



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 20, 2023 – 03:29 PM EDT

PDB ID : 2ICY
Title : Crystal Structure of a Putative UDP-glucose Pyrophosphorylase from Arabidopsis Thaliana with Bound UDP-glucose
Authors : McCoy, J.G.; Wesenberg, G.E.; Phillips Jr., G.N.; Bitto, E.; Bingman, C.A.; Center for Eukaryotic Structural Genomics (CESG)
Deposited on : 2006-09-13
Resolution : 1.64 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35
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) : 2.35

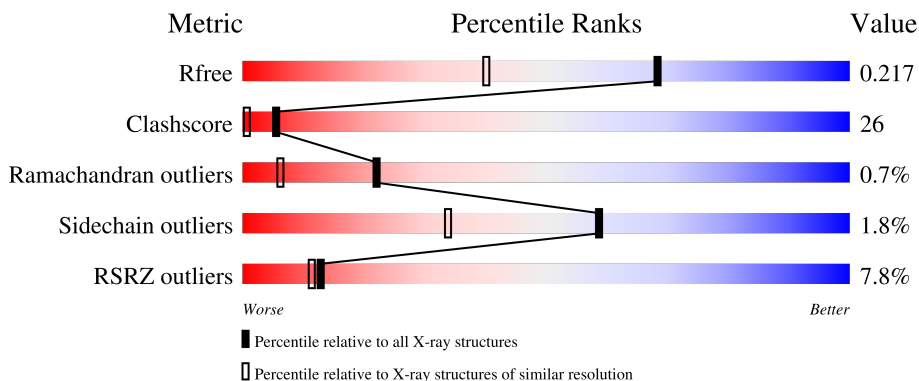
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION


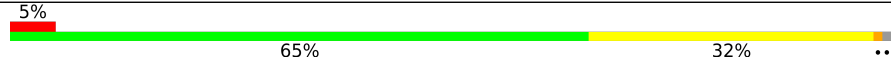
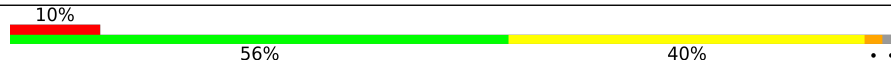

The reported resolution of this entry is 1.64 Å.

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	3122 (1.66-1.62)
Clashscore	141614	3268 (1.66-1.62)
Ramachandran outliers	138981	3215 (1.66-1.62)
Sidechain outliers	138945	3215 (1.66-1.62)
RSRZ outliers	127900	3079 (1.66-1.62)

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

Mol	Chain	Length	Quality of chain
1	1-A	469	
1	1-B	469	
1	2-A	469	
1	2-B	469	

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 16171 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.

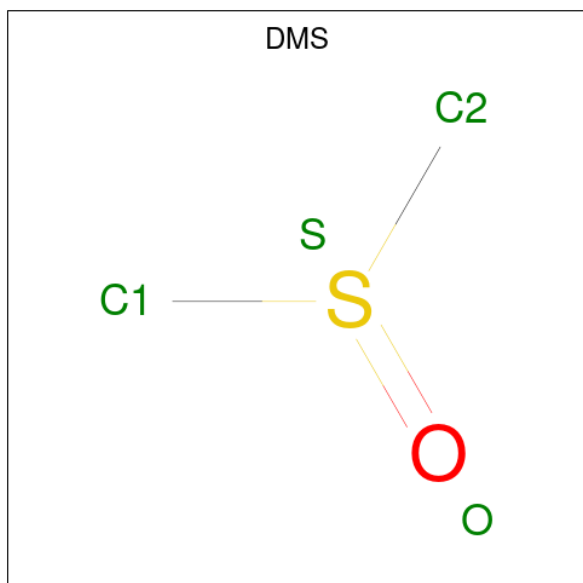
- Molecule 1 is a protein called Probable UTP-glucose-1-phosphate uridylyltransferase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	1-A	456	Total 3550	C 2275	N 587	O 678	S 10	0	0	0
1	2-A	459	Total 3574	C 2289	N 593	O 682	S 10	0	0	0
1	1-B	463	Total 3602	C 2305	N 597	O 690	S 10	0	0	0
1	2-B	463	Total 3602	C 2305	N 597	O 690	S 10	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

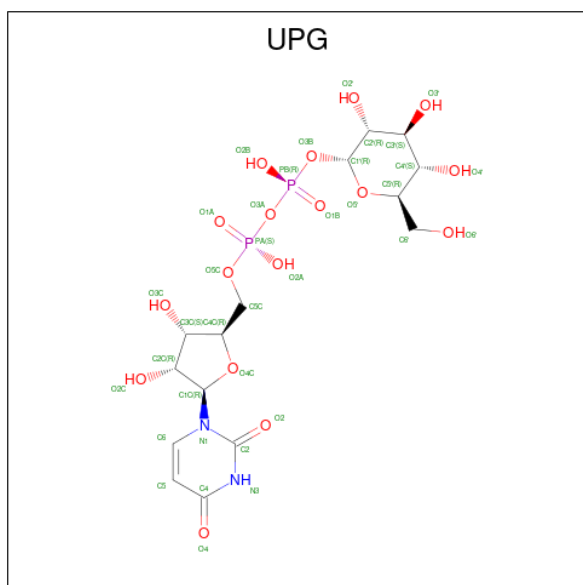
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	SER	-	cloning artifact	UNP Q9M9P3
B	1	SER	-	cloning artifact	UNP Q9M9P3

- Molecule 2 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C₂H₆OS).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	1-A	1	Total C O S 4 2 1 1	0	0
2	2-A	1	Total C O S 4 2 1 1	0	0

- Molecule 3 is URIDINE-5'-DIPHOSPHATE-GLUCOSE (three-letter code: UPG) (formula: $C_{15}H_{24}N_2O_{17}P_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	1-A	1	Total C N O P 36 15 2 17 2	0	0
3	2-A	1	Total C N O P 36 15 2 17 2	0	0
3	1-B	1	Total C N O P 36 15 2 17 2	0	0

- Molecule 4

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
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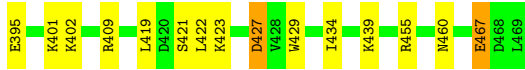
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	1-A	356	Total O 356 356	0	0
5	2-A	356	Total O 356 356	0	0

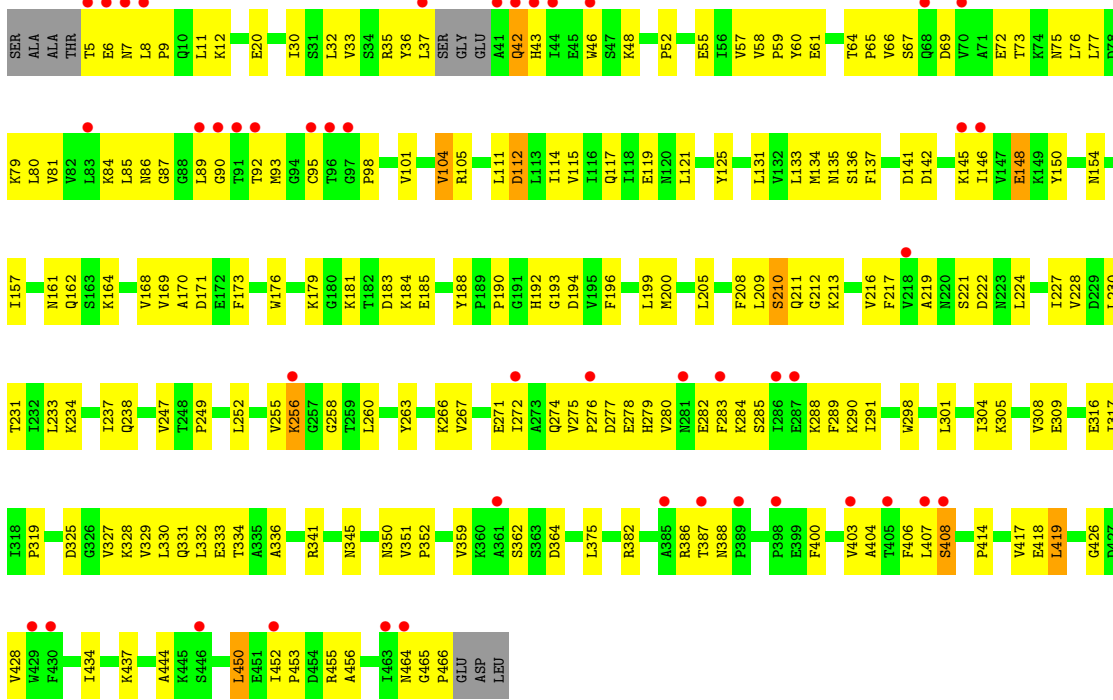
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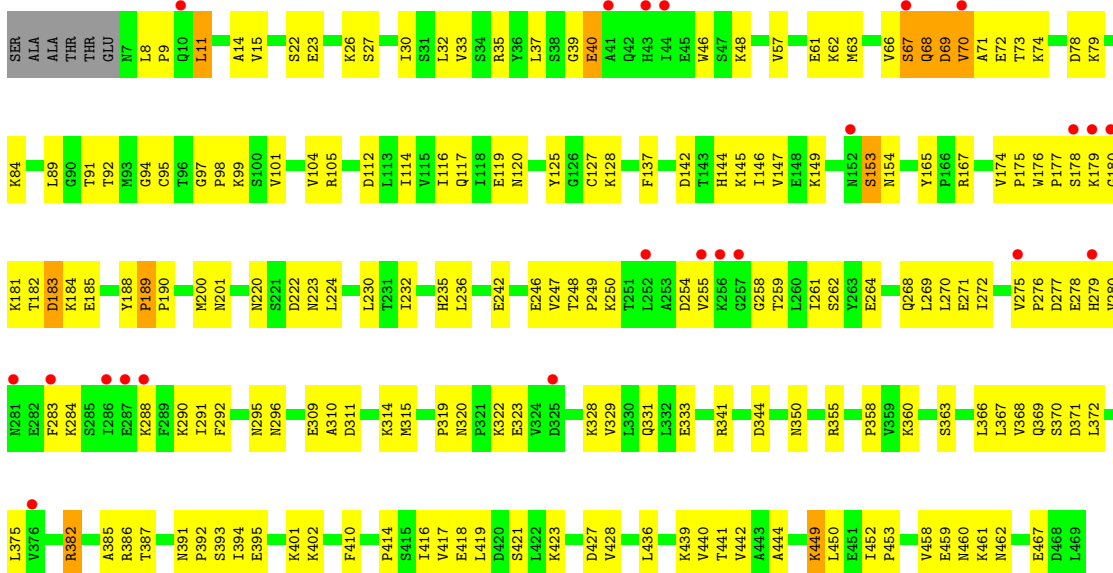
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	1-B	492	Total	O	0	0
			492	492		
5	2-B	502	Total	O	0	0
			502	502		



● Molecule 1: Probable UTP-glucose-1-phosphate uridylyltransferase 2



● Molecule 1: Probable UTP-glucose-1-phosphate uridylyltransferase 2



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	188.01Å 59.71Å 89.76Å 90.00° 100.32° 90.00°	Depositor
Resolution (Å)	38.25 – 1.64 38.25 – 1.64	Depositor EDS
% Data completeness (in resolution range)	99.4 (38.25-1.64) 99.4 (38.25-1.64)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.27 (at 1.64Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.183 , 0.223 0.174 , 0.217	Depositor DCC
R_{free} test set	5964 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	21.9	Xtrriage
Anisotropy	0.347	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 49.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	16171	wwPDB-VP
Average B, all atoms (Å ²)	26.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.06% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: U5P, DMS, UPG

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	1-A	0.81	1/3617 (0.0%)	0.87	2/4905 (0.0%)
1	1-B	0.88	0/3671	0.96	5/4979 (0.1%)
1	2-A	0.84	2/3642 (0.1%)	0.92	10/4939 (0.2%)
1	2-B	0.87	0/3671	0.95	4/4979 (0.1%)
All	All	0.85	3/14601 (0.0%)	0.93	21/19802 (0.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1-A	63	MET	SD-CE	-6.66	1.40	1.77
1	2-A	148	GLU	CB-CG	5.32	1.62	1.52
1	2-A	316	GLU	CG-CD	5.14	1.59	1.51

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1-B	409	ARG	NE-CZ-NH1	8.58	124.59	120.30
1	2-A	419	LEU	CA-CB-CG	7.63	132.86	115.30
1	1-B	427	ASP	CB-CG-OD1	7.42	124.98	118.30
1	2-A	224	LEU	CB-CG-CD1	-7.00	99.11	111.00
1	2-A	224	LEU	CB-CG-CD2	6.54	122.11	111.00
1	1-B	409	ARG	NE-CZ-NH2	-6.53	117.03	120.30
1	2-B	449	LYS	N-CA-C	-6.12	94.47	111.00
1	1-B	371	ASP	CB-CG-OD2	-5.98	112.92	118.30
1	2-B	68	GLN	N-CA-C	5.92	126.99	111.00
1	1-B	427	ASP	CB-CG-OD2	-5.64	113.22	118.30
1	2-A	222	ASP	CB-CG-OD1	5.58	123.32	118.30
1	2-A	450	LEU	CA-CB-CG	5.56	128.10	115.30
1	2-A	256	LYS	CD-CE-NZ	5.55	124.46	111.70
1	2-A	199	LEU	CB-CG-CD1	-5.42	101.79	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2-A	104	VAL	CB-CA-C	-5.38	101.17	111.40
1	1-A	105	ARG	NE-CZ-NH1	5.30	122.95	120.30
1	1-A	296	ASN	N-CA-C	-5.25	96.82	111.00
1	2-B	189	PRO	N-CA-C	-5.17	98.65	112.10
1	2-B	382	ARG	NE-CZ-NH1	-5.11	117.75	120.30
1	2-A	85	LEU	N-CA-C	-5.01	97.46	111.00
1	2-A	112	ASP	CB-CG-OD2	-5.00	113.80	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	1-A	3550	0	3630	177	0
1	1-B	3602	0	3673	168	0
1	2-A	3574	0	3650	217	0
1	2-B	3602	0	3673	193	0
2	1-A	4	0	6	0	0
2	2-A	4	0	6	0	0
3	1-A	36	0	22	10	0
3	1-B	36	0	22	3	0
3	2-A	36	0	22	2	0
4	2-B	21	0	11	1	0
5	1-A	356	0	0	28	0
5	1-B	492	0	0	34	0
5	2-A	356	0	0	28	0
5	2-B	502	0	0	44	0
All	All	16171	0	14715	755	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 26.

All (755) 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:224:LEU:HD13	1:B:380:VAL:HG21	1.12	1.10
1:A:60:TYR:HB2	1:A:350:ASN:O	1.52	1.09
1:B:77:LEU:HD13	1:B:127:CYS:SG	1.93	1.07
1:B:224:LEU:CD1	1:B:380:VAL:HG21	1.87	1.05
1:A:80:LEU:HD11	1:A:217:PHE:HB2	1.39	1.05
1:B:224:LEU:HD13	1:B:380:VAL:CG2	1.87	1.03
1:B:66:VAL:HB	5:B:1155:HOH:O	1.60	1.01
1:B:92:THR:O	1:B:401:LYS:HE2	1.60	1.00
1:B:11:LEU:HD11	1:B:33:VAL:HG11	1.47	0.97
1:A:60:TYR:HB2	1:A:351:VAL:HA	1.46	0.96
1:A:450:LEU:HD21	1:A:465:GLY:HA2	1.46	0.95
1:A:76:LEU:HD11	1:A:234:LYS:HB2	1.49	0.94
1:A:77:LEU:HG	1:A:230:LEU:HD21	1.49	0.94
1:A:60:TYR:CE1	1:A:231:THR:HB	2.04	0.93
1:A:60:TYR:CB	1:A:350:ASN:O	2.17	0.92
1:A:80:LEU:HD11	1:A:217:PHE:CB	2.00	0.91
1:B:92:THR:HB	5:B:1309:HOH:O	1.70	0.91
1:B:11:LEU:HD22	1:B:30:ILE:CD1	2.00	0.91
1:B:74:LYS:HD2	5:B:1128:HOH:O	1.71	0.91
1:A:73:THR:HG23	1:A:230:LEU:CD1	2.01	0.91
1:A:60:TYR:N	1:A:350:ASN:O	2.05	0.90
1:A:86:ASN:ND2	1:A:135:ASN:OD1	2.05	0.89
1:A:168:VAL:O	1:A:329:VAL:HA	1.72	0.89
1:B:184:LYS:HG3	1:B:185:GLU:H	1.37	0.89
1:A:7:ASN:OD1	1:A:9:PRO:HD2	1.73	0.89
1:A:71:ALA:HA	1:A:74:LYS:HE2	1.54	0.89
1:A:356:PHE:CE2	5:A:997:HOH:O	2.25	0.87
1:A:59:PRO:HA	1:A:350:ASN:HB3	1.53	0.87
1:A:77:LEU:CD2	1:A:228:VAL:HG11	2.04	0.87
1:A:356:PHE:HE2	5:A:997:HOH:O	1.57	0.86
1:A:73:THR:HG23	1:A:230:LEU:HD13	1.59	0.85
1:B:35:ARG:HD3	1:B:314:LYS:HD3	1.59	0.84
1:A:109:THR:OG1	1:A:112:ASP:OD2	1.96	0.84
1:A:64:THR:O	1:A:231:THR:HG23	1.77	0.83
1:B:258:GLY:HA3	1:B:271:GLU:OE1	1.77	0.83
1:A:200:MET:SD	1:A:205:LEU:HD13	2.19	0.83
1:B:35:ARG:HB2	1:B:317:ILE:HD11	1.60	0.82
1:B:70:VAL:HA	5:B:1250:HOH:O	1.77	0.82
1:B:387:THR:N	5:B:1016:HOH:O	2.12	0.82
1:A:318:ILE:HB	1:A:333:GLU:HG3	1.60	0.82
1:A:60:TYR:CD2	1:A:352:PRO:HD3	2.15	0.82
1:A:398:PRO:HA	1:A:401:LYS:HG3	1.61	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:366:LEU:C	1:B:366:LEU:HD23	2.00	0.81
1:B:11:LEU:CD1	1:B:33:VAL:HG11	2.11	0.81
1:A:192:HIS:CE1	1:A:336:ALA:H	1.99	0.81
1:A:293:ASN:O	3:A:901:UPG:O4'	1.98	0.81
1:A:58:VAL:O	1:A:350:ASN:N	2.11	0.80
1:A:5:THR:HB	1:A:173:PHE:HB3	1.63	0.80
1:B:79:LYS:HA	1:B:213:LYS:HA	1.61	0.80
1:A:44:ILE:HG21	1:A:274:GLN:O	1.80	0.80
1:B:14:ALA:HB1	1:B:178:SER:OG	1.83	0.79
1:A:93:MET:CE	1:A:99:LYS:HE3	2.12	0.79
1:B:184:LYS:HG3	1:B:185:GLU:N	1.97	0.79
1:B:240:LYS:HE2	5:B:1364:HOH:O	1.81	0.79
1:B:259:THR:HG21	1:B:289:PHE:HD1	1.47	0.79
1:B:370:SER:CA	5:B:1011:HOH:O	2.30	0.78
1:A:119:GLU:HG3	1:A:154:ASN:H	1.49	0.78
1:A:386:ARG:HB2	1:A:417:VAL:HG22	1.64	0.77
1:B:117:GLN:NE2	5:B:937:HOH:O	2.16	0.77
1:A:190:PRO:O	1:A:333:GLU:HB2	1.84	0.77
1:B:146:ILE:O	1:B:149:LYS:HE2	1.85	0.76
1:B:357:LEU:HD21	1:B:368:VAL:HG12	1.66	0.76
1:A:32:LEU:HG	1:A:317:ILE:HD12	1.68	0.76
1:B:311:ASP:OD1	5:B:1260:HOH:O	2.03	0.76
1:A:85:LEU:HB3	3:A:901:UPG:H1C	1.65	0.76
1:B:184:LYS:HD3	5:B:1067:HOH:O	1.86	0.76
1:B:116:ILE:HG22	1:B:378:GLY:HA3	1.68	0.76
1:A:382:ARG:HG3	5:A:1114:HOH:O	1.84	0.76
1:B:120:ASN:ND2	1:B:377:ASP:O	2.19	0.75
1:A:60:TYR:CB	1:A:351:VAL:HA	2.16	0.75
1:A:356:PHE:HZ	5:A:1192:HOH:O	1.68	0.75
1:A:76:LEU:O	1:A:233:LEU:HD21	1.86	0.75
1:A:64:THR:O	1:A:234:LYS:HD3	1.87	0.75
1:B:73:THR:OG1	5:B:928:HOH:O	2.04	0.75
1:A:73:THR:CG2	1:A:230:LEU:HD13	2.17	0.75
1:A:250:LYS:HE3	1:A:283:PHE:O	1.87	0.75
1:B:153:SER:O	5:B:1203:HOH:O	2.05	0.74
1:B:220:ASN:ND2	5:B:996:HOH:O	2.20	0.74
1:A:387:THR:HG23	1:A:388:ASN:H	1.50	0.74
1:B:222:ASP:OD1	1:B:358:PRO:CB	2.35	0.74
1:B:7:ASN:HA	1:B:10:GLN:OE1	1.86	0.74
1:A:430:PHE:CE2	1:A:452:ILE:HD12	2.22	0.74
1:B:259:THR:O	1:B:270:LEU:N	2.18	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:366:LEU:HD21	1:B:416:ILE:HD13	1.70	0.73
1:A:57:VAL:HA	1:A:348:GLY:O	1.88	0.73
1:B:242:GLU:OE1	1:B:344:ASP:HB2	1.87	0.73
1:A:5:THR:O	1:A:6:GLU:HG3	1.88	0.73
1:A:293:ASN:ND2	3:A:901:UPG:O3'	2.21	0.73
1:A:63:MET:HB2	1:A:231:THR:CG2	2.19	0.73
1:B:116:ILE:HA	1:B:119:GLU:HG2	1.71	0.73
1:B:331:GLN:O	1:B:333:GLU:HG3	1.88	0.72
1:B:370:SER:HA	5:B:1011:HOH:O	1.88	0.72
1:B:441:THR:OG1	1:B:462:ASN:HA	1.88	0.72
1:B:97:GLY:HA3	1:B:142:ASP:OD1	1.88	0.72
1:A:406:PHE:CD1	5:A:1234:HOH:O	2.43	0.72
1:A:89:LEU:HD21	1:A:138:ASN:O	1.89	0.71
1:A:93:MET:HE2	1:A:99:LYS:HE3	1.71	0.71
1:A:366:LEU:HD12	1:A:413:ILE:HG23	1.70	0.71
1:A:433:SER:HB2	1:A:455:ARG:HD2	1.71	0.71
1:B:9:PRO:HB2	1:B:10:GLN:NE2	2.05	0.71
1:B:368:VAL:O	5:B:936:HOH:O	2.09	0.71
1:A:81:VAL:HB	1:A:216:VAL:HG23	1.73	0.71
1:A:141:ASP:O	1:A:145:LYS:HD2	1.90	0.71
1:A:426:GLY:HA3	1:A:444:ALA:HB3	1.73	0.71
1:A:140:HIS:CD2	1:A:161:ASN:HD21	2.09	0.71
1:B:89:LEU:HB3	1:B:91:THR:HG23	1.72	0.71
1:B:79:LYS:NZ	1:B:214:GLU:OE2	2.23	0.70
1:A:266:LYS:HG3	5:A:1108:HOH:O	1.91	0.70
1:B:32:LEU:HD22	1:B:165:TYR:HE2	1.56	0.70
1:B:371:ASP:N	5:B:1011:HOH:O	2.24	0.70
1:A:57:VAL:HG11	1:A:291:ILE:HD13	1.72	0.70
1:A:119:GLU:HG3	1:A:154:ASN:N	2.07	0.70
1:A:148:GLU:OE2	5:A:1069:HOH:O	2.10	0.70
1:A:176:TRP:CH2	1:A:181:LYS:HE2	2.27	0.70
1:B:259:THR:HG21	1:B:289:PHE:CD1	2.27	0.69
1:B:79:LYS:O	1:B:214:GLU:N	2.21	0.69
1:A:75:ASN:HB3	5:A:1091:HOH:O	1.92	0.69
1:A:196:PHE:HE2	1:A:336:ALA:HA	1.58	0.69
1:A:227:ILE:HD13	5:A:1032:HOH:O	1.92	0.69
1:B:11:LEU:HD22	1:B:30:ILE:HD13	1.73	0.69
1:B:200:MET:HE1	1:B:205:LEU:HD22	1.73	0.69
1:B:259:THR:O	1:B:269:LEU:HD12	1.93	0.69
1:B:68:GLN:HB2	5:B:1188:HOH:O	1.93	0.69
1:A:69:ASP:O	5:A:975:HOH:O	2.10	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:19:THR:HA	5:A:1118:HOH:O	1.91	0.68
1:A:56:ILE:O	1:A:347:ILE:HB	1.94	0.68
1:B:10:GLN:CD	1:B:10:GLN:H	1.97	0.68
1:A:84:LYS:HB3	1:A:221:SER:HB3	1.75	0.68
1:A:81:VAL:CG2	1:A:213:LYS:HG3	2.23	0.68
1:A:33:VAL:HA	1:A:332:LEU:CD1	2.24	0.68
1:B:174:VAL:HG21	1:B:179:LYS:HD2	1.74	0.68
1:A:386:ARG:NH2	1:A:388:ASN:HB3	2.09	0.68
1:B:223:ASN:ND2	1:B:355:ARG:O	2.19	0.68
1:B:171:ASP:HB2	1:B:172:GLU:OE2	1.93	0.67
1:B:105:ARG:HD2	5:B:935:HOH:O	1.93	0.67
1:A:71:ALA:HA	1:A:74:LYS:CE	2.24	0.67
1:A:230:LEU:HG	5:A:993:HOH:O	1.93	0.67
1:A:234:LYS:O	1:A:238:GLN:HG2	1.95	0.67
1:B:142:ASP:HA	1:B:145:LYS:HD2	1.77	0.67
1:A:6:GLU:HB3	5:A:1257:HOH:O	1.93	0.67
1:B:222:ASP:OD1	1:B:358:PRO:CA	2.43	0.67
1:A:294:THR:O	3:A:901:UPG:H6'1	1.95	0.67
1:A:193:GLY:HA3	1:A:334:THR:O	1.94	0.67
1:B:382:ARG:NH1	1:B:391:ASN:OD1	2.20	0.67
1:B:11:LEU:HD12	1:B:175:PRO:HD3	1.78	0.66
1:A:171:ASP:N	5:A:1073:HOH:O	2.15	0.66
1:B:167:ARG:NH1	1:B:185:GLU:O	2.27	0.66
1:A:169:VAL:HG12	1:A:171:ASP:OD2	1.96	0.66
1:B:169:VAL:HG11	1:B:172:GLU:OE1	1.96	0.66
1:A:98:PRO:HB2	5:A:1180:HOH:O	1.95	0.66
1:A:135:ASN:O	1:A:162:GLN:N	2.29	0.66
1:A:238:GLN:HG3	5:A:1140:HOH:O	1.96	0.66
1:B:57:VAL:HG11	1:B:291:ILE:HD13	1.78	0.66
1:B:8:LEU:HD13	1:B:37:LEU:HD12	1.76	0.65
1:A:192:HIS:ND1	1:A:336:ALA:N	2.36	0.65
1:A:104:VAL:O	1:A:105:ARG:HB3	1.96	0.65
1:B:32:LEU:HD12	1:B:317:ILE:CD1	2.26	0.65
1:B:54:ASP:O	5:B:1038:HOH:O	2.15	0.65
1:B:256:LYS:CD	1:B:284:LYS:HE2	2.27	0.65
1:A:294:THR:C	3:A:901:UPG:H6'1	2.16	0.65
1:A:193:GLY:HA3	1:A:334:THR:C	2.16	0.65
1:A:406:PHE:HD1	5:A:1234:HOH:O	1.79	0.65
1:A:11:LEU:HD22	1:A:33:VAL:HG11	1.78	0.65
1:A:35:ARG:NH2	1:A:317:ILE:HD11	2.11	0.65
1:A:318:ILE:HB	1:A:333:GLU:CG	2.26	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:72:GLU:OE2	1:A:234:LYS:HD2	1.97	0.65
1:A:76:LEU:HB3	1:A:233:LEU:HD23	1.79	0.65
1:B:95:CYS:HA	5:B:1047:HOH:O	1.96	0.64
1:A:111:LEU:HB3	5:A:1251:HOH:O	1.97	0.64
1:A:188:TYR:CZ	1:A:331:GLN:HA	2.32	0.64
1:B:48:LYS:NZ	1:B:264:GLU:OE2	2.28	0.64
1:A:76:LEU:HD21	1:A:234:LYS:HA	1.79	0.64
1:A:77:LEU:HD21	1:A:228:VAL:HG11	1.79	0.63
1:A:272:ILE:HD13	1:A:272:ILE:N	2.13	0.63
1:B:402:LYS:HD2	5:B:1340:HOH:O	1.99	0.63
1:A:170:ALA:N	1:A:328:LYS:O	2.18	0.63
1:A:93:MET:HE1	1:A:99:LYS:HE3	1.79	0.63
1:A:60:TYR:CA	1:A:350:ASN:O	2.46	0.63
1:A:60:TYR:CD1	1:A:351:VAL:HG12	2.33	0.63
1:A:168:VAL:O	1:A:329:VAL:CA	2.45	0.63
1:A:382:ARG:NH2	1:A:388:ASN:O	2.31	0.63
1:A:77:LEU:CG	1:A:230:LEU:HD21	2.26	0.63
1:B:69:ASP:O	1:B:72:GLU:N	2.20	0.63
1:B:180:GLY:O	1:B:182:THR:HG23	1.98	0.63
1:B:222:ASP:OD1	1:B:358:PRO:HA	1.99	0.63
1:B:256:LYS:HD2	1:B:284:LYS:HE2	1.81	0.62
1:B:69:ASP:C	1:B:71:ALA:N	2.51	0.62
1:A:333:GLU:HB3	5:A:937:HOH:O	1.98	0.62
1:B:355:ARG:HD2	5:B:1054:HOH:O	1.99	0.62
1:A:6:GLU:HG2	1:A:37:LEU:HD22	1.80	0.62
1:B:105:ARG:HG3	1:B:375:LEU:CD2	2.29	0.62
1:B:259:THR:HG22	1:B:270:LEU:O	1.98	0.62
1:A:7:ASN:ND2	1:A:10:GLN:OE1	2.30	0.62
1:A:64:THR:HG23	5:A:1010:HOH:O	2.00	0.62
1:B:322:LYS:CD	1:B:331:GLN:HE22	2.13	0.62
1:A:5:THR:HG22	1:A:6:GLU:N	2.14	0.62
1:B:116:ILE:CG2	1:B:378:GLY:HA3	2.30	0.62
1:B:285:SER:C	1:B:287:GLU:H	2.03	0.62
1:A:121:LEU:HD21	1:A:228:VAL:HB	1.80	0.62
1:A:387:THR:HG23	1:A:388:ASN:N	2.15	0.61
1:A:60:TYR:CZ	1:A:231:THR:HB	2.34	0.61
1:B:77:LEU:CD1	1:B:127:CYS:SG	2.82	0.61
1:A:272:ILE:HD13	1:A:272:ILE:H	1.64	0.61
1:A:432:SER:OG	1:A:454:ASP:OD2	2.07	0.61
1:B:417:VAL:HG13	1:B:418:GLU:HG3	1.81	0.61
1:A:77:LEU:HG	1:A:230:LEU:CD2	2.27	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:192:HIS:NE2	3:A:901:UPG:O1B	2.27	0.61
1:A:60:TYR:HE1	1:A:229:ASP:OD1	1.84	0.60
1:A:196:PHE:CD1	1:A:304:ILE:HG12	2.36	0.60
1:B:78:ASP:O	1:B:213:LYS:HD3	2.00	0.60
1:A:5:THR:HB	1:A:173:PHE:HB2	1.82	0.60
1:A:33:VAL:HA	1:A:332:LEU:HD11	1.83	0.60
1:B:220:ASN:OD1	1:B:295:ASN:ND2	2.29	0.60
1:A:6:GLU:N	1:A:6:GLU:OE1	2.35	0.60
1:A:295:ASN:OD1	3:A:901:UPG:H2'	2.01	0.60
1:A:86:ASN:C	1:A:134:MET:O	2.39	0.60
1:A:305:LYS:O	1:A:309:GLU:HG3	2.02	0.60
1:A:81:VAL:HG22	1:A:213:LYS:HG3	1.83	0.60
1:B:57:VAL:HG11	1:B:291:ILE:CD1	2.32	0.60
1:B:69:ASP:O	1:B:71:ALA:N	2.35	0.60
1:A:44:ILE:HG23	1:A:44:ILE:O	2.01	0.59
1:A:73:THR:CG2	1:A:230:LEU:CD1	2.76	0.59
1:A:386:ARG:HB2	1:A:417:VAL:CG2	2.32	0.59
1:A:320:ASN:HA	5:A:1200:HOH:O	2.03	0.59
1:B:455:ARG:NH1	5:B:1352:HOH:O	2.34	0.59
1:B:26:LYS:O	1:B:30:ILE:HG12	2.02	0.59
1:A:386:ARG:CZ	1:A:388:ASN:HB3	2.32	0.59
1:B:92:THR:O	1:B:401:LYS:CE	2.44	0.59
1:B:427:ASP:HB3	1:B:449:LYS:HA	1.84	0.59
1:A:209:LEU:HD21	1:A:301:LEU:CB	2.33	0.59
1:A:72:GLU:OE2	1:A:234:LYS:NZ	2.28	0.59
1:A:65:PRO:HA	1:A:231:THR:CG2	2.33	0.59
1:A:87:GLY:HA3	1:A:162:GLN:OE1	2.03	0.59
1:B:247:VAL:HG21	1:B:291:ILE:HD12	1.84	0.59
1:B:112:ASP:OD1	1:B:149:LYS:NZ	2.27	0.58
1:B:373:TYR:HA	1:B:381:THR:O	2.03	0.58
1:A:464:ASN:O	5:A:1176:HOH:O	2.17	0.58
1:B:278:GLU:H	1:B:278:GLU:CD	2.07	0.58
1:A:84:LYS:HG3	1:A:114:ILE:HD13	1.86	0.58
1:B:105:ARG:NH2	5:B:1336:HOH:O	2.36	0.58
1:A:255:VAL:HG13	1:A:284:LYS:HE3	1.85	0.58
1:B:39:GLY:O	1:B:40:GLU:O	2.22	0.58
1:A:398:PRO:HB3	1:A:401:LYS:HE3	1.84	0.58
1:A:119:GLU:HA	1:A:154:ASN:O	2.03	0.58
1:A:56:ILE:O	1:A:347:ILE:CB	2.51	0.58
1:A:295:ASN:HB2	3:A:901:UPG:O5'	2.03	0.58
1:A:319:PRO:HD2	5:A:1053:HOH:O	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:162:GLN:HB2	1:B:194:ASP:OD2	2.04	0.58
1:A:164:LYS:NZ	5:A:1047:HOH:O	2.31	0.58
1:A:62:LYS:HG2	5:A:1151:HOH:O	2.03	0.58
1:A:450:LEU:CD2	1:A:466:PRO:HD3	2.34	0.58
1:B:171:ASP:CB	1:B:172:GLU:OE2	2.52	0.57
1:A:45:GLU:HB2	1:A:48:LYS:HD3	1.84	0.57
1:A:263:TYR:OH	5:A:1124:HOH:O	2.17	0.57
1:A:35:ARG:CZ	1:A:314:LYS:HA	2.34	0.57
1:A:63:MET:HB2	1:A:231:THR:HG23	1.84	0.57
1:B:69:ASP:C	1:B:71:ALA:H	2.08	0.57
1:A:60:TYR:CG	1:A:352:PRO:HD3	2.38	0.57
1:A:345:ASN:ND2	5:A:1225:HOH:O	2.35	0.57
1:B:358:PRO:O	5:B:1090:HOH:O	2.17	0.57
1:A:144:HIS:ND1	5:A:1166:HOH:O	2.32	0.57
1:B:29:PHE:O	1:B:33:VAL:HG23	2.05	0.57
1:A:60:TYR:HD1	1:A:351:VAL:HG12	1.70	0.57
1:A:196:PHE:CE2	1:A:336:ALA:HA	2.38	0.57
1:B:242:GLU:CD	1:B:344:ASP:HB2	2.25	0.56
1:A:171:ASP:OD2	1:A:172:GLU:N	2.38	0.56
1:B:211:GLN:O	5:B:911:HOH:O	2.17	0.56
1:A:5:THR:CG2	1:A:6:GLU:N	2.68	0.56
1:A:135:ASN:HB3	1:A:139:THR:OG1	2.05	0.56
1:B:8:LEU:HB3	1:B:9:PRO:HD3	1.88	0.56
1:A:351:VAL:HB	1:A:352:PRO:HD2	1.87	0.56
1:B:458:VAL:HG13	1:B:461:LYS:HD3	1.87	0.56
1:A:196:PHE:HB3	1:A:304:ILE:HG23	1.87	0.56
1:B:353:ARG:NH1	5:B:1002:HOH:O	2.32	0.56
1:A:193:GLY:CA	1:A:334:THR:O	2.53	0.56
1:A:162:GLN:HB2	1:A:194:ASP:OD2	2.06	0.56
1:A:6:GLU:CG	1:A:37:LEU:HD22	2.36	0.56
1:B:11:LEU:HD22	1:B:33:VAL:HG11	1.88	0.56
1:B:249:PRO:HA	1:B:290:LYS:O	2.06	0.55
1:B:261:ILE:CG1	1:B:268:GLN:HG2	2.36	0.55
1:B:35:ARG:CB	1:B:317:ILE:HD11	2.35	0.55
1:B:272:ILE:HA	1:B:275:VAL:HG23	1.89	0.55
1:B:15:VAL:HG11	1:B:30:ILE:HD11	1.86	0.55
1:A:356:PHE:CZ	5:A:1192:HOH:O	2.52	0.55
1:A:193:GLY:N	1:A:334:THR:O	2.40	0.55
1:B:250:LYS:NZ	1:B:254:ASP:O	2.33	0.55
1:A:146:ILE:O	1:A:149:LYS:HG2	2.07	0.55
1:B:395:GLU:HG3	5:B:1229:HOH:O	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:170:ALA:HB3	1:B:328:LYS:CB	2.37	0.55
1:B:176:TRP:CE2	1:B:181:LYS:HG2	2.41	0.55
1:A:50:GLN:NE2	5:A:1210:HOH:O	2.39	0.55
1:A:260:LEU:HD11	1:A:267:VAL:HG22	1.89	0.55
1:B:260:LEU:HD22	1:B:267:VAL:HG22	1.88	0.55
1:A:105:ARG:HD2	1:A:375:LEU:HB2	1.88	0.55
1:A:173:PHE:HE1	1:A:330:LEU:CD1	2.19	0.55
1:B:254:ASP:OD2	1:B:292:PHE:CE2	2.59	0.55
1:A:5:THR:CG2	1:A:6:GLU:H	2.20	0.55
1:B:280:VAL:O	1:B:283:PHE:HB3	2.06	0.55
1:A:73:THR:HG23	1:A:230:LEU:HD11	1.86	0.55
1:A:137:PHE:CE1	1:A:164:LYS:HE3	2.42	0.55
1:B:367:LEU:HG	1:B:394:ILE:HG13	1.89	0.54
1:A:65:PRO:HA	1:A:231:THR:HG23	1.88	0.54
1:B:256:LYS:HE3	1:B:284:LYS:HE2	1.89	0.54
1:B:272:ILE:HD11	1:B:280:VAL:HG13	1.90	0.54
1:A:76:LEU:O	1:A:233:LEU:CD2	2.55	0.54
1:B:46:TRP:CH2	1:B:275:VAL:HG13	2.41	0.54
1:A:368:VAL:HG23	1:A:380:VAL:HG11	1.89	0.54
1:A:33:VAL:O	1:A:37:LEU:HG	2.07	0.54
1:B:416:ILE:HG22	1:B:419:LEU:HD22	1.90	0.54
1:A:419:LEU:HD22	1:A:421:SER:N	2.23	0.54
1:B:124:LYS:HE2	1:B:125:TYR:CZ	2.42	0.54
1:A:8:LEU:N	1:A:9:PRO:CD	2.70	0.54
1:B:10:GLN:CD	1:B:10:GLN:N	2.62	0.54
1:A:99:LYS:NZ	1:A:222:ASP:OD2	2.40	0.54
1:A:270:LEU:HA	5:A:1077:HOH:O	2.07	0.54
1:B:36:TYR:OH	1:B:330:LEU:HD11	2.07	0.54
1:B:240:LYS:HE3	5:B:1208:HOH:O	2.07	0.53
1:B:442:VAL:HG11	1:B:452:ILE:HD11	1.90	0.53
1:A:36:TYR:CE1	1:A:319:PRO:HB3	2.43	0.53
1:B:224:LEU:HG	5:B:998:HOH:O	2.08	0.53
1:B:261:ILE:HG13	1:B:268:GLN:HG2	1.89	0.53
1:A:192:HIS:CE1	1:A:336:ALA:N	2.73	0.53
1:A:230:LEU:CG	5:A:993:HOH:O	2.52	0.53
1:B:285:SER:OG	1:B:287:GLU:HB3	2.09	0.53
1:B:323:GLU:HG2	1:B:328:LYS:HG2	1.91	0.53
1:A:42:GLN:O	1:A:43:HIS:CD2	2.62	0.53
1:A:260:LEU:HG	1:A:267:VAL:HG22	1.91	0.53
1:B:444:ALA:HA	1:B:450:LEU:HD22	1.89	0.53
1:A:295:ASN:CG	3:A:901:UPG:H2'	2.30	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:398:PRO:O	1:A:401:LYS:HG3	2.09	0.52
1:B:357:LEU:CD2	1:B:368:VAL:HG12	2.37	0.52
1:B:467:GLU:CD	1:B:467:GLU:H	2.13	0.52
1:B:105:ARG:HG3	1:B:375:LEU:HD22	1.89	0.52
1:A:208:PHE:O	1:A:213:LYS:HB2	2.09	0.52
1:A:260:LEU:HG	1:A:267:VAL:CG2	2.40	0.52
1:A:8:LEU:HD11	1:A:30:ILE:HG23	1.91	0.52
1:B:363:SER:HB2	1:B:394:ILE:CG2	2.40	0.52
1:A:220:ASN:ND2	5:A:1138:HOH:O	2.41	0.52
1:B:360:LYS:NZ	3:B:902:UPG:O1A	2.42	0.52
1:A:137:PHE:CD1	1:A:164:LYS:HE3	2.44	0.52
1:B:370:SER:HB2	5:B:1011:HOH:O	2.09	0.52
1:A:223:ASN:HB2	5:A:1138:HOH:O	2.10	0.52
1:B:258:GLY:O	1:B:292:PHE:HA	2.10	0.52
1:A:76:LEU:CD2	1:A:234:LYS:HA	2.40	0.52
1:B:89:LEU:CD2	1:B:97:GLY:HA2	2.40	0.52
1:A:356:PHE:CZ	5:A:997:HOH:O	2.54	0.52
1:B:23:GLU:O	1:B:27:SER:N	2.41	0.52
1:B:254:ASP:CG	1:B:292:PHE:CE2	2.84	0.52
1:A:228:VAL:HG23	5:A:953:HOH:O	2.08	0.52
1:B:363:SER:HB2	1:B:394:ILE:HB	1.91	0.52
1:B:402:LYS:HB3	5:B:1131:HOH:O	2.10	0.52
1:B:15:VAL:HG12	1:B:26:LYS:HG2	1.90	0.51
1:B:101:VAL:HG12	1:B:146:ILE:HG13	1.92	0.51
1:B:114:ILE:O	1:B:117:GLN:HB2	2.10	0.51
1:A:93:MET:O	1:A:403:VAL:HG23	2.09	0.51
1:A:260:LEU:HD21	1:A:267:VAL:HG21	1.92	0.51
1:B:67:SER:CB	1:B:72:GLU:OE2	2.58	0.51
1:B:341:ARG:HA	5:B:927:HOH:O	2.10	0.51
1:A:92:THR:CG2	1:A:92:THR:O	2.58	0.51
1:B:137:PHE:CD1	1:B:184:LYS:HD2	2.46	0.51
1:A:398:PRO:CA	1:A:401:LYS:HG3	2.38	0.51
1:B:360:LYS:HE2	1:B:360:LYS:HA	1.92	0.51
1:A:200:MET:HG2	1:A:308:VAL:HG11	1.91	0.51
1:A:403:VAL:O	1:A:407:LEU:HG	2.10	0.51
1:B:224:LEU:CG	5:B:998:HOH:O	2.58	0.51
1:A:50:GLN:HB2	1:A:262:SER:HB3	1.92	0.51
1:A:365:LEU:HA	1:A:368:VAL:HG12	1.91	0.51
1:A:419:LEU:HD23	1:A:438:GLY:O	2.11	0.51
1:A:60:TYR:HB2	1:A:350:ASN:C	2.28	0.51
1:B:188:TYR:CD1	1:B:331:GLN:HB3	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:222:ASP:OD1	1:B:358:PRO:HB2	2.09	0.51
1:A:135:ASN:HB3	1:A:139:THR:HG1	1.75	0.51
1:B:11:LEU:CD2	1:B:30:ILE:CD1	2.84	0.51
1:A:89:LEU:HG	5:A:954:HOH:O	2.10	0.51
1:B:370:SER:CB	5:B:1011:HOH:O	2.57	0.51
1:A:60:TYR:CE1	1:A:231:THR:CB	2.88	0.51
1:A:85:LEU:HB3	3:A:901:UPG:C1C	2.39	0.51
1:A:93:MET:HB3	1:A:403:VAL:CG2	2.40	0.51
1:A:162:GLN:HB2	1:A:194:ASP:OD2	2.11	0.51
1:A:400:PHE:HB3	5:A:1234:HOH:O	2.11	0.51
1:B:183:ASP:OD1	1:B:185:GLU:HB2	2.10	0.51
1:B:246:GLU:HB2	1:B:296:ASN:HB2	1.92	0.51
1:A:135:ASN:HD21	1:A:143:THR:HG21	1.76	0.50
1:A:382:ARG:NH2	1:A:389:PRO:O	2.44	0.50
1:B:258:GLY:CA	1:B:271:GLU:OE1	2.55	0.50
1:B:52:PRO:HD2	5:B:1124:HOH:O	2.12	0.50
1:B:105:ARG:NH1	5:B:935:HOH:O	2.44	0.50
1:B:261:ILE:O	1:B:267:VAL:HG23	2.11	0.50
1:B:285:SER:C	1:B:287:GLU:N	2.65	0.50
1:B:302:LYS:HG3	5:B:967:HOH:O	2.11	0.50
1:B:46:TRP:CZ2	1:B:279:HIS:HB3	2.46	0.50
1:B:395:GLU:HB3	1:B:423:LYS:HA	1.94	0.50
1:A:68:GLN:NE2	5:A:1194:HOH:O	2.36	0.50
1:B:322:LYS:HG3	5:B:1167:HOH:O	2.10	0.50
1:A:66:VAL:HG12	1:A:67:SER:O	2.11	0.50
1:B:128:LYS:HZ2	1:B:154:ASN:CG	2.15	0.50
1:B:224:LEU:HD12	5:B:998:HOH:O	2.12	0.50
1:A:5:THR:HG22	1:A:6:GLU:N	2.27	0.50
1:B:104:VAL:O	1:B:369:GLN:HG2	2.12	0.50
1:B:370:SER:OG	1:B:416:ILE:HD11	2.11	0.50
1:B:79:LYS:CA	1:B:213:LYS:HA	2.37	0.50
1:A:93:MET:HB3	1:A:403:VAL:HG23	1.94	0.50
1:A:359:VAL:HA	1:A:364:ASP:HB3	1.94	0.50
1:A:81:VAL:HG23	1:A:213:LYS:HB3	1.93	0.49
1:A:200:MET:CE	1:A:305:LYS:HG3	2.41	0.49
1:A:81:VAL:HB	1:A:216:VAL:HA	1.92	0.49
1:B:70:VAL:CA	5:B:1250:HOH:O	2.45	0.49
1:B:84:LYS:HG3	1:B:114:ILE:HD13	1.92	0.49
1:A:146:ILE:HD13	5:A:1072:HOH:O	2.12	0.49
1:A:173:PHE:CE1	1:A:330:LEU:CD1	2.95	0.49
1:A:285:SER:OG	1:A:288:LYS:HB2	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:PRO:O	1:B:101:VAL:HG22	2.13	0.49
1:A:48:LYS:HB2	1:A:263:TYR:CE1	2.47	0.49
1:B:70:VAL:HG12	5:B:962:HOH:O	2.12	0.49
1:B:366:LEU:HD23	1:B:367:LEU:N	2.27	0.49
1:A:230:LEU:HB2	5:A:993:HOH:O	2.12	0.49
1:B:210:SER:O	5:B:1068:HOH:O	2.19	0.49
1:A:279:HIS:HA	1:A:282:GLU:OE1	2.12	0.49
1:B:167:ARG:HB3	1:B:329:VAL:HB	1.94	0.49
1:B:366:LEU:C	1:B:366:LEU:CD2	2.76	0.49
1:A:272:ILE:H	1:A:272:ILE:CD1	2.26	0.49
1:A:112:ASP:OD1	1:A:150:TYR:OH	2.24	0.49
1:A:190:PRO:O	1:A:333:GLU:CB	2.55	0.49
1:A:209:LEU:HD21	1:A:301:LEU:HB3	1.94	0.49
1:A:81:VAL:HG23	1:A:213:LYS:HG3	1.94	0.49
1:B:105:ARG:NH1	1:B:373:TYR:O	2.45	0.49
1:A:155:VAL:N	5:A:1204:HOH:O	2.46	0.49
1:B:322:LYS:HD3	1:B:331:GLN:HE22	1.77	0.49
1:B:441:THR:HG1	1:B:462:ASN:HA	1.76	0.49
1:A:81:VAL:HG23	1:A:213:LYS:CB	2.42	0.49
1:B:181:LYS:HE3	1:B:185:GLU:HB2	1.95	0.49
1:B:265:GLY:N	5:B:1379:HOH:O	2.34	0.49
1:B:144:HIS:HA	1:B:147:VAL:HG22	1.95	0.49
1:B:393:SER:OG	1:B:421:SER:CB	2.61	0.49
1:A:63:MET:SD	1:A:235:HIS:HB2	2.52	0.48
1:B:372:LEU:HD11	1:B:392:PRO:CG	2.43	0.48
1:A:8:LEU:N	1:A:9:PRO:HD3	2.28	0.48
1:A:77:LEU:HD23	1:A:228:VAL:HG11	1.93	0.48
1:B:94:GLY:HA3	1:B:402:LYS:HG2	1.94	0.48
1:B:439:LYS:HB3	5:B:1351:HOH:O	2.13	0.48
1:B:440:VAL:HG13	1:B:458:VAL:HG11	1.95	0.48
1:B:462:ASN:HB2	5:B:1107:HOH:O	2.13	0.48
1:B:89:LEU:HD21	1:B:138:ASN:HB3	1.95	0.48
1:B:177:PRO:O	1:B:178:SER:C	2.51	0.48
1:A:11:LEU:CD2	1:A:33:VAL:HG11	2.43	0.48
1:A:76:LEU:HD13	1:A:230:LEU:O	2.14	0.48
1:B:440:VAL:HG13	1:B:458:VAL:CG1	2.43	0.48
1:B:113:LEU:HD21	1:B:375:LEU:HD21	1.94	0.48
1:B:68:GLN:O	1:B:70:VAL:N	2.46	0.48
1:B:259:THR:HG23	1:B:270:LEU:HB3	1.94	0.48
1:A:45:GLU:OE2	1:A:48:LYS:CD	2.62	0.48
1:B:104:VAL:O	1:B:369:GLN:HG2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:185:GLU:HG3	5:B:1283:HOH:O	2.13	0.48
1:B:272:ILE:HA	1:B:275:VAL:CG2	2.44	0.48
1:A:255:VAL:HG11	1:A:284:LYS:HZ1	1.79	0.48
1:B:174:VAL:CG2	1:B:179:LYS:HD2	2.42	0.48
1:B:246:GLU:OE1	1:B:355:ARG:NE	2.25	0.48
1:A:205:LEU:HD13	1:A:304:ILE:HG21	1.95	0.48
1:A:341:ARG:NH1	5:A:1189:HOH:O	2.46	0.48
1:B:116:ILE:CA	1:B:119:GLU:HG2	2.42	0.48
1:B:372:LEU:HD11	1:B:392:PRO:CD	2.43	0.48
1:A:99:LYS:CE	1:A:222:ASP:OD2	2.61	0.48
1:A:181:LYS:HE3	1:A:185:GLU:HB2	1.95	0.48
1:B:386:ARG:HA	5:B:1016:HOH:O	2.13	0.48
1:A:140:HIS:CD2	5:A:1233:HOH:O	2.66	0.48
1:A:80:LEU:HD11	1:A:217:PHE:HB3	1.91	0.48
1:B:276:PRO:O	1:B:280:VAL:HG23	2.14	0.48
1:B:280:VAL:HG12	1:B:284:LYS:HE3	1.96	0.48
1:A:402:LYS:HG2	5:A:1246:HOH:O	2.13	0.47
1:B:268:GLN:OE1	5:B:1211:HOH:O	2.20	0.47
1:A:35:ARG:CD	1:A:314:LYS:HD3	2.43	0.47
1:B:121:LEU:HD11	5:B:1381:HOH:O	2.13	0.47
1:A:169:VAL:HG21	1:A:179:LYS:HD3	1.95	0.47
1:B:46:TRP:CZ3	1:B:275:VAL:HG13	2.49	0.47
1:B:67:SER:OG	1:B:72:GLU:OE2	2.22	0.47
1:B:119:GLU:HG3	1:B:120:ASN:N	2.29	0.47
1:B:291:ILE:CG2	1:B:350:ASN:ND2	2.77	0.47
1:B:250:LYS:HD2	5:B:1330:HOH:O	2.13	0.47
1:B:394:ILE:HD12	1:B:422:LEU:HB3	1.96	0.47
1:A:8:LEU:O	1:A:12:LYS:HB2	2.14	0.47
1:A:115:VAL:HG11	1:A:150:TYR:CG	2.50	0.47
1:A:64:THR:HB	1:A:234:LYS:HE2	1.97	0.47
1:B:8:LEU:HD11	1:B:30:ILE:HG23	1.95	0.47
1:B:176:TRP:CD2	1:B:181:LYS:HG2	2.49	0.47
1:A:169:VAL:HG22	1:A:327:VAL:HG11	1.96	0.47
1:A:418:GLU:HB2	1:A:437:LYS:CG	2.45	0.47
1:B:370:SER:C	5:B:1011:HOH:O	2.45	0.47
1:B:255:VAL:HG12	1:B:286:ILE:CG2	2.45	0.47
1:B:394:ILE:HD11	1:B:419:LEU:CD2	2.44	0.47
1:B:395:GLU:OE2	1:B:423:LYS:NZ	2.45	0.47
1:A:73:THR:HG23	1:A:230:LEU:CD2	2.44	0.47
1:B:184:LYS:HG2	5:B:1253:HOH:O	2.14	0.47
1:B:315:MET:HA	5:B:1007:HOH:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:124:LYS:HE3	1:A:125:TYR:CZ	2.49	0.47
1:B:280:VAL:HG11	5:B:1387:HOH:O	2.15	0.47
1:A:57:VAL:HG11	1:A:291:ILE:HG21	1.96	0.47
1:A:81:VAL:O	1:A:217:PHE:N	2.33	0.47
1:B:74:LYS:HE2	1:B:125:TYR:O	2.15	0.47
1:A:60:TYR:HE1	1:A:231:THR:HB	1.71	0.47
1:A:79:LYS:O	1:A:213:LYS:HA	2.15	0.47
1:B:32:LEU:HD12	1:B:317:ILE:HD12	1.95	0.47
1:A:398:PRO:HA	1:A:401:LYS:CG	2.41	0.47
1:A:197:PRO:HA	1:A:308:VAL:HG11	1.96	0.46
1:A:119:GLU:HG3	1:A:154:ASN:CA	2.45	0.46
1:A:428:VAL:HG13	1:A:452:ILE:HD11	1.97	0.46
1:A:196:PHE:CD1	1:A:304:ILE:CD1	2.98	0.46
1:B:11:LEU:HD22	1:B:30:ILE:HD11	1.89	0.46
1:B:250:LYS:NZ	1:B:255:VAL:O	2.48	0.46
1:B:62:LYS:HB3	1:B:62:LYS:HE3	1.67	0.46
1:B:190:PRO:HA	1:B:333:GLU:HG2	1.97	0.46
1:B:428:VAL:HA	1:B:450:LEU:O	2.14	0.46
1:A:454:ASP:O	1:A:455:ARG:HB2	2.15	0.46
1:B:255:VAL:HG12	1:B:286:ILE:HG23	1.96	0.46
1:A:66:VAL:HG12	1:A:67:SER:N	2.30	0.46
1:A:283:PHE:HA	1:A:289:PHE:HE2	1.80	0.46
1:A:26:LYS:O	1:A:30:ILE:HD12	2.15	0.46
1:B:79:LYS:HD3	1:B:214:GLU:OE2	2.15	0.46
1:A:137:PHE:CE2	1:A:164:LYS:HG3	2.51	0.46
1:A:184:LYS:HG2	5:A:991:HOH:O	2.15	0.46
1:A:319:PRO:O	1:A:320:ASN:C	2.54	0.46
1:B:18:LEU:HD21	1:B:178:SER:OG	2.16	0.46
1:A:192:HIS:ND1	1:A:336:ALA:CB	2.79	0.46
1:A:142:ASP:HA	1:A:145:LYS:HD2	1.97	0.46
1:A:237:ILE:HG12	5:A:931:HOH:O	2.14	0.46
1:B:288:LYS:CG	5:B:1179:HOH:O	2.62	0.46
1:A:188:TYR:CE1	1:A:332:LEU:O	2.68	0.46
1:B:7:ASN:CA	1:B:10:GLN:OE1	2.61	0.46
1:B:11:LEU:O	1:B:15:VAL:HG23	2.16	0.46
1:B:285:SER:O	1:B:287:GLU:N	2.49	0.46
1:A:7:ASN:CG	1:A:9:PRO:HD2	2.36	0.46
1:B:79:LYS:NZ	5:B:910:HOH:O	2.35	0.46
1:B:372:LEU:CD1	1:B:392:PRO:HD2	2.46	0.46
1:A:196:PHE:HD1	1:A:304:ILE:HD13	1.80	0.46
1:B:81:VAL:O	1:B:216:VAL:HA	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:200:MET:CE	1:B:205:LEU:HD13	2.46	0.46
1:B:318:ILE:HB	1:B:333:GLU:HG3	1.98	0.46
1:B:453:PRO:HG3	5:B:1361:HOH:O	2.15	0.46
1:A:196:PHE:CE1	1:A:304:ILE:CD1	2.99	0.46
1:B:92:THR:O	1:B:401:LYS:NZ	2.43	0.46
1:B:170:ALA:N	1:B:328:LYS:O	2.31	0.46
1:B:256:LYS:CE	1:B:284:LYS:HE2	2.46	0.46
1:A:8:LEU:HB3	1:A:9:PRO:HD3	1.98	0.46
1:A:124:LYS:HE3	1:A:125:TYR:OH	2.15	0.46
1:B:145:LYS:HE3	5:B:1063:HOH:O	2.16	0.46
1:A:135:ASN:O	1:A:161:ASN:HA	2.16	0.46
1:A:98:PRO:O	1:A:101:VAL:HG22	2.16	0.45
1:A:351:VAL:HB	1:A:352:PRO:HD2	1.98	0.45
1:A:398:PRO:CB	1:A:401:LYS:HE3	2.46	0.45
1:A:433:SER:HB2	1:A:455:ARG:CD	2.44	0.45
1:A:81:VAL:CB	1:A:216:VAL:HG23	2.43	0.45
1:B:46:TRP:CZ3	1:B:275:VAL:HG22	2.51	0.45
1:A:98:PRO:O	1:A:101:VAL:HG22	2.16	0.45
1:A:117:GLN:HG2	1:A:379:PHE:CD2	2.51	0.45
1:B:66:VAL:HG12	1:B:67:SER:N	2.31	0.45
1:B:216:VAL:HB	1:B:301:LEU:HD21	1.98	0.45
1:A:119:GLU:CG	1:A:154:ASN:H	2.25	0.45
1:A:5:THR:HG22	1:A:6:GLU:H	1.79	0.45
1:B:177:PRO:HA	1:B:181:LYS:O	2.16	0.45
1:B:439:LYS:O	1:B:460:ASN:HA	2.17	0.45
1:A:42:GLN:CD	1:A:317:ILE:H	2.19	0.45
1:B:254:ASP:CG	1:B:292:PHE:CZ	2.90	0.45
1:A:35:ARG:HD3	1:A:314:LYS:HD3	1.97	0.45
1:A:196:PHE:CD1	1:A:304:ILE:HD13	2.52	0.45
1:B:83:LEU:HA	1:B:132:VAL:O	2.16	0.45
1:B:174:VAL:HG23	1:B:179:LYS:HD2	1.98	0.45
1:A:73:THR:HG21	1:A:125:TYR:CE1	2.52	0.45
1:B:73:THR:HG23	1:B:230:LEU:CD1	2.46	0.45
1:B:99:LYS:NZ	5:B:1310:HOH:O	2.35	0.45
1:B:63:MET:SD	1:B:235:HIS:HB2	2.57	0.45
1:A:295:ASN:HB2	3:A:901:UPG:H6'1	1.97	0.45
1:B:9:PRO:HB2	1:B:10:GLN:HE22	1.78	0.45
1:B:32:LEU:HD12	1:B:317:ILE:HD13	1.96	0.45
1:A:280:VAL:O	1:A:280:VAL:CG1	2.65	0.45
1:B:170:ALA:HB3	1:B:328:LYS:HB2	1.97	0.45
1:A:277:ASP:HA	1:A:280:VAL:HG23	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:78:ASP:OD1	1:B:127:CYS:HB3	2.17	0.45
1:B:280:VAL:O	1:B:284:LYS:HG3	2.16	0.45
1:A:44:ILE:O	1:A:46:TRP:N	2.50	0.45
1:B:202:SER:OG	1:B:204:LYS:HG2	2.17	0.45
1:A:209:LEU:CD2	1:A:301:LEU:CB	2.94	0.45
1:A:362:SER:CB	5:A:1234:HOH:O	2.65	0.45
1:B:137:PHE:HD1	1:B:184:LYS:HD2	1.81	0.45
1:B:328:LYS:HB3	5:B:1270:HOH:O	2.16	0.45
1:B:108:LEU:HD12	1:B:375:LEU:HD21	1.98	0.45
1:A:193:GLY:HA2	1:A:336:ALA:N	2.31	0.45
1:A:209:LEU:CD2	1:A:301:LEU:HB3	2.47	0.45
1:A:283:PHE:HA	1:A:289:PHE:CE2	2.52	0.45
1:B:232:ILE:O	1:B:236:LEU:HG	2.17	0.45
1:A:73:THR:HG21	1:A:125:TYR:CZ	2.53	0.44
1:A:386:ARG:HG3	1:A:417:VAL:O	2.17	0.44
1:A:196:PHE:CD1	1:A:304:ILE:CG1	3.01	0.44
1:A:196:PHE:HE1	1:A:304:ILE:HD11	1.82	0.44
1:A:423:LYS:HB2	1:A:441:THR:HG23	1.99	0.44
1:B:33:VAL:HA	1:B:332:LEU:CD1	2.47	0.44
1:B:164:LYS:HE2	1:B:187:TRP:CG	2.52	0.44
1:B:379:PHE:HE1	5:B:1198:HOH:O	1.99	0.44
1:B:8:LEU:CD1	1:B:37:LEU:HD12	2.45	0.44
1:A:272:ILE:N	1:A:272:ILE:CD1	2.81	0.44
1:B:79:LYS:HD3	1:B:214:GLU:CD	2.38	0.44
1:A:60:TYR:HB2	1:A:351:VAL:CA	2.32	0.44
1:B:322:LYS:CD	1:B:331:GLN:NE2	2.79	0.44
1:A:20:GLU:HG3	5:A:1121:HOH:O	2.16	0.44
1:A:131:LEU:HD21	1:A:133:LEU:HD21	1.99	0.44
1:B:224:LEU:CD1	5:B:998:HOH:O	2.65	0.44
1:B:68:GLN:HA	5:B:1367:HOH:O	2.18	0.44
1:B:260:LEU:HD22	1:B:267:VAL:CG2	2.47	0.44
1:A:117:GLN:OE1	1:A:227:ILE:HG22	2.17	0.44
1:A:136:SER:HB3	1:A:162:GLN:HG2	1.99	0.44
1:B:427:ASP:OD1	1:B:429:TRP:NE1	2.49	0.44
1:A:52:PRO:HB2	1:A:57:VAL:HG23	2.00	0.44
1:A:172:GLU:O	1:A:172:GLU:HG2	2.18	0.44
1:A:176:TRP:CZ2	1:A:181:LYS:HE2	2.52	0.44
1:A:271:GLU:OE2	3:A:901:UPG:O2'	2.25	0.44
1:B:372:LEU:HD11	1:B:392:PRO:HD2	1.99	0.44
1:B:392:PRO:HB3	1:B:419:LEU:O	2.18	0.44
1:A:60:TYR:CE1	1:A:229:ASP:OD1	2.68	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:230:LEU:CB	5:A:993:HOH:O	2.65	0.44
1:A:250:LYS:NZ	1:A:254:ASP:O	2.48	0.44
1:B:436:LEU:HD22	1:B:440:VAL:HG11	2.00	0.44
1:B:48:LYS:HG2	5:B:1241:HOH:O	2.18	0.43
1:B:66:VAL:HG13	1:B:72:GLU:CD	2.39	0.43
1:A:455:ARG:NH1	5:A:1163:HOH:O	2.37	0.43
1:B:176:TRP:N	1:B:177:PRO:CD	2.81	0.43
1:B:320:ASN:HD22	1:B:333:GLU:CD	2.21	0.43
1:A:274:GLN:NE2	5:A:1110:HOH:O	2.49	0.43
1:B:200:MET:HE2	1:B:309:GLU:OE1	2.19	0.43
1:B:64:THR:HA	1:B:65:PRO:HD3	1.89	0.43
1:A:232:ILE:O	1:A:236:LEU:HG	2.18	0.43
1:B:89:LEU:CB	1:B:91:THR:HG23	2.45	0.43
1:B:99:LYS:NZ	5:B:1160:HOH:O	2.40	0.43
1:A:211:GLN:OE1	5:A:1017:HOH:O	2.22	0.43
1:B:288:LYS:HD3	5:B:1179:HOH:O	2.18	0.43
1:B:366:LEU:CD2	1:B:416:ILE:HD13	2.43	0.43
1:A:115:VAL:HG13	1:A:157:ILE:HD11	2.00	0.43
1:A:209:LEU:HD21	1:A:301:LEU:HB2	2.01	0.43
1:A:258:GLY:HA3	1:A:271:GLU:OE1	2.19	0.43
1:B:385:ALA:O	5:B:1289:HOH:O	2.21	0.43
1:A:45:GLU:OE2	1:A:48:LYS:HD3	2.19	0.43
1:A:167:ARG:HG2	1:A:331:GLN:HG2	1.99	0.43
1:A:461:LYS:HD3	1:A:463:ILE:HG12	2.00	0.43
1:B:91:THR:HA	1:B:95:CYS:O	2.19	0.43
1:B:167:ARG:HD3	1:B:329:VAL:HG21	1.99	0.43
1:A:52:PRO:HG3	1:A:267:VAL:HG23	2.00	0.43
1:A:109:THR:HG23	1:A:112:ASP:OD2	2.18	0.43
1:A:109:THR:CB	1:A:112:ASP:OD2	2.66	0.43
1:A:256:LYS:HE3	1:A:256:LYS:HB3	1.82	0.43
1:B:323:GLU:OE2	1:B:328:LYS:NZ	2.52	0.43
1:A:45:GLU:CB	1:A:48:LYS:HD3	2.48	0.43
1:A:430:PHE:CD2	1:A:452:ILE:HD12	2.53	0.43
1:B:46:TRP:CH2	1:B:289:PHE:CZ	3.06	0.43
1:B:393:SER:O	1:B:394:ILE:HD13	2.19	0.43
1:A:55:GLU:N	1:A:55:GLU:CD	2.72	0.43
1:A:76:LEU:CD1	1:A:234:LYS:HB2	2.34	0.43
1:B:149:LYS:HE3	1:B:149:LYS:HB2	1.87	0.43
1:B:174:VAL:HG21	1:B:179:LYS:CD	2.47	0.43
1:B:164:LYS:HE2	1:B:187:TRP:CB	2.49	0.42
1:B:46:TRP:HZ3	1:B:275:VAL:HG22	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:45:GLU:OE2	1:A:48:LYS:HD2	2.19	0.42
1:A:272:ILE:HD13	1:A:283:PHE:CD2	2.54	0.42
1:B:363:SER:HB2	1:B:394:ILE:CB	2.49	0.42
1:B:416:ILE:CG2	1:B:419:LEU:HD22	2.48	0.42
1:B:32:LEU:HD12	1:B:32:LEU:HA	1.90	0.42
1:B:116:ILE:CG2	1:B:378:GLY:CA	2.97	0.42
1:B:220:ASN:HD21	3:B:902:UPG:H5C1	1.85	0.42
1:B:455:ARG:HG3	1:B:455:ARG:HH11	1.83	0.42
1:A:57:VAL:HG13	1:A:247:VAL:HG21	2.02	0.42
1:B:189:PRO:HB2	4:B:903:U5P:O4	2.19	0.42
1:B:220:ASN:OD1	3:B:902:UPG:H4C	2.20	0.42
1:A:362:SER:HB2	5:A:1234:HOH:O	2.19	0.42
1:B:128:LYS:HA	1:B:128:LYS:HD3	1.89	0.42
1:B:11:LEU:CD2	1:B:30:ILE:HD11	2.49	0.42
1:B:11:LEU:HD23	1:B:15:VAL:HG23	2.01	0.42
1:A:76:LEU:HB3	1:A:233:LEU:CD2	2.50	0.42
1:A:92:THR:O	1:A:92:THR:HG22	2.19	0.42
1:B:393:SER:OG	1:B:421:SER:HB2	2.20	0.42
1:B:77:LEU:HD22	1:B:129:VAL:HG21	2.01	0.42
1:B:401:LYS:HE2	5:B:1394:HOH:O	2.20	0.42
1:A:80:LEU:HD21	1:A:228:VAL:HG22	2.01	0.42
1:A:414:PRO:HB3	1:A:434:ILE:HB	2.01	0.42
1:A:115:VAL:CG1	1:A:157:ILE:HD11	2.50	0.42
1:A:184:LYS:HE2	5:A:1254:HOH:O	2.18	0.42
1:A:261:ILE:O	1:A:267:VAL:HA	2.20	0.42
1:A:461:LYS:HG2	1:A:462:ASN:N	2.35	0.42
1:B:82:VAL:O	1:B:132:VAL:N	2.48	0.42
1:A:60:TYR:CD2	1:A:352:PRO:CD	2.94	0.42
1:B:149:LYS:HB2	1:B:149:LYS:HE3	1.75	0.42
1:B:319:PRO:HD2	5:B:1332:HOH:O	2.19	0.42
1:A:419:LEU:CD2	1:A:421:SER:N	2.83	0.42
1:B:11:LEU:O	1:B:11:LEU:HD23	2.20	0.42
1:A:382:ARG:CZ	1:A:386:ARG:HG2	2.50	0.41
1:A:252:LEU:HD23	1:A:252:LEU:HA	1.90	0.41
1:A:453:PRO:HG2	1:A:456:ALA:HB2	2.02	0.41
1:A:60:TYR:CZ	1:A:231:THR:CB	3.02	0.41
1:A:83:LEU:HA	1:A:132:VAL:O	2.20	0.41
1:A:244:CYS:HA	1:A:347:ILE:O	2.20	0.41
1:A:90:GLY:O	1:A:95:CYS:SG	2.78	0.41
1:A:179:LYS:HB3	1:A:179:LYS:HE3	1.95	0.41
1:A:183:ASP:OD1	1:A:185:GLU:HB2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:105:ARG:HG3	1:B:375:LEU:HD23	2.02	0.41
1:B:434:ILE:HB	5:B:1025:HOH:O	2.21	0.41
1:B:95:CYS:HB3	5:B:979:HOH:O	2.21	0.41
1:B:201:ASN:ND2	5:B:1239:HOH:O	2.49	0.41
1:B:459:GLU:O	1:B:460:ASN:C	2.59	0.41
1:A:46:TRP:C	1:A:48:LYS:H	2.24	0.41
1:A:262:SER:HA	1:A:266:LYS:O	2.21	0.41
1:B:61:GLU:CD	1:B:61:GLU:H	2.24	0.41
1:A:200:MET:CE	1:A:205:LEU:HD22	2.50	0.41
1:B:367:LEU:HD22	1:B:372:LEU:CD1	2.50	0.41
1:A:83:LEU:HB3	1:A:216:VAL:CG2	2.50	0.41
1:A:140:HIS:ND1	1:A:140:HIS:C	2.73	0.41
1:B:164:LYS:NZ	5:B:1066:HOH:O	2.42	0.41
1:B:167:ARG:NE	1:B:331:GLN:OE1	2.47	0.41
1:B:22:SER:O	1:B:26:LYS:N	2.39	0.41
1:A:261:ILE:HG12	1:A:268:GLN:HG3	2.03	0.41
1:A:366:LEU:HD23	1:A:394:ILE:HG21	2.01	0.41
1:B:373:TYR:CD2	1:B:380:VAL:HG12	2.55	0.41
1:A:11:LEU:HD21	1:A:33:VAL:HG21	2.03	0.41
1:A:249:PRO:HA	1:A:290:LYS:O	2.21	0.41
1:A:275:VAL:HA	1:A:276:PRO:HD3	1.92	0.41
1:A:418:GLU:HB3	1:A:437:LYS:HG2	2.02	0.41
1:B:272:ILE:HB	1:B:283:PHE:CE2	2.55	0.41
1:B:386:ARG:NH1	1:B:417:VAL:O	2.50	0.41
1:A:64:THR:O	1:A:234:LYS:CD	2.63	0.41
1:B:184:LYS:O	1:B:186:GLY:N	2.53	0.41
1:B:419:LEU:HD11	1:B:421:SER:O	2.21	0.41
1:B:128:LYS:HD2	5:B:1137:HOH:O	2.20	0.41
1:B:128:LYS:HE2	5:B:982:HOH:O	2.21	0.41
1:B:272:ILE:HD11	1:B:280:VAL:HG13	2.03	0.41
1:B:310:ALA:O	1:B:311:ASP:HB3	2.21	0.41
1:B:410:PHE:CD1	1:B:414:PRO:HD3	2.56	0.41
1:A:419:LEU:CD2	1:A:421:SER:H	2.33	0.41
1:B:249:PRO:HD3	5:B:1084:HOH:O	2.21	0.41
1:A:79:LYS:NZ	5:A:1091:HOH:O	2.54	0.41
1:B:261:ILE:N	1:B:268:GLN:O	2.43	0.41
1:B:280:VAL:CG1	1:B:284:LYS:HE3	2.51	0.41
1:B:100:SER:HB2	1:B:111:LEU:HG	2.03	0.40
1:A:77:LEU:HD21	1:A:228:VAL:CG1	2.47	0.40
1:A:80:LEU:HD13	1:A:298:TRP:CZ3	2.56	0.40
1:A:176:TRP:CD2	1:A:181:LYS:HG2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:325:ASP:OD1	1:A:325:ASP:O	2.38	0.40
1:A:404:ALA:O	1:A:408:SER:OG	2.39	0.40
1:B:261:ILE:O	1:B:268:GLN:N	2.49	0.40
1:B:277:ASP:HA	1:B:280:VAL:HG23	2.03	0.40
1:B:360:LYS:NZ	5:B:996:HOH:O	2.54	0.40
1:B:375:LEU:HD12	1:B:375:LEU:HA	1.78	0.40
1:B:68:GLN:O	1:B:69:ASP:C	2.58	0.40
1:A:188:TYR:HE1	1:A:332:LEU:O	2.03	0.40
1:B:248:THR:O	1:B:291:ILE:HA	2.21	0.40
1:A:196:PHE:CE1	1:A:299:VAL:HG11	2.56	0.40
1:A:210:SER:C	1:A:212:GLY:H	2.25	0.40
1:A:418:GLU:CB	1:A:437:LYS:HG2	2.52	0.40
1:B:128:LYS:NZ	1:B:154:ASN:HD21	2.20	0.40
1:B:289:PHE:N	1:B:289:PHE:CD2	2.89	0.40
1:A:52:PRO:CB	1:A:57:VAL:HG23	2.51	0.40
1:A:84:LYS:HA	1:A:219:ALA:O	2.21	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	1-A	452/469 (96%)	428 (95%)	22 (5%)	2 (0%)	34	15
1	1-B	461/469 (98%)	442 (96%)	14 (3%)	5 (1%)	14	2
1	2-A	455/469 (97%)	431 (95%)	23 (5%)	1 (0%)	47	26
1	2-B	461/469 (98%)	440 (95%)	17 (4%)	4 (1%)	17	3
All	All	1829/1876 (98%)	1741 (95%)	76 (4%)	12 (1%)	22	6

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	2-B	40	GLU
1	2-B	181	LYS
1	1-A	45	GLU
1	1-B	264	GLU
1	2-B	70	VAL
1	1-B	272	ILE
1	1-A	285	SER
1	1-B	183	ASP
1	1-B	185	GLU
1	2-B	69	ASP
1	2-A	46	TRP
1	1-B	286	ILE

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	1-A	405/414 (98%)	396 (98%)	9 (2%)	52	25
1	1-B	410/414 (99%)	406 (99%)	4 (1%)	76	59
1	2-A	407/414 (98%)	400 (98%)	7 (2%)	60	36
1	2-B	410/414 (99%)	400 (98%)	10 (2%)	49	21
All	All	1632/1656 (99%)	1602 (98%)	30 (2%)	59	34

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	1-A	11	LEU
1	1-A	31	SER
1	1-A	61	GLU
1	1-A	105	ARG
1	1-A	140	HIS
1	1-A	272	ILE
1	1-A	277	ASP
1	1-A	330	LEU
1	1-A	419	LEU
1	1-B	61	GLU

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Mol	Chain	Res	Type
1	1-B	105	ARG
1	1-B	325	ASP
1	1-B	467	GLU
1	2-A	42	GLN
1	2-A	61	GLU
1	2-A	210	SER
1	2-A	256	LYS
1	2-A	278	GLU
1	2-A	408	SER
1	2-A	419	LEU
1	2-B	11	LEU
1	2-B	61	GLU
1	2-B	67	SER
1	2-B	153	SER
1	2-B	183	ASP
1	2-B	255	VAL
1	2-B	262	SER
1	2-B	278	GLU
1	2-B	360	LYS
1	2-B	467	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	1-A	140	HIS
1	1-B	42	GLN
1	1-B	268	GLN
1	2-A	42	GLN
1	2-A	43	HIS
1	2-A	320	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

5 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	UPG	2-A	901	-	35,38,38	1.69	8 (22%)	53,58,58	1.32	7 (13%)
3	UPG	1-A	901	-	35,38,38	1.69	8 (22%)	53,58,58	1.32	7 (13%)
2	DMS	1-A	900	-	3,3,3	1.17	0	3,3,3	1.09	0
3	UPG	1-B	902	-	35,38,38	1.50	7 (20%)	53,58,58	1.49	9 (16%)
2	DMS	2-A	900	-	3,3,3	1.17	0	3,3,3	1.09	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	UPG	2-A	901	-	-	0/23/59/59	0/3/3/3
3	UPG	1-A	901	-	-	0/23/59/59	0/3/3/3
3	UPG	1-B	902	-	-	0/23/59/59	0/3/3/3

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	1-A	901	UPG	PB-O3B	4.39	1.72	1.60
3	2-A	901	UPG	PB-O3B	4.39	1.72	1.60
3	1-B	902	UPG	O5'-C5'	3.71	1.53	1.44
3	1-A	901	UPG	C6-N1	3.31	1.46	1.38
3	2-A	901	UPG	C6-N1	3.31	1.46	1.38
3	1-B	902	UPG	O3'-C3'	2.87	1.49	1.43
3	1-A	901	UPG	PA-O5C	-2.61	1.48	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	2-A	901	UPG	PA-O5C	-2.61	1.48	1.59
3	1-B	902	UPG	PB-O1B	-2.53	1.41	1.50
3	1-A	901	UPG	PB-O2B	-2.52	1.43	1.55
3	2-A	901	UPG	PB-O2B	-2.52	1.43	1.55
3	1-A	901	UPG	C2C-C1C	-2.34	1.46	1.53
3	2-A	901	UPG	C2C-C1C	-2.34	1.46	1.53
3	1-A	901	UPG	O3C-C3C	2.33	1.48	1.43
3	2-A	901	UPG	O3C-C3C	2.33	1.48	1.43
3	1-B	902	UPG	C4'-C5'	2.31	1.57	1.53
3	1-B	902	UPG	C2-N1	2.28	1.42	1.38
3	1-B	902	UPG	C5C-C4C	2.21	1.58	1.51
3	1-A	901	UPG	O4C-C4C	2.14	1.49	1.45
3	2-A	901	UPG	O4C-C4C	2.14	1.49	1.45
3	1-A	901	UPG	C4'-C5'	2.12	1.57	1.53
3	2-A	901	UPG	C4'-C5'	2.12	1.57	1.53
3	1-B	902	UPG	PA-O2A	-2.08	1.45	1.55

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	1-B	902	UPG	O5'-C1'-O3B	-3.51	106.78	111.36
3	1-B	902	UPG	O3A-PB-O3B	3.44	109.43	102.48
3	1-B	902	UPG	C4'-C3'-C2'	-3.27	105.12	110.82
3	1-B	902	UPG	O3'-C3'-C2'	3.24	117.83	110.35
3	1-A	901	UPG	O3A-PB-O3B	-2.84	96.76	102.48
3	2-A	901	UPG	O3A-PB-O3B	-2.84	96.76	102.48
3	1-B	902	UPG	PB-O3B-C1'	2.80	130.56	119.74
3	1-A	901	UPG	C6'-C5'-C4'	-2.65	106.80	113.00
3	2-A	901	UPG	C6'-C5'-C4'	-2.65	106.80	113.00
3	1-B	902	UPG	C2C-C3C-C4C	2.64	107.78	102.64
3	1-B	902	UPG	O4'-C4'-C3'	-2.62	104.29	110.35
3	1-A	901	UPG	O4'-C4'-C3'	-2.52	104.52	110.35
3	2-A	901	UPG	O4'-C4'-C3'	-2.52	104.52	110.35
3	1-B	902	UPG	C1'-C2'-C3'	2.51	115.23	110.00
3	1-A	901	UPG	O3'-C3'-C2'	-2.30	105.04	110.35
3	2-A	901	UPG	O3'-C3'-C2'	-2.30	105.04	110.35
3	1-A	901	UPG	C4'-C3'-C2'	-2.26	106.88	110.82
3	2-A	901	UPG	C4'-C3'-C2'	-2.26	106.88	110.82
3	1-A	901	UPG	PB-O3B-C1'	2.25	128.43	119.74
3	2-A	901	UPG	PB-O3B-C1'	2.25	128.43	119.74
3	1-B	902	UPG	O6'-C6'-C5'	-2.09	104.13	111.29
3	1-A	901	UPG	C2C-C3C-C4C	2.06	106.64	102.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2-A	901	UPG	C2C-C3C-C4C	2.06	106.64	102.64

There are no chirality outliers.

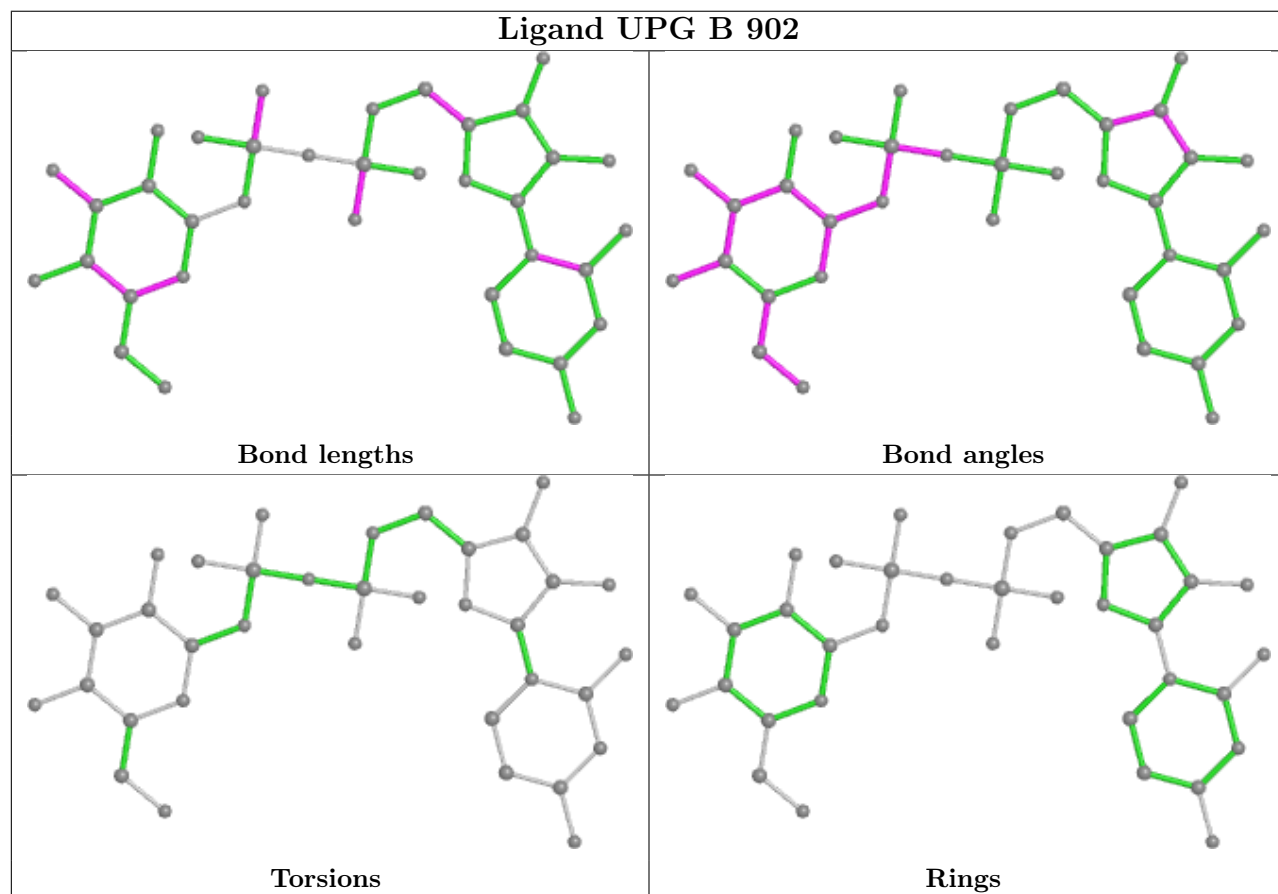
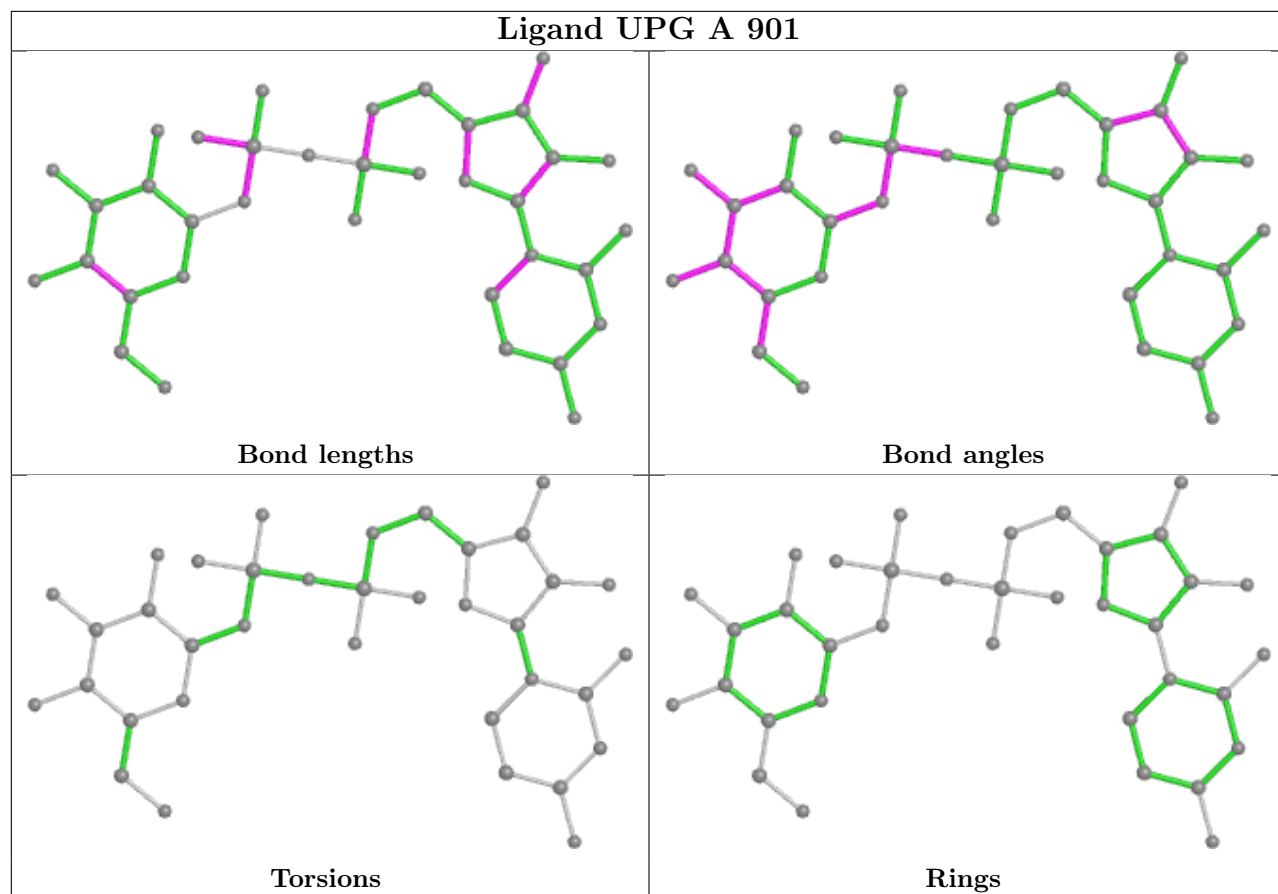
There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	2-A	901	UPG	2	0
3	1-A	901	UPG	10	0
3	1-B	902	UPG	3	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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	1-A	456/469 (97%)	0.53	42 (9%) 9 7	10, 23, 47, 70	456 (100%)
1	1-B	463/469 (98%)	0.20	23 (4%) 28 26	8, 21, 46, 66	463 (100%)
1	2-A	459/469 (97%)	0.54	45 (9%) 7 6	10, 23, 47, 70	459 (100%)
1	2-B	463/469 (98%)	0.20	23 (4%) 28 26	8, 21, 46, 66	463 (100%)
All	All	1841/1876 (98%)	0.37	133 (7%) 13 13	8, 22, 47, 70	1841 (100%)

All (133) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	1-A	91	THR	6.8
1	2-A	91	THR	6.8
1	1-B	256	LYS	6.6
1	2-B	256	LYS	6.6
1	1-B	41	ALA	6.5
1	2-B	41	ALA	6.5
1	1-B	255	VAL	6.4
1	2-B	255	VAL	6.4
1	1-A	287	GLU	5.8
1	2-A	287	GLU	5.8
1	1-B	70	VAL	5.6
1	2-B	70	VAL	5.6
1	1-A	5	THR	5.5
1	2-A	5	THR	5.5
1	1-A	389	PRO	4.8
1	2-A	389	PRO	4.8
1	1-B	257	GLY	4.5
1	2-B	257	GLY	4.5
1	1-A	92	THR	4.4
1	2-A	92	THR	4.4
1	1-A	452	ILE	4.2

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Mol	Chain	Res	Type	RSRZ
1	2-A	452	ILE	4.2
1	1-B	376	VAL	4.0
1	2-B	376	VAL	4.0
1	1-B	283	PHE	4.0
1	2-B	283	PHE	4.0
1	1-B	325	ASP	3.8
1	2-B	325	ASP	3.8
1	1-A	6	GLU	3.7
1	2-A	6	GLU	3.7
1	2-A	43	HIS	3.6
1	1-A	286	ILE	3.6
1	2-A	286	ILE	3.6
1	1-A	96	THR	3.6
1	2-A	96	THR	3.6
1	1-B	67	SER	3.5
1	2-B	67	SER	3.5
1	1-A	272	ILE	3.5
1	2-A	272	ILE	3.5
1	1-A	403	VAL	3.4
1	2-A	403	VAL	3.4
1	1-A	385	ALA	3.3
1	2-A	385	ALA	3.3
1	1-A	218	VAL	3.3
1	2-A	218	VAL	3.3
1	1-A	387	THR	3.2
1	2-A	387	THR	3.2
1	1-B	44	ILE	3.1
1	2-B	44	ILE	3.1
1	1-A	281	ASN	3.1
1	2-A	281	ASN	3.1
1	1-A	89	LEU	3.1
1	2-A	89	LEU	3.1
1	1-B	281	ASN	3.1
1	2-B	281	ASN	3.1
1	1-A	70	VAL	3.1
1	2-A	70	VAL	3.1
1	1-B	10	GLN	3.1
1	2-B	10	GLN	3.1
1	1-A	256	LYS	3.0
1	2-A	256	LYS	3.0
1	1-B	43	HIS	3.0
1	2-B	43	HIS	3.0

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Mol	Chain	Res	Type	RSRZ
1	1-B	152	ASN	3.0
1	2-B	152	ASN	3.0
1	1-A	405	THR	3.0
1	2-A	405	THR	3.0
1	1-A	408	SER	3.0
1	2-A	408	SER	3.0
1	1-A	7	ASN	2.8
1	2-A	7	ASN	2.8
1	1-B	286	ILE	2.7
1	2-B	286	ILE	2.7
1	1-B	287	GLU	2.7
1	2-B	287	GLU	2.7
1	1-A	90	GLY	2.7
1	2-A	90	GLY	2.7
1	1-A	97	GLY	2.7
1	2-A	97	GLY	2.7
1	1-B	275	VAL	2.7
1	2-B	275	VAL	2.7
1	1-A	68	GLN	2.7
1	2-A	68	GLN	2.7
1	1-B	178	SER	2.6
1	2-B	178	SER	2.6
1	1-A	407	LEU	2.6
1	2-A	407	LEU	2.6
1	1-A	430	PHE	2.6
1	2-A	430	PHE	2.6
1	1-B	288	LYS	2.6
1	2-B	288	LYS	2.6
1	1-A	44	ILE	2.5
1	1-A	146	ILE	2.5
1	2-A	44	ILE	2.5
1	2-A	146	ILE	2.5
1	1-A	95	CYS	2.5
1	2-A	95	CYS	2.5
1	1-B	179	LYS	2.5
1	2-B	179	LYS	2.5
1	1-A	83	LEU	2.5
1	2-A	83	LEU	2.5
1	2-A	42	GLN	2.5
1	2-A	41	ALA	2.4
1	1-A	145	LYS	2.3
1	2-A	145	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	1-A	429	TRP	2.3
1	2-A	429	TRP	2.3
1	1-A	398	PRO	2.3
1	2-A	398	PRO	2.3
1	1-A	283	PHE	2.2
1	2-A	283	PHE	2.2
1	1-A	276	PRO	2.2
1	2-A	276	PRO	2.2
1	1-A	464	ASN	2.2
1	2-A	464	ASN	2.2
1	1-B	252	LEU	2.2
1	2-B	252	LEU	2.2
1	1-A	463	ILE	2.2
1	2-A	463	ILE	2.2
1	1-A	37	LEU	2.2
1	2-A	37	LEU	2.2
1	1-A	361	ALA	2.1
1	2-A	361	ALA	2.1
1	1-B	279	HIS	2.1
1	2-B	279	HIS	2.1
1	1-A	46	TRP	2.1
1	2-A	46	TRP	2.1
1	1-A	8	LEU	2.1
1	1-B	180	GLY	2.1
1	2-A	8	LEU	2.1
1	2-B	180	GLY	2.1
1	1-A	446	SER	2.0
1	2-A	446	SER	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.

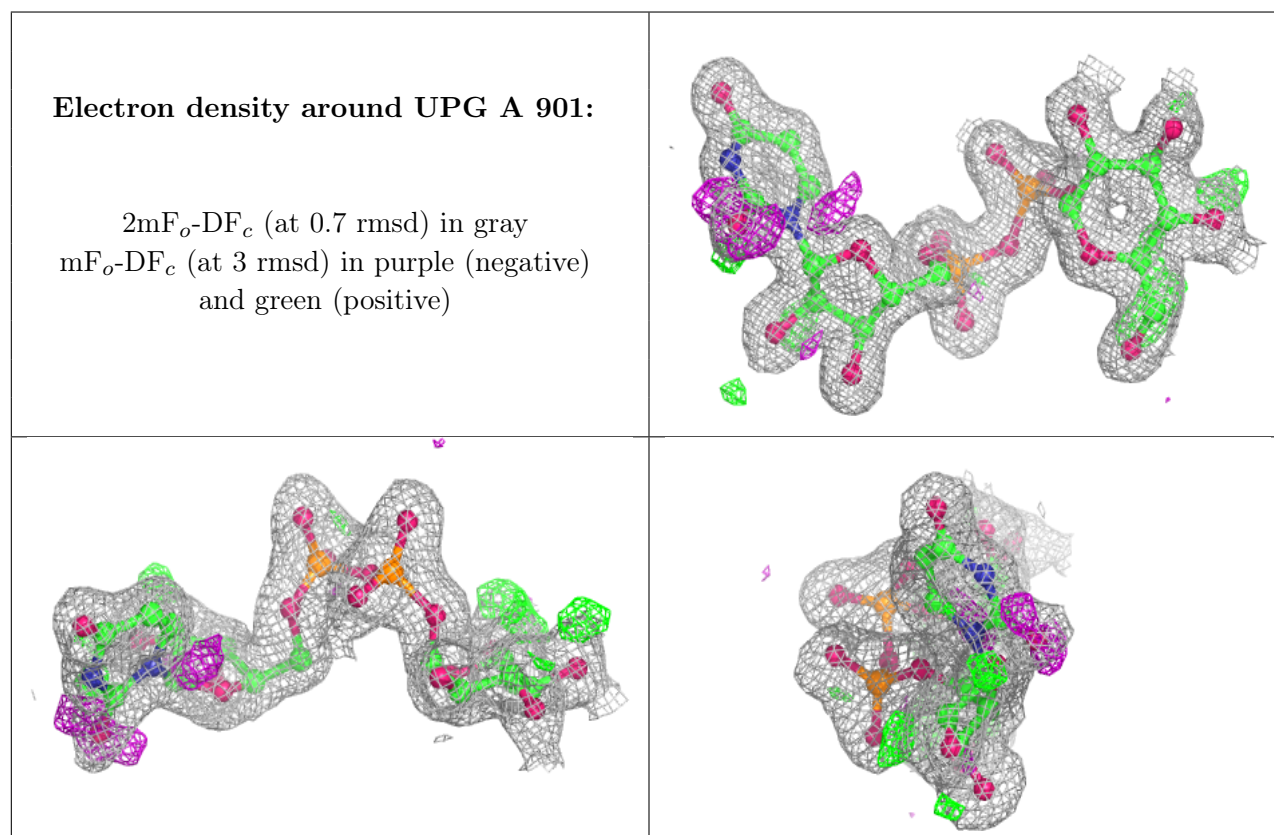
6.4 Ligands [i](#)

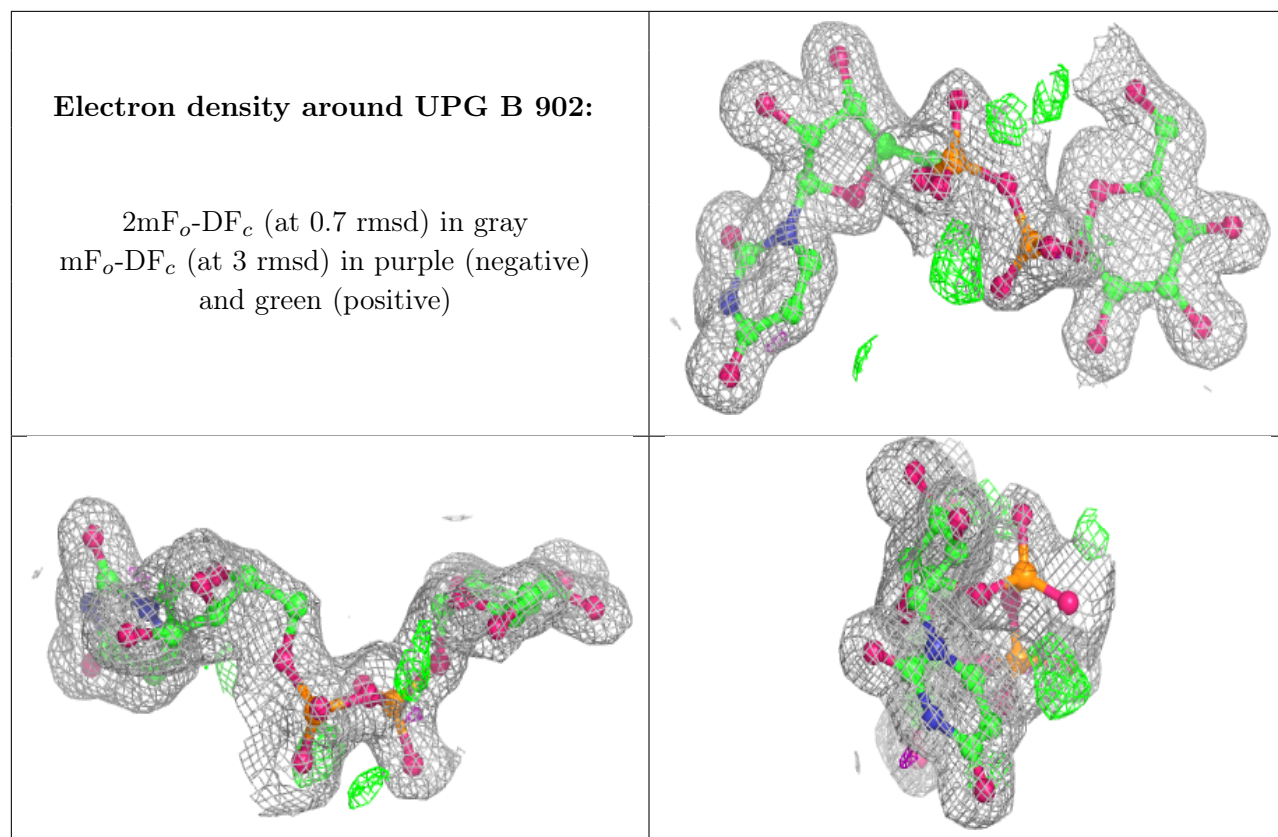
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,

median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	DMS	1-A	900	4/4	0.97	0.08	28,36,37,39	4
2	DMS	2-A	900	4/4	0.97	0.08	28,36,37,39	4
3	UPG	1-A	901	36/36	0.97	0.07	19,22,27,28	36
3	UPG	2-A	901	36/36	0.97	0.07	19,22,27,28	36
3	UPG	1-B	902	36/36	0.97	0.10	13,22,29,31	36

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.