1:A:595:GLU:HG2	1.54	0.89
1:B:539:LYS:HA	1:B:734:GLY:HA2	1.53	0.89
1:A:539:LYS:HA	1:A:734:GLY:HA2	1.54	0.88
1:B:733:ARG:HG2	1:B:734:GLY:H	1.35	0.88
1:B:589:ARG:NH2	1:B:595:GLU:OE2	2.08	0.85
2:D:51:SER:HB2	2:D:74:THR:HG22	1.58	0.84
2:C:51:SER:HB2	2:C:74:THR:HG22	1.60	0.83
1:A:191:GLN:HG2	1:A:845:GLU:HG3	1.60	0.83
1:A:538:CYS:O	1:A:539:LYS:HB2	1.77	0.83
4:C:200:HEM:HBB2	4:C:200:HEM:HHC	1.61	0.83
2:C:137:TYR:HB2	4:C:200:HEM:HBC1	1.60	0.82
1:B:520:LEU:HD11	1:B:609:TYR:CD1	2.14	0.82
1:B:191:GLN:HG2	1:B:845:GLU:HG3	1.62	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:592:ALA:HB3	1:B:595:GLU:HG2	1.61	0.81
2:C:41:ASN:HB2	2:C:42:SER:HA	1.63	0.81
1:A:301:ASP:HA	1:A:304:ASN:HA	1.63	0.80
1:A:480:PRO:HD3	1:A:594:THR:HA	1.63	0.79
1:A:216:MET:HE2	1:A:490:PHE:HE2	1.46	0.79
1:A:720:TRP:CE3	1:A:721:LEU:HG	2.17	0.79
1:B:301:ASP:HA	1:B:304:ASN:HA	1.64	0.79
1:A:520:LEU:HD11	1:A:609:TYR:CD1	2.18	0.78
1:A:341:LEU:HD23	1:A:388:TYR:HD1	1.48	0.78
1:B:538:CYS:O	1:B:539:LYS:HB2	1.82	0.78
1:B:341:LEU:HD23	1:B:388:TYR:HD1	1.46	0.78
1:A:733:ARG:CG	1:A:734:GLY:N	2.46	0.77
1:A:720:TRP:CZ3	1:A:721:LEU:HG	2.19	0.77
1:B:480:PRO:HD3	1:B:594:THR:HA	1.64	0.77
1:B:643:LYS:HB3	1:B:691:GLN:HG3	1.65	0.77
1:B:610:PRO:O	1:B:720:TRP:HZ3	1.67	0.77
2:D:41:ASN:HB2	2:D:42:SER:HA	1.65	0.77
1:B:720:TRP:CE3	1:B:721:LEU:HG	2.20	0.77
1:A:568:ALA:HB2	1:A:583:THR:HG22	1.67	0.77
1:B:216:MET:HE2	1:B:490:PHE:HE2	1.48	0.76
1:B:733:ARG:CG	1:B:734:GLY:N	2.49	0.76
1:A:643:LYS:HB3	1:A:691:GLN:HG3	1.67	0.76
1:A:216:MET:SD	1:A:438:GLN:HB2	2.25	0.76
1:B:720:TRP:CZ3	1:B:721:LEU:HG	2.21	0.76
1:A:562:LYS:HE2	1:A:618:ARG:CD	2.15	0.76
1:A:610:PRO:O	1:A:720:TRP:HZ3	1.68	0.75
1:B:297:ARG:HH22	1:B:847:LEU:HA	1.51	0.75
1:B:562:LYS:HE2	1:B:618:ARG:CD	2.16	0.75
1:B:376:TYR:CE1	5:B:871:GOL:H2	2.21	0.75
2:D:20:LEU:HB3	2:D:144:THR:HG21	1.69	0.75
1:B:520:LEU:CD1	1:B:609:TYR:HD1	2.00	0.74
1:B:376:TYR:HE1	5:B:871:GOL:H2	1.53	0.73
4:D:200:HEM:HBD2	4:D:200:HEM:HHA	1.70	0.73
1:A:462:TYR:CE1	1:A:486:VAL:HG13	2.23	0.73
1:A:297:ARG:HH22	1:A:847:LEU:HA	1.52	0.73
1:A:733:ARG:HG2	1:A:734:GLY:N	2.04	0.73
1:B:520:LEU:HD11	1:B:609:TYR:HD1	1.53	0.73
2:C:20:LEU:HB3	2:C:144:THR:HG21	1.71	0.73
4:D:200:HEM:HBB2	4:D:200:HEM:HHC	1.69	0.73
1:B:393:GLU:O	1:B:394:ASP:HB2	1.89	0.72
1:B:462:TYR:CE1	1:B:486:VAL:HG13	2.25	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:562:LYS:HE2	1:A:618:ARG:HD2	1.71	0.72
1:A:300:ASN:HB3	1:A:302:THR:CG2	2.19	0.72
1:A:520:LEU:CD1	1:A:609:TYR:HD1	2.02	0.72
1:B:216:MET:SD	1:B:438:GLN:HB2	2.30	0.71
1:B:562:LYS:HE2	1:B:618:ARG:HD2	1.72	0.71
1:B:300:ASN:HB3	1:B:302:THR:CG2	2.19	0.70
1:B:831:VAL:HG22	1:B:857:VAL:HG22	1.71	0.70
1:B:426:TYR:CE2	1:B:472:ARG:HD2	2.25	0.70
1:A:831:VAL:HG22	1:A:857:VAL:HG22	1.74	0.70
1:B:274:LEU:HD12	1:B:275:LEU:N	2.07	0.70
1:A:274:LEU:HD12	1:A:275:LEU:N	2.06	0.69
1:B:278:SER:OG	1:B:326:SER:HB2	1.93	0.69
1:A:733:ARG:HG3	1:A:734:GLY:H	1.58	0.69
1:B:175:MET:HE1	1:B:196:MET:HG2	1.73	0.69
4:C:200:HEM:HBA2	4:C:200:HEM:CHA	2.22	0.69
1:A:520:LEU:O	1:A:551:ARG:HD3	1.92	0.69
1:A:604:SER:O	1:A:605:SER:HB3	1.92	0.68
1:B:770:THR:HG22	1:B:785:THR:HG23	1.76	0.68
1:A:216:MET:HE2	1:A:490:PHE:CE2	2.29	0.68
1:A:657:LEU:O	1:A:755:GLN:O	2.11	0.67
1:A:568:ALA:CB	1:A:583:THR:HG22	2.24	0.67
1:A:163:ASN:ND2	1:A:168:GLN:HB3	2.10	0.67
1:A:393:GLU:O	1:A:394:ASP:HB2	1.92	0.67
1:A:770:THR:HG22	1:A:785:THR:HG23	1.75	0.67
1:A:480:PRO:HG2	1:A:597:LEU:HB2	1.77	0.67
1:A:661:ARG:HH11	1:A:718:LYS:HA	1.59	0.67
1:A:798:PRO:HB2	1:A:800:ASN:OD1	1.95	0.67
1:B:733:ARG:HG2	1:B:734:GLY:N	2.07	0.66
1:B:520:LEU:O	1:B:551:ARG:HD3	1.94	0.66
1:B:604:SER:O	1:B:605:SER:HB3	1.94	0.66
2:C:122:SER:HB2	2:C:132:VAL:HG22	1.76	0.66
1:A:278:SER:OG	1:A:326:SER:HB2	1.95	0.66
1:B:798:PRO:HB2	1:B:800:ASN:OD1	1.96	0.66
1:B:480:PRO:HG2	1:B:597:LEU:HB2	1.76	0.66
1:B:657:LEU:O	1:B:755:GLN:O	2.13	0.66
1:A:426:TYR:CE2	1:A:472:ARG:HD2	2.30	0.66
1:A:604:SER:O	1:A:605:SER:CB	2.43	0.66
1:B:163:ASN:ND2	1:B:168:GLN:HB3	2.11	0.66
2:D:122:SER:HB2	2:D:132:VAL:HG22	1.77	0.66
2:C:41:ASN:CB	2:C:42:SER:HA	2.23	0.66
1:A:798:PRO:HD2	1:A:801:TYR:CE2	2.29	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:539:LYS:HD2	1:B:734:GLY:HA3	1.78	0.65
1:B:568:ALA:HB2	1:B:583:THR:HG22	1.78	0.65
1:A:175:MET:HE1	1:A:196:MET:HG2	1.76	0.65
1:A:475:MET:HA	1:A:478:VAL:HG23	1.78	0.65
1:A:237:LEU:O	5:A:867:GOL:H11	1.96	0.65
1:B:604:SER:O	1:B:605:SER:CB	2.44	0.65
1:B:733:ARG:HG3	1:B:734:GLY:H	1.61	0.65
1:A:603:HIS:HE1	4:C:200:HEM:HMA3	1.62	0.65
1:B:661:ARG:HH11	1:B:718:LYS:HA	1.62	0.64
1:B:231:VAL:HG12	1:B:274:LEU:HD21	1.79	0.64
1:B:373:ARG:HH12	5:B:871:GOL:H12	1.63	0.64
1:A:610:PRO:O	1:A:720:TRP:CZ3	2.51	0.64
1:B:216:MET:HE2	1:B:490:PHE:CE2	2.30	0.64
1:A:539:LYS:HD2	1:A:734:GLY:HA3	1.79	0.64
1:B:798:PRO:HD2	1:B:801:TYR:CE2	2.32	0.64
1:B:610:PRO:O	1:B:720:TRP:CZ3	2.50	0.64
1:A:231:VAL:HG12	1:A:274:LEU:HD21	1.79	0.64
1:A:566:THR:O	1:A:567:LEU:HD12	1.97	0.64
1:A:341:LEU:CD2	1:A:388:TYR:HD1	2.11	0.63
1:A:303:GLY:O	1:A:304:ASN:HB2	1.97	0.63
1:B:475:MET:HA	1:B:478:VAL:HG23	1.78	0.63
1:B:697:GLY:HA3	1:B:778:ARG:HH21	1.62	0.63
1:B:417:SER:HB2	1:B:424:ASN:OD1	1.99	0.63
1:B:301:ASP:HB3	1:B:304:ASN:OD1	1.98	0.63
1:B:822:THR:HG23	1:B:825:LEU:HB2	1.81	0.63
1:B:373:ARG:CZ	5:B:871:GOL:H11	2.28	0.63
1:B:508:ARG:O	1:B:563:LEU:HD12	1.98	0.63
1:B:504:GLU:HB3	1:B:568:ALA:HB3	1.81	0.63
1:B:341:LEU:CD2	1:B:388:TYR:HD1	2.11	0.62
1:A:822:THR:HG23	1:A:825:LEU:HB2	1.81	0.62
1:A:853:ARG:HH11	1:A:856:THR:HG21	1.64	0.62
1:A:301:ASP:HB3	1:A:304:ASN:OD1	1.99	0.62
1:B:373:ARG:HH12	5:B:871:GOL:C1	2.12	0.62
1:B:568:ALA:CB	1:B:583:THR:HG22	2.30	0.61
1:B:566:THR:O	1:B:567:LEU:HD12	2.00	0.61
1:A:417:SER:HB2	1:A:424:ASN:OD1	2.00	0.61
1:B:373:ARG:NH1	5:B:871:GOL:H11	2.15	0.61
2:C:15:SER:HA	2:C:165:THR:HA	1.82	0.61
1:B:328:LEU:HD12	1:B:329:ALA:N	2.15	0.61
1:A:508:ARG:O	1:A:563:LEU:HD12	2.01	0.61
1:B:508:ARG:HD2	1:B:510:ASP:OD1	2.00	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:162:VAL:HG23	1:A:175:MET:HE3	1.83	0.61
1:A:299:ASN:HA	1:A:305:TYR:HD2	1.65	0.61
1:A:341:LEU:CD2	1:A:388:TYR:CD1	2.84	0.61
1:B:341:LEU:CD2	1:B:388:TYR:CD1	2.83	0.61
1:B:341:LEU:HD23	1:B:388:TYR:CD1	2.34	0.61
2:C:137:TYR:HB2	4:C:200:HEM:CBC	2.31	0.61
1:B:609:TYR:CZ	1:B:663:LYS:HE2	2.36	0.60
1:B:299:ASN:HA	1:B:305:TYR:HD2	1.66	0.60
1:A:137:ARG:HD3	1:A:853:ARG:CD	2.23	0.60
1:B:605:SER:OG	4:D:200:HEM:C1D	2.55	0.60
1:B:137:ARG:HD3	1:B:853:ARG:CD	2.25	0.60
4:C:200:HEM:CMD	4:C:200:HEM:HBD2	2.32	0.60
1:B:548:THR:HG22	1:B:549:THR:N	2.16	0.60
1:B:562:LYS:HG3	1:B:563:LEU:N	2.16	0.60
1:B:303:GLY:O	1:B:304:ASN:HB2	2.02	0.59
1:B:328:LEU:HD12	1:B:329:ALA:H	1.67	0.59
1:B:534:ILE:HD12	1:B:737:TYR:CZ	2.37	0.59
1:A:609:TYR:CZ	1:A:663:LYS:HE2	2.37	0.59
1:A:162:VAL:HG23	1:A:175:MET:CE	2.33	0.59
2:D:15:SER:HA	2:D:165:THR:HA	1.85	0.59
1:A:419:SER:OG	1:A:422:LEU:HB2	2.02	0.59
1:B:520:LEU:CD1	1:B:609:TYR:CD1	2.82	0.59
1:B:165:ARG:HA	1:B:708:MET:CE	2.33	0.59
1:A:579:GLU:HB3	1:A:627:ASN:ND2	2.18	0.59
1:B:579:GLU:HB3	1:B:627:ASN:ND2	2.18	0.59
1:A:548:THR:HG22	1:A:549:THR:N	2.17	0.59
1:A:526:ALA:HB2	1:A:531:ARG:HA	1.85	0.58
1:A:562:LYS:HG3	1:A:563:LEU:N	2.17	0.58
1:B:620:ARG:HG2	1:B:620:ARG:O	2.02	0.58
1:B:299:ASN:HD22	1:B:300:ASN:N	2.00	0.58
1:B:526:ALA:HB2	1:B:531:ARG:HA	1.85	0.58
1:A:700:TYR:CE2	1:A:772:GLY:HA3	2.39	0.58
1:B:419:SER:OG	1:B:422:LEU:HB2	2.03	0.58
1:B:162:VAL:HG23	1:B:175:MET:CE	2.34	0.58
1:A:200:SER:HA	1:A:203:LEU:HD12	1.85	0.58
1:A:263:ILE:HG23	1:A:274:LEU:HD11	1.86	0.58
1:B:172:ARG:NH1	1:B:655:ILE:HG13	2.19	0.58
1:A:727:TYR:CD2	2:C:109:GLN:HG3	2.38	0.58
1:B:358:LEU:HD12	1:B:370:GLY:O	2.03	0.58
1:A:520:LEU:CD1	1:A:609:TYR:CD1	2.83	0.58
1:A:126:ILE:HG13	1:A:206:VAL:HB	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:328:LEU:HD12	1:A:329:ALA:N	2.19	0.58
1:B:500:TRP:O	1:B:571:VAL:HA	2.03	0.58
1:B:497:TYR:HB3	1:B:501:LEU:HB3	1.84	0.58
1:A:165:ARG:HA	1:A:708:MET:CE	2.34	0.57
1:A:655:ILE:O	1:A:655:ILE:HD12	2.03	0.57
1:B:263:ILE:HG23	1:B:274:LEU:HD11	1.87	0.57
1:B:126:ILE:HG13	1:B:206:VAL:HB	1.85	0.57
1:A:534:ILE:HD12	1:A:737:TYR:CZ	2.38	0.57
1:B:655:ILE:HD12	1:B:655:ILE:O	2.04	0.57
2:C:115:PHE:HB3	2:C:118:LEU:HD11	1.86	0.57
1:A:605:SER:OG	4:C:200:HEM:C4A	2.58	0.57
1:B:162:VAL:HG23	1:B:175:MET:HE3	1.87	0.57
1:A:720:TRP:O	1:A:721:LEU:HB2	2.03	0.57
1:A:191:GLN:HG2	1:A:845:GLU:CG	2.33	0.57
1:A:163:ASN:HD22	1:A:168:GLN:HB3	1.70	0.57
2:C:101:GLY:HA3	2:C:106:TYR:CE2	2.40	0.57
1:B:373:ARG:NH2	5:B:871:GOL:H11	2.18	0.56
1:B:539:LYS:HD2	1:B:734:GLY:CA	2.34	0.56
1:A:520:LEU:HD11	1:A:609:TYR:HD1	1.58	0.56
1:A:475:MET:SD	1:A:478:VAL:HG21	2.45	0.56
1:A:508:ARG:HD2	1:A:510:ASP:OD1	2.04	0.56
1:B:426:TYR:CD2	1:B:472:ARG:HD2	2.39	0.56
1:B:526:ALA:HB1	1:B:530:GLN:O	2.05	0.56
1:A:539:LYS:HD2	1:A:734:GLY:CA	2.36	0.56
1:A:120:PRO:O	1:A:121:ARG:HB3	2.05	0.56
1:B:511:ARG:HH22	1:B:513:ARG:HD2	1.71	0.56
2:D:115:PHE:HB3	2:D:118:LEU:HD11	1.88	0.56
1:B:191:GLN:HG2	1:B:845:GLU:CG	2.34	0.56
1:B:727:TYR:CD2	2:D:109:GLN:HG3	2.40	0.56
1:B:700:TYR:CE2	1:B:772:GLY:HA3	2.41	0.56
1:B:321:HIS:CE1	5:B:871:GOL:HO1	2.23	0.55
1:B:588:TRP:CH2	1:B:590:PRO:HG3	2.41	0.55
1:A:328:LEU:HD12	1:A:329:ALA:H	1.72	0.55
1:A:299:ASN:HD22	1:A:300:ASN:N	2.04	0.55
1:A:426:TYR:CD2	1:A:472:ARG:HD2	2.41	0.55
1:A:511:ARG:HH22	1:A:513:ARG:HD2	1.71	0.55
1:B:645:ALA:O	1:B:688:LEU:HD23	2.07	0.55
1:A:712:ASN:HD22	1:A:712:ASN:N	2.05	0.55
1:A:462:TYR:CE1	1:A:486:VAL:CG1	2.90	0.54
2:C:113:VAL:HG12	2:C:114:SER:N	2.22	0.54
1:A:526:ALA:CB	1:A:531:ARG:HA	2.38	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:853:ARG:HH11	1:B:856:THR:HG21	1.71	0.54
1:A:358:LEU:HD12	1:A:370:GLY:O	2.08	0.54
1:B:373:ARG:NH1	5:B:871:GOL:C1	2.70	0.54
1:A:661:ARG:NH1	1:A:718:LYS:HA	2.23	0.54
1:A:172:ARG:NH1	1:A:655:ILE:HG13	2.23	0.54
1:B:712:ASN:N	1:B:712:ASN:HD22	2.05	0.54
1:A:620:ARG:O	1:A:620:ARG:HG2	2.08	0.54
1:A:500:TRP:O	1:A:571:VAL:HA	2.07	0.53
1:A:601:SER:HB3	1:A:607:THR:HA	1.90	0.53
1:B:864:ARG:O	1:B:865:PHE:HB3	2.07	0.53
1:B:697:GLY:CA	1:B:778:ARG:HH21	2.22	0.53
4:D:200:HEM:HHD	4:D:200:HEM:CBC	2.30	0.53
2:C:41:ASN:HB2	2:C:42:SER:CA	2.37	0.53
1:A:273:ILE:HD11	1:A:275:LEU:HG	1.90	0.53
1:A:864:ARG:O	1:A:865:PHE:HB3	2.08	0.53
1:A:646:TYR:HB2	1:A:688:LEU:HD21	1.90	0.53
1:A:588:TRP:CH2	1:A:590:PRO:HG3	2.44	0.53
1:A:180:MET:HE1	1:A:383:ASN:HB3	1.91	0.53
1:B:137:ARG:HH11	1:B:155:GLN:HB3	1.73	0.53
1:B:163:ASN:HD22	1:B:168:GLN:HB3	1.73	0.53
1:A:726:ARG:HB2	1:A:741:ASP:HB2	1.89	0.53
1:B:200:SER:HA	1:B:203:LEU:HD12	1.91	0.53
1:A:729:ASP:N	1:A:729:ASP:OD1	2.40	0.53
1:B:729:ASP:OD1	1:B:729:ASP:N	2.41	0.53
1:B:769:VAL:HG12	1:B:786:VAL:HB	1.91	0.53
1:A:504:GLU:HB3	1:A:568:ALA:HB3	1.91	0.53
1:B:180:MET:HE1	1:B:383:ASN:HB3	1.91	0.53
2:C:86:TYR:HA	2:C:132:VAL:HG21	1.91	0.53
1:B:526:ALA:CB	1:B:531:ARG:HA	2.39	0.53
1:A:645:ALA:O	1:A:688:LEU:HD23	2.08	0.53
2:D:113:VAL:HG12	2:D:114:SER:N	2.23	0.53
1:B:601:SER:HB3	1:B:607:THR:HA	1.92	0.52
1:B:199:ASP:O	1:B:200:SER:HB3	2.10	0.52
1:B:790:PRO:O	1:B:809:LYS:HB3	2.09	0.52
1:A:144:GLU:HG2	1:A:766:ARG:NH1	2.25	0.52
4:C:200:HEM:HHD	4:C:200:HEM:CBC	2.28	0.52
1:B:519:GLY:HA3	1:B:551:ARG:NH1	2.25	0.52
1:B:273:ILE:HD12	1:B:274:LEU:N	2.25	0.52
1:A:790:PRO:O	1:A:809:LYS:HB3	2.10	0.52
1:A:577:TRP:HD1	1:A:578:LEU:HB2	1.74	0.52
2:D:101:GLY:HA3	2:D:106:TYR:CE2	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:274:LEU:C	1:B:274:LEU:HD12	2.30	0.52
1:B:720:TRP:O	1:B:721:LEU:HB2	2.08	0.52
2:D:86:TYR:HA	2:D:132:VAL:HG21	1.92	0.51
1:A:338:ASN:HB3	1:A:391:ALA:O	2.10	0.51
1:B:462:TYR:CE1	1:B:486:VAL:CG1	2.92	0.51
2:C:128:HIS:HA	2:C:133:HIS:CD2	2.45	0.51
1:A:273:ILE:HD12	1:A:274:LEU:N	2.25	0.51
2:D:128:HIS:HA	2:D:133:HIS:CD2	2.44	0.51
1:B:296:ILE:HG22	1:B:804:LEU:HD13	1.93	0.51
1:A:497:TYR:HB3	1:A:501:LEU:HB3	1.91	0.51
1:B:646:TYR:HB2	1:B:688:LEU:HD21	1.93	0.51
1:A:301:ASP:HA	1:A:304:ASN:CA	2.36	0.51
1:A:479:THR:O	1:A:594:THR:HG23	2.11	0.51
1:A:462:TYR:CZ	1:A:486:VAL:CG1	2.94	0.51
1:A:117:TYR:CG	1:A:641:VAL:HG22	2.46	0.51
1:B:120:PRO:O	1:B:121:ARG:HB3	2.09	0.51
1:B:165:ARG:HA	1:B:708:MET:HE3	1.93	0.51
1:B:655:ILE:C	1:B:655:ILE:HD12	2.32	0.50
2:C:67:PHE:C	2:C:67:PHE:CD1	2.84	0.50
1:B:338:ASN:HB3	1:B:391:ALA:O	2.12	0.50
1:A:282:LEU:O	1:A:321:HIS:HB2	2.11	0.50
1:B:828:ARG:NH1	1:B:862:GLU:OE1	2.42	0.50
2:D:67:PHE:CD1	2:D:67:PHE:C	2.85	0.50
1:A:137:ARG:HH11	1:A:155:GLN:HB3	1.75	0.50
2:D:55:TYR:CE1	4:D:200:HEM:CBB	2.94	0.50
1:A:828:ARG:NH1	1:A:862:GLU:OE1	2.42	0.50
1:B:373:ARG:HH22	5:B:871:GOL:C1	2.24	0.50
1:B:299:ASN:HD22	1:B:300:ASN:CG	2.15	0.50
1:A:169:ASP:O	1:A:172:ARG:HG3	2.10	0.50
1:B:596:THR:HG22	1:B:597:LEU:HD23	1.93	0.50
1:B:273:ILE:HD11	1:B:275:LEU:HG	1.94	0.50
2:C:137:TYR:CZ	4:C:200:HEM:HMD3	2.47	0.50
1:B:588:TRP:CZ3	1:B:590:PRO:HG3	2.46	0.50
1:A:628:VAL:O	1:A:641:VAL:HA	2.12	0.50
1:B:156:GLN:HG3	1:B:850:THR:HG21	1.94	0.50
1:B:144:GLU:HG2	1:B:766:ARG:NH1	2.26	0.50
1:A:199:ASP:O	1:A:200:SER:HB3	2.12	0.50
1:A:853:ARG:NH1	1:A:856:THR:HG21	2.27	0.50
1:A:299:ASN:ND2	1:A:300:ASN:CG	2.64	0.50
4:D:200:HEM:HHC	4:D:200:HEM:CBB	2.41	0.50
1:B:661:ARG:NH1	1:B:718:LYS:HA	2.25	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:526:ALA:HB1	1:A:530:GLN:O	2.12	0.50
1:A:296:ILE:HG22	1:A:804:LEU:HD13	1.93	0.50
1:A:635:PHE:N	1:A:635:PHE:CD1	2.76	0.50
1:A:199:ASP:O	1:A:199:ASP:OD1	2.29	0.50
1:B:300:ASN:C	1:B:302:THR:H	2.16	0.49
1:B:299:ASN:ND2	1:B:300:ASN:CG	2.64	0.49
1:B:301:ASP:HA	1:B:304:ASN:CA	2.37	0.49
1:B:577:TRP:HD1	1:B:578:LEU:HB2	1.77	0.49
1:A:116:VAL:HG23	1:A:123:VAL:HG13	1.94	0.49
1:A:562:LYS:HE2	1:A:618:ARG:NE	2.27	0.49
1:A:596:THR:HG22	1:A:597:LEU:HD23	1.95	0.49
1:B:570:ALA:HA	1:B:580:LEU:O	2.13	0.49
1:A:301:ASP:CA	1:A:304:ASN:HA	2.38	0.49
1:A:595:GLU:HA	1:A:676:TYR:CD1	2.47	0.49
1:A:655:ILE:HD12	1:A:655:ILE:C	2.32	0.49
1:B:662:ASN:OD1	1:B:718:LYS:HE3	2.13	0.49
4:D:200:HEM:CBD	4:D:200:HEM:HHA	2.41	0.49
1:B:462:TYR:CZ	1:B:486:VAL:CG1	2.95	0.49
4:C:200:HEM:HBD2	4:C:200:HEM:HMD2	1.93	0.49
1:B:734:GLY:O	1:B:736:PHE:N	2.45	0.49
1:A:299:ASN:HD22	1:A:300:ASN:CG	2.16	0.49
1:A:519:GLY:HA3	1:A:551:ARG:NH1	2.27	0.49
1:A:570:ALA:HA	1:A:580:LEU:O	2.13	0.49
1:A:130:GLN:OE1	1:A:145:GLN:HB2	2.12	0.49
1:B:726:ARG:HB2	1:B:741:ASP:HB2	1.94	0.49
1:A:692:LEU:HD23	1:A:692:LEU:C	2.32	0.49
1:A:507:LEU:O	1:A:507:LEU:HD12	2.13	0.49
1:A:139:ALA:HB1	1:A:160:LEU:HD22	1.95	0.49
1:A:797:VAL:HB	1:A:801:TYR:CD2	2.48	0.49
1:B:475:MET:SD	1:B:478:VAL:HG21	2.53	0.49
2:D:27:PHE:HB2	2:D:65:THR:HG21	1.95	0.49
1:B:628:VAL:O	1:B:641:VAL:HA	2.13	0.48
1:A:300:ASN:C	1:A:302:THR:H	2.15	0.48
1:B:231:VAL:CG1	1:B:274:LEU:HD21	2.42	0.48
1:B:282:LEU:O	1:B:321:HIS:HB2	2.13	0.48
1:A:734:GLY:O	1:A:736:PHE:N	2.45	0.48
2:C:133:HIS:CE1	4:C:200:HEM:CBC	2.96	0.48
1:A:165:ARG:HA	1:A:708:MET:HE3	1.95	0.48
1:B:117:TYR:CG	1:B:641:VAL:HG22	2.48	0.48
1:B:672:GLY:HA2	4:D:200:HEM:HBC1	1.96	0.48
2:C:62:ASN:O	2:C:64:VAL:HG12	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:769:VAL:HG12	1:A:786:VAL:HB	1.94	0.48
1:B:327:ARG:HB3	5:B:867:GOL:H31	1.95	0.48
1:B:539:LYS:CA	1:B:734:GLY:HA2	2.35	0.48
1:B:661:ARG:HD3	1:B:718:LYS:HA	1.96	0.48
1:B:169:ASP:O	1:B:172:ARG:HG3	2.13	0.48
1:B:692:LEU:HD23	1:B:692:LEU:C	2.33	0.48
1:A:231:VAL:CG1	1:A:274:LEU:HD21	2.42	0.48
1:B:797:VAL:HB	1:B:801:TYR:CD2	2.48	0.48
1:A:165:ARG:HA	1:A:708:MET:HE1	1.95	0.48
2:C:53:SER:HA	2:C:71:GLY:O	2.14	0.48
1:A:539:LYS:CA	1:A:734:GLY:HA2	2.35	0.48
1:A:577:TRP:CD1	1:A:578:LEU:HB2	2.48	0.48
1:A:274:LEU:C	1:A:274:LEU:HD12	2.34	0.48
2:D:62:ASN:O	2:D:64:VAL:HG12	2.14	0.48
1:B:130:GLN:OE1	1:B:145:GLN:HB2	2.13	0.48
2:C:113:VAL:CG1	2:C:114:SER:N	2.76	0.47
1:B:635:PHE:N	1:B:635:PHE:CD1	2.79	0.47
1:A:661:ARG:HD3	1:A:718:LYS:HA	1.95	0.47
1:B:165:ARG:HA	1:B:708:MET:HE1	1.95	0.47
1:B:731:SER:OG	1:B:733:ARG:NH2	2.47	0.47
1:B:301:ASP:CA	1:B:304:ASN:HA	2.38	0.47
1:B:793:GLN:HA	1:B:805:ALA:O	2.14	0.47
1:A:685:PHE:CD2	1:A:685:PHE:N	2.82	0.47
1:A:523:PRO:HG3	1:A:668:GLN:OE1	2.14	0.47
1:B:655:ILE:HG22	1:B:678:ASN:ND2	2.30	0.47
1:A:669:PRO:C	2:C:43:GLY:O	2.52	0.47
1:B:116:VAL:HG23	1:B:123:VAL:HG13	1.97	0.47
1:B:321:HIS:CE1	5:B:871:GOL:O1	2.67	0.47
1:A:655:ILE:HG22	1:A:678:ASN:ND2	2.29	0.47
1:B:262:GLY:O	1:B:276:ALA:HA	2.15	0.47
1:A:793:GLN:HA	1:A:805:ALA:O	2.14	0.47
1:B:554:TRP:CZ3	1:B:613:PHE:HZ	2.33	0.47
1:B:238:ALA:HB1	1:B:239:PRO:HD2	1.97	0.47
1:B:199:ASP:OD1	1:B:199:ASP:O	2.33	0.47
2:D:113:VAL:CG1	2:D:114:SER:N	2.78	0.47
1:B:776:PHE:O	1:B:777:ASP:HB2	2.14	0.47
1:A:116:VAL:CG2	1:A:123:VAL:HG13	2.45	0.47
2:C:62:ASN:O	2:C:63:GLN:HB2	2.15	0.47
1:A:513:ARG:HH12	1:A:515:ARG:NH1	2.13	0.47
1:B:119:GLU:HA	1:B:120:PRO:HD3	1.68	0.46
1:A:669:PRO:O	2:C:43:GLY:O	2.33	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:562:LYS:HE2	1:B:618:ARG:NE	2.30	0.46
1:A:662:ASN:OD1	1:A:718:LYS:HE3	2.15	0.46
1:B:685:PHE:CD2	1:B:685:PHE:N	2.84	0.46
1:A:238:ALA:HB1	1:A:239:PRO:HD2	1.97	0.46
4:D:200:HEM:CHC	4:D:200:HEM:HBB2	2.40	0.46
1:A:579:GLU:HB3	1:A:627:ASN:HD21	1.80	0.46
1:A:296:ILE:HD13	1:A:296:ILE:N	2.31	0.46
1:B:387:ASP:OD1	1:B:403:LYS:HD3	2.15	0.46
1:B:577:TRP:CD1	1:B:578:LEU:HB2	2.50	0.46
1:B:669:PRO:C	2:D:43:GLY:O	2.54	0.46
2:D:55:TYR:CE1	4:D:200:HEM:HBB1	2.51	0.46
1:B:712:ASN:ND2	1:B:712:ASN:N	2.63	0.46
1:B:199:ASP:C	1:B:201:GLU:H	2.19	0.46
1:A:262:GLY:O	1:A:276:ALA:HA	2.15	0.46
4:D:200:HEM:HBC2	4:D:200:HEM:CHD	2.24	0.46
1:B:575:VAL:CG1	1:B:577:TRP:HB3	2.45	0.46
1:B:501:LEU:HD12	1:B:502:THR:H	1.80	0.46
1:A:312:ILE:HD11	1:A:358:LEU:HD11	1.98	0.46
1:B:468:SER:HB3	1:B:476:GLU:O	2.16	0.46
1:A:494:THR:HG22	1:A:495:TYR:N	2.31	0.46
1:B:523:PRO:HG3	1:B:668:GLN:OE1	2.16	0.45
1:A:121:ARG:O	1:A:643:LYS:HE3	2.15	0.45
1:B:669:PRO:O	2:D:43:GLY:O	2.35	0.45
1:B:139:ALA:HB1	1:B:160:LEU:HD22	1.97	0.45
1:A:712:ASN:ND2	1:A:712:ASN:N	2.64	0.45
1:B:373:ARG:NH2	5:B:871:GOL:C1	2.79	0.45
1:B:216:MET:SD	1:B:438:GLN:CB	3.03	0.45
1:A:847:LEU:HD12	1:A:847:LEU:HA	1.73	0.45
1:A:776:PHE:O	1:A:777:ASP:HB2	2.16	0.45
1:B:609:TYR:OH	1:B:663:LYS:HE2	2.17	0.45
1:B:498:ASP:HB2	1:B:500:TRP:CD1	2.51	0.45
2:C:19:TYR:C	2:C:19:TYR:CD2	2.90	0.45
1:B:299:ASN:O	1:B:301:ASP:N	2.49	0.45
1:A:199:ASP:C	1:A:201:GLU:H	2.20	0.45
2:D:27:PHE:O	2:D:27:PHE:CD1	2.70	0.45
1:A:498:ASP:HB2	1:A:500:TRP:CD1	2.52	0.45
1:A:588:TRP:CZ3	1:A:590:PRO:HG3	2.52	0.45
1:B:533:THR:OG1	1:B:534:ILE:N	2.50	0.45
1:B:579:GLU:HB3	1:B:627:ASN:HD21	1.81	0.45
2:C:27:PHE:O	2:C:27:PHE:CD1	2.70	0.45
2:C:74:THR:OG1	2:C:86:TYR:CE2	2.70	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:LEU:HD12	1:A:502:THR:H	1.79	0.45
2:C:27:PHE:HB2	2:C:65:THR:HG21	1.98	0.45
1:B:312:ILE:HD11	1:B:358:LEU:HD11	1.97	0.45
1:B:299:ASN:ND2	1:B:300:ASN:N	2.65	0.45
1:A:299:ASN:O	1:A:301:ASP:N	2.50	0.44
2:D:53:SER:HA	2:D:71:GLY:O	2.17	0.44
1:A:595:GLU:OE2	1:A:655:ILE:HG12	2.16	0.44
1:B:256:THR:HG21	1:B:858:GLN:OE1	2.17	0.44
1:A:156:GLN:HG3	1:A:850:THR:HG21	1.98	0.44
1:A:300:ASN:C	1:A:302:THR:N	2.71	0.44
1:B:595:GLU:HA	1:B:676:TYR:CD1	2.53	0.44
1:B:847:LEU:HA	1:B:847:LEU:HD12	1.75	0.44
2:D:83:HIS:O	2:D:128:HIS:HE1	2.00	0.44
1:B:286:TRP:HA	1:B:287:PRO:HD3	1.78	0.44
2:D:74:THR:OG1	2:D:86:TYR:CE2	2.70	0.44
2:C:26:THR:C	2:C:28:GLY:H	2.21	0.44
2:D:26:THR:C	2:D:28:GLY:H	2.20	0.44
1:A:119:GLU:HA	1:A:120:PRO:HD3	1.70	0.44
2:C:69:ALA:HB1	2:C:89:LEU:HD21	1.99	0.44
1:B:853:ARG:NH1	1:B:856:THR:HG21	2.32	0.44
1:B:479:THR:O	1:B:594:THR:HG23	2.18	0.44
1:A:121:ARG:O	1:A:643:LYS:CE	2.65	0.44
1:B:717:ASN:O	1:B:719:ALA:N	2.43	0.44
1:B:298:ILE:O	1:B:299:ASN:HB3	2.18	0.44
1:A:589:ARG:NH2	1:A:595:GLU:OE2	2.29	0.44
1:A:201:GLU:OE1	1:A:201:GLU:HA	2.17	0.44
2:C:155:LEU:HB3	2:C:160:LEU:HB2	1.99	0.44
1:A:288:GLY:HA3	1:A:838:ALA:HA	2.00	0.44
1:A:387:ASP:OD1	1:A:403:LYS:HD3	2.18	0.43
1:A:373:ARG:O	1:A:373:ARG:HG2	2.18	0.43
2:D:62:ASN:O	2:D:63:GLN:HB2	2.18	0.43
2:C:27:PHE:CG	2:C:27:PHE:O	2.71	0.43
1:B:444:ARG:HG3	1:B:454:ARG:HG3	1.99	0.43
1:B:373:ARG:HG2	1:B:373:ARG:O	2.18	0.43
2:C:83:HIS:O	2:C:128:HIS:HE1	2.01	0.43
1:B:548:THR:HG22	1:B:549:THR:H	1.81	0.43
1:B:123:VAL:HG22	1:B:124:SER:N	2.33	0.43
1:B:293:ILE:HG13	1:B:294:GLY:N	2.33	0.43
1:B:657:LEU:HB2	1:B:676:TYR:CE2	2.54	0.43
1:A:444:ARG:HG3	1:A:454:ARG:HG3	2.00	0.43
2:D:155:LEU:HB3	2:D:160:LEU:HB2	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:19:TYR:C	2:D:19:TYR:CD2	2.91	0.43
1:A:609:TYR:OH	1:A:663:LYS:HE2	2.18	0.43
1:B:697:GLY:HA3	1:B:778:ARG:NH2	2.30	0.43
1:A:533:THR:OG1	1:A:534:ILE:N	2.51	0.43
1:B:296:ILE:N	1:B:296:ILE:HD13	2.32	0.43
1:B:243:LEU:C	1:B:243:LEU:HD23	2.38	0.43
1:B:762:LEU:HD12	1:B:762:LEU:HA	1.82	0.43
1:A:266:LEU:HA	1:A:266:LEU:HD12	1.80	0.43
1:B:299:ASN:C	1:B:301:ASP:H	2.22	0.43
1:B:719:ALA:C	1:B:720:TRP:O	2.54	0.43
1:A:731:SER:OG	1:A:733:ARG:NH2	2.51	0.43
1:A:548:THR:HG22	1:A:549:THR:H	1.81	0.43
1:B:180:MET:HE2	1:B:405:TYR:HB2	2.00	0.43
1:B:494:THR:HG22	1:B:495:TYR:N	2.32	0.43
2:C:83:HIS:CE1	4:C:200:HEM:C2A	3.06	0.43
1:A:500:TRP:HA	1:A:572:ARG:HG3	2.01	0.43
1:B:165:ARG:HD3	1:B:647:PHE:CE2	2.54	0.43
1:B:123:VAL:CG2	1:B:124:SER:N	2.81	0.43
1:A:554:TRP:CZ3	1:A:613:PHE:HZ	2.36	0.43
1:B:787:ARG:NH1	1:B:814:ASP:OD2	2.50	0.43
1:B:201:GLU:HA	1:B:201:GLU:OE1	2.18	0.42
1:B:116:VAL:CG2	1:B:123:VAL:HG13	2.49	0.42
1:B:139:ALA:O	1:B:142:ILE:HG23	2.19	0.42
1:A:652:ASP:O	1:A:653:ASN:HB2	2.19	0.42
1:B:833:ASN:O	1:B:855:ARG:HA	2.20	0.42
1:B:590:PRO:HA	1:B:616:PRO:HB3	2.00	0.42
1:A:657:LEU:HB2	1:A:676:TYR:CE2	2.54	0.42
1:A:480:PRO:HB2	1:A:481:ALA:H	1.48	0.42
1:A:719:ALA:C	1:A:720:TRP:O	2.55	0.42
1:B:121:ARG:O	1:B:643:LYS:CE	2.68	0.42
1:A:821:LEU:HD12	1:A:821:LEU:HA	1.76	0.42
4:C:200:HEM:HBC2	4:C:200:HEM:CHD	2.25	0.42
1:A:680:LEU:HD11	1:A:717:ASN:OD1	2.19	0.42
1:B:798:PRO:C	1:B:800:ASN:H	2.23	0.42
1:B:417:SER:HB3	1:B:425:GLY:N	2.34	0.42
1:B:172:ARG:HH12	1:B:655:ILE:HG13	1.82	0.42
2:D:27:PHE:CG	2:D:27:PHE:O	2.72	0.42
1:A:763:PRO:HA	1:A:843:TYR:CD2	2.55	0.42
1:A:369:LEU:HA	1:A:369:LEU:HD12	1.92	0.42
1:A:299:ASN:ND2	1:A:300:ASN:N	2.67	0.42
1:A:575:VAL:CG1	1:A:577:TRP:HB3	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:717:ASN:C	1:A:719:ALA:H	2.21	0.42
1:B:763:PRO:HA	1:B:843:TYR:CD2	2.54	0.42
1:A:543:LEU:HA	1:A:543:LEU:HD23	1.89	0.42
1:A:572:ARG:HA	1:A:578:LEU:O	2.19	0.42
1:A:798:PRO:C	1:A:800:ASN:H	2.22	0.42
1:A:293:ILE:HG13	1:A:294:GLY:N	2.34	0.42
1:A:168:GLN:HG3	1:A:169:ASP:OD1	2.19	0.42
1:A:256:THR:HG21	1:A:858:GLN:OE1	2.19	0.42
1:A:143:LEU:HA	1:A:143:LEU:HD12	1.91	0.42
1:B:507:LEU:HD12	1:B:507:LEU:O	2.19	0.42
1:B:147:THR:HG23	1:B:704:THR:HB	2.02	0.42
1:B:300:ASN:C	1:B:302:THR:N	2.71	0.42
1:A:603:HIS:CE1	4:C:200:HEM:HMA3	2.49	0.42
1:A:480:PRO:HG3	1:A:598:THR:HA	2.01	0.42
1:A:468:SER:HB3	1:A:476:GLU:O	2.19	0.42
1:B:299:ASN:HD22	1:B:300:ASN:CB	2.33	0.42
1:A:300:ASN:O	1:A:302:THR:N	2.52	0.42
1:B:572:ARG:HA	1:B:578:LEU:O	2.20	0.42
1:A:717:ASN:O	1:A:719:ALA:N	2.44	0.42
2:D:80:GLU:HG2	2:D:81:PRO:HA	2.01	0.42
1:B:832:GLU:OE1	1:B:853:ARG:NH2	2.53	0.41
1:A:516:GLY:HA3	1:A:597:LEU:HD11	2.02	0.41
1:A:575:VAL:HG22	1:A:576:GLU:N	2.35	0.41
1:A:609:TYR:HA	1:A:610:PRO:HD3	1.85	0.41
1:B:834:LEU:HA	1:B:834:LEU:HD23	1.86	0.41
1:B:137:ARG:HB2	1:B:282:LEU:HD13	2.02	0.41
1:B:516:GLY:HA3	1:B:597:LEU:HD11	2.03	0.41
1:B:564:SER:HA	1:B:565:PRO:HD3	1.73	0.41
1:A:762:LEU:HD12	1:A:762:LEU:HA	1.81	0.41
1:A:216:MET:SD	1:A:438:GLN:CB	3.03	0.41
1:B:569:VAL:O	1:B:581:TYR:HA	2.20	0.41
1:A:137:ARG:HB2	1:A:282:LEU:HD13	2.03	0.41
2:C:122:SER:HB2	2:C:132:VAL:CG2	2.48	0.41
1:A:562:LYS:HB3	1:A:588:TRP:CD2	2.55	0.41
1:B:297:ARG:NH2	1:B:846:THR:O	2.53	0.41
1:A:640:LEU:HG	1:A:641:VAL:N	2.35	0.41
1:B:652:ASP:O	1:B:653:ASN:HB2	2.21	0.41
4:D:200:HEM:CBD	4:D:200:HEM:CHA	2.99	0.41
1:B:712:ASN:HD22	1:B:712:ASN:H	1.67	0.41
1:A:543:LEU:HD21	1:A:736:PHE:CD1	2.55	0.41
1:B:520:LEU:HD12	1:B:520:LEU:HA	1.78	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:121:ARG:O	1:B:643:LYS:HE3	2.20	0.41
1:A:566:THR:O	1:A:567:LEU:CD1	2.66	0.41
1:A:417:SER:HB3	1:A:425:GLY:N	2.35	0.41
1:B:593:ILE:HD12	1:B:593:ILE:H	1.85	0.41
2:D:122:SER:HB2	2:D:132:VAL:CG2	2.47	0.41
1:A:297:ARG:NH2	1:A:846:THR:O	2.54	0.41
2:D:165:THR:O	2:D:169:VAL:HG23	2.21	0.41
1:A:123:VAL:HG22	1:A:124:SER:N	2.35	0.41
1:B:854:GLY:O	1:B:855:ARG:C	2.59	0.41
1:A:595:GLU:OE1	1:A:655:ILE:HD13	2.21	0.41
1:B:609:TYR:HA	1:B:610:PRO:HD3	1.88	0.41
1:B:480:PRO:HB2	1:B:481:ALA:H	1.38	0.41
1:B:615:GLN:HA	1:B:616:PRO:HD3	1.95	0.41
1:A:532:TYR:HA	1:A:536:ASN:O	2.20	0.41
1:B:288:GLY:HA3	1:B:838:ALA:HA	2.03	0.41
2:D:69:ALA:HB1	2:D:89:LEU:HD21	2.03	0.41
2:C:80:GLU:HG2	2:C:81:PRO:HA	2.03	0.41
1:A:299:ASN:C	1:A:301:ASP:H	2.23	0.41
1:A:590:PRO:HA	1:A:616:PRO:HB3	2.02	0.41
1:A:787:ARG:NH1	1:A:814:ASP:OD2	2.51	0.41
1:B:365:PRO:HA	1:B:366:PRO:C	2.42	0.40
1:A:617:GLU:OE2	1:A:654:TYR:HA	2.21	0.40
1:B:839:TYR:O	1:B:851:LEU:HA	2.22	0.40
1:B:283:GLY:HA2	1:B:321:HIS:CB	2.51	0.40
1:B:617:GLU:OE2	1:B:654:TYR:HA	2.22	0.40
1:A:407:VAL:O	1:A:433:ARG:HA	2.21	0.40
1:A:321:HIS:CE1	1:A:353:PRO:HG2	2.56	0.40
1:B:827:LEU:HD23	1:B:827:LEU:HA	1.83	0.40
1:A:287:PRO:HG3	1:A:317:ILE:HD11	2.03	0.40
1:A:411:ASP:HB3	1:A:430:THR:HG23	2.03	0.40
1:A:123:VAL:CG2	1:A:124:SER:N	2.84	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	751/865 (87%)	664 (88%)	76 (10%)	11 (2%)	13	40
1	B	751/865 (87%)	666 (89%)	73 (10%)	12 (2%)	12	38
2	C	158/206 (77%)	141 (89%)	16 (10%)	1 (1%)	30	65
2	D	158/206 (77%)	142 (90%)	15 (10%)	1 (1%)	30	65
All	All	1818/2142 (85%)	1613 (89%)	180 (10%)	25 (1%)	14	42

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	480	PRO
1	B	480	PRO
2	C	5	VAL
2	D	5	VAL
1	A	299	ASN
1	A	300	ASN
1	A	304	ASN
1	A	605	SER
1	A	733	ARG
1	B	299	ASN
1	B	300	ASN
1	B	304	ASN
1	B	605	SER
1	B	733	ARG
1	A	121	ARG
1	B	318	PRO
1	B	735	ASN
1	A	318	PRO
1	A	735	ASN
1	B	121	ARG
1	B	337	ALA
1	A	336	PRO
1	B	336	PRO
1	A	231	VAL
1	B	231	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	615/694 (89%)	564 (92%)	51 (8%)	14	38
1	B	615/694 (89%)	563 (92%)	52 (8%)	13	36
2	C	123/158 (78%)	115 (94%)	8 (6%)	21	52
2	D	123/158 (78%)	115 (94%)	8 (6%)	21	52
All	All	1476/1704 (87%)	1357 (92%)	119 (8%)	15	39

All (119) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	122	SER
1	A	125	VAL
1	A	126	ILE
1	A	142	ILE
1	A	143	LEU
1	A	146	THR
1	A	152	SER
1	A	168	GLN
1	A	176	ASN
1	A	187	SER
1	A	207	THR
1	A	212	THR
1	A	222	LEU
1	A	264	LEU
1	A	266	LEU
1	A	273	ILE
1	A	274	LEU
1	A	335	LEU
1	A	344	SER
1	A	348	THR
1	A	393	GLU
1	A	409	THR
1	A	428	THR
1	A	430	THR

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Mol	Chain	Res	Type
1	A	467	THR
1	A	469	ASP
1	A	496	ASP
1	A	503	LEU
1	A	512	TYR
1	A	514	LEU
1	A	533	THR
1	A	542	ARG
1	A	546	CYS
1	A	549	THR
1	A	564	SER
1	A	620	ARG
1	A	624	VAL
1	A	627	ASN
1	A	662	ASN
1	A	691	GLN
1	A	698	VAL
1	A	703	LEU
1	A	712	ASN
1	A	729	ASP
1	A	733	ARG
1	A	738	VAL
1	A	762	LEU
1	A	770	THR
1	A	822	THR
1	A	826	THR
1	A	834	LEU
1	B	122	SER
1	B	125	VAL
1	B	126	ILE
1	B	142	ILE
1	B	143	LEU
1	B	146	THR
1	B	152	SER
1	B	168	GLN
1	B	176	ASN
1	B	187	SER
1	B	207	THR
1	B	212	THR
1	B	222	LEU
1	B	264	LEU
1	B	266	LEU

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Mol	Chain	Res	Type
1	B	273	ILE
1	B	274	LEU
1	B	312	ILE
1	B	335	LEU
1	B	344	SER
1	B	348	THR
1	B	393	GLU
1	B	409	THR
1	B	428	THR
1	B	430	THR
1	B	467	THR
1	B	469	ASP
1	B	488	SER
1	B	496	ASP
1	B	503	LEU
1	B	512	TYR
1	B	514	LEU
1	B	533	THR
1	B	542	ARG
1	B	546	CYS
1	B	549	THR
1	B	564	SER
1	B	620	ARG
1	B	627	ASN
1	B	662	ASN
1	B	691	GLN
1	B	698	VAL
1	B	703	LEU
1	B	712	ASN
1	B	729	ASP
1	B	733	ARG
1	B	738	VAL
1	B	762	LEU
1	B	770	THR
1	B	822	THR
1	B	826	THR
1	B	834	LEU
2	C	64	VAL
2	C	67	PHE
2	C	89	LEU
2	C	108	ILE
2	C	114	SER

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Mol	Chain	Res	Type
2	C	123	LEU
2	C	147	LEU
2	C	164	SER
2	D	64	VAL
2	D	67	PHE
2	D	89	LEU
2	D	108	ILE
2	D	114	SER
2	D	123	LEU
2	D	147	LEU
2	D	164	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	299	ASN
1	A	441	ASN
1	A	603	HIS
1	B	299	ASN
1	B	441	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 2 are monoatomic - leaving 8 for Mogul analysis.

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
5	GOL	A	867	-	5,5,5	0.37	0	5,5,5	0.24	0
5	GOL	B	867	-	5,5,5	0.40	0	5,5,5	0.30	0
5	GOL	B	868	-	5,5,5	0.35	0	5,5,5	0.32	0
5	GOL	B	869	-	5,5,5	0.34	0	5,5,5	0.30	0
5	GOL	B	870	-	5,5,5	0.43	0	5,5,5	0.47	0
5	GOL	B	871	-	5,5,5	0.29	0	5,5,5	0.55	0
4	HEM	C	200	2	30,50,50	2.06	8 (26%)	24,82,82	2.23	9 (37%)
4	HEM	D	200	2	30,50,50	2.14	7 (23%)	24,82,82	2.43	11 (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
5	GOL	A	867	-	-	0/4/4/4	0/0/0/0
5	GOL	B	867	-	-	0/4/4/4	0/0/0/0
5	GOL	B	868	-	-	0/4/4/4	0/0/0/0
5	GOL	B	869	-	-	0/4/4/4	0/0/0/0
5	GOL	B	870	-	-	0/4/4/4	0/0/0/0
5	GOL	B	871	-	-	0/4/4/4	0/0/0/0
4	HEM	C	200	2	-	0/10/54/54	0/0/8/8
4	HEM	D	200	2	-	0/10/54/54	0/0/8/8

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	200	HEM	C3B-C4B	-6.81	1.45	1.51
4	C	200	HEM	C3B-C4B	-6.60	1.46	1.51
4	D	200	HEM	C3D-C4D	-5.04	1.45	1.51
4	C	200	HEM	C3D-C4D	-4.68	1.45	1.51
4	D	200	HEM	C2C-C1C	-3.76	1.45	1.52
4	C	200	HEM	C2C-C1C	-3.67	1.45	1.52
4	D	200	HEM	C4C-NC	2.03	1.38	1.36
4	C	200	HEM	C3B-CAB	2.04	1.55	1.51
4	C	200	HEM	C4C-NC	2.14	1.38	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	200	HEM	FE-ND	2.18	2.09	1.97
4	C	200	HEM	FE-NB	2.22	2.09	1.97
4	C	200	HEM	C1C-NC	2.34	1.38	1.36
4	D	200	HEM	C1C-NC	2.41	1.39	1.36
4	D	200	HEM	FE-NB	2.69	2.11	1.97
4	D	200	HEM	FE-NC	3.05	2.07	1.95

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	200	HEM	C3C-CAC-CBC	-3.58	118.97	124.46
4	D	200	HEM	C3B-CAB-CBB	-3.21	119.53	124.46
4	C	200	HEM	C3C-CAC-CBC	-2.95	119.94	124.46
4	D	200	HEM	CBD-CAD-C3D	-2.90	105.10	113.55
4	D	200	HEM	CAA-CBA-CGA	-2.50	108.16	112.75
4	C	200	HEM	C3B-CAB-CBB	-2.06	121.29	124.46
4	C	200	HEM	C2D-C3D-C4D	2.10	105.05	101.50
4	D	200	HEM	C3B-C4B-CHC	2.15	126.20	123.16
4	D	200	HEM	C2D-C3D-C4D	2.48	105.71	101.50
4	C	200	HEM	C3B-C4B-CHC	2.74	127.03	123.16
4	D	200	HEM	CMD-C2D-C3D	2.90	127.17	114.35
4	C	200	HEM	CMD-C2D-C3D	3.04	127.81	114.35
4	C	200	HEM	CMB-C2B-C3B	3.22	124.58	116.53
4	C	200	HEM	CMC-C2C-C3C	3.42	125.06	116.53
4	D	200	HEM	CMB-C2B-C3B	3.52	125.33	116.53
4	D	200	HEM	CMC-C2C-C3C	3.55	125.40	116.53
4	D	200	HEM	CAD-C3D-C4D	4.04	126.72	112.47
4	C	200	HEM	CAD-C3D-C4D	4.27	127.54	112.47
4	C	200	HEM	CAD-C3D-C2D	4.94	127.41	113.22
4	D	200	HEM	CAD-C3D-C2D	4.99	127.56	113.22

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 43 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	867	GOL	1	0
5	B	867	GOL	1	0
5	B	871	GOL	12	0
4	C	200	HEM	16	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	200	HEM	13	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	753/865 (87%)	0.47	41 (5%) 29 19	65, 96, 140, 198	0
1	B	753/865 (87%)	0.73	79 (10%) 8 4	66, 99, 142, 195	0
2	C	162/206 (78%)	0.78	18 (11%) 7 3	90, 118, 145, 161	5 (3%)
2	D	162/206 (78%)	0.96	20 (12%) 5 3	98, 118, 144, 163	5 (3%)
All	All	1830/2142 (85%)	0.65	158 (8%) 13 6	65, 101, 142, 198	10 (0%)

All (158) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	449	PRO	5.4
1	B	602	ALA	4.7
1	B	701	ALA	4.7
2	C	97	GLY	4.7
1	B	670	SER	4.6
2	C	41	ASN	4.6
1	B	291	GLY	4.5
1	B	292	ASP	4.5
2	D	162	VAL	4.2
1	B	758	SER	4.2
1	B	757	GLY	4.2
2	C	169	VAL	3.9
2	D	41	ASN	3.9
1	A	367	TYR	3.8
1	A	670	SER	3.8
1	B	299	ASN	3.8
1	A	366	PRO	3.6
2	C	158	TYR	3.6
1	B	420	SER	3.6
1	B	628	VAL	3.5
1	B	305	TYR	3.4

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Mol	Chain	Res	Type	RSRZ
1	A	819	TYR	3.4
2	D	166	PHE	3.3
2	D	109	GLN	3.3
1	A	151	SER	3.3
1	B	699	PHE	3.2
1	B	309	ALA	3.2
1	B	633	LEU	3.2
1	B	445	PHE	3.2
1	B	362	GLY	3.1
1	B	308	TYR	3.1
1	B	634	TRP	3.1
1	B	312	ILE	3.1
1	B	622	TRP	3.1
1	B	603	HIS	3.0
2	C	3	PHE	3.0
1	B	821	LEU	3.0
1	B	573	PRO	3.0
1	B	577	TRP	3.0
1	A	821	LEU	3.0
2	C	157	ASP	3.0
1	B	636	GLU	2.9
2	C	154	ILE	2.9
1	B	366	PRO	2.9
1	B	421	LEU	2.9
2	C	28	GLY	2.9
1	B	818	SER	2.9
1	A	299	ASN	2.9
1	B	698	VAL	2.8
1	B	422	LEU	2.8
1	B	635	PHE	2.8
2	C	173	THR	2.8
1	B	854	GLY	2.8
1	B	367	TYR	2.8
1	A	152	SER	2.8
2	D	42	SER	2.8
1	B	680	LEU	2.8
1	A	364	ARG	2.7
1	B	838	ALA	2.7
2	D	26	THR	2.7
1	A	190	GLY	2.7
1	B	639	ARG	2.7
1	B	630	GLN	2.7

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Mol	Chain	Res	Type	RSRZ
2	D	78	PHE	2.6
1	B	771	LEU	2.6
2	D	107	SER	2.6
1	A	292	ASP	2.6
1	B	301	ASP	2.6
1	A	361	LEU	2.6
1	B	448	ALA	2.6
1	B	742	ALA	2.6
1	B	361	LEU	2.6
1	B	601	SER	2.6
1	B	500	TRP	2.6
1	A	476	GLU	2.6
1	B	191	GLN	2.6
1	B	425	GLY	2.6
1	B	473	GLN	2.6
1	A	422	LEU	2.6
2	C	120	LEU	2.5
1	A	308	TYR	2.5
1	A	426	TYR	2.5
1	A	362	GLY	2.5
2	D	50	LEU	2.5
2	D	49	SER	2.5
1	B	720	TRP	2.5
1	B	153	VAL	2.5
2	C	109	GLN	2.5
1	A	368	GLU	2.5
1	B	152	SER	2.5
2	C	106	TYR	2.4
2	C	171	ALA	2.4
1	B	767	GLY	2.4
1	B	151	SER	2.4
1	B	690	TYR	2.4
1	A	372	LYS	2.4
1	A	194	GLY	2.4
1	A	479	THR	2.4
2	C	166	PHE	2.4
1	A	414	ASP	2.4
2	D	160	LEU	2.4
2	D	158	TYR	2.4
1	A	636	GLU	2.4
1	A	452	ASP	2.4
1	A	171	GLY	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	303	GLY	2.3
2	C	155	LEU	2.3
1	B	671	GLY	2.3
2	D	87	GLY	2.3
1	A	307	ARG	2.3
2	D	48	GLY	2.3
1	B	852	GLY	2.3
2	D	88	GLN	2.3
1	A	447	LEU	2.2
1	B	772	GLY	2.2
2	D	9	SER	2.2
1	B	575	VAL	2.2
1	A	318	PRO	2.2
2	C	174	ALA	2.2
1	A	634	TRP	2.2
1	A	538	CYS	2.2
1	A	658	ALA	2.2
1	B	779	LYS	2.2
1	A	542	ARG	2.2
2	C	107	SER	2.2
1	B	845	GLU	2.2
1	B	226	ALA	2.2
1	B	368	GLU	2.2
1	B	161	SER	2.2
1	B	694	TYR	2.2
1	A	758	SER	2.1
1	B	776	PHE	2.1
1	B	774	ARG	2.1
1	A	196	MET	2.1
1	B	479	THR	2.1
2	D	120	LEU	2.1
1	A	333	TRP	2.1
1	B	183	ASN	2.1
1	B	482	GLY	2.1
2	D	97	GLY	2.1
1	B	447	LEU	2.1
1	A	369	LEU	2.1
2	D	156	ASP	2.1
1	B	696	ALA	2.0
1	B	451	HIS	2.0
1	B	778	ARG	2.0
2	D	24	ALA	2.0

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Mol	Chain	Res	Type	RSRZ
2	C	11	PHE	2.0
1	A	500	TRP	2.0
1	B	819	TYR	2.0
1	A	424	ASN	2.0
1	B	682	LYS	2.0
1	B	554	TRP	2.0
1	A	427	ALA	2.0
1	A	549	THR	2.0
1	B	641	VAL	2.0
1	B	193	ASN	2.0
1	A	420	SER	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
5	GOL	B	870	6/6	0.76	0.46	7.76	51,71,96,107	0
5	GOL	B	867	6/6	0.72	0.25	1.90	72,94,110,114	0
5	GOL	A	867	6/6	0.83	0.31	1.38	98,121,134,139	0
4	HEM	C	200	43/43	0.92	0.24	0.07	72,117,151,157	43
4	HEM	D	200	43/43	0.91	0.28	-0.02	92,118,162,199	0
5	GOL	B	869	6/6	0.89	0.18	-0.40	105,129,146,149	0
3	NA	B	866	1/1	0.52	2.34	-	131,131,131,131	0
5	GOL	B	871	6/6	0.50	0.90	-	101,168,171,176	0
3	NA	A	866	1/1	0.12	0.89	-	103,103,103,103	0
5	GOL	B	868	6/6	0.62	0.26	-	82,102,134,135	0

6.5 Other polymers

There are no such residues in this entry.