



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 16, 2023 – 11:01 AM EDT

PDB ID : 2D5N  
Title : Crystal structure of a bifunctional deaminase and reductase involved in riboflavin biosynthesis  
Authors : Liaw, S.H.; Chen, S.J.; Chang, Y.C.  
Deposited on : 2005-11-02  
Resolution : 2.97 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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
buster-report : 1.1.7 (2018)  
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

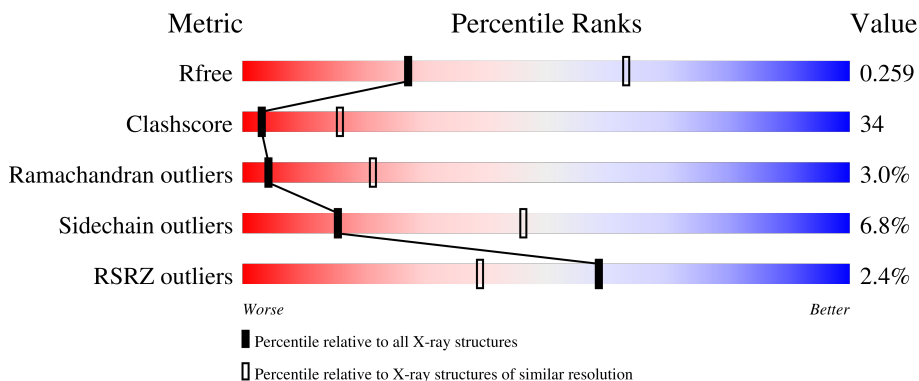
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.97 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	2754 (3.00-2.96)
Clashscore	141614	3103 (3.00-2.96)
Ramachandran outliers	138981	2993 (3.00-2.96)
Sidechain outliers	138945	2996 (3.00-2.96)
RSRZ outliers	127900	2644 (3.00-2.96)

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	373	
1	B	373	
1	C	373	
1	D	373	

## 2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 11257 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 Riboflavin biosynthesis protein ribD.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	359	2741	1740	469	517	15	0	0	0
1	B	359	2741	1740	469	517	15	0	0	0
1	C	359	2741	1740	469	517	15	0	0	0
1	D	360	2747	1743	470	519	15	0	0	0

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-11	MET	-	cloning artifact	UNP P17618
A	-10	ARG	-	cloning artifact	UNP P17618
A	-9	GLY	-	cloning artifact	UNP P17618
A	-8	SER	-	cloning artifact	UNP P17618
A	-7	HIS	-	cloning artifact	UNP P17618
A	-6	HIS	-	cloning artifact	UNP P17618
A	-5	HIS	-	cloning artifact	UNP P17618
A	-4	HIS	-	cloning artifact	UNP P17618
A	-3	HIS	-	cloning artifact	UNP P17618
A	-2	HIS	-	cloning artifact	UNP P17618
A	-1	GLY	-	cloning artifact	UNP P17618
A	0	SER	-	cloning artifact	UNP P17618
B	-11	MET	-	cloning artifact	UNP P17618
B	-10	ARG	-	cloning artifact	UNP P17618
B	-9	GLY	-	cloning artifact	UNP P17618
B	-8	SER	-	cloning artifact	UNP P17618
B	-7	HIS	-	cloning artifact	UNP P17618
B	-6	HIS	-	cloning artifact	UNP P17618
B	-5	HIS	-	cloning artifact	UNP P17618
B	-4	HIS	-	cloning artifact	UNP P17618
B	-3	HIS	-	cloning artifact	UNP P17618

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-2	HIS	-	cloning artifact	UNP P17618
B	-1	GLY	-	cloning artifact	UNP P17618
B	0	SER	-	cloning artifact	UNP P17618
C	-11	MET	-	cloning artifact	UNP P17618
C	-10	ARG	-	cloning artifact	UNP P17618
C	-9	GLY	-	cloning artifact	UNP P17618
C	-8	SER	-	cloning artifact	UNP P17618
C	-7	HIS	-	cloning artifact	UNP P17618
C	-6	HIS	-	cloning artifact	UNP P17618
C	-5	HIS	-	cloning artifact	UNP P17618
C	-4	HIS	-	cloning artifact	UNP P17618
C	-3	HIS	-	cloning artifact	UNP P17618
C	-2	HIS	-	cloning artifact	UNP P17618
C	-1	GLY	-	cloning artifact	UNP P17618
C	0	SER	-	cloning artifact	UNP P17618
D	-11	MET	-	cloning artifact	UNP P17618
D	-10	ARG	-	cloning artifact	UNP P17618
D	-9	GLY	-	cloning artifact	UNP P17618
D	-8	SER	-	cloning artifact	UNP P17618
D	-7	HIS	-	cloning artifact	UNP P17618
D	-6	HIS	-	cloning artifact	UNP P17618
D	-5	HIS	-	cloning artifact	UNP P17618
D	-4	HIS	-	cloning artifact	UNP P17618
D	-3	HIS	-	cloning artifact	UNP P17618
D	-2	HIS	-	cloning artifact	UNP P17618
D	-1	GLY	-	cloning artifact	UNP P17618
D	0	SER	-	cloning artifact	UNP P17618

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Zn 1 1	0	0
2	B	1	Total Zn 1 1	0	0
2	C	1	Total Zn 1 1	0	0
2	D	1	Total Zn 1 1	0	0

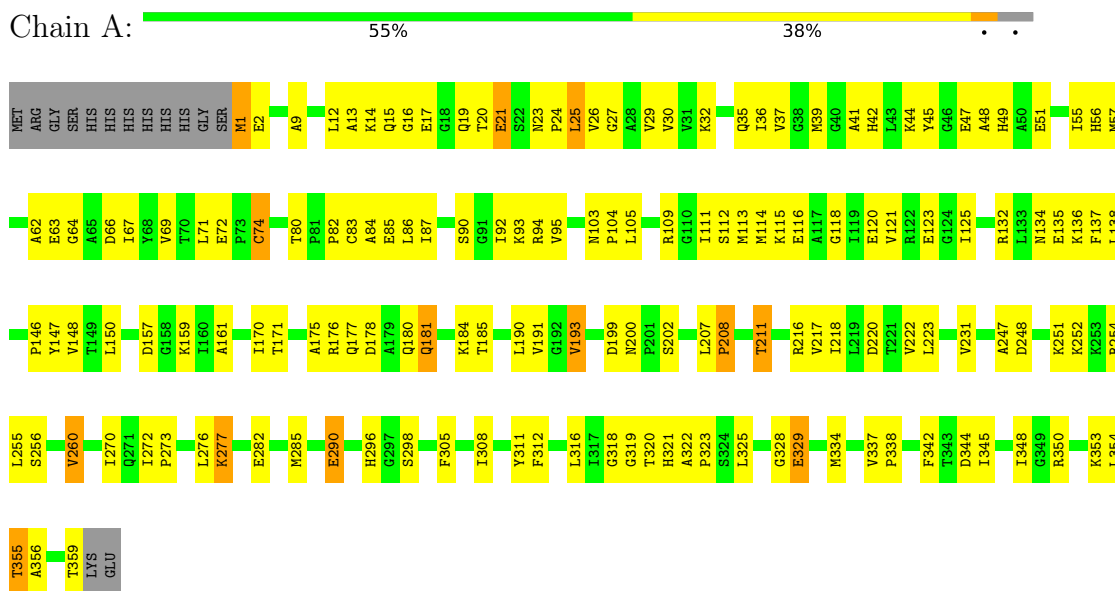
- Molecule 3 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: C<sub>21</sub>H<sub>30</sub>N<sub>7</sub>O<sub>17</sub>P<sub>3</sub>).



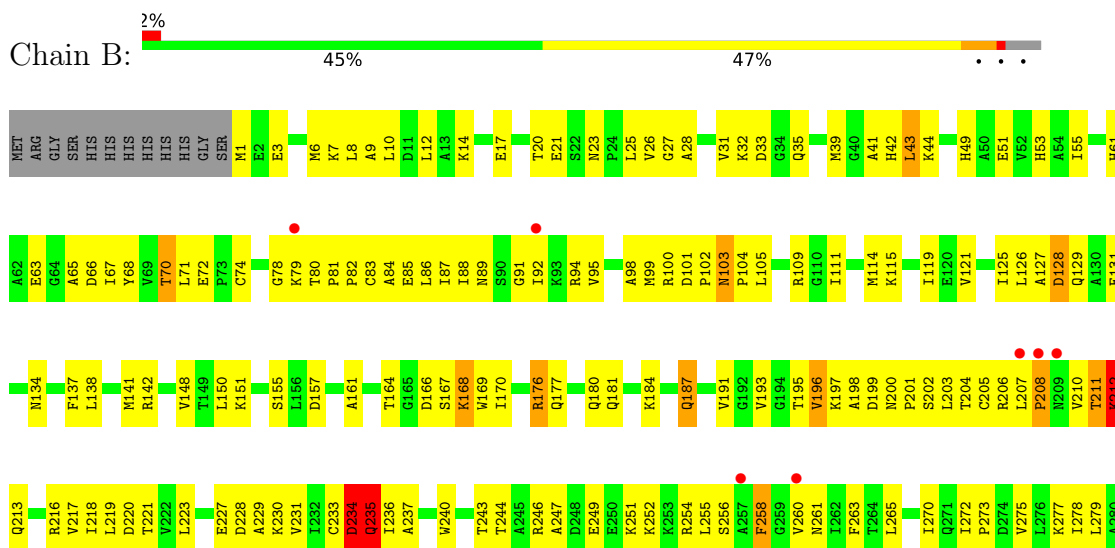
### 3 Residue-property plots

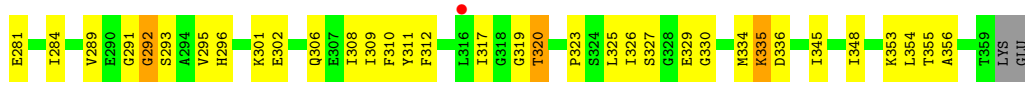
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

- Molecule 1: Riboflavin biosynthesis protein ribD

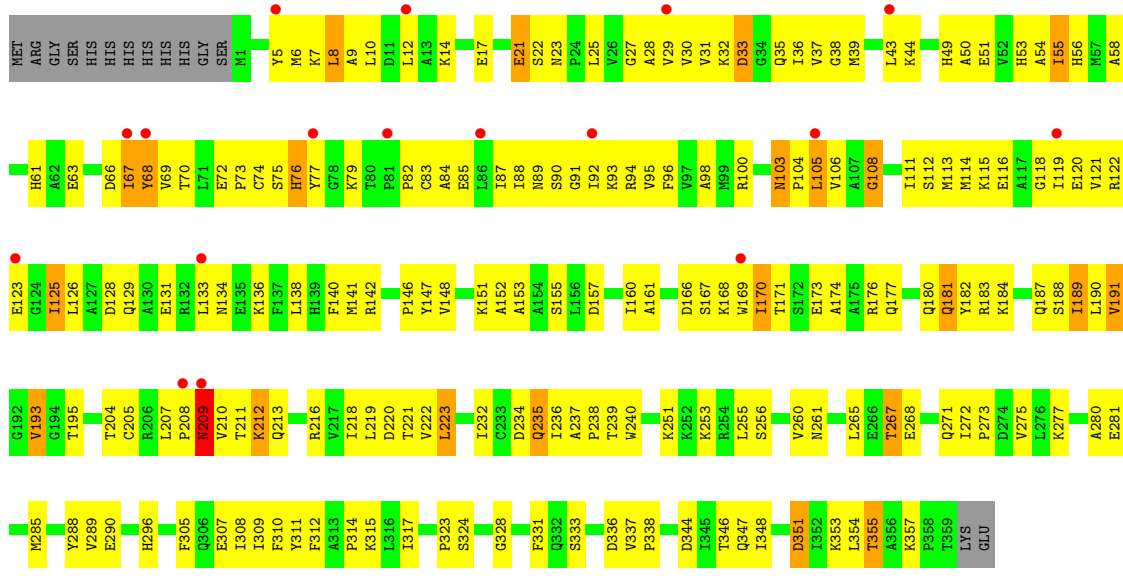


- Molecule 1: Riboflavin biosynthesis protein ribD

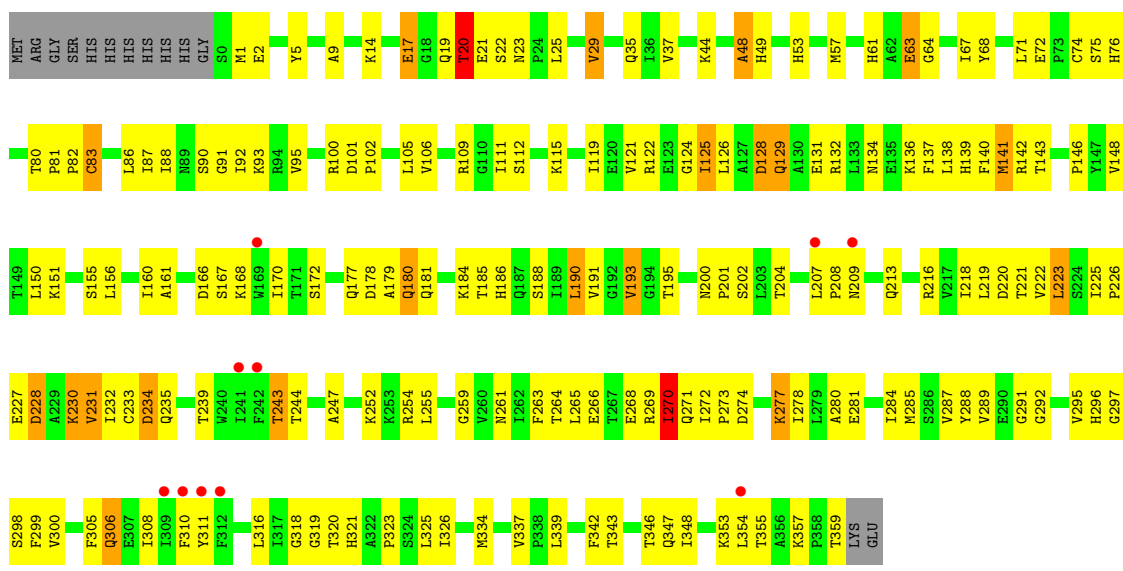




• Molecule 1: Riboflavin biosynthesis protein ribD



• Molecule 1: Riboflavin biosynthesis protein ribD



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	86.13Å 107.95Å 186.84Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.97 46.74 – 2.97	Depositor EDS
% Data completeness (in resolution range)	97.5 (30.00-2.97) 97.2 (46.74-2.97)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.59 (at 2.96Å)	Xtrriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.224 , 0.270 0.209 , 0.259	Depositor DCC
$R_{free}$ test set	3573 reflections (9.97%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	71.8	Xtrriage
Anisotropy	0.442	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.29 , 48.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	11257	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	67.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.79% 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 [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.39	0/2792	0.67	1/3778 (0.0%)
1	B	0.38	0/2792	0.64	0/3778
1	C	0.37	0/2792	0.63	0/3778
1	D	0.37	0/2798	0.64	1/3786 (0.0%)
All	All	0.38	0/11174	0.65	2/15120 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	74	CYS	CA-CB-SG	6.18	125.13	114.00
1	D	83	CYS	CA-CB-SG	-5.45	104.19	114.00

There are no chirality outliers.

There are no planarity outliers.

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

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2741	0	2782	156	0
1	B	2741	0	2782	232	0
1	C	2741	0	2782	217	0
1	D	2747	0	2787	174	0
2	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	B	48	0	26	10	0
4	A	66	0	0	17	2
4	B	64	0	0	4	1
4	C	54	0	0	3	0
4	D	51	0	0	5	0
All	All	11257	0	11159	744	2

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 34.

All (744) 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:B:309:ILE:HG12	1:B:355:THR:HG22	1.33	1.06
1:A:94:ARG:HA	4:A:1377:HOH:O	1.55	1.06
1:A:355:THR:HG22	4:A:1415:HOH:O	1.58	1.01
1:C:21:GLU:HG3	1:C:22:SER:H	1.26	1.00
1:D:270:ILE:HD13	1:D:270:ILE:H	1.24	0.98
1:B:308:ILE:HB	4:B:1362:HOH:O	1.64	0.97
1:B:181:GLN:HA	1:B:207:LEU:HD11	1.45	0.96
1:A:125:ILE:HD12	1:A:125:ILE:H	1.30	0.95
1:B:166:ASP:OD1	1:B:168:LYS:HG3	1.66	0.94
1:C:207:LEU:HD12	1:C:207:LEU:H	1.32	0.94
1:D:148:VAL:H	1:D:306:GLN:NE2	1.65	0.94
1:A:328:GLY:H	1:B:320:THR:HG22	1.36	0.91
1:A:95:VAL:HG11	1:A:114:MET:HE1	1.52	0.91
1:D:148:VAL:HB	1:D:305:PHE:HA	1.52	0.91
1:D:111:ILE:HG23	1:D:121:VAL:HG11	1.53	0.90
1:A:318:GLY:HA3	1:B:330:GLY:HA2	1.52	0.90
1:C:232:ILE:HD13	1:C:255:LEU:HD22	1.54	0.89
1:D:19:GLN:HG2	1:D:44:LYS:HD2	1.55	0.89
1:B:3:GLU:HB2	1:B:126:LEU:HD11	1.55	0.89
1:D:190:LEU:HB3	1:D:289:VAL:HG22	1.51	0.89
1:C:36:ILE:HD12	1:C:36:ILE:H	1.37	0.89
1:C:151:LYS:HD2	1:C:152:ALA:N	1.90	0.87
1:C:82:PRO:HD2	1:C:85:GLU:OE2	1.76	0.86
1:C:25:LEU:H	1:C:134:ASN:HD21	1.19	0.85
1:C:184:LYS:HZ1	1:C:207:LEU:HB2	1.42	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:148:VAL:H	1:B:306:GLN:HE21	1.18	0.84
1:D:272:ILE:HB	1:D:273:PRO:HD3	1.57	0.83
1:D:25:LEU:H	1:D:134:ASN:HD21	1.25	0.83
1:C:32:LYS:HD2	1:C:61:HIS:O	1.78	0.83
1:C:309:ILE:CD1	1:C:355:THR:HB	2.09	0.83
1:A:64:GLY:HA2	1:A:93:LYS:HG2	1.58	0.83
1:A:184:LYS:NZ	1:A:207:LEU:HD12	1.93	0.82
1:C:94:ARG:HD3	1:C:96:PHE:CE2	2.14	0.82
1:B:206:ARG:HB2	1:B:206:ARG:NH1	1.94	0.82
1:A:134:ASN:O	1:A:138:LEU:HD13	1.77	0.82
1:C:204:THR:HB	1:C:213:GLN:NE2	1.95	0.82
1:C:180:GLN:HB3	1:C:207:LEU:HD11	1.62	0.81
1:B:301:LYS:HZ3	1:B:329:GLU:HG3	1.45	0.81
1:C:223:LEU:HD12	1:C:251:LYS:HD3	1.63	0.81
1:D:22:SER:HA	1:D:285:MET:HE1	1.63	0.81
1:C:111:ILE:O	1:C:115:LYS:HB2	1.82	0.80
1:B:207:LEU:HB3	1:B:208:PRO:CD	2.11	0.80
1:D:190:LEU:CB	1:D:289:VAL:HG22	2.10	0.79
1:A:328:GLY:N	1:B:320:THR:HG22	1.96	0.79
1:B:88:ILE:HD11	1:B:114:MET:HA	1.65	0.78
1:B:161:ALA:HB3	1:B:323:PRO:CG	2.14	0.77
1:B:25:LEU:H	1:B:134:ASN:HD21	1.32	0.77
1:A:211:THR:HA	4:A:1369:HOH:O	1.85	0.76
1:B:72:GLU:OE1	1:B:111:ILE:HG12	1.86	0.75
1:B:207:LEU:HB3	1:B:208:PRO:HD2	1.68	0.75
1:C:105:LEU:HD23	1:C:105:LEU:H	1.51	0.75
1:A:62:ALA:O	1:A:92:ILE:HD13	1.87	0.75
1:B:137:PHE:HD1	1:B:138:LEU:HD12	1.51	0.75
1:C:309:ILE:HD13	1:C:355:THR:HB	1.68	0.75
1:A:72:GLU:OE2	1:A:111:ILE:HG12	1.87	0.74
1:C:181:GLN:HG3	1:C:182:TYR:N	2.02	0.74
1:C:94:ARG:HD3	1:C:96:PHE:CZ	2.22	0.74
1:B:234:ASP:O	1:B:236:ILE:N	2.20	0.73
1:A:120:GLU:N	4:A:1377:HOH:O	2.22	0.73
1:D:137:PHE:HD1	1:D:138:LEU:HD12	1.54	0.73
1:A:150:LEU:HB2	1:A:308:ILE:HD13	1.70	0.73
1:B:243:THR:HG22	1:B:244:THR:N	2.04	0.73
1:B:8:LEU:O	1:B:12:LEU:HD13	1.89	0.73
1:D:106:VAL:HG22	1:D:109:ARG:NH2	2.04	0.73
1:B:199:ASP:HB2	1:B:201:PRO:HD3	1.70	0.72
1:B:216:ARG:HD2	1:B:231:VAL:HG12	1.70	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:184:LYS:NZ	1:C:207:LEU:HB2	2.03	0.72
1:C:204:THR:HB	1:C:213:GLN:HE22	1.52	0.72
1:D:178:ASP:O	1:D:181:GLN:HG2	1.88	0.72
1:C:103:ASN:HD22	1:C:104:PRO:HD2	1.55	0.72
1:B:292:GLY:HA3	3:B:381:NDP:PA	2.29	0.72
1:A:44:LYS:HE3	1:C:35:GLN:NE2	2.05	0.72
1:D:193:VAL:HG13	1:D:220:ASP:HA	1.70	0.72
1:D:270:ILE:HD13	1:D:270:ILE:N	2.01	0.71
1:B:161:ALA:HB3	1:B:323:PRO:HG3	1.72	0.70
1:A:184:LYS:HZ2	1:A:207:LEU:HD12	1.55	0.70
1:A:125:ILE:HD12	1:A:125:ILE:N	2.06	0.70
1:B:111:ILE:HG23	1:B:121:VAL:HG11	1.74	0.70
1:B:184:LYS:HB2	1:B:205:CYS:SG	2.32	0.70
1:B:187:GLN:HB3	1:B:284:ILE:HG23	1.74	0.70
1:C:181:GLN:O	1:C:184:LYS:HG2	1.92	0.70
1:B:216:ARG:NH1	1:B:231:VAL:HA	2.07	0.69
1:A:49:HIS:HD2	1:A:83:CYS:SG	2.15	0.69
1:C:220:ASP:OD2	1:C:223:LEU:HA	1.92	0.69
1:D:218:ILE:HD11	1:D:231:VAL:HG11	1.73	0.69
1:C:85:GLU:HB3	1:C:89:ASN:HD21	1.58	0.69
1:C:87:ILE:HA	1:C:92:ILE:HD12	1.74	0.69
1:D:270:ILE:H	1:D:270:ILE:CD1	1.99	0.69
1:B:301:LYS:NZ	1:B:329:GLU:HG3	2.07	0.68
1:B:234:ASP:O	1:B:236:ILE:HG12	1.92	0.68
1:B:275:VAL:O	1:B:279:LEU:HG	1.94	0.68
1:D:93:LYS:HB2	4:D:1388:HOH:O	1.93	0.68
1:C:87:ILE:HG23	1:C:92:ILE:HD12	1.74	0.68
1:B:70:THR:O	1:B:98:ALA:HB3	1.94	0.68
1:A:329:GLU:HG2	4:A:1365:HOH:O	1.93	0.68
1:B:265:LEU:CD1	1:B:270:ILE:HG23	2.24	0.68
1:A:69:VAL:HG12	1:A:71:LEU:H	1.58	0.67
1:B:261:ASN:HB3	1:B:263:PHE:HE1	1.59	0.67
1:B:14:LYS:HD2	1:B:17:GLU:OE2	1.95	0.67
1:D:22:SER:HA	1:D:285:MET:CE	2.23	0.67
1:A:318:GLY:HA3	1:B:330:GLY:CA	2.24	0.67
1:B:98:ALA:O	1:B:127:ALA:HB2	1.95	0.67
4:A:1383:HOH:O	1:B:325:LEU:HB2	1.93	0.67
1:B:166:ASP:OD2	1:B:168:LYS:HE2	1.95	0.67
1:C:21:GLU:HG3	1:C:22:SER:N	2.07	0.67
1:C:93:LYS:O	1:C:119:ILE:HG23	1.94	0.67
1:C:25:LEU:N	1:C:134:ASN:HD21	1.91	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:63:GLU:HG3	1:B:91:GLY:HA3	1.77	0.67
1:B:134:ASN:O	1:B:138:LEU:HD13	1.95	0.67
1:B:79:LYS:HA	4:B:1367:HOH:O	1.95	0.66
1:B:71:LEU:HD13	1:B:72:GLU:N	2.10	0.66
1:D:346:THR:HG22	1:D:347:GLN:N	2.09	0.66
1:A:334:MET:HA	1:A:337:VAL:HG12	1.77	0.66
1:B:137:PHE:CD1	1:B:138:LEU:HD12	2.31	0.66
1:B:270:ILE:HB	3:B:381:NDP:C2A	2.26	0.65
1:A:64:GLY:HA2	1:A:93:LYS:CG	2.26	0.65
1:A:190:LEU:HA	1:A:217:VAL:O	1.95	0.65
1:B:41:ALA:O	1:B:43:LEU:HD22	1.97	0.65
1:B:206:ARG:HB2	1:B:206:ARG:HH11	1.60	0.65
1:B:211:THR:O	1:B:212:LYS:HB2	1.97	0.65
4:A:1374:HOH:O	1:C:35:GLN:HB3	1.97	0.65
1:C:180:GLN:HA	1:C:183:ARG:HD2	1.78	0.65
1:D:300:VAL:HG21	1:D:326:ILE:HD13	1.78	0.65
1:A:150:LEU:HD12	1:A:308:ILE:HD11	1.79	0.65
3:B:381:NDP:H52A	3:B:381:NDP:H8A	1.79	0.65
1:D:231:VAL:HB	1:D:239:THR:HG21	1.79	0.65
1:A:311:TYR:OH	1:A:353:LYS:HE2	1.98	0.64
1:D:190:LEU:HD13	1:D:191:VAL:N	2.12	0.64
1:D:230:LYS:O	1:D:234:ASP:HB3	1.96	0.64
1:D:346:THR:HG22	1:D:347:GLN:H	1.62	0.64
1:A:125:ILE:H	1:A:125:ILE:CD1	2.04	0.64
1:A:51:GLU:O	1:A:55:ILE:HG12	1.97	0.64
1:A:25:LEU:HB2	1:A:134:ASN:OD1	1.98	0.64
1:A:251:LYS:HG3	1:A:254:ARG:HH21	1.60	0.64
1:B:308:ILE:HG22	1:B:356:ALA:O	1.97	0.64
1:C:136:LYS:HG2	1:C:147:TYR:CG	2.32	0.64
1:D:141:MET:HA	1:D:141:MET:CE	2.26	0.64
1:C:6:MET:HB3	1:C:126:LEU:HD12	1.80	0.64
1:C:75:SER:HA	1:C:82:PRO:HB3	1.79	0.64
1:A:207:LEU:O	1:A:208:PRO:O	2.16	0.64
1:C:207:LEU:H	1:C:207:LEU:CD1	2.07	0.64
1:B:221:THR:HB	3:B:381:NDP:O3X	1.98	0.64
1:B:254:ARG:HG2	1:B:258:PHE:CE1	2.33	0.63
1:B:42:HIS:HD2	1:B:49:HIS:HA	1.62	0.63
1:B:84:ALA:O	1:B:88:ILE:HG12	1.99	0.63
1:D:243:THR:HG22	1:D:244:THR:H	1.63	0.63
1:C:151:LYS:HG3	1:C:288:TYR:OH	1.99	0.63
1:C:277:LYS:HE3	1:C:281:GLU:OE2	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:270:ILE:N	1:A:270:ILE:HD12	2.14	0.63
1:B:292:GLY:HA3	3:B:381:NDP:O2A	1.99	0.63
1:C:181:GLN:HG3	1:C:182:TYR:H	1.63	0.63
1:C:235:GLN:NE2	4:C:1395:HOH:O	2.32	0.63
1:D:277:LYS:NZ	1:D:277:LYS:HB3	2.13	0.63
1:B:243:THR:HG22	1:B:244:THR:H	1.62	0.62
1:D:111:ILE:HG22	1:D:115:LYS:HE3	1.81	0.62
1:D:125:ILE:HD12	1:D:125:ILE:H	1.63	0.62
1:A:255:LEU:O	1:A:260:VAL:HG13	1.98	0.62
1:B:216:ARG:CZ	1:B:231:VAL:HA	2.30	0.62
1:C:347:GLN:HG3	1:C:351:ASP:O	2.00	0.62
1:A:184:LYS:HZ3	1:A:207:LEU:HB2	1.63	0.62
1:A:312:PHE:CE2	1:A:354:LEU:HD12	2.33	0.62
1:B:161:ALA:HB3	1:B:323:PRO:HG2	1.80	0.62
1:D:49:HIS:ND1	1:D:74:CYS:SG	2.71	0.62
1:D:310:PHE:CE2	1:D:325:LEU:HD13	2.35	0.62
1:B:240:TRP:CD1	1:B:261:ASN:HB2	2.34	0.62
1:B:308:ILE:HD11	1:B:310:PHE:CE1	2.34	0.62
1:D:134:ASN:O	1:D:138:LEU:HD13	2.00	0.62
1:B:103:ASN:HD22	1:B:104:PRO:HD2	1.64	0.62
1:D:146:PRO:HD3	1:D:280:ALA:HB2	1.81	0.61
1:D:148:VAL:H	1:D:306:GLN:HE21	1.44	0.61
1:B:79:LYS:O	1:B:80:THR:HG23	2.00	0.61
1:B:308:ILE:CG2	1:B:356:ALA:HB3	2.29	0.61
1:C:77:TYR:HA	1:C:82:PRO:HG3	1.81	0.61
1:C:88:ILE:HG13	1:C:89:ASN:N	2.15	0.61
1:B:204:THR:HB	1:B:213:GLN:HE22	1.66	0.61
1:B:243:THR:HG21	1:B:247:ALA:HB2	1.83	0.61
1:B:291:GLY:O	1:B:295:VAL:HB	2.00	0.61
1:B:12:LEU:HD21	1:B:39:MET:HB3	1.83	0.61
1:D:148:VAL:H	1:D:306:GLN:HE22	1.46	0.61
1:C:161:ALA:HB3	1:C:323:PRO:CG	2.30	0.61
1:B:148:VAL:H	1:B:306:GLN:NE2	1.95	0.61
1:A:193:VAL:HG22	1:A:220:ASP:HA	1.82	0.61
1:B:125:ILE:HD12	1:B:125:ILE:H	1.66	0.61
1:C:173:GLU:HA	1:C:176:ARG:HD3	1.83	0.61
1:B:218:ILE:N	1:B:218:ILE:HD12	2.16	0.60
1:A:223:LEU:HD12	1:A:247:ALA:HB1	1.82	0.60
1:B:67:ILE:HG22	1:B:92:ILE:HG21	1.83	0.60
1:B:103:ASN:HD22	1:B:104:PRO:CD	2.14	0.60
1:D:343:THR:HG21	1:D:357:LYS:HG3	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:193:VAL:O	1:B:197:LYS:HG2	2.02	0.60
1:D:63:GLU:HB2	4:D:1394:HOH:O	2.01	0.60
1:D:297:GLY:HA2	1:D:326:ILE:HG23	1.83	0.60
1:A:49:HIS:CD2	1:A:83:CYS:SG	2.94	0.60
1:D:150:LEU:CD2	1:D:289:VAL:HB	2.32	0.60
1:C:311:TYR:HE1	1:C:353:LYS:HD2	1.66	0.60
1:B:103:ASN:ND2	1:B:105:LEU:H	2.00	0.59
1:C:95:VAL:HG11	1:C:114:MET:HE3	1.84	0.59
1:B:254:ARG:HG3	1:B:254:ARG:HH11	1.67	0.59
1:C:5:TYR:OH	1:C:31:VAL:HG21	2.01	0.59
1:B:199:ASP:CB	1:B:201:PRO:HD3	2.33	0.59
1:C:67:ILE:CG2	1:C:95:VAL:HG23	2.32	0.59
1:C:152:ALA:HB3	1:C:310:PHE:CE1	2.38	0.59
1:C:67:ILE:HG23	1:C:95:VAL:HG23	1.85	0.59
1:C:83:CYS:O	1:C:87:ILE:HG13	2.02	0.59
1:D:37:VAL:HG11	1:D:61:HIS:HB3	1.83	0.59
1:A:19:GLN:HE22	1:C:36:ILE:CD1	2.16	0.59
1:D:193:VAL:CG1	1:D:220:ASP:HA	2.33	0.59
1:B:292:GLY:HA2	3:B:381:NDP:H51N	1.84	0.58
4:A:1383:HOH:O	1:B:325:LEU:CB	2.49	0.58
1:B:74:CYS:SG	1:B:83:CYS:N	2.67	0.58
1:C:161:ALA:HB3	1:C:323:PRO:HG3	1.84	0.58
1:D:72:GLU:OE1	1:D:111:ILE:HG12	2.03	0.58
1:D:190:LEU:HD11	1:D:219:LEU:HD22	1.85	0.58
1:C:125:ILE:HD13	1:C:125:ILE:N	2.17	0.58
1:C:191:VAL:HG21	1:C:195:THR:HG21	1.85	0.58
1:D:80:THR:HB	1:D:81:PRO:HD2	1.83	0.58
1:B:44:LYS:NZ	1:D:35:GLN:HE22	2.02	0.58
1:B:284:ILE:N	1:B:284:ILE:HD12	2.19	0.58
1:B:302:GLU:HA	1:B:302:GLU:OE2	2.03	0.58
1:C:188:SER:C	1:C:189:ILE:HD13	2.23	0.58
1:D:150:LEU:HD23	1:D:289:VAL:HB	1.84	0.58
1:C:103:ASN:HD22	1:C:104:PRO:CD	2.17	0.58
1:B:129:GLN:C	1:B:131:GLU:H	2.06	0.58
1:A:118:GLY:HA3	4:A:1403:HOH:O	2.04	0.58
1:A:83:CYS:O	1:A:87:ILE:HG12	2.04	0.57
1:B:177:GLN:O	1:B:180:GLN:HB2	2.04	0.57
1:D:269:ARG:HB2	4:D:1368:HOH:O	2.02	0.57
1:B:134:ASN:HB2	1:B:138:LEU:HD13	1.86	0.57
1:C:10:LEU:HD23	1:C:70:THR:HG21	1.87	0.57
1:B:167:SER:O	1:B:169:TRP:N	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:157:ASP:HA	1:D:325:LEU:CD1	2.34	0.57
1:A:19:GLN:HE22	1:C:36:ILE:HD12	1.70	0.57
1:B:176:ARG:HH11	1:B:176:ARG:HG2	1.70	0.57
1:B:200:ASN:N	1:B:201:PRO:CD	2.67	0.57
1:B:270:ILE:HB	3:B:381:NDP:H2A	1.87	0.57
1:B:348:ILE:HD12	1:B:348:ILE:N	2.20	0.57
1:B:204:THR:O	1:B:206:ARG:HG3	2.05	0.57
1:C:193:VAL:HG13	1:C:220:ASP:HB2	1.86	0.57
1:B:191:VAL:CG1	1:B:195:THR:HB	2.34	0.57
1:D:178:ASP:OD1	1:D:348:ILE:HG13	2.04	0.57
1:C:180:GLN:CB	1:C:207:LEU:HD11	2.35	0.56
1:A:150:LEU:HD12	1:A:308:ILE:CD1	2.35	0.56
1:B:243:THR:CG2	1:B:244:THR:N	2.67	0.56
1:D:83:CYS:O	1:D:87:ILE:HG13	2.05	0.56
1:A:20:THR:HB	1:A:23:ASN:HB2	1.87	0.56
1:C:207:LEU:HD12	1:C:207:LEU:N	2.13	0.56
1:C:25:LEU:H	1:C:134:ASN:ND2	1.96	0.56
1:D:334:MET:O	1:D:337:VAL:HG12	2.05	0.56
1:A:290:GLU:O	1:A:296:HIS:CE1	2.58	0.56
1:B:243:THR:CG2	1:B:244:THR:H	2.18	0.56
1:C:205:CYS:SG	1:C:210:VAL:HG11	2.46	0.56
1:B:31:VAL:O	1:B:65:ALA:HB1	2.06	0.56
1:B:125:ILE:HD12	1:B:125:ILE:N	2.21	0.56
1:D:101:ASP:OD1	1:D:102:PRO:HD2	2.06	0.56
1:B:234:ASP:OD2	1:B:234:ASP:C	2.44	0.56
1:C:28:ALA:HB3	1:C:50:ALA:O	2.05	0.55
1:C:55:ILE:HD11	1:C:92:ILE:HD11	1.87	0.55
1:A:66:ASP:OD2	1:A:94:ARG:HB2	2.06	0.55
1:C:94:ARG:HD3	1:C:96:PHE:HE2	1.64	0.55
1:C:131:GLU:OE1	1:C:142:ARG:NH2	2.32	0.55
1:B:176:ARG:HG2	1:B:176:ARG:NH1	2.21	0.55
1:B:258:PHE:N	1:B:258:PHE:HD1	2.05	0.55
1:D:17:GLU:HA	1:D:25:LEU:HD21	1.88	0.55
1:C:166:ASP:OD1	1:C:168:LYS:HG3	2.07	0.55
1:B:103:ASN:HD21	1:B:105:LEU:HD13	1.70	0.55
1:C:148:VAL:HB	1:C:305:PHE:HA	1.89	0.55
1:B:240:TRP:CH2	1:B:284:ILE:HD11	2.42	0.55
1:B:308:ILE:HG21	1:B:356:ALA:HB3	1.87	0.55
1:C:265:LEU:HD11	1:C:275:VAL:HG22	1.89	0.55
1:D:296:HIS:O	1:D:300:VAL:HG23	2.05	0.55
1:C:120:GLU:HB3	4:C:1383:HOH:O	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:190:LEU:HD21	1:C:219:LEU:HD21	1.88	0.55
1:D:23:ASN:HD22	1:D:23:ASN:N	2.03	0.55
1:C:111:ILE:HG23	1:C:121:VAL:HG11	1.89	0.55
1:B:301:LYS:HZ3	1:B:329:GLU:CG	2.18	0.54
1:C:221:THR:HG22	1:C:222:VAL:HG13	1.88	0.54
1:B:233:CYS:O	1:B:235:GLN:N	2.39	0.54
1:C:324:SER:HB3	4:C:1387:HOH:O	2.07	0.54
1:A:222:VAL:HG22	1:A:222:VAL:O	2.06	0.54
1:B:151:LYS:HD3	1:B:151:LYS:C	2.28	0.54
1:A:1:MET:N	4:A:1368:HOH:O	2.40	0.54
1:D:320:THR:HG22	1:D:321:HIS:H	1.72	0.54
1:D:243:THR:HG21	1:D:247:ALA:HB2	1.88	0.54
1:B:278:ILE:O	1:B:281:GLU:HB2	2.07	0.54
1:C:93:LYS:HB3	1:C:93:LYS:HZ2	1.72	0.54
1:B:293:SER:OG	1:B:327:SER:HB2	2.08	0.54
1:A:105:LEU:O	1:A:105:LEU:HG	2.07	0.54
1:B:200:ASN:OD1	1:B:229:ALA:HA	2.07	0.54
1:C:10:LEU:HD23	1:C:70:THR:CG2	2.38	0.54
1:D:161:ALA:HB3	1:D:323:PRO:HG3	1.89	0.54
1:C:211:THR:O	1:C:212:LYS:HB2	2.07	0.54
1:B:17:GLU:HA	1:B:25:LEU:HD21	1.89	0.53
1:B:258:PHE:N	1:B:258:PHE:CD1	2.76	0.53
1:D:111:ILE:O	1:D:115:LYS:HG3	2.07	0.53
1:A:1:MET:HA	1:A:1:MET:CE	2.38	0.53
1:A:137:PHE:HD1	1:A:138:LEU:HD12	1.73	0.53
1:A:344:ASP:HB3	1:A:355:THR:CG2	2.39	0.53
1:B:35:GLN:OE1	1:D:19:GLN:HB2	2.09	0.53
1:C:93:LYS:HB3	1:C:93:LYS:NZ	2.23	0.53
1:A:9:ALA:O	1:A:27:GLY:HA3	2.08	0.53
1:A:190:LEU:HD23	1:A:191:VAL:N	2.23	0.53
1:C:103:ASN:HD21	1:C:105:LEU:HD21	1.74	0.53
1:A:32:LYS:HE3	1:A:63:GLU:O	2.09	0.53
1:B:25:LEU:H	1:B:134:ASN:ND2	2.04	0.53
1:D:202:SER:O	1:D:204:THR:HG23	2.07	0.53
1:B:137:PHE:HD1	1:B:138:LEU:CD1	2.21	0.53
1:C:125:ILE:HD13	1:C:125:ILE:H	1.73	0.53
1:C:223:LEU:HD12	1:C:251:LYS:CD	2.37	0.53
1:C:235:GLN:HA	1:C:235:GLN:OE1	2.08	0.53
1:C:312:PHE:CE2	1:C:354:LEU:HD12	2.42	0.53
1:D:19:GLN:O	1:D:20:THR:HG23	2.09	0.53
1:A:207:LEU:HB3	1:A:208:PRO:HD2	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:168:LYS:HE3	1:C:169:TRP:CZ3	2.44	0.53
1:A:184:LYS:NZ	1:A:184:LYS:HB2	2.23	0.52
1:C:9:ALA:HB2	1:C:29:VAL:HG12	1.90	0.52
1:C:157:ASP:HA	1:D:325:LEU:HD12	1.91	0.52
1:A:26:VAL:O	1:A:41:ALA:HA	2.09	0.52
1:C:153:ALA:HB1	1:C:171:THR:CG2	2.39	0.52
1:D:232:ILE:HD12	1:D:255:LEU:HD22	1.92	0.52
1:A:184:LYS:HZ3	1:A:207:LEU:HD12	1.71	0.52
1:B:206:ARG:HH11	1:B:206:ARG:CB	2.21	0.52
1:B:251:LYS:HA	1:B:254:ARG:NH2	2.24	0.52
1:B:254:ARG:HH11	1:B:254:ARG:CG	2.21	0.52
1:D:337:VAL:HG13	1:D:337:VAL:O	2.08	0.52
1:D:101:ASP:OD2	1:D:106:VAL:HB	2.09	0.52
1:D:218:ILE:CD1	1:D:231:VAL:HG21	2.39	0.52
1:B:20:THR:HB	1:B:23:ASN:HB2	1.90	0.52
1:C:37:VAL:HG22	1:C:37:VAL:O	2.10	0.52
1:C:87:ILE:CG2	1:C:92:ILE:HD12	2.39	0.52
1:D:191:VAL:HG13	1:D:195:THR:HB	1.90	0.52
1:D:291:GLY:O	1:D:295:VAL:HB	2.09	0.52
1:A:35:GLN:OE1	1:C:44:LYS:HE3	2.10	0.52
1:A:277:LYS:NZ	1:A:277:LYS:HB3	2.24	0.52
1:B:150:LEU:HD23	1:B:289:VAL:HB	1.89	0.52
1:C:87:ILE:HG23	1:C:92:ILE:CD1	2.38	0.52
1:D:265:LEU:HD12	1:D:265:LEU:N	2.25	0.52
1:A:190:LEU:HG	1:A:217:VAL:HG12	1.92	0.52
1:A:193:VAL:HG13	1:A:220:ASP:HB2	1.90	0.52
1:B:99:MET:HE2	1:B:100:ARG:O	2.09	0.52
1:D:19:GLN:HE21	1:D:44:LYS:HD2	1.75	0.52
1:D:216:ARG:O	1:D:239:THR:HA	2.09	0.52
1:A:251:LYS:HG3	1:A:254:ARG:NH2	2.25	0.52
1:A:325:LEU:HD12	1:B:157:ASP:HA	1.91	0.52
1:B:55:ILE:HD11	1:B:92:ILE:HD11	1.92	0.52
1:B:217:VAL:C	1:B:218:ILE:HD12	2.30	0.52
1:B:308:ILE:HD11	1:B:310:PHE:CZ	2.45	0.52
1:C:12:LEU:HD21	1:C:39:MET:HB3	1.91	0.52
1:A:16:GLY:O	1:A:19:GLN:HB2	2.09	0.52
1:C:136:LYS:HG2	1:C:147:TYR:CD2	2.45	0.52
1:C:169:TRP:O	1:C:315:LYS:HE3	2.10	0.51
1:B:335:LYS:HD2	1:B:335:LYS:C	2.30	0.51
1:C:160:ILE:HG12	1:C:323:PRO:O	2.09	0.51
1:D:177:GLN:HG3	4:D:1365:HOH:O	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:344:ASP:HB3	1:A:355:THR:HG23	1.92	0.51
1:B:7:LYS:HA	1:B:10:LEU:HD12	1.91	0.51
1:C:234:ASP:O	1:C:235:GLN:C	2.48	0.51
1:D:271:GLN:HG2	1:D:273:PRO:HD2	1.91	0.51
1:C:90:SER:OG	1:C:92:ILE:HG13	2.09	0.51
1:C:187:GLN:HE22	1:C:285:MET:HG3	1.74	0.51
1:A:146:PRO:HA	1:A:285:MET:O	2.11	0.51
1:B:164:THR:O	1:B:164:THR:HG22	2.11	0.51
1:D:48:ALA:HB3	1:D:53:HIS:CE1	2.45	0.51
1:D:177:GLN:O	1:D:180:GLN:HB2	2.11	0.51
1:B:28:ALA:HA	1:B:68:TYR:O	2.11	0.51
1:B:102:PRO:HG2	1:B:137:PHE:HE1	1.76	0.51
1:C:8:LEU:HD22	1:C:12:LEU:HD13	1.92	0.51
1:D:222:VAL:HG22	1:D:222:VAL:O	2.10	0.51
1:A:109:ARG:HG3	4:A:1391:HOH:O	2.09	0.51
1:B:184:LYS:NZ	1:B:210:VAL:HA	2.26	0.51
1:C:36:ILE:H	1:C:36:ILE:CD1	2.15	0.51
1:D:9:ALA:HB2	1:D:29:VAL:HG12	1.93	0.50
1:A:334:MET:CE	1:B:170:ILE:HA	2.41	0.50
1:B:169:TRP:HE3	1:B:169:TRP:HA	1.76	0.50
1:D:128:ASP:O	1:D:132:ARG:HG3	2.11	0.50
1:D:146:PRO:HG3	1:D:284:ILE:O	2.10	0.50
1:D:190:LEU:HD21	1:D:219:LEU:HD13	1.94	0.50
1:A:20:THR:O	1:A:21:GLU:HB2	2.10	0.50
1:A:57:MET:HG3	1:C:53:HIS:CE1	2.47	0.50
1:B:1:MET:N	4:B:1384:HOH:O	2.43	0.50
1:C:25:LEU:HD23	1:C:133:LEU:HD11	1.93	0.50
1:A:112:SER:O	1:A:116:GLU:HB2	2.11	0.50
1:B:131:GLU:OE2	1:B:138:LEU:HD23	2.11	0.50
1:D:148:VAL:HG23	1:D:306:GLN:HE22	1.76	0.50
1:A:74:CYS:O	1:A:82:PRO:HB2	2.11	0.50
1:A:175:ALA:O	1:A:178:ASP:N	2.44	0.50
1:C:72:GLU:CD	1:C:111:ILE:HG12	2.32	0.50
1:A:325:LEU:CD1	1:B:157:ASP:HA	2.42	0.50
1:B:335:LYS:HD2	1:B:336:ASP:N	2.26	0.50
1:C:37:VAL:HG22	1:C:58:ALA:HA	1.94	0.50
1:B:169:TRP:HA	1:B:169:TRP:CE3	2.46	0.49
1:D:72:GLU:CD	1:D:111:ILE:HG12	2.33	0.49
1:A:318:GLY:CA	1:B:330:GLY:HA2	2.35	0.49
1:C:49:HIS:ND1	1:C:83:CYS:SG	2.77	0.49
1:D:63:GLU:HA	1:D:91:GLY:HA3	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:220:ASP:CG	1:D:223:LEU:HA	2.31	0.49
1:A:150:LEU:HB2	1:A:308:ILE:CD1	2.40	0.49
1:A:320:THR:HG23	1:A:321:HIS:CD2	2.47	0.49
1:B:308:ILE:O	1:B:308:ILE:HG23	2.12	0.49
1:C:68:TYR:N	1:C:68:TYR:CD2	2.79	0.49
1:D:188:SER:OG	1:D:287:VAL:HG22	2.11	0.49
1:A:136:LYS:HE3	1:A:185:THR:O	2.13	0.49
1:B:55:ILE:HG13	1:B:86:LEU:CD1	2.43	0.49
1:B:193:VAL:HG11	1:B:220:ASP:CG	2.33	0.49
1:D:160:ILE:O	1:D:160:ILE:HG22	2.12	0.49
1:A:44:LYS:HE3	1:C:35:GLN:HE21	1.74	0.49
1:A:157:ASP:OD2	1:A:159:LYS:HD3	2.13	0.49
1:C:14:LYS:HE3	1:C:17:GLU:OE2	2.13	0.49
1:D:289:VAL:HG21	1:D:299:PHE:CZ	2.47	0.49
1:A:334:MET:HE2	1:B:170:ILE:HA	1.93	0.49
1:B:312:PHE:CE2	1:B:354:LEU:HD12	2.48	0.49
1:C:208:PRO:O	1:C:209:ASN:HB2	2.12	0.49
1:B:25:LEU:N	1:B:134:ASN:HD21	2.06	0.49
1:B:66:ASP:HA	1:B:94:ARG:O	2.13	0.49
1:C:180:GLN:O	1:C:183:ARG:HB2	2.11	0.49
1:D:200:ASN:O	1:D:230:LYS:HG3	2.13	0.49
1:A:29:VAL:O	1:A:67:ILE:HA	2.13	0.49
1:A:170:ILE:HG12	1:B:334:MET:HE1	1.95	0.49
1:C:267:THR:HG22	1:C:268:GLU:H	1.78	0.49
1:D:272:ILE:CG1	1:D:298:SER:HB3	2.43	0.49
1:A:312:PHE:HE2	1:A:354:LEU:HD12	1.75	0.49
1:B:3:GLU:CB	1:B:126:LEU:HD11	2.37	0.49
1:B:14:LYS:HE3	4:B:1374:HOH:O	2.11	0.49
1:B:255:LEU:O	1:B:260:VAL:HB	2.13	0.49
1:C:67:ILE:HG23	1:C:67:ILE:O	2.13	0.49
1:A:184:LYS:HZ2	1:A:184:LYS:HB2	1.78	0.48
1:B:65:ALA:O	1:B:92:ILE:HG23	2.13	0.48
1:C:95:VAL:HG12	1:C:121:VAL:HG22	1.95	0.48
1:D:223:LEU:HD23	1:D:225:ILE:HG22	1.95	0.48
1:A:74:CYS:SG	1:A:83:CYS:N	2.76	0.48
1:A:272:ILE:N	1:A:273:PRO:CD	2.76	0.48
1:C:87:ILE:CA	1:C:92:ILE:HD12	2.42	0.48
1:C:333:SER:HB3	1:C:336:ASP:OD2	2.14	0.48
1:D:75:SER:HB2	1:D:109:ARG:HD2	1.95	0.48
1:D:156:LEU:HB3	1:D:316:LEU:HD23	1.95	0.48
1:A:67:ILE:CG2	1:A:95:VAL:HG22	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:180:GLN:HB3	1:A:207:LEU:HD21	1.95	0.48
1:D:19:GLN:CG	1:D:44:LYS:HD2	2.37	0.48
1:B:254:ARG:HG2	1:B:258:PHE:CZ	2.49	0.48
1:C:68:TYR:N	1:C:68:TYR:HD2	2.12	0.48
1:D:14:LYS:O	1:D:17:GLU:HB2	2.13	0.48
1:A:20:THR:O	1:A:45:TYR:HD1	1.97	0.48
1:C:6:MET:HE1	1:C:69:VAL:O	2.14	0.48
1:D:200:ASN:N	1:D:201:PRO:CD	2.76	0.48
1:D:343:THR:HG21	1:D:357:LYS:HE2	1.95	0.48
1:D:339:LEU:O	1:D:359:THR:HG22	2.14	0.47
1:A:184:LYS:HZ3	1:A:207:LEU:CB	2.27	0.47
1:B:202:SER:CB	1:B:230:LYS:HD2	2.44	0.47
1:B:272:ILE:HB	1:B:273:PRO:HD3	1.96	0.47
1:D:287:VAL:HG12	1:D:289:VAL:HG23	1.96	0.47
1:A:90:SER:OG	1:A:92:ILE:HG12	2.14	0.47
1:B:191:VAL:HG13	1:B:291:GLY:HA3	1.97	0.47
1:B:345:ILE:HG23	1:B:354:LEU:HD23	1.97	0.47
1:A:202:SER:O	1:A:216:ARG:HD2	2.14	0.47
1:B:210:VAL:O	1:B:212:LYS:N	2.47	0.47
1:B:234:ASP:O	1:B:235:GLN:C	2.52	0.47
1:A:42:HIS:HE1	1:A:47:GLU:O	1.97	0.47
1:B:102:PRO:HG2	1:B:137:PHE:CE1	2.49	0.47
1:C:84:ALA:O	1:C:88:ILE:HG23	2.14	0.47
1:C:112:SER:O	1:C:115:LYS:N	2.47	0.47
1:D:140:PHE:CG	1:D:285:MET:HG2	2.49	0.47
1:D:263:PHE:CD2	1:D:278:ILE:HG21	2.48	0.47
1:B:12:LEU:CD2	1:B:39:MET:HB3	2.44	0.47
1:B:67:ILE:HG23	1:B:67:ILE:O	2.15	0.47
1:C:103:ASN:HD21	1:C:105:LEU:CD2	2.27	0.47
1:C:314:PRO:HG3	1:D:342:PHE:CE2	2.49	0.47
1:D:19:GLN:CG	1:D:44:LYS:HA	2.45	0.47
1:C:33:ASP:N	1:C:33:ASP:OD2	2.48	0.47
1:C:95:VAL:HG11	1:C:114:MET:CE	2.44	0.47
1:C:240:TRP:CD1	1:C:261:ASN:HB2	2.50	0.47
1:D:140:PHE:CD2	1:D:285:MET:HG2	2.49	0.47
1:A:123:GLU:O	1:A:125:ILE:HD12	2.14	0.47
1:D:1:MET:HG3	1:D:5:TYR:CE2	2.50	0.47
1:D:64:GLY:HA2	1:D:93:LYS:HG2	1.96	0.47
1:D:311:TYR:CE1	1:D:353:LYS:HD2	2.50	0.47
1:C:9:ALA:HB2	1:C:29:VAL:CG1	2.45	0.46
1:C:103:ASN:HB3	1:C:106:VAL:HG22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:222:VAL:HG12	4:A:1395:HOH:O	2.15	0.46
1:B:301:LYS:CE	1:B:329:GLU:HB2	2.45	0.46
1:B:301:LYS:HD3	1:B:329:GLU:HB2	1.96	0.46
1:B:35:GLN:CD	1:D:19:GLN:HB2	2.36	0.46
1:A:207:LEU:HB3	1:A:208:PRO:CD	2.46	0.46
1:B:254:ARG:HB2	1:B:254:ARG:NH1	2.31	0.46
1:C:85:GLU:O	1:C:88:ILE:N	2.47	0.46
1:B:168:LYS:O	1:B:169:TRP:HB2	2.16	0.46
1:C:7:LYS:O	1:C:10:LEU:HB2	2.15	0.46
1:C:100:ARG:HH21	1:C:108:GLY:HA2	1.79	0.46
1:A:56:HIS:NE2	1:C:56:HIS:NE2	2.64	0.46
1:B:202:SER:HB2	1:B:230:LYS:HD2	1.96	0.46
1:C:129:GLN:H	1:C:129:GLN:CD	2.18	0.46
1:B:85:GLU:HG2	1:B:89:ASN:HD21	1.80	0.46
1:B:193:VAL:HG13	1:B:219:LEU:O	2.16	0.46
1:B:213:GLN:HB3	1:B:237:ALA:HB2	1.98	0.46
1:B:301:LYS:NZ	1:B:329:GLU:CG	2.77	0.46
1:B:301:LYS:NZ	1:B:329:GLU:CB	2.79	0.46
1:B:198:ALA:O	1:B:199:ASP:OD1	2.33	0.46
1:D:88:ILE:HA	1:D:119:ILE:HD11	1.97	0.46
1:B:53:HIS:HB3	1:D:57:MET:HE3	1.98	0.46
1:C:85:GLU:HB3	1:C:89:ASN:ND2	2.27	0.46
1:D:226:PRO:C	1:D:228:ASP:N	2.68	0.46
1:A:134:ASN:HB2	1:A:138:LEU:CD1	2.46	0.45
1:B:95:VAL:HG23	1:B:119:ILE:HG21	1.98	0.45
1:B:329:GLU:OE1	1:B:329:GLU:HA	2.15	0.45
1:C:23:ASN:N	1:C:23:ASN:HD22	2.14	0.45
1:C:344:ASP:HB3	1:C:355:THR:CG2	2.45	0.45
1:A:30:VAL:HG12	1:A:37:VAL:CG2	2.47	0.45
1:C:66:ASP:CG	1:C:94:ARG:HD2	2.37	0.45
1:D:180:GLN:HE21	1:D:180:GLN:HB3	1.53	0.45
1:A:64:GLY:CA	1:A:93:LYS:HG2	2.40	0.45
1:A:71:LEU:O	1:A:72:GLU:C	2.55	0.45
1:C:37:VAL:HG21	1:C:61:HIS:CD2	2.52	0.45
1:C:85:GLU:O	1:C:88:ILE:HG12	2.17	0.45
1:C:315:LYS:HE2	1:D:339:LEU:HD13	1.98	0.45
1:A:170:ILE:HG12	1:B:334:MET:CE	2.46	0.45
1:C:151:LYS:HD2	1:C:151:LYS:C	2.37	0.45
1:D:277:LYS:HB3	1:D:277:LYS:HZ3	1.82	0.45
1:B:263:PHE:CD2	1:B:278:ILE:HG21	2.52	0.45
1:C:153:ALA:HB1	1:C:171:THR:HG23	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:331:PHE:CE1	1:C:338:PRO:HD2	2.51	0.45
1:D:155:SER:N	1:D:170:ILE:HD11	2.32	0.45
1:B:134:ASN:HB3	1:B:137:PHE:HB3	1.99	0.45
1:B:277:LYS:O	1:B:281:GLU:HG3	2.17	0.45
1:C:216:ARG:HD2	1:C:237:ALA:HB3	1.98	0.45
1:B:92:ILE:O	1:B:119:ILE:HD12	2.17	0.45
1:B:310:PHE:CE1	1:B:325:LEU:HD22	2.51	0.45
1:C:82:PRO:O	1:C:85:GLU:N	2.47	0.45
1:C:157:ASP:HA	1:D:325:LEU:HD13	1.99	0.45
1:C:167:SER:HA	1:D:334:MET:HE2	1.97	0.45
1:A:193:VAL:CG2	1:A:220:ASP:HA	2.46	0.45
1:C:237:ALA:HB1	1:C:238:PRO:CD	2.47	0.45
1:C:311:TYR:CE1	1:C:353:LYS:HD2	2.50	0.45
1:C:55:ILE:O	1:C:58:ALA:N	2.36	0.45
1:C:85:GLU:HA	1:C:88:ILE:HG12	1.99	0.45
1:D:252:LYS:HE3	1:D:264:THR:HG21	1.98	0.45
1:D:346:THR:CG2	1:D:347:GLN:N	2.78	0.45
1:A:32:LYS:HB2	1:A:37:VAL:HG11	1.99	0.45
1:A:348:ILE:HD11	1:A:353:LYS:HE3	1.99	0.45
1:C:55:ILE:CD1	1:C:92:ILE:HD11	2.46	0.45
1:D:181:GLN:O	1:D:184:LYS:HB3	2.16	0.45
1:C:116:GLU:C	1:C:118:GLY:H	2.19	0.44
1:C:346:THR:O	1:C:353:LYS:HB3	2.17	0.44
1:A:193:VAL:HG11	1:A:220:ASP:CG	2.38	0.44
1:A:334:MET:HA	1:A:337:VAL:CG1	2.47	0.44
1:B:204:THR:HB	1:B:213:GLN:NE2	2.32	0.44
1:C:56:HIS:ND1	1:C:56:HIS:C	2.71	0.44
1:C:88:ILE:CG1	1:C:89:ASN:N	2.79	0.44
1:C:189:ILE:HD13	1:C:189:ILE:N	2.32	0.44
1:C:285:MET:HB2	1:C:285:MET:HE3	1.77	0.44
1:D:19:GLN:HG2	1:D:44:LYS:CD	2.37	0.44
1:D:72:GLU:HG3	1:D:111:ILE:CD1	2.47	0.44
1:A:85:GLU:HB2	1:A:113:MET:HE3	1.99	0.44
1:B:293:SER:H	3:B:381:NDP:H52N	1.82	0.44
1:D:326:ILE:O	1:D:326:ILE:HG22	2.17	0.44
1:B:223:LEU:HB2	1:B:243:THR:HG21	1.99	0.44
1:C:5:TYR:CZ	1:C:31:VAL:HG21	2.52	0.44
1:C:6:MET:O	1:C:10:LEU:HG	2.18	0.44
1:C:32:LYS:HG2	1:C:33:ASP:OD2	2.17	0.44
1:D:23:ASN:N	1:D:23:ASN:ND2	2.66	0.44
1:D:190:LEU:HD21	1:D:219:LEU:CD1	2.47	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:49:HIS:HD2	1:A:74:CYS:SG	2.40	0.44
1:A:148:VAL:HB	1:A:305:PHE:HA	2.00	0.44
1:B:246:ARG:HG3	1:B:246:ARG:HH11	1.83	0.44
1:D:230:LYS:O	1:D:232:ILE:N	2.50	0.44
1:B:195:THR:O	1:B:196:VAL:C	2.56	0.44
1:B:261:ASN:HB3	1:B:263:PHE:CE1	2.45	0.44
1:C:129:GLN:CD	1:C:129:GLN:N	2.71	0.44
1:A:199:ASP:O	1:A:200:ASN:C	2.56	0.44
1:A:311:TYR:CZ	1:A:353:LYS:HE2	2.52	0.44
1:C:174:ALA:HB1	1:C:348:ILE:HG22	2.00	0.44
1:D:204:THR:HB	1:D:213:GLN:NE2	2.33	0.44
1:D:300:VAL:HG21	1:D:326:ILE:CD1	2.45	0.44
1:A:12:LEU:CD1	1:A:39:MET:HB3	2.48	0.44
1:A:308:ILE:O	1:A:355:THR:HA	2.18	0.44
1:A:342:PHE:HA	1:A:356:ALA:HB2	2.00	0.44
1:C:28:ALA:H	1:C:50:ALA:HB1	1.82	0.44
1:C:337:VAL:HG23	1:C:337:VAL:O	2.16	0.44
1:D:76:HIS:O	1:D:82:PRO:HB3	2.18	0.44
1:D:134:ASN:HB3	1:D:137:PHE:HB3	2.00	0.44
1:D:151:LYS:HE2	1:D:179:ALA:HB1	2.00	0.44
1:D:160:ILE:O	1:D:160:ILE:CG2	2.66	0.44
1:D:272:ILE:HB	1:D:273:PRO:CD	2.39	0.44
1:A:159:LYS:NZ	4:A:1383:HOH:O	2.35	0.44
1:A:329:GLU:O	1:B:319:GLY:HA2	2.17	0.44
1:B:80:THR:HB	1:B:81:PRO:HD2	2.00	0.44
1:B:348:ILE:HD13	1:B:353:LYS:HB2	2.00	0.44
1:C:6:MET:CB	1:C:126:LEU:HD12	2.45	0.44
1:D:137:PHE:CD1	1:D:138:LEU:HD12	2.43	0.44
1:D:274:ASP:O	1:D:278:ILE:HG12	2.18	0.44
1:A:157:ASP:HB2	4:A:1383:HOH:O	2.18	0.43
1:D:272:ILE:CB	1:D:273:PRO:HD3	2.35	0.43
1:A:134:ASN:HB2	1:A:138:LEU:HD11	1.99	0.43
1:A:175:ALA:O	1:A:176:ARG:C	2.56	0.43
1:B:61:HIS:NE2	1:D:44:LYS:HE2	2.33	0.43
1:B:311:TYR:OH	1:B:353:LYS:HE3	2.17	0.43
1:C:96:PHE:CD2	1:C:96:PHE:N	2.86	0.43
1:C:193:VAL:HG11	1:C:220:ASP:CG	2.39	0.43
1:C:344:ASP:HB3	1:C:355:THR:HG23	2.00	0.43
1:A:17:GLU:HA	1:A:25:LEU:HD11	1.99	0.43
1:A:181:GLN:HA	1:A:207:LEU:HD11	1.99	0.43
1:C:167:SER:HA	1:D:334:MET:CE	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:184:LYS:HE2	1:C:184:LYS:HB3	1.82	0.43
1:A:32:LYS:HB2	1:A:37:VAL:CG1	2.47	0.43
1:A:114:MET:O	1:A:115:LYS:C	2.57	0.43
1:C:63:GLU:HA	1:C:91:GLY:O	2.19	0.43
1:C:312:PHE:HE2	1:C:354:LEU:HD12	1.82	0.43
1:C:331:PHE:CD1	1:C:337:VAL:HG12	2.54	0.43
1:A:359:THR:HG22	4:A:1416:HOH:O	2.19	0.43
1:B:42:HIS:CD2	1:B:49:HIS:HD2	2.37	0.43
1:B:82:PRO:O	1:B:85:GLU:N	2.52	0.43
1:B:221:THR:O	1:B:243:THR:HG23	2.18	0.43
1:A:161:ALA:O	1:A:323:PRO:HD2	2.18	0.43
1:A:319:GLY:HA3	1:A:322:ALA:HB2	2.00	0.43
1:C:29:VAL:HG13	1:C:68:TYR:HB2	1.99	0.43
1:C:328:GLY:O	1:D:319:GLY:HA2	2.18	0.43
1:D:124:GLY:O	1:D:125:ILE:C	2.55	0.43
1:A:55:ILE:HD11	1:A:67:ILE:HD12	2.00	0.43
1:B:254:ARG:CG	1:B:254:ARG:NH1	2.81	0.43
1:C:95:VAL:CG1	1:C:121:VAL:HG22	2.48	0.43
1:D:190:LEU:HD13	1:D:191:VAL:H	1.82	0.43
1:D:277:LYS:O	1:D:281:GLU:HG3	2.18	0.43
1:A:19:GLN:CD	1:C:35:GLN:HB2	2.39	0.43
1:B:252:LYS:O	1:B:256:SER:HB3	2.19	0.43
1:C:12:LEU:CD2	1:C:39:MET:HB3	2.49	0.43
1:A:290:GLU:O	1:A:296:HIS:NE2	2.51	0.43
1:B:138:LEU:O	1:B:142:ARG:HG3	2.19	0.43
1:C:28:ALA:HA	1:C:68:TYR:O	2.19	0.43
1:D:337:VAL:O	1:D:337:VAL:CG1	2.67	0.43
1:A:32:LYS:HD3	1:A:32:LYS:C	2.39	0.42
1:D:208:PRO:O	1:D:209:ASN:HB2	2.19	0.42
1:B:103:ASN:HD22	1:B:103:ASN:C	2.21	0.42
1:C:146:PRO:HA	1:C:285:MET:O	2.19	0.42
1:C:152:ALA:HB3	1:C:310:PHE:CD1	2.54	0.42
1:C:181:GLN:NE2	1:C:182:TYR:CE2	2.88	0.42
1:D:131:GLU:OE1	1:D:142:ARG:NH2	2.45	0.42
1:D:139:HIS:O	1:D:143:THR:HG23	2.19	0.42
1:D:272:ILE:HG12	1:D:298:SER:HB3	2.00	0.42
1:B:83:CYS:O	1:B:87:ILE:HG13	2.19	0.42
1:B:198:ALA:C	1:B:199:ASP:OD1	2.57	0.42
1:A:14:LYS:HG3	1:A:14:LYS:O	2.19	0.42
1:A:36:ILE:O	1:C:43:LEU:HD13	2.18	0.42
1:A:248:ASP:O	1:A:252:LYS:HG3	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:202:SER:O	1:B:203:LEU:HB2	2.18	0.42
1:C:140:PHE:HE1	1:C:280:ALA:HB1	1.85	0.42
1:D:150:LEU:HB2	1:D:308:ILE:HD13	2.02	0.42
1:D:184:LYS:HD2	1:D:207:LEU:HD23	2.01	0.42
1:B:51:GLU:OE1	1:B:83:CYS:CB	2.67	0.42
1:B:258:PHE:HD1	1:B:258:PHE:H	1.66	0.42
1:C:8:LEU:HD22	1:C:12:LEU:CD1	2.49	0.42
1:C:28:ALA:CB	1:C:51:GLU:HA	2.49	0.42
1:C:173:GLU:O	1:C:177:GLN:HB2	2.20	0.42
1:C:239:THR:O	1:C:260:VAL:HG13	2.19	0.42
1:D:227:GLU:OE2	1:D:254:ARG:HD2	2.20	0.42
1:A:13:ALA:HB2	1:A:27:GLY:N	2.34	0.42
1:B:9:ALA:O	1:B:27:GLY:HA3	2.20	0.42
1:A:345:ILE:HD12	1:A:345:ILE:N	2.34	0.42
1:B:176:ARG:HD3	1:B:176:ARG:N	2.35	0.42
1:C:100:ARG:NH1	1:C:123:GLU:OE2	2.53	0.42
1:B:284:ILE:N	1:B:284:ILE:CD1	2.83	0.42
1:B:296:HIS:HB3	1:B:326:ILE:HD12	2.02	0.42
1:C:9:ALA:HB1	1:C:27:GLY:O	2.20	0.42
1:D:67:ILE:HG22	1:D:95:VAL:HG22	2.01	0.42
1:A:84:ALA:HB3	1:A:113:MET:CE	2.50	0.42
1:A:157:ASP:HB3	1:A:316:LEU:HD22	2.02	0.42
1:B:210:VAL:HG23	1:B:211:THR:N	2.35	0.42
1:C:191:VAL:O	1:C:218:ILE:HA	2.20	0.42
1:C:234:ASP:O	1:C:236:ILE:N	2.52	0.42
1:C:234:ASP:O	1:C:236:ILE:HG13	2.19	0.42
1:B:126:LEU:C	1:B:128:ASP:N	2.74	0.41
1:B:213:GLN:HB3	1:B:237:ALA:CB	2.49	0.41
1:B:227:GLU:CD	1:B:227:GLU:H	2.23	0.41
1:C:6:MET:CE	1:C:98:ALA:HB2	2.50	0.41
1:D:216:ARG:CZ	1:D:231:VAL:HA	2.49	0.41
1:A:15:GLN:O	1:C:36:ILE:HD13	2.20	0.41
1:B:206:ARG:NH1	1:B:206:ARG:CB	2.76	0.41
1:B:218:ILE:N	1:B:218:ILE:CD1	2.82	0.41
1:C:272:ILE:HB	1:C:273:PRO:HD3	2.02	0.41
1:C:290:GLU:O	1:C:296:HIS:NE2	2.54	0.41
1:D:230:LYS:HB2	4:D:1404:HOH:O	2.19	0.41
1:B:102:PRO:HB2	1:B:141:MET:CB	2.49	0.41
1:B:115:LYS:HE3	1:B:115:LYS:HB2	1.85	0.41
1:C:72:GLU:HA	1:C:73:PRO:HD3	1.92	0.41
1:D:72:GLU:HB2	1:D:100:ARG:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:218:ILE:HD11	1:D:231:VAL:HG21	2.01	0.41
1:B:102:PRO:HB2	1:B:141:MET:HB2	2.02	0.41
1:B:308:ILE:O	1:B:355:THR:HA	2.20	0.41
1:C:28:ALA:O	1:C:54:ALA:HB2	2.21	0.41
1:A:1:MET:HA	1:A:1:MET:HE2	2.01	0.41
1:A:115:LYS:HE2	1:A:121:VAL:HB	2.02	0.41
1:A:132:ARG:O	1:A:135:GLU:HB2	2.20	0.41
1:A:147:TYR:N	1:A:285:MET:O	2.44	0.41
1:B:103:ASN:HD22	1:B:104:PRO:N	2.18	0.41
1:B:125:ILE:H	1:B:125:ILE:CD1	2.32	0.41
1:B:129:GLN:C	1:B:131:GLU:N	2.72	0.41
1:C:272:ILE:N	1:C:273:PRO:CD	2.83	0.41
1:D:125:ILE:HG22	1:D:126:LEU:HG	2.02	0.41
1:D:161:ALA:HB3	1:D:323:PRO:CG	2.50	0.41
1:D:343:THR:CG2	1:D:357:LYS:HG3	2.50	0.41
1:C:69:VAL:HG21	1:C:73:PRO:HD3	2.01	0.41
1:D:29:VAL:HG13	1:D:68:TYR:HB2	2.02	0.41
1:A:24:PRO:HD3	1:A:137:PHE:CE2	2.56	0.41
1:A:191:VAL:O	1:A:218:ILE:HA	2.20	0.41
1:B:103:ASN:ND2	1:B:103:ASN:C	2.74	0.41
1:B:292:GLY:HA2	3:B:381:NDP:C5D	2.51	0.41
1:C:30:VAL:HB	1:C:38:GLY:HA3	2.01	0.41
1:D:136:LYS:HE3	1:D:185:THR:O	2.19	0.41
1:D:289:VAL:HG21	1:D:299:PHE:CE2	2.56	0.41
1:A:176:ARG:HD2	4:A:1385:HOH:O	2.21	0.41
1:B:12:LEU:HD12	1:B:12:LEU:N	2.36	0.41
1:D:23:ASN:ND2	1:D:23:ASN:H	2.18	0.41
1:A:30:VAL:O	1:A:37:VAL:HG22	2.21	0.41
1:A:103:ASN:HA	1:A:104:PRO:HD3	1.94	0.41
1:B:32:LYS:HE2	1:B:33:ASP:OD2	2.21	0.41
1:B:292:GLY:HA3	3:B:381:NDP:O1A	2.20	0.41
1:C:170:ILE:HG22	1:C:171:THR:N	2.35	0.41
1:C:190:LEU:HD12	1:C:289:VAL:HG13	2.01	0.41
1:C:307:GLU:CD	1:C:357:LYS:HZ3	2.25	0.41
1:D:75:SER:CB	1:D:109:ARG:HD2	2.51	0.41
1:D:166:ASP:OD1	1:D:168:LYS:HG3	2.20	0.41
1:D:226:PRO:C	1:D:228:ASP:H	2.25	0.41
1:D:233:CYS:O	1:D:235:GLN:N	2.54	0.41
1:A:276:LEU:HD23	1:A:276:LEU:HA	1.87	0.41
1:A:334:MET:HB2	1:B:168:LYS:HB2	2.03	0.41
1:C:181:GLN:NE2	1:C:182:TYR:CD2	2.87	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:253:LYS:HA	1:C:256:SER:OG	2.21	0.41
1:C:308:ILE:HD11	1:C:310:PHE:CZ	2.56	0.41
1:D:186:HIS:CD2	1:D:288:TYR:HB2	2.56	0.41
1:B:6:MET:HG2	1:B:125:ILE:O	2.21	0.40
1:B:155:SER:HB3	1:B:317:ILE:HG13	2.03	0.40
1:C:96:PHE:HA	1:C:122:ARG:O	2.21	0.40
1:C:155:SER:HB3	1:C:317:ILE:HG12	2.02	0.40
1:D:37:VAL:HG11	1:D:61:HIS:CB	2.50	0.40
1:D:129:GLN:HE21	1:D:129:GLN:HB3	1.68	0.40
1:A:25:LEU:HA	4:A:1375:HOH:O	2.21	0.40
1:A:337:VAL:HA	1:A:338:PRO:HD3	1.87	0.40
1:B:51:GLU:O	1:B:55:ILE:HG12	2.21	0.40
1:B:86:LEU:HD13	1:B:86:LEU:O	2.21	0.40
1:D:9:ALA:HB2	1:D:29:VAL:CG1	2.51	0.40
1:B:79:LYS:O	1:B:80:THR:CG2	2.69	0.40
1:C:82:PRO:C	1:C:84:ALA:N	2.75	0.40
1:D:20:THR:O	1:D:21:GLU:HB2	2.21	0.40
1:B:26:VAL:HG12	1:B:27:GLY:N	2.36	0.40
1:C:116:GLU:C	1:C:118:GLY:N	2.74	0.40
1:C:174:ALA:CB	1:C:348:ILE:HG22	2.52	0.40
1:D:19:GLN:HE21	1:D:44:LYS:NZ	2.19	0.40
1:D:101:ASP:HA	1:D:102:PRO:HD3	1.79	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1398:HOH:O	4:B:1422:HOH:O[3_645]	1.93	0.27
4:A:1410:HOH:O	4:A:1419:HOH:O[3_645]	2.19	0.01

## 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	357/373 (96%)	310 (87%)	41 (12%)	6 (2%)	9	36
1	B	357/373 (96%)	303 (85%)	44 (12%)	10 (3%)	5	23
1	C	357/373 (96%)	303 (85%)	43 (12%)	11 (3%)	4	20
1	D	358/373 (96%)	309 (86%)	33 (9%)	16 (4%)	2	13
All	All	1429/1492 (96%)	1225 (86%)	161 (11%)	43 (3%)	4	21

All (43) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	208	PRO
1	A	329	GLU
1	B	168	LYS
1	B	208	PRO
1	B	211	THR
1	B	212	LYS
1	B	234	ASP
1	B	235	GLN
1	C	67	ILE
1	C	209	ASN
1	C	212	LYS
1	C	235	GLN
1	D	20	THR
1	D	167	SER
1	A	211	THR
1	B	78	GLY
1	B	196	VAL
1	B	292	GLY
1	C	79	LYS
1	D	17	GLU
1	D	92	ILE
1	D	125	ILE
1	D	234	ASP
1	A	48	ALA
1	C	21	GLU
1	C	108	GLY
1	A	21	GLU
1	B	21	GLU
1	C	76	HIS
1	D	172	SER
1	D	221	THR
1	D	230	LYS
1	D	259	GLY

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Mol	Chain	Res	Type
1	A	290	GLU
1	C	170	ILE
1	D	48	ALA
1	D	270	ILE
1	C	113	MET
1	D	228	ASP
1	D	231	VAL
1	D	318	GLY
1	C	55	ILE
1	D	292	GLY

### 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	293/305 (96%)	276 (94%)	17 (6%)	20	53
1	B	293/305 (96%)	277 (94%)	16 (6%)	21	55
1	C	293/305 (96%)	272 (93%)	21 (7%)	14	43
1	D	294/305 (96%)	268 (91%)	26 (9%)	10	34
All	All	1173/1220 (96%)	1093 (93%)	80 (7%)	16	46

All (80) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	2	GLU
1	A	25	LEU
1	A	80	THR
1	A	86	LEU
1	A	171	THR
1	A	177	GLN
1	A	181	GLN
1	A	193	VAL
1	A	231	VAL
1	A	256	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	260	VAL
1	A	277	LYS
1	A	282	GLU
1	A	298	SER
1	A	350	ARG
1	A	355	THR
1	B	43	LEU
1	B	70	THR
1	B	101	ASP
1	B	103	ASN
1	B	109	ARG
1	B	128	ASP
1	B	176	ARG
1	B	187	GLN
1	B	212	LYS
1	B	228	ASP
1	B	234	ASP
1	B	235	GLN
1	B	249	GLU
1	B	258	PHE
1	B	320	THR
1	B	335	LYS
1	C	8	LEU
1	C	33	ASP
1	C	68	TYR
1	C	74	CYS
1	C	76	HIS
1	C	103	ASN
1	C	105	LEU
1	C	125	ILE
1	C	128	ASP
1	C	138	LEU
1	C	141	MET
1	C	181	GLN
1	C	189	ILE
1	C	191	VAL
1	C	193	VAL
1	C	209	ASN
1	C	223	LEU
1	C	267	THR
1	C	271	GLN
1	C	351	ASP

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Mol	Chain	Res	Type
1	C	355	THR
1	D	2	GLU
1	D	20	THR
1	D	29	VAL
1	D	63	GLU
1	D	71	LEU
1	D	86	LEU
1	D	90	SER
1	D	105	LEU
1	D	112	SER
1	D	122	ARG
1	D	128	ASP
1	D	129	GLN
1	D	141	MET
1	D	180	GLN
1	D	190	LEU
1	D	193	VAL
1	D	223	LEU
1	D	243	THR
1	D	261	ASN
1	D	266	GLU
1	D	268	GLU
1	D	270	ILE
1	D	277	LYS
1	D	306	GLN
1	D	354	LEU
1	D	355	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (48) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	GLN
1	A	19	GLN
1	A	49	HIS
1	A	139	HIS
1	A	177	GLN
1	A	187	GLN
1	A	209	ASN
1	A	235	GLN
1	A	321	HIS
1	A	341	GLN
1	A	347	GLN

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Mol	Chain	Res	Type
1	B	23	ASN
1	B	35	GLN
1	B	42	HIS
1	B	89	ASN
1	B	103	ASN
1	B	134	ASN
1	B	186	HIS
1	B	187	GLN
1	B	296	HIS
1	B	306	GLN
1	B	341	GLN
1	B	347	GLN
1	C	15	GLN
1	C	23	ASN
1	C	35	GLN
1	C	89	ASN
1	C	103	ASN
1	C	134	ASN
1	C	186	HIS
1	C	187	GLN
1	C	209	ASN
1	C	261	ASN
1	C	341	GLN
1	D	19	GLN
1	D	23	ASN
1	D	35	GLN
1	D	53	HIS
1	D	56	HIS
1	D	89	ASN
1	D	129	GLN
1	D	134	ASN
1	D	180	GLN
1	D	181	GLN
1	D	186	HIS
1	D	271	GLN
1	D	306	GLN
1	D	347	GLN

### 5.3.3 RNA

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 5 ligands modelled in this entry, 4 are monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	NDP	B	381	-	45,52,52	1.34	5 (11%)	53,80,80	1.08	3 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NDP	B	381	-	-	11/30/77/77	0/5/5/5

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	381	NDP	C6N-C5N	4.18	1.40	1.33
3	B	381	NDP	C4N-C3N	-3.17	1.43	1.49
3	B	381	NDP	C4N-C5N	-2.87	1.41	1.48
3	B	381	NDP	C2A-N3A	2.72	1.36	1.32
3	B	381	NDP	C8A-N7A	-2.07	1.31	1.34

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	381	NDP	PN-O3-PA	3.13	143.58	132.83
3	B	381	NDP	C1D-N1N-C2N	-2.79	116.47	121.11
3	B	381	NDP	C4A-C5A-N7A	2.26	111.76	109.40

There are no chirality outliers.

All (11) torsion outliers are listed below:

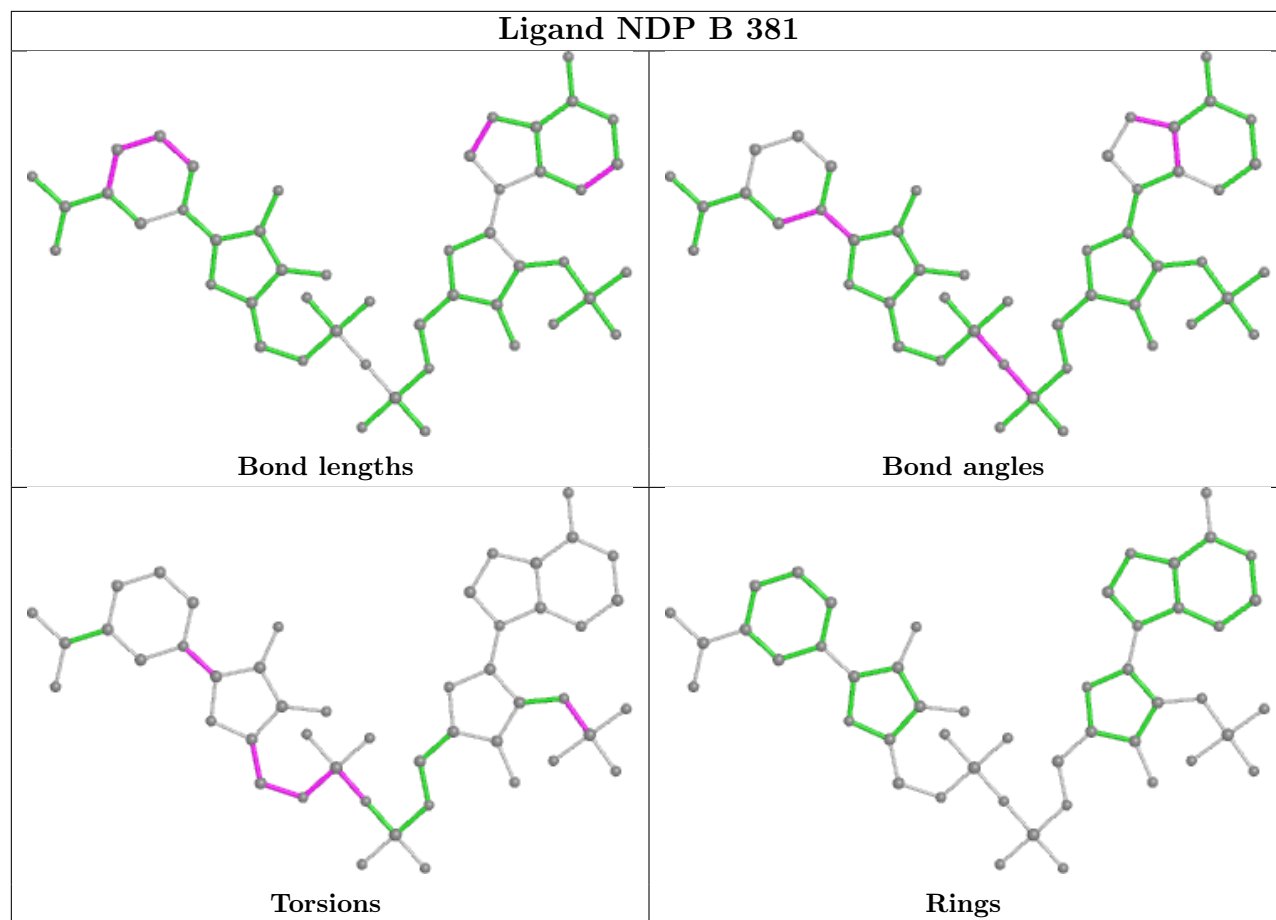
Mol	Chain	Res	Type	Atoms
3	B	381	NDP	C5D-O5D-PN-O1N
3	B	381	NDP	C5D-O5D-PN-O2N
3	B	381	NDP	O4D-C4D-C5D-O5D
3	B	381	NDP	C2D-C1D-N1N-C6N
3	B	381	NDP	C2D-C1D-N1N-C2N
3	B	381	NDP	PA-O3-PN-O5D
3	B	381	NDP	O4D-C1D-N1N-C6N
3	B	381	NDP	C4D-C5D-O5D-PN
3	B	381	NDP	O4D-C1D-N1N-C2N
3	B	381	NDP	C2B-O2B-P2B-O1X
3	B	381	NDP	C5D-O5D-PN-O3

There are no ring outliers.

1 monomer is involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	381	NDP	10	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	359/373 (96%)	0.00	0 <span style="border: 1px solid blue; padding: 2px;">100</span> <span style="border: 1px solid blue; padding: 2px;">100</span>	37, 58, 78, 99	0
1	B	359/373 (96%)	0.27	8 (2%) <span style="border: 1px solid gray; padding: 2px;">62</span> <span style="border: 1px solid gray; padding: 2px;">42</span>	45, 66, 98, 128	0
1	C	359/373 (96%)	0.32	17 (4%) <span style="border: 1px solid red; padding: 2px;">31</span> <span style="border: 1px solid red; padding: 2px;">18</span>	41, 70, 99, 122	0
1	D	360/373 (96%)	0.19	10 (2%) <span style="border: 1px solid gray; padding: 2px;">53</span> <span style="border: 1px solid gray; padding: 2px;">34</span>	44, 66, 110, 123	0
All	All	1437/1492 (96%)	0.20	35 (2%) <span style="border: 1px solid gray; padding: 2px;">59</span> <span style="border: 1px solid gray; padding: 2px;">39</span>	37, 64, 99, 128	0

All (35) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	209	ASN	7.5
1	C	86	LEU	5.3
1	C	208	PRO	5.0
1	B	209	ASN	5.0
1	D	209	ASN	4.6
1	C	169	TRP	3.6
1	B	208	PRO	3.2
1	B	207	LEU	3.2
1	B	92	ILE	3.1
1	C	105	LEU	3.1
1	C	29	VAL	3.0
1	D	310	PHE	2.8
1	C	5	TYR	2.8
1	D	169	TRP	2.8
1	C	119	ILE	2.7
1	D	309	ILE	2.7
1	C	92	ILE	2.7
1	C	43	LEU	2.4
1	C	12	LEU	2.4
1	C	123	GLU	2.3
1	C	67	ILE	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	207	LEU	2.3
1	D	312	PHE	2.3
1	B	257	ALA	2.3
1	C	81	PRO	2.3
1	D	241	ILE	2.3
1	C	77	TYR	2.2
1	C	133	LEU	2.2
1	D	311	TYR	2.2
1	B	260	VAL	2.1
1	B	79	LYS	2.1
1	B	316	LEU	2.1
1	D	354	LEU	2.0
1	C	68	TYR	2.0
1	D	242	PHE	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](#)

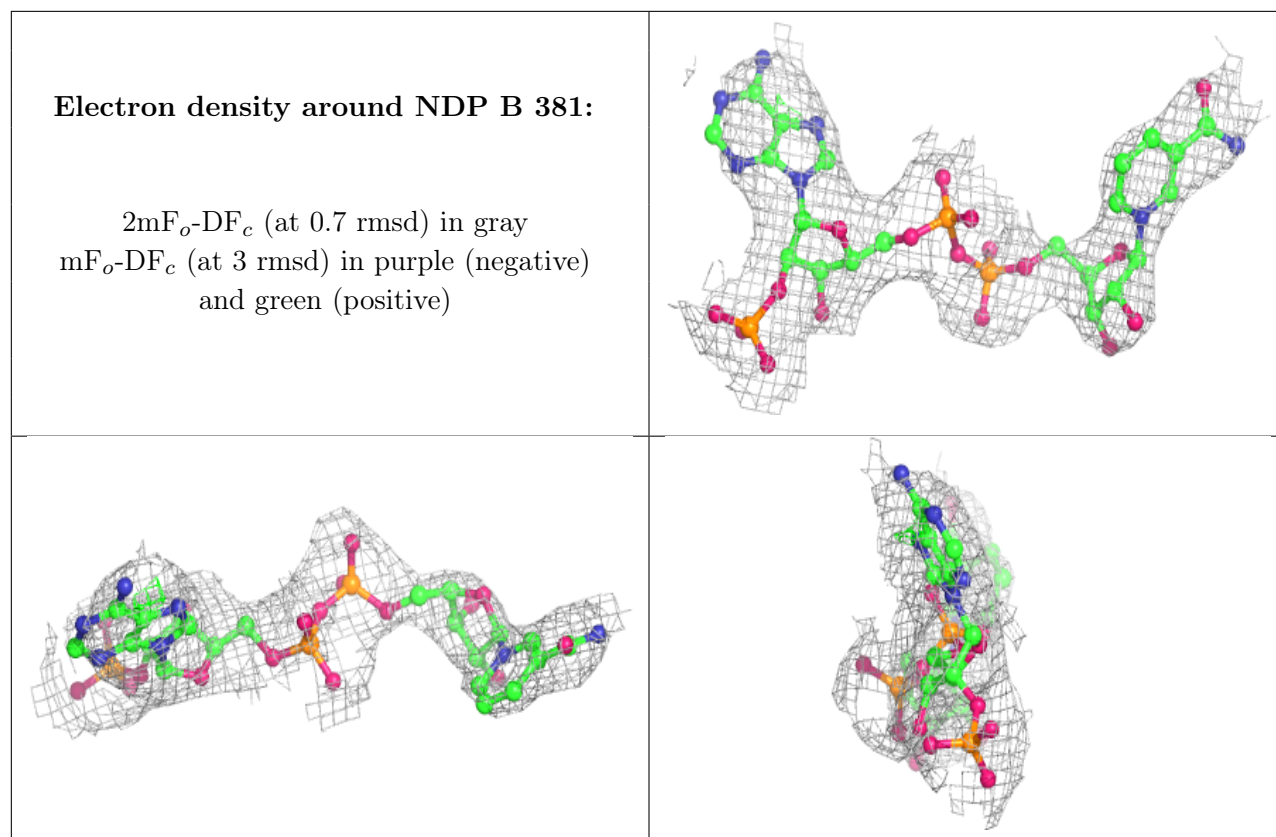
There are no monosaccharides in this entry.

## 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( $\text{\AA}^2$ )	Q<0.9
3	NDP	B	381	48/48	0.92	0.22	76,85,88,91	0
2	ZN	D	1360	1/1	0.97	0.15	78,78,78,78	0
2	ZN	C	1360	1/1	0.98	0.12	92,92,92,92	0
2	ZN	B	1360	1/1	0.99	0.10	63,63,63,63	0
2	ZN	A	1360	1/1	0.99	0.18	73,73,73,73	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



## 6.5 Other polymers [i](#)

There are no such residues in this entry.