



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 02:12 AM UTC

PDB ID : 3PCE / pdb_00003pce
Title : STRUCTURE OF PROTOCATECHUATE 3,4-DIOXYGENASE COM-
PLEXED WITH 3-HYDROXYPHENYLACETATE
Authors : Elango, N.; Orville, A.M.; Lipscomb, J.D.; Ohlendorf, D.H.
Deposited on : 1997-04-29
Resolution : 2.06 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

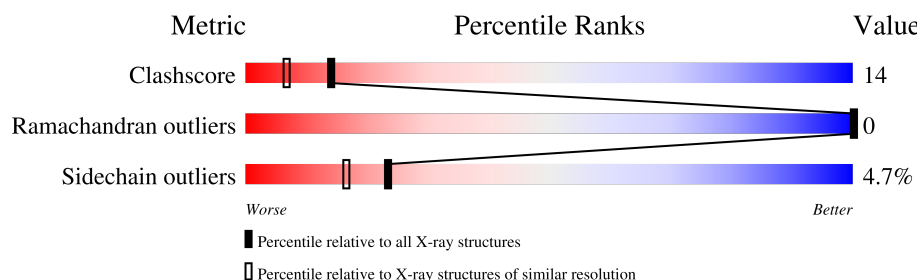
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.06 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	190562	3883 (2.08-2.04)
Ramachandran outliers	187476	3860 (2.08-2.04)
Sidechain outliers	187428	3860 (2.08-2.04)





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

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	200	68% 26% . .
1	B	200	68% 26% 6%
1	C	200	68% 26% 5% .
1	D	200	66% 25% 8%
1	E	200	62% 32% 6%
1	F	200	64% 30% 6%
2	M	238	68% 24% 5% .
2	N	238	71% 22% . .

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Mol	Chain	Length	Quality of chain
2	O	238	 70%23% . . .
2	P	238	 66%25%7% .
2	Q	238	 68%23%6% . .
2	R	238	 63%30% . . .

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	3HP	M	550	-	-	X	-
5	3HP	R	550	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 22008 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 PROTOCATECHUATE 3,4-DIOXYGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	200	Total	C	N	O	S	0	0	0
			1571	993	276	299	3			
1	B	200	Total	C	N	O	S	0	0	0
			1571	993	276	299	3			
1	C	200	Total	C	N	O	S	0	0	0
			1571	993	276	299	3			
1	D	200	Total	C	N	O	S	0	0	0
			1571	993	276	299	3			
1	E	200	Total	C	N	O	S	0	0	0
			1571	993	276	299	3			
1	F	200	Total	C	N	O	S	0	0	0
			1571	993	276	299	3			

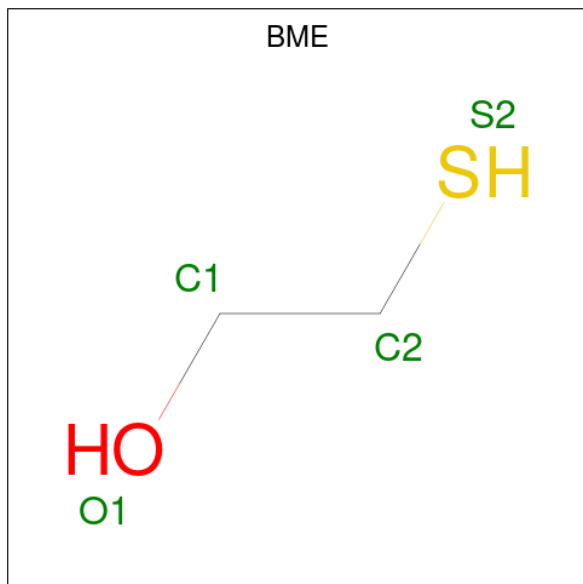
- Molecule 2 is a protein called PROTOCATECHUATE 3,4-DIOXYGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	M	233	Total	C	N	O	S	0	0	0
			1840	1171	334	328	7			
2	N	233	Total	C	N	O	S	0	0	0
			1840	1171	334	328	7			
2	O	233	Total	C	N	O	S	0	0	0
			1840	1171	334	328	7			
2	P	233	Total	C	N	O	S	0	0	0
			1840	1171	334	328	7			
2	Q	233	Total	C	N	O	S	0	0	0
			1840	1171	334	328	7			
2	R	233	Total	C	N	O	S	0	0	0
			1840	1171	334	328	7			

- Molecule 3 is FE (III) ION (CCD ID: FE) (formula: Fe).

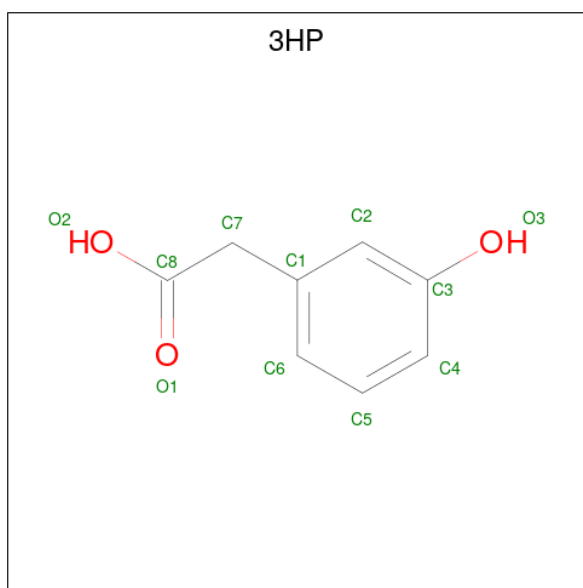
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	M	1	Total Fe 1 1	0	0
3	N	1	Total Fe 1 1	0	0
3	O	1	Total Fe 1 1	0	0
3	P	1	Total Fe 1 1	0	0
3	Q	1	Total Fe 1 1	0	0
3	R	1	Total Fe 1 1	0	0

- Molecule 4 is BETA-MERCAPTOETHANOL (CCD ID: BME) (formula: C_2H_6OS).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	M	1	Total C O S 4 2 1 1	0	0
4	N	1	Total C O S 4 2 1 1	0	0
4	O	1	Total C O S 4 2 1 1	0	0
4	P	1	Total C O S 4 2 1 1	0	0
4	Q	1	Total C O S 4 2 1 1	0	0
4	R	1	Total C O S 4 2 1 1	0	0

- Molecule 5 is 3-HYDROXYPHENYLACETATE (CCD ID: 3HP) (formula: $C_8H_8O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	M	1	Total	C	O	0	0
			11	8	3		
5	N	1	Total	C	O	0	0
			11	8	3		
5	O	1	Total	C	O	0	0
			11	8	3		
5	P	1	Total	C	O	0	0
			11	8	3		
5	Q	1	Total	C	O	0	0
			11	8	3		
5	R	1	Total	C	O	0	0
			11	8	3		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	81	Total	O	0	0
			81	81		
6	M	159	Total	O	0	0
			159	159		
6	B	88	Total	O	0	0
			88	88		
6	N	157	Total	O	0	0
			157	157		
6	C	81	Total	O	0	0
			81	81		

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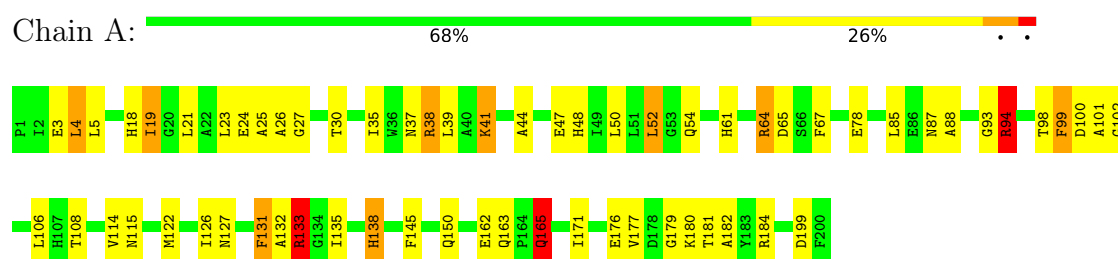
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	O	158	Total 158	O 158	0	0
6	D	80	Total 80	O 80	0	0
6	P	156	Total 156	O 156	0	0
6	E	84	Total 84	O 84	0	0
6	Q	161	Total 161	O 161	0	0
6	F	83	Total 83	O 83	0	0
6	R	158	Total 158	O 158	0	0

3 Residue-property plots

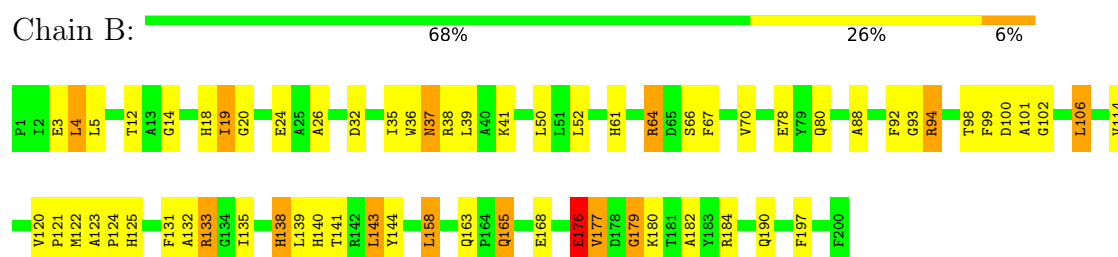
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS was not executed.

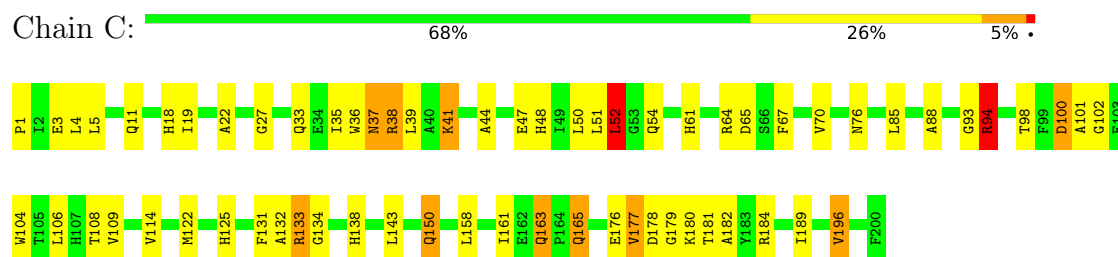
• Molecule 1: PROTOCATECHUATE 3,4-DIOXYGENASE



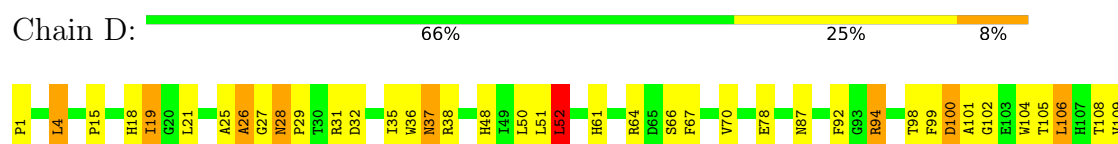
• Molecule 1: PROTOCATECHUATE 3,4-DIOXYGENASE



• Molecule 1: PROTOCATECHUATE 3,4-DIOXYGENASE



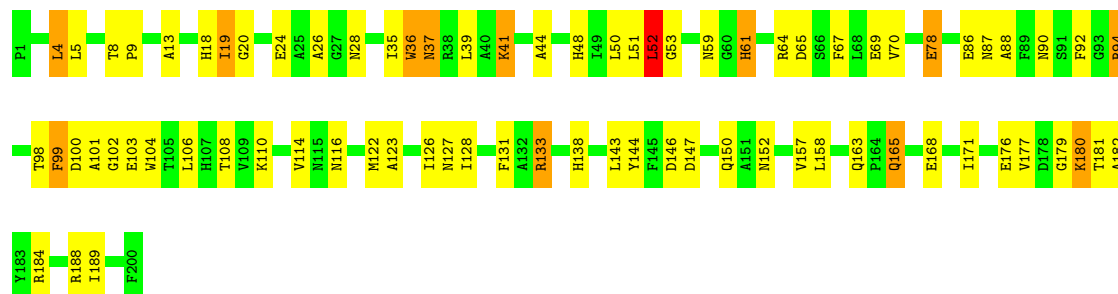
• Molecule 1: PROTOCATECHUATE 3,4-DIOXYGENASE





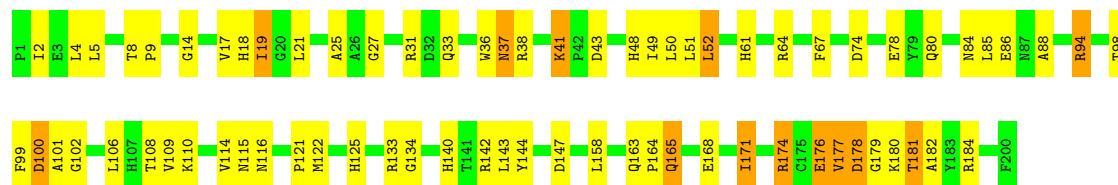
• Molecule 1: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain E: 62% 32% 6%



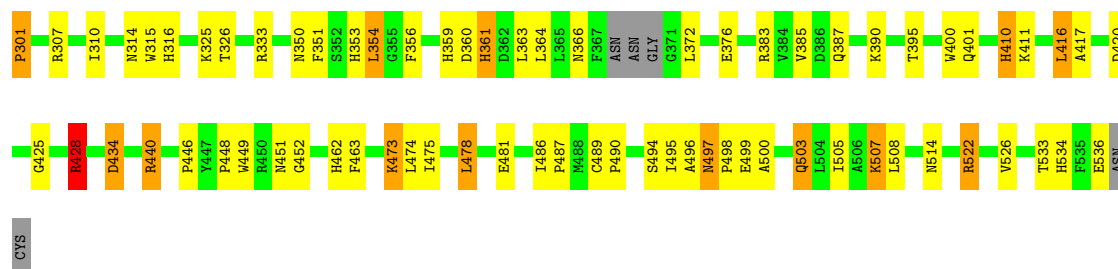
• Molecule 1: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain F: 64% 30% 6%



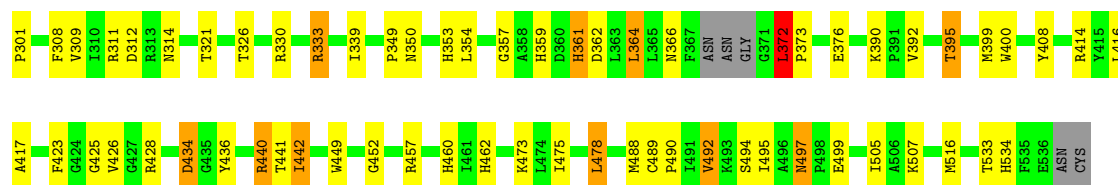
• Molecule 2: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain M: 68% 24% 5%



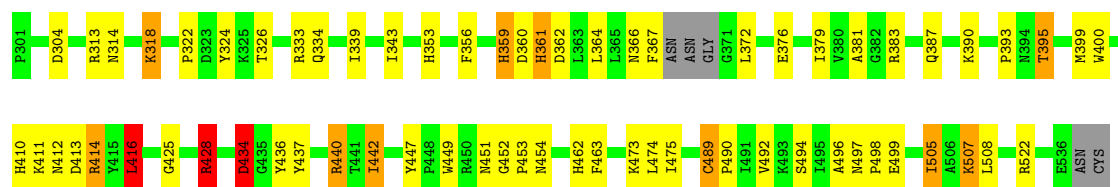
• Molecule 2: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain N: 71% 22% 7%



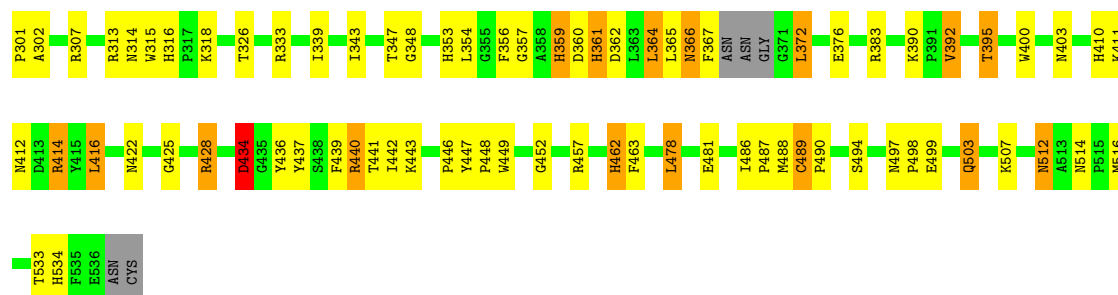
• Molecule 2: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain O:  70% 23% . . .



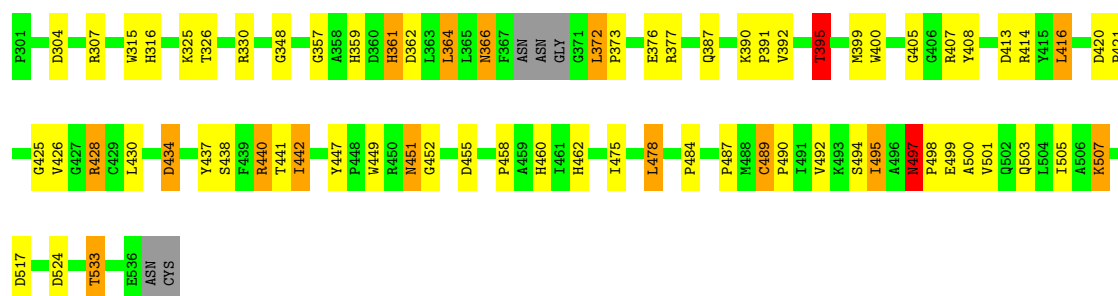
• Molecule 2: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain P:  66% 25% 7% .



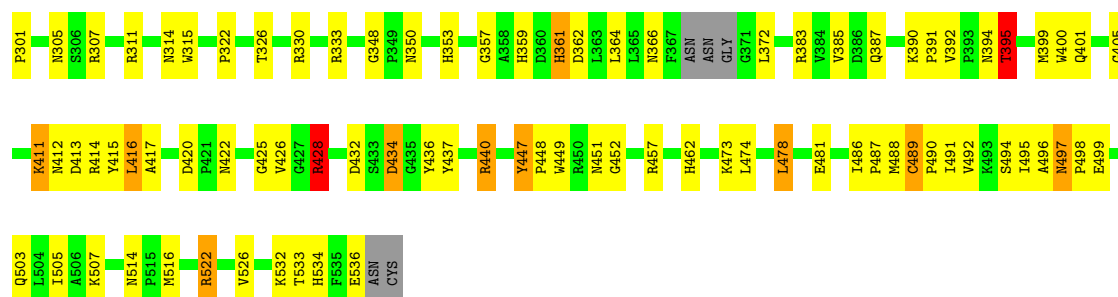
• Molecule 2: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain Q:  68% 23% 6% . .



• Molecule 2: PROTOCATECHUATE 3,4-DIOXYGENASE

Chain R:  63% 30% . . .



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	I 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	196.57 Å 127.77 Å 134.63 Å 90.00° 97.70° 90.00°	Depositor
Resolution (Å)	6.00 – 2.06	Depositor
% Data completeness (in resolution range)	79.8 (6.00-2.06)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
Refinement program	PROLSQ	Depositor
R, R_{free}	0.169 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	22008	wwPDB-VP
Average B, all atoms (Å ²)	24.0	wwPDB-VP

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: BME, FE, 3HP

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	1.23	2/1611 (0.1%)	1.85	32/2195 (1.5%)
1	B	1.22	2/1611 (0.1%)	1.83	31/2195 (1.4%)
1	C	1.29	3/1611 (0.2%)	1.73	24/2195 (1.1%)
1	D	1.28	5/1611 (0.3%)	1.89	26/2195 (1.2%)
1	E	1.32	5/1611 (0.3%)	1.82	31/2195 (1.4%)
1	F	1.35	5/1611 (0.3%)	1.85	33/2195 (1.5%)
2	M	1.36	2/1895 (0.1%)	1.83	30/2580 (1.2%)
2	N	1.35	6/1895 (0.3%)	1.83	30/2580 (1.2%)
2	O	1.39	6/1895 (0.3%)	1.86	34/2580 (1.3%)
2	P	1.36	4/1895 (0.2%)	1.84	36/2580 (1.4%)
2	Q	1.41	4/1895 (0.2%)	1.78	27/2580 (1.0%)
2	R	1.36	3/1895 (0.2%)	1.86	40/2580 (1.6%)
All	All	1.33	47/21036 (0.2%)	1.83	374/28650 (1.3%)

All (47) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	94	ARG	CD-NE	-9.41	1.33	1.46
2	Q	451	ASN	CA-C	9.28	1.56	1.52
1	D	94	ARG	CD-NE	-9.16	1.33	1.46
2	M	428	ARG	CD-NE	-7.43	1.35	1.46
1	E	94	ARG	CD-NE	-6.86	1.36	1.46
2	R	428	ARG	CD-NE	-6.84	1.36	1.46
1	D	133	ARG	CD-NE	-6.68	1.36	1.46
2	O	452	GLY	CA-C	6.61	1.60	1.51
1	C	108	THR	CA-CB	6.56	1.62	1.53
2	M	401	GLN	N-CA	6.41	1.53	1.46
2	N	321	THR	N-CA	6.40	1.53	1.46
2	O	313	ARG	NE-CZ	6.34	1.40	1.33
1	F	140	HIS	CA-CB	6.31	1.62	1.53
2	N	441	THR	CA-CB	6.31	1.62	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	P	403	ASN	N-CA	6.26	1.53	1.45
2	N	428	ARG	CD-NE	-6.09	1.37	1.46
1	B	12	THR	CA-CB	6.06	1.63	1.53
1	E	108	THR	CA-CB	5.94	1.62	1.54
2	Q	441	THR	CA-CB	5.86	1.61	1.53
1	F	2	ILE	CA-CB	5.85	1.61	1.54
2	P	441	THR	CA-CB	5.78	1.61	1.53
2	N	495	ILE	CA-CB	5.72	1.60	1.54
2	N	311	ARG	CD-NE	-5.70	1.38	1.46
2	O	324	TYR	CA-C	5.64	1.59	1.53
1	F	108	THR	CA-CB	5.64	1.62	1.54
2	R	401	GLN	C-O	5.61	1.29	1.24
1	D	133	ARG	NE-CZ	-5.51	1.26	1.33
1	E	133	ARG	CD-NE	-5.51	1.38	1.46
2	O	451	ASN	CA-C	5.47	1.55	1.52
2	Q	452	GLY	CA-C	5.38	1.59	1.51
1	C	196	VAL	CA-C	5.36	1.58	1.52
1	B	94	ARG	CD-NE	-5.33	1.38	1.46
1	F	94	ARG	CD-NE	-5.33	1.38	1.46
1	D	4	LEU	N-CA	5.32	1.52	1.45
1	D	108	THR	CA-CB	5.29	1.61	1.54
2	O	318	LYS	N-CA	5.28	1.52	1.45
2	O	379	ILE	CA-C	5.27	1.59	1.52
1	A	108	THR	CA-CB	5.26	1.60	1.53
2	Q	495	ILE	CA-CB	5.25	1.59	1.53
2	R	495	ILE	CA-CB	5.24	1.59	1.53
1	F	171	ILE	CA-CB	5.22	1.60	1.54
2	P	343	ILE	CA-CB	5.19	1.62	1.54
1	E	5	LEU	CA-C	5.05	1.59	1.53
2	N	533	THR	CB-OG1	5.04	1.51	1.43
2	P	462	HIS	N-CA	5.03	1.52	1.46
1	E	127	ASN	N-CA	5.03	1.52	1.46
1	C	94	ARG	CD-NE	-5.01	1.39	1.46

All (374) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	133	ARG	CD-NE-CZ	25.28	159.79	124.40
1	D	94	ARG	CD-NE-CZ	18.46	150.24	124.40
1	A	94	ARG	CD-NE-CZ	18.23	149.92	124.40
2	N	311	ARG	CD-NE-CZ	16.67	147.74	124.40
1	F	94	ARG	CD-NE-CZ	14.27	144.38	124.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	M	428	ARG	CD-NE-CZ	13.49	143.28	124.40
2	R	428	ARG	CD-NE-CZ	13.33	143.06	124.40
2	N	440	ARG	NE-CZ-NH2	-12.45	107.99	119.20
1	B	176	GLU	CB-CG-CD	12.06	133.11	112.60
2	O	353	HIS	CA-CB-CG	-11.61	102.19	113.80
1	E	133	ARG	CD-NE-CZ	11.53	140.54	124.40
2	R	434	ASP	CA-CB-CG	-11.31	101.29	112.60
2	M	440	ARG	NE-CZ-NH2	-10.79	109.49	119.20
2	R	361	HIS	CA-CB-CG	-10.78	103.02	113.80
2	N	452	GLY	N-CA-C	-10.67	98.98	112.10
1	D	94	ARG	CG-CD-NE	10.66	135.46	112.00
2	O	452	GLY	N-CA-C	-10.64	99.02	112.10
2	P	440	ARG	NE-CZ-NH2	-10.53	109.72	119.20
1	E	94	ARG	CD-NE-CZ	10.33	138.87	124.40
2	R	353	HIS	CA-CB-CG	-10.30	103.50	113.80
2	Q	452	GLY	N-CA-C	-10.21	99.87	112.23
2	O	434	ASP	CA-CB-CG	-10.21	102.39	112.60
2	O	428	ARG	CD-NE-CZ	10.21	138.69	124.40
2	O	451	ASN	O-C-N	10.19	128.37	120.83
1	D	94	ARG	NE-CZ-NH1	10.17	131.67	121.50
1	D	94	ARG	NE-CZ-NH2	-9.96	110.23	119.20
2	Q	451	ASN	O-C-N	9.89	128.15	120.83
1	F	38	ARG	CD-NE-CZ	9.53	137.74	124.40
1	E	94	ARG	CG-CD-NE	9.45	132.79	112.00
2	O	440	ARG	NE-CZ-NH2	-9.13	110.99	119.20
1	F	133	ARG	CD-NE-CZ	9.05	137.06	124.40
1	A	94	ARG	CG-CD-NE	9.01	131.82	112.00
2	R	452	GLY	N-CA-C	-9.01	101.33	112.23
1	A	184	ARG	CD-NE-CZ	8.94	136.91	124.40
2	N	434	ASP	CA-CB-CG	-8.86	103.74	112.60
2	M	353	HIS	CA-CB-CG	-8.58	105.22	113.80
1	D	37	ASN	N-CA-C	8.54	122.49	112.93
2	R	440	ARG	NE-CZ-NH2	-8.46	111.59	119.20
2	O	339	ILE	O-C-N	8.35	126.95	121.69
2	Q	361	HIS	CA-CB-CG	-8.33	105.47	113.80
2	M	452	GLY	N-CA-C	-8.25	101.95	112.10
1	C	37	ASN	N-CA-C	8.18	122.09	112.93
1	B	184	ARG	NE-CZ-NH2	-8.13	111.88	119.20
1	A	37	ASN	N-CA-C	8.11	122.01	112.93
1	F	174	ARG	CD-NE-CZ	-8.03	113.16	124.40
2	Q	434	ASP	CA-CB-CG	-7.95	104.65	112.60
2	P	361	HIS	CA-CB-CG	-7.90	105.90	113.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	38	ARG	CA-CB-CG	7.84	129.78	114.10
1	D	158	LEU	CB-CA-C	7.77	123.69	110.79
1	E	37	ASN	N-CA-C	7.68	122.24	113.02
1	B	37	ASN	N-CA-C	7.67	121.53	112.93
1	A	3	GLU	CB-CG-CD	7.67	125.64	112.60
1	F	94	ARG	CG-CD-NE	7.56	128.63	112.00
1	A	131	PHE	CA-CB-CG	7.55	121.35	113.80
2	N	353	HIS	CA-CB-CG	-7.54	106.26	113.80
1	E	94	ARG	CB-CG-CD	7.40	128.32	111.30
1	A	165	GLN	OE1-CD-NE2	-7.33	115.27	122.60
1	D	38	ARG	CD-NE-CZ	-7.30	114.17	124.40
2	P	434	ASP	CA-CB-CG	-7.30	105.30	112.60
2	N	497	ASN	CB-CA-C	7.26	119.84	109.38
2	P	353	HIS	CA-CB-CG	-7.25	106.56	113.80
1	B	133	ARG	CD-NE-CZ	7.24	134.54	124.40
1	A	47	GLU	CB-CG-CD	7.23	124.90	112.60
2	P	422	ASN	CA-CB-CG	-7.20	105.40	112.60
2	O	492	VAL	N-CA-C	-7.18	103.53	110.42
1	F	181	THR	N-CA-CB	7.09	120.62	109.71
2	Q	440	ARG	NE-CZ-NH2	-7.05	112.86	119.20
1	F	43	ASP	CA-CB-CG	-7.05	105.55	112.60
2	R	428	ARG	CG-CD-NE	7.02	127.44	112.00
2	N	428	ARG	CG-CD-NE	7.02	127.44	112.00
1	B	168	GLU	CB-CG-CD	6.99	124.49	112.60
1	D	28	ASN	O-C-N	6.96	127.27	121.35
2	M	494	SER	N-CA-C	-6.95	104.06	112.54
2	M	314	ASN	N-CA-C	-6.93	104.86	113.38
1	C	38	ARG	CD-NE-CZ	-6.93	114.70	124.40
2	Q	325	LYS	N-CA-C	6.92	119.42	111.11
1	F	37	ASN	N-CA-C	6.92	120.68	112.93
1	B	94	ARG	NE-CZ-NH1	6.85	128.35	121.50
2	M	503	GLN	OE1-CD-NE2	6.84	129.44	122.60
1	D	100	ASP	CA-CB-CG	-6.82	105.78	112.60
1	D	26	ALA	N-CA-C	-6.80	104.85	113.01
1	E	99	PHE	CA-CB-CG	6.78	120.58	113.80
2	N	533	THR	CA-CB-OG1	-6.76	99.45	109.60
2	Q	497	ASN	CB-CA-C	6.76	117.56	109.85
2	R	394	ASN	CA-CB-CG	-6.74	105.86	112.60
2	N	361	HIS	CA-CB-CG	-6.72	107.08	113.80
1	F	158	LEU	CB-CA-C	6.68	122.98	110.63
1	B	80	GLN	OE1-CD-NE2	-6.65	115.95	122.60
1	D	178	ASP	CA-CB-CG	-6.65	105.95	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	O	387	GLN	OE1-CD-NE2	6.65	129.25	122.60
2	M	440	ARG	NH1-CZ-NH2	6.64	127.93	119.30
1	E	59	ASN	CA-CB-CG	-6.63	105.97	112.60
1	A	177	VAL	O-C-N	6.63	128.94	122.97
2	P	367	PHE	CA-C-O	-6.59	109.59	120.80
2	R	428	ARG	NE-CZ-NH1	6.57	128.07	121.50
1	D	94	ARG	CB-CG-CD	6.57	126.40	111.30
2	P	457	ARG	CD-NE-CZ	6.56	133.59	124.40
2	M	361	HIS	CA-CB-CG	-6.53	107.27	113.80
2	N	475	ILE	N-CA-CB	6.53	120.43	111.41
2	Q	489	CYS	O-C-N	6.50	126.84	121.31
1	A	199	ASP	CA-CB-CG	6.50	119.10	112.60
1	F	5	LEU	N-CA-C	-6.49	101.13	110.08
1	C	76	ASN	CA-CB-CG	-6.46	106.14	112.60
2	O	361	HIS	CA-CB-CG	-6.45	107.35	113.80
1	A	5	LEU	N-CA-C	-6.44	101.65	109.83
1	E	157	VAL	CB-CA-C	6.44	120.44	111.94
2	P	428	ARG	CG-CD-NE	6.43	126.16	112.00
2	R	322	PRO	CB-CA-C	6.43	122.17	111.56
2	R	494	SER	N-CA-C	-6.42	104.70	112.54
2	R	457	ARG	CA-CB-CG	6.42	126.94	114.10
1	C	94	ARG	NE-CZ-NH1	6.42	127.92	121.50
2	N	309	VAL	O-C-N	6.42	129.21	122.67
1	E	5	LEU	N-CA-C	-6.40	101.25	110.08
2	P	314	ASN	N-CA-C	-6.38	105.65	113.50
1	C	133	ARG	CD-NE-CZ	6.38	133.33	124.40
2	P	440	ARG	NE-CZ-NH1	6.34	127.84	121.50
2	O	451	ASN	CA-C-O	-6.32	116.17	119.77
2	R	311	ARG	CD-NE-CZ	6.30	133.22	124.40
2	M	411	LYS	CB-CA-C	-6.29	100.31	110.74
2	M	481	GLU	CB-CG-CD	6.29	123.29	112.60
1	A	94	ARG	NE-CZ-NH2	-6.27	113.56	119.20
2	R	305	ASN	CA-CB-CG	-6.26	106.34	112.60
2	P	512	ASN	CA-CB-CG	-6.25	106.35	112.60
2	Q	494	SER	N-CA-C	-6.24	104.77	112.38
2	O	440	ARG	NH1-CZ-NH2	6.23	127.40	119.30
1	B	94	ARG	CD-NE-CZ	6.23	133.12	124.40
1	E	133	ARG	NE-CZ-NH1	6.23	127.73	121.50
1	D	159	ASN	CA-CB-CG	-6.21	106.39	112.60
1	A	94	ARG	CB-CG-CD	6.20	125.55	111.30
1	A	150	GLN	OE1-CD-NE2	-6.19	116.41	122.60
1	E	94	ARG	NE-CZ-NH1	6.19	127.69	121.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	30	THR	CA-CB-OG1	-6.17	100.34	109.60
1	A	99	PHE	CA-CB-CG	6.17	119.97	113.80
2	M	522	ARG	CD-NE-CZ	-6.16	115.78	124.40
2	M	514	ASN	O-C-N	6.14	127.34	120.83
2	R	420	ASP	CB-CA-C	6.14	116.98	110.17
1	D	194	GLU	CB-CG-CD	6.13	123.02	112.60
1	F	94	ARG	CB-CG-CD	6.13	125.39	111.30
1	C	41	LYS	N-CA-C	-6.12	101.31	110.24
2	Q	437	TYR	O-C-N	6.11	130.56	123.17
2	N	440	ARG	CB-CG-CD	-6.10	97.26	111.30
2	R	492	VAL	N-CA-C	-6.08	104.58	110.42
2	P	316	HIS	CA-CB-CG	-6.07	107.73	113.80
1	F	100	ASP	CA-CB-CG	-6.07	106.53	112.60
1	E	158	LEU	CB-CA-C	6.07	120.86	110.79
1	E	4	LEU	N-CA-CB	-6.06	101.22	110.49
1	A	64	ARG	CD-NE-CZ	-6.04	115.95	124.40
2	R	411	LYS	CB-CA-C	-6.03	100.73	110.74
1	E	146	ASP	CA-CB-CG	6.03	118.62	112.60
1	A	38	ARG	NE-CZ-NH2	-6.00	113.80	119.20
2	R	333	ARG	N-CA-C	-5.99	106.30	113.97
1	C	94	ARG	CD-NE-CZ	5.98	132.78	124.40
2	O	508	LEU	CA-C-O	-5.97	114.12	120.92
1	C	11	GLN	N-CA-CB	5.96	122.63	111.53
1	B	94	ARG	CG-CD-NE	5.95	125.10	112.00
1	D	66	SER	CA-C-N	5.95	131.91	122.74
1	D	66	SER	C-N-CA	5.95	131.91	122.74
2	M	314	ASN	CB-CA-C	5.95	120.00	109.65
1	C	94	ARG	NE-CZ-NH2	-5.95	113.85	119.20
2	R	447	TYR	O-C-N	5.95	126.47	121.83
1	C	150	GLN	N-CA-CB	5.94	118.85	109.82
1	B	66	SER	N-CA-CB	5.93	118.71	110.17
1	B	64	ARG	CD-NE-CZ	-5.92	116.11	124.40
2	P	452	GLY	N-CA-C	-5.92	100.25	112.34
2	O	489	CYS	O-C-N	5.92	126.34	121.31
2	O	414	ARG	CD-NE-CZ	-5.92	116.12	124.40
2	P	359	HIS	CA-CB-CG	-5.91	107.89	113.80
2	R	357	GLY	N-CA-C	-5.91	104.98	112.54
1	C	125	HIS	CA-CB-CG	-5.88	107.92	113.80
1	E	78	GLU	CB-CG-CD	5.86	122.56	112.60
1	F	38	ARG	NE-CZ-NH2	-5.84	113.94	119.20
1	C	52	LEU	CB-CA-C	5.83	122.98	110.45
1	E	36	TRP	CB-CA-C	5.82	122.00	110.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	N	333	ARG	N-CA-C	-5.81	106.54	113.97
1	C	100	ASP	CA-CB-CG	-5.80	106.80	112.60
2	N	417	ALA	N-CA-C	-5.80	102.46	109.83
2	R	522	ARG	NE-CZ-NH1	-5.79	115.71	121.50
2	Q	316	HIS	O-C-N	5.79	127.74	121.60
1	E	99	PHE	N-CA-C	-5.79	105.48	112.54
2	P	441	THR	N-CA-CB	-5.78	101.95	110.97
1	D	131	PHE	CA-CB-CG	5.78	119.58	113.80
2	M	325	LYS	N-CA-C	5.78	120.90	111.37
2	Q	304	ASP	CA-CB-CG	-5.78	106.82	112.60
1	C	181	THR	N-CA-CB	5.77	118.44	109.85
1	B	38	ARG	NE-CZ-NH2	-5.74	114.03	119.20
2	P	457	ARG	NE-CZ-NH1	5.74	127.24	121.50
2	N	494	SER	N-CA-C	-5.74	105.38	112.38
2	P	333	ARG	CB-CA-C	5.73	119.28	109.24
2	O	333	ARG	CB-CA-C	5.72	119.25	109.24
1	B	24	GLU	CA-CB-CG	5.71	125.52	114.10
2	O	494	SER	N-CA-C	-5.71	105.41	112.38
1	C	178	ASP	CA-CB-CG	-5.71	106.89	112.60
2	R	496	ALA	N-CA-C	5.71	117.50	111.28
2	N	354	LEU	CB-CA-C	5.70	119.40	109.65
1	C	5	LEU	O-C-N	5.70	127.81	121.43
2	O	505	ILE	N-CA-C	5.69	116.29	107.99
2	R	422	ASN	CA-CB-CG	-5.69	106.91	112.60
2	P	443	LYS	CG-CD-CE	5.68	124.38	111.30
1	B	94	ARG	CB-CG-CD	5.68	124.36	111.30
1	B	133	ARG	N-CA-C	-5.68	101.99	110.23
1	B	184	ARG	NE-CZ-NH1	5.67	127.17	121.50
2	Q	357	GLY	N-CA-C	-5.65	105.02	112.82
2	R	522	ARG	NE-CZ-NH2	5.65	124.28	119.20
1	A	87	ASN	CA-CB-CG	5.64	118.24	112.60
2	P	357	GLY	N-CA-C	-5.64	105.31	112.54
2	N	314	ASN	N-CA-C	-5.63	106.45	113.38
2	M	316	HIS	O-C-N	5.63	127.56	121.60
1	B	158	LEU	CB-CA-C	5.62	120.12	110.79
2	M	440	ARG	CB-CG-CD	-5.62	98.39	111.30
1	B	177	VAL	O-C-N	5.62	129.02	123.18
1	A	115	ASN	CA-CB-CG	5.61	118.20	112.60
2	N	457	ARG	NE-CZ-NH2	-5.59	114.16	119.20
2	O	314	ASN	N-CA-CB	5.59	119.24	110.46
1	A	138	HIS	CA-CB-CG	-5.59	108.21	113.80
2	P	372	LEU	CB-CA-C	5.59	116.44	108.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	M	434	ASP	CA-CB-CG	-5.58	107.02	112.60
1	B	125	HIS	CA-CB-CG	-5.58	108.22	113.80
2	O	395	THR	CA-CB-OG1	-5.58	101.23	109.60
2	Q	366	ASN	N-CA-C	5.58	119.95	113.20
2	M	428	ARG	CG-CD-NE	5.58	124.27	112.00
1	B	179	GLY	O-C-N	5.58	127.03	122.51
1	C	47	GLU	CB-CG-CD	5.58	122.08	112.60
2	R	451	ASN	N-CA-C	-5.58	98.92	110.80
1	C	70	VAL	CA-C-N	5.57	130.63	122.39
1	C	70	VAL	C-N-CA	5.57	130.63	122.39
1	D	171	ILE	N-CA-C	5.56	116.11	107.99
2	Q	377	ARG	NE-CZ-NH1	-5.56	115.94	121.50
1	F	94	ARG	NE-CZ-NH1	5.55	127.05	121.50
1	F	5	LEU	O-C-N	5.55	127.63	121.53
1	B	94	ARG	NE-CZ-NH2	-5.55	114.21	119.20
1	F	140	HIS	CB-CA-C	-5.55	100.60	109.75
2	O	463	PHE	CA-CB-CG	5.54	119.34	113.80
2	O	454	ASN	CA-C-O	-5.54	116.52	121.67
1	F	52	LEU	CB-CA-C	5.54	120.92	110.62
2	Q	428	ARG	NE-CZ-NH2	-5.52	114.23	119.20
2	Q	533	THR	N-CA-C	-5.52	103.25	110.53
1	F	184	ARG	CD-NE-CZ	-5.50	116.70	124.40
2	R	514	ASN	O-C-N	5.50	126.36	121.19
2	M	333	ARG	CD-NE-CZ	-5.50	116.71	124.40
1	B	99	PHE	N-CA-C	-5.49	105.84	112.54
1	A	127	ASN	CA-CB-CG	-5.48	107.12	112.60
2	N	350	ASN	OD1-CG-ND2	-5.48	117.12	122.60
1	C	158	LEU	CB-CA-C	5.48	119.89	110.79
2	O	447	TYR	O-C-N	5.48	125.69	121.85
2	P	348	GLY	O-C-N	5.47	127.24	121.77
2	P	463	PHE	CA-CB-CG	5.47	119.27	113.80
2	N	505	ILE	N-CA-C	5.47	115.66	107.51
1	A	94	ARG	NE-CZ-NH1	5.46	126.96	121.50
2	P	489	CYS	N-CA-C	5.46	117.50	109.42
1	E	90	ASN	CA-CB-CG	5.46	118.06	112.60
1	A	171	ILE	N-CA-C	5.45	115.63	107.51
2	O	367	PHE	CA-C-O	-5.45	111.54	120.80
1	A	126	ILE	O-C-N	5.44	128.84	123.18
2	N	460	HIS	CA-CB-CG	-5.44	108.36	113.80
1	E	94	ARG	NE-CZ-NH2	-5.44	114.31	119.20
2	R	394	ASN	CA-C-O	-5.44	115.23	121.54
2	M	496	ALA	N-CA-C	5.43	117.28	111.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	4	LEU	N-CA-CB	-5.43	101.76	110.39
2	Q	430	LEU	CA-C-O	-5.42	114.68	120.92
2	Q	348	GLY	O-C-N	5.42	127.19	121.77
2	O	359	HIS	CA-CB-CG	-5.42	108.39	113.80
2	N	440	ARG	NH1-CZ-NH2	5.39	126.30	119.30
2	O	318	LYS	N-CA-C	-5.38	103.59	110.53
1	E	189	ILE	O-C-N	5.38	127.09	121.87
1	F	176	GLU	CB-CG-CD	5.38	121.75	112.60
1	A	52	LEU	CB-CA-C	5.38	122.01	110.45
1	F	14	GLY	CA-C-N	5.37	125.19	119.28
1	F	14	GLY	C-N-CA	5.37	125.19	119.28
1	F	41	LYS	N-CA-C	-5.37	103.17	110.36
1	E	41	LYS	N-CA-C	-5.37	102.41	110.24
1	F	177	VAL	CB-CA-C	5.36	117.11	110.73
2	R	350	ASN	N-CA-CB	5.36	119.01	110.65
1	F	144	TYR	N-CA-CB	5.35	118.67	110.70
2	O	334	GLN	OE1-CD-NE2	-5.35	117.25	122.60
1	D	52	LEU	CB-CA-C	5.35	121.33	109.94
1	D	177	VAL	O-C-N	5.34	128.73	123.18
2	Q	492	VAL	N-CA-C	-5.34	105.18	110.62
2	R	534	HIS	CA-CB-CG	5.34	119.14	113.80
2	Q	395	THR	CA-CB-OG1	-5.33	101.60	109.60
2	M	417	ALA	CB-CA-C	5.33	118.47	109.67
2	P	512	ASN	OD1-CG-ND2	5.32	127.92	122.60
2	O	322	PRO	CB-CA-C	5.32	120.34	111.56
2	Q	501	VAL	O-C-N	5.32	127.03	121.87
1	C	163	GLN	CA-C-O	5.32	123.55	119.46
2	P	339	ILE	O-C-N	5.32	125.04	121.69
1	A	99	PHE	N-CA-C	-5.31	105.90	112.38
1	E	52	LEU	CB-CA-C	5.31	121.87	110.45
2	P	494	SER	N-CA-C	-5.31	106.06	112.54
1	D	150	GLN	O-C-N	5.31	127.53	122.07
2	O	475	ILE	N-CA-CB	5.30	118.73	111.41
2	P	514	ASN	CA-CB-CG	5.30	117.90	112.60
2	N	309	VAL	N-CA-CB	5.30	117.23	110.13
2	Q	428	ARG	CG-CD-NE	5.30	123.65	112.00
1	C	189	ILE	O-C-N	5.29	127.00	121.87
2	R	532	LYS	O-C-N	5.28	128.87	122.85
2	R	412	ASN	CA-CB-CG	5.28	117.88	112.60
1	A	133	ARG	NE-CZ-NH2	5.28	123.95	119.20
2	R	394	ASN	O-C-N	5.28	129.31	122.40
2	P	365	LEU	N-CA-C	5.27	120.72	113.97

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	N	308	PHE	CB-CA-C	5.27	118.86	109.38
2	P	440	ARG	CD-NE-CZ	5.27	131.77	124.40
2	O	416	LEU	CB-CA-C	5.27	120.91	110.17
1	D	87	ASN	OD1-CG-ND2	5.25	127.85	122.60
1	E	108	THR	CA-C-N	5.24	131.02	122.69
1	E	108	THR	C-N-CA	5.24	131.02	122.69
1	B	139	LEU	O-C-N	5.24	129.47	123.29
1	E	133	ARG	N-CA-C	-5.24	102.64	110.23
1	F	158	LEU	N-CA-CB	-5.23	102.16	110.22
2	N	339	ILE	O-C-N	5.23	124.99	121.69
2	P	366	ASN	N-CA-C	5.23	119.53	113.20
1	E	61	HIS	CA-CB-CG	-5.23	108.57	113.80
2	R	333	ARG	CB-CA-C	5.23	117.85	109.07
2	N	357	GLY	N-CA-C	-5.22	105.61	112.82
2	R	387	GLN	OE1-CD-NE2	5.22	127.82	122.60
2	O	353	HIS	CB-CG-CD2	-5.22	124.42	131.20
1	F	171	ILE	N-CA-C	5.22	115.61	107.99
1	F	178	ASP	N-CA-C	-5.22	104.21	111.52
2	N	312	ASP	CA-CB-CG	-5.21	107.39	112.60
1	E	69	GLU	CB-CG-CD	5.21	121.46	112.60
1	F	38	ARG	NE-CZ-NH1	5.21	126.71	121.50
1	E	116	ASN	N-CA-C	-5.20	103.17	110.35
2	Q	524	ASP	O-C-N	5.20	128.88	123.06
1	E	78	GLU	CG-CD-OE2	-5.20	106.44	118.40
2	M	463	PHE	CA-CB-CG	5.20	119.00	113.80
2	R	348	GLY	O-C-N	5.20	126.97	121.77
1	F	134	GLY	N-CA-C	-5.19	108.46	115.21
1	B	176	GLU	CG-CD-OE1	5.19	130.33	118.40
1	F	133	ARG	NE-CZ-NH1	5.18	126.68	121.50
2	P	507	LYS	CG-CD-CE	5.18	123.21	111.30
1	A	162	GLU	CA-CB-CG	5.17	124.45	114.10
1	E	28	ASN	O-C-N	5.16	125.74	121.35
2	M	383	ARG	CD-NE-CZ	-5.16	117.18	124.40
2	N	492	VAL	N-CA-C	-5.16	105.36	110.62
1	F	142	ARG	NE-CZ-NH1	5.14	126.64	121.50
1	B	177	VAL	CB-CA-C	5.14	117.36	110.42
2	P	354	LEU	N-CA-C	-5.14	103.25	110.50
2	M	410	HIS	CA-C-N	5.12	128.50	120.82
2	M	410	HIS	C-N-CA	5.12	128.50	120.82
2	Q	458	PRO	N-CA-C	-5.12	103.73	111.41
2	M	451	ASN	N-CA-C	-5.12	99.91	110.80
1	E	152	ASN	O-C-N	5.11	127.54	122.12

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	112	GLY	N-CA-C	-5.11	104.38	112.66
1	F	2	ILE	CB-CA-C	-5.11	104.51	111.15
2	R	489	CYS	O-C-N	5.11	126.39	121.28
1	B	138	HIS	CA-CB-CG	-5.11	108.69	113.80
1	B	5	LEU	N-CA-C	-5.11	103.34	109.83
2	N	372	LEU	N-CA-CB	-5.11	103.85	110.03
2	R	395	THR	CA-CB-OG1	-5.10	101.95	109.60
1	C	5	LEU	N-CA-C	-5.09	103.36	109.83
2	O	440	ARG	O-C-N	5.09	129.36	123.30
2	Q	387	GLN	OE1-CD-NE2	5.09	127.69	122.60
2	O	496	ALA	N-CA-C	5.08	117.55	111.71
1	B	18	HIS	N-CA-CB	5.07	117.67	110.06
2	R	481	GLU	CB-CG-CD	5.07	121.22	112.60
2	M	326	THR	CA-CB-OG1	-5.07	102.00	109.60
2	O	454	ASN	CA-CB-CG	5.07	117.67	112.60
1	A	41	LYS	N-CA-C	-5.07	102.84	110.24
1	D	4	LEU	N-CA-CB	-5.06	100.91	110.07
1	C	177	VAL	O-C-N	5.06	127.94	123.03
2	P	439	PHE	CA-C-N	-5.05	115.86	122.99
2	P	439	PHE	C-N-CA	-5.05	115.86	122.99
1	A	21	LEU	N-CA-CB	-5.05	103.28	110.80
1	B	14	GLY	CA-C-N	5.05	124.66	119.56
1	B	14	GLY	C-N-CA	5.05	124.66	119.56
2	R	314	ASN	N-CA-C	-5.04	107.16	113.72
2	M	420	ASP	CB-CA-C	5.04	115.95	110.15
2	N	428	ARG	CB-CG-CD	5.03	122.87	111.30
2	R	394	ASN	OD1-CG-ND2	5.02	127.62	122.60
2	M	354	LEU	CB-CA-C	5.02	118.01	109.53
1	A	23	LEU	CB-CA-C	5.01	119.16	110.84
2	Q	316	HIS	N-CA-C	-5.01	102.99	110.20
2	P	481	GLU	CB-CG-CD	5.00	121.11	112.60
2	P	392	VAL	O-C-N	5.00	126.80	121.10
1	D	21	LEU	N-CA-CB	-5.00	103.35	110.80

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1571	0	1499	49	0
1	B	1571	0	1499	45	0
1	C	1571	0	1499	49	0
1	D	1571	0	1499	51	0
1	E	1571	0	1499	58	0
1	F	1571	0	1499	60	0
2	M	1840	0	1792	53	0
2	N	1840	0	1792	36	0
2	O	1840	0	1792	47	0
2	P	1840	0	1792	54	0
2	Q	1840	0	1792	53	0
2	R	1840	0	1792	58	0
3	M	1	0	0	0	0
3	N	1	0	0	0	0
3	O	1	0	0	0	0
3	P	1	0	0	0	0
3	Q	1	0	0	0	0
3	R	1	0	0	0	0
4	M	4	0	5	0	0
4	N	4	0	5	1	0
4	O	4	0	5	1	0
4	P	4	0	5	0	0
4	Q	4	0	5	3	0
4	R	4	0	5	1	0
5	M	11	0	6	4	0
5	N	11	0	6	3	0
5	O	11	0	6	3	0
5	P	11	0	6	3	0
5	Q	11	0	6	3	0
5	R	11	0	6	4	0
6	A	81	0	0	2	0
6	B	88	0	0	2	0
6	C	81	0	0	0	0
6	D	80	0	0	1	0
6	E	84	0	0	0	0
6	F	83	0	0	1	0
6	M	159	0	0	3	0
6	N	157	0	0	3	0
6	O	158	0	0	5	0
6	P	156	0	0	3	0
6	Q	161	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	R	158	0	0	3	0
All	All	22008	0	19812	577	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 14.

All (577) 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:E:165:GLN:H	1:E:165:GLN:NE2	1.41	1.17
1:B:165:GLN:H	1:B:165:GLN:NE2	1.43	1.14
1:E:165:GLN:HE21	1:E:165:GLN:N	1.45	1.13
2:P:364:LEU:HD22	2:P:440:ARG:HD3	1.16	1.11
1:F:163:GLN:HB3	1:F:165:GLN:HE22	1.13	1.10
1:A:98:THR:HB	1:A:100:ASP:OD1	1.56	1.06
2:R:497:ASN:ND2	2:R:499:GLU:H	1.58	1.01
1:E:41:LYS:HD2	1:E:88:ALA:HA	1.43	0.99
1:C:64:ARG:NH1	1:C:100:ASP:O	1.97	0.97
1:A:163:GLN:HB3	1:A:165:GLN:NE2	1.81	0.95
1:D:64:ARG:NH1	1:D:100:ASP:O	1.99	0.95
1:F:163:GLN:HB3	1:F:165:GLN:NE2	1.80	0.95
1:B:165:GLN:H	1:B:165:GLN:HE21	1.00	0.95
2:R:361:HIS:H	2:R:361:HIS:CD2	1.80	0.95
2:P:364:LEU:CD2	2:P:440:ARG:HD3	1.97	0.93
1:D:165:GLN:H	1:D:165:GLN:HE21	1.04	0.93
2:R:497:ASN:HD22	2:R:499:GLU:H	1.17	0.93
1:C:163:GLN:HB3	1:C:165:GLN:NE2	1.85	0.92
1:E:98:THR:HB	1:E:100:ASP:OD1	1.69	0.92
2:R:505:ILE:HG22	2:R:507:LYS:HE3	1.52	0.91
1:B:165:GLN:HE21	1:B:165:GLN:N	1.68	0.91
1:D:165:GLN:H	1:D:165:GLN:NE2	1.68	0.90
1:A:163:GLN:HB3	1:A:165:GLN:HE22	1.33	0.90
1:E:64:ARG:NH1	1:E:100:ASP:O	2.05	0.90
2:M:497:ASN:ND2	2:M:499:GLU:H	1.70	0.90
1:F:64:ARG:NH1	1:F:100:ASP:O	2.06	0.89
2:M:497:ASN:HD22	2:M:499:GLU:H	1.19	0.88
1:B:67:PHE:HZ	1:B:94:ARG:HD2	1.37	0.87
1:F:98:THR:OG1	1:F:102:GLY:N	2.09	0.86
1:B:98:THR:HB	1:B:100:ASP:OD1	1.75	0.85
1:F:98:THR:HB	1:F:100:ASP:OD1	1.78	0.84
2:R:361:HIS:H	2:R:361:HIS:HD2	1.19	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:R:462:HIS:HE1	5:R:550:3HP:H4	1.40	0.84
1:A:176:GLU:OE2	1:A:179:GLY:HA2	1.78	0.84
1:D:98:THR:OG1	1:D:102:GLY:N	2.14	0.80
1:E:168:GLU:HA	1:E:171:ILE:HD12	1.64	0.80
1:C:33:GLN:HG2	1:C:85:LEU:HD12	1.64	0.79
1:D:165:GLN:HE21	1:D:165:GLN:N	1.80	0.79
2:Q:361:HIS:CD2	2:Q:361:HIS:H	2.00	0.79
1:F:176:GLU:HG2	1:F:179:GLY:HA2	1.64	0.79
1:A:67:PHE:HZ	1:A:94:ARG:HD2	1.48	0.78
2:O:497:ASN:HD22	2:O:499:GLU:H	1.30	0.78
2:Q:390:LYS:HD2	6:Q:1040:HOH:O	1.83	0.78
1:F:114:VAL:HG23	1:F:122:MET:HE3	1.66	0.78
2:P:497:ASN:HD22	2:P:499:GLU:H	1.32	0.77
1:E:51:LEU:HD12	1:E:106:LEU:HD23	1.64	0.77
1:C:67:PHE:HZ	1:C:94:ARG:HD2	1.49	0.77
1:A:64:ARG:NH1	1:A:100:ASP:O	2.18	0.77
2:N:390:LYS:HD3	6:N:645:HOH:O	1.85	0.77
1:B:64:ARG:NH1	1:B:100:ASP:O	2.18	0.76
2:O:497:ASN:ND2	2:O:499:GLU:H	1.84	0.76
1:F:177:VAL:O	1:F:180:LYS:HB3	1.86	0.76
2:R:361:HIS:CD2	2:R:361:HIS:N	2.54	0.75
1:E:67:PHE:HZ	1:E:94:ARG:HD2	1.50	0.75
1:F:100:ASP:CG	1:F:101:ALA:H	1.96	0.74
2:N:497:ASN:HD22	2:N:499:GLU:H	1.36	0.74
2:Q:497:ASN:ND2	2:Q:499:GLU:H	1.86	0.73
1:B:67:PHE:CZ	1:B:94:ARG:HD2	2.23	0.73
2:P:313:ARG:O	2:P:318:LYS:HE3	1.89	0.73
2:P:361:HIS:H	2:P:361:HIS:CD2	2.06	0.73
1:F:33:GLN:HG2	1:F:85:LEU:HD12	1.69	0.73
2:N:390:LYS:HE2	6:N:721:HOH:O	1.88	0.72
1:C:98:THR:OG1	1:C:102:GLY:N	2.21	0.72
1:D:177:VAL:O	1:D:180:LYS:HB3	1.89	0.72
1:F:163:GLN:CB	1:F:165:GLN:HE22	2.00	0.72
1:B:19:ILE:HG22	1:B:26:ALA:HB1	1.72	0.72
2:P:390:LYS:HE2	6:P:727:HOH:O	1.90	0.72
2:Q:361:HIS:H	2:Q:361:HIS:HD2	1.37	0.71
2:P:364:LEU:HD22	2:P:440:ARG:CD	2.08	0.71
2:Q:497:ASN:ND2	2:Q:499:GLU:OE1	2.22	0.71
1:B:165:GLN:NE2	1:B:165:GLN:N	2.28	0.71
1:C:35:ILE:HG22	1:C:94:ARG:HG3	1.73	0.71
1:A:67:PHE:CZ	1:A:94:ARG:HD2	2.25	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:THR:OG1	1:A:102:GLY:N	2.24	0.70
1:A:100:ASP:CG	1:A:101:ALA:H	1.99	0.70
1:D:176:GLU:HG2	1:D:179:GLY:HA2	1.73	0.70
2:P:462:HIS:HE1	5:P:550:3HP:H4	1.56	0.70
1:E:163:GLN:HB3	1:E:165:GLN:HE22	1.57	0.70
1:B:163:GLN:HB3	1:B:165:GLN:NE2	2.06	0.70
1:A:114:VAL:HG23	1:A:122:MET:HE3	1.75	0.69
2:R:497:ASN:ND2	2:R:499:GLU:OE1	2.26	0.69
1:F:78:GLU:HG2	2:R:301:PRO:HG2	1.74	0.69
2:R:473:LYS:HD2	2:R:474:LEU:N	2.08	0.69
2:Q:449:TRP:CE3	5:Q:550:3HP:H71	2.27	0.69
1:F:51:LEU:HD12	1:F:106:LEU:HD23	1.75	0.69
2:R:497:ASN:ND2	2:R:499:GLU:N	2.38	0.69
1:F:165:GLN:CD	1:F:165:GLN:H	1.99	0.68
2:P:416:LEU:C	2:P:416:LEU:HD23	2.19	0.68
1:E:98:THR:OG1	1:E:102:GLY:N	2.24	0.68
2:N:449:TRP:CE3	5:N:550:3HP:H71	2.28	0.68
1:D:98:THR:HB	1:D:100:ASP:OD1	1.94	0.68
2:R:462:HIS:CE1	5:R:550:3HP:H4	2.26	0.68
1:E:163:GLN:HB3	1:E:165:GLN:NE2	2.08	0.68
1:E:143:LEU:HD23	1:E:143:LEU:C	2.18	0.68
1:A:78:GLU:OE1	6:A:239:HOH:O	2.12	0.67
1:A:176:GLU:HG3	1:A:180:LYS:O	1.94	0.67
2:N:361:HIS:CD2	2:N:361:HIS:H	2.11	0.67
1:C:165:GLN:NE2	1:C:165:GLN:H	1.92	0.67
2:M:449:TRP:CE3	5:M:550:3HP:H71	2.29	0.67
1:C:100:ASP:CG	1:C:101:ALA:H	2.02	0.67
1:C:67:PHE:CZ	1:C:94:ARG:HD2	2.30	0.67
1:C:163:GLN:HB3	1:C:165:GLN:HE22	1.60	0.67
2:R:497:ASN:HD22	2:R:499:GLU:N	1.93	0.66
2:N:497:ASN:ND2	2:N:499:GLU:H	1.94	0.66
2:R:497:ASN:HD22	2:R:497:ASN:C	2.02	0.66
2:M:361:HIS:H	2:M:361:HIS:CD2	2.11	0.66
1:D:100:ASP:CG	1:D:101:ALA:H	2.03	0.66
2:O:413:ASP:C	2:O:414:ARG:HD2	2.21	0.65
1:D:176:GLU:HA	1:D:180:LYS:O	1.97	0.65
2:P:360:ASP:OD2	2:P:428:ARG:HD2	1.97	0.65
1:B:176:GLU:HG3	1:B:180:LYS:O	1.97	0.65
5:O:550:3HP:O2	6:O:754:HOH:O	2.13	0.65
2:P:449:TRP:CE3	5:P:550:3HP:H71	2.32	0.65
1:E:180:LYS:HG3	1:E:181:THR:N	2.10	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:315:TRP:HZ2	2:Q:503:GLN:HE21	1.43	0.65
2:Q:497:ASN:C	2:Q:497:ASN:HD22	2.06	0.64
2:O:361:HIS:H	2:O:361:HIS:CD2	2.16	0.64
1:D:18:HIS:CE1	1:D:99:PHE:HE1	2.15	0.64
2:P:497:ASN:ND2	2:P:499:GLU:H	1.94	0.64
1:A:165:GLN:CD	1:A:165:GLN:H	2.04	0.64
1:B:41:LYS:HD2	1:B:88:ALA:HA	1.79	0.63
1:A:176:GLU:HA	1:A:180:LYS:O	1.97	0.63
2:Q:497:ASN:HD22	2:Q:499:GLU:H	1.43	0.63
1:A:163:GLN:CB	1:A:165:GLN:HE22	2.09	0.63
5:N:550:3HP:O2	6:N:747:HOH:O	2.16	0.63
2:R:315:TRP:HZ2	2:R:503:GLN:HE21	1.46	0.63
2:O:416:LEU:C	2:O:416:LEU:HD23	2.24	0.63
2:R:307:ARG:NE	2:R:536:GLU:OE2	2.31	0.63
2:R:497:ASN:HD22	2:R:498:PRO:N	1.96	0.63
1:A:18:HIS:CE1	1:A:99:PHE:HE1	2.17	0.62
1:A:41:LYS:HD2	1:A:88:ALA:HA	1.81	0.62
1:B:3:GLU:HA	1:B:3:GLU:OE1	2.00	0.62
2:O:413:ASP:O	2:O:414:ARG:HD2	1.99	0.62
1:F:18:HIS:CE1	1:F:99:PHE:HE1	2.18	0.62
2:R:400:TRP:HA	2:R:425:GLY:O	2.00	0.62
2:M:446:PRO:HD2	2:P:376:GLU:HG2	1.82	0.62
1:E:67:PHE:CZ	1:E:94:ARG:HD2	2.34	0.62
2:Q:413:ASP:O	2:Q:414:ARG:NH1	2.33	0.61
2:N:497:ASN:ND2	2:N:499:GLU:HB2	2.15	0.61
1:F:176:GLU:HG3	1:F:180:LYS:N	2.15	0.61
2:N:478:LEU:C	2:N:478:LEU:HD23	2.25	0.61
2:Q:376:GLU:O	2:Q:442:ILE:HA	2.00	0.61
2:O:434:ASP:HB3	2:O:436:TYR:CD2	2.35	0.61
1:E:100:ASP:CG	1:E:101:ALA:H	2.09	0.61
1:D:163:GLN:HB3	1:D:165:GLN:NE2	2.14	0.60
1:D:67:PHE:CZ	1:D:94:ARG:HD2	2.36	0.60
2:N:359:HIS:O	2:N:366:ASN:HB3	2.02	0.60
1:C:54:GLN:HG3	1:C:184:ARG:NH2	2.16	0.60
1:D:18:HIS:CE1	1:D:99:PHE:CE1	2.90	0.60
2:Q:462:HIS:HE1	5:Q:550:3HP:H4	1.66	0.60
2:M:478:LEU:HD23	2:M:478:LEU:C	2.27	0.60
1:C:98:THR:HB	1:C:100:ASP:OD1	2.01	0.60
2:O:364:LEU:HD22	2:O:440:ARG:HD3	1.82	0.60
2:N:361:HIS:H	2:N:361:HIS:HD2	1.48	0.60
2:M:462:HIS:HE1	5:M:550:3HP:H4	1.65	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:176:GLU:HG3	1:B:180:LYS:C	2.26	0.60
1:F:176:GLU:HA	1:F:180:LYS:O	2.02	0.60
2:P:356:PHE:HD1	2:P:428:ARG:HD3	1.67	0.60
1:D:67:PHE:HZ	1:D:94:ARG:HD2	1.66	0.59
2:Q:361:HIS:CG	4:Q:601:BME:H21	2.38	0.59
2:N:488:MET:CE	1:C:1:PRO:HG3	2.32	0.59
1:E:41:LYS:HE3	1:E:87:ASN:O	2.03	0.59
2:M:361:HIS:H	2:M:361:HIS:HD2	1.50	0.59
1:D:114:VAL:HG23	1:D:122:MET:HE3	1.85	0.59
1:D:168:GLU:HA	1:D:171:ILE:HD12	1.85	0.58
1:F:18:HIS:CE1	1:F:99:PHE:CE1	2.90	0.58
1:E:65:ASP:OD2	1:E:133:ARG:HD3	2.03	0.58
2:P:361:HIS:H	2:P:361:HIS:HD2	1.49	0.58
1:E:168:GLU:HA	1:E:171:ILE:CD1	2.32	0.58
1:D:78:GLU:HG2	2:P:301:PRO:HG3	1.86	0.58
1:F:114:VAL:HG23	1:F:122:MET:CE	2.33	0.58
2:M:497:ASN:HD22	2:M:497:ASN:C	2.11	0.58
1:B:131:PHE:CD2	1:B:138:HIS:HB3	2.38	0.58
2:M:360:ASP:OD2	2:M:428:ARG:HD2	2.03	0.58
1:A:163:GLN:HG3	1:C:61:HIS:ND1	2.19	0.58
1:C:100:ASP:OD1	1:C:100:ASP:N	2.36	0.57
2:O:390:LYS:HE2	6:O:727:HOH:O	2.04	0.57
2:Q:359:HIS:O	2:Q:366:ASN:HB3	2.04	0.57
2:Q:364:LEU:HD22	2:Q:440:ARG:HD3	1.86	0.57
2:M:390:LYS:HD3	6:M:639:HOH:O	2.04	0.57
2:P:497:ASN:ND2	2:P:499:GLU:HB2	2.19	0.57
2:R:364:LEU:HD22	2:R:440:ARG:HD3	1.85	0.57
2:N:462:HIS:HE1	5:N:550:3HP:H4	1.70	0.57
1:F:41:LYS:HD2	1:F:88:ALA:HA	1.85	0.57
1:F:67:PHE:HZ	1:F:94:ARG:HD2	1.69	0.57
1:C:41:LYS:HD2	1:C:88:ALA:HA	1.87	0.57
1:E:184:ARG:NH1	1:E:184:ARG:HG3	2.19	0.57
1:B:39:LEU:HD11	1:B:93:GLY:HA3	1.87	0.57
1:B:177:VAL:O	1:B:180:LYS:HB3	2.04	0.57
1:E:176:GLU:OE2	1:E:179:GLY:HA2	2.05	0.57
1:F:176:GLU:CG	1:F:179:GLY:HA2	2.33	0.57
1:D:19:ILE:HG22	1:D:26:ALA:HB1	1.86	0.56
2:R:497:ASN:ND2	2:R:499:GLU:HB2	2.21	0.56
2:O:356:PHE:CD1	2:O:428:ARG:HD3	2.40	0.56
2:O:390:LYS:HD3	6:O:645:HOH:O	2.05	0.56
2:P:390:LYS:HD3	6:P:649:HOH:O	2.04	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:497:ASN:HD22	2:M:498:PRO:N	2.04	0.56
1:C:163:GLN:HB3	1:C:165:GLN:HE21	1.68	0.56
1:D:143:LEU:C	1:D:143:LEU:HD23	2.31	0.56
2:R:536:GLU:HB2	6:R:1362:HOH:O	2.05	0.56
2:O:497:ASN:HD22	2:O:497:ASN:C	2.14	0.55
2:R:416:LEU:C	2:R:416:LEU:HD23	2.31	0.55
1:C:27:GLY:HA3	2:O:411:LYS:HE3	1.89	0.55
1:F:25:ALA:O	2:R:411:LYS:HE3	2.07	0.55
1:C:36:TRP:CG	1:C:37:ASN:H	2.25	0.55
2:O:364:LEU:HD22	2:O:440:ARG:CD	2.37	0.55
2:P:356:PHE:CD1	2:P:428:ARG:HD3	2.41	0.55
1:E:176:GLU:HG2	1:E:179:GLY:HA2	1.89	0.55
1:F:19:ILE:O	2:R:426:VAL:HG21	2.07	0.55
1:B:176:GLU:HA	1:B:180:LYS:O	2.06	0.55
1:C:177:VAL:O	1:C:180:LYS:HB3	2.07	0.55
2:P:383:ARG:NE	2:P:434:ASP:O	2.35	0.55
1:A:39:LEU:HD11	1:A:93:GLY:HA3	1.88	0.54
1:B:176:GLU:HG2	1:B:179:GLY:HA2	1.89	0.54
1:F:100:ASP:CG	1:F:101:ALA:N	2.66	0.54
1:E:176:GLU:HA	1:E:180:LYS:O	2.08	0.54
2:Q:416:LEU:HD23	2:Q:416:LEU:C	2.33	0.54
2:Q:497:ASN:HD22	2:Q:498:PRO:N	2.05	0.54
2:M:497:ASN:ND2	2:M:499:GLU:HB2	2.23	0.54
2:P:364:LEU:HD11	2:P:442:ILE:HG23	1.89	0.54
1:F:115:ASN:HA	1:F:121:PRO:HA	1.89	0.54
2:P:416:LEU:C	2:P:416:LEU:CD2	2.81	0.53
1:A:176:GLU:HG2	1:A:179:GLY:HA2	1.91	0.53
2:N:497:ASN:HD21	2:N:499:GLU:HB2	1.73	0.53
1:A:35:ILE:HD13	2:M:351:PHE:CE1	2.43	0.53
1:B:163:GLN:HB3	1:B:165:GLN:HE22	1.74	0.53
2:O:400:TRP:HA	2:O:425:GLY:O	2.09	0.53
1:D:51:LEU:O	1:D:105:THR:HA	2.08	0.53
2:P:434:ASP:HB3	2:P:436:TYR:CE2	2.43	0.53
1:F:98:THR:O	1:F:102:GLY:HA2	2.08	0.53
1:D:50:LEU:O	1:D:182:ALA:HA	2.09	0.53
2:O:462:HIS:HE1	5:O:550:3HP:H4	1.73	0.53
1:D:153:ALA:HB3	1:D:154:LYS:HE3	1.90	0.53
2:P:376:GLU:O	2:P:442:ILE:HA	2.08	0.53
1:A:18:HIS:CE1	1:A:99:PHE:CE1	2.97	0.53
1:C:143:LEU:HD23	1:C:143:LEU:C	2.34	0.52
2:O:410:HIS:CE1	2:O:412:ASN:H	2.27	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:67:PHE:CZ	1:F:94:ARG:HD2	2.44	0.52
2:O:449:TRP:CE3	5:O:550:3HP:H71	2.45	0.52
1:E:131:PHE:CD2	1:E:138:HIS:HB3	2.45	0.52
1:F:78:GLU:HB3	1:F:80:GLN:NE2	2.24	0.52
2:O:361:HIS:CG	4:O:601:BME:H21	2.44	0.52
2:M:508:LEU:HD23	2:P:488:MET:HE1	1.91	0.52
1:D:144:TYR:CE1	1:D:158:LEU:HD13	2.44	0.52
2:R:497:ASN:HD21	2:R:499:GLU:HB2	1.75	0.52
2:R:326:THR:HG22	2:R:330:ARG:HD2	1.92	0.52
1:E:50:LEU:HB2	1:E:180:LYS:HE3	1.91	0.52
1:F:78:GLU:HG2	2:R:301:PRO:CG	2.38	0.52
1:A:114:VAL:HG23	1:A:122:MET:CE	2.39	0.51
1:B:78:GLU:HG2	2:N:301:PRO:HG2	1.92	0.51
2:N:414:ARG:NE	2:N:414:ARG:HA	2.24	0.51
1:C:163:GLN:CB	1:C:165:GLN:HE22	2.24	0.51
2:M:497:ASN:ND2	2:M:499:GLU:N	2.50	0.51
2:O:410:HIS:ND1	2:O:412:ASN:N	2.52	0.51
2:Q:447:TYR:CE2	2:Q:460:HIS:CE1	2.98	0.51
1:E:110:LYS:NZ	1:E:147:ASP:OD1	2.39	0.51
1:C:44:ALA:O	1:C:48:HIS:NE2	2.30	0.51
2:P:410:HIS:CE1	2:P:412:ASN:H	2.28	0.51
1:A:65:ASP:OD2	1:A:133:ARG:HD3	2.10	0.51
2:O:434:ASP:HB3	2:O:436:TYR:CE2	2.46	0.51
1:D:163:GLN:HG3	1:F:61:HIS:ND1	2.25	0.51
2:N:376:GLU:O	2:N:442:ILE:HA	2.10	0.51
2:Q:505:ILE:O	2:Q:507:LYS:HE3	2.09	0.51
2:R:413:ASP:C	2:R:414:ARG:HD2	2.35	0.51
2:R:478:LEU:C	2:R:478:LEU:HD23	2.36	0.51
1:A:131:PHE:CD2	1:A:138:HIS:HB3	2.46	0.51
1:D:32:ASP:HB2	6:P:733:HOH:O	2.10	0.51
2:P:478:LEU:C	2:P:478:LEU:HD23	2.36	0.51
1:A:44:ALA:O	1:A:48:HIS:NE2	2.30	0.51
2:M:390:LYS:CD	6:M:639:HOH:O	2.59	0.51
1:B:190:GLN:HG3	2:N:333:ARG:HG2	1.92	0.50
1:C:131:PHE:O	1:C:132:ALA:HB2	2.11	0.50
1:E:114:VAL:HG23	1:E:122:MET:HE3	1.92	0.50
2:M:497:ASN:HD21	2:M:499:GLU:HB2	1.77	0.50
1:D:36:TRP:CG	1:D:37:ASN:H	2.30	0.50
1:B:165:GLN:H	1:B:165:GLN:CD	2.07	0.50
1:C:176:GLU:HG3	1:C:180:LYS:O	2.12	0.50
2:O:359:HIS:O	2:O:366:ASN:HB3	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:176:GLU:HG2	1:A:179:GLY:CA	2.41	0.50
2:M:364:LEU:HD22	2:M:440:ARG:HD3	1.93	0.50
1:B:100:ASP:CG	1:B:101:ALA:H	2.19	0.50
1:C:176:GLU:HG2	1:C:179:GLY:HA2	1.94	0.50
1:D:176:GLU:CG	1:D:179:GLY:HA2	2.41	0.50
1:E:19:ILE:HG22	1:E:26:ALA:HB1	1.94	0.50
2:M:356:PHE:CD1	2:M:428:ARG:HD3	2.47	0.50
2:R:536:GLU:HG3	6:R:1254:HOH:O	2.11	0.50
2:M:364:LEU:HD22	2:M:440:ARG:CD	2.42	0.50
2:O:360:ASP:HB3	2:O:428:ARG:HG3	1.94	0.50
1:E:176:GLU:HG3	1:E:180:LYS:O	2.11	0.50
1:F:36:TRP:CG	1:F:37:ASN:H	2.30	0.50
2:P:359:HIS:O	2:P:366:ASN:HB3	2.11	0.49
1:C:50:LEU:O	1:C:182:ALA:HA	2.12	0.49
2:Q:315:TRP:HZ2	2:Q:503:GLN:NE2	2.09	0.49
2:M:462:HIS:CE1	5:M:550:3HP:H4	2.45	0.49
2:N:326:THR:HG22	2:N:330:ARG:HD2	1.93	0.49
2:O:381:ALA:O	2:O:522:ARG:HA	2.13	0.49
2:Q:405:GLY:HA3	6:Q:1044:HOH:O	2.12	0.49
2:O:505:ILE:O	2:O:507:LYS:HE3	2.13	0.49
1:A:61:HIS:ND1	1:B:163:GLN:HG3	2.28	0.49
1:A:176:GLU:HG3	1:A:180:LYS:N	2.27	0.49
2:P:313:ARG:O	2:P:318:LYS:CE	2.61	0.49
1:F:147:ASP:OD2	1:F:174:ARG:HD2	2.13	0.49
2:R:449:TRP:CE3	5:R:550:3HP:H71	2.48	0.49
2:M:356:PHE:HD1	2:M:428:ARG:HD3	1.77	0.49
1:D:163:GLN:HB3	1:D:165:GLN:HE22	1.77	0.49
2:O:356:PHE:HD1	2:O:428:ARG:CD	2.25	0.49
2:M:363:LEU:HD23	2:M:425:GLY:HA2	1.95	0.49
1:E:131:PHE:CE2	1:E:138:HIS:HB3	2.48	0.49
2:P:411:LYS:O	2:P:414:ARG:NH1	2.46	0.48
2:R:489:CYS:HA	2:R:490:PRO:HD3	1.70	0.48
2:N:434:ASP:HB3	2:N:436:TYR:CE2	2.47	0.48
1:D:64:ARG:HD3	1:D:99:PHE:O	2.13	0.48
1:D:176:GLU:HG3	1:D:180:LYS:N	2.28	0.48
1:D:191:GLY:O	1:D:194:GLU:HB2	2.12	0.48
1:F:31:ARG:NH1	2:R:428:ARG:HG2	2.29	0.48
1:C:98:THR:O	1:C:102:GLY:HA2	2.13	0.48
1:C:114:VAL:HG23	1:C:122:MET:HE3	1.93	0.48
2:Q:364:LEU:HB2	2:Q:440:ARG:HD3	1.95	0.48
2:O:361:HIS:CD2	6:O:706:HOH:O	2.66	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:O:497:ASN:ND2	2:O:499:GLU:HB2	2.28	0.48
1:E:188:ARG:HG3	1:E:188:ARG:HH11	1.79	0.48
2:Q:407:ARG:HG2	2:Q:407:ARG:HH11	1.78	0.48
1:E:98:THR:O	1:E:102:GLY:HA2	2.14	0.48
2:Q:484:PRO:O	2:Q:487:PRO:HD2	2.14	0.48
2:O:383:ARG:HG3	2:O:436:TYR:CE1	2.49	0.48
1:F:84:ASN:OD1	1:F:86:GLU:HB2	2.12	0.48
2:M:486:ILE:HB	2:M:487:PRO:HD3	1.96	0.48
1:D:52:LEU:C	1:D:52:LEU:HD22	2.38	0.48
2:P:437:TYR:CD1	2:P:437:TYR:C	2.92	0.48
1:E:98:THR:HG1	1:E:101:ALA:HB3	1.79	0.48
2:Q:438:SER:O	4:Q:601:BME:H22	2.13	0.48
2:R:416:LEU:HD23	2:R:417:ALA:N	2.29	0.48
1:A:114:VAL:CG2	1:A:122:MET:HE3	2.43	0.47
1:C:39:LEU:HD11	1:C:93:GLY:HA3	1.95	0.47
1:D:1:PRO:HG2	2:R:488:MET:HE2	1.96	0.47
2:Q:447:TYR:CE2	2:Q:460:HIS:HE1	2.31	0.47
2:O:376:GLU:O	2:O:442:ILE:HA	2.13	0.47
2:O:473:LYS:HD2	2:O:474:LEU:N	2.30	0.47
1:E:168:GLU:CA	1:E:171:ILE:HD12	2.42	0.47
2:P:307:ARG:HG2	2:P:533:THR:HG22	1.97	0.47
1:E:53:GLY:O	1:E:103:GLU:HG3	2.14	0.47
2:Q:364:LEU:HD22	2:Q:440:ARG:CD	2.43	0.47
2:M:473:LYS:HD2	2:M:474:LEU:N	2.29	0.47
1:C:134:GLY:HA3	2:O:326:THR:HG22	1.95	0.47
2:R:392:VAL:HG12	2:R:395:THR:HB	1.95	0.47
1:E:8:THR:HA	1:E:9:PRO:HD3	1.77	0.47
2:Q:400:TRP:HA	2:Q:425:GLY:O	2.14	0.47
1:F:74:ASP:HB2	6:F:1293:HOH:O	2.14	0.47
2:Q:361:HIS:ND1	4:Q:601:BME:H21	2.30	0.47
1:F:143:LEU:C	1:F:143:LEU:HD23	2.39	0.47
1:A:25:ALA:C	1:A:27:GLY:H	2.23	0.47
1:E:41:LYS:NZ	1:E:86:GLU:O	2.46	0.47
2:Q:392:VAL:HG12	2:Q:395:THR:HB	1.97	0.47
2:O:356:PHE:CE1	2:O:428:ARG:HD3	2.50	0.47
1:D:100:ASP:CG	1:D:101:ALA:N	2.72	0.47
1:F:41:LYS:O	1:F:48:HIS:HE1	1.98	0.47
1:F:64:ARG:HD3	1:F:99:PHE:O	2.15	0.47
1:B:35:ILE:HG21	1:B:92:PHE:HE2	1.80	0.46
1:F:98:THR:HG1	1:F:101:ALA:HB3	1.80	0.46
1:F:110:LYS:NZ	1:F:147:ASP:OD1	2.43	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:131:PHE:CD2	2:M:475:ILE:HD12	2.50	0.46
1:A:180:LYS:HG2	1:A:181:THR:N	2.29	0.46
1:E:36:TRP:CG	1:E:37:ASN:H	2.34	0.46
2:M:495:ILE:CG2	2:M:500:ALA:HB3	2.46	0.46
1:B:114:VAL:HG23	1:B:122:MET:HE3	1.97	0.46
2:O:399:MET:HA	2:O:462:HIS:O	2.16	0.46
1:D:61:HIS:CD2	1:E:165:GLN:OE1	2.69	0.46
2:P:489:CYS:HA	2:P:490:PRO:HD3	1.77	0.46
1:E:176:GLU:HG2	1:E:179:GLY:CA	2.45	0.46
2:Q:307:ARG:HG2	2:Q:533:THR:HG22	1.97	0.46
2:Q:361:HIS:CD2	2:Q:361:HIS:N	2.72	0.46
2:R:307:ARG:HG2	2:R:533:THR:HG22	1.98	0.46
2:R:497:ASN:ND2	2:R:497:ASN:C	2.72	0.46
1:A:176:GLU:OE2	1:A:179:GLY:CA	2.55	0.46
1:A:176:GLU:HG3	1:A:180:LYS:C	2.40	0.46
1:F:168:GLU:HA	1:F:171:ILE:HD12	1.97	0.46
1:B:36:TRP:CG	1:B:37:ASN:H	2.33	0.46
1:D:78:GLU:HG2	2:P:301:PRO:CG	2.45	0.46
2:Q:478:LEU:C	2:Q:478:LEU:HD23	2.41	0.46
1:A:165:GLN:NE2	1:C:61:HIS:NE2	2.64	0.46
2:M:416:LEU:C	2:M:416:LEU:HD23	2.41	0.46
2:N:400:TRP:HA	2:N:425:GLY:O	2.16	0.46
2:O:410:HIS:CE1	2:O:412:ASN:HB2	2.50	0.46
2:M:307:ARG:HG2	2:M:533:THR:HG22	1.98	0.46
1:D:134:GLY:HA3	2:P:326:THR:HG22	1.96	0.46
1:E:13:ALA:HB2	2:Q:475:ILE:HG21	1.97	0.46
2:R:491:ILE:CD1	5:R:550:3HP:H6	2.46	0.46
1:B:98:THR:O	1:B:102:GLY:HA2	2.16	0.46
1:D:36:TRP:CE3	1:D:36:TRP:HA	2.50	0.46
2:Q:326:THR:HG22	2:Q:330:ARG:HD2	1.98	0.46
1:B:50:LEU:O	1:B:182:ALA:HA	2.16	0.46
1:B:114:VAL:HG22	6:B:319:HOH:O	2.16	0.46
1:C:52:LEU:C	1:C:52:LEU:HD22	2.41	0.46
2:Q:451:ASN:HB3	2:Q:455:ASP:OD2	2.16	0.46
2:M:385:VAL:O	2:M:526:VAL:HA	2.17	0.45
2:N:497:ASN:HD22	2:N:497:ASN:C	2.23	0.45
2:M:359:HIS:O	2:M:366:ASN:HB3	2.16	0.45
1:B:132:ALA:HB3	1:B:135:ILE:HD12	1.98	0.45
1:B:143:LEU:C	1:B:143:LEU:HD23	2.41	0.45
1:C:100:ASP:CG	1:C:101:ALA:N	2.71	0.45
2:Q:399:MET:HA	2:Q:462:HIS:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:522:ARG:HH11	2:M:522:ARG:HD3	1.49	0.45
1:E:123:ALA:HB3	1:E:144:TYR:CE2	2.51	0.45
2:Q:390:LYS:HA	2:Q:391:PRO:HD3	1.85	0.45
2:M:489:CYS:HA	2:M:490:PRO:HD3	1.79	0.45
2:M:495:ILE:HG21	2:M:500:ALA:HB3	1.98	0.45
1:D:31:ARG:NH2	6:D:932:HOH:O	2.35	0.45
2:P:362:ASP:OD1	2:P:440:ARG:HD2	2.16	0.45
1:E:70:VAL:HG12	1:E:128:ILE:HG12	1.99	0.45
1:C:165:GLN:H	1:C:165:GLN:HE21	1.64	0.45
2:Q:408:TYR:HE1	2:Q:447:TYR:CZ	2.34	0.45
1:F:125:HIS:HA	1:F:143:LEU:O	2.16	0.45
1:A:24:GLU:HB2	6:A:262:HOH:O	2.17	0.45
2:Q:420:ASP:HA	2:Q:421:PRO:HD2	1.78	0.45
1:F:100:ASP:OD1	1:F:100:ASP:N	2.32	0.45
2:P:400:TRP:HA	2:P:425:GLY:O	2.16	0.45
1:E:41:LYS:CD	1:E:88:ALA:HA	2.30	0.45
2:Q:489:CYS:HA	2:Q:490:PRO:HD3	1.82	0.45
1:B:36:TRP:HA	1:B:36:TRP:CE3	2.52	0.45
2:N:392:VAL:HG12	2:N:395:THR:HB	1.98	0.45
1:D:35:ILE:HG21	1:D:92:PHE:HE2	1.82	0.45
1:E:61:HIS:ND1	1:F:163:GLN:HG3	2.31	0.45
1:F:48:HIS:HA	1:F:109:VAL:HG12	1.98	0.45
2:M:497:ASN:HD22	2:M:499:GLU:N	2.00	0.45
1:B:19:ILE:HD11	2:N:408:TYR:HD1	1.82	0.45
2:P:497:ASN:HA	2:P:498:PRO:HD2	1.74	0.45
2:N:362:ASP:OD1	2:N:440:ARG:HD3	2.17	0.44
2:R:359:HIS:O	2:R:366:ASN:HB3	2.17	0.44
1:E:50:LEU:O	1:E:182:ALA:HA	2.18	0.44
2:M:354:LEU:HD23	2:M:356:PHE:CE1	2.52	0.44
2:M:448:PRO:HB2	2:P:516:MET:HA	1.99	0.44
1:F:174:ARG:HE	1:F:181:THR:HG23	1.81	0.44
2:M:307:ARG:NE	2:M:536:GLU:OE2	2.51	0.44
1:C:48:HIS:HA	1:C:109:VAL:HG12	2.00	0.44
1:B:140:HIS:O	1:B:197:PHE:HA	2.17	0.44
1:E:51:LEU:HB2	1:E:106:LEU:HB3	1.98	0.44
2:N:489:CYS:HA	2:N:490:PRO:HD3	1.87	0.44
1:F:8:THR:HA	1:F:9:PRO:HD3	1.87	0.44
2:M:360:ASP:HB3	2:M:428:ARG:HG3	1.99	0.44
1:B:61:HIS:ND1	1:C:163:GLN:HG3	2.32	0.44
2:P:360:ASP:HB3	2:P:428:ARG:HG3	1.99	0.44
2:O:410:HIS:ND1	2:O:411:LYS:N	2.66	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:P:462:HIS:CE1	5:P:550:3HP:H4	2.45	0.43
1:E:44:ALA:O	1:E:48:HIS:NE2	2.32	0.43
1:A:19:ILE:HG22	1:A:26:ALA:HB1	1.99	0.43
1:A:19:ILE:HG21	2:M:410:HIS:HB2	2.00	0.43
1:A:78:GLU:HG2	2:M:301:PRO:CB	2.48	0.43
1:E:114:VAL:HG23	1:E:122:MET:CE	2.48	0.43
2:Q:362:ASP:OD1	2:Q:440:ARG:HD2	2.18	0.43
1:B:131:PHE:CE2	1:B:138:HIS:HB3	2.52	0.43
1:D:48:HIS:HA	1:D:109:VAL:HG12	1.99	0.43
2:P:315:TRP:HZ2	2:P:503:GLN:HE21	1.66	0.43
1:E:165:GLN:H	1:E:165:GLN:HE21	0.62	0.43
1:A:132:ALA:HB3	1:A:135:ILE:HD12	1.98	0.43
2:P:318:LYS:HD3	2:P:318:LYS:HA	1.72	0.43
2:Q:497:ASN:ND2	2:Q:499:GLU:N	2.62	0.43
1:C:54:GLN:HG3	1:C:184:ARG:HH22	1.83	0.43
2:P:307:ARG:CG	2:P:533:THR:HG22	2.48	0.43
2:P:486:ILE:HB	2:P:487:PRO:HD3	2.00	0.43
1:E:177:VAL:O	1:E:180:LYS:HB3	2.18	0.43
2:R:399:MET:HA	2:R:462:HIS:O	2.19	0.43
1:C:51:LEU:HD12	1:C:106:LEU:HD23	2.01	0.43
1:C:65:ASP:OD2	1:C:133:ARG:HD3	2.18	0.43
1:E:18:HIS:CE1	1:E:99:PHE:HE1	2.37	0.43
2:M:505:ILE:O	2:M:507:LYS:HE3	2.19	0.43
2:O:318:LYS:HD3	2:O:318:LYS:HA	1.88	0.43
1:D:28:ASN:HB3	1:D:29:PRO:HD2	2.01	0.43
1:F:116:ASN:OD1	1:F:116:ASN:C	2.61	0.43
2:P:447:TYR:HA	2:P:448:PRO:HD3	1.88	0.43
1:F:163:GLN:HA	1:F:164:PRO:HD2	1.78	0.43
2:R:447:TYR:HB2	2:R:448:PRO:HD2	2.00	0.43
2:R:497:ASN:HA	2:R:498:PRO:HD3	1.83	0.43
2:O:362:ASP:OD1	2:O:364:LEU:HB2	2.19	0.43
2:O:437:TYR:CD1	2:O:437:TYR:C	2.96	0.43
1:F:177:VAL:HG12	1:F:178:ASP:OD2	2.19	0.43
2:M:310:ILE:HG13	2:O:453:PRO:HB2	2.00	0.43
2:M:400:TRP:HA	2:M:425:GLY:O	2.18	0.43
1:C:3:GLU:OE1	1:C:3:GLU:HA	2.18	0.43
2:O:489:CYS:HA	2:O:490:PRO:HD3	1.74	0.43
2:R:486:ILE:HB	2:R:487:PRO:HD3	2.01	0.43
1:A:54:GLN:HG2	1:A:102:GLY:O	2.18	0.42
2:M:315:TRP:HZ2	2:M:503:GLN:NE2	2.16	0.42
1:B:120:VAL:HA	1:B:121:PRO:HD3	1.86	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:19:ILE:HD13	1:F:19:ILE:HG21	1.75	0.42
2:R:383:ARG:HD2	2:R:436:TYR:CZ	2.54	0.42
1:C:131:PHE:CD2	1:C:138:HIS:HB3	2.54	0.42
1:D:52:LEU:HA	1:D:104:TRP:O	2.19	0.42
2:Q:362:ASP:OD1	2:Q:440:ARG:CD	2.66	0.42
2:Q:495:ILE:CG2	2:Q:500:ALA:HB3	2.49	0.42
2:P:302:ALA:HB1	2:P:347:THR:CG2	2.49	0.42
1:F:78:GLU:HB3	1:F:80:GLN:HE21	1.84	0.42
2:N:497:ASN:HD22	2:N:499:GLU:N	2.10	0.42
2:P:414:ARG:NE	2:P:414:ARG:HA	2.34	0.42
2:R:405:GLY:HA3	6:R:1285:HOH:O	2.20	0.42
2:N:361:HIS:CG	4:N:601:BME:H21	2.55	0.42
2:R:505:ILE:HG22	2:R:507:LYS:CE	2.37	0.42
2:O:361:HIS:HD2	6:O:706:HOH:O	2.02	0.42
2:R:437:TYR:CD1	2:R:437:TYR:C	2.98	0.42
1:A:19:ILE:CG2	2:M:410:HIS:HB2	2.49	0.42
1:B:123:ALA:HB3	1:B:144:TYR:CE2	2.54	0.42
1:C:18:HIS:HA	1:C:22:ALA:HB3	2.02	0.42
2:O:304:ASP:HB2	2:O:343:ILE:HB	2.02	0.42
1:F:176:GLU:OE2	1:F:179:GLY:C	2.62	0.42
2:R:516:MET:HE3	2:R:516:MET:HB3	1.66	0.42
1:A:78:GLU:HG2	2:M:301:PRO:HG3	2.02	0.42
1:A:100:ASP:OD1	1:A:100:ASP:N	2.44	0.42
1:C:52:LEU:CD2	1:C:184:ARG:NH1	2.82	0.42
2:O:361:HIS:H	2:O:361:HIS:HD2	1.62	0.42
1:D:98:THR:OG1	1:D:101:ALA:HB3	2.20	0.42
1:E:51:LEU:HD11	1:E:126:ILE:HD12	2.02	0.42
1:E:52:LEU:HA	1:E:104:TRP:O	2.20	0.42
2:R:415:TYR:CE1	2:R:416:LEU:HD22	2.54	0.42
2:R:432:ASP:OD1	2:R:432:ASP:C	2.63	0.42
5:M:550:3HP:C6	6:M:741:HOH:O	2.68	0.41
1:C:184:ARG:NH1	1:C:184:ARG:HG3	2.35	0.41
1:D:15:PRO:HB3	1:D:133:ARG:HD3	2.01	0.41
1:F:17:VAL:CG2	1:F:21:LEU:HD12	2.49	0.41
2:R:497:ASN:HD21	2:R:499:GLU:CB	2.33	0.41
1:B:20:GLY:HA2	2:N:426:VAL:HG13	2.02	0.41
1:C:161:ILE:HD13	1:C:196:VAL:HG21	2.01	0.41
2:O:497:ASN:HD21	2:O:499:GLU:HB2	1.85	0.41
1:D:100:ASP:OD1	1:D:100:ASP:N	2.40	0.41
1:E:98:THR:OG1	1:E:101:ALA:HB3	2.20	0.41
2:Q:407:ARG:HG2	2:Q:407:ARG:NH1	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:517:ASP:OD1	2:Q:517:ASP:C	2.64	0.41
1:F:25:ALA:C	1:F:27:GLY:N	2.78	0.41
1:F:147:ASP:OD2	1:F:174:ARG:NH1	2.53	0.41
2:R:362:ASP:OD1	2:R:440:ARG:HD2	2.20	0.41
2:R:385:VAL:O	2:R:526:VAL:HA	2.19	0.41
2:R:390:LYS:HA	2:R:391:PRO:HD3	1.86	0.41
1:A:25:ALA:C	1:A:27:GLY:N	2.77	0.41
1:D:153:ALA:CB	1:D:154:LYS:HE3	2.50	0.41
2:N:372:LEU:HA	2:N:373:PRO:HD3	1.93	0.41
1:C:165:GLN:H	1:C:165:GLN:CD	2.24	0.41
2:O:497:ASN:HD22	2:O:498:PRO:N	2.18	0.41
2:Q:447:TYR:CZ	2:Q:460:HIS:HE1	2.39	0.41
2:N:516:MET:HB3	2:N:516:MET:HE3	1.67	0.41
2:P:410:HIS:ND1	2:P:411:LYS:N	2.68	0.41
1:E:20:GLY:HA2	2:Q:426:VAL:HG13	2.02	0.41
1:E:35:ILE:HG21	1:E:92:PHE:HE2	1.85	0.41
1:B:98:THR:OG1	1:B:102:GLY:N	2.53	0.41
1:D:25:ALA:C	1:D:27:GLY:N	2.78	0.41
1:D:120:VAL:HA	1:D:121:PRO:HD3	1.89	0.41
2:Q:372:LEU:HA	2:Q:373:PRO:HD3	1.94	0.41
2:M:497:ASN:ND2	2:M:497:ASN:C	2.78	0.41
2:M:497:ASN:HA	2:M:498:PRO:HD2	1.81	0.41
1:B:70:VAL:HG21	1:B:106:LEU:HD21	2.02	0.41
1:B:124:PRO:HA	6:B:287:HOH:O	2.20	0.41
1:D:70:VAL:HG21	1:D:106:LEU:HD21	2.02	0.41
2:P:434:ASP:HB3	2:P:436:TYR:CD2	2.55	0.41
2:Q:462:HIS:CE1	5:Q:550:3HP:H4	2.50	0.41
2:R:364:LEU:HB2	2:R:440:ARG:HD3	2.02	0.41
1:A:4:LEU:HB3	2:M:387:GLN:HB3	2.02	0.41
2:Q:447:TYR:OH	2:Q:460:HIS:CE1	2.73	0.41
1:F:50:LEU:O	1:F:182:ALA:HA	2.20	0.41
2:R:361:HIS:CG	4:R:601:BME:H21	2.56	0.41
2:R:522:ARG:HH11	2:R:522:ARG:HD3	1.57	0.41
2:N:373:PRO:HB3	2:N:423:PHE:HB2	2.03	0.41
2:N:399:MET:HA	2:N:462:HIS:O	2.21	0.41
1:E:18:HIS:CE1	1:E:99:PHE:CE1	3.09	0.41
2:M:376:GLU:HG2	2:P:446:PRO:HD2	2.02	0.40
1:A:50:LEU:O	1:A:182:ALA:HA	2.21	0.40
2:N:364:LEU:HD22	2:N:440:ARG:HG2	2.03	0.40
2:N:489:CYS:HB3	2:N:492:VAL:HB	2.03	0.40
1:C:114:VAL:HG23	1:C:122:MET:CE	2.50	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:39:LEU:CD1	1:E:106:LEU:HD11	2.52	0.40
1:F:177:VAL:N	1:F:180:LYS:O	2.46	0.40
1:A:85:LEU:HD23	1:A:85:LEU:HA	1.91	0.40
2:M:350:ASN:C	2:M:350:ASN:OD1	2.64	0.40
1:B:92:PHE:CD1	2:N:349:PRO:HG3	2.56	0.40
2:P:392:VAL:HG12	2:P:395:THR:HB	2.03	0.40
2:P:497:ASN:HD21	2:P:499:GLU:HB2	1.86	0.40
1:C:52:LEU:HA	1:C:104:TRP:O	2.21	0.40
2:O:356:PHE:HD1	2:O:428:ARG:HD2	1.85	0.40
2:N:534:HIS:CE1	2:P:512:ASN:O	2.75	0.40
2:Q:497:ASN:ND2	2:Q:497:ASN:C	2.77	0.40
1:F:48:HIS:CD2	1:F:109:VAL:HG12	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	198/200 (99%)	193 (98%)	5 (2%)	0	100	100
1	B	198/200 (99%)	190 (96%)	8 (4%)	0	100	100
1	C	198/200 (99%)	192 (97%)	6 (3%)	0	100	100
1	D	198/200 (99%)	190 (96%)	8 (4%)	0	100	100
1	E	198/200 (99%)	187 (94%)	11 (6%)	0	100	100
1	F	198/200 (99%)	191 (96%)	7 (4%)	0	100	100
2	M	229/238 (96%)	220 (96%)	9 (4%)	0	100	100
2	N	229/238 (96%)	222 (97%)	7 (3%)	0	100	100
2	O	229/238 (96%)	222 (97%)	7 (3%)	0	100	100
2	P	229/238 (96%)	223 (97%)	6 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	Q	229/238 (96%)	220 (96%)	9 (4%)	0	100	100
2	R	229/238 (96%)	218 (95%)	11 (5%)	0	100	100
All	All	2562/2628 (98%)	2468 (96%)	94 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	162/163 (99%)	153 (94%)	9 (6%)	19	12
1	B	162/163 (99%)	151 (93%)	11 (7%)	14	8
1	C	162/163 (99%)	155 (96%)	7 (4%)	26	20
1	D	162/163 (99%)	155 (96%)	7 (4%)	26	20
1	E	162/163 (99%)	154 (95%)	8 (5%)	22	15
1	F	162/163 (99%)	157 (97%)	5 (3%)	35	30
2	M	196/202 (97%)	185 (94%)	11 (6%)	19	12
2	N	196/202 (97%)	188 (96%)	8 (4%)	27	21
2	O	196/202 (97%)	188 (96%)	8 (4%)	27	21
2	P	196/202 (97%)	187 (95%)	9 (5%)	24	17
2	Q	196/202 (97%)	186 (95%)	10 (5%)	21	14
2	R	196/202 (97%)	189 (96%)	7 (4%)	31	25
All	All	2148/2190 (98%)	2048 (95%)	100 (5%)	23	16

All (100) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	LEU
1	A	19	ILE
1	A	38	ARG
1	A	52	LEU

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Mol	Chain	Res	Type
1	A	94	ARG
1	A	106	LEU
1	A	133	ARG
1	A	145	PHE
1	A	165	GLN
2	M	301	PRO
2	M	372	LEU
2	M	395	THR
2	M	416	LEU
2	M	428	ARG
2	M	434	ASP
2	M	473	LYS
2	M	478	LEU
2	M	497	ASN
2	M	507	LYS
2	M	534	HIS
1	B	4	LEU
1	B	19	ILE
1	B	32	ASP
1	B	52	LEU
1	B	106	LEU
1	B	133	ARG
1	B	141	THR
1	B	143	LEU
1	B	158	LEU
1	B	165	GLN
1	B	176	GLU
2	N	364	LEU
2	N	372	LEU
2	N	395	THR
2	N	416	LEU
2	N	442	ILE
2	N	473	LYS
2	N	478	LEU
2	N	507	LYS
1	C	4	LEU
1	C	19	ILE
1	C	38	ARG
1	C	52	LEU
1	C	94	ARG
1	C	150	GLN
1	C	165	GLN

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Mol	Chain	Res	Type
2	O	372	LEU
2	O	393	PRO
2	O	395	THR
2	O	416	LEU
2	O	428	ARG
2	O	434	ASP
2	O	442	ILE
2	O	507	LYS
1	D	4	LEU
1	D	19	ILE
1	D	52	LEU
1	D	106	LEU
1	D	154	LYS
1	D	165	GLN
1	D	180	LYS
2	P	364	LEU
2	P	372	LEU
2	P	395	THR
2	P	414	ARG
2	P	416	LEU
2	P	434	ASP
2	P	478	LEU
2	P	503	GLN
2	P	534	HIS
1	E	4	LEU
1	E	19	ILE
1	E	24	GLU
1	E	52	LEU
1	E	78	GLU
1	E	150	GLN
1	E	165	GLN
1	E	180	LYS
2	Q	364	LEU
2	Q	372	LEU
2	Q	395	THR
2	Q	416	LEU
2	Q	428	ARG
2	Q	434	ASP
2	Q	442	ILE
2	Q	478	LEU
2	Q	497	ASN
2	Q	507	LYS

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Mol	Chain	Res	Type
1	F	4	LEU
1	F	19	ILE
1	F	49	ILE
1	F	52	LEU
1	F	165	GLN
2	R	372	LEU
2	R	395	THR
2	R	416	LEU
2	R	428	ARG
2	R	434	ASP
2	R	478	LEU
2	R	497	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	28	ASN
1	A	165	GLN
2	M	305	ASN
2	M	359	HIS
2	M	361	HIS
2	M	412	ASN
2	M	497	ASN
2	M	530	GLN
1	B	11	GLN
1	B	80	GLN
1	B	140	HIS
1	B	165	GLN
2	N	359	HIS
2	N	361	HIS
2	N	412	ASN
2	N	497	ASN
1	C	11	GLN
1	C	165	GLN
2	O	361	HIS
2	O	412	ASN
2	O	497	ASN
2	O	503	GLN
2	O	530	GLN
1	D	163	GLN
1	D	165	GLN
2	P	334	GLN

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Mol	Chain	Res	Type
2	P	361	HIS
2	P	412	ASN
2	P	497	ASN
2	P	514	ASN
1	E	165	GLN
2	Q	305	ASN
2	Q	361	HIS
2	Q	394	ASN
2	Q	412	ASN
2	Q	422	ASN
2	Q	497	ASN
2	Q	503	GLN
2	Q	530	GLN
1	F	11	GLN
1	F	59	ASN
1	F	140	HIS
1	F	165	GLN
2	R	361	HIS
2	R	394	ASN
2	R	497	ASN
2	R	503	GLN

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 18 ligands modelled in this entry, 6 are monoatomic - leaving 12 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
4	BME	N	601	2	3,3,3	0.12	0	2,2,2	0.49	0
5	3HP	R	550	3	11,11,11	1.03	0	14,14,14	1.94	4 (28%)
4	BME	O	601	2	3,3,3	0.45	0	2,2,2	0.50	0
5	3HP	N	550	3	11,11,11	1.18	1 (9%)	14,14,14	2.15	5 (35%)
4	BME	M	601	2	3,3,3	0.39	0	2,2,2	0.33	0
4	BME	P	601	2	3,3,3	0.58	0	2,2,2	0.99	0
5	3HP	M	550	3	11,11,11	1.32	2 (18%)	14,14,14	1.92	5 (35%)
5	3HP	Q	550	3	11,11,11	1.28	1 (9%)	14,14,14	1.81	5 (35%)
5	3HP	P	550	3	11,11,11	1.28	2 (18%)	14,14,14	1.52	4 (28%)
5	3HP	O	550	3	11,11,11	1.12	0	14,14,14	1.65	6 (42%)
4	BME	R	601	2	3,3,3	0.40	0	2,2,2	0.16	0
4	BME	Q	601	2	3,3,3	0.86	0	2,2,2	1.10	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	BME	N	601	2	-	0/1/1/1	-
5	3HP	R	550	3	-	0/4/4/4	0/1/1/1
4	BME	O	601	2	-	0/1/1/1	-
5	3HP	N	550	3	-	0/4/4/4	0/1/1/1
4	BME	M	601	2	-	0/1/1/1	-
4	BME	P	601	2	-	0/1/1/1	-
5	3HP	M	550	3	-	0/4/4/4	0/1/1/1
5	3HP	Q	550	3	-	0/4/4/4	0/1/1/1
5	3HP	P	550	3	-	0/4/4/4	0/1/1/1
5	3HP	O	550	3	-	0/4/4/4	0/1/1/1
4	BME	R	601	2	-	0/1/1/1	-
4	BME	Q	601	2	-	0/1/1/1	-

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	P	550	3HP	O1-C8	2.48	1.30	1.22

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	P	550	3HP	C5-C6	2.46	1.43	1.38
5	M	550	3HP	C5-C6	2.43	1.43	1.38
5	Q	550	3HP	C5-C6	2.36	1.42	1.38
5	N	550	3HP	C2-C3	2.09	1.42	1.39
5	M	550	3HP	O1-C8	2.07	1.28	1.22

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	N	550	3HP	C7-C1-C6	-4.48	114.29	120.89
5	R	550	3HP	C7-C1-C6	-4.43	114.37	120.89
5	R	550	3HP	C7-C1-C2	3.82	126.18	120.38
5	M	550	3HP	C7-C1-C6	-3.78	115.33	120.89
5	N	550	3HP	C7-C1-C2	3.66	125.94	120.38
5	M	550	3HP	O1-C8-C7	-3.57	112.17	122.94
5	Q	550	3HP	C7-C1-C6	-3.53	115.69	120.89
5	M	550	3HP	C7-C1-C2	3.42	125.57	120.38
5	Q	550	3HP	C7-C1-C2	3.41	125.55	120.38
5	N	550	3HP	O1-C8-C7	-3.37	112.79	122.94
5	P	550	3HP	C7-C1-C6	-2.90	116.62	120.89
5	O	550	3HP	C7-C1-C6	-2.83	116.72	120.89
5	O	550	3HP	O1-C8-C7	-2.79	114.53	122.94
5	P	550	3HP	C7-C1-C2	2.77	124.59	120.38
5	R	550	3HP	O1-C8-C7	-2.71	114.77	122.94
5	P	550	3HP	O1-C8-C7	-2.70	114.78	122.94
5	N	550	3HP	C3-C2-C1	-2.43	118.58	120.35
5	Q	550	3HP	O1-C8-C7	-2.36	115.84	122.94
5	Q	550	3HP	C4-C3-C2	2.31	122.72	120.19
5	R	550	3HP	C3-C2-C1	-2.27	118.69	120.35
5	O	550	3HP	C4-C3-C2	2.26	122.67	120.19
5	O	550	3HP	O2-C8-C7	2.24	122.53	113.98
5	Q	550	3HP	C3-C2-C1	-2.20	118.75	120.35
5	M	550	3HP	C3-C2-C1	-2.16	118.78	120.35
5	N	550	3HP	O2-C8-C7	2.15	122.19	113.98
5	P	550	3HP	O2-C8-C7	2.10	121.99	113.98
5	O	550	3HP	C7-C1-C2	2.10	123.56	120.38
5	O	550	3HP	C3-C2-C1	-2.09	118.83	120.35
5	M	550	3HP	O2-C8-C7	2.03	121.72	113.98

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

10 monomers are involved in 26 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	N	601	BME	1	0
5	R	550	3HP	4	0
4	O	601	BME	1	0
5	N	550	3HP	3	0
5	M	550	3HP	4	0
5	Q	550	3HP	3	0
5	P	550	3HP	3	0
5	O	550	3HP	3	0
4	R	601	BME	1	0
4	Q	601	BME	3	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

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.