Full wwPDB X-ray Structure Validation Report (i)

Oct 12, 2021 – 09:23 AM EDT

PDB ID	:	2A3L
Title	:	X-Ray Structure of Adenosine 5'-Monophosphate Deaminase from Arabidopsis Thaliana in Complex with Coformycin 5'-Phosphate
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Deposited on	:	2005-06-25
Resolution	:	3.34 Å(reported)

The following versions of software and data (see references (i)) 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	:	2.23.2
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)	:	2.23.2

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 3.34 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	Percentile Ranks	Value
Rfree		0.314
Clashscore		74
Ramachandran outliers		13.7%
Sidechain outliers		26.4%
RSRZ outliers		0.6%

Worse   *Better*

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution
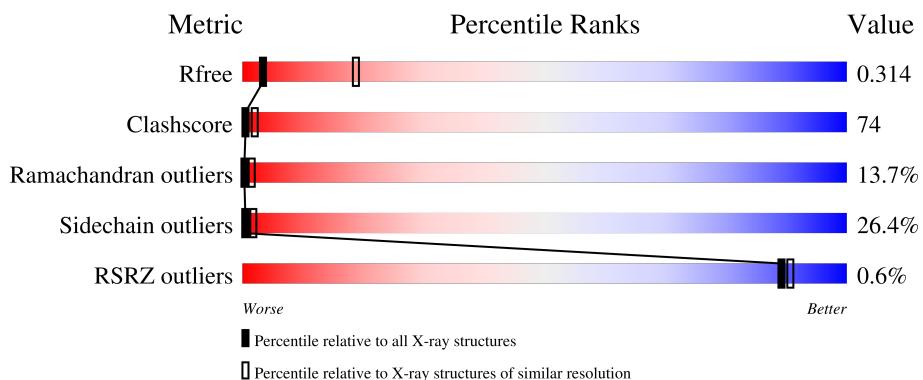
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1060 (3.38-3.30)
Clashscore	141614	1111 (3.38-3.30)
Ramachandran outliers	138981	1090 (3.38-3.30)
Sidechain outliers	138945	1089 (3.38-3.30)
RSRZ outliers	127900	1028 (3.38-3.30)

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 <=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	701	% 18% 44% 21% 5% 12%
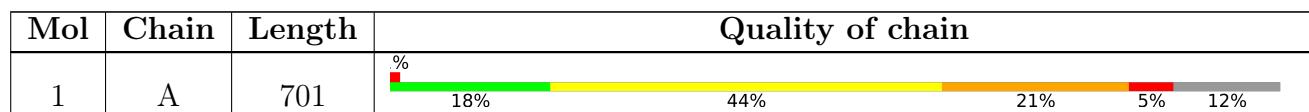
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	CF5	A	841	-	-	X	-

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 5104 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 AMP deaminase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	616	Total 5050	C 3243	N 864	O 923	S 20	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	139	MET	ILE	engineered mutation	UNP O80452

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

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

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).
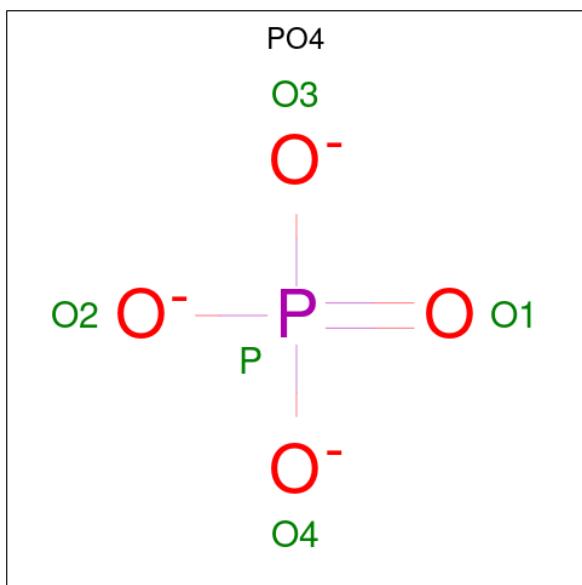
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	P		
3	A	1	5	4	1	0	0

• Molecule 4 is COFORMYCIN 5'-PHOSPHATE (three-letter code: CF5) (formula: $C_{11}H_{17}N_4O_8P$).
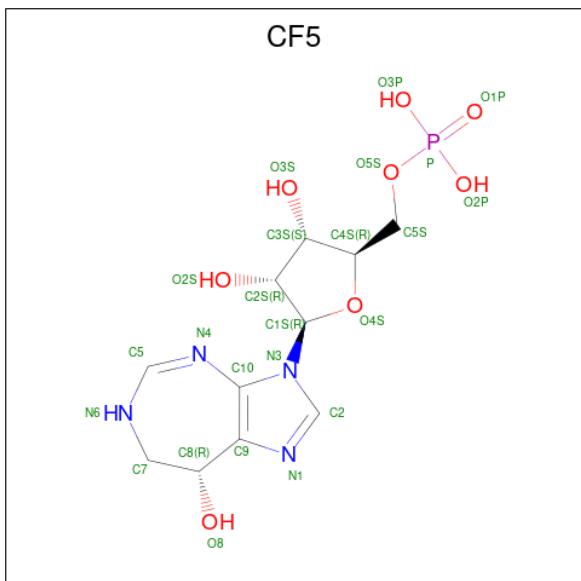
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
4	A	1	24	11	4	8	1	0	0

• Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	24	24	24	0	0

3　Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry 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: AMP deaminase
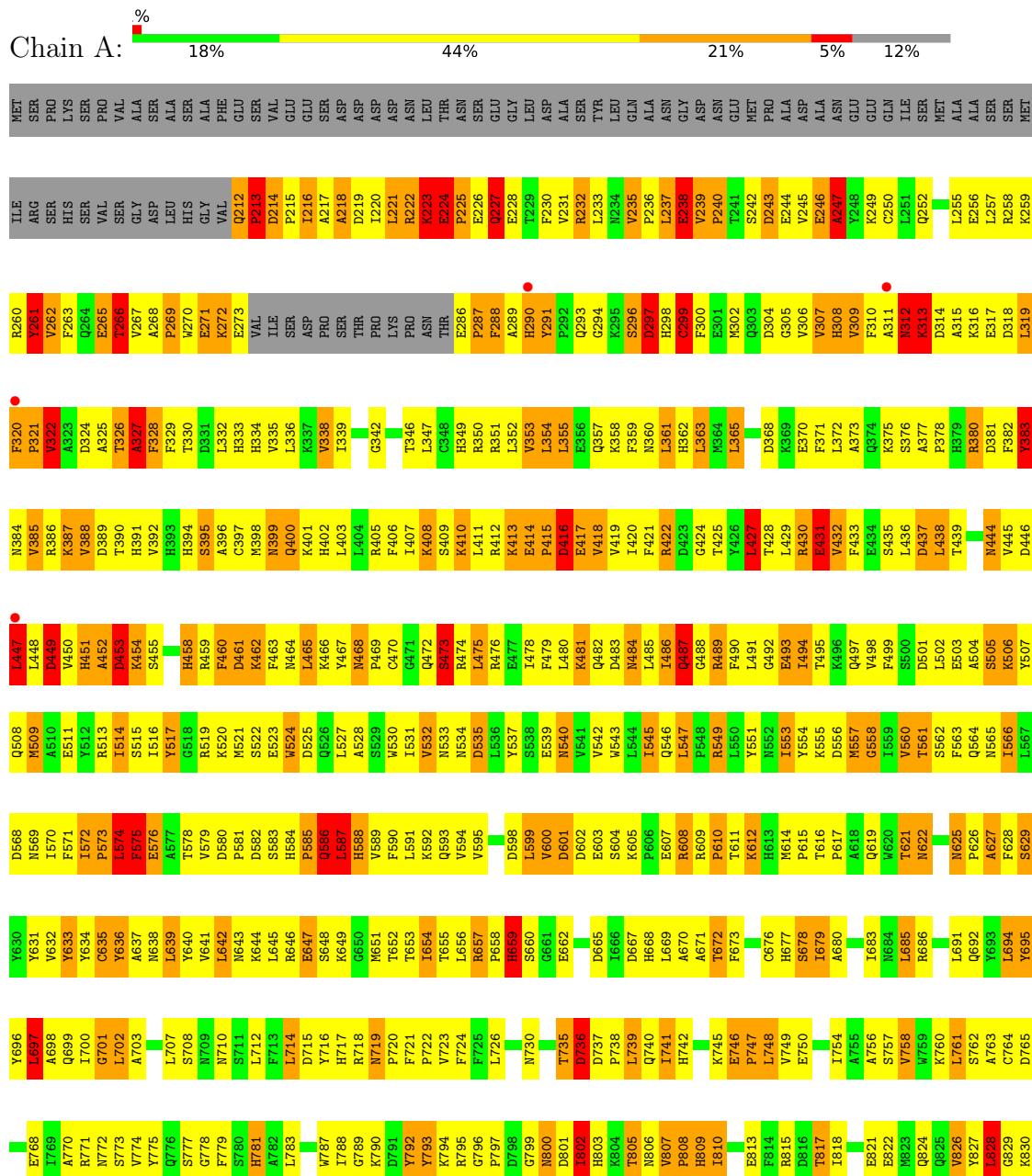
A831 V832 I833 S834 D835 E836 V837 V838 P839

4   Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 62 2 2	Depositor
Cell constants a, b, c, α, β, γ	131.32Å 131.32Å 208.25Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.91 – 3.34 49.91 – 3.34	Depositor EDS
% Data completeness (in resolution range)	93.8 (49.91-3.34) 93.9 (49.91-3.34)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.26 (at 3.33Å)	Xtriage
Refinement program	CNS 1.1, REFMAC 1.1	Depositor
R, R_{free}	0.237 , 0.323 0.220 , 0.314	Depositor DCC
R_{free} test set	741 reflections (4.64%)	wwPDB-VP
Wilson B-factor (Å^2)	96.4	Xtriage
Anisotropy	0.355	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 95.2	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	5104	wwPDB-VP
Average B, all atoms (Å^2)	73.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.94% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CF5, PO4, 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	0.72	0/5184	1.06	22/7033 (0.3%)

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	451	HIS	N-CA-C	10.85	140.29	111.00
1	A	223	LYS	N-CA-C	9.43	136.47	111.00
1	A	587	LEU	N-CA-C	-7.40	91.01	111.00
1	A	327	ALA	N-CA-C	-7.37	91.10	111.00
1	A	449	ASP	N-CA-C	-7.36	91.14	111.00
1	A	736	ASP	CB-CG-OD1	-7.00	112.00	118.30
1	A	575	PHE	N-CA-C	-6.64	93.07	111.00
1	A	600	VAL	N-CA-C	6.47	128.48	111.00
1	A	659	HIS	N-CA-C	-5.99	94.83	111.00
1	A	453	ASP	N-CA-C	5.98	127.16	111.00
1	A	452	ALA	N-CA-C	-5.90	95.08	111.00
1	A	297	ASP	CB-CG-OD2	5.82	123.54	118.30
1	A	235	VAL	CB-CA-C	-5.79	100.40	111.40
1	A	247	ALA	N-CA-C	-5.75	95.47	111.00
1	A	238	GLU	N-CA-C	5.73	126.48	111.00
1	A	245	VAL	N-CA-C	-5.69	95.64	111.00
1	A	447	LEU	CA-CB-CG	5.60	128.19	115.30
1	A	427	LEU	CA-CB-CG	5.57	128.12	115.30
1	A	741	ILE	N-CA-C	5.45	125.72	111.00
1	A	574	LEU	N-CA-C	-5.34	96.57	111.00
1	A	377	ALA	N-CA-C	-5.31	96.67	111.00
1	A	235	VAL	N-CA-C	5.10	124.77	111.00

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	5050	0	4954	739	1
2	A	1	0	0	0	0
3	A	5	0	0	0	0
4	A	24	0	14	15	0
5	A	24	0	0	9	0
All	All	5104	0	4968	740	1

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 74.

All (740) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:466:LYS:HB3	4:A:841:CF5:O3S	1.35	1.21
1:A:586:GLN:HA	1:A:589:VAL:HG13	1.24	1.19
1:A:481:LYS:HD3	1:A:482:GLN:N	1.63	1.13
1:A:735:THR:HG21	1:A:738:PRO:HG3	1.27	1.10
1:A:625:ASN:HD22	1:A:626:PRO:HD2	1.12	1.09
1:A:314:ASP:HB2	5:A:865:HOH:O	1.50	1.09
1:A:232:ARG:HH21	1:A:232:ARG:HG3	1.09	1.07
1:A:672:THR:HG21	1:A:679:ILE:HD11	1.30	1.07
1:A:319:LEU:HD23	1:A:321:PRO:HG3	1.35	1.06
1:A:212:GLN:HA	1:A:212:GLN:HE21	1.20	1.06
1:A:546:GLN:HA	1:A:598:ASP:O	1.56	1.04
1:A:800:ASN:ND2	1:A:805:THR:HG21	1.71	1.04
1:A:222:ARG:HB2	1:A:222:ARG:CZ	1.88	1.03
1:A:222:ARG:HD3	1:A:223:LYS:HG3	1.40	1.03
1:A:625:ASN:ND2	1:A:626:PRO:HD2	1.75	1.02
1:A:290:HIS:CG	1:A:291:TYR:H	1.73	1.01
1:A:399:ASN:HB3	5:A:864:HOH:O	1.60	1.01
1:A:481:LYS:HD3	1:A:482:GLN:H	0.86	1.01
1:A:735:THR:CG2	1:A:738:PRO:HG3	1.90	1.01

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:232:ARG:HH21	1:A:232:ARG:CG	1.73	1.00
1:A:394:HIS:O	1:A:395:SER:HB3	1.62	1.00
1:A:748:LEU:HD13	1:A:749:VAL:N	1.77	0.99
1:A:223:LYS:HB3	1:A:225:PRO:HD2	1.44	0.99
1:A:625:ASN:HD22	1:A:626:PRO:CD	1.76	0.99
1:A:574:LEU:O	1:A:575:PHE:HB2	1.59	0.99
1:A:475:LEU:H	1:A:475:LEU:HD22	1.25	0.98
1:A:805:THR:HG23	1:A:807:VAL:HG13	1.45	0.97
1:A:481:LYS:CD	1:A:482:GLN:H	1.76	0.97
1:A:800:ASN:HD21	1:A:805:THR:HG21	1.29	0.96
1:A:226:GLU:C	1:A:227:GLN:HE21	1.69	0.95
1:A:221:LEU:HD22	1:A:222:ARG:HG2	1.46	0.94
1:A:293:GLN:HG2	1:A:581:PRO:HG2	1.47	0.94
1:A:748:LEU:HD13	1:A:749:VAL:H	1.34	0.93
1:A:833:ILE:HA	5:A:848:HOH:O	1.68	0.91
1:A:466:LYS:CB	4:A:841:CF5:O3S	2.17	0.91
1:A:809:HIS:H	1:A:809:HIS:HD1	1.08	0.91
1:A:407:ILE:HG12	1:A:479:PHE:CE2	2.06	0.91
1:A:451:HIS:C	1:A:453:ASP:N	2.21	0.91
1:A:419:VAL:HG21	1:A:429:LEU:HD12	1.52	0.90
1:A:212:GLN:N	1:A:213:PRO:HD2	1.86	0.90
1:A:296:SER:HB3	1:A:298:HIS:CE1	2.05	0.90
1:A:809:HIS:ND1	1:A:809:HIS:N	2.19	0.90
1:A:616:THR:HG23	1:A:619:GLN:NE2	1.87	0.89
1:A:407:ILE:HG12	1:A:479:PHE:CD2	2.07	0.88
1:A:433:PHE:HD2	1:A:439:THR:HB	1.39	0.88
1:A:612:LYS:HB3	5:A:863:HOH:O	1.71	0.88
1:A:809:HIS:HD1	1:A:809:HIS:N	1.71	0.88
1:A:319:LEU:CD2	1:A:321:PRO:HG3	2.03	0.88
1:A:509:MET:HE3	1:A:540:ASN:HB3	1.55	0.87
1:A:802:ILE:HA	1:A:805:THR:HG22	1.54	0.87
1:A:444:ASN:HD22	1:A:444:ASN:C	1.78	0.87
1:A:616:THR:H	1:A:619:GLN:HE21	1.18	0.87
1:A:296:SER:O	1:A:297:ASP:HB3	1.72	0.87
1:A:662:GLU:OE1	4:A:841:CF5:H71	1.74	0.87
1:A:669:LEU:HD13	1:A:685:LEU:HD13	1.55	0.86
1:A:223:LYS:HZ3	1:A:225:PRO:HD2	1.42	0.85
1:A:430:ARG:HH11	1:A:430:ARG:HB2	1.41	0.85
1:A:222:ARG:CD	1:A:223:LYS:HG3	2.06	0.85
1:A:657:ARG:HD2	1:A:678:SER:HB3	1.59	0.84
1:A:307:VAL:HG21	1:A:575:PHE:CZ	2.12	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:428:THR:H	1:A:431:GLU:HG3	1.42	0.84
1:A:446:ASP:O	1:A:448:LEU:N	2.11	0.84
1:A:517:TYR:HD1	1:A:517:TYR:H	1.26	0.84
1:A:433:PHE:CD2	1:A:439:THR:HB	2.13	0.84
1:A:599:LEU:HD23	1:A:599:LEU:H	1.42	0.84
1:A:302:MET:HA	1:A:307:VAL:HA	1.58	0.83
1:A:226:GLU:C	1:A:227:GLN:NE2	2.31	0.83
1:A:578:THR:HG22	1:A:646:ARG:HE	1.41	0.83
1:A:215:PRO:HD3	1:A:761:LEU:O	1.79	0.83
1:A:263:PHE:HB2	1:A:640:TYR:CD1	2.14	0.83
1:A:805:THR:HG23	1:A:807:VAL:H	1.44	0.82
1:A:226:GLU:OE1	1:A:226:GLU:HA	1.77	0.82
1:A:531:ILE:HG13	1:A:590:PHE:CD2	2.14	0.82
1:A:586:GLN:HA	1:A:589:VAL:CG1	2.07	0.82
1:A:349:HIS:O	1:A:353:VAL:HG12	1.78	0.82
1:A:212:GLN:HE21	1:A:212:GLN:CA	1.93	0.81
1:A:737:ASP:OD1	4:A:841:CF5:H2	1.80	0.81
1:A:468:ASN:HD22	1:A:469:PRO:N	1.78	0.81
1:A:318:ASP:C	1:A:320:PHE:H	1.83	0.81
1:A:388:VAL:HG12	1:A:509:MET:HB2	1.61	0.81
1:A:290:HIS:CG	1:A:291:TYR:N	2.48	0.81
1:A:407:ILE:HG23	1:A:479:PHE:HE2	1.44	0.81
1:A:645:LEU:HA	1:A:648:SER:HB3	1.61	0.81
1:A:223:LYS:HZ3	1:A:225:PRO:CD	1.94	0.80
1:A:659:HIS:HA	1:A:680:ALA:HB3	1.63	0.80
1:A:446:ASP:O	1:A:448:LEU:HD13	1.82	0.80
1:A:468:ASN:HD22	1:A:469:PRO:CD	1.95	0.80
1:A:672:THR:CG2	1:A:679:ILE:HD11	2.09	0.80
1:A:777:SER:OG	1:A:779:PHE:HD2	1.65	0.79
1:A:462:LYS:HG2	4:A:841:CF5:H5S1	1.64	0.79
1:A:222:ARG:O	1:A:223:LYS:HB2	1.82	0.79
1:A:232:ARG:CG	1:A:232:ARG:NH2	2.38	0.78
1:A:386:ARG:HE	1:A:787:TRP:HD1	1.31	0.78
1:A:237:LEU:N	1:A:237:LEU:HD22	1.97	0.78
1:A:223:LYS:HZ3	1:A:225:PRO:CG	1.97	0.78
1:A:517:TYR:N	1:A:517:TYR:CD1	2.49	0.78
1:A:432:VAL:O	1:A:435:SER:HB3	1.84	0.77
1:A:701:GLY:HA2	1:A:730:ASN:HB3	1.66	0.77
1:A:413:LYS:O	1:A:414:GLU:HB2	1.85	0.77
1:A:616:THR:H	1:A:619:GLN:NE2	1.83	0.77
1:A:388:VAL:HG12	1:A:509:MET:CB	2.15	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:212:GLN:HA	1:A:212:GLN:NE2	1.96	0.76
1:A:475:LEU:HD22	1:A:475:LEU:N	1.99	0.76
1:A:737:ASP:OD1	4:A:841:CF5:H5S2	1.84	0.76
1:A:221:LEU:HD22	1:A:222:ARG:CG	2.15	0.76
1:A:452:ALA:HA	1:A:474:ARG:HE	1.50	0.76
1:A:270:TRP:HA	1:A:781:HIS:ND1	2.01	0.76
1:A:626:PRO:HG2	1:A:631:TYR:CE1	2.20	0.76
1:A:491:LEU:HD12	1:A:530:TRP:CZ2	2.21	0.76
1:A:419:VAL:HG11	1:A:478:ILE:HD13	1.68	0.76
1:A:339:ILE:HD11	1:A:691:LEU:HG	1.66	0.75
1:A:466:LYS:HB3	4:A:841:CF5:H1	1.49	0.75
1:A:669:LEU:HD13	1:A:685:LEU:CD1	2.17	0.74
1:A:461:ASP:CG	1:A:462:LYS:H	1.91	0.74
1:A:252:GLN:HE21	1:A:827:TYR:HD1	1.35	0.74
1:A:637:ALA:O	1:A:640:TYR:HB3	1.87	0.74
1:A:409:SER:HA	1:A:412:ARG:HH12	1.52	0.73
1:A:710:ASN:HA	1:A:714:LEU:O	1.87	0.73
1:A:532:VAL:HG21	1:A:586:GLN:HB2	1.71	0.73
1:A:307:VAL:HG11	1:A:575:PHE:CE1	2.23	0.73
1:A:420:ILE:HD12	1:A:421:PHE:H	1.53	0.73
1:A:643:ASN:OD1	1:A:653:THR:HB	1.89	0.73
1:A:222:ARG:CZ	1:A:222:ARG:CB	2.67	0.73
1:A:409:SER:HA	1:A:412:ARG:NH1	2.03	0.73
1:A:521:MET:N	1:A:569:ASN:HD22	1.85	0.73
1:A:436:LEU:HD13	1:A:450:VAL:HG23	1.71	0.72
1:A:223:LYS:NZ	1:A:375:LYS:HB2	2.04	0.72
1:A:268:ALA:O	1:A:271:GLU:HG3	1.88	0.72
1:A:332:LEU:O	1:A:332:LEU:HD23	1.88	0.72
1:A:735:THR:HG21	1:A:738:PRO:CG	2.16	0.72
1:A:824:GLN:NE2	1:A:831:ALA:HB3	2.03	0.72
1:A:419:VAL:HG11	1:A:478:ILE:CD1	2.20	0.71
1:A:213:PRO:HB3	1:A:760:LYS:O	1.89	0.71
1:A:467:TYR:CZ	4:A:841:CF5:O2S	2.41	0.71
1:A:223:LYS:NZ	1:A:225:PRO:HG2	2.06	0.71
1:A:416:ASP:HA	1:A:428:THR:HB	1.70	0.71
1:A:488:GLY:O	1:A:490:PHE:N	2.23	0.71
1:A:521:MET:N	1:A:569:ASN:ND2	2.39	0.71
1:A:792:TYR:C	1:A:792:TYR:CD2	2.63	0.71
1:A:805:THR:CG2	1:A:807:VAL:H	2.03	0.71
1:A:475:LEU:H	1:A:475:LEU:CD2	1.99	0.71
1:A:742:HIS:HB3	1:A:750:GLU:OE1	1.91	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:299:CYS:SG	1:A:310:PHE:N	2.64	0.70
1:A:561:THR:H	1:A:565:ASN:ND2	1.89	0.70
1:A:695:TYR:CE2	1:A:700:ILE:HG21	2.26	0.70
1:A:503:GLU:HA	1:A:540:ASN:HD21	1.56	0.70
1:A:719:ASN:HD22	1:A:720:PRO:N	1.89	0.70
1:A:603:GLU:OE2	1:A:668:HIS:HD2	1.74	0.70
1:A:430:ARG:HH11	1:A:430:ARG:CB	2.04	0.70
1:A:584:HIS:O	1:A:587:LEU:HB3	1.92	0.70
1:A:299:CYS:SG	1:A:310:PHE:HB2	2.32	0.70
1:A:563:PHE:O	1:A:566:ILE:HG13	1.91	0.69
1:A:410:LYS:HG2	1:A:490:PHE:HE1	1.58	0.69
1:A:754:ILE:O	1:A:758:VAL:HG13	1.92	0.69
1:A:468:ASN:HD22	1:A:469:PRO:HD2	1.57	0.69
1:A:484:ASN:HD22	1:A:484:ASN:C	1.95	0.69
1:A:805:THR:CG2	1:A:807:VAL:HG13	2.21	0.69
1:A:380:ARG:HG2	1:A:806:ASN:HB2	1.75	0.68
1:A:263:PHE:HB2	1:A:640:TYR:HD1	1.55	0.68
1:A:290:HIS:CD2	1:A:291:TYR:H	2.12	0.68
1:A:223:LYS:HZ1	1:A:375:LYS:HB2	1.58	0.68
1:A:319:LEU:HD23	1:A:321:PRO:CG	2.18	0.68
1:A:632:VAL:HG23	1:A:633:TYR:N	2.09	0.68
1:A:350:ARG:O	1:A:354:LEU:HB2	1.93	0.67
1:A:222:ARG:CB	1:A:222:ARG:NH2	2.58	0.67
1:A:232:ARG:HG3	1:A:232:ARG:NH2	1.92	0.67
1:A:410:LYS:HG2	1:A:490:PHE:CE1	2.29	0.67
1:A:642:LEU:HD11	1:A:646:ARG:CG	2.25	0.67
1:A:300:PHE:HZ	1:A:576:GLU:HA	1.60	0.67
1:A:631:TYR:O	1:A:635:CYS:HB2	1.94	0.67
1:A:790:LYS:O	1:A:793:TYR:HE1	1.77	0.67
1:A:402:HIS:CE1	1:A:494:ILE:HD11	2.30	0.67
1:A:633:TYR:CD1	1:A:634:TYR:N	2.63	0.67
1:A:452:ALA:HA	1:A:474:ARG:NE	2.09	0.66
1:A:266:THR:HG23	1:A:267:VAL:HG23	1.76	0.66
1:A:318:ASP:N	5:A:860:HOH:O	2.17	0.66
1:A:451:HIS:HB3	1:A:453:ASP:H	1.60	0.66
1:A:495:THR:O	1:A:498:VAL:HB	1.95	0.66
1:A:777:SER:OG	1:A:779:PHE:CD2	2.47	0.66
1:A:562:SER:H	1:A:565:ASN:ND2	1.93	0.66
1:A:585:PRO:O	1:A:587:LEU:N	2.28	0.66
1:A:317:GLU:O	1:A:318:ASP:OD1	2.14	0.66
1:A:394:HIS:NE2	1:A:491:LEU:HD11	2.11	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:421:PHE:HD1	1:A:425:THR:C	1.98	0.66
1:A:468:ASN:ND2	1:A:469:PRO:HD2	2.09	0.66
1:A:805:THR:HG23	1:A:807:VAL:CG1	2.23	0.66
1:A:524:TRP:CH2	1:A:545:ILE:HG12	2.31	0.65
1:A:572:ILE:HB	1:A:573:PRO:HD3	1.77	0.65
1:A:463:PHE:O	1:A:467:TYR:HB2	1.96	0.65
1:A:582:ASP:O	1:A:585:PRO:HD3	1.97	0.65
1:A:617:PRO:HG2	5:A:853:HOH:O	1.95	0.65
1:A:701:GLY:CA	1:A:730:ASN:HB3	2.26	0.65
1:A:528:ALA:HB1	1:A:587:LEU:HA	1.78	0.65
1:A:629:SER:O	1:A:632:VAL:HG22	1.96	0.65
1:A:701:GLY:HA2	1:A:730:ASN:O	1.96	0.65
1:A:222:ARG:HB2	1:A:222:ARG:NH2	2.11	0.65
1:A:326:THR:O	1:A:327:ALA:CB	2.45	0.65
1:A:422:ARG:HE	1:A:474:ARG:HE	1.45	0.65
1:A:436:LEU:HD13	1:A:450:VAL:CG2	2.26	0.65
1:A:451:HIS:C	1:A:453:ASP:H	1.82	0.65
1:A:391:HIS:HE1	1:A:736:ASP:OD2	1.79	0.65
1:A:616:THR:HB	1:A:617:PRO:HD2	1.79	0.65
1:A:252:GLN:O	1:A:256:GLU:HG2	1.97	0.64
1:A:336:LEU:O	1:A:339:ILE:HG22	1.97	0.64
1:A:305:GLY:HA3	1:A:617:PRO:HG3	1.79	0.64
1:A:394:HIS:O	1:A:395:SER:CB	2.41	0.64
1:A:307:VAL:HG23	1:A:308:HIS:N	2.13	0.64
1:A:715:ASP:OD1	1:A:716:TYR:N	2.31	0.64
1:A:297:ASP:O	1:A:579:VAL:HG13	1.96	0.64
1:A:272:LYS:O	1:A:273:GLU:HB2	1.96	0.63
1:A:293:GLN:HG3	1:A:294:GLY:N	2.13	0.63
1:A:297:ASP:HA	1:A:312:ASN:CG	2.18	0.63
1:A:473:SER:OG	1:A:474:ARG:N	2.30	0.63
1:A:719:ASN:ND2	1:A:721:PHE:H	1.96	0.63
1:A:781:HIS:C	1:A:781:HIS:CD2	2.71	0.63
1:A:783:LEU:HG	1:A:787:TRP:CZ2	2.34	0.63
1:A:447:LEU:HD21	1:A:460:PHE:CZ	2.33	0.63
1:A:221:LEU:CD2	1:A:222:ARG:HG2	2.23	0.63
1:A:549:ARG:HD3	1:A:600:VAL:O	1.98	0.63
1:A:838:VAL:HG22	1:A:839:PRO:HD2	1.78	0.63
1:A:498:VAL:HG12	1:A:499:PHE:HD2	1.63	0.62
1:A:227:GLN:O	1:A:227:GLN:HG2	1.99	0.62
1:A:402:HIS:CE1	1:A:494:ILE:CD1	2.82	0.62
1:A:419:VAL:HG21	1:A:429:LEU:CD1	2.26	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:616:THR:N	1:A:619:GLN:HE21	1.94	0.62
1:A:223:LYS:HZ3	1:A:225:PRO:HG2	1.63	0.62
1:A:238:GLU:N	1:A:238:GLU:OE2	2.32	0.62
1:A:388:VAL:CG1	1:A:509:MET:HB2	2.28	0.62
1:A:387:LYS:HD3	1:A:508:GLN:NE2	2.15	0.62
1:A:327:ALA:O	1:A:330:THR:N	2.32	0.61
1:A:595:VAL:O	1:A:655:THR:HG22	1.99	0.61
1:A:628:PHE:O	1:A:631:TYR:N	2.34	0.61
1:A:307:VAL:CG2	1:A:308:HIS:N	2.63	0.61
1:A:792:TYR:CD2	1:A:793:TYR:N	2.68	0.61
1:A:412:ARG:O	1:A:415:PRO:HD3	1.99	0.61
1:A:562:SER:H	1:A:565:ASN:HD22	1.47	0.61
1:A:319:LEU:C	1:A:321:PRO:HD3	2.20	0.61
1:A:312:ASN:C	1:A:312:ASN:HD22	2.03	0.61
1:A:318:ASP:C	1:A:320:PHE:N	2.54	0.61
1:A:535:ASP:CG	1:A:535:ASP:O	2.39	0.61
1:A:222:ARG:HD3	1:A:223:LYS:CG	2.24	0.61
1:A:472:GLN:HG3	1:A:476:ARG:HG2	1.83	0.61
1:A:524:TRP:CD1	1:A:573:PRO:HB2	2.35	0.61
1:A:532:VAL:O	1:A:534:ASN:N	2.33	0.61
1:A:553:ILE:O	1:A:557:MET:HG3	2.00	0.61
1:A:444:ASN:C	1:A:444:ASN:ND2	2.48	0.60
1:A:371:PHE:CE2	1:A:375:LYS:HE3	2.36	0.60
1:A:249:LYS:HA	1:A:252:GLN:OE1	2.02	0.60
1:A:272:LYS:O	1:A:272:LYS:HD2	2.01	0.60
1:A:386:ARG:NE	1:A:787:TRP:HD1	1.98	0.60
1:A:468:ASN:HD22	1:A:468:ASN:C	2.00	0.60
1:A:658:PRO:HG2	1:A:676:CYS:SG	2.41	0.60
1:A:428:THR:N	1:A:431:GLU:HG3	2.13	0.60
1:A:491:LEU:HD12	1:A:530:TRP:CH2	2.36	0.60
1:A:492:GLY:O	1:A:494:ILE:N	2.35	0.60
1:A:632:VAL:CG2	1:A:633:TYR:N	2.64	0.60
1:A:460:PHE:HB2	1:A:465:LEU:HD11	1.84	0.60
1:A:223:LYS:CB	1:A:225:PRO:HD2	2.27	0.60
1:A:313:LYS:HG3	1:A:314:ASP:H	1.67	0.60
1:A:319:LEU:HD11	1:A:644:LYS:O	2.02	0.60
1:A:599:LEU:HD23	1:A:599:LEU:N	2.15	0.60
1:A:478:ILE:HG22	1:A:479:PHE:CD1	2.37	0.60
1:A:616:THR:HG23	1:A:619:GLN:HE21	1.67	0.60
1:A:517:TYR:HB3	1:A:554:TYR:OH	2.00	0.59
1:A:719:ASN:HD22	1:A:721:PHE:H	1.50	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:462:LYS:CG	4:A:841:CF5:H5S1	2.32	0.59
1:A:467:TYR:CE2	4:A:841:CF5:O2S	2.54	0.59
1:A:484:ASN:C	1:A:484:ASN:ND2	2.54	0.59
1:A:421:PHE:HE1	1:A:424:GLY:O	1.86	0.59
1:A:609:ARG:HD2	1:A:667:ASP:CG	2.21	0.59
1:A:326:THR:O	1:A:327:ALA:HB2	2.01	0.59
1:A:362:HIS:HE1	1:A:370:GLU:OE2	1.86	0.59
1:A:232:ARG:HD2	1:A:810:ILE:HD12	1.85	0.59
1:A:444:ASN:ND2	1:A:444:ASN:O	2.35	0.59
1:A:332:LEU:HD23	1:A:332:LEU:C	2.23	0.59
1:A:407:ILE:HG23	1:A:479:PHE:CE2	2.33	0.59
1:A:263:PHE:HB2	1:A:640:TYR:CE1	2.37	0.59
1:A:215:PRO:CD	1:A:761:LEU:O	2.50	0.59
1:A:824:GLN:NE2	1:A:831:ALA:CB	2.65	0.58
1:A:321:PRO:HG2	1:A:641:VAL:HG13	1.83	0.58
1:A:406:PHE:CD2	1:A:494:ILE:HG12	2.39	0.58
1:A:793:TYR:HD1	1:A:793:TYR:H	1.50	0.58
1:A:572:ILE:O	1:A:576:GLU:HB2	2.03	0.58
1:A:719:ASN:HD22	1:A:719:ASN:C	2.06	0.58
1:A:214:ASP:H	1:A:761:LEU:C	2.06	0.58
1:A:800:ASN:HD21	1:A:805:THR:CG2	2.11	0.58
1:A:223:LYS:CE	1:A:225:PRO:HG2	2.34	0.58
1:A:625:ASN:HD22	1:A:626:PRO:N	2.02	0.58
1:A:386:ARG:HH22	1:A:507:TYR:HE1	1.50	0.58
1:A:707:LEU:HD22	1:A:754:ILE:CD1	2.33	0.58
1:A:388:VAL:O	1:A:390:THR:HG23	2.04	0.58
1:A:257:LEU:O	1:A:258:ARG:C	2.39	0.58
1:A:315:ALA:CB	5:A:860:HOH:O	2.52	0.58
1:A:578:THR:HG22	1:A:646:ARG:NE	2.16	0.58
1:A:336:LEU:C	1:A:339:ILE:HG22	2.25	0.57
1:A:579:VAL:O	1:A:581:PRO:HD3	2.04	0.57
1:A:805:THR:HG23	1:A:807:VAL:N	2.18	0.57
1:A:223:LYS:HZ2	1:A:375:LYS:CB	2.17	0.57
1:A:249:LYS:O	1:A:252:GLN:HB2	2.04	0.57
1:A:587:LEU:O	1:A:590:PHE:HB3	2.04	0.57
1:A:672:THR:HG21	1:A:679:ILE:CD1	2.20	0.57
1:A:387:LYS:HD3	1:A:508:GLN:HE21	1.68	0.57
1:A:555:LYS:O	1:A:555:LYS:HD3	2.05	0.57
1:A:376:SER:O	1:A:378:PRO:HD3	2.03	0.57
1:A:602:ASP:OD1	1:A:604:SER:OG	2.21	0.57
1:A:633:TYR:O	1:A:636:TYR:HB3	2.03	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:223:LYS:NZ	1:A:225:PRO:CG	2.66	0.57
1:A:437:ASP:O	1:A:439:THR:N	2.37	0.57
1:A:422:ARG:NH2	1:A:474:ARG:HG3	2.20	0.57
1:A:797:PRO:HG3	1:A:813:GLU:HA	1.87	0.57
1:A:309:VAL:O	1:A:309:VAL:HG13	2.05	0.57
1:A:397:CYS:SG	1:A:397:CYS:O	2.63	0.57
1:A:480:LEU:HA	1:A:491:LEU:HD23	1.87	0.57
1:A:527:LEU:O	1:A:530:TRP:HB3	2.05	0.57
1:A:592:LYS:HA	1:A:652:THR:HG21	1.87	0.57
1:A:223:LYS:HE2	1:A:225:PRO:HG2	1.85	0.57
1:A:460:PHE:HB2	1:A:465:LEU:CD1	2.35	0.57
1:A:818:ILE:O	1:A:822:GLU:HG2	2.05	0.57
1:A:382:PHE:O	1:A:385:VAL:CG1	2.53	0.57
1:A:492:GLY:O	1:A:493:GLU:C	2.43	0.57
1:A:506:LYS:HE3	1:A:507:TYR:CZ	2.40	0.57
1:A:509:MET:CE	1:A:540:ASN:HB3	2.29	0.57
1:A:691:LEU:O	1:A:695:TYR:HD1	1.88	0.57
1:A:409:SER:O	1:A:411:LEU:N	2.38	0.56
1:A:431:GLU:O	1:A:432:VAL:C	2.43	0.56
1:A:701:GLY:N	1:A:730:ASN:HB3	2.20	0.56
1:A:453:ASP:O	1:A:454:LYS:HB2	2.05	0.56
1:A:222:ARG:NE	1:A:223:LYS:H	2.04	0.56
1:A:339:ILE:HD11	1:A:691:LEU:CG	2.34	0.56
1:A:382:PHE:O	1:A:385:VAL:HG13	2.06	0.56
1:A:451:HIS:CB	1:A:453:ASP:H	2.17	0.56
1:A:421:PHE:CD1	1:A:425:THR:C	2.78	0.56
1:A:672:THR:HG22	1:A:695:TYR:OH	2.05	0.56
1:A:747:PRO:O	1:A:750:GLU:HB3	2.06	0.56
1:A:511:GLU:OE1	1:A:657:ARG:NH1	2.38	0.56
1:A:707:LEU:HD22	1:A:754:ILE:HD11	1.87	0.56
1:A:391:HIS:HA	1:A:513:ARG:NH1	2.20	0.56
1:A:407:ILE:CG2	1:A:479:PHE:HE2	2.16	0.56
1:A:409:SER:C	1:A:411:LEU:H	2.09	0.56
1:A:311:ALA:HB3	1:A:315:ALA:HB2	1.87	0.56
1:A:800:ASN:ND2	1:A:805:THR:CG2	2.60	0.56
1:A:828:LEU:CD2	1:A:828:LEU:N	2.69	0.56
1:A:224:GLU:O	1:A:226:GLU:HG2	2.05	0.56
1:A:324:ASP:OD2	1:A:326:THR:O	2.23	0.56
1:A:708:SER:HB2	1:A:741:ILE:CD1	2.35	0.56
1:A:420:ILE:CD1	1:A:421:PHE:H	2.20	0.55
1:A:467:TYR:CE2	1:A:600:VAL:HG21	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:520:LYS:C	1:A:569:ASN:HD22	2.08	0.55
1:A:697:LEU:HD13	1:A:697:LEU:H	1.71	0.55
1:A:756:ALA:HA	1:A:761:LEU:HB2	1.88	0.55
1:A:361:LEU:HD22	1:A:365:LEU:CD2	2.36	0.55
1:A:386:ARG:NH2	1:A:507:TYR:CE1	2.74	0.55
1:A:402:HIS:HE1	1:A:494:ILE:CD1	2.18	0.55
1:A:692:GLN:CD	1:A:724:PHE:HE2	2.09	0.55
1:A:226:GLU:OE1	1:A:226:GLU:CA	2.47	0.55
1:A:386:ARG:NE	1:A:787:TRP:CD1	2.74	0.55
1:A:297:ASP:HA	1:A:312:ASN:ND2	2.21	0.55
1:A:309:VAL:HG21	1:A:645:LEU:CD1	2.36	0.55
1:A:828:LEU:N	1:A:828:LEU:HD22	2.21	0.55
1:A:587:LEU:HD13	1:A:587:LEU:C	2.27	0.55
1:A:288:PHE:CZ	1:A:535:ASP:HA	2.42	0.55
1:A:223:LYS:NZ	1:A:375:LYS:CB	2.68	0.55
1:A:645:LEU:O	1:A:648:SER:HB3	2.07	0.55
1:A:801:ASP:O	1:A:803:HIS:N	2.40	0.55
1:A:468:ASN:ND2	1:A:470:CYS:H	2.05	0.55
1:A:215:PRO:O	1:A:216:ILE:C	2.45	0.54
1:A:582:ASP:C	1:A:585:PRO:HD3	2.28	0.54
1:A:513:ARG:NE	1:A:598:ASP:OD2	2.31	0.54
1:A:415:PRO:O	1:A:417:GLU:N	2.40	0.54
1:A:642:LEU:HD11	1:A:646:ARG:HD2	1.89	0.54
1:A:642:LEU:HD11	1:A:646:ARG:HG3	1.87	0.54
1:A:540:ASN:N	1:A:540:ASN:OD1	2.40	0.54
1:A:407:ILE:O	1:A:408:LYS:C	2.45	0.54
1:A:498:VAL:HG12	1:A:499:PHE:N	2.23	0.54
1:A:226:GLU:HB2	1:A:227:GLN:HE22	1.72	0.54
1:A:327:ALA:O	1:A:329:PHE:N	2.41	0.54
1:A:406:PHE:CE2	1:A:494:ILE:HG12	2.43	0.54
1:A:485:LEU:C	1:A:487:GLN:H	2.11	0.54
1:A:571:PHE:O	1:A:572:ILE:HG12	2.08	0.54
1:A:427:LEU:HB3	1:A:431:GLU:HB2	1.90	0.53
1:A:822:GLU:O	1:A:826:VAL:HG12	2.07	0.53
1:A:387:LYS:HB3	1:A:770:ALA:HB1	1.90	0.53
1:A:236:PRO:C	1:A:237:LEU:HD22	2.28	0.53
1:A:237:LEU:N	1:A:237:LEU:CD2	2.71	0.53
1:A:319:LEU:O	1:A:321:PRO:HD3	2.08	0.53
1:A:335:VAL:O	1:A:339:ILE:HB	2.09	0.53
1:A:645:LEU:HA	1:A:648:SER:CB	2.37	0.53
1:A:645:LEU:CA	1:A:648:SER:HB3	2.36	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:472:GLN:CD	1:A:476:ARG:HD3	2.29	0.53
1:A:386:ARG:NH2	1:A:507:TYR:CD1	2.76	0.53
1:A:832:VAL:O	1:A:833:ILE:HB	2.08	0.53
1:A:359:PHE:CZ	1:A:363:LEU:HD21	2.44	0.53
1:A:560:VAL:HG22	1:A:565:ASN:HB2	1.90	0.53
1:A:461:ASP:CG	1:A:462:LYS:N	2.59	0.53
1:A:610:PRO:HD3	1:A:627:ALA:CB	2.39	0.53
1:A:388:VAL:HG12	1:A:509:MET:HB3	1.91	0.53
1:A:239:VAL:HG22	1:A:240:PRO:O	2.08	0.52
1:A:313:LYS:CG	1:A:314:ASP:H	2.21	0.52
1:A:462:LYS:HD3	4:A:841:CF5:H3S	1.90	0.52
1:A:607:GLU:OE2	1:A:668:HIS:HE1	1.92	0.52
1:A:771:ARG:NH1	1:A:800:ASN:HB2	2.24	0.52
1:A:447:LEU:HD13	1:A:447:LEU:O	2.08	0.52
1:A:642:LEU:CD1	1:A:646:ARG:HG3	2.39	0.52
1:A:498:VAL:HG12	1:A:499:PHE:CD2	2.44	0.52
1:A:574:LEU:O	1:A:574:LEU:HD12	2.10	0.52
1:A:668:HIS:O	1:A:672:THR:HB	2.10	0.52
1:A:680:ALA:O	1:A:703:ALA:O	2.26	0.52
1:A:332:LEU:CD2	1:A:336:LEU:HD22	2.39	0.52
1:A:495:THR:O	1:A:498:VAL:N	2.39	0.52
1:A:701:GLY:HA2	1:A:730:ASN:CB	2.37	0.52
1:A:708:SER:HB2	1:A:741:ILE:HD13	1.91	0.52
1:A:325:ALA:HA	1:A:633:TYR:CZ	2.44	0.52
1:A:580:ASP:OD1	1:A:583:SER:HB3	2.10	0.52
1:A:554:TYR:O	1:A:560:VAL:HG12	2.10	0.52
1:A:694:LEU:O	1:A:696:TYR:N	2.42	0.52
1:A:551:TYR:CZ	1:A:555:LYS:HG3	2.45	0.51
4:A:841:CF5:O8	4:A:841:CF5:C5	2.58	0.51
1:A:556:ASP:C	1:A:558:GLY:H	2.13	0.51
1:A:642:LEU:HD12	1:A:642:LEU:O	2.10	0.51
1:A:414:GLU:H	1:A:415:PRO:HD3	1.74	0.51
1:A:532:VAL:C	1:A:534:ASN:H	2.13	0.51
1:A:265:GLU:O	1:A:267:VAL:N	2.43	0.51
1:A:330:THR:HG22	5:A:863:HOH:O	2.10	0.51
1:A:611:THR:HG22	1:A:614:MET:SD	2.51	0.51
1:A:694:LEU:O	1:A:695:TYR:C	2.48	0.51
1:A:701:GLY:H	1:A:730:ASN:HB3	1.76	0.51
1:A:312:ASN:C	1:A:312:ASN:ND2	2.63	0.51
1:A:695:TYR:HE2	1:A:700:ILE:HG21	1.76	0.51
1:A:492:GLY:O	1:A:495:THR:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:609:ARG:HD2	1:A:667:ASP:CB	2.41	0.51
1:A:662:GLU:CD	4:A:841:CF5:H71	2.30	0.51
1:A:313:LYS:O	1:A:314:ASP:OD1	2.29	0.51
1:A:411:LEU:HA	1:A:429:LEU:CD2	2.41	0.51
1:A:421:PHE:CE1	1:A:424:GLY:O	2.63	0.51
1:A:405:ARG:HG2	1:A:405:ARG:HH21	1.75	0.51
1:A:417:GLU:O	1:A:417:GLU:HG3	2.09	0.51
1:A:683:ILE:O	1:A:686:ARG:HD3	2.11	0.51
1:A:698:ALA:O	1:A:699:GLN:HB2	2.11	0.51
1:A:237:LEU:O	1:A:238:GLU:HB2	2.11	0.51
1:A:300:PHE:HZ	1:A:576:GLU:CA	2.22	0.51
1:A:695:TYR:CD2	1:A:700:ILE:HG21	2.45	0.51
1:A:572:ILE:H	1:A:573:PRO:CD	2.24	0.50
1:A:638:ASN:O	1:A:639:LEU:C	2.49	0.50
1:A:657:ARG:N	1:A:658:PRO:HD3	2.25	0.50
1:A:679:ILE:HG23	1:A:680:ALA:N	2.26	0.50
1:A:258:ARG:O	1:A:262:VAL:HG12	2.12	0.50
1:A:419:VAL:CG1	1:A:478:ILE:HG12	2.40	0.50
1:A:223:LYS:HZ2	1:A:375:LYS:HB3	1.75	0.50
1:A:339:ILE:CD1	1:A:691:LEU:HG	2.39	0.50
1:A:469:PRO:HB3	1:A:517:TYR:CE2	2.46	0.50
1:A:612:LYS:N	1:A:612:LYS:HD3	2.26	0.50
1:A:735:THR:CG2	1:A:738:PRO:CG	2.78	0.50
1:A:777:SER:OG	1:A:778:GLY:N	2.45	0.50
1:A:795:ARG:HG3	1:A:795:ARG:HH11	1.77	0.50
1:A:719:ASN:ND2	1:A:720:PRO:HD2	2.27	0.50
1:A:372:LEU:O	1:A:373:ALA:C	2.49	0.50
1:A:451:HIS:CD2	1:A:458:HIS:CE1	2.99	0.50
1:A:244:GLU:OE2	1:A:244:GLU:N	2.45	0.50
1:A:383:TYR:HD1	1:A:383:TYR:H	1.60	0.50
1:A:520:LYS:C	1:A:569:ASN:ND2	2.65	0.50
1:A:421:PHE:HE1	1:A:425:THR:HA	1.77	0.49
1:A:310:PHE:HA	1:A:318:ASP:HA	1.94	0.49
1:A:311:ALA:O	1:A:313:LYS:N	2.45	0.49
1:A:325:ALA:HA	1:A:633:TYR:CE2	2.47	0.49
1:A:382:PHE:O	1:A:383:TYR:C	2.50	0.49
1:A:252:GLN:HG2	1:A:827:TYR:CE1	2.47	0.49
1:A:359:PHE:O	1:A:362:HIS:HB3	2.12	0.49
1:A:433:PHE:CA	1:A:439:THR:HG21	2.42	0.49
1:A:321:PRO:CG	1:A:641:VAL:HG13	2.41	0.49
1:A:718:ARG:HG2	1:A:718:ARG:HH11	1.76	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:528:ALA:CB	1:A:587:LEU:HA	2.43	0.49
1:A:602:ASP:HB3	1:A:605:LYS:HE3	1.94	0.49
1:A:721:PHE:N	1:A:722:PRO:HD2	2.28	0.49
1:A:451:HIS:O	1:A:474:ARG:HG2	2.13	0.49
1:A:461:ASP:OD1	1:A:462:LYS:N	2.46	0.49
1:A:224:GLU:OE2	1:A:225:PRO:HD3	2.13	0.49
1:A:572:ILE:H	1:A:573:PRO:HD2	1.77	0.49
1:A:307:VAL:HG11	1:A:575:PHE:HE1	1.76	0.49
1:A:488:GLY:C	1:A:490:PHE:N	2.66	0.49
1:A:332:LEU:O	1:A:336:LEU:HB2	2.13	0.49
1:A:417:GLU:O	1:A:419:VAL:HG23	2.13	0.49
1:A:524:TRP:HE1	1:A:570:ILE:HA	1.78	0.49
1:A:221:LEU:CD2	1:A:221:LEU:C	2.81	0.48
1:A:494:ILE:CG2	1:A:495:THR:N	2.76	0.48
1:A:788:ILE:HG13	1:A:789:GLY:H	1.77	0.48
1:A:272:LYS:O	1:A:273:GLU:CB	2.60	0.48
1:A:309:VAL:HG21	1:A:645:LEU:HD11	1.96	0.48
1:A:437:ASP:O	1:A:438:LEU:C	2.52	0.48
1:A:481:LYS:HE2	1:A:482:GLN:HG3	1.95	0.48
1:A:656:LEU:C	1:A:658:PRO:HD3	2.33	0.48
1:A:672:THR:CG2	1:A:695:TYR:OH	2.60	0.48
1:A:777:SER:HG	1:A:779:PHE:HD2	1.42	0.48
1:A:616:THR:OG1	1:A:619:GLN:HG3	2.13	0.48
1:A:827:TYR:C	1:A:828:LEU:HD22	2.34	0.48
1:A:224:GLU:N	1:A:225:PRO:CD	2.77	0.48
1:A:633:TYR:CD1	1:A:633:TYR:C	2.86	0.48
1:A:328:PHE:CD1	1:A:328:PHE:C	2.87	0.48
1:A:335:VAL:O	1:A:338:VAL:HG13	2.13	0.48
1:A:446:ASP:C	1:A:448:LEU:H	2.16	0.48
1:A:494:ILE:HG22	1:A:495:THR:N	2.28	0.48
1:A:600:VAL:O	1:A:601:ASP:HB2	2.13	0.48
1:A:224:GLU:H	1:A:225:PRO:HD3	1.79	0.48
1:A:270:TRP:CE3	1:A:793:TYR:HB3	2.48	0.48
1:A:383:TYR:CD1	1:A:383:TYR:N	2.81	0.48
1:A:736:ASP:OD1	4:A:841:CF5:N1	2.46	0.48
1:A:524:TRP:NE1	1:A:570:ILE:HA	2.29	0.48
1:A:232:ARG:HD2	1:A:810:ILE:CD1	2.44	0.47
1:A:438:LEU:O	1:A:439:THR:HG23	2.14	0.47
1:A:827:TYR:C	1:A:828:LEU:CD2	2.82	0.47
1:A:242:SER:OG	1:A:243:ASP:N	2.47	0.47
1:A:452:ALA:HA	1:A:474:ARG:HH21	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:827:TYR:O	1:A:830:LYS:N	2.44	0.47
1:A:226:GLU:CA	1:A:227:GLN:NE2	2.78	0.47
1:A:232:ARG:NH2	1:A:232:ARG:HG2	2.26	0.47
1:A:572:ILE:C	1:A:574:LEU:N	2.65	0.47
1:A:611:THR:OG1	1:A:612:LYS:N	2.46	0.47
1:A:797:PRO:C	1:A:799:GLY:H	2.15	0.47
1:A:411:LEU:HD13	1:A:411:LEU:C	2.34	0.47
1:A:454:LYS:HB3	1:A:455:SER:H	1.33	0.47
1:A:468:ASN:ND2	1:A:468:ASN:C	2.67	0.47
1:A:501:ASP:O	1:A:504:ALA:HB3	2.14	0.47
1:A:503:GLU:HA	1:A:540:ASN:ND2	2.28	0.47
1:A:783:LEU:HG	1:A:787:TRP:CE2	2.49	0.47
1:A:247:ALA:O	1:A:250:CYS:HB2	2.15	0.47
1:A:603:GLU:OE2	1:A:668:HIS:CD2	2.62	0.47
1:A:460:PHE:O	1:A:461:ASP:O	2.33	0.47
1:A:478:ILE:HG22	1:A:479:PHE:HD1	1.78	0.47
1:A:466:LYS:NZ	1:A:546:GLN:HE22	2.13	0.47
1:A:824:GLN:OE1	1:A:829:GLY:CA	2.63	0.47
1:A:391:HIS:CD2	1:A:659:HIS:CE1	3.03	0.46
1:A:446:ASP:C	1:A:448:LEU:N	2.69	0.46
1:A:571:PHE:HE2	1:A:639:LEU:HD22	1.80	0.46
1:A:215:PRO:HG2	1:A:216:ILE:N	2.31	0.46
1:A:225:PRO:O	1:A:226:GLU:CD	2.53	0.46
1:A:313:LYS:HG3	1:A:314:ASP:N	2.30	0.46
1:A:319:LEU:O	1:A:321:PRO:CD	2.63	0.46
1:A:389:ASP:OD1	1:A:735:THR:HB	2.14	0.46
1:A:433:PHE:O	1:A:439:THR:HG21	2.15	0.46
1:A:672:THR:HG22	1:A:673:PHE:N	2.29	0.46
1:A:222:ARG:NE	1:A:223:LYS:N	2.62	0.46
1:A:300:PHE:CZ	1:A:576:GLU:HA	2.46	0.46
1:A:396:ALA:O	1:A:739:LEU:HB2	2.15	0.46
1:A:824:GLN:OE1	1:A:829:GLY:HA2	2.16	0.46
1:A:411:LEU:HA	1:A:429:LEU:HD23	1.97	0.46
1:A:417:GLU:O	1:A:418:VAL:C	2.54	0.46
1:A:428:THR:OG1	1:A:429:LEU:N	2.46	0.46
1:A:449:ASP:CG	1:A:449:ASP:O	2.53	0.46
1:A:532:VAL:C	1:A:534:ASN:N	2.69	0.46
1:A:319:LEU:HD23	1:A:319:LEU:O	2.15	0.46
1:A:327:ALA:C	1:A:329:PHE:N	2.69	0.46
1:A:327:ALA:O	1:A:328:PHE:C	2.52	0.46
1:A:428:THR:HG23	1:A:431:GLU:HG3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:748:LEU:HD13	1:A:748:LEU:C	2.34	0.46
1:A:222:ARG:HE	1:A:223:LYS:HA	1.81	0.46
1:A:226:GLU:HB2	1:A:227:GLN:NE2	2.31	0.46
1:A:288:PHE:HZ	1:A:535:ASP:HA	1.78	0.46
1:A:722:PRO:HG2	1:A:723:VAL:N	2.30	0.46
1:A:307:VAL:CG2	1:A:575:PHE:CZ	2.94	0.46
1:A:599:LEU:N	1:A:599:LEU:CD2	2.78	0.46
1:A:452:ALA:HA	1:A:474:ARG:NH2	2.30	0.45
1:A:642:LEU:HD11	1:A:646:ARG:CD	2.45	0.45
1:A:795:ARG:HD2	1:A:796:GLY:N	2.31	0.45
1:A:438:LEU:C	1:A:439:THR:HG23	2.36	0.45
1:A:528:ALA:O	1:A:531:ILE:HG12	2.16	0.45
1:A:361:LEU:HD22	1:A:365:LEU:HD21	1.98	0.45
1:A:488:GLY:C	1:A:490:PHE:H	2.20	0.45
1:A:669:LEU:O	1:A:670:ALA:C	2.55	0.45
1:A:564:GLN:HG3	1:A:568:ASP:OD2	2.16	0.45
1:A:826:VAL:C	1:A:828:LEU:H	2.19	0.45
1:A:217:ALA:O	1:A:218:ALA:O	2.34	0.45
1:A:333:HIS:O	1:A:334:HIS:C	2.54	0.45
1:A:361:LEU:HD22	1:A:365:LEU:HD22	1.99	0.45
1:A:452:ALA:HA	1:A:474:ARG:CZ	2.47	0.45
1:A:588:HIS:C	1:A:590:PHE:N	2.70	0.45
1:A:252:GLN:HG2	1:A:827:TYR:CD1	2.52	0.45
1:A:524:TRP:CZ3	1:A:545:ILE:HG12	2.52	0.45
1:A:771:ARG:HG2	1:A:772:ASN:N	2.31	0.45
1:A:466:LYS:NZ	1:A:546:GLN:NE2	2.65	0.45
1:A:400:GLN:O	1:A:401:LYS:C	2.53	0.45
1:A:574:LEU:O	1:A:575:PHE:CB	2.45	0.45
1:A:585:PRO:C	1:A:587:LEU:N	2.70	0.45
1:A:626:PRO:HG2	1:A:631:TYR:HE1	1.76	0.45
1:A:749:VAL:HG12	1:A:750:GLU:N	2.28	0.45
1:A:246:GLU:HA	1:A:249:LYS:HD3	1.98	0.45
1:A:270:TRP:HA	1:A:781:HIS:CE1	2.51	0.45
1:A:464:ASN:N	1:A:464:ASN:HD22	2.14	0.45
1:A:479:PHE:CD1	1:A:479:PHE:N	2.85	0.45
1:A:506:LYS:HE3	1:A:507:TYR:CE1	2.52	0.45
1:A:591:LEU:C	1:A:593:GLN:H	2.20	0.45
1:A:717:HIS:H	1:A:717:HIS:CD2	2.33	0.45
1:A:232:ARG:HD2	1:A:810:ILE:CG1	2.47	0.45
1:A:336:LEU:HA	1:A:339:ILE:HG21	1.99	0.45
1:A:722:PRO:HG2	1:A:723:VAL:H	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:447:LEU:HD21	1:A:460:PHE:CE1	2.52	0.44
1:A:833:ILE:HG22	1:A:834:SER:N	2.32	0.44
1:A:214:ASP:N	1:A:761:LEU:O	2.45	0.44
1:A:223:LYS:NZ	1:A:225:PRO:HD2	2.23	0.44
1:A:298:HIS:H	1:A:312:ASN:HA	1.82	0.44
1:A:360:ASN:O	1:A:363:LEU:HB2	2.17	0.44
1:A:387:LYS:HD2	1:A:387:LYS:N	2.32	0.44
1:A:400:GLN:OE1	1:A:445:VAL:HG11	2.18	0.44
1:A:489:ARG:O	1:A:493:GLU:HB2	2.17	0.44
1:A:801:ASP:O	1:A:802:ILE:C	2.53	0.44
1:A:524:TRP:HD1	1:A:573:PRO:HB2	1.81	0.44
1:A:451:HIS:CD2	1:A:458:HIS:NE2	2.85	0.44
1:A:580:ASP:O	1:A:581:PRO:C	2.55	0.44
1:A:444:ASN:ND2	1:A:446:ASP:N	2.65	0.44
1:A:542:VAL:HB	1:A:595:VAL:CG1	2.48	0.44
1:A:735:THR:O	1:A:736:ASP:CB	2.65	0.44
1:A:746:GLU:HA	1:A:747:PRO:HD2	1.73	0.44
1:A:268:ALA:HB1	1:A:269:PRO:HD2	2.00	0.44
1:A:481:LYS:CD	1:A:482:GLN:N	2.53	0.44
1:A:632:VAL:O	1:A:636:TYR:N	2.51	0.44
1:A:537:TYR:CD2	1:A:593:GLN:NE2	2.86	0.44
1:A:719:ASN:ND2	1:A:720:PRO:CD	2.81	0.44
1:A:300:PHE:O	1:A:309:VAL:N	2.49	0.44
1:A:453:ASP:O	1:A:454:LYS:CB	2.66	0.44
1:A:797:PRO:C	1:A:799:GLY:N	2.72	0.44
1:A:286:GLU:HA	1:A:287:PRO:HD3	1.83	0.43
1:A:347:LEU:HD12	1:A:347:LEU:O	2.18	0.43
1:A:395:SER:O	1:A:398:MET:CE	2.66	0.43
1:A:433:PHE:HA	1:A:439:THR:HG21	2.00	0.43
1:A:444:ASN:HD22	1:A:446:ASP:N	2.16	0.43
1:A:491:LEU:HD13	1:A:491:LEU:C	2.39	0.43
1:A:514:ILE:HG13	1:A:543:TRP:CE3	2.53	0.43
1:A:585:PRO:C	1:A:587:LEU:H	2.21	0.43
1:A:628:PHE:O	1:A:629:SER:C	2.56	0.43
1:A:697:LEU:N	1:A:697:LEU:CD1	2.80	0.43
1:A:795:ARG:HG3	1:A:795:ARG:NH1	2.33	0.43
1:A:448:LEU:N	1:A:448:LEU:HD12	2.33	0.43
1:A:807:VAL:HA	1:A:808:PRO:HD3	1.80	0.43
1:A:685:LEU:HA	1:A:685:LEU:HD12	1.80	0.43
1:A:773:SER:OG	1:A:774:VAL:N	2.51	0.43
1:A:805:THR:O	1:A:807:VAL:HG12	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:315:ALA:HB3	5:A:860:HOH:O	2.16	0.43
1:A:603:GLU:OE1	1:A:660:SER:HA	2.17	0.43
1:A:403:LEU:HD22	1:A:739:LEU:HD11	2.00	0.43
1:A:588:HIS:CE1	1:A:651:MET:SD	3.11	0.43
1:A:665:ASP:HB3	1:A:667:ASP:OD1	2.18	0.43
1:A:775:TYR:CE1	1:A:788:ILE:HD12	2.54	0.43
1:A:576:GLU:HB3	1:A:584:HIS:CD2	2.53	0.43
1:A:830:LYS:HA	1:A:830:LYS:HD3	1.91	0.43
1:A:354:LEU:O	1:A:358:LYS:HG3	2.18	0.43
1:A:214:ASP:HA	1:A:761:LEU:O	2.19	0.43
1:A:701:GLY:C	1:A:702:LEU:HD13	2.39	0.43
1:A:414:GLU:O	1:A:415:PRO:O	2.37	0.43
1:A:432:VAL:C	1:A:435:SER:HB3	2.39	0.43
1:A:516:ILE:CD1	1:A:524:TRP:CE3	3.02	0.43
1:A:802:ILE:HG13	1:A:802:ILE:O	2.19	0.43
1:A:493:GLU:O	1:A:497:GLN:NE2	2.49	0.43
1:A:578:THR:CG2	1:A:646:ARG:HE	2.21	0.43
1:A:608:ARG:HH11	1:A:608:ARG:HB2	1.83	0.43
1:A:612:LYS:HD3	1:A:612:LYS:H	1.83	0.43
1:A:324:ASP:OD2	1:A:327:ALA:HB2	2.19	0.42
1:A:420:ILE:CG1	1:A:421:PHE:N	2.82	0.42
1:A:438:LEU:O	1:A:439:THR:CG2	2.67	0.42
1:A:621:THR:O	1:A:622:ASN:O	2.37	0.42
1:A:381:ASP:O	1:A:385:VAL:HG12	2.19	0.42
1:A:212:GLN:N	1:A:213:PRO:CD	2.71	0.42
1:A:256:GLU:O	1:A:257:LEU:C	2.58	0.42
1:A:312:ASN:ND2	1:A:312:ASN:O	2.45	0.42
1:A:336:LEU:HA	1:A:339:ILE:CG2	2.50	0.42
1:A:357:GLN:OE1	1:A:357:GLN:HA	2.19	0.42
1:A:391:HIS:HE1	1:A:736:ASP:CG	2.22	0.42
1:A:447:LEU:C	1:A:448:LEU:HD12	2.39	0.42
1:A:645:LEU:C	1:A:647:GLU:N	2.68	0.42
1:A:646:ARG:O	1:A:651:MET:N	2.37	0.42
1:A:775:TYR:OH	1:A:792:TYR:HB2	2.20	0.42
1:A:436:LEU:HD23	1:A:436:LEU:HA	1.72	0.42
1:A:216:ILE:H	1:A:216:ILE:HG12	1.69	0.42
1:A:289:ALA:HB2	1:A:589:VAL:HG21	2.00	0.42
1:A:466:LYS:HG3	4:A:841:CF5:H4S	2.01	0.42
1:A:470:CYS:C	1:A:472:GLN:N	2.70	0.42
1:A:504:ALA:C	1:A:506:LYS:H	2.23	0.42
1:A:714:LEU:HD23	1:A:715:ASP:N	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:793:TYR:N	1:A:793:TYR:CD1	2.78	0.42
1:A:221:LEU:HD22	1:A:222:ARG:CB	2.48	0.42
1:A:223:LYS:HB3	1:A:225:PRO:CD	2.31	0.42
1:A:258:ARG:O	1:A:261:TYR:HB2	2.20	0.42
1:A:448:LEU:N	1:A:448:LEU:CD1	2.83	0.42
1:A:793:TYR:O	1:A:837:VAL:HG23	2.20	0.42
1:A:409:SER:C	1:A:411:LEU:N	2.71	0.42
1:A:827:TYR:HD1	1:A:827:TYR:HA	1.76	0.42
1:A:270:TRP:CA	1:A:781:HIS:ND1	2.78	0.41
1:A:358:LYS:O	1:A:359:PHE:C	2.58	0.41
1:A:416:ASP:HA	1:A:428:THR:CB	2.45	0.41
1:A:481:LYS:HD2	1:A:483:ASP:H	1.84	0.41
1:A:382:PHE:O	1:A:385:VAL:HG12	2.19	0.41
1:A:446:ASP:O	1:A:448:LEU:CD1	2.60	0.41
1:A:499:PHE:O	1:A:502:LEU:HB3	2.20	0.41
1:A:268:ALA:CB	1:A:269:PRO:HD2	2.50	0.41
1:A:646:ARG:NH1	1:A:652:THR:O	2.53	0.41
1:A:833:ILE:O	1:A:834:SER:O	2.38	0.41
1:A:289:ALA:O	1:A:290:HIS:CB	2.68	0.41
1:A:509:MET:HE3	1:A:509:MET:HA	2.01	0.41
1:A:547:LEU:HD13	1:A:547:LEU:O	2.20	0.41
1:A:256:GLU:O	1:A:259:LYS:N	2.53	0.41
1:A:373:ALA:HB1	1:A:809:HIS:HE1	1.86	0.41
1:A:307:VAL:HG23	1:A:308:HIS:H	1.81	0.41
1:A:322:VAL:HB	1:A:641:VAL:HG22	2.03	0.41
1:A:467:TYR:CD1	1:A:601:ASP:HA	2.56	0.41
1:A:599:LEU:H	1:A:599:LEU:CD2	2.21	0.41
1:A:617:PRO:HD3	1:A:634:TYR:CE2	2.56	0.41
1:A:707:LEU:HD22	1:A:754:ILE:HD13	2.01	0.41
1:A:817:THR:O	1:A:821:GLU:HB2	2.20	0.41
1:A:332:LEU:HD11	1:A:671:ALA:HB2	2.03	0.41
1:A:396:ALA:O	1:A:739:LEU:N	2.54	0.41
1:A:233:LEU:HA	1:A:233:LEU:HD13	1.77	0.41
1:A:258:ARG:HD2	1:A:673:PHE:O	2.21	0.41
1:A:355:LEU:HD21	1:A:822:GLU:HG3	2.02	0.41
1:A:594:VAL:HG12	1:A:654:ILE:CG2	2.51	0.41
1:A:694:LEU:C	1:A:696:TYR:N	2.74	0.41
1:A:697:LEU:HD13	1:A:697:LEU:N	2.35	0.41
1:A:700:ILE:O	1:A:700:ILE:CG2	2.69	0.41
1:A:763:ALA:O	1:A:764:CYS:C	2.59	0.41
1:A:420:ILE:HD12	1:A:421:PHE:N	2.29	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:491:LEU:HD12	1:A:530:TRP:HZ2	1.83	0.41
1:A:762:SER:O	1:A:765:ASP:HB2	2.21	0.41
1:A:827:TYR:CE2	1:A:832:VAL:HG23	2.56	0.41
1:A:396:ALA:CB	1:A:737:ASP:HA	2.52	0.40
1:A:485:LEU:O	1:A:487:GLN:N	2.51	0.40
1:A:793:TYR:HD2	1:A:836:GLU:OE2	2.04	0.40
1:A:633:TYR:HD1	1:A:634:TYR:CD1	2.39	0.40
1:A:695:TYR:CD2	1:A:700:ILE:CG2	3.04	0.40
1:A:719:ASN:ND2	1:A:719:ASN:C	2.74	0.40
1:A:764:CYS:O	1:A:768:GLU:HB2	2.21	0.40
1:A:486:ILE:O	1:A:486:ILE:HG13	2.20	0.40
1:A:643:ASN:C	1:A:645:LEU:H	2.24	0.40
1:A:719:ASN:ND2	1:A:720:PRO:N	2.64	0.40
1:A:466:LYS:HZ2	1:A:546:GLN:HE22	1.69	0.40
1:A:549:ARG:CG	1:A:631:TYR:CE2	3.03	0.40
1:A:716:TYR:HE2	1:A:758:VAL:HG21	1.87	0.40
1:A:735:THR:O	1:A:736:ASP:HB2	2.21	0.40
1:A:298:HIS:HB3	1:A:299:CYS:H	1.68	0.40
1:A:304:ASP:O	1:A:306:VAL:HG23	2.21	0.40
1:A:332:LEU:C	1:A:332:LEU:CD2	2.89	0.40
1:A:451:HIS:O	1:A:453:ASP:N	2.50	0.40
1:A:600:VAL:O	1:A:601:ASP:CB	2.70	0.40
1:A:740:GLN:NE2	1:A:740:GLN:HA	2.37	0.40
1:A:808:PRO:C	1:A:810:ILE:N	2.73	0.40

All (1) 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)
1:A:357:GLN:NE2	1:A:357:GLN:NE2[10_444]	2.19	0.01

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	612/701 (87%)	404 (66%)	124 (20%)	84 (14%)	0 1

All (84) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	213	PRO
1	A	218	ALA
1	A	239	VAL
1	A	266	THR
1	A	287	PRO
1	A	290	HIS
1	A	296	SER
1	A	309	VAL
1	A	312	ASN
1	A	316	LYS
1	A	322	VAL
1	A	327	ALA
1	A	414	GLU
1	A	415	PRO
1	A	416	ASP
1	A	438	LEU
1	A	447	LEU
1	A	454	LYS
1	A	461	ASP
1	A	489	ARG
1	A	586	GLN
1	A	601	ASP
1	A	622	ASN
1	A	677	HIS
1	A	678	SER
1	A	747	PRO
1	A	828	LEU
1	A	834	SER
1	A	837	VAL
1	A	223	LYS
1	A	231	VAL
1	A	261	TYR
1	A	321	PRO
1	A	342	GLY
1	A	395	SER
1	A	410	LYS

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Mol	Chain	Res	Type
1	A	486	ILE
1	A	523	GLU
1	A	533	ASN
1	A	558	GLY
1	A	572	ILE
1	A	575	PHE
1	A	627	ALA
1	A	701	GLY
1	A	736	ASP
1	A	746	GLU
1	A	227	GLN
1	A	230	PHE
1	A	238	GLU
1	A	265	GLU
1	A	299	CYS
1	A	313	LYS
1	A	384	ASN
1	A	437	ASP
1	A	453	ASP
1	A	473	SER
1	A	487	GLN
1	A	493	GLU
1	A	505	SER
1	A	506	LYS
1	A	524	TRP
1	A	695	TYR
1	A	833	ILE
1	A	214	ASP
1	A	240	PRO
1	A	291	TYR
1	A	320	PHE
1	A	328	PHE
1	A	383	TYR
1	A	431	GLU
1	A	432	VAL
1	A	610	PRO
1	A	633	TYR
1	A	697	LEU
1	A	269	PRO
1	A	413	LYS
1	A	247	ALA
1	A	288	PHE

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Mol	Chain	Res	Type
1	A	297	ASP
1	A	557	MET
1	A	585	PRO
1	A	802	ILE
1	A	532	VAL
1	A	224	GLU

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	557/629 (89%)	410 (74%)	147 (26%)	0	2

All (147) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	212	GLN
1	A	213	PRO
1	A	216	ILE
1	A	219	ASP
1	A	220	ILE
1	A	221	LEU
1	A	222	ARG
1	A	224	GLU
1	A	225	PRO
1	A	227	GLN
1	A	228	GLU
1	A	232	ARG
1	A	235	VAL
1	A	237	LEU
1	A	238	GLU
1	A	243	ASP
1	A	246	GLU
1	A	255	LEU
1	A	260	ARG
1	A	261	TYR

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Mol	Chain	Res	Type
1	A	262	VAL
1	A	266	THR
1	A	271	GLU
1	A	272	LYS
1	A	299	CYS
1	A	307	VAL
1	A	308	HIS
1	A	312	ASN
1	A	313	LYS
1	A	319	LEU
1	A	322	VAL
1	A	326	THR
1	A	338	VAL
1	A	346	THR
1	A	351	ARG
1	A	352	LEU
1	A	353	VAL
1	A	354	LEU
1	A	355	LEU
1	A	361	LEU
1	A	363	LEU
1	A	365	LEU
1	A	368	ASP
1	A	380	ARG
1	A	383	TYR
1	A	385	VAL
1	A	387	LYS
1	A	388	VAL
1	A	392	VAL
1	A	399	ASN
1	A	400	GLN
1	A	408	LYS
1	A	416	ASP
1	A	417	GLU
1	A	418	VAL
1	A	422	ARG
1	A	427	LEU
1	A	430	ARG
1	A	431	GLU
1	A	444	ASN
1	A	449	ASP
1	A	458	HIS

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Mol	Chain	Res	Type
1	A	459	ARG
1	A	460	PHE
1	A	462	LYS
1	A	465	LEU
1	A	468	ASN
1	A	473	SER
1	A	475	LEU
1	A	481	LYS
1	A	484	ASN
1	A	487	GLN
1	A	494	ILE
1	A	505	SER
1	A	509	MET
1	A	514	ILE
1	A	515	SER
1	A	517	TYR
1	A	519	ARG
1	A	522	SER
1	A	525	ASP
1	A	535	ASP
1	A	539	GLU
1	A	540	ASN
1	A	545	ILE
1	A	547	LEU
1	A	549	ARG
1	A	553	ILE
1	A	560	VAL
1	A	561	THR
1	A	566	ILE
1	A	573	PRO
1	A	574	LEU
1	A	575	PHE
1	A	576	GLU
1	A	586	GLN
1	A	587	LEU
1	A	588	HIS
1	A	599	LEU
1	A	608	ARG
1	A	612	LYS
1	A	615	PRO
1	A	621	THR
1	A	625	ASN

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Mol	Chain	Res	Type
1	A	629	SER
1	A	635	CYS
1	A	636	TYR
1	A	639	LEU
1	A	642	LEU
1	A	647	GLU
1	A	649	LYS
1	A	654	ILE
1	A	657	ARG
1	A	659	HIS
1	A	672	THR
1	A	679	ILE
1	A	685	LEU
1	A	694	LEU
1	A	697	LEU
1	A	702	LEU
1	A	712	LEU
1	A	714	LEU
1	A	719	ASN
1	A	726	LEU
1	A	735	THR
1	A	739	LEU
1	A	745	LYS
1	A	748	LEU
1	A	757	SER
1	A	758	VAL
1	A	761	LEU
1	A	781	HIS
1	A	792	TYR
1	A	793	TYR
1	A	794	LYS
1	A	800	ASN
1	A	802	ILE
1	A	805	THR
1	A	807	VAL
1	A	808	PRO
1	A	809	HIS
1	A	810	ILE
1	A	815	ARG
1	A	817	THR
1	A	826	VAL
1	A	828	LEU

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Mol	Chain	Res	Type
1	A	838	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	212	GLN
1	A	227	GLN
1	A	298	HIS
1	A	303	GLN
1	A	312	ASN
1	A	360	ASN
1	A	362	HIS
1	A	402	HIS
1	A	444	ASN
1	A	451	HIS
1	A	464	ASN
1	A	468	ASN
1	A	484	ASN
1	A	487	GLN
1	A	526	GLN
1	A	533	ASN
1	A	546	GLN
1	A	565	ASN
1	A	569	ASN
1	A	619	GLN
1	A	625	ASN
1	A	638	ASN
1	A	668	HIS
1	A	709	ASN
1	A	717	HIS
1	A	719	ASN
1	A	740	GLN
1	A	776	GLN
1	A	800	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 1 is monoatomic - leaving 2 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	PO4	A	842	-	4,4,4	3.34	3 (75%)	6,6,6	0.64	0
4	CF5	A	841	2	18,26,26	3.11	6 (33%)	19,39,39	1.89	3 (15%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	CF5	A	841	2	-	5/6/37/37	0/2/3/3

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	841	CF5	P-O2P	8.04	1.85	1.54
4	A	841	CF5	P-O3P	7.76	1.84	1.54
3	A	842	PO4	P-O1	5.30	1.63	1.50
4	A	841	CF5	P-O1P	4.06	1.63	1.50
4	A	841	CF5	C7-N6	-3.77	1.41	1.45
3	A	842	PO4	P-O2	3.09	1.63	1.54
4	A	841	CF5	O8-C8	2.81	1.49	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	842	PO4	P-O3	2.21	1.61	1.54
4	A	841	CF5	C2S-C1S	-2.08	1.50	1.53

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	841	CF5	C3S-C2S-C1S	6.55	110.85	100.98
4	A	841	CF5	O2P-P-O3P	2.50	117.20	107.64
4	A	841	CF5	O8-C8-C9	-2.16	105.45	110.33

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	841	CF5	C5S-O5S-P-O1P
4	A	841	CF5	C5S-O5S-P-O3P
4	A	841	CF5	C5S-O5S-P-O2P
4	A	841	CF5	C3S-C4S-C5S-O5S
4	A	841	CF5	O4S-C4S-C5S-O5S

There are no ring outliers.

1 monomer is involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	841	CF5	15	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 then 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.

Ligand CF5 A 841

Bond lengths

Bond angles

Torsions

Rings
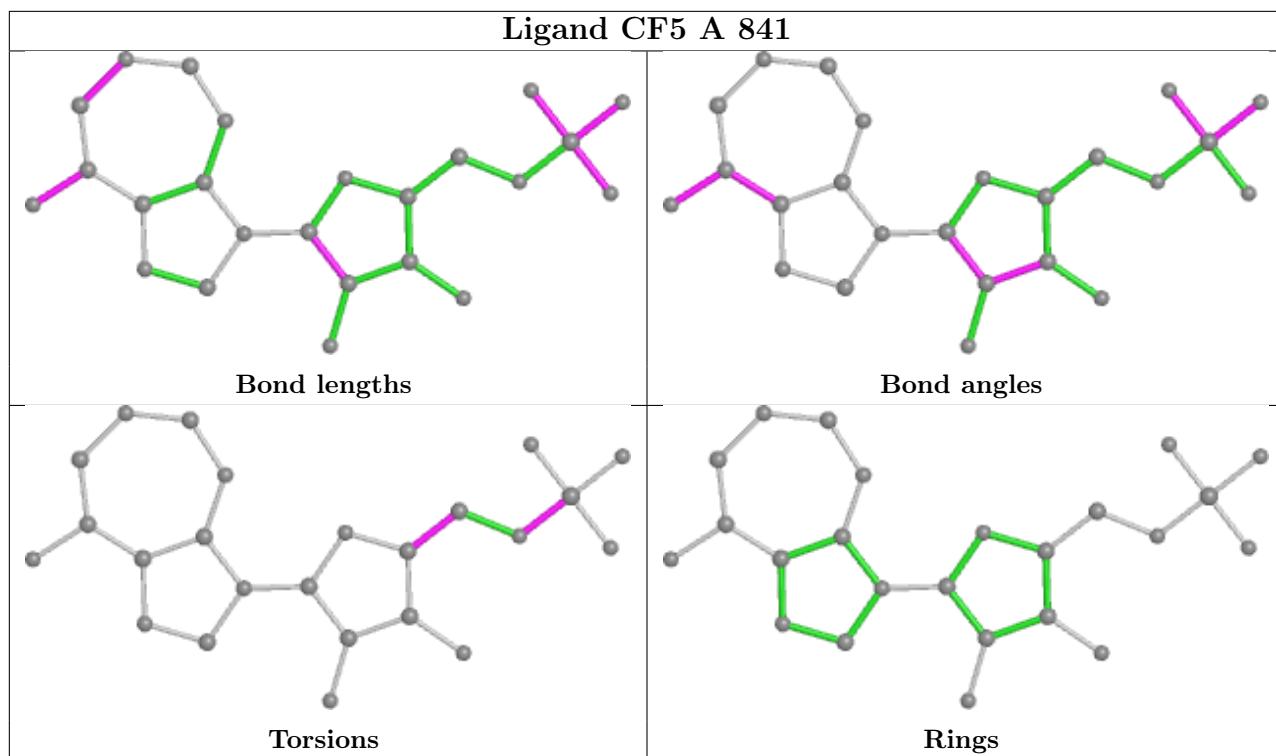
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	616/701 (87%)	-0.33	4 (0%)	89	90	28, 68, 120, 189	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	290	HIS	3.5
1	A	320	PHE	3.0
1	A	447	LEU	2.3
1	A	311	ALA	2.1

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
4	CF5	A	841	24/24	0.81	0.35	75,75,75,75	0
3	PO4	A	842	5/5	0.95	0.12	75,75,75,75	0
2	ZN	A	840	1/1	0.96	0.29	116,116,116,116	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.

Electron density around CF5 A 841:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
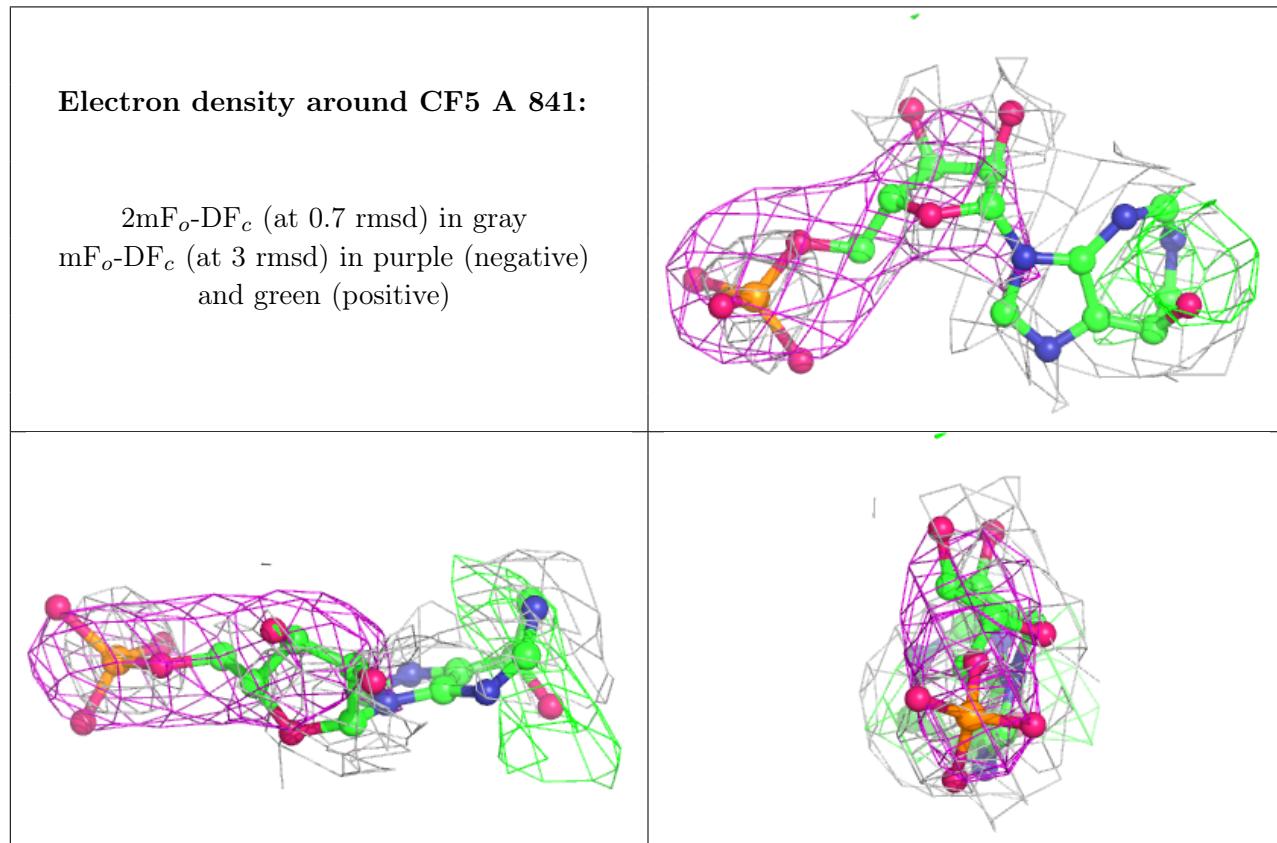
6.5 Other polymers (i)

There are no such residues in this entry.