



Full wwPDB EM Validation Report ⓘ

Nov 4, 2024 – 08:56 PM EST

PDB ID : 8TKE
EMDB ID : EMD-41348
Title : Human Type 3 IP3 Receptor - Preactivated+Ca²⁺ State (+IP3/ATP/JD Ca²⁺)
Authors : Paknejad, N.; Sapuru, V.; Hite, R.K.
Deposited on : 2023-07-25
Resolution : 3.60 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 : 0.0.1.dev113
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

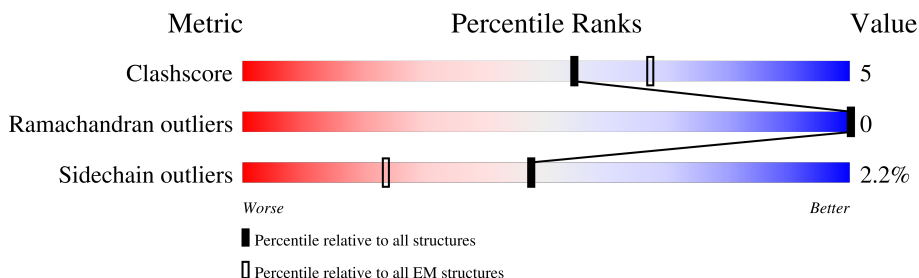
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.60 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	2671	<div> <div>6%</div> <div>73%</div> <div>11%</div> <div>16%</div> </div>
1	B	2671	<div> <div>6%</div> <div>74%</div> <div>10%</div> <div>16%</div> </div>
1	C	2671	<div> <div>7%</div> <div>74%</div> <div>10%</div> <div>16%</div> </div>
1	D	2671	<div> <div>6%</div> <div>73%</div> <div>11%</div> <div>16%</div> </div>

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 144456 atoms, of which 72136 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.

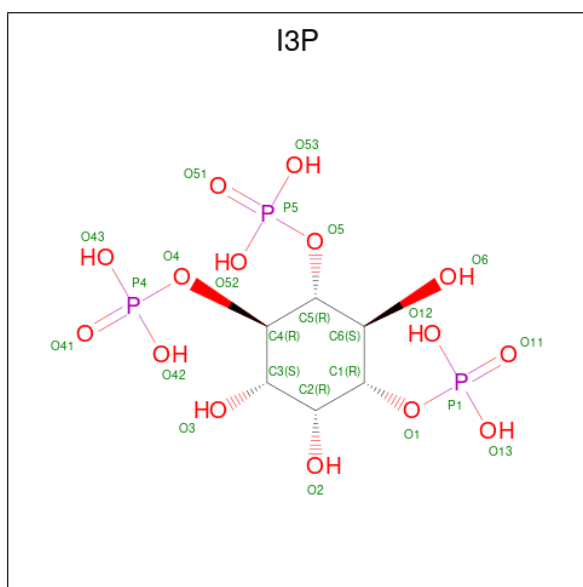
- Molecule 1 is a protein called Inositol 1,4,5-trisphosphate receptor type 3.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	2249	Total	C	H	N	O	S	0	0
			36036	11497	18013	3089	3326	111		
1	B	2249	Total	C	H	N	O	S	0	0
			36036	11497	18013	3089	3326	111		
1	C	2249	Total	C	H	N	O	S	0	0
			36036	11497	18013	3089	3326	111		
1	D	2249	Total	C	H	N	O	S	0	0
			36036	11497	18013	3089	3326	111		

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

Mol	Chain	Residues	Atoms		AltConf
2	A	1	Total	Zn	0
			1	1	
2	B	1	Total	Zn	0
			1	1	
2	C	1	Total	Zn	0
			1	1	
2	D	1	Total	Zn	0
			1	1	

- Molecule 3 is D-MYO-INOSITOL-1,4,5-TRIPHOSPHATE (three-letter code: I3P) (formula: C₆H₁₅O₁₅P₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	H	O	P	0
			33	6	9	15	3	
3	B	1	Total	C	H	O	P	0
			33	6	9	15	3	
3	C	1	Total	C	H	O	P	0
			33	6	9	15	3	
3	D	1	Total	C	H	O	P	0
			33	6	9	15	3	

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	Ca	0
			1	1	
4	B	1	Total	Ca	0
			1	1	
4	C	1	Total	Ca	0
			1	1	
4	D	1	Total	Ca	0
			1	1	

- Molecule 5 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: C₁₀H₁₆N₅O₁₃P₃) (labeled as "Ligand of Interest" by depositor).

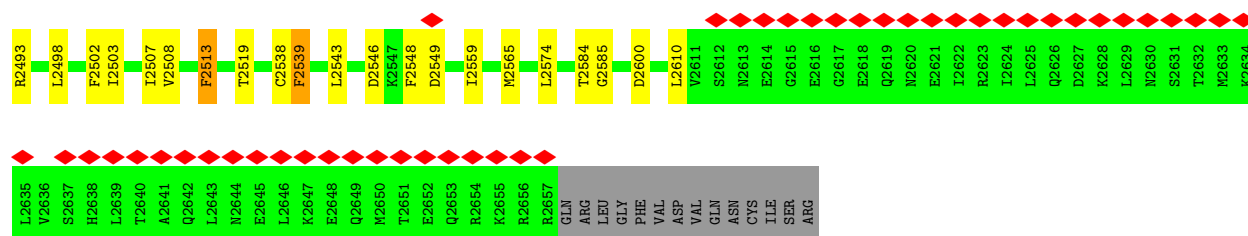


Mol	Chain	Residues	Atoms						AltConf
5	A	1	Total 43	C 10	H 12	N 5	O 13	P 3	0
5	B	1	Total 43	C 10	H 12	N 5	O 13	P 3	0
5	C	1	Total 43	C 10	H 12	N 5	O 13	P 3	0
5	D	1	Total 43	C 10	H 12	N 5	O 13	P 3	0

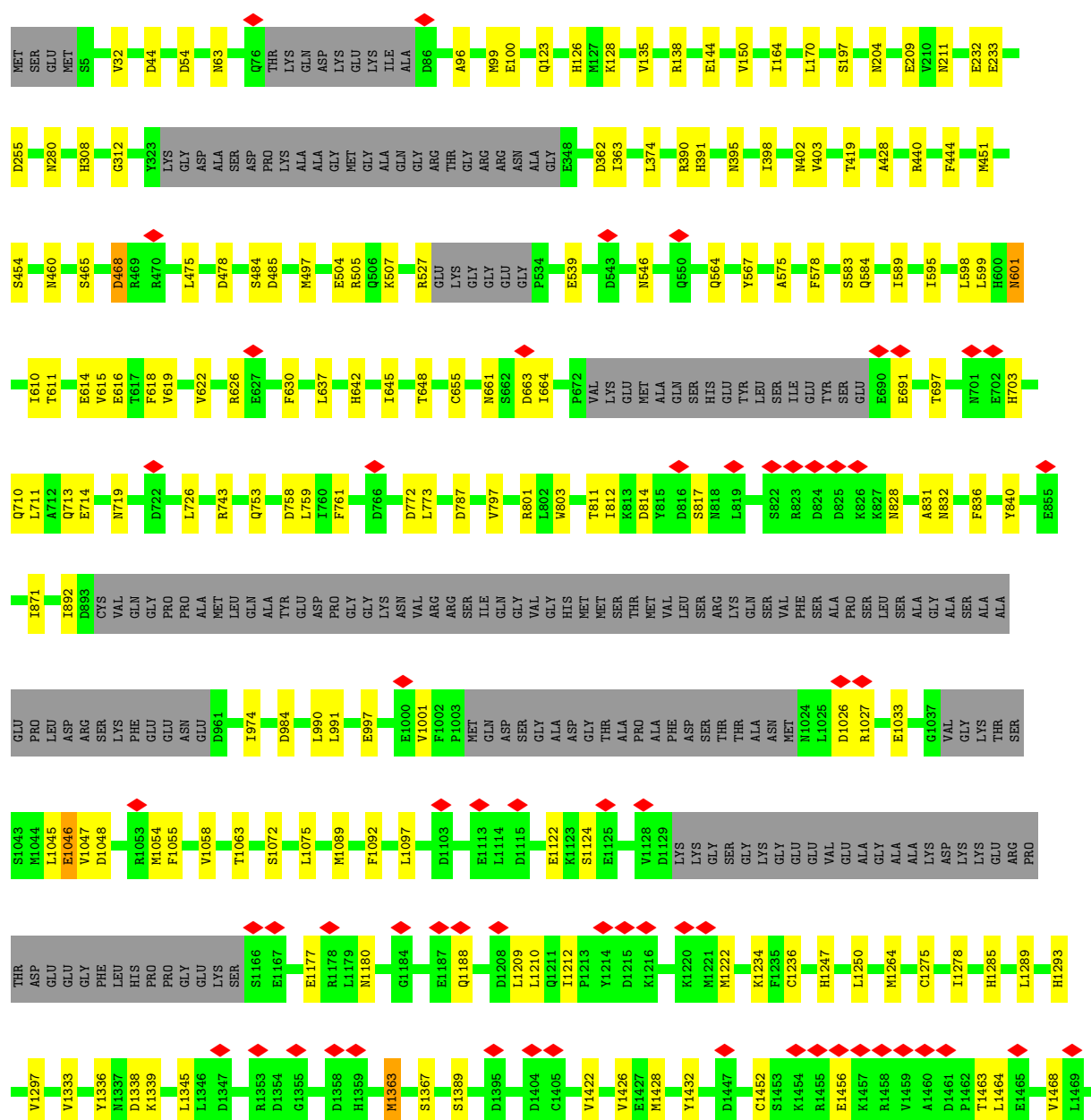
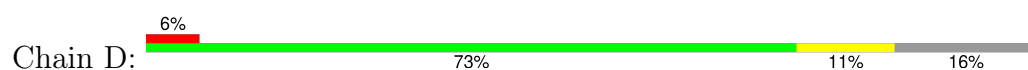


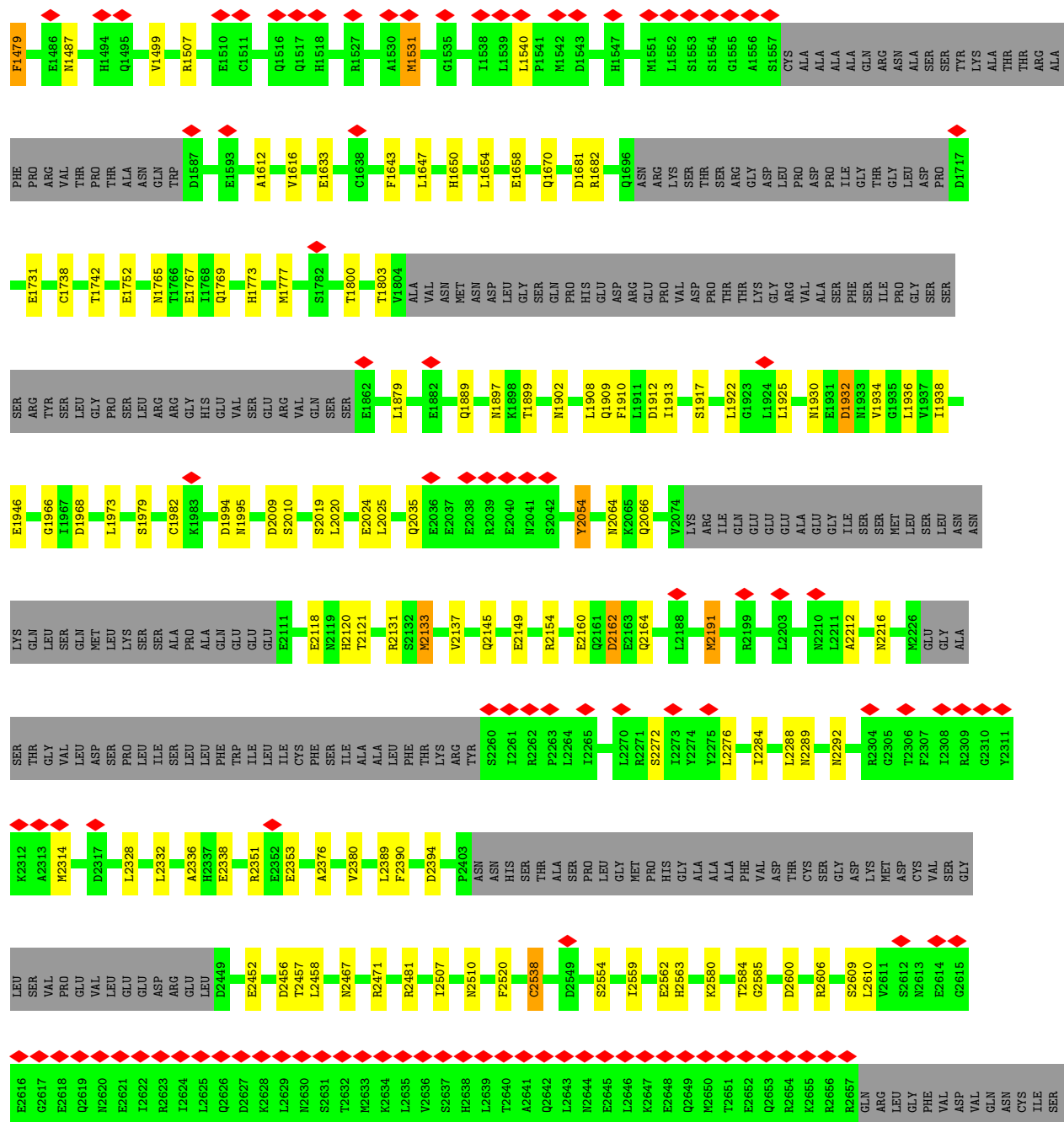






• Molecule 1: Inositol 1,4,5-trisphosphate receptor type 3





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	123416	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 ($e^-/\text{\AA}^2$)	66	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	4300	Depositor
Magnification	29000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	132.507	Depositor
Minimum map value	-38.790	Depositor
Average map value	0.152	Depositor
Map value standard deviation	1.648	Depositor
Recommended contour level	6	Depositor
Map size (Å)	422.68802, 422.68802, 422.68802	wwPDB
Map dimensions	672, 672, 672	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.629, 0.629, 0.629	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: I3P, CA, ZN, ATP

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	0.24	0/18354	0.46	0/24804
1	B	0.24	0/18354	0.45	0/24804
1	C	0.24	0/18354	0.45	0/24804
1	D	0.24	0/18354	0.45	0/24804
All	All	0.24	0/73416	0.45	0/99216

There are no bond length outliers.

There are no bond angle outliers.

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	18023	18013	18013	193	0
1	B	18023	18013	18013	168	0
1	C	18023	18013	18013	171	0
1	D	18023	18013	18013	191	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	24	9	9	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	24	9	9	2	0
3	C	24	9	9	2	0
3	D	24	9	9	2	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	31	12	12	0	0
5	B	31	12	12	1	0
5	C	31	12	12	0	0
5	D	31	12	12	1	0
All	All	72320	72136	72136	703	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 5.

All (703) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1925:LEU:HD21	1:B:1973:LEU:HD23	1.58	0.85
1:D:465:SER:OG	1:D:468:ASP:OD1	1.95	0.84
1:A:465:SER:OG	1:A:468:ASP:OD1	1.95	0.83
1:B:465:SER:OG	1:B:468:ASP:OD1	1.96	0.83
1:C:1925:LEU:HD21	1:C:1973:LEU:HD23	1.62	0.82
1:A:1925:LEU:HD21	1:A:1973:LEU:HD23	1.62	0.81
1:B:691:GLU:OE1	1:B:691:GLU:N	2.13	0.81
1:A:2066:GLN:O	1:A:2070:LEU:HD22	1.81	0.81
1:C:170:LEU:HD22	1:D:428:ALA:HB3	1.64	0.80
1:D:1925:LEU:HD21	1:D:1973:LEU:HD23	1.61	0.80
1:C:2467:ASN:OD1	1:C:2471:ARG:NH1	2.16	0.79
1:B:1194:GLN:OE1	1:B:1239:ASN:ND2	2.15	0.79
1:A:2467:ASN:OD1	1:A:2471:ARG:NH1	2.16	0.79
1:D:485:ASP:OD1	1:D:505:ARG:NH1	2.15	0.79
1:B:1072:SER:OG	1:B:1658:GLU:OE2	2.03	0.77
1:D:2338:GLU:OE2	1:D:2338:GLU:N	2.18	0.76
1:B:170:LEU:HD22	1:C:428:ALA:HB3	1.66	0.76
1:A:2338:GLU:OE2	1:A:2338:GLU:N	2.19	0.76
1:A:428:ALA:HB3	1:D:170:LEU:HD22	1.69	0.75
1:B:2467:ASN:OD1	1:B:2471:ARG:NH1	2.18	0.75
1:B:2338:GLU:OE1	1:B:2338:GLU:N	2.18	0.75
1:A:2459:LEU:O	1:A:2463:VAL:HG23	1.85	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:390:ARG:NH2	1:C:395:ASN:OD1	2.19	0.75
1:A:1072:SER:OG	1:A:1658:GLU:OE2	2.03	0.74
1:B:1633:GLU:N	1:B:1633:GLU:OE1	2.21	0.74
1:B:2131:ARG:O	1:B:2131:ARG:NH1	2.21	0.74
1:D:1633:GLU:OE1	1:D:1633:GLU:N	2.21	0.74
1:D:2467:ASN:OD1	1:D:2471:ARG:NH1	2.20	0.74
1:A:2131:ARG:O	1:A:2131:ARG:NH1	2.21	0.73
1:C:2394:ASP:OD1	1:C:2481:ARG:NE	2.21	0.73
1:D:2131:ARG:O	1:D:2131:ARG:NH1	2.21	0.73
1:C:1072:SER:OG	1:C:1658:GLU:OE2	2.06	0.73
1:C:2131:ARG:NH1	1:C:2131:ARG:O	2.22	0.73
1:B:2394:ASP:OD1	1:B:2481:ARG:NE	2.22	0.72
1:A:2133:MET:SD	1:A:2606:ARG:NH1	2.62	0.72
1:C:1422:VAL:O	1:C:1432:TYR:OH	2.04	0.72
1:C:698:ASP:OD2	1:C:699:LYS:N	2.24	0.71
1:D:1902:ASN:OD1	1:D:1902:ASN:O	2.08	0.71
1:D:2162:ASP:OD1	1:D:2164:GLN:N	2.25	0.70
1:A:1619:ASP:OD2	1:A:1687:ARG:NH2	2.24	0.70
1:D:753:GLN:OE1	1:D:753:GLN:N	2.24	0.70
1:C:2394:ASP:OD2	1:C:2493:ARG:NH2	2.25	0.70
1:D:390:ARG:NH2	1:D:395:ASN:OD1	2.24	0.70
1:C:663:ASP:OD1	1:C:664:ILE:N	2.25	0.70
1:D:232:GLU:OE2	1:D:232:GLU:N	2.25	0.69
1:D:567:TYR:OH	3:D:3002:I3P:O53	2.10	0.69
1:A:2162:ASP:OD1	1:A:2164:GLN:N	2.26	0.69
1:D:362:ASP:OD1	1:D:363:ILE:N	2.26	0.69
1:D:2212:ALA:O	1:D:2216:ASN:ND2	2.26	0.69
1:A:1738:CYS:O	1:A:1742:THR:HG22	1.93	0.68
1:A:618:PHE:O	1:A:622:VAL:HG23	1.92	0.68
1:C:2485:LYS:NZ	1:D:2452:GLU:OE2	2.17	0.68
1:C:567:TYR:OH	3:C:3002:I3P:O53	2.12	0.68
1:D:710:GLN:O	1:D:713:GLN:N	2.27	0.68
1:B:260:LYS:NZ	1:B:262:GLN:OE1	2.24	0.67
1:B:710:GLN:NE2	1:B:714:GLU:OE2	2.27	0.67
1:D:618:PHE:O	1:D:622:VAL:HG23	1.94	0.67
1:B:2562:GLU:OE2	1:B:2609:SER:OG	2.11	0.67
1:A:2064:ASN:OD1	1:A:2066:GLN:N	2.28	0.67
1:C:801:ARG:NH2	1:C:984:ASP:OD1	2.27	0.67
1:D:1072:SER:OG	1:D:1658:GLU:OE2	2.12	0.67
1:A:801:ARG:NH2	1:A:984:ASP:OD1	2.28	0.67
1:A:663:ASP:OD1	1:A:664:ILE:N	2.27	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1738:CYS:O	1:C:1742:THR:HG22	1.94	0.66
1:A:539:GLU:OE1	1:A:539:GLU:N	2.26	0.66
1:B:1930:ASN:ND2	1:B:1932:ASP:OD1	2.28	0.66
1:A:1773:HIS:NE2	1:A:1777:MET:SD	2.68	0.66
1:B:2456:ASP:OD1	1:B:2457:THR:N	2.29	0.66
1:D:255:ASP:OD1	1:D:280:ASN:ND2	2.29	0.66
1:A:2332:LEU:O	1:A:2336:ALA:N	2.28	0.66
1:B:567:TYR:OH	3:B:3002:I3P:O53	2.13	0.66
1:B:801:ARG:NH2	1:B:984:ASP:OD1	2.29	0.65
1:D:2376:ALA:O	1:D:2380:VAL:HG23	1.95	0.65
1:A:567:TYR:OH	3:A:3002:I3P:O53	2.12	0.65
1:A:1397:VAL:O	1:A:1401:THR:HG22	1.96	0.65
1:A:1612:ALA:O	1:A:1616:VAL:HG23	1.96	0.65
1:C:19:GLU:OE1	1:C:20:GLY:N	2.30	0.65
1:B:1902:ASN:OD1	1:B:1902:ASN:O	2.13	0.65
1:D:663:ASP:OD1	1:D:664:ILE:N	2.30	0.65
1:B:62:MET:SD	1:B:121:VAL:HG21	2.37	0.65
1:B:2064:ASN:OD1	1:B:2066:GLN:N	2.31	0.64
1:D:1738:CYS:O	1:D:1742:THR:HG22	1.97	0.64
1:B:614:GLU:OE1	1:B:614:GLU:N	2.27	0.64
1:D:2562:GLU:OE2	1:D:2609:SER:OG	2.14	0.64
1:D:539:GLU:OE1	1:D:539:GLU:N	2.26	0.64
1:D:801:ARG:NH2	1:D:984:ASP:OD1	2.29	0.64
1:C:2064:ASN:OD1	1:C:2066:GLN:N	2.30	0.63
1:D:2064:ASN:OD1	1:D:2066:GLN:N	2.32	0.63
1:B:255:ASP:OD1	1:B:280:ASN:ND2	2.31	0.63
1:B:2485:LYS:NZ	1:C:2452:GLU:OE2	2.21	0.63
1:B:2459:LEU:O	1:B:2463:VAL:HG23	1.99	0.63
1:A:2358:VAL:O	1:A:2361:SER:OG	2.11	0.63
1:D:758:ASP:OD1	1:D:759:LEU:N	2.31	0.63
1:D:1075:LEU:HD21	1:D:1647:LEU:HD21	1.80	0.62
1:D:2394:ASP:OD1	1:D:2481:ARG:NE	2.31	0.62
1:C:1075:LEU:HD21	1:C:1647:LEU:HD21	1.81	0.62
1:C:811:THR:OG1	1:C:814:ASP:OD1	2.13	0.61
1:A:233:GLU:N	1:A:233:GLU:OE1	2.33	0.61
1:A:1800:THR:O	1:A:1803:THR:HG22	1.99	0.61
1:D:1033:GLU:OE2	1:D:1682:ARG:NH2	2.33	0.61
1:D:1654:LEU:HD12	1:D:1654:LEU:O	2.00	0.61
1:D:1773:HIS:NE2	1:D:1777:MET:SD	2.73	0.61
1:A:1297:VAL:HG11	1:A:1363:MET:CE	2.30	0.61
1:A:1902:ASN:OD1	1:A:1902:ASN:O	2.17	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2149:GLU:N	1:A:2149:GLU:OE1	2.34	0.61
1:D:1275:CYS:O	1:D:1278:ILE:HG22	2.00	0.61
1:A:2394:ASP:OD1	1:A:2481:ARG:NE	2.33	0.61
1:B:758:ASP:OD1	1:B:759:LEU:N	2.34	0.61
1:B:233:GLU:OE1	1:B:233:GLU:N	2.34	0.60
1:B:536:VAL:HG23	1:B:546:ASN:ND2	2.16	0.60
1:D:611:THR:N	1:D:614:GLU:OE1	2.35	0.60
1:A:743:ARG:NE	1:A:787:ASP:OD1	2.34	0.60
1:C:233:GLU:N	1:C:233:GLU:OE1	2.33	0.60
1:B:1619:ASP:OD2	1:B:1687:ARG:NH2	2.35	0.60
1:B:1773:HIS:NE2	1:B:1777:MET:SD	2.74	0.60
1:C:985:TYR:CD2	1:C:1045:LEU:HD21	2.37	0.60
1:D:2024:GLU:OE1	1:D:2024:GLU:N	2.35	0.60
1:D:144:GLU:OE1	1:D:211:ASN:ND2	2.35	0.60
1:D:1800:THR:O	1:D:1803:THR:HG22	2.02	0.60
1:D:2452:GLU:N	1:D:2452:GLU:OE1	2.35	0.60
1:D:2149:GLU:N	1:D:2149:GLU:OE1	2.35	0.60
1:C:772:ASP:OD1	1:C:773:LEU:N	2.35	0.59
1:D:2133:MET:SD	1:D:2606:ARG:NH1	2.75	0.59
1:A:615:VAL:O	1:A:619:VAL:HG13	2.01	0.59
1:B:2563:HIS:O	5:B:3004:ATP:N6	2.35	0.59
1:C:581:MET:HB3	1:C:595:ILE:HD11	1.84	0.59
1:C:758:ASP:OD1	1:C:759:LEU:N	2.36	0.59
1:D:233:GLU:OE1	1:D:233:GLU:N	2.35	0.59
1:A:758:ASP:OD1	1:A:759:LEU:N	2.34	0.59
1:B:1800:THR:O	1:B:1803:THR:HG22	2.03	0.59
1:C:614:GLU:N	1:C:614:GLU:OE1	2.35	0.59
1:A:991:LEU:HD22	1:A:1092:PHE:HE1	1.68	0.59
1:C:1681:ASP:OD1	1:C:1681:ASP:N	2.36	0.59
1:C:1800:THR:O	1:C:1803:THR:HG22	2.03	0.59
1:D:1681:ASP:N	1:D:1681:ASP:OD1	2.35	0.59
1:A:44:ASP:OD2	1:A:44:ASP:N	2.36	0.58
1:A:691:GLU:N	1:A:691:GLU:OE1	2.35	0.58
1:A:1338:ASP:OD1	1:A:1339:LYS:N	2.36	0.58
1:A:1908:LEU:HD11	1:A:1966:GLY:HA3	1.85	0.58
1:C:2149:GLU:OE1	1:C:2149:GLU:N	2.35	0.58
1:C:2024:GLU:N	1:C:2024:GLU:OE1	2.36	0.58
1:A:985:TYR:CD2	1:A:1045:LEU:HD21	2.39	0.58
1:B:2149:GLU:N	1:B:2149:GLU:OE1	2.35	0.58
1:C:2543:LEU:HD13	1:C:2610:LEU:HD11	1.86	0.58
1:B:1681:ASP:N	1:B:1681:ASP:OD1	2.35	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:2456:ASP:OD1	1:D:2457:THR:N	2.36	0.58
1:B:618:PHE:O	1:B:622:VAL:HG23	2.03	0.58
1:B:1912:ASP:O	1:B:1917:SER:N	2.36	0.58
1:B:1499:VAL:HG22	1:B:1540:LEU:CD2	2.34	0.58
1:A:892:ILE:HG21	1:A:1058:VAL:HG13	1.86	0.57
1:B:73:LYS:HA	1:B:73:LYS:HE2	1.84	0.57
1:B:2024:GLU:OE1	1:B:2024:GLU:N	2.37	0.57
1:D:598:LEU:HD23	1:D:599:LEU:HD23	1.86	0.57
1:A:1654:LEU:HD12	1:A:1654:LEU:O	2.04	0.57
1:B:1738:CYS:O	1:B:1742:THR:HG22	2.03	0.57
1:A:745:TYR:OH	1:A:789:ASP:OD1	2.12	0.57
1:C:600:HIS:O	1:C:640:SER:OG	2.12	0.57
1:C:1499:VAL:HG22	1:C:1540:LEU:CD2	2.34	0.57
1:C:1654:LEU:O	1:C:1654:LEU:HD12	2.04	0.57
1:D:759:LEU:HD12	1:D:759:LEU:O	2.05	0.57
1:C:507:LYS:NZ	3:C:3002:I3P:O53	2.38	0.57
1:D:2563:HIS:O	5:D:3004:ATP:N6	2.38	0.57
1:A:1960:VAL:HA	1:A:1967:ILE:HD11	1.87	0.56
1:D:714:GLU:OE2	1:D:714:GLU:N	2.31	0.56
1:D:1499:VAL:HG22	1:D:1540:LEU:CD2	2.35	0.56
1:C:1912:ASP:O	1:C:1917:SER:N	2.37	0.56
1:A:1793:MET:O	1:A:1797:GLN:HG3	2.05	0.56
1:A:1931:GLU:N	1:A:1931:GLU:OE1	2.36	0.56
1:A:255:ASP:OD1	1:A:280:ASN:ND2	2.39	0.56
1:B:811:THR:OG1	1:B:814:ASP:OD1	2.08	0.56
1:C:1301:ASP:O	1:C:1305:THR:HG23	2.06	0.56
1:A:1912:ASP:O	1:A:1917:SER:N	2.39	0.56
1:A:1297:VAL:HG11	1:A:1363:MET:HE3	1.88	0.56
1:B:985:TYR:CD2	1:B:1045:LEU:HD21	2.41	0.56
1:D:892:ILE:HG21	1:D:1058:VAL:HG13	1.88	0.56
1:A:1247:HIS:CD2	1:A:1250:LEU:HD22	2.40	0.55
1:C:599:LEU:HD22	1:C:606:LEU:HA	1.88	0.55
1:D:691:GLU:N	1:D:691:GLU:OE1	2.39	0.55
1:B:892:ILE:HG21	1:B:1058:VAL:HG13	1.89	0.55
1:D:1769:GLN:NE2	1:D:1879:LEU:O	2.40	0.55
1:A:655:CYS:O	1:A:661:ASN:ND2	2.39	0.55
1:A:138:ARG:O	1:B:1426:VAL:HG23	2.06	0.55
1:B:2201:MET:HA	1:B:2201:MET:HE2	1.88	0.55
1:C:255:ASP:OD1	1:C:280:ASN:ND2	2.39	0.55
1:C:991:LEU:HD22	1:C:1092:PHE:HE1	1.71	0.55
1:C:2507:ILE:O	1:C:2507:ILE:HG22	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1731:GLU:HA	1:C:1731:GLU:OE1	2.07	0.54
1:A:1426:VAL:HG23	1:D:138:ARG:O	2.07	0.54
1:B:749:ASP:OD1	1:B:750:GLU:N	2.40	0.54
1:B:2507:ILE:HG22	1:B:2507:ILE:O	2.08	0.54
1:A:1681:ASP:OD1	1:A:1681:ASP:N	2.35	0.54
1:C:118:TYR:HE1	1:C:183:VAL:HG12	1.73	0.54
1:C:743:ARG:NE	1:C:787:ASP:OD1	2.40	0.54
1:A:1499:VAL:HG22	1:A:1540:LEU:CD2	2.37	0.54
1:D:1930:ASN:OD1	1:D:1932:ASP:N	2.41	0.54
1:A:2365:ASN:OD1	1:A:2519:THR:OG1	2.13	0.54
1:B:1247:HIS:CD2	1:B:1250:LEU:HD22	2.42	0.54
1:A:1731:GLU:OE1	1:A:1731:GLU:HA	2.08	0.54
1:A:1250:LEU:HD11	1:A:1264:MET:SD	2.47	0.53
1:A:2456:ASP:OD1	1:A:2457:THR:N	2.42	0.53
1:A:772:ASP:OD1	1:A:773:LEU:N	2.41	0.53
1:C:1968:ASP:OD1	1:C:2019:SER:OG	2.16	0.53
1:D:504:GLU:OE1	1:D:504:GLU:N	2.38	0.53
1:C:578:PHE:CE2	1:C:595:ILE:HD12	2.44	0.53
1:D:1250:LEU:HD11	1:D:1264:MET:SD	2.48	0.53
1:D:2456:ASP:OD1	1:D:2457:THR:HG22	2.09	0.53
1:B:772:ASP:OD1	1:B:773:LEU:N	2.40	0.53
1:C:1247:HIS:CD2	1:C:1250:LEU:HD22	2.43	0.53
1:D:2538:CYS:HB2	1:D:2559:ILE:HG22	1.90	0.53
1:B:626:ARG:NH2	1:B:697:THR:O	2.42	0.53
1:D:44:ASP:OD1	1:D:44:ASP:N	2.41	0.53
1:D:626:ARG:NH2	1:D:697:THR:O	2.42	0.53
1:D:1247:HIS:CD2	1:D:1250:LEU:HD22	2.44	0.53
1:D:2332:LEU:O	1:D:2336:ALA:N	2.42	0.53
1:B:32:VAL:HG12	1:B:32:VAL:O	2.09	0.53
1:C:7:PHE:CE1	1:D:374:LEU:HD23	2.44	0.53
1:A:1188:GLN:OE1	1:A:1188:GLN:N	2.41	0.52
1:A:504:GLU:OE1	1:A:504:GLU:N	2.39	0.52
1:C:626:ARG:NH2	1:C:697:THR:O	2.42	0.52
1:C:2213:VAL:O	1:C:2217:ILE:HG23	2.09	0.52
1:D:2507:ILE:HG22	1:D:2507:ILE:O	2.08	0.52
1:B:44:ASP:OD2	1:B:44:ASP:N	2.43	0.52
1:B:663:ASP:OD1	1:B:664:ILE:N	2.42	0.52
1:A:1410:LYS:O	1:A:1414:VAL:HG23	2.08	0.52
1:C:2338:GLU:N	1:C:2338:GLU:OE1	2.42	0.52
1:C:786:VAL:HG21	1:C:866:LEU:HD11	1.92	0.52
1:D:1285:HIS:CE1	1:D:1289:LEU:HD11	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:589:ILE:O	1:B:589:ILE:HG22	2.10	0.52
1:B:642:HIS:ND1	1:B:642:HIS:O	2.42	0.52
1:B:1731:GLU:OE1	1:B:1731:GLU:HA	2.09	0.52
1:A:2024:GLU:N	1:A:2024:GLU:OE1	2.41	0.52
1:B:138:ARG:O	1:C:1426:VAL:HG13	2.10	0.52
1:D:1188:GLN:OE1	1:D:1188:GLN:N	2.41	0.52
1:D:1731:GLU:OE1	1:D:1731:GLU:HA	2.10	0.52
1:D:1968:ASP:OD1	1:D:2019:SER:OG	2.20	0.52
1:A:2120:HIS:NE2	1:A:2145:GLN:OE1	2.43	0.52
1:C:812:ILE:HD11	1:C:1045:LEU:HD11	1.92	0.52
1:A:128:LYS:O	1:A:440:ARG:NH1	2.44	0.51
1:A:507:LYS:NZ	3:A:3002:I3P:O53	2.44	0.51
1:A:1909:GLN:O	1:A:1913:ILE:HG13	2.09	0.51
1:A:2507:ILE:O	1:A:2507:ILE:HG22	2.09	0.51
1:A:308:HIS:O	1:A:312:GLY:N	2.43	0.51
1:B:589:ILE:O	1:B:589:ILE:CG2	2.59	0.51
1:A:1616:VAL:HG21	1:A:1690:LEU:HD12	1.92	0.51
1:D:828:ASN:OD1	1:D:831:ALA:N	2.43	0.51
1:B:1384:GLU:OE2	1:B:1424:THR:OG1	2.17	0.51
1:C:2167:LYS:HB2	1:C:2539:PHE:CE1	2.46	0.51
1:D:1531:MET:HA	1:D:1531:MET:CE	2.41	0.51
1:A:1531:MET:HA	1:A:1531:MET:CE	2.40	0.51
1:A:1397:VAL:HG22	1:A:1440:LEU:CD1	2.40	0.51
1:B:1188:GLN:OE1	1:B:1188:GLN:N	2.41	0.51
1:C:485:ASP:OD1	1:C:505:ARG:NH1	2.44	0.51
1:A:1456:GLU:OE2	1:A:1507:ARG:NH2	2.44	0.51
1:A:2611:VAL:HG12	1:A:2611:VAL:O	2.11	0.51
1:B:1531:MET:CE	1:B:1531:MET:HA	2.41	0.51
1:B:2332:LEU:O	1:B:2336:ALA:N	2.42	0.51
1:D:100:GLU:HA	1:D:100:GLU:OE1	2.11	0.51
1:D:2580:LYS:O	1:D:2580:LYS:NZ	2.34	0.51
1:C:170:LEU:HD22	1:D:428:ALA:CB	2.39	0.51
1:D:772:ASP:OD1	1:D:773:LEU:N	2.42	0.51
1:A:1232:LEU:CD1	1:A:1246:LEU:HD11	2.40	0.50
1:C:73:LYS:HE2	1:C:73:LYS:HA	1.93	0.50
1:C:1531:MET:HA	1:C:1531:MET:CE	2.41	0.50
1:A:170:LEU:HD22	1:B:428:ALA:HB3	1.92	0.50
1:A:1397:VAL:HG22	1:A:1440:LEU:HD11	1.93	0.50
1:C:1437:ILE:HG21	1:C:1479:PHE:HE2	1.76	0.50
1:A:135:VAL:HG22	1:A:150:VAL:HG22	1.92	0.50
1:A:639:VAL:HG21	1:A:741:LEU:HD23	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:692:VAL:HG21	1:A:759:LEU:HD11	1.92	0.50
1:A:1203:HIS:CD2	1:A:1245:LEU:HD21	2.47	0.50
1:B:1909:GLN:O	1:B:1913:ILE:HD12	2.11	0.50
1:D:655:CYS:O	1:D:661:ASN:ND2	2.44	0.50
1:B:1437:ILE:HG21	1:B:1479:PHE:HE2	1.76	0.50
1:C:1960:VAL:HA	1:C:1967:ILE:HD11	1.93	0.50
1:D:991:LEU:HD22	1:D:1092:PHE:HE1	1.77	0.50
1:D:2584:THR:OG1	1:D:2585:GLY:N	2.44	0.50
1:B:2364:ARG:NH2	1:B:2522:ASP:OD2	2.44	0.50
1:D:1338:ASP:OD1	1:D:1339:LYS:N	2.45	0.50
1:B:504:GLU:OE1	1:B:504:GLU:N	2.38	0.50
1:C:138:ARG:O	1:D:1426:VAL:HG23	2.11	0.50
1:A:622:VAL:HG22	1:A:630:PHE:CB	2.42	0.50
1:A:626:ARG:NH2	1:A:697:THR:O	2.45	0.50
1:B:991:LEU:HD22	1:B:1092:PHE:HE1	1.77	0.50
1:B:1333:VAL:HG13	1:B:1333:VAL:O	2.12	0.50
1:C:645:ILE:HB	1:C:648:THR:HG22	1.93	0.50
1:D:1122:GLU:OE1	1:D:1122:GLU:HA	2.11	0.50
1:D:1333:VAL:HG13	1:D:1333:VAL:O	2.12	0.50
1:A:642:HIS:O	1:A:642:HIS:ND1	2.42	0.50
1:A:1333:VAL:O	1:A:1333:VAL:HG13	2.12	0.50
1:B:96:ALA:CB	1:C:1922:LEU:HD11	2.41	0.50
1:B:361:ASN:OD1	1:B:362:ASP:N	2.45	0.50
1:B:1426:VAL:HG22	1:B:1428:MET:H	1.77	0.50
1:B:308:HIS:O	1:B:312:GLY:N	2.44	0.50
1:C:1333:VAL:HG13	1:C:1333:VAL:O	2.12	0.50
1:A:1497:ILE:HA	1:A:1500:GLN:OE1	2.12	0.49
1:C:1426:VAL:HG12	1:C:1428:MET:H	1.77	0.49
1:C:2584:THR:OG1	1:C:2585:GLY:N	2.44	0.49
1:C:1338:ASP:OD1	1:C:1339:LYS:N	2.45	0.49
1:A:1533:ALA:HB1	1:A:1538:ILE:HG22	1.95	0.49
1:D:1936:LEU:HD23	1:D:1936:LEU:O	2.12	0.49
1:D:2191:MET:CE	1:D:2191:MET:HA	2.43	0.49
1:B:1338:ASP:OD1	1:B:1339:LYS:N	2.46	0.49
1:C:1180:ASN:O	1:C:1234:LYS:NZ	2.46	0.49
1:D:507:LYS:NZ	3:D:3002:I3P:O53	2.45	0.49
1:D:616:GLU:OE1	1:D:616:GLU:HA	2.12	0.49
1:D:1930:ASN:OD1	1:D:1930:ASN:C	2.51	0.49
1:C:1931:GLU:OE1	1:C:1931:GLU:N	2.40	0.49
1:C:2381:TYR:CZ	1:C:2385:ILE:HD11	2.46	0.49
1:A:1426:VAL:HG22	1:A:1428:MET:H	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1250:LEU:HD11	1:B:1264:MET:SD	2.53	0.49
1:B:2584:THR:OG1	1:B:2585:GLY:N	2.45	0.49
1:D:1297:VAL:HG11	1:D:1363:MET:CE	2.43	0.49
1:D:1930:ASN:O	1:D:1934:VAL:HG13	2.12	0.49
1:C:2539:PHE:CD2	1:C:2565:MET:SD	3.05	0.49
1:B:96:ALA:HB2	1:C:1922:LEU:HD11	1.94	0.49
1:D:128:LYS:O	1:D:440:ARG:NH1	2.46	0.49
1:D:642:HIS:O	1:D:642:HIS:ND1	2.42	0.49
1:D:645:ILE:HB	1:D:648:THR:HG22	1.94	0.49
1:D:811:THR:OG1	1:D:814:ASP:OD1	2.10	0.49
1:B:1604:GLU:HA	1:B:1604:GLU:OE1	2.13	0.49
1:C:2016:ILE:HG21	1:C:2060:LEU:HD21	1.94	0.49
1:A:645:ILE:HB	1:A:648:THR:HG22	1.95	0.48
1:A:1922:LEU:HD11	1:D:96:ALA:CB	2.43	0.48
1:B:616:GLU:OE1	1:B:616:GLU:HA	2.12	0.48
1:B:2033:TYR:O	1:B:2047:ARG:NH1	2.46	0.48
1:A:584:GLN:HB3	1:A:589:ILE:HD11	1.96	0.48
1:B:2204:TRP:CZ3	1:B:2295:VAL:HG21	2.49	0.48
1:C:1176:LEU:HD11	1:C:1228:THR:HG22	1.96	0.48
1:C:2033:TYR:O	1:C:2047:ARG:NH1	2.47	0.48
1:A:2162:ASP:OD1	1:A:2162:ASP:C	2.52	0.48
1:A:1180:ASN:O	1:A:1234:LYS:NZ	2.46	0.48
1:A:1232:LEU:HD11	1:A:1246:LEU:HD11	1.94	0.48
1:A:1500:GLN:HA	1:A:1503:GLN:HG2	1.96	0.48
1:A:1604:GLU:OE1	1:A:1604:GLU:HA	2.14	0.48
1:A:2160:GLU:N	1:A:2160:GLU:OE1	2.47	0.48
1:C:7:PHE:CE1	1:D:374:LEU:CD2	2.97	0.48
1:D:308:HIS:O	1:D:312:GLY:N	2.44	0.48
1:D:398:ILE:HA	1:D:419:THR:HG22	1.95	0.48
1:D:710:GLN:O	1:D:714:GLU:OE2	2.31	0.48
1:D:1938:ILE:HG23	1:D:1995:ASN:OD1	2.13	0.48
1:D:2160:GLU:OE1	1:D:2160:GLU:N	2.47	0.48
1:C:128:LYS:O	1:C:440:ARG:NH1	2.47	0.48
1:C:2160:GLU:N	1:C:2160:GLU:OE1	2.47	0.48
1:A:1336:TYR:HB2	1:A:1345:LEU:HD11	1.96	0.48
1:A:2584:THR:OG1	1:A:2585:GLY:N	2.47	0.48
1:A:2543:LEU:HD13	1:A:2610:LEU:HD11	1.96	0.48
1:B:63:ASN:OD1	1:B:123:GLN:NE2	2.47	0.48
1:B:100:GLU:HA	1:B:100:GLU:OE1	2.13	0.48
1:B:1336:TYR:HB2	1:B:1345:LEU:HD11	1.96	0.48
1:D:1336:TYR:HB2	1:D:1345:LEU:HD11	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:1994:ASP:OD1	1:D:1994:ASP:C	2.52	0.48
1:A:96:ALA:CB	1:B:1922:LEU:HD11	2.44	0.48
1:A:1793:MET:HA	1:A:1870:MET:HE3	1.95	0.48
1:A:2009:ASP:OD1	1:A:2010:SER:N	2.47	0.48
1:B:507:LYS:NZ	3:B:3002:I3P:O53	2.46	0.47
1:C:100:GLU:OE1	1:C:100:GLU:HA	2.13	0.47
1:D:2162:ASP:OD1	1:D:2162:ASP:C	2.52	0.47
1:A:1437:ILE:HG21	1:A:1479:PHE:HE2	1.78	0.47
1:B:128:LYS:O	1:B:440:ARG:NH1	2.47	0.47
1:C:1188:GLN:OE1	1:C:1188:GLN:N	2.41	0.47
1:D:2009:ASP:OD1	1:D:2010:SER:N	2.47	0.47
1:A:100:GLU:HA	1:A:100:GLU:OE1	2.14	0.47
1:A:639:VAL:HG22	1:A:644:ALA:HA	1.97	0.47
1:A:871:ILE:HD13	1:A:974:ILE:HG23	1.96	0.47
1:A:1670:GLN:NE2	1:A:1752:GLU:O	2.46	0.47
1:B:2009:ASP:OD1	1:B:2010:SER:N	2.47	0.47
1:B:2016:ILE:HG21	1:B:2060:LEU:HD21	1.95	0.47
1:B:2160:GLU:OE1	1:B:2160:GLU:N	2.47	0.47
1:C:308:HIS:O	1:C:312:GLY:N	2.45	0.47
1:A:637:LEU:HD23	1:A:637:LEU:O	2.15	0.47
1:A:1236:CYS:SG	1:A:1236:CYS:O	2.73	0.47
1:C:2058:LEU:HD23	1:C:2058:LEU:O	2.15	0.47
1:B:164:ILE:HG23	1:B:164:ILE:O	2.15	0.47
1:A:1344:HIS:O	1:A:1348:MET:HG3	2.15	0.47
1:A:2035:GLN:CG	1:A:2035:GLN:O	2.63	0.47
1:C:2066:GLN:O	1:C:2070:LEU:HD22	2.14	0.47
1:A:2064:ASN:OD1	1:A:2064:ASN:C	2.53	0.47
1:A:2328:LEU:O	1:A:2332:LEU:HD13	2.14	0.47
1:C:1604:GLU:OE1	1:C:1604:GLU:HA	2.15	0.47
1:D:63:ASN:OD1	1:D:123:GLN:NE2	2.48	0.47
1:D:871:ILE:HD13	1:D:974:ILE:HG23	1.96	0.47
1:B:1612:ALA:O	1:B:1616:VAL:HG23	2.15	0.46
1:C:1209:LEU:O	1:C:1212:ILE:HG22	2.15	0.46
1:C:1868:LEU:HD22	1:C:1868:LEU:H	1.80	0.46
1:D:1426:VAL:HG22	1:D:1428:MET:H	1.80	0.46
1:C:1250:LEU:HD11	1:C:1264:MET:SD	2.55	0.46
1:B:1456:GLU:OE2	1:B:1507:ARG:NH2	2.49	0.46
1:C:96:ALA:CB	1:D:1922:LEU:HD11	2.46	0.46
1:C:1239:ASN:OD1	1:C:1241:GLY:N	2.46	0.46
1:C:1793:MET:CE	1:C:1903:LEU:HD22	2.46	0.46
1:D:164:ILE:HG23	1:D:164:ILE:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:997:GLU:O	1:A:1001:VAL:HG22	2.15	0.46
1:D:1456:GLU:OE2	1:D:1507:ARG:NH2	2.49	0.46
1:D:1464:LEU:O	1:D:1468:VAL:HG22	2.16	0.46
1:D:1908:LEU:HD11	1:D:1966:GLY:HA3	1.98	0.46
1:C:1773:HIS:NE2	1:C:1777:MET:SD	2.89	0.46
1:D:1046:GLU:OE1	1:D:1046:GLU:HA	2.15	0.46
1:D:2284:ILE:O	1:D:2288:LEU:HD13	2.15	0.46
1:D:2292:ASN:OD1	1:D:2292:ASN:C	2.54	0.46
1:D:2353:GLU:OE1	1:D:2353:GLU:HA	2.16	0.46
1:A:622:VAL:HG22	1:A:630:PHE:HB3	1.97	0.46
1:C:1249:HIS:CD2	1:C:1249:HIS:N	2.84	0.46
1:C:1864:GLY:O	1:C:1867:VAL:HG22	2.16	0.46
1:C:2353:GLU:HA	1:C:2353:GLU:OE1	2.15	0.46
1:D:661:ASN:HB3	1:D:664:ILE:HD11	1.98	0.46
1:A:355:VAL:HG22	1:A:356:ALA:H	1.80	0.46
1:B:2020:LEU:HD22	1:B:2025:LEU:HD13	1.96	0.46
1:C:692:VAL:HG11	1:C:759:LEU:CD1	2.46	0.46
1:D:743:ARG:NE	1:D:787:ASP:OD1	2.48	0.46
1:A:309:LEU:HD13	1:A:439:ILE:HD13	1.96	0.46
1:A:985:TYR:HD2	1:A:1045:LEU:HD21	1.80	0.46
1:C:1336:TYR:HB2	1:C:1345:LEU:HD11	1.97	0.46
1:D:1180:ASN:O	1:D:1234:LYS:NZ	2.48	0.46
1:D:1289:LEU:O	1:D:1293:HIS:N	2.47	0.46
1:A:1391:LEU:HD23	1:A:1416:PHE:CD2	2.51	0.46
1:C:164:ILE:HG23	1:C:164:ILE:O	2.16	0.46
1:D:1048:ASP:OD1	1:D:1048:ASP:C	2.53	0.46
1:B:2058:LEU:O	1:B:2061:SER:OG	2.34	0.46
1:C:892:ILE:HG21	1:C:1058:VAL:HG13	1.98	0.46
1:D:611:THR:HG22	1:D:614:GLU:OE2	2.16	0.46
1:D:997:GLU:O	1:D:1001:VAL:HG22	2.16	0.46
1:A:135:VAL:HG21	1:A:187:PRO:HG3	1.97	0.45
1:C:2131:ARG:O	1:C:2131:ARG:HG2	2.16	0.45
1:A:63:ASN:OD1	1:A:123:GLN:NE2	2.49	0.45
1:A:1028:ILE:CD1	1:A:1598:ILE:HD12	2.46	0.45
1:C:2272:SER:O	1:C:2276:LEU:N	2.49	0.45
1:D:460:ASN:OD1	1:D:527:ARG:NH1	2.49	0.45
1:A:1176:LEU:HD11	1:A:1228:THR:HG22	1.97	0.45
1:B:2295:VAL:HA	1:B:2298:VAL:HG12	1.98	0.45
1:B:2353:GLU:OE1	1:B:2353:GLU:HA	2.15	0.45
1:C:745:TYR:OH	1:C:789:ASP:OD1	2.27	0.45
1:D:584:GLN:HB3	1:D:589:ILE:HD11	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1974:ILE:HD12	1:A:2000:LEU:HD12	1.99	0.45
1:A:2284:ILE:O	1:A:2288:LEU:HG	2.17	0.45
1:B:1487:ASN:O	1:B:1487:ASN:ND2	2.48	0.45
1:A:1053:ARG:O	1:A:1057:ARG:HG3	2.15	0.45
1:A:1506:THR:HA	1:A:1509:LEU:HD23	1.98	0.45
1:B:1236:CYS:O	1:B:1236:CYS:SG	2.74	0.45
1:A:2131:ARG:O	1:A:2131:ARG:HG2	2.16	0.45
1:C:1236:CYS:SG	1:C:1236:CYS:O	2.75	0.45
1:C:1394:GLU:OE1	1:C:1436:HIS:NE2	2.50	0.45
1:C:1887:ASP:OD1	1:C:1888:LEU:N	2.49	0.45
1:C:2574:LEU:HD12	1:C:2574:LEU:O	2.17	0.45
1:A:2329:THR:CG2	1:A:2343:ILE:HD11	2.47	0.45
1:B:661:ASN:HB3	1:B:664:ILE:HD11	1.98	0.45
1:D:1236:CYS:O	1:D:1236:CYS:SG	2.74	0.45
1:A:803:TRP:HE3	1:A:1097:LEU:HD12	1.82	0.45
1:A:1469:LEU:O	1:A:1473:LEU:HD12	2.16	0.45
1:B:997:GLU:O	1:B:1001:VAL:HG22	2.16	0.45
1:B:1285:HIS:CE1	1:B:1289:LEU:HD11	2.51	0.45
1:C:584:GLN:HB3	1:C:589:ILE:HD11	1.99	0.45
1:D:2131:ARG:O	1:D:2131:ARG:HG2	2.16	0.45
1:B:1178:ARG:O	1:B:1182:MET:HE3	2.17	0.45
1:C:2513:PHE:O	1:C:2513:PHE:HD1	1.99	0.45
1:D:615:VAL:O	1:D:619:VAL:HG13	2.17	0.45
1:A:1431:ILE:HD11	1:A:1437:ILE:HD12	1.98	0.45
1:A:2326:TYR:CD1	1:A:2326:TYR:C	2.90	0.45
1:B:743:ARG:NE	1:B:787:ASP:OD1	2.50	0.45
1:B:2066:GLN:OE1	1:B:2070:LEU:HD21	2.17	0.45
1:C:73:LYS:O	1:C:73:LYS:HD3	2.17	0.45
1:C:389:LEU:HB2	1:C:398:ILE:HD12	1.98	0.45
1:C:2365:ASN:OD1	1:C:2519:THR:OG1	2.19	0.45
1:D:1910:PHE:HE1	1:D:1936:LEU:HD22	1.82	0.45
1:A:1761:LEU:O	1:A:1879:LEU:HD12	2.16	0.44
1:A:1922:LEU:HD11	1:D:96:ALA:HB2	2.00	0.44
1:B:1271:ASN:C	1:B:1271:ASN:OD1	2.56	0.44
1:C:1612:ALA:O	1:C:1616:VAL:HG23	2.17	0.44
1:A:1464:LEU:O	1:A:1468:VAL:HG22	2.17	0.44
1:A:1509:LEU:HD22	1:A:1526:ILE:HD13	1.99	0.44
1:B:2131:ARG:O	1:B:2131:ARG:HG2	2.16	0.44
1:C:1203:HIS:CD2	1:C:1245:LEU:HD21	2.53	0.44
1:D:1912:ASP:O	1:D:1917:SER:N	2.49	0.44
1:D:2020:LEU:HD22	1:D:2025:LEU:HD13	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1994:ASP:C	1:C:1994:ASP:OD1	2.55	0.44
1:D:2118:GLU:O	1:D:2121:THR:OG1	2.29	0.44
1:C:398:ILE:HA	1:C:419:THR:HG22	1.99	0.44
1:C:1456:GLU:OE2	1:C:1507:ARG:NH2	2.50	0.44
1:C:1864:GLY:O	1:C:1868:LEU:HD22	2.17	0.44
1:A:197:SER:N	1:A:209:GLU:O	2.48	0.44
1:B:1048:ASP:OD2	1:B:1054:MET:N	2.51	0.44
1:B:1994:ASP:OD1	1:B:1994:ASP:C	2.55	0.44
1:B:1048:ASP:OD1	1:B:1048:ASP:C	2.56	0.44
1:C:2064:ASN:OD1	1:C:2064:ASN:C	2.56	0.44
1:D:2328:LEU:O	1:D:2332:LEU:HD13	2.17	0.44
1:A:444:PHE:HD1	1:A:444:PHE:O	2.01	0.44
1:A:1297:VAL:HG11	1:A:1363:MET:HE1	1.98	0.44
1:A:1669:LEU:HD22	1:A:1728:LEU:HD21	1.99	0.44
1:A:1975:LEU:HD21	1:A:2024:GLU:HB3	1.99	0.44
1:B:403:VAL:O	1:B:403:VAL:CG1	2.65	0.44
1:A:164:ILE:O	1:A:164:ILE:HG23	2.17	0.44
1:C:997:GLU:O	1:C:1001:VAL:HG22	2.17	0.44
1:D:761:PHE:CE1	1:D:832:ASN:HB3	2.53	0.44
1:A:1869:ILE:HD12	1:A:1869:ILE:O	2.18	0.43
1:B:645:ILE:HB	1:B:648:THR:HG22	1.99	0.43
1:B:1910:PHE:CE2	1:B:1936:LEU:HD21	2.53	0.43
1:C:135:VAL:HG22	1:C:150:VAL:HG22	2.00	0.43
1:A:1533:ALA:HB1	1:A:1538:ILE:CG2	2.48	0.43
1:A:1910:PHE:CD1	1:A:1910:PHE:C	2.91	0.43
1:C:394:THR:HG22	1:C:396:THR:HG23	2.00	0.43
1:C:985:TYR:HD2	1:C:1045:LEU:HD21	1.81	0.43
1:C:2548:PHE:CE1	1:C:2610:LEU:HD21	2.53	0.43
1:D:391:HIS:O	1:D:395:ASN:N	2.49	0.43
1:D:1897:ASN:OD1	1:D:1899:THR:N	2.51	0.43
1:A:661:ASN:HB3	1:A:664:ILE:HD11	1.99	0.43
1:A:1793:MET:CE	1:A:1903:LEU:HD22	2.49	0.43
1:A:2359:ILE:O	1:A:2362:VAL:HG12	2.17	0.43
1:C:1897:ASN:OD1	1:C:1899:THR:N	2.51	0.43
1:A:1271:ASN:OD1	1:A:1271:ASN:C	2.56	0.43
1:A:1874:LEU:HD13	1:A:1940:THR:HG22	2.01	0.43
1:A:2320:PHE:O	1:A:2324:VAL:HG12	2.18	0.43
1:C:497:MET:HE3	1:C:497:MET:H	1.84	0.43
1:C:2012:ASN:O	1:C:2016:ILE:HG22	2.18	0.43
1:D:1612:ALA:O	1:D:1616:VAL:HG23	2.16	0.43
1:D:2064:ASN:OD1	1:D:2064:ASN:C	2.56	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1303:LEU:HD22	1:A:1321:ILE:HD11	2.01	0.43
1:A:2295:VAL:O	1:A:2298:VAL:HG12	2.18	0.43
1:A:2593:MET:HE3	1:A:2593:MET:HA	2.00	0.43
1:B:362:ASP:OD2	1:B:363:ILE:N	2.52	0.43
1:B:2064:ASN:OD1	1:B:2064:ASN:C	2.56	0.43
1:C:2502:PHE:O	1:C:2507:ILE:HD12	2.19	0.43
1:D:54:ASP:O	1:D:126:HIS:NE2	2.51	0.43
1:D:610:ILE:O	1:D:610:ILE:HG22	2.19	0.43
1:D:797:VAL:HG13	1:D:797:VAL:O	2.18	0.43
1:D:1124:SER:HB2	1:D:1212:ILE:HD11	2.00	0.43
1:A:1391:LEU:HD21	1:A:1396:VAL:HG22	2.00	0.43
1:C:32:VAL:O	1:C:32:VAL:HG12	2.19	0.43
1:C:403:VAL:O	1:C:403:VAL:CG1	2.66	0.43
1:D:197:SER:N	1:D:209:GLU:O	2.50	0.43
1:D:2538:CYS:CB	1:D:2559:ILE:HG22	2.49	0.43
1:A:2607:ALA:O	1:A:2611:VAL:HG23	2.19	0.43
1:B:736:PHE:CD2	1:B:751:ILE:HD12	2.53	0.43
1:B:1391:LEU:HD23	1:B:1416:PHE:CD2	2.54	0.43
1:B:1489:THR:O	1:B:1489:THR:OG1	2.36	0.43
1:C:786:VAL:HG21	1:C:866:LEU:CD1	2.49	0.43
1:C:994:PHE:CD1	1:C:994:PHE:C	2.91	0.43
1:D:1047:VAL:HG11	1:D:1055:PHE:CG	2.54	0.43
1:B:655:CYS:O	1:B:661:ASN:ND2	2.51	0.43
1:B:1761:LEU:O	1:B:1879:LEU:HD12	2.18	0.43
1:B:1869:ILE:HD12	1:B:1869:ILE:O	2.18	0.43
1:D:1177:GLU:HA	1:D:1177:GLU:OE2	2.19	0.43
1:A:557:TYR:CE2	1:A:589:ILE:HD12	2.54	0.42
1:C:54:ASP:O	1:C:126:HIS:NE2	2.52	0.42
1:C:63:ASN:OD1	1:C:123:GLN:NE2	2.52	0.42
1:C:309:LEU:HD13	1:C:439:ILE:HD13	2.01	0.42
1:C:749:ASP:OD2	1:C:750:GLU:N	2.52	0.42
1:C:1391:LEU:HD23	1:C:1416:PHE:CD2	2.54	0.42
1:D:451:MET:CE	1:D:475:LEU:HD22	2.48	0.42
1:D:1909:GLN:O	1:D:1913:ILE:HD12	2.19	0.42
1:C:96:ALA:HB2	1:D:1922:LEU:HD11	2.01	0.42
1:C:1106:ASN:O	1:C:1110:ILE:HD12	2.19	0.42
1:C:2381:TYR:HD1	1:C:2462:ILE:HD12	1.84	0.42
1:D:1422:VAL:O	1:D:1432:TYR:OH	2.23	0.42
1:B:2012:ASN:O	1:B:2016:ILE:HG22	2.18	0.42
1:B:2120:HIS:NE2	1:B:2145:GLN:OE1	2.53	0.42
1:B:2548:PHE:CE1	1:B:2610:LEU:HD21	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1345:LEU:HA	1:C:1348:MET:HE2	2.02	0.42
1:D:32:VAL:HG12	1:D:32:VAL:O	2.19	0.42
1:A:1593:GLU:O	1:A:1597:ASP:OD2	2.37	0.42
1:A:1930:ASN:O	1:A:1934:VAL:HG13	2.19	0.42
1:A:2611:VAL:O	1:A:2611:VAL:CG1	2.67	0.42
1:C:760:ILE:HD11	1:C:780:LEU:HD23	2.01	0.42
1:C:2503:ILE:O	1:C:2508:VAL:HG23	2.20	0.42
1:B:197:SER:N	1:B:209:GLU:O	2.48	0.42
1:B:1894:CYS:SG	1:B:1895:GLN:N	2.93	0.42
1:C:1761:LEU:O	1:C:1879:LEU:HD12	2.19	0.42
1:D:575:ALA:HB2	1:D:598:LEU:HD21	2.02	0.42
1:B:812:ILE:HD11	1:B:1045:LEU:HD11	2.02	0.42
1:D:1063:THR:HG21	1:D:1643:PHE:HE1	1.83	0.42
1:D:2272:SER:O	1:D:2276:LEU:N	2.52	0.42
1:A:736:PHE:CD2	1:A:751:ILE:HD12	2.55	0.42
1:A:1048:ASP:OD1	1:A:1052:GLY:N	2.50	0.42
1:B:1124:SER:HB2	1:B:1212:ILE:HD11	2.02	0.42
1:B:2502:PHE:O	1:B:2507:ILE:HD12	2.20	0.42
1:C:803:TRP:HE3	1:C:1097:LEU:HD12	1.84	0.42
1:B:782:LEU:HD11	1:B:869:ASN:OD1	2.20	0.42
1:B:2066:GLN:OE1	1:B:2066:GLN:O	2.37	0.42
1:C:134:THR:HG1	1:C:160:SER:HG	1.67	0.42
1:D:1285:HIS:NE2	1:D:1289:LEU:HD11	2.35	0.42
1:D:2389:LEU:C	1:D:2389:LEU:HD23	2.39	0.42
1:A:1203:HIS:NE2	1:A:1245:LEU:HD21	2.35	0.42
1:A:1495:GLN:O	1:A:1499:VAL:HG23	2.19	0.42
1:A:1887:ASP:OD1	1:A:1888:LEU:N	2.53	0.42
1:A:2035:GLN:O	1:A:2035:GLN:HG3	2.20	0.42
1:A:2035:GLN:O	1:A:2035:GLN:OE1	2.38	0.42
1:B:1630:GLU:OE2	1:B:1630:GLU:C	2.58	0.42
1:B:2272:SER:O	1:B:2276:LEU:N	2.52	0.42
1:C:1741:ILE:HG21	1:C:1785:PHE:CE1	2.55	0.42
1:C:2035:GLN:CG	1:C:2035:GLN:O	2.68	0.42
1:C:2538:CYS:HB2	1:C:2559:ILE:HG22	2.01	0.42
1:A:812:ILE:HD11	1:A:1045:LEU:HD11	2.02	0.42
1:B:2381:TYR:HD1	1:B:2462:ILE:HD12	1.85	0.42
1:C:2120:HIS:NE2	1:C:2145:GLN:OE1	2.53	0.42
1:D:374:LEU:HD12	1:D:374:LEU:O	2.20	0.42
1:D:2507:ILE:O	1:D:2507:ILE:CG2	2.68	0.42
1:A:245:HIS:O	1:A:249:GLU:N	2.53	0.41
1:A:2054:TYR:CD1	1:A:2054:TYR:C	2.93	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:403:VAL:O	1:B:403:VAL:HG13	2.19	0.41
1:B:985:TYR:HD2	1:B:1045:LEU:HD21	1.83	0.41
1:C:1889:GLN:NE2	1:C:1946:GLU:O	2.53	0.41
1:C:1930:ASN:C	1:C:1930:ASN:OD1	2.58	0.41
1:C:2167:LYS:HB2	1:C:2539:PHE:HE1	1.83	0.41
1:D:803:TRP:HE3	1:D:1097:LEU:HD12	1.85	0.41
1:D:1026:ASP:OD1	1:D:1027:ARG:N	2.53	0.41
1:D:2035:GLN:CG	1:D:2035:GLN:O	2.67	0.41
1:B:391:HIS:O	1:B:395:ASN:N	2.50	0.41
1:B:2035:GLN:CG	1:B:2035:GLN:O	2.67	0.41
1:B:2154:ARG:HH11	1:B:2154:ARG:HG2	1.85	0.41
1:D:622:VAL:HG22	1:D:630:PHE:HB3	2.02	0.41
1:D:2154:ARG:HH11	1:D:2154:ARG:HG2	1.85	0.41
1:A:1209:LEU:HD12	1:A:1209:LEU:O	2.19	0.41
1:B:578:PHE:CE1	1:B:595:ILE:HD12	2.56	0.41
1:C:493:VAL:HG21	1:C:555:LEU:HD11	2.02	0.41
1:D:1650:HIS:CE1	1:D:1654:LEU:HD23	2.55	0.41
1:A:204:ASN:OD1	1:A:204:ASN:N	2.54	0.41
1:A:1960:VAL:HG11	1:A:2012:ASN:HA	2.02	0.41
1:B:709:ARG:NH1	1:B:768:MET:SD	2.91	0.41
1:C:661:ASN:HB3	1:C:664:ILE:HD11	2.03	0.41
1:C:1026:ASP:OD1	1:C:1027:ARG:N	2.53	0.41
1:D:135:VAL:HG22	1:D:150:VAL:HG22	2.02	0.41
1:D:1209:LEU:O	1:D:1212:ILE:HG22	2.20	0.41
1:D:1670:GLN:NE2	1:D:1752:GLU:O	2.54	0.41
1:D:1938:ILE:N	1:D:1938:ILE:HD12	2.36	0.41
1:B:107:GLU:OE2	1:B:107:GLU:HA	2.20	0.41
1:B:1209:LEU:O	1:B:1212:ILE:HG22	2.20	0.41
1:B:2503:ILE:O	1:B:2508:VAL:HG23	2.20	0.41
1:C:1545:ASP:OD1	1:C:1545:ASP:C	2.59	0.41
1:C:1974:ILE:CD1	1:C:2000:LEU:HD12	2.50	0.41
1:A:1437:ILE:HD13	1:A:1479:PHE:CD2	2.55	0.41
1:B:1289:LEU:O	1:B:1293:HIS:N	2.50	0.41
1:D:812:ILE:HD11	1:D:1045:LEU:HD11	2.01	0.41
1:A:228:ARG:HG3	1:A:229:ASP:OD2	2.20	0.41
1:A:2211:LEU:O	1:A:2215:ILE:HG13	2.20	0.41
1:A:2539:PHE:HB3	1:A:2565:MET:HE3	2.03	0.41
1:B:1249:HIS:ND1	1:B:1249:HIS:N	2.69	0.41
1:B:1889:GLN:NE2	1:B:1946:GLU:O	2.54	0.41
1:C:815:TYR:OH	1:C:984:ASP:OD2	2.33	0.41
1:A:468:ASP:OD1	1:A:468:ASP:N	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:54:ASP:O	1:B:126:HIS:NE2	2.52	0.41
1:B:1913:ILE:HD12	1:B:1913:ILE:H	1.86	0.41
1:B:2388:PHE:C	1:B:2388:PHE:CD2	2.94	0.41
1:C:645:ILE:N	1:C:645:ILE:HD13	2.35	0.41
1:D:1765:ASN:OD1	1:D:1767:GLU:N	2.54	0.41
1:D:1938:ILE:HD12	1:D:1938:ILE:H	1.85	0.41
1:D:2120:HIS:NE2	1:D:2145:GLN:OE1	2.54	0.41
1:A:578:PHE:CE1	1:A:595:ILE:HD12	2.56	0.41
1:B:135:VAL:HG22	1:B:150:VAL:HG22	2.02	0.41
1:B:309:LEU:HD13	1:B:439:ILE:HD13	2.03	0.41
1:B:1026:ASP:OD1	1:B:1027:ARG:N	2.53	0.41
1:B:1047:VAL:HG11	1:B:1055:PHE:CG	2.56	0.41
1:B:1463:THR:HG23	1:B:1464:LEU:N	2.35	0.41
1:B:1729:ASP:OD1	1:B:1734:THR:OG1	2.28	0.41
1:B:2054:TYR:C	1:B:2054:TYR:CD1	2.94	0.41
1:C:403:VAL:O	1:C:403:VAL:HG13	2.21	0.41
1:C:1275:CYS:O	1:C:1278:ILE:HG22	2.21	0.41
1:C:2538:CYS:CB	1:C:2559:ILE:HG22	2.51	0.41
1:D:403:VAL:O	1:D:403:VAL:HG13	2.21	0.41
1:D:564:GLN:CD	1:D:564:GLN:O	2.58	0.41
1:D:711:LEU:HB3	1:D:726:LEU:HD13	2.02	0.41
1:D:1048:ASP:OD2	1:D:1054:MET:N	2.53	0.41
1:D:2458:LEU:HD23	1:D:2458:LEU:O	2.21	0.41
1:A:1502:LEU:O	1:A:1505:THR:HG22	2.21	0.41
1:A:1765:ASN:OD1	1:A:1767:GLU:N	2.54	0.41
1:A:2272:SER:O	1:A:2276:LEU:N	2.53	0.41
1:A:2294:ILE:O	1:A:2297:VAL:HG12	2.21	0.41
1:C:1630:GLU:C	1:C:1630:GLU:OE2	2.59	0.41
1:D:1297:VAL:HG11	1:D:1363:MET:HE3	2.02	0.41
1:D:1889:GLN:NE2	1:D:1946:GLU:O	2.54	0.41
1:A:811:THR:N	1:A:814:ASP:OD1	2.54	0.40
1:B:564:GLN:CD	1:B:564:GLN:O	2.60	0.40
1:C:352:TYR:CD2	1:C:394:THR:HG21	2.56	0.40
1:D:578:PHE:CE1	1:D:595:ILE:HD12	2.56	0.40
1:D:1063:THR:O	1:D:1063:THR:HG22	2.21	0.40
1:D:1463:THR:HG23	1:D:1464:LEU:N	2.35	0.40
1:D:2137:VAL:O	1:D:2137:VAL:HG13	2.21	0.40
1:A:1300:LEU:HD11	1:A:1364:TYR:HE2	1.85	0.40
1:A:1630:GLU:OE2	1:A:1630:GLU:C	2.59	0.40
1:B:1693:ASN:OD1	1:B:1693:ASN:C	2.58	0.40
1:B:2137:VAL:O	1:B:2137:VAL:HG13	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:637:LEU:HD23	1:D:637:LEU:O	2.21	0.40
1:D:2610:LEU:HD12	1:D:2610:LEU:H	1.85	0.40
1:A:610:ILE:O	1:A:610:ILE:HG22	2.21	0.40
1:A:1673:LEU:HD11	1:A:1728:LEU:HD22	2.03	0.40
1:B:105:ASP:OD1	1:B:105:ASP:C	2.59	0.40
1:B:509:MET:HE1	1:B:514:ILE:HG21	2.03	0.40
1:B:803:TRP:HE3	1:B:1097:LEU:HD12	1.87	0.40
1:D:601:ASN:O	1:D:601:ASN:ND2	2.45	0.40
1:A:2213:VAL:O	1:A:2217:ILE:HG22	2.21	0.40
1:B:716:ARG:HH11	1:B:716:ARG:HG2	1.87	0.40
1:B:1669:LEU:HD22	1:B:1728:LEU:HD21	2.03	0.40
1:C:759:LEU:HD12	1:C:759:LEU:O	2.22	0.40
1:C:1669:LEU:HD22	1:C:1728:LEU:HD21	2.03	0.40
1:C:1769:GLN:NE2	1:C:1879:LEU:O	2.54	0.40
1:C:1925:LEU:HD13	1:C:1969:ILE:HD11	2.03	0.40
1:D:614:GLU:H	1:D:614:GLU:CD	2.25	0.40
1:D:1479:PHE:CD1	1:D:1479:PHE:C	2.95	0.40
1:A:968:LYS:HB3	1:A:1070:LEU:HD11	2.04	0.40
1:A:1209:LEU:O	1:A:1212:ILE:HG22	2.21	0.40
1:B:749:ASP:O	1:B:753:GLN:OE1	2.40	0.40
1:B:1391:LEU:HD21	1:B:1396:VAL:HG22	2.03	0.40
1:B:1594:LYS:O	1:B:1598:ILE:HG12	2.21	0.40
1:C:581:MET:CB	1:C:595:ILE:HD11	2.51	0.40
1:C:1897:ASN:OD1	1:C:1897:ASN:C	2.60	0.40
1:D:2054:TYR:CD1	1:D:2054:TYR:C	2.94	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 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	2219/2671 (83%)	2179 (98%)	40 (2%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	2219/2671 (83%)	2191 (99%)	28 (1%)	0	100	100
1	C	2219/2671 (83%)	2192 (99%)	27 (1%)	0	100	100
1	D	2219/2671 (83%)	2190 (99%)	29 (1%)	0	100	100
All	All	8876/10684 (83%)	8752 (99%)	124 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	1995/2385 (84%)	1954 (98%)	41 (2%)	48	71
1	B	1995/2385 (84%)	1951 (98%)	44 (2%)	47	69
1	C	1995/2385 (84%)	1953 (98%)	42 (2%)	48	71
1	D	1995/2385 (84%)	1950 (98%)	45 (2%)	45	68
All	All	7980/9540 (84%)	7808 (98%)	172 (2%)	47	69

All (172) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	99	MET
1	A	146	ASN
1	A	204	ASN
1	A	402	ASN
1	A	444	PHE
1	A	468	ASP
1	A	484	SER
1	A	497	MET
1	A	583	SER
1	A	588	ASP
1	A	600	HIS
1	A	601	ASN
1	A	836	PHE

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Mol	Chain	Res	Type
1	A	840	TYR
1	A	1122	GLU
1	A	1208	ASP
1	A	1210	LEU
1	A	1367	SER
1	A	1389	SER
1	A	1452	CYS
1	A	1464	LEU
1	A	1479	PHE
1	A	1487	ASN
1	A	1531	MET
1	A	1545	ASP
1	A	1619	ASP
1	A	1785	PHE
1	A	1910	PHE
1	A	1958	CYS
1	A	1979	SER
1	A	2054	TYR
1	A	2150	GLU
1	A	2156	PHE
1	A	2162	ASP
1	A	2182	MET
1	A	2225	TYR
1	A	2326	TYR
1	A	2351	ARG
1	A	2490	PHE
1	A	2554	SER
1	A	2565	MET
1	B	71	TYR
1	B	99	MET
1	B	204	ASN
1	B	444	PHE
1	B	454	SER
1	B	468	ASP
1	B	478	ASP
1	B	484	SER
1	B	497	MET
1	B	552	MET
1	B	583	SER
1	B	588	ASP
1	B	601	ASN
1	B	636	ASP

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Mol	Chain	Res	Type
1	B	640	SER
1	B	699	LYS
1	B	703	HIS
1	B	768	MET
1	B	817	SER
1	B	836	PHE
1	B	840	TYR
1	B	990	LEU
1	B	1089	MET
1	B	1208	ASP
1	B	1249	HIS
1	B	1389	SER
1	B	1479	PHE
1	B	1487	ASN
1	B	1531	MET
1	B	1894	CYS
1	B	1930	ASN
1	B	1958	CYS
1	B	1979	SER
1	B	1982	CYS
1	B	2054	TYR
1	B	2066	GLN
1	B	2133	MET
1	B	2156	PHE
1	B	2225	TYR
1	B	2351	ARG
1	B	2497	ASP
1	B	2539	PHE
1	B	2549	ASP
1	B	2600	ASP
1	C	71	TYR
1	C	99	MET
1	C	157	ASN
1	C	203	ASP
1	C	204	ASN
1	C	262	GLN
1	C	427	GLU
1	C	444	PHE
1	C	454	SER
1	C	497	MET
1	C	583	SER
1	C	588	ASP

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Mol	Chain	Res	Type
1	C	601	ASN
1	C	642	HIS
1	C	713	GLN
1	C	1030	GLU
1	C	1046	GLU
1	C	1089	MET
1	C	1122	GLU
1	C	1222	MET
1	C	1479	PHE
1	C	1487	ASN
1	C	1531	MET
1	C	1623	TRP
1	C	1902	ASN
1	C	1958	CYS
1	C	1979	SER
1	C	1982	CYS
1	C	2020	LEU
1	C	2166	SER
1	C	2210	ASN
1	C	2225	TYR
1	C	2314	MET
1	C	2326	TYR
1	C	2351	ARG
1	C	2394	ASP
1	C	2498	LEU
1	C	2513	PHE
1	C	2539	PHE
1	C	2546	ASP
1	C	2549	ASP
1	C	2600	ASP
1	D	99	MET
1	D	204	ASN
1	D	402	ASN
1	D	444	PHE
1	D	454	SER
1	D	468	ASP
1	D	478	ASP
1	D	484	SER
1	D	497	MET
1	D	546	ASN
1	D	583	SER
1	D	601	ASN

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Mol	Chain	Res	Type
1	D	703	HIS
1	D	719	ASN
1	D	817	SER
1	D	836	PHE
1	D	840	TYR
1	D	990	LEU
1	D	1046	GLU
1	D	1089	MET
1	D	1210	LEU
1	D	1222	MET
1	D	1363	MET
1	D	1367	SER
1	D	1389	SER
1	D	1452	CYS
1	D	1479	PHE
1	D	1487	ASN
1	D	1531	MET
1	D	1932	ASP
1	D	1979	SER
1	D	1982	CYS
1	D	2054	TYR
1	D	2133	MET
1	D	2162	ASP
1	D	2191	MET
1	D	2289	ASN
1	D	2314	MET
1	D	2351	ARG
1	D	2390	PHE
1	D	2510	ASN
1	D	2520	PHE
1	D	2538	CYS
1	D	2554	SER
1	D	2600	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1962	HIS
1	A	2210	ASN
1	B	546	ASN
1	B	1239	ASN
1	B	1962	HIS

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Mol	Chain	Res	Type
1	C	1288	HIS
1	C	1344	HIS
1	C	2323	HIS
1	D	289	HIS
1	D	546	ASN
1	D	1344	HIS
1	D	1962	HIS
1	D	2216	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](#)

Of 16 ligands modelled in this entry, 8 are monoatomic - leaving 8 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	$\# Z > 2$
5	ATP	A	3004	-	28,33,33	0.64	0	34,52,52	0.91	1 (2%)
3	I3P	C	3002	-	24,24,24	2.17	3 (12%)	39,39,39	0.86	0
5	ATP	D	3004	-	28,33,33	0.63	0	34,52,52	0.91	1 (2%)
3	I3P	A	3002	-	24,24,24	2.17	3 (12%)	39,39,39	0.86	0
5	ATP	B	3004	-	28,33,33	0.63	0	34,52,52	0.91	1 (2%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	I3P	B	3002	-	24,24,24	2.17	3 (12%)	39,39,39	0.86	0
5	ATP	C	3004	-	28,33,33	0.64	0	34,52,52	0.91	1 (2%)
3	I3P	D	3002	-	24,24,24	2.17	3 (12%)	39,39,39	0.86	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
5	ATP	A	3004	-	-	9/18/38/38	0/3/3/3
3	I3P	C	3002	-	-	1/15/39/39	0/1/1/1
5	ATP	D	3004	-	-	9/18/38/38	0/3/3/3
3	I3P	A	3002	-	-	2/15/39/39	0/1/1/1
5	ATP	B	3004	-	-	9/18/38/38	0/3/3/3
3	I3P	B	3002	-	-	2/15/39/39	0/1/1/1
5	ATP	C	3004	-	-	10/18/38/38	0/3/3/3
3	I3P	D	3002	-	-	1/15/39/39	0/1/1/1

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	3002	I3P	P4-O4	6.02	1.70	1.59
3	A	3002	I3P	P4-O4	6.02	1.70	1.59
3	C	3002	I3P	P4-O4	6.02	1.70	1.59
3	D	3002	I3P	P4-O4	6.02	1.70	1.59
3	A	3002	I3P	P5-O5	5.84	1.69	1.59
3	C	3002	I3P	P5-O5	5.84	1.69	1.59
3	D	3002	I3P	P5-O5	5.84	1.69	1.59
3	B	3002	I3P	P5-O5	5.83	1.69	1.59
3	C	3002	I3P	P1-O1	5.71	1.69	1.59
3	D	3002	I3P	P1-O1	5.71	1.69	1.59
3	A	3002	I3P	P1-O1	5.71	1.69	1.59
3	B	3002	I3P	P1-O1	5.70	1.69	1.59

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	3004	ATP	C5-C6-N6	2.33	123.87	120.31
5	D	3004	ATP	C5-C6-N6	2.33	123.86	120.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	3004	ATP	C5-C6-N6	2.32	123.85	120.31
5	C	3004	ATP	C5-C6-N6	2.32	123.85	120.31

There are no chirality outliers.

All (43) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	3004	ATP	PB-O3B-PG-O3G
5	A	3004	ATP	C5'-O5'-PA-O2A
5	B	3004	ATP	PB-O3B-PG-O3G
5	B	3004	ATP	C5'-O5'-PA-O1A
5	B	3004	ATP	C5'-O5'-PA-O2A
5	B	3004	ATP	C5'-O5'-PA-O3A
5	C	3004	ATP	PB-O3B-PG-O3G
5	C	3004	ATP	C5'-O5'-PA-O2A
5	C	3004	ATP	C5'-O5'-PA-O3A
5	D	3004	ATP	PB-O3B-PG-O3G
5	D	3004	ATP	C5'-O5'-PA-O2A
5	D	3004	ATP	C5'-O5'-PA-O3A
5	A	3004	ATP	C3'-C4'-C5'-O5'
5	C	3004	ATP	C3'-C4'-C5'-O5'
5	A	3004	ATP	O4'-C4'-C5'-O5'
5	B	3004	ATP	O4'-C4'-C5'-O5'
5	B	3004	ATP	C3'-C4'-C5'-O5'
5	C	3004	ATP	O4'-C4'-C5'-O5'
5	D	3004	ATP	O4'-C4'-C5'-O5'
5	D	3004	ATP	C3'-C4'-C5'-O5'
5	A	3004	ATP	C5'-O5'-PA-O1A
5	A	3004	ATP	C5'-O5'-PA-O3A
5	C	3004	ATP	C5'-O5'-PA-O1A
5	D	3004	ATP	C5'-O5'-PA-O1A
3	A	3002	I3P	C5-O5-P5-O51
3	B	3002	I3P	C5-O5-P5-O51
3	C	3002	I3P	C5-O5-P5-O51
3	D	3002	I3P	C5-O5-P5-O51
5	A	3004	ATP	PB-O3B-PG-O1G
5	C	3004	ATP	PB-O3B-PG-O1G
5	D	3004	ATP	PB-O3B-PG-O1G
5	B	3004	ATP	PG-O3B-PB-O1B
5	B	3004	ATP	PG-O3B-PB-O2B
5	D	3004	ATP	PG-O3B-PB-O1B
5	D	3004	ATP	PG-O3B-PB-O2B

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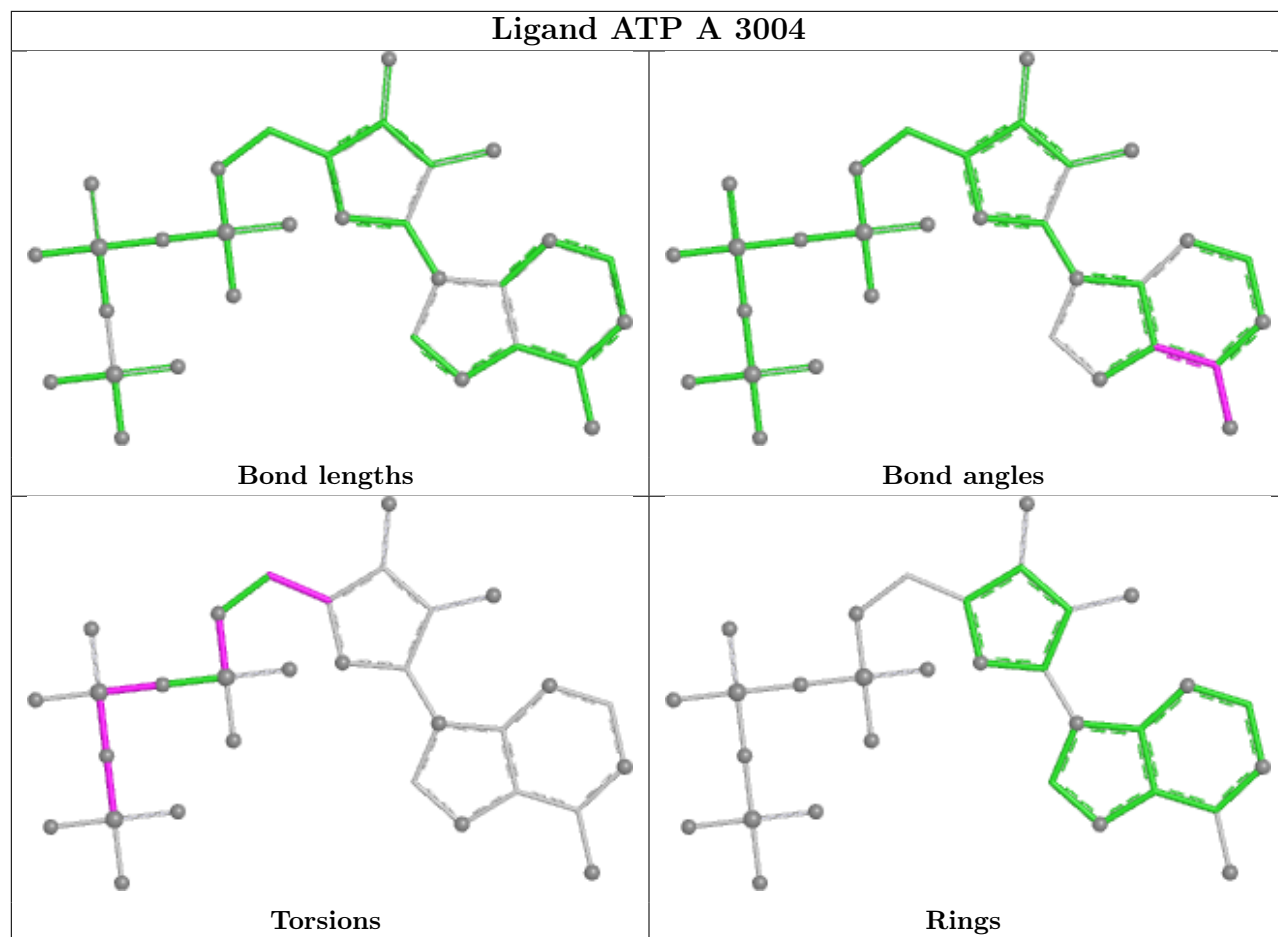
Mol	Chain	Res	Type	Atoms
3	A	3002	I3P	C5-O5-P5-O52
3	B	3002	I3P	C5-O5-P5-O52
5	A	3004	ATP	PG-O3B-PB-O1B
5	A	3004	ATP	PA-O3A-PB-O2B
5	B	3004	ATP	PA-O3A-PB-O2B
5	C	3004	ATP	PG-O3B-PB-O1B
5	C	3004	ATP	PG-O3B-PB-O2B
5	C	3004	ATP	PA-O3A-PB-O2B

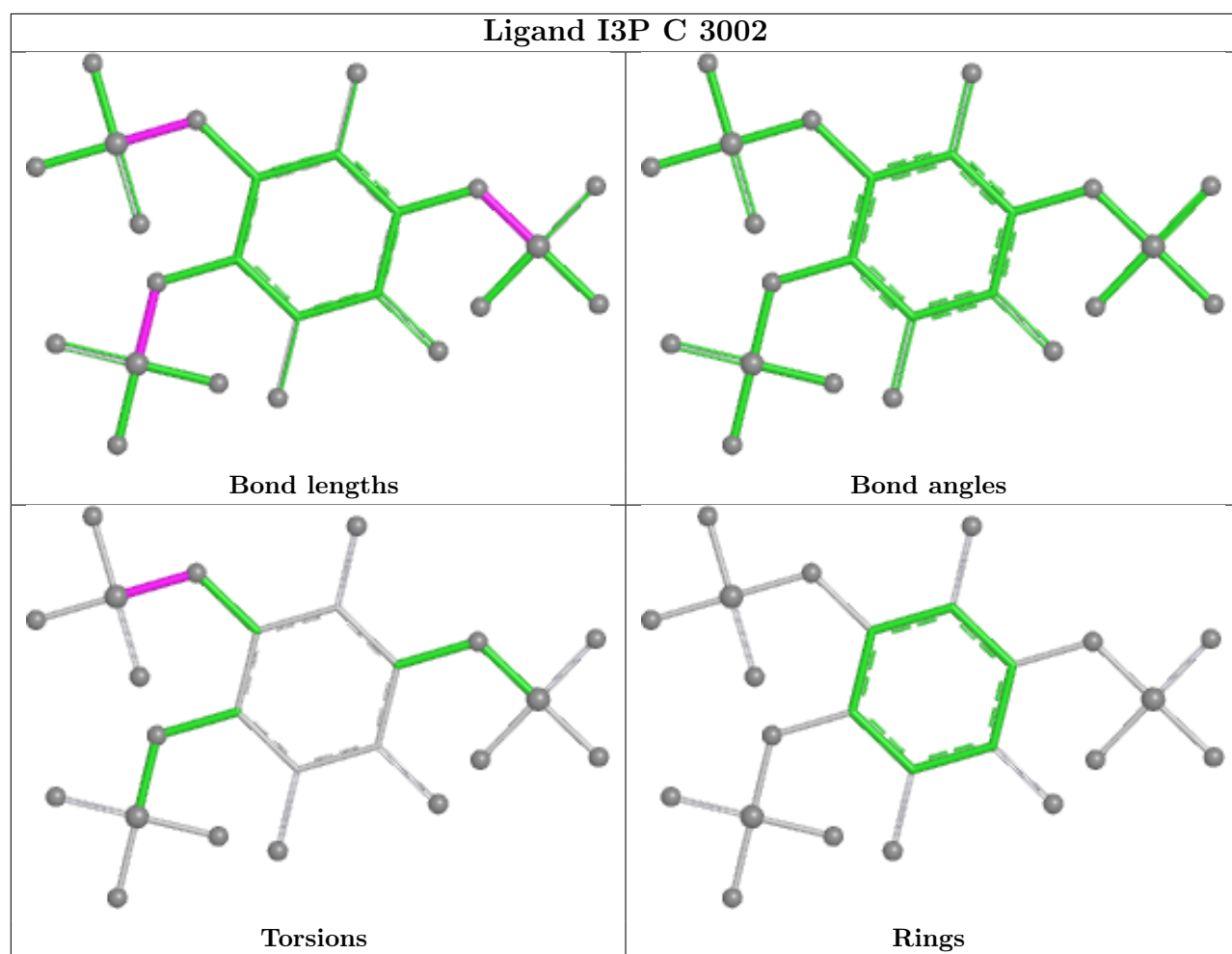
There are no ring outliers.

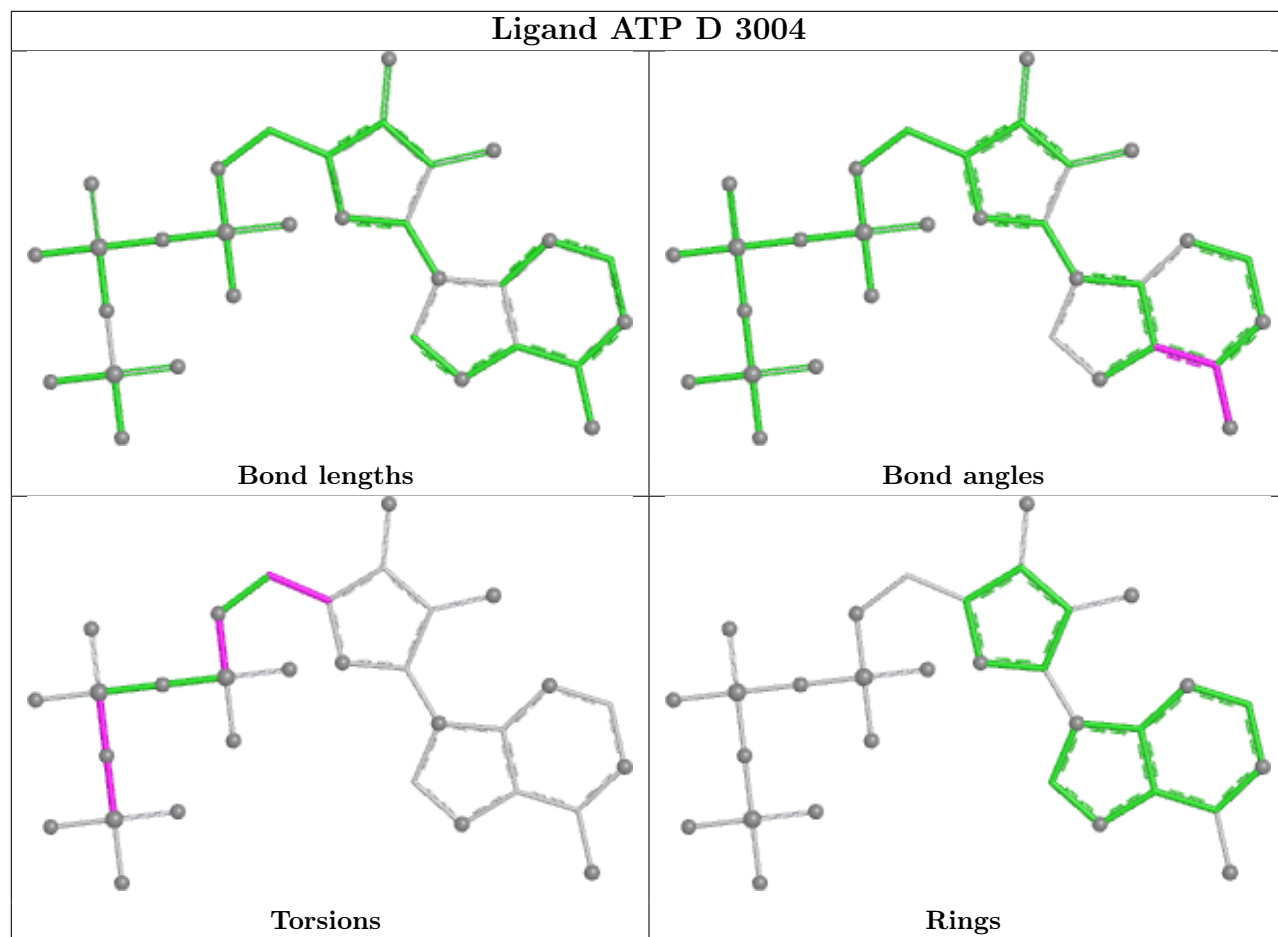
6 monomers are involved in 10 short contacts:

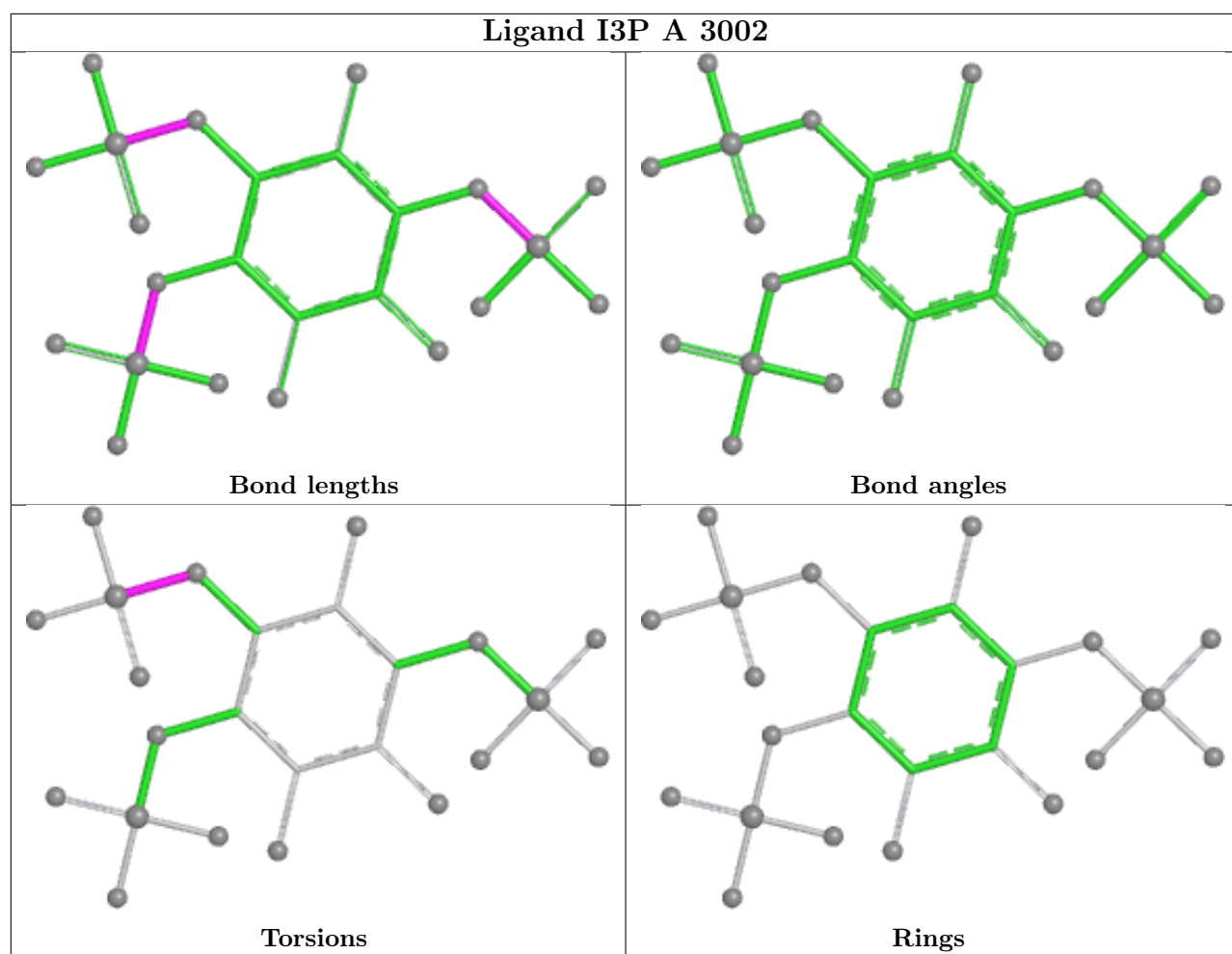
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	3002	I3P	2	0
5	D	3004	ATP	1	0
3	A	3002	I3P	2	0
5	B	3004	ATP	1	0
3	B	3002	I3P	2	0
3	D	3002	I3P	2	0

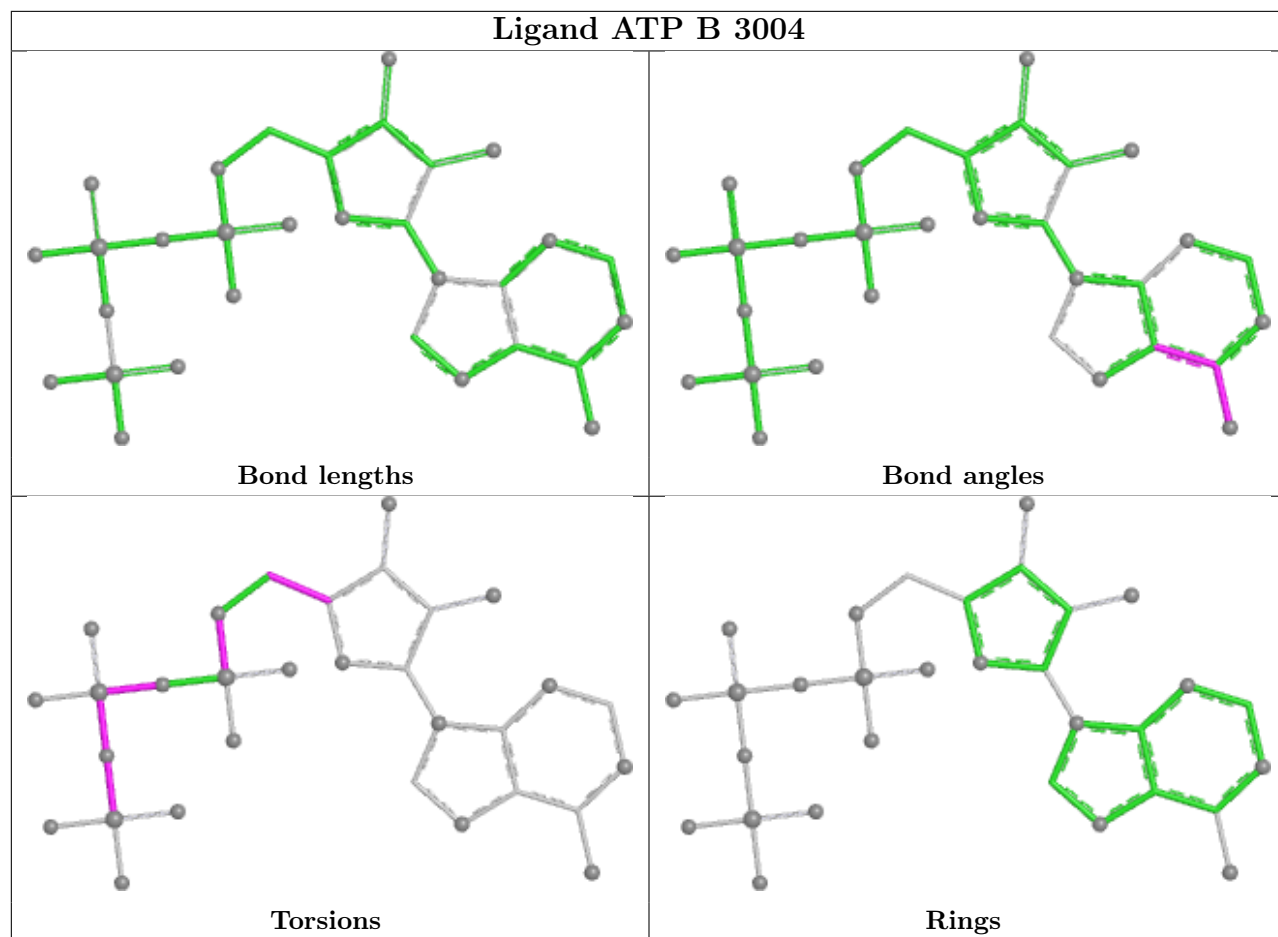
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

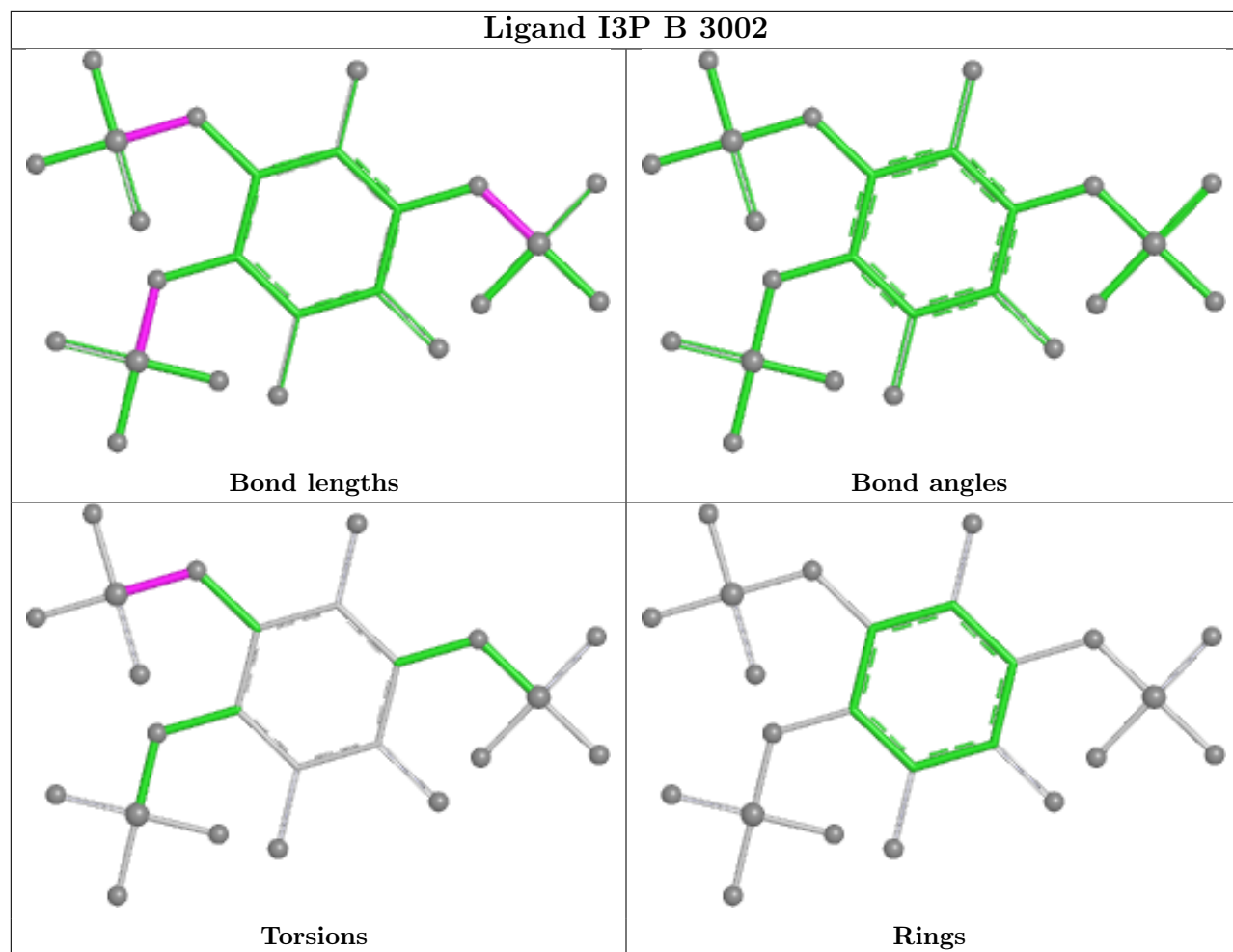


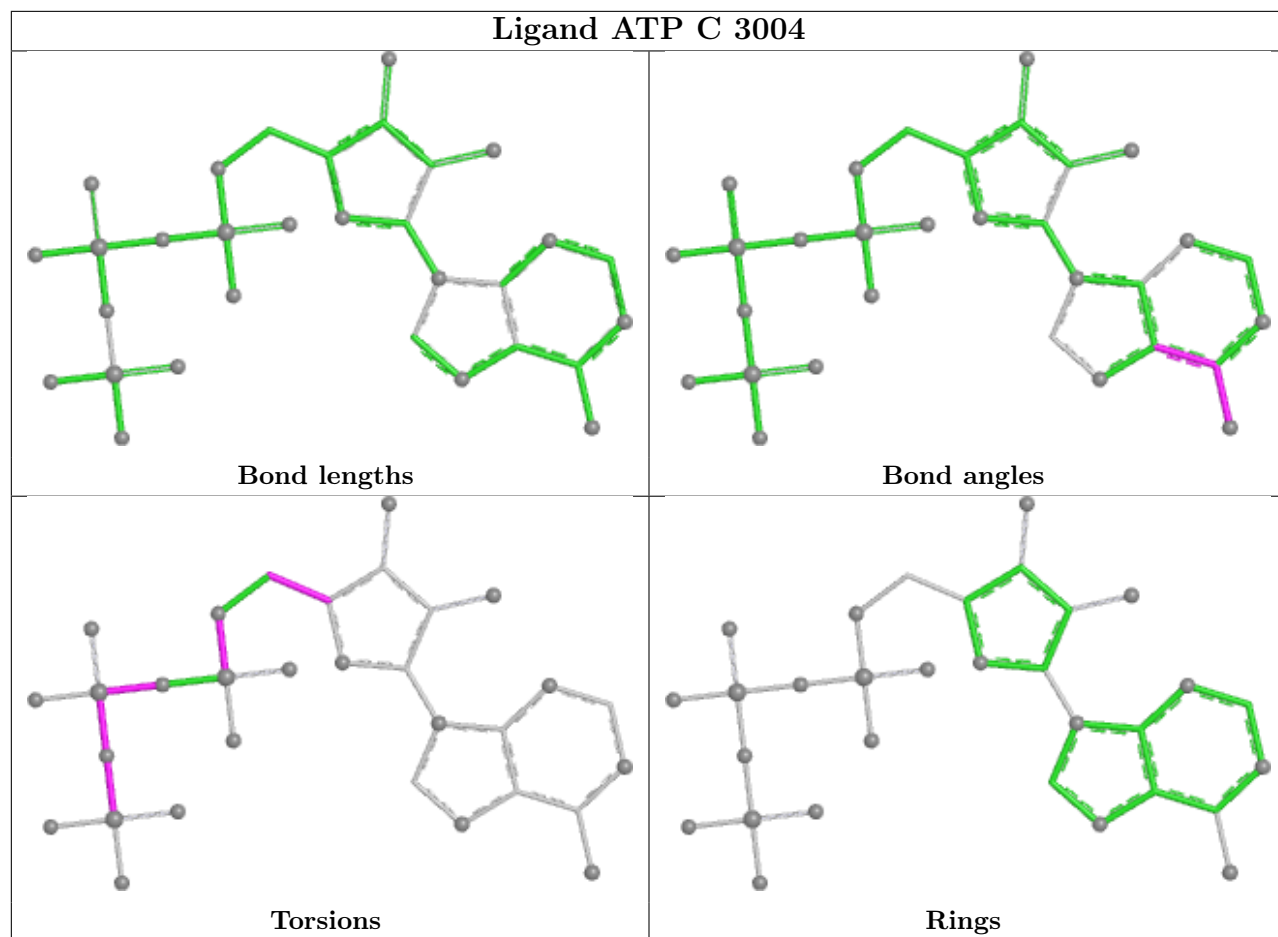


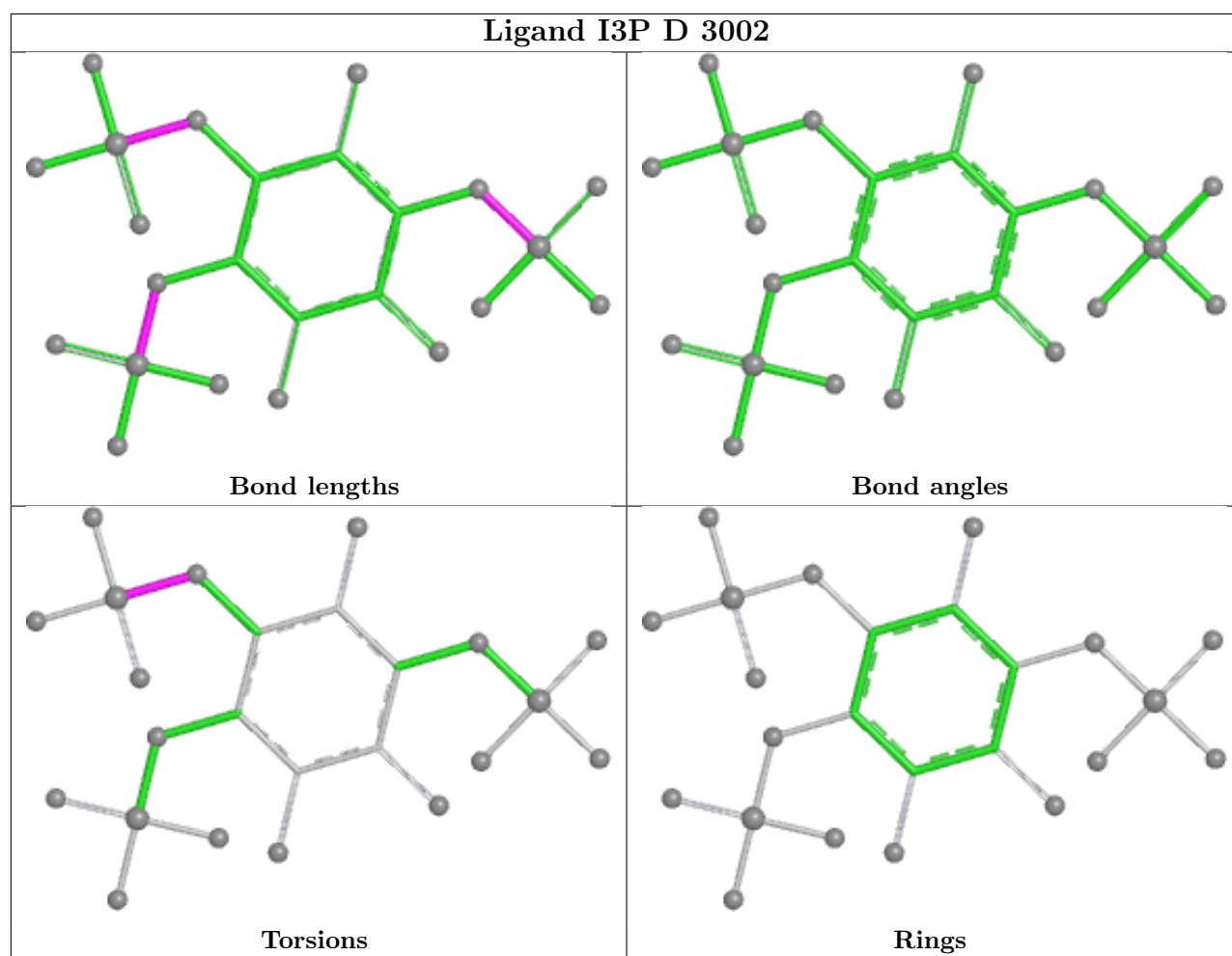












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

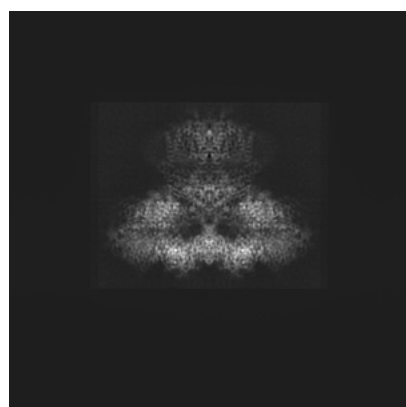
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-41348. These allow visual inspection of the internal detail of the map and identification of artifacts.

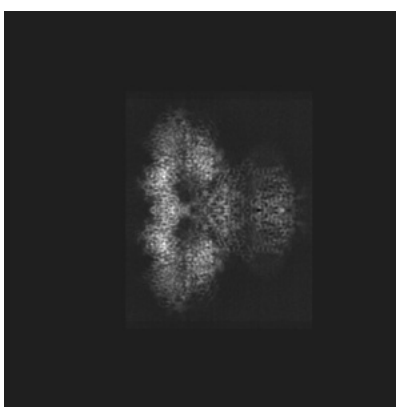
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

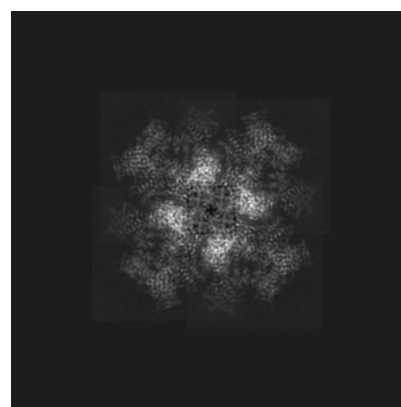
6.1.1 Primary map



X



Y

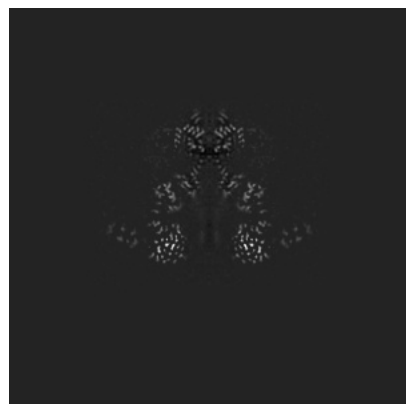


Z

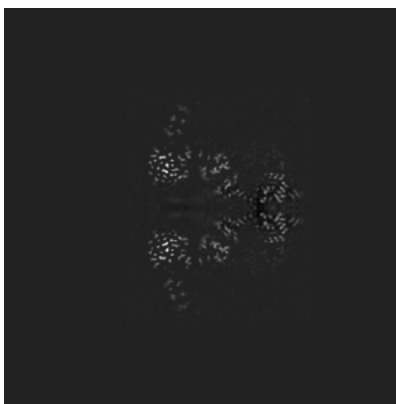
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 336



Y Index: 336

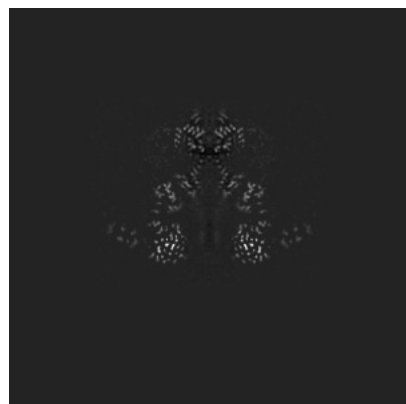


Z Index: 336

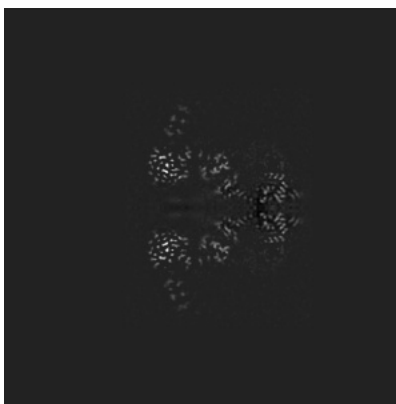
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

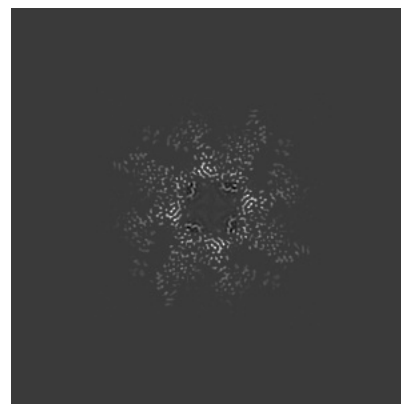
6.3.1 Primary map



X Index: 336



Y Index: 336

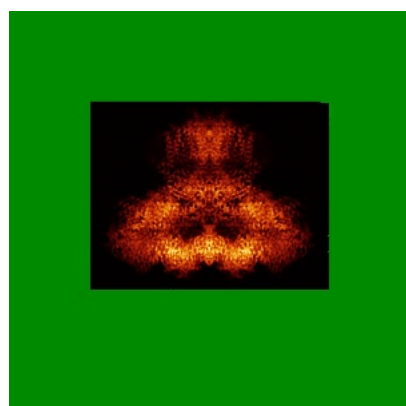


Z Index: 268

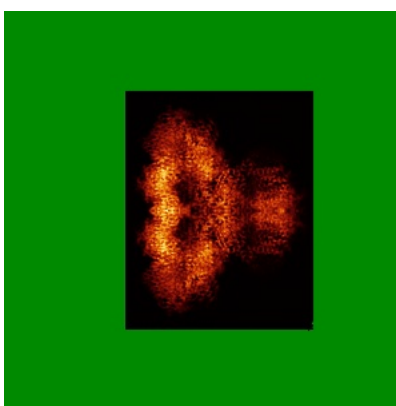
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

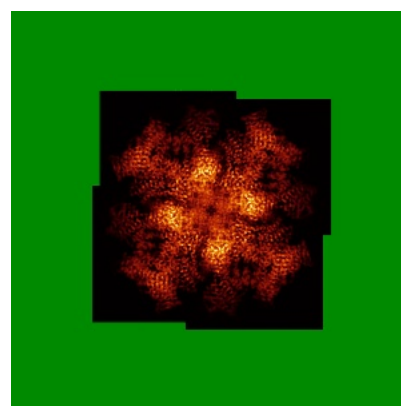
6.4.1 Primary map



X



Y

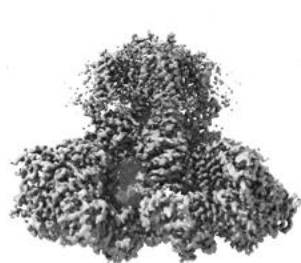


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

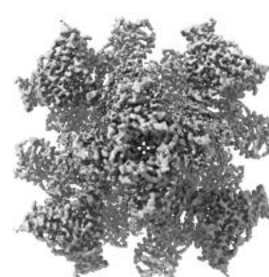
6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 6.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

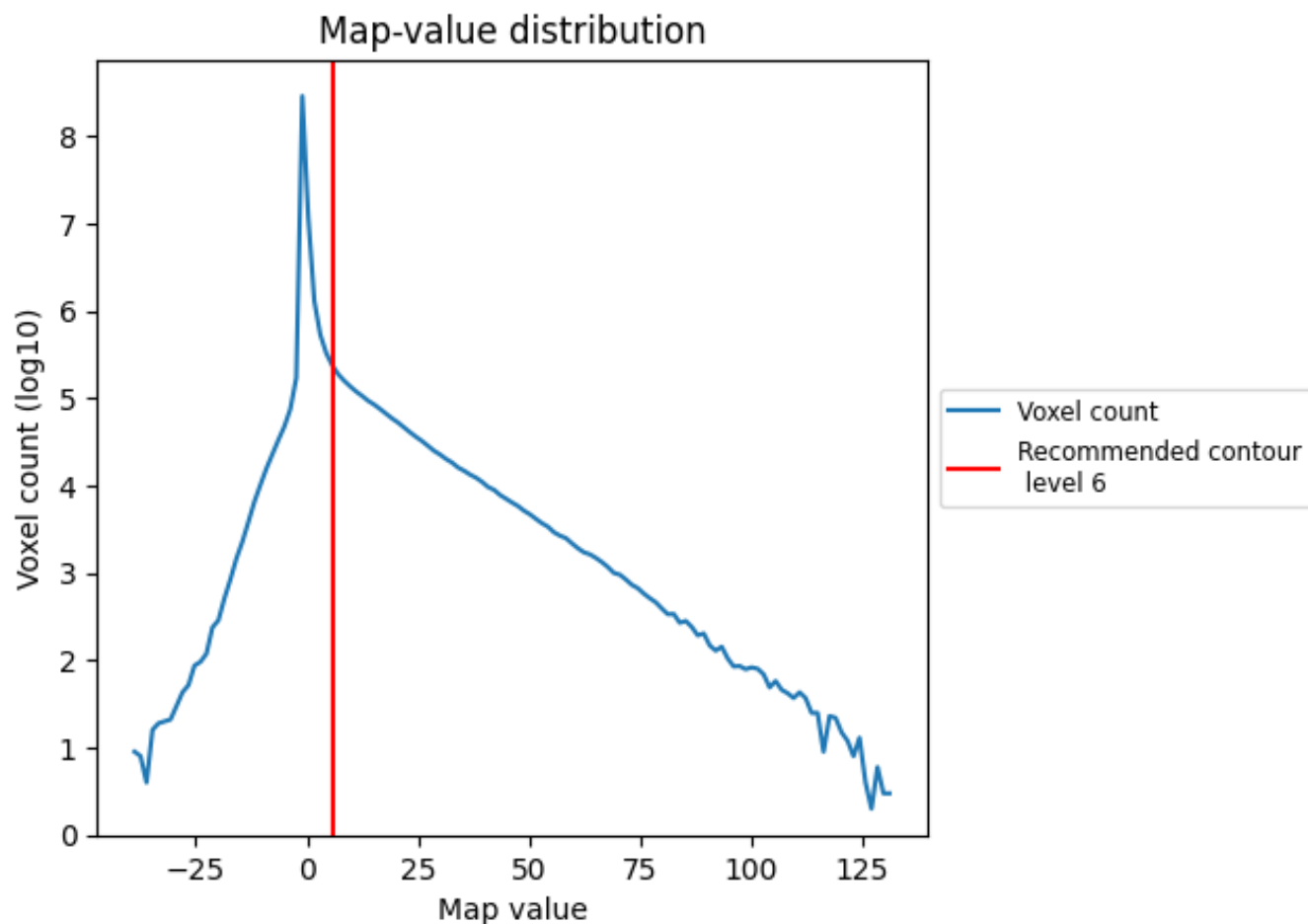
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

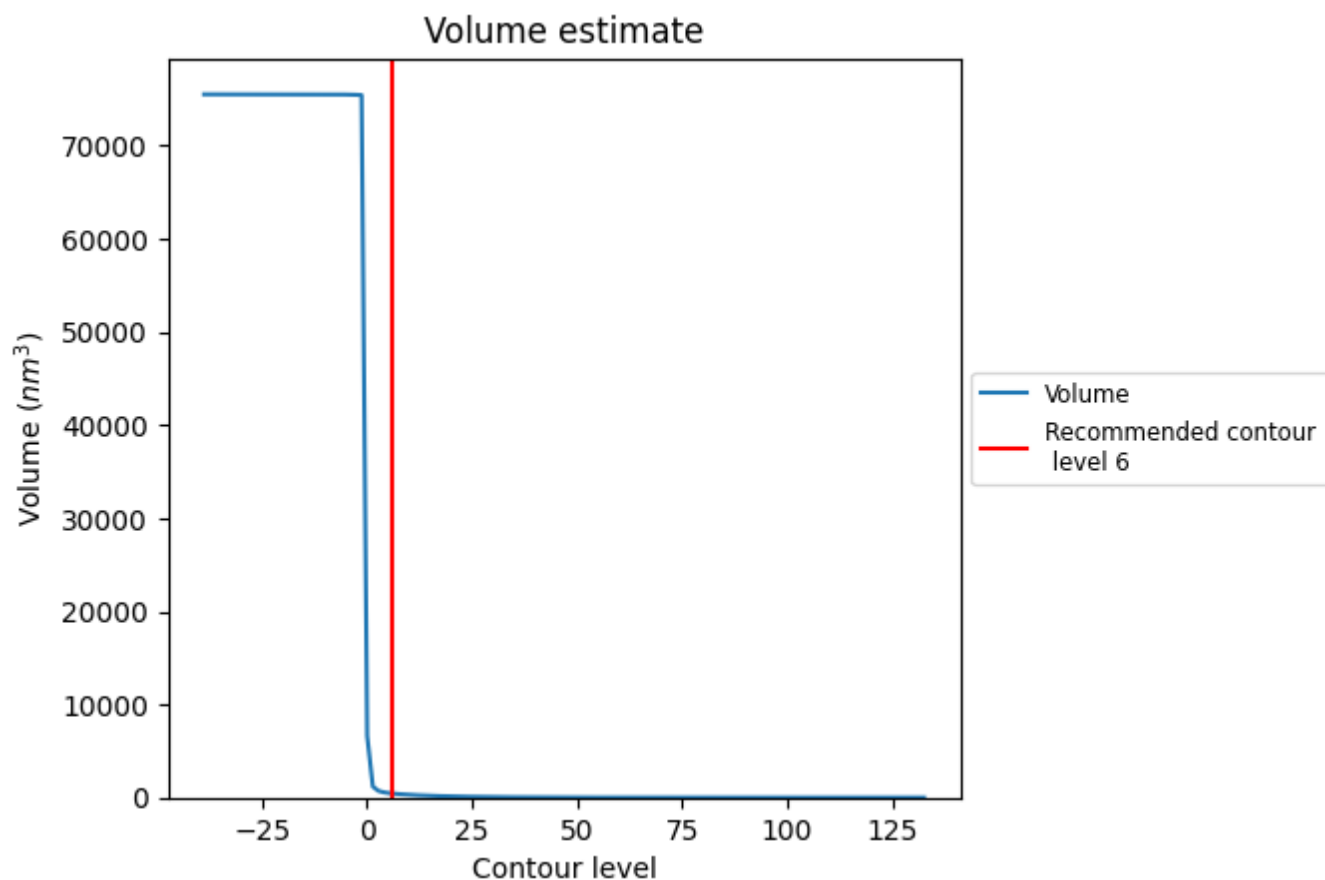
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

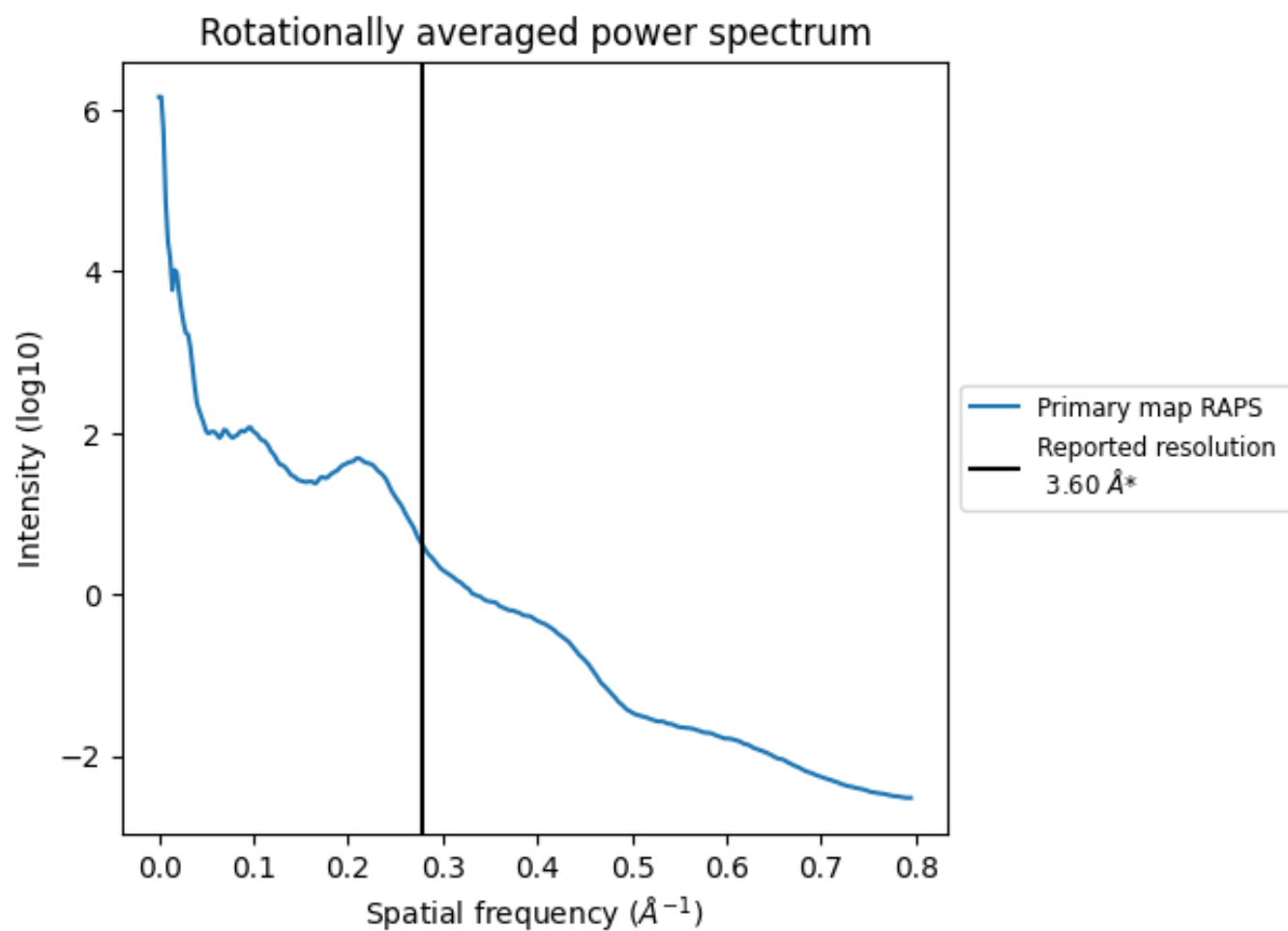
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 439 nm^3 ; this corresponds to an approximate mass of 396 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.278 Å⁻¹

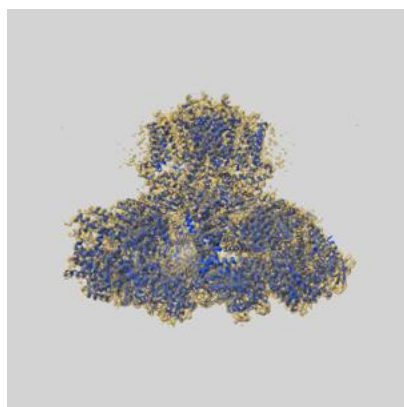
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

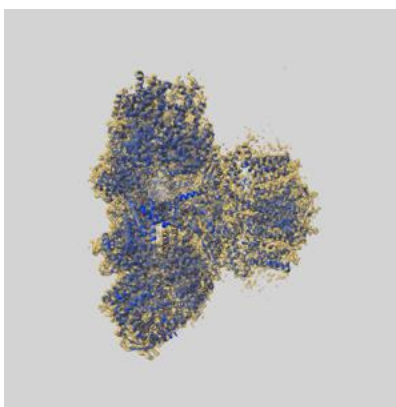
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-41348 and PDB model 8TKE. Per-residue inclusion information can be found in section [3](#) on page [6](#).

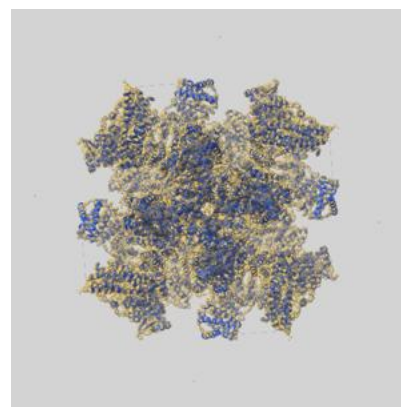
9.1 Map-model overlay [i](#)



X



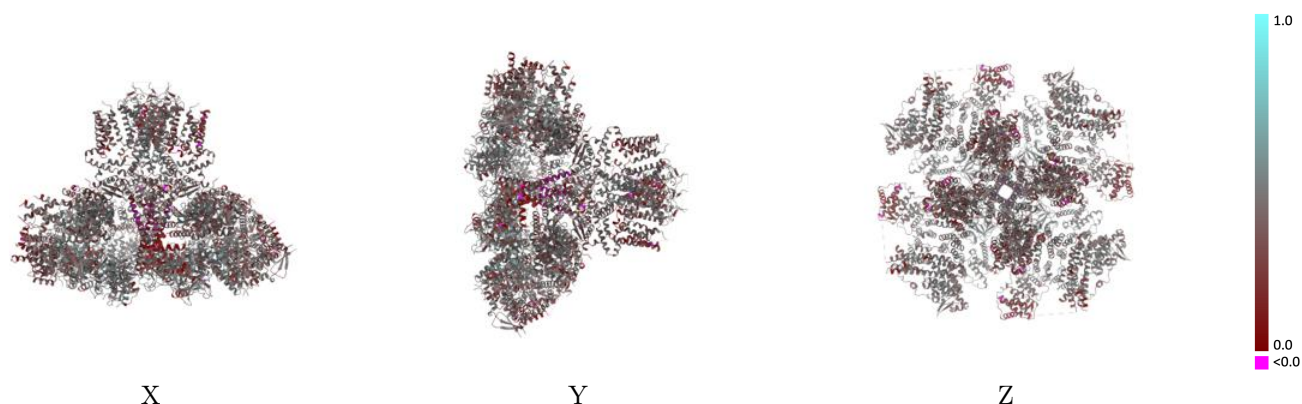
Y



Z

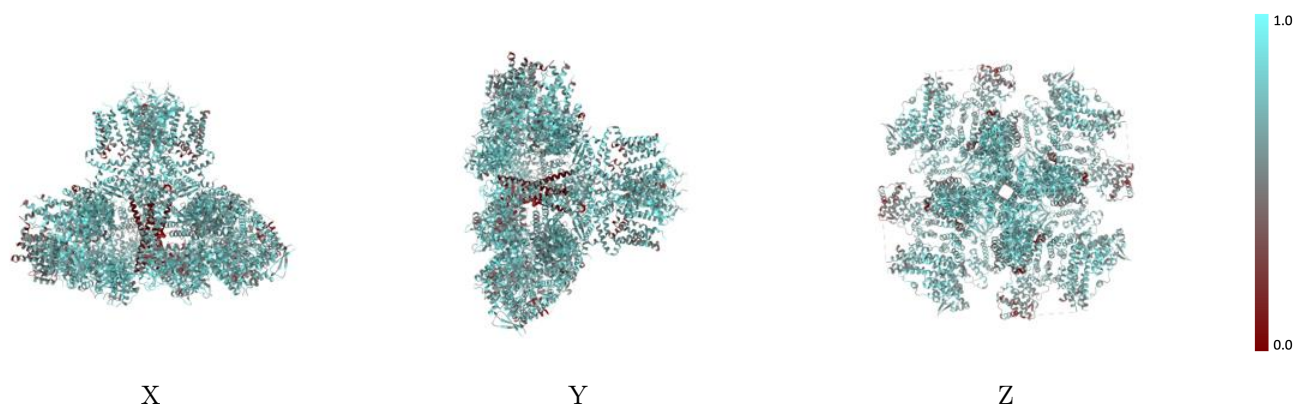
The images above show the 3D surface view of the map at the recommended contour level 6.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



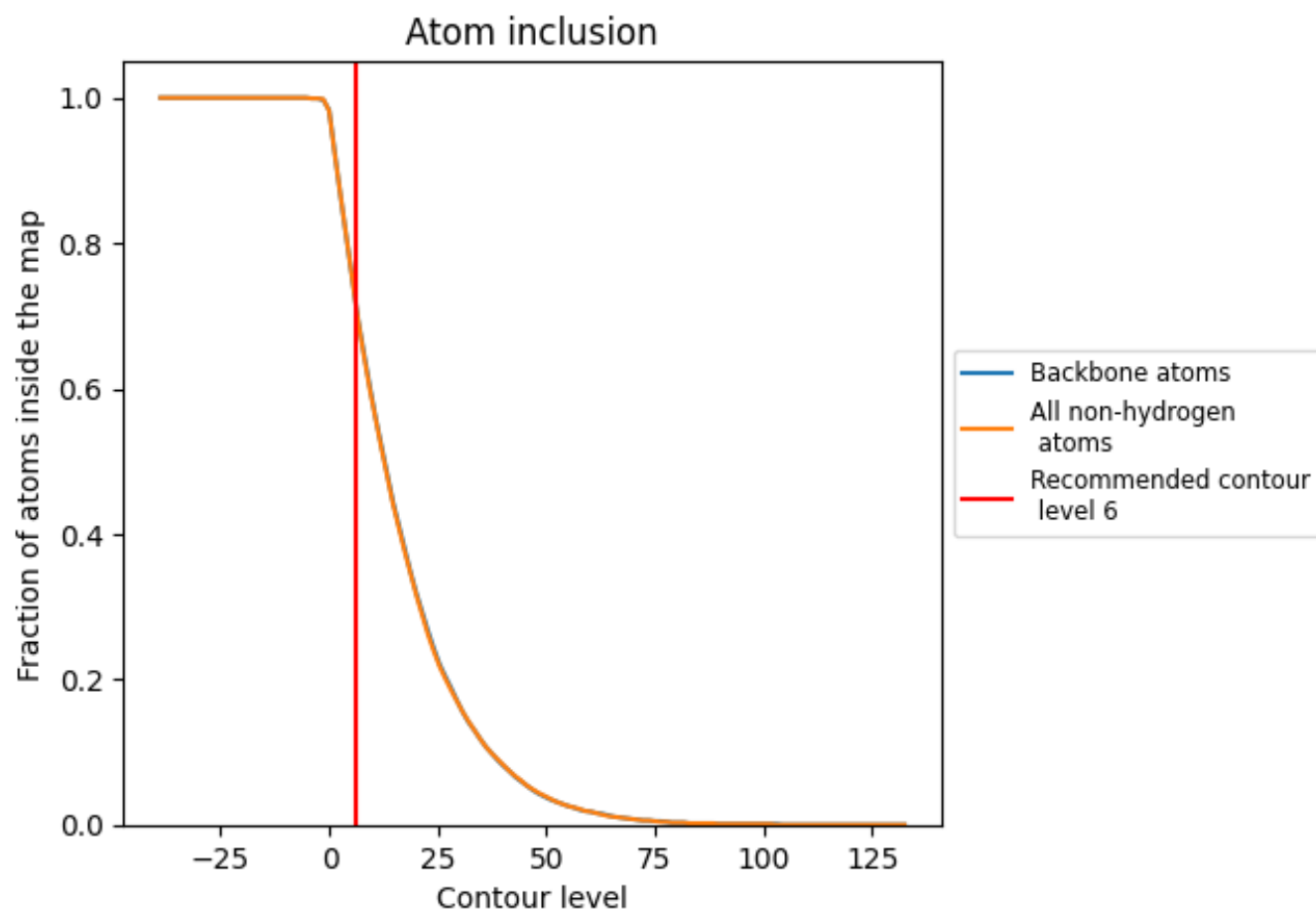
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (6).

9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.7220	<div></div> 0.4110
A	<div></div> 0.7290	<div></div> 0.4090
B	<div></div> 0.7290	<div></div> 0.4130
C	<div></div> 0.7270	<div></div> 0.4120
D	<div></div> 0.7290	<div></div> 0.4100

