



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 17, 2023 – 09:17 AM EDT

PDB ID : 1LLW  
Title : Structural studies on the synchronization of catalytic centers in glutamate synthase: complex with 2-oxoglutarate  
Authors : van den Heuvel, R.H.; Ferrari, D.; Bossi, R.T.; Ravasio, S.; Curti, B.; Vanoni, M.A.; Florencio, F.J.; Mattevi, A.  
Deposited on : 2002-04-30  
Resolution : 2.70 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.36  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

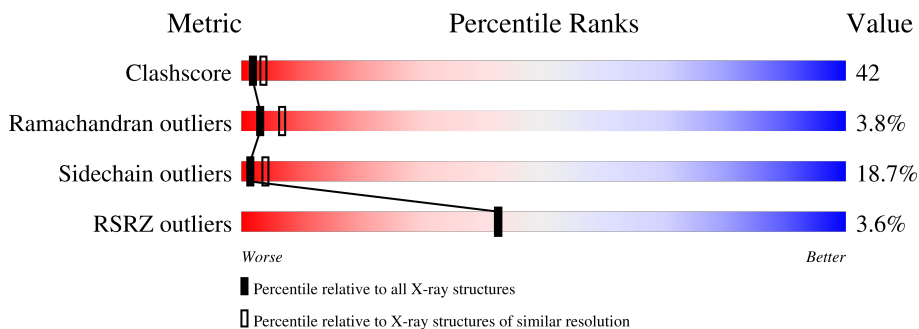
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

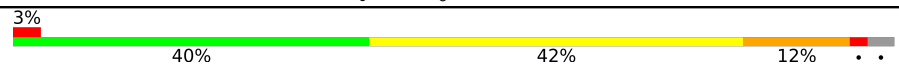
The reported resolution of this entry is 2.70 Å.

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))
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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

Mol	Chain	Length	Quality of chain
1	A	1520	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	F3S	A	2072	-	-	X	-

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 11408 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.

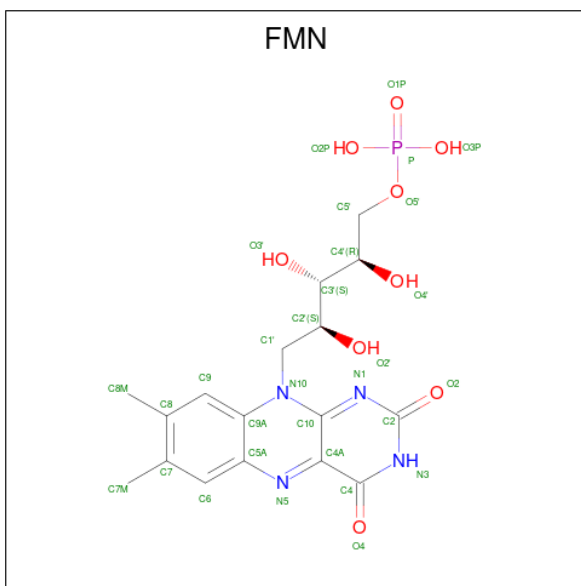
- Molecule 1 is a protein called Ferredoxin-dependent glutamate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1475	11311	7137	1970	2148	56	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

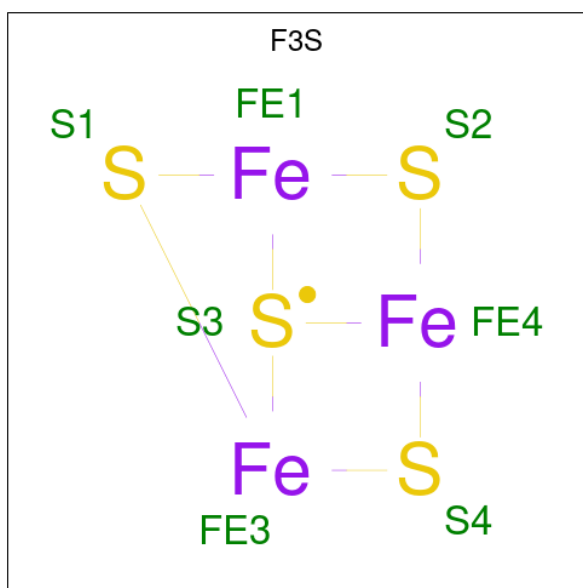
Chain	Residue	Modelled	Actual	Comment	Reference
A	578	ASP	THR	conflict	UNP P55038
A	581	THR	ASP	conflict	UNP P55038
A	1507	ASN	GLY	conflict	UNP P55038

- Molecule 2 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C<sub>17</sub>H<sub>21</sub>N<sub>4</sub>O<sub>9</sub>P).



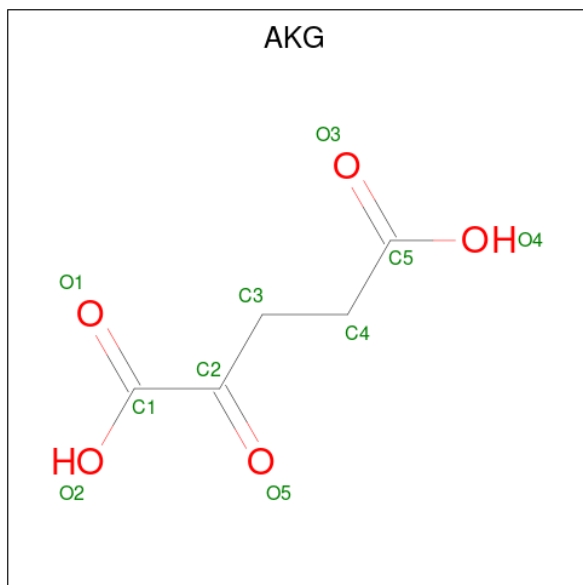
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	31	17	4	9	1	0	0

- Molecule 3 is FE3-S4 CLUSTER (three-letter code: F3S) (formula: Fe<sub>3</sub>S<sub>4</sub>).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	
3	A	1	Total	Fe	S	0	0
			7	3	4		

- Molecule 4 is 2-OXOGLUTARIC ACID (three-letter code: AKG) (formula: C<sub>5</sub>H<sub>6</sub>O<sub>5</sub>).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	
4	A	1	Total	C	O	0	0
			10	5	5		

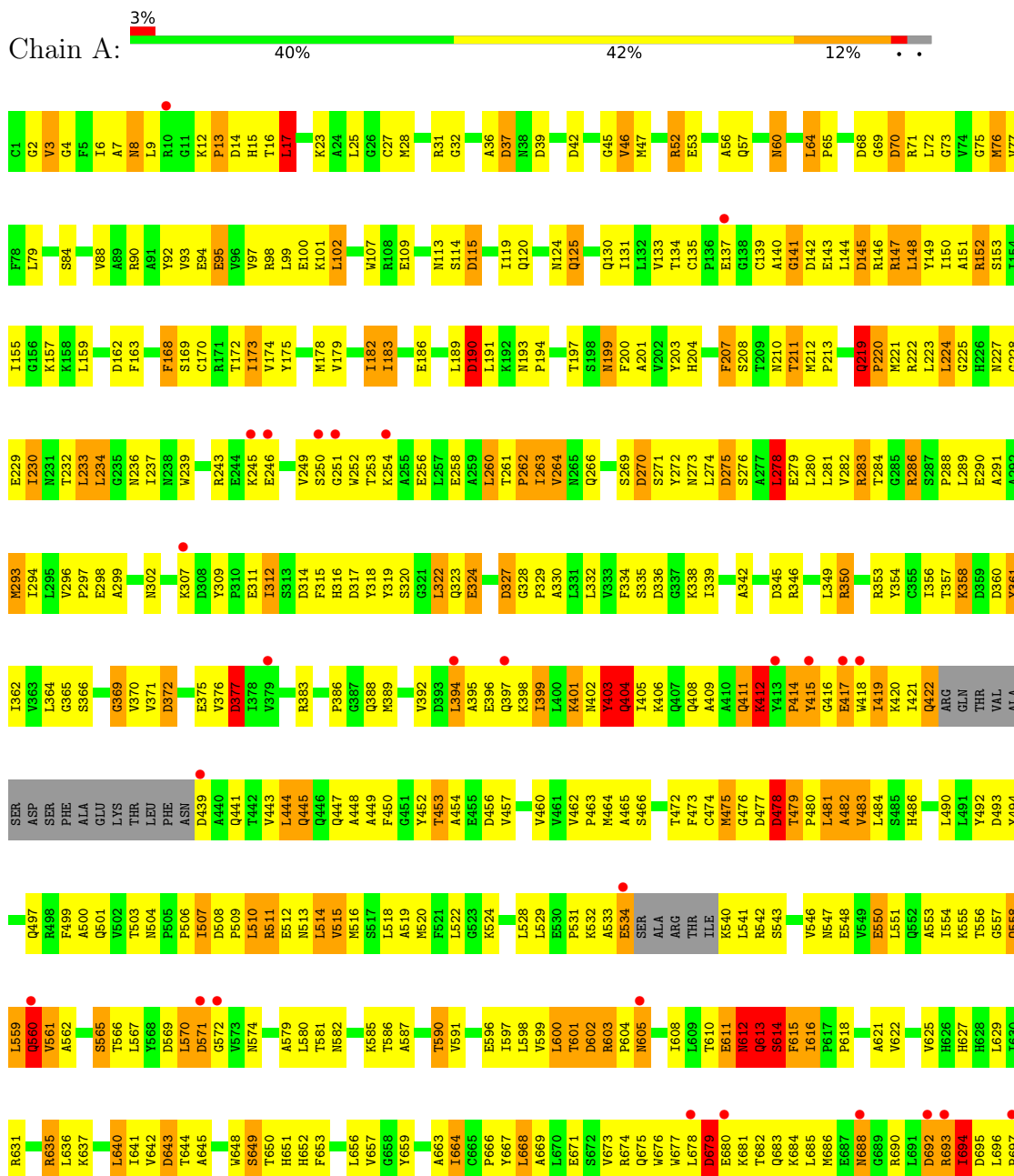
- Molecule 5 is water.

<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>	<b>ZeroOcc</b>	<b>AltConf</b>
5	A	49	Total O 49 49	0	0

### 3 Residue-property plots [i](#)

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: Ferredoxin-dependent glutamate synthase





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	166.52Å 166.52Å 219.87Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	12.00 – 2.70 11.99 – 2.70	Depositor EDS
% Data completeness (in resolution range)	96.6 (12.00-2.70) 97.9 (11.99-2.70)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	0.09	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.67 (at 2.70Å)	Xtrriage
Refinement program	REFMAC 5.1.06	Depositor
R, $R_{free}$	0.234 , 0.293 0.232 , (Not available)	Depositor DCC
$R_{free}$ test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	67.9	Xtrriage
Anisotropy	0.515	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 66.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	11408	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.32% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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



## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: FMN, AKG, F3S

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	0.89	5/11533 (0.0%)	1.15	62/15639 (0.4%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	16

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1433	ASP	CB-CG	7.41	1.67	1.51
1	A	952	VAL	CB-CG2	-6.62	1.39	1.52
1	A	796	MET	CG-SD	6.00	1.96	1.81
1	A	293	MET	SD-CE	5.52	2.08	1.77
1	A	692	ASP	CB-CG	5.27	1.62	1.51

All (62) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	145	ASP	CB-CG-OD2	9.22	126.60	118.30
1	A	31	ARG	NE-CZ-NH2	-8.15	116.22	120.30
1	A	478	ASP	CB-CG-OD2	8.13	125.61	118.30
1	A	877	LEU	CA-CB-CG	-8.01	96.87	115.30
1	A	1195	ASP	CB-CG-OD2	7.79	125.31	118.30
1	A	270	ASP	CB-CG-OD2	7.69	125.22	118.30
1	A	907	ASP	CB-CG-OD2	7.55	125.09	118.30
1	A	37	ASP	CB-CG-OD2	7.52	125.07	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1277	ASP	CB-CG-OD2	7.50	125.05	118.30
1	A	695	ASP	CB-CG-OD2	7.46	125.02	118.30
1	A	162	ASP	CB-CG-OD2	7.32	124.89	118.30
1	A	493	ASP	CB-CG-OD2	7.25	124.83	118.30
1	A	851	ASP	CB-CG-OD2	7.21	124.78	118.30
1	A	1248	ASP	CB-CG-OD2	7.21	124.78	118.30
1	A	14	ASP	CB-CG-OD2	7.11	124.70	118.30
1	A	327	ASP	CB-CG-OD2	7.09	124.68	118.30
1	A	219	GLN	N-CA-C	6.84	129.48	111.00
1	A	278	LEU	CA-CB-CG	6.80	130.93	115.30
1	A	345	ASP	CB-CG-OD2	6.75	124.38	118.30
1	A	275	ASP	CB-CG-OD2	6.64	124.28	118.30
1	A	1101	LEU	CA-CB-CG	6.62	130.53	115.30
1	A	1201	ASP	CB-CG-OD2	6.58	124.22	118.30
1	A	692	ASP	CB-CG-OD2	6.54	124.18	118.30
1	A	350	ARG	NE-CZ-NH1	-6.49	117.05	120.30
1	A	569	ASP	CB-CG-OD2	6.47	124.13	118.30
1	A	694	ILE	CG1-CB-CG2	-6.45	97.20	111.40
1	A	17	LEU	CA-CB-CG	6.31	129.81	115.30
1	A	1240	VAL	CB-CA-C	-6.31	99.42	111.40
1	A	37	ASP	CB-CG-OD1	-6.30	112.63	118.30
1	A	1250	ASP	CB-CG-OD2	6.28	123.95	118.30
1	A	1433	ASP	CB-CG-OD2	6.22	123.89	118.30
1	A	220	PRO	N-CD-CG	-6.12	94.02	103.20
1	A	836	ASP	CB-CG-OD2	6.10	123.79	118.30
1	A	1062	ASP	CB-CG-OD2	6.05	123.75	118.30
1	A	909	VAL	CB-CA-C	-6.02	99.95	111.40
1	A	142	ASP	CB-CG-OD2	6.01	123.71	118.30
1	A	1008	ASP	CB-CG-OD2	5.83	123.55	118.30
1	A	1113	ASP	CB-CG-OD2	5.76	123.48	118.30
1	A	377	ASP	CB-CG-OD2	5.72	123.45	118.30
1	A	571	ASP	CB-CG-OD2	5.67	123.40	118.30
1	A	1235	LEU	CB-CG-CD1	5.65	120.61	111.00
1	A	844	ASP	CB-CG-OD2	5.55	123.30	118.30
1	A	1132	MET	CG-SD-CE	-5.49	91.42	100.20
1	A	1208	ASP	CB-CG-OD2	5.49	123.24	118.30
1	A	98	ARG	NE-CZ-NH2	-5.41	117.60	120.30
1	A	1021	ASP	CB-CG-OD2	5.38	123.14	118.30
1	A	847	ASP	CB-CG-OD2	5.37	123.14	118.30
1	A	1227	ASP	CB-CG-OD2	5.35	123.12	118.30
1	A	1103	ARG	NE-CZ-NH1	5.33	122.96	120.30
1	A	1399	ASP	CB-CG-OD2	5.32	123.09	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	950	PHE	C-N-CA	-5.28	111.22	122.30
1	A	72	LEU	C-N-CA	-5.27	111.23	122.30
1	A	70	ASP	CB-CG-OD2	5.27	123.04	118.30
1	A	679	ASP	CB-CG-OD2	5.25	123.02	118.30
1	A	1235	LEU	CA-CB-CG	5.23	127.33	115.30
1	A	643	ASP	CB-CG-OD2	5.18	122.96	118.30
1	A	1089	ARG	NE-CZ-NH1	-5.13	117.73	120.30
1	A	1141	ARG	NE-CZ-NH2	-5.13	117.74	120.30
1	A	722	LEU	CA-CB-CG	5.11	127.05	115.30
1	A	882	ARG	NE-CZ-NH2	-5.05	117.77	120.30
1	A	190	ASP	CB-CG-OD2	5.04	122.84	118.30
1	A	372	ASP	CB-CG-OD2	5.01	122.81	118.30

There are no chirality outliers.

All (16) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1007	HIS	Peptide
1	A	1137	CYS	Peptide
1	A	219	GLN	Peptide
1	A	260	LEU	Peptide
1	A	369	GLY	Peptide
1	A	403	TYR	Peptide
1	A	412	LYS	Peptide
1	A	445	GLN	Peptide
1	A	572	GLY	Peptide
1	A	612	ASN	Peptide
1	A	615	PHE	Peptide
1	A	838	PRO	Peptide
1	A	873	GLY	Peptide
1	A	902	GLY	Peptide
1	A	952	VAL	Peptide
1	A	997	GLY	Peptide

## 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	A	11311	0	11255	947	1
2	A	31	0	19	0	0
3	A	7	0	0	4	0
4	A	10	0	4	2	0
5	A	49	0	0	14	0
All	All	11408	0	11278	947	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 42.

All (947) 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:383:ARG:NH1	1:A:1380:GLY:HA2	1.20	1.46
1:A:221:MET:SD	1:A:221:MET:CE	2.02	1.46
1:A:293:MET:SD	1:A:293:MET:CE	2.08	1.41
1:A:885:HIS:CD2	1:A:910:ARG:HH22	1.44	1.36
1:A:768:PHE:CE2	1:A:771:MET:HG2	1.68	1.28
1:A:383:ARG:HH12	1:A:1380:GLY:CA	1.45	1.27
1:A:1263:HIS:CE1	1:A:1297:PHE:HA	1.71	1.24
1:A:1355:GLU:HG2	1:A:1476:LYS:HB2	1.22	1.15
1:A:1491:PHE:HD1	1:A:1491:PHE:O	1.28	1.13
1:A:558:GLN:OE1	1:A:558:GLN:HA	1.34	1.12
1:A:768:PHE:HE2	1:A:771:MET:HG2	0.96	1.11
1:A:484:LEU:HB3	1:A:839:VAL:CG1	1.81	1.10
1:A:443:VAL:HG21	1:A:675:GLN:HE21	1.13	1.09
1:A:1347:HIS:CG	1:A:1348:PRO:HD2	1.88	1.09
1:A:802:SER:HB2	1:A:1133:ILE:HG23	1.31	1.08
1:A:1119:LEU:HD23	1:A:1196:ILE:HG22	1.35	1.07
1:A:510:LEU:HB2	1:A:511:ARG:HH21	1.11	1.07
1:A:953:THR:HG23	1:A:1294:ASN:HD21	1.06	1.07
1:A:809:VAL:HG11	1:A:1169:GLN:O	1.55	1.07
1:A:414:PRO:HB3	1:A:418:TRP:HB3	1.37	1.06
1:A:1447:ILE:HD11	1:A:1494:ALA:HB1	1.38	1.06
1:A:953:THR:CG2	1:A:1294:ASN:HD21	1.67	1.05
1:A:867:VAL:HG11	1:A:895:LEU:HB3	1.38	1.05
1:A:559:LEU:CD2	1:A:560:GLN:O	2.05	1.04
1:A:1254:ASP:HB2	1:A:1255:PRO:CD	1.87	1.03
1:A:453:THR:HB	1:A:456:ASP:OD2	1.59	1.03
1:A:1263:HIS:HE1	1:A:1297:PHE:HA	0.86	1.02
1:A:559:LEU:HD21	1:A:560:GLN:O	1.59	1.02
1:A:1263:HIS:HE1	1:A:1297:PHE:CA	1.71	1.02

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:383:ARG:NH1	1:A:1380:GLY:CA	2.13	1.02
1:A:1254:ASP:CB	1:A:1255:PRO:HD3	1.88	1.02
1:A:460:VAL:HG12	1:A:464:MET:CE	1.91	1.01
1:A:885:HIS:HD2	1:A:910:ARG:NH2	1.58	1.01
1:A:883:GLU:OE1	1:A:1160:ARG:HD2	1.59	1.01
1:A:261:THR:HB	1:A:262:PRO:HD3	1.43	1.01
1:A:559:LEU:HG	1:A:560:GLN:N	1.72	1.01
1:A:403:TYR:HD1	1:A:403:TYR:H	1.06	1.00
1:A:243:ARG:NH1	1:A:528:LEU:HB2	1.75	1.00
1:A:460:VAL:HG12	1:A:464:MET:HE2	1.40	1.00
1:A:1337:MET:HE1	1:A:1365:LEU:HD21	1.42	0.99
1:A:444:LEU:O	1:A:445:GLN:HG2	1.63	0.99
1:A:885:HIS:CD2	1:A:910:ARG:NH2	2.30	0.98
1:A:1347:HIS:ND1	1:A:1348:PRO:HD2	1.77	0.98
1:A:414:PRO:CB	1:A:418:TRP:HB3	1.94	0.97
1:A:510:LEU:HB2	1:A:511:ARG:NH2	1.77	0.97
1:A:100:GLU:HB2	1:A:102:LEU:HD12	1.43	0.97
1:A:846:LEU:HB2	1:A:1116:MET:HE1	1.46	0.97
1:A:1081:GLU:HG3	1:A:1120:MET:HE1	1.44	0.97
1:A:1254:ASP:CB	1:A:1255:PRO:CD	2.42	0.97
1:A:1491:PHE:O	1:A:1491:PHE:CD1	2.18	0.96
1:A:1254:ASP:HB3	1:A:1255:PRO:HD3	1.45	0.96
1:A:354:TYR:HB3	1:A:364:LEU:HD12	1.48	0.95
1:A:445:GLN:HG3	1:A:777:ALA:HB1	1.47	0.95
1:A:71:ARG:HG2	5:A:2117:HOH:O	1.67	0.95
1:A:484:LEU:HB3	1:A:839:VAL:HG11	1.50	0.94
1:A:1101:LEU:HD13	1:A:1123:GLU:HB2	1.49	0.94
1:A:686:MET:O	1:A:692:ASP:HB2	1.68	0.93
1:A:1355:GLU:HG2	1:A:1476:LYS:CB	1.99	0.93
1:A:875:MET:SD	1:A:1132:MET:HE1	2.08	0.93
1:A:318:TYR:HD1	1:A:418:TRP:HE1	1.13	0.92
1:A:415:TYR:CD1	1:A:416:GLY:N	2.37	0.92
1:A:1318:LEU:HB2	1:A:1321:MET:HE3	1.50	0.92
1:A:768:PHE:HE2	1:A:771:MET:CG	1.83	0.91
1:A:657:VAL:HG11	1:A:723:LEU:HD11	1.52	0.91
1:A:1130:ILE:HD13	1:A:1130:ILE:H	1.36	0.91
1:A:1038:GLU:O	1:A:1041:ILE:HG22	1.70	0.90
1:A:1253:ALA:HA	5:A:2081:HOH:O	1.70	0.90
1:A:809:VAL:CG1	1:A:1169:GLN:O	2.20	0.90
1:A:907:ASP:OD2	1:A:909:VAL:HG23	1.71	0.90
1:A:953:THR:HG23	1:A:1294:ASN:ND2	1.85	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1372:ASN:N	1:A:1372:ASN:HD22	1.70	0.90
1:A:418:TRP:CE3	1:A:418:TRP:O	2.25	0.89
1:A:1138:ILE:HG22	1:A:1139:MET:N	1.87	0.89
1:A:1142:VAL:O	1:A:1145:THR:HB	1.72	0.88
1:A:757:THR:HB	5:A:2091:HOH:O	1.72	0.88
1:A:1311:GLN:OE1	1:A:1311:GLN:HA	1.74	0.88
1:A:760:ASP:OD2	1:A:1214:THR:HG23	1.73	0.88
1:A:307:LYS:HE3	1:A:1440:GLU:OE1	1.72	0.88
1:A:993:ARG:HG3	1:A:993:ARG:HH11	1.38	0.88
1:A:802:SER:HB2	1:A:1133:ILE:CG2	2.04	0.87
1:A:1337:MET:CE	1:A:1365:LEU:HD21	2.03	0.87
1:A:383:ARG:HH11	1:A:1380:GLY:HA2	1.35	0.87
1:A:1119:LEU:CD2	1:A:1196:ILE:HG22	2.04	0.87
1:A:1447:ILE:HD11	1:A:1494:ALA:CB	2.04	0.87
1:A:263:ILE:HD12	1:A:280:LEU:HD22	1.57	0.87
1:A:443:VAL:HG21	1:A:675:GLN:NE2	1.90	0.86
1:A:768:PHE:CE2	1:A:771:MET:CG	2.55	0.86
1:A:460:VAL:CG1	1:A:464:MET:HE2	2.05	0.86
1:A:560:GLN:OE1	1:A:560:GLN:HA	1.71	0.86
1:A:855:ILE:HG23	1:A:856:SER:H	1.40	0.86
1:A:286:ARG:NH2	1:A:528:LEU:O	2.07	0.86
1:A:715:LEU:HD22	1:A:726:TYR:CD1	2.11	0.85
1:A:243:ARG:HH11	1:A:528:LEU:HB2	1.41	0.85
1:A:603:ARG:O	1:A:603:ARG:HG2	1.72	0.85
1:A:404:GLN:HA	1:A:404:GLN:OE1	1.77	0.85
1:A:701:LYS:O	1:A:705:GLN:HB2	1.76	0.85
1:A:501:GLN:HE22	1:A:1035:LEU:HB3	1.42	0.84
1:A:369:GLY:HA3	1:A:1308:ALA:CB	2.08	0.84
1:A:649:SER:HB2	1:A:652:HIS:CD2	2.12	0.84
1:A:993:ARG:HH11	1:A:993:ARG:CG	1.90	0.84
1:A:878:GLY:HA2	1:A:988:ILE:HD12	1.60	0.84
1:A:1251:ILE:HD13	1:A:1271:TYR:CE1	2.13	0.84
1:A:1420:VAL:HG12	1:A:1420:VAL:O	1.77	0.84
1:A:558:GLN:OE1	1:A:558:GLN:CA	2.22	0.83
1:A:100:GLU:HB2	1:A:102:LEU:CD1	2.08	0.83
1:A:1065:THR:HG21	1:A:1068:SER:OG	1.78	0.83
1:A:414:PRO:O	1:A:418:TRP:N	2.11	0.83
1:A:492:TYR:HE2	1:A:656:LEU:HD13	1.44	0.83
1:A:867:VAL:CG1	1:A:895:LEU:HB3	2.08	0.83
1:A:881:SER:HB2	1:A:1160:ARG:HD3	1.61	0.83
1:A:750:THR:HG21	1:A:1039:ILE:HG21	1.62	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:399:ILE:HG22	1:A:404:GLN:HG2	1.62	0.82
1:A:1347:HIS:CE1	1:A:1348:PRO:HD2	2.14	0.82
1:A:1376:ASN:HD21	1:A:1472:THR:HG23	1.43	0.82
1:A:1119:LEU:CD2	1:A:1196:ILE:CG2	2.58	0.82
1:A:657:VAL:HG11	1:A:723:LEU:CD1	2.09	0.82
1:A:1254:ASP:HB2	1:A:1255:PRO:HD2	1.61	0.81
1:A:73:GLY:HA2	1:A:170:CYS:HA	1.63	0.81
1:A:770:GLY:O	5:A:2116:HOH:O	1.95	0.81
1:A:443:VAL:HG11	1:A:675:GLN:HG3	1.59	0.81
1:A:484:LEU:HD13	1:A:839:VAL:HG13	1.61	0.80
1:A:737:LEU:O	1:A:754:GLY:HA2	1.81	0.80
1:A:484:LEU:HB3	1:A:839:VAL:HG12	1.63	0.80
1:A:497:GLN:HE21	1:A:651:HIS:HD2	1.27	0.80
1:A:1208:ASP:OD1	1:A:1208:ASP:N	2.13	0.80
1:A:1263:HIS:CE1	1:A:1296:GLY:O	2.36	0.79
1:A:676:TRP:HE1	1:A:690:ARG:HH12	1.28	0.79
1:A:522:LEU:HB2	5:A:2080:HOH:O	1.82	0.79
1:A:460:VAL:CG1	1:A:464:MET:CE	2.60	0.79
1:A:179:VAL:HB	1:A:183:ILE:HG22	1.63	0.78
1:A:1360:ILE:HG23	1:A:1364:CYS:SG	2.23	0.78
1:A:445:GLN:OE1	1:A:777:ALA:HB2	1.84	0.78
1:A:1409:VAL:O	1:A:1410:ILE:HD13	1.83	0.78
1:A:1111:GLY:HA3	1:A:1180:GLU:HG2	1.66	0.78
1:A:827:TYR:O	1:A:831:ARG:HB2	1.83	0.78
1:A:1476:LYS:O	1:A:1480:ILE:HG13	1.84	0.78
1:A:1338:ASN:HA	1:A:1369:THR:HG22	1.64	0.77
1:A:768:PHE:CD2	1:A:771:MET:HB2	2.20	0.77
1:A:464:MET:HB3	1:A:706:SER:OG	1.85	0.77
1:A:1119:LEU:O	1:A:1198:GLY:HA2	1.84	0.77
1:A:828:GLU:O	1:A:832:GLN:HB2	1.84	0.77
1:A:12:LYS:HB3	1:A:13:PRO:HD2	1.65	0.77
1:A:499:PHE:CD1	1:A:973:PRO:HB3	2.20	0.77
1:A:610:THR:HG23	1:A:773:PHE:HB3	1.67	0.77
1:A:649:SER:HB2	1:A:652:HIS:CG	2.20	0.76
1:A:134:THR:HB	5:A:2117:HOH:O	1.86	0.76
1:A:294:ILE:HG21	1:A:528:LEU:HD11	1.67	0.76
1:A:1191:ARG:HG2	5:A:2084:HOH:O	1.85	0.76
1:A:100:GLU:O	1:A:102:LEU:N	2.18	0.76
1:A:1101:LEU:CD1	1:A:1123:GLU:HB2	2.15	0.76
1:A:182:ILE:HG12	1:A:182:ILE:O	1.85	0.76
1:A:885:HIS:HD2	1:A:910:ARG:HH22	0.79	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:811:ALA:O	1:A:812:TYR:HB2	1.84	0.76
1:A:1119:LEU:HD23	1:A:1196:ILE:CG2	2.15	0.75
1:A:1461:LEU:HD21	1:A:1491:PHE:HZ	1.52	0.75
1:A:1491:PHE:HD1	1:A:1491:PHE:C	1.88	0.75
1:A:338:LYS:O	1:A:394:LEU:HD23	1.88	0.74
1:A:649:SER:HB3	1:A:652:HIS:H	1.50	0.74
1:A:768:PHE:CD2	1:A:771:MET:HG2	2.21	0.74
1:A:949:ARG:NH2	1:A:1008:ASP:OD2	2.19	0.74
1:A:1456:LYS:HB3	1:A:1503:PRO:O	1.87	0.74
1:A:354:TYR:HB3	1:A:364:LEU:CD1	2.16	0.74
1:A:1376:ASN:OD1	1:A:1472:THR:HG21	1.87	0.74
1:A:567:LEU:HD12	1:A:604:PRO:CD	2.18	0.74
1:A:773:PHE:HB2	1:A:774:PRO:CD	2.16	0.74
1:A:1461:LEU:HD21	1:A:1491:PHE:CZ	2.22	0.74
1:A:1142:VAL:O	1:A:1142:VAL:CG1	2.35	0.74
1:A:1130:ILE:H	1:A:1130:ILE:CD1	2.00	0.74
1:A:714:ILE:HA	1:A:717:LYS:HD2	1.69	0.74
1:A:907:ASP:OD2	1:A:909:VAL:CG2	2.36	0.74
1:A:685:LEU:HD12	1:A:690:ARG:HD2	1.69	0.74
1:A:1081:GLU:CG	1:A:1120:MET:HE1	2.17	0.73
1:A:1491:PHE:CD1	1:A:1491:PHE:C	2.60	0.73
1:A:443:VAL:CG2	1:A:675:GLN:HE21	1.99	0.73
1:A:581:THR:CG2	1:A:585:LYS:HE3	2.18	0.73
1:A:9:LEU:HD21	1:A:392:VAL:CG1	2.19	0.73
1:A:472:THR:HG22	1:A:473:PHE:N	2.01	0.73
1:A:1119:LEU:HD21	1:A:1196:ILE:CG2	2.18	0.73
1:A:855:ILE:CG2	1:A:856:SER:H	2.01	0.73
1:A:616:ILE:CG2	1:A:621:ALA:HB2	2.18	0.73
1:A:404:GLN:OE1	1:A:404:GLN:CA	2.35	0.72
1:A:1148:CYS:SG	3:A:2072:F3S:S3	2.86	0.72
1:A:1455:SER:O	1:A:1459:GLU:HG2	1.88	0.72
1:A:645:ALA:CB	1:A:668:LEU:HB2	2.20	0.72
1:A:318:TYR:HD1	1:A:418:TRP:NE1	1.86	0.72
1:A:1103:ARG:HG2	1:A:1124:GLU:HB2	1.71	0.72
1:A:1138:ILE:CG2	1:A:1139:MET:N	2.51	0.72
1:A:883:GLU:OE1	1:A:1160:ARG:CD	2.35	0.72
1:A:1355:GLU:CD	1:A:1355:GLU:H	1.93	0.72
1:A:1347:HIS:CD2	1:A:1348:PRO:HD2	2.25	0.71
1:A:497:GLN:HE21	1:A:651:HIS:CD2	2.06	0.71
1:A:506:PRO:HD2	1:A:1005:PRO:HB3	1.72	0.71
1:A:45:GLY:HA3	1:A:220:PRO:CD	2.20	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:560:GLN:OE1	1:A:560:GLN:CA	2.38	0.71
1:A:37:ASP:H	1:A:120:GLN:HE21	1.38	0.71
1:A:445:GLN:HB3	1:A:772:ALA:HB1	1.73	0.71
1:A:307:LYS:CE	1:A:1440:GLU:OE1	2.37	0.71
1:A:1254:ASP:C	1:A:1256:ASP:H	1.94	0.70
1:A:211:THR:HG21	1:A:1094:ASN:O	1.91	0.70
1:A:773:PHE:CB	1:A:774:PRO:CD	2.69	0.70
1:A:1318:LEU:HB2	1:A:1321:MET:CE	2.20	0.70
1:A:460:VAL:O	1:A:464:MET:HG3	1.92	0.70
1:A:403:TYR:HD1	1:A:403:TYR:N	1.85	0.70
1:A:237:ILE:HG23	1:A:264:VAL:HG13	1.74	0.70
1:A:152:ARG:HH12	1:A:168:PHE:N	1.90	0.70
1:A:402:ASN:O	1:A:403:TYR:O	2.09	0.70
1:A:1372:ASN:N	1:A:1372:ASN:ND2	2.34	0.70
1:A:519:ALA:O	1:A:520:MET:HG2	1.92	0.69
1:A:511:ARG:HG3	1:A:1422:ALA:HB1	1.74	0.69
1:A:561:VAL:CG1	1:A:599:VAL:HG23	2.22	0.69
1:A:258:GLU:O	1:A:261:THR:OG1	2.04	0.69
1:A:567:LEU:HD12	1:A:604:PRO:HD2	1.73	0.69
1:A:1101:LEU:HA	1:A:1123:GLU:OE2	1.92	0.69
1:A:296:VAL:HG12	1:A:296:VAL:O	1.90	0.69
1:A:602:ASP:OD1	1:A:644:THR:OG1	2.07	0.69
1:A:908:VAL:HG22	1:A:911:TYR:CE1	2.26	0.69
1:A:1325:LEU:HD21	1:A:1328:GLU:O	1.93	0.69
1:A:773:PHE:HB2	1:A:774:PRO:HD3	1.72	0.69
1:A:827:TYR:O	1:A:831:ARG:N	2.26	0.69
1:A:232:THR:HG21	1:A:725:SER:HB3	1.74	0.68
1:A:559:LEU:HD22	1:A:596:GLU:H	1.58	0.68
1:A:1032:SER:CB	1:A:1055:ILE:HB	2.22	0.68
1:A:1347:HIS:ND1	1:A:1348:PRO:CD	2.53	0.68
1:A:445:GLN:HG3	1:A:777:ALA:CB	2.22	0.67
1:A:1294:ASN:HB3	1:A:1338:ASN:HD21	1.59	0.67
1:A:1130:ILE:HD13	1:A:1130:ILE:N	2.07	0.67
1:A:490:LEU:HD11	1:A:648:TRP:CH2	2.29	0.67
1:A:501:GLN:HE22	1:A:1035:LEU:CB	2.07	0.67
1:A:1147:ASN:O	1:A:1148:CYS:C	2.31	0.67
1:A:686:MET:HE3	1:A:692:ASP:HA	1.76	0.67
1:A:1338:ASN:O	1:A:1370:GLY:HA3	1.94	0.67
1:A:509:PRO:HA	1:A:516:MET:HE2	1.76	0.66
1:A:1263:HIS:CE1	1:A:1298:GLU:H	2.13	0.66
1:A:144:LEU:HD23	1:A:170:CYS:HB3	1.76	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:416:GLY:O	1:A:420:LYS:HG3	1.95	0.66
1:A:1246:VAL:O	1:A:1249:ASP:HB2	1.95	0.66
1:A:1360:ILE:CG2	1:A:1364:CYS:SG	2.83	0.66
1:A:9:LEU:HD21	1:A:392:VAL:HG13	1.78	0.66
1:A:645:ALA:HB1	1:A:668:LEU:HB2	1.76	0.66
1:A:559:LEU:CD2	1:A:596:GLU:H	2.08	0.66
1:A:676:TRP:HE1	1:A:690:ARG:NH1	1.93	0.66
1:A:450:PHE:CZ	1:A:608:ILE:HD12	2.31	0.66
1:A:73:GLY:HA2	1:A:169:SER:O	1.96	0.66
1:A:893:ASN:ND2	1:A:937:THR:HG23	2.11	0.66
1:A:1352:PHE:O	1:A:1354:PRO:HD3	1.96	0.66
1:A:1442:ILE:CD1	1:A:1449:LEU:HD13	2.25	0.66
1:A:315:PHE:HD2	1:A:319:TYR:CE1	2.14	0.66
1:A:418:TRP:C	1:A:418:TRP:CD2	2.70	0.66
1:A:1311:GLN:OE1	1:A:1311:GLN:CA	2.45	0.65
1:A:45:GLY:HA3	1:A:220:PRO:HD3	1.77	0.65
1:A:773:PHE:CB	1:A:774:PRO:HD3	2.26	0.65
1:A:1402:CYS:O	1:A:1403:GLU:O	2.14	0.65
1:A:37:ASP:H	1:A:120:GLN:NE2	1.92	0.65
1:A:581:THR:HG23	1:A:585:LYS:HE3	1.79	0.65
1:A:901:SER:O	1:A:902:GLY:C	2.35	0.65
1:A:1251:ILE:CD1	1:A:1271:TYR:CE1	2.80	0.65
1:A:406:LYS:O	1:A:409:ALA:HB3	1.96	0.65
1:A:686:MET:CE	1:A:694:ILE:HB	2.26	0.65
1:A:311:GLU:CB	1:A:409:ALA:HB1	2.26	0.65
1:A:1282:THR:OG1	1:A:1315:ALA:HB3	1.97	0.65
1:A:261:THR:CB	1:A:262:PRO:HD3	2.24	0.65
1:A:329:PRO:HB3	1:A:349:LEU:HB2	1.77	0.65
1:A:529:LEU:O	1:A:531:PRO:HD3	1.96	0.64
1:A:1032:SER:HA	1:A:1055:ILE:O	1.97	0.64
1:A:602:ASP:O	1:A:608:ILE:HD13	1.97	0.64
1:A:146:ARG:NH2	1:A:256:GLU:OE1	2.29	0.64
1:A:270:ASP:OD1	1:A:271:SER:N	2.30	0.64
1:A:511:ARG:CG	1:A:1422:ALA:HB1	2.26	0.64
1:A:1137:CYS:SG	1:A:1138:ILE:O	2.54	0.64
1:A:891:ALA:CB	1:A:1170:VAL:CG2	2.75	0.64
1:A:715:LEU:HD22	1:A:726:TYR:CG	2.32	0.64
1:A:1432:LEU:HG	1:A:1432:LEU:O	1.96	0.64
1:A:501:GLN:NE2	1:A:1035:LEU:HA	2.13	0.64
1:A:612:ASN:O	1:A:614:SER:N	2.31	0.64
1:A:1462:LYS:HB2	1:A:1484:TRP:CZ2	2.33	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:611:GLU:O	1:A:613:GLN:N	2.29	0.64
1:A:611:GLU:C	1:A:613:GLN:N	2.48	0.64
1:A:1430:TYR:CE2	1:A:1493:GLN:OE1	2.50	0.64
1:A:315:PHE:HD2	1:A:319:TYR:HE1	1.44	0.64
1:A:148:LEU:HD23	1:A:169:SER:HA	1.79	0.64
1:A:302:ASN:O	1:A:1418:ARG:NH1	2.31	0.63
1:A:551:LEU:HG	1:A:555:LYS:HE2	1.79	0.63
1:A:957:LEU:HD22	1:A:963:LEU:HD13	1.81	0.63
1:A:1228:THR:HG23	1:A:1228:THR:O	1.97	0.63
1:A:1338:ASN:OD1	1:A:1369:THR:CG2	2.47	0.63
1:A:1447:ILE:CD1	1:A:1494:ALA:HB1	2.20	0.63
1:A:757:THR:H	1:A:760:ASP:HB2	1.62	0.63
1:A:383:ARG:HG2	1:A:1358:VAL:HG21	1.80	0.63
1:A:415:TYR:CG	1:A:416:GLY:N	2.56	0.63
1:A:453:THR:CB	1:A:456:ASP:OD2	2.40	0.63
1:A:908:VAL:HG22	1:A:911:TYR:HE1	1.64	0.63
1:A:32:GLY:HA2	1:A:207:PHE:HB2	1.81	0.62
1:A:1142:VAL:HG11	1:A:1147:ASN:HB2	1.81	0.62
1:A:289:LEU:CD2	1:A:389:MET:HE3	2.29	0.62
1:A:414:PRO:HB2	1:A:418:TRP:HB3	1.81	0.62
1:A:1388:SER:HA	1:A:1406:THR:HG22	1.82	0.62
1:A:1409:VAL:C	1:A:1410:ILE:HD13	2.20	0.62
1:A:358:LYS:HD2	1:A:377:ASP:HB2	1.81	0.62
1:A:1142:VAL:O	1:A:1142:VAL:HG12	1.98	0.62
1:A:6:ILE:HD11	1:A:371:VAL:HG21	1.80	0.62
1:A:1101:LEU:HD11	1:A:1124:GLU:HG3	1.81	0.62
1:A:318:TYR:CD1	1:A:418:TRP:NE1	2.65	0.62
1:A:679:ASP:OD1	1:A:681:LYS:N	2.33	0.62
1:A:289:LEU:HD22	1:A:389:MET:HE3	1.81	0.62
1:A:290:GLU:OE1	1:A:408:GLN:HG3	2.00	0.62
1:A:421:ILE:O	1:A:422:GLN:O	2.17	0.62
1:A:953:THR:CG2	1:A:1294:ASN:ND2	2.52	0.62
1:A:509:PRO:HA	1:A:516:MET:CE	2.29	0.62
1:A:1288:ILE:HD12	1:A:1321:MET:HE1	1.81	0.62
1:A:2:GLY:HA3	1:A:28:MET:CE	2.30	0.61
1:A:855:ILE:CG2	1:A:856:SER:N	2.60	0.61
1:A:239:TRP:HE1	1:A:728:GLY:HA3	1.65	0.61
1:A:17:LEU:HD21	1:A:200:PHE:HA	1.80	0.61
1:A:450:PHE:HZ	1:A:608:ILE:HD12	1.63	0.61
1:A:1363:THR:CG2	1:A:1385:VAL:HG21	2.31	0.61
1:A:2:GLY:HA3	1:A:28:MET:HE3	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:311:GLU:HB3	1:A:409:ALA:HB1	1.81	0.61
1:A:28:MET:HE1	1:A:366:SER:HB2	1.80	0.61
1:A:688:ASN:CG	1:A:688:ASN:O	2.39	0.61
1:A:1257:ILE:O	1:A:1261:ILE:HG12	2.01	0.61
1:A:1461:LEU:CD2	1:A:1491:PHE:HZ	2.13	0.61
1:A:499:PHE:CE1	1:A:973:PRO:HB3	2.36	0.61
1:A:570:LEU:HG	1:A:613:GLN:HG2	1.83	0.61
1:A:907:ASP:CG	1:A:909:VAL:HG23	2.20	0.61
1:A:971:ALA:HB3	1:A:1065:THR:HG23	1.82	0.61
1:A:388:GLN:HG2	1:A:401:LYS:HD3	1.81	0.61
1:A:645:ALA:HB1	1:A:668:LEU:CB	2.31	0.61
1:A:1347:HIS:CE1	1:A:1348:PRO:CD	2.84	0.60
1:A:314:ASP:OD2	1:A:415:TYR:HD1	1.84	0.60
1:A:827:TYR:HE1	1:A:1176:PHE:HD1	1.50	0.60
1:A:550:GLU:O	1:A:554:ILE:HD13	2.01	0.60
1:A:586:THR:O	1:A:590:THR:OG1	2.18	0.60
1:A:147:ARG:HA	1:A:150:ILE:HD12	1.83	0.60
1:A:315:PHE:HE1	1:A:415:TYR:HB3	1.66	0.60
1:A:603:ARG:O	1:A:603:ARG:CG	2.45	0.60
1:A:221:MET:CE	1:A:221:MET:CG	2.79	0.60
1:A:1250:ASP:O	1:A:1253:ALA:N	2.32	0.60
1:A:13:PRO:O	1:A:197:THR:HB	2.00	0.60
1:A:441:GLN:OE1	1:A:441:GLN:N	2.35	0.60
1:A:603:ARG:HD2	1:A:667:TYR:CE2	2.37	0.60
1:A:616:ILE:HG21	1:A:621:ALA:HB2	1.83	0.60
1:A:1032:SER:HB3	1:A:1055:ILE:HB	1.84	0.60
1:A:1354:PRO:HB2	1:A:1355:GLU:OE2	2.02	0.60
1:A:9:LEU:O	1:A:396:GLU:HG2	2.01	0.60
1:A:1228:THR:O	1:A:1228:THR:CG2	2.49	0.60
1:A:234:LEU:CD1	1:A:234:LEU:C	2.70	0.59
1:A:239:TRP:HH2	1:A:635:ARG:HH12	1.50	0.59
1:A:1216:ASN:C	1:A:1216:ASN:HD22	2.05	0.59
1:A:567:LEU:HD21	1:A:615:PHE:CE2	2.36	0.59
1:A:450:PHE:CD2	1:A:645:ALA:HB3	2.37	0.59
1:A:1200:THR:HG21	1:A:1225:LEU:HB2	1.83	0.59
1:A:234:LEU:C	1:A:234:LEU:HD12	2.23	0.59
1:A:1325:LEU:HB3	1:A:1344:ILE:HG12	1.83	0.59
1:A:484:LEU:CB	1:A:839:VAL:CG1	2.72	0.59
1:A:6:ILE:CD1	1:A:371:VAL:HG21	2.33	0.59
1:A:9:LEU:HD21	1:A:392:VAL:HG11	1.84	0.59
1:A:1382:ARG:HG3	1:A:1385:VAL:HG13	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:9:LEU:HD12	1:A:360:ASP:HB3	1.85	0.59
1:A:152:ARG:HH12	1:A:168:PHE:H	1.50	0.59
1:A:501:GLN:HE22	1:A:1035:LEU:CA	2.16	0.59
1:A:1023:HIS:HE1	1:A:1054:ASP:OD2	1.85	0.59
1:A:1263:HIS:CE1	1:A:1298:GLU:N	2.71	0.58
1:A:1412:VAL:HG11	1:A:1416:VAL:CG2	2.32	0.58
1:A:1438:LEU:HB3	1:A:1439:PRO:HD3	1.85	0.58
1:A:261:THR:HB	1:A:262:PRO:CD	2.28	0.58
1:A:603:ARG:HD2	1:A:667:TYR:CD2	2.38	0.58
1:A:1138:ILE:HG22	1:A:1139:MET:H	1.68	0.58
1:A:1442:ILE:HD11	1:A:1449:LEU:HD13	1.85	0.58
1:A:316:HIS:O	1:A:320:SER:CB	2.52	0.58
1:A:518:LEU:HD13	1:A:712:PHE:CE2	2.38	0.58
1:A:642:VAL:HG13	1:A:664:ILE:HG23	1.86	0.58
1:A:941:ALA:HB1	1:A:961:LYS:HD2	1.85	0.58
1:A:1137:CYS:SG	3:A:2072:F3S:S1	3.01	0.58
1:A:383:ARG:HH12	1:A:1380:GLY:HA2	0.77	0.58
1:A:445:GLN:OE1	1:A:772:ALA:HA	2.04	0.58
1:A:445:GLN:CG	1:A:777:ALA:HB1	2.29	0.58
1:A:591:VAL:HG22	1:A:598:LEU:HD11	1.86	0.58
1:A:37:ASP:OD1	1:A:119:ILE:HG22	2.04	0.58
1:A:484:LEU:HD13	1:A:839:VAL:CG1	2.33	0.58
1:A:516:MET:HG2	1:A:721:SER:HA	1.85	0.58
1:A:450:PHE:CZ	1:A:615:PHE:CZ	2.92	0.57
1:A:511:ARG:HD3	1:A:1423:GLY:HA3	1.86	0.57
1:A:358:LYS:CD	1:A:377:ASP:HB2	2.34	0.57
1:A:993:ARG:CG	1:A:993:ARG:NH1	2.60	0.57
1:A:1315:ALA:O	1:A:1317:ASN:N	2.37	0.57
1:A:602:ASP:O	1:A:608:ILE:CD1	2.53	0.57
1:A:1154:THR:HG21	1:A:1159:LEU:HD12	1.87	0.57
1:A:243:ARG:HG2	1:A:636:LEU:HD21	1.87	0.57
1:A:450:PHE:CE2	1:A:645:ALA:HB3	2.40	0.57
1:A:1451:ARG:HH12	1:A:1491:PHE:H	1.53	0.57
1:A:1461:LEU:CD2	1:A:1491:PHE:CZ	2.87	0.57
1:A:3:VAL:HG21	1:A:227:ASN:HB3	1.87	0.57
1:A:211:THR:HG22	1:A:212:MET:HE2	1.86	0.57
1:A:230:ILE:HA	1:A:327:ASP:O	2.05	0.57
1:A:953:THR:O	1:A:956:TYR:HB3	2.04	0.57
1:A:492:TYR:HE2	1:A:656:LEU:CD1	2.15	0.57
1:A:1376:ASN:HD21	1:A:1472:THR:CG2	2.15	0.57
1:A:875:MET:SD	1:A:1132:MET:CE	2.89	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:774:PRO:HD2	5:A:2116:HOH:O	2.04	0.56
1:A:314:ASP:OD2	1:A:415:TYR:CD1	2.57	0.56
1:A:483:VAL:HG23	1:A:494:TYR:HE2	1.69	0.56
1:A:995:LYS:HD2	1:A:1498:SER:OG	2.04	0.56
1:A:71:ARG:HG3	1:A:139:CYS:O	2.06	0.56
1:A:289:LEU:HD22	1:A:404:GLN:HE22	1.70	0.56
1:A:686:MET:HE3	1:A:694:ILE:HB	1.85	0.56
1:A:875:MET:CE	1:A:888:LEU:CD1	2.84	0.56
1:A:73:GLY:CA	1:A:170:CYS:HA	2.33	0.56
1:A:75:GLY:O	1:A:130:GLN:HA	2.05	0.56
1:A:519:ALA:O	1:A:520:MET:CG	2.54	0.56
1:A:1279:THR:HG22	1:A:1282:THR:HB	1.87	0.56
1:A:264:VAL:HG22	1:A:273:ASN:OD1	2.05	0.56
1:A:559:LEU:O	1:A:561:VAL:HG23	2.05	0.56
1:A:1442:ILE:HD12	1:A:1449:LEU:HD22	1.87	0.56
1:A:560:GLN:C	1:A:561:VAL:HG23	2.26	0.56
1:A:445:GLN:OE1	1:A:776:MET:O	2.24	0.56
1:A:1420:VAL:O	1:A:1420:VAL:CG1	2.48	0.56
1:A:56:ALA:O	1:A:60:ASN:HB2	2.05	0.56
1:A:501:GLN:NE2	1:A:1035:LEU:CA	2.68	0.56
1:A:627:HIS:O	1:A:631:ARG:HG3	2.06	0.56
1:A:281:LEU:HD12	1:A:291:ALA:HB1	1.88	0.56
1:A:309:TYR:O	1:A:312:ILE:HG22	2.06	0.56
1:A:448:ALA:HB3	1:A:772:ALA:HB2	1.88	0.56
1:A:559:LEU:O	1:A:561:VAL:CG2	2.54	0.56
1:A:1228:THR:HG21	1:A:1232:ARG:HH21	1.71	0.56
1:A:472:THR:CG2	1:A:473:PHE:N	2.69	0.56
1:A:805:LEU:HB2	1:A:830:TYR:CD1	2.41	0.56
1:A:971:ALA:CB	1:A:1065:THR:HG23	2.35	0.56
1:A:1279:THR:HG22	1:A:1282:THR:CB	2.36	0.56
1:A:449:ALA:HA	1:A:768:PHE:O	2.07	0.55
1:A:1129:SER:HA	1:A:1132:MET:HE3	1.87	0.55
1:A:1251:ILE:HD13	1:A:1271:TYR:CZ	2.41	0.55
1:A:501:GLN:NE2	1:A:1035:LEU:HB3	2.17	0.55
1:A:582:ASN:O	1:A:586:THR:OG1	2.14	0.55
1:A:219:GLN:O	1:A:219:GLN:CG	2.52	0.55
1:A:316:HIS:O	1:A:320:SER:HB3	2.07	0.55
1:A:827:TYR:CE1	1:A:1176:PHE:CD1	2.95	0.55
1:A:875:MET:CE	1:A:888:LEU:HD11	2.37	0.55
1:A:1085:THR:HG22	1:A:1086:GLU:N	2.20	0.55
1:A:1371:GLY:C	1:A:1372:ASN:ND2	2.60	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1294:ASN:HB3	1:A:1338:ASN:ND2	2.22	0.55
1:A:84:SER:O	1:A:88:VAL:HG23	2.07	0.55
1:A:768:PHE:CE1	1:A:783:PHE:HZ	2.24	0.55
1:A:399:ILE:CG2	1:A:404:GLN:HG2	2.35	0.55
1:A:679:ASP:OD1	1:A:679:ASP:C	2.45	0.55
1:A:750:THR:CG2	1:A:1039:ILE:HG21	2.33	0.55
1:A:827:TYR:HE1	1:A:1176:PHE:CD1	2.25	0.55
1:A:570:LEU:HB2	1:A:613:GLN:HB2	1.88	0.55
1:A:228:GLY:O	1:A:229:GLU:HG2	2.06	0.54
1:A:600:LEU:HD21	1:A:625:VAL:HG11	1.87	0.54
1:A:663:ALA:C	1:A:664:ILE:HG12	2.27	0.54
1:A:827:TYR:CE1	1:A:1176:PHE:HD1	2.25	0.54
1:A:450:PHE:HZ	1:A:608:ILE:CD1	2.20	0.54
1:A:499:PHE:CG	1:A:973:PRO:HB3	2.42	0.54
1:A:972:LYS:HD3	1:A:1068:SER:OG	2.07	0.54
1:A:1138:ILE:CG2	1:A:1139:MET:H	2.21	0.54
1:A:314:ASP:HB2	1:A:415:TYR:HB2	1.87	0.54
1:A:484:LEU:CB	1:A:839:VAL:HG12	2.35	0.54
1:A:1363:THR:HG22	1:A:1385:VAL:HG21	1.89	0.54
1:A:311:GLU:HB2	1:A:409:ALA:HB1	1.90	0.54
1:A:1234:TRP:CZ3	1:A:1235:LEU:HD13	2.43	0.54
1:A:1292:TYR:CE1	1:A:1297:PHE:HD1	2.26	0.54
1:A:559:LEU:HG	1:A:560:GLN:CA	2.37	0.54
1:A:861:GLU:OE1	1:A:1193:LEU:N	2.40	0.54
1:A:559:LEU:CG	1:A:560:GLN:O	2.56	0.53
1:A:565:SER:OG	1:A:567:LEU:HB2	2.09	0.53
1:A:794:TYR:CG	1:A:795:HIS:N	2.75	0.53
1:A:645:ALA:HB2	1:A:667:TYR:CZ	2.42	0.53
1:A:916:ASP:OD2	1:A:924:PRO:HD2	2.09	0.53
1:A:243:ARG:NH1	1:A:528:LEU:HD22	2.24	0.53
1:A:278:LEU:O	1:A:282:VAL:HG23	2.08	0.53
1:A:475:MET:HE1	1:A:1129:SER:OG	2.09	0.53
1:A:769:HIS:C	1:A:769:HIS:CD2	2.81	0.53
1:A:1442:ILE:HD12	1:A:1449:LEU:HD13	1.90	0.53
1:A:481:LEU:O	1:A:483:VAL:N	2.41	0.53
1:A:263:ILE:CD1	1:A:280:LEU:HD22	2.35	0.53
1:A:1089:ARG:NH2	1:A:1225:LEU:CD2	2.72	0.53
1:A:152:ARG:HG3	1:A:153:SER:N	2.23	0.53
1:A:157:LYS:NZ	1:A:261:THR:HB	2.24	0.53
1:A:224:LEU:HD12	1:A:225:GLY:O	2.08	0.53
1:A:478:ASP:OD2	1:A:1141:ARG:NH2	2.39	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1081:GLU:O	1:A:1085:THR:HB	2.08	0.53
1:A:1399:ASP:OD1	1:A:1417:GLY:HA3	2.07	0.53
1:A:704:ARG:O	1:A:707:VAL:HB	2.09	0.53
1:A:173:ILE:HD13	1:A:175:TYR:HE1	1.74	0.53
1:A:524:LYS:HB3	1:A:637:LYS:O	2.09	0.53
1:A:1137:CYS:SG	3:A:2072:F3S:S3	3.07	0.53
1:A:1142:VAL:CG1	1:A:1147:ASN:HB2	2.39	0.52
1:A:1316:PHE:CE2	1:A:1336:GLY:HA3	2.44	0.52
1:A:13:PRO:HB2	1:A:197:THR:OG1	2.08	0.52
1:A:559:LEU:HD23	1:A:560:GLN:O	2.03	0.52
1:A:1263:HIS:CE1	1:A:1297:PHE:CA	2.61	0.52
1:A:1354:PRO:HG2	1:A:1475:PRO:HG2	1.91	0.52
1:A:1419:ASN:HD21	1:A:1443:ASN:ND2	2.07	0.52
1:A:635:ARG:HH11	1:A:635:ARG:CG	2.22	0.52
1:A:668:LEU:O	1:A:669:ALA:C	2.46	0.52
1:A:720:ILE:HD11	1:A:731:ILE:HD12	1.91	0.52
1:A:1021:ASP:O	1:A:1024:GLN:HB3	2.10	0.52
1:A:1105:ASP:OD1	1:A:1105:ASP:C	2.47	0.52
1:A:1338:ASN:OD1	1:A:1369:THR:HG23	2.10	0.52
1:A:375:GLU:N	1:A:375:GLU:OE1	2.43	0.52
1:A:418:TRP:O	1:A:418:TRP:CD2	2.62	0.52
1:A:768:PHE:HE1	1:A:783:PHE:HZ	1.57	0.52
1:A:1371:GLY:C	1:A:1372:ASN:HD22	2.12	0.52
1:A:677:TRP:NE1	1:A:694:ILE:O	2.27	0.52
1:A:872:THR:O	1:A:1127:PHE:O	2.27	0.52
1:A:877:LEU:HG	1:A:877:LEU:O	2.09	0.52
1:A:883:GLU:CD	1:A:1160:ARG:HD2	2.29	0.52
1:A:42:ASP:OD2	1:A:208:SER:N	2.42	0.52
1:A:541:LEU:HD23	1:A:663:ALA:HB2	1.91	0.52
1:A:876:SER:HA	1:A:902:GLY:HA3	1.90	0.52
1:A:1008:ASP:HB2	1:A:1366:TYR:HE1	1.75	0.52
1:A:1087:VAL:O	1:A:1088:HIS:C	2.47	0.52
1:A:52:ARG:HD2	5:A:2076:HOH:O	2.09	0.52
1:A:353:ARG:NH2	1:A:1329:ALA:O	2.43	0.52
1:A:383:ARG:HH12	1:A:1380:GLY:C	2.10	0.52
1:A:447:GLN:HB3	1:A:780:LEU:HD21	1.92	0.52
1:A:648:TRP:H	1:A:652:HIS:HD2	1.56	0.52
1:A:696:LEU:N	1:A:697:PRO:CD	2.73	0.52
1:A:768:PHE:CD2	1:A:771:MET:CB	2.92	0.52
1:A:418:TRP:CZ3	1:A:422:GLN:HB3	2.45	0.52
1:A:232:THR:O	1:A:233:LEU:C	2.48	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:329:PRO:HB3	1:A:349:LEU:CB	2.40	0.51
1:A:978:GLN:O	4:A:2073:AKG:H41	2.10	0.51
1:A:204:HIS:CG	1:A:219:GLN:O	2.63	0.51
1:A:473:PHE:CG	1:A:474:CYS:N	2.77	0.51
1:A:484:LEU:HD23	1:A:1211:LEU:HD13	1.91	0.51
1:A:548:GLU:CD	1:A:603:ARG:HH22	2.14	0.51
1:A:686:MET:O	1:A:692:ASP:CB	2.52	0.51
1:A:1130:ILE:CD1	1:A:1130:ILE:N	2.69	0.51
1:A:872:THR:HB	1:A:892:MET:HG3	1.92	0.51
1:A:1317:ASN:OD1	1:A:1321:MET:HB3	2.10	0.51
1:A:1402:CYS:O	1:A:1403:GLU:C	2.48	0.51
1:A:2:GLY:CA	1:A:28:MET:CE	2.89	0.51
1:A:179:VAL:HB	1:A:183:ILE:CG2	2.39	0.51
1:A:744:TYR:O	1:A:744:TYR:CD2	2.63	0.51
1:A:1142:VAL:HG13	1:A:1145:THR:HB	1.90	0.51
1:A:1497:PRO:O	1:A:1498:SER:HB2	2.11	0.51
1:A:275:ASP:O	1:A:276:SER:C	2.49	0.51
1:A:768:PHE:CE2	1:A:771:MET:CB	2.94	0.51
1:A:1461:LEU:HD11	1:A:1465:ILE:HD11	1.93	0.51
1:A:114:SER:OG	1:A:125:GLN:OE1	2.28	0.51
1:A:794:TYR:CD2	1:A:795:HIS:N	2.79	0.51
1:A:124:ASN:ND2	1:A:213:PRO:O	2.44	0.51
1:A:204:HIS:CE1	1:A:219:GLN:HB3	2.45	0.51
1:A:608:ILE:HG21	1:A:615:PHE:HZ	1.76	0.51
1:A:798:SER:H	1:A:801:MET:HE2	1.76	0.51
1:A:799:PRO:HB3	1:A:1138:ILE:HG23	1.92	0.51
1:A:1173:PHE:O	1:A:1177:ILE:HG12	2.11	0.51
1:A:401:LYS:HE3	1:A:402:ASN:OD1	2.10	0.51
1:A:703:TYR:O	1:A:707:VAL:HG23	2.11	0.51
1:A:1228:THR:CG2	1:A:1232:ARG:HH21	2.24	0.51
1:A:403:TYR:O	1:A:406:LYS:N	2.43	0.50
1:A:514:LEU:HD13	1:A:514:LEU:C	2.31	0.50
1:A:540:LYS:N	5:A:2080:HOH:O	2.44	0.50
1:A:1354:PRO:HB3	5:A:2110:HOH:O	2.10	0.50
1:A:77:VAL:HG12	1:A:79:LEU:HG	1.93	0.50
1:A:843:ARG:HG3	1:A:1112:TRP:CH2	2.46	0.50
1:A:874:GLY:CA	1:A:900:ASN:HB3	2.41	0.50
1:A:877:LEU:HD23	1:A:988:ILE:HD13	1.93	0.50
1:A:1250:ASP:O	1:A:1251:ILE:C	2.49	0.50
1:A:289:LEU:HD22	1:A:389:MET:CE	2.41	0.50
1:A:480:PRO:HB3	1:A:840:THR:HA	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1119:LEU:HD21	1:A:1196:ILE:HG21	1.91	0.50
1:A:1138:ILE:O	3:A:2072:F3S:S1	2.69	0.50
1:A:17:LEU:HD11	1:A:201:ALA:HB2	1.91	0.50
1:A:567:LEU:HD21	1:A:615:PHE:HE2	1.77	0.50
1:A:1119:LEU:HD13	1:A:1203:LEU:HD21	1.94	0.50
1:A:744:TYR:CD2	1:A:744:TYR:C	2.84	0.50
1:A:1080:TRP:CZ3	1:A:1120:MET:CE	2.94	0.50
1:A:452:TYR:CE1	1:A:668:LEU:HD13	2.47	0.50
1:A:875:MET:HE3	1:A:888:LEU:CD1	2.42	0.50
1:A:1065:THR:HB	1:A:1067:ALA:H	1.77	0.50
1:A:1139:MET:O	1:A:1140:ALA:C	2.48	0.50
1:A:1185:LEU:O	1:A:1189:GLY:N	2.39	0.50
1:A:898:LYS:HE2	1:A:942:ILE:HD11	1.93	0.50
1:A:271:SER:O	1:A:272:TYR:C	2.50	0.49
1:A:1214:THR:HG22	1:A:1215:GLN:H	1.77	0.49
1:A:207:PHE:C	1:A:207:PHE:CD2	2.84	0.49
1:A:971:ALA:HB3	1:A:1065:THR:CG2	2.42	0.49
1:A:1337:MET:CE	1:A:1365:LEU:CD2	2.85	0.49
1:A:740:GLU:OE1	1:A:740:GLU:N	2.44	0.49
1:A:773:PHE:HB2	1:A:774:PRO:HD2	1.95	0.49
1:A:797:ASN:HA	1:A:801:MET:HE2	1.93	0.49
1:A:4:GLY:HA3	1:A:203:TYR:CZ	2.48	0.49
1:A:212:MET:HE2	1:A:1094:ASN:HA	1.93	0.49
1:A:338:LYS:O	1:A:394:LEU:CD2	2.58	0.49
1:A:402:ASN:O	1:A:403:TYR:C	2.50	0.49
1:A:559:LEU:HD22	1:A:596:GLU:N	2.27	0.49
1:A:1418:ARG:HA	1:A:1441:LYS:HB3	1.94	0.49
1:A:290:GLU:O	1:A:294:ILE:HD12	2.13	0.49
1:A:447:GLN:O	1:A:452:TYR:HB2	2.13	0.49
1:A:608:ILE:HG21	1:A:615:PHE:CZ	2.47	0.49
1:A:1024:GLN:HA	1:A:1283:ARG:HH21	1.78	0.49
1:A:1404:TYR:CD1	1:A:1404:TYR:N	2.80	0.49
1:A:178:MET:HG3	1:A:213:PRO:HB2	1.94	0.49
1:A:342:ALA:CB	1:A:364:LEU:CD2	2.91	0.49
1:A:696:LEU:N	1:A:697:PRO:HD2	2.28	0.49
1:A:1325:LEU:HD21	1:A:1328:GLU:C	2.33	0.49
1:A:1401:CYS:O	1:A:1402:CYS:HB2	2.12	0.49
1:A:1419:ASN:ND2	1:A:1443:ASN:ND2	2.60	0.49
1:A:445:GLN:CD	1:A:777:ALA:CB	2.80	0.49
1:A:616:ILE:HG22	1:A:621:ALA:HB2	1.94	0.49
1:A:657:VAL:CG1	1:A:723:LEU:HD11	2.35	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:829:LEU:HD22	1:A:833:TYR:HE1	1.77	0.49
1:A:315:PHE:CD2	1:A:319:TYR:CE1	2.99	0.49
1:A:560:GLN:C	1:A:561:VAL:CG2	2.81	0.49
1:A:768:PHE:HE1	1:A:783:PHE:CZ	2.31	0.49
1:A:954:PRO:O	1:A:958:MET:HG2	2.13	0.49
1:A:239:TRP:CD1	1:A:324:GLU:OE2	2.66	0.48
1:A:312:ILE:C	1:A:312:ILE:HD13	2.33	0.48
1:A:414:PRO:O	1:A:417:GLU:N	2.46	0.48
1:A:587:ALA:O	1:A:591:VAL:HG23	2.13	0.48
1:A:490:LEU:N	1:A:490:LEU:HD23	2.28	0.48
1:A:911:TYR:O	1:A:912:LEU:HD23	2.14	0.48
1:A:671:GLU:OE1	1:A:674:ARG:NH1	2.42	0.48
1:A:200:PHE:CD1	1:A:201:ALA:N	2.81	0.48
1:A:541:LEU:HD21	1:A:546:VAL:HG11	1.95	0.48
1:A:874:GLY:HA2	1:A:900:ASN:HB3	1.94	0.48
1:A:1008:ASP:HB2	1:A:1366:TYR:CE1	2.48	0.48
1:A:243:ARG:HH11	1:A:528:LEU:CB	2.19	0.48
1:A:445:GLN:OE1	1:A:777:ALA:CB	2.60	0.48
1:A:1375:ALA:O	1:A:1394:ILE:HA	2.12	0.48
1:A:1438:LEU:HA	1:A:1441:LYS:HD2	1.93	0.48
1:A:408:GLN:CD	1:A:408:GLN:O	2.52	0.48
1:A:148:LEU:O	1:A:151:ALA:N	2.46	0.48
1:A:157:LYS:HZ3	1:A:261:THR:HB	1.78	0.48
1:A:394:LEU:C	1:A:396:GLU:H	2.16	0.48
1:A:481:LEU:O	1:A:482:ALA:C	2.51	0.48
1:A:759:ALA:O	1:A:762:ALA:HB3	2.13	0.48
1:A:1420:VAL:HB	1:A:1442:ILE:HA	1.96	0.48
1:A:284:THR:OG1	1:A:529:LEU:HD22	2.13	0.48
1:A:290:GLU:CD	1:A:408:GLN:HG3	2.33	0.48
1:A:507:ILE:O	1:A:716:SER:HB2	2.13	0.48
1:A:893:ASN:HD22	1:A:937:THR:HG23	1.76	0.48
1:A:145:ASP:OD2	1:A:169:SER:HB2	2.13	0.48
1:A:685:LEU:HD12	1:A:690:ARG:CD	2.42	0.48
1:A:756:LEU:HD12	1:A:1214:THR:OG1	2.13	0.48
1:A:1065:THR:HG21	1:A:1068:SER:HG	1.76	0.48
1:A:342:ALA:HB3	1:A:364:LEU:CD2	2.44	0.48
1:A:369:GLY:HA3	1:A:1308:ALA:HB3	1.92	0.48
1:A:406:LYS:HA	1:A:409:ALA:CB	2.44	0.48
1:A:492:TYR:CE2	1:A:656:LEU:CD1	2.97	0.48
1:A:1316:PHE:CD2	1:A:1336:GLY:HA3	2.49	0.48
1:A:315:PHE:CE1	1:A:415:TYR:HB3	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:570:LEU:HB2	1:A:613:GLN:CB	2.43	0.47
1:A:649:SER:O	1:A:653:PHE:HD2	1.97	0.47
1:A:875:MET:HE3	1:A:888:LEU:HD11	1.95	0.47
1:A:954:PRO:HG3	1:A:1316:PHE:HB3	1.95	0.47
1:A:484:LEU:HD23	1:A:1211:LEU:CD1	2.44	0.47
1:A:887:THR:O	1:A:888:LEU:C	2.50	0.47
1:A:149:TYR:CG	1:A:283:ARG:HG3	2.49	0.47
1:A:801:MET:HE3	1:A:802:SER:HB3	1.95	0.47
1:A:1000:LEU:HA	1:A:1000:LEU:HD23	1.59	0.47
1:A:3:VAL:CG2	1:A:227:ASN:HB3	2.45	0.47
1:A:891:ALA:HB1	1:A:1171:VAL:HG23	1.96	0.47
1:A:1017:GLN:HG3	1:A:1311:GLN:HG3	1.97	0.47
1:A:794:TYR:CE1	1:A:837:ARG:HB3	2.50	0.47
1:A:1363:THR:HG23	1:A:1385:VAL:HG21	1.97	0.47
1:A:97:VAL:HG11	1:A:133:VAL:HG21	1.95	0.47
1:A:444:LEU:O	1:A:445:GLN:CG	2.47	0.47
1:A:602:ASP:C	1:A:604:PRO:HD3	2.35	0.47
1:A:625:VAL:O	1:A:629:LEU:HB2	2.14	0.47
1:A:686:MET:C	1:A:692:ASP:HB2	2.34	0.47
1:A:801:MET:CE	1:A:802:SER:HB3	2.44	0.47
1:A:1030:GLN:HG2	1:A:1240:VAL:HG13	1.97	0.47
1:A:1288:ILE:HD12	1:A:1321:MET:CE	2.44	0.47
1:A:92:TYR:O	1:A:93:VAL:C	2.52	0.47
1:A:135:CYS:HB3	1:A:139:CYS:HB2	1.97	0.47
1:A:561:VAL:HG12	1:A:561:VAL:O	2.15	0.47
1:A:640:LEU:N	1:A:640:LEU:HD13	2.30	0.47
1:A:223:LEU:HD12	1:A:335:SER:O	2.15	0.47
1:A:239:TRP:NE1	1:A:728:GLY:HA3	2.29	0.47
1:A:403:TYR:N	1:A:403:TYR:CD1	2.60	0.47
1:A:486:HIS:CE1	1:A:838:PRO:HB3	2.50	0.47
1:A:1264:GLN:NE2	1:A:1298:GLU:OE1	2.47	0.47
1:A:2:GLY:CA	1:A:28:MET:HE2	2.44	0.47
1:A:460:VAL:CG1	1:A:464:MET:HE1	2.43	0.47
1:A:627:HIS:CE1	1:A:730:GLN:HE22	2.33	0.47
1:A:1198:GLY:C	1:A:1200:THR:H	2.19	0.47
1:A:173:ILE:HD13	1:A:175:TYR:CE1	2.50	0.46
1:A:312:ILE:HG21	1:A:405:ILE:HD13	1.96	0.46
1:A:445:GLN:CG	1:A:777:ALA:CB	2.89	0.46
1:A:445:GLN:CD	1:A:777:ALA:HB2	2.36	0.46
1:A:910:ARG:C	1:A:912:LEU:H	2.18	0.46
1:A:364:LEU:HG	1:A:365:GLY:N	2.31	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1119:LEU:O	1:A:1198:GLY:CA	2.60	0.46
1:A:477:ASP:OD1	1:A:479:THR:HG23	2.15	0.46
1:A:514:LEU:C	1:A:514:LEU:CD1	2.83	0.46
1:A:548:GLU:OE2	1:A:603:ARG:NH2	2.49	0.46
1:A:1272:ARG:NH1	1:A:1306:GLN:HG2	2.30	0.46
1:A:1306:GLN:HA	1:A:1326:GLN:O	2.16	0.46
1:A:212:MET:CE	1:A:1094:ASN:HA	2.46	0.46
1:A:221:MET:HE1	1:A:271:SER:HB3	1.97	0.46
1:A:364:LEU:HG	1:A:365:GLY:H	1.80	0.46
1:A:562:ALA:CB	1:A:590:THR:HG21	2.46	0.46
1:A:645:ALA:HB1	1:A:668:LEU:HD12	1.97	0.46
1:A:831:ARG:O	1:A:834:LEU:HB2	2.15	0.46
1:A:1118:ALA:O	1:A:1197:ILE:HA	2.16	0.46
1:A:210:ASN:HB2	1:A:1094:ASN:OD1	2.15	0.46
1:A:349:LEU:O	1:A:350:ARG:HD2	2.15	0.46
1:A:140:ALA:O	1:A:141:GLY:C	2.53	0.46
1:A:414:PRO:HB2	1:A:418:TRP:CD1	2.50	0.46
1:A:514:LEU:HD13	1:A:515:VAL:N	2.30	0.46
1:A:1228:THR:HG23	1:A:1232:ARG:HE	1.80	0.46
1:A:342:ALA:O	1:A:389:MET:HA	2.15	0.46
1:A:349:LEU:O	1:A:350:ARG:NH1	2.44	0.46
1:A:377:ASP:C	1:A:377:ASP:OD1	2.53	0.46
1:A:513:ASN:HA	1:A:516:MET:CE	2.46	0.46
1:A:516:MET:HB2	1:A:516:MET:HE3	1.91	0.46
1:A:418:TRP:O	1:A:418:TRP:HE3	1.92	0.46
1:A:1021:ASP:OD2	1:A:1335:LYS:NZ	2.43	0.46
1:A:1383:PHE:O	1:A:1384:ALA:HB3	2.15	0.46
1:A:232:THR:CB	1:A:236:ASN:HD21	2.29	0.46
1:A:342:ALA:HB3	1:A:364:LEU:HD22	1.97	0.46
1:A:501:GLN:NE2	1:A:1035:LEU:CB	2.77	0.46
1:A:867:VAL:CG1	1:A:895:LEU:CB	2.89	0.46
1:A:1004:PRO:HB2	1:A:1005:PRO:HD3	1.96	0.46
1:A:1096:LEU:O	1:A:1099:ARG:HB2	2.16	0.46
1:A:289:LEU:HB3	1:A:389:MET:CE	2.46	0.45
1:A:809:VAL:HG12	1:A:1169:GLN:O	2.12	0.45
1:A:1403:GLU:HG3	1:A:1422:ALA:HB3	1.98	0.45
1:A:1256:ASP:O	1:A:1259:GLU:HG2	2.15	0.45
1:A:1355:GLU:HG3	1:A:1395:GLU:OE1	2.16	0.45
1:A:419:ILE:O	1:A:422:GLN:HG2	2.16	0.45
1:A:843:ARG:HG3	1:A:1112:TRP:CZ3	2.52	0.45
1:A:1130:ILE:HA	1:A:1133:ILE:HG13	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1474:SER:HA	1:A:1475:PRO:HD3	1.69	0.45
1:A:1488:LEU:HD23	1:A:1488:LEU:HA	1.80	0.45
1:A:113:ASN:OD1	1:A:115:ASP:HB2	2.15	0.45
1:A:698:THR:O	1:A:702:ASN:HB2	2.17	0.45
1:A:832:GLN:HG2	5:A:2092:HOH:O	2.17	0.45
1:A:1132:MET:HG2	1:A:1152:VAL:HG11	1.97	0.45
1:A:1432:LEU:HB2	1:A:1491:PHE:CD2	2.52	0.45
1:A:324:GLU:H	1:A:324:GLU:HG3	1.25	0.45
1:A:418:TRP:HZ3	1:A:422:GLN:HB3	1.79	0.45
1:A:12:LYS:HD3	1:A:12:LYS:HA	1.67	0.45
1:A:186:GLU:OE1	1:A:186:GLU:HA	2.17	0.45
1:A:561:VAL:HG11	1:A:599:VAL:HG23	1.97	0.45
1:A:567:LEU:HD23	1:A:567:LEU:HA	1.61	0.45
1:A:825:ASP:O	1:A:828:GLU:HB3	2.17	0.45
1:A:967:MET:HB2	1:A:1034:LYS:O	2.17	0.45
1:A:711:LEU:O	1:A:712:PHE:C	2.55	0.45
1:A:135:CYS:CB	1:A:139:CYS:HB2	2.46	0.45
1:A:281:LEU:O	1:A:286:ARG:HG3	2.17	0.45
1:A:524:LYS:CB	1:A:637:LYS:O	2.64	0.45
1:A:239:TRP:HE1	1:A:728:GLY:CA	2.28	0.45
1:A:418:TRP:HB2	1:A:533:ALA:HB1	1.99	0.45
1:A:462:VAL:HB	1:A:463:PRO:HD3	1.99	0.45
1:A:465:ALA:HB1	1:A:673:VAL:HG13	1.99	0.45
1:A:1273:LEU:HD21	1:A:1305:PHE:CD2	2.52	0.45
1:A:152:ARG:HD3	1:A:222:ARG:NH1	2.32	0.44
1:A:269:SER:O	1:A:270:ASP:C	2.55	0.44
1:A:474:CYS:CB	1:A:1143:CYS:HB2	2.47	0.44
1:A:513:ASN:HA	1:A:516:MET:HE3	1.99	0.44
1:A:570:LEU:HG	1:A:613:GLN:CG	2.46	0.44
1:A:1354:PRO:CB	5:A:2110:HOH:O	2.64	0.44
1:A:443:VAL:CG2	1:A:675:GLN:NE2	2.68	0.44
1:A:514:LEU:CD1	1:A:515:VAL:N	2.80	0.44
1:A:574:ASN:C	1:A:574:ASN:OD1	2.55	0.44
1:A:955:GLU:O	1:A:956:TYR:C	2.56	0.44
1:A:17:LEU:CD1	1:A:201:ALA:HB2	2.47	0.44
1:A:53:GLU:O	1:A:56:ALA:HB3	2.17	0.44
1:A:296:VAL:N	1:A:297:PRO:CD	2.79	0.44
1:A:910:ARG:O	1:A:939:ASN:HB2	2.17	0.44
1:A:1110:THR:O	1:A:1113:ASP:N	2.50	0.44
1:A:1257:ILE:HD11	5:A:2081:HOH:O	2.16	0.44
1:A:1347:HIS:CG	1:A:1348:PRO:CD	2.80	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:90:ARG:HG3	1:A:107:TRP:CZ2	2.53	0.44
1:A:90:ARG:O	1:A:90:ARG:HG2	2.17	0.44
1:A:546:VAL:HB	1:A:550:GLU:HB2	2.00	0.44
1:A:686:MET:HE1	1:A:694:ILE:O	2.17	0.44
1:A:1225:LEU:HB3	1:A:1226:PRO:HD2	1.99	0.44
1:A:547:ASN:N	1:A:550:GLU:HG3	2.32	0.44
1:A:663:ALA:C	1:A:664:ILE:CG1	2.86	0.44
1:A:757:THR:N	1:A:760:ASP:HB2	2.32	0.44
1:A:878:GLY:HA3	1:A:992:ARG:NH2	2.32	0.44
1:A:1395:GLU:O	1:A:1414:GLY:HA3	2.17	0.44
1:A:309:TYR:HB3	1:A:312:ILE:CG2	2.48	0.44
1:A:322:LEU:HA	1:A:322:LEU:HD12	1.70	0.44
1:A:501:GLN:HE21	1:A:1035:LEU:HA	1.81	0.44
1:A:1315:ALA:O	1:A:1316:PHE:C	2.56	0.44
1:A:207:PHE:C	1:A:207:PHE:HD2	2.21	0.44
1:A:443:VAL:O	1:A:447:GLN:HB2	2.18	0.44
1:A:532:LYS:C	1:A:534:GLU:H	2.21	0.44
1:A:860:VAL:HG21	1:A:1182:ARG:O	2.18	0.44
1:A:1254:ASP:C	1:A:1256:ASP:N	2.65	0.44
1:A:6:ILE:HD11	1:A:371:VAL:CG2	2.47	0.44
1:A:76:MET:HG2	1:A:174:VAL:O	2.18	0.44
1:A:1021:ASP:HA	1:A:1279:THR:HG21	2.00	0.44
1:A:9:LEU:CD2	1:A:392:VAL:HG13	2.47	0.43
1:A:486:HIS:HE1	1:A:838:PRO:HB3	1.83	0.43
1:A:796:MET:O	1:A:1109:LYS:NZ	2.48	0.43
1:A:1148:CYS:C	1:A:1150:VAL:H	2.21	0.43
1:A:2:GLY:O	1:A:204:HIS:HA	2.18	0.43
1:A:146:ARG:O	1:A:149:TYR:HB3	2.18	0.43
1:A:475:MET:CA	1:A:475:MET:CE	2.90	0.43
1:A:478:ASP:HB3	1:A:795:HIS:ND1	2.33	0.43
1:A:486:HIS:HD2	1:A:1212:SER:OG	2.01	0.43
1:A:554:ILE:HG21	1:A:641:ILE:HD11	1.99	0.43
1:A:629:LEU:HD23	1:A:635:ARG:HD2	2.01	0.43
1:A:693:ARG:C	1:A:694:ILE:HG12	2.38	0.43
1:A:1175:TYR:HD2	1:A:1175:TYR:HA	1.63	0.43
1:A:1309:ALA:HB3	1:A:1329:ALA:CB	2.48	0.43
1:A:15:HIS:O	1:A:15:HIS:CG	2.71	0.43
1:A:679:ASP:OD1	1:A:680:GLU:N	2.52	0.43
1:A:1054:ASP:C	1:A:1055:ILE:HG13	2.38	0.43
1:A:155:ILE:HG23	1:A:163:PHE:CZ	2.53	0.43
1:A:189:LEU:O	1:A:190:ASP:C	2.57	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:406:LYS:HA	1:A:409:ALA:HB3	2.00	0.43
1:A:475:MET:HE2	1:A:476:GLY:H	1.83	0.43
1:A:601:THR:HG23	1:A:643:ASP:OD2	2.19	0.43
1:A:1325:LEU:CD2	1:A:1329:ALA:HB2	2.49	0.43
1:A:832:GLN:HA	1:A:835:LYS:HG3	2.01	0.43
1:A:1136:GLY:O	1:A:1150:VAL:HG11	2.18	0.43
1:A:7:ALA:HB3	1:A:362:ILE:CG2	2.49	0.43
1:A:600:LEU:CD2	1:A:625:VAL:HG11	2.48	0.43
1:A:891:ALA:CB	1:A:1170:VAL:HG22	2.49	0.43
1:A:1419:ASN:HD22	1:A:1443:ASN:HB2	1.84	0.43
1:A:145:ASP:O	1:A:146:ARG:C	2.57	0.43
1:A:566:THR:HB	1:A:602:ASP:HA	2.01	0.43
1:A:659:TYR:CE2	1:A:746:PHE:HB3	2.54	0.43
1:A:332:LEU:O	1:A:342:ALA:HA	2.18	0.43
1:A:541:LEU:HD23	1:A:663:ALA:CB	2.48	0.43
1:A:727:HIS:O	1:A:728:GLY:C	2.56	0.43
1:A:965:ILE:HD13	1:A:1018:LEU:HD23	1.99	0.43
1:A:1409:VAL:HA	1:A:1428:LEU:O	2.18	0.43
1:A:768:PHE:CD2	1:A:771:MET:CG	2.92	0.43
1:A:848:PHE:HB3	1:A:1188:LEU:HD21	2.00	0.43
1:A:315:PHE:O	1:A:319:TYR:CD1	2.72	0.42
1:A:474:CYS:HB2	1:A:1143:CYS:HB2	2.01	0.42
1:A:636:LEU:HA	1:A:636:LEU:HD12	1.70	0.42
1:A:336:ASP:HB3	1:A:339:ILE:H	1.83	0.42
1:A:510:LEU:HD13	1:A:511:ARG:NH2	2.34	0.42
1:A:579:ALA:HB3	1:A:616:ILE:HD11	2.00	0.42
1:A:768:PHE:HD2	1:A:768:PHE:HA	1.79	0.42
1:A:912:LEU:HD23	1:A:912:LEU:HA	1.81	0.42
1:A:1065:THR:HG22	4:A:2073:AKG:O1	2.18	0.42
1:A:323:GLN:HE21	1:A:528:LEU:HD22	1.85	0.42
1:A:1005:PRO:HG2	1:A:1007:HIS:CE1	2.54	0.42
1:A:1146:ASN:C	1:A:1154:THR:HG23	2.39	0.42
1:A:1430:TYR:HE2	1:A:1493:GLN:OE1	2.00	0.42
1:A:230:ILE:HG22	1:A:233:LEU:N	2.34	0.42
1:A:276:SER:O	1:A:279:GLU:HB2	2.19	0.42
1:A:314:ASP:CG	1:A:415:TYR:HD1	2.21	0.42
1:A:315:PHE:HZ	1:A:412:LYS:O	2.02	0.42
1:A:500:ALA:HB1	1:A:504:ASN:O	2.19	0.42
1:A:910:ARG:HD2	1:A:938:ALA:O	2.19	0.42
1:A:1080:TRP:CZ3	1:A:1120:MET:HE2	2.53	0.42
1:A:1082:LEU:HD23	1:A:1082:LEU:HA	1.75	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1275:ASN:OD1	1:A:1275:ASN:C	2.57	0.42
1:A:288:PRO:HB2	1:A:334:PHE:CD1	2.54	0.42
1:A:1110:THR:HG22	1:A:1113:ASP:H	1.85	0.42
1:A:1325:LEU:CB	1:A:1344:ILE:HG12	2.50	0.42
1:A:36:ALA:N	1:A:120:GLN:HE22	2.18	0.42
1:A:317:ASP:HB3	1:A:419:ILE:CD1	2.50	0.42
1:A:519:ALA:C	1:A:520:MET:HG2	2.40	0.42
1:A:139:CYS:SG	1:A:143:GLU:HG3	2.59	0.42
1:A:401:LYS:O	1:A:404:GLN:HB3	2.19	0.42
1:A:445:GLN:HB3	1:A:772:ALA:CB	2.45	0.42
1:A:605:ASN:OD1	1:A:605:ASN:N	2.53	0.42
1:A:666:PRO:HB2	1:A:669:ALA:HB3	2.01	0.42
1:A:694:ILE:HD12	1:A:694:ILE:HG23	1.36	0.42
1:A:728:GLY:O	1:A:729:ALA:O	2.37	0.42
1:A:809:VAL:HG12	1:A:1172:ASN:HB2	2.02	0.42
1:A:551:LEU:HD12	1:A:551:LEU:HA	1.79	0.42
1:A:561:VAL:HG13	1:A:597:ILE:HG22	2.01	0.42
1:A:1451:ARG:NH1	1:A:1491:PHE:H	2.16	0.42
1:A:1145:THR:HG22	1:A:1147:ASN:CG	2.40	0.42
1:A:1451:ARG:O	1:A:1452:ILE:C	2.58	0.42
1:A:97:VAL:HG11	1:A:133:VAL:CG2	2.50	0.42
1:A:474:CYS:SG	1:A:1143:CYS:HB2	2.60	0.42
1:A:770:GLY:C	1:A:771:MET:SD	2.98	0.42
1:A:1150:VAL:HG13	1:A:1152:VAL:HG23	2.01	0.42
1:A:1446:ILE:HD12	1:A:1446:ILE:HG21	1.84	0.42
1:A:193:ASN:HA	1:A:194:PRO:HD3	1.90	0.41
1:A:499:PHE:CG	1:A:973:PRO:CB	3.02	0.41
1:A:522:LEU:HD23	1:A:522:LEU:HA	1.83	0.41
1:A:1297:PHE:CZ	1:A:1299:GLY:HA3	2.55	0.41
1:A:1458:GLU:OE2	1:A:1488:LEU:HD11	2.20	0.41
1:A:53:GLU:O	1:A:56:ALA:CB	2.67	0.41
1:A:350:ARG:HD2	1:A:350:ARG:HH11	1.59	0.41
1:A:421:ILE:O	1:A:421:ILE:CG2	2.68	0.41
1:A:453:THR:O	1:A:454:ALA:C	2.59	0.41
1:A:509:PRO:HB3	1:A:716:SER:HB3	2.01	0.41
1:A:299:ALA:HB2	1:A:346:ARG:NH2	2.35	0.41
1:A:399:ILE:HG22	1:A:404:GLN:CG	2.42	0.41
1:A:399:ILE:HG22	1:A:399:ILE:O	2.21	0.41
1:A:1070:LEU:O	1:A:1071:SER:C	2.58	0.41
1:A:1142:VAL:O	1:A:1142:VAL:HG13	2.16	0.41
1:A:1197:ILE:O	1:A:1232:ARG:NH2	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:148:LEU:HD23	1:A:169:SER:CA	2.49	0.41
1:A:357:THR:OG1	1:A:361:TYR:CB	2.68	0.41
1:A:358:LYS:H	1:A:358:LYS:HG3	1.55	0.41
1:A:1129:SER:O	1:A:1133:ILE:HG12	2.20	0.41
1:A:1173:PHE:CZ	1:A:1177:ILE:HG13	2.55	0.41
1:A:1481:LEU:O	1:A:1484:TRP:HB2	2.21	0.41
1:A:7:ALA:HB3	1:A:362:ILE:HG23	2.01	0.41
1:A:131:ILE:HG12	1:A:133:VAL:HG23	2.03	0.41
1:A:237:ILE:HD13	1:A:237:ILE:HG21	1.81	0.41
1:A:682:THR:O	1:A:683:GLN:C	2.59	0.41
1:A:1385:VAL:O	1:A:1404:TYR:N	2.53	0.41
1:A:47:MET:O	1:A:201:ALA:HA	2.21	0.41
1:A:64:LEU:HA	1:A:65:PRO:HD3	1.92	0.41
1:A:233:LEU:HD12	1:A:233:LEU:HA	1.81	0.41
1:A:566:THR:HB	1:A:601:THR:O	2.21	0.41
1:A:882:ARG:HB2	1:A:886:GLU:OE2	2.19	0.41
1:A:957:LEU:HD13	1:A:1025:ILE:HG21	2.02	0.41
1:A:1484:TRP:O	1:A:1488:LEU:HB2	2.21	0.41
1:A:309:TYR:O	1:A:312:ILE:CG2	2.68	0.41
1:A:508:ASP:O	1:A:512:GLU:HB2	2.20	0.41
1:A:720:ILE:CD1	1:A:731:ILE:HD12	2.50	0.41
1:A:1053:ALA:O	1:A:1241:HIS:HD2	2.04	0.41
1:A:100:GLU:C	1:A:102:LEU:H	2.17	0.41
1:A:644:THR:O	1:A:666:PRO:HA	2.21	0.41
1:A:878:GLY:H	1:A:992:ARG:HH21	1.68	0.41
1:A:8:ASN:N	1:A:199:ASN:O	2.52	0.41
1:A:219:GLN:O	1:A:219:GLN:HG2	2.20	0.41
1:A:229:GLU:O	1:A:328:GLY:HA3	2.21	0.41
1:A:275:ASP:HB3	1:A:276:SER:H	1.76	0.41
1:A:603:ARG:N	1:A:604:PRO:HD3	2.36	0.41
1:A:1145:THR:CG2	1:A:1147:ASN:ND2	2.84	0.41
1:A:553:ALA:O	1:A:556:THR:HB	2.21	0.41
1:A:674:ARG:HH11	1:A:674:ARG:HD2	1.74	0.41
1:A:736:GLY:H	1:A:753:VAL:HG12	1.86	0.41
1:A:1258:GLN:O	1:A:1262:ASN:HB2	2.21	0.41
1:A:46:VAL:N	1:A:220:PRO:HG2	2.36	0.40
1:A:508:ASP:C	1:A:508:ASP:OD1	2.60	0.40
1:A:510:LEU:CB	1:A:511:ARG:HH21	2.04	0.40
1:A:559:LEU:HG	1:A:560:GLN:O	2.21	0.40
1:A:145:ASP:O	1:A:149:TYR:N	2.41	0.40
1:A:411:GLN:CG	1:A:412:LYS:H	2.35	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1382:ARG:O	1:A:1385:VAL:HG22	2.21	0.40
1:A:581:THR:HG22	1:A:585:LYS:HE3	1.97	0.40
1:A:618:PRO:O	1:A:622:VAL:HG23	2.21	0.40
1:A:722:LEU:O	1:A:723:LEU:C	2.60	0.40
1:A:903:GLU:HG2	1:A:946:ALA:CB	2.51	0.40
1:A:1262:ASN:O	1:A:1264:GLN:N	2.54	0.40
1:A:1345:VAL:HA	1:A:1376:ASN:HD22	1.87	0.40
1:A:250:SER:C	1:A:252:TRP:H	2.25	0.40
1:A:386:PRO:HD3	1:A:1381:GLU:OE1	2.22	0.40
1:A:421:ILE:O	1:A:421:ILE:HG22	2.21	0.40
1:A:94:GLU:O	1:A:95:GLU:C	2.59	0.40
1:A:916:ASP:OD1	1:A:916:ASP:N	2.53	0.40
1:A:996:PRO:O	1:A:997:GLY:C	2.58	0.40
1:A:1216:ASN:C	1:A:1216:ASN:ND2	2.74	0.40
1:A:1269:LYS:HD3	1:A:1269:LYS:HA	1.85	0.40
1:A:1462:LYS:O	1:A:1466:THR:HB	2.22	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:1158:ARG:CD	1:A:1324:HIS:CE1[4_475]	2.19	0.01

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	1467/1520 (96%)	1215 (83%)	196 (13%)	56 (4%)	<b>3</b> <b>7</b>

All (56) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	68	ASP
1	A	101	LYS
1	A	403	TYR
1	A	414	PRO
1	A	415	TYR
1	A	482	ALA
1	A	560	GLN
1	A	614	SER
1	A	839	VAL
1	A	903	GLU
1	A	1254	ASP
1	A	1399	ASP
1	A	1403	GLU
1	A	1491	PHE
1	A	1498	SER
1	A	141	GLY
1	A	251	GLY
1	A	283	ARG
1	A	412	LYS
1	A	557	GLY
1	A	571	ASP
1	A	688	ASN
1	A	754	GLY
1	A	970	GLY
1	A	1200	THR
1	A	1209	VAL
1	A	1316	PHE
1	A	1442	ILE
1	A	1490	LYS
1	A	13	PRO
1	A	233	LEU
1	A	395	ALA
1	A	404	GLN
1	A	475	MET
1	A	561	VAL
1	A	773	PHE
1	A	1366	TYR
1	A	69	GLY
1	A	565	SER
1	A	613	GLN
1	A	1194	ASP
1	A	1489	GLY
1	A	39	ASP

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Mol	Chain	Res	Type
1	A	190	ASP
1	A	330	ALA
1	A	612	ASN
1	A	729	ALA
1	A	1311	GLN
1	A	694	ILE
1	A	790	PRO
1	A	1389	VAL
1	A	262	PRO
1	A	1420	VAL
1	A	973	PRO
1	A	399	ILE
1	A	1245	PRO

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	1200/1236 (97%)	976 (81%)	224 (19%)	<b>1</b> <b>4</b>

All (224) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	VAL
1	A	8	ASN
1	A	16	THR
1	A	17	LEU
1	A	23	LYS
1	A	25	LEU
1	A	27	CYS
1	A	46	VAL
1	A	52	ARG
1	A	57	GLN
1	A	60	ASN
1	A	64	LEU
1	A	70	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	76	MET
1	A	95	GLU
1	A	99	LEU
1	A	102	LEU
1	A	109	GLU
1	A	115	ASP
1	A	125	GLN
1	A	137	GLU
1	A	147	ARG
1	A	148	LEU
1	A	152	ARG
1	A	159	LEU
1	A	168	PHE
1	A	172	THR
1	A	173	ILE
1	A	182	ILE
1	A	183	ILE
1	A	191	LEU
1	A	199	ASN
1	A	207	PHE
1	A	211	THR
1	A	224	LEU
1	A	230	ILE
1	A	234	LEU
1	A	245	LYS
1	A	246	GLU
1	A	249	VAL
1	A	253	THR
1	A	254	LYS
1	A	260	LEU
1	A	263	ILE
1	A	264	VAL
1	A	266	GLN
1	A	274	LEU
1	A	278	LEU
1	A	286	ARG
1	A	298	GLU
1	A	312	ILE
1	A	322	LEU
1	A	324	GLU
1	A	356	ILE
1	A	358	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	361	TYR
1	A	370	VAL
1	A	372	ASP
1	A	376	VAL
1	A	377	ASP
1	A	394	LEU
1	A	397	GLN
1	A	398	LYS
1	A	401	LYS
1	A	403	TYR
1	A	404	GLN
1	A	411	GLN
1	A	417	GLU
1	A	419	ILE
1	A	422	GLN
1	A	439	ASP
1	A	444	LEU
1	A	453	THR
1	A	457	VAL
1	A	466	SER
1	A	478	ASP
1	A	479	THR
1	A	481	LEU
1	A	483	VAL
1	A	503	THR
1	A	507	ILE
1	A	510	LEU
1	A	511	ARG
1	A	514	LEU
1	A	515	VAL
1	A	534	GLU
1	A	542	ARG
1	A	543	SER
1	A	550	GLU
1	A	558	GLN
1	A	559	LEU
1	A	560	GLN
1	A	570	LEU
1	A	580	LEU
1	A	590	THR
1	A	600	LEU
1	A	601	THR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	602	ASP
1	A	603	ARG
1	A	605	ASN
1	A	611	GLU
1	A	613	GLN
1	A	614	SER
1	A	616	ILE
1	A	635	ARG
1	A	640	LEU
1	A	649	SER
1	A	650	THR
1	A	664	ILE
1	A	668	LEU
1	A	678	LEU
1	A	679	ASP
1	A	684	LYS
1	A	693	ARG
1	A	701	LYS
1	A	704	ARG
1	A	705	GLN
1	A	706	SER
1	A	750	THR
1	A	753	VAL
1	A	757	THR
1	A	761	VAL
1	A	765	VAL
1	A	766	MET
1	A	769	HIS
1	A	771	MET
1	A	778	LYS
1	A	780	LEU
1	A	783	PHE
1	A	797	ASN
1	A	801	MET
1	A	809	VAL
1	A	824	TYR
1	A	827	TYR
1	A	829	LEU
1	A	834	LEU
1	A	836	ASP
1	A	843	ARG
1	A	855	ILE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	857	LEU
1	A	863	VAL
1	A	867	VAL
1	A	872	THR
1	A	877	LEU
1	A	899	SER
1	A	903	GLU
1	A	909	VAL
1	A	912	LEU
1	A	919	SER
1	A	953	THR
1	A	991	LEU
1	A	993	ARG
1	A	996	PRO
1	A	1013	GLU
1	A	1015	LEU
1	A	1039	ILE
1	A	1052	ASN
1	A	1062	ASP
1	A	1065	THR
1	A	1085	THR
1	A	1095	GLN
1	A	1100	VAL
1	A	1101	LEU
1	A	1105	ASP
1	A	1110	THR
1	A	1120	MET
1	A	1130	ILE
1	A	1132	MET
1	A	1142	VAL
1	A	1148	CYS
1	A	1150	VAL
1	A	1154	THR
1	A	1161	GLN
1	A	1175	TYR
1	A	1192	SER
1	A	1194	ASP
1	A	1200	THR
1	A	1208	ASP
1	A	1211	LEU
1	A	1214	THR
1	A	1215	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1216	ASN
1	A	1225	LEU
1	A	1228	THR
1	A	1235	LEU
1	A	1238	GLU
1	A	1240	VAL
1	A	1242	SER
1	A	1246	VAL
1	A	1254	ASP
1	A	1256	ASP
1	A	1257	ILE
1	A	1259	GLU
1	A	1274	VAL
1	A	1279	THR
1	A	1280	VAL
1	A	1311	GLN
1	A	1332	TYR
1	A	1363	THR
1	A	1366	TYR
1	A	1369	THR
1	A	1372	ASN
1	A	1373	LEU
1	A	1381	GLU
1	A	1385	VAL
1	A	1386	ARG
1	A	1389	VAL
1	A	1406	THR
1	A	1419	ASN
1	A	1425	THR
1	A	1432	LEU
1	A	1433	ASP
1	A	1442	ILE
1	A	1446	ILE
1	A	1447	ILE
1	A	1448	THR
1	A	1451	ARG
1	A	1453	THR
1	A	1456	LYS
1	A	1463	SER
1	A	1464	LEU
1	A	1488	LEU
1	A	1491	PHE

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Mol	Chain	Res	Type
1	A	1504	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	HIS
1	A	120	GLN
1	A	127	HIS
1	A	236	ASN
1	A	303	GLN
1	A	323	GLN
1	A	486	HIS
1	A	501	GLN
1	A	552	GLN
1	A	613	GLN
1	A	651	HIS
1	A	652	HIS
1	A	675	GLN
1	A	730	GLN
1	A	769	HIS
1	A	885	HIS
1	A	978	GLN
1	A	1023	HIS
1	A	1052	ASN
1	A	1216	ASN
1	A	1262	ASN
1	A	1263	HIS
1	A	1372	ASN
1	A	1376	ASN
1	A	1419	ASN
1	A	1493	GLN

### 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](#)

3 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	F3S	A	2072	1	0,9,9	-	-	-		
2	FMN	A	2070	-	33,33,33	1.22	3 (9%)	48,50,50	1.16	6 (12%)
4	AKG	A	2073	-	9,9,9	2.22	3 (33%)	11,11,11	1.55	2 (18%)

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	F3S	A	2072	1	-	-	0/3/3/3
2	FMN	A	2070	-	-	5/18/18/18	0/3/3/3
4	AKG	A	2073	-	-	6/9/9/9	-

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	2073	AKG	O5-C2	4.72	1.32	1.23
2	A	2070	FMN	C4A-N5	3.60	1.37	1.30
4	A	2073	AKG	O1-C1	3.56	1.32	1.22
4	A	2073	AKG	O3-C5	2.67	1.31	1.22
2	A	2070	FMN	C4A-C10	-2.19	1.37	1.44
2	A	2070	FMN	O2'-C2'	-2.03	1.39	1.43

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2070	FMN	C4A-C10-N10	3.07	120.96	116.48
4	A	2073	AKG	O4-C5-O3	-2.79	116.36	123.30
2	A	2070	FMN	C4-C4A-N5	2.62	121.97	118.23
2	A	2070	FMN	C4-N3-C2	-2.57	120.89	125.64
2	A	2070	FMN	C10-C4A-N5	-2.49	119.57	124.86
2	A	2070	FMN	O4-C4-C4A	-2.35	120.36	126.60
2	A	2070	FMN	C4A-C4-N3	2.33	119.11	113.19
4	A	2073	AKG	O4-C5-C4	2.26	121.28	114.03

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	2073	AKG	O2-C1-C2-C3
2	A	2070	FMN	O3'-C3'-C4'-O4'
2	A	2070	FMN	O3'-C3'-C4'-C5'
2	A	2070	FMN	C2'-C3'-C4'-C5'
2	A	2070	FMN	C2'-C3'-C4'-O4'
4	A	2073	AKG	O1-C1-C2-C3
2	A	2070	FMN	C4'-C5'-O5'-P
4	A	2073	AKG	O2-C1-C2-O5
4	A	2073	AKG	C3-C4-C5-O3
4	A	2073	AKG	C3-C4-C5-O4
4	A	2073	AKG	O1-C1-C2-O5

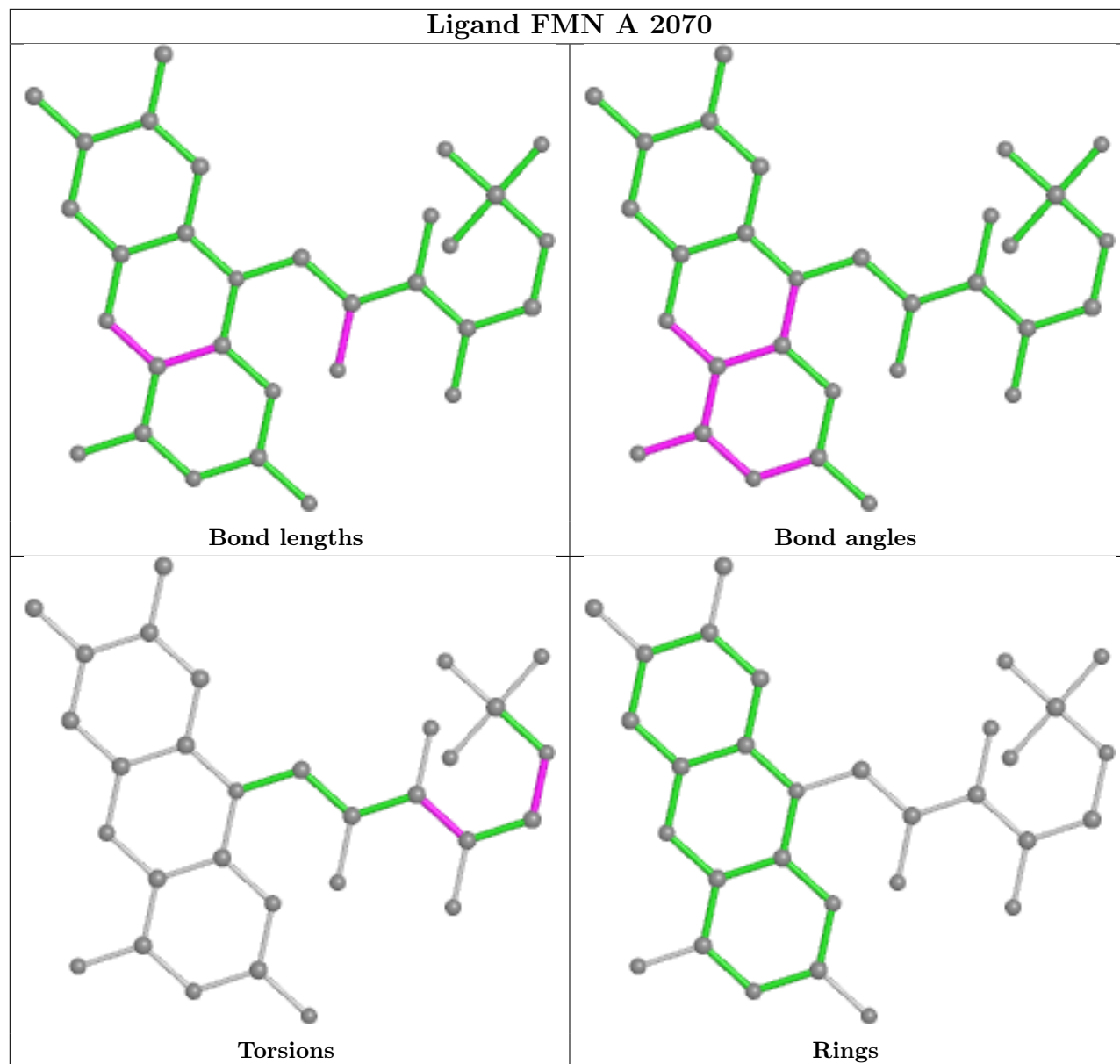
There are no ring outliers.

2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	2072	F3S	4	0
4	A	2073	AKG	2	0

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

equivalents in the CSD to analyse the geometry.



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	1475/1520 (97%)	-0.26	53 (3%) 42 42	8, 42, 64, 100	0

All (53) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	776	MET	7.3
1	A	10	ARG	5.0
1	A	605	ASN	4.9
1	A	1507	ASN	4.7
1	A	1264	GLN	4.4
1	A	251	GLY	4.3
1	A	560	GLN	4.3
1	A	413	TYR	4.2
1	A	418	TRP	4.2
1	A	439	ASP	3.8
1	A	774	PRO	3.8
1	A	137	GLU	3.8
1	A	693	ARG	3.7
1	A	1212	SER	3.6
1	A	1490	LYS	3.5
1	A	571	ASP	3.5
1	A	415	TYR	3.4
1	A	836	ASP	3.4
1	A	572	GLY	3.4
1	A	678	LEU	3.2
1	A	379	VAL	3.0
1	A	680	GLU	2.9
1	A	245	LYS	2.8
1	A	824	TYR	2.8
1	A	246	GLU	2.8
1	A	1263	HIS	2.8
1	A	417	GLU	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	394	LEU	2.7
1	A	920	GLU	2.6
1	A	1435	VAL	2.6
1	A	254	LYS	2.5
1	A	833	TYR	2.5
1	A	307	LYS	2.5
1	A	250	SER	2.5
1	A	829	LEU	2.4
1	A	1260	ALA	2.4
1	A	825	ASP	2.4
1	A	1456	LYS	2.4
1	A	828	GLU	2.4
1	A	791	GLY	2.3
1	A	692	ASP	2.3
1	A	397	GLN	2.3
1	A	775	GLU	2.2
1	A	1351	SER	2.2
1	A	1206	ARG	2.2
1	A	1258	GLN	2.2
1	A	1433	ASP	2.1
1	A	534	GLU	2.1
1	A	688	ASN	2.1
1	A	1486	ASP	2.1
1	A	697	PRO	2.1
1	A	772	ALA	2.0
1	A	1353	ALA	2.0

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

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

## 6.3 Carbohydrates [\(i\)](#)

There are no monosaccharides in this entry.

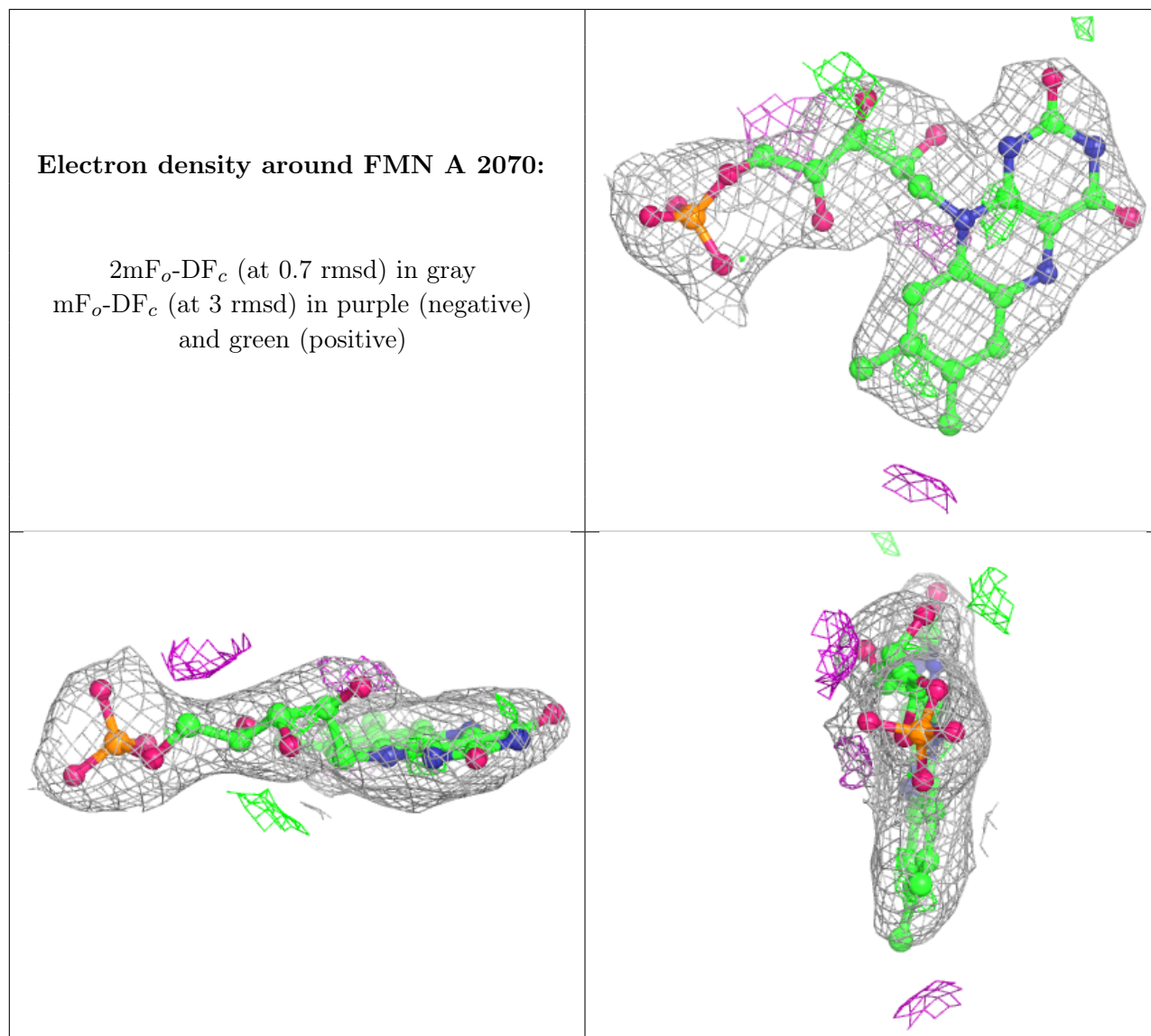
## 6.4 Ligands [\(i\)](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.



Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	AKG	A	2073	10/10	0.96	0.24	81,85,87,89	0
2	FMN	A	2070	31/31	0.97	0.17	80,85,88,88	0
3	F3S	A	2072	7/7	0.98	0.12	85,91,94,96	0

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



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

There are no such residues in this entry.