



Full wwPDB EM Validation Report ⓘ

Jul 16, 2025 – 01:36 PM JST

PDB ID : 8JU5 / pdb_00008ju5
EMDB ID : EMD-36659
Title : Structure of human TRPV4 with antagonist A1
Authors : Fan, J.; Lei, X.
Deposited on : 2023-06-24
Resolution : 3.74 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0rc1
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

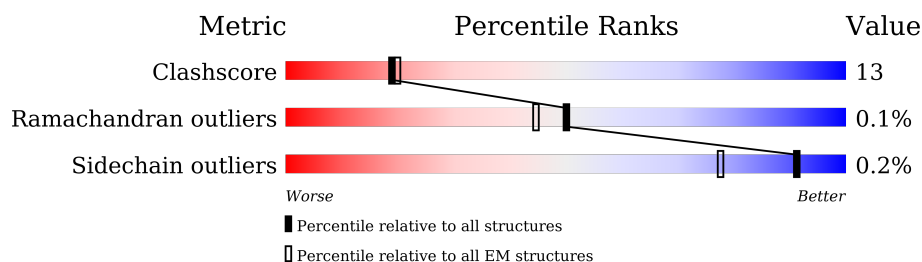
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.74 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)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	1144	39% 13% 48%
1	B	1144	40% 15% 46%
1	C	1144	37% 14% 48%
1	D	1144	37% 17% 46%

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
2	F3L	B	1201	-	-	X	-
2	F3L	D	1201	-	-	X	-

2 Entry composition [i](#)

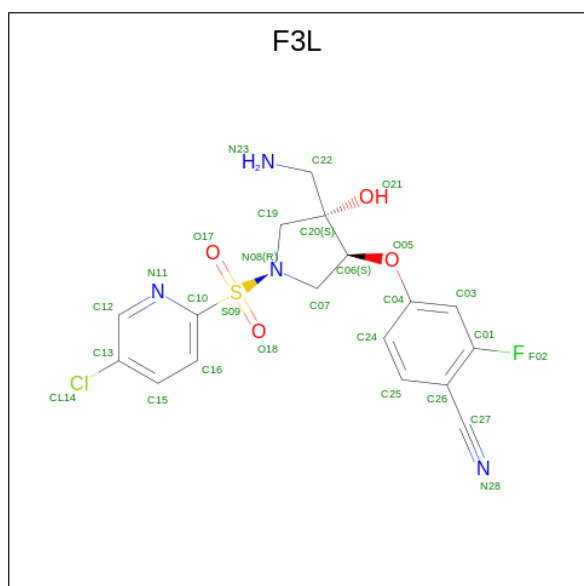
There are 2 unique types of molecules in this entry. The entry contains 19567 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Transient receptor potential cation channel subfamily V member 4,3C-GFP.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	595	Total	C	N	O	S	0	0
			4762	3099	791	848	24		
1	D	622	Total	C	N	O	S	0	0
			4986	3248	825	887	26		
1	C	595	Total	C	N	O	S	0	0
			4765	3105	790	847	23		
1	B	623	Total	C	N	O	S	0	0
			4998	3254	829	888	27		

- Molecule 2 is 4-[(3 {S},4 {S})-4-(aminomethyl)-1-(5-chloranylpyridin-2-yl)sulfonyl-4-oxidanyl-pyrrolidin-3-yl]oxy-2-fluoranyl-benzenecarbonitrile (CCD ID: F3L) (formula: C₁₇H₁₆ClFN₄O₄S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms							AltConf
2	D	1	Total	C	Cl	F	N	O	S	0
			28	17	1	1	4	4	1	

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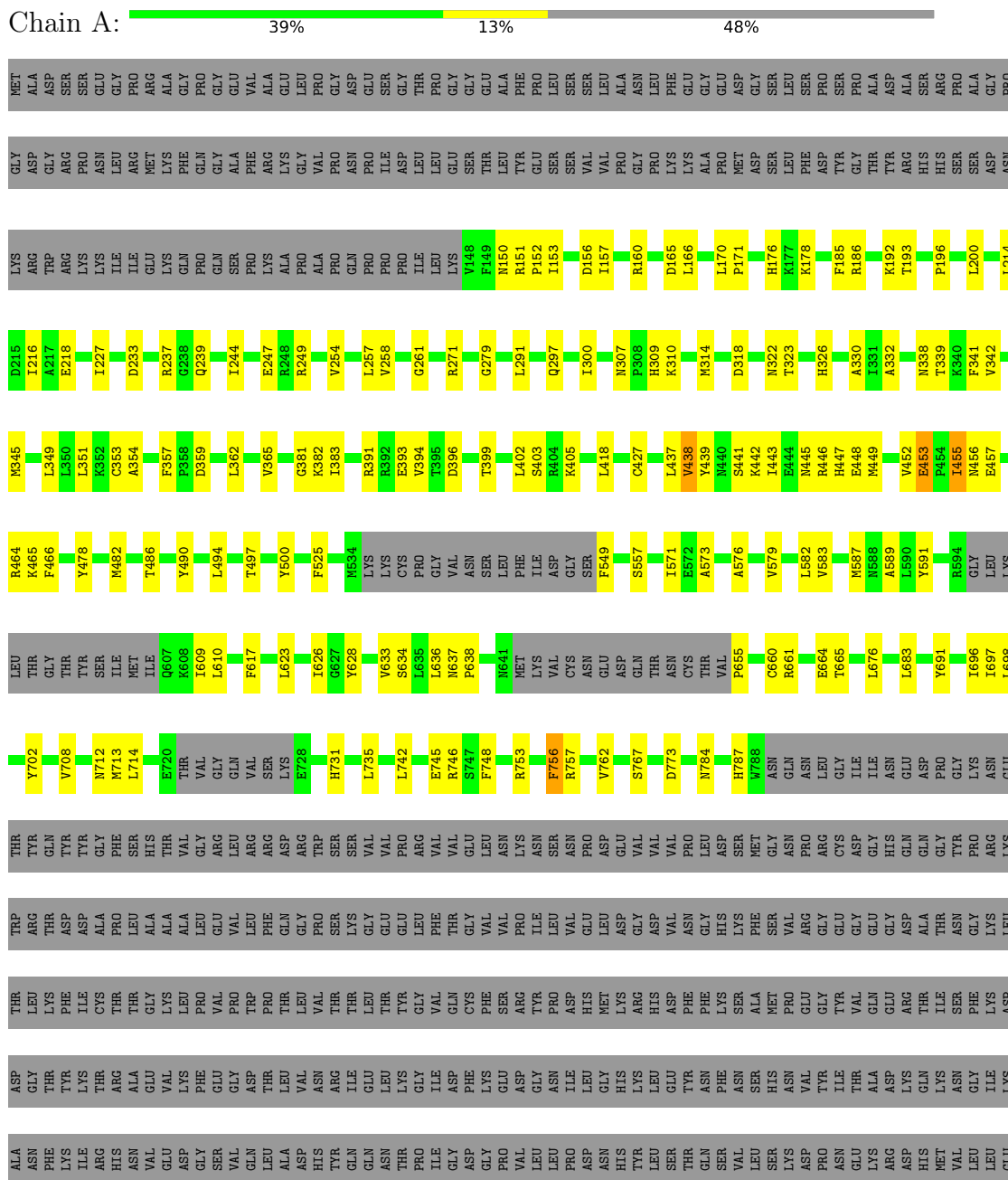
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Mol	Chain	Residues	Atoms							AltConf
			Total	C	Cl	F	N	O	S	
2	B	1	28	17	1	1	4	4	1	0

3 Residue-property plots

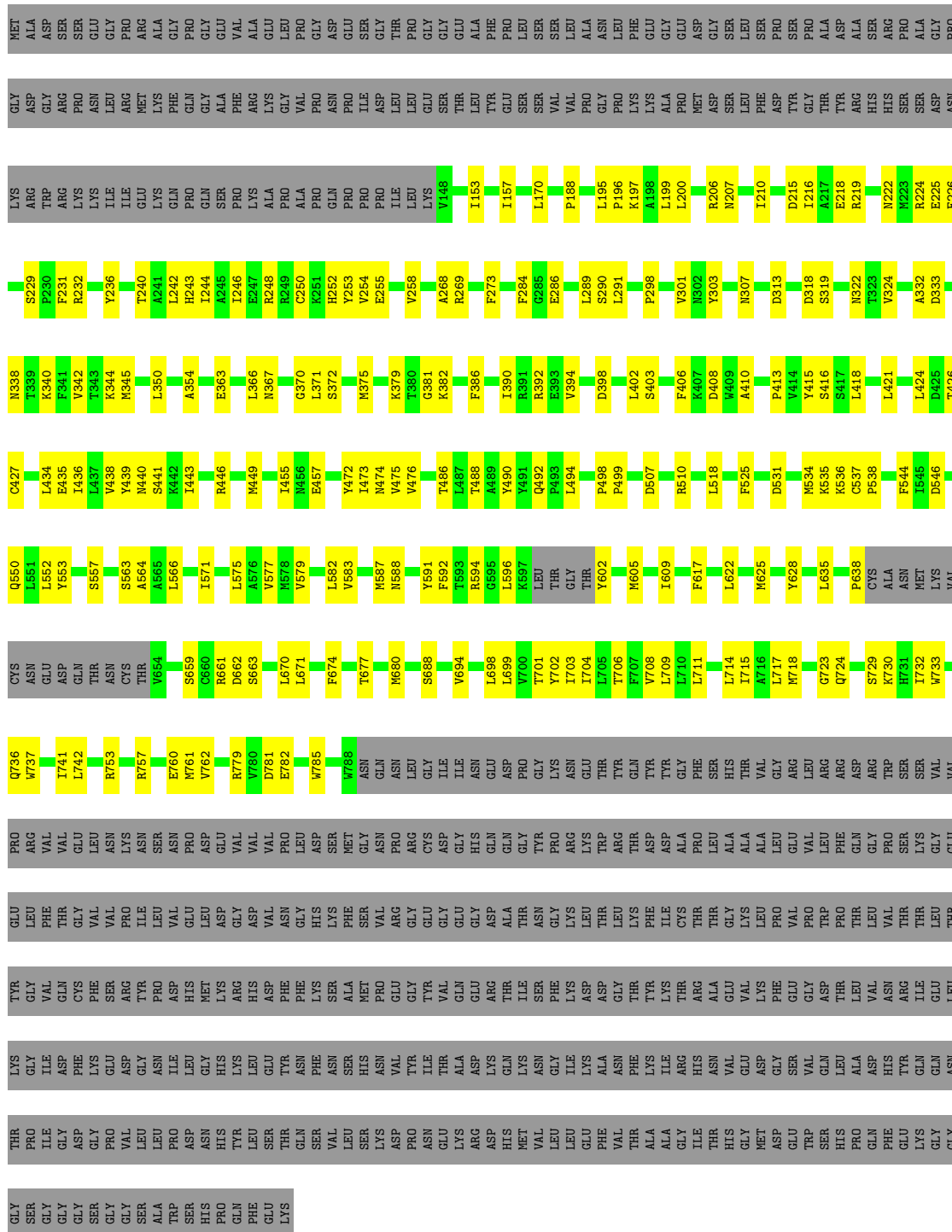
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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: Transient receptor potential cation channel subfamily V member 4,3C-GFP



- Molecule 1: Transient receptor potential cation channel subfamily V member 4,3C-GFP

Chain D: 37% 17% 46%



- Molecule 1: Transient receptor potential cation channel subfamily V member 4,3C-GFP

[illegible][illegible]



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	102087	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor

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: F3L

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	0.18	0/4871	0.43	3/6608 (0.0%)
1	B	0.12	0/5115	0.34	0/6936
1	C	0.15	0/4874	0.41	2/6610 (0.0%)
1	D	0.13	0/5103	0.36	0/6921
All	All	0.15	0/19963	0.39	5/27075 (0.0%)

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	1

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	C	655	PRO	N-CA-CB	6.73	110.40	103.00
1	A	655	PRO	N-CA-CB	6.73	110.40	103.00
1	A	609	ILE	N-CA-C	-5.43	108.56	113.71
1	A	455	ILE	N-CA-C	-5.32	106.99	111.56
1	C	510	ARG	CA-C-O	-5.02	115.10	120.42

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	453	GLU	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	4762	0	4780	109	0
1	B	4998	0	5052	124	0
1	C	4765	0	4781	143	0
1	D	4986	0	5036	148	0
2	B	28	0	0	12	0
2	D	28	0	0	12	0
All	All	19567	0	19649	492	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 13.

All (492) 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:C:502:TYR:CE1	1:C:511:LEU:HD22	1.64	1.32
1:C:502:TYR:CE2	1:C:511:LEU:HD21	1.75	1.19
1:C:502:TYR:CZ	1:C:511:LEU:HD22	1.86	1.10
1:D:550:GLN:HG2	2:D:1201:F3L:O18	1.51	1.10
1:C:502:TYR:CZ	1:C:511:LEU:CD2	2.37	1.08
1:C:502:TYR:CG	1:C:511:LEU:HD23	1.92	1.04
1:C:502:TYR:CE1	1:C:511:LEU:CD2	2.41	1.04
1:C:502:TYR:CE2	1:C:511:LEU:CD2	2.40	1.03
1:C:502:TYR:CD2	1:C:511:LEU:CD2	2.48	0.96
1:C:502:TYR:CD1	1:C:511:LEU:CD2	2.49	0.95
1:A:549:PHE:N	1:A:591:TYR:HH	1.63	0.94
1:A:745:GLU:O	1:A:753:ARG:NH2	2.03	0.92
1:D:474:ASN:ND2	2:D:1201:F3L:C27	2.32	0.91
1:C:502:TYR:CG	1:C:511:LEU:CD2	2.54	0.89
1:C:315:ARG:HH12	1:C:353:CYS:HB2	1.35	0.89
1:A:753:ARG:O	1:A:757:ARG:HG3	1.74	0.88
1:B:474:ASN:HB2	2:B:1201:F3L:N28	1.86	0.88
1:C:502:TYR:CD2	1:C:511:LEU:HD21	2.07	0.86
1:C:502:TYR:CD1	1:C:511:LEU:HD22	2.11	0.85
1:C:509:LEU:HD12	1:C:509:LEU:O	1.79	0.82
1:D:544:PHE:O	1:D:736:GLN:NE2	2.12	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:437:LEU:O	1:A:439:TYR:N	2.13	0.81
1:D:474:ASN:CB	2:D:1201:F3L:N28	2.45	0.79
1:D:474:ASN:HB2	2:D:1201:F3L:N28	1.97	0.79
1:C:502:TYR:CD1	1:C:511:LEU:HD23	2.14	0.78
1:A:239:GLN:NE2	1:B:411:TYR:OH	2.17	0.76
1:D:443:ILE:HA	1:D:446:ARG:HD2	1.68	0.74
1:C:510:ARG:HG2	1:C:510:ARG:HH21	1.54	0.73
1:B:424:LEU:HA	1:B:433:VAL:HG12	1.72	0.72
1:A:249:ARG:NH1	1:A:297:GLN:OE1	2.23	0.72
1:A:661:ARG:HB2	1:A:665:THR:HG21	1.70	0.72
1:C:180:LEU:HD12	1:C:186:ARG:HH22	1.56	0.71
1:D:671:LEU:HD23	1:C:696:ILE:HD12	1.72	0.71
1:B:474:ASN:ND2	2:B:1201:F3L:C27	2.54	0.71
1:B:544:PHE:O	1:B:736:GLN:NE2	2.22	0.71
1:C:406:PHE:HB2	1:C:418:LEU:HB3	1.73	0.70
1:C:760:GLU:OE2	1:C:779:ARG:NH1	2.26	0.69
1:C:243:HIS:O	1:C:247:GLU:HB2	1.92	0.69
1:B:440:ASN:HD21	1:B:535:LYS:HD3	1.57	0.68
1:D:474:ASN:ND2	2:D:1201:F3L:N28	2.40	0.68
1:B:254:VAL:HG11	1:B:300:ILE:HD12	1.74	0.68
1:C:267:GLN:OE1	1:C:269:ARG:NH2	2.26	0.68
1:C:315:ARG:HH21	1:C:357:PHE:HD2	1.42	0.67
1:A:351:LEU:HD21	1:A:394:VAL:HG11	1.75	0.67
1:D:518:LEU:HD11	1:D:564:ALA:HB2	1.77	0.67
1:A:391:ARG:NH1	1:A:453:GLU:OE2	2.27	0.67
1:D:333:ASP:OD1	1:D:338:ASN:ND2	2.23	0.67
1:A:332:ALA:HB2	1:A:342:VAL:HG21	1.76	0.66
1:A:486:THR:HA	1:A:582:LEU:HD11	1.77	0.66
1:A:151:ARG:NH1	1:A:186:ARG:O	2.28	0.66
1:D:298:PRO:HG3	1:D:345:MET:HE1	1.75	0.66
1:B:591:TYR:HE2	2:B:1201:F3L:C16	2.09	0.66
1:B:474:ASN:CB	2:B:1201:F3L:N28	2.56	0.66
1:A:676:LEU:HD12	1:A:683:LEU:HD11	1.78	0.66
1:D:474:ASN:CG	2:D:1201:F3L:N28	2.53	0.66
1:C:509:LEU:HD12	1:C:509:LEU:C	2.19	0.66
1:B:534:MET:HG2	1:B:535:LYS:H	1.59	0.66
1:C:157:ILE:HG12	1:C:160:ARG:HH21	1.62	0.65
1:C:180:LEU:HB2	1:C:222:ASN:HD21	1.62	0.65
1:A:227:ILE:HG21	1:A:257:LEU:HD11	1.78	0.64
1:A:696:ILE:HD12	1:B:671:LEU:HD23	1.78	0.64
1:C:714:LEU:HD12	1:B:711:LEU:HD12	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:MET:HE3	1:B:436:ILE:HD12	1.80	0.64
1:C:638:PRO:HD2	1:C:661:ARG:HG2	1.81	0.63
1:A:486:THR:HG22	1:A:582:LEU:HD21	1.81	0.63
1:C:351:LEU:HD11	1:C:394:VAL:HG21	1.78	0.63
1:A:466:PHE:HB2	1:A:756:PHE:CE1	2.34	0.63
1:A:150:ASN:H	1:A:153:ILE:HD12	1.63	0.62
1:B:406:PHE:HB2	1:B:418:LEU:HB3	1.81	0.62
1:D:732:ILE:HG23	1:D:736:GLN:HE22	1.63	0.62
1:D:375:MET:HE3	1:D:436:ILE:HD12	1.82	0.62
1:B:442:LYS:HG3	1:B:444:GLU:HG2	1.82	0.62
1:A:576:ALA:HB1	1:D:694:VAL:HG11	1.81	0.62
1:B:559:LEU:HD22	1:B:581:ALA:HB2	1.80	0.62
1:A:466:PHE:HB2	1:A:756:PHE:CZ	2.35	0.62
1:C:307:ASN:ND2	1:C:310:LYS:O	2.33	0.62
1:C:584:LEU:HA	1:C:587:MET:HE2	1.82	0.61
1:C:484:ILE:O	1:C:488:THR:N	2.33	0.61
1:C:607:GLN:HG2	1:C:608:LYS:H	1.65	0.61
1:D:354:ALA:HB2	1:D:402:LEU:HD11	1.83	0.61
1:D:434:LEU:HG	1:D:742:LEU:HD11	1.83	0.61
1:C:661:ARG:HB2	1:C:665:THR:HG21	1.82	0.61
1:C:434:LEU:HG	1:C:742:LEU:HD11	1.81	0.61
1:A:418:LEU:HD23	1:A:762:VAL:HG21	1.83	0.61
1:D:350:LEU:HG	1:D:402:LEU:HD13	1.81	0.61
1:D:406:PHE:HB2	1:D:418:LEU:HB3	1.83	0.60
1:D:427:CYS:HB2	1:D:757:ARG:HH21	1.67	0.60
1:D:662:ASP:OD1	1:D:663:SER:N	2.33	0.60
1:B:381:GLY:HA2	1:B:449:MET:HE1	1.83	0.60
1:D:434:LEU:HD13	1:D:455:ILE:HD12	1.84	0.60
1:A:339:THR:HA	1:A:342:VAL:HG12	1.82	0.60
1:B:434:LEU:HD13	1:B:455:ILE:HD12	1.84	0.59
1:C:264:VAL:HB	1:C:312:ALA:HB2	1.84	0.59
1:D:418:LEU:HD21	1:D:762:VAL:HG11	1.85	0.59
1:C:318:ASP:OD1	1:C:322:ASN:N	2.36	0.59
1:D:170:LEU:HD21	1:D:216:ILE:HG12	1.83	0.58
1:D:415:TYR:N	1:D:782:GLU:O	2.30	0.58
1:A:338:ASN:HA	1:A:341:PHE:CE1	2.39	0.58
1:A:427:CYS:SG	1:A:757:ARG:CD	2.92	0.58
1:C:633:VAL:HG12	1:C:661:ARG:HH11	1.69	0.58
1:B:418:LEU:HD21	1:B:762:VAL:HG11	1.85	0.58
1:C:510:ARG:HH21	1:C:510:ARG:CG	2.16	0.58
1:C:329:VAL:HG22	1:C:385:ILE:HG12	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:502:TYR:CZ	1:C:511:LEU:HD21	2.13	0.58
1:B:387:GLN:OE1	1:B:391:ARG:NH2	2.37	0.58
1:A:157:ILE:HG21	1:A:166:LEU:HB3	1.85	0.58
1:B:711:LEU:O	1:B:715:ILE:HD12	2.03	0.58
1:D:591:TYR:OH	2:D:1201:F3L:C03	2.52	0.57
1:C:420:ASP:OD1	1:C:421:LEU:N	2.37	0.57
1:A:427:CYS:SG	1:A:757:ARG:HD3	2.45	0.57
1:A:748:PHE:HB2	1:A:753:ARG:HH21	1.69	0.57
1:C:301:VAL:HG11	1:C:349:LEU:HD21	1.87	0.57
1:B:426:THR:O	1:B:753:ARG:NH2	2.38	0.57
1:A:178:LYS:HD2	1:A:185:PHE:HZ	1.70	0.56
1:A:753:ARG:O	1:A:757:ARG:CG	2.50	0.56
1:C:502:TYR:HE1	1:C:510:ARG:NH1	2.04	0.56
1:B:426:THR:HG22	1:B:432:SER:HB3	1.87	0.56
1:D:207:ASN:O	1:D:253:TYR:OH	2.23	0.56
1:A:452:VAL:HG22	1:A:453:GLU:H	1.70	0.56
1:B:215:ASP:O	1:B:219:ARG:HG2	2.05	0.56
1:D:596:LEU:O	1:D:733:TRP:NE1	2.39	0.55
1:B:366:LEU:HB3	1:B:370:GLY:HA2	1.88	0.55
1:D:424:LEU:HD12	1:D:455:ILE:HD11	1.87	0.55
1:A:698:LEU:HD22	1:B:583:VAL:HG21	1.89	0.55
1:D:625:MET:HG2	1:D:670:LEU:HD11	1.88	0.55
1:D:680:MET:HE1	1:C:682:ASP:HA	1.89	0.55
1:B:494:LEU:HD22	1:B:575:LEU:HD22	1.86	0.55
1:B:486:THR:HA	1:B:582:LEU:HD11	1.89	0.55
1:D:229:SER:HB3	1:D:231:PHE:CE1	2.42	0.55
1:D:486:THR:HA	1:D:582:LEU:HD11	1.89	0.55
1:B:760:GLU:OE2	1:B:779:ARG:NH1	2.39	0.55
1:A:307:ASN:ND2	1:A:310:LYS:O	2.40	0.55
1:D:729:SER:O	1:D:730:LYS:HG2	2.07	0.55
1:C:195:LEU:HD13	1:C:213:LEU:HD11	1.88	0.55
1:B:726:SER:HB3	1:B:729:SER:HB2	1.88	0.55
1:A:583:VAL:HG12	1:A:587:MET:HE1	1.89	0.55
1:C:265:HIS:NE2	1:C:313:ASP:OD1	2.33	0.55
1:A:393:GLU:HA	1:A:403:SER:HB2	1.89	0.54
1:B:536:LYS:HG2	1:B:537:CYS:H	1.72	0.54
1:A:456:ASN:OD1	1:A:457:GLU:N	2.41	0.54
1:C:553:TYR:HA	1:C:556:TYR:HB3	1.87	0.54
1:B:278:GLU:OE1	1:B:320:ARG:NH2	2.36	0.54
1:C:338:ASN:HA	1:C:341:PHE:CE1	2.42	0.54
1:B:507:ASP:OD1	1:B:510:ARG:NH1	2.35	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:453:GLU:O	1:A:455:ILE:N	2.40	0.54
1:B:434:LEU:HG	1:B:742:LEU:HD11	1.88	0.54
1:B:474:ASN:ND2	2:B:1201:F3L:C01	2.70	0.54
1:A:447:HIS:HB2	1:A:731:HIS:CE1	2.42	0.54
1:D:474:ASN:HD22	2:D:1201:F3L:C27	2.14	0.54
1:D:255:GLU:HG2	1:D:303:TYR:CZ	2.42	0.54
1:B:553:TYR:CE1	2:B:1201:F3L:C16	2.90	0.54
1:B:566:LEU:HB3	1:B:571:ILE:HB	1.89	0.54
1:C:290:SER:HA	1:C:324:VAL:HG23	1.89	0.54
1:C:357:PHE:CE2	1:C:359:ASP:HB3	2.43	0.54
1:B:231:PHE:HB2	1:B:236:TYR:O	2.08	0.54
1:B:596:LEU:O	1:B:733:TRP:NE1	2.41	0.54
1:B:662:ASP:OD1	1:B:663:SER:N	2.41	0.53
1:A:494:LEU:HB3	1:D:638:PRO:HG3	1.90	0.53
1:B:456:ASN:OD1	1:B:734:LYS:NZ	2.41	0.53
1:A:157:ILE:HG12	1:A:160:ARG:HH21	1.74	0.53
1:D:440:ASN:HD21	1:D:535:LYS:HD3	1.72	0.53
1:B:628:TYR:CE2	1:B:702:TYR:HB2	2.44	0.53
1:C:180:LEU:O	1:C:186:ARG:NH1	2.41	0.53
1:C:767:SER:OG	1:C:773:ASP:OD1	2.27	0.53
1:D:318:ASP:OD1	1:D:322:ASN:N	2.42	0.53
1:B:625:MET:HG2	1:B:670:LEU:HD11	1.91	0.53
1:C:607:GLN:HA	1:C:610:LEU:HD13	1.90	0.53
1:C:511:LEU:HD12	1:C:511:LEU:O	2.09	0.53
1:C:482:MET:HA	1:C:482:MET:HE2	1.91	0.52
1:B:617:PHE:HZ	1:B:710:LEU:HD23	1.74	0.52
1:D:507:ASP:OD1	1:D:510:ARG:NH1	2.36	0.52
1:A:323:THR:HG22	1:A:326:HIS:ND1	2.23	0.52
1:A:571:ILE:HG22	1:A:573:ALA:H	1.74	0.52
1:C:396:ASP:OD1	1:C:399:THR:OG1	2.27	0.52
1:A:427:CYS:SG	1:A:757:ARG:HD2	2.49	0.52
1:A:638:PRO:HG3	1:B:494:LEU:HB2	1.92	0.52
1:D:670:LEU:HG	1:C:696:ILE:HD13	1.91	0.52
1:C:351:LEU:HD21	1:C:394:VAL:HG11	1.91	0.52
1:D:553:TYR:HE2	2:D:1201:F3L:C12	2.23	0.52
1:D:534:MET:HG2	1:D:535:LYS:H	1.74	0.52
1:C:329:VAL:HG13	1:C:385:ILE:HG21	1.92	0.52
1:D:488:THR:O	1:D:492:GLN:HG3	2.11	0.51
1:D:490:TYR:HA	1:C:634:SER:HB2	1.92	0.51
1:A:628:TYR:CE2	1:A:702:TYR:HB2	2.45	0.51
1:A:696:ILE:HD13	1:B:670:LEU:HG	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:274:GLN:OE1	1:C:320:ARG:NH2	2.35	0.51
1:C:380:THR:HG22	1:C:382:LYS:HE3	1.93	0.51
1:B:325:LEU:HB3	1:B:346:TYR:HE1	1.75	0.51
1:D:760:GLU:OE2	1:D:779:ARG:NH1	2.37	0.51
1:C:628:TYR:CE2	1:C:702:TYR:HB2	2.45	0.51
1:D:537:CYS:N	1:D:538:PRO:HD3	2.26	0.51
1:C:617:PHE:CE2	1:C:713:MET:HB2	2.46	0.51
1:A:186:ARG:HB3	1:A:193:THR:HG22	1.92	0.51
1:A:247:GLU:HB2	1:A:291:LEU:HD21	1.93	0.51
1:D:258:VAL:HG11	1:D:303:TYR:HE2	1.75	0.51
1:D:381:GLY:HA2	1:D:449:MET:HE1	1.93	0.51
1:D:628:TYR:CE2	1:D:702:TYR:HB2	2.46	0.51
1:C:234:ILE:HB	1:C:271:ARG:HH12	1.76	0.51
1:D:457:GLU:OE2	1:D:457:GLU:N	2.44	0.50
1:C:556:TYR:CE1	1:C:582:LEU:HD22	2.46	0.50
1:B:591:TYR:CE2	2:B:1201:F3L:C16	2.93	0.50
1:D:426:THR:O	1:D:753:ARG:NH2	2.45	0.50
1:C:658:PRO:HA	1:C:669:PHE:HZ	1.76	0.50
1:D:439:TYR:HB3	1:D:535:LYS:HE2	1.93	0.50
1:D:711:LEU:O	1:D:715:ILE:HD12	2.11	0.50
1:C:283:TYR:OH	1:C:322:ASN:ND2	2.43	0.50
1:B:559:LEU:HA	1:B:562:VAL:HG12	1.93	0.50
1:D:231:PHE:HB2	1:D:236:TYR:O	2.12	0.50
1:C:511:LEU:HD12	1:C:511:LEU:C	2.36	0.50
1:B:537:CYS:N	1:B:538:PRO:HD3	2.26	0.50
1:D:410:ALA:HB1	1:D:415:TYR:HD2	1.76	0.50
1:C:510:ARG:CG	1:C:510:ARG:NH2	2.72	0.50
1:C:188:PRO:O	1:C:232:ARG:NH2	2.45	0.50
1:B:660:CYS:SG	1:B:661:ARG:N	2.84	0.50
1:A:362:LEU:O	1:A:365:VAL:HG12	2.11	0.50
1:A:497:THR:HG23	1:A:500:TYR:H	1.76	0.50
1:D:289:LEU:HD11	1:D:301:VAL:HG13	1.94	0.50
1:D:332:ALA:HB2	1:D:342:VAL:HG11	1.94	0.50
1:D:416:SER:HA	1:D:781:ASP:HA	1.93	0.50
1:B:362:LEU:O	1:B:365:VAL:HG12	2.11	0.49
1:D:699:LEU:O	1:D:703:ILE:HD12	2.12	0.49
1:A:482:MET:HE2	1:A:482:MET:HA	1.94	0.49
1:B:307:ASN:ND2	1:B:310:LYS:H	2.09	0.49
1:B:215:ASP:O	1:B:218:GLU:HG2	2.12	0.49
1:D:579:VAL:HG13	1:C:631:ALA:HB1	1.95	0.49
1:C:485:PHE:CG	1:C:582:LEU:HD12	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:457:GLU:N	1:B:457:GLU:OE2	2.46	0.49
1:B:607:GLN:NE2	1:B:733:TRP:HB2	2.27	0.49
1:B:372:SER:HB3	1:B:375:MET:HG2	1.95	0.49
1:D:583:VAL:O	1:D:587:MET:HG3	2.13	0.49
1:B:501:PRO:HB3	1:B:503:ARG:NH2	2.26	0.49
1:D:617:PHE:CE1	1:D:709:LEU:HG	2.48	0.48
1:B:761:MET:HA	1:B:761:MET:HE2	1.95	0.48
1:A:176:HIS:HB3	1:A:178:LYS:HE2	1.95	0.48
1:D:553:TYR:CE2	2:D:1201:F3L:C13	2.96	0.48
1:C:217:ALA:O	1:C:220:THR:OG1	2.27	0.48
1:C:372:SER:H	1:C:375:MET:HE2	1.77	0.48
1:D:659:SER:HA	1:D:688:SER:HA	1.95	0.48
1:C:229:SER:HB3	1:C:231:PHE:CE1	2.47	0.48
1:B:344:LYS:HE2	1:B:344:LYS:HA	1.94	0.48
1:A:465:LYS:NZ	1:A:757:ARG:O	2.46	0.48
1:D:622:LEU:HD12	1:C:697:ILE:HG12	1.95	0.48
1:B:318:ASP:OD1	1:B:322:ASN:N	2.47	0.48
1:B:346:TYR:HE2	1:B:389:ILE:HG12	1.79	0.48
1:B:553:TYR:HE1	2:B:1201:F3L:C16	2.27	0.48
1:C:387:GLN:O	1:C:391:ARG:HG2	2.14	0.48
1:A:525:PHE:HB2	1:A:557:SER:HB2	1.96	0.48
1:D:546:ASP:HA	1:D:594:ARG:HH22	1.78	0.48
1:D:531:ASP:HB2	1:D:536:LYS:HD2	1.96	0.48
1:A:579:VAL:HG11	1:D:635:LEU:HD11	1.96	0.48
1:D:443:ILE:HD12	1:D:443:ILE:H	1.78	0.48
1:D:215:ASP:O	1:D:219:ARG:HG2	2.14	0.48
1:C:274:GLN:O	1:C:280:GLY:HA3	2.14	0.48
1:B:474:ASN:ND2	1:B:592:PHE:HE1	2.11	0.48
1:A:381:GLY:HA3	1:A:443:ILE:HD11	1.96	0.47
1:D:206:ARG:HH22	1:D:252:HIS:HB2	1.78	0.47
1:A:160:ARG:NH2	1:A:165:ASP:OD2	2.47	0.47
1:D:332:ALA:O	1:D:382:LYS:NZ	2.39	0.47
1:C:332:ALA:HB2	1:C:342:VAL:HG11	1.96	0.47
1:B:514:GLU:O	1:B:518:LEU:HG	2.15	0.47
1:D:195:LEU:HB3	1:D:196:PRO:HD3	1.96	0.47
1:D:718:MET:HE2	1:C:711:LEU:HD21	1.95	0.47
1:C:502:TYR:CD2	1:C:511:LEU:HD23	2.23	0.47
1:B:472:TYR:HA	1:B:475:VAL:HG12	1.96	0.47
1:A:383:ILE:HD13	1:A:448:GLU:HG3	1.96	0.47
1:A:438:VAL:HG12	1:A:446:ARG:HG2	1.96	0.47
1:A:696:ILE:HD11	1:B:674:PHE:HB2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:408:ASP:OD2	1:B:779:ARG:NH2	2.41	0.47
1:A:691:TYR:OH	1:B:572:GLU:OE2	2.17	0.47
1:B:317:GLN:HB3	1:B:321:GLY:HA2	1.97	0.47
1:B:332:ALA:O	1:B:382:LYS:NZ	2.36	0.47
1:D:761:MET:HE2	1:D:761:MET:HA	1.96	0.47
1:D:224:ARG:NH1	1:D:225:GLU:OE1	2.47	0.47
1:C:315:ARG:NH1	1:C:353:CYS:HB2	2.18	0.47
1:A:445:ASN:HB2	1:A:449:MET:SD	2.55	0.47
1:D:718:MET:SD	1:B:715:ILE:HG13	2.55	0.47
1:A:314:MET:SD	1:A:353:CYS:HB3	2.55	0.46
1:D:398:ASP:OD1	1:D:398:ASP:N	2.47	0.46
1:B:474:ASN:ND2	2:B:1201:F3L:C26	2.78	0.46
1:A:254:VAL:HG11	1:A:300:ILE:HD12	1.98	0.46
1:A:391:ARG:HG3	1:A:405:LYS:HD3	1.96	0.46
1:D:269:ARG:NH1	1:D:319:SER:OG	2.48	0.46
1:C:638:PRO:HG3	1:C:660:CYS:HB3	1.96	0.46
1:C:781:ASP:OD1	1:C:781:ASP:N	2.44	0.46
1:D:222:ASN:O	1:D:226:PHE:N	2.48	0.46
1:D:303:TYR:O	1:D:307:ASN:HB3	2.15	0.46
1:C:237:ARG:H	1:C:270:GLY:HA2	1.81	0.46
1:C:511:LEU:HD13	1:C:511:LEU:HA	1.73	0.46
1:C:553:TYR:HE1	1:C:588:ASN:HB3	1.80	0.46
1:B:447:HIS:CG	1:B:731:HIS:HB3	2.51	0.46
1:A:396:ASP:OD1	1:A:396:ASP:N	2.48	0.46
1:A:345:MET:HE2	1:A:345:MET:HB2	1.85	0.46
1:C:414:VAL:HA	1:C:783:VAL:HG22	1.97	0.46
1:B:434:LEU:HD23	1:B:742:LEU:HD21	1.98	0.46
1:B:723:GLY:O	1:B:724:GLN:CB	2.64	0.46
1:D:197:LYS:HD2	1:D:197:LYS:HA	1.69	0.46
1:C:344:LYS:HE3	1:C:344:LYS:HB2	1.80	0.46
1:B:474:ASN:CG	2:B:1201:F3L:C27	2.88	0.46
1:A:318:ASP:OD1	1:A:322:ASN:N	2.49	0.45
1:A:691:TYR:CD2	1:B:576:ALA:HB2	2.51	0.45
1:D:394:VAL:HG12	1:D:403:SER:HB2	1.97	0.45
1:C:332:ALA:O	1:C:382:LYS:HD2	2.16	0.45
1:A:633:VAL:HA	1:A:636:LEU:HD13	1.97	0.45
1:B:222:ASN:O	1:B:226:PHE:N	2.47	0.45
1:B:462:LYS:NZ	1:B:745:GLU:OE1	2.42	0.45
1:D:215:ASP:HA	1:D:218:GLU:OE2	2.17	0.45
1:C:326:HIS:CE1	1:C:376:MET:HE2	2.52	0.45
1:D:472:TYR:HA	1:D:475:VAL:HG12	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:553:TYR:CE2	2:D:1201:F3L:CL14	3.07	0.45
1:A:192:LYS:HG3	1:A:196:PRO:HB2	1.99	0.45
1:D:674:PHE:HB2	1:C:696:ILE:HD11	1.99	0.45
1:D:714:LEU:HD21	1:B:714:LEU:HD21	1.99	0.45
1:C:209:THR:HG22	1:C:213:LEU:HD23	1.98	0.45
1:C:763:THR:OG1	1:C:774:ARG:NH1	2.49	0.45
1:B:504:THR:O	1:B:508:TYR:N	2.45	0.45
1:A:623:LEU:HA	1:A:626:ILE:HG22	1.98	0.45
1:D:563:SER:OG	1:D:577:VAL:HG23	2.16	0.45
1:D:723:GLY:O	1:D:724:GLN:CB	2.64	0.45
1:B:314:MET:HE1	1:B:352:LYS:HB3	1.99	0.45
1:A:254:VAL:O	1:A:258:VAL:HG12	2.17	0.45
1:C:359:ASP:CG	1:C:360:SER:H	2.25	0.45
1:C:657:TYR:HB2	1:C:658:PRO:HD3	1.98	0.45
1:B:386:PHE:HE1	1:B:433:VAL:HG21	1.81	0.45
1:D:494:LEU:HD11	1:D:575:LEU:HD23	1.98	0.45
1:D:553:TYR:CE2	2:D:1201:F3L:C12	3.00	0.45
1:C:418:LEU:HD21	1:C:762:VAL:HG11	1.98	0.45
1:B:202:LEU:HD21	1:B:205:GLY:HA2	1.97	0.45
1:A:767:SER:OG	1:A:773:ASP:OD1	2.34	0.44
1:D:704:ILE:O	1:D:708:VAL:HG23	2.17	0.44
1:D:290:SER:HA	1:D:324:VAL:HG23	2.00	0.44
1:D:441:SER:O	1:D:446:ARG:NH1	2.50	0.44
1:C:579:VAL:HG11	1:B:635:LEU:HD11	1.98	0.44
1:B:474:ASN:ND2	2:B:1201:F3L:F02	2.37	0.44
1:C:210:ILE:HD13	1:C:213:LEU:HD21	2.00	0.44
1:B:478:TYR:OH	1:B:482:MET:HE3	2.18	0.44
1:A:271:ARG:HH21	1:A:279:GLY:HA3	1.82	0.44
1:A:330:ALA:O	1:A:382:LYS:NZ	2.50	0.44
1:A:617:PHE:CE1	1:A:713:MET:HG2	2.53	0.44
1:D:240:THR:HG23	1:D:242:LEU:H	1.82	0.44
1:C:629:ALA:HB2	1:C:673:LEU:HD22	2.00	0.44
1:B:416:SER:HA	1:B:781:ASP:HA	1.99	0.44
1:B:443:ILE:HD12	1:B:443:ILE:H	1.82	0.44
1:C:176:HIS:HB3	1:C:178:LYS:HE2	2.00	0.44
1:C:340:LYS:HD3	1:C:340:LYS:HA	1.64	0.44
1:B:332:ALA:HB2	1:B:342:VAL:HG11	1.99	0.44
1:B:683:LEU:H	1:B:683:LEU:HD23	1.82	0.44
1:C:275:PRO:HG3	1:C:283:TYR:CE2	2.52	0.44
1:C:482:MET:HE1	1:C:582:LEU:HD13	2.00	0.44
1:A:442:LYS:C	1:A:446:ARG:HH21	2.26	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:250:CYS:O	1:D:254:VAL:HG23	2.17	0.44
1:D:536:LYS:HG2	1:D:537:CYS:H	1.83	0.44
1:B:732:ILE:HG23	1:B:736:GLN:HE22	1.83	0.44
1:A:357:PHE:CE2	1:A:359:ASP:HB3	2.52	0.43
1:D:268:ALA:HB1	1:D:273:PHE:CD2	2.52	0.43
1:C:317:GLN:CG	1:C:321:GLY:HA2	2.48	0.43
1:B:427:CYS:SG	1:B:757:ARG:NE	2.88	0.43
1:A:441:SER:C	1:A:442:LYS:HD3	2.43	0.43
1:D:218:GLU:HG3	1:D:219:ARG:HD3	2.00	0.43
1:D:737:TRP:CE2	1:D:741:ILE:HD11	2.54	0.43
1:C:313:ASP:OD1	1:C:316:ARG:HB2	2.18	0.43
1:A:697:ILE:HG12	1:B:622:LEU:HD12	2.00	0.43
1:D:242:LEU:O	1:D:246:ILE:HG12	2.18	0.43
1:D:440:ASN:ND2	1:D:535:LYS:HD3	2.33	0.43
1:D:498:PRO:HA	1:D:499:PRO:HD3	1.88	0.43
1:B:583:VAL:O	1:B:587:MET:HG3	2.18	0.43
1:D:188:PRO:HA	1:D:232:ARG:HH21	1.84	0.43
1:D:313:ASP:N	1:D:313:ASP:OD1	2.50	0.43
1:C:488:THR:O	1:C:492:GLN:HG2	2.18	0.43
1:C:712:ASN:HA	1:C:715:ILE:HG22	2.00	0.43
1:A:637:ASN:HB3	1:A:660:CYS:HA	2.00	0.43
1:D:206:ARG:HE	1:D:206:ARG:HA	1.82	0.43
1:D:434:LEU:HD23	1:D:742:LEU:HD21	1.99	0.43
1:D:566:LEU:HB3	1:D:571:ILE:HB	2.00	0.43
1:B:737:TRP:CE2	1:B:741:ILE:HD11	2.53	0.43
1:A:170:LEU:HD12	1:A:216:ILE:HA	2.00	0.43
1:D:474:ASN:ND2	1:D:592:PHE:HE1	2.17	0.43
1:C:510:ARG:HG2	1:C:510:ARG:NH2	2.29	0.43
1:B:580:PHE:O	1:B:584:LEU:HD23	2.19	0.43
1:B:240:THR:HG22	1:B:243:HIS:ND1	2.33	0.43
1:B:398:ASP:OD1	1:B:398:ASP:N	2.49	0.43
1:A:466:PHE:CB	1:A:756:PHE:CZ	3.01	0.43
1:D:215:ASP:O	1:D:218:GLU:HG2	2.19	0.43
1:D:473:ILE:HA	1:D:476:VAL:HG22	2.01	0.43
1:C:504:THR:HG22	1:C:506:VAL:H	1.84	0.43
1:C:686:LEU:HD11	1:C:699:LEU:HD22	2.01	0.43
1:C:714:LEU:HD22	1:B:708:VAL:HG22	2.01	0.43
1:A:151:ARG:HB3	1:A:152:PRO:HD3	2.00	0.43
1:A:156:ASP:O	1:A:160:ARG:HG2	2.18	0.43
1:B:154:LEU:HA	1:B:157:ILE:HG22	2.01	0.43
1:B:207:ASN:O	1:B:253:TYR:OH	2.35	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:313:ASP:OD1	1:B:313:ASP:N	2.50	0.42
1:A:170:LEU:HB3	1:A:171:PRO:HD3	2.00	0.42
1:A:714:LEU:HD21	1:D:708:VAL:HG22	2.01	0.42
1:A:784:ASN:HB3	1:A:787:HIS:CD2	2.54	0.42
1:D:240:THR:HG22	1:D:243:HIS:ND1	2.35	0.42
1:B:229:SER:HB3	1:B:231:PHE:CE1	2.54	0.42
1:D:284:PHE:CZ	1:D:291:LEU:HD12	2.54	0.42
1:D:609:ILE:HD13	1:D:717:LEU:HD22	2.01	0.42
1:C:420:ASP:OD1	1:C:422:SER:N	2.52	0.42
1:C:513:GLY:O	1:C:517:THR:HG23	2.20	0.42
1:C:244:ILE:HA	1:C:247:GLU:HB3	2.02	0.42
1:C:386:PHE:HA	1:C:389:ILE:HG22	2.00	0.42
1:A:549:PHE:N	1:A:591:TYR:OH	2.41	0.42
1:D:732:ILE:CG2	1:D:736:GLN:HE22	2.30	0.42
1:C:170:LEU:HB3	1:C:171:PRO:HD3	2.02	0.42
1:C:485:PHE:CD2	1:C:582:LEU:HD12	2.55	0.42
1:B:181:THR:HG22	1:B:222:ASN:HD21	1.85	0.42
1:B:338:ASN:HA	1:B:341:PHE:CE1	2.54	0.42
1:D:286:GLU:HB2	1:D:318:ASP:HB2	2.02	0.42
1:C:156:ASP:O	1:C:160:ARG:HG3	2.19	0.42
1:C:386:PHE:CZ	1:C:390:ILE:HD11	2.55	0.42
1:B:222:ASN:OD1	1:B:225:GLU:HB3	2.20	0.42
1:B:635:LEU:HD22	1:B:695:PHE:HD1	1.84	0.42
1:A:742:LEU:O	1:A:746:ARG:HG3	2.19	0.42
1:D:408:ASP:OD2	1:D:779:ARG:NH2	2.45	0.42
1:D:785:TRP:CD1	1:C:341:PHE:HZ	2.37	0.42
1:C:571:ILE:HG22	1:C:573:ALA:H	1.85	0.42
1:B:195:LEU:HB3	1:B:196:PRO:HD3	2.02	0.42
1:B:326:HIS:HB3	1:B:376:MET:HE1	2.01	0.42
1:A:464:ARG:HA	1:A:464:ARG:HD3	1.75	0.41
1:A:178:LYS:HD2	1:A:185:PHE:CZ	2.54	0.41
1:D:367:ASN:OD1	1:D:371:LEU:N	2.54	0.41
1:D:698:LEU:O	1:D:701:THR:OG1	2.37	0.41
1:C:186:ARG:HE	1:C:193:THR:HG22	1.85	0.41
1:B:368:ASN:OD1	1:B:369:ASP:N	2.52	0.41
1:A:233:ASP:O	1:A:237:ARG:HG2	2.20	0.41
1:A:261:GLY:HA3	1:A:309:HIS:CE1	2.54	0.41
1:D:210:ILE:HD13	1:D:253:TYR:OH	2.21	0.41
1:D:674:PHE:CB	1:C:696:ILE:HD11	2.50	0.41
1:C:635:LEU:HD21	1:C:694:VAL:HG13	2.02	0.41
1:D:421:LEU:HD12	1:D:424:LEU:HB2	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:525:PHE:HB2	1:D:557:SER:HB3	2.02	0.41
1:D:552:LEU:HD23	1:D:588:ASN:OD1	2.20	0.41
1:D:602:TYR:O	1:D:605:MET:HG3	2.20	0.41
1:C:497:THR:OG1	1:C:499:PRO:HD2	2.21	0.41
1:C:512:ALA:O	1:C:515:VAL:N	2.53	0.41
1:C:579:VAL:O	1:C:583:VAL:HG23	2.20	0.41
1:A:610:LEU:HD23	1:A:610:LEU:H	1.85	0.41
1:D:244:ILE:O	1:D:248:ARG:HG2	2.21	0.41
1:A:617:PHE:CZ	1:A:713:MET:HG2	2.56	0.41
1:A:634:SER:O	1:B:575:LEU:HD21	2.21	0.41
1:D:371:LEU:HD21	1:D:379:LYS:HD3	2.01	0.41
1:D:438:VAL:O	1:D:446:ARG:NH2	2.39	0.41
1:B:151:ARG:HH22	1:B:152:PRO:HG3	1.86	0.41
1:B:170:LEU:HD21	1:B:216:ILE:HG12	2.03	0.41
1:A:200:LEU:HD12	1:A:244:ILE:HG21	2.02	0.41
1:A:664:GLU:N	1:A:664:GLU:OE1	2.54	0.41
1:A:708:VAL:HG22	1:B:717:LEU:HD11	2.02	0.41
1:D:413:PRO:HB3	1:D:785:TRP:CE2	2.56	0.41
1:C:231:PHE:O	1:C:237:ARG:HD2	2.21	0.41
1:A:214:LEU:O	1:A:218:GLU:OE1	2.39	0.41
1:A:396:ASP:OD2	1:A:399:THR:OG1	2.38	0.41
1:A:490:TYR:O	1:D:661:ARG:NH2	2.52	0.41
1:D:363:GLU:OE2	1:D:392:ARG:NH1	2.54	0.41
1:D:366:LEU:HD23	1:D:370:GLY:HA2	2.02	0.41
1:D:494:LEU:HD23	1:D:494:LEU:HA	1.93	0.41
1:D:594:ARG:HD3	1:D:736:GLN:HB3	2.02	0.41
1:C:317:GLN:HG3	1:C:321:GLY:HA2	2.03	0.41
1:B:333:ASP:OD1	1:B:338:ASN:ND2	2.32	0.41
1:B:251:LYS:HA	1:B:254:VAL:HG12	2.02	0.41
1:B:498:PRO:HA	1:B:499:PRO:HD3	1.85	0.41
1:A:446:ARG:HD2	1:A:735:LEU:HD11	2.03	0.40
1:A:712:ASN:HB3	1:B:605:MET:HE2	2.04	0.40
1:D:200:LEU:HD12	1:D:244:ILE:HG21	2.02	0.40
1:C:192:LYS:HD2	1:C:197:LYS:HD2	2.03	0.40
1:C:623:LEU:HA	1:C:626:ILE:HG22	2.03	0.40
1:A:354:ALA:HB2	1:A:402:LEU:HD11	2.04	0.40
1:D:435:GLU:OE2	1:D:436:ILE:HG13	2.21	0.40
1:C:234:ILE:HB	1:C:271:ARG:NH1	2.36	0.40
1:C:236:TYR:O	1:C:238:GLY:N	2.54	0.40
1:C:393:GLU:HA	1:C:403:SER:HB2	2.03	0.40
1:C:424:LEU:HA	1:C:433:VAL:HB	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:229:SER:HB3	1:B:231:PHE:HE1	1.86	0.40
1:B:501:PRO:HA	1:B:503:ARG:NH1	2.36	0.40
1:A:478:TYR:HE2	1:A:589:ALA:HB2	1.85	0.40
1:D:195:LEU:O	1:D:199:LEU:HD23	2.21	0.40
1:D:680:MET:HE2	1:D:680:MET:HB3	1.90	0.40
1:C:313:ASP:OD1	1:C:313:ASP:N	2.54	0.40
1:B:474:ASN:CG	2:B:1201:F3L:N28	2.80	0.40
1:A:249:ARG:HG2	1:A:297:GLN:CD	2.46	0.40
1:A:349:LEU:HD12	1:A:349:LEU:HA	1.96	0.40
1:D:340:LYS:O	1:D:344:LYS:HG2	2.21	0.40
1:D:372:SER:HB3	1:D:375:MET:HG2	2.02	0.40
1:D:386:PHE:CE2	1:D:390:ILE:HD11	2.57	0.40
1:D:677:THR:HG23	1:D:706:THR:HG21	2.04	0.40
1:D:732:ILE:O	1:D:736:GLN:OE1	2.40	0.40
1:C:199:LEU:O	1:C:202:LEU:HG	2.20	0.40
1:C:276:LYS:HA	1:C:280:GLY:O	2.22	0.40
1:B:197:LYS:HD2	1:B:197:LYS:HA	1.89	0.40
1:D:153:ILE:O	1:D:157:ILE:HG12	2.21	0.40
1:C:485:PHE:CD1	1:C:582:LEU:HD12	2.57	0.40
1:C:633:VAL:HG21	1:C:666:PHE:HD1	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	585/1144 (51%)	545 (93%)	39 (7%)	1 (0%)	44	72
1	B	617/1144 (54%)	571 (92%)	45 (7%)	1 (0%)	44	72
1	C	583/1144 (51%)	543 (93%)	40 (7%)	0	100	100
1	D	616/1144 (54%)	568 (92%)	48 (8%)	0	100	100
All	All	2401/4576 (52%)	2227 (93%)	172 (7%)	2 (0%)	50	78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	438	VAL
1	B	730	LYS

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 PDB entries followed by that with respect to all EM entries.

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	515/991 (52%)	514 (100%)	1 (0%)	92	95
1	B	546/991 (55%)	546 (100%)	0	100	100
1	C	514/991 (52%)	511 (99%)	3 (1%)	84	90
1	D	544/991 (55%)	544 (100%)	0	100	100
All	All	2119/3964 (54%)	2115 (100%)	4 (0%)	91	95

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	756	PHE
1	C	509	LEU
1	C	510	ARG
1	C	511	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	239	GLN
1	A	274	GLN
1	A	447	HIS
1	D	252	HIS
1	D	302	ASN
1	D	401	HIS
1	D	474	ASN
1	C	309	HIS
1	C	368	ASN

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Mol	Chain	Res	Type
1	C	474	ASN
1	C	528	ASN
1	B	201	ASN
1	B	309	HIS
1	B	474	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

2 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	$\# Z > 2$
2	F3L	D	1201	-	29,30,30	7.18	24 (82%)	33,45,45	2.97	14 (42%)
2	F3L	B	1201	-	29,30,30	7.19	24 (82%)	33,45,45	3.13	14 (42%)

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
2	F3L	D	1201	-	-	3/18/36/36	0/3/3/3
2	F3L	B	1201	-	-	3/18/36/36	0/3/3/3

All (48) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1201	F3L	C07-N08	-14.07	1.33	1.48
2	D	1201	F3L	C07-N08	-14.05	1.33	1.48
2	B	1201	F3L	C19-N08	13.55	1.64	1.48
2	D	1201	F3L	C19-N08	13.32	1.64	1.48
2	B	1201	F3L	C10-N11	10.37	1.49	1.33
2	D	1201	F3L	C10-N11	10.29	1.49	1.33
2	D	1201	F3L	C16-C10	9.95	1.54	1.37
2	B	1201	F3L	C16-C10	9.92	1.54	1.37
2	D	1201	F3L	C25-C26	9.69	1.55	1.40
2	B	1201	F3L	C25-C26	9.69	1.55	1.40
2	D	1201	F3L	C03-C01	9.53	1.54	1.37
2	D	1201	F3L	C03-C04	9.29	1.55	1.38
2	B	1201	F3L	C03-C01	9.28	1.53	1.37
2	B	1201	F3L	C10-S09	9.18	1.86	1.78
2	B	1201	F3L	C03-C04	9.14	1.54	1.38
2	D	1201	F3L	C10-S09	8.93	1.86	1.78
2	D	1201	F3L	C25-C24	8.72	1.54	1.38
2	B	1201	F3L	C25-C24	8.71	1.54	1.38
2	D	1201	F3L	C26-C01	8.04	1.53	1.38
2	B	1201	F3L	C12-N11	7.97	1.51	1.34
2	B	1201	F3L	C26-C01	7.93	1.53	1.38
2	D	1201	F3L	C12-N11	7.85	1.51	1.34
2	D	1201	F3L	C24-C04	7.52	1.53	1.38
2	B	1201	F3L	C24-C04	7.48	1.53	1.38
2	B	1201	F3L	C12-C13	6.92	1.53	1.38
2	D	1201	F3L	C12-C13	6.92	1.53	1.38
2	D	1201	F3L	C16-C15	6.79	1.51	1.38
2	D	1201	F3L	C15-C13	6.76	1.50	1.38
2	B	1201	F3L	C16-C15	6.75	1.51	1.38
2	B	1201	F3L	C15-C13	6.69	1.50	1.38
2	B	1201	F3L	S09-N08	6.46	1.72	1.63
2	D	1201	F3L	C26-C27	6.34	1.53	1.44
2	B	1201	F3L	C26-C27	6.23	1.53	1.44
2	D	1201	F3L	S09-N08	6.11	1.72	1.63
2	B	1201	F3L	C22-C20	4.92	1.60	1.56
2	D	1201	F3L	C22-C20	4.88	1.60	1.56
2	B	1201	F3L	O21-C20	-4.80	1.36	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1201	F3L	O21-C20	-4.66	1.36	1.44
2	B	1201	F3L	O18-S09	3.05	1.46	1.43
2	D	1201	F3L	O18-S09	2.99	1.46	1.43
2	D	1201	F3L	C07-C06	2.94	1.60	1.53
2	D	1201	F3L	O05-C04	2.93	1.44	1.38
2	D	1201	F3L	O17-S09	2.91	1.46	1.43
2	B	1201	F3L	O17-S09	2.87	1.46	1.43
2	B	1201	F3L	O05-C04	2.86	1.43	1.38
2	B	1201	F3L	C07-C06	2.84	1.59	1.53
2	B	1201	F3L	C13-CL14	2.23	1.79	1.74
2	D	1201	F3L	C13-CL14	2.14	1.79	1.74

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1201	F3L	O18-S09-O17	-11.30	101.20	119.52
2	D	1201	F3L	O18-S09-O17	-10.84	101.95	119.52
2	D	1201	F3L	O17-S09-N08	5.44	111.64	106.69
2	B	1201	F3L	O17-S09-N08	5.40	111.61	106.69
2	D	1201	F3L	O18-S09-N08	5.28	111.50	106.69
2	B	1201	F3L	O18-S09-N08	5.27	111.49	106.69
2	B	1201	F3L	C16-C10-N11	-4.98	119.81	125.28
2	D	1201	F3L	C16-C10-N11	-4.64	120.19	125.28
2	B	1201	F3L	S09-C10-N11	4.57	120.51	114.76
2	B	1201	F3L	C12-N11-C10	4.19	120.37	115.91
2	D	1201	F3L	C12-N11-C10	3.93	120.09	115.91
2	D	1201	F3L	S09-C10-N11	3.87	119.63	114.76
2	B	1201	F3L	C07-N08-C19	-3.75	102.72	109.99
2	D	1201	F3L	C07-N08-C19	-3.54	103.13	109.99
2	B	1201	F3L	C07-N08-S09	3.45	124.65	119.62
2	B	1201	F3L	C03-C01-C26	-2.87	119.53	122.89
2	B	1201	F3L	C25-C26-C01	2.61	120.01	117.49
2	D	1201	F3L	C03-C01-C26	-2.60	119.85	122.89
2	D	1201	F3L	O17-S09-C10	2.54	112.08	107.50
2	B	1201	F3L	C19-N08-S09	2.52	124.56	120.11
2	D	1201	F3L	C07-N08-S09	2.48	123.24	119.62
2	B	1201	F3L	C20-C22-N23	-2.36	109.21	114.77
2	D	1201	F3L	C25-C26-C01	2.36	119.76	117.49
2	D	1201	F3L	O18-S09-C10	2.35	111.73	107.50
2	D	1201	F3L	C20-C22-N23	-2.33	109.29	114.77
2	B	1201	F3L	F02-C01-C26	2.18	120.55	117.67
2	B	1201	F3L	O17-S09-C10	2.12	111.32	107.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1201	F3L	C19-N08-S09	2.04	123.71	120.11

There are no chirality outliers.

All (6) torsion outliers are listed below:

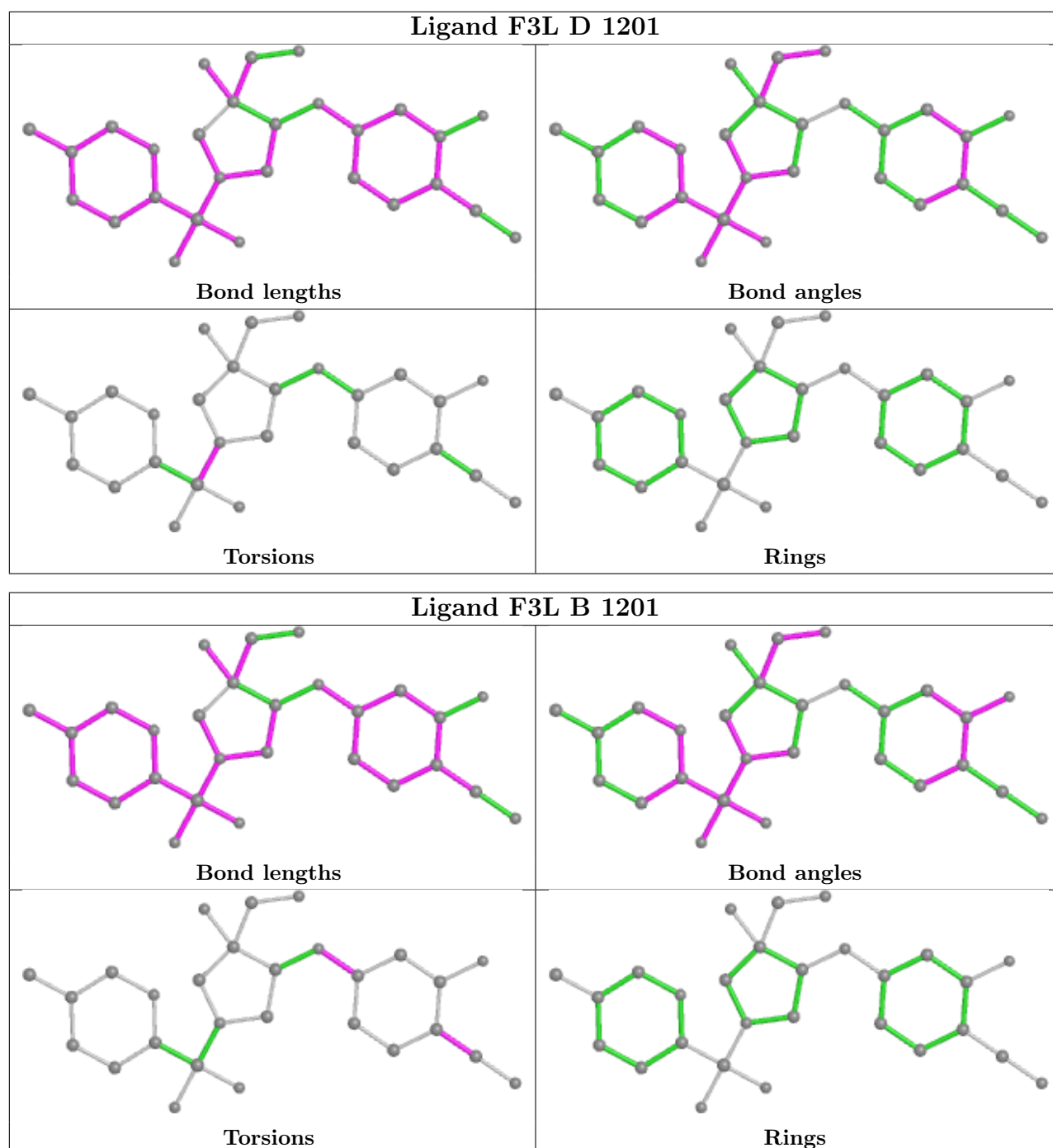
Mol	Chain	Res	Type	Atoms
2	D	1201	F3L	C07-N08-S09-O18
2	D	1201	F3L	C19-N08-S09-O18
2	D	1201	F3L	C07-N08-S09-C10
2	B	1201	F3L	C01-C26-C27-N28
2	B	1201	F3L	C24-C04-O05-C06
2	B	1201	F3L	C03-C04-O05-C06

There are no ring outliers.

2 monomers are involved in 24 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	1201	F3L	12	0
2	B	1201	F3L	12	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.