



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 18, 2023 – 01:32 am GMT

PDB ID : 4AM3  
Title : Crystal structure of *C. crescentus* PNPase bound to RNA  
Authors : Hardwick, S.W.; Gubbey, T.; Hug, I.; Jenal, U.; Luisi, B.F.  
Deposited on : 2012-03-07  
Resolution : 3.00 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](mailto: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>.

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

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

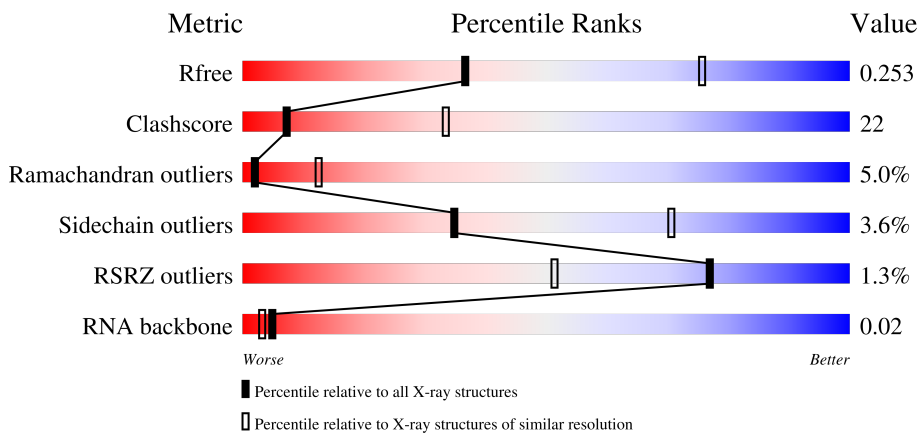
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.00 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))
$R_{free}$	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)
RNA backbone	3102	1173 (3.30-2.70)

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  $\geq 3$ , 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	717	 2% 56% 26% • 13%
1	B	717	 2% 57% 25% • 13%
1	C	717	 2% 59% 24% • • 13%
2	D	9	 11% 89%

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Mol	Chain	Length	Quality of chain
2	E	9	
2	H	9	
2	I	9	

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
3	PO4	A	1621	-	-	X	-
3	PO4	B	1620	-	-	X	-
3	PO4	B	1621	-	-	-	X
3	PO4	C	1620	-	-	X	-

## 2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 14015 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 POLYRIBONUCLEOTIDE NUCLEOTIDYLTRANSFERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	622	4632	2924	789	896	23	0	0	0
1	B	621	4534	2858	767	886	23	0	0	0
1	C	621	4554	2869	776	886	23	0	0	0

There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	GLY	-	expression tag	UNP Q9AC32
A	-3	PRO	-	expression tag	UNP Q9AC32
A	-2	LEU	-	expression tag	UNP Q9AC32
A	-1	GLY	-	expression tag	UNP Q9AC32
A	0	SER	-	expression tag	UNP Q9AC32
B	-4	GLY	-	expression tag	UNP Q9AC32
B	-3	PRO	-	expression tag	UNP Q9AC32
B	-2	LEU	-	expression tag	UNP Q9AC32
B	-1	GLY	-	expression tag	UNP Q9AC32
B	0	SER	-	expression tag	UNP Q9AC32
C	-4	GLY	-	expression tag	UNP Q9AC32
C	-3	PRO	-	expression tag	UNP Q9AC32
C	-2	LEU	-	expression tag	UNP Q9AC32
C	-1	GLY	-	expression tag	UNP Q9AC32
C	0	SER	-	expression tag	UNP Q9AC32

- Molecule 2 is a RNA chain called RNA, 5'-R(\*UP\*AP\*AP\*CP\*UP\*UP\*UP\*GP\*GP)-3'.

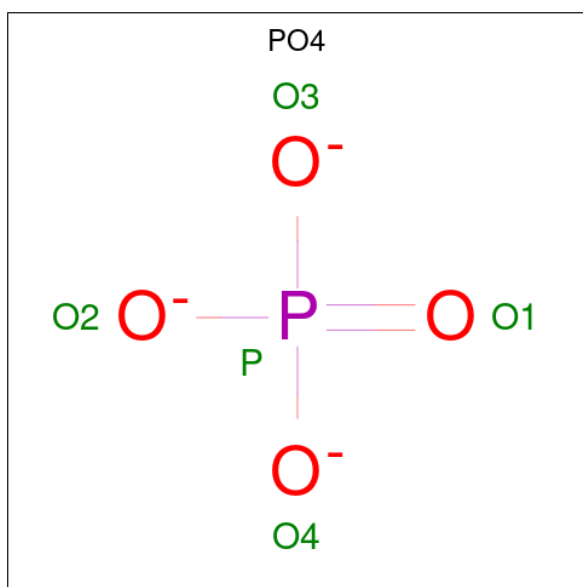
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	D	1	9	5	2	2	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	E	9	Total	C	N	O	P	0	0	0
			182	81	29	63	9			
2	H	1	Total	C	N			0	0	0
			11	6	5					
2	I	1	Total	C	N	O		0	0	0
			9	5	2	2				

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P).

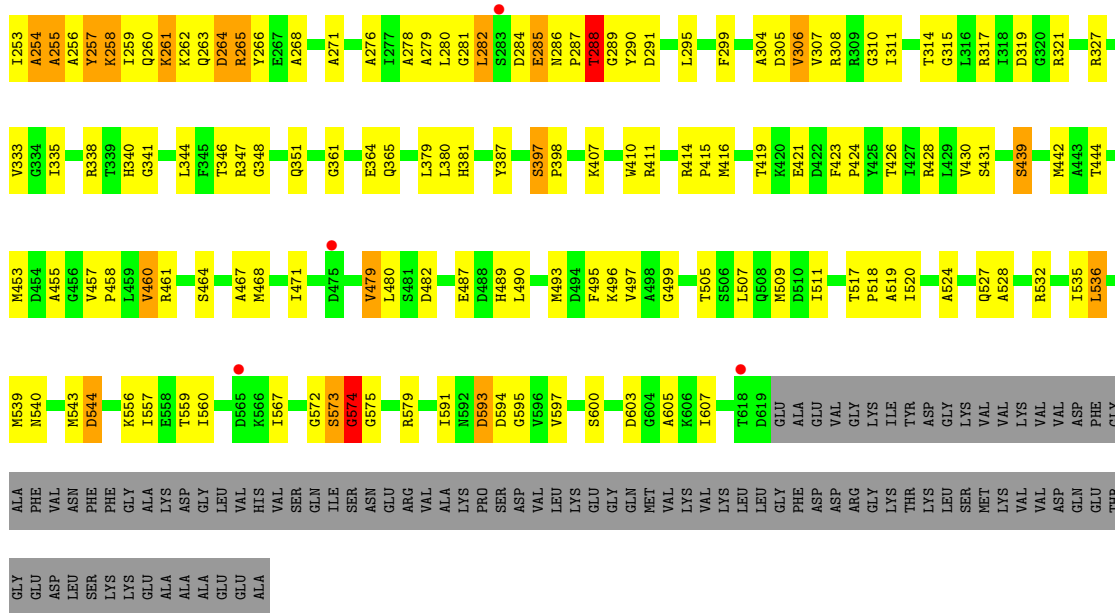


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	P	0	0
			5	4	1		
3	A	1	Total	O	P	0	0
			5	4	1		
3	B	1	Total	O	P	0	0
			5	4	1		
3	B	1	Total	O	P	0	0
			5	4	1		
3	C	1	Total	O	P	0	0
			5	4	1		
3	C	1	Total	O	P	0	0
			5	4	1		

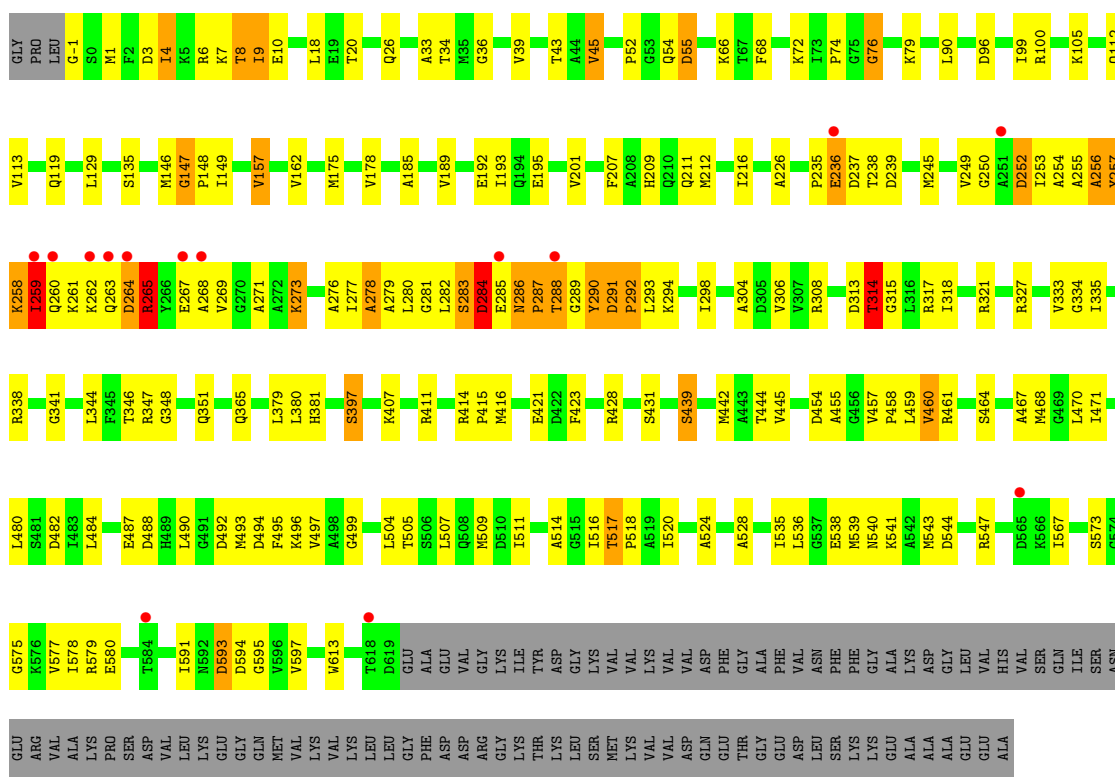
- Molecule 4 is water.

<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
4	A	19	Total 19	O 19	0	0
4	B	13	Total 13	O 13	0	0
4	C	22	Total 22	O 22	0	0





● Molecule 1: POLYRIBONUCLEOTIDE NUCLEOTIDYLTRANSFERASE



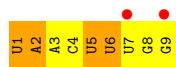
● Molecule 2: RNA, 5'-R(\*UP\*AP\*AP\*CP\*UP\*UP\*UP\*GP\*GP)-3'



U1  
A  
A  
C  
C  
U  
U  
U  
U  
G



- Molecule 2: RNA, 5'-R(\*UP\*AP\*AP\*CP\*UP\*UP\*UP\*GP\*GP)-3'



- Molecule 2: RNA, 5'-R(\*UP\*AP\*AP\*CP\*UP\*UP\*UP\*GP\*GP)-3'



- Molecule 2: RNA, 5'-R(\*UP\*AP\*AP\*CP\*UP\*UP\*UP\*GP\*GP)-3'



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 2 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	93.64Å 112.06Å 236.22Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.87 – 3.00 34.87 – 3.00	Depositor EDS
% Data completeness (in resolution range)	98.9 (34.87-3.00) 99.0 (34.87-3.00)	Depositor EDS
$R_{merge}$	0.13	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.42 (at 3.00Å)	Xtrriage
Refinement program	REFMAC 5.6.0117	Depositor
R, $R_{free}$	0.210 , 0.254 0.209 , 0.253	Depositor DCC
$R_{free}$ test set	2539 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	54.9	Xtrriage
Anisotropy	0.019	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 57.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	14015	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	55.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.73% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: PO4

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	3/4705 (0.1%)	0.89	4/6367 (0.1%)
1	B	0.60	1/4606 (0.0%)	0.83	2/6247 (0.0%)
1	C	0.66	0/4626	0.89	3/6271 (0.0%)
2	D	0.40	0/9	0.20	0/12
2	E	0.31	0/202	0.88	0/312
2	H	0.39	0/12	0.26	0/17
2	I	0.50	0/9	0.31	0/12
All	All	0.65	4/14169 (0.0%)	0.87	9/19238 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	2
1	C	0	3
All	All	0	7

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	156	TRP	CD2-CE2	5.65	1.48	1.41
1	B	410	TRP	CD2-CE2	5.38	1.47	1.41
1	A	11	TRP	CD2-CE2	5.16	1.47	1.41
1	A	613	TRP	CD2-CE2	5.13	1.47	1.41

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	259	ILE	CB-CA-C	7.80	127.19	111.60
1	A	93	ARG	NE-CZ-NH2	-6.42	117.09	120.30
1	B	315	GLY	N-CA-C	-6.21	97.58	113.10
1	C	10	GLU	N-CA-C	-6.13	94.44	111.00
1	C	315	GLY	N-CA-C	-5.91	98.33	113.10
1	A	347	ARG	NE-CZ-NH2	-5.78	117.41	120.30
1	A	176	ASP	CB-CG-OD1	5.71	123.44	118.30
1	A	330	LEU	CB-CG-CD2	5.52	120.39	111.00
1	B	532	ARG	NE-CZ-NH2	-5.10	117.75	120.30

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	289	GLY	Peptide
1	A	553	PHE	Peptide
1	B	264	ASP	Peptide
1	B	574	GLY	Peptide
1	C	258	LYS	Peptide
1	C	259	ILE	Peptide
1	C	314	THR	Peptide

## 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4632	0	4657	231	0
1	B	4534	0	4444	199	0
1	C	4554	0	4494	201	0
2	D	9	0	3	1	0
2	E	182	0	92	7	0
2	H	11	0	4	0	0
2	I	9	0	3	2	0
3	A	10	0	0	2	0
3	B	10	0	0	2	0
3	C	10	0	0	3	0
4	A	19	0	0	0	0
4	B	13	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	C	22	0	0	0	0
All	All	14015	0	13697	622	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 22.

All (622) 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:272:ALA:HB2	1:A:299:PHE:CZ	1.61	1.34
1:A:272:ALA:CB	1:A:299:PHE:CZ	2.12	1.32
1:B:102:LEU:HD21	1:B:187:MET:CE	1.65	1.26
1:C:281:GLY:HA2	1:C:290:TYR:CB	1.68	1.22
1:A:272:ALA:CB	1:A:299:PHE:CE2	2.25	1.19
1:C:8:THR:HG23	1:C:9:ILE:HG12	1.17	1.16
1:A:272:ALA:HB1	1:A:299:PHE:CE2	1.82	1.14
1:A:8:THR:HG23	1:A:9:ILE:HG12	1.15	1.14
1:C:283:SER:HA	1:C:284:ASP:HB2	1.28	1.13
1:A:262:LYS:CB	1:A:264:ASP:HB2	1.76	1.12
1:B:102:LEU:HD21	1:B:187:MET:HE3	1.18	1.12
1:A:554:ALA:HB1	1:A:555:PRO:CA	1.82	1.09
1:C:259:ILE:HG22	1:C:260:GLN:CA	1.82	1.09
1:A:263:GLN:O	1:A:265:ARG:HD3	1.52	1.08
1:C:8:THR:CG2	1:C:9:ILE:HG12	1.86	1.06
1:A:381:HIS:CD2	1:A:428:ARG:HH11	1.74	1.06
1:A:554:ALA:CB	1:A:555:PRO:HA	1.85	1.05
1:C:283:SER:CA	1:C:284:ASP:HB2	1.88	1.04
1:B:317:ARG:O	1:B:319:ASP:O	1.76	1.04
1:C:493:MET:HG3	1:C:511:ILE:HG12	1.39	1.03
1:B:381:HIS:CD2	1:B:428:ARG:HH11	1.75	1.03
1:A:493:MET:HG3	1:A:511:ILE:HG12	1.41	1.03
1:C:259:ILE:HG21	1:C:265:ARG:CG	1.89	1.02
1:C:259:ILE:HG21	1:C:265:ARG:HG3	1.38	1.02
1:B:197:SER:OG	1:B:200:ILE:HG12	1.59	1.02
1:C:259:ILE:CG2	1:C:260:GLN:HA	1.89	1.01
1:C:277:ILE:O	1:C:280:LEU:O	1.79	1.01
1:B:257:TYR:HB2	1:B:258:LYS:CB	1.90	1.01
1:A:262:LYS:HB3	1:A:264:ASP:CB	1.90	1.00
1:B:493:MET:HG3	1:B:511:ILE:HG12	1.40	1.00
1:B:381:HIS:HD2	1:B:428:ARG:NH1	1.58	1.00
1:B:8:THR:CG2	1:B:9:ILE:HG12	1.91	0.99

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:381:HIS:CD2	1:C:428:ARG:HH11	1.80	0.99
1:B:8:THR:HG23	1:B:9:ILE:HG12	1.02	0.99
1:C:381:HIS:HD2	1:C:428:ARG:NH1	1.60	0.99
1:A:381:HIS:HD2	1:A:428:ARG:NH1	1.58	0.99
1:C:488:ASP:OD1	1:C:494:ASP:OD2	1.79	0.99
1:A:554:ALA:HB1	1:A:555:PRO:HA	0.99	0.98
1:A:317:ARG:HD3	1:A:480:LEU:HD22	1.45	0.98
1:A:8:THR:HG23	1:A:9:ILE:CG1	1.92	0.98
1:A:259:ILE:HG22	1:A:260:GLN:H	1.30	0.97
1:A:272:ALA:HB1	1:A:299:PHE:CZ	1.91	0.96
1:A:453:MET:CE	1:A:543:MET:HG3	1.94	0.96
1:B:317:ARG:HD3	1:B:480:LEU:HD22	1.45	0.96
1:C:381:HIS:HD2	1:C:428:ARG:HH11	0.96	0.95
1:C:317:ARG:HD3	1:C:480:LEU:HD22	1.47	0.95
1:B:276:ALA:O	1:B:280:LEU:CB	2.14	0.95
1:B:4:ILE:HG21	1:B:226:ALA:HB2	1.48	0.94
1:A:8:THR:CG2	1:A:9:ILE:HG12	1.96	0.94
1:B:257:TYR:OH	1:B:307:VAL:HG22	1.68	0.94
1:B:8:THR:HG23	1:B:9:ILE:CG1	1.96	0.94
1:C:4:ILE:HG21	1:C:226:ALA:HB2	1.50	0.94
1:C:291:ASP:O	1:C:293:LEU:N	2.02	0.92
1:A:54:GLN:O	1:A:55:ASP:HB3	1.68	0.92
1:A:4:ILE:HG21	1:A:226:ALA:HB2	1.51	0.91
1:B:262:LYS:O	1:B:264:ASP:OD1	1.87	0.91
1:A:272:ALA:HB2	1:A:299:PHE:HZ	1.33	0.91
2:E:5:U:O2'	2:E:6:U:OP1	1.89	0.91
1:A:453:MET:HE3	1:A:543:MET:HG3	1.52	0.90
1:A:253:ILE:HD11	1:A:299:PHE:CE1	2.07	0.90
1:C:259:ILE:HG22	1:C:260:GLN:HA	0.94	0.90
1:A:262:LYS:HB3	1:A:264:ASP:HB2	0.93	0.89
1:A:540:ASN:HB2	1:A:544:ASP:HA	1.53	0.89
1:B:102:LEU:HD21	1:B:187:MET:HE1	1.55	0.89
1:C:264:ASP:O	1:C:265:ARG:O	1.91	0.88
1:A:54:GLN:O	1:A:55:ASP:CB	2.21	0.88
1:B:261:LYS:HA	1:B:263:GLN:H	1.37	0.87
1:B:220:ILE:O	1:B:224:GLU:HG3	1.74	0.87
1:C:8:THR:HG23	1:C:9:ILE:CG1	2.04	0.87
1:B:442:MET:CE	1:B:496:LYS:HB3	2.05	0.87
1:C:416:MET:CE	1:C:460:VAL:HG22	2.04	0.86
1:A:442:MET:CE	1:A:496:LYS:HB3	2.06	0.86
1:C:442:MET:CE	1:C:496:LYS:HB3	2.06	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:264:ASP:C	1:C:265:ARG:HD2	1.96	0.86
1:C:281:GLY:CA	1:C:290:TYR:CB	2.54	0.86
1:C:439:SER:HA	3:C:1620:PO4:O2	1.76	0.85
1:B:416:MET:HE3	1:B:460:VAL:HG22	1.59	0.84
1:B:416:MET:CE	1:B:460:VAL:HG22	2.08	0.84
1:B:442:MET:HE3	1:B:496:LYS:HB3	1.58	0.84
1:A:381:HIS:HD2	1:A:428:ARG:HH11	0.85	0.83
1:A:442:MET:HE3	1:A:496:LYS:HB3	1.58	0.83
1:A:517:THR:OG1	1:A:520:ILE:HG12	1.78	0.83
1:B:453:MET:HE3	1:B:543:MET:HG3	1.60	0.83
1:C:291:ASP:H	1:C:292:PRO:CD	1.90	0.82
1:B:281:GLY:C	1:B:289:GLY:O	2.18	0.82
1:A:416:MET:HE3	1:A:460:VAL:HG22	1.58	0.82
1:A:416:MET:CE	1:A:460:VAL:HG22	2.10	0.81
1:B:288:THR:OG1	1:B:289:GLY:HA3	1.79	0.81
1:B:453:MET:CE	1:B:543:MET:HG3	2.10	0.81
1:A:248:LEU:CD2	1:A:279:ALA:CB	2.59	0.80
1:C:397:SER:HB3	2:I:1:U:C4	2.16	0.80
1:B:254:ALA:O	1:B:256:ALA:N	2.14	0.80
1:C:416:MET:HE3	1:C:460:VAL:HG22	1.62	0.80
1:A:264:ASP:H	1:A:265:ARG:HA	1.47	0.80
1:A:119:GLN:NE2	1:B:338:ARG:H	1.80	0.79
1:B:257:TYR:CB	1:B:258:LYS:CB	2.60	0.79
1:C:237:ASP:OD2	1:C:239:ASP:OD2	2.01	0.79
1:A:248:LEU:HD22	1:A:279:ALA:CB	2.13	0.79
1:C:287:PRO:O	1:C:288:THR:O	2.01	0.79
1:A:272:ALA:HB2	1:A:299:PHE:CE2	2.05	0.78
1:A:264:ASP:H	1:A:265:ARG:CA	1.95	0.78
1:B:381:HIS:HD2	1:B:428:ARG:HH11	0.84	0.78
1:C:442:MET:HE3	1:C:496:LYS:HB3	1.66	0.78
1:B:263:GLN:C	1:B:265:ARG:HB3	2.04	0.77
1:B:556:LYS:O	1:B:607:ILE:HD11	1.84	0.77
1:A:302:LEU:O	1:A:306:VAL:HG23	1.85	0.77
1:C:245:MET:CE	1:C:298:ILE:HG22	2.15	0.77
1:C:245:MET:HE1	1:C:298:ILE:HG22	1.67	0.77
1:A:317:ARG:HD2	1:A:487:GLU:OE2	1.84	0.76
1:B:540:ASN:HB2	1:B:544:ASP:HA	1.66	0.76
1:A:256:ALA:O	1:A:259:ILE:HB	1.84	0.76
1:B:317:ARG:NH2	1:B:321:ARG:NH1	2.33	0.76
1:B:102:LEU:CD2	1:B:187:MET:HE3	2.10	0.76
1:B:264:ASP:HA	1:B:266:TYR:N	2.01	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:333:VAL:HG11	1:C:543:MET:HE1	1.68	0.75
1:A:6:ARG:C	1:A:8:THR:H	1.90	0.75
1:C:282:LEU:N	1:C:289:GLY:O	2.20	0.75
1:B:6:ARG:C	1:B:8:THR:H	1.89	0.75
1:A:263:GLN:O	1:A:265:ARG:CD	2.34	0.75
1:B:517:THR:OG1	1:B:520:ILE:HG12	1.85	0.74
1:B:257:TYR:OH	1:B:307:VAL:CG2	2.34	0.74
1:C:249:VAL:O	1:C:252:ASP:HB2	1.86	0.74
1:C:257:TYR:C	1:C:259:ILE:HB	2.06	0.74
1:B:261:LYS:HA	1:B:263:GLN:N	2.03	0.74
1:A:561:ASN:ND2	1:A:596:VAL:HG22	2.03	0.74
1:C:484:LEU:N	1:C:487:GLU:OE1	2.16	0.74
1:A:6:ARG:HG3	1:A:8:THR:HG22	1.70	0.74
1:C:273:LYS:O	1:C:277:ILE:HG12	1.88	0.74
1:C:540:ASN:HB2	1:C:544:ASP:HA	1.68	0.73
1:C:283:SER:N	1:C:284:ASP:HB2	2.02	0.73
1:B:182:THR:HG23	1:B:185:ALA:H	1.54	0.73
1:C:284:ASP:N	1:C:285:GLU:HB2	2.04	0.73
1:A:3:ASP:HB3	1:A:20:THR:O	1.89	0.73
1:C:291:ASP:H	1:C:292:PRO:HD3	1.52	0.73
1:C:304:ALA:O	1:C:308:ARG:HG3	1.89	0.72
1:A:248:LEU:CD2	1:A:279:ALA:HB2	2.18	0.72
1:B:153:ARG:NH1	1:B:176:ASP:OD1	2.21	0.72
1:A:543:MET:O	1:A:544:ASP:HB3	1.88	0.71
1:C:8:THR:HG23	1:C:9:ILE:N	2.03	0.71
1:C:253:ILE:HA	1:C:256:ALA:HB3	1.73	0.71
1:C:54:GLN:O	1:C:55:ASP:CB	2.38	0.71
1:B:253:ILE:HD11	1:B:299:PHE:CE1	2.26	0.69
1:B:282:LEU:O	1:B:289:GLY:N	2.25	0.69
1:C:283:SER:C	1:C:285:GLU:HB2	2.12	0.69
2:E:7:U:OP2	2:E:7:U:H3'	1.91	0.69
1:B:257:TYR:N	1:B:258:LYS:CB	2.56	0.69
1:B:304:ALA:O	1:B:308:ARG:HG3	1.92	0.69
1:C:54:GLN:O	1:C:55:ASP:HB3	1.93	0.69
1:C:259:ILE:CG2	1:C:265:ARG:HG3	2.21	0.69
1:C:439:SER:HA	3:C:1620:PO4:P	2.33	0.69
1:C:333:VAL:HG13	1:C:454:ASP:HB2	1.75	0.69
1:A:259:ILE:O	1:A:260:GLN:HB3	1.92	0.69
1:C:291:ASP:C	1:C:293:LEU:H	1.95	0.69
1:B:8:THR:HG23	1:B:9:ILE:N	2.06	0.68
1:C:442:MET:HE2	1:C:496:LYS:HB3	1.73	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:284:ASP:HA	1:B:285:GLU:CB	2.24	0.68
1:A:202:LEU:HD11	1:A:525:LEU:HD22	1.76	0.68
1:C:317:ARG:HD2	1:C:487:GLU:OE2	1.94	0.67
1:C:327:ARG:HD2	1:C:348:GLY:HA3	1.77	0.67
1:A:119:GLN:HE22	1:B:338:ARG:H	1.42	0.67
1:B:119:GLN:NE2	1:C:338:ARG:H	1.92	0.67
1:A:308:ARG:HE	1:A:471:ILE:HG23	1.58	0.67
1:B:288:THR:CB	1:B:289:GLY:HA3	2.25	0.67
1:A:241:ILE:HG21	1:A:298:ILE:HD12	1.75	0.67
1:C:265:ARG:HD2	1:C:265:ARG:N	2.09	0.66
1:B:182:THR:CG2	1:B:185:ALA:H	2.08	0.66
1:A:259:ILE:HG22	1:A:260:GLN:N	2.06	0.66
1:A:554:ALA:CB	1:A:555:PRO:CA	2.56	0.66
1:B:54:GLN:O	1:B:55:ASP:OD1	2.13	0.66
1:B:540:ASN:HB2	1:B:544:ASP:CA	2.25	0.66
1:A:393:GLY:H	1:C:112:GLN:HE22	1.43	0.66
1:C:416:MET:HE1	1:C:460:VAL:HG22	1.78	0.66
1:C:575:GLY:C	1:C:579:ARG:NH1	2.49	0.66
1:A:540:ASN:HB2	1:A:544:ASP:CA	2.26	0.65
1:C:540:ASN:HB2	1:C:544:ASP:CA	2.25	0.65
1:B:556:LYS:HB2	1:B:607:ILE:HD12	1.78	0.65
1:C:195:GLU:OE2	1:C:461:ARG:NH1	2.29	0.65
1:C:249:VAL:CG1	1:C:276:ALA:HB2	2.26	0.65
1:A:264:ASP:CB	1:A:265:ARG:HA	2.25	0.65
1:B:453:MET:CE	1:B:543:MET:CG	2.74	0.65
1:A:264:ASP:HB3	1:A:266:TYR:H	1.60	0.65
1:A:7:LYS:HG3	1:A:17:VAL:HG22	1.78	0.65
1:A:6:ARG:HG3	1:A:8:THR:CG2	2.26	0.64
1:A:127:ASP:O	1:A:131:MET:HG3	1.96	0.64
1:A:281:GLY:HA2	1:A:290:TYR:O	1.96	0.64
1:B:249:VAL:HA	1:B:252:ASP:HB3	1.77	0.64
1:A:262:LYS:H	1:A:263:GLN:C	2.01	0.64
1:B:59:LEU:HD23	1:B:100:ARG:NH1	2.11	0.64
1:A:283:SER:HB2	1:A:284:ASP:O	1.98	0.64
1:A:275:LYS:C	1:A:275:LYS:HD3	2.18	0.64
1:A:264:ASP:N	1:A:265:ARG:HA	2.07	0.64
1:C:471:ILE:CD1	1:C:490:LEU:HD13	2.28	0.63
1:A:9:ILE:HG22	1:A:11:TRP:HB2	1.81	0.63
1:A:8:THR:HG23	1:A:9:ILE:N	2.12	0.63
1:A:253:ILE:HD11	1:A:299:PHE:HE1	1.59	0.63
2:E:6:U:C5'	2:E:6:U:H6	2.11	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:6:ARG:O	1:B:8:THR:N	2.32	0.63
1:B:317:ARG:HD2	1:B:487:GLU:OE2	1.99	0.63
1:A:442:MET:HE2	1:A:496:LYS:HB3	1.81	0.62
1:C:308:ARG:NH2	1:C:492:ASP:OD2	2.32	0.62
1:C:284:ASP:H	1:C:286:ASN:N	1.97	0.62
1:B:253:ILE:O	1:B:254:ALA:O	2.17	0.62
1:B:317:ARG:HH22	1:B:321:ARG:NH1	1.95	0.62
1:C:290:TYR:CB	1:C:292:PRO:HD3	2.29	0.62
1:B:249:VAL:HG22	1:B:253:ILE:HG13	1.82	0.62
1:B:253:ILE:HD11	1:B:299:PHE:HE1	1.62	0.62
1:C:283:SER:CA	1:C:284:ASP:CB	2.72	0.62
1:A:313:ASP:O	1:A:314:THR:OG1	2.17	0.62
1:B:381:HIS:CD2	1:B:428:ARG:NH1	2.51	0.61
1:A:269:VAL:O	1:A:273:LYS:CB	2.49	0.61
1:B:7:LYS:HA	1:B:17:VAL:HG13	1.83	0.61
2:E:6:U:H6	2:E:6:U:H5''	1.65	0.61
1:A:453:MET:CE	1:A:543:MET:CG	2.74	0.61
1:B:257:TYR:CA	1:B:258:LYS:CB	2.78	0.61
1:C:6:ARG:O	1:C:8:THR:HB	2.00	0.61
1:A:536:LEU:HA	1:A:539:MET:HE3	1.82	0.60
1:C:235:PRO:CA	1:C:236:GLU:CB	2.79	0.60
1:A:202:LEU:CD1	1:A:525:LEU:HD22	2.30	0.60
1:B:556:LYS:HB2	1:B:607:ILE:CD1	2.31	0.60
1:C:291:ASP:N	1:C:292:PRO:CD	2.59	0.60
1:B:9:ILE:HG22	1:B:11:TRP:HB2	1.82	0.60
1:B:442:MET:HE2	1:B:496:LYS:HB3	1.81	0.60
1:C:257:TYR:O	1:C:259:ILE:HB	2.00	0.60
1:A:262:LYS:HB2	1:A:264:ASP:N	2.17	0.60
1:B:464:SER:CB	1:B:539:MET:HE1	2.31	0.59
1:A:241:ILE:HG21	1:A:298:ILE:CD1	2.32	0.59
1:A:248:LEU:CD2	1:A:279:ALA:HB1	2.32	0.59
1:A:453:MET:HE2	1:A:543:MET:HG3	1.82	0.59
1:A:499:GLY:HA2	1:A:505:THR:HB	1.84	0.59
1:A:317:ARG:NH1	1:A:487:GLU:OE1	2.36	0.59
1:A:453:MET:HE2	1:A:543:MET:CG	2.32	0.59
1:C:333:VAL:HG12	1:C:334:GLY:N	2.17	0.59
1:B:55:ASP:OD1	1:B:56:PHE:HD1	1.85	0.59
1:C:284:ASP:HA	1:C:286:ASN:O	2.03	0.59
1:B:0:SER:O	1:B:1:MET:O	2.20	0.58
1:C:235:PRO:HA	1:C:236:GLU:CB	2.31	0.58
1:C:259:ILE:HG21	1:C:265:ARG:CB	2.33	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:536:LEU:HA	1:C:539:MET:HE3	1.85	0.58
1:A:338:ARG:H	1:C:119:GLN:NE2	2.01	0.58
1:B:119:GLN:HE22	1:C:338:ARG:H	1.50	0.58
1:B:257:TYR:H	1:B:258:LYS:CB	2.14	0.58
1:C:259:ILE:C	1:C:260:GLN:HG3	2.24	0.58
1:A:412:ALA:HA	1:A:505:THR:HG23	1.86	0.58
1:B:361:GLY:O	1:B:364:GLU:HG2	2.03	0.58
1:B:257:TYR:CB	1:B:258:LYS:CA	2.82	0.58
1:A:259:ILE:O	1:A:260:GLN:CB	2.51	0.58
1:A:263:GLN:C	1:A:265:ARG:HD3	2.23	0.58
1:C:249:VAL:HG11	1:C:276:ALA:HB2	1.85	0.58
1:A:304:ALA:O	1:A:308:ARG:HG3	2.03	0.58
1:A:272:ALA:HB1	1:A:299:PHE:CD2	2.38	0.58
1:B:439:SER:HB2	1:B:467:ALA:HB2	1.84	0.58
1:A:248:LEU:HD22	1:A:279:ALA:HB1	1.86	0.58
1:A:6:ARG:O	1:A:8:THR:N	2.30	0.57
1:A:327:ARG:HD2	1:A:348:GLY:HA3	1.86	0.57
1:A:454:ASP:O	1:A:547:ARG:HD2	2.04	0.57
1:C:249:VAL:HA	1:C:252:ASP:OD2	2.03	0.57
1:C:284:ASP:H	1:C:285:GLU:C	2.07	0.57
3:C:1620:PO4:O1	3:C:1621:PO4:O3	2.22	0.57
1:B:453:MET:HE2	1:B:543:MET:CG	2.34	0.57
1:C:283:SER:HA	1:C:284:ASP:CB	2.17	0.57
1:C:8:THR:O	1:C:9:ILE:O	2.23	0.57
1:C:333:VAL:HG11	1:C:543:MET:CE	2.34	0.57
1:B:281:GLY:CA	1:B:289:GLY:O	2.52	0.56
1:C:192:GLU:HB2	1:C:411:ARG:HG2	1.86	0.56
1:C:591:ILE:HG12	1:C:597:VAL:HG22	1.86	0.56
1:A:497:VAL:HG21	1:A:528:ALA:HB1	1.88	0.56
1:B:307:VAL:O	1:B:310:GLY:N	2.38	0.56
1:C:90:LEU:HD13	1:C:407:LYS:HG2	1.86	0.56
1:C:255:ALA:C	1:C:257:TYR:H	2.08	0.56
1:C:278:ALA:O	1:C:280:LEU:N	2.38	0.56
2:E:1:U:H4'	2:E:2:A:OP1	2.04	0.56
1:A:381:HIS:CD2	1:A:428:ARG:NH1	2.51	0.56
1:A:439:SER:HA	3:A:1621:PO4:P	2.46	0.56
1:A:242:LYS:HG3	1:A:242:LYS:O	2.05	0.56
1:A:90:LEU:HD13	1:A:407:LYS:HG2	1.89	0.56
1:B:99:ILE:HG13	1:B:100:ARG:N	2.21	0.55
1:C:209:HIS:HD2	1:C:212:MET:HE2	1.70	0.55
1:B:90:LEU:HD13	1:B:407:LYS:HG2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:105:LYS:O	1:C:235:PRO:HG3	2.07	0.55
1:B:559:THR:O	1:B:560:ILE:HD13	2.06	0.55
1:C:146:MET:O	1:C:147:GLY:O	2.24	0.55
1:A:202:LEU:HD21	1:A:521:MET:HB3	1.89	0.55
1:A:294:LYS:O	1:A:298:ILE:HG13	2.06	0.55
1:B:517:THR:O	1:B:519:ALA:N	2.40	0.55
1:A:6:ARG:NE	1:A:8:THR:HG21	2.22	0.55
1:C:249:VAL:HG13	1:C:276:ALA:HB2	1.89	0.55
1:C:265:ARG:NH2	1:C:318:ILE:O	2.40	0.55
1:A:99:ILE:HG13	1:A:100:ARG:N	2.21	0.54
1:A:189:VAL:HB	1:A:509:MET:HB2	1.89	0.54
1:B:278:ALA:O	1:B:279:ALA:HB3	2.08	0.54
1:B:416:MET:HE1	1:B:460:VAL:HG22	1.89	0.54
1:A:264:ASP:N	1:A:265:ARG:CA	2.64	0.54
1:B:281:GLY:HA2	1:B:288:THR:CG2	2.38	0.54
1:B:327:ARG:HD2	1:B:348:GLY:HA3	1.89	0.54
1:A:328:PRO:HB2	1:C:-1:GLY:N	2.22	0.54
1:B:282:LEU:N	1:B:289:GLY:O	2.40	0.54
1:B:497:VAL:HG12	1:B:507:LEU:CD1	2.38	0.54
1:B:308:ARG:HE	1:B:471:ILE:HG23	1.72	0.54
1:A:464:SER:CB	1:A:539:MET:HE1	2.39	0.53
1:B:439:SER:HA	3:B:1620:PO4:P	2.49	0.53
1:C:268:ALA:HA	1:C:271:ALA:HB3	1.89	0.53
1:B:148:PRO:HG2	1:B:216:ILE:HG23	1.90	0.53
1:C:99:ILE:HG13	1:C:100:ARG:N	2.22	0.53
1:B:249:VAL:CG2	1:B:253:ILE:HG13	2.38	0.53
1:C:237:ASP:OD1	1:C:239:ASP:N	2.42	0.53
1:A:264:ASP:H	1:A:265:ARG:CB	2.21	0.53
1:A:439:SER:HB2	1:A:467:ALA:HB2	1.91	0.53
1:B:497:VAL:HG21	1:B:528:ALA:HB1	1.91	0.53
1:B:189:VAL:HB	1:B:509:MET:HB2	1.91	0.53
1:B:259:ILE:N	1:B:260:GLN:HA	2.23	0.53
1:C:497:VAL:HG21	1:C:528:ALA:HB1	1.90	0.52
1:B:192:GLU:HB2	1:B:411:ARG:HG2	1.89	0.52
1:C:207:PHE:O	1:C:211:GLN:HG2	2.09	0.52
1:A:241:ILE:HG23	1:A:242:LYS:N	2.25	0.52
1:A:423:PHE:CD1	1:A:458:PRO:HD2	2.44	0.52
1:C:579:ARG:HG3	1:C:579:ARG:HH11	1.73	0.52
1:A:264:ASP:HB3	1:A:266:TYR:N	2.25	0.52
1:B:264:ASP:HA	1:B:266:TYR:H	1.71	0.52
1:B:285:GLU:H	1:B:286:ASN:C	2.13	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:8:THR:CG2	1:C:9:ILE:N	2.71	0.52
1:C:34:THR:HG23	1:C:39:VAL:HG22	1.91	0.52
1:B:0:SER:O	1:B:1:MET:HG2	2.09	0.52
1:A:6:ARG:C	1:A:8:THR:N	2.61	0.52
1:A:8:THR:HG23	1:A:9:ILE:CD1	2.39	0.51
1:C:454:ASP:O	1:C:547:ARG:HD2	2.11	0.51
1:A:43:THR:HG21	1:B:387:TYR:CD2	2.46	0.51
1:A:262:LYS:N	1:A:263:GLN:C	2.63	0.51
1:B:603:ASP:HB3	1:B:605:ALA:H	1.76	0.51
1:C:135:SER:HB2	1:C:149:ILE:HG13	1.93	0.51
1:C:259:ILE:CG2	1:C:260:GLN:CA	2.69	0.51
1:A:497:VAL:HG12	1:A:507:LEU:CD1	2.40	0.51
1:A:295:LEU:O	1:A:299:PHE:N	2.41	0.51
1:A:366:PHE:CE1	1:A:375:LYS:HD3	2.46	0.51
1:B:195:GLU:OE2	1:B:461:ARG:NH1	2.43	0.51
1:A:67:THR:OG1	1:A:74:PRO:HD3	2.11	0.51
1:C:347:ARG:NH2	1:C:439:SER:O	2.43	0.51
1:A:2:PHE:CZ	1:A:4:ILE:HD11	2.46	0.51
1:B:263:GLN:O	1:B:265:ARG:HB3	2.09	0.51
1:B:421:GLU:O	1:B:559:THR:HG21	2.11	0.51
1:C:439:SER:HB2	1:C:467:ALA:HB2	1.93	0.51
1:A:471:ILE:CD1	1:A:490:LEU:HD13	2.41	0.51
1:B:249:VAL:HG22	1:B:249:VAL:O	2.11	0.51
1:A:560:ILE:HD13	1:A:611:ILE:HG12	1.93	0.51
1:B:251:ALA:O	1:B:255:ALA:HB3	2.11	0.51
1:A:192:GLU:HB2	1:A:411:ARG:HG2	1.92	0.50
1:A:256:ALA:HA	1:A:259:ILE:HG12	1.92	0.50
1:A:283:SER:HB2	1:A:284:ASP:C	2.31	0.50
1:C:464:SER:CB	1:C:539:MET:HE1	2.41	0.50
1:B:9:ILE:HG13	1:B:218:ALA:HB2	1.92	0.50
1:B:517:THR:HG1	1:B:520:ILE:HG12	1.76	0.50
1:C:189:VAL:HB	1:C:509:MET:HB2	1.92	0.50
1:C:283:SER:N	1:C:284:ASP:CB	2.71	0.50
1:C:423:PHE:CD1	1:C:458:PRO:HD2	2.46	0.50
1:B:575:GLY:H	1:B:579:ARG:NH1	2.10	0.50
1:B:517:THR:O	1:B:520:ILE:N	2.42	0.50
1:C:157:VAL:HG13	1:C:162:VAL:HG21	1.93	0.50
1:C:471:ILE:HD11	1:C:490:LEU:CD1	2.41	0.50
1:A:333:VAL:HG21	1:A:543:MET:CE	2.42	0.50
1:A:347:ARG:NH2	1:A:439:SER:O	2.45	0.50
1:B:163:LEU:HD22	1:B:211:GLN:HE21	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:489:HIS:CE1	4:B:2012:HOH:O	2.65	0.50
1:C:333:VAL:CG1	1:C:334:GLY:N	2.75	0.50
1:C:497:VAL:HG12	1:C:507:LEU:CD1	2.41	0.50
1:B:3:ASP:HB3	1:B:20:THR:O	2.11	0.50
1:B:34:THR:HG23	1:B:39:VAL:HG22	1.94	0.50
1:C:257:TYR:HA	1:C:265:ARG:HG2	1.94	0.50
1:B:591:ILE:HG12	1:B:597:VAL:HG22	1.94	0.50
1:C:335:ILE:HD13	1:C:344:LEU:HB2	1.93	0.49
1:A:380:LEU:C	1:A:380:LEU:HD23	2.32	0.49
1:B:281:GLY:HA3	1:B:289:GLY:O	2.12	0.49
1:C:535:ILE:HG22	1:C:539:MET:HE2	1.94	0.49
1:C:575:GLY:C	1:C:579:ARG:HH11	2.14	0.49
1:A:468:MET:HB2	1:A:495:PHE:CE1	2.47	0.49
1:A:561:ASN:HD21	1:A:596:VAL:HG22	1.76	0.49
1:B:2:PHE:CZ	1:B:4:ILE:HD11	2.48	0.49
1:C:538:GLU:HA	1:C:541:LYS:HD3	1.94	0.49
1:A:248:LEU:HD23	1:A:279:ALA:HB2	1.93	0.49
1:A:498:ALA:O	1:A:505:THR:HG22	2.12	0.49
1:A:535:ILE:HG22	1:A:539:MET:HE2	1.93	0.49
1:B:54:GLN:O	1:B:55:ASP:CG	2.50	0.49
1:C:201:VAL:HG21	1:C:504:LEU:HD12	1.94	0.49
1:C:256:ALA:HB2	1:C:268:ALA:CB	2.43	0.49
1:C:457:VAL:O	1:C:459:LEU:N	2.42	0.49
1:C:517:THR:OG1	1:C:520:ILE:HG12	2.13	0.49
1:C:543:MET:HE1	1:C:547:ARG:HH12	1.78	0.49
1:C:76:GLY:O	1:C:79:LYS:HE2	2.13	0.49
1:A:440:SER:OG	3:A:1621:PO4:O2	2.28	0.48
1:B:535:ILE:HG22	1:B:539:MET:HE2	1.95	0.48
1:A:148:PRO:HG2	1:A:216:ILE:HG23	1.95	0.48
1:B:127:ASP:O	1:B:131:MET:HG3	2.12	0.48
1:B:146:MET:O	1:B:147:GLY:O	2.30	0.48
1:C:33:ALA:HB1	1:C:129:LEU:HD11	1.95	0.48
1:B:288:THR:HG23	1:B:289:GLY:O	2.13	0.48
1:B:536:LEU:HA	1:B:539:MET:HE3	1.95	0.48
1:B:380:LEU:HD23	1:B:380:LEU:C	2.34	0.48
1:A:252:ASP:HB3	1:A:271:ALA:HB1	1.95	0.48
1:C:471:ILE:HD11	1:C:490:LEU:HD13	1.94	0.48
1:A:283:SER:CB	1:A:284:ASP:C	2.82	0.48
1:C:468:MET:HB2	1:C:495:PHE:CE1	2.48	0.48
1:A:104:VAL:CG1	1:A:235:PRO:HG3	2.43	0.48
1:B:102:LEU:CD2	1:B:187:MET:HE1	2.33	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:416:MET:HE2	1:C:461:ARG:CB	2.43	0.48
1:C:497:VAL:HG12	1:C:507:LEU:HD13	1.95	0.48
1:A:157:VAL:HG13	1:A:162:VAL:HG21	1.96	0.48
1:A:256:ALA:HA	1:A:259:ILE:CG1	2.44	0.48
1:A:264:ASP:HB3	1:A:265:ARG:HA	1.95	0.48
1:B:90:LEU:CD1	1:B:407:LYS:HG2	2.44	0.48
1:B:268:ALA:O	1:B:271:ALA:HB3	2.14	0.47
1:B:305:ASP:O	1:B:306:VAL:C	2.52	0.47
1:B:253:ILE:O	1:B:254:ALA:C	2.50	0.47
1:C:148:PRO:HG2	1:C:216:ILE:HG23	1.95	0.47
2:E:6:U:H5''	2:E:6:U:C6	2.47	0.47
1:A:8:THR:O	1:A:16:LEU:O	2.31	0.47
1:A:314:THR:C	1:A:316:LEU:H	2.18	0.47
1:B:468:MET:HB2	1:B:495:PHE:CE1	2.49	0.47
1:A:274:LYS:HA	1:A:277:ILE:HB	1.96	0.47
1:A:346:THR:OG1	1:A:351:GLN:HG3	2.14	0.47
1:A:6:ARG:O	1:A:8:THR:HG22	2.14	0.47
1:A:262:LYS:N	1:A:263:GLN:CA	2.78	0.47
1:B:9:ILE:CG2	1:B:11:TRP:HB2	2.45	0.47
1:C:253:ILE:CA	1:C:256:ALA:HB3	2.42	0.47
1:C:308:ARG:HE	1:C:471:ILE:HG23	1.80	0.47
1:B:80:ARG:CZ	1:C:381:HIS:HB3	2.44	0.47
1:A:457:VAL:O	1:A:459:LEU:N	2.46	0.47
1:A:497:VAL:HG12	1:A:507:LEU:HD13	1.97	0.47
1:B:264:ASP:N	1:B:265:ARG:HB3	2.30	0.47
1:B:288:THR:HG23	1:B:289:GLY:CA	2.44	0.47
1:B:439:SER:HA	3:B:1620:PO4:O4	2.14	0.47
1:B:497:VAL:HG12	1:B:507:LEU:HD13	1.96	0.47
1:C:317:ARG:NH2	1:C:321:ARG:NH1	2.63	0.47
2:E:5:U:O2'	2:E:6:U:P	2.71	0.47
1:A:277:ILE:HD13	1:A:295:LEU:HD13	1.96	0.47
1:A:288:THR:HA	1:A:289:GLY:HA2	1.66	0.47
1:A:416:MET:HE1	1:A:460:VAL:HG22	1.94	0.47
1:C:175:MET:CE	1:C:201:VAL:HA	2.45	0.47
1:A:310:GLY:O	1:A:314:THR:OG1	2.33	0.47
1:A:317:ARG:NH2	1:A:321:ARG:NH1	2.63	0.46
1:B:319:ASP:OD1	1:B:321:ARG:HG2	2.14	0.46
1:B:6:ARG:C	1:B:8:THR:N	2.57	0.46
1:B:197:SER:OG	1:B:200:ILE:CG1	2.48	0.46
1:C:471:ILE:CD1	1:C:490:LEU:CD1	2.93	0.46
1:A:392:THR:HG22	1:C:45:VAL:HG22	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:582:VAL:HG13	1:A:587:ALA:O	2.14	0.46
1:A:594:ASP:OD1	1:A:596:VAL:HB	2.15	0.46
1:C:287:PRO:O	1:C:288:THR:C	2.53	0.46
1:A:255:ALA:O	1:A:258:LYS:HB3	2.16	0.46
1:A:313:ASP:O	1:A:314:THR:CB	2.64	0.46
1:B:80:ARG:HG3	1:C:381:HIS:CD2	2.50	0.46
1:C:256:ALA:HB2	1:C:268:ALA:HB1	1.96	0.46
1:A:260:GLN:HA	1:A:261:LYS:HA	1.77	0.46
1:A:285:GLU:N	1:A:285:GLU:OE1	2.48	0.46
1:A:452:MET:O	1:A:457:VAL:HG13	2.15	0.46
1:A:495:PHE:CZ	1:A:524:ALA:HB1	2.50	0.46
1:B:499:GLY:HA2	1:B:505:THR:OG1	2.15	0.46
1:A:470:LEU:HD12	1:A:479:VAL:HG22	1.97	0.46
1:B:572:GLY:O	1:B:574:GLY:N	2.48	0.46
1:B:340:HIS:O	1:B:455:ALA:HA	2.15	0.46
1:C:3:ASP:HB3	1:C:20:THR:O	2.15	0.46
1:C:495:PHE:CZ	1:C:524:ALA:HB1	2.51	0.46
1:B:439:SER:HB2	1:B:467:ALA:CB	2.46	0.46
1:A:43:THR:HG21	1:B:387:TYR:CE2	2.51	0.46
1:B:109:ASN:N	1:B:109:ASN:HD22	2.14	0.46
1:A:10:GLU:OE1	1:A:10:GLU:HA	2.15	0.45
1:A:266:TYR:O	1:A:269:VAL:HB	2.16	0.45
1:B:495:PHE:CZ	1:B:524:ALA:HB1	2.51	0.45
1:B:575:GLY:N	1:B:579:ARG:NH1	2.63	0.45
1:C:543:MET:HE1	1:C:547:ARG:NH1	2.30	0.45
1:A:241:ILE:HD11	1:A:280:LEU:HD13	1.97	0.45
1:C:256:ALA:CB	1:C:268:ALA:HB3	2.46	0.45
1:C:235:PRO:CB	1:C:236:GLU:CB	2.94	0.45
1:C:516:ILE:HD12	1:C:516:ILE:HA	1.82	0.45
1:A:263:GLN:N	1:A:264:ASP:HA	2.31	0.45
1:C:6:ARG:O	1:C:6:ARG:HG3	2.16	0.45
1:C:259:ILE:HG13	1:C:265:ARG:HB3	1.97	0.45
1:A:255:ALA:O	1:A:259:ILE:HG12	2.16	0.45
1:A:241:ILE:CG2	1:A:298:ILE:CD1	2.95	0.45
1:B:346:THR:OG1	1:B:351:GLN:HG3	2.16	0.45
1:A:80:ARG:HG3	1:B:381:HIS:CD2	2.51	0.45
1:A:264:ASP:HB3	1:A:265:ARG:CA	2.46	0.45
1:C:258:LYS:N	1:C:259:ILE:HB	2.31	0.45
1:C:538:GLU:O	1:C:541:LYS:HG2	2.16	0.45
1:A:416:MET:HE3	1:A:460:VAL:CG2	2.40	0.45
1:C:380:LEU:C	1:C:380:LEU:HD23	2.38	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:ASP:O	1:A:314:THR:HG23	2.16	0.45
1:A:416:MET:HE1	1:A:461:ARG:HB2	1.99	0.45
1:B:431:SER:CB	1:B:444:THR:HG23	2.47	0.44
1:C:185:ALA:HB2	1:C:514:ALA:HA	1.98	0.44
1:C:347:ARG:NH1	1:C:482:ASP:OD1	2.50	0.44
1:A:238:THR:OG1	1:A:298:ILE:CD1	2.66	0.44
1:B:479:VAL:HG13	1:B:527:GLN:OE1	2.16	0.44
1:C:6:ARG:O	1:C:8:THR:N	2.50	0.44
1:C:341:GLY:HA3	1:C:455:ALA:HB2	1.98	0.44
1:C:193:ILE:O	1:C:505:THR:HA	2.17	0.44
1:B:264:ASP:N	1:B:265:ARG:CB	2.81	0.44
1:C:284:ASP:N	1:C:285:GLU:CB	2.78	0.44
1:A:431:SER:CB	1:A:444:THR:HG23	2.47	0.44
1:A:364:GLU:HG3	1:A:375:LYS:HE2	2.00	0.44
1:C:414:ARG:N	1:C:415:PRO:CD	2.81	0.44
1:B:168:ASP:O	1:B:171:LYS:HB2	2.18	0.44
1:C:575:GLY:O	1:C:579:ARG:HG3	2.18	0.44
1:A:284:ASP:N	1:A:285:GLU:O	2.50	0.44
1:A:454:ASP:HA	1:A:543:MET:HE3	2.00	0.44
1:B:593:ASP:C	1:B:595:GLY:H	2.21	0.44
1:C:43:THR:O	1:C:113:VAL:HA	2.18	0.44
1:A:66:LYS:HB3	1:A:68:PHE:CE2	2.53	0.44
1:B:263:GLN:C	1:B:265:ARG:CB	2.84	0.44
1:B:304:ALA:HA	1:B:490:LEU:CD2	2.47	0.43
1:A:195:GLU:OE2	1:A:461:ARG:NH1	2.51	0.43
1:B:423:PHE:CD1	1:B:458:PRO:HD2	2.53	0.43
1:B:464:SER:HB3	1:B:539:MET:HE1	1.99	0.43
1:C:567:ILE:HD11	1:C:593:ASP:O	2.18	0.43
1:A:14:LYS:HE2	1:A:124:ASN:OD1	2.19	0.43
1:A:181:GLY:O	1:A:212:MET:HE3	2.18	0.43
1:B:453:MET:HE2	1:B:543:MET:HG2	1.99	0.43
1:A:333:VAL:HG21	1:A:543:MET:HE2	2.00	0.43
1:C:146:MET:C	1:C:147:GLY:O	2.56	0.43
1:A:257:TYR:C	1:A:259:ILE:N	2.72	0.43
1:C:255:ALA:O	1:C:257:TYR:N	2.48	0.43
1:B:540:ASN:O	1:B:544:ASP:HB3	2.17	0.43
1:C:66:LYS:HB3	1:C:68:PHE:CE2	2.54	0.43
1:C:431:SER:CB	1:C:444:THR:HG23	2.49	0.43
1:C:499:GLY:HA2	1:C:505:THR:OG1	2.19	0.43
1:A:272:ALA:HB1	1:A:299:PHE:CE1	2.50	0.43
1:B:286:ASN:N	1:B:287:PRO:HA	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:431:SER:HB2	1:B:444:THR:HG23	2.00	0.43
1:C:397:SER:HB3	2:I:1:U:N3	2.33	0.43
1:A:109:ASN:N	1:A:109:ASN:HD22	2.16	0.43
1:A:312:LEU:CD1	1:A:473:GLU:HG3	2.49	0.43
1:A:340:HIS:O	1:A:455:ALA:HA	2.19	0.43
1:B:281:GLY:CA	1:B:288:THR:CG2	2.97	0.43
1:C:245:MET:CE	1:C:298:ILE:CG2	2.94	0.43
1:A:9:ILE:N	1:A:9:ILE:HD13	2.34	0.43
1:C:294:LYS:O	1:C:298:ILE:HG13	2.18	0.43
1:C:577:VAL:O	1:C:580:GLU:HB3	2.18	0.43
1:B:35:MET:O	1:B:36:GLY:O	2.36	0.42
1:A:264:ASP:CB	1:A:265:ARG:CA	2.95	0.42
1:A:416:MET:CE	1:A:461:ARG:HB2	2.48	0.42
1:B:282:LEU:C	1:B:289:GLY:H	2.17	0.42
1:C:259:ILE:HD13	1:C:259:ILE:HA	1.75	0.42
1:A:497:VAL:CG2	1:A:528:ALA:HB1	2.49	0.42
1:B:281:GLY:HA2	1:B:288:THR:HG22	2.02	0.42
1:A:414:ARG:N	1:A:415:PRO:CD	2.82	0.42
1:A:462:PRO:HG2	1:A:536:LEU:HD11	2.01	0.42
1:A:517:THR:HG1	1:A:520:ILE:HG12	1.81	0.42
1:B:335:ILE:HD13	1:B:344:LEU:HB2	2.00	0.42
1:C:74:PRO:O	1:C:79:LYS:HD3	2.20	0.42
1:B:249:VAL:HG23	1:B:252:ASP:HB3	2.01	0.42
1:B:347:ARG:NH1	1:B:482:ASP:OD1	2.53	0.42
1:C:90:LEU:CD1	1:C:407:LYS:HG2	2.48	0.42
1:C:283:SER:H	1:C:284:ASP:HB2	1.80	0.42
1:A:249:VAL:HG12	1:A:253:ILE:HG13	2.01	0.42
1:A:33:ALA:HB1	1:A:129:LEU:HD11	2.02	0.42
1:A:104:VAL:HG13	1:A:235:PRO:HG3	2.01	0.42
1:A:322:ASP:HB3	1:A:325:THR:OG1	2.20	0.42
1:A:341:GLY:HA3	1:A:455:ALA:HB2	2.02	0.42
1:C:365:GLN:HE21	1:C:379:LEU:HD22	1.83	0.42
1:B:102:LEU:CD2	1:B:187:MET:CE	2.61	0.42
1:B:379:LEU:O	1:B:428:ARG:HA	2.20	0.42
1:C:254:ALA:HA	1:C:306:VAL:HG11	2.01	0.42
1:C:381:HIS:CD2	1:C:428:ARG:NH1	2.52	0.42
1:C:580:GLU:OE2	1:C:613:TRP:HZ2	2.03	0.42
1:A:347:ARG:NH1	1:A:482:ASP:OD1	2.52	0.42
1:B:253:ILE:HG22	1:B:254:ALA:N	2.35	0.42
1:C:313:ASP:O	1:C:314:THR:O	2.37	0.42
1:A:397:SER:HA	1:A:398:PRO:HD2	1.76	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:291:ASP:O	1:B:295:LEU:HG	2.20	0.42
1:B:333:VAL:HG21	1:B:543:MET:CE	2.50	0.42
1:A:335:ILE:HD13	1:A:344:LEU:HB2	2.02	0.41
1:A:490:LEU:HD12	1:A:491:GLY:N	2.34	0.41
1:C:516:ILE:HG23	1:C:516:ILE:O	2.20	0.41
1:A:161:TYR:OH	1:A:200:ILE:O	2.22	0.41
1:A:181:GLY:C	1:A:212:MET:HE3	2.40	0.41
1:B:104:VAL:HG11	1:B:235:PRO:HD3	2.02	0.41
1:C:175:MET:HE1	1:C:201:VAL:HA	2.02	0.41
1:A:416:MET:HE2	1:A:461:ARG:CB	2.50	0.41
1:A:7:LYS:HG3	1:A:17:VAL:CG2	2.49	0.41
1:A:22:ARG:HG2	1:A:23:ILE:HG13	2.02	0.41
1:B:175:MET:CE	1:B:201:VAL:HA	2.50	0.41
1:B:341:GLY:HA3	1:B:455:ALA:HB2	2.02	0.41
1:A:262:LYS:CB	1:A:264:ASP:N	2.83	0.41
1:A:389:VAL:HA	1:C:26:GLN:NE2	2.36	0.41
1:B:567:ILE:HD11	1:B:593:ASP:O	2.21	0.41
1:A:34:THR:HG23	1:A:39:VAL:HG22	2.02	0.41
1:A:238:THR:OG1	1:A:298:ILE:HD13	2.20	0.41
1:A:257:TYR:O	1:A:259:ILE:N	2.53	0.41
1:B:127:ASP:OD2	1:B:153:ARG:NH2	2.54	0.41
1:B:247:ASP:C	1:B:248:LEU:HD12	2.40	0.41
1:C:575:GLY:O	1:C:578:ILE:HG22	2.20	0.41
1:A:249:VAL:HG13	1:A:252:ASP:HB2	2.02	0.41
1:A:346:THR:HG21	1:C:1:MET:CE	2.51	0.41
1:B:5:LYS:HB2	1:B:5:LYS:HE3	1.71	0.41
1:B:57:PHE:HA	1:B:58:PRO:HD3	1.95	0.41
1:B:397:SER:HA	1:B:398:PRO:HD2	1.72	0.41
1:C:346:THR:OG1	1:C:351:GLN:HG3	2.21	0.41
1:A:314:THR:O	1:A:316:LEU:N	2.47	0.41
1:A:393:GLY:H	1:C:112:GLN:NE2	2.15	0.41
1:B:8:THR:O	1:B:16:LEU:O	2.39	0.41
1:B:347:ARG:NH2	1:B:439:SER:O	2.53	0.41
1:B:414:ARG:N	1:B:415:PRO:CD	2.83	0.41
1:C:464:SER:HA	1:C:539:MET:HE1	2.02	0.41
1:C:540:ASN:HB2	1:C:544:ASP:CB	2.51	0.41
1:A:328:PRO:HB2	1:C:-1:GLY:H1	1.83	0.41
1:A:439:SER:HB2	1:A:467:ALA:CB	2.51	0.41
1:B:311:ILE:HD13	1:B:317:ARG:HG2	2.02	0.41
1:B:457:VAL:HA	1:B:458:PRO:HD2	1.95	0.41
1:A:381:HIS:CD2	1:A:428:ARG:HD2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:599:VAL:HG11	1:A:610:ALA:HB3	2.03	0.40
1:B:424:PRO:HG2	1:B:557:ILE:HG22	2.02	0.40
1:C:96:ASP:OD2	1:C:100:ARG:NH2	2.52	0.40
1:A:368:ASP:N	1:A:368:ASP:OD1	2.51	0.40
1:B:365:GLN:HE21	1:B:379:LEU:HD22	1.86	0.40
1:C:285:GLU:O	1:C:286:ASN:CB	2.68	0.40
1:A:396:GLY:HA3	2:D:1:U:C5	2.56	0.40
1:B:535:ILE:HG22	1:B:539:MET:CE	2.51	0.40
1:B:556:LYS:O	1:B:600:SER:HA	2.21	0.40
1:C:470:LEU:HD22	1:C:516:ILE:HD11	2.02	0.40
1:B:221:ASP:O	1:B:225:HIS:CD2	2.74	0.40
1:C:245:MET:HE1	1:C:298:ILE:CG2	2.43	0.40
1:C:593:ASP:C	1:C:595:GLY:N	2.75	0.40
1:A:265:ARG:O	1:A:269:VAL:HG23	2.21	0.40
1:A:471:ILE:HD11	1:A:490:LEU:HD13	2.04	0.40
1:B:347:ARG:HE	1:B:347:ARG:HB3	1.54	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	620/717 (86%)	546 (88%)	47 (8%)	27 (4%)	2	15
1	B	619/717 (86%)	532 (86%)	57 (9%)	30 (5%)	2	13
1	C	619/717 (86%)	536 (87%)	47 (8%)	36 (6%)	1	10
All	All	1858/2151 (86%)	1614 (87%)	151 (8%)	93 (5%)	2	12

All (93) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	7	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	52	PRO
1	A	55	ASP
1	A	259	ILE
1	A	260	GLN
1	A	287	PRO
1	A	439	SER
1	A	554	ALA
1	B	1	MET
1	B	7	LYS
1	B	52	PRO
1	B	254	ALA
1	B	255	ALA
1	B	258	LYS
1	B	573	SER
1	C	7	LYS
1	C	9	ILE
1	C	52	PRO
1	C	236	GLU
1	C	256	ALA
1	C	259	ILE
1	C	262	LYS
1	C	263	GLN
1	C	264	ASP
1	C	265	ARG
1	C	269	VAL
1	C	284	ASP
1	C	286	ASN
1	C	288	THR
1	C	291	ASP
1	C	292	PRO
1	A	36	GLY
1	A	258	LYS
1	A	269	VAL
1	A	288	THR
1	A	314	THR
1	A	544	ASP
1	A	592	ASN
1	B	9	ILE
1	B	36	GLY
1	B	147	GLY
1	B	250	GLY
1	B	282	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	285	GLU
1	B	314	THR
1	B	439	SER
1	C	36	GLY
1	C	55	ASP
1	C	76	GLY
1	C	147	GLY
1	C	252	ASP
1	C	267	GLU
1	C	273	LYS
1	C	279	ALA
1	C	314	THR
1	C	439	SER
1	C	594	ASP
1	A	9	ILE
1	A	240	ALA
1	A	397	SER
1	B	290	TYR
1	C	261	LYS
1	C	287	PRO
1	A	272	ALA
1	B	54	GLN
1	B	235	PRO
1	B	257	TYR
1	B	397	SER
1	B	518	PRO
1	C	278	ALA
1	C	290	TYR
1	C	397	SER
1	A	4	ILE
1	A	54	GLN
1	A	267	GLU
1	A	283	SER
1	A	285	GLU
1	B	4	ILE
1	B	265	ARG
1	B	594	ASP
1	C	4	ILE
1	C	573	SER
1	B	55	ASP
1	B	240	ALA
1	B	261	LYS

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Mol	Chain	Res	Type
1	B	288	THR
1	B	574	GLY
1	C	250	GLY
1	A	235	PRO
1	A	318	ILE
1	A	315	GLY
1	C	518	PRO
1	B	306	VAL

### 5.3.2 Protein sidechains [i](#)

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	479/568 (84%)	460 (96%)	19 (4%)	31	68
1	B	454/568 (80%)	439 (97%)	15 (3%)	38	73
1	C	461/568 (81%)	445 (96%)	16 (4%)	36	71
All	All	1394/1704 (82%)	1344 (96%)	50 (4%)	35	70

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	ASP
1	A	18	LEU
1	A	123	GLU
1	A	157	VAL
1	A	178	VAL
1	A	196	LEU
1	A	238	THR
1	A	275	LYS
1	A	286	ASN
1	A	290	TYR
1	A	291	ASP
1	A	460	VAL
1	A	505	THR
1	A	516	ILE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	522	GLU
1	A	557	ILE
1	A	576	LYS
1	A	590	ASP
1	A	592	ASN
1	B	8	THR
1	B	157	VAL
1	B	167	LEU
1	B	178	VAL
1	B	238	THR
1	B	288	THR
1	B	419	THR
1	B	426	THR
1	B	430	VAL
1	B	460	VAL
1	B	479	VAL
1	B	536	LEU
1	B	544	ASP
1	B	573	SER
1	B	593	ASP
1	C	8	THR
1	C	18	LEU
1	C	45	VAL
1	C	72	LYS
1	C	157	VAL
1	C	178	VAL
1	C	238	THR
1	C	257	TYR
1	C	265	ARG
1	C	283	SER
1	C	284	ASP
1	C	421	GLU
1	C	445	VAL
1	C	460	VAL
1	C	517	THR
1	C	593	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	62	ASN
1	A	109	ASN

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Mol	Chain	Res	Type
1	A	112	GLN
1	A	119	GLN
1	A	209	HIS
1	A	286	ASN
1	A	381	HIS
1	A	405	HIS
1	A	508	GLN
1	A	527	GLN
1	A	561	ASN
1	A	592	ASN
1	B	62	ASN
1	B	109	ASN
1	B	112	GLN
1	B	119	GLN
1	B	209	HIS
1	B	211	GLN
1	B	225	HIS
1	B	365	GLN
1	B	381	HIS
1	B	405	HIS
1	B	508	GLN
1	B	561	ASN
1	C	26	GLN
1	C	62	ASN
1	C	109	ASN
1	C	112	GLN
1	C	119	GLN
1	C	209	HIS
1	C	225	HIS
1	C	365	GLN
1	C	381	HIS
1	C	405	HIS
1	C	561	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	D	0/9	-	-
2	E	9/9 (100%)	6 (66%)	4 (44%)
2	H	0/9	-	-
2	I	0/9	-	-

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
All	All	9/36 (25%)	6 (66%)	4 (44%)

All (6) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	E	2	A
2	E	3	A
2	E	4	C
2	E	5	U
2	E	6	U
2	E	9	G

All (4) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	E	1	U
2	E	4	C
2	E	5	U
2	E	8	G

## 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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

6 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PO4	B	1621	-	4,4,4	0.83	0	6,6,6	0.65	0
3	PO4	C	1620	-	4,4,4	0.82	0	6,6,6	0.83	0
3	PO4	A	1622	-	4,4,4	0.86	0	6,6,6	1.06	0
3	PO4	A	1621	-	4,4,4	0.81	0	6,6,6	1.61	1 (16%)
3	PO4	C	1621	-	4,4,4	0.77	0	6,6,6	0.82	0
3	PO4	B	1620	-	4,4,4	0.88	0	6,6,6	0.47	0

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
3	A	1621	PO4	O4-P-O2	2.44	115.81	107.97

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	1620	PO4	3	0
3	A	1621	PO4	2	0
3	C	1621	PO4	1	0
3	B	1620	PO4	2	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	622/717 (86%)	-0.39	4 (0%) 89 72	19, 42, 95, 135	1 (0%)
1	B	621/717 (86%)	-0.32	5 (0%) 86 65	24, 56, 114, 168	2 (0%)
1	C	621/717 (86%)	-0.22	14 (2%) 60 31	28, 42, 116, 170	0
2	D	1/9 (11%)	1.35	0 100 100	83, 83, 83, 83	0
2	E	9/9 (100%)	0.83	2 (22%) 0 0	74, 101, 124, 151	0
2	H	1/9 (11%)	1.44	0 100 100	84, 84, 84, 84	0
2	I	1/9 (11%)	1.57	0 100 100	89, 89, 89, 89	0
All	All	1876/2187 (85%)	-0.30	25 (1%) 77 51	19, 47, 112, 170	3 (0%)

All (25) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	264	ASP	4.8
1	C	267	GLU	4.1
1	B	618	THR	3.3
2	E	7	U	3.1
1	C	259	ILE	3.1
1	B	475	ASP	3.1
1	C	584	THR	3.0
1	C	288	THR	2.8
1	B	76	GLY	2.7
1	B	283	SER	2.6
1	C	236	GLU	2.6
1	C	263	GLN	2.5
1	A	264	ASP	2.4
1	C	260	GLN	2.4
1	C	618	THR	2.3
1	C	285	GLU	2.3
1	C	268	ALA	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	56	PHE	2.3
1	B	565	ASP	2.3
1	C	565	ASP	2.2
1	A	263	GLN	2.1
1	A	274	LYS	2.1
1	C	251	ALA	2.1
2	E	9	G	2.1
1	C	262	LYS	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
3	PO4	B	1621	5/5	0.62	0.44	125,131,134,139	0
3	PO4	C	1621	5/5	0.84	0.28	95,99,107,109	0
3	PO4	B	1620	5/5	0.85	0.27	100,102,112,116	0
3	PO4	A	1622	5/5	0.87	0.24	80,84,88,91	0
3	PO4	C	1620	5/5	0.94	0.16	66,70,75,82	0
3	PO4	A	1621	5/5	0.94	0.18	49,50,67,69	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.