



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 01:38 AM UTC

PDB ID : 3KLG / pdb_00003klg
Title : Crystal structure of AZT-resistant HIV-1 Reverse Transcriptase crosslinked to pre-translocation AZTMP-Terminated DNA (COMPLEX N)
Authors : Tu, X.; Sarafianos, S.G.; Arnold, E.
Deposited on : 2009-11-07
Resolution : 3.65 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)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

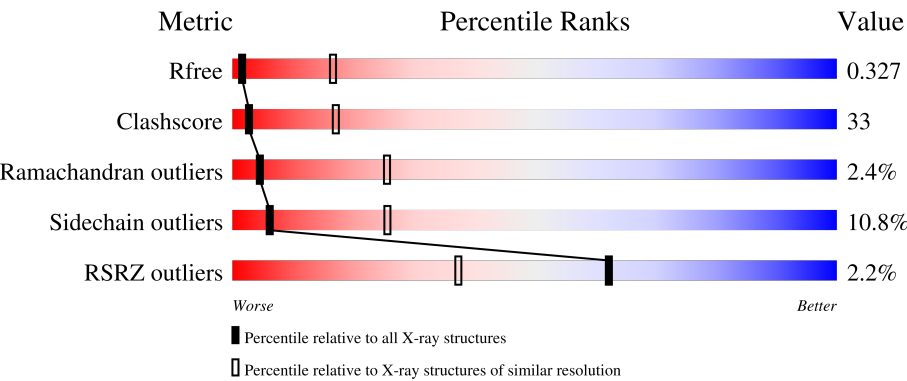
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.65 Å.

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




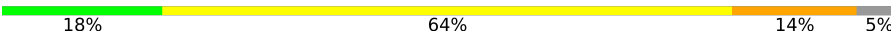

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1062 (3.78-3.54)
Clashscore	190562	1009 (3.76-3.56)
Ramachandran outliers	187476	1054 (3.78-3.54)
Sidechain outliers	187428	1052 (3.78-3.54)
RSRZ outliers	180081	1061 (3.78-3.54)

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 $\leq 5\%$. 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	562	<div><div></div><div><div>44%</div><div>46%</div><div>8%</div><div>..</div></div></div>
1	E	562	<div><div>4%</div><div><div>48%</div><div>41%</div><div>9%</div><div>.</div></div></div>
2	B	437	<div><div></div><div><div>39%</div><div>44%</div><div>11%</div><div>5%</div></div></div>
2	F	437	<div><div>2%</div><div><div>49%</div><div>36%</div><div>8%</div><div>5%</div></div></div>
3	C	27	<div><div>4%</div><div><div>11%</div><div>70%</div><div>15%</div><div>.</div></div></div>

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Mol	Chain	Length	Quality of chain
3	G	27	
4	D	22	
4	H	22	

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
4	ATM	H	823	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 17640 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 Reverse transcriptase/ribonuclease H.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	554	Total	C	N	O	S	0	0	0
			4513	2922	752	832	7			
1	E	554	Total	C	N	O	S	0	0	0
			4513	2922	752	832	7			

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	expression tag	UNP P03366
A	0	VAL	-	expression tag	UNP P03366
A	41	LEU	MET	engineered mutation	UNP P03366
A	67	ASN	ASP	engineered mutation	UNP P03366
A	70	ARG	LYS	engineered mutation	UNP P03366
A	215	TYR	THR	engineered mutation	UNP P03366
A	219	GLN	LYS	engineered mutation	UNP P03366
A	258	CYS	GLN	engineered mutation	UNP P03366
A	280	SER	CYS	engineered mutation	UNP P03366
A	559	VAL	ILE	SEE REMARK 999	UNP P03366
E	-1	MET	-	expression tag	UNP P03366
E	0	VAL	-	expression tag	UNP P03366
E	41	LEU	MET	engineered mutation	UNP P03366
E	67	ASN	ASP	engineered mutation	UNP P03366
E	70	ARG	LYS	engineered mutation	UNP P03366
E	215	TYR	THR	engineered mutation	UNP P03366
E	219	GLN	LYS	engineered mutation	UNP P03366
E	258	CYS	GLN	engineered mutation	UNP P03366
E	280	SER	CYS	engineered mutation	UNP P03366
E	559	VAL	ILE	SEE REMARK 999	UNP P03366

- Molecule 2 is a protein called p51 RT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	413	Total 3405	C 2215	N 564	O 620	S 6	0	0	0
2	F	413	Total 3405	C 2215	N 564	O 620	S 6	0	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	280	SER	CYS	engineered mutation	UNP P03366
B	429	GLY	-	expression tag	UNP P03366
B	430	GLY	-	expression tag	UNP P03366
B	431	HIS	-	expression tag	UNP P03366
B	432	HIS	-	expression tag	UNP P03366
B	433	HIS	-	expression tag	UNP P03366
B	434	HIS	-	expression tag	UNP P03366
B	435	HIS	-	expression tag	UNP P03366
B	436	HIS	-	expression tag	UNP P03366
B	437	HIS	-	expression tag	UNP P03366
F	280	SER	CYS	engineered mutation	UNP P03366
F	429	GLY	-	expression tag	UNP P03366
F	430	GLY	-	expression tag	UNP P03366
F	431	HIS	-	expression tag	UNP P03366
F	432	HIS	-	expression tag	UNP P03366
F	433	HIS	-	expression tag	UNP P03366
F	434	HIS	-	expression tag	UNP P03366
F	435	HIS	-	expression tag	UNP P03366
F	436	HIS	-	expression tag	UNP P03366
F	437	HIS	-	expression tag	UNP P03366

- Molecule 3 is a DNA chain called DNA (5'-D(*AP*T*GP*CP*AP*TP*GP*GP*CP*GP*C
P*CP*CP*GP*AP*AP*CP*AP*GP*GP*GP*AP*CP*TP*GP*TP*G)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	23	Total 473	C 223	N 95	O 133	P 22	0	0	0
3	G	23	Total 473	C 223	N 95	O 133	P 22	0	0	0

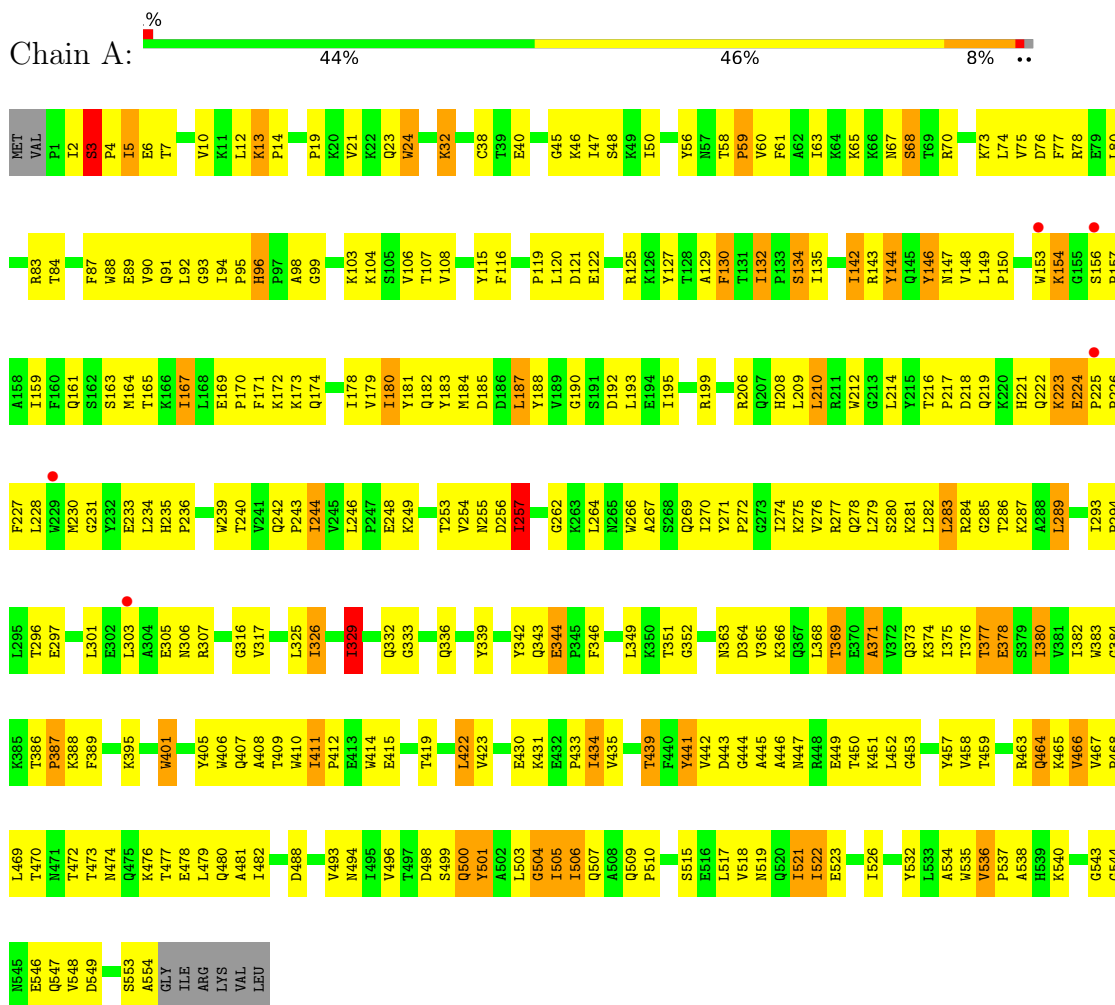
- Molecule 4 is a DNA chain called DNA (5'-D(*A*CP*AP*GP*TP*CP*CP*CP*TP*GP*T
P*TP*CP*GP*GP*(MRG)P*CP*GP*CP*CP*AP*(ATM))-3').

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
4	D	21	Total	C	N	O	P	S	0	0	0
			429	205	77	126	20	1			
4	H	21	Total	C	N	O	P	S	0	0	0
			429	205	77	126	20	1			

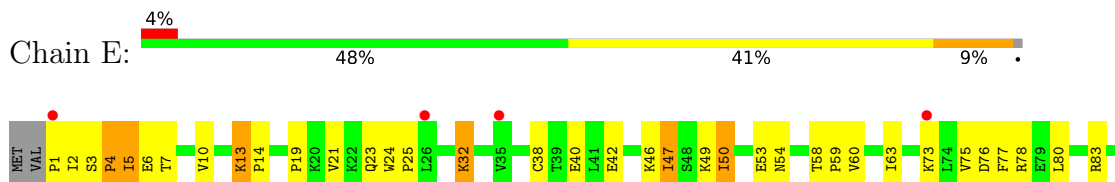
3 Residue-property plots

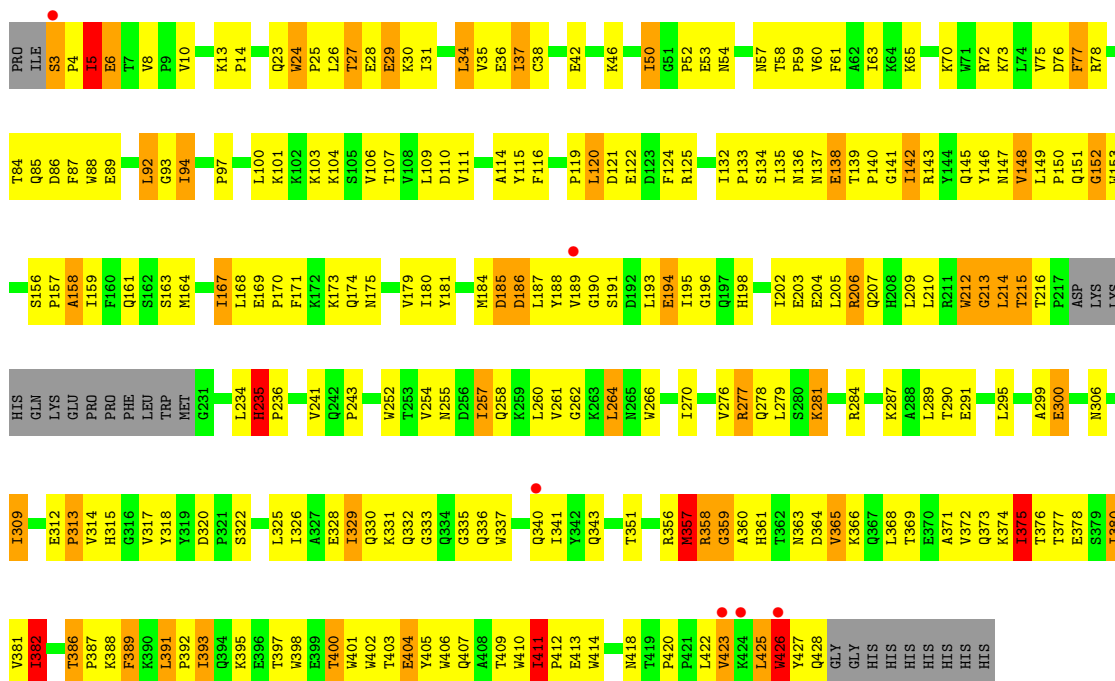
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

• Molecule 1: Reverse transcriptase/ribonuclease H



• Molecule 1: Reverse transcriptase/ribonuclease H





DA	C803	A804	G805	T806	C807	C808	C809	T810	G816	G817	C818	G819	C820	C821	A822	T823
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4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	79.12Å 154.40Å 277.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.97 – 3.65 39.97 – 3.65	Depositor EDS
% Data completeness (in resolution range)	85.0 (39.97-3.65) 83.3 (39.97-3.65)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.47 (at 3.66Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.312 , 0.350 0.301 , 0.327	Depositor DCC
R_{free} test set	652 reflections (2.02%)	wwPDB-VP
Wilson B-factor (Å ²)	120.0	Xtriage
Anisotropy	0.483	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 80.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.26$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	17640	wwPDB-VP
Average B, all atoms (Å ²)	120.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.43% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ATM, MRG

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	0.68	0/4632	1.06	37/6295 (0.6%)
1	E	0.56	0/4632	1.00	31/6295 (0.5%)
2	B	0.78	1/3502 (0.0%)	1.17	36/4760 (0.8%)
2	F	0.54	0/3502	0.98	14/4760 (0.3%)
3	C	0.46	0/532	0.93	1/820 (0.1%)
3	G	0.37	0/532	0.88	3/820 (0.4%)
4	D	0.44	0/424	0.89	1/649 (0.2%)
4	H	0.39	0/424	0.87	2/649 (0.3%)
All	All	0.62	1/18180 (0.0%)	1.03	125/25048 (0.5%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	393	ILE	CA-CB	-5.05	1.50	1.55

All (125) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	538	ALA	N-CA-C	10.05	122.18	111.03
2	B	34	LEU	N-CA-C	9.40	123.26	111.69
1	A	332	GLN	N-CA-C	8.94	124.10	112.12
1	E	341	ILE	CB-CA-C	-8.72	100.88	111.08
2	B	279	LEU	N-CA-C	8.68	121.69	111.71
2	B	3	SER	CA-C-N	-8.57	111.59	120.85
2	B	3	SER	C-N-CA	-8.57	111.59	120.85
2	B	389	PHE	N-CA-C	8.54	122.92	108.23
2	F	279	LEU	N-CA-C	8.26	120.29	111.28
2	F	389	PHE	N-CA-C	7.71	121.49	108.23
1	A	344	GLU	N-CA-C	-7.41	100.76	110.39
2	B	152	GLY	N-CA-C	7.39	124.94	113.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	391	LEU	N-CA-C	7.31	121.56	108.47
1	E	96	HIS	CA-C-N	6.83	126.51	119.82
1	E	96	HIS	C-N-CA	6.83	126.51	119.82
1	A	549	ASP	N-CA-C	-6.79	103.34	111.69
2	F	353	LYS	N-CA-CB	-6.57	99.84	111.08
2	B	357	MET	N-CA-C	-6.53	105.61	112.93
1	A	58	THR	CA-C-N	6.51	127.98	119.84
1	A	58	THR	C-N-CA	6.51	127.98	119.84
2	B	34	LEU	CB-CA-C	-6.48	98.84	110.70
2	B	5	ILE	N-CA-C	6.47	122.79	109.34
2	B	386	THR	CA-C-N	6.46	126.97	119.99
2	B	386	THR	C-N-CA	6.46	126.97	119.99
2	B	213	GLY	N-CA-C	6.44	127.03	114.16
1	A	509	GLN	CA-C-N	6.39	126.36	120.03
1	A	509	GLN	C-N-CA	6.39	126.36	120.03
2	F	138	GLU	N-CA-C	-6.36	104.35	111.28
2	F	360	ALA	N-CA-CB	-6.34	106.95	114.17
1	E	58	THR	CA-C-N	6.27	127.68	119.84
1	E	58	THR	C-N-CA	6.27	127.68	119.84
1	E	332	GLN	N-CA-C	6.27	118.82	108.48
1	A	257	ILE	N-CA-C	-6.24	104.97	111.58
4	D	822	DA	C2'-C3'-O3'	-6.22	102.16	111.50
2	B	138	GLU	N-CA-C	-6.22	104.50	111.28
1	E	341	ILE	N-CA-C	6.19	117.70	108.54
2	B	380	ILE	CB-CA-C	-6.17	103.91	111.87
1	E	539	HIS	N-CA-C	-6.13	96.05	107.71
1	A	547	GLN	N-CA-C	6.08	119.89	112.23
1	A	500	GLN	N-CA-C	-6.07	104.74	111.36
1	A	184	MET	CB-CA-C	-5.99	109.66	116.54
2	F	380	ILE	CB-CA-C	-5.97	103.23	111.65
2	B	235	HIS	CA-C-N	5.95	125.63	119.56
2	B	235	HIS	C-N-CA	5.95	125.63	119.56
1	E	333	GLY	N-CA-C	-5.93	105.68	112.79
1	A	332	GLN	CB-CA-C	-5.91	101.44	111.26
2	B	411	ILE	CA-C-N	5.90	126.36	120.52
2	B	411	ILE	C-N-CA	5.90	126.36	120.52
2	B	120	LEU	N-CA-C	5.89	118.80	110.50
4	H	822	DA	C2'-C3'-O3'	-5.88	102.69	111.50
2	B	214	LEU	N-CA-C	5.87	118.29	108.02
1	E	529	GLU	N-CA-C	5.86	118.61	111.82
1	E	13	LYS	CA-C-N	5.82	127.12	119.84
1	E	13	LYS	C-N-CA	5.82	127.12	119.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	92	LEU	N-CA-C	5.81	120.75	111.81
2	B	24	TRP	N-CA-C	5.79	116.95	109.72
2	B	359	GLY	N-CA-C	5.78	121.07	112.41
1	E	509	GLN	CA-C-N	5.75	125.72	120.03
1	E	509	GLN	C-N-CA	5.75	125.72	120.03
1	A	98	ALA	N-CA-C	-5.74	106.28	113.28
2	F	375	ILE	N-CA-C	-5.70	106.26	111.67
1	A	371	ALA	N-CA-C	-5.69	106.29	113.18
1	A	154	LYS	N-CA-C	5.69	117.56	111.36
2	B	315	HIS	CB-CA-C	5.66	121.37	109.65
1	A	244	ILE	N-CA-C	5.64	116.33	108.89
1	E	499	SER	N-CA-C	5.63	117.58	108.41
1	A	519	ASN	N-CA-C	-5.62	105.69	112.54
2	B	93	GLY	N-CA-C	5.61	126.48	113.18
1	E	387	PRO	N-CA-C	5.54	118.98	111.22
2	F	235	HIS	CA-C-N	5.53	125.20	119.56
2	F	235	HIS	C-N-CA	5.53	125.20	119.56
1	A	441	TYR	N-CA-C	-5.52	98.76	108.20
1	E	244	ILE	N-CA-C	5.52	116.19	109.30
1	A	387	PRO	N-CA-C	5.48	118.89	111.22
2	F	416	PHE	N-CA-C	5.48	117.32	108.34
2	F	127	TYR	N-CA-C	5.47	119.82	113.20
1	E	118	VAL	CA-C-N	5.47	125.74	119.83
1	E	118	VAL	C-N-CA	5.47	125.74	119.83
1	E	439	THR	N-CA-C	5.46	118.07	109.39
2	B	382	ILE	N-CA-C	5.45	115.65	110.42
1	A	289	LEU	N-CA-C	5.43	117.90	111.33
3	G	706	DT	C2'-C3'-O3'	-5.42	103.37	111.50
2	F	320	ASP	CA-C-N	5.41	125.49	119.87
2	F	320	ASP	C-N-CA	5.41	125.49	119.87
1	A	378	GLU	N-CA-C	-5.39	106.44	114.64
1	A	96	HIS	CA-C-N	5.39	126.58	119.84
1	A	96	HIS	C-N-CA	5.39	126.58	119.84
1	E	289	LEU	N-CA-C	5.38	117.84	111.33
1	A	439	THR	N-CA-C	5.38	117.94	109.39
1	A	499	SER	N-CA-C	5.36	117.15	108.41
1	A	369	THR	N-CA-C	-5.36	105.13	110.97
1	E	538	ALA	CB-CA-C	-5.36	102.65	110.95
1	A	3	SER	CA-C-N	-5.35	113.15	119.84
1	A	3	SER	C-N-CA	-5.35	113.15	119.84
1	A	130	PHE	CB-CA-C	5.33	119.82	109.33
3	C	707	DG	C2'-C3'-O3'	-5.30	103.55	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	411	ILE	CA-C-N	5.29	126.45	119.84
1	E	411	ILE	C-N-CA	5.29	126.45	119.84
1	A	13	LYS	CA-C-N	5.28	126.44	119.84
1	A	13	LYS	C-N-CA	5.28	126.44	119.84
2	B	426	TRP	N-CA-C	5.27	119.20	112.87
2	B	241	VAL	N-CA-C	5.26	116.37	109.21
1	E	379	SER	N-CA-C	-5.25	106.72	113.23
1	E	519	ASN	N-CA-C	-5.25	105.97	112.38
2	B	24	TRP	CA-C-N	5.25	126.40	119.84
2	B	24	TRP	C-N-CA	5.25	126.40	119.84
1	A	329	ILE	CB-CA-C	-5.24	102.51	110.95
2	B	375	ILE	N-CA-C	-5.22	106.71	111.67
1	E	371	ALA	N-CA-C	-5.22	106.42	112.89
1	A	374	LYS	N-CA-C	-5.21	106.08	112.90
1	E	389	PHE	N-CA-C	5.20	118.04	109.72
1	E	378	GLU	N-CA-C	-5.13	106.84	114.64
1	A	510	PRO	N-CA-C	5.13	119.10	111.41
3	G	705	DA	C2'-C3'-O3'	-5.11	103.84	111.50
2	B	86	ASP	CB-CA-C	5.09	119.25	110.79
2	B	193	LEU	N-CA-C	5.09	117.37	110.35
1	E	184	MET	CB-CA-C	-5.09	110.73	116.63
1	A	24	TRP	N-CA-C	5.09	117.67	110.24
4	H	820	DC	C2'-C3'-O3'	-5.09	103.87	111.50
3	G	710	DG	C2'-C3'-O3'	-5.07	103.89	111.50
2	B	164	MET	N-CA-C	5.07	117.54	111.71
1	A	532	TYR	N-CA-C	-5.04	101.42	109.23
1	A	389	PHE	N-CA-C	5.04	117.78	109.72
2	B	158	ALA	N-CA-C	-5.02	107.00	113.23
2	F	359	GLY	N-CA-C	5.01	118.17	111.20

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	4513	0	4568	361	0
1	E	4513	0	4568	297	0
2	B	3405	0	3437	254	0
2	F	3405	0	3437	212	0
3	C	473	0	257	37	0
3	G	473	0	257	32	0
4	D	429	0	243	36	0
4	H	429	0	243	35	0
All	All	17640	0	17010	1156	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 33.

All (1156) 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:153:TRP:CD1	1:A:154:LYS:H	1.50	1.30
1:E:142:ILE:H	1:E:142:ILE:HD13	1.01	1.16
1:A:24:TRP:HA	3:C:703:DG:H21	1.09	1.10
2:B:5:ILE:HG22	2:B:6:GLU:N	1.53	1.10
2:B:5:ILE:HG22	2:B:6:GLU:H	0.94	1.08
1:E:540:LYS:O	1:E:542:ILE:HD12	1.53	1.08
1:E:49:LYS:HB3	1:E:144:TYR:HE1	1.15	1.08
1:A:142:ILE:HB	1:A:144:TYR:CE2	1.90	1.07
1:E:49:LYS:HB3	1:E:144:TYR:CE1	1.90	1.07
1:A:458:VAL:HA	1:A:463:ARG:O	1.52	1.06
1:E:24:TRP:HA	3:G:703:DG:N2	1.70	1.05
1:A:142:ILE:HD12	1:A:142:ILE:H	1.20	1.04
2:B:402:TRP:HH2	2:B:411:ILE:HD13	1.19	1.03
1:E:406:TRP:CE2	2:F:420:PRO:HB3	1.93	1.03
1:A:142:ILE:HG21	1:A:144:TYR:CZ	1.93	1.03
2:B:34:LEU:O	2:B:37:ILE:HG22	1.57	1.03
1:E:24:TRP:HA	3:G:703:DG:H21	0.91	1.03
2:B:54:ASN:HB3	2:B:143:ARG:NH2	1.75	1.02
1:E:443:ASP:O	1:E:481:ALA:HB2	1.60	1.02
2:B:109:LEU:HB2	2:B:187:LEU:HB3	1.38	1.00
2:F:34:LEU:O	2:F:37:ILE:HG22	1.60	1.00
1:E:172:LYS:HE2	1:E:180:ILE:HG21	1.02	1.00
1:E:24:TRP:CA	3:G:703:DG:H21	1.75	0.99
1:A:441:TYR:CE2	1:A:544:GLY:HA3	1.97	0.98
2:B:5:ILE:CG2	2:B:6:GLU:N	2.26	0.98
2:B:5:ILE:CG2	2:B:6:GLU:H	1.74	0.98

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:67:ASN:O	1:A:68:SER:HB2	1.59	0.97
1:A:153:TRP:CD1	1:A:154:LYS:N	2.32	0.97
1:A:60:VAL:HG12	1:A:75:VAL:HG13	1.46	0.96
1:A:143:ARG:O	1:A:143:ARG:HG2	1.63	0.96
2:B:295:LEU:HD23	2:B:300:GLU:HG2	1.48	0.96
1:E:172:LYS:CE	1:E:180:ILE:HG21	1.96	0.95
2:F:54:ASN:HB3	2:F:143:ARG:NH2	1.82	0.95
1:A:144:TYR:H	1:A:144:TYR:HD2	1.14	0.94
1:E:142:ILE:H	1:E:142:ILE:CD1	1.78	0.94
2:B:402:TRP:CH2	2:B:411:ILE:HD13	2.01	0.93
1:A:142:ILE:CG2	1:A:144:TYR:CZ	2.51	0.93
2:B:357:MET:O	2:B:358:ARG:HB2	1.64	0.93
1:E:153:TRP:CD1	1:E:154:LYS:H	1.87	0.93
1:A:144:TYR:N	1:A:144:TYR:CD2	2.34	0.92
1:A:24:TRP:HA	3:C:703:DG:N2	1.83	0.92
1:A:199:ARG:HH22	1:A:223:LYS:CE	1.83	0.92
1:E:172:LYS:HE2	1:E:180:ILE:CG2	1.97	0.91
1:A:142:ILE:HB	1:A:144:TYR:HE2	1.28	0.90
1:A:23:GLN:HE21	1:A:60:VAL:H	1.18	0.90
1:A:209:LEU:HD22	1:A:214:LEU:HD22	1.51	0.90
2:B:122:GLU:HA	2:B:125:ARG:HD2	1.51	0.90
2:B:125:ARG:HH12	2:B:147:ASN:HD22	1.17	0.90
2:F:163:SER:O	2:F:167:ILE:HG13	1.72	0.89
1:E:49:LYS:HA	1:E:144:TYR:HD1	1.35	0.89
1:E:143:ARG:O	1:E:143:ARG:HG2	1.70	0.89
1:E:142:ILE:HD13	1:E:142:ILE:N	1.87	0.89
1:A:384:GLY:HA3	2:B:28:GLU:H	1.38	0.89
1:A:453:GLY:O	1:A:469:LEU:HB2	1.72	0.89
2:F:378:GLU:O	2:F:382:ILE:HG13	1.73	0.89
2:F:122:GLU:HA	2:F:125:ARG:HD2	1.53	0.89
1:A:342:TYR:HD2	1:A:344:GLU:O	1.56	0.87
2:F:380:ILE:HA	2:F:384:GLY:HA2	1.56	0.86
1:A:75:VAL:HG21	1:A:146:TYR:HE1	1.38	0.86
1:E:384:GLY:O	2:F:27:THR:HB	1.76	0.86
2:F:295:LEU:HD23	2:F:300:GLU:HG2	1.56	0.85
1:A:144:TYR:HD2	1:A:144:TYR:N	1.70	0.85
1:A:199:ARG:HH22	1:A:223:LYS:HE2	1.42	0.85
2:B:88:TRP:HE3	2:B:88:TRP:O	1.59	0.85
1:E:371:ALA:O	1:E:375:ILE:HD12	1.75	0.84
1:A:75:VAL:HG21	1:A:146:TYR:CE1	2.13	0.84
1:E:49:LYS:CA	1:E:144:TYR:HD1	1.90	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:125:ARG:HH12	2:B:147:ASN:ND2	1.76	0.83
2:B:398:TRP:HZ3	2:B:414:TRP:CZ2	1.96	0.83
2:B:210:LEU:HD13	2:B:215:THR:HG23	1.61	0.83
2:F:163:SER:O	2:F:167:ILE:CG1	2.26	0.83
1:A:91:GLN:HB2	1:A:161:GLN:OE1	1.77	0.83
2:B:103:LYS:HG3	2:B:191:SER:O	1.78	0.83
1:A:255:ASN:HB2	1:A:289:LEU:HB2	1.59	0.83
1:A:142:ILE:CB	1:A:144:TYR:CE2	2.63	0.82
2:F:382:ILE:HG22	2:F:383:TRP:CE2	2.14	0.82
2:F:97:PRO:HG2	2:F:100:LEU:HB2	1.61	0.82
1:E:5:ILE:HG12	1:E:167:ILE:HD11	1.60	0.82
1:A:443:ASP:OD1	1:A:444:GLY:N	2.13	0.82
1:E:10:VAL:HG21	1:E:153:TRP:HH2	1.45	0.81
1:A:254:VAL:O	1:A:257:ILE:HG22	1.79	0.81
1:E:23:GLN:HE21	1:E:60:VAL:H	1.26	0.81
1:A:76:ASP:OD1	3:C:705:DA:H4'	1.81	0.81
1:E:373:GLN:OE1	2:F:397:THR:HG22	1.81	0.81
1:E:163:SER:O	1:E:167:ILE:HD12	1.81	0.80
1:A:469:LEU:HD13	1:A:472:THR:HG21	1.64	0.80
2:B:378:GLU:O	2:B:382:ILE:HG13	1.82	0.80
2:F:183:TYR:CE2	2:F:380:ILE:HD12	2.17	0.80
1:A:24:TRP:CA	3:C:703:DG:H21	1.92	0.80
1:A:153:TRP:CG	1:A:154:LYS:H	2.00	0.80
1:E:540:LYS:O	1:E:542:ILE:CD1	2.30	0.79
1:E:443:ASP:OD1	1:E:444:GLY:N	2.15	0.79
2:F:180:ILE:CG2	2:F:187:LEU:HD11	2.12	0.79
1:A:406:TRP:CE2	2:B:420:PRO:HB3	2.17	0.79
1:A:469:LEU:CD1	1:A:472:THR:HG21	2.12	0.79
2:F:378:GLU:O	2:F:382:ILE:CG1	2.31	0.78
1:E:439:THR:HG22	1:E:441:TYR:HE1	1.48	0.78
1:A:464:GLN:HB2	1:E:466:VAL:HG13	1.64	0.78
2:B:402:TRP:HH2	2:B:411:ILE:CD1	1.96	0.78
1:E:255:ASN:HB2	1:E:289:LEU:HB2	1.66	0.78
2:B:185:ASP:N	2:B:185:ASP:OD1	2.17	0.78
2:F:421:PRO:CB	2:F:425:LEU:HD13	2.13	0.78
3:G:705:DA:C2'	3:G:706:DT:H5'	2.13	0.78
1:A:142:ILE:CG2	1:A:144:TYR:CE2	2.67	0.78
2:F:125:ARG:HH12	2:F:147:ASN:HD22	1.32	0.78
2:F:421:PRO:HB3	2:F:425:LEU:HD13	1.65	0.77
1:A:406:TRP:HD1	1:A:407:GLN:HE21	1.31	0.77
2:B:329:ILE:N	2:B:329:ILE:HD12	1.98	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:49:LYS:HA	1:E:144:TYR:CD1	2.18	0.77
2:F:180:ILE:HG21	2:F:187:LEU:HD11	1.67	0.77
2:F:382:ILE:CG2	2:F:383:TRP:CE2	2.67	0.77
2:B:75:VAL:HG11	2:B:77:PHE:CE2	2.20	0.76
2:B:262:GLY:HA3	2:B:423:VAL:HG11	1.67	0.76
2:F:8:VAL:HG21	2:F:159:ILE:HD13	1.65	0.76
3:C:705:DA:H2''	3:C:706:DT:H5''	1.68	0.76
1:A:10:VAL:HG21	1:A:153:TRP:HH2	1.50	0.76
1:A:277:ARG:HB2	1:A:336:GLN:HE21	1.51	0.76
2:F:402:TRP:HH2	2:F:411:ILE:CD1	1.98	0.76
2:B:270:ILE:HG22	2:B:314:VAL:HG21	1.68	0.76
1:E:254:VAL:O	1:E:257:ILE:HG22	1.84	0.76
1:E:92:LEU:CD1	2:F:133:PRO:HB3	2.15	0.76
2:F:329:ILE:N	2:F:329:ILE:HD12	1.99	0.76
1:A:264:LEU:HD21	1:A:306:ASN:HD22	1.49	0.75
2:B:270:ILE:HG22	2:B:314:VAL:CG2	2.15	0.75
3:G:705:DA:H2''	3:G:706:DT:C5'	2.17	0.75
1:A:2:ILE:HD11	1:A:46:LYS:HA	1.68	0.75
2:F:421:PRO:HB3	2:F:425:LEU:CD1	2.16	0.75
1:A:142:ILE:HD12	1:A:142:ILE:N	2.01	0.75
1:A:373:GLN:OE1	2:B:397:THR:HG22	1.86	0.75
1:A:2:ILE:O	1:A:3:SER:OG	2.05	0.75
1:A:246:LEU:HD11	1:A:307:ARG:HG3	1.68	0.75
1:E:439:THR:CG2	1:E:441:TYR:HE1	2.00	0.75
1:E:466:VAL:HG22	1:E:466:VAL:O	1.87	0.75
3:G:705:DA:H2'	3:G:706:DT:H5'	1.69	0.75
1:A:87:PHE:HZ	1:A:153:TRP:CZ2	2.05	0.75
1:A:115:TYR:CE2	4:D:823:ATM:H1'	2.21	0.75
2:B:185:ASP:C	2:B:186:ASP:OD1	2.30	0.74
2:B:132:ILE:O	2:B:132:ILE:HG13	1.87	0.74
2:B:54:ASN:HB3	2:B:143:ARG:HH22	1.48	0.74
2:B:332:GLN:OE1	2:B:425:LEU:HD13	1.87	0.74
1:E:145:GLN:O	1:E:145:GLN:HG3	1.87	0.74
1:A:142:ILE:HG21	1:A:144:TYR:OH	1.88	0.74
1:E:439:THR:HG22	1:E:441:TYR:CE1	2.22	0.74
1:E:49:LYS:CA	1:E:144:TYR:CD1	2.71	0.74
1:A:5:ILE:HG12	1:A:167:ILE:HD11	1.70	0.74
1:A:76:ASP:OD1	1:A:78:ARG:HD3	1.87	0.74
3:C:705:DA:H2''	3:C:706:DT:C5'	2.16	0.74
2:B:97:PRO:HG2	2:B:100:LEU:HB2	1.69	0.73
1:E:293:ILE:HD12	1:E:294:PRO:HD2	1.70	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:148:VAL:HG22	1:E:149:LEU:H	1.54	0.73
2:F:183:TYR:CE2	2:F:380:ILE:CD1	2.71	0.73
3:C:705:DA:C2'	3:C:706:DT:H5'	2.18	0.73
1:A:384:GLY:O	2:B:27:THR:HG22	1.88	0.73
1:A:384:GLY:C	2:B:27:THR:HG22	2.13	0.73
3:C:707:DG:H2''	3:C:708:DG:H5'	1.71	0.73
3:G:709:DC:H2''	3:G:710:DG:H5'	1.69	0.73
1:A:224:GLU:HB3	1:A:226:PRO:HD2	1.70	0.73
1:E:38:CYS:SG	1:E:132:ILE:HD12	2.29	0.73
1:A:115:TYR:CD2	4:D:823:ATM:H2'	2.23	0.72
1:E:156:SER:OG	1:E:157:PRO:HD3	1.90	0.72
1:E:406:TRP:CD2	2:F:420:PRO:HB3	2.24	0.72
2:F:380:ILE:CA	2:F:384:GLY:HA2	2.20	0.72
1:A:441:TYR:CD2	1:A:544:GLY:HA3	2.24	0.72
2:F:125:ARG:HH12	2:F:147:ASN:ND2	1.87	0.72
1:E:406:TRP:HD1	1:E:407:GLN:HE21	1.35	0.72
2:B:180:ILE:HD12	2:B:180:ILE:O	1.90	0.72
3:C:709:DC:H2''	3:C:710:DG:H5'	1.71	0.72
1:A:326:ILE:HD13	1:A:326:ILE:N	2.05	0.71
1:E:76:ASP:OD1	3:G:705:DA:H4'	1.90	0.71
2:B:377:THR:O	2:B:381:VAL:HG23	1.90	0.71
1:A:464:GLN:CB	1:E:466:VAL:HG13	2.20	0.71
1:E:458:VAL:HA	1:E:463:ARG:O	1.91	0.71
1:A:106:VAL:HG12	1:A:190:GLY:HA3	1.71	0.71
2:B:23:GLN:HE21	2:B:26:LEU:HD11	1.55	0.71
1:E:443:ASP:O	1:E:481:ALA:CB	2.37	0.71
1:A:153:TRP:CG	1:A:154:LYS:N	2.58	0.71
1:A:384:GLY:HA3	2:B:28:GLU:N	2.05	0.71
2:B:185:ASP:O	2:B:186:ASP:CG	2.34	0.70
3:C:705:DA:H2'	3:C:706:DT:H5'	1.73	0.70
3:C:706:DT:H2''	3:C:707:DG:H5'	1.73	0.70
1:E:505:ILE:HD12	1:E:505:ILE:H	1.56	0.70
1:A:371:ALA:O	1:A:375:ILE:HD12	1.90	0.70
1:E:225:PRO:HB2	1:E:226:PRO:HD3	1.73	0.70
1:E:406:TRP:CD1	1:E:407:GLN:HG2	2.27	0.70
2:F:54:ASN:HB3	2:F:143:ARG:HH22	1.51	0.70
1:E:76:ASP:OD1	1:E:78:ARG:HD3	1.92	0.70
1:A:84:THR:HG21	1:A:153:TRP:CZ2	2.26	0.70
1:A:293:ILE:HD12	1:A:294:PRO:HD2	1.74	0.69
1:E:92:LEU:HB2	2:F:137:ASN:OD1	1.92	0.69
2:F:380:ILE:HA	2:F:384:GLY:CA	2.21	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:163:SER:O	2:B:167:ILE:HG13	1.91	0.69
1:A:67:ASN:O	1:A:68:SER:CB	2.36	0.69
1:A:163:SER:O	1:A:167:ILE:HD12	1.92	0.69
2:F:398:TRP:HZ3	2:F:414:TRP:CZ2	2.10	0.69
3:G:707:DG:H2''	3:G:708:DG:H5'	1.73	0.69
2:F:115:TYR:O	2:F:149:LEU:HB2	1.92	0.69
3:G:705:DA:H2''	3:G:706:DT:H5''	1.73	0.69
1:A:181:TYR:CE2	2:B:138:GLU:HA	2.27	0.69
4:D:818:DC:H2''	4:D:819:DG:H5'	1.74	0.69
1:E:326:ILE:HD13	1:E:326:ILE:N	2.08	0.69
2:B:363:ASN:HD22	2:B:366:LYS:HB2	1.57	0.69
2:F:382:ILE:HG21	2:F:383:TRP:CZ2	2.28	0.69
1:A:172:LYS:HE2	1:A:180:ILE:HG21	1.73	0.69
1:A:459:THR:HG23	1:A:463:ARG:HB3	1.75	0.68
1:A:464:GLN:HB2	1:E:466:VAL:CG1	2.22	0.68
2:B:169:GLU:HB3	2:B:170:PRO:HD3	1.74	0.68
1:E:544:GLY:H	1:E:547:GLN:HE22	1.40	0.68
1:E:506:ILE:HD13	1:E:506:ILE:N	2.08	0.68
2:B:185:ASP:C	2:B:186:ASP:CG	2.61	0.68
1:E:99:GLY:HA2	1:E:383:TRP:HE1	1.58	0.68
2:F:75:VAL:HG11	2:F:77:PHE:CE2	2.29	0.68
2:F:132:ILE:HG13	2:F:132:ILE:O	1.92	0.68
1:E:90:VAL:HG12	2:F:140:PRO:HB2	1.76	0.68
2:F:169:GLU:HB3	2:F:170:PRO:HD3	1.75	0.68
1:E:108:VAL:HG13	1:E:187:LEU:O	1.94	0.68
1:E:106:VAL:HG12	1:E:190:GLY:HA3	1.75	0.67
1:A:12:LEU:HD11	1:A:127:TYR:CZ	2.29	0.67
1:A:108:VAL:HG13	1:A:187:LEU:O	1.95	0.67
1:A:284:ARG:HA	3:C:714:DG:OP1	1.94	0.67
2:F:402:TRP:CH2	2:F:411:ILE:HD13	2.29	0.67
2:F:7:THR:HB	2:F:121:ASP:HA	1.75	0.67
4:H:818:DC:H2''	4:H:819:DG:H5'	1.75	0.67
2:B:88:TRP:O	2:B:88:TRP:CE3	2.47	0.67
1:E:246:LEU:HD11	1:E:307:ARG:HG3	1.76	0.67
2:F:359:GLY:O	2:F:360:ALA:HB3	1.94	0.67
2:F:402:TRP:HH2	2:F:411:ILE:HD13	1.59	0.67
2:F:423:VAL:CG2	2:F:426:TRP:HD1	2.06	0.67
1:A:199:ARG:HH22	1:A:223:LYS:NZ	1.93	0.67
1:A:61:PHE:CE1	1:A:74:LEU:HB2	2.28	0.66
1:E:217:PRO:C	1:E:219:GLN:H	2.02	0.66
2:F:388:LYS:HA	2:F:413:GLU:O	1.95	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:205:LEU:HD23	2:F:205:LEU:O	1.95	0.66
1:A:199:ARG:NH2	1:A:223:LYS:CE	2.56	0.66
2:F:171:PHE:HZ	2:F:204:GLU:HG2	1.61	0.66
2:B:150:PRO:HG2	2:B:153:TRP:HB3	1.78	0.66
1:E:115:TYR:HD2	4:H:823:ATM:H2'	1.60	0.66
1:E:344:GLU:O	1:E:345:PRO:C	2.37	0.66
2:B:23:GLN:HG2	2:B:133:PRO:HG3	1.78	0.66
1:A:505:ILE:HD12	1:A:505:ILE:H	1.60	0.66
2:F:363:ASN:HD22	2:F:366:LYS:HB2	1.61	0.66
1:A:199:ARG:NH2	1:A:223:LYS:HE2	2.09	0.65
2:B:27:THR:OG1	2:B:30:LYS:HE2	1.96	0.65
3:C:705:DA:C2'	3:C:706:DT:C5'	2.75	0.65
2:B:212:TRP:CD1	2:B:212:TRP:H	2.11	0.65
1:A:93:GLY:O	2:B:137:ASN:CG	2.39	0.65
1:A:464:GLN:CB	1:E:466:VAL:CG1	2.75	0.65
1:E:369:THR:HA	1:E:411:ILE:HD11	1.77	0.65
1:A:442:VAL:HB	1:A:481:ALA:HB1	1.78	0.65
1:E:199:ARG:HH22	1:E:223:LYS:HD3	1.62	0.65
2:B:61:PHE:HZ	2:B:411:ILE:HD11	1.60	0.65
2:B:171:PHE:HZ	2:B:204:GLU:HG2	1.62	0.65
1:E:108:VAL:HB	1:E:221:HIS:CD2	2.32	0.65
1:A:326:ILE:HD13	1:A:326:ILE:H	1.62	0.65
1:A:408:ALA:HB1	2:B:364:ASP:HB3	1.77	0.65
2:B:88:TRP:CE3	2:B:88:TRP:C	2.75	0.65
2:F:94:ILE:N	2:F:94:ILE:HD13	2.12	0.65
1:A:103:LYS:HE3	1:A:179:VAL:HG21	1.78	0.65
1:A:180:ILE:HG23	1:A:180:ILE:O	1.96	0.65
1:E:181:TYR:HB2	1:E:188:TYR:HB3	1.77	0.65
1:A:88:TRP:CE3	1:A:89:GLU:O	2.50	0.64
1:E:272:PRO:HB3	1:E:351:THR:HG21	1.79	0.64
3:G:706:DT:H2''	3:G:707:DG:H5'	1.79	0.64
1:A:339:TYR:CZ	1:A:352:GLY:HA3	2.32	0.64
1:A:371:ALA:O	1:A:375:ILE:CD1	2.45	0.64
1:E:537:PRO:HB2	1:E:540:LYS:HB2	1.79	0.64
2:F:121:ASP:O	2:F:125:ARG:HG3	1.98	0.64
2:F:422:LEU:HB2	2:F:426:TRP:HE1	1.62	0.64
3:G:705:DA:C2'	3:G:706:DT:C5'	2.75	0.64
1:A:87:PHE:CZ	1:A:153:TRP:CZ2	2.85	0.64
2:B:84:THR:O	2:B:84:THR:HG22	1.98	0.64
2:F:72:ARG:NH2	2:F:151:GLN:NE2	2.45	0.64
1:A:142:ILE:H	1:A:142:ILE:CD1	2.00	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:203:GLU:O	2:F:207:GLN:HG2	1.97	0.63
1:A:95:PRO:HA	2:B:136:ASN:OD1	1.98	0.63
1:A:363:ASN:OD1	1:A:364:ASP:N	2.31	0.63
2:B:54:ASN:HB3	2:B:143:ARG:HH21	1.63	0.63
2:B:376:THR:HG23	2:B:386:THR:HG23	1.80	0.63
1:A:537:PRO:HB2	1:A:540:LYS:HB2	1.81	0.63
1:E:339:TYR:CZ	1:E:352:GLY:HA3	2.34	0.63
1:A:122:GLU:O	1:A:125:ARG:HD2	1.98	0.63
2:B:205:LEU:HD23	2:B:205:LEU:O	1.99	0.63
1:A:87:PHE:HZ	1:A:153:TRP:CH2	2.16	0.63
2:B:261:VAL:HG13	2:B:276:VAL:HG21	1.80	0.63
2:B:325:LEU:HD12	2:B:343:GLN:HE21	1.64	0.63
2:B:181:TYR:O	2:B:188:TYR:HB2	1.99	0.63
2:F:109:LEU:HB2	2:F:187:LEU:HB3	1.80	0.63
2:F:120:LEU:HD11	2:F:150:PRO:HD3	1.80	0.63
1:A:142:ILE:HG12	1:A:144:TYR:OH	1.98	0.63
2:B:212:TRP:CD1	2:B:212:TRP:N	2.67	0.63
1:A:142:ILE:CB	1:A:144:TYR:CZ	2.82	0.62
2:B:109:LEU:O	2:B:187:LEU:N	2.28	0.62
2:B:388:LYS:HA	2:B:413:GLU:O	1.98	0.62
1:A:99:GLY:HA2	1:A:383:TRP:HE1	1.62	0.62
1:A:246:LEU:HD23	1:A:246:LEU:H	1.64	0.62
2:B:359:GLY:O	2:B:360:ALA:HB3	1.97	0.62
1:E:60:VAL:HG12	1:E:75:VAL:HG13	1.79	0.62
1:A:346:PHE:O	1:A:346:PHE:CD1	2.53	0.62
2:B:75:VAL:CG1	2:B:77:PHE:CE2	2.83	0.62
2:B:191:SER:OG	2:B:198:HIS:ND1	2.29	0.62
2:B:328:GLU:C	2:B:329:ILE:HD12	2.24	0.62
2:F:156:SER:N	2:F:157:PRO:HD2	2.15	0.62
4:H:808:DC:H1'	4:H:809:DC:H5'	1.82	0.62
1:A:103:LYS:HE3	1:A:179:VAL:CG2	2.30	0.62
1:A:435:VAL:HG22	2:B:290:THR:HG21	1.81	0.62
1:A:506:ILE:HD13	1:A:506:ILE:N	2.14	0.62
1:E:344:GLU:HB2	1:E:347:LYS:HB2	1.81	0.62
1:E:134:SER:O	1:E:135:ILE:HD13	2.00	0.61
1:E:505:ILE:HD12	1:E:505:ILE:N	2.15	0.61
1:A:73:LYS:NZ	1:A:130:PHE:CE2	2.67	0.61
1:E:49:LYS:CB	1:E:144:TYR:CE1	2.76	0.61
1:E:384:GLY:HA3	2:F:28:GLU:N	2.15	0.61
1:E:151:GLN:NE2	4:H:823:ATM:H2''	2.15	0.61
2:F:191:SER:HG	2:F:198:HIS:CE1	2.18	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:393:ILE:HG12	2:F:397:THR:OG1	2.00	0.61
1:A:518:VAL:HA	1:A:521:ILE:HG13	1.82	0.61
1:E:153:TRP:CD1	1:E:154:LYS:N	2.64	0.61
1:A:142:ILE:HB	1:A:144:TYR:CZ	2.35	0.61
1:A:225:PRO:HB2	1:A:226:PRO:HD3	1.82	0.61
1:E:494:ASN:HB3	2:F:289:LEU:HD22	1.83	0.61
1:A:369:THR:HA	1:A:411:ILE:HD11	1.83	0.61
2:B:8:VAL:HG11	2:B:159:ILE:HD13	1.82	0.61
1:A:445:ALA:O	1:A:477:THR:HG21	2.00	0.61
1:E:406:TRP:CD1	1:E:407:GLN:HE21	2.17	0.60
1:E:340:GLN:HB3	1:E:351:THR:HG22	1.83	0.60
1:E:180:ILE:HG23	1:E:180:ILE:O	2.01	0.60
1:E:246:LEU:HD23	1:E:246:LEU:H	1.66	0.60
2:B:84:THR:HG21	2:B:153:TRP:HZ2	1.66	0.60
2:F:163:SER:O	2:F:167:ILE:HG12	2.01	0.60
1:A:90:VAL:HG12	2:B:140:PRO:HB2	1.84	0.60
2:B:402:TRP:NE1	2:B:403:THR:HG23	2.16	0.60
1:E:326:ILE:HD13	1:E:326:ILE:H	1.65	0.60
1:A:181:TYR:HB2	1:A:188:TYR:HB3	1.83	0.60
2:B:125:ARG:HB3	2:B:145:GLN:HE21	1.66	0.60
1:E:7:THR:HB	1:E:121:ASP:HA	1.82	0.60
2:F:23:GLN:HE21	2:F:26:LEU:HD11	1.67	0.60
2:F:382:ILE:HG21	2:F:383:TRP:CE2	2.37	0.60
1:A:169:GLU:HB3	1:A:170:PRO:HD3	1.82	0.60
2:B:121:ASP:O	2:B:125:ARG:HG3	2.01	0.60
1:E:120:LEU:HD12	1:E:125:ARG:HG3	1.83	0.60
1:A:199:ARG:HH12	1:A:223:LYS:HZ2	1.48	0.60
1:A:267:ALA:O	1:A:271:TYR:HB2	2.01	0.60
1:A:346:PHE:CD1	1:A:346:PHE:C	2.80	0.60
1:E:182:GLN:O	1:E:182:GLN:HG3	2.01	0.60
1:E:406:TRP:HD1	1:E:407:GLN:HG2	1.66	0.60
1:A:434:ILE:HD13	1:A:434:ILE:N	2.17	0.59
1:E:47:ILE:HG22	1:E:144:TYR:HB3	1.82	0.59
1:A:153:TRP:HB3	1:A:156:SER:OG	2.02	0.59
2:B:125:ARG:NH1	2:B:147:ASN:ND2	2.50	0.59
2:F:406:TRP:HZ2	2:F:410:TRP:O	1.85	0.59
2:B:88:TRP:HE3	2:B:88:TRP:C	2.10	0.59
3:G:709:DC:H2'	3:G:710:DG:H8	1.66	0.59
1:A:23:GLN:HG2	1:A:59:PRO:HA	1.85	0.59
1:A:505:ILE:HD12	1:A:505:ILE:N	2.18	0.59
4:D:822:DA:H2''	4:D:823:ATM:H5'	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:49:LYS:HA	1:E:143:ARG:O	2.02	0.59
2:F:94:ILE:HD11	2:F:158:ALA:HA	1.85	0.59
1:A:376:THR:C	1:A:378:GLU:H	2.10	0.59
1:E:264:LEU:HD21	1:E:306:ASN:HD22	1.66	0.59
1:E:346:PHE:O	1:E:347:LYS:C	2.45	0.59
2:B:23:GLN:NE2	2:B:26:LEU:HD11	2.18	0.59
2:B:168:LEU:HD21	2:B:209:LEU:HD21	1.83	0.59
3:C:707:DG:H2''	3:C:708:DG:C5'	2.33	0.59
2:F:215:THR:O	2:F:216:THR:C	2.46	0.59
4:D:808:DC:H1'	4:D:809:DC:H5'	1.83	0.59
1:E:5:ILE:HG22	1:E:6:GLU:H	1.67	0.59
1:E:47:ILE:CG2	1:E:144:TYR:HB3	2.32	0.59
3:G:710:DG:H2''	3:G:711:DC:H5'	1.85	0.59
4:H:805:DG:H2''	4:H:806:DT:OP2	2.03	0.59
3:C:710:DG:H2''	3:C:711:DC:H5'	1.84	0.58
1:E:537:PRO:HB2	1:E:540:LYS:CB	2.34	0.58
1:E:439:THR:HG22	1:E:439:THR:O	2.04	0.58
2:F:213:GLY:C	2:F:214:LEU:HD12	2.28	0.58
2:F:262:GLY:HA3	2:F:423:VAL:HG11	1.85	0.58
2:F:382:ILE:HG22	2:F:383:TRP:CD2	2.37	0.58
4:H:822:DA:H2''	4:H:823:ATM:H5'	1.85	0.58
1:A:264:LEU:HD23	1:A:276:VAL:HG12	1.85	0.58
2:F:115:TYR:CD1	2:F:156:SER:HB3	2.39	0.58
2:F:174:GLN:HG3	2:F:175:ASN:OD1	2.03	0.58
1:A:38:CYS:O	1:A:47:ILE:HD11	2.03	0.58
1:A:535:TRP:C	1:A:536:VAL:HG22	2.28	0.58
1:A:224:GLU:HG2	1:A:225:PRO:HD2	1.86	0.58
1:E:125:ARG:O	1:E:128:THR:HG22	2.04	0.58
2:F:72:ARG:CZ	2:F:151:GLN:NE2	2.66	0.58
2:B:325:LEU:O	2:B:387:PRO:HA	2.04	0.58
1:A:115:TYR:OH	1:A:157:PRO:HG3	2.03	0.58
1:A:406:TRP:CD1	1:A:407:GLN:HE21	2.18	0.58
2:B:395:LYS:NZ	4:D:813:DT:OP2	2.34	0.58
2:F:88:TRP:CE3	2:F:89:GLU:HB2	2.39	0.57
1:A:142:ILE:CB	1:A:144:TYR:OH	2.52	0.57
1:A:406:TRP:CD1	1:A:407:GLN:HG2	2.38	0.57
1:A:553:SER:O	1:A:554:ALA:HB3	2.03	0.57
2:B:180:ILE:HG22	2:B:189:VAL:HG22	1.86	0.57
1:E:115:TYR:HE2	4:H:823:ATM:H1'	1.69	0.57
3:G:707:DG:H2''	3:G:708:DG:C5'	2.34	0.57
1:A:5:ILE:HG22	1:A:6:GLU:H	1.68	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:384:GLY:HA3	2:F:28:GLU:H	1.67	0.57
1:E:457:TYR:CE2	1:E:465:LYS:HB3	2.39	0.57
1:E:505:ILE:H	1:E:505:ILE:CD1	2.17	0.57
2:F:23:GLN:HG2	2:F:133:PRO:HG3	1.85	0.57
3:C:720:DG:H2''	3:C:721:DG:OP2	2.04	0.57
1:E:501:TYR:C	1:E:501:TYR:CD1	2.83	0.57
3:G:707:DG:H2'	3:G:708:DG:C8	2.40	0.57
1:E:115:TYR:OH	1:E:157:PRO:HG3	2.05	0.57
2:F:27:THR:H	2:F:30:LYS:HE2	1.70	0.57
1:A:48:SER:C	1:A:144:TYR:HB3	2.28	0.57
1:A:277:ARG:HB2	1:A:336:GLN:NE2	2.20	0.57
1:E:342:TYR:HA	1:E:349:LEU:HD23	1.87	0.57
1:A:87:PHE:CZ	1:A:153:TRP:CH2	2.92	0.57
1:A:264:LEU:HD23	1:A:276:VAL:CG1	2.35	0.57
1:E:115:TYR:HD1	1:E:149:LEU:HD23	1.68	0.57
1:E:408:ALA:HB1	2:F:364:ASP:HB3	1.87	0.57
2:F:214:LEU:HD12	2:F:214:LEU:N	2.19	0.57
2:F:328:GLU:C	2:F:329:ILE:HD12	2.29	0.57
1:A:446:ALA:HB2	1:A:477:THR:HG21	1.87	0.57
2:B:10:VAL:HG11	2:B:124:PHE:CE1	2.39	0.57
1:E:115:TYR:CD2	4:H:823:ATM:H4'	2.39	0.57
1:E:374:LYS:O	1:E:374:LYS:HD3	2.04	0.57
2:B:70:LYS:HE2	2:B:70:LYS:HA	1.87	0.56
2:B:254:VAL:HG23	2:B:291:GLU:O	2.05	0.56
1:E:115:TYR:CE2	4:H:823:ATM:H1'	2.40	0.56
2:F:114:ALA:HB2	2:F:214:LEU:CD2	2.35	0.56
1:A:65:LYS:HD2	1:A:70:ARG:HB2	1.86	0.56
1:A:70:ARG:HH11	1:A:70:ARG:HG2	1.70	0.56
2:B:23:GLN:HG2	2:B:133:PRO:CG	2.35	0.56
2:B:266:TRP:CD1	2:B:426:TRP:CD1	2.92	0.56
1:E:169:GLU:HB3	1:E:170:PRO:HD3	1.87	0.56
2:F:261:VAL:HG13	2:F:276:VAL:HG21	1.88	0.56
3:G:720:DG:H2''	3:G:721:DG:OP2	2.04	0.56
2:B:76:ASP:C	2:B:78:ARG:H	2.13	0.56
2:B:210:LEU:CD1	2:B:215:THR:HG23	2.34	0.56
1:E:544:GLY:HA2	2:F:286:THR:HG22	1.86	0.56
2:F:183:TYR:CD2	2:F:380:ILE:HD12	2.40	0.56
1:A:505:ILE:H	1:A:505:ILE:CD1	2.18	0.56
2:B:423:VAL:CG2	2:B:426:TRP:HD1	2.19	0.56
2:B:427:TYR:O	2:B:428:GLN:C	2.48	0.56
2:B:109:LEU:CB	2:B:187:LEU:HB3	2.25	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:108:VAL:HG22	1:E:188:TYR:HA	1.88	0.56
2:B:174:GLN:HG3	2:B:175:ASN:OD1	2.05	0.56
2:B:387:PRO:HG2	2:B:389:PHE:CE1	2.40	0.56
1:A:5:ILE:HG22	1:A:6:GLU:N	2.20	0.56
1:A:209:LEU:O	1:A:212:TRP:N	2.38	0.56
1:A:441:TYR:HE2	1:A:543:GLY:O	1.89	0.56
4:D:806:DT:H1'	4:D:807:DC:H5'	1.87	0.56
1:E:23:GLN:HG2	1:E:59:PRO:HA	1.88	0.56
1:A:92:LEU:HB2	2:B:137:ASN:OD1	2.06	0.55
1:A:165:THR:HA	1:A:182:GLN:HE22	1.71	0.55
1:A:342:TYR:CD2	1:A:344:GLU:O	2.48	0.55
1:A:363:ASN:HB3	1:A:366:LYS:HB2	1.87	0.55
1:A:439:THR:HG22	1:A:439:THR:O	2.06	0.55
1:A:465:LYS:HD3	1:A:488:ASP:OD2	2.06	0.55
2:B:94:ILE:HD13	2:B:94:ILE:N	2.21	0.55
2:B:331:LYS:HG2	2:B:332:GLN:N	2.20	0.55
2:B:406:TRP:HZ2	2:B:410:TRP:O	1.87	0.55
3:C:713:DC:H2''	3:C:714:DG:C8	2.41	0.55
1:A:501:TYR:C	1:A:501:TYR:HD1	2.15	0.55
2:B:134:SER:OG	2:B:138:GLU:HB3	2.05	0.55
4:D:808:DC:H2''	4:D:809:DC:H5'	1.87	0.55
2:F:402:TRP:NE1	2:F:403:THR:HG23	2.21	0.55
1:E:32:LYS:HZ1	1:E:135:ILE:HD11	1.71	0.55
1:A:233:GLU:HB3	1:A:240:THR:HG23	1.88	0.55
1:A:501:TYR:C	1:A:501:TYR:CD1	2.82	0.55
2:B:23:GLN:OE1	2:B:59:PRO:HA	2.07	0.55
2:B:214:LEU:HD12	2:B:214:LEU:N	2.22	0.55
4:D:805:DG:H2''	4:D:806:DT:OP2	2.05	0.55
1:E:109:LEU:HD13	1:E:216:THR:HG21	1.89	0.55
2:F:423:VAL:CG2	2:F:426:TRP:CD1	2.88	0.55
2:B:58:THR:HG23	2:B:59:PRO:HD2	1.88	0.55
2:B:369:THR:O	2:B:373:GLN:HG3	2.06	0.55
4:D:808:DC:H6	4:D:808:DC:H5'	1.70	0.55
1:E:165:THR:HA	1:E:182:GLN:HE22	1.72	0.55
1:E:267:ALA:O	1:E:271:TYR:HB2	2.07	0.55
1:A:80:LEU:O	1:A:83:ARG:N	2.25	0.55
1:A:225:PRO:HB3	1:A:235:HIS:CD2	2.42	0.55
2:B:213:GLY:C	2:B:214:LEU:HD12	2.31	0.55
2:B:76:ASP:OD1	2:B:78:ARG:HB2	2.06	0.55
2:B:234:LEU:HD12	2:B:234:LEU:O	2.07	0.55
2:B:266:TRP:HZ2	2:B:422:LEU:HD12	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:501:TYR:C	1:E:501:TYR:HD1	2.15	0.55
2:F:325:LEU:HD12	2:F:343:GLN:HE21	1.72	0.55
1:A:134:SER:O	1:A:135:ILE:HD13	2.06	0.54
1:A:280:SER:HA	1:A:283:LEU:HD23	1.89	0.54
1:A:395:LYS:HA	1:A:414:TRP:HH2	1.72	0.54
2:B:103:LYS:CG	2:B:191:SER:O	2.53	0.54
1:E:21:VAL:HG13	1:E:59:PRO:HD3	1.88	0.54
1:A:142:ILE:CG2	1:A:144:TYR:OH	2.54	0.54
2:B:363:ASN:HD21	2:B:365:VAL:HG23	1.71	0.54
2:B:403:THR:O	2:B:405:TYR:N	2.40	0.54
3:C:707:DG:H2'	3:C:708:DG:C8	2.42	0.54
2:F:254:VAL:O	2:F:258:GLN:HG2	2.07	0.54
1:A:182:GLN:O	1:A:182:GLN:HG3	2.07	0.54
2:F:23:GLN:OE1	2:F:59:PRO:HA	2.07	0.54
3:G:707:DG:H2'	3:G:708:DG:H8	1.71	0.54
1:A:442:VAL:HG12	1:A:457:TYR:HB3	1.89	0.54
2:B:72:ARG:NH2	2:B:151:GLN:HG2	2.23	0.54
3:C:709:DC:H2'	3:C:710:DG:H8	1.72	0.54
1:A:21:VAL:HG13	1:A:59:PRO:HD3	1.90	0.54
2:B:357:MET:O	2:B:358:ARG:CB	2.45	0.54
3:C:717:DC:H1'	3:C:718:DA:H5'	1.88	0.54
4:D:818:DC:H2'	4:D:819:DG:H8	1.73	0.54
1:E:73:LYS:NZ	1:E:130:PHE:CE2	2.75	0.54
2:F:8:VAL:CG2	2:F:159:ILE:HD13	2.37	0.54
1:A:178:ILE:HD12	1:A:178:ILE:O	2.08	0.54
1:E:340:GLN:CB	1:E:351:THR:HG22	2.37	0.54
1:E:478:GLU:OE2	1:E:498:ASP:OD1	2.26	0.54
1:A:225:PRO:N	1:A:226:PRO:CD	2.69	0.54
1:E:217:PRO:O	1:E:219:GLN:N	2.40	0.54
2:F:180:ILE:CG2	2:F:187:LEU:CD1	2.84	0.54
2:F:340:GLN:O	2:F:341:ILE:HG12	2.07	0.54
1:A:439:THR:HA	1:A:494:ASN:HB2	1.89	0.54
1:E:80:LEU:O	1:E:83:ARG:N	2.32	0.54
1:E:151:GLN:HE21	4:H:823:ATM:H2''	1.72	0.54
2:F:148:VAL:O	2:F:149:LEU:C	2.51	0.54
3:G:722:DA:H2''	3:G:723:DC:OP2	2.07	0.54
2:F:325:LEU:O	2:F:387:PRO:HA	2.08	0.54
1:A:2:ILE:HD13	1:A:148:VAL:HG12	1.90	0.54
2:F:50:ILE:CD1	2:F:143:ARG:HB3	2.38	0.54
2:B:375:ILE:HD13	2:B:375:ILE:N	2.22	0.53
1:E:181:TYR:CE2	2:F:138:GLU:HA	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:379:SER:HB3	2:F:385:LYS:O	2.08	0.53
1:A:84:THR:HG21	1:A:153:TRP:CE2	2.42	0.53
1:A:181:TYR:CD2	2:B:138:GLU:HA	2.43	0.53
1:A:553:SER:OG	1:A:554:ALA:N	2.41	0.53
2:B:180:ILE:HD12	2:B:180:ILE:C	2.33	0.53
3:C:722:DA:H2''	3:C:723:DC:OP2	2.09	0.53
1:A:84:THR:HG21	1:A:153:TRP:NE1	2.24	0.53
1:A:199:ARG:HH12	1:A:223:LYS:NZ	2.05	0.53
2:B:371:ALA:O	2:B:375:ILE:HG12	2.08	0.53
1:E:536:VAL:HG12	1:E:537:PRO:HD2	1.91	0.53
2:F:54:ASN:HB3	2:F:143:ARG:HH21	1.71	0.53
2:F:125:ARG:HB3	2:F:145:GLN:HE21	1.73	0.53
2:F:320:ASP:OD2	2:F:322:SER:HB3	2.08	0.53
1:E:384:GLY:HA2	2:F:27:THR:HA	1.90	0.53
2:F:421:PRO:HB2	2:F:425:LEU:HD13	1.91	0.53
1:A:130:PHE:CD1	1:A:130:PHE:N	2.77	0.53
1:A:142:ILE:HG22	1:A:144:TYR:CE2	2.44	0.53
1:E:283:LEU:H	1:E:283:LEU:HD22	1.73	0.53
2:F:375:ILE:HD13	2:F:375:ILE:N	2.24	0.53
1:A:96:HIS:H	2:B:136:ASN:ND2	2.07	0.53
1:E:32:LYS:NZ	1:E:135:ILE:HD11	2.24	0.53
1:E:442:VAL:HB	1:E:481:ALA:HB1	1.89	0.53
4:H:808:DC:H6	4:H:808:DC:H5'	1.74	0.53
1:A:274:ILE:O	1:A:274:ILE:HG22	2.09	0.53
3:G:713:DC:H2''	3:G:714:DG:C8	2.44	0.53
1:A:159:ILE:HD13	2:B:52:PRO:HG2	1.92	0.52
1:A:267:ALA:HB1	1:A:271:TYR:HD2	1.73	0.52
1:A:458:VAL:CA	1:A:463:ARG:O	2.41	0.52
2:B:50:ILE:CD1	2:B:143:ARG:HB3	2.39	0.52
2:F:94:ILE:HD12	2:F:161:GLN:OE1	2.08	0.52
1:A:199:ARG:HH22	1:A:223:LYS:HZ3	1.57	0.52
1:E:363:ASN:OD1	1:E:364:ASP:N	2.41	0.52
1:E:406:TRP:NE1	2:F:420:PRO:HB3	2.23	0.52
1:A:419:THR:HG23	1:A:419:THR:O	2.10	0.52
1:A:458:VAL:HG12	1:A:548:VAL:CG2	2.39	0.52
1:A:3:SER:H	1:A:119:PRO:HG3	1.74	0.52
1:A:376:THR:O	1:A:378:GLU:N	2.42	0.52
2:B:148:VAL:O	2:B:149:LEU:C	2.53	0.52
1:E:395:LYS:HA	1:E:414:TRP:HH2	1.75	0.52
2:F:75:VAL:CG1	2:F:77:PHE:CE2	2.93	0.52
1:A:296:THR:HG22	1:A:297:GLU:N	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:363:ASN:ND2	2:B:365:VAL:HG23	2.24	0.52
1:E:284:ARG:HA	3:G:714:DG:OP1	2.10	0.52
1:A:23:GLN:NE2	1:A:60:VAL:H	1.99	0.52
1:A:95:PRO:HG3	2:B:137:ASN:O	2.09	0.52
1:A:142:ILE:CG1	1:A:144:TYR:OH	2.57	0.52
2:B:84:THR:HG22	2:B:87:PHE:HB3	1.92	0.52
2:F:234:LEU:HD12	2:F:234:LEU:O	2.09	0.52
1:A:500:GLN:O	1:A:501:TYR:C	2.51	0.52
4:D:808:DC:H2''	4:D:809:DC:C5'	2.39	0.52
4:D:818:DC:H2''	4:D:819:DG:C5'	2.40	0.52
1:A:221:HIS:HE1	1:A:228:LEU:H	1.57	0.52
1:A:266:TRP:CE2	4:D:820:DC:H4'	2.45	0.52
1:A:284:ARG:CA	3:C:714:DG:OP1	2.57	0.52
2:B:393:ILE:HG12	2:B:397:THR:OG1	2.10	0.52
1:E:122:GLU:O	1:E:125:ARG:HD2	2.10	0.52
2:F:357:MET:O	2:F:358:ARG:C	2.52	0.52
3:C:722:DA:C4	3:C:723:DC:C5	2.98	0.52
1:E:38:CYS:SG	1:E:132:ILE:CD1	2.98	0.52
1:E:329:ILE:HG23	1:E:339:TYR:HB3	1.92	0.52
2:F:329:ILE:N	2:F:329:ILE:CD1	2.71	0.52
1:A:10:VAL:HG21	1:A:153:TRP:CH2	2.37	0.51
1:A:223:LYS:HA	1:A:227:PHE:CZ	2.45	0.51
2:B:106:VAL:HA	2:B:190:GLY:HA2	1.91	0.51
2:B:320:ASP:OD2	2:B:322:SER:HB3	2.11	0.51
2:B:423:VAL:CG2	2:B:426:TRP:CD1	2.93	0.51
1:E:5:ILE:HG22	1:E:6:GLU:N	2.25	0.51
2:F:3:SER:N	2:F:4:PRO:HD3	2.26	0.51
2:F:5:ILE:O	2:F:6:GLU:HG3	2.10	0.51
2:F:254:VAL:HG23	2:F:291:GLU:O	2.08	0.51
1:A:384:GLY:O	2:B:27:THR:CG2	2.58	0.51
2:B:61:PHE:CZ	2:B:411:ILE:HD11	2.44	0.51
3:C:723:DC:C2'	3:C:724:DT:H71	2.40	0.51
1:E:209:LEU:O	1:E:212:TRP:N	2.43	0.51
1:E:115:TYR:HE2	4:H:823:ATM:C1'	2.23	0.51
1:E:342:TYR:HB2	1:E:347:LYS:O	2.11	0.51
1:E:439:THR:HA	1:E:494:ASN:HB2	1.93	0.51
2:F:210:LEU:HG	2:F:210:LEU:O	2.09	0.51
2:F:382:ILE:HG22	2:F:383:TRP:NE1	2.25	0.51
2:F:402:TRP:CH2	2:F:411:ILE:CD1	2.85	0.51
4:H:818:DC:H2'	4:H:819:DG:H8	1.76	0.51
2:B:115:TYR:O	2:B:149:LEU:HB2	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:125:ARG:NH1	2:B:147:ASN:HD22	1.98	0.51
2:B:170:PRO:O	2:B:174:GLN:HG2	2.10	0.51
1:E:92:LEU:HD11	2:F:133:PRO:HB3	1.91	0.51
1:E:246:LEU:HD22	1:E:310:LEU:HD12	1.91	0.51
2:F:331:LYS:HG2	2:F:332:GLN:N	2.26	0.51
1:E:242:GLN:O	1:E:244:ILE:N	2.44	0.51
2:F:27:THR:O	2:F:31:ILE:CG1	2.58	0.51
2:F:70:LYS:HE2	2:F:70:LYS:HA	1.91	0.51
2:B:92:LEU:CB	2:B:158:ALA:HB1	2.41	0.51
2:B:378:GLU:O	2:B:382:ILE:CG1	2.57	0.51
2:B:109:LEU:O	2:B:186:ASP:HA	2.11	0.51
1:E:49:LYS:N	1:E:144:TYR:HD1	2.08	0.51
1:E:376:THR:C	1:E:378:GLU:H	2.19	0.51
1:A:96:HIS:H	2:B:136:ASN:HD21	1.58	0.51
1:A:473:THR:OG1	1:A:476:LYS:HG3	2.11	0.51
2:B:120:LEU:HB2	2:B:147:ASN:O	2.10	0.51
1:E:3:SER:HA	1:E:119:PRO:HG3	1.91	0.51
2:F:72:ARG:NH2	2:F:151:GLN:HE21	2.08	0.51
1:A:156:SER:HB2	1:A:157:PRO:HD3	1.93	0.51
1:A:458:VAL:HG12	1:A:548:VAL:HG21	1.93	0.51
1:A:515:SER:O	1:A:517:LEU:N	2.41	0.51
2:B:8:VAL:HB	2:B:159:ILE:HD12	1.92	0.51
1:E:115:TYR:CE2	4:H:823:ATM:C1'	2.94	0.50
1:A:61:PHE:CE1	1:A:74:LEU:CB	2.93	0.50
1:A:171:PHE:HD1	1:A:208:HIS:CD2	2.30	0.50
1:A:280:SER:C	1:A:282:LEU:H	2.19	0.50
1:E:180:ILE:CG2	1:E:180:ILE:O	2.59	0.50
1:A:326:ILE:HD11	1:A:343:GLN:HA	1.93	0.50
1:A:223:LYS:HA	1:A:227:PHE:HZ	1.76	0.50
1:A:469:LEU:HD12	1:A:472:THR:HG21	1.89	0.50
1:A:284:ARG:HB3	3:C:714:DG:OP1	2.11	0.50
1:E:10:VAL:HG21	1:E:153:TRP:CH2	2.35	0.50
1:A:61:PHE:CD1	1:A:74:LEU:HB2	2.47	0.50
1:A:142:ILE:N	1:A:142:ILE:CD1	2.70	0.50
1:A:467:VAL:HB	1:A:468:PRO:HD2	1.93	0.50
1:E:156:SER:N	1:E:157:PRO:CD	2.74	0.50
1:E:496:VAL:HG12	1:E:534:ALA:HB3	1.94	0.50
2:F:76:ASP:C	2:F:78:ARG:H	2.18	0.50
1:A:7:THR:HB	1:A:121:ASP:HA	1.93	0.50
1:A:95:PRO:HA	2:B:136:ASN:O	2.11	0.50
1:A:209:LEU:HD22	1:A:214:LEU:CD2	2.34	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:506:ILE:O	1:A:507:GLN:C	2.54	0.50
2:B:94:ILE:N	2:B:94:ILE:CD1	2.73	0.50
2:B:119:PRO:HA	2:B:148:VAL:HA	1.94	0.50
2:B:260:LEU:O	2:B:260:LEU:HD23	2.11	0.50
1:E:3:SER:N	1:E:4:PRO:HD3	2.27	0.50
1:E:115:TYR:HD2	4:H:823:ATM:C2'	2.22	0.50
1:E:264:LEU:HD23	1:E:276:VAL:HG12	1.94	0.50
2:F:423:VAL:HG22	2:F:426:TRP:HD1	1.75	0.50
3:G:717:DC:H1'	3:G:718:DA:H5'	1.92	0.50
1:A:217:PRO:C	1:A:219:GLN:H	2.19	0.50
2:B:73:LYS:NZ	2:B:146:TYR:OH	2.37	0.50
1:E:266:TRP:CE2	4:H:820:DC:H4'	2.46	0.50
1:E:276:VAL:HG23	1:E:276:VAL:O	2.11	0.50
4:H:818:DC:H2''	4:H:819:DG:C5'	2.39	0.50
1:A:84:THR:HG21	1:A:153:TRP:HZ2	1.74	0.50
2:B:58:THR:CG2	2:B:59:PRO:HD2	2.42	0.50
4:D:819:DG:H2'	4:D:820:DC:C6	2.47	0.50
1:E:522:ILE:O	1:E:526:ILE:HG13	2.12	0.50
1:A:115:TYR:HD2	4:D:823:ATM:H2'	1.75	0.49
1:A:325:LEU:HD23	1:A:387:PRO:HB3	1.94	0.49
1:A:465:LYS:HA	1:E:464:GLN:O	2.12	0.49
3:C:707:DG:H2'	3:C:708:DG:H8	1.77	0.49
1:A:65:LYS:HD2	1:A:70:ARG:CB	2.42	0.49
1:A:180:ILE:O	1:A:180:ILE:CG2	2.59	0.49
1:A:301:LEU:O	1:A:305:GLU:HG2	2.12	0.49
1:A:329:ILE:HG23	1:A:339:TYR:HB3	1.93	0.49
1:A:446:ALA:HB2	1:A:477:THR:CG2	2.42	0.49
2:B:312:GLU:O	2:B:313:PRO:O	2.30	0.49
2:F:134:SER:OG	2:F:138:GLU:HB3	2.12	0.49
1:A:231:GLY:HA3	4:D:821:DC:H5''	1.93	0.49
2:B:335:GLY:HA3	2:B:356:ARG:HD2	1.93	0.49
1:E:434:ILE:CD1	1:E:434:ILE:N	2.75	0.49
2:F:356:ARG:HG2	2:F:357:MET:N	2.28	0.49
1:A:326:ILE:HG22	1:A:388:LYS:HB2	1.94	0.49
1:E:364:ASP:HB3	1:E:423:VAL:HG13	1.94	0.49
1:A:115:TYR:HE2	4:D:823:ATM:H1'	1.70	0.49
1:A:469:LEU:HD13	1:A:472:THR:CG2	2.39	0.49
1:A:401:TRP:CZ3	1:A:405:TYR:CG	3.00	0.49
1:A:464:GLN:HB3	1:E:466:VAL:CG1	2.40	0.49
2:B:398:TRP:HZ3	2:B:414:TRP:CH2	2.29	0.49
1:E:501:TYR:HD1	1:E:501:TYR:O	1.96	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:339:TYR:CZ	2:F:375:ILE:HD12	2.47	0.49
1:A:38:CYS:SG	1:A:132:ILE:HD12	2.52	0.49
2:B:254:VAL:O	2:B:258:GLN:HG2	2.12	0.49
4:D:807:DC:C2	4:D:808:DC:C5	3.00	0.49
1:E:217:PRO:C	1:E:219:GLN:N	2.68	0.49
2:F:369:THR:O	2:F:373:GLN:HG3	2.13	0.49
2:F:423:VAL:HG23	2:F:426:TRP:CD1	2.48	0.49
2:B:92:LEU:HB3	2:B:158:ALA:HB1	1.93	0.49
2:B:125:ARG:NH1	2:B:147:ASN:HA	2.28	0.49
1:E:108:VAL:HB	1:E:221:HIS:HD2	1.76	0.49
2:F:424:LYS:O	2:F:425:LEU:O	2.30	0.49
2:B:333:GLY:C	2:B:335:GLY:H	2.20	0.49
1:E:108:VAL:H	1:E:221:HIS:HB2	1.78	0.49
1:E:142:ILE:CD1	1:E:142:ILE:N	2.57	0.49
1:E:248:GLU:HA	1:E:252:TRP:HH2	1.77	0.49
2:F:156:SER:HB2	2:F:157:PRO:HD3	1.93	0.49
1:A:10:VAL:HG11	1:A:153:TRP:CZ2	2.48	0.49
1:A:178:ILE:HD12	1:A:178:ILE:C	2.38	0.49
2:B:87:PHE:CE1	2:B:92:LEU:HD23	2.47	0.49
2:B:266:TRP:CZ2	2:B:422:LEU:HD12	2.48	0.49
2:F:8:VAL:HG11	2:F:159:ILE:HD13	1.95	0.49
2:F:336:GLN:C	2:F:337:TRP:CD1	2.91	0.48
4:D:818:DC:H2'	4:D:819:DG:C8	2.48	0.48
1:E:111:VAL:HB	1:E:185:ASP:HB2	1.95	0.48
2:F:50:ILE:HD12	2:F:143:ARG:HB3	1.95	0.48
2:B:398:TRP:C	2:B:400:THR:H	2.21	0.48
1:E:50:ILE:H	1:E:143:ARG:HG2	1.78	0.48
1:E:178:ILE:HD12	1:E:178:ILE:O	2.13	0.48
1:E:371:ALA:O	1:E:375:ILE:CD1	2.54	0.48
2:F:94:ILE:N	2:F:94:ILE:CD1	2.76	0.48
2:F:183:TYR:CG	2:F:380:ILE:HG21	2.48	0.48
2:F:371:ALA:O	2:F:375:ILE:HG12	2.13	0.48
1:A:2:ILE:HD12	1:A:45:GLY:O	2.14	0.48
1:A:108:VAL:HG22	1:A:188:TYR:HA	1.95	0.48
2:B:24:TRP:CH2	2:B:403:THR:HG21	2.48	0.48
2:B:270:ILE:CG2	2:B:314:VAL:HG21	2.39	0.48
1:E:465:LYS:HD3	1:E:488:ASP:OD2	2.13	0.48
1:A:84:THR:HG21	1:A:153:TRP:HE1	1.79	0.48
2:B:260:LEU:O	2:B:264:LEU:HB2	2.14	0.48
1:E:224:GLU:HB3	1:E:225:PRO:HD2	1.95	0.48
1:A:3:SER:N	1:A:4:PRO:HD3	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:TYR:O	1:A:149:LEU:HB3	2.14	0.48
1:A:262:GLY:C	4:D:819:DG:H4'	2.39	0.48
1:E:262:GLY:C	4:H:819:DG:H4'	2.38	0.48
2:F:23:GLN:NE2	2:F:26:LEU:HD11	2.27	0.48
4:H:809:DC:H1'	4:H:810:DT:H5'	1.95	0.48
1:A:92:LEU:O	1:A:93:GLY:C	2.56	0.48
1:A:282:LEU:HD11	1:A:296:THR:OG1	2.13	0.48
2:B:398:TRP:C	2:B:400:THR:N	2.70	0.48
3:C:710:DG:C6	3:C:711:DC:N4	2.82	0.48
1:E:170:PRO:O	1:E:174:GLN:HG2	2.13	0.48
1:A:99:GLY:HA2	1:A:383:TRP:NE1	2.29	0.48
1:A:453:GLY:O	1:A:469:LEU:CB	2.54	0.48
2:B:194:GLU:HG3	2:B:195:ILE:N	2.28	0.48
4:D:809:DC:H1'	4:D:810:DT:C5'	2.44	0.48
1:E:49:LYS:N	1:E:144:TYR:CD1	2.82	0.48
2:F:120:LEU:HB2	2:F:147:ASN:O	2.14	0.48
1:A:96:HIS:N	2:B:136:ASN:OD1	2.46	0.48
1:A:108:VAL:H	1:A:221:HIS:HB2	1.78	0.48
2:B:84:THR:CG2	2:B:87:PHE:HB3	2.43	0.48
1:E:342:TYR:HD2	1:E:344:GLU:O	1.96	0.48
2:B:156:SER:HB2	2:B:157:PRO:HD3	1.96	0.47
2:B:363:ASN:ND2	2:B:366:LYS:HB2	2.29	0.47
1:E:156:SER:CB	1:E:157:PRO:HD3	2.44	0.47
2:F:260:LEU:HD23	2:F:260:LEU:O	2.14	0.47
2:F:389:PHE:O	2:F:391:LEU:HG	2.13	0.47
4:H:808:DC:H2''	4:H:809:DC:H5'	1.95	0.47
1:A:264:LEU:HD21	1:A:306:ASN:ND2	2.23	0.47
2:B:423:VAL:HG23	2:B:426:TRP:CD1	2.49	0.47
1:E:500:GLN:O	1:E:501:TYR:C	2.57	0.47
1:E:46:LYS:C	1:E:47:ILE:HG12	2.39	0.47
1:E:540:LYS:HB3	1:E:542:ILE:HD11	1.95	0.47
1:A:280:SER:C	1:A:282:LEU:N	2.71	0.47
2:B:94:ILE:HD12	2:B:161:GLN:OE1	2.15	0.47
1:E:239:TRP:CD1	1:E:316:GLY:C	2.93	0.47
1:E:326:ILE:HG22	1:E:388:LYS:HB2	1.96	0.47
1:A:282:LEU:N	1:A:282:LEU:HD22	2.30	0.47
1:A:380:ILE:HD11	1:A:386:THR:HG22	1.95	0.47
2:B:328:GLU:HB3	2:B:340:GLN:HG3	1.95	0.47
1:E:86:ASP:O	2:F:55:PRO:HB3	2.14	0.47
1:E:225:PRO:HB2	1:E:226:PRO:CD	2.44	0.47
1:E:280:SER:HA	1:E:283:LEU:HD23	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:363:ASN:HB3	1:E:366:LYS:HB2	1.96	0.47
1:A:90:VAL:HG12	1:A:90:VAL:O	2.13	0.47
1:A:206:ARG:HG3	1:A:216:THR:OG1	2.15	0.47
1:A:553:SER:O	1:A:554:ALA:CB	2.63	0.47
2:B:329:ILE:N	2:B:329:ILE:CD1	2.70	0.47
1:E:419:THR:HG23	1:E:419:THR:O	2.14	0.47
1:E:506:ILE:O	1:E:507:GLN:C	2.57	0.47
1:A:32:LYS:HZ1	1:A:135:ILE:HD11	1.79	0.47
1:A:106:VAL:HG23	1:A:227:PHE:HE1	1.79	0.47
1:A:172:LYS:NZ	2:B:139:THR:HG21	2.29	0.47
1:A:223:LYS:HB2	1:A:223:LYS:HE3	1.49	0.47
2:B:84:THR:HG21	2:B:153:TRP:CZ2	2.49	0.47
2:B:114:ALA:HB2	2:B:214:LEU:CD2	2.45	0.47
4:D:808:DC:H2''	4:D:809:DC:O5'	2.15	0.47
1:E:116:PHE:C	1:E:148:VAL:HG21	2.40	0.47
1:E:153:TRP:CG	1:E:154:LYS:N	2.82	0.47
1:E:225:PRO:CB	1:E:226:PRO:HD3	2.43	0.47
1:E:544:GLY:H	1:E:547:GLN:NE2	2.10	0.47
2:F:27:THR:OG1	2:F:30:LYS:HG2	2.15	0.47
2:F:402:TRP:HH2	2:F:411:ILE:HD12	1.79	0.47
4:H:808:DC:H2''	4:H:809:DC:C5'	2.45	0.47
1:A:2:ILE:C	1:A:3:SER:HG	2.15	0.47
1:E:32:LYS:NZ	1:E:135:ILE:CD1	2.78	0.47
2:F:27:THR:H	2:F:30:LYS:CE	2.28	0.47
1:A:414:TRP:HE3	1:A:415:GLU:O	1.98	0.47
1:A:501:TYR:HD1	1:A:501:TYR:O	1.98	0.47
1:E:340:GLN:HA	1:E:351:THR:HA	1.97	0.47
1:E:437:ALA:HB2	1:E:492:GLU:HB3	1.96	0.47
2:F:8:VAL:HB	2:F:159:ILE:CD1	2.45	0.47
2:F:357:MET:HE3	2:F:357:MET:HB3	1.66	0.47
2:F:359:GLY:O	2:F:360:ALA:CB	2.63	0.47
3:C:714:DG:C4	3:C:715:DA:N7	2.83	0.47
1:E:277:ARG:HB2	1:E:336:GLN:HE21	1.80	0.47
1:A:522:ILE:O	1:A:526:ILE:HG13	2.14	0.46
2:B:184:MET:HB3	2:B:185:ASP:OD1	2.15	0.46
4:D:809:DC:H1'	4:D:810:DT:H5'	1.96	0.46
1:E:19:PRO:HD3	1:E:80:LEU:HD13	1.97	0.46
4:H:809:DC:H1'	4:H:810:DT:C5'	2.45	0.46
4:H:818:DC:H2'	4:H:819:DG:C8	2.50	0.46
2:B:85:GLN:HA	2:B:88:TRP:CE2	2.49	0.46
2:B:252:TRP:HA	2:B:252:TRP:CE3	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:PRO:HA	1:A:173:LYS:HZ2	1.80	0.46
1:A:233:GLU:HB3	1:A:240:THR:CG2	2.46	0.46
1:E:341:ILE:O	1:E:349:LEU:HB2	2.15	0.46
1:A:56:TYR:O	1:A:129:ALA:HB3	2.15	0.46
2:B:8:VAL:HG21	2:B:159:ILE:HG23	1.97	0.46
2:B:92:LEU:HD22	2:B:92:LEU:N	2.31	0.46
1:E:90:VAL:CG1	2:F:140:PRO:HB2	2.45	0.46
1:E:275:LYS:C	1:E:276:VAL:HG13	2.40	0.46
1:E:317:VAL:HG12	1:E:348:ASN:O	2.15	0.46
2:F:333:GLY:C	2:F:335:GLY:H	2.23	0.46
1:A:384:GLY:HA2	2:B:27:THR:HA	1.98	0.46
2:B:180:ILE:HG22	2:B:189:VAL:HA	1.96	0.46
1:E:77:PHE:HB3	1:E:80:LEU:HB3	1.97	0.46
1:E:380:ILE:HD11	1:E:386:THR:HG22	1.98	0.46
1:A:254:VAL:HG21	1:A:287:LYS:HB3	1.97	0.46
1:E:114:ALA:HB1	1:E:160:PHE:CZ	2.51	0.46
2:F:423:VAL:HG22	2:F:426:TRP:CD1	2.51	0.46
1:A:170:PRO:O	1:A:174:GLN:HG2	2.16	0.46
2:B:3:SER:OG	2:B:4:PRO:HD3	2.15	0.46
1:A:46:LYS:O	1:A:147:ASN:HB3	2.16	0.46
1:E:98:ALA:O	1:E:319:TYR:HB2	2.15	0.46
1:E:113:ASP:HA	4:H:823:ATM:N5'	2.30	0.46
1:E:517:LEU:O	1:E:521:ILE:HG13	2.15	0.46
2:F:358:ARG:HB3	2:F:359:GLY:H	1.57	0.46
1:A:234:LEU:HD12	1:A:234:LEU:N	2.31	0.46
1:A:368:LEU:C	1:A:368:LEU:HD23	2.41	0.46
1:A:496:VAL:HG12	1:A:534:ALA:HB3	1.97	0.46
2:B:326:ILE:N	2:B:326:ILE:HD12	2.31	0.46
1:E:329:ILE:CD1	1:E:375:ILE:HD13	2.45	0.46
2:F:23:GLN:HG2	2:F:133:PRO:CG	2.46	0.46
2:F:376:THR:O	2:F:379:SER:HB2	2.15	0.46
1:A:4:PRO:HG2	1:A:5:ILE:HD12	1.98	0.46
2:B:372:VAL:O	2:B:376:THR:OG1	2.33	0.46
1:E:264:LEU:HD23	1:E:276:VAL:CG1	2.46	0.46
1:E:407:GLN:OE1	2:F:418:ASN:HA	2.16	0.46
1:E:409:THR:O	1:E:410:TRP:HB2	2.16	0.46
4:H:808:DC:H2''	4:H:809:DC:O5'	2.17	0.46
1:A:61:PHE:HE2	1:A:76:ASP:HB2	1.81	0.45
1:A:239:TRP:NE1	1:A:316:GLY:HA3	2.32	0.45
1:A:266:TRP:CD2	4:D:820:DC:H4'	2.51	0.45
2:B:37:ILE:CG2	2:B:38:CYS:N	2.79	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:180:ILE:HA	2:B:188:TYR:O	2.16	0.45
1:A:75:VAL:CG2	1:A:146:TYR:HE1	2.18	0.45
1:A:409:THR:O	1:A:410:TRP:HB2	2.16	0.45
1:A:466:VAL:HG13	1:E:464:GLN:HB2	1.99	0.45
2:B:46:LYS:HE3	2:B:116:PHE:HB3	1.97	0.45
3:C:718:DA:C2	4:D:811:DG:C2	3.04	0.45
4:D:820:DC:H2'	4:D:821:DC:C6	2.52	0.45
1:E:343:GLN:HG2	1:E:349:LEU:HD21	1.98	0.45
2:F:97:PRO:CG	2:F:100:LEU:HB2	2.39	0.45
1:E:333:GLY:H	1:E:336:GLN:HB2	1.82	0.45
2:F:58:THR:HG23	2:F:59:PRO:HD2	1.97	0.45
1:A:19:PRO:HD3	1:A:80:LEU:HD13	1.99	0.45
1:A:96:HIS:H	2:B:136:ASN:CG	2.23	0.45
2:B:206:ARG:HB2	2:B:206:ARG:NH1	2.31	0.45
1:E:215:TYR:CZ	1:E:217:PRO:HA	2.52	0.45
2:F:17:ASP:CG	2:F:18:GLY:H	2.25	0.45
2:F:160:PHE:O	2:F:160:PHE:CD2	2.70	0.45
3:G:722:DA:C4	3:G:723:DC:C5	3.03	0.45
1:A:235:HIS:HB3	1:A:236:PRO:HD2	1.98	0.45
2:B:336:GLN:C	2:B:337:TRP:CD1	2.94	0.45
2:F:76:ASP:OD1	2:F:78:ARG:HB2	2.16	0.45
1:E:49:LYS:CB	1:E:144:TYR:CD1	2.99	0.45
1:E:381:VAL:HG22	2:F:25:PRO:HG2	1.97	0.45
1:A:269:GLN:O	1:A:351:THR:N	2.48	0.45
1:A:458:VAL:CG1	1:A:548:VAL:CG2	2.95	0.45
2:B:88:TRP:CZ3	2:B:89:GLU:HB2	2.52	0.45
2:F:194:GLU:HG3	2:F:195:ILE:N	2.31	0.45
1:A:380:ILE:HD11	1:A:386:THR:CG2	2.47	0.45
2:B:110:ASP:HB3	2:B:216:THR:CG2	2.46	0.45
1:E:221:HIS:CE1	1:E:228:LEU:N	2.85	0.45
2:F:109:LEU:O	2:F:186:ASP:HA	2.17	0.45
1:A:537:PRO:HB2	1:A:540:LYS:CB	2.45	0.45
2:B:150:PRO:HG2	2:B:153:TRP:CB	2.47	0.45
2:B:317:VAL:HG13	2:B:317:VAL:O	2.17	0.45
4:D:815:DG:C6	4:D:816:DG:O6	2.70	0.45
1:E:159:ILE:HD13	2:F:52:PRO:HG2	1.99	0.45
2:F:260:LEU:O	2:F:264:LEU:HB2	2.18	0.45
4:H:820:DC:H2''	4:H:821:DC:H5'	1.98	0.45
1:A:2:ILE:CD1	1:A:148:VAL:CG1	2.96	0.44
1:E:414:TRP:HE3	1:E:415:GLU:O	2.01	0.44
2:F:125:ARG:NH1	2:F:147:ASN:HA	2.31	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:406:TRP:HD1	1:A:407:GLN:HG2	1.81	0.44
2:B:24:TRP:HH2	2:B:403:THR:HG21	1.82	0.44
2:B:414:TRP:CD1	2:B:414:TRP:C	2.96	0.44
1:E:283:LEU:HD22	1:E:283:LEU:N	2.31	0.44
2:F:156:SER:N	2:F:157:PRO:CD	2.79	0.44
1:A:535:TRP:C	1:A:536:VAL:CG2	2.90	0.44
2:B:277:ARG:O	2:B:278:GLN:C	2.61	0.44
1:E:434:ILE:N	1:E:434:ILE:HD13	2.31	0.44
2:F:24:TRP:HA	2:F:25:PRO:HD3	1.89	0.44
2:F:281:LYS:HE2	2:F:284:ARG:HD2	1.99	0.44
1:A:282:LEU:N	1:A:282:LEU:CD2	2.81	0.44
1:A:333:GLY:H	1:A:336:GLN:HB2	1.83	0.44
1:E:90:VAL:HG12	1:E:90:VAL:O	2.16	0.44
1:E:171:PHE:HD1	1:E:208:HIS:CD2	2.35	0.44
1:A:2:ILE:HD13	1:A:148:VAL:CG1	2.47	0.44
1:A:401:TRP:CZ3	1:A:405:TYR:HB2	2.52	0.44
2:B:57:ASN:O	2:B:58:THR:OG1	2.33	0.44
2:B:206:ARG:HB2	2:B:206:ARG:HH11	1.83	0.44
1:E:233:GLU:HB3	1:E:240:THR:HG23	2.00	0.44
1:E:374:LYS:HD3	1:E:374:LYS:C	2.43	0.44
2:F:29:GLU:H	2:F:29:GLU:HG2	1.46	0.44
4:H:806:DT:H1'	4:H:807:DC:H5'	1.98	0.44
1:A:121:ASP:O	1:A:125:ARG:HD2	2.17	0.44
1:A:221:HIS:HE1	1:A:228:LEU:N	2.16	0.44
1:A:225:PRO:CB	1:A:226:PRO:HD3	2.46	0.44
1:A:422:LEU:H	1:A:422:LEU:HD23	1.81	0.44
1:A:536:VAL:HG12	1:A:537:PRO:HD2	1.99	0.44
2:B:110:ASP:HB3	2:B:216:THR:HG22	1.99	0.44
4:D:810:DT:H6	4:D:810:DT:H2'	1.54	0.44
1:E:94:ILE:HA	1:E:95:PRO:HD3	1.85	0.44
1:E:401:TRP:HE3	1:E:401:TRP:O	2.01	0.44
2:F:125:ARG:NH1	2:F:147:ASN:ND2	2.60	0.44
2:F:382:ILE:HG22	2:F:383:TRP:CD1	2.53	0.44
1:A:246:LEU:CD1	1:A:307:ARG:HG3	2.41	0.44
2:B:357:MET:HE3	2:B:357:MET:HB3	1.77	0.44
1:E:296:THR:HG22	1:E:297:GLU:N	2.33	0.44
2:F:106:VAL:HA	2:F:190:GLY:HA2	2.00	0.44
2:F:183:TYR:CZ	2:F:380:ILE:HD13	2.53	0.44
1:A:107:THR:CG2	1:A:223:LYS:HG2	2.47	0.44
1:A:493:VAL:HG12	1:A:494:ASN:N	2.33	0.44
2:B:179:VAL:HG12	2:B:180:ILE:N	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:351:THR:O	2:B:351:THR:OG1	2.30	0.44
1:E:248:GLU:HA	1:E:252:TRP:CH2	2.52	0.44
2:F:161:GLN:O	2:F:165:THR:HG23	2.18	0.44
2:F:340:GLN:HG2	2:F:341:ILE:N	2.32	0.44
1:A:32:LYS:NZ	1:A:135:ILE:HD11	2.33	0.44
1:A:401:TRP:HE3	1:A:401:TRP:O	2.01	0.44
2:B:104:LYS:O	2:B:235:HIS:HB3	2.18	0.44
2:B:142:ILE:H	2:B:142:ILE:HG12	1.50	0.44
2:B:210:LEU:CD1	2:B:215:THR:OG1	2.66	0.44
3:C:712:DC:O2	4:D:817:MRG:H211	2.17	0.44
1:E:99:GLY:HA2	1:E:383:TRP:NE1	2.30	0.44
1:E:453:GLY:O	1:E:469:LEU:HB2	2.17	0.44
1:A:457:TYR:OH	1:A:488:ASP:OD2	2.29	0.43
2:B:29:GLU:H	2:B:29:GLU:HG2	1.43	0.43
1:A:77:PHE:HB3	1:A:80:LEU:HB3	1.99	0.43
1:A:239:TRP:CD1	1:A:316:GLY:C	2.97	0.43
2:B:38:CYS:O	2:B:42:GLU:N	2.51	0.43
2:B:281:LYS:HE2	2:B:284:ARG:HD2	2.00	0.43
1:E:380:ILE:HD11	1:E:386:THR:CG2	2.48	0.43
1:E:384:GLY:CA	2:F:27:THR:HA	2.48	0.43
2:F:398:TRP:C	2:F:400:THR:N	2.76	0.43
1:A:364:ASP:HB3	1:A:423:VAL:HG13	2.01	0.43
1:A:395:LYS:HG2	1:A:414:TRP:CH2	2.53	0.43
2:B:26:LEU:HD21	2:B:60:VAL:O	2.18	0.43
2:B:360:ALA:O	2:B:361:HIS:CD2	2.72	0.43
1:E:225:PRO:HB3	1:E:235:HIS:CD2	2.53	0.43
1:E:326:ILE:HG12	1:E:342:TYR:O	2.17	0.43
1:E:422:LEU:HD23	1:E:422:LEU:H	1.83	0.43
1:E:506:ILE:N	1:E:506:ILE:CD1	2.81	0.43
3:G:714:DG:C4	3:G:715:DA:N7	2.86	0.43
1:A:183:TYR:CD2	1:A:230:MET:SD	3.11	0.43
1:A:368:LEU:HD23	1:A:368:LEU:O	2.17	0.43
1:A:498:ASP:HB2	1:A:538:ALA:HA	2.00	0.43
2:B:391:LEU:HA	2:B:392:PRO:HD2	1.84	0.43
1:A:120:LEU:HD23	1:A:125:ARG:HG3	2.01	0.43
1:A:278:GLN:O	1:A:281:LYS:N	2.50	0.43
2:B:389:PHE:O	2:B:391:LEU:HG	2.17	0.43
4:D:808:DC:C2'	4:D:809:DC:H5'	2.49	0.43
2:F:114:ALA:HB2	2:F:214:LEU:HD21	2.00	0.43
3:G:723:DC:C2'	3:G:724:DT:H71	2.49	0.43
1:A:13:LYS:HA	1:A:14:PRO:HD2	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:LEU:CD2	1:A:214:LEU:HD22	2.35	0.43
2:B:295:LEU:HG	2:B:299:ALA:HB3	2.00	0.43
1:E:150:PRO:HB2	1:E:153:TRP:HB2	1.99	0.43
1:A:242:GLN:O	1:A:244:ILE:N	2.51	0.43
1:A:433:PRO:HD3	2:B:255:ASN:OD1	2.18	0.43
2:B:101:LYS:O	2:B:236:PRO:HB2	2.18	0.43
2:F:206:ARG:HH11	2:F:206:ARG:HB2	1.84	0.43
1:A:503:LEU:HD11	1:A:507:GLN:HE21	1.84	0.43
3:C:715:DA:C2	3:C:716:DA:C4	3.07	0.43
4:D:806:DT:H6	4:D:806:DT:H5'	1.84	0.43
2:F:363:ASN:HD21	2:F:365:VAL:HG23	1.84	0.43
4:H:820:DC:H2'	4:H:821:DC:C6	2.54	0.43
1:A:406:TRP:HH2	1:A:507:GLN:HB3	1.84	0.43
2:B:46:LYS:HG2	2:B:148:VAL:HG21	2.01	0.43
1:A:317:VAL:HG12	1:A:349:LEU:HD22	2.00	0.43
1:A:377:THR:OG1	2:B:400:THR:HG22	2.19	0.43
1:E:434:ILE:HG13	1:E:530:LYS:HE2	2.01	0.43
2:F:8:VAL:CB	2:F:159:ILE:CD1	2.96	0.43
2:F:206:ARG:HB2	2:F:206:ARG:NH1	2.34	0.43
2:F:363:ASN:ND2	2:F:365:VAL:HG23	2.34	0.43
2:F:380:ILE:O	2:F:384:GLY:HA2	2.18	0.43
1:A:172:LYS:HZ3	2:B:139:THR:HG21	1.82	0.42
1:A:209:LEU:O	1:A:210:LEU:C	2.62	0.42
2:B:156:SER:HB2	2:B:157:PRO:CD	2.48	0.42
3:C:714:DG:C2	3:C:715:DA:C5	3.06	0.42
2:F:295:LEU:HG	2:F:299:ALA:HB3	2.01	0.42
4:H:819:DG:H2'	4:H:820:DC:C6	2.54	0.42
2:B:332:GLN:HB3	2:B:428:GLN:HE22	1.84	0.42
2:F:88:TRP:CZ3	2:F:89:GLU:HB2	2.53	0.42
3:G:715:DA:C2	3:G:716:DA:C4	3.07	0.42
2:B:65:LYS:HA	2:B:407:GLN:HG2	2.00	0.42
2:B:333:GLY:C	2:B:335:GLY:N	2.78	0.42
1:E:225:PRO:O	1:E:227:PHE:N	2.52	0.42
1:E:239:TRP:NE1	1:E:316:GLY:HA3	2.34	0.42
3:G:724:DT:H2''	3:G:725:DG:N7	2.34	0.42
1:A:363:ASN:HB3	1:A:366:LYS:CB	2.48	0.42
2:B:332:GLN:NE2	2:B:428:GLN:HB2	2.34	0.42
1:E:548:VAL:O	1:E:552:VAL:HG22	2.19	0.42
2:F:333:GLY:C	2:F:335:GLY:N	2.78	0.42
3:G:712:DC:O2	4:H:817:MRG:H211	2.18	0.42
1:A:253:THR:H	1:A:256:ASP:HB2	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:186:ASP:OD1	2:B:186:ASP:N	2.52	0.42
2:B:194:GLU:HG3	2:B:196:GLY:H	1.84	0.42
3:C:707:DG:C6	4:D:822:DA:N1	2.88	0.42
1:E:498:ASP:HB2	1:E:538:ALA:HA	2.02	0.42
2:F:180:ILE:HA	2:F:188:TYR:O	2.19	0.42
1:A:47:ILE:HD12	1:A:144:TYR:CD1	2.55	0.42
1:A:116:PHE:HE1	1:A:146:TYR:HE2	1.68	0.42
1:A:225:PRO:N	1:A:226:PRO:HD2	2.34	0.42
1:A:317:VAL:O	1:A:349:LEU:HD13	2.19	0.42
1:A:450:THR:O	1:A:451:LYS:HB2	2.19	0.42
2:B:107:THR:OG1	2:B:202:ILE:HD11	2.20	0.42
3:C:716:DA:C2	3:C:717:DC:C2	3.07	0.42
1:E:142:ILE:HB	1:E:144:TYR:CE2	2.54	0.42
1:E:373:GLN:HE21	2:F:396:GLU:HG3	1.85	0.42
2:F:8:VAL:CB	2:F:159:ILE:HD13	2.50	0.42
2:F:252:TRP:HA	2:F:252:TRP:CE3	2.53	0.42
1:A:185:ASP:OD2	4:D:823:ATM:OP1	2.38	0.42
1:E:372:VAL:HG11	1:E:411:ILE:HG23	2.01	0.42
1:E:429:LEU:HD11	1:E:506:ILE:HG22	2.02	0.42
2:F:414:TRP:CD1	2:F:414:TRP:C	2.97	0.42
1:A:2:ILE:HD11	1:A:46:LYS:HD3	2.01	0.42
1:A:96:HIS:O	2:B:136:ASN:ND2	2.48	0.42
1:A:115:TYR:CD1	1:A:149:LEU:HD23	2.55	0.42
1:A:464:GLN:O	1:E:465:LYS:HA	2.20	0.42
1:A:474:ASN:O	1:A:477:THR:OG1	2.31	0.42
2:B:398:TRP:CZ3	2:B:414:TRP:CZ2	2.89	0.42
1:E:244:ILE:O	1:E:244:ILE:HG23	2.18	0.42
1:E:254:VAL:HG21	1:E:287:LYS:HB3	2.02	0.42
1:E:325:LEU:HD23	1:E:387:PRO:HB3	2.01	0.42
1:E:443:ASP:CG	1:E:444:GLY:H	2.17	0.42
2:F:330:GLN:HE21	2:F:330:GLN:HB2	1.60	0.42
2:F:403:THR:O	2:F:405:TYR:N	2.53	0.42
1:A:267:ALA:HB1	1:A:271:TYR:CD2	2.54	0.42
1:A:285:GLY:O	1:A:287:LYS:N	2.53	0.42
1:A:522:ILE:O	1:A:523:GLU:C	2.62	0.42
1:E:201:LYS:HD3	1:E:201:LYS:HA	1.92	0.42
1:E:206:ARG:HH21	1:E:215:TYR:HE1	1.66	0.42
1:E:283:LEU:H	1:E:283:LEU:CD2	2.32	0.42
1:E:480:GLN:O	1:E:483:TYR:N	2.51	0.42
1:E:501:TYR:O	1:E:505:ILE:HD13	2.20	0.42
2:F:288:ALA:HB3	2:F:291:GLU:HB2	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:822:DA:H2''	4:H:823:ATM:C5'	2.49	0.42
1:A:2:ILE:CD1	1:A:46:LYS:HA	2.46	0.41
1:A:478:GLU:OE2	1:A:498:ASP:OD1	2.38	0.41
2:B:85:GLN:O	2:B:89:GLU:HB3	2.20	0.41
2:B:391:LEU:O	2:B:393:ILE:N	2.50	0.41
3:C:707:DG:C2'	3:C:708:DG:O5'	2.68	0.41
2:F:57:ASN:O	2:F:58:THR:OG1	2.33	0.41
2:F:343:GLN:HG2	2:F:349:LEU:HD11	2.02	0.41
3:G:710:DG:C6	3:G:711:DC:N4	2.88	0.41
1:A:434:ILE:N	1:A:434:ILE:CD1	2.82	0.41
1:A:447:ASN:HB3	1:A:450:THR:OG1	2.20	0.41
2:B:332:GLN:HB3	2:B:428:GLN:NE2	2.35	0.41
1:E:411:ILE:HA	1:E:412:PRO:HD3	1.90	0.41
2:F:306:ASN:HA	2:F:309:ILE:HG22	2.02	0.41
2:B:27:THR:H	2:B:30:LYS:HE2	1.86	0.41
2:B:403:THR:C	2:B:405:TYR:H	2.28	0.41
1:E:401:TRP:CZ3	1:E:405:TYR:CG	3.09	0.41
1:E:515:SER:O	1:E:517:LEU:N	2.45	0.41
2:F:142:ILE:H	2:F:142:ILE:HG12	1.58	0.41
2:F:398:TRP:C	2:F:400:THR:H	2.27	0.41
1:A:78:ARG:HD2	3:C:705:DA:H5''	2.01	0.41
1:A:445:ALA:C	1:A:477:THR:HG21	2.45	0.41
1:E:116:PHE:HA	1:E:148:VAL:HG21	2.03	0.41
1:E:215:TYR:OH	1:E:217:PRO:HA	2.21	0.41
2:F:326:ILE:N	2:F:326:ILE:HD12	2.36	0.41
2:B:13:LYS:HA	2:B:14:PRO:HD3	1.95	0.41
2:B:257:ILE:O	2:B:261:VAL:HG23	2.20	0.41
1:A:108:VAL:HB	1:A:221:HIS:CD2	2.56	0.41
2:B:306:ASN:HA	2:B:309:ILE:HG22	2.02	0.41
4:D:807:DC:H1'	4:D:808:DC:H5''	2.03	0.41
1:E:115:TYR:CD2	4:H:823:ATM:C4'	3.02	0.41
1:E:234:LEU:N	1:E:234:LEU:HD12	2.35	0.41
1:E:303:LEU:HD23	1:E:303:LEU:O	2.20	0.41
2:F:380:ILE:CG2	2:F:384:GLY:HA2	2.51	0.41
1:A:12:LEU:HD11	1:A:127:TYR:CE1	2.55	0.41
1:A:70:ARG:HH11	1:A:70:ARG:CG	2.29	0.41
1:A:156:SER:CB	1:A:157:PRO:HD3	2.49	0.41
1:A:407:GLN:OE1	2:B:418:ASN:HA	2.21	0.41
2:B:203:GLU:O	2:B:207:GLN:HG2	2.20	0.41
3:C:714:DG:N3	3:C:715:DA:C8	2.88	0.41
4:D:817:MRG:C2	4:D:818:DC:C2	3.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:13:LYS:HA	1:E:14:PRO:HD2	1.87	0.41
1:E:277:ARG:HB2	1:E:336:GLN:NE2	2.36	0.41
1:A:276:VAL:O	1:A:276:VAL:HG23	2.20	0.41
1:A:466:VAL:HG13	1:E:464:GLN:CB	2.51	0.41
2:B:76:ASP:C	2:B:78:ARG:N	2.78	0.41
2:B:94:ILE:HD11	2:B:158:ALA:HA	2.03	0.41
2:B:325:LEU:CD1	2:B:343:GLN:HE21	2.31	0.41
1:E:50:ILE:HG13	1:E:143:ARG:HG3	2.02	0.41
1:E:406:TRP:CE2	2:F:420:PRO:CB	2.85	0.41
1:E:517:LEU:CD2	1:E:521:ILE:HD11	2.51	0.41
1:A:84:THR:CG2	1:A:153:TRP:HZ2	2.34	0.41
1:A:104:LYS:HG3	1:A:192:ASP:OD1	2.21	0.41
1:A:380:ILE:HA	1:A:383:TRP:O	2.21	0.41
1:A:501:TYR:O	1:A:505:ILE:HD13	2.21	0.41
1:A:517:LEU:HD23	1:A:521:ILE:HD11	2.03	0.41
2:B:36:GLU:O	2:B:37:ILE:C	2.64	0.41
2:B:132:ILE:HA	2:B:133:PRO:HD3	1.82	0.41
1:E:1:PRO:C	1:E:2:ILE:HD13	2.46	0.41
1:E:53:GLU:O	1:E:53:GLU:HG2	2.20	0.41
1:E:115:TYR:CD2	4:H:823:ATM:H2'	2.48	0.41
1:E:479:LEU:HD12	1:E:517:LEU:HD22	2.03	0.41
2:F:146:TYR:CE2	2:F:150:PRO:HA	2.56	0.41
4:H:816:DG:H2''	4:H:817:MRG:OP2	2.21	0.41
1:A:38:CYS:SG	1:A:132:ILE:CD1	3.09	0.41
1:A:494:ASN:HB3	2:B:289:LEU:HD22	2.03	0.41
2:B:152:GLY:O	2:B:153:TRP:C	2.63	0.41
2:B:398:TRP:CZ3	2:B:414:TRP:CH2	3.08	0.41
1:E:401:TRP:CZ3	1:E:405:TYR:HB2	2.56	0.41
2:F:54:ASN:HA	2:F:55:PRO:HD2	2.01	0.41
2:F:207:GLN:O	2:F:211:ARG:HG3	2.21	0.41
1:A:275:LYS:C	1:A:276:VAL:HG13	2.45	0.40
1:A:384:GLY:CA	2:B:28:GLU:H	2.19	0.40
2:B:8:VAL:HB	2:B:159:ILE:CD1	2.51	0.40
2:B:376:THR:CG2	2:B:386:THR:HG23	2.49	0.40
1:E:130:PHE:CE2	1:E:132:ILE:HD11	2.56	0.40
1:E:456:GLY:HA3	1:E:465:LYS:O	2.20	0.40
2:F:104:LYS:O	2:F:235:HIS:HB3	2.21	0.40
2:F:180:ILE:HG12	2:F:189:VAL:HG22	2.02	0.40
1:A:504:GLY:O	1:A:505:ILE:C	2.62	0.40
2:B:180:ILE:CG2	2:B:189:VAL:HG22	2.51	0.40
1:E:450:THR:O	1:E:451:LYS:HB2	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:498:ASP:HA	1:E:536:VAL:O	2.21	0.40
1:E:512:LYS:HA	1:E:512:LYS:HD2	1.80	0.40
3:G:717:DC:H2"	3:G:718:DA:OP2	2.21	0.40
2:B:374:LYS:C	2:B:375:ILE:HD13	2.46	0.40
2:B:402:TRP:CD1	2:B:403:THR:HG23	2.57	0.40
2:B:404:GLU:O	2:B:405:TYR:CD1	2.74	0.40
1:E:24:TRP:HB3	3:G:703:DG:N3	2.35	0.40
1:E:275:LYS:O	1:E:276:VAL:CG1	2.69	0.40
1:E:505:ILE:N	1:E:505:ILE:CD1	2.81	0.40
1:A:90:VAL:HG13	2:B:141:GLY:O	2.22	0.40
1:A:365:VAL:CG2	1:A:401:TRP:NE1	2.85	0.40
1:E:25:PRO:HD2	3:G:703:DG:C2	2.57	0.40
1:E:391:LEU:HA	1:E:392:PRO:HD3	1.95	0.40
2:F:5:ILE:O	2:F:6:GLU:CG	2.69	0.40
2:F:5:ILE:HG22	2:F:6:GLU:N	2.35	0.40
2:F:398:TRP:HZ3	2:F:414:TRP:CH2	2.38	0.40
1:A:70:ARG:CG	1:A:70:ARG:NH1	2.85	0.40
1:E:32:LYS:HA	1:E:32:LYS:HE3	2.03	0.40
1:E:168:LEU:HB3	1:E:172:LYS:HE3	2.04	0.40
1:E:301:LEU:O	1:E:305:GLU:HG2	2.21	0.40
2:F:8:VAL:HG11	2:F:159:ILE:CD1	2.52	0.40
2:F:34:LEU:HD12	2:F:37:ILE:HG21	2.04	0.40
4:H:817:MRG:C2	4:H:818:DC:C2	3.05	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	552/562 (98%)	469 (85%)	71 (13%)	12 (2%)	5	27
1	E	552/562 (98%)	460 (83%)	78 (14%)	14 (2%)	4	25

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	409/437 (94%)	352 (86%)	45 (11%)	12 (3%)	3	22
2	F	409/437 (94%)	348 (85%)	53 (13%)	8 (2%)	6	29
All	All	1922/1998 (96%)	1629 (85%)	247 (13%)	46 (2%)	4	25

All (46) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3	SER
1	A	134	SER
2	B	358	ARG
1	E	134	SER
1	E	345	PRO
1	E	412	PRO
1	E	470	THR
2	F	425	LEU
1	A	68	SER
1	A	377	THR
1	A	412	PRO
1	A	470	THR
2	B	243	PRO
2	B	313	PRO
2	B	404	GLU
1	E	218	ASP
1	E	377	THR
2	F	404	GLU
1	A	218	ASP
1	A	243	PRO
2	B	25	PRO
2	B	425	LEU
1	E	4	PRO
1	E	226	PRO
1	E	243	PRO
2	F	25	PRO
2	F	243	PRO
2	B	5	ILE
1	E	286	THR
2	F	4	PRO
1	A	150	PRO
1	A	286	THR
2	B	194	GLU
2	B	277	ARG

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Mol	Chain	Res	Type
1	E	217	PRO
1	E	276	VAL
2	B	77	PHE
1	E	150	PRO
2	F	194	GLU
2	B	35	VAL
2	F	213	GLY
1	E	462	GLY
1	A	59	PRO
1	A	504	GLY
2	B	111	VAL
2	F	111	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	495/502 (99%)	443 (90%)	52 (10%)	6	27
1	E	495/502 (99%)	442 (89%)	53 (11%)	6	26
2	B	375/397 (94%)	332 (88%)	43 (12%)	5	23
2	F	375/397 (94%)	335 (89%)	40 (11%)	6	26
All	All	1740/1798 (97%)	1552 (89%)	188 (11%)	6	25

All (188) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	ILE
1	A	32	LYS
1	A	40	GLU
1	A	50	ILE
1	A	63	ILE
1	A	94	ILE
1	A	132	ILE
1	A	142	ILE
1	A	144	TYR

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Mol	Chain	Res	Type
1	A	146	TYR
1	A	164	MET
1	A	167	ILE
1	A	180	ILE
1	A	187	LEU
1	A	193	LEU
1	A	195	ILE
1	A	210	LEU
1	A	222	GLN
1	A	223	LYS
1	A	224	GLU
1	A	248	GLU
1	A	249	LYS
1	A	257	ILE
1	A	270	ILE
1	A	272	PRO
1	A	279	LEU
1	A	283	LEU
1	A	303	LEU
1	A	326	ILE
1	A	329	ILE
1	A	380	ILE
1	A	382	ILE
1	A	401	TRP
1	A	411	ILE
1	A	422	LEU
1	A	430	GLU
1	A	431	LYS
1	A	434	ILE
1	A	449	GLU
1	A	452	LEU
1	A	464	GLN
1	A	466	VAL
1	A	479	LEU
1	A	480	GLN
1	A	482	ILE
1	A	501	TYR
1	A	505	ILE
1	A	506	ILE
1	A	521	ILE
1	A	522	ILE
1	A	536	VAL

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Mol	Chain	Res	Type
1	A	546	GLU
2	B	6	GLU
2	B	27	THR
2	B	29	GLU
2	B	31	ILE
2	B	37	ILE
2	B	50	ILE
2	B	53	GLU
2	B	63	ILE
2	B	94	ILE
2	B	135	ILE
2	B	142	ILE
2	B	148	VAL
2	B	167	ILE
2	B	173	LYS
2	B	185	ASP
2	B	186	ASP
2	B	206	ARG
2	B	212	TRP
2	B	215	THR
2	B	235	HIS
2	B	257	ILE
2	B	264	LEU
2	B	281	LYS
2	B	287	LYS
2	B	300	GLU
2	B	309	ILE
2	B	318	TYR
2	B	329	ILE
2	B	330	GLN
2	B	341	ILE
2	B	357	MET
2	B	365	VAL
2	B	368	LEU
2	B	375	ILE
2	B	380	ILE
2	B	382	ILE
2	B	400	THR
2	B	401	TRP
2	B	409	THR
2	B	411	ILE
2	B	412	PRO

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Mol	Chain	Res	Type
2	B	423	VAL
2	B	426	TRP
1	E	5	ILE
1	E	32	LYS
1	E	40	GLU
1	E	42	GLU
1	E	47	ILE
1	E	50	ILE
1	E	54	ASN
1	E	63	ILE
1	E	120	LEU
1	E	132	ILE
1	E	142	ILE
1	E	143	ARG
1	E	156	SER
1	E	164	MET
1	E	167	ILE
1	E	180	ILE
1	E	187	LEU
1	E	193	LEU
1	E	195	ILE
1	E	210	LEU
1	E	248	GLU
1	E	249	LYS
1	E	257	ILE
1	E	270	ILE
1	E	272	PRO
1	E	279	LEU
1	E	303	LEU
1	E	326	ILE
1	E	329	ILE
1	E	365	VAL
1	E	380	ILE
1	E	382	ILE
1	E	401	TRP
1	E	411	ILE
1	E	422	LEU
1	E	431	LYS
1	E	434	ILE
1	E	449	GLU
1	E	452	LEU
1	E	463	ARG

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Mol	Chain	Res	Type
1	E	464	GLN
1	E	466	VAL
1	E	479	LEU
1	E	480	GLN
1	E	482	ILE
1	E	501	TYR
1	E	505	ILE
1	E	506	ILE
1	E	521	ILE
1	E	522	ILE
1	E	536	VAL
1	E	542	ILE
1	E	547	GLN
2	F	3	SER
2	F	29	GLU
2	F	30	LYS
2	F	31	ILE
2	F	37	ILE
2	F	63	ILE
2	F	88	TRP
2	F	94	ILE
2	F	135	ILE
2	F	142	ILE
2	F	159	ILE
2	F	161	GLN
2	F	163	SER
2	F	167	ILE
2	F	173	LYS
2	F	206	ARG
2	F	235	HIS
2	F	257	ILE
2	F	264	LEU
2	F	270	ILE
2	F	281	LYS
2	F	287	LYS
2	F	300	GLU
2	F	309	ILE
2	F	318	TYR
2	F	329	ILE
2	F	330	GLN
2	F	341	ILE
2	F	357	MET

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Mol	Chain	Res	Type
2	F	358	ARG
2	F	365	VAL
2	F	368	LEU
2	F	375	ILE
2	F	380	ILE
2	F	382	ILE
2	F	401	TRP
2	F	411	ILE
2	F	423	VAL
2	F	425	LEU
2	F	426	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (63) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	23	GLN
1	A	81	ASN
1	A	91	GLN
1	A	174	GLN
1	A	182	GLN
1	A	198	HIS
1	A	221	HIS
1	A	235	HIS
1	A	255	ASN
1	A	306	ASN
1	A	336	GLN
1	A	394	GLN
1	A	447	ASN
1	A	475	GLN
1	A	480	GLN
1	A	507	GLN
1	A	509	GLN
1	A	519	ASN
1	A	520	GLN
1	A	539	HIS
2	B	54	ASN
2	B	145	GLN
2	B	147	ASN
2	B	207	GLN
2	B	315	HIS
2	B	330	GLN
2	B	340	GLN

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Mol	Chain	Res	Type
2	B	343	GLN
2	B	361	HIS
2	B	363	ASN
2	B	373	GLN
2	B	407	GLN
2	B	428	GLN
1	E	23	GLN
1	E	91	GLN
1	E	174	GLN
1	E	182	GLN
1	E	198	HIS
1	E	221	HIS
1	E	235	HIS
1	E	255	ASN
1	E	278	GLN
1	E	334	GLN
1	E	336	GLN
1	E	343	GLN
1	E	394	GLN
1	E	407	GLN
1	E	447	ASN
1	E	480	GLN
1	E	509	GLN
1	E	519	ASN
1	E	520	GLN
1	E	547	GLN
2	F	54	ASN
2	F	145	GLN
2	F	147	ASN
2	F	278	GLN
2	F	330	GLN
2	F	343	GLN
2	F	363	ASN
2	F	373	GLN
2	F	407	GLN
2	F	418	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

4 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	ATM	H	823	3,4	20,23,24	1.05	2 (10%)	26,32,35	0.71	1 (3%)
4	ATM	D	823	3,4	20,23,24	1.15	2 (10%)	26,32,35	0.81	1 (3%)
4	MRG	D	817	3,4	25,28,29	1.23	1 (4%)	32,39,42	2.30	2 (6%)
4	MRG	H	817	3,4	25,28,29	1.12	1 (4%)	32,39,42	2.20	2 (6%)

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	ATM	H	823	3,4	-	1/10/24/25	0/2/2/2
4	ATM	D	823	3,4	-	0/10/24/25	0/2/2/2
4	MRG	D	817	3,4	-	4/12/26/27	0/3/3/3
4	MRG	H	817	3,4	-	4/12/26/27	0/3/3/3

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	817	MRG	C21-N2	-5.24	1.34	1.46
4	H	817	MRG	C21-N2	-5.08	1.34	1.46
4	D	823	ATM	N5'-N4'	4.37	1.32	1.23
4	H	823	ATM	N5'-N4'	3.39	1.30	1.23
4	H	823	ATM	N4'-N3'	-2.88	1.16	1.23
4	D	823	ATM	N4'-N3'	-2.15	1.18	1.23

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	817	MRG	C21-N2-C2	-12.36	100.14	123.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	H	817	MRG	C21-N2-C2	-11.91	100.99	123.36
4	D	823	ATM	C2'-C3'-N3'	3.09	116.96	108.72
4	H	823	ATM	C2'-C3'-N3'	2.53	115.46	108.72
4	D	817	MRG	C22-C23-S24	2.36	120.33	113.10
4	H	817	MRG	C22-C23-S24	2.32	120.19	113.10

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	D	817	MRG	N3-C2-N2-C21
4	D	817	MRG	N1-C2-N2-C21
4	D	817	MRG	N2-C21-C22-C23
4	H	817	MRG	N3-C2-N2-C21
4	H	817	MRG	N1-C2-N2-C21
4	H	817	MRG	N2-C21-C22-C23
4	H	817	MRG	C21-C22-C23-S24
4	H	823	ATM	C3'-N3'-N4'-N5'
4	D	817	MRG	C21-C22-C23-S24

There are no ring outliers.

4 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	H	823	ATM	14	0
4	D	823	ATM	6	0
4	D	817	MRG	2	0
4	H	817	MRG	3	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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	554/562 (98%)	0.01	5 (0%) 81 57	26, 89, 115, 135	0
1	E	554/562 (98%)	0.39	23 (4%) 40 24	32, 154, 164, 172	0
2	B	413/437 (94%)	0.04	6 (1%) 72 44	54, 84, 119, 143	0
2	F	413/437 (94%)	0.34	10 (2%) 59 35	127, 153, 165, 170	0
3	C	23/27 (85%)	0.08	1 (4%) 40 24	65, 90, 125, 141	0
3	G	23/27 (85%)	0.22	0 100 100	151, 159, 167, 178	0
4	D	19/22 (86%)	-0.19	0 100 100	75, 100, 127, 136	0
4	H	19/22 (86%)	0.25	0 100 100	149, 159, 170, 171	0
All	All	2018/2096 (96%)	0.19	45 (2%) 62 37	26, 122, 162, 178	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	508	ALA	3.8
1	E	502	ALA	3.8
2	B	423	VAL	3.6
1	E	506	ILE	3.4
2	F	118	VAL	3.2
1	E	164	MET	3.1
2	B	340	GLN	3.1
3	C	703	DG	3.1
2	F	76	ASP	2.9
2	F	149	LEU	2.8
1	E	554	ALA	2.8
2	F	205	LEU	2.8
2	F	8	VAL	2.8
1	E	271	TYR	2.8
1	E	90	VAL	2.7
1	A	153	TRP	2.6

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Mol	Chain	Res	Type	RSRZ
1	E	1	PRO	2.6
2	F	159	ILE	2.5
2	F	150	PRO	2.4
1	E	167	ILE	2.4
1	E	26	LEU	2.4
1	E	545	ASN	2.3
2	F	188	TYR	2.3
2	F	381	VAL	2.3
2	B	3	SER	2.3
1	E	150	PRO	2.3
1	A	303	LEU	2.3
2	B	189	VAL	2.3
1	E	544	GLY	2.2
2	B	424	LYS	2.2
1	E	518	VAL	2.2
1	E	205	LEU	2.2
1	E	505	ILE	2.2
1	E	247	PRO	2.2
1	E	327	ALA	2.1
1	A	156	SER	2.1
1	E	114	ALA	2.1
2	B	426	TRP	2.1
1	E	543	GLY	2.1
1	A	225	PRO	2.1
1	A	229	TRP	2.1
1	E	35	VAL	2.1
2	F	164	MET	2.1
1	E	548	VAL	2.0
1	E	73	LYS	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	ATM	H	823	22/23	0.66	0.13	155,157,158,158	0
4	MRG	H	817	26/27	0.83	0.09	154,157,167,167	0
4	MRG	D	817	26/27	0.87	0.10	89,93,101,108	0
4	ATM	D	823	22/23	0.91	0.09	87,90,92,94	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.