



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 26, 2023 – 10:16 PM EDT

PDB ID : 6CDK
Title : Characterization of the P1+ intermediate state of nitrogenase P-cluster
Authors : Keable, S.M.; Zadvornyy, O.A.; Rasmussen, A.J.; Danyal, K.; Eilers, B.J.; Prussia, G.A.; LeVan, A.X.; Seefeldt, L.C.; Peters, J.W.
Deposited on : 2018-02-08
Resolution : 2.10 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

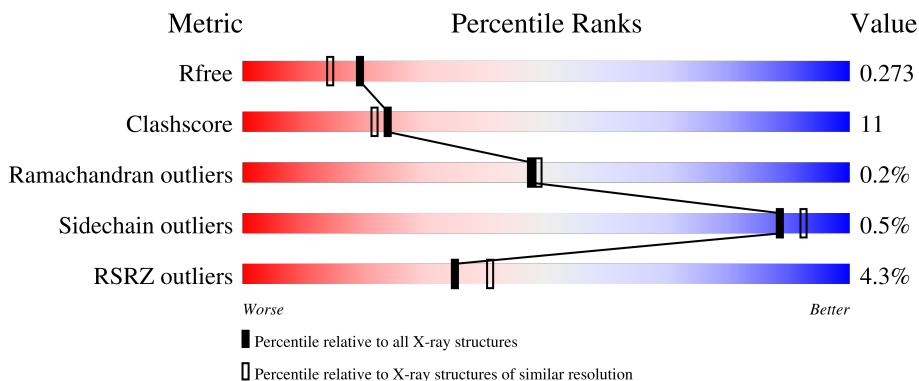
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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

Mol	Chain	Length	Quality of chain
1	A	492	 4% 78% 16% 5%
1	C	492	 5% 75% 19% 5%
2	B	523	 4% 86% 13% 5%
2	D	523	 3% 84% 16% 5%

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
5	CLF	C	503	-	-	X	-

2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 16611 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

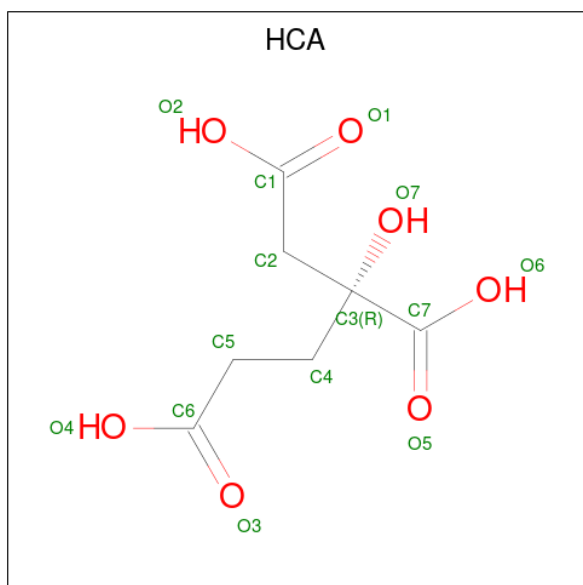
- Molecule 1 is a protein called Nitrogenase molybdenum-iron protein alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	467	Total 3716	C 2363	N 633	O 696	S 24	0	0	0
1	C	466	Total 3711	C 2361	N 632	O 693	S 25	0	0	0

- Molecule 2 is a protein called Nitrogenase molybdenum-iron protein beta chain.

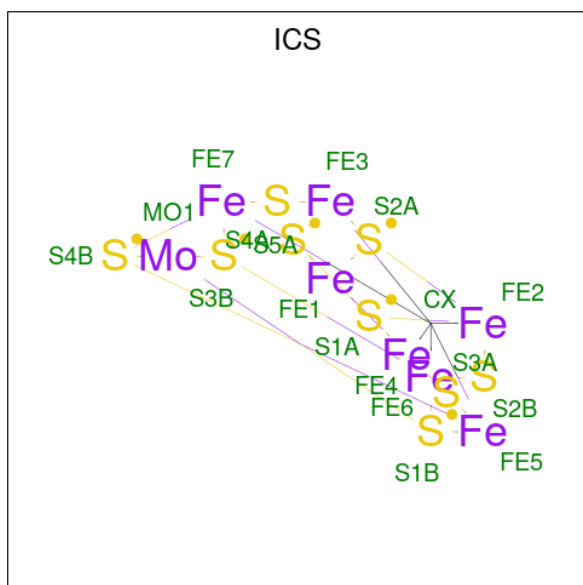
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	522	Total 4174	C 2666	N 705	O 775	S 28	0	0	0
2	D	522	Total 4173	C 2666	N 705	O 774	S 28	0	0	0

- Molecule 3 is 3-HYDROXY-3-CARBOXY-ADIPIC ACID (three-letter code: HCA) (formula: C₇H₁₀O₇).



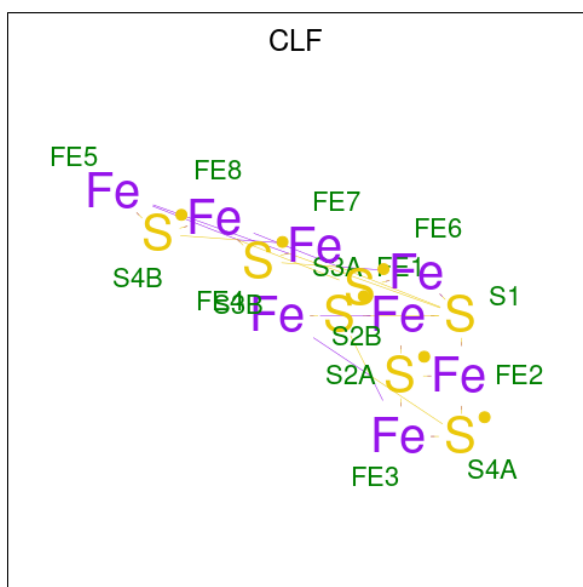
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			14	7	7		
3	C	1	Total	C	O	0	0
			14	7	7		

- Molecule 4 is iron-sulfur-molybdenum cluster with interstitial carbon (three-letter code: ICS) (formula: CFe_7MoS_9).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
4	A	1	Total	C	Fe	Mo	S	0	0
			18	1	7	1	9		
4	C	1	Total	C	Fe	Mo	S	0	0
			18	1	7	1	9		

- Molecule 5 is FE(8)-S(7) CLUSTER (three-letter code: CLF) (formula: Fe_8S_7).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total Fe S 15 8 7	0	0
5	C	1	Total Fe S 15 8 7	0	0

- Molecule 6 is FE (III) ION (three-letter code: FE) (formula: Fe).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	2	Total Fe 2 2	0	0

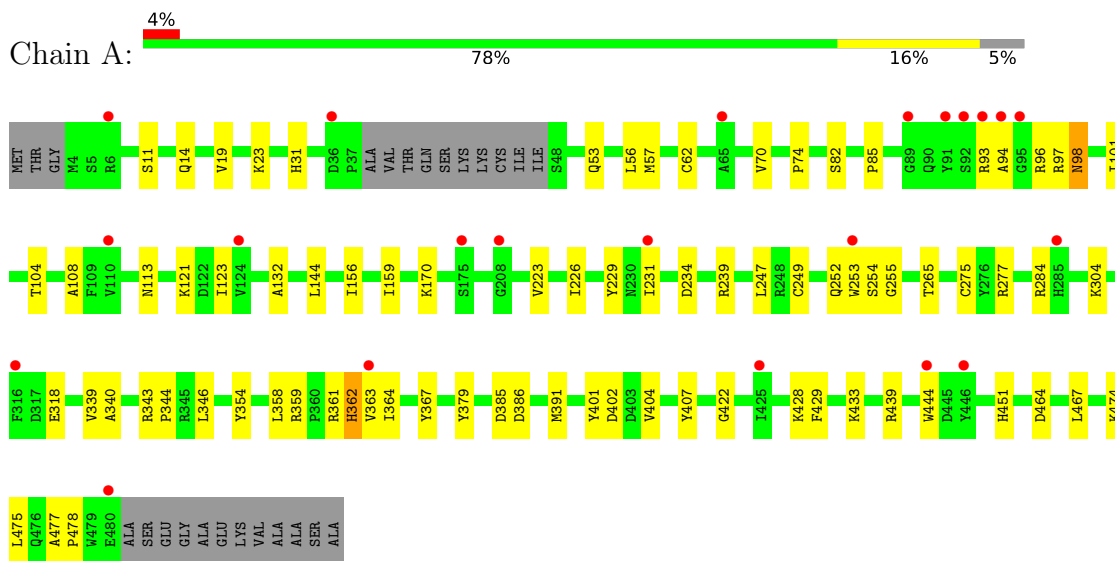
- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	158	Total O 158 158	0	0
7	B	215	Total O 215 215	0	0
7	C	154	Total O 154 154	0	0
7	D	214	Total O 214 214	0	0

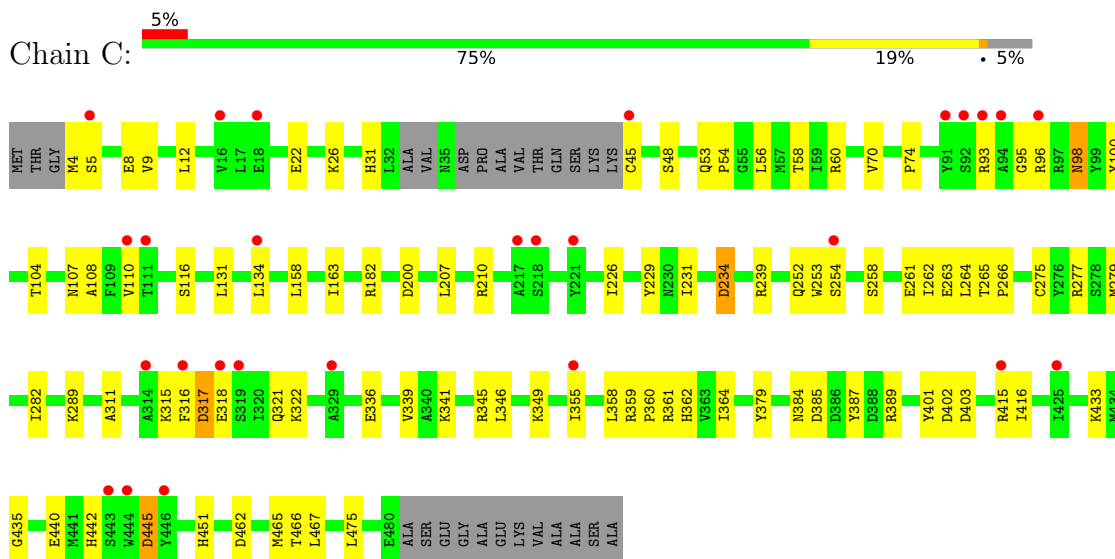
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

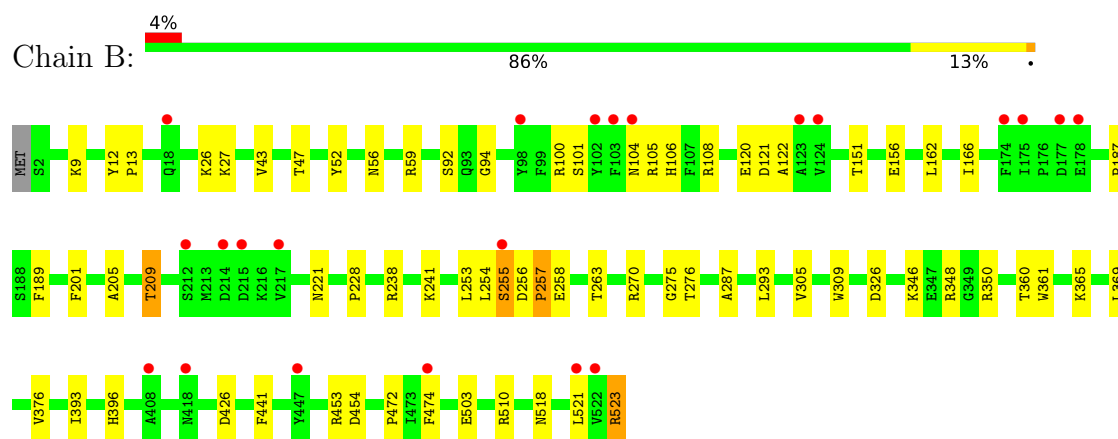
- Molecule 1: Nitrogenase molybdenum-iron protein alpha chain



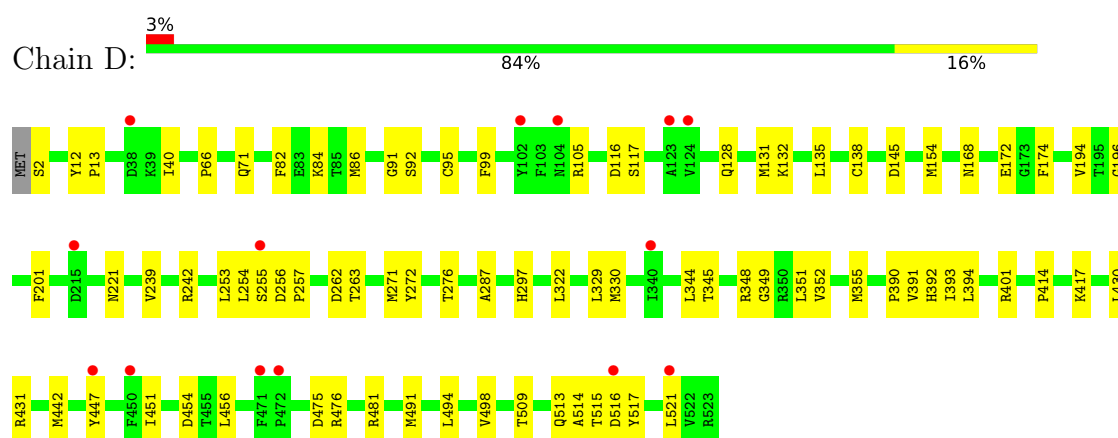
- Molecule 1: Nitrogenase molybdenum-iron protein alpha chain



- Molecule 2: Nitrogenase molybdenum-iron protein beta chain



• Molecule 2: Nitrogenase molybdenum-iron protein beta chain



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	107.88Å 130.78Å 80.79Å 90.00° 110.85° 90.00°	Depositor
Resolution (Å)	50.01 – 2.10 40.01 – 2.10	Depositor EDS
% Data completeness (in resolution range)	57.1 (50.01-2.10) 57.1 (40.01-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.14	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.76 (at 2.10Å)	Xtrriage
Refinement program	REFMAC 5.8.0135	Depositor
R, R_{free}	0.232 , 0.263 0.246 , 0.273	Depositor DCC
R_{free} test set	3503 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	24.5	Xtrriage
Anisotropy	1.135	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 40.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.034 for -h-1,-k,l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	16611	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.94% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: FE, ICS, HCA, CLF

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	0.78	0/3803	0.87	1/5127 (0.0%)
1	C	0.72	0/3796	0.86	3/5114 (0.1%)
2	B	0.68	0/4280	0.82	0/5786
2	D	0.69	0/4279	0.85	2/5785 (0.0%)
All	All	0.72	0/16158	0.85	6/21812 (0.0%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	92	SER	N-CA-CB	-6.90	100.15	110.50
1	C	45	CYS	N-CA-C	6.45	128.41	111.00
2	D	92	SER	N-CA-C	5.77	126.57	111.00
1	C	234	ASP	CB-CG-OD1	5.64	123.37	118.30
1	A	255	GLY	N-CA-C	-5.37	99.67	113.10
1	C	445	ASP	CB-CG-OD2	5.11	122.89	118.30

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	3716	0	3641	92	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	3711	0	3642	115	0
2	B	4174	0	4087	83	0
2	D	4173	0	4087	84	0
3	A	14	0	6	0	0
3	C	14	0	6	1	0
4	A	18	0	0	0	0
4	C	18	0	0	3	0
5	A	15	0	0	2	0
5	C	15	0	0	6	0
6	B	2	0	0	0	0
7	A	158	0	0	20	0
7	B	215	0	0	17	0
7	C	154	0	0	23	0
7	D	214	0	0	21	0
All	All	16611	0	15469	348	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 11.

All (348) 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)
2:B:106:HIS:HB2	2:B:474:PHE:HE1	1.11	1.16
1:A:93:ARG:HD2	1:A:113:ASN:HB2	1.23	1.14
1:C:435:GLY:HA2	1:C:475:LEU:HD11	1.43	1.00
1:C:440:GLU:HB2	1:C:445:ASP:OD1	1.62	0.99
1:C:289:LYS:HA	7:C:658:HOH:O	1.60	0.99
1:C:475:LEU:HG	7:C:606:HOH:O	1.63	0.98
2:B:101:SER:HB3	2:B:105:ARG:HH12	1.24	0.98
1:C:226:ILE:HD12	7:C:740:HOH:O	1.64	0.97
1:C:239:ARG:HE	1:C:252:GLN:HE21	1.07	0.96
1:A:284:ARG:HB3	7:A:676:HOH:O	1.65	0.96
2:B:255:SER:O	2:B:257:PRO:HD3	1.65	0.95
1:A:121:LYS:HE3	7:A:688:HOH:O	1.63	0.95
5:C:503:CLF:S3A	5:C:503:CLF:S2A	2.65	0.95
1:A:475:LEU:HD22	7:A:717:HOH:O	1.67	0.94
2:B:106:HIS:HB2	2:B:474:PHE:CE1	2.01	0.94
1:C:70:VAL:HA	1:C:96:ARG:NH1	1.82	0.93
2:D:271:MET:HG2	7:D:757:HOH:O	1.67	0.93
2:B:350:ARG:HD2	2:D:262:ASP:OD1	1.70	0.92
1:A:101:ILE:HG23	7:D:707:HOH:O	1.68	0.92

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:271:MET:HB3	7:D:757:HOH:O	1.69	0.91
1:C:253:TRP:CD2	7:C:740:HOH:O	2.23	0.91
1:A:226:ILE:HD13	1:A:253:TRP:CD1	2.04	0.91
1:A:93:ARG:HD2	1:A:113:ASN:CB	1.99	0.91
7:B:882:HOH:O	2:D:491:MET:SD	2.28	0.91
2:B:9:LYS:CD	7:B:750:HOH:O	2.19	0.90
2:D:271:MET:CB	7:D:757:HOH:O	2.19	0.90
7:B:882:HOH:O	2:D:491:MET:CE	2.20	0.90
1:C:435:GLY:CA	1:C:475:LEU:HD11	2.02	0.89
2:D:272:TYR:CD2	7:D:757:HOH:O	2.25	0.89
1:C:239:ARG:HE	1:C:252:GLN:NE2	1.71	0.86
2:B:106:HIS:CB	2:B:474:PHE:HE1	1.89	0.86
1:C:440:GLU:CB	1:C:445:ASP:OD1	2.24	0.85
2:D:271:MET:CG	7:D:757:HOH:O	2.20	0.85
2:B:101:SER:HB3	2:B:105:ARG:NH1	1.91	0.85
2:D:154:MET:HA	7:D:764:HOH:O	1.77	0.84
1:C:70:VAL:HA	1:C:96:ARG:HH11	1.39	0.84
2:D:345:THR:O	2:D:348:ARG:HG2	1.78	0.84
1:C:96:ARG:HE	1:C:231:ILE:HD11	1.43	0.83
1:A:391:MET:HB2	7:A:620:HOH:O	1.79	0.82
1:C:317:ASP:O	1:C:321:GLN:NE2	2.12	0.81
1:A:359:ARG:O	1:A:363:VAL:HG22	1.80	0.81
1:C:31:HIS:HE1	7:C:623:HOH:O	1.65	0.80
1:A:226:ILE:CD1	1:A:253:TRP:CD1	2.63	0.79
1:C:317:ASP:O	1:C:321:GLN:CD	2.20	0.79
2:B:92:SER:HB3	7:B:786:HOH:O	1.83	0.78
1:C:433:LYS:NZ	2:D:263:THR:O	2.17	0.78
2:B:360:THR:HA	1:C:465:MET:CE	2.13	0.78
1:A:96:ARG:HD3	1:A:98:ASN:HD22	1.48	0.77
1:C:387:TYR:CD2	7:C:636:HOH:O	2.36	0.77
2:B:101:SER:CB	2:B:105:ARG:HH12	1.96	0.77
1:A:239:ARG:HD2	1:A:252:GLN:NE2	2.00	0.76
1:C:440:GLU:CG	1:C:445:ASP:OD1	2.34	0.76
1:C:70:VAL:HG13	1:C:96:ARG:HH12	1.48	0.76
2:D:431:ARG:NE	2:D:454:ASP:OD2	2.18	0.75
1:C:96:ARG:NH2	4:C:502:ICS:S5A	2.60	0.75
2:D:513:GLN:CG	7:D:707:HOH:O	2.35	0.74
2:D:131:MET:HE2	2:D:135:LEU:HD11	1.68	0.74
2:D:401:ARG:HG3	7:D:777:HOH:O	1.88	0.73
1:A:57:MET:HG2	2:B:100:ARG:NH1	2.04	0.72
1:A:57:MET:HG2	2:B:100:ARG:HH12	1.54	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:360:THR:HA	1:C:465:MET:HE2	1.70	0.72
1:C:442:HIS:ND1	4:C:502:ICS:S4B	2.63	0.72
1:A:121:LYS:HE2	7:A:749:HOH:O	1.90	0.72
1:C:74:PRO:CB	1:C:254:SER:O	2.38	0.71
5:C:503:CLF:FE3	5:C:503:CLF:S4A	1.82	0.71
1:A:363:VAL:O	1:A:367:TYR:HD2	1.72	0.71
2:D:272:TYR:CG	7:D:757:HOH:O	2.43	0.70
1:C:239:ARG:NE	1:C:252:GLN:HE21	1.85	0.70
5:C:503:CLF:S3A	5:C:503:CLF:FE1	1.83	0.70
1:A:11:SER:O	1:A:14:GLN:HG2	1.92	0.70
2:B:209:THR:HG21	2:B:309:TRP:HE1	1.57	0.69
1:A:339:VAL:CG2	1:A:343:ARG:HB2	2.23	0.69
2:B:166:ILE:HG13	7:B:733:HOH:O	1.93	0.69
2:D:513:GLN:HG3	7:D:707:HOH:O	1.93	0.69
5:C:503:CLF:S2A	5:C:503:CLF:FE3	1.84	0.68
2:B:350:ARG:HD2	2:D:262:ASP:CG	2.13	0.68
1:C:96:ARG:NH2	1:C:229:TYR:CB	2.57	0.68
1:C:289:LYS:CA	7:C:658:HOH:O	2.30	0.68
1:C:96:ARG:NH2	1:C:229:TYR:CG	2.62	0.68
1:A:361:ARG:HG3	7:A:754:HOH:O	1.93	0.67
1:A:253:TRP:HE1	1:A:265:THR:HG21	1.60	0.67
5:C:503:CLF:S3A	5:C:503:CLF:FE3	1.85	0.67
1:A:361:ARG:NH2	1:A:386:ASP:OD1	2.27	0.67
1:C:210:ARG:NH1	1:C:264:LEU:CD1	2.59	0.66
1:C:440:GLU:HG3	1:C:445:ASP:OD1	1.94	0.66
1:A:339:VAL:HG23	1:A:343:ARG:HB2	1.76	0.66
2:B:209:THR:HG21	2:B:309:TRP:NE1	2.10	0.66
1:C:349:LYS:HE3	7:C:710:HOH:O	1.96	0.66
2:D:329:LEU:HD13	2:D:344:LEU:HD13	1.78	0.66
2:B:503:GLU:OE1	2:D:476:ARG:NH1	2.29	0.65
2:D:272:TYR:CE2	7:D:757:HOH:O	2.46	0.65
1:C:95:GLY:HA2	2:D:105:ARG:HH12	1.60	0.65
1:C:74:PRO:HB2	1:C:254:SER:O	1.94	0.65
1:C:5:SER:O	1:C:9:VAL:HG23	1.97	0.65
1:C:359:ARG:NH1	1:C:442:HIS:HA	2.12	0.65
1:A:252:GLN:OE1	2:B:27:LYS:HE3	1.97	0.64
1:C:385:ASP:O	1:C:389:ARG:NH1	2.29	0.64
1:C:58:THR:HG22	1:C:60:ARG:H	1.63	0.64
1:C:275:CYS:HA	1:C:358:LEU:HD22	1.80	0.63
1:A:343:ARG:N	1:A:344:PRO:HD2	2.14	0.63
2:B:9:LYS:HD2	7:B:750:HOH:O	1.86	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:166:ILE:CD1	7:B:733:HOH:O	2.45	0.63
1:A:94:ALA:HB3	2:D:521:LEU:CD2	2.29	0.63
5:A:503:CLF:FE3	5:A:503:CLF:S4A	1.90	0.62
1:C:70:VAL:CA	1:C:96:ARG:NH1	2.62	0.62
5:C:503:CLF:S2A	5:C:503:CLF:FE1	1.91	0.61
2:D:329:LEU:CD1	2:D:344:LEU:HD13	2.30	0.61
1:C:22:GLU:CG	1:C:26:LYS:HE2	2.30	0.61
2:B:201:PHE:HZ	2:B:254:LEU:CD1	2.14	0.61
1:C:96:ARG:HH21	1:C:229:TYR:HB2	1.66	0.61
1:C:93:ARG:HA	7:C:673:HOH:O	1.99	0.60
2:D:128:GLN:HG3	2:D:132:LYS:HE2	1.83	0.60
2:B:472:PRO:HB2	2:B:474:PHE:CZ	2.35	0.60
1:C:158:LEU:HD12	7:D:764:HOH:O	2.02	0.60
1:C:182:ARG:CZ	7:C:651:HOH:O	2.50	0.60
2:B:510:ARG:O	2:B:510:ARG:HG2	2.02	0.60
1:C:253:TRP:CE3	7:C:740:HOH:O	2.51	0.60
1:C:93:ARG:HD3	2:D:447:TYR:CE1	2.37	0.59
2:B:254:LEU:O	2:B:255:SER:HB3	2.01	0.59
1:C:210:ARG:HH11	1:C:264:LEU:CD1	2.15	0.59
1:A:339:VAL:CG2	1:A:343:ARG:HD2	2.34	0.58
2:B:472:PRO:HB2	2:B:474:PHE:CE1	2.39	0.58
1:C:239:ARG:NE	1:C:252:GLN:NE2	2.47	0.58
1:A:226:ILE:CD1	1:A:253:TRP:NE1	2.67	0.57
1:C:96:ARG:HH21	1:C:229:TYR:CB	2.17	0.57
1:C:435:GLY:CA	1:C:475:LEU:CD1	2.81	0.57
1:C:96:ARG:HD3	1:C:98:ASN:HD22	1.69	0.57
2:D:82:PHE:CZ	2:D:255:SER:HB2	2.40	0.57
1:C:58:THR:HG23	1:C:403:ASP:OD1	2.05	0.57
2:D:255:SER:N	2:D:276:THR:OG1	2.38	0.57
1:A:93:ARG:NH1	7:A:602:HOH:O	2.35	0.57
2:B:263:THR:HG21	7:B:703:HOH:O	2.04	0.57
1:C:316:PHE:O	1:C:317:ASP:HB3	2.05	0.57
1:A:275:CYS:HA	1:A:358:LEU:HD22	1.87	0.57
2:B:100:ARG:O	2:B:104:ASN:CG	2.43	0.56
2:D:431:ARG:NH2	7:D:703:HOH:O	2.37	0.56
2:B:255:SER:O	2:B:257:PRO:CD	2.46	0.56
2:B:100:ARG:O	2:B:104:ASN:ND2	2.39	0.56
1:A:429:PHE:CD1	2:B:108:ARG:O	2.59	0.56
2:B:441:PHE:HD2	7:B:796:HOH:O	1.88	0.56
2:D:390:PRO:HB2	2:D:393:ILE:HD11	1.88	0.56
2:B:510:ARG:HG2	2:D:456:LEU:HD23	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:200:ASP:HB2	7:C:638:HOH:O	2.04	0.56
1:A:93:ARG:O	1:A:94:ALA:HB3	2.06	0.55
1:A:339:VAL:HG13	1:A:340:ALA:N	2.21	0.55
1:A:277:ARG:HG2	7:A:608:HOH:O	2.07	0.55
1:C:100:TYR:CE1	1:C:110:VAL:HB	2.42	0.55
2:B:238:ARG:HE	2:B:258:GLU:HG3	1.71	0.55
1:C:226:ILE:HG22	1:C:279:MET:HB3	1.89	0.55
2:D:253:LEU:CD2	2:D:256:ASP:HB2	2.36	0.54
2:B:326:ASP:OD1	2:B:348:ARG:NE	2.39	0.54
1:C:54:PRO:HB3	2:D:116:ASP:O	2.06	0.54
1:A:361:ARG:HB3	1:A:379:TYR:OH	2.08	0.54
2:D:431:ARG:HE	2:D:454:ASP:CG	2.07	0.54
2:B:201:PHE:HZ	2:B:254:LEU:HD12	1.72	0.54
1:A:96:ARG:HD3	1:A:98:ASN:ND2	2.21	0.54
1:A:96:ARG:NH2	1:A:229:TYR:CG	2.76	0.54
1:A:346:LEU:HD21	1:A:464:ASP:HA	1.89	0.54
1:A:346:LEU:HD22	1:A:467:LEU:HD23	1.90	0.54
2:B:205:ALA:O	2:B:209:THR:HB	2.08	0.54
1:C:96:ARG:HD3	1:C:98:ASN:ND2	2.23	0.54
2:D:494:LEU:O	2:D:498:VAL:HG23	2.07	0.54
1:A:304:LYS:HE2	7:A:727:HOH:O	2.07	0.54
1:A:361:ARG:O	1:A:364:ILE:HG12	2.07	0.53
1:C:311:ALA:O	1:C:315:LYS:HG2	2.08	0.53
2:D:513:GLN:C	7:D:706:HOH:O	2.46	0.53
2:D:194:VAL:HB	2:D:297:HIS:CG	2.44	0.53
1:A:277:ARG:HB2	7:A:608:HOH:O	2.08	0.53
1:A:277:ARG:O	1:A:277:ARG:HD3	2.08	0.53
2:B:270:ARG:NH2	7:B:701:HOH:O	2.41	0.53
1:A:277:ARG:NH2	1:A:385:ASP:OD1	2.42	0.52
1:A:94:ALA:HB3	2:D:521:LEU:HD23	1.90	0.52
2:B:453:ARG:NH1	2:B:454:ASP:OD1	2.42	0.52
1:A:94:ALA:HB3	2:D:521:LEU:HD22	1.90	0.52
7:B:882:HOH:O	2:D:491:MET:HE1	1.97	0.52
2:B:12:TYR:HA	2:D:517:TYR:OH	2.10	0.51
7:A:665:HOH:O	2:B:120:GLU:HG3	2.11	0.51
2:B:518:ASN:O	2:B:523:ARG:NH2	2.40	0.51
1:C:346:LEU:HD22	1:C:467:LEU:HD23	1.93	0.51
1:A:363:VAL:O	1:A:367:TYR:CD2	2.60	0.50
1:A:475:LEU:O	7:A:601:HOH:O	2.19	0.50
1:A:475:LEU:CD2	7:A:717:HOH:O	2.43	0.50
2:D:82:PHE:CE1	2:D:255:SER:HB2	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:444:TRP:HA	1:A:444:TRP:CE3	2.46	0.50
1:A:234:ASP:HB3	1:A:451:HIS:ND1	2.27	0.49
1:A:23:LYS:HB3	7:A:747:HOH:O	2.12	0.49
2:B:92:SER:CB	7:B:786:HOH:O	2.51	0.49
1:C:387:TYR:CG	7:C:636:HOH:O	2.62	0.49
2:B:151:THR:HG23	2:B:162:LEU:HD11	1.95	0.49
1:C:53:GLN:HB2	1:C:56:LEU:HD12	1.94	0.49
1:C:355:ILE:HG22	1:C:442:HIS:CE1	2.47	0.49
1:A:144:LEU:CD1	2:B:43:VAL:HG21	2.41	0.49
1:A:97:ARG:O	1:A:231:ILE:HA	2.12	0.49
1:A:123:ILE:HG13	2:B:189:PHE:CG	2.47	0.49
1:A:156:ILE:O	1:A:159:ILE:HG22	2.13	0.49
1:C:435:GLY:HA3	1:C:475:LEU:CD1	2.43	0.49
2:B:106:HIS:CA	2:B:474:PHE:HE1	2.25	0.49
1:A:428:LYS:NZ	7:A:607:HOH:O	2.45	0.49
2:B:162:LEU:HB3	7:B:733:HOH:O	2.13	0.49
1:C:277:ARG:HD3	7:C:612:HOH:O	2.12	0.48
1:C:104:THR:HA	1:C:108:ALA:O	2.13	0.48
7:C:611:HOH:O	2:D:66:PRO:HD2	2.13	0.48
1:A:223:VAL:HG11	1:A:247:LEU:HD13	1.95	0.48
1:A:339:VAL:HG13	1:A:340:ALA:H	1.77	0.48
1:C:234:ASP:HB3	1:C:451:HIS:ND1	2.28	0.48
1:A:444:TRP:HA	1:A:444:TRP:HE3	1.77	0.48
1:A:123:ILE:HA	1:A:159:ILE:HD11	1.96	0.48
1:C:258:SER:OG	1:C:261:GLU:HG3	2.13	0.48
1:C:116:SER:HB3	1:C:134:LEU:HD21	1.96	0.48
1:C:359:ARG:N	1:C:360:PRO:CD	2.77	0.48
2:D:351:LEU:HG	2:D:355:MET:HE2	1.94	0.48
1:A:422:GLY:HA2	1:A:439:ARG:O	2.13	0.48
1:C:360:PRO:HG2	1:C:379:TYR:CD2	2.49	0.48
2:D:2:SER:N	7:D:709:HOH:O	2.46	0.48
2:D:255:SER:O	2:D:257:PRO:HD3	2.13	0.48
2:B:9:LYS:HD3	7:B:750:HOH:O	2.03	0.48
2:B:56:ASN:OD1	2:B:59:ARG:NH1	2.46	0.48
1:C:210:ARG:NH1	1:C:264:LEU:HD13	2.29	0.48
1:A:354:TYR:CZ	1:A:404:VAL:HG12	2.49	0.47
2:B:166:ILE:HD11	7:B:733:HOH:O	2.13	0.47
1:C:442:HIS:HB3	3:C:501:HCA:O5	2.14	0.47
2:B:106:HIS:CA	2:B:474:PHE:CE1	2.97	0.47
1:C:263:GLU:O	1:C:266:PRO:HD2	2.14	0.47
1:A:226:ILE:HD12	1:A:253:TRP:NE1	2.29	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:70:VAL:CG1	1:C:96:ARG:HH12	2.22	0.47
1:C:253:TRP:CZ2	1:C:262:ILE:HG23	2.49	0.47
2:B:255:SER:N	2:B:276:THR:OG1	2.42	0.47
2:D:168:ASN:O	2:D:172:GLU:HG2	2.15	0.47
2:B:151:THR:CG2	2:B:162:LEU:HD11	2.44	0.47
1:A:339:VAL:HG22	1:A:343:ARG:HB2	1.94	0.47
1:C:462:ASP:HA	1:C:465:MET:HG2	1.97	0.47
2:B:369:LEU:C	2:B:369:LEU:HD12	2.35	0.47
2:D:116:ASP:OD1	2:D:116:ASP:C	2.53	0.47
1:A:343:ARG:N	1:A:344:PRO:CD	2.78	0.47
1:C:4:MET:SD	1:C:416:ILE:HD13	2.55	0.47
2:B:238:ARG:HE	2:B:258:GLU:CG	2.28	0.46
2:D:131:MET:HE2	2:D:135:LEU:CD1	2.41	0.46
1:A:362:HIS:HD2	7:A:754:HOH:O	1.98	0.46
1:C:465:MET:HG3	1:C:466:THR:N	2.30	0.46
2:D:116:ASP:OD1	2:D:117:SER:N	2.48	0.46
2:D:348:ARG:HG3	2:D:349:GLY:N	2.29	0.46
2:B:472:PRO:CB	2:B:474:PHE:CZ	2.99	0.46
1:C:5:SER:O	1:C:8:GLU:HB2	2.14	0.46
1:C:107:ASN:HD22	2:D:40:ILE:HG12	1.79	0.46
1:C:346:LEU:CD2	1:C:467:LEU:HD23	2.46	0.46
1:A:239:ARG:NH1	1:A:249:CYS:HB2	2.30	0.46
2:B:9:LYS:CE	7:B:750:HOH:O	2.54	0.46
2:D:351:LEU:HG	2:D:355:MET:CE	2.45	0.46
2:D:513:GLN:HG2	7:D:707:HOH:O	2.07	0.46
1:A:94:ALA:CB	2:D:521:LEU:HD22	2.46	0.46
1:C:359:ARG:NH1	1:C:442:HIS:CA	2.78	0.46
1:C:266:PRO:CB	7:C:602:HOH:O	2.64	0.46
1:A:478:PRO:HB2	2:D:330:MET:SD	2.56	0.46
1:C:58:THR:HG22	1:C:60:ARG:N	2.30	0.46
1:C:107:ASN:ND2	2:D:40:ILE:HD13	2.32	0.46
1:A:144:LEU:HD13	2:B:43:VAL:HG21	1.96	0.45
1:A:391:MET:CB	7:A:620:HOH:O	2.49	0.45
1:C:207:LEU:HD22	1:C:282:ILE:HD11	1.98	0.45
2:D:239:VAL:HG23	2:D:242:ARG:HH21	1.81	0.45
2:D:253:LEU:HD23	2:D:256:ASP:HB2	1.97	0.45
1:C:131:LEU:HA	1:C:134:LEU:HG	1.98	0.45
1:C:265:THR:N	1:C:266:PRO:CD	2.79	0.45
2:D:91:GLY:O	2:D:116:ASP:OD1	2.33	0.45
1:A:82:SER:N	7:A:611:HOH:O	2.49	0.45
2:B:9:LYS:HE2	7:B:750:HOH:O	2.14	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:514:ALA:N	7:D:706:HOH:O	2.50	0.45
1:C:345:ARG:HD3	7:C:738:HOH:O	2.16	0.45
1:A:31:HIS:HD2	1:A:402:ASP:OD2	2.01	0.44
2:B:396:HIS:CE1	2:B:426:ASP:HB3	2.53	0.44
1:C:318:GLU:HG3	1:C:322:LYS:HE3	2.00	0.44
1:A:475:LEU:HD13	7:A:717:HOH:O	2.17	0.44
7:C:611:HOH:O	2:D:66:PRO:CD	2.66	0.44
2:B:510:ARG:O	2:B:510:ARG:CG	2.65	0.44
2:D:84:LYS:HE2	2:D:145:ASP:OD2	2.18	0.44
2:D:86:MET:HG2	2:D:138:CYS:SG	2.57	0.44
2:B:121:ASP:OD1	2:B:122:ALA:N	2.51	0.44
2:B:346:LYS:O	2:B:350:ARG:HG3	2.18	0.44
2:B:369:LEU:HD11	2:B:393:ILE:HG23	1.98	0.44
1:C:440:GLU:H	1:C:445:ASP:CG	2.20	0.44
1:A:433:LYS:NZ	2:B:263:THR:O	2.50	0.44
2:B:360:THR:HA	1:C:465:MET:HE1	1.97	0.44
1:A:74:PRO:CB	1:A:254:SER:O	2.66	0.43
1:C:4:MET:CE	1:C:12:LEU:HD22	2.48	0.43
1:A:53:GLN:HB2	1:A:56:LEU:HD12	2.00	0.43
2:B:241:LYS:HD2	2:B:253:LEU:HD22	2.00	0.43
2:B:361:TRP:O	2:B:365:LYS:HE3	2.18	0.43
2:B:369:LEU:CD1	2:B:376:VAL:HG13	2.48	0.43
1:C:12:LEU:HD13	1:C:415:ARG:HG2	2.01	0.43
1:A:226:ILE:HD12	1:A:253:TRP:CD1	2.50	0.43
1:C:158:LEU:CD1	7:D:764:HOH:O	2.63	0.43
1:A:85:PRO:HB2	5:A:503:CLF:S2B	2.59	0.43
1:C:475:LEU:CG	7:C:606:HOH:O	2.42	0.43
2:D:394:LEU:HD13	2:D:430:LEU:HB2	2.01	0.42
1:C:475:LEU:CD2	7:C:606:HOH:O	2.64	0.42
2:B:326:ASP:CG	2:B:348:ARG:HE	2.20	0.42
1:A:70:VAL:HG13	1:A:96:ARG:NH2	2.33	0.42
1:A:19:VAL:HG11	1:A:407:TYR:CE2	2.55	0.42
2:B:47:THR:HA	2:B:52:TYR:CG	2.54	0.42
1:C:442:HIS:CE1	4:C:502:ICS:S1B	3.13	0.42
2:B:12:TYR:HA	2:B:13:PRO:HA	1.76	0.42
1:C:341:LYS:NZ	7:C:603:HOH:O	2.52	0.42
2:D:95:CYS:HB3	2:D:99:PHE:CZ	2.54	0.42
1:A:359:ARG:CZ	1:A:444:TRP:CZ2	3.03	0.42
1:C:163:ILE:HD11	1:C:182:ARG:HD2	2.02	0.42
2:D:221:ASN:OD1	2:D:287:ALA:HA	2.19	0.42
2:D:515:THR:HA	2:D:517:TYR:CE2	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:31:HIS:CE1	7:C:623:HOH:O	2.53	0.42
1:C:361:ARG:O	1:C:364:ILE:HG12	2.19	0.42
1:C:336:GLU:HA	1:C:339:VAL:HG22	2.01	0.42
1:C:349:LYS:HA	1:C:349:LYS:HD3	1.93	0.42
1:C:22:GLU:HG2	1:C:26:LYS:HE2	2.02	0.42
2:B:521:LEU:O	2:D:475:ASP:HB3	2.20	0.41
2:B:256:ASP:O	2:B:275:GLY:HA2	2.20	0.41
1:C:355:ILE:CG2	1:C:442:HIS:CE1	3.03	0.41
1:A:474:LYS:HB3	2:D:322:LEU:HD21	2.02	0.41
2:D:352:VAL:HG22	2:D:355:MET:HE3	2.02	0.41
2:B:101:SER:CB	2:B:105:ARG:NH1	2.68	0.41
2:D:12:TYR:HA	2:D:13:PRO:HA	1.80	0.41
1:A:429:PHE:CG	2:B:108:ARG:O	2.74	0.41
2:B:221:ASN:OD1	2:B:287:ALA:HA	2.21	0.41
2:D:71:GLN:O	2:D:196:GLY:HA3	2.21	0.41
2:D:201:PHE:HZ	2:D:254:LEU:HD12	1.86	0.41
1:A:62:CYS:HB3	2:B:94:GLY:HA3	2.03	0.41
1:A:277:ARG:HD3	7:A:619:HOH:O	2.21	0.41
1:C:74:PRO:HB3	1:C:254:SER:O	2.16	0.41
1:C:210:ARG:HH11	1:C:264:LEU:HD12	1.85	0.41
2:D:391:VAL:HG12	2:D:392:HIS:CE1	2.56	0.41
2:D:481:ARG:NH2	7:D:714:HOH:O	2.51	0.41
2:D:509:THR:O	2:D:516:ASP:HA	2.20	0.41
1:A:477:ALA:HB2	2:D:348:ARG:HD3	2.03	0.41
1:C:31:HIS:HD2	1:C:402:ASP:OD2	2.04	0.41
2:D:201:PHE:HZ	2:D:254:LEU:CD1	2.33	0.41
1:A:104:THR:HA	1:A:108:ALA:O	2.19	0.40
2:B:228:PRO:HA	2:B:293:LEU:HD12	2.03	0.40
1:C:48:SER:OG	1:C:384:ASN:ND2	2.52	0.40
2:D:442:MET:HE3	2:D:451:ILE:HG21	2.03	0.40
2:B:305:VAL:O	2:B:309:TRP:HB2	2.22	0.40
1:C:96:ARG:CD	1:C:98:ASN:HD22	2.33	0.40
1:C:442:HIS:HB2	7:C:678:HOH:O	2.21	0.40
1:A:74:PRO:HB2	1:A:254:SER:O	2.21	0.40
1:A:132:ALA:HB1	1:A:170:LYS:HE3	2.03	0.40
1:C:4:MET:HE1	1:C:12:LEU:HD22	2.02	0.40
2:D:262:ASP:OD1	7:D:701:HOH:O	2.22	0.40
1:A:277:ARG:HD3	1:A:277:ARG:C	2.42	0.40
2:B:156:GLU:HG3	2:B:187:PRO:HB3	2.03	0.40
2:D:414:PRO:HA	2:D:417:LYS:HD3	2.04	0.40
1:A:94:ALA:CB	2:D:521:LEU:CD2	2.99	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:132:LYS:HD3	2:D:174:PHE:CE2	2.57	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 X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	463/492 (94%)	438 (95%)	24 (5%)	1 (0%)	47	49
1	C	461/492 (94%)	434 (94%)	26 (6%)	1 (0%)	47	49
2	B	520/523 (99%)	494 (95%)	24 (5%)	2 (0%)	34	32
2	D	520/523 (99%)	505 (97%)	15 (3%)	0	100	100
All	All	1964/2030 (97%)	1871 (95%)	89 (4%)	4 (0%)	47	49

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	317	ASP
1	A	318	GLU
2	B	255	SER
2	B	257	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	398/415 (96%)	395 (99%)	3 (1%)	81	86
1	C	398/415 (96%)	395 (99%)	3 (1%)	81	86
2	B	454/455 (100%)	451 (99%)	3 (1%)	84	88
2	D	454/455 (100%)	454 (100%)	0	100	100
All	All	1704/1740 (98%)	1695 (100%)	9 (0%)	88	92

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	98	ASN
1	A	362	HIS
1	A	401	TYR
2	B	26	LYS
2	B	209	THR
2	B	523	ARG
1	C	98	ASN
1	C	362	HIS
1	C	401	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	31	HIS
1	A	98	ASN
1	A	362	HIS
2	B	457	HIS
1	C	31	HIS
1	C	98	ASN
1	C	252	GLN
1	C	321	GLN
1	C	362	HIS
1	C	384	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 2 are monoatomic - leaving 6 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
4	ICS	A	502	1	18,30,30	6.57	13 (72%)	-		
4	ICS	C	502	1	18,30,30	6.60	13 (72%)	-		
5	CLF	C	503	2,1	0,24,24	-	-	-		
5	CLF	A	503	2,1	0,24,24	-	-	-		
3	HCA	A	501	-	13,13,13	1.50	2 (15%)	14,18,18	2.58	4 (28%)
3	HCA	C	501	-	13,13,13	1.48	4 (30%)	14,18,18	1.56	3 (21%)

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	CLF	A	503	2,1	-	-	0/12/10/10
5	CLF	C	503	2,1	-	-	0/12/10/10
3	HCA	A	501	-	-	7/17/17/17	-
3	HCA	C	501	-	-	5/17/17/17	-

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	502	ICS	S1B-FE6	-11.44	2.04	2.32
4	A	502	ICS	S1B-FE6	-10.60	2.06	2.32
4	A	502	ICS	S1A-FE4	-9.83	2.08	2.32
4	C	502	ICS	S4A-FE3	-9.37	2.09	2.32
4	A	502	ICS	S3B-FE7	-9.12	2.10	2.32
4	C	502	ICS	S3B-FE7	-8.93	2.10	2.32
4	C	502	ICS	S4A-FE4	-8.35	2.11	2.32
4	C	502	ICS	S1A-FE2	-8.19	2.12	2.32
4	C	502	ICS	S1A-FE4	-8.05	2.12	2.32
4	C	502	ICS	S4B-FE7	-7.92	2.13	2.32
4	A	502	ICS	S2A-FE3	-7.89	2.13	2.32
4	A	502	ICS	S4A-FE3	-7.77	2.13	2.32
4	A	502	ICS	S1A-FE2	-7.45	2.14	2.32
4	C	502	ICS	S4B-FE5	-7.38	2.14	2.32
4	C	502	ICS	S2A-FE2	-7.34	2.14	2.32
4	A	502	ICS	S4B-FE5	-7.31	2.14	2.32
4	A	502	ICS	S4A-FE4	-7.29	2.14	2.32
4	A	502	ICS	S4B-FE7	-7.27	2.14	2.32
4	A	502	ICS	S2A-FE2	-7.16	2.14	2.32
4	A	502	ICS	S1B-FE5	-7.11	2.15	2.32
4	C	502	ICS	S1B-FE5	-6.99	2.15	2.32
4	C	502	ICS	S2A-FE3	-5.89	2.17	2.32
4	A	502	ICS	S3B-FE6	-5.81	2.18	2.32
4	C	502	ICS	S3B-FE6	-4.17	2.22	2.32
3	A	501	HCA	O5-C7	3.45	1.33	1.22
3	C	501	HCA	O4-C6	-2.48	1.22	1.30
4	C	502	ICS	S3A-FE4	-2.43	2.19	2.24
3	C	501	HCA	O5-C7	2.37	1.29	1.22
3	A	501	HCA	O4-C6	-2.32	1.22	1.30
4	A	502	ICS	S3A-FE5	2.29	2.30	2.24
3	C	501	HCA	O1-C1	2.12	1.29	1.22
3	C	501	HCA	C4-C3	2.09	1.57	1.54

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	501	HCA	O7-C3-C7	-6.40	99.88	108.86
3	A	501	HCA	O5-C7-C3	-4.78	115.48	122.25
3	C	501	HCA	O4-C6-C5	2.96	123.53	114.03
3	A	501	HCA	O4-C6-C5	2.86	123.22	114.03
3	C	501	HCA	C4-C5-C6	2.84	119.19	112.75
3	C	501	HCA	O4-C6-O3	-2.41	117.28	123.30
3	A	501	HCA	O3-C6-C5	-2.15	116.18	123.08

There are no chirality outliers.

All (12) torsion outliers are listed below:

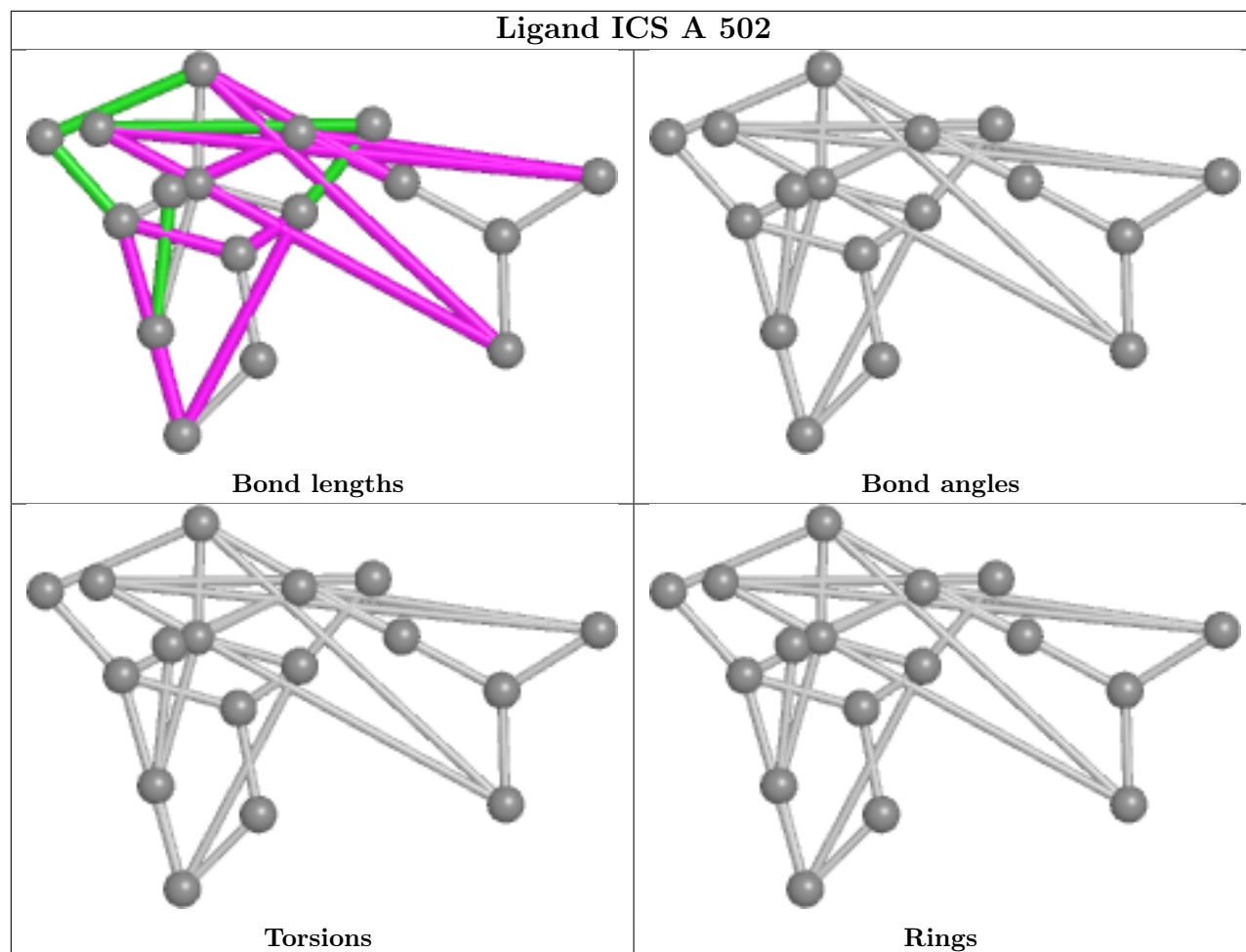
Mol	Chain	Res	Type	Atoms
3	A	501	HCA	C2-C3-C4-C5
3	A	501	HCA	C7-C3-C4-C5
3	A	501	HCA	O7-C3-C4-C5
3	C	501	HCA	C2-C3-C4-C5
3	A	501	HCA	C3-C4-C5-C6
3	C	501	HCA	C7-C3-C4-C5
3	C	501	HCA	O7-C3-C4-C5
3	A	501	HCA	O2-C1-C2-C3
3	A	501	HCA	O1-C1-C2-C3
3	A	501	HCA	C4-C5-C6-O4
3	C	501	HCA	C4-C5-C6-O3
3	C	501	HCA	C3-C4-C5-C6

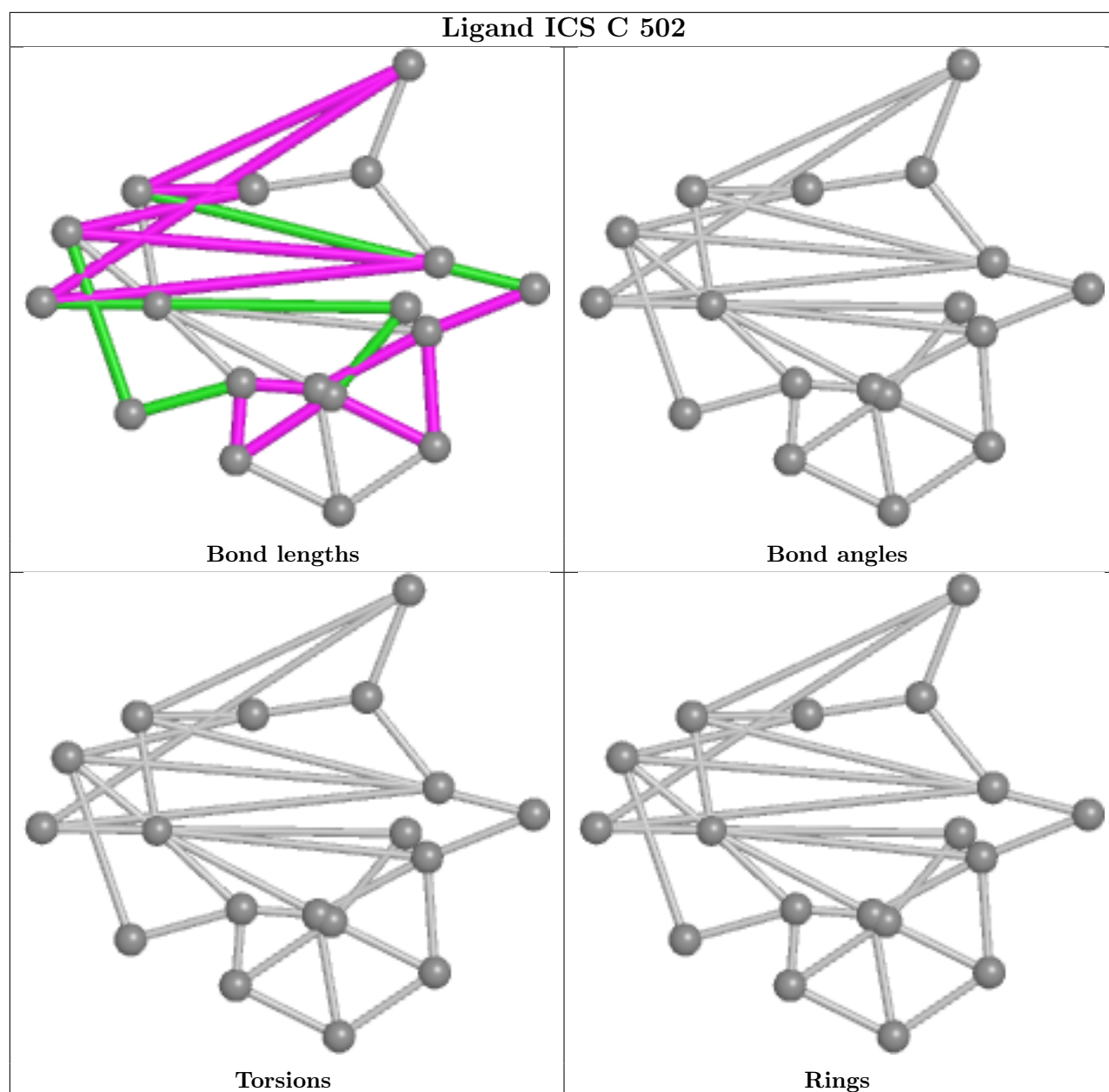
There are no ring outliers.

4 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	502	ICS	3	0
5	C	503	CLF	6	0
5	A	503	CLF	2	0
3	C	501	HCA	1	0

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





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	467/492 (94%)	0.30	22 (4%) 31 37	25, 40, 61, 84	0
1	C	466/492 (94%)	0.42	27 (5%) 23 28	27, 44, 63, 81	0
2	B	522/523 (99%)	0.22	22 (4%) 36 42	25, 39, 58, 88	0
2	D	522/523 (99%)	0.12	14 (2%) 54 60	25, 37, 57, 74	0
All	All	1977/2030 (97%)	0.26	85 (4%) 35 41	25, 40, 61, 88	0

All (85) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	214	ASP	4.2
2	B	521	LEU	3.9
2	D	38	ASP	3.6
1	C	329	ALA	3.6
2	B	212	SER	3.5
1	C	415	ARG	3.5
1	C	92	SER	3.4
2	B	102	TYR	3.4
1	C	425	ILE	3.3
2	D	102	TYR	3.3
1	A	89	GLY	3.2
1	C	93	ARG	3.2
2	B	215	ASP	3.2
1	C	314	ALA	3.2
2	D	521	LEU	3.1
1	C	5	SER	3.1
2	B	217	VAL	3.0
2	D	447	TYR	3.0
1	A	91	TYR	2.9
2	D	215	ASP	2.9
2	B	103	PHE	2.9

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Mol	Chain	Res	Type	RSRZ
1	C	110	VAL	2.8
2	B	177	ASP	2.7
1	C	134	LEU	2.7
1	C	444	TRP	2.7
2	D	255	SER	2.7
1	A	65	ALA	2.7
2	D	450	PHE	2.6
1	A	480	GLU	2.6
1	A	93	ARG	2.6
1	A	253	TRP	2.6
2	B	175	ILE	2.6
1	A	175	SER	2.6
1	C	355	ILE	2.6
2	D	124	VAL	2.5
1	C	91	TYR	2.5
1	A	425	ILE	2.5
1	C	221	TYR	2.5
1	A	36	ASP	2.5
2	B	408	ALA	2.5
2	D	123	ALA	2.5
1	A	444	TRP	2.5
1	C	16	VAL	2.5
1	C	217	ALA	2.5
1	C	319	SER	2.4
1	A	124	VAL	2.4
2	B	178	GLU	2.4
2	B	447	TYR	2.4
1	A	285	HIS	2.4
2	B	522	VAL	2.4
1	C	111	THR	2.3
1	A	94	ALA	2.3
1	A	95	GLY	2.3
1	C	94	ALA	2.3
1	C	443	SER	2.3
2	B	255	SER	2.3
2	B	124	VAL	2.3
2	B	104	ASN	2.2
1	A	92	SER	2.2
1	A	231	ILE	2.2
1	C	318	GLU	2.2
1	C	446	TYR	2.2
2	D	472	PRO	2.2

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Mol	Chain	Res	Type	RSRZ
2	B	174	PHE	2.1
1	C	45	CYS	2.1
1	A	6	ARG	2.1
1	C	218	SER	2.1
2	B	98	TYR	2.1
1	C	96	ARG	2.1
2	D	471	PHE	2.1
2	D	104	ASN	2.1
1	A	208	GLY	2.1
1	A	110	VAL	2.1
2	B	418	ASN	2.1
1	A	316	PHE	2.1
1	C	316	PHE	2.1
1	C	18	GLU	2.0
2	B	474	PHE	2.0
1	A	446	TYR	2.0
2	B	18	GLN	2.0
2	B	123	ALA	2.0
2	D	516	ASP	2.0
1	C	254	SER	2.0
2	D	340	ILE	2.0
1	A	363	VAL	2.0

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

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

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

There are no monosaccharides in this entry.

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

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

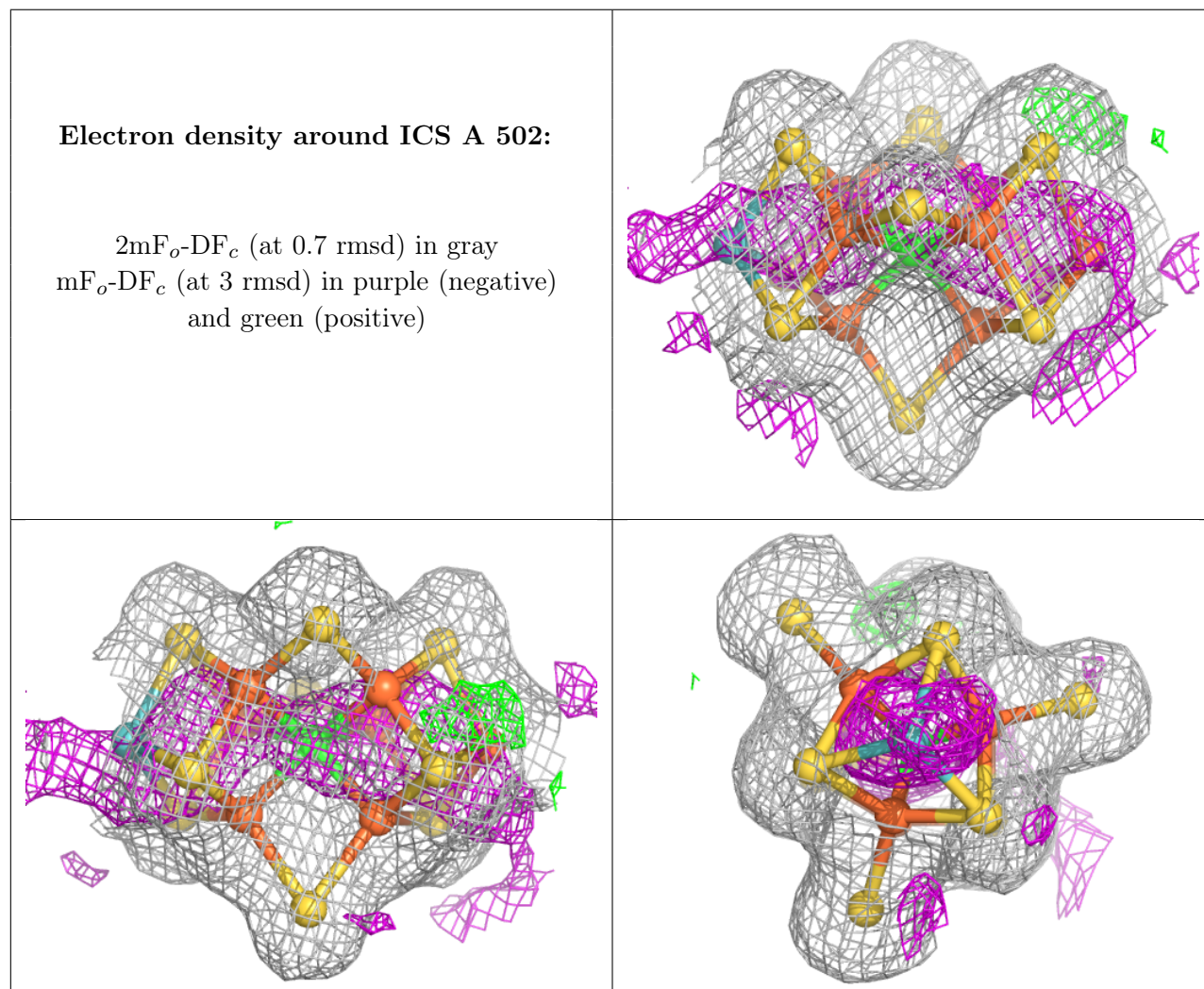
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	HCA	C	501	14/14	0.92	0.23	26,30,35,35	0

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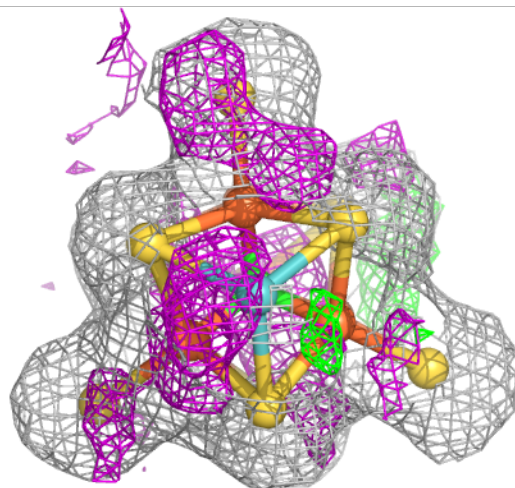
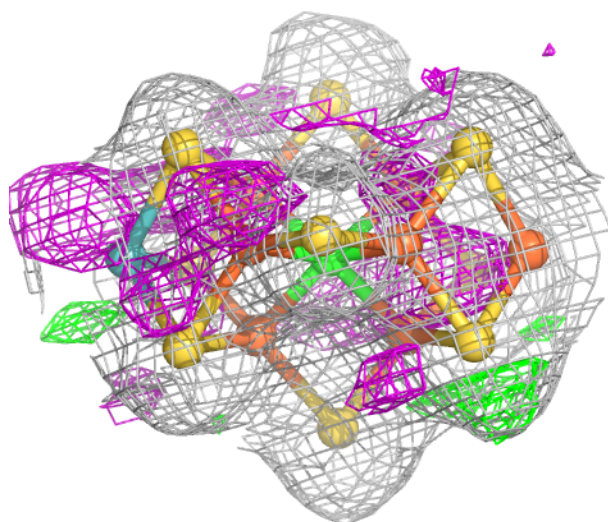
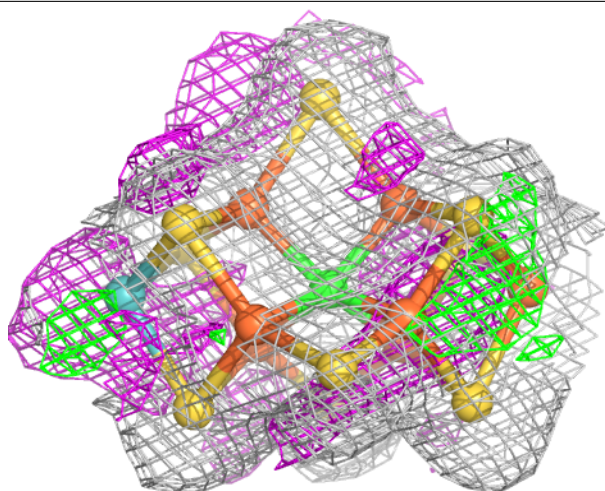
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
5	CLF	C	503	15/15	0.95	0.06	28,30,36,40	0
5	CLF	A	503	15/15	0.96	0.06	23,25,27,29	0
4	ICS	A	502	18/18	0.96	0.07	28,30,32,33	0
3	HCA	A	501	14/14	0.97	0.14	28,32,36,40	0
4	ICS	C	502	18/18	0.97	0.06	27,31,34,34	0
6	FE	B	602	1/1	0.98	0.08	40,40,40,40	0
6	FE	B	601	1/1	0.99	0.07	40,40,40,40	0

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



Electron density around ICS C 502:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



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

There are no such residues in this entry.