



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 04:38 PM UTC

PDB ID : 4DOJ / pdb\_00004doj  
Title : Crystal structure of BetP in outward-facing conformation  
Authors : Perez, C.; Ziegler, C.  
Deposited on : 2012-02-09  
Resolution : 3.25 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 : 4-5-2 with Phenix2.0  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 2.0  
EDS : 3.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
CCP4 : 9.0.010 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

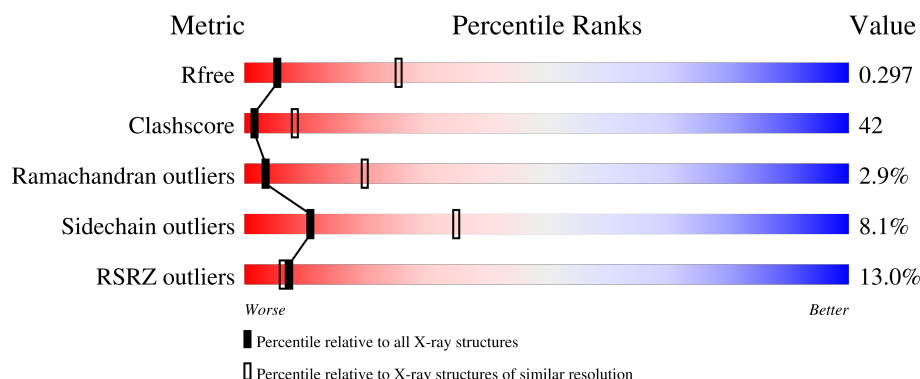
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.25 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	180053	1605 (3.30-3.22)
Clashscore	190562	1660 (3.30-3.22)
Ramachandran outliers	187476	1630 (3.30-3.22)
Sidechain outliers	187428	1629 (3.30-3.22)
RSRZ outliers	180081	1605 (3.30-3.22)

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	566	<div> <div>14%</div> <div>39%</div> <div>47%</div> <div>7%</div> <div>7%</div> </div>
1	B	566	<div> <div>16%</div> <div>36%</div> <div>44%</div> <div>7%</div> <div>11%</div> </div>
1	C	566	<div> <div>5%</div> <div>36%</div> <div>50%</div> <div>10%</div> </div>

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 11763 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 Glycine betaine transporter BetP.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	526	Total	C	N	O	S	0	0	0
			4017	2635	664	702	16			
1	B	501	Total	C	N	O	S	0	0	0
			3794	2502	607	669	16			
1	C	507	Total	C	N	O	S	0	0	0
			3860	2542	626	676	16			

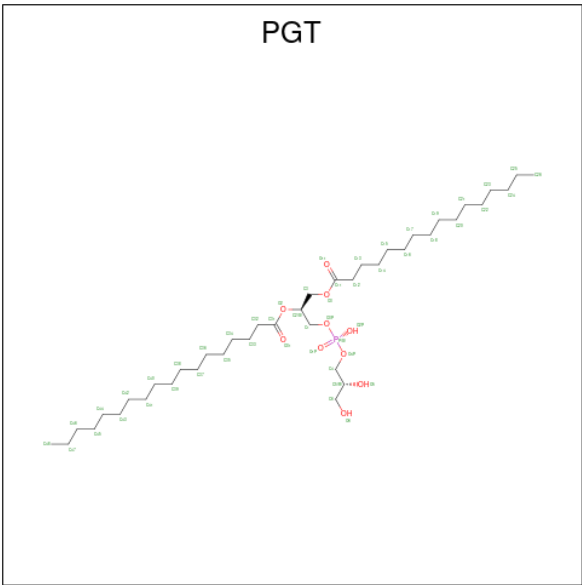
There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	153	ASP	GLY	engineered mutation	UNP P54582
B	153	ASP	GLY	engineered mutation	UNP P54582
C	153	ASP	GLY	engineered mutation	UNP P54582

- Molecule 2 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

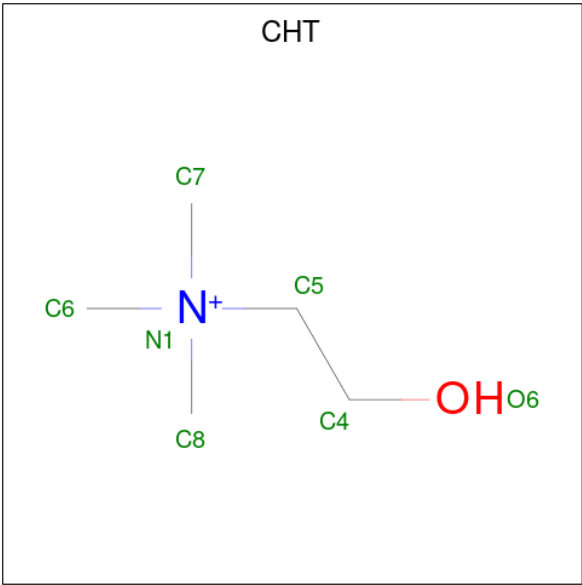
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Cl	0	0
			1	1		
2	C	1	Total	Cl	0	0
			1	1		

- Molecule 3 is (1S)-2-{{[(2R)-2,3-DIHYDROXYPROPYL]OXY}(HYDROXY)PHOSPHORYL]OXY}-1-[(PALMITOYLOXY)METHYL]ETHYL STEARATE (CCD ID: PGT) (formula: C<sub>40</sub>H<sub>79</sub>O<sub>10</sub>P).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	O	P	5	0
			51	40	10	1		

- Molecule 4 is CHOLINE ION (CCD ID: CHT) (formula: C<sub>5</sub>H<sub>14</sub>NO).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	C	1	Total	C	N	O	0	0
			7	5	1	1		

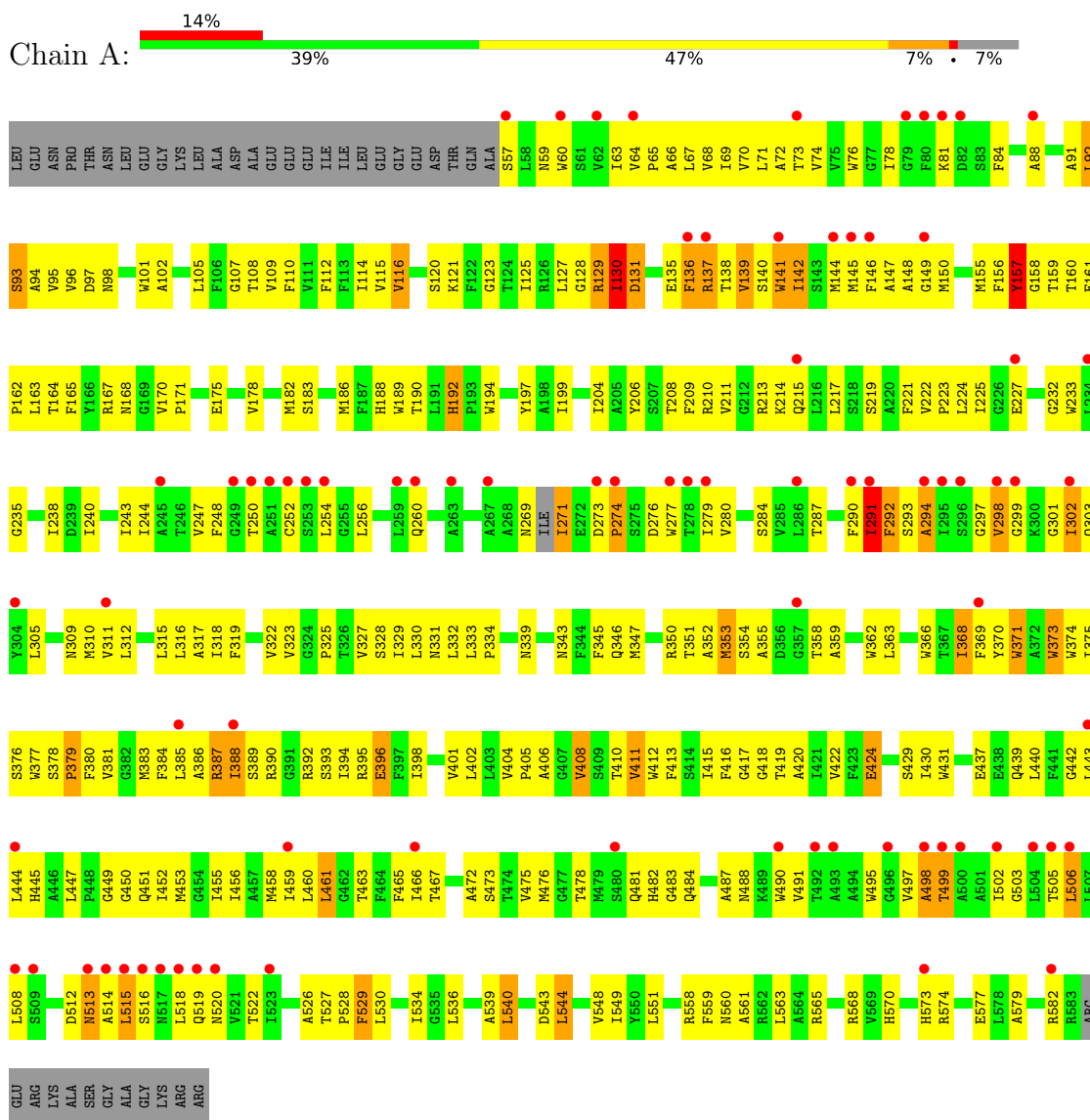
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	7	Total 7	O 7	0	0
5	B	12	Total 12	O 12	0	0
5	C	13	Total 13	O 13	0	0

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

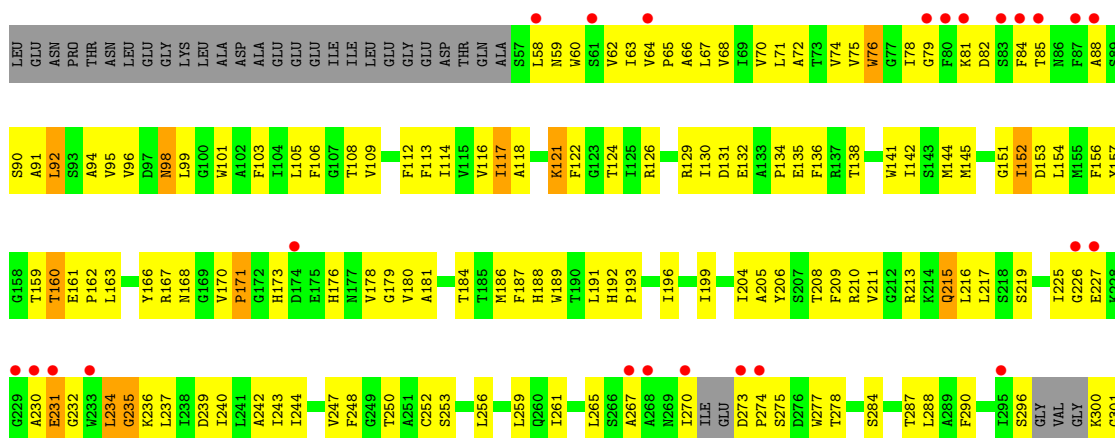
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Glycine betaine transporter BetP



#### • Molecule 1: Glycine betaine transporter BetP









## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	117.44Å 129.32Å 184.86Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.80 – 3.25 29.80 – 3.25	Depositor EDS
% Data completeness (in resolution range)	86.0 (29.80-3.25) 85.8 (29.80-3.25)	Depositor EDS
$R_{merge}$	0.11	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	14.40 (at 3.19Å)	Xtriage
Refinement program	PHENIX 1.7_650	Depositor
R, $R_{free}$	0.249 , 0.297 0.248 , 0.297	Depositor DCC
$R_{free}$ test set	3848 reflections (9.92%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	79.9	Xtriage
Anisotropy	0.018	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.29 , 121.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.89	EDS
Total number of atoms	11763	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	118.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.91% 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: PGT, CL, CHT

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	0.30	0/4119	0.71	0/5609
1	B	0.34	0/3892	0.72	3/5308 (0.1%)
1	C	0.32	0/3958	0.74	2/5393 (0.0%)
All	All	0.32	0/11969	0.72	5/16310 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	155	MET	N-CA-C	-7.21	103.59	113.18
1	C	90	SER	N-CA-C	-5.67	106.53	113.50
1	C	337	ILE	N-CA-C	-5.43	107.07	113.42
1	B	273	ASP	CA-C-N	5.04	126.14	119.84
1	B	273	ASP	C-N-CA	5.04	126.14	119.84

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	4017	0	4051	378	0
1	B	3794	0	3816	334	0
1	C	3860	0	3888	288	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	1	0	0	0	0
2	C	1	0	0	1	0
3	A	51	0	78	10	0
4	C	7	0	14	2	0
5	A	7	0	0	1	0
5	B	12	0	0	2	0
5	C	13	0	0	2	0
All	All	11763	0	11847	979	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 42.

All (979) 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:297:GLY:H	1:A:298:VAL:CG2	1.52	1.21
1:A:506:LEU:O	1:A:506:LEU:HD23	1.37	1.18
1:C:226:GLY:HA2	1:C:227:GLU:HB3	1.29	1.07
1:A:292:PHE:H	1:A:293:SER:HB2	1.17	1.05
1:A:297:GLY:H	1:A:298:VAL:HG22	1.12	1.04
1:B:254:LEU:HD23	1:B:465:PHE:CE1	1.95	1.01
1:B:196:ILE:HD11	1:B:374:TRP:HB3	1.41	0.98
1:B:148:ALA:HB1	1:B:380:PHE:CZ	1.98	0.98
1:B:271:ILE:HG23	1:B:272:GLU:HA	1.42	0.98
1:B:254:LEU:HD23	1:B:465:PHE:CZ	1.98	0.98
1:B:261:ILE:HG13	1:B:282:ILE:HG21	1.45	0.98
1:A:370:TYR:HB3	1:A:374:TRP:HE1	1.24	0.97
1:A:297:GLY:N	1:A:298:VAL:CG2	2.30	0.95
1:C:95:VAL:HG21	1:C:527:THR:HG21	1.49	0.95
1:B:78:ILE:CG2	1:B:506:LEU:HD23	1.97	0.95
1:B:153:ASP:OD1	1:B:256:LEU:HG	1.70	0.91
1:A:297:GLY:N	1:A:298:VAL:HG22	1.86	0.90
1:A:445:HIS:HA	1:A:450:GLY:HA3	1.53	0.90
1:A:252:CYS:SG	1:A:522:THR:HG21	2.12	0.89
1:A:302:ILE:HG22	1:A:303:GLN:H	1.38	0.87
1:B:154:LEU:HD12	1:B:154:LEU:O	1.73	0.87
1:A:292:PHE:N	1:A:293:SER:HB2	1.87	0.87
1:A:453:MET:O	1:A:456:ILE:HG12	1.76	0.85
1:A:297:GLY:H	1:A:298:VAL:HG23	1.40	0.85
1:B:152:ILE:HG12	1:B:464:PHE:HE1	1.41	0.85
1:A:141:TRP:CH2	1:A:392:ARG:HG2	2.11	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:78:ILE:HG23	1:C:505:THR:HG23	1.59	0.84
1:B:458:MET:HA	1:B:461:LEU:HD12	1.57	0.84
1:A:88:ALA:HB3	1:A:520:ASN:HD21	1.43	0.83
1:C:284:SER:HA	1:C:287:THR:HG22	1.58	0.83
1:B:154:LEU:HD12	1:B:154:LEU:C	2.01	0.83
1:C:237:LEU:O	1:C:240:ILE:HG22	1.77	0.83
1:A:312:LEU:HD13	1:A:460:LEU:HG	1.61	0.83
1:A:273:ASP:HB3	1:A:274:PRO:HD2	1.59	0.83
1:B:476:MET:HE2	1:B:495:TRP:HE3	1.43	0.82
1:A:150:MET:HE1	1:A:374:TRP:HZ3	1.43	0.81
1:B:126:ARG:HD3	1:B:393:SER:HB3	1.61	0.81
1:C:375:ILE:HD13	1:C:530:LEU:HA	1.63	0.81
1:B:154:LEU:O	1:B:154:LEU:CD1	2.29	0.80
1:B:126:ARG:HA	1:B:393:SER:HA	1.63	0.80
1:C:167:ARG:HH22	1:C:431:TRP:HB2	1.45	0.80
1:B:271:ILE:HG12	1:B:273:ASP:H	1.47	0.80
1:A:312:LEU:HB3	1:A:460:LEU:CD2	2.12	0.80
1:C:160:THR:HG21	1:C:436:ALA:HB1	1.62	0.80
1:C:193:PRO:HB3	1:C:374:TRP:CD1	2.17	0.80
1:B:515:LEU:H	1:B:515:LEU:HD12	1.46	0.80
1:C:337:ILE:HD11	1:C:410:THR:HG21	1.61	0.79
1:B:153:ASP:C	1:B:155:MET:H	1.90	0.79
1:A:387:ARG:O	1:A:388:ILE:HG12	1.82	0.79
1:A:490:TRP:HD1	1:A:491:VAL:HG13	1.47	0.78
1:A:392:ARG:HD2	1:A:396:GLU:HG3	1.63	0.78
1:B:298:VAL:HG12	1:B:298:VAL:O	1.82	0.78
1:B:141:TRP:CH2	1:B:389:SER:HB3	2.18	0.78
1:C:105:LEU:O	1:C:109:VAL:HG23	1.83	0.78
1:C:74:VAL:O	1:C:78:ILE:HG12	1.84	0.78
1:A:506:LEU:HD23	1:A:506:LEU:C	2.09	0.77
1:B:257:GLY:O	1:B:261:ILE:HG12	1.84	0.77
1:A:297:GLY:N	1:A:298:VAL:HG23	1.96	0.77
1:A:456:ILE:O	1:A:460:LEU:HB2	1.84	0.77
1:C:300:LYS:N	1:C:301:GLY:HA3	1.98	0.76
1:B:154:LEU:O	1:B:154:LEU:CG	2.30	0.76
1:A:505:THR:HA	1:A:508:LEU:HG	1.68	0.76
1:B:143:SER:HB2	1:B:306:SER:HB3	1.67	0.76
1:A:379:PRO:HG3	1:A:529:PHE:CZ	2.20	0.76
1:B:186:MET:HE1	1:B:336:SER:HB3	1.65	0.76
1:A:458:MET:HA	1:A:461:LEU:HD23	1.68	0.75
1:A:64:VAL:HB	1:A:65:PRO:HD3	1.68	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:163:LEU:HD22	1:C:420:ALA:HB1	1.68	0.75
5:B:607:HOH:O	1:C:354:SER:HB3	1.86	0.75
1:B:254:LEU:CD2	1:B:465:PHE:CZ	2.69	0.75
1:A:97:ASP:O	1:C:327:VAL:HG11	1.87	0.75
1:C:231:GLU:HA	1:C:235:GLY:HA3	1.67	0.75
1:B:290:PHE:HA	1:B:466:ILE:HD13	1.67	0.75
1:C:227:GLU:H	1:C:230:ALA:HB2	1.50	0.75
1:B:152:ILE:HG12	1:B:464:PHE:CE1	2.21	0.74
1:C:67:LEU:HA	1:C:70:VAL:HG12	1.68	0.74
1:B:418:GLY:O	1:B:422:VAL:HG23	1.87	0.74
1:C:559:PHE:HA	1:C:562:ARG:HG2	1.69	0.74
1:A:373:TRP:CD1	1:A:373:TRP:C	2.62	0.74
1:B:123:GLY:HA2	1:B:394:ILE:HD11	1.70	0.74
1:A:370:TYR:HB3	1:A:374:TRP:NE1	2.02	0.74
1:A:105:LEU:HB2	1:C:334:PRO:HB3	1.68	0.74
1:A:121:LYS:HG2	3:A:602:PGT:H11	1.69	0.73
1:C:312:LEU:HB3	1:C:460:LEU:HD22	1.68	0.73
1:B:106:PHE:CD1	1:B:534:ILE:HD12	2.24	0.73
1:B:190:THR:HG22	1:B:406:ALA:HA	1.70	0.73
1:C:404:VAL:HB	1:C:405:PRO:HD3	1.71	0.73
1:B:161:GLU:HB3	1:B:162:PRO:HD3	1.71	0.73
1:C:506:LEU:HD23	1:C:518:LEU:HD12	1.69	0.73
1:A:209:PHE:CD2	1:A:390:ARG:HG2	2.24	0.72
1:B:64:VAL:HB	1:B:65:PRO:HD3	1.71	0.72
1:B:134:PRO:O	1:B:135:GLU:HB2	1.87	0.72
1:B:259:LEU:HD13	1:B:437:GLU:HG2	1.72	0.72
1:B:515:LEU:H	1:B:515:LEU:CD1	2.02	0.72
1:B:78:ILE:HG23	1:B:506:LEU:HD23	1.71	0.72
1:C:166:TYR:HA	5:C:701:HOH:O	1.89	0.72
1:B:271:ILE:CG2	1:B:272:GLU:HA	2.19	0.72
1:B:152:ILE:HG22	1:B:256:LEU:HD12	1.72	0.72
1:A:355:ALA:O	1:A:358:THR:HG22	1.90	0.71
1:B:261:ILE:HG21	1:B:282:ILE:HG12	1.71	0.71
1:B:150:MET:CE	1:B:154:LEU:CD2	2.69	0.71
1:C:211:VAL:HG11	1:C:213:ARG:CZ	2.20	0.71
1:A:68:VAL:HG13	1:A:69:ILE:HG13	1.71	0.71
1:B:101:TRP:HA	1:B:104:ILE:HD11	1.72	0.71
1:C:226:GLY:HA2	1:C:227:GLU:CB	2.05	0.71
1:A:305:LEU:HD22	1:A:467:THR:HG22	1.72	0.70
1:B:452:ILE:O	1:B:455:ILE:HG12	1.92	0.70
1:C:118:ALA:HB2	1:C:398:ILE:HD13	1.72	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:150:MET:HE2	1:B:154:LEU:HD23	1.73	0.70
1:B:538:PHE:HA	1:B:541:VAL:HG12	1.73	0.70
1:A:260:GLN:HA	1:A:437:GLU:HG2	1.74	0.70
1:B:473:SER:HA	1:B:476:MET:SD	2.31	0.70
1:B:475:VAL:HG22	1:B:479:MET:HE3	1.72	0.70
1:A:301:GLY:HA2	1:A:302:ILE:HB	1.74	0.69
1:C:343:ASN:O	1:C:347:MET:HG2	1.92	0.69
1:A:146:PHE:HZ	1:A:405:PRO:HA	1.56	0.69
1:B:150:MET:CE	1:B:154:LEU:HD22	2.22	0.69
1:C:523:ILE:O	1:C:527:THR:HG23	1.92	0.69
1:A:329:ILE:HG21	1:A:415:ILE:HG22	1.75	0.69
1:C:167:ARG:HG3	1:C:168:ASN:OD1	1.91	0.69
1:C:562:ARG:HA	1:C:565:ARG:HD2	1.75	0.69
1:B:256:LEU:HD22	1:B:259:LEU:HD21	1.73	0.69
1:A:373:TRP:C	1:A:373:TRP:HD1	2.01	0.69
1:A:506:LEU:O	1:A:506:LEU:CD2	2.30	0.68
1:B:189:TRP:O	1:B:190:THR:HG23	1.93	0.68
1:C:204:ILE:HD13	1:C:383:MET:HG2	1.74	0.68
1:B:110:PHE:HD1	1:B:196:ILE:HG22	1.57	0.68
1:B:141:TRP:HH2	1:B:389:SER:HB3	1.59	0.68
1:C:159:THR:HG21	1:C:443:LEU:HD22	1.75	0.68
1:C:452:ILE:O	1:C:456:ILE:HG13	1.94	0.68
1:B:225:ILE:HG21	1:B:230:ALA:HA	1.76	0.67
1:B:149:GLY:C	1:B:150:MET:HG3	2.20	0.67
1:B:369:PHE:CD1	1:B:523:ILE:HD11	2.30	0.67
1:A:375:ILE:HG22	1:A:529:PHE:HB3	1.77	0.67
1:B:515:LEU:HD12	1:B:515:LEU:N	2.10	0.67
1:C:243:ILE:O	1:C:247:VAL:HG23	1.94	0.67
1:A:183:SER:OG	1:A:339:ASN:HB3	1.94	0.67
1:A:316:LEU:HB3	1:A:456:ILE:HD11	1.77	0.67
1:B:341:LEU:HB3	1:C:345:PHE:CD2	2.29	0.67
1:B:384:PHE:CZ	1:B:471:SER:HB2	2.30	0.67
1:B:92:LEU:O	1:B:95:VAL:HG12	1.95	0.67
1:B:502:ILE:O	1:B:506:LEU:HG	1.94	0.67
1:A:384:PHE:O	1:A:387:ARG:HG2	1.95	0.66
1:B:154:LEU:O	1:B:154:LEU:HG	1.95	0.66
1:B:265:LEU:HD22	1:B:269:ASN:HD21	1.60	0.66
1:C:456:ILE:O	1:C:459:ILE:HG22	1.94	0.66
1:A:211:VAL:HG11	1:A:213:ARG:HE	1.60	0.66
1:C:485:LEU:H	1:C:485:LEU:HD12	1.60	0.66
1:A:312:LEU:HD22	1:A:460:LEU:HD11	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:122:PHE:CE1	1:C:544:LEU:HB3	2.30	0.66
1:C:354:SER:O	1:C:359:ALA:HB3	1.96	0.66
1:A:312:LEU:HB3	1:A:460:LEU:HD21	1.77	0.66
1:A:170:VAL:HG13	1:A:171:PRO:HD2	1.76	0.66
1:A:515:LEU:HD12	1:A:515:LEU:N	2.10	0.66
1:A:141:TRP:O	1:A:145:MET:HG2	1.95	0.66
1:B:152:ILE:CG1	1:B:464:PHE:HE1	2.09	0.66
1:B:300:LYS:HG3	1:B:303:GLN:HB2	1.77	0.66
1:B:453:MET:CE	1:B:456:ILE:HD11	2.25	0.66
1:C:319:PHE:O	1:C:323:VAL:HG12	1.95	0.66
1:C:397:PHE:O	1:C:401:VAL:HG23	1.97	0.65
1:C:561:ALA:O	1:C:565:ARG:HG3	1.96	0.65
1:A:385:LEU:HD21	1:A:401:VAL:HG21	1.76	0.65
1:A:404:VAL:O	1:A:408:VAL:HG13	1.95	0.65
1:B:460:LEU:HA	1:B:463:THR:HG22	1.77	0.65
1:B:110:PHE:CD1	1:B:196:ILE:HG22	2.31	0.65
1:A:248:PHE:HB3	1:A:522:THR:HG22	1.77	0.65
1:B:141:TRP:HB3	1:B:145:MET:HE2	1.78	0.65
1:A:252:CYS:HA	1:A:518:LEU:HD11	1.78	0.65
1:B:153:ASP:OD1	1:B:256:LEU:CG	2.45	0.65
1:B:260:GLN:CD	1:B:461:LEU:HD13	2.22	0.65
1:C:261:ILE:HD11	1:C:461:LEU:HB2	1.79	0.65
1:B:254:LEU:HD23	1:B:465:PHE:HE1	1.58	0.65
1:C:319:PHE:CE2	1:C:453:MET:HG3	2.32	0.65
1:C:114:ILE:HD13	1:C:199:ILE:HD13	1.77	0.65
1:B:153:ASP:O	1:B:155:MET:N	2.29	0.64
1:B:323:VAL:HG23	1:B:447:LEU:HD22	1.78	0.64
1:C:81:LYS:HB3	1:C:84:PHE:CD2	2.32	0.64
1:A:182:MET:HE2	1:A:332:LEU:HD21	1.78	0.64
1:A:463:THR:O	1:A:466:ILE:HG13	1.97	0.64
1:B:217:LEU:HD12	1:B:217:LEU:H	1.62	0.64
1:B:341:LEU:HD23	1:C:345:PHE:CZ	2.33	0.64
1:B:70:VAL:HG21	1:B:247:VAL:HG11	1.78	0.64
1:B:463:THR:C	1:B:465:PHE:H	2.06	0.64
1:A:380:PHE:HA	1:A:475:VAL:HG11	1.79	0.64
1:C:163:LEU:HD11	1:C:424:GLU:HG3	1.78	0.64
1:A:316:LEU:HD12	1:A:317:ALA:N	2.13	0.63
1:B:233:TRP:CD1	1:B:233:TRP:H	2.17	0.63
1:B:470:ASP:O	1:B:474:THR:HG23	1.98	0.63
1:C:59:ASN:O	1:C:63:ILE:HG13	1.98	0.63
1:A:516:SER:HB3	1:A:519:GLN:HG2	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:460:LEU:O	1:B:463:THR:HG22	1.98	0.63
1:C:475:VAL:HG12	1:C:479:MET:HE2	1.80	0.63
1:B:346:GLN:HG3	1:B:347:MET:N	2.14	0.63
1:B:378:SER:OG	1:B:379:PRO:HD3	1.99	0.63
1:B:524:VAL:HA	1:B:527:THR:OG1	1.98	0.62
1:B:259:LEU:HD12	1:B:260:GLN:N	2.14	0.62
1:C:378:SER:N	1:C:379:PRO:HD2	2.14	0.62
1:A:206:TYR:CE1	1:A:210:ARG:HG2	2.34	0.62
1:A:449:GLY:O	1:A:452:ILE:HG12	1.99	0.62
1:A:276:ASP:CG	1:A:277:TRP:H	2.08	0.62
1:A:373:TRP:HD1	1:A:373:TRP:O	1.81	0.62
1:A:404:VAL:HB	1:A:405:PRO:HD3	1.81	0.62
1:A:497:VAL:O	1:A:499:THR:HG22	2.00	0.62
1:B:307:ASN:HA	1:B:310:MET:HE2	1.81	0.62
1:B:152:ILE:CG2	1:B:256:LEU:HD12	2.29	0.62
1:C:273:ASP:HB2	1:C:274:PRO:HD3	1.80	0.62
1:C:248:PHE:HB3	1:C:522:THR:HG22	1.81	0.62
1:C:205:ALA:HB2	1:C:386:ALA:HA	1.82	0.61
1:B:144:MET:HA	1:B:147:ALA:HB3	1.82	0.61
1:C:108:THR:HA	1:C:192:HIS:CE1	2.36	0.61
1:C:208:THR:HG21	1:C:215:GLN:HG3	1.82	0.61
1:A:243:ILE:HD12	1:A:244:ILE:N	2.15	0.61
1:A:463:THR:O	1:A:467:THR:HG23	1.99	0.61
1:B:517:ASN:O	1:B:521:VAL:HG23	2.01	0.61
1:A:92:LEU:C	1:A:94:ALA:H	2.08	0.61
1:A:114:ILE:HB	1:A:398:ILE:HD13	1.82	0.61
1:B:234:LEU:HD12	1:B:234:LEU:H	1.65	0.61
1:C:121:LYS:HD3	1:C:121:LYS:N	2.15	0.61
1:C:537:MET:O	1:C:541:VAL:HG23	2.00	0.61
1:C:539:ALA:O	1:C:543:ASP:HB2	2.00	0.61
1:A:69:ILE:HA	1:A:72:ALA:HB3	1.81	0.61
1:B:207:SER:O	1:B:213:ARG:HB2	2.01	0.61
1:B:276:ASP:C	1:B:278:THR:H	2.09	0.61
1:C:126:ARG:HD3	1:C:132:GLU:O	2.00	0.61
1:A:146:PHE:CZ	1:A:405:PRO:HA	2.34	0.61
1:A:512:ASP:O	1:A:513:ASN:CB	2.48	0.61
1:C:549:ILE:HG13	2:C:602:CL:CL	2.37	0.61
1:A:149:GLY:HA2	1:A:381:VAL:HG12	1.83	0.61
1:A:354:SER:O	1:A:359:ALA:HB3	2.01	0.61
1:A:66:ALA:O	1:A:70:VAL:HG23	2.01	0.60
1:A:291:ILE:HB	1:A:294:ALA:HB2	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:71:LEU:HA	1:C:74:VAL:HG22	1.82	0.60
1:C:300:LYS:HD2	1:C:302:ILE:HG22	1.83	0.60
1:A:144:MET:HB3	1:A:384:PHE:CE2	2.36	0.60
1:A:316:LEU:O	1:A:319:PHE:HB3	2.01	0.60
1:A:138:THR:O	1:A:140:SER:N	2.33	0.60
1:B:192:HIS:HB2	1:B:193:PRO:HD3	1.83	0.60
1:B:216:LEU:HD23	1:B:218:SER:H	1.67	0.60
1:B:404:VAL:HB	1:B:405:PRO:HD3	1.83	0.60
1:A:92:LEU:HD12	1:A:93:SER:N	2.17	0.60
1:A:165:PHE:CE1	1:A:362:TRP:HZ2	2.20	0.60
1:A:456:ILE:HB	1:A:460:LEU:HD22	1.82	0.60
1:C:64:VAL:CG1	1:C:65:PRO:HD3	2.32	0.60
1:C:381:VAL:HG12	1:C:385:LEU:HD12	1.84	0.59
1:B:78:ILE:HG22	1:B:506:LEU:HA	1.83	0.59
1:B:150:MET:HE3	1:B:154:LEU:HD22	1.85	0.59
1:C:302:ILE:O	1:C:306:SER:HB3	2.02	0.59
1:A:415:ILE:HG13	1:A:416:PHE:CD2	2.37	0.59
1:B:376:SER:O	1:B:379:PRO:HD2	2.03	0.59
1:A:142:ILE:HD13	1:A:142:ILE:H	1.66	0.59
1:A:145:MET:HE1	1:A:385:LEU:CD1	2.32	0.59
1:B:157:TYR:HA	1:B:160:THR:HG22	1.82	0.59
1:C:230:ALA:O	1:C:231:GLU:HB3	2.01	0.59
1:A:81:LYS:CB	1:A:84:PHE:HB2	2.33	0.59
1:A:150:MET:HE1	1:A:374:TRP:CZ3	2.31	0.59
1:C:122:PHE:CD1	1:C:544:LEU:HB3	2.37	0.59
1:A:527:THR:N	1:A:528:PRO:HD2	2.18	0.59
1:C:226:GLY:CA	1:C:227:GLU:HB3	2.20	0.59
1:A:141:TRP:HH2	1:A:392:ARG:HG2	1.64	0.59
1:A:158:GLY:HA2	1:A:413:PHE:HE1	1.68	0.59
1:A:330:LEU:HG	1:B:101:TRP:CD2	2.38	0.59
1:C:430:ILE:HD13	1:C:443:LEU:HB2	1.84	0.59
1:A:490:TRP:CD1	1:A:491:VAL:HG13	2.35	0.58
1:A:526:ALA:HB1	1:A:529:PHE:HB2	1.85	0.58
1:B:271:ILE:HG12	1:B:273:ASP:N	2.17	0.58
1:B:307:ASN:O	1:B:311:VAL:HG23	2.04	0.58
1:A:311:VAL:O	1:A:315:LEU:HB2	2.04	0.58
1:C:92:LEU:O	1:C:95:VAL:HG12	2.04	0.58
1:C:121:LYS:HD3	1:C:121:LYS:H	1.66	0.58
1:C:170:VAL:CG1	1:C:171:PRO:HD2	2.33	0.58
1:B:92:LEU:HD13	1:B:523:ILE:HG21	1.85	0.58
1:B:451:GLN:CD	1:B:451:GLN:H	2.12	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:VAL:HG11	3:A:602:PGT:H402	1.85	0.58
1:A:123:GLY:O	1:A:395:ARG:HB2	2.02	0.58
1:A:302:ILE:HG22	1:A:303:GLN:N	2.15	0.58
1:A:579:ALA:O	1:A:582:ARG:HG2	2.03	0.58
1:C:252:CYS:SG	1:C:522:THR:HG21	2.43	0.58
1:B:453:MET:HE3	1:B:456:ILE:HD11	1.85	0.58
1:B:472:ALA:O	1:B:476:MET:HG3	2.03	0.58
1:C:121:LYS:H	1:C:121:LYS:CD	2.15	0.58
1:A:71:LEU:HA	1:A:74:VAL:HB	1.85	0.58
1:B:331:ASN:OD1	1:C:101:TRP:HB3	2.03	0.58
1:A:161:GLU:HA	1:A:164:THR:HG22	1.86	0.58
1:A:478:THR:HG23	1:A:484:GLN:O	2.04	0.58
1:B:254:LEU:CD2	1:B:465:PHE:HZ	2.17	0.58
1:B:379:PRO:HG3	1:B:529:PHE:CZ	2.39	0.58
1:A:73:THR:HA	1:A:76:TRP:HB3	1.86	0.58
1:A:424:GLU:OE1	1:A:429:SER:HA	2.04	0.58
1:C:380:PHE:HE1	1:C:471:SER:HB2	1.68	0.57
1:C:226:GLY:O	1:C:230:ALA:HA	2.04	0.57
1:B:144:MET:SD	1:B:388:ILE:HD12	2.44	0.57
1:B:530:LEU:C	1:B:530:LEU:HD23	2.28	0.57
1:C:296:SER:HG	1:C:300:LYS:N	2.02	0.57
1:A:379:PRO:HG3	1:A:529:PHE:CE2	2.39	0.57
1:C:290:PHE:CZ	1:C:493:ALA:HA	2.39	0.57
1:A:530:LEU:O	1:A:534:ILE:HG12	2.04	0.57
1:B:153:ASP:C	1:B:155:MET:N	2.58	0.57
1:A:209:PHE:CE2	1:A:390:ARG:HG2	2.40	0.57
1:C:58:LEU:HA	1:C:481:GLN:HB3	1.86	0.57
1:A:186:MET:HE3	1:A:410:THR:HB	1.87	0.57
1:A:292:PHE:HA	1:A:293:SER:C	2.29	0.57
1:B:148:ALA:HB1	1:B:380:PHE:HZ	1.60	0.57
1:A:128:GLY:HA2	1:A:209:PHE:O	2.05	0.57
1:A:506:LEU:C	1:A:506:LEU:CD2	2.76	0.57
1:A:112:PHE:CD1	3:A:602:PGT:H422	2.40	0.57
1:A:378:SER:HA	1:A:381:VAL:HG22	1.85	0.57
1:A:442:GLY:HA2	1:A:445:HIS:CD2	2.39	0.57
1:B:223:PRO:HG2	1:B:543:ASP:HB2	1.86	0.57
1:B:237:LEU:O	1:B:241:LEU:HG	2.04	0.57
1:C:92:LEU:HD13	1:C:520:ASN:HA	1.87	0.57
1:C:369:PHE:HA	1:C:523:ILE:HD11	1.86	0.57
1:A:145:MET:HE1	1:A:385:LEU:HD13	1.86	0.57
1:B:215:GLN:HE21	1:B:383:MET:HG3	1.69	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:266:SER:OG	1:B:271:ILE:HG13	2.05	0.57
1:C:167:ARG:NH2	1:C:431:TRP:HB2	2.17	0.57
1:A:387:ARG:NH1	1:A:387:ARG:HB3	2.19	0.56
1:C:529:PHE:O	1:C:530:LEU:C	2.48	0.56
1:B:476:MET:HE2	1:B:495:TRP:CE3	2.32	0.56
1:B:499:THR:O	1:B:502:ILE:HG12	2.05	0.56
1:C:227:GLU:H	1:C:230:ALA:CB	2.18	0.56
1:C:309:ASN:HB3	1:C:464:PHE:CE1	2.40	0.56
1:A:197:TYR:CE1	1:A:381:VAL:HG21	2.40	0.56
1:A:350:ARG:HG2	1:A:363:LEU:HD21	1.85	0.56
1:A:353:MET:HG2	1:C:332:LEU:HD21	1.87	0.56
1:B:190:THR:O	1:B:193:PRO:HD2	2.05	0.56
1:B:233:TRP:H	1:B:233:TRP:HD1	1.54	0.56
1:B:154:LEU:HD11	1:B:412:TRP:CD1	2.40	0.56
1:C:136:PHE:CD2	1:C:144:MET:HE1	2.40	0.56
1:C:248:PHE:CD1	1:C:502:ILE:HD12	2.41	0.56
1:C:209:PHE:CE1	1:C:390:ARG:HB2	2.41	0.56
1:A:488:ASN:HB3	1:A:490:TRP:NE1	2.20	0.56
1:A:565:ARG:HD2	5:A:707:HOH:O	2.05	0.56
1:B:195:ALA:O	1:B:199:ILE:HD13	2.06	0.56
1:B:417:GLY:O	1:B:421:ILE:HG12	2.05	0.56
1:C:64:VAL:HG13	1:C:65:PRO:HD3	1.86	0.56
1:A:415:ILE:HG13	1:A:416:PHE:HD2	1.70	0.56
1:C:157:TYR:O	1:C:161:GLU:HB3	2.06	0.56
1:A:144:MET:HB3	1:A:384:PHE:HE2	1.70	0.56
1:A:252:CYS:SG	1:A:522:THR:CG2	2.89	0.56
1:A:334:PRO:HB3	1:B:105:LEU:HD13	1.88	0.56
1:C:167:ARG:HH22	1:C:431:TRP:CB	2.16	0.56
1:A:136:PHE:O	1:A:137:ARG:HB3	2.05	0.55
1:B:223:PRO:CG	1:B:543:ASP:HB2	2.36	0.55
1:A:392:ARG:CD	1:A:396:GLU:HG3	2.35	0.55
1:B:464:PHE:O	1:B:468:SER:OG	2.24	0.55
1:A:558:ARG:O	1:A:561:ALA:HB3	2.05	0.55
1:B:118:ALA:HB2	1:B:398:ILE:HD12	1.88	0.55
1:B:527:THR:HB	1:B:528:PRO:HD3	1.87	0.55
1:C:481:GLN:OE1	1:C:484:GLN:HB2	2.06	0.55
1:A:331:ASN:ND2	1:B:352:ALA:HB3	2.22	0.55
1:A:163:LEU:HD11	1:A:424:GLU:OE2	2.06	0.55
1:C:381:VAL:HG12	1:C:385:LEU:CD1	2.36	0.55
1:C:475:VAL:O	1:C:479:MET:HG2	2.05	0.55
1:B:254:LEU:HD23	1:B:465:PHE:HZ	1.65	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:504:LEU:HD12	1:B:505:THR:HG23	1.89	0.55
1:C:319:PHE:CG	1:C:453:MET:HE3	2.42	0.55
1:A:81:LYS:HB2	1:A:84:PHE:HB2	1.89	0.55
1:A:297:GLY:CA	1:A:298:VAL:CG2	2.85	0.55
1:B:227:GLU:C	1:B:229:GLY:H	2.15	0.55
1:B:521:VAL:O	1:B:525:ALA:HB2	2.07	0.55
1:B:346:GLN:HG3	1:B:347:MET:H	1.71	0.55
1:B:232:GLY:O	1:B:233:TRP:C	2.49	0.55
1:B:243:ILE:O	1:B:246:THR:HG22	2.07	0.55
1:A:456:ILE:HB	1:A:460:LEU:HD13	1.89	0.54
1:C:211:VAL:HG12	1:C:213:ARG:HG3	1.88	0.54
1:C:64:VAL:O	1:C:68:VAL:HG23	2.06	0.54
1:A:148:ALA:HB1	1:A:380:PHE:CZ	2.41	0.54
1:C:113:PHE:O	1:C:117:ILE:HG23	2.06	0.54
1:B:139:VAL:HG13	1:B:310:MET:HE1	1.90	0.54
1:B:183:SER:OG	1:B:339:ASN:HB3	2.07	0.54
1:C:126:ARG:HD2	1:C:131:ASP:HA	1.88	0.54
1:C:252:CYS:O	1:C:256:LEU:HG	2.08	0.54
1:C:275:SER:HB3	1:C:278:THR:OG1	2.08	0.54
1:C:308:ALA:O	1:C:312:LEU:HD13	2.07	0.54
1:A:287:THR:HA	1:A:290:PHE:HB3	1.90	0.54
1:B:121:LYS:HZ1	1:B:550:TYR:HD1	1.56	0.54
1:C:92:LEU:HD13	1:C:520:ASN:HD22	1.73	0.54
1:C:167:ARG:HH12	1:C:431:TRP:CD1	2.25	0.54
1:A:224:LEU:HD12	1:A:539:ALA:HB2	1.89	0.54
1:B:130:ILE:HD13	1:B:131:ASP:N	2.22	0.54
1:B:134:PRO:O	1:B:135:GLU:CB	2.56	0.54
1:B:153:ASP:O	1:B:156:PHE:N	2.41	0.54
1:B:519:GLN:HE21	1:B:520:ASN:ND2	2.06	0.54
1:B:534:ILE:O	1:B:537:MET:HB3	2.08	0.54
1:A:141:TRP:CD1	1:A:388:ILE:HG13	2.43	0.54
1:C:300:LYS:HA	1:C:302:ILE:H	1.72	0.54
1:C:380:PHE:HE2	4:C:601:CHT:H73	1.71	0.54
1:B:281:GLY:C	1:B:282:ILE:HD12	2.32	0.54
1:B:372:ALA:CB	1:B:523:ILE:HG23	2.38	0.54
1:A:366:TRP:O	1:A:369:PHE:HB3	2.07	0.54
1:C:250:THR:HG22	1:C:377:TRP:HE1	1.73	0.54
1:B:309:ASN:ND2	1:B:464:PHE:HB3	2.24	0.53
1:A:527:THR:N	1:A:528:PRO:CD	2.71	0.53
1:C:305:LEU:HA	1:C:308:ALA:HB3	1.89	0.53
1:A:156:PHE:CE2	1:A:256:LEU:HD11	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:235:GLY:H	1:A:238:ILE:HD13	1.73	0.53
1:A:325:PRO:HB2	1:A:328:SER:HB2	1.91	0.53
3:A:602:PGT:C23	1:C:399:LEU:HD21	2.38	0.53
1:B:108:THR:OG1	1:B:192:HIS:HE1	1.91	0.53
1:B:399:LEU:HD12	1:B:399:LEU:C	2.33	0.53
1:C:380:PHE:CE1	1:C:471:SER:HB2	2.43	0.53
1:B:114:ILE:HG23	1:B:199:ILE:HD12	1.88	0.53
1:B:123:GLY:HA2	1:B:394:ILE:CD1	2.39	0.53
1:B:213:ARG:NH1	1:B:222:VAL:HB	2.24	0.53
1:B:435:ALA:O	1:B:438:GLU:HG2	2.08	0.53
1:B:260:GLN:CG	1:B:461:LEU:HD13	2.37	0.53
1:B:463:THR:O	1:B:464:PHE:CG	2.62	0.53
1:C:488:ASN:HB3	1:C:491:VAL:HG12	1.90	0.53
1:A:67:LEU:HA	1:A:70:VAL:HB	1.91	0.53
1:B:384:PHE:CE1	1:B:471:SER:HB2	2.43	0.53
1:C:76:TRP:CD1	1:C:76:TRP:C	2.86	0.53
1:A:375:ILE:HD13	1:A:530:LEU:HA	1.90	0.53
1:C:314:ALA:O	1:C:318:ILE:HG13	2.09	0.53
1:A:370:TYR:C	1:A:374:TRP:CD1	2.87	0.53
1:C:112:PHE:O	1:C:113:PHE:C	2.52	0.53
1:A:128:GLY:O	1:A:129:ARG:C	2.51	0.53
1:A:498:ALA:O	1:A:499:THR:HB	2.09	0.53
1:C:152:ILE:HG21	1:C:253:SER:O	2.08	0.53
1:A:112:PHE:O	1:A:116:VAL:HG13	2.09	0.53
1:B:111:VAL:HG22	1:B:191:LEU:O	2.09	0.53
1:C:421:ILE:O	1:C:425:GLN:HG3	2.09	0.53
1:B:463:THR:O	1:B:465:PHE:N	2.38	0.52
1:C:170:VAL:HG13	1:C:171:PRO:HD2	1.92	0.52
1:A:88:ALA:CB	1:A:520:ASN:HD21	2.17	0.52
1:C:517:ASN:O	1:C:521:VAL:HG22	2.09	0.52
1:A:222:VAL:N	1:A:223:PRO:CD	2.72	0.52
1:B:305:LEU:HB3	1:B:467:THR:HG21	1.90	0.52
1:B:531:PHE:HA	1:B:534:ILE:HG12	1.91	0.52
1:C:250:THR:HG21	1:C:472:ALA:CB	2.38	0.52
1:A:107:GLY:HA2	1:A:110:PHE:CD2	2.45	0.52
1:A:376:SER:OG	1:A:526:ALA:HB3	2.09	0.52
1:C:191:LEU:HB2	1:C:340:TYR:OH	2.09	0.52
1:C:230:ALA:O	1:C:231:GLU:CB	2.56	0.52
1:A:316:LEU:HD13	1:A:416:PHE:HZ	1.73	0.52
1:B:189:TRP:HZ2	1:B:370:TYR:HH	1.53	0.52
1:B:187:PHE:CD1	1:B:347:MET:HG3	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:468:SER:O	1:B:472:ALA:HB2	2.10	0.52
1:C:67:LEU:HD23	1:C:70:VAL:HG11	1.91	0.52
1:C:81:LYS:O	1:C:82:ASP:HB3	2.09	0.52
1:B:298:VAL:O	1:B:298:VAL:CG1	2.54	0.52
1:B:371:TRP:CE3	1:B:374:TRP:HD1	2.27	0.52
1:C:385:LEU:HD22	1:C:401:VAL:HG22	1.91	0.52
1:A:392:ARG:HD2	1:A:396:GLU:CG	2.39	0.51
1:B:249:GLY:O	1:B:253:SER:OG	2.28	0.51
1:B:486:GLU:CD	1:B:486:GLU:H	2.18	0.51
1:B:512:ASP:O	1:B:513:ASN:HB2	2.08	0.51
1:A:101:TRP:CE2	1:C:330:LEU:HD13	2.44	0.51
1:B:76:TRP:O	1:B:85:THR:HB	2.09	0.51
1:B:204:ILE:HD11	1:B:217:LEU:HA	1.93	0.51
1:B:279:ILE:O	1:B:283:VAL:HB	2.10	0.51
1:C:94:ALA:O	1:C:98:ASN:OD1	2.28	0.51
1:C:455:ILE:HA	1:C:458:MET:HE3	1.92	0.51
1:A:254:LEU:HD22	1:A:465:PHE:CZ	2.45	0.51
1:A:515:LEU:N	1:A:515:LEU:CD1	2.73	0.51
1:A:74:VAL:HG13	1:A:502:ILE:HB	1.93	0.51
1:B:260:GLN:HG2	1:B:461:LEU:HD22	1.93	0.51
1:A:318:ILE:O	1:A:322:VAL:HG22	2.10	0.51
1:A:149:GLY:HA2	1:A:381:VAL:CG1	2.41	0.51
1:A:156:PHE:CD2	1:A:256:LEU:HD11	2.46	0.51
1:A:183:SER:C	1:A:347:MET:HE1	2.35	0.51
1:A:352:ALA:HB3	1:C:331:ASN:ND2	2.26	0.51
1:B:103:PHE:HE1	1:B:372:ALA:HA	1.75	0.51
1:B:128:GLY:HA2	1:B:209:PHE:O	2.10	0.51
1:B:364:GLY:HA2	1:B:368:ILE:HB	1.91	0.51
1:C:67:LEU:HA	1:C:70:VAL:CG1	2.38	0.51
1:A:112:PHE:HZ	1:A:345:PHE:CZ	2.29	0.51
1:A:208:THR:HG21	1:A:215:GLN:CD	2.35	0.51
1:A:393:SER:HB3	1:A:396:GLU:CG	2.41	0.51
1:A:568:ARG:HH11	1:C:552:GLU:HG3	1.74	0.51
1:C:225:ILE:HG22	1:C:226:GLY:O	2.10	0.51
1:A:160:THR:O	1:A:164:THR:HG22	2.11	0.51
1:C:404:VAL:CB	1:C:405:PRO:HD3	2.39	0.51
1:A:74:VAL:O	1:A:78:ILE:HG22	2.11	0.51
1:B:374:TRP:HA	1:B:374:TRP:CE3	2.46	0.51
1:C:151:GLY:O	1:C:152:ILE:C	2.54	0.51
1:C:551:LEU:O	1:C:555:GLU:HG3	2.10	0.51
1:A:222:VAL:HB	1:A:227:GLU:HA	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:96:VAL:HG13	1:B:368:ILE:HG21	1.92	0.50
1:C:234:LEU:O	1:C:236:LYS:N	2.44	0.50
1:C:377:TRP:C	1:C:379:PRO:HD2	2.35	0.50
1:A:121:LYS:CG	3:A:602:PGT:H11	2.41	0.50
1:A:142:ILE:H	1:A:142:ILE:CD1	2.23	0.50
1:A:292:PHE:CA	1:A:293:SER:C	2.84	0.50
1:A:331:ASN:O	1:A:334:PRO:HD2	2.10	0.50
1:B:99:LEU:O	1:B:103:PHE:HD2	1.93	0.50
1:B:196:ILE:HD11	1:B:374:TRP:CB	2.27	0.50
1:B:375:ILE:HG12	1:B:530:LEU:HA	1.92	0.50
1:C:524:VAL:O	1:C:528:PRO:HD3	2.11	0.50
1:A:136:PHE:O	1:A:137:ARG:CB	2.59	0.50
1:A:292:PHE:HA	1:A:293:SER:O	2.11	0.50
1:A:63:ILE:O	1:A:66:ALA:HB3	2.11	0.50
1:B:70:VAL:O	1:B:74:VAL:HG12	2.11	0.50
1:C:76:TRP:HB2	5:C:709:HOH:O	2.11	0.50
1:A:101:TRP:CZ2	1:C:330:LEU:HD13	2.46	0.50
1:A:221:PHE:O	1:A:225:ILE:HG12	2.12	0.50
1:B:176:HIS:N	1:B:176:HIS:CD2	2.79	0.50
1:B:206:TYR:O	1:B:210:ARG:HB3	2.11	0.50
1:C:129:ARG:NH1	1:C:130:ILE:H	2.09	0.50
1:A:81:LYS:HB3	1:A:84:PHE:HB2	1.94	0.50
1:A:115:VAL:HG11	3:A:602:PGT:H421	1.93	0.50
1:A:139:VAL:HG23	1:A:140:SER:N	2.27	0.50
1:A:273:ASP:HB3	1:A:274:PRO:CD	2.39	0.50
1:C:75:VAL:HG12	1:C:76:TRP:N	2.26	0.50
1:A:269:ASN:OD1	1:A:271:ILE:HG13	2.11	0.49
1:A:451:GLN:O	1:A:455:ILE:HG13	2.10	0.49
1:B:458:MET:HA	1:B:461:LEU:CD1	2.36	0.49
1:A:161:GLU:HB3	1:A:162:PRO:HD3	1.93	0.49
1:A:301:GLY:CA	1:A:302:ILE:C	2.85	0.49
1:A:330:LEU:HG	1:B:101:TRP:CG	2.47	0.49
1:B:250:THR:O	1:B:254:LEU:HG	2.12	0.49
1:B:354:SER:O	1:B:359:ALA:HB3	2.12	0.49
1:B:455:ILE:HG13	1:B:456:ILE:N	2.26	0.49
1:B:540:LEU:O	1:B:544:LEU:HG	2.11	0.49
1:A:222:VAL:HB	1:A:227:GLU:HG2	1.94	0.49
1:B:121:LYS:NZ	1:B:550:TYR:HD1	2.10	0.49
1:B:185:THR:O	1:B:189:TRP:HD1	1.96	0.49
1:C:60:TRP:C	1:C:62:VAL:H	2.20	0.49
1:C:106:PHE:HA	1:C:109:VAL:HB	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:129:ARG:O	1:B:130:ILE:HG22	2.13	0.49
1:B:373:TRP:CD1	1:B:373:TRP:C	2.88	0.49
1:C:66:ALA:N	1:C:240:ILE:HD11	2.27	0.49
1:C:284:SER:HA	1:C:287:THR:CG2	2.36	0.49
1:A:455:ILE:HG23	1:A:459:ILE:HD12	1.95	0.49
1:A:514:ALA:C	1:A:515:LEU:HD12	2.37	0.49
3:A:602:PGT:O31	3:A:602:PGT:H12	2.11	0.49
1:C:520:ASN:O	1:C:524:VAL:HG23	2.12	0.49
1:A:156:PHE:HE1	1:A:437:GLU:HG3	1.78	0.49
1:B:234:LEU:HD12	1:B:234:LEU:N	2.28	0.49
1:B:463:THR:C	1:B:465:PHE:N	2.71	0.49
1:A:159:THR:OG1	1:A:443:LEU:HD21	2.12	0.49
1:A:373:TRP:HE1	1:A:377:TRP:HE3	1.60	0.49
1:B:89:SER:O	1:B:92:LEU:HB3	2.12	0.49
1:B:305:LEU:HB3	1:B:467:THR:CG2	2.43	0.49
1:A:430:ILE:HG13	1:A:443:LEU:HB3	1.95	0.49
1:C:449:GLY:O	1:C:452:ILE:HG12	2.13	0.49
1:A:325:PRO:HD2	1:A:419:THR:HG22	1.95	0.48
1:C:316:LEU:O	1:C:320:VAL:HG23	2.13	0.48
1:A:70:VAL:O	1:A:74:VAL:HG23	2.13	0.48
1:A:138:THR:HG23	1:A:139:VAL:HG13	1.95	0.48
1:A:146:PHE:O	1:A:147:ALA:C	2.56	0.48
1:C:62:VAL:C	1:C:65:PRO:HD2	2.38	0.48
1:A:378:SER:HA	1:A:381:VAL:CG2	2.43	0.48
1:B:186:MET:HE1	1:B:336:SER:CB	2.41	0.48
1:C:156:PHE:CE1	1:C:256:LEU:HB2	2.48	0.48
1:C:473:SER:HA	1:C:476:MET:HE3	1.95	0.48
1:A:92:LEU:C	1:A:92:LEU:HD12	2.39	0.48
1:B:139:VAL:CG1	1:B:310:MET:HE1	2.43	0.48
1:C:430:ILE:HG21	1:C:443:LEU:HA	1.96	0.48
1:C:375:ILE:HD11	1:C:530:LEU:HD13	1.94	0.48
1:C:431:TRP:NE1	1:C:434:GLY:HA2	2.28	0.48
1:A:380:PHE:CD1	1:A:472:ALA:HA	2.48	0.48
1:A:497:VAL:O	1:A:499:THR:N	2.45	0.48
1:B:141:TRP:HD1	1:B:145:MET:SD	2.36	0.48
1:C:78:ILE:HG13	1:C:79:GLY:N	2.28	0.48
1:C:323:VAL:HG22	1:C:447:LEU:HD22	1.95	0.48
1:A:456:ILE:HB	1:A:460:LEU:CD2	2.44	0.48
1:B:141:TRP:O	1:B:142:ILE:C	2.56	0.48
1:B:206:TYR:CE1	1:B:210:ARG:HG2	2.48	0.48
1:A:443:LEU:HD12	1:A:443:LEU:C	2.38	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:499:THR:O	1:A:503:GLY:N	2.47	0.48
1:B:316:LEU:O	1:B:319:PHE:HB3	2.14	0.48
1:B:467:THR:HA	1:B:470:ASP:OD2	2.14	0.48
1:C:311:VAL:O	1:C:315:LEU:HD13	2.14	0.48
1:C:554:ARG:HD3	1:C:557:GLN:HE21	1.79	0.48
1:A:95:VAL:HG23	1:A:96:VAL:N	2.29	0.48
1:A:473:SER:HA	1:A:476:MET:HG2	1.96	0.48
1:A:162:PRO:HG2	1:A:417:GLY:HA3	1.96	0.47
1:B:194:TRP:CE3	1:B:197:TYR:HD2	2.32	0.47
1:B:476:MET:HA	1:B:479:MET:HG2	1.96	0.47
1:B:519:GLN:HA	5:B:608:HOH:O	2.14	0.47
1:B:325:PRO:HB2	1:B:328:SER:HB2	1.95	0.47
1:A:94:ALA:O	1:A:98:ASN:HB2	2.14	0.47
1:A:183:SER:CB	1:A:347:MET:HE1	2.44	0.47
1:A:188:HIS:HA	1:A:371:TRP:HH2	1.79	0.47
1:B:254:LEU:HA	1:B:465:PHE:CZ	2.49	0.47
1:A:92:LEU:C	1:A:94:ALA:N	2.73	0.47
1:A:570:HIS:O	1:A:574:ARG:HG2	2.14	0.47
1:B:425:GLN:OE1	1:C:353:MET:HE1	2.14	0.47
1:C:226:GLY:CA	1:C:227:GLU:CB	2.83	0.47
1:A:232:GLY:O	1:A:233:TRP:C	2.56	0.47
1:A:497:VAL:O	1:A:498:ALA:C	2.56	0.47
1:A:563:LEU:HD23	1:A:563:LEU:C	2.39	0.47
1:A:78:ILE:HG12	1:A:505:THR:HB	1.95	0.47
1:A:559:PHE:O	1:A:560:ASN:C	2.57	0.47
1:B:373:TRP:O	1:B:376:SER:HB3	2.15	0.47
1:A:418:GLY:O	1:A:422:VAL:HG23	2.14	0.47
1:B:100:GLY:O	1:B:104:ILE:HG13	2.15	0.47
1:B:280:VAL:O	1:B:284:SER:HB3	2.15	0.47
1:B:371:TRP:HE3	1:B:374:TRP:HD1	1.61	0.47
1:B:443:LEU:HD12	1:B:443:LEU:O	2.14	0.47
1:C:117:ILE:HG13	1:C:118:ALA:N	2.29	0.47
1:C:471:SER:O	1:C:475:VAL:HG23	2.15	0.47
1:A:222:VAL:CG2	1:A:223:PRO:HD3	2.44	0.47
1:A:194:TRP:CE3	1:A:197:TYR:HD2	2.33	0.47
1:A:287:THR:O	1:A:291:ILE:HG12	2.15	0.47
1:A:292:PHE:N	1:A:293:SER:CB	2.68	0.47
1:A:303:GLN:C	1:A:305:LEU:H	2.23	0.47
1:C:103:PHE:CZ	1:C:527:THR:HG22	2.50	0.47
1:C:162:PRO:CG	1:C:417:GLY:HA3	2.45	0.47
1:C:418:GLY:O	1:C:422:VAL:HG23	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:67:LEU:HD12	1:A:67:LEU:H	1.80	0.47
1:A:250:THR:O	1:A:254:LEU:HG	2.15	0.47
1:A:371:TRP:HA	1:A:374:TRP:HD1	1.80	0.47
1:A:515:LEU:HB3	1:A:516:SER:HA	1.96	0.47
1:B:276:ASP:O	1:B:278:THR:N	2.44	0.47
1:A:67:LEU:HD12	1:A:67:LEU:N	2.30	0.46
1:A:310:MET:O	1:A:311:VAL:C	2.58	0.46
1:A:369:PHE:CD1	1:A:369:PHE:C	2.93	0.46
1:C:309:ASN:HD21	1:C:467:THR:HG21	1.80	0.46
1:B:136:PHE:HB3	1:B:140:SER:HB2	1.97	0.46
1:B:153:ASP:OD1	1:B:256:LEU:CD2	2.63	0.46
1:B:443:LEU:HD12	1:B:443:LEU:C	2.40	0.46
1:C:473:SER:HB3	1:C:492:THR:O	2.15	0.46
1:A:65:PRO:C	1:A:68:VAL:HG12	2.41	0.46
1:A:167:ARG:HG2	1:A:168:ASN:OD1	2.15	0.46
1:A:297:GLY:CA	1:A:298:VAL:HG22	2.46	0.46
1:B:112:PHE:O	1:B:116:VAL:HG23	2.15	0.46
1:C:415:ILE:O	1:C:419:THR:HG23	2.15	0.46
1:C:451:GLN:O	1:C:455:ILE:HG13	2.16	0.46
1:A:150:MET:HE2	1:A:150:MET:HA	1.96	0.46
1:A:247:VAL:HG13	1:A:498:ALA:HB1	1.98	0.46
1:A:370:TYR:O	1:A:374:TRP:CD1	2.68	0.46
1:B:395:ARG:C	1:B:397:PHE:H	2.23	0.46
1:C:141:TRP:HD1	1:C:388:ILE:HG22	1.81	0.46
1:A:574:ARG:HA	1:A:577:GLU:HG2	1.98	0.46
1:B:151:GLY:O	1:B:155:MET:HG3	2.15	0.46
1:B:430:ILE:HD12	1:B:430:ILE:O	2.16	0.46
1:A:88:ALA:HA	1:A:91:ALA:HB3	1.98	0.46
1:A:125:ILE:O	1:A:394:ILE:HG12	2.16	0.46
1:B:261:ILE:HD12	1:B:458:MET:HE1	1.97	0.46
1:A:371:TRP:HE3	1:A:374:TRP:CD1	2.34	0.46
1:A:378:SER:N	1:A:379:PRO:CD	2.78	0.46
1:A:387:ARG:H	1:A:387:ARG:NE	2.13	0.46
1:B:58:LEU:HD21	1:B:481:GLN:HE21	1.80	0.46
1:B:314:ALA:O	1:B:318:ILE:HG13	2.16	0.46
1:B:319:PHE:CB	1:B:453:MET:HE2	2.46	0.46
1:B:322:VAL:HG23	1:B:323:VAL:N	2.30	0.46
1:C:211:VAL:CG1	1:C:213:ARG:HG3	2.46	0.46
1:A:243:ILE:O	1:A:247:VAL:HG23	2.15	0.46
1:B:354:SER:HA	1:B:355:ALA:HA	1.71	0.46
1:B:377:TRP:O	1:B:381:VAL:HG23	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:432:GLY:C	1:B:434:GLY:H	2.23	0.46
1:A:346:GLN:O	1:A:346:GLN:HG2	2.16	0.46
1:B:344:PHE:O	1:B:348:ALA:HB2	2.16	0.46
1:A:188:HIS:HA	1:A:371:TRP:CH2	2.51	0.45
1:A:512:ASP:O	1:A:513:ASN:HB3	2.15	0.45
1:B:142:ILE:HG23	1:B:310:MET:SD	2.56	0.45
1:C:159:THR:HG22	1:C:416:PHE:HB3	1.98	0.45
1:C:210:ARG:HH22	1:C:549:ILE:CG1	2.29	0.45
1:C:250:THR:HG21	1:C:472:ALA:HB1	1.97	0.45
1:C:186:MET:HE3	1:C:186:MET:HB3	1.90	0.45
1:B:139:VAL:HG12	1:B:139:VAL:O	2.16	0.45
1:A:178:VAL:O	1:A:182:MET:HG2	2.16	0.45
1:A:332:LEU:O	1:A:332:LEU:HD23	2.17	0.45
1:B:71:LEU:HD23	1:B:71:LEU:O	2.16	0.45
1:B:508:LEU:HD12	1:B:508:LEU:C	2.42	0.45
1:C:414:SER:O	1:C:418:GLY:HA3	2.15	0.45
1:A:105:LEU:O	1:A:109:VAL:HG23	2.17	0.45
1:A:302:ILE:HG23	1:A:305:LEU:HD21	1.99	0.45
1:A:378:SER:N	1:A:379:PRO:HD2	2.31	0.45
1:A:444:LEU:HD12	1:A:445:HIS:N	2.31	0.45
1:A:108:THR:HA	1:A:192:HIS:NE2	2.32	0.45
1:A:323:VAL:HG12	1:A:447:LEU:HD22	1.97	0.45
1:C:503:GLY:O	1:C:507:LEU:HD13	2.16	0.45
1:A:513:ASN:C	1:A:515:LEU:H	2.25	0.45
1:B:228:LYS:C	1:B:230:ALA:H	2.25	0.45
1:C:225:ILE:CG2	1:C:226:GLY:N	2.79	0.45
1:C:389:SER:O	1:C:390:ARG:C	2.58	0.45
1:C:317:ALA:O	1:C:318:ILE:C	2.60	0.45
1:C:428:GLU:OE1	1:C:428:GLU:N	2.49	0.45
1:A:269:ASN:O	1:A:271:ILE:HB	2.16	0.45
1:A:333:LEU:HB3	1:A:334:PRO:HD3	1.99	0.45
1:A:393:SER:HB3	1:A:396:GLU:HG2	1.98	0.45
1:A:490:TRP:CD1	1:A:491:VAL:H	2.35	0.45
1:B:141:TRP:CZ2	1:B:389:SER:HB3	2.50	0.45
1:B:547:ASP:OD1	1:B:548:VAL:HG22	2.16	0.45
1:A:159:THR:HG21	1:A:440:LEU:HA	1.99	0.45
1:A:558:ARG:HH11	1:A:558:ARG:HA	1.82	0.45
1:B:300:LYS:CG	1:B:303:GLN:HB2	2.45	0.45
1:B:359:ALA:O	1:B:360:GLY:C	2.60	0.45
1:B:374:TRP:HA	1:B:374:TRP:HE3	1.81	0.45
1:C:152:ILE:O	1:C:153:ASP:C	2.60	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:167:ARG:HH21	1:C:424:GLU:CD	2.24	0.45
1:C:417:GLY:O	1:C:421:ILE:HG12	2.17	0.45
1:C:559:PHE:C	1:C:561:ALA:H	2.25	0.45
1:A:57:SER:HB2	1:A:482:HIS:ND1	2.32	0.44
1:A:197:TYR:HH	1:A:374:TRP:HE3	1.63	0.44
1:A:343:ASN:O	1:A:347:MET:HG3	2.16	0.44
1:A:385:LEU:HD21	1:A:401:VAL:CG2	2.43	0.44
1:A:393:SER:HB3	1:A:396:GLU:CD	2.42	0.44
1:B:103:PHE:CE1	1:B:372:ALA:HA	2.52	0.44
1:B:161:GLU:HG2	1:B:185:THR:OG1	2.16	0.44
1:B:366:TRP:O	1:B:367:THR:C	2.60	0.44
1:C:91:ALA:O	1:C:94:ALA:HB3	2.17	0.44
1:A:107:GLY:O	1:A:110:PHE:HB2	2.17	0.44
1:A:129:ARG:C	1:A:130:ILE:HD12	2.42	0.44
1:A:139:VAL:HG23	1:A:140:SER:H	1.82	0.44
1:B:175:GLU:CD	1:B:175:GLU:H	2.25	0.44
1:C:375:ILE:CD1	1:C:530:LEU:HD13	2.47	0.44
1:A:155:MET:C	1:A:157:TYR:H	2.25	0.44
1:B:193:PRO:HG3	1:B:374:TRP:NE1	2.31	0.44
1:B:464:PHE:CD1	1:B:464:PHE:C	2.95	0.44
1:B:505:THR:HA	1:B:508:LEU:HG	1.99	0.44
1:C:208:THR:HG21	1:C:215:GLN:CG	2.46	0.44
1:B:217:LEU:HG	1:B:383:MET:HE1	1.99	0.44
1:C:178:VAL:HG23	1:C:179:GLY:N	2.32	0.44
1:C:244:ILE:HG23	1:C:248:PHE:HE2	1.83	0.44
1:A:127:LEU:HD12	1:A:392:ARG:O	2.18	0.44
1:B:75:VAL:C	1:B:77:GLY:H	2.26	0.44
1:B:92:LEU:CD1	1:B:523:ILE:HG21	2.48	0.44
1:B:240:ILE:O	1:B:244:ILE:HG13	2.16	0.44
1:B:371:TRP:CE3	1:B:371:TRP:HA	2.52	0.44
1:B:371:TRP:HE3	1:B:371:TRP:HA	1.82	0.44
1:C:82:ASP:O	1:C:85:THR:HG22	2.16	0.44
1:C:259:LEU:HD13	1:C:437:GLU:OE1	2.18	0.44
1:A:101:TRP:CG	1:A:102:ALA:N	2.85	0.44
1:B:276:ASP:C	1:B:278:THR:N	2.75	0.44
1:C:527:THR:N	1:C:528:PRO:CD	2.81	0.44
1:A:223:PRO:HG2	1:A:543:ASP:HB2	1.99	0.44
1:A:276:ASP:CG	1:A:277:TRP:N	2.75	0.44
1:A:333:LEU:HB3	1:A:334:PRO:CD	2.47	0.44
1:A:516:SER:C	1:A:518:LEU:H	2.24	0.44
1:B:151:GLY:O	1:B:155:MET:CG	2.66	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:74:VAL:HG12	1:C:505:THR:OG1	2.18	0.44
1:C:159:THR:CG2	1:C:416:PHE:HB3	2.48	0.44
1:C:225:ILE:O	1:C:227:GLU:HB2	2.18	0.44
1:A:167:ARG:NH1	1:A:431:TRP:CG	2.85	0.44
1:A:381:VAL:O	1:A:385:LEU:HB2	2.17	0.44
1:C:99:LEU:HD11	1:C:531:PHE:HZ	1.82	0.44
1:C:187:PHE:HA	1:C:340:TYR:HE1	1.83	0.44
1:C:206:TYR:CE2	1:C:211:VAL:HG23	2.53	0.44
1:A:204:ILE:HD11	1:A:217:LEU:HD12	2.00	0.44
1:B:106:PHE:HB3	1:B:110:PHE:CZ	2.53	0.44
1:C:141:TRP:CD1	1:C:388:ILE:HG22	2.53	0.44
1:C:371:TRP:HA	1:C:371:TRP:CE3	2.53	0.44
1:A:331:ASN:C	1:A:333:LEU:H	2.24	0.43
1:A:540:LEU:HD22	1:A:544:LEU:HD22	2.00	0.43
1:B:276:ASP:O	1:B:277:TRP:CD1	2.71	0.43
1:C:114:ILE:HD12	1:C:114:ILE:HA	1.81	0.43
1:A:368:ILE:O	1:A:369:PHE:C	2.61	0.43
1:A:461:LEU:O	1:A:461:LEU:HD12	2.18	0.43
1:B:95:VAL:HG23	1:B:99:LEU:HD12	2.00	0.43
1:B:149:GLY:O	1:B:150:MET:HG3	2.18	0.43
1:B:549:ILE:HD12	1:B:550:TYR:N	2.33	0.43
1:C:135:GLU:OE2	1:C:390:ARG:HG2	2.18	0.43
1:C:138:THR:O	1:C:142:ILE:HG13	2.18	0.43
1:C:217:LEU:HD12	1:C:242:ALA:HB2	2.00	0.43
1:C:265:LEU:C	1:C:267:ALA:H	2.26	0.43
3:A:602:PGT:H232	1:C:399:LEU:HD21	2.00	0.43
1:B:380:PHE:CD1	1:B:380:PHE:C	2.94	0.43
1:C:193:PRO:O	1:C:196:ILE:HB	2.18	0.43
1:A:141:TRP:C	1:A:145:MET:HG2	2.43	0.43
1:A:199:ILE:HG22	1:A:536:LEU:HD23	2.00	0.43
1:C:173:HIS:CD2	1:C:180:VAL:HG11	2.53	0.43
1:A:189:TRP:CZ3	1:A:374:TRP:HH2	2.37	0.43
1:A:215:GLN:CD	1:A:387:ARG:NH2	2.77	0.43
1:A:481:GLN:O	1:A:484:GLN:HG2	2.18	0.43
1:A:536:LEU:O	1:A:540:LEU:HB2	2.18	0.43
1:B:64:VAL:O	1:B:68:VAL:HG22	2.18	0.43
1:B:189:TRP:CZ2	1:B:370:TYR:OH	2.69	0.43
1:B:256:LEU:HD13	1:B:256:LEU:O	2.18	0.43
1:C:124:THR:HG23	1:C:395:ARG:HH21	1.83	0.43
1:C:145:MET:HE3	1:C:404:VAL:HG21	1.99	0.43
1:C:371:TRP:CE3	1:C:371:TRP:CA	3.02	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:VAL:CG1	3:A:602:PGT:H402	2.48	0.43
1:B:157:TYR:HD1	1:B:160:THR:CG2	2.31	0.43
1:B:233:TRP:HB2	1:B:234:LEU:HD12	2.00	0.43
1:B:271:ILE:HG12	1:B:272:GLU:CA	2.49	0.43
1:B:273:ASP:O	1:B:274:PRO:C	2.62	0.43
1:B:347:MET:HE3	1:B:347:MET:HB3	1.83	0.43
1:B:430:ILE:HD12	1:B:430:ILE:C	2.43	0.43
1:C:71:LEU:O	1:C:72:ALA:C	2.62	0.43
1:C:369:PHE:O	1:C:370:TYR:C	2.61	0.43
1:A:112:PHE:HZ	1:A:345:PHE:CE1	2.37	0.43
1:A:331:ASN:HD22	1:B:352:ALA:HB3	1.82	0.43
1:B:243:ILE:HA	1:B:246:THR:HG22	2.00	0.43
1:B:256:LEU:HA	1:B:259:LEU:HG	2.00	0.43
1:B:271:ILE:CB	1:B:272:GLU:HA	2.47	0.43
1:B:280:VAL:C	1:B:282:ILE:H	2.27	0.43
1:C:67:LEU:CA	1:C:70:VAL:HG12	2.42	0.43
1:C:325:PRO:O	1:C:326:THR:C	2.61	0.43
1:A:156:PHE:O	1:A:156:PHE:CG	2.71	0.43
1:A:292:PHE:H	1:A:293:SER:CB	2.07	0.43
1:B:143:SER:HB3	1:B:310:MET:SD	2.59	0.43
1:B:195:ALA:C	1:B:197:TYR:H	2.27	0.43
1:B:259:LEU:HD12	1:B:259:LEU:C	2.43	0.43
1:A:473:SER:HA	1:A:476:MET:SD	2.59	0.43
1:B:74:VAL:CG2	1:B:502:ILE:HB	2.49	0.43
1:B:517:ASN:C	1:B:521:VAL:HG23	2.43	0.43
1:C:216:LEU:HD21	1:C:483:GLY:N	2.34	0.43
1:C:239:ASP:O	1:C:243:ILE:HG12	2.19	0.43
1:C:343:ASN:O	1:C:344:PHE:C	2.61	0.43
1:C:540:LEU:O	1:C:544:LEU:HG	2.19	0.43
1:A:147:ALA:HB2	1:A:309:ASN:ND2	2.34	0.43
1:A:194:TRP:CZ2	1:A:405:PRO:HB3	2.54	0.43
1:A:445:HIS:HA	1:A:450:GLY:CA	2.38	0.43
1:B:153:ASP:CG	1:B:256:LEU:HG	2.39	0.43
1:C:103:PHE:HZ	1:C:527:THR:HG22	1.84	0.43
1:C:106:PHE:CD1	1:C:534:ILE:HD13	2.54	0.43
1:C:247:VAL:HG12	1:C:502:ILE:CD1	2.49	0.43
1:A:190:THR:HB	1:A:406:ALA:HB1	2.00	0.42
1:A:505:THR:HA	1:A:508:LEU:CG	2.43	0.42
1:B:127:LEU:O	1:B:127:LEU:HG	2.19	0.42
1:B:369:PHE:CD2	1:B:369:PHE:C	2.97	0.42
1:C:521:VAL:HG23	1:C:522:THR:N	2.33	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:546:ASN:O	1:C:551:LEU:HD12	2.19	0.42
1:A:383:MET:HE3	1:A:383:MET:HB3	1.90	0.42
1:B:141:TRP:HH2	1:B:389:SER:CB	2.30	0.42
1:B:254:LEU:CD2	1:B:465:PHE:CE1	2.85	0.42
1:C:316:LEU:HB3	1:C:416:PHE:HZ	1.84	0.42
1:C:359:ALA:O	1:C:363:LEU:HG	2.18	0.42
1:C:506:LEU:HD23	1:C:518:LEU:HA	2.00	0.42
1:A:194:TRP:CE2	1:A:405:PRO:HB3	2.55	0.42
1:A:197:TYR:CD1	1:A:381:VAL:HG21	2.53	0.42
1:A:387:ARG:C	1:A:389:SER:H	2.27	0.42
1:A:502:ILE:HA	1:A:505:THR:OG1	2.18	0.42
1:B:141:TRP:O	1:B:143:SER:N	2.52	0.42
1:C:60:TRP:O	1:C:64:VAL:HG12	2.19	0.42
1:A:144:MET:HE2	1:A:384:PHE:CZ	2.54	0.42
1:A:214:LYS:H	1:A:214:LYS:HG2	1.62	0.42
1:A:214:LYS:HG3	1:A:219:SER:OG	2.19	0.42
1:A:222:VAL:HG22	1:A:223:PRO:HD3	2.01	0.42
1:A:290:PHE:CE2	1:A:291:ILE:HG23	2.54	0.42
1:A:371:TRP:HA	1:A:371:TRP:CE3	2.54	0.42
1:B:158:GLY:HA2	1:B:413:PHE:CE1	2.54	0.42
1:B:331:ASN:HD22	1:C:352:ALA:HB3	1.84	0.42
1:C:154:LEU:HD23	1:C:413:PHE:CE2	2.54	0.42
1:C:303:GLN:HA	1:C:306:SER:HB3	2.01	0.42
1:C:330:LEU:HD23	1:C:330:LEU:HA	1.89	0.42
1:C:337:ILE:O	1:C:341:LEU:HG	2.20	0.42
1:C:353:MET:O	1:C:357:GLY:N	2.49	0.42
1:C:475:VAL:HG12	1:C:479:MET:CE	2.49	0.42
1:A:208:THR:HG21	1:A:215:GLN:HA	2.01	0.42
1:B:199:ILE:HG22	1:B:200:VAL:N	2.34	0.42
1:C:78:ILE:CG2	1:C:505:THR:HG23	2.41	0.42
1:C:108:THR:CA	1:C:192:HIS:CE1	3.02	0.42
1:C:178:VAL:HG12	1:C:421:ILE:HG21	2.02	0.42
1:C:378:SER:N	1:C:379:PRO:CD	2.80	0.42
1:A:66:ALA:HB1	1:A:243:ILE:HD13	2.01	0.42
1:B:286:LEU:HD23	1:B:465:PHE:CD2	2.55	0.42
1:A:130:ILE:O	1:A:131:ASP:C	2.63	0.42
1:A:148:ALA:HB1	1:A:380:PHE:HZ	1.84	0.42
1:C:145:MET:CE	1:C:404:VAL:HG21	2.50	0.42
1:A:279:ILE:HG22	1:A:279:ILE:O	2.19	0.42
1:B:222:VAL:HB	1:B:223:PRO:HD3	2.00	0.42
1:B:233:TRP:CD1	1:B:233:TRP:N	2.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:81:LYS:HB3	1:C:84:PHE:HD2	1.80	0.42
1:C:166:TYR:CE2	1:C:176:HIS:HD2	2.38	0.42
1:C:256:LEU:C	1:C:256:LEU:HD12	2.44	0.42
1:C:527:THR:OG1	1:C:528:PRO:HD3	2.20	0.42
1:A:67:LEU:HD11	1:A:495:TRP:CH2	2.55	0.42
1:A:71:LEU:C	1:A:73:THR:H	2.28	0.42
1:A:303:GLN:C	1:A:305:LEU:N	2.77	0.42
1:A:387:ARG:C	1:A:389:SER:N	2.78	0.42
1:B:104:ILE:HD12	1:B:105:LEU:N	2.35	0.42
1:B:152:ILE:HA	1:B:464:PHE:CZ	2.55	0.42
1:B:234:LEU:H	1:B:234:LEU:CD1	2.32	0.42
1:B:288:LEU:HA	1:B:291:ILE:HG22	2.00	0.42
1:B:321:PHE:HA	1:B:329:ILE:CD1	2.50	0.42
1:C:377:TRP:CH2	4:C:601:CHT:HC51	2.54	0.42
1:A:243:ILE:HD12	1:A:244:ILE:HG13	2.01	0.42
1:A:305:LEU:HD22	1:A:467:THR:HA	2.02	0.42
1:B:68:VAL:HG23	1:B:69:ILE:N	2.35	0.42
1:B:206:TYR:C	1:B:208:THR:H	2.28	0.42
1:B:264:GLY:HA3	1:B:458:MET:SD	2.60	0.42
1:B:319:PHE:O	1:B:323:VAL:HG22	2.20	0.42
1:C:284:SER:CA	1:C:287:THR:HG22	2.41	0.42
1:C:319:PHE:CD1	1:C:453:MET:HE3	2.55	0.42
1:A:424:GLU:CD	1:A:429:SER:HA	2.44	0.41
1:A:456:ILE:HB	1:A:460:LEU:CD1	2.49	0.41
1:A:568:ARG:HH11	1:C:552:GLU:CG	2.33	0.41
1:B:213:ARG:HH11	1:B:222:VAL:HB	1.85	0.41
1:A:197:TYR:OH	1:A:374:TRP:HE3	2.03	0.41
1:B:302:ILE:HD11	1:B:474:THR:HG21	2.02	0.41
1:B:481:GLN:HE22	1:B:488:ASN:HB2	1.84	0.41
1:C:564:ALA:HA	1:C:567:ARG:HG2	2.02	0.41
1:A:78:ILE:HD13	1:A:505:THR:O	2.21	0.41
1:A:204:ILE:O	1:A:208:THR:HG23	2.19	0.41
1:A:371:TRP:CE3	1:A:371:TRP:CA	3.03	0.41
1:A:551:LEU:HD23	1:A:551:LEU:HA	1.82	0.41
3:A:602:PGT:H231	1:C:399:LEU:HD21	2.02	0.41
1:B:341:LEU:HD23	1:C:345:PHE:CE1	2.54	0.41
1:C:134:PRO:HA	1:C:391:GLY:HA3	2.02	0.41
1:C:433:ASP:OD1	1:C:433:ASP:C	2.62	0.41
1:A:59:ASN:O	1:A:63:ILE:HG22	2.20	0.41
1:A:105:LEU:O	1:A:105:LEU:HD12	2.21	0.41
1:A:481:GLN:OE1	1:A:484:GLN:HG3	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:186:MET:HE2	1:B:186:MET:HB2	1.55	0.41
1:A:170:VAL:CG1	1:A:171:PRO:HD2	2.49	0.41
1:A:384:PHE:HA	1:A:387:ARG:HD2	2.02	0.41
1:B:327:VAL:O	1:B:331:ASN:N	2.48	0.41
1:C:290:PHE:CZ	1:C:496:GLY:HA3	2.55	0.41
1:C:463:THR:O	1:C:467:THR:HG23	2.21	0.41
1:A:114:ILE:CD1	1:A:402:LEU:HD11	2.51	0.41
1:A:116:VAL:O	1:A:120:SER:N	2.52	0.41
1:A:136:PHE:HD1	1:A:388:ILE:HB	1.85	0.41
1:A:219:SER:O	1:A:222:VAL:HG13	2.20	0.41
1:A:240:ILE:O	1:A:243:ILE:HG13	2.21	0.41
1:A:458:MET:O	1:A:461:LEU:HG	2.19	0.41
1:B:144:MET:SD	1:B:384:PHE:HD2	2.44	0.41
1:B:214:LYS:HE2	1:B:214:LYS:HB3	1.87	0.41
1:B:297:GLY:C	1:B:299:GLY:H	2.28	0.41
1:B:371:TRP:CE3	1:B:374:TRP:CD1	3.08	0.41
1:B:473:SER:O	1:B:476:MET:HB2	2.21	0.41
1:C:323:VAL:HG13	1:C:324:GLY:N	2.35	0.41
1:A:158:GLY:HA2	1:A:413:PHE:CE1	2.53	0.41
1:A:189:TRP:CZ2	1:A:370:TYR:HE1	2.38	0.41
1:A:299:GLY:HA2	1:A:487:ALA:HB2	2.03	0.41
1:A:354:SER:HA	1:A:355:ALA:HA	1.71	0.41
1:A:484:GLN:HG2	1:A:484:GLN:H	1.70	0.41
1:C:88:ALA:O	1:C:91:ALA:HB3	2.21	0.41
1:C:210:ARG:NH2	1:C:549:ILE:HG12	2.35	0.41
1:C:325:PRO:HD2	1:C:419:THR:HG22	2.02	0.41
1:C:466:ILE:N	1:C:466:ILE:HD12	2.35	0.41
1:A:110:PHE:CZ	1:A:534:ILE:HD13	2.56	0.41
1:A:130:ILE:HB	1:A:131:ASP:H	1.65	0.41
1:A:170:VAL:HG22	1:A:362:TRP:CZ2	2.55	0.41
1:A:280:VAL:O	1:A:284:SER:HB2	2.20	0.41
1:A:327:VAL:HG21	1:B:98:ASN:OD1	2.21	0.41
1:C:124:THR:HG23	1:C:395:ARG:NH2	2.35	0.41
1:C:159:THR:HA	1:C:417:GLY:CA	2.50	0.41
1:C:290:PHE:CE2	1:C:496:GLY:HA3	2.56	0.41
1:C:323:VAL:HG13	1:C:447:LEU:HD13	2.02	0.41
1:A:60:TRP:HA	1:A:63:ILE:HG22	2.03	0.41
1:A:81:LYS:HB2	1:A:84:PHE:CB	2.50	0.41
1:A:410:THR:HG23	1:A:411:VAL:N	2.35	0.41
1:A:415:ILE:O	1:A:419:THR:HG23	2.21	0.41
1:A:536:LEU:HD12	1:A:536:LEU:HA	1.94	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:548:VAL:HG23	1:A:549:ILE:N	2.36	0.41
1:B:444:LEU:HD23	1:B:444:LEU:HA	1.87	0.41
1:B:460:LEU:CA	1:B:463:THR:HG22	2.48	0.41
1:B:466:ILE:O	1:B:470:ASP:HB3	2.21	0.41
1:C:129:ARG:HH12	1:C:130:ILE:HG13	1.85	0.41
1:C:270:ILE:N	1:C:270:ILE:HD12	2.36	0.41
1:C:556:GLN:O	1:C:560:ASN:HB2	2.20	0.41
1:A:156:PHE:CD2	1:A:156:PHE:O	2.74	0.41
1:A:163:LEU:HD22	1:A:420:ALA:HB1	2.02	0.41
1:A:175:GLU:H	1:A:175:GLU:HG2	1.74	0.41
1:B:189:TRP:HZ2	1:B:370:TYR:OH	2.02	0.41
1:B:272:GLU:O	1:B:273:ASP:C	2.63	0.41
1:B:372:ALA:HB1	1:B:523:ILE:HG23	2.03	0.41
1:B:455:ILE:CG1	1:B:456:ILE:N	2.83	0.41
1:C:440:LEU:O	1:C:443:LEU:HB3	2.21	0.41
1:A:97:ASP:O	1:C:327:VAL:CG1	2.63	0.40
1:A:329:ILE:HD13	1:A:415:ILE:HG22	2.02	0.40
1:A:424:GLU:OE1	1:A:424:GLU:N	2.54	0.40
1:A:481:GLN:C	1:A:483:GLY:H	2.28	0.40
1:B:320:VAL:HG12	1:B:447:LEU:HD13	2.03	0.40
1:B:453:MET:O	1:B:456:ILE:HG12	2.21	0.40
1:C:180:VAL:O	1:C:181:ALA:C	2.63	0.40
1:C:329:ILE:HD11	1:C:419:THR:CG2	2.51	0.40
1:A:209:PHE:HE2	1:A:386:ALA:O	2.03	0.40
1:A:508:LEU:HD12	1:A:508:LEU:C	2.46	0.40
1:B:186:MET:HE3	1:B:340:TYR:HB2	2.03	0.40
1:B:320:VAL:HG12	1:B:447:LEU:CD1	2.51	0.40
1:C:356:ASP:O	1:C:357:GLY:C	2.64	0.40
1:C:423:PHE:C	1:C:425:GLN:H	2.29	0.40
1:C:453:MET:HA	1:C:456:ILE:HD12	2.03	0.40
1:A:370:TYR:O	1:A:371:TRP:C	2.64	0.40
1:C:226:GLY:C	1:C:230:ALA:HA	2.46	0.40
1:A:182:MET:CE	1:A:332:LEU:HD21	2.49	0.40
1:A:291:ILE:O	1:A:292:PHE:HB2	2.20	0.40
1:A:301:GLY:HA2	1:A:302:ILE:CB	2.41	0.40
1:B:58:LEU:CD2	1:B:481:GLN:HE21	2.35	0.40
1:B:81:LYS:NZ	1:B:84:PHE:HD2	2.20	0.40
1:B:207:SER:HA	1:B:213:ARG:HH21	1.86	0.40
1:C:64:VAL:N	1:C:65:PRO:CD	2.85	0.40
1:C:371:TRP:N	1:C:371:TRP:HE3	2.20	0.40
1:A:213:ARG:HB2	1:A:214:LYS:H	1.72	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:316:LEU:HD11	1:A:412:TRP:HH2	1.87	0.40
1:A:444:LEU:O	1:A:450:GLY:HA2	2.21	0.40
1:B:122:PHE:CD1	1:B:544:LEU:HB3	2.57	0.40
1:B:147:ALA:O	1:B:468:SER:OG	2.23	0.40
1:B:330:LEU:HG	1:C:101:TRP:CE2	2.57	0.40
1:B:466:ILE:O	1:B:466:ILE:HD12	2.22	0.40
1:C:184:THR:HG22	1:C:188:HIS:CE1	2.57	0.40
1:C:213:ARG:HD2	1:C:219:SER:O	2.20	0.40
1:C:311:VAL:O	1:C:314:ALA:HB3	2.22	0.40
1:C:536:LEU:O	1:C:540:LEU:HB2	2.22	0.40

There are no symmetry-related clashes.

## 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	524/566 (93%)	414 (79%)	90 (17%)	20 (4%)	2	15
1	B	497/566 (88%)	406 (82%)	76 (15%)	15 (3%)	3	19
1	C	501/566 (88%)	411 (82%)	81 (16%)	9 (2%)	6	29
All	All	1522/1698 (90%)	1231 (81%)	247 (16%)	44 (3%)	3	20

All (44) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	137	ARG
1	A	498	ALA
1	A	499	THR
1	A	513	ASN
1	B	134	PRO
1	B	135	GLU
1	B	233	TRP

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Mol	Chain	Res	Type
1	B	274	PRO
1	B	432	GLY
1	B	513	ASN
1	C	231	GLU
1	C	429	SER
1	A	131	ASP
1	A	139	VAL
1	A	157	TYR
1	A	274	PRO
1	A	292	PHE
1	A	294	ALA
1	A	302	ILE
1	B	130	ILE
1	B	142	ILE
1	B	154	LEU
1	B	190	THR
1	B	298	VAL
1	B	464	PHE
1	C	152	ILE
1	C	234	LEU
1	C	235	GLY
1	C	416	PHE
1	A	129	ARG
1	A	130	ILE
1	C	171	PRO
1	C	232	GLY
1	A	93	SER
1	A	135	GLU
1	A	291	ILE
1	A	388	ILE
1	B	225	ILE
1	A	271	ILE
1	A	379	PRO
1	A	298	VAL
1	B	152	ILE
1	B	379	PRO
1	C	532	VAL

### 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	412/443 (93%)	385 (93%)	27 (7%)	15	42
1	B	391/443 (88%)	348 (89%)	43 (11%)	6	23
1	C	397/443 (90%)	370 (93%)	27 (7%)	14	41
All	All	1200/1329 (90%)	1103 (92%)	97 (8%)	11	35

All (97) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	92	LEU
1	A	116	VAL
1	A	130	ILE
1	A	136	PHE
1	A	141	TRP
1	A	142	ILE
1	A	157	TYR
1	A	192	HIS
1	A	291	ILE
1	A	351	THR
1	A	353	MET
1	A	368	ILE
1	A	371	TRP
1	A	373	TRP
1	A	387	ARG
1	A	396	GLU
1	A	408	VAL
1	A	411	VAL
1	A	424	GLU
1	A	439	GLN
1	A	461	LEU
1	A	506	LEU
1	A	515	LEU
1	A	529	PHE
1	A	540	LEU
1	A	544	LEU
1	A	573	HIS
1	B	74	VAL
1	B	82	ASP
1	B	92	LEU

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Mol	Chain	Res	Type
1	B	117	ILE
1	B	130	ILE
1	B	131	ASP
1	B	137	ARG
1	B	150	MET
1	B	153	ASP
1	B	154	LEU
1	B	155	MET
1	B	186	MET
1	B	190	THR
1	B	196	ILE
1	B	248	PHE
1	B	253	SER
1	B	271	ILE
1	B	273	ASP
1	B	277	TRP
1	B	286	LEU
1	B	290	PHE
1	B	305	LEU
1	B	320	VAL
1	B	327	VAL
1	B	347	MET
1	B	369	PHE
1	B	371	TRP
1	B	375	ILE
1	B	383	MET
1	B	390	ARG
1	B	402	LEU
1	B	408	VAL
1	B	409	SER
1	B	419	THR
1	B	443	LEU
1	B	461	LEU
1	B	466	ILE
1	B	467	THR
1	B	470	ASP
1	B	502	ILE
1	B	512	ASP
1	B	515	LEU
1	B	543	ASP
1	C	76	TRP
1	C	92	LEU

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Mol	Chain	Res	Type
1	C	96	VAL
1	C	98	ASN
1	C	116	VAL
1	C	117	ILE
1	C	121	LYS
1	C	160	THR
1	C	189	TRP
1	C	215	GLN
1	C	277	TRP
1	C	288	LEU
1	C	365	SER
1	C	367	THR
1	C	368	ILE
1	C	371	TRP
1	C	375	ILE
1	C	377	TRP
1	C	414	SER
1	C	422	VAL
1	C	437	GLU
1	C	439	GLN
1	C	443	LEU
1	C	481	GLN
1	C	523	ILE
1	C	545	SER
1	C	553	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	176	HIS
1	A	346	GLN
1	A	439	GLN
1	A	481	GLN
1	A	520	ASN
1	A	556	GLN
1	A	560	ASN
1	B	176	HIS
1	B	192	HIS
1	B	215	GLN
1	B	269	ASN
1	B	309	ASN
1	B	343	ASN

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Mol	Chain	Res	Type
1	B	346	GLN
1	B	426	ASN
1	B	445	HIS
1	B	481	GLN
1	B	482	HIS
1	B	519	GLN
1	C	59	ASN
1	C	176	HIS
1	C	192	HIS
1	C	307	ASN
1	C	331	ASN
1	C	439	GLN
1	C	484	GLN
1	C	517	ASN
1	C	519	GLN
1	C	520	ASN
1	C	556	GLN
1	C	557	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 oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 2 are 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	PGT	A	602	-	50,50,50	0.86	2 (4%)	53,56,56	1.12	3 (5%)
4	CHT	C	601	-	6,6,6	0.86	0	8,8,8	0.37	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PGT	A	602	-	-	27/55/55/55	-
4	CHT	C	601	-	-	0/4/4/4	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	PGT	O2-C2	-3.03	1.39	1.46
3	A	602	PGT	O3-C3	-2.41	1.39	1.45

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	602	PGT	O2-C31-C32	4.31	120.81	111.48
3	A	602	PGT	O3-C3-C2	3.03	117.14	108.40
3	A	602	PGT	O3-C11-C12	2.34	118.97	111.83

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	602	PGT	C1-O3P-P-O1P
3	A	602	PGT	C1-O3P-P-O2P
3	A	602	PGT	C1-O3P-P-O4P
3	A	602	PGT	C20-C21-C22-C23
3	A	602	PGT	C4-C5-C6-O6
3	A	602	PGT	C31-C32-C33-C34
3	A	602	PGT	C16-C17-C18-C19
3	A	602	PGT	C40-C41-C42-C43
3	A	602	PGT	C11-C12-C13-C14

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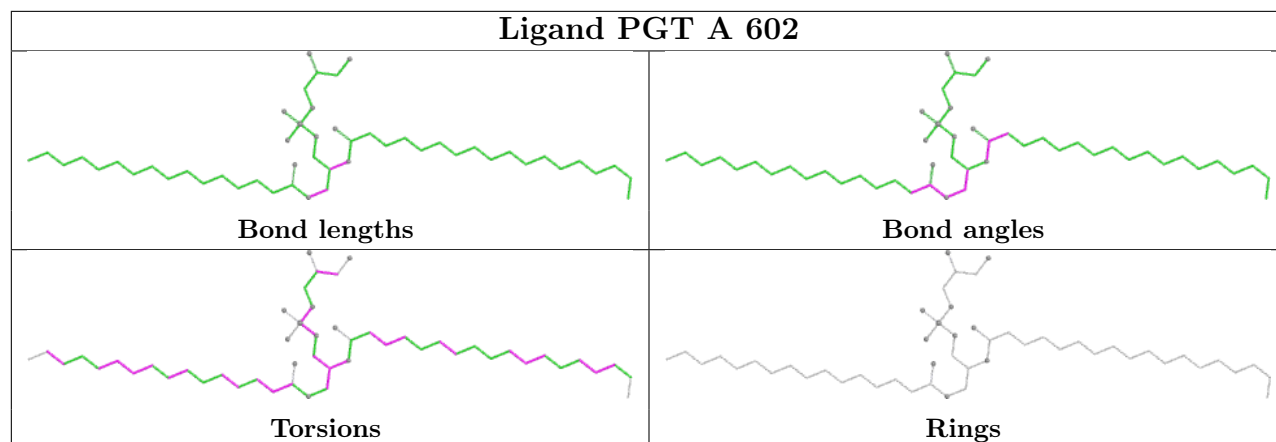
Mol	Chain	Res	Type	Atoms
3	A	602	PGT	C39-C40-C41-C42
3	A	602	PGT	O5-C5-C6-O6
3	A	602	PGT	C32-C33-C34-C35
3	A	602	PGT	C18-C19-C20-C21
3	A	602	PGT	C19-C20-C21-C22
3	A	602	PGT	O2-C2-C3-O3
3	A	602	PGT	O3P-C1-C2-C3
3	A	602	PGT	O3P-C1-C2-O2
3	A	602	PGT	C4-O4P-P-O1P
3	A	602	PGT	C1-C2-O2-C31
3	A	602	PGT	C43-C44-C45-C46
3	A	602	PGT	C1-C2-C3-O3
3	A	602	PGT	C13-C14-C15-C16
3	A	602	PGT	C23-C24-C25-C26
3	A	602	PGT	C44-C45-C46-C47
3	A	602	PGT	C35-C36-C37-C38
3	A	602	PGT	C3-C2-O2-C31
3	A	602	PGT	O3-C11-C12-C13

There are no ring outliers.

2 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	602	PGT	10	0
4	C	601	CHT	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	526/566 (92%)	0.86	80 (15%) <b>5</b> <b>5</b>	22, 120, 299, 416	0
1	B	501/566 (88%)	0.87	89 (17%) <b>4</b> <b>3</b>	13, 116, 284, 438	0
1	C	507/566 (89%)	0.15	30 (5%) <b>28</b> <b>19</b>	9, 75, 181, 389	0
All	All	1534/1698 (90%)	0.63	199 (12%) <b>7</b> <b>6</b>	9, 98, 275, 438	0

All (199) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	253	SER	12.5
1	B	250	THR	7.7
1	C	270	ILE	6.4
1	B	254	LEU	6.2
1	A	517	ASN	6.2
1	A	294	ALA	5.6
1	B	506	LEU	5.2
1	B	141	TRP	5.2
1	A	388	ILE	5.2
1	B	492	THR	5.1
1	A	506	LEU	5.1
1	B	151	GLY	5.1
1	A	227	GLU	5.0
1	B	253	SER	4.9
1	A	502	ILE	4.9
1	B	390	ARG	4.6
1	B	364	GLY	4.6
1	B	466	ILE	4.5
1	A	64	VAL	4.5
1	B	79	GLY	4.5
1	B	133	ALA	4.4
1	A	518	LEU	4.3
1	A	515	LEU	4.3

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Mol	Chain	Res	Type	RSRZ
1	A	144	MET	4.2
1	C	81	LYS	4.2
1	B	234	LEU	4.1
1	C	268	ALA	4.1
1	B	504	LEU	4.0
1	A	62	VAL	4.0
1	A	520	ASN	4.0
1	B	396	GLU	4.0
1	A	509	SER	4.0
1	B	149	GLY	3.9
1	C	302	ILE	3.9
1	B	260	GLN	3.9
1	B	145	MET	3.9
1	B	146	PHE	3.9
1	A	136	PHE	3.9
1	C	555	GLU	3.9
1	B	303	GLN	3.8
1	A	234	LEU	3.8
1	B	508	LEU	3.8
1	C	80	PHE	3.8
1	C	267	ALA	3.7
1	B	152	ILE	3.7
1	B	138	THR	3.7
1	A	514	ALA	3.7
1	B	125	ILE	3.7
1	A	490	TRP	3.7
1	C	274	PRO	3.6
1	B	387	ARG	3.6
1	B	150	MET	3.6
1	B	477	GLY	3.6
1	A	291	ILE	3.6
1	B	252	CYS	3.6
1	A	385	LEU	3.6
1	A	290	PHE	3.6
1	B	271	ILE	3.5
1	C	174	ASP	3.5
1	A	254	LEU	3.5
1	C	230	ALA	3.5
1	B	274	PRO	3.5
1	C	84	PHE	3.4
1	A	249	GLY	3.4
1	A	145	MET	3.4

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Mol	Chain	Res	Type	RSRZ
1	A	279	ILE	3.4
1	B	265	LEU	3.4
1	A	79	GLY	3.4
1	B	505	THR	3.4
1	A	267	ALA	3.4
1	B	255	GLY	3.4
1	B	249	GLY	3.3
1	A	274	PRO	3.3
1	B	542	LYS	3.3
1	B	509	SER	3.3
1	B	517	ASN	3.3
1	A	357	GLY	3.3
1	B	301	GLY	3.3
1	A	505	THR	3.3
1	A	141	TRP	3.2
1	A	466	ILE	3.2
1	C	88	ALA	3.2
1	A	304	TYR	3.2
1	A	263	ALA	3.2
1	B	386	ALA	3.2
1	A	81	LYS	3.1
1	B	121	LYS	3.1
1	B	503	GLY	3.1
1	A	60	TRP	3.1
1	A	137	ARG	3.0
1	B	148	ALA	3.0
1	A	250	THR	3.0
1	B	498	ALA	3.0
1	A	245	ALA	3.0
1	B	273	ASP	3.0
1	A	252	CYS	3.0
1	B	389	SER	2.9
1	C	273	ASP	2.9
1	A	295	ILE	2.9
1	B	523	ILE	2.9
1	A	519	GLN	2.9
1	A	278	THR	2.9
1	A	296	SER	2.9
1	A	504	LEU	2.9
1	A	523	ILE	2.9
1	B	507	LEU	2.9
1	A	516	SER	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	73	THR	2.8
1	A	277	TRP	2.8
1	A	508	LEU	2.8
1	B	470	ASP	2.8
1	B	372	ALA	2.8
1	B	62	VAL	2.8
1	B	140	SER	2.8
1	C	509	SER	2.8
1	B	248	PHE	2.7
1	A	299	GLY	2.7
1	A	513	ASN	2.7
1	A	582	ARG	2.7
1	B	134	PRO	2.7
1	C	83	SER	2.7
1	A	273	ASP	2.7
1	B	147	ALA	2.7
1	B	551	LEU	2.7
1	C	568	ARG	2.7
1	C	233	TRP	2.7
1	B	220	ALA	2.7
1	B	469	ALA	2.7
1	C	58	LEU	2.7
1	A	369	PHE	2.7
1	B	85	THR	2.7
1	A	286	LEU	2.6
1	B	291	ILE	2.6
1	B	488	ASN	2.6
1	A	260	GLN	2.6
1	A	88	ALA	2.6
1	B	479	MET	2.6
1	A	80	PHE	2.6
1	B	84	PHE	2.6
1	A	251	ALA	2.6
1	B	373	TRP	2.5
1	A	215	GLN	2.5
1	B	272	GLU	2.5
1	B	257	GLY	2.5
1	C	226	GLY	2.5
1	A	298	VAL	2.5
1	A	259	LEU	2.5
1	B	127	LEU	2.5
1	A	146	PHE	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	80	PHE	2.4
1	B	139	VAL	2.4
1	A	493	ALA	2.4
1	B	128	GLY	2.4
1	B	136	PHE	2.4
1	A	480	SER	2.4
1	A	492	THR	2.3
1	A	573	HIS	2.3
1	A	82	ASP	2.3
1	B	225	ILE	2.3
1	B	240	ILE	2.3
1	B	388	ILE	2.3
1	B	550	TYR	2.3
1	B	516	SER	2.3
1	C	451	GLN	2.3
1	A	498	ALA	2.3
1	C	79	GLY	2.3
1	A	311	VAL	2.3
1	A	459	ILE	2.2
1	C	229	GLY	2.2
1	A	499	THR	2.2
1	C	231	GLU	2.2
1	A	496	GLY	2.2
1	C	61	SER	2.2
1	C	64	VAL	2.2
1	B	244	ILE	2.2
1	C	227	GLU	2.2
1	B	88	ALA	2.2
1	C	87	PHE	2.2
1	C	85	THR	2.2
1	B	556	GLN	2.2
1	A	302	ILE	2.1
1	C	452	ILE	2.1
1	B	299	GLY	2.1
1	B	295	ILE	2.1
1	C	295	ILE	2.1
1	B	104	ILE	2.1
1	B	130	ILE	2.1
1	B	276	ASP	2.1
1	B	288	LEU	2.1
1	A	443	LEU	2.1
1	A	444	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	69	ILE	2.1
1	B	73	THR	2.1
1	A	500	ALA	2.1
1	B	472	ALA	2.1
1	A	57	SER	2.0
1	A	149	GLY	2.0
1	B	501	ALA	2.0
1	B	215	GLN	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](#)

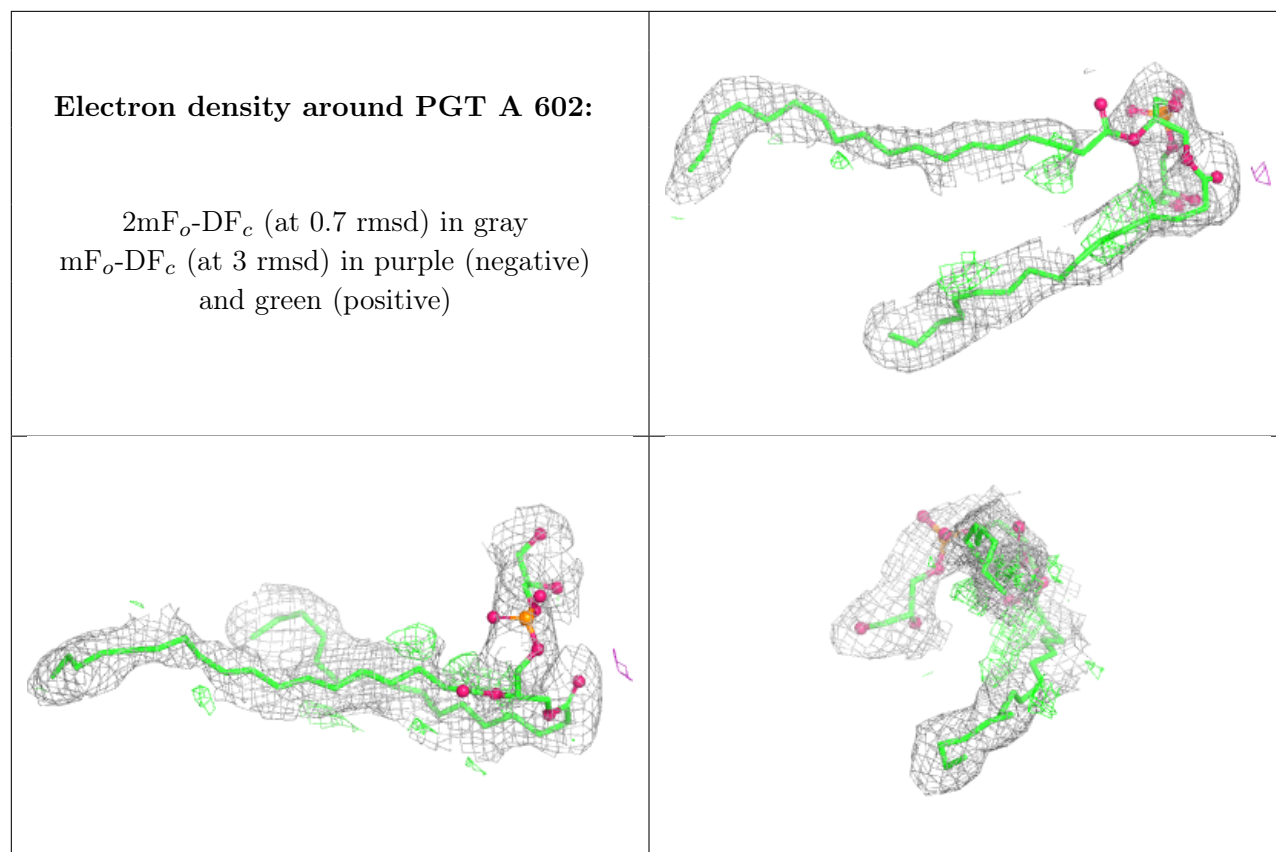
There are no oligosaccharides in this entry.

## 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	CHT	C	601	7/7	0.84	0.27	99,103,112,121	0
2	CL	A	601	1/1	0.85	0.21	105,105,105,105	0
3	PGT	A	602	51/51	0.91	0.13	24,47,72,73	30
2	CL	C	602	1/1	0.98	0.06	57,57,57,57	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.