



Full wwPDB EM Validation Report ⓘ

Jul 15, 2025 – 08:35 PM JST

PDB ID : 8K23 / pdb_00008k23
EMDB ID : EMD-36826
Title : ICP1 Csy-dsDNA-Cas1-Cas2/3 complex (fully assembled form) composited structure with C1 symmetry
Authors : Zhang, L.X.; Feng, Y.
Deposited on : 2023-07-12
Resolution : 3.75 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>
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:

EMDB validation analysis : **FAILED**
MolProbity : 4-5-2 with Phenix2.0rc1
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

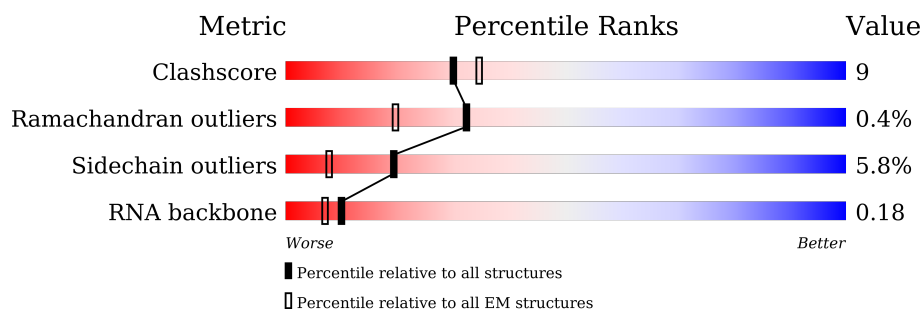
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.75 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)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	B	177	81% 18% .
1	b	177	81% 18% .
2	C	248	79% 18% .
2	c	248	79% 19% .
3	D	302	72% 21% . .
3	E	302	76% 21% . .
3	d	302	71% 25% . .
3	e	302	69% 26% . .

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Mol	Chain	Length	Quality of chain
4	G	306	
4	I	306	
4	J	306	
4	K	306	
4	L	306	
4	M	306	
4	g	306	
4	i	306	
4	j	306	
4	k	306	
4	l	306	
4	m	306	
5	H	168	
5	h	168	
6	P	60	
6	p	60	
7	Q	43	
7	U	43	
7	q	43	
8	R	31	
8	r	31	
9	A	930	
9	a	930	
10	V	21	

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 67168 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Csy1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	177	Total	C	N	O	S	0	0
			1415	896	235	274	10		
1	b	177	Total	C	N	O	S	0	0
			1415	896	235	274	10		

- Molecule 2 is a protein called Csy2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	247	Total	C	N	O	S	0	0
			1903	1214	320	355	14		
2	c	247	Total	C	N	O	S	0	0
			1903	1214	320	355	14		

- Molecule 3 is a protein called Cas1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	295	Total	C	N	O	S	2	0
			2316	1480	397	428	11		
3	E	295	Total	C	N	O	S	0	0
			2329	1491	394	431	13		
3	d	295	Total	C	N	O	S	2	0
			2326	1485	399	430	12		
3	e	295	Total	C	N	O	S	0	0
			2324	1489	393	429	13		

- Molecule 4 is a protein called Csy3.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	G	302	Total	C	N	O	S	0	0
			2314	1456	392	459	7		
4	I	302	Total	C	N	O	S	0	0
			2298	1447	389	455	7		

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Mol	Chain	Residues	Atoms					AltConf	Trace
4	J	302	Total	C	N	O	S	0	0
			2318	1459	393	459	7		
4	K	302	Total	C	N	O	S	0	0
			2318	1459	393	459	7		
4	L	302	Total	C	N	O	S	0	0
			2307	1450	391	459	7		
4	M	302	Total	C	N	O	S	0	0
			2314	1456	392	459	7		
4	g	302	Total	C	N	O	S	0	0
			2314	1456	392	459	7		
4	i	302	Total	C	N	O	S	0	0
			2298	1447	389	455	7		
4	j	302	Total	C	N	O	S	0	0
			2318	1459	393	459	7		
4	k	302	Total	C	N	O	S	0	0
			2318	1459	393	459	7		
4	l	302	Total	C	N	O	S	0	0
			2307	1450	391	459	7		
4	m	302	Total	C	N	O	S	0	0
			2314	1456	392	459	7		

- Molecule 5 is a protein called Csy4.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	H	165	Total	C	N	O	S	0	0
			1290	818	221	245	6		
5	h	165	Total	C	N	O	S	0	0
			1290	818	221	245	6		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	51	ILE	VAL	conflict	UNP F1D5V5
h	51	ILE	VAL	conflict	UNP F1D5V5

- Molecule 6 is a RNA chain called RNA (60-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
6	P	60	Total	C	N	O	P	0	0
			1260	565	210	425	60		
6	p	60	Total	C	N	O	P	0	0
			1260	565	210	425	60		

- Molecule 7 is a DNA chain called DNA (43-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	Q	43	Total	C	N	O	P	0	0
			898	425	184	246	43		
7	U	21	Total	C	N	O	P	0	0
			439	209	88	121	21		
7	q	43	Total	C	N	O	P	0	0
			898	425	184	246	43		

- Molecule 8 is a DNA chain called DNA (31-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
8	R	31	Total	C	N	O	P	0	0
			620	299	94	196	31		
8	r	31	Total	C	N	O	P	0	0
			620	299	94	196	31		

- Molecule 9 is a protein called HD Cas3-type domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	A	929	Total	C	N	O	S	0	0
			7259	4620	1242	1363	34		
9	a	929	Total	C	N	O	S	0	0
			7242	4606	1241	1361	34		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	834	LYS	ARG	conflict	UNP F1D5V9
a	834	LYS	ARG	conflict	UNP F1D5V9

- Molecule 10 is a DNA chain called DNA (5'-D(*AP*TP*CP*TP*TP*CP*CP*CP*TP*AP*TP*TP*TP*AP*AP*AP*TP*TP*GP*CP*T)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
10	V	21	Total	C	N	O	P	0	0
			419	205	65	129	20		

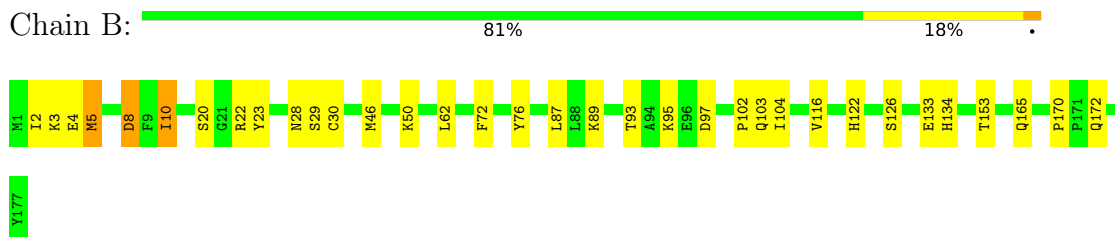
- Molecule 11 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
11	A	2	Total 2	Mn 2	0
11	a	2	Total 2	Mn 2	0

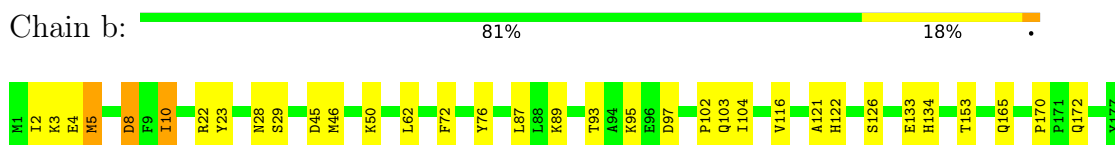
3 Residue-property plots

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.

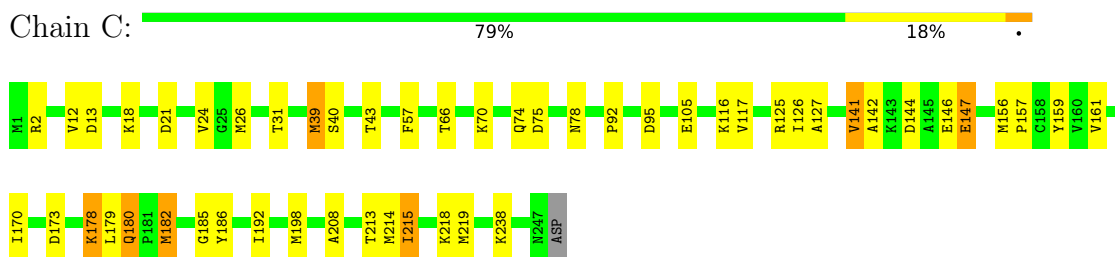
- Molecule 1: Csy1



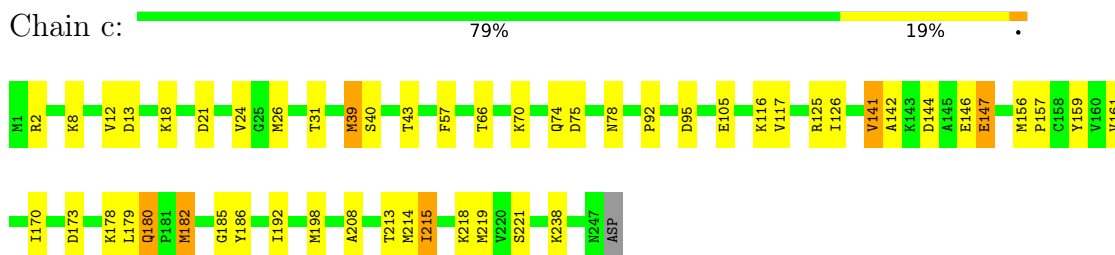
- Molecule 1: Csy1



- Molecule 2: Csy2

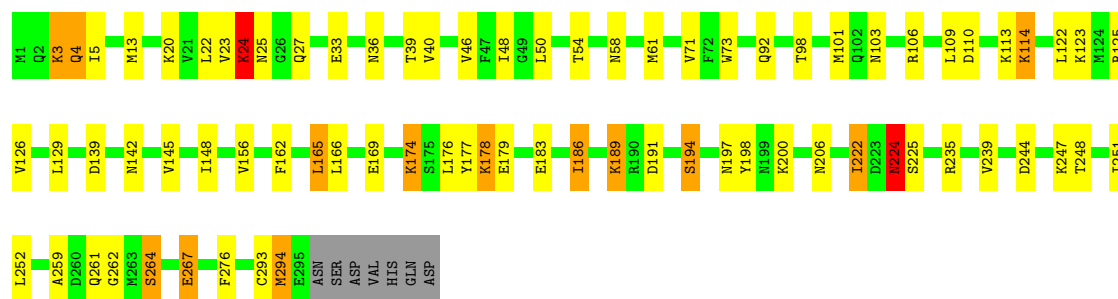


- Molecule 2: Csy2



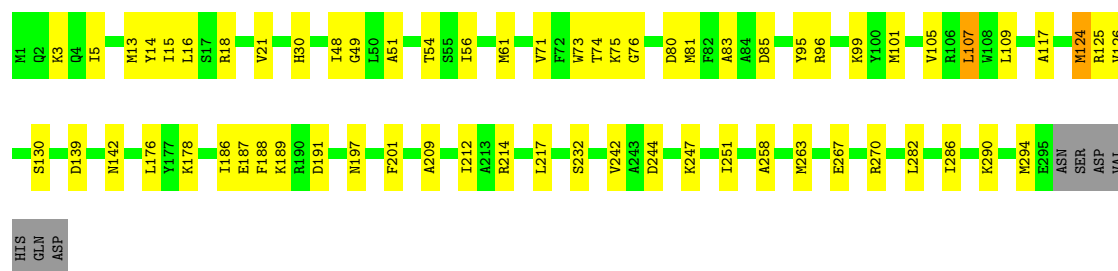
- Molecule 3: Cas1

Chain D:  72% 21% . . .



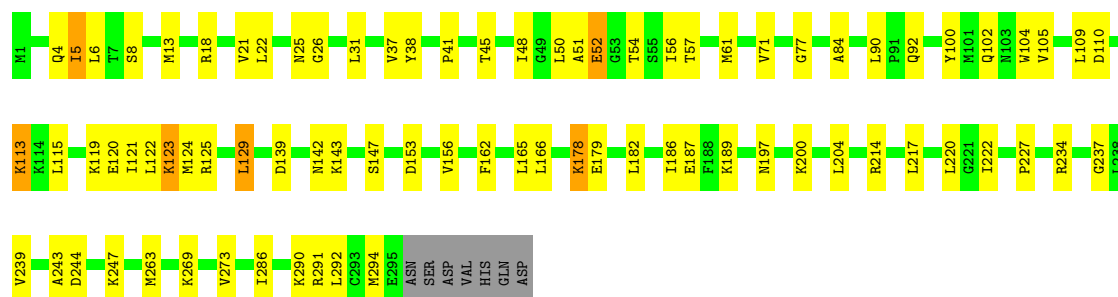
• Molecule 3: Cas1

Chain E:  76% 21% . .



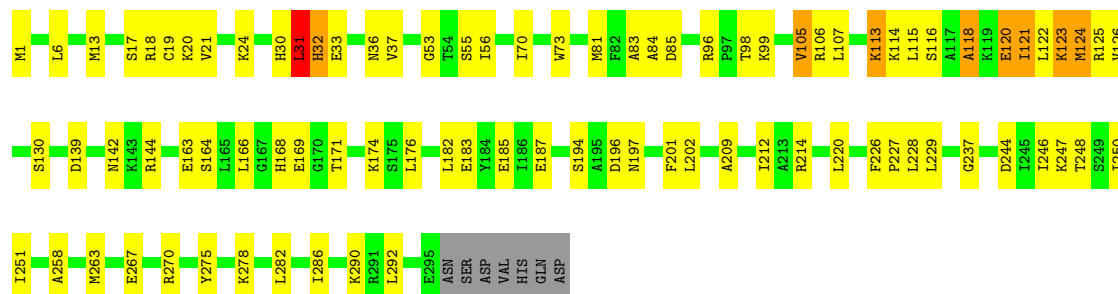
• Molecule 3: Cas1

Chain d:  71% 25% . .

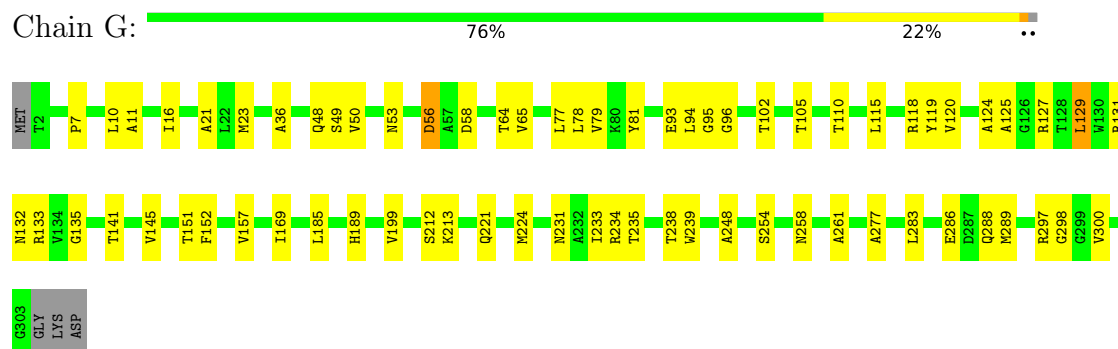


• Molecule 3: Cas1

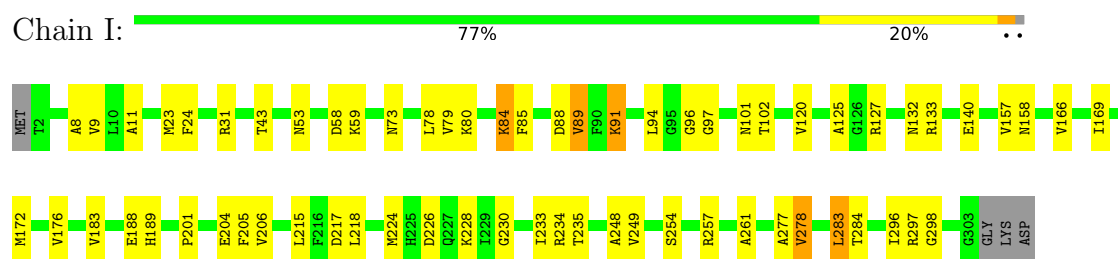
Chain e:  69% 26% . .



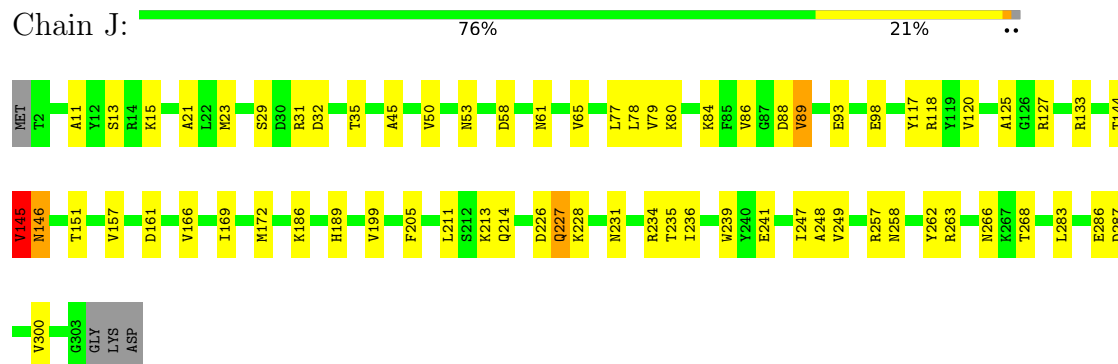
• Molecule 4: Csy3



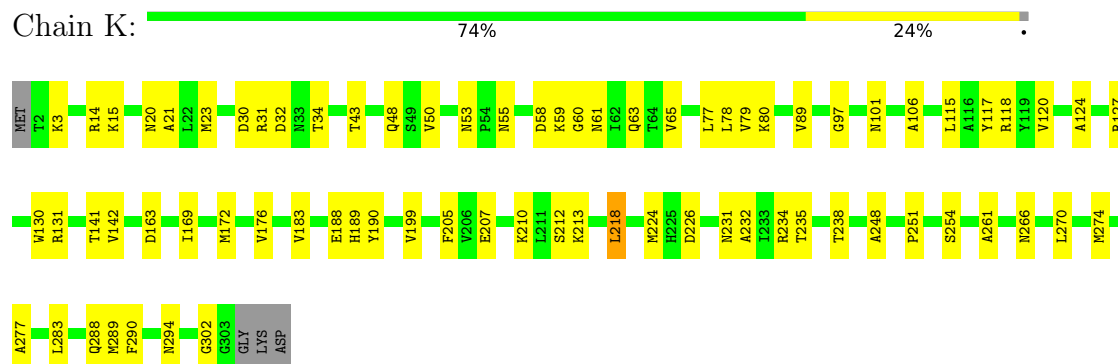
• Molecule 4: Csy3



• Molecule 4: Csy3

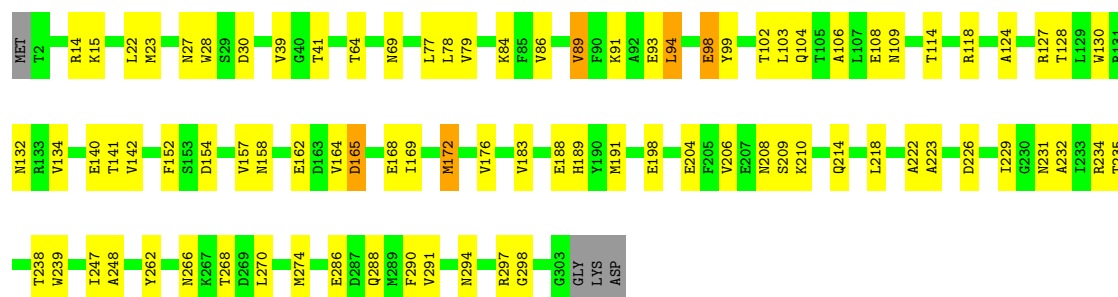


• Molecule 4: Csy3



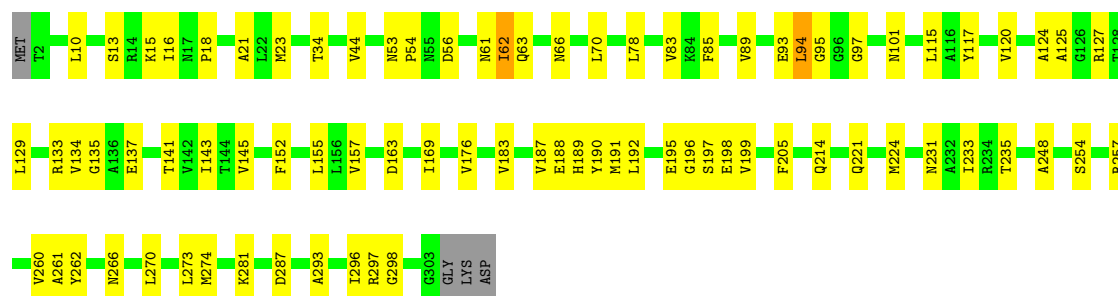
• Molecule 4: Csy3

Chain L:  71% 26% ..



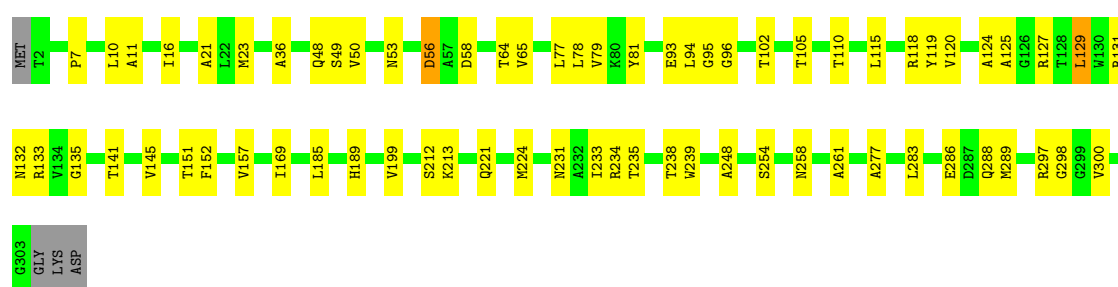
• Molecule 4: Csy3

Chain M:  72% 26% ..



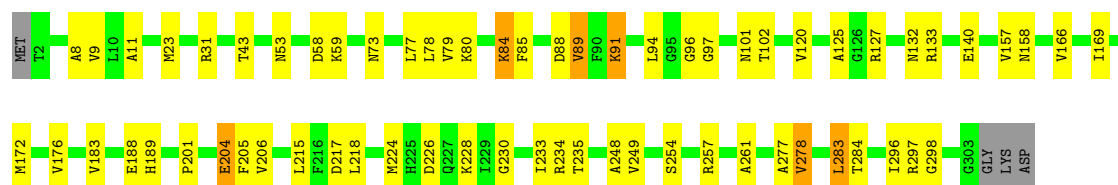
• Molecule 4: Csy3

Chain g:  76% 22% ..



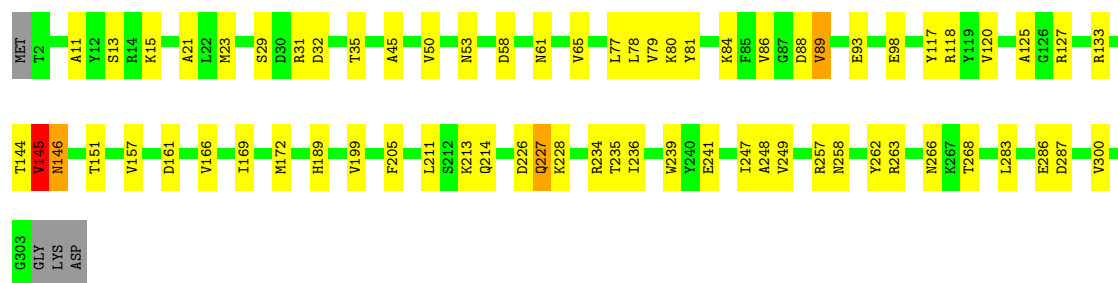
• Molecule 4: Csy3

Chain i:  77% 19% ..



• Molecule 4: Csy3

Chain j:  76% 21% ..



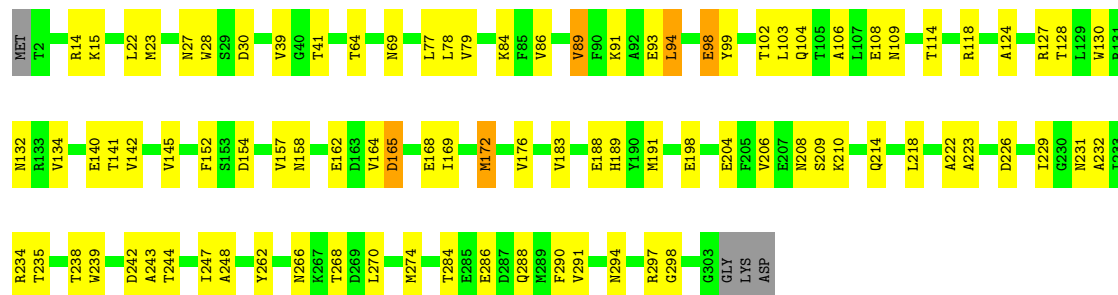
• Molecule 4: Csy3

Chain k:  74% 25% .



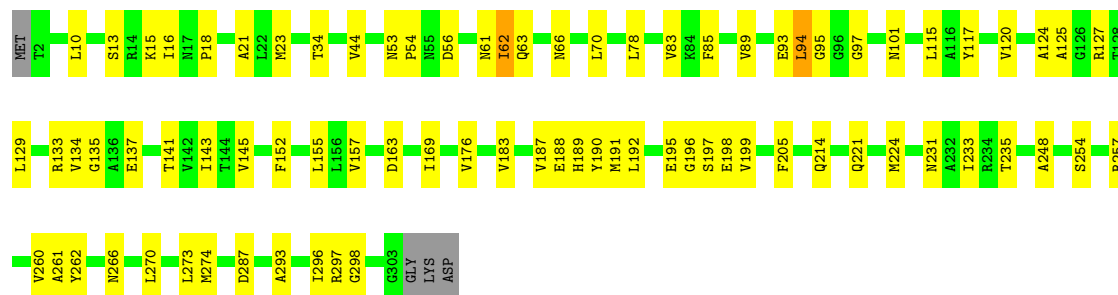
• Molecule 4: Csy3

Chain l:  69% 28% ..



• Molecule 4: Csy3

Chain m:  73% 25% ..



Chain q:  72% 26% .



- Molecule 8: DNA (31-MER)

Chain R:  81% 19%



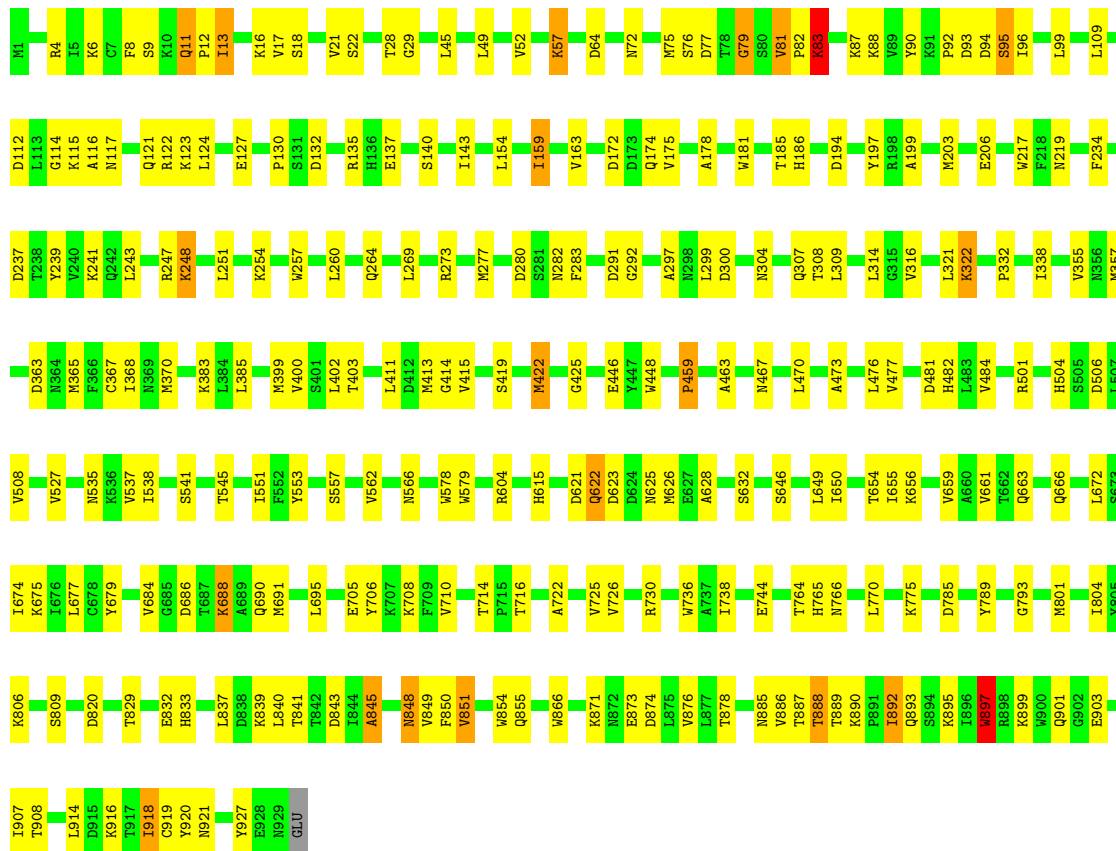
- Molecule 8: DNA (31-MER)

Chain r:  81% 19%



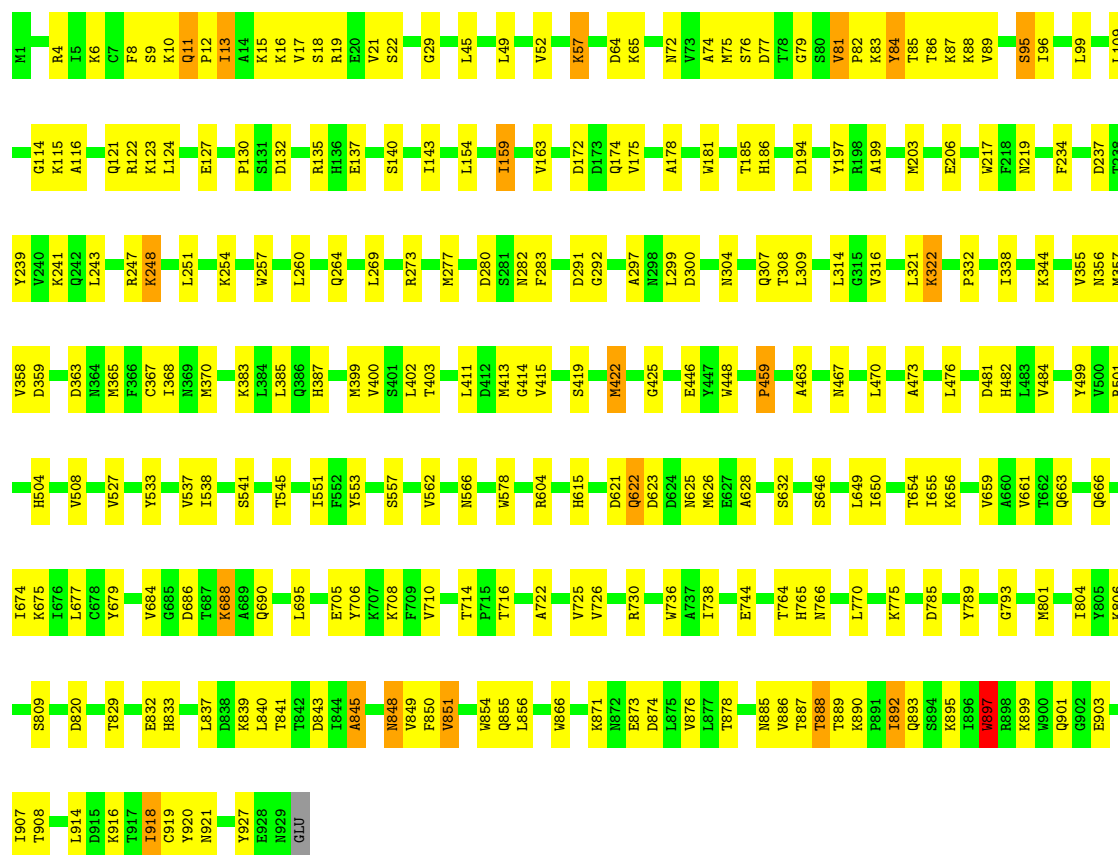
- Molecule 9: HD Cas3-type domain-containing protein

Chain A:  73% 25% .



- Molecule 9: HD Cas3-type domain-containing protein

Chain a:  72% 25% .



• Molecule 10: DNA (5'-D(*AP*TP*CP*TP*TP*CP*CP*CP*TP*AP*TP*TP*TP*AP*AP*AP*TP*TP*GP*CP*T)-3')

Chain V:  76% 24%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	132865	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	B	0.32	0/1448	0.61	2/1956 (0.1%)
1	b	0.32	0/1448	0.61	2/1956 (0.1%)
2	C	0.32	0/1940	0.67	3/2625 (0.1%)
2	c	0.32	0/1940	0.67	3/2625 (0.1%)
3	D	0.56	2/2370 (0.1%)	0.77	2/3207 (0.1%)
3	E	0.26	0/2377	0.62	3/3210 (0.1%)
3	d	0.36	0/2380	0.73	0/3219
3	e	0.51	2/2373 (0.1%)	0.75	7/3208 (0.2%)
4	G	0.34	0/2354	0.60	1/3198 (0.0%)
4	I	0.36	0/2338	0.65	2/3180 (0.1%)
4	J	0.35	0/2358	0.67	2/3202 (0.1%)
4	K	0.36	0/2358	0.64	0/3202
4	L	0.42	0/2347	0.78	5/3190 (0.2%)
4	M	0.28	0/2354	0.63	2/3198 (0.1%)
4	g	0.34	0/2354	0.60	1/3198 (0.0%)
4	i	0.36	0/2338	0.65	2/3180 (0.1%)
4	j	0.35	0/2358	0.67	2/3202 (0.1%)
4	k	0.36	0/2358	0.64	0/3202
4	l	0.42	0/2347	0.78	5/3190 (0.2%)
4	m	0.29	0/2354	0.63	2/3198 (0.1%)
5	H	0.38	0/1308	0.77	1/1757 (0.1%)
5	h	0.37	0/1308	0.77	1/1757 (0.1%)
6	P	0.35	0/1404	0.62	2/2181 (0.1%)
6	p	0.35	0/1404	0.62	2/2181 (0.1%)
7	Q	0.31	0/1014	0.53	1/1565 (0.1%)
7	U	0.31	0/495	0.48	0/763
7	q	0.31	0/1014	0.53	1/1565 (0.1%)
8	R	0.29	0/688	0.53	0/1057
8	r	0.29	0/688	0.53	0/1057
9	A	0.37	1/7412 (0.0%)	0.72	14/10046 (0.1%)
9	a	0.40	1/7393 (0.0%)	0.73	17/10022 (0.2%)
10	V	0.54	0/466	0.80	1/716 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
All	All	0.37	6/69088 (0.0%)	0.68	86/95013 (0.1%)

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	a	84	TYR	N-CA	-8.28	1.37	1.46
3	e	31	LEU	CA-C	-6.99	1.44	1.53
3	D	24	LYS	CA-C	-6.35	1.45	1.52
9	A	83	LYS	CA-C	-6.25	1.44	1.52
3	D	24	LYS	C-O	-5.11	1.17	1.24
3	e	96	ARG	C-N	5.05	1.39	1.33

All (86) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	l	98	GLU	N-CA-C	-10.39	100.67	113.97
4	L	98	GLU	N-CA-C	-10.39	100.67	113.97
4	j	53	ASN	CB-CA-C	10.12	118.39	111.20
4	J	53	ASN	CB-CA-C	10.04	118.33	111.20
9	A	13	ILE	N-CA-C	-9.91	103.39	112.90
9	a	13	ILE	N-CA-C	-9.90	103.40	112.90
9	A	77	ASP	N-CA-C	-9.81	101.19	113.55
9	a	77	ASP	N-CA-C	-9.77	101.24	113.55
5	h	12	ASP	N-CA-C	-8.66	102.52	113.43
5	H	12	ASP	N-CA-C	-8.65	102.53	113.43
9	a	892	ILE	N-CA-C	-8.24	98.01	109.21
9	A	892	ILE	N-CA-C	-8.21	98.04	109.21
9	a	87	LYS	N-CA-C	-7.08	99.12	109.18
3	e	32	HIS	N-CA-C	-6.70	99.98	109.96
6	P	41	C	C4'-C3'-O3'	6.60	119.30	109.40
6	p	41	C	C4'-C3'-O3'	6.59	119.28	109.40
3	e	118	ALA	N-CA-C	-6.55	104.06	111.07
3	D	177	TYR	N-CA-C	-6.39	104.23	111.07
1	B	8	ASP	N-CA-C	-6.23	104.57	111.36
1	b	8	ASP	N-CA-C	-6.20	104.60	111.36
3	D	224	ASN	N-CA-C	-6.13	106.77	114.56
3	e	96	ARG	CA-C-N	-6.04	114.05	120.03
3	e	96	ARG	C-N-CA	-6.04	114.05	120.03
3	E	96	ARG	CA-C-N	-5.95	113.84	119.85
3	E	96	ARG	C-N-CA	-5.95	113.84	119.85
9	a	897	TRP	N-CA-CB	5.95	119.42	110.14
4	i	53	ASN	CA-CB-CG	5.95	118.55	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	I	53	ASN	CA-CB-CG	5.92	118.53	112.60
4	J	53	ASN	N-CA-CB	-5.92	105.08	111.66
4	j	53	ASN	N-CA-CB	-5.92	105.09	111.66
9	A	897	TRP	N-CA-CB	5.90	119.35	110.14
9	a	82	PRO	CB-CA-C	-5.80	101.98	111.56
1	b	3	LYS	N-CA-C	-5.77	104.96	112.23
1	B	3	LYS	N-CA-C	-5.76	104.97	112.23
9	A	76	SER	N-CA-C	5.69	117.67	108.34
9	a	76	SER	N-CA-C	5.68	117.65	108.34
9	a	159	ILE	CA-CB-CG1	5.66	120.03	110.40
9	A	159	ILE	CA-CB-CG1	5.66	120.02	110.40
3	e	33	GLU	N-CA-C	-5.58	106.32	113.01
7	q	52	DA	C2'-C3'-O3'	5.56	119.83	111.50
7	Q	52	DA	C2'-C3'-O3'	5.54	119.82	111.50
9	a	57	LYS	CB-CG-CD	5.49	123.93	111.30
9	a	448	TRP	CA-C-N	5.49	132.16	121.41
9	a	448	TRP	C-N-CA	5.49	132.16	121.41
9	A	448	TRP	CA-C-N	5.48	132.15	121.41
9	A	448	TRP	C-N-CA	5.48	132.15	121.41
9	A	57	LYS	CB-CG-CD	5.46	123.87	111.30
9	a	545	THR	N-CA-C	-5.45	102.79	110.31
9	A	545	THR	N-CA-C	-5.44	102.81	110.31
4	L	106	ALA	N-CA-C	-5.39	107.71	114.56
4	l	106	ALA	N-CA-C	-5.36	107.75	114.56
2	c	213	THR	N-CA-C	-5.36	101.61	109.81
2	C	213	THR	N-CA-C	-5.35	101.62	109.81
9	A	855	GLN	N-CA-C	-5.33	105.63	111.82
3	e	107	LEU	N-CA-C	-5.31	105.58	111.36
9	a	855	GLN	N-CA-C	-5.30	105.67	111.82
6	p	41	C	C2'-C3'-O3'	5.27	117.40	109.50
4	l	162	GLU	N-CA-C	5.26	117.33	108.96
4	L	162	GLU	N-CA-C	5.24	117.29	108.96
4	G	56	ASP	N-CA-C	-5.21	106.88	113.18
6	P	41	C	C2'-C3'-O3'	5.20	117.30	109.50
2	C	180	GLN	CA-C-N	-5.17	113.27	120.25
2	C	180	GLN	C-N-CA	-5.17	113.27	120.25
4	g	56	ASP	N-CA-C	-5.17	106.92	113.18
2	c	180	GLN	CA-C-N	-5.15	113.29	120.25
2	c	180	GLN	C-N-CA	-5.15	113.29	120.25
9	a	86	THR	N-CA-C	5.15	114.83	108.19
4	L	268	THR	N-CA-C	-5.14	105.02	113.50
4	l	268	THR	N-CA-C	-5.13	105.04	113.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	79	GLY	N-CA-C	-5.12	104.77	112.60
10	V	2	DT	C4'-C3'-O3'	-5.11	102.34	110.00
9	a	79	GLY	N-CA-C	-5.10	104.79	112.60
4	M	61	ASN	CA-C-N	5.08	131.11	121.97
4	M	61	ASN	C-N-CA	5.08	131.11	121.97
4	l	210	LYS	CB-CA-C	-5.06	110.72	116.54
4	m	61	ASN	CA-C-N	5.06	131.08	121.97
4	m	61	ASN	C-N-CA	5.06	131.08	121.97
4	L	210	LYS	CB-CA-C	-5.05	110.73	116.54
4	I	88	ASP	N-CA-C	-5.05	104.46	111.28
4	i	88	ASP	N-CA-C	-5.04	104.48	111.28
9	A	459	PRO	CA-C-N	5.03	129.55	122.46
9	A	459	PRO	C-N-CA	5.03	129.55	122.46
9	a	459	PRO	CA-C-N	5.02	129.54	122.46
9	a	459	PRO	C-N-CA	5.02	129.54	122.46
3	E	178	LYS	CA-CB-CG	5.02	124.13	114.10
3	e	32	HIS	CB-CA-C	5.00	117.36	110.16

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	1415	0	1353	17	0
1	b	1415	0	1353	17	0
2	C	1903	0	1916	34	0
2	c	1903	0	1916	34	0
3	D	2316	0	2280	77	0
3	E	2329	0	2300	39	0
3	d	2326	0	2294	47	0
3	e	2324	0	2293	83	0
4	G	2314	0	2249	37	0
4	I	2298	0	2216	37	0
4	J	2318	0	2260	36	0
4	K	2318	0	2260	46	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	L	2307	0	2229	47	0
4	M	2314	0	2249	47	0
4	g	2314	0	2249	37	0
4	i	2298	0	2216	38	0
4	j	2318	0	2260	35	0
4	k	2318	0	2260	47	0
4	l	2307	0	2229	66	0
4	m	2314	0	2249	46	0
5	H	1290	0	1336	25	0
5	h	1290	0	1336	43	0
6	P	1260	0	641	36	0
6	p	1260	0	641	37	0
7	Q	898	0	481	11	0
7	U	439	0	237	12	0
7	q	898	0	481	11	0
8	R	620	0	355	6	0
8	r	620	0	355	6	0
9	A	7259	0	7155	148	0
9	a	7242	0	7120	190	0
10	V	419	0	243	17	0
11	A	2	0	0	0	0
11	a	2	0	0	0	0
All	All	67168	0	63012	1150	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 9.

All (1150) 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)
9:A:29:GLY:CA	9:a:81:VAL:HG11	1.30	1.52
3:D:186:ILE:CD1	9:a:357:MET:SD	2.09	1.40
3:D:33:GLU:HA	9:a:89:VAL:CG1	1.50	1.39
3:D:36:ASN:HD21	9:a:74:ALA:CB	1.34	1.37
3:D:33:GLU:CA	9:a:89:VAL:HG11	1.55	1.35
3:D:186:ILE:HD13	9:a:357:MET:SD	1.63	1.34
3:D:267:GLU:OE1	9:a:65:LYS:CD	1.78	1.31
3:D:267:GLU:OE1	9:a:65:LYS:HD3	1.23	1.28
9:A:29:GLY:HA3	9:a:81:VAL:CG1	1.69	1.21
9:A:29:GLY:CA	9:a:81:VAL:CG1	2.18	1.20
10:V:12:DT:H5''	9:a:10:LYS:CD	1.72	1.18

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:e:174:LYS:HE2	4:l:242:ASP:C	1.73	1.14
9:A:29:GLY:HA2	9:a:81:VAL:HG11	1.26	1.13
3:e:144:ARG:HH21	5:h:9:VAL:HG21	1.08	1.12
3:D:186:ILE:HD11	9:a:357:MET:CE	1.82	1.10
3:D:36:ASN:HD21	9:a:74:ALA:HB1	1.09	1.08
3:D:36:ASN:ND2	9:a:74:ALA:CB	2.19	1.06
3:D:197:ASN:ND2	9:a:356:ASN:C	2.14	1.05
3:D:36:ASN:ND2	9:a:74:ALA:HB1	1.71	1.05
3:D:186:ILE:HD11	9:a:357:MET:SD	1.93	1.05
3:D:259:ALA:O	9:a:356:ASN:HB3	1.53	1.05
3:e:174:LYS:HE2	4:l:243:ALA:N	1.73	1.04
3:D:36:ASN:HD21	9:a:74:ALA:HB3	1.15	1.03
3:e:144:ARG:NH2	5:h:9:VAL:HG21	1.73	1.02
3:D:197:ASN:ND2	9:a:356:ASN:O	1.93	1.01
3:D:197:ASN:HD22	9:a:356:ASN:C	1.70	1.00
3:D:197:ASN:OD1	9:a:358:VAL:O	1.79	0.99
3:e:174:LYS:HE2	4:l:242:ASP:CA	1.93	0.97
3:D:186:ILE:HD11	9:a:357:MET:HE1	1.42	0.96
10:V:12:DT:H5"	9:a:10:LYS:HD3	1.44	0.95
3:e:182:LEU:HD23	5:h:77:HIS:CG	2.02	0.94
3:D:267:GLU:OE1	9:a:65:LYS:HD2	1.67	0.94
9:A:29:GLY:HA2	9:a:81:VAL:CG1	1.89	0.94
9:A:663:GLN:HG2	9:A:892:ILE:HD11	1.49	0.94
9:a:663:GLN:HG2	9:a:892:ILE:HD11	1.49	0.93
3:e:174:LYS:HE2	4:l:242:ASP:HA	1.51	0.93
3:e:185:GLU:OE2	5:h:5:SER:OG	1.87	0.92
10:V:13:DT:OP1	9:a:10:LYS:HA	1.68	0.91
10:V:12:DT:C5'	9:a:10:LYS:CD	2.53	0.85
9:A:29:GLY:HA3	9:a:81:VAL:HG11	0.87	0.85
3:e:174:LYS:CE	4:l:243:ALA:N	2.38	0.84
10:V:12:DT:H5"	9:a:10:LYS:CE	2.11	0.81
3:e:182:LEU:HD21	5:h:77:HIS:CB	2.10	0.80
4:K:21:ALA:HA	4:K:80:LYS:O	1.83	0.78
3:e:182:LEU:CD2	5:h:77:HIS:CB	2.62	0.78
4:k:21:ALA:HA	4:k:80:LYS:O	1.83	0.77
9:A:28:THR:O	9:a:81:VAL:HG21	1.85	0.76
3:e:182:LEU:CD2	5:h:77:HIS:CG	2.69	0.75
10:V:12:DT:H5"	9:a:10:LYS:HD2	1.69	0.75
3:D:224:ASN:HD21	3:D:239:VAL:HG12	1.52	0.74
3:D:36:ASN:ND2	9:a:74:ALA:HB3	1.94	0.74
5:h:10:ASP:CG	4:l:158:ASN:HD21	1.96	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:H:10:ASP:CG	4:L:158:ASN:HD21	1.96	0.73
5:H:10:ASP:OD2	4:L:158:ASN:ND2	2.23	0.71
4:L:84:LYS:HD3	4:M:135:GLY:HA3	1.72	0.71
4:l:84:LYS:HD3	4:m:135:GLY:HA3	1.72	0.71
9:A:174:GLN:HB3	9:A:257:TRP:HE1	1.56	0.71
5:h:10:ASP:OD2	4:l:158:ASN:ND2	2.23	0.71
10:V:12:DT:C5'	9:a:10:LYS:HD2	2.20	0.70
4:k:79:VAL:HB	4:k:189:HIS:HB2	1.73	0.70
4:K:79:VAL:HB	4:K:189:HIS:HB2	1.73	0.70
3:e:182:LEU:HD21	5:h:77:HIS:HB3	1.72	0.70
9:a:174:GLN:HB3	9:a:257:TRP:HE1	1.56	0.70
3:D:200:LYS:HD3	9:a:359:ASP:OD1	1.90	0.70
4:M:78:LEU:HA	4:M:189:HIS:O	1.90	0.70
3:e:174:LYS:CE	4:l:242:ASP:HA	2.22	0.70
4:m:78:LEU:HA	4:m:189:HIS:O	1.90	0.70
4:g:78:LEU:HA	4:g:189:HIS:O	1.93	0.69
4:G:78:LEU:HA	4:G:189:HIS:O	1.93	0.68
3:e:183:GLU:HA	5:h:77:HIS:HE1	1.58	0.68
6:p:43:G:H21	6:p:47:A:H62	1.39	0.68
3:D:191:ASP:HB3	3:D:194:SER:HB2	1.76	0.68
4:m:97:GLY:O	4:m:101:ASN:ND2	2.27	0.68
3:e:163:GLU:CB	4:l:284:THR:HG21	2.24	0.68
3:D:103:ASN:HB2	3:D:293:CYS:HB2	1.77	0.67
6:P:43:G:H21	6:P:47:A:H62	1.39	0.67
10:V:12:DT:C5'	9:a:10:LYS:HD3	2.20	0.67
3:D:109:LEU:HD11	3:E:105:VAL:HG12	1.76	0.67
4:M:97:GLY:O	4:M:101:ASN:ND2	2.27	0.67
4:m:89:VAL:HB	4:m:296:ILE:HG22	1.77	0.67
4:M:89:VAL:HB	4:M:296:ILE:HG22	1.77	0.66
4:M:44:VAL:O	4:M:62:ILE:HA	1.96	0.65
7:U:1:DA:OP1	3:e:20:LYS:CD	2.43	0.65
7:U:1:DA:OP1	3:e:20:LYS:HD2	1.97	0.65
3:e:163:GLU:HG2	4:l:284:THR:CG2	2.26	0.65
2:c:2:ARG:HB2	2:c:142:ALA:HB3	1.78	0.65
4:m:44:VAL:O	4:m:62:ILE:HA	1.97	0.65
9:A:29:GLY:HA3	9:a:81:VAL:CB	2.25	0.64
3:d:13:MET:HB3	3:d:273:VAL:HG22	1.80	0.64
6:p:10:U:H5	7:q:41:DG:H1	1.45	0.64
2:C:2:ARG:HB2	2:C:142:ALA:HB3	1.78	0.64
6:P:10:U:H5	7:Q:41:DG:H1	1.45	0.64
4:j:21:ALA:HA	4:j:80:LYS:O	1.98	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:21:ALA:HA	4:J:80:LYS:O	1.98	0.64
9:A:81:VAL:HG21	9:a:29:GLY:HA3	1.81	0.63
5:H:143:ARG:HH12	6:P:36:A:H4'	1.63	0.63
3:D:197:ASN:HD21	9:a:356:ASN:C	2.04	0.62
3:E:197:ASN:O	3:E:201:PHE:HB2	2.00	0.62
4:l:94:LEU:HD23	4:m:257:ARG:HG3	1.80	0.62
5:h:143:ARG:HH12	6:p:36:A:H4'	1.63	0.62
4:L:94:LEU:HD23	4:M:257:ARG:HG3	1.81	0.62
3:E:75:LYS:HB3	3:E:80:ASP:HB3	1.81	0.62
3:e:174:LYS:NZ	4:l:243:ALA:N	2.46	0.61
4:k:78:LEU:HA	4:k:189:HIS:O	2.00	0.61
4:l:15:LYS:HE2	4:l:89:VAL:HA	1.83	0.61
1:B:5:MET:HB3	1:B:62:LEU:HD13	1.83	0.61
2:C:156:MET:HE3	2:C:157:PRO:HA	1.81	0.61
4:i:201:PRO:HG2	4:i:215:LEU:HD13	1.82	0.61
4:L:15:LYS:HE2	4:L:89:VAL:HA	1.83	0.61
9:A:194:ASP:HB3	9:A:197:TYR:HB2	1.82	0.60
4:J:78:LEU:HA	4:J:189:HIS:O	2.01	0.60
2:c:156:MET:HE3	2:c:157:PRO:HA	1.81	0.60
3:e:139:ASP:O	3:e:142:ASN:ND2	2.33	0.60
4:K:78:LEU:HA	4:K:189:HIS:O	2.00	0.60
9:A:677:LEU:HB2	9:A:897:TRP:HE1	1.67	0.60
4:j:78:LEU:HA	4:j:189:HIS:O	2.01	0.60
4:I:201:PRO:HG2	4:I:215:LEU:HD13	1.82	0.60
9:a:677:LEU:HB2	9:a:897:TRP:HE1	1.67	0.60
9:a:744:GLU:HG3	9:a:829:THR:HG22	1.83	0.60
1:b:5:MET:HB3	1:b:62:LEU:HD13	1.83	0.60
9:a:194:ASP:HB3	9:a:197:TYR:HB2	1.82	0.60
10:V:13:DT:OP1	9:a:10:LYS:CA	2.47	0.59
3:D:261:GLN:HA	9:a:344:LYS:NZ	2.16	0.59
4:I:78:LEU:HA	4:I:189:HIS:O	2.03	0.59
5:h:20:VAL:HG13	5:h:52:ILE:HD11	1.84	0.59
3:D:92:GLN:NE2	3:E:81:MET:SD	2.76	0.59
3:D:139:ASP:O	3:D:142:ASN:ND2	2.35	0.59
7:U:1:DA:OP1	3:e:20:LYS:HG2	2.02	0.59
3:d:197:ASN:HA	3:d:200:LYS:HE3	1.83	0.59
4:i:78:LEU:HA	4:i:189:HIS:O	2.03	0.59
9:A:273:ARG:HG2	9:A:277:MET:HE2	1.85	0.59
5:H:20:VAL:HG13	5:H:52:ILE:HD11	1.84	0.59
9:a:656:LYS:NZ	8:r:41:DT:OP1	2.35	0.59
4:k:127:ARG:HD3	4:k:235:THR:HB	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:A:744:GLU:HG3	9:A:829:THR:HG22	1.83	0.59
3:e:187:GLU:CG	5:h:43:ARG:NH1	2.65	0.59
4:g:7:PRO:HG2	4:g:10:LEU:HB2	1.83	0.59
4:K:127:ARG:HD3	4:K:235:THR:HB	1.84	0.59
4:M:13:SER:OG	4:M:15:LYS:NZ	2.36	0.58
7:U:1:DA:P	3:e:20:LYS:HD3	2.43	0.58
9:a:99:LEU:HD21	9:a:257:TRP:HE3	1.68	0.58
3:e:70:ILE:HD11	3:e:85:ASP:HB2	1.84	0.58
9:a:273:ARG:HG2	9:a:277:MET:HE2	1.85	0.58
2:C:39:MET:HE1	2:C:117:VAL:HG22	1.85	0.58
4:G:7:PRO:HG2	4:G:10:LEU:HB2	1.83	0.58
9:A:99:LEU:HD21	9:A:257:TRP:HE3	1.68	0.58
7:U:10:DA:H61	10:V:12:DT:H3	1.50	0.58
3:d:139:ASP:O	3:d:142:ASN:ND2	2.36	0.58
3:e:122:LEU:HD21	3:e:229:LEU:HD11	1.86	0.58
4:m:13:SER:OG	4:m:15:LYS:NZ	2.37	0.58
4:i:125:ALA:O	4:i:133:ARG:NH2	2.37	0.58
4:I:125:ALA:O	4:I:133:ARG:NH2	2.37	0.58
9:a:675:LYS:HB3	9:a:897:TRP:HB3	1.86	0.58
4:L:290:PHE:O	4:L:294:ASN:ND2	2.37	0.58
4:l:41:THR:HG22	4:l:64:THR:HG22	1.86	0.58
3:e:163:GLU:HG2	4:l:284:THR:HG22	1.85	0.58
4:L:41:THR:HG22	4:L:64:THR:HG22	1.86	0.57
9:A:675:LYS:HB3	9:A:897:TRP:HB3	1.86	0.57
8:R:41:DT:OP1	9:A:656:LYS:NZ	2.35	0.57
2:c:39:MET:HE1	2:c:117:VAL:HG22	1.85	0.57
3:E:81:MET:O	3:E:214:ARG:NH1	2.36	0.57
9:A:203:MET:HB2	9:A:206:GLU:HB3	1.87	0.57
9:A:473:ALA:O	9:A:501:ARG:NH1	2.37	0.57
9:A:481:ASP:HB3	9:A:866:TRP:HE1	1.69	0.57
9:a:203:MET:HB2	9:a:206:GLU:HB3	1.87	0.57
3:E:267:GLU:HA	3:E:270:ARG:HG2	1.87	0.57
9:a:473:ALA:O	9:a:501:ARG:NH1	2.38	0.57
4:k:270:LEU:O	4:k:274:MET:HB2	2.04	0.57
9:a:19:ARG:CZ	3:d:25:ASN:O	2.53	0.57
9:a:481:ASP:HB3	9:a:866:TRP:HE1	1.69	0.57
1:B:170:PRO:HD3	2:C:26:MET:HB2	1.86	0.57
1:b:133:GLU:HG2	1:b:134:HIS:HD2	1.70	0.57
3:e:174:LYS:CE	4:l:242:ASP:C	2.63	0.57
5:H:158:ASN:HD21	5:H:162:LEU:HB2	1.70	0.57
4:J:78:LEU:HD21	4:J:80:LYS:HZ1	1.68	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:170:PRO:HD3	2:c:26:MET:HB2	1.86	0.57
4:g:127:ARG:NH2	4:g:157:VAL:O	2.36	0.57
1:B:133:GLU:HG2	1:B:134:HIS:HD2	1.70	0.56
7:U:2:DG:N2	10:V:21:DT:O2	2.38	0.56
10:V:12:DT:H5"	9:a:10:LYS:HE2	1.84	0.56
9:a:237:ASP:O	9:a:241:LYS:NZ	2.38	0.56
3:D:110:ASP:HB3	3:D:113:LYS:HB2	1.86	0.56
3:D:139:ASP:OD1	3:D:139:ASP:N	2.38	0.56
4:G:127:ARG:NH2	4:G:157:VAL:O	2.36	0.56
4:K:118:ARG:NH2	4:K:238:THR:OG1	2.38	0.56
9:A:115:LYS:O	9:A:121:GLN:NE2	2.38	0.56
3:d:291:ARG:HA	3:d:294:MET:HE2	1.87	0.56
4:l:297:ARG:NH1	4:l:298:GLY:O	2.39	0.56
3:D:200:LYS:CD	9:a:359:ASP:OD1	2.53	0.56
3:D:262:GLY:H	9:a:356:ASN:HD22	1.54	0.56
4:K:270:LEU:O	4:K:274:MET:HB2	2.04	0.56
4:L:297:ARG:NH1	4:L:298:GLY:O	2.39	0.56
9:A:292:GLY:H	9:A:308:THR:HG21	1.71	0.56
9:A:677:LEU:HB2	9:A:897:TRP:NE1	2.20	0.56
3:d:18:ARG:HH22	3:d:52:GLU:HB2	1.69	0.56
3:d:21:VAL:HB	3:d:56:ILE:HG13	1.86	0.56
3:e:182:LEU:HD23	5:h:77:HIS:CD2	2.40	0.56
4:k:118:ARG:NH2	4:k:238:THR:OG1	2.38	0.56
9:a:292:GLY:H	9:a:308:THR:HG21	1.71	0.56
3:e:220:LEU:HD13	3:e:290:LYS:HZ3	1.70	0.56
1:B:28:ASN:ND2	1:B:97:ASP:OD1	2.38	0.56
3:D:259:ALA:O	9:a:356:ASN:CB	2.42	0.56
4:L:14:ARG:NH2	6:P:28:U:OP1	2.39	0.56
9:A:237:ASP:O	9:A:241:LYS:NZ	2.38	0.56
9:a:115:LYS:O	9:a:121:GLN:NE2	2.38	0.56
9:a:677:LEU:HB2	9:a:897:TRP:NE1	2.20	0.56
3:e:187:GLU:HG3	5:h:43:ARG:NH1	2.21	0.56
1:b:28:ASN:ND2	1:b:97:ASP:OD1	2.38	0.56
3:e:174:LYS:HD2	4:l:244:THR:HG22	1.87	0.56
4:k:142:VAL:HB	4:k:188:GLU:HB2	1.88	0.56
5:h:158:ASN:HD21	5:h:162:LEU:HB2	1.70	0.56
4:m:16:ILE:HG21	4:m:233:ILE:HG21	1.88	0.56
4:K:142:VAL:HB	4:K:188:GLU:HB2	1.88	0.56
4:M:231:ASN:ND2	6:P:24:U:OP2	2.39	0.56
4:l:14:ARG:NH2	6:p:28:U:OP1	2.39	0.56
3:D:198:TYR:CE1	9:a:357:MET:SD	2.99	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:39:THR:HG21	9:A:22:SER:HB2	1.88	0.55
4:G:118:ARG:NH2	4:G:238:THR:OG1	2.39	0.55
3:d:90:LEU:HD21	3:d:214:ARG:HH22	1.72	0.55
3:e:182:LEU:HD21	5:h:77:HIS:HB2	1.87	0.55
4:j:125:ALA:O	4:j:133:ARG:NH2	2.40	0.55
7:U:1:DA:P	3:e:20:LYS:CD	2.94	0.55
3:e:81:MET:O	3:e:214:ARG:NH1	2.39	0.55
4:g:102:THR:HA	4:g:105:THR:HG22	1.88	0.55
4:l:152:PHE:CE1	4:l:165:ASP:HB3	2.41	0.55
4:l:290:PHE:O	4:l:294:ASN:ND2	2.37	0.55
4:L:152:PHE:CE1	4:L:165:ASP:HB3	2.41	0.55
2:c:75:ASP:HB2	2:c:78:ASN:HD21	1.72	0.55
4:g:118:ARG:NH2	4:g:238:THR:OG1	2.39	0.55
5:h:94:ASP:OD2	6:p:50:C:N4	2.39	0.55
2:C:75:ASP:HB2	2:C:78:ASN:HD21	1.72	0.55
3:D:267:GLU:CD	9:a:65:LYS:HD3	2.22	0.55
4:M:16:ILE:HG21	4:M:233:ILE:HG21	1.88	0.55
3:e:163:GLU:HB2	4:l:284:THR:HG21	1.88	0.55
4:m:231:ASN:ND2	6:p:24:U:OP2	2.39	0.55
3:D:23:VAL:HA	3:D:27:GLN:O	2.06	0.55
4:J:125:ALA:O	4:J:133:ARG:NH2	2.40	0.55
4:i:102:THR:HG23	4:i:278:VAL:HG22	1.89	0.55
4:L:231:ASN:HB2	6:P:30:A:H5'	1.88	0.54
4:m:10:LEU:HD12	4:m:95:GLY:HA3	1.90	0.54
4:I:102:THR:HG23	4:I:278:VAL:HG22	1.89	0.54
4:L:206:VAL:O	6:P:31:A:N6	2.40	0.54
4:l:206:VAL:O	6:p:31:A:N6	2.40	0.54
4:G:102:THR:HA	4:G:105:THR:HG22	1.88	0.54
5:H:94:ASP:OD2	6:P:50:C:N4	2.39	0.54
5:H:137:SER:OG	5:H:142:GLN:O	2.25	0.54
5:h:137:SER:OG	5:h:142:GLN:O	2.25	0.54
2:C:95:ASP:OD2	4:K:20:ASN:ND2	2.41	0.54
4:M:10:LEU:HD12	4:M:95:GLY:HA3	1.89	0.54
4:M:176:VAL:HG21	4:M:183:VAL:HB	1.89	0.54
1:b:29:SER:O	1:b:95:LYS:NZ	2.41	0.54
3:d:56:ILE:HD13	3:d:61:MET:HG2	1.87	0.54
4:l:152:PHE:HE1	4:l:165:ASP:HB3	1.73	0.54
4:l:231:ASN:HB2	6:p:30:A:H5'	1.89	0.54
4:M:270:LEU:O	4:M:274:MET:HB2	2.07	0.54
9:a:890:LYS:C	9:a:921:ASN:HD21	2.16	0.54
2:c:95:ASP:OD2	4:k:20:ASN:ND2	2.41	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:k:124:ALA:HA	4:k:141:THR:HG21	1.89	0.54
4:m:270:LEU:O	4:m:274:MET:HB2	2.07	0.54
3:D:3:LYS:NZ	3:D:4:GLN:O	2.41	0.54
3:E:189:LYS:NZ	3:E:191:ASP:OD2	2.41	0.54
4:K:124:ALA:HA	4:K:141:THR:HG21	1.89	0.54
4:L:152:PHE:HE1	4:L:165:ASP:HB3	1.73	0.54
9:A:851:VAL:HG13	9:A:854:TRP:HB2	1.90	0.54
3:D:40:VAL:HG11	3:D:48:ILE:HD11	1.90	0.54
3:E:48:ILE:HG23	3:E:71:VAL:HG13	1.90	0.54
3:E:51:ALA:HB1	3:E:76:GLY:HA2	1.90	0.54
9:a:851:VAL:HG13	9:a:854:TRP:HB2	1.90	0.54
2:c:125:ARG:NH1	6:p:-3:A:OP1	2.41	0.54
4:L:124:ALA:HA	4:L:141:THR:HG21	1.90	0.53
2:C:125:ARG:NH1	6:P:-3:A:OP1	2.41	0.53
3:d:57:THR:HG22	3:e:55:SER:HB3	1.89	0.53
1:B:29:SER:O	1:B:95:LYS:NZ	2.41	0.53
4:K:235:THR:HA	4:K:248:ALA:HA	1.90	0.53
9:A:890:LYS:C	9:A:921:ASN:HD21	2.16	0.53
1:b:72:PHE:O	1:b:76:TYR:HB2	2.09	0.53
4:g:10:LEU:HA	4:g:95:GLY:HA2	1.91	0.53
4:m:176:VAL:HG21	4:m:183:VAL:HB	1.90	0.53
1:B:72:PHE:O	1:B:76:TYR:HB2	2.09	0.53
3:D:33:GLU:HA	9:a:89:VAL:HG11	0.65	0.53
6:P:22:C:O2'	6:P:23:C:O4'	2.26	0.53
4:i:58:ASP:OD1	4:i:58:ASP:N	2.41	0.53
6:p:22:C:O2'	6:p:23:C:O4'	2.26	0.53
9:A:123:LYS:HG3	9:A:130:PRO:HA	1.91	0.53
9:a:283:PHE:O	9:a:307:GLN:NE2	2.39	0.53
3:D:33:GLU:C	9:a:89:VAL:HG11	2.27	0.53
4:G:10:LEU:HA	4:G:95:GLY:HA2	1.91	0.53
3:e:121:ILE:HG13	3:e:292:LEU:HD11	1.90	0.53
4:i:297:ARG:NH1	4:i:298:GLY:O	2.41	0.53
9:A:90:TYR:HD1	9:A:92:PRO:HD3	1.73	0.53
9:A:283:PHE:O	9:A:307:GLN:NE2	2.39	0.53
3:e:182:LEU:CD2	5:h:77:HIS:HB2	2.37	0.53
4:g:235:THR:HA	4:g:248:ALA:HA	1.91	0.53
4:M:18:PRO:HB3	4:M:83:VAL:HG22	1.91	0.53
5:h:143:ARG:HH22	6:p:36:A:H5'	1.74	0.53
4:G:235:THR:HA	4:G:248:ALA:HA	1.91	0.53
4:M:133:ARG:HH12	4:M:157:VAL:HG21	1.72	0.53
4:M:137:GLU:HB2	4:M:192:LEU:HB3	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:P:4:A:N1	7:Q:47:DG:O6	2.42	0.53
4:I:58:ASP:OD1	4:I:58:ASP:N	2.41	0.53
9:a:123:LYS:HG3	9:a:130:PRO:HA	1.91	0.53
4:m:133:ARG:HH12	4:m:157:VAL:HG21	1.72	0.53
9:A:551:ILE:HG21	9:A:840:LEU:HB3	1.90	0.52
9:a:551:ILE:HG21	9:a:840:LEU:HB3	1.90	0.52
5:h:17:ASN:ND2	5:h:47:ASN:OD1	2.42	0.52
4:k:235:THR:HA	4:k:248:ALA:HA	1.90	0.52
4:l:124:ALA:HA	4:l:141:THR:HG21	1.90	0.52
3:e:114:LYS:HD2	3:e:228:LEU:HD23	1.91	0.52
4:j:78:LEU:HD21	4:j:80:LYS:HZ1	1.75	0.52
3:D:103:ASN:ND2	3:D:294:MET:O	2.43	0.52
6:p:4:A:N1	7:q:47:DG:O6	2.42	0.52
4:j:263:ARG:NH1	4:j:268:THR:O	2.40	0.52
4:k:65:VAL:HG22	4:k:213:LYS:HB3	1.91	0.52
4:m:18:PRO:HB3	4:m:83:VAL:HG22	1.91	0.52
10:V:12:DT:H3'	9:a:10:LYS:HB3	1.91	0.52
9:a:666:GLN:HA	9:a:895:LYS:HD2	1.91	0.52
4:g:93:GLU:O	4:j:257:ARG:NE	2.41	0.52
9:a:64:ASP:OD1	9:a:64:ASP:N	2.39	0.52
4:i:31:ARG:NH2	4:i:140:GLU:OE2	2.42	0.52
5:H:143:ARG:HH22	6:P:36:A:H5'	1.74	0.52
9:A:140:SER:HA	9:A:143:ILE:HD12	1.91	0.52
9:a:140:SER:HA	9:a:143:ILE:HD12	1.91	0.52
3:e:182:LEU:HD23	5:h:77:HIS:CB	2.33	0.52
4:l:142:VAL:HB	4:l:188:GLU:HG2	1.92	0.52
4:m:137:GLU:HB2	4:m:192:LEU:HB3	1.91	0.52
4:I:176:VAL:HG21	4:I:183:VAL:HB	1.92	0.52
4:J:263:ARG:NH1	4:J:268:THR:O	2.41	0.52
4:K:15:LYS:HG3	4:K:89:VAL:HG12	1.91	0.52
4:L:22:LEU:HD21	4:L:218:LEU:HD22	1.91	0.52
9:A:666:GLN:HA	9:A:895:LYS:HD2	1.92	0.52
6:p:1:G:H1	7:q:50:DT:H3	1.58	0.52
4:L:142:VAL:HB	4:L:188:GLU:HG2	1.92	0.52
9:a:845:ALA:HB3	9:a:848:ASN:HB2	1.92	0.52
3:e:73:TRP:HB2	3:e:83:ALA:HB3	1.91	0.52
4:k:15:LYS:HG3	4:k:89:VAL:HG12	1.91	0.52
5:H:17:ASN:ND2	5:H:47:ASN:OD1	2.42	0.52
4:K:65:VAL:HG22	4:K:213:LYS:HB3	1.91	0.52
9:a:363:ASP:OD1	9:a:363:ASP:N	2.42	0.52
4:k:21:ALA:HB1	4:k:79:VAL:HG13	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:m:273:LEU:HD13	4:m:287:ASP:HB2	1.92	0.52
2:C:141:VAL:HG21	9:A:199:ALA:HB2	1.93	0.51
4:G:11:ALA:HB3	4:G:94:LEU:HB3	1.92	0.51
9:A:801:MET:HA	9:A:804:ILE:HG12	1.92	0.51
5:h:91:ARG:HA	5:h:162:LEU:HB3	1.92	0.51
4:I:120:VAL:HG11	4:I:169:ILE:HB	1.92	0.51
4:K:61:ASN:OD1	4:K:63:GLN:NE2	2.42	0.51
6:P:1:G:H1	7:Q:50:DT:H3	1.58	0.51
9:a:481:ASP:N	9:a:481:ASP:OD1	2.42	0.51
4:g:135:GLY:HA3	4:i:84:LYS:HD3	1.92	0.51
4:L:127:ARG:NH2	4:L:157:VAL:O	2.43	0.51
3:E:21:VAL:HB	3:E:56:ILE:HG13	1.92	0.51
4:G:277:ALA:HB2	4:G:283:LEU:HD11	1.93	0.51
4:J:117:TYR:OH	4:J:161:ASP:O	2.28	0.51
4:K:21:ALA:HB1	4:K:79:VAL:HG13	1.92	0.51
9:A:64:ASP:OD1	9:A:64:ASP:N	2.39	0.51
9:A:481:ASP:N	9:A:481:ASP:OD1	2.42	0.51
10:V:12:DT:O5'	9:a:10:LYS:HD2	2.09	0.51
9:a:199:ALA:HB2	2:c:141:VAL:HG21	1.92	0.51
9:a:801:MET:HA	9:a:804:ILE:HG12	1.92	0.51
4:k:61:ASN:OD1	4:k:63:GLN:NE2	2.42	0.51
4:I:31:ARG:NH2	4:I:140:GLU:OE2	2.42	0.51
3:e:164:SER:HB3	4:l:286:GLU:OE2	2.10	0.51
4:i:176:VAL:HG21	4:i:183:VAL:HB	1.92	0.51
4:l:127:ARG:NH2	4:l:157:VAL:O	2.43	0.51
4:L:231:ASN:O	4:L:235:THR:OG1	2.29	0.51
4:M:56:ASP:OD1	4:M:56:ASP:N	2.36	0.51
3:e:182:LEU:HD21	5:h:9:VAL:HG11	1.92	0.51
9:A:363:ASP:OD1	9:A:363:ASP:N	2.42	0.51
2:c:43:THR:O	2:c:116:LYS:NZ	2.43	0.51
4:i:120:VAL:HG11	4:i:169:ILE:HB	1.93	0.51
4:j:117:TYR:OH	4:j:161:ASP:O	2.28	0.51
4:l:22:LEU:HD13	4:l:223:ALA:HB2	1.92	0.51
4:l:231:ASN:O	4:l:235:THR:OG1	2.29	0.51
4:G:135:GLY:HA3	4:I:84:LYS:HD3	1.92	0.51
5:H:91:ARG:HA	5:H:162:LEU:HB3	1.92	0.51
4:K:266:ASN:OD1	4:K:266:ASN:N	2.44	0.51
4:g:11:ALA:HB3	4:g:94:LEU:HB3	1.92	0.51
4:i:257:ARG:HB3	4:m:94:LEU:HA	1.93	0.51
4:l:22:LEU:HD21	4:l:218:LEU:HD22	1.91	0.51
4:M:273:LEU:HD13	4:M:287:ASP:HB2	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:A:29:GLY:HA3	9:a:81:VAL:HG21	1.93	0.51
9:A:632:SER:HB3	9:A:738:ILE:HD12	1.92	0.51
3:e:194:SER:OG	3:e:196:ASP:OD1	2.29	0.51
4:l:234:ARG:NH2	6:p:30:A:OP2	2.44	0.51
1:B:122:HIS:O	1:B:126:SER:HB3	2.11	0.51
3:D:262:GLY:H	9:a:356:ASN:ND2	2.07	0.51
3:E:212:ILE:HG13	3:E:282:LEU:HD12	1.91	0.51
4:L:234:ARG:NH2	6:P:30:A:OP2	2.44	0.51
1:b:122:HIS:O	1:b:126:SER:HB3	2.11	0.51
9:A:239:TYR:HA	9:A:314:LEU:HD21	1.93	0.50
9:A:291:ASP:OD1	9:A:291:ASP:N	2.44	0.50
9:A:845:ALA:HB3	9:A:848:ASN:HB2	1.92	0.50
4:J:13:SER:OG	4:K:131:ARG:NH1	2.44	0.50
3:d:48:ILE:HG12	3:d:71:VAL:HG22	1.93	0.50
4:g:277:ALA:HB2	4:g:283:LEU:HD11	1.93	0.50
9:a:385:LEU:HD11	9:a:508:VAL:HG21	1.93	0.50
4:g:125:ALA:O	4:g:133:ARG:NH1	2.44	0.50
4:J:15:LYS:HG3	4:J:89:VAL:HG12	1.93	0.50
9:a:527:VAL:HG13	9:a:537:VAL:HG21	1.93	0.50
4:j:15:LYS:HG3	4:j:89:VAL:HG12	1.93	0.50
4:k:266:ASN:OD1	4:k:266:ASN:N	2.44	0.50
2:C:43:THR:O	2:C:116:LYS:NZ	2.43	0.50
9:A:385:LEU:HD11	9:A:508:VAL:HG21	1.93	0.50
4:j:13:SER:OG	4:k:131:ARG:NH1	2.44	0.50
5:H:22:LYS:HG2	4:L:134:VAL:HG12	1.94	0.50
4:I:297:ARG:NH1	4:I:298:GLY:O	2.41	0.50
9:a:239:TYR:HA	9:a:314:LEU:HD21	1.93	0.50
9:a:806:LYS:HB2	9:a:809:SER:HB3	1.93	0.50
4:i:11:ALA:HB3	4:i:94:LEU:HB3	1.94	0.50
3:E:74:THR:HA	3:E:81:MET:HA	1.94	0.50
4:I:11:ALA:HB3	4:I:94:LEU:HB3	1.94	0.50
4:I:257:ARG:HB3	4:M:94:LEU:HA	1.93	0.50
5:h:22:LYS:HG2	4:l:134:VAL:HG12	1.94	0.50
4:l:23:MET:HE3	4:l:77:LEU:HD21	1.94	0.50
3:D:200:LYS:CE	9:a:359:ASP:OD1	2.60	0.50
7:U:1:DA:OP1	3:e:20:LYS:CG	2.60	0.50
9:a:632:SER:HB3	9:a:738:ILE:HD12	1.92	0.50
4:j:205:PHE:HB3	4:k:43:THR:HB	1.93	0.50
9:A:135:ARG:HB2	9:A:217:TRP:HD1	1.77	0.50
9:a:135:ARG:HB2	9:a:217:TRP:HD1	1.77	0.50
2:c:12:VAL:HG11	2:c:126:ILE:HB	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:141:THR:HB	4:G:152:PHE:HB2	1.94	0.49
6:P:11:U:H5	7:Q:40:DA:H61	1.60	0.49
9:a:615:HIS:HA	9:a:766:ASN:HD21	1.77	0.49
3:e:120:GLU:HG2	3:e:123:LYS:HE2	1.93	0.49
3:e:164:SER:HB3	4:l:286:GLU:CD	2.36	0.49
2:C:12:VAL:HG11	2:C:126:ILE:HB	1.94	0.49
4:G:131:ARG:NH2	6:P:16:A:OP1	2.45	0.49
4:G:212:SER:OG	7:Q:34:DA:N6	2.46	0.49
4:I:132:ASN:ND2	4:I:224:MET:SD	2.85	0.49
4:L:239:TRP:HB3	4:L:286:GLU:HB3	1.94	0.49
9:A:527:VAL:HG13	9:A:537:VAL:HG21	1.93	0.49
4:g:131:ARG:NH2	6:p:16:A:OP1	2.45	0.49
4:i:132:ASN:ND2	4:i:224:MET:SD	2.85	0.49
4:l:239:TRP:HB3	4:l:286:GLU:HB3	1.94	0.49
8:r:27:DC:H2''	8:r:28:DC:H3'	1.94	0.49
3:D:206:ASN:HA	3:D:247:LYS:HZ1	1.77	0.49
4:L:22:LEU:HD13	4:L:223:ALA:HB2	1.92	0.49
3:E:209:ALA:HB2	3:E:251:ILE:HG13	1.95	0.49
4:J:247:ILE:HD13	4:J:262:TYR:HD2	1.77	0.49
3:d:239:VAL:O	3:d:243:ALA:HB3	2.13	0.49
4:g:141:THR:HB	4:g:152:PHE:HB2	1.95	0.49
4:g:212:SER:OG	7:q:34:DA:N6	2.46	0.49
4:G:64:THR:O	4:G:212:SER:N	2.42	0.49
4:g:36:ALA:HB1	4:g:221:GLN:HG3	1.93	0.49
4:g:254:SER:HA	4:g:261:ALA:HA	1.93	0.49
4:J:205:PHE:HB3	4:K:43:THR:HB	1.93	0.49
4:K:23:MET:HB3	4:K:77:LEU:HD11	1.94	0.49
4:L:23:MET:HE3	4:L:77:LEU:HD21	1.94	0.49
4:L:118:ARG:NH2	4:L:238:THR:OG1	2.46	0.49
8:R:27:DC:H2''	8:R:28:DC:H3'	1.94	0.49
9:a:19:ARG:NE	3:d:26:GLY:HA3	2.28	0.49
3:d:104:TRP:HZ3	3:d:292:LEU:HD21	1.78	0.49
3:D:50:LEU:HD23	3:D:54:THR:HB	1.94	0.49
4:L:128:THR:HB	4:L:229:ILE:HD12	1.94	0.49
9:a:764:THR:OG1	9:a:765:HIS:N	2.45	0.49
4:j:247:ILE:HD13	4:j:262:TYR:HD2	1.77	0.49
3:D:13:MET:HG2	3:D:46:VAL:HB	1.95	0.49
4:G:36:ALA:HB1	4:G:221:GLN:HG3	1.94	0.49
4:M:117:TYR:OH	4:M:163:ASP:N	2.43	0.49
3:D:224:ASN:HD22	3:E:95:TYR:HE2	1.61	0.49
3:E:73:TRP:HB2	3:E:83:ALA:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:254:SER:HA	4:G:261:ALA:HA	1.93	0.49
9:A:29:GLY:HA3	9:a:81:VAL:CG2	2.43	0.49
9:A:806:LYS:HB2	9:A:809:SER:HB3	1.93	0.49
4:j:23:MET:HB3	4:j:77:LEU:HD11	1.94	0.49
6:p:11:U:H5	7:q:40:DA:H61	1.60	0.49
4:L:247:ILE:HD13	4:L:262:TYR:HD2	1.78	0.49
4:M:266:ASN:OD1	4:M:266:ASN:N	2.45	0.49
4:l:247:ILE:HD13	4:l:262:TYR:HD2	1.78	0.49
4:G:239:TRP:HB3	4:G:286:GLU:HB3	1.95	0.48
4:J:118:ARG:NH1	4:J:236:ILE:O	2.46	0.48
3:d:8:SER:HB3	3:d:286:ILE:HD12	1.94	0.48
3:e:212:ILE:HG13	3:e:282:LEU:HD12	1.95	0.48
4:j:118:ARG:NH1	4:j:236:ILE:O	2.46	0.48
4:k:23:MET:HB3	4:k:77:LEU:HD11	1.93	0.48
4:m:266:ASN:OD1	4:m:266:ASN:N	2.45	0.48
2:C:186:TYR:HB3	2:C:208:ALA:HB1	1.95	0.48
4:K:97:GLY:O	4:K:101:ASN:ND2	2.45	0.48
4:K:106:ALA:O	4:K:288:GLN:NE2	2.46	0.48
4:g:239:TRP:HB3	4:g:286:GLU:HB3	1.95	0.48
4:l:118:ARG:NH2	4:l:238:THR:OG1	2.46	0.48
4:l:128:THR:HB	4:l:229:ILE:HD12	1.94	0.48
4:l:154:ASP:OD1	4:l:154:ASP:N	2.46	0.48
4:m:56:ASP:OD1	4:m:56:ASP:N	2.36	0.48
3:E:217:LEU:HD21	3:E:242:VAL:HG21	1.94	0.48
9:a:291:ASP:OD1	9:a:291:ASP:N	2.44	0.48
3:e:118:ALA:O	3:e:122:LEU:HG	2.13	0.48
9:A:122:ARG:HB3	9:A:127:GLU:HG2	1.96	0.48
9:A:615:HIS:HA	9:A:766:ASN:HD21	1.77	0.48
4:g:231:ASN:O	4:g:235:THR:OG1	2.31	0.48
4:G:125:ALA:O	4:G:133:ARG:NH1	2.44	0.48
4:G:129:LEU:HB3	4:G:132:ASN:HB2	1.96	0.48
4:M:23:MET:O	4:M:221:GLN:NE2	2.39	0.48
4:k:97:GLY:O	4:k:101:ASN:ND2	2.45	0.48
4:l:235:THR:HA	4:l:248:ALA:HA	1.95	0.48
4:G:231:ASN:O	4:G:235:THR:OG1	2.31	0.48
4:L:235:THR:HA	4:L:248:ALA:HA	1.95	0.48
9:A:843:ASP:O	9:A:850:PHE:HB2	2.14	0.48
9:a:365:MET:HE3	9:a:365:MET:HB3	1.78	0.48
9:A:365:MET:HE3	9:A:365:MET:HB3	1.78	0.48
2:C:161:VAL:HG11	2:C:182:MET:HE2	1.96	0.48
2:C:178:LYS:HD2	2:C:178:LYS:HA	1.61	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:264:SER:H	3:D:267:GLU:HG3	1.78	0.48
9:A:29:GLY:CA	9:a:81:VAL:CB	2.87	0.48
9:A:87:LYS:HG3	9:A:88:LYS:HD2	1.95	0.48
9:A:764:THR:OG1	9:A:765:HIS:N	2.45	0.48
9:a:19:ARG:NE	3:d:25:ASN:O	2.46	0.48
9:a:843:ASP:O	9:a:850:PHE:HB2	2.14	0.48
4:m:85:PHE:HB2	4:m:183:VAL:HG12	1.96	0.48
2:C:13:ASP:OD1	2:C:13:ASP:N	2.46	0.48
2:c:161:VAL:HG11	2:c:182:MET:HE2	1.96	0.48
4:k:21:ALA:HB3	4:k:224:MET:HB2	1.96	0.48
4:G:145:VAL:HG22	4:G:185:LEU:HG	1.96	0.47
4:J:23:MET:HB3	4:J:77:LEU:HD11	1.94	0.47
9:a:122:ARG:HB3	9:a:127:GLU:HG2	1.95	0.47
2:c:214:MET:HE3	2:c:214:MET:HB3	1.74	0.47
4:g:129:LEU:HB3	4:g:132:ASN:HB2	1.96	0.47
5:h:27:LEU:HD22	5:h:32:ILE:HG21	1.95	0.47
4:k:106:ALA:O	4:k:288:GLN:NE2	2.46	0.47
2:c:13:ASP:OD1	2:c:13:ASP:N	2.46	0.47
4:i:257:ARG:HH21	4:m:93:GLU:HG2	1.79	0.47
4:j:235:THR:HA	4:j:248:ALA:HA	1.96	0.47
8:R:45:DT:OP1	9:A:425:GLY:N	2.45	0.47
9:a:19:ARG:HE	3:d:26:GLY:HA3	1.79	0.47
9:a:338:ILE:HG12	9:a:415:VAL:HG22	1.96	0.47
9:a:367:CYS:HB3	9:a:538:ILE:HA	1.97	0.47
2:c:186:TYR:HB3	2:c:208:ALA:HB1	1.95	0.47
3:e:250:ILE:HG12	3:e:275:TYR:HE2	1.79	0.47
4:G:297:ARG:NH1	4:G:298:GLY:O	2.44	0.47
4:I:257:ARG:HH21	4:M:93:GLU:HG2	1.79	0.47
4:M:129:LEU:HD13	4:M:191:MET:HE3	1.96	0.47
9:A:8:PHE:HB2	9:A:57:LYS:HB3	1.96	0.47
9:A:94:ASP:OD1	9:A:94:ASP:N	2.46	0.47
4:l:204:GLU:HB2	4:l:214:GLN:HB2	1.97	0.47
4:m:129:LEU:HD13	4:m:191:MET:HE3	1.96	0.47
4:M:120:VAL:HG11	4:M:169:ILE:HB	1.96	0.47
7:U:3:DC:OP2	3:d:25:ASN:N	2.45	0.47
9:a:650:ILE:HG21	9:a:661:VAL:HG11	1.96	0.47
3:d:109:LEU:HD21	3:e:105:VAL:HG11	1.95	0.47
3:d:239:VAL:O	3:d:243:ALA:CB	2.62	0.47
3:d:244:ASP:HA	3:d:247:LYS:HG2	1.96	0.47
4:k:117:TYR:OH	4:k:163:ASP:OD1	2.33	0.47
4:L:130:TRP:CZ2	4:L:232:ALA:HB2	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:a:8:PHE:HB2	9:a:57:LYS:HB3	1.96	0.47
2:c:31:THR:OG1	6:p:-5:U:OP1	2.33	0.47
4:g:145:VAL:HG22	4:g:185:LEU:HG	1.96	0.47
4:G:93:GLU:O	4:J:257:ARG:NE	2.41	0.47
5:H:27:LEU:HD22	5:H:32:ILE:HG21	1.95	0.47
4:I:257:ARG:HH12	6:P:20:U:H5"	1.80	0.47
4:K:21:ALA:HB3	4:K:224:MET:HB2	1.96	0.47
4:K:254:SER:HA	4:K:261:ALA:HA	1.96	0.47
4:L:204:GLU:HB2	4:L:214:GLN:HB2	1.97	0.47
8:R:43:DC:H5"	9:A:399:MET:HG2	1.97	0.47
9:A:367:CYS:HB3	9:A:538:ILE:HA	1.97	0.47
9:A:650:ILE:HG21	9:A:661:VAL:HG11	1.97	0.47
3:e:18:ARG:HH21	3:e:53:GLY:HA3	1.79	0.47
3:e:176:LEU:HD12	3:e:248:THR:HB	1.97	0.47
4:g:64:THR:O	4:g:212:SER:N	2.42	0.47
4:k:277:ALA:HB2	4:k:283:LEU:HD22	1.97	0.47
4:m:23:MET:O	4:m:221:GLN:NE2	2.39	0.47
3:D:109:LEU:HD11	3:E:105:VAL:CG1	2.44	0.47
4:G:96:GLY:HA2	4:J:258:ASN:HA	1.97	0.47
4:J:235:THR:HA	4:J:248:ALA:HA	1.96	0.47
4:M:143:ILE:HG12	4:M:187:VAL:HG13	1.97	0.47
4:M:297:ARG:NH1	4:M:298:GLY:O	2.48	0.47
9:A:725:VAL:O	9:A:730:ARG:NH1	2.48	0.47
7:U:3:DC:H2"	7:U:4:DA:C8	2.49	0.47
9:a:368:ILE:HG23	9:a:578:TRP:HA	1.97	0.47
9:a:674:ILE:HB	9:a:895:LYS:HD3	1.97	0.47
3:d:263:MET:SD	3:d:263:MET:N	2.87	0.47
3:e:267:GLU:HA	3:e:270:ARG:HB3	1.95	0.47
4:g:297:ARG:NH1	4:g:298:GLY:O	2.44	0.47
4:i:277:ALA:HB2	4:i:283:LEU:HD22	1.96	0.47
4:l:130:TRP:CZ2	4:l:232:ALA:HB2	2.49	0.47
4:m:143:ILE:HG12	4:m:187:VAL:HG13	1.97	0.47
3:D:200:LYS:HE2	9:a:359:ASP:OD1	2.14	0.47
4:I:89:VAL:HB	4:I:296:ILE:CG2	2.45	0.47
9:a:399:MET:HG2	8:r:43:DC:H5"	1.97	0.47
4:k:218:LEU:HD23	4:k:218:LEU:HA	1.53	0.47
1:B:46:MET:HE1	1:B:62:LEU:HG	1.97	0.47
3:D:235:ARG:HH11	3:E:95:TYR:H	1.63	0.47
5:H:92:LYS:HG3	5:H:146:MET:HE2	1.97	0.47
4:I:97:GLY:O	4:I:101:ASN:ND2	2.48	0.47
4:I:277:ALA:HB2	4:I:283:LEU:HD22	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:K:14:ARG:NH1	6:P:-1:G:OP2	2.48	0.47
4:K:277:ALA:HB2	4:K:283:LEU:HD22	1.97	0.47
4:M:85:PHE:HB2	4:M:183:VAL:HG12	1.96	0.47
4:M:145:VAL:HG11	4:M:169:ILE:HG23	1.96	0.47
9:A:656:LYS:HA	9:A:659:VAL:HG22	1.97	0.47
9:a:4:ARG:HE	9:a:6:LYS:HZ1	1.63	0.47
4:i:23:MET:HG2	4:i:79:VAL:HG22	1.96	0.47
4:k:14:ARG:NH1	6:p:-1:G:OP2	2.48	0.47
4:m:117:TYR:OH	4:m:163:ASP:N	2.43	0.47
4:m:297:ARG:NH1	4:m:298:GLY:O	2.48	0.47
4:G:23:MET:HG2	4:G:79:VAL:HG22	1.96	0.46
9:A:122:ARG:HE	9:A:122:ARG:HB2	1.61	0.46
9:a:725:VAL:O	9:a:730:ARG:NH1	2.48	0.46
1:b:46:MET:HE1	1:b:62:LEU:HG	1.97	0.46
3:e:163:GLU:HG2	4:l:284:THR:HG21	1.97	0.46
4:g:23:MET:HG2	4:g:79:VAL:HG22	1.96	0.46
5:h:92:LYS:HG3	5:h:146:MET:HE2	1.97	0.46
4:i:85:PHE:HB2	4:i:183:VAL:HG12	1.97	0.46
4:k:131:ARG:NE	6:p:3:C:OP1	2.43	0.46
3:E:107:LEU:HD11	3:E:117:ALA:HB2	1.97	0.46
4:I:85:PHE:HB2	4:I:183:VAL:HG12	1.97	0.46
9:A:29:GLY:HA2	9:a:81:VAL:HG12	1.87	0.46
9:A:338:ILE:HG12	9:A:415:VAL:HG22	1.96	0.46
9:A:674:ILE:HB	9:A:895:LYS:HD3	1.97	0.46
3:d:220:LEU:HD21	3:d:286:ILE:HG23	1.97	0.46
4:m:145:VAL:HG11	4:m:169:ILE:HG23	1.96	0.46
2:C:18:LYS:HA	2:C:24:VAL:HG22	1.97	0.46
4:L:176:VAL:HG21	4:L:183:VAL:HB	1.97	0.46
9:A:81:VAL:CG2	9:a:29:GLY:HA3	2.45	0.46
9:A:368:ILE:HG23	9:A:578:TRP:HA	1.97	0.46
9:A:622:GLN:H	9:A:622:GLN:HG2	1.28	0.46
3:e:185:GLU:OE2	5:h:5:SER:CB	2.63	0.46
4:i:257:ARG:HH12	6:p:20:U:H5"	1.79	0.46
5:H:91:ARG:NH1	5:H:92:LYS:O	2.49	0.46
4:K:117:TYR:OH	4:K:163:ASP:OD1	2.33	0.46
9:A:83:LYS:HD2	9:A:83:LYS:HA	1.42	0.46
10:V:12:DT:OP1	9:a:10:LYS:NZ	2.38	0.46
9:a:656:LYS:HA	9:a:659:VAL:HG22	1.97	0.46
4:K:78:LEU:HD13	4:K:190:TYR:CE1	2.51	0.46
9:A:45:LEU:O	9:A:49:LEU:HB2	2.16	0.46
9:A:81:VAL:HG11	9:a:29:GLY:CA	2.45	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:c:74:GLN:HA	4:k:251:PRO:HG2	1.97	0.46
3:d:166:LEU:HD11	3:d:234:ARG:HB3	1.98	0.46
4:i:97:GLY:O	4:i:101:ASN:ND2	2.48	0.46
4:k:73:ASN:OD1	4:k:73:ASN:N	2.47	0.46
4:m:120:VAL:HG11	4:m:169:ILE:HB	1.97	0.46
4:J:65:VAL:HG13	4:J:213:LYS:HB3	1.98	0.46
4:J:120:VAL:HG12	4:J:166:VAL:HG13	1.98	0.46
9:A:413:MET:SD	9:A:414:GLY:N	2.89	0.46
9:A:481:ASP:HA	9:A:484:VAL:HG22	1.98	0.46
9:a:114:GLY:H	9:a:140:SER:HB3	1.81	0.46
9:a:481:ASP:HA	9:a:484:VAL:HG22	1.98	0.46
9:a:649:LEU:HD11	9:a:726:VAL:HG11	1.98	0.46
4:i:89:VAL:HB	4:i:296:ILE:CG2	2.45	0.46
4:j:65:VAL:HG13	4:j:213:LYS:HB3	1.98	0.46
4:k:231:ASN:O	4:k:235:THR:OG1	2.33	0.46
4:k:254:SER:HA	4:k:261:ALA:HA	1.97	0.46
4:m:115:LEU:HD21	4:m:293:ALA:HB2	1.97	0.46
9:A:446:GLU:N	9:A:446:GLU:OE1	2.48	0.46
9:a:370:MET:HE2	9:a:604:ARG:HD3	1.98	0.46
4:g:96:GLY:HA2	4:j:258:ASN:HA	1.97	0.46
5:h:91:ARG:NH1	5:h:92:LYS:O	2.49	0.46
4:k:78:LEU:HD13	4:k:190:TYR:CE1	2.51	0.46
2:C:74:GLN:HA	4:K:251:PRO:HG2	1.97	0.46
5:H:40:THR:OG1	5:H:88:LYS:O	2.34	0.46
4:I:23:MET:HG2	4:I:79:VAL:HG22	1.96	0.46
4:L:99:TYR:HE1	4:L:274:MET:HE3	1.79	0.46
9:A:649:LEU:HD11	9:A:726:VAL:HG11	1.98	0.46
9:a:446:GLU:N	9:a:446:GLU:OE1	2.48	0.46
3:D:174:LYS:HD2	3:D:174:LYS:HA	1.66	0.46
3:D:244:ASP:HA	3:D:247:LYS:HG2	1.97	0.46
3:D:262:GLY:N	9:a:356:ASN:ND2	2.64	0.46
4:K:130:TRP:CH2	4:K:232:ALA:HB2	2.51	0.46
4:K:169:ILE:HA	4:K:172:MET:HE3	1.98	0.46
4:K:176:VAL:HG21	4:K:183:VAL:HB	1.98	0.46
4:K:231:ASN:O	4:K:235:THR:OG1	2.34	0.46
4:M:21:ALA:HB3	4:M:224:MET:HB2	1.98	0.46
9:A:297:ALA:HB2	9:A:309:LEU:HD13	1.98	0.46
9:A:370:MET:HE2	9:A:604:ARG:HD3	1.98	0.46
9:A:625:ASN:HB3	9:A:770:LEU:HD13	1.98	0.46
9:a:413:MET:SD	9:a:414:GLY:N	2.89	0.46
3:d:77:GLY:HA2	3:d:84:ALA:HB3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:h:40:THR:OG1	5:h:88:LYS:O	2.34	0.46
4:m:21:ALA:HB3	4:m:224:MET:HB2	1.98	0.46
9:A:114:GLY:H	9:A:140:SER:HB3	1.81	0.46
9:a:45:LEU:O	9:a:49:LEU:HB2	2.16	0.46
1:b:172:GLN:NE2	2:c:57:PHE:O	2.49	0.46
3:d:123:LYS:H	3:d:123:LYS:HG2	1.63	0.46
4:g:16:ILE:HG21	4:g:233:ILE:HG21	1.98	0.46
4:M:53:ASN:N	4:M:53:ASN:OD1	2.48	0.45
9:A:93:ASP:OD1	9:A:93:ASP:N	2.46	0.45
4:l:99:TYR:HE1	4:l:274:MET:HE3	1.80	0.45
4:l:176:VAL:HG21	4:l:183:VAL:HB	1.97	0.45
4:G:11:ALA:HA	4:G:300:VAL:HA	1.98	0.45
4:K:131:ARG:NE	6:P:3:C:OP1	2.43	0.45
4:L:78:LEU:HA	4:L:189:HIS:O	2.16	0.45
9:A:116:ALA:HB2	9:A:234:PHE:HZ	1.82	0.45
4:g:11:ALA:HA	4:g:300:VAL:HA	1.98	0.45
4:i:89:VAL:HB	4:i:296:ILE:HG22	1.98	0.45
4:k:130:TRP:CH2	4:k:232:ALA:HB2	2.51	0.45
3:D:178:LYS:HD2	3:D:178:LYS:HA	1.40	0.45
3:E:290:LYS:O	3:E:294:MET:HB2	2.17	0.45
9:a:116:ALA:HB2	9:a:234:PHE:HZ	1.82	0.45
4:g:65:VAL:HG12	4:g:213:LYS:HB3	1.99	0.45
4:j:120:VAL:HG12	4:j:166:VAL:HG13	1.98	0.45
4:m:254:SER:HA	4:m:261:ALA:HA	1.98	0.45
6:p:16:A:H2'	6:p:17:U:C6	2.52	0.45
4:I:235:THR:HA	4:I:248:ALA:HA	1.98	0.45
9:A:81:VAL:CB	9:a:29:GLY:HA3	2.47	0.45
9:a:17:VAL:HG12	9:a:52:VAL:HG11	1.98	0.45
9:a:499:TYR:HH	9:a:533:TYR:HH	1.57	0.45
9:a:553:TYR:O	9:a:557:SER:OG	2.30	0.45
4:k:115:LEU:HG	4:k:289:MET:HG2	1.98	0.45
4:m:53:ASN:OD1	4:m:53:ASN:N	2.48	0.45
1:B:172:GLN:NE2	2:C:57:PHE:O	2.49	0.45
2:C:161:VAL:HG11	2:C:182:MET:CE	2.46	0.45
3:D:61:MET:HE1	3:D:71:VAL:HG11	1.99	0.45
3:D:114:LYS:HG2	3:D:162:PHE:HZ	1.82	0.45
9:a:109:LEU:HD13	9:a:243:LEU:HA	1.99	0.45
9:a:297:ALA:HB2	9:a:309:LEU:HD13	1.98	0.45
2:c:18:LYS:HA	2:c:24:VAL:HG22	1.97	0.45
2:c:161:VAL:HG11	2:c:182:MET:CE	2.46	0.45
4:k:176:VAL:HG21	4:k:183:VAL:HB	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:l:78:LEU:HA	4:l:189:HIS:O	2.16	0.45
2:C:182:MET:HG2	2:C:215:ILE:HG12	1.99	0.45
4:G:16:ILE:HG21	4:G:233:ILE:HG21	1.98	0.45
4:J:120:VAL:HG11	4:J:169:ILE:HB	1.99	0.45
4:M:115:LEU:HD21	4:M:293:ALA:HB2	1.97	0.45
4:M:125:ALA:HB1	4:M:157:VAL:HG22	1.99	0.45
7:Q:53:DC:H5	8:R:22:DG:H22	1.65	0.45
9:A:4:ARG:HE	9:A:6:LYS:HZ1	1.64	0.45
9:a:918:ILE:HD12	9:a:918:ILE:HA	1.80	0.45
4:k:169:ILE:HA	4:k:172:MET:HE3	1.98	0.45
4:G:65:VAL:HG12	4:G:213:LYS:HB3	1.99	0.45
4:J:77:LEU:HD13	4:J:199:VAL:HG11	1.99	0.45
4:K:59:LYS:HB3	4:K:59:LYS:HE2	1.71	0.45
4:M:254:SER:HA	4:M:261:ALA:HA	1.98	0.45
6:P:22:C:O2'	6:P:23:C:O5'	2.34	0.45
9:A:109:LEU:HD13	9:A:243:LEU:HA	1.99	0.45
9:a:322:LYS:HB3	9:a:322:LYS:HE3	1.43	0.45
9:a:625:ASN:HB3	9:a:770:LEU:HD13	1.98	0.45
1:b:50:LYS:HG2	7:q:52:DA:H2	1.80	0.45
5:h:128:CYS:O	6:p:37:G:N2	2.50	0.45
4:i:235:THR:HA	4:i:248:ALA:HA	1.98	0.45
5:H:128:CYS:O	6:P:37:G:N2	2.50	0.45
4:K:115:LEU:HG	4:K:289:MET:HG2	1.98	0.45
6:P:16:A:H2'	6:P:17:U:C6	2.52	0.45
9:A:260:LEU:HD22	9:A:264:GLN:HE21	1.82	0.45
9:a:260:LEU:HD22	9:a:264:GLN:HE21	1.82	0.45
2:c:185:GLY:HA3	2:c:238:LYS:HA	1.98	0.45
3:e:258:ALA:HA	3:e:263:MET:HE1	1.99	0.45
4:j:120:VAL:HG11	4:j:169:ILE:HB	1.99	0.45
1:B:50:LYS:HG2	7:Q:52:DA:H2	1.80	0.45
2:C:185:GLY:HA3	2:C:238:LYS:HA	1.98	0.45
9:a:15:LYS:HE2	3:d:25:ASN:ND2	2.32	0.45
3:e:31:LEU:O	3:e:32:HIS:C	2.59	0.45
5:h:103:ARG:HH12	6:p:39:A:H5''	1.81	0.45
4:l:69:ASN:HA	4:l:198:GLU:HA	1.99	0.45
4:m:124:ALA:HA	4:m:141:THR:HG21	1.98	0.45
4:m:127:ARG:HD3	4:m:235:THR:HB	1.99	0.45
6:p:43:G:N2	6:p:47:A:H62	2.11	0.45
9:A:17:VAL:HG12	9:A:52:VAL:HG11	1.98	0.45
9:a:280:ASP:HA	9:a:316:VAL:HG22	1.99	0.45
4:J:13:SER:N	4:J:93:GLU:OE1	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:K:77:LEU:HD13	4:K:199:VAL:HG11	1.99	0.44
9:A:18:SER:O	9:A:22:SER:HB3	2.17	0.44
9:A:124:LEU:HD22	9:A:299:LEU:HG	1.99	0.44
9:A:178:ALA:HB1	9:A:269:LEU:HD11	1.99	0.44
9:A:280:ASP:HA	9:A:316:VAL:HG22	2.00	0.44
9:A:562:VAL:O	9:A:566:ASN:HB2	2.18	0.44
9:a:124:LEU:HD22	9:a:299:LEU:HG	2.00	0.44
9:a:688:LYS:HB2	9:a:688:LYS:HE2	1.69	0.44
2:c:192:ILE:HG21	2:c:198:MET:HE3	1.98	0.44
3:e:220:LEU:HD21	3:e:286:ILE:HD12	1.99	0.44
4:j:13:SER:N	4:j:93:GLU:OE1	2.50	0.44
4:m:125:ALA:HB1	4:m:157:VAL:HG22	1.99	0.44
6:p:22:C:O2'	6:p:23:C:O5'	2.34	0.44
7:q:53:DC:H5	8:r:22:DG:H22	1.65	0.44
1:B:102:PRO:HG2	6:P:-5:U:H1'	1.98	0.44
4:M:124:ALA:HA	4:M:141:THR:HG21	1.98	0.44
4:M:133:ARG:HH22	4:M:157:VAL:HG21	1.82	0.44
9:a:562:VAL:O	9:a:566:ASN:HB2	2.18	0.44
1:b:23:TYR:HE1	1:b:153:THR:HG21	1.82	0.44
2:c:182:MET:HG2	2:c:215:ILE:HG12	1.99	0.44
4:j:77:LEU:HD13	4:j:199:VAL:HG11	1.99	0.44
4:j:127:ARG:NH2	4:j:157:VAL:O	2.50	0.44
4:l:172:MET:HE2	4:l:172:MET:HB3	1.74	0.44
4:M:63:GLN:NE2	6:P:29:A:N1	2.65	0.44
9:A:663:GLN:HG2	9:A:892:ILE:CD1	2.34	0.44
9:a:18:SER:O	9:a:22:SER:HB3	2.17	0.44
9:a:127:GLU:N	9:a:127:GLU:OE2	2.50	0.44
3:e:182:LEU:HD21	5:h:9:VAL:CG1	2.47	0.44
4:m:63:GLN:NE2	6:p:29:A:N1	2.65	0.44
2:C:192:ILE:HG21	2:C:198:MET:HE3	1.98	0.44
4:I:89:VAL:HB	4:I:296:ILE:HG22	1.98	0.44
4:M:127:ARG:HD3	4:M:235:THR:HB	1.99	0.44
3:d:100:TYR:CZ	3:d:290:LYS:HE3	2.52	0.44
3:e:21:VAL:HB	3:e:56:ILE:HG13	1.99	0.44
4:m:66:ASN:HB2	4:m:214:GLN:HA	1.99	0.44
5:H:103:ARG:HH12	6:P:39:A:H5''	1.81	0.44
4:J:127:ARG:NH2	4:J:157:VAL:O	2.50	0.44
4:L:86:VAL:HG11	4:M:134:VAL:HG13	1.98	0.44
9:A:470:LEU:HD13	9:A:476:LEU:HD21	2.00	0.44
9:A:775:LYS:NZ	9:A:785:ASP:OD1	2.44	0.44
9:a:332:PRO:HG3	9:a:504:HIS:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:22:ARG:HA	1:b:22:ARG:HD3	1.87	0.44
5:H:104:ARG:HH12	6:P:42:C:H5	1.65	0.44
4:K:226:ASP:OD1	4:K:226:ASP:N	2.51	0.44
4:M:66:ASN:HB2	4:M:214:GLN:HA	1.99	0.44
7:U:4:DA:H2'	7:U:5:DA:C8	2.52	0.44
9:a:9:SER:HB2	9:a:13:ILE:HG23	1.99	0.44
9:a:178:ALA:HB1	9:a:269:LEU:HD11	1.99	0.44
9:a:470:LEU:HD13	9:a:476:LEU:HD21	2.00	0.44
2:c:105:GLU:N	2:c:105:GLU:OE1	2.51	0.44
3:e:278:LYS:HB2	3:e:278:LYS:HE3	1.73	0.44
4:l:86:VAL:HG11	4:m:134:VAL:HG13	1.99	0.44
4:m:152:PHE:HB3	4:m:155:LEU:HD11	2.00	0.44
3:E:258:ALA:HA	3:E:263:MET:HE1	2.00	0.44
4:J:11:ALA:HA	4:J:300:VAL:HA	2.00	0.44
4:K:48:GLN:NE2	4:K:60:GLY:O	2.45	0.44
4:K:290:PHE:O	4:K:294:ASN:ND2	2.44	0.44
5:h:4:ILE:HD12	5:h:81:PRO:HG3	2.00	0.44
5:h:104:ARG:HH12	6:p:42:C:H5	1.65	0.44
4:i:120:VAL:HG12	4:i:166:VAL:HG13	2.00	0.44
4:m:133:ARG:HH22	4:m:157:VAL:HG21	1.83	0.44
2:C:31:THR:OG1	6:P:-5:U:OP1	2.32	0.44
2:C:105:GLU:N	2:C:105:GLU:OE1	2.51	0.44
3:E:18:ARG:HD3	10:V:1:DA:C6	2.53	0.44
4:I:120:VAL:HG12	4:I:166:VAL:HG13	2.00	0.44
4:K:234:ARG:HH12	6:P:-1:G:H5''	1.83	0.44
9:a:422:MET:HE2	9:a:422:MET:HB2	1.58	0.44
3:d:129:LEU:HD13	3:d:129:LEU:HA	1.83	0.44
3:e:183:GLU:HA	5:h:77:HIS:CE1	2.46	0.44
4:i:43:THR:HB	4:m:205:PHE:HB3	1.99	0.44
4:k:226:ASP:OD1	4:k:226:ASP:N	2.51	0.44
4:k:234:ARG:HH12	6:p:-1:G:H5''	1.83	0.44
1:B:10:ILE:HD12	1:B:10:ILE:HA	1.79	0.44
1:B:23:TYR:HE1	1:B:153:THR:HG21	1.82	0.44
3:E:14:TYR:O	3:E:49:GLY:N	2.47	0.44
4:I:169:ILE:HA	4:I:172:MET:HE3	2.00	0.44
4:L:69:ASN:HA	4:L:198:GLU:HA	1.99	0.44
9:A:9:SER:HB2	9:A:13:ILE:HG23	2.00	0.44
9:A:127:GLU:N	9:A:127:GLU:OE2	2.50	0.44
9:a:470:LEU:HD11	9:a:482:HIS:HB3	2.00	0.44
3:e:113:LYS:HB2	3:e:113:LYS:HE3	1.61	0.44
4:i:169:ILE:HA	4:i:172:MET:HE3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:214:MET:HE3	2:C:214:MET:HB3	1.74	0.43
4:M:152:PHE:HB3	4:M:155:LEU:HD11	2.00	0.43
9:A:332:PRO:HG3	9:A:504:HIS:HB3	1.99	0.43
9:A:355:VAL:HG21	9:A:383:LYS:HG2	2.00	0.43
3:d:227:PRO:HG3	3:d:237:GLY:HA2	2.00	0.43
4:j:11:ALA:HA	4:j:300:VAL:HA	2.00	0.43
4:m:78:LEU:HD13	4:m:190:TYR:CE1	2.53	0.43
4:I:43:THR:HB	4:M:205:PHE:HB3	1.99	0.43
4:J:263:ARG:NH1	4:J:268:THR:OG1	2.51	0.43
4:M:78:LEU:HD13	4:M:190:TYR:CE1	2.53	0.43
3:e:197:ASN:O	3:e:201:PHE:HB2	2.18	0.43
4:i:234:ARG:HB2	4:i:249:VAL:HB	2.00	0.43
7:Q:35:DA:H2'	7:Q:36:DG:C8	2.53	0.43
9:A:79:GLY:C	3:d:38:TYR:CE1	2.96	0.43
1:b:102:PRO:HG2	6:p:-5:U:H1'	1.99	0.43
4:g:21:ALA:HA	4:g:81:TYR:HB3	1.99	0.43
4:k:77:LEU:HD13	4:k:199:VAL:HG11	1.99	0.43
7:q:35:DA:H2'	7:q:36:DG:C8	2.53	0.43
1:B:103:GLN:HG2	1:B:116:VAL:HG22	2.00	0.43
4:G:21:ALA:HA	4:G:81:TYR:HB3	1.99	0.43
5:H:4:ILE:HD12	5:H:81:PRO:HG3	2.00	0.43
9:A:470:LEU:HD11	9:A:482:HIS:HB3	2.00	0.43
9:a:793:GLY:HA3	2:c:146:GLU:HA	2.00	0.43
9:a:820:ASP:H	9:a:833:HIS:CD2	2.35	0.43
1:b:103:GLN:HG2	1:b:116:VAL:HG22	2.00	0.43
3:d:31:LEU:HD13	3:d:37:VAL:HG22	1.99	0.43
3:e:187:GLU:HG3	5:h:43:ARG:CZ	2.47	0.43
4:j:263:ARG:NH1	4:j:268:THR:OG1	2.51	0.43
3:D:13:MET:HE1	3:D:276:PHE:HD2	1.82	0.43
9:A:322:LYS:HE3	9:A:322:LYS:HB3	1.43	0.43
9:A:820:ASP:H	9:A:833:HIS:CD2	2.35	0.43
9:A:899:LYS:HB3	9:A:899:LYS:HE3	1.67	0.43
3:d:204:LEU:HD21	3:d:269:LYS:HD3	2.01	0.43
3:D:248:THR:HG22	3:D:252:LEU:HD13	1.99	0.43
4:G:21:ALA:HB3	4:G:224:MET:HB2	2.00	0.43
4:I:234:ARG:HB2	4:I:249:VAL:HB	2.01	0.43
9:A:282:ASN:HA	9:A:459:PRO:HA	2.01	0.43
9:a:402:LEU:HD23	9:a:402:LEU:HA	1.86	0.43
5:h:101:LEU:HD23	5:h:120:TYR:HE2	1.84	0.43
4:G:124:ALA:HA	4:G:141:THR:HG21	2.00	0.43
4:I:230:GLY:HA2	4:I:233:ILE:HG12	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:a:282:ASN:HA	9:a:459:PRO:HA	2.01	0.43
3:d:41:PRO:O	3:d:45:THR:OG1	2.33	0.43
3:d:92:GLN:HE22	3:e:84:ALA:HB3	1.83	0.43
4:i:204:GLU:H	4:i:204:GLU:HG2	1.60	0.43
3:D:189:LYS:HD2	3:D:189:LYS:HA	1.47	0.43
4:L:23:MET:HG2	4:L:79:VAL:HG22	2.00	0.43
10:V:13:DT:OP1	9:a:10:LYS:CB	2.67	0.43
2:c:70:LYS:HG2	4:k:205:PHE:HD2	1.84	0.43
4:g:124:ALA:HA	4:g:141:THR:HG21	2.00	0.43
4:i:230:GLY:HA2	4:i:233:ILE:HG12	2.00	0.43
4:j:58:ASP:OD1	4:j:58:ASP:N	2.50	0.43
2:C:70:LYS:HG2	4:K:205:PHE:HD2	1.84	0.43
2:C:146:GLU:HA	9:A:793:GLY:HA3	2.00	0.43
3:E:244:ASP:HA	3:E:247:LYS:HD3	2.00	0.43
4:I:91:LYS:HE3	4:I:91:LYS:HB3	1.27	0.43
4:K:3:LYS:HD2	4:K:3:LYS:HA	1.90	0.43
4:L:172:MET:HE2	4:L:172:MET:HB3	1.74	0.43
4:M:235:THR:HA	4:M:248:ALA:HA	2.00	0.43
7:U:2:DG:OP1	3:d:22:LEU:HB2	2.19	0.43
9:a:355:VAL:HG21	9:a:383:LYS:HG2	2.00	0.43
9:a:886:VAL:O	9:a:919:CYS:HA	2.18	0.43
9:a:899:LYS:HE3	9:a:899:LYS:HB3	1.67	0.43
2:c:18:LYS:HB2	2:c:92:PRO:HD2	2.00	0.43
3:e:227:PRO:HB3	3:e:237:GLY:HA3	2.00	0.43
4:i:205:PHE:HA	6:p:19:U:C5	2.54	0.43
5:H:158:ASN:HB3	5:H:164:ILE:HD11	2.00	0.43
9:A:688:LYS:HB2	9:A:688:LYS:HE2	1.69	0.43
9:A:888:THR:HA	9:A:920:TYR:O	2.19	0.43
9:a:400:VAL:O	9:a:403:THR:OG1	2.28	0.43
4:g:21:ALA:HB3	4:g:224:MET:HB2	2.00	0.43
5:H:101:LEU:HD23	5:H:120:TYR:HE2	1.84	0.42
4:I:80:LYS:HG2	4:I:188:GLU:HG2	2.01	0.42
4:J:58:ASP:OD1	4:J:58:ASP:N	2.50	0.42
4:K:218:LEU:HD23	4:K:218:LEU:HA	1.53	0.42
9:A:300:ASP:OD1	9:A:300:ASP:N	2.52	0.42
9:A:691:MET:HE2	9:A:691:MET:HB2	1.72	0.42
3:e:168:HIS:HA	3:e:171:THR:HG22	2.00	0.42
3:e:244:ASP:OD1	3:e:247:LYS:NZ	2.38	0.42
4:k:163:ASP:OD1	4:k:163:ASP:N	2.52	0.42
3:D:259:ALA:O	9:a:356:ASN:ND2	2.48	0.42
4:I:73:ASN:OD1	4:I:73:ASN:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:K:163:ASP:OD1	4:K:163:ASP:N	2.52	0.42
4:L:154:ASP:OD1	4:L:154:ASP:N	2.46	0.42
9:A:402:LEU:HD23	9:A:402:LEU:HA	1.86	0.42
4:g:120:VAL:HG11	4:g:169:ILE:HB	2.00	0.42
4:j:234:ARG:HG3	4:j:249:VAL:H	1.85	0.42
3:D:98:THR:OG1	3:E:232:SER:O	2.31	0.42
3:E:16:LEU:HD11	3:E:48:ILE:HD11	2.00	0.42
4:G:120:VAL:HG11	4:G:169:ILE:HB	2.00	0.42
4:I:205:PHE:HA	6:P:19:U:C5	2.54	0.42
4:L:169:ILE:H	4:L:169:ILE:HG13	1.70	0.42
4:M:281:LYS:HE2	4:M:281:LYS:HB2	1.83	0.42
9:A:553:TYR:O	9:A:557:SER:OG	2.30	0.42
9:A:886:VAL:O	9:A:919:CYS:HA	2.18	0.42
9:a:18:SER:HA	9:a:21:VAL:HG12	2.00	0.42
9:a:425:GLY:N	8:r:45:DT:OP1	2.45	0.42
5:h:158:ASN:HB3	5:h:164:ILE:HD11	2.00	0.42
4:k:99:TYR:OH	4:k:275:ASP:OD1	2.35	0.42
4:l:39:VAL:HG13	4:l:222:ALA:HB2	2.01	0.42
4:l:188:GLU:OE2	4:l:188:GLU:N	2.52	0.42
4:m:235:THR:HA	4:m:248:ALA:HA	2.00	0.42
9:A:625:ASN:HA	9:A:628:ALA:HB3	2.00	0.42
9:a:888:THR:HA	9:a:920:TYR:O	2.19	0.42
3:d:162:PHE:HA	3:d:165:LEU:HD12	2.01	0.42
3:e:246:ILE:HB	3:e:250:ILE:HD12	2.01	0.42
5:h:100:LYS:HE2	6:p:40:G:H22	1.84	0.42
4:m:53:ASN:HA	4:m:54:PRO:HD3	1.88	0.42
3:D:206:ASN:HA	3:D:247:LYS:NZ	2.34	0.42
3:E:5:ILE:HB	3:E:13:MET:HB3	2.02	0.42
5:H:100:LYS:HE2	6:P:40:G:H22	1.84	0.42
4:L:188:GLU:OE2	4:L:188:GLU:N	2.52	0.42
9:A:248:LYS:HA	9:A:248:LYS:HD3	1.84	0.42
4:i:254:SER:HA	4:i:261:ALA:HA	2.01	0.42
2:C:24:VAL:HG11	2:C:66:THR:HG21	2.01	0.42
4:J:234:ARG:HG3	4:J:249:VAL:H	1.85	0.42
9:A:18:SER:HA	9:A:21:VAL:HG12	2.00	0.42
9:A:90:TYR:CD1	9:A:92:PRO:HD3	2.53	0.42
9:A:646:SER:HB2	9:A:736:TRP:HE1	1.85	0.42
9:a:622:GLN:H	9:a:622:GLN:HG2	1.28	0.42
9:a:625:ASN:HA	9:a:628:ALA:HB3	2.00	0.42
9:a:646:SER:HB2	9:a:736:TRP:HE1	1.85	0.42
3:e:122:LEU:HD22	3:e:169:GLU:OE1	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:i:158:ASN:OD1	4:i:158:ASN:N	2.52	0.42
4:j:145:VAL:HB	4:j:146:ASN:H	1.62	0.42
4:j:239:TRP:HB3	4:j:286:GLU:HG2	2.01	0.42
2:C:142:ALA:HA	2:C:147:GLU:HB3	2.01	0.42
9:A:706:TYR:C	9:A:708:LYS:N	2.75	0.42
9:a:654:THR:OG1	9:a:655:ILE:N	2.52	0.42
4:g:115:LEU:HG	4:g:289:MET:HG2	2.01	0.42
4:i:73:ASN:OD1	4:i:73:ASN:N	2.52	0.42
4:k:290:PHE:O	4:k:294:ASN:ND2	2.44	0.42
4:l:23:MET:HG2	4:l:79:VAL:HG22	2.00	0.42
4:l:28:TRP:HH2	4:l:140:GLU:HB2	1.85	0.42
3:D:101:MET:HE2	3:D:222:ILE:HA	2.02	0.42
4:I:158:ASN:OD1	4:I:158:ASN:N	2.52	0.42
4:I:254:SER:HA	4:I:261:ALA:HA	2.02	0.42
4:J:79:VAL:HB	4:J:189:HIS:HB2	2.02	0.42
9:A:300:ASP:OD1	9:A:304:ASN:N	2.53	0.42
3:d:51:ALA:O	3:d:54:THR:OG1	2.32	0.42
4:k:234:ARG:NH2	6:p:0:A:OP2	2.53	0.42
2:C:18:LYS:HB2	2:C:92:PRO:HD2	2.00	0.42
2:C:75:ASP:HA	4:K:302:GLY:H	1.85	0.42
3:E:139:ASP:HB3	3:E:142:ASN:HB2	2.02	0.42
4:G:115:LEU:HG	4:G:289:MET:HG2	2.01	0.42
4:L:28:TRP:HH2	4:L:140:GLU:HB2	1.85	0.42
9:a:300:ASP:OD1	9:a:300:ASP:N	2.52	0.42
9:a:663:GLN:HG2	9:a:892:ILE:CD1	2.34	0.42
9:a:706:TYR:C	9:a:708:LYS:N	2.75	0.42
2:c:75:ASP:HA	4:k:302:GLY:H	1.85	0.42
2:c:173:ASP:OD2	2:c:214:MET:HG3	2.19	0.42
4:j:241:GLU:OE1	4:j:266:ASN:ND2	2.52	0.42
4:l:270:LEU:HD12	4:l:291:VAL:HG22	2.02	0.42
3:D:58:ASN:N	3:E:54:THR:O	2.53	0.42
3:D:156:VAL:HG23	3:D:165:LEU:HD11	2.01	0.42
3:E:21:VAL:HG22	3:E:30:HIS:HB3	2.01	0.42
3:E:187:GLU:OE2	5:H:43:ARG:NH1	2.52	0.42
4:G:119:TYR:HE1	4:G:234:ARG:HA	1.85	0.42
4:J:211:LEU:HD23	4:J:214:GLN:HB2	2.01	0.42
9:a:181:TRP:NE1	9:a:856:LEU:O	2.46	0.42
3:d:110:ASP:HB2	3:d:113:LYS:HB2	2.02	0.42
4:j:211:LEU:HD23	4:j:214:GLN:HB2	2.01	0.42
2:C:173:ASP:OD2	2:C:214:MET:HG3	2.19	0.41
4:J:186:LYS:HE3	4:J:186:LYS:HB3	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:241:GLU:OE1	4:J:266:ASN:ND2	2.52	0.41
4:J:283:LEU:HB3	4:J:287:ASP:HB3	2.02	0.41
9:A:659:VAL:HG21	9:A:927:TYR:HB3	2.02	0.41
9:a:248:LYS:HA	9:a:248:LYS:HD3	1.84	0.41
9:a:358:VAL:O	9:a:387:HIS:NE2	2.47	0.41
3:d:178:LYS:HD2	3:d:178:LYS:HA	1.40	0.41
3:e:1:MET:N	3:e:17:SER:HB2	2.35	0.41
3:e:209:ALA:HB2	3:e:251:ILE:HG13	2.02	0.41
4:g:119:TYR:HE1	4:g:234:ARG:HA	1.85	0.41
4:i:80:LYS:HG2	4:i:188:GLU:HG2	2.01	0.41
4:j:45:ALA:HA	4:j:61:ASN:O	2.20	0.41
4:j:79:VAL:HB	4:j:189:HIS:HB2	2.02	0.41
4:l:286:GLU:OE2	4:l:286:GLU:N	2.53	0.41
1:B:22:ARG:HA	1:B:22:ARG:HD3	1.87	0.41
3:D:145:VAL:HA	3:D:148:ILE:HG22	2.01	0.41
4:K:234:ARG:NH2	6:P:0:A:OP2	2.53	0.41
9:A:672:LEU:HD12	9:A:672:LEU:HA	1.94	0.41
9:a:300:ASP:OD1	9:a:304:ASN:N	2.53	0.41
3:d:269:LYS:O	3:d:273:VAL:HG23	2.20	0.41
4:l:191:MET:HE3	4:l:191:MET:HB2	1.90	0.41
3:D:20:LYS:HG3	3:D:22:LEU:HD23	2.03	0.41
3:D:61:MET:HE3	3:E:73:TRP:CE2	2.55	0.41
3:D:261:GLN:CA	9:a:344:LYS:NZ	2.82	0.41
3:E:3:LYS:HB3	3:E:15:ILE:HB	2.02	0.41
4:J:239:TRP:HB3	4:J:286:GLU:HG2	2.02	0.41
4:L:39:VAL:HG13	4:L:222:ALA:HB2	2.01	0.41
4:L:208:ASN:HA	7:Q:18:DA:H2	1.86	0.41
9:A:95:SER:OG	9:A:96:ILE:N	2.53	0.41
9:A:154:LEU:HD12	9:A:154:LEU:HA	1.89	0.41
9:A:654:THR:OG1	9:A:655:ILE:N	2.52	0.41
9:A:918:ILE:HD12	9:A:918:ILE:HA	1.80	0.41
9:a:659:VAL:HG21	9:a:927:TYR:HB3	2.02	0.41
3:e:163:GLU:HB2	4:l:284:THR:CG2	2.49	0.41
4:J:231:ASN:ND2	6:P:6:C:OP2	2.46	0.41
4:L:191:MET:HE3	4:L:191:MET:HB2	1.90	0.41
4:L:270:LEU:HD12	4:L:291:VAL:HG22	2.02	0.41
4:M:260:VAL:HG13	4:M:262:TYR:HE1	1.85	0.41
9:A:789:TYR:HD2	9:A:832:GLU:HG2	1.85	0.41
9:a:132:ASP:O	9:a:219:ASN:ND2	2.53	0.41
2:c:24:VAL:HG11	2:c:66:THR:HG21	2.01	0.41
4:k:120:VAL:HG11	4:k:169:ILE:HB	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:132:ASN:HB2	4:L:191:MET:HE1	2.03	0.41
9:A:132:ASP:O	9:A:219:ASN:ND2	2.53	0.41
9:A:370:MET:N	9:A:579:TRP:O	2.45	0.41
9:a:143:ILE:HA	9:a:163:VAL:HG11	2.03	0.41
9:a:775:LYS:NZ	9:a:785:ASP:OD1	2.44	0.41
2:c:142:ALA:HA	2:c:147:GLU:HB3	2.01	0.41
3:e:163:GLU:CG	4:l:284:THR:HG21	2.51	0.41
4:m:260:VAL:HG13	4:m:262:TYR:HE1	1.85	0.41
4:I:127:ARG:NH2	4:I:157:VAL:O	2.53	0.41
4:L:286:GLU:OE2	4:L:286:GLU:N	2.53	0.41
9:A:12:PRO:O	9:A:16:LYS:HG2	2.20	0.41
9:a:19:ARG:HH21	3:d:26:GLY:HA2	1.85	0.41
9:a:137:GLU:HB3	9:a:186:HIS:CE1	2.56	0.41
4:k:48:GLN:NE2	4:k:60:GLY:O	2.45	0.41
3:E:176:LEU:HD23	3:E:176:LEU:HA	1.92	0.41
4:G:77:LEU:HD13	4:G:199:VAL:HG11	2.03	0.41
4:J:45:ALA:HA	4:J:61:ASN:O	2.20	0.41
6:P:33:G:OP2	6:P:33:G:N2	2.46	0.41
9:A:81:VAL:HA	9:A:82:PRO:HD2	1.98	0.41
9:a:463:ALA:HB3	9:a:467:ASN:HB2	2.03	0.41
3:d:50:LEU:HD23	3:d:54:THR:HB	2.02	0.41
3:e:202:LEU:HD23	3:e:202:LEU:HA	1.93	0.41
4:g:77:LEU:HD13	4:g:199:VAL:HG11	2.03	0.41
4:j:283:LEU:HB3	4:j:287:ASP:HB3	2.02	0.41
4:M:70:LEU:O	4:M:196:GLY:HA2	2.21	0.41
9:a:95:SER:OG	9:a:96:ILE:N	2.52	0.41
3:e:19:CYS:SG	3:e:30:HIS:HB2	2.60	0.41
3:e:286:ILE:HD13	3:e:286:ILE:HA	1.92	0.41
4:i:8:ALA:HB1	7:q:36:DG:H4'	2.03	0.41
4:l:132:ASN:HB2	4:l:191:MET:HE1	2.03	0.41
4:m:70:LEU:O	4:m:196:GLY:HA2	2.21	0.41
3:E:85:ASP:OD1	3:E:85:ASP:N	2.43	0.41
3:E:186:ILE:HD12	3:E:188:PHE:HB2	2.02	0.41
4:J:145:VAL:HB	4:J:146:ASN:H	1.62	0.41
6:P:42:C:H2'	6:P:43:G:O4'	2.21	0.41
9:A:137:GLU:HB3	9:A:186:HIS:CE1	2.56	0.41
9:A:143:ILE:HA	9:A:163:VAL:HG11	2.03	0.41
9:a:679:TYR:HB3	9:a:722:ALA:HB2	2.03	0.41
9:a:789:TYR:HD2	9:a:832:GLU:HG2	1.85	0.41
3:d:143:LYS:O	3:d:147:SER:HB3	2.20	0.41
3:e:24:LYS:HE2	3:e:24:LYS:HB2	1.88	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:i:23:MET:HB3	4:i:77:LEU:HD11	2.03	0.41
4:j:227:GLN:H	4:j:227:GLN:HG3	1.54	0.41
4:l:208:ASN:HA	7:q:18:DA:H2	1.86	0.41
3:D:251:ILE:HD13	3:D:251:ILE:HA	1.89	0.41
4:G:258:ASN:HA	4:I:96:GLY:HA2	2.02	0.41
5:H:41:PHE:H	5:H:90:TYR:HE2	1.67	0.41
4:J:169:ILE:HA	4:J:172:MET:HE3	2.02	0.41
4:J:227:GLN:H	4:J:227:GLN:HG3	1.54	0.41
4:K:120:VAL:HG11	4:K:169:ILE:HB	2.02	0.41
9:A:117:ASN:OD1	9:A:117:ASN:N	2.51	0.41
9:A:185:THR:O	9:A:273:ARG:NE	2.52	0.41
9:A:357:MET:HE3	9:A:357:MET:HB3	1.82	0.41
9:A:463:ALA:HB3	9:A:467:ASN:HB2	2.03	0.41
9:A:679:TYR:HB3	9:A:722:ALA:HB2	2.03	0.41
9:a:185:THR:O	9:a:273:ARG:NE	2.52	0.41
3:d:217:LEU:O	3:d:222:ILE:N	2.51	0.41
3:e:124:MET:HE3	3:e:124:MET:HB3	1.78	0.41
4:g:258:ASN:HA	4:i:96:GLY:HA2	2.02	0.41
4:i:91:LYS:HE3	4:i:91:LYS:HB3	1.27	0.41
4:l:27:ASN:HB2	4:l:30:ASP:HB3	2.01	0.41
6:p:42:C:H2'	6:p:43:G:O4'	2.21	0.41
7:q:25:DT:H2''	7:q:26:DA:C8	2.55	0.41
3:D:24:LYS:O	3:D:25:ASN:C	2.62	0.40
3:E:124:MET:HE3	3:E:124:MET:HB3	1.96	0.40
5:H:76:ILE:HD12	5:H:76:ILE:HA	1.94	0.40
4:M:53:ASN:HA	4:M:54:PRO:HD3	1.88	0.40
9:A:11:GLN:HB2	9:A:13:ILE:HG22	2.04	0.40
9:A:400:VAL:O	9:A:403:THR:OG1	2.28	0.40
9:a:12:PRO:O	9:a:16:LYS:HG2	2.20	0.40
2:c:159:TYR:CE1	2:c:219:MET:HG2	2.56	0.40
3:d:105:VAL:HG21	3:e:226:PHE:HZ	1.87	0.40
4:k:59:LYS:HB3	4:k:59:LYS:HE2	1.71	0.40
4:l:145:VAL:HG11	4:l:169:ILE:HG23	2.03	0.40
6:p:39:A:H3'	6:p:40:G:H21	1.87	0.40
3:E:286:ILE:HG22	3:E:290:LYS:NZ	2.37	0.40
4:G:110:THR:HG22	4:G:288:GLN:HB3	2.03	0.40
4:L:27:ASN:HB2	4:L:30:ASP:HB3	2.02	0.40
7:Q:25:DT:H2''	7:Q:26:DA:C8	2.55	0.40
8:R:41:DT:H4'	9:A:654:THR:HA	2.04	0.40
9:A:181:TRP:O	9:A:185:THR:OG1	2.36	0.40
9:a:654:THR:HA	8:r:41:DT:H4'	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:10:ILE:HD12	1:b:10:ILE:HA	1.79	0.40
5:h:41:PHE:H	5:h:90:TYR:HE2	1.67	0.40
4:i:127:ARG:NH2	4:i:157:VAL:O	2.53	0.40
4:l:169:ILE:H	4:l:169:ILE:HG13	1.70	0.40
1:B:20:SER:OG	1:B:30:CYS:O	2.35	0.40
1:B:104:ILE:HB	6:P:-6:U:H5''	2.03	0.40
2:C:159:TYR:CE1	2:C:219:MET:HG2	2.56	0.40
3:D:247:LYS:HA	3:D:251:ILE:HB	2.03	0.40
6:P:39:A:H3'	6:P:40:G:H21	1.87	0.40
9:A:422:MET:HA	9:A:477:VAL:O	2.21	0.40
9:a:11:GLN:HB2	9:a:13:ILE:HG22	2.04	0.40
1:b:104:ILE:HB	6:p:-6:U:H5''	2.03	0.40
2:c:8:LYS:HE2	2:c:8:LYS:HB3	1.89	0.40
4:g:110:THR:HG22	4:g:288:GLN:HB3	2.03	0.40
4:j:81:TYR:HH	4:j:189:HIS:HE2	1.68	0.40
4:j:169:ILE:HA	4:j:172:MET:HE3	2.02	0.40
2:C:182:MET:HE3	2:C:215:ILE:HG21	2.04	0.40
4:I:24:PHE:HB2	4:I:78:LEU:HD23	2.03	0.40
9:A:16:LYS:HE2	9:A:52:VAL:HG22	2.04	0.40
9:a:16:LYS:HE2	9:a:52:VAL:HG22	2.04	0.40
2:c:182:MET:HE3	2:c:215:ILE:HG21	2.04	0.40
2:C:31:THR:HG21	2:C:127:ALA:HB2	2.03	0.40
3:D:73:TRP:CD2	3:E:61:MET:HG2	2.57	0.40
4:I:8:ALA:HB1	7:Q:36:DG:H4'	2.03	0.40
9:A:112:ASP:HB3	9:A:309:LEU:HD11	2.04	0.40
9:A:506:ASP:HA	9:A:535:ASN:HB3	2.02	0.40
9:a:154:LEU:HD12	9:a:154:LEU:HA	1.89	0.40
1:b:45:ASP:HB2	1:b:121:ALA:HB1	2.03	0.40
2:c:156:MET:SD	2:c:221:SER:HB3	2.61	0.40
3:d:153:ASP:HA	3:d:156:VAL:HG12	2.03	0.40
6:p:-3:A:N7	6:p:-2:A:N6	2.70	0.40
6:p:4:A:H2'	6:p:5:A:C4	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 PDB entries followed by that with respect to all EM

entries.

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	B	175/177 (99%)	165 (94%)	10 (6%)	0	100	100
1	b	175/177 (99%)	165 (94%)	10 (6%)	0	100	100
2	C	245/248 (99%)	225 (92%)	20 (8%)	0	100	100
2	c	245/248 (99%)	225 (92%)	20 (8%)	0	100	100
3	D	295/302 (98%)	278 (94%)	15 (5%)	2 (1%)	19	52
3	E	293/302 (97%)	286 (98%)	7 (2%)	0	100	100
3	d	295/302 (98%)	278 (94%)	16 (5%)	1 (0%)	37	68
3	e	293/302 (97%)	279 (95%)	14 (5%)	0	100	100
4	G	300/306 (98%)	290 (97%)	10 (3%)	0	100	100
4	I	300/306 (98%)	284 (95%)	16 (5%)	0	100	100
4	J	300/306 (98%)	286 (95%)	11 (4%)	3 (1%)	13	45
4	K	300/306 (98%)	286 (95%)	14 (5%)	0	100	100
4	L	300/306 (98%)	285 (95%)	15 (5%)	0	100	100
4	M	300/306 (98%)	286 (95%)	13 (4%)	1 (0%)	37	68
4	g	300/306 (98%)	290 (97%)	10 (3%)	0	100	100
4	i	300/306 (98%)	284 (95%)	16 (5%)	0	100	100
4	j	300/306 (98%)	286 (95%)	11 (4%)	3 (1%)	13	45
4	k	300/306 (98%)	286 (95%)	14 (5%)	0	100	100
4	l	300/306 (98%)	285 (95%)	15 (5%)	0	100	100
4	m	300/306 (98%)	286 (95%)	13 (4%)	1 (0%)	37	68
5	H	163/168 (97%)	148 (91%)	14 (9%)	1 (1%)	22	55
5	h	163/168 (97%)	148 (91%)	14 (9%)	1 (1%)	22	55
9	A	927/930 (100%)	850 (92%)	69 (7%)	8 (1%)	14	47
9	a	927/930 (100%)	846 (91%)	72 (8%)	9 (1%)	13	45
All	All	7796/7926 (98%)	7327 (94%)	439 (6%)	30 (0%)	32	63

All (30) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	M	62	ILE

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Mol	Chain	Res	Type
9	A	159	ILE
9	A	851	VAL
9	a	159	ILE
9	a	851	VAL
4	m	62	ILE
4	J	50	VAL
4	J	145	VAL
4	j	50	VAL
4	j	145	VAL
3	D	294	MET
9	A	11	GLN
9	A	75	MET
9	A	887	THR
9	a	11	GLN
9	a	75	MET
9	a	88	LYS
9	a	887	THR
9	A	95	SER
9	a	95	SER
4	J	98	GLU
4	j	98	GLU
3	D	4	GLN
9	A	845	ALA
9	a	845	ALA
5	H	32	ILE
3	d	5	ILE
5	h	32	ILE
9	A	81	VAL
9	a	81	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 PDB entries followed by that with respect to all EM entries.

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	B	155/156 (99%)	146 (94%)	9 (6%)	17	44
1	b	155/156 (99%)	146 (94%)	9 (6%)	17	44

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C	208/211 (99%)	195 (94%)	13 (6%)	15	41
2	c	208/211 (99%)	195 (94%)	13 (6%)	15	41
3	D	245/261 (94%)	219 (89%)	26 (11%)	5	24
3	E	247/261 (95%)	239 (97%)	8 (3%)	34	58
3	d	247/261 (95%)	226 (92%)	21 (8%)	8	32
3	e	247/261 (95%)	227 (92%)	20 (8%)	9	33
4	G	246/251 (98%)	238 (97%)	8 (3%)	33	57
4	I	241/251 (96%)	227 (94%)	14 (6%)	17	44
4	J	247/251 (98%)	232 (94%)	15 (6%)	15	43
4	K	247/251 (98%)	235 (95%)	12 (5%)	21	47
4	L	244/251 (97%)	225 (92%)	19 (8%)	10	35
4	M	246/251 (98%)	239 (97%)	7 (3%)	38	60
4	g	246/251 (98%)	238 (97%)	8 (3%)	33	57
4	i	241/251 (96%)	227 (94%)	14 (6%)	17	44
4	j	247/251 (98%)	232 (94%)	15 (6%)	15	43
4	k	247/251 (98%)	235 (95%)	12 (5%)	21	47
4	l	244/251 (97%)	225 (92%)	19 (8%)	10	35
4	m	246/251 (98%)	239 (97%)	7 (3%)	38	60
5	H	148/151 (98%)	143 (97%)	5 (3%)	32	57
5	h	148/151 (98%)	143 (97%)	5 (3%)	32	57
9	A	787/817 (96%)	738 (94%)	49 (6%)	15	42
9	a	783/817 (96%)	732 (94%)	51 (6%)	14	41
All	All	6520/6726 (97%)	6141 (94%)	379 (6%)	19	44

All (379) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	2	ILE
1	B	4	GLU
1	B	5	MET
1	B	8	ASP
1	B	10	ILE
1	B	87	LEU
1	B	89	LYS

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Mol	Chain	Res	Type
1	B	93	THR
1	B	165	GLN
2	C	21	ASP
2	C	39	MET
2	C	40	SER
2	C	141	VAL
2	C	144	ASP
2	C	147	GLU
2	C	170	ILE
2	C	178	LYS
2	C	179	LEU
2	C	180	GLN
2	C	182	MET
2	C	215	ILE
2	C	218	LYS
3	D	3	LYS
3	D	5	ILE
3	D	24	LYS
3	D	106	ARG
3	D	114	LYS
3	D	122	LEU
3	D	123	LYS
3	D	125	ARG
3	D	126	VAL
3	D	129	LEU
3	D	165	LEU
3	D	166	LEU
3	D	169	GLU
3	D	174	LYS
3	D	176	LEU
3	D	178	LYS
3	D	179	GLU
3	D	183	GLU
3	D	186	ILE
3	D	189	LYS
3	D	194	SER
3	D	222	ILE
3	D	224	ASN
3	D	225	SER
3	D	264	SER
3	D	267	GLU
3	E	99	LYS

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Mol	Chain	Res	Type
3	E	101	MET
3	E	107	LEU
3	E	109	LEU
3	E	124	MET
3	E	125	ARG
3	E	126	VAL
3	E	130	SER
4	G	48	GLN
4	G	49	SER
4	G	50	VAL
4	G	53	ASN
4	G	56	ASP
4	G	58	ASP
4	G	129	LEU
4	G	151	THR
5	H	9	VAL
5	H	12	ASP
5	H	14	VAL
5	H	17	ASN
5	H	44	MET
4	I	9	VAL
4	I	59	LYS
4	I	84	LYS
4	I	89	VAL
4	I	91	LYS
4	I	204	GLU
4	I	206	VAL
4	I	217	ASP
4	I	218	LEU
4	I	226	ASP
4	I	228	LYS
4	I	278	VAL
4	I	283	LEU
4	I	284	THR
4	J	29	SER
4	J	31	ARG
4	J	32	ASP
4	J	35	THR
4	J	84	LYS
4	J	86	VAL
4	J	88	ASP
4	J	89	VAL

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Mol	Chain	Res	Type
4	J	144	THR
4	J	145	VAL
4	J	146	ASN
4	J	151	THR
4	J	226	ASP
4	J	227	GLN
4	J	228	LYS
4	K	30	ASP
4	K	31	ARG
4	K	32	ASP
4	K	34	THR
4	K	50	VAL
4	K	53	ASN
4	K	55	ASN
4	K	58	ASP
4	K	207	GLU
4	K	210	LYS
4	K	212	SER
4	K	218	LEU
4	L	89	VAL
4	L	91	LYS
4	L	93	GLU
4	L	94	LEU
4	L	98	GLU
4	L	102	THR
4	L	103	LEU
4	L	104	GLN
4	L	108	GLU
4	L	109	ASN
4	L	114	THR
4	L	164	VAL
4	L	165	ASP
4	L	168	GLU
4	L	172	MET
4	L	209	SER
4	L	226	ASP
4	L	266	ASN
4	L	288	GLN
4	M	34	THR
4	M	94	LEU
4	M	188	GLU
4	M	195	GLU

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Mol	Chain	Res	Type
4	M	197	SER
4	M	198	GLU
4	M	199	VAL
9	A	72	ASN
9	A	83	LYS
9	A	172	ASP
9	A	175	VAL
9	A	247	ARG
9	A	248	LYS
9	A	251	LEU
9	A	254	LYS
9	A	321	LEU
9	A	322	LYS
9	A	411	LEU
9	A	419	SER
9	A	422	MET
9	A	541	SER
9	A	621	ASP
9	A	622	GLN
9	A	623	ASP
9	A	626	MET
9	A	684	VAL
9	A	686	ASP
9	A	688	LYS
9	A	690	GLN
9	A	695	LEU
9	A	705	GLU
9	A	710	VAL
9	A	714	THR
9	A	716	THR
9	A	837	LEU
9	A	839	LYS
9	A	841	THR
9	A	848	ASN
9	A	849	VAL
9	A	871	LYS
9	A	873	GLU
9	A	874	ASP
9	A	876	VAL
9	A	878	THR
9	A	885	ASN
9	A	888	THR

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Mol	Chain	Res	Type
9	A	889	THR
9	A	893	GLN
9	A	897	TRP
9	A	901	GLN
9	A	903	GLU
9	A	907	ILE
9	A	908	THR
9	A	914	LEU
9	A	916	LYS
9	A	918	ILE
9	a	72	ASN
9	a	83	LYS
9	a	84	TYR
9	a	85	THR
9	a	172	ASP
9	a	175	VAL
9	a	247	ARG
9	a	248	LYS
9	a	251	LEU
9	a	254	LYS
9	a	321	LEU
9	a	322	LYS
9	a	411	LEU
9	a	419	SER
9	a	422	MET
9	a	541	SER
9	a	621	ASP
9	a	622	GLN
9	a	623	ASP
9	a	626	MET
9	a	684	VAL
9	a	686	ASP
9	a	688	LYS
9	a	690	GLN
9	a	695	LEU
9	a	705	GLU
9	a	710	VAL
9	a	714	THR
9	a	716	THR
9	a	837	LEU
9	a	839	LYS
9	a	841	THR

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Mol	Chain	Res	Type
9	a	848	ASN
9	a	849	VAL
9	a	871	LYS
9	a	873	GLU
9	a	874	ASP
9	a	876	VAL
9	a	878	THR
9	a	885	ASN
9	a	888	THR
9	a	889	THR
9	a	893	GLN
9	a	897	TRP
9	a	901	GLN
9	a	903	GLU
9	a	907	ILE
9	a	908	THR
9	a	914	LEU
9	a	916	LYS
9	a	918	ILE
1	b	2	ILE
1	b	4	GLU
1	b	5	MET
1	b	8	ASP
1	b	10	ILE
1	b	87	LEU
1	b	89	LYS
1	b	93	THR
1	b	165	GLN
2	c	21	ASP
2	c	39	MET
2	c	40	SER
2	c	141	VAL
2	c	144	ASP
2	c	147	GLU
2	c	170	ILE
2	c	178	LYS
2	c	179	LEU
2	c	180	GLN
2	c	182	MET
2	c	215	ILE
2	c	218	LYS
3	d	4	GLN

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Mol	Chain	Res	Type
3	d	5	ILE
3	d	6	LEU
3	d	52	GLU
3	d	102	GLN
3	d	113	LYS
3	d	115	LEU
3	d	119	LYS
3	d	120	GLU
3	d	121	ILE
3	d	122	LEU
3	d	123	LYS
3	d	124	MET
3	d	125	ARG
3	d	129	LEU
3	d	178	LYS
3	d	179	GLU
3	d	182	LEU
3	d	186	ILE
3	d	187	GLU
3	d	189	LYS
3	e	6	LEU
3	e	13	MET
3	e	31	LEU
3	e	36	ASN
3	e	37	VAL
3	e	98	THR
3	e	99	LYS
3	e	105	VAL
3	e	106	ARG
3	e	113	LYS
3	e	115	LEU
3	e	116	SER
3	e	120	GLU
3	e	121	ILE
3	e	123	LYS
3	e	124	MET
3	e	125	ARG
3	e	126	VAL
3	e	130	SER
3	e	166	LEU
4	g	48	GLN
4	g	49	SER

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Mol	Chain	Res	Type
4	g	50	VAL
4	g	53	ASN
4	g	56	ASP
4	g	58	ASP
4	g	129	LEU
4	g	151	THR
5	h	9	VAL
5	h	12	ASP
5	h	14	VAL
5	h	17	ASN
5	h	44	MET
4	i	9	VAL
4	i	59	LYS
4	i	84	LYS
4	i	89	VAL
4	i	91	LYS
4	i	204	GLU
4	i	206	VAL
4	i	217	ASP
4	i	218	LEU
4	i	226	ASP
4	i	228	LYS
4	i	278	VAL
4	i	283	LEU
4	i	284	THR
4	j	29	SER
4	j	31	ARG
4	j	32	ASP
4	j	35	THR
4	j	84	LYS
4	j	86	VAL
4	j	88	ASP
4	j	89	VAL
4	j	144	THR
4	j	145	VAL
4	j	146	ASN
4	j	151	THR
4	j	226	ASP
4	j	227	GLN
4	j	228	LYS
4	k	30	ASP
4	k	31	ARG

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Mol	Chain	Res	Type
4	k	32	ASP
4	k	34	THR
4	k	50	VAL
4	k	53	ASN
4	k	55	ASN
4	k	58	ASP
4	k	207	GLU
4	k	210	LYS
4	k	212	SER
4	k	218	LEU
4	l	89	VAL
4	l	91	LYS
4	l	93	GLU
4	l	94	LEU
4	l	98	GLU
4	l	102	THR
4	l	103	LEU
4	l	104	GLN
4	l	108	GLU
4	l	109	ASN
4	l	114	THR
4	l	164	VAL
4	l	165	ASP
4	l	168	GLU
4	l	172	MET
4	l	209	SER
4	l	226	ASP
4	l	266	ASN
4	l	288	GLN
4	m	34	THR
4	m	94	LEU
4	m	188	GLU
4	m	195	GLU
4	m	197	SER
4	m	198	GLU
4	m	199	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (93) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	134	HIS
2	C	9	ASN

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Mol	Chain	Res	Type
2	C	74	GLN
2	C	78	ASN
3	D	36	ASN
3	D	58	ASN
3	D	102	GLN
3	D	103	ASN
3	D	197	ASN
3	D	224	ASN
3	E	44	ASN
3	E	150	ASN
4	G	20	ASN
4	G	104	GLN
4	G	203	GLN
4	I	20	ASN
4	I	33	ASN
4	I	69	ASN
4	I	101	ASN
4	J	20	ASN
4	J	33	ASN
4	J	69	ASN
4	J	82	ASN
4	J	227	GLN
4	K	27	ASN
4	K	53	ASN
4	K	72	HIS
4	K	231	ASN
4	L	20	ASN
4	L	66	ASN
4	L	158	ASN
4	L	266	ASN
4	M	101	ASN
4	M	146	ASN
4	M	148	GLN
9	A	44	ASN
9	A	46	GLN
9	A	168	ASN
9	A	264	GLN
9	A	298	ASN
9	A	409	GLN
9	A	592	GLN
9	A	622	GLN
9	A	818	GLN

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Mol	Chain	Res	Type
9	A	833	HIS
9	A	872	ASN
9	a	44	ASN
9	a	46	GLN
9	a	168	ASN
9	a	219	ASN
9	a	264	GLN
9	a	356	ASN
9	a	409	GLN
9	a	592	GLN
9	a	622	GLN
9	a	667	ASN
9	a	768	HIS
9	a	818	GLN
9	a	833	HIS
9	a	872	ASN
1	b	134	HIS
2	c	9	ASN
2	c	74	GLN
2	c	78	ASN
3	d	32	HIS
3	d	92	GLN
3	d	102	GLN
3	d	257	HIS
3	d	265	ASN
3	e	30	HIS
4	g	20	ASN
4	g	104	GLN
4	g	203	GLN
4	i	20	ASN
4	i	69	ASN
4	i	101	ASN
4	j	20	ASN
4	j	33	ASN
4	j	82	ASN
4	j	148	GLN
4	j	227	GLN
4	k	27	ASN
4	k	53	ASN
4	k	72	HIS
4	k	231	ASN
4	l	20	ASN

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Mol	Chain	Res	Type
4	l	66	ASN
4	l	158	ASN
4	l	231	ASN
4	l	266	ASN
4	m	101	ASN
4	m	146	ASN
4	m	148	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
6	P	59/60 (98%)	37 (62%)	3 (5%)
6	p	59/60 (98%)	37 (62%)	0
All	All	118/120 (98%)	74 (62%)	3 (2%)

All (74) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	P	-6	U
6	P	-5	U
6	P	-2	A
6	P	0	A
6	P	1	G
6	P	2	U
6	P	3	C
6	P	4	A
6	P	5	A
6	P	6	C
6	P	7	C
6	P	8	C
6	P	9	U
6	P	10	U
6	P	11	U
6	P	12	G
6	P	13	C
6	P	14	U
6	P	16	A
6	P	18	C
6	P	19	U
6	P	20	U
6	P	22	C

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Mol	Chain	Res	Type
6	P	23	C
6	P	24	U
6	P	25	A
6	P	26	U
6	P	27	U
6	P	28	U
6	P	29	A
6	P	30	A
6	P	31	A
6	P	36	A
6	P	38	C
6	P	41	C
6	P	42	C
6	P	46	U
6	p	-6	U
6	p	-5	U
6	p	-2	A
6	p	0	A
6	p	1	G
6	p	2	U
6	p	3	C
6	p	4	A
6	p	5	A
6	p	6	C
6	p	7	C
6	p	8	C
6	p	9	U
6	p	10	U
6	p	11	U
6	p	12	G
6	p	13	C
6	p	14	U
6	p	16	A
6	p	18	C
6	p	19	U
6	p	20	U
6	p	22	C
6	p	23	C
6	p	24	U
6	p	25	A
6	p	26	U
6	p	27	U

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Mol	Chain	Res	Type
6	p	28	U
6	p	29	A
6	p	30	A
6	p	31	A
6	p	36	A
6	p	38	C
6	p	41	C
6	p	42	C
6	p	46	U

All (3) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
6	P	11	U
6	P	22	C
6	P	41	C

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 4 ligands modelled in this entry, 4 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.