WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Nov 20, 2023 – 04:11 PM JST

PDB ID : 7CVT
Title : Crystal structure of the C85A/L194A/H234C mutant CLC-ec1 with Fab fragment
Authors : Park, K.; Mersch, K.; Robertson, J.; Lim, H.-H.
Deposited on : 2020-08-27
Resolution : 2.90 Å(reported)

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

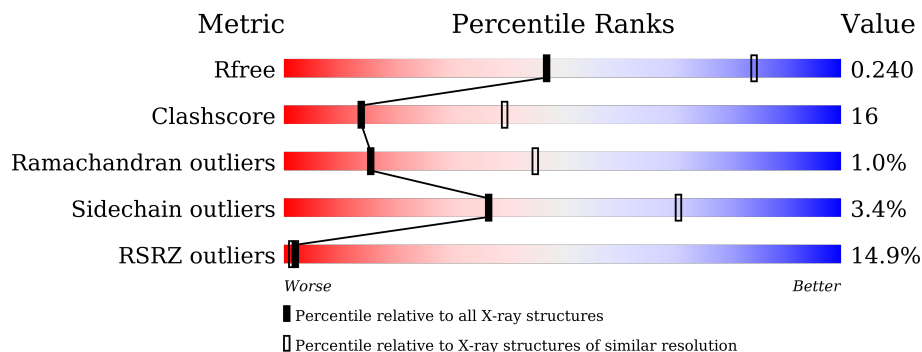|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	: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

1   Overall quality at a glance   ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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	Percentile Ranks	Value
Rfree		0.240
Clashscore		16
Ramachandran outliers		1.0%
Sidechain outliers		3.4%
RSRZ outliers		14.9%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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 <=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	473	18% / 66% 26% • 6%
1	B	473	19% / 59% 33% • 6%
2	C	222	6% / 80% 18% •
2	E	222	5% / 77% 22%
3	D	211	18% / 63% 35% •
3	F	211	11% / 72% 26% •

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 13248 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 H(+)/Cl(-) exchange transporter ClcA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	444	Total	C	N	O	S	0	0	0
			3325	2184	558	563	20			
1	B	444	Total	C	N	O	S	0	0	0
			3325	2184	558	563	20			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	85	ALA	CYS	engineered mutation	UNP D7XDR7
A	194	ALA	LEU	engineered mutation	UNP D7XDR7
A	234	CYS	HIS	engineered mutation	UNP D7XDR7
B	85	ALA	CYS	engineered mutation	UNP D7XDR7
B	194	ALA	LEU	engineered mutation	UNP D7XDR7
B	234	CYS	HIS	engineered mutation	UNP D7XDR7

- Molecule 2 is a protein called antibody Fab fragment heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	222	Total	C	N	O	S	0	0	0
			1681	1082	275	318	6			
2	E	221	Total	C	N	O	S	0	0	0
			1672	1077	274	315	6			

- Molecule 3 is a protein called antibody Fab fragment light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	D	211	Total	C	N	O	S	0	0	0
			1621	1008	271	334	8			
3	F	211	Total	C	N	O	S	0	0	0
			1621	1008	271	334	8			

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl) (labeled as "Ligand of

Interest" by depositor).

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total 2	Cl 2	0	0
4	B	1	Total 1	Cl 1	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: H(+)/Cl(-) exchange transporter ClcA
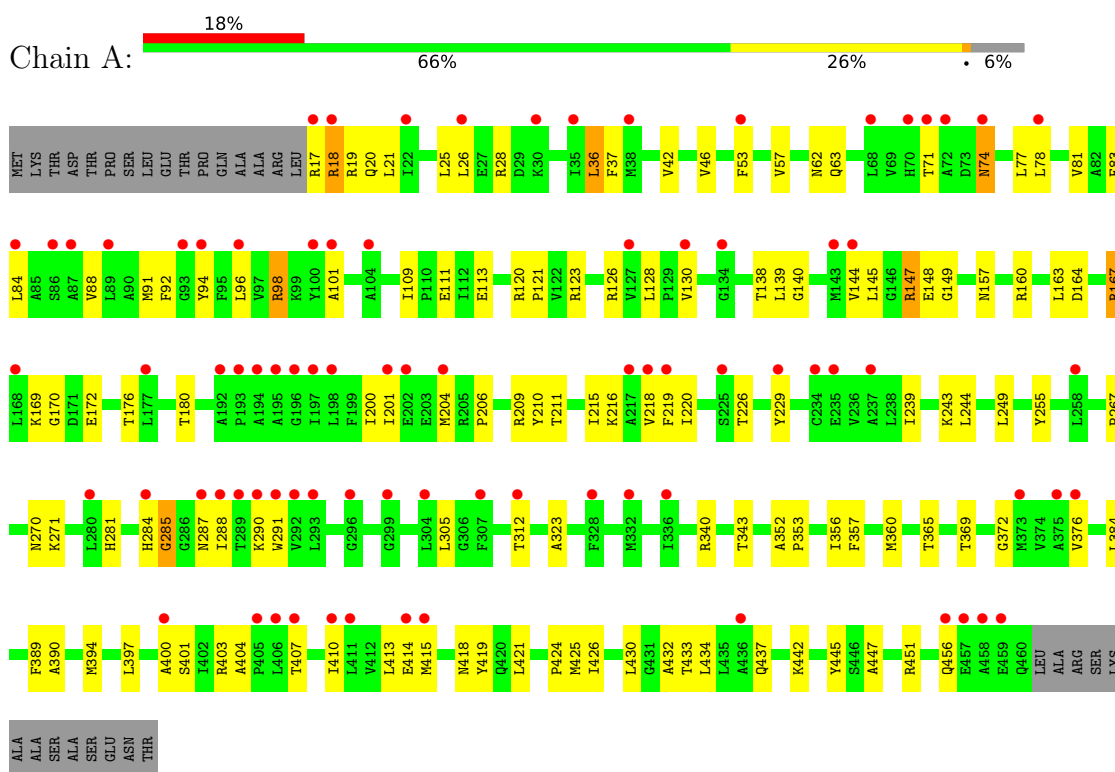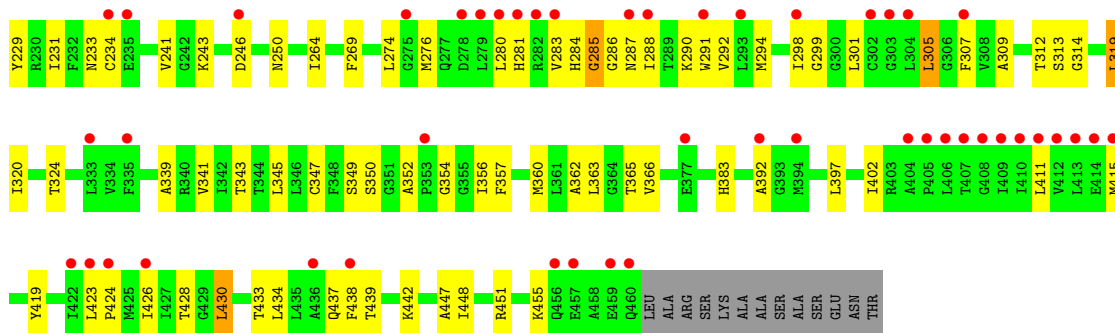
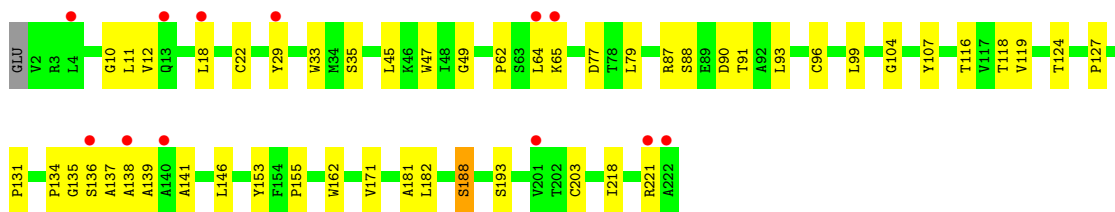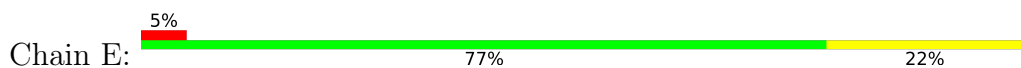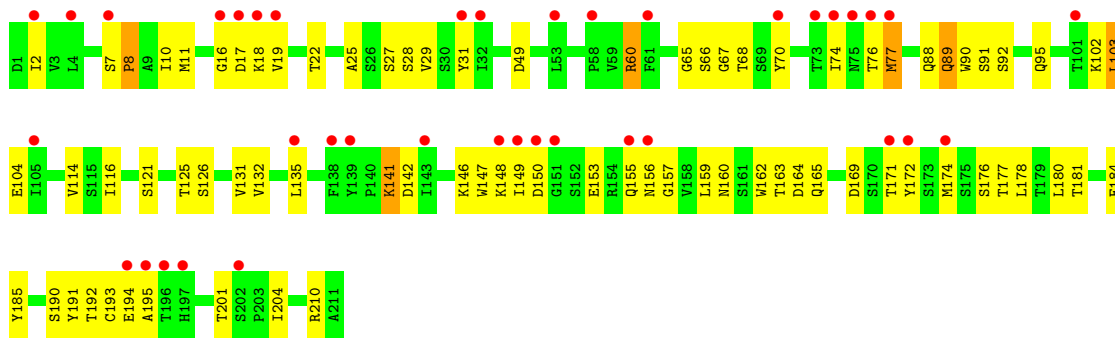• Molecule 1: H(+)/Cl(-) exchange transporter ClcA

• Molecule 2: antibody Fab fragment heavy chain
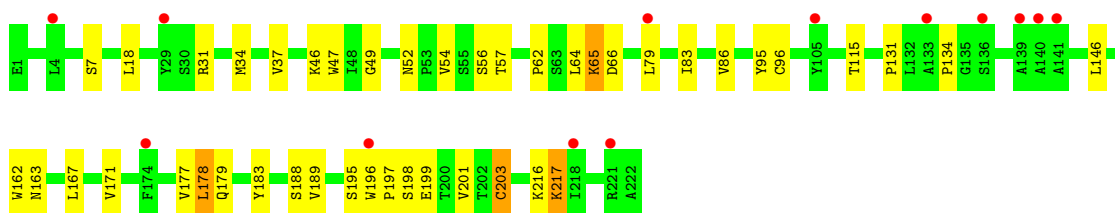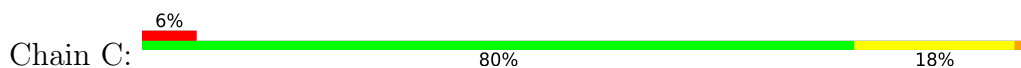
Chain C:

• Molecule 2: antibody Fab fragment heavy chain

Chain E:

• Molecule 3: antibody Fab fragment light chain

Chain D:

• Molecule 3: antibody Fab fragment light chain

Chain F:
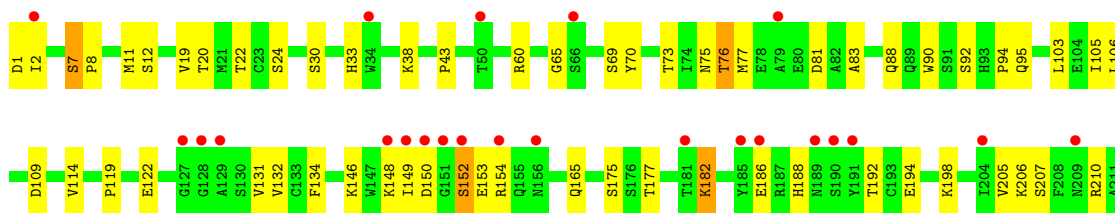
4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	233.03Å 98.31Å 172.43Å 90.00° 131.99° 90.00°	Depositor
Resolution (Å)	50.00 – 2.90 49.78 – 2.90	Depositor EDS
% Data completeness (in resolution range)	99.0 (50.00-2.90) 99.0 (49.78-2.90)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.68 (at 2.91Å)	Xtriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
R, R_{free}	0.201 , 0.241 0.201 , 0.240	Depositor DCC
R_{free} test set	3294 reflections (5.17%)	wwPDB-VP
Wilson B-factor (Å^2)	96.6	Xtriage
Anisotropy	0.247	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 79.3	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.004 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13248	wwPDB-VP
Average B, all atoms (Å^2)	115.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.60% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CL

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	0.29	0/3396	0.53	1/4609 (0.0%)
1	B	0.33	0/3396	0.58	2/4609 (0.0%)
2	C	0.27	0/1730	0.52	0/2367
2	E	0.28	0/1721	0.52	0/2355
3	D	0.31	0/1660	0.54	0/2257
3	F	0.30	0/1660	0.53	0/2257
All	All	0.30	0/13563	0.54	3/18454 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	319	LEU	CB-CG-CD1	-5.88	101.01	111.00
1	B	77	LEU	CA-CB-CG	5.33	127.55	115.30
1	A	36	LEU	CA-CB-CG	5.01	126.83	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3325	0	3476	111	0
1	B	3325	0	3476	160	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	1681	0	1663	26	0
2	E	1672	0	1654	34	0
3	D	1621	0	1546	70	0
3	F	1621	0	1546	49	0
4	A	2	0	0	1	0
4	B	1	0	0	1	0
All	All	13248	0	13361	419	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 16.

All (419) 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)
3:D:141:LYS:NZ	3:D:172:TYR:CD2	1.77	1.49
3:D:141:LYS:NZ	3:D:172:TYR:CE2	1.85	1.44
1:B:71:THR:HG23	1:B:77:LEU:HG	1.45	0.96
1:B:319:LEU:HD12	1:B:320:ILE:N	1.83	0.94
3:F:146:LYS:HB3	3:F:194:GLU:HB2	1.50	0.92
1:A:456:GLN:O	1:A:456:GLN:NE2	2.03	0.91
1:A:219:PHE:HD1	1:B:430:LEU:HD13	1.36	0.91
3:F:7:SER:HB2	3:F:22:THR:H	1.36	0.89
1:A:372:GLY:HA2	1:A:389:PHE:HD2	1.39	0.88
3:F:186:GLU:HG2	3:F:210:ARG:HH12	1.41	0.86
1:B:109:ILE:O	1:B:112:ILE:HG22	1.75	0.86
1:B:110:PRO:HG2	1:B:448:ILE:HD11	1.57	0.85
1:B:298:ILE:HD12	1:B:299:GLY:N	1.93	0.84
3:D:169:ASP:HB3	3:D:171:THR:HG23	1.60	0.83
1:A:219:PHE:HD1	1:B:430:LEU:CD1	1.93	0.82
3:D:148:LYS:HB2	3:D:192:THR:OG1	1.80	0.81
2:E:11:LEU:HD23	2:E:11:LEU:H	1.45	0.79
1:B:281:HIS:HA	1:B:284:HIS:CE1	2.17	0.79
3:F:186:GLU:HG2	3:F:210:ARG:NH1	1.98	0.79
1:B:138:THR:HG22	1:B:143:MET:HE2	1.65	0.78
3:D:141:LYS:CE	3:D:172:TYR:CE2	2.65	0.78
1:B:64:ARG:NH2	1:B:140:GLY:O	2.12	0.77
1:B:264:ILE:HG22	1:B:439:THR:HG21	1.67	0.77
1:A:74:ASN:HB2	1:A:77:LEU:HB3	1.68	0.76
1:B:138:THR:CG2	1:B:143:MET:HE2	2.15	0.76
1:B:110:PRO:CG	1:B:448:ILE:HD11	2.16	0.75
1:B:169:LYS:HG2	1:B:170:GLY:H	1.51	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:182:LYS:O	3:F:186:GLU:HG3	1.87	0.74
1:B:62:ASN:HA	1:B:65:MET:HB2	1.69	0.74
2:C:171:VAL:HG22	2:C:189:VAL:HG12	1.68	0.74
3:D:160:ASN:OD1	3:D:176:SER:HB2	1.88	0.74
1:A:169:LYS:HG2	1:A:170:GLY:H	1.53	0.74
1:B:210:TYR:HE1	1:B:212:LEU:HD12	1.52	0.73
3:D:132:VAL:HG22	3:D:177:THR:HG23	1.71	0.73
1:A:88:VAL:HA	1:A:91:MET:HE2	1.71	0.72
1:B:110:PRO:CB	1:B:448:ILE:HD11	2.19	0.72
1:A:284:HIS:HA	1:A:290:LYS:HG2	1.72	0.71
1:B:138:THR:CG2	1:B:143:MET:CE	2.68	0.71
3:F:7:SER:OG	3:F:8:PRO:HD3	1.91	0.71
1:B:360:MET:HE1	1:B:402:ILE:HD13	1.73	0.71
1:A:369:THR:HG22	1:A:390:ALA:HB2	1.73	0.70
3:D:10:ILE:HD12	3:D:102:LYS:HB3	1.72	0.70
1:A:113:GLU:HG3	1:A:204:MET:HG2	1.72	0.70
1:B:138:THR:HG23	1:B:143:MET:CE	2.21	0.70
1:A:92:PHE:O	1:A:96:LEU:HD12	1.92	0.70
1:B:38:MET:HG3	1:B:168:LEU:HD11	1.73	0.70
1:B:138:THR:HG23	1:B:143:MET:HE1	1.71	0.70
3:D:141:LYS:HE3	3:D:172:TYR:CZ	2.27	0.70
3:D:95:GLN:OE1	3:D:95:GLN:N	2.24	0.69
1:B:57:VAL:O	1:B:61:GLN:HG3	1.93	0.69
1:A:219:PHE:CD1	1:B:430:LEU:CD1	2.76	0.69
3:D:163:THR:HG22	3:D:164:ASP:O	1.92	0.69
2:E:135:GLY:O	2:E:137:ALA:N	2.26	0.68
1:A:164:ASP:O	1:A:167:ARG:HD2	1.94	0.68
1:A:147:ARG:HG2	1:A:147:ARG:HH11	1.58	0.68
1:B:98:ARG:HH21	1:B:102:PRO:HB3	1.57	0.67
2:E:91:THR:HG22	2:E:119:VAL:H	1.60	0.67
1:B:160:ARG:HA	1:B:163:LEU:HB3	1.75	0.67
1:A:376:VAL:HG22	1:A:384:LEU:HB2	1.77	0.67
1:B:345:LEU:O	1:B:349:SER:OG	2.13	0.67
1:B:101:ALA:HB3	1:B:130:VAL:HG11	1.76	0.66
1:B:284:HIS:O	1:B:286:GLY:N	2.27	0.66
1:B:319:LEU:HD12	1:B:319:LEU:C	2.16	0.66
1:A:372:GLY:HA2	1:A:389:PHE:CD2	2.29	0.66
1:B:99:LYS:HG2	1:B:100:TYR:CE1	2.31	0.66
1:A:288:ILE:HD12	1:A:288:ILE:H	1.60	0.65
2:E:93:LEU:HD13	2:E:116:THR:HG22	1.79	0.65
2:C:52:ASN:ND2	2:C:57:THR:H	1.93	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:74:ASN:HB3	1:B:77:LEU:HB3	1.78	0.64
2:C:131:PRO:HD3	2:C:216:LYS:HE2	1.79	0.64
3:D:29:VAL:O	3:D:70:TYR:OH	2.15	0.64
1:B:163:LEU:O	1:B:163:LEU:HD12	1.98	0.64
1:B:360:MET:HB3	1:B:397:LEU:HD22	1.80	0.64
1:A:42:VAL:O	1:A:46:VAL:HG23	1.98	0.64
1:B:206:PRO:HG2	1:B:211:THR:HG21	1.79	0.64
1:A:365:THR:O	1:A:369:THR:HG23	1.98	0.63
1:B:61:GLN:HA	1:B:64:ARG:NH2	2.13	0.63
1:A:430:LEU:HA	1:A:433:THR:HG22	1.79	0.63
3:D:89:GLN:NE2	3:D:92:SER:H	1.96	0.63
1:A:244:LEU:H	1:A:418:ASN:ND2	1.96	0.63
1:B:162:VAL:HG23	1:B:166:PHE:CE2	2.33	0.63
3:F:149:ILE:O	3:F:152:SER:N	2.30	0.63
3:D:2:ILE:HD13	3:D:29:VAL:CG1	2.28	0.63
3:D:77:MET:HE1	3:D:103:LEU:HD23	1.81	0.63
3:F:2:ILE:H	3:F:2:ILE:HD12	1.63	0.62
1:B:98:ARG:HE	1:B:98:ARG:HA	1.65	0.62
1:B:27:GLU:OE1	1:B:30:LYS:HD2	2.00	0.62
2:E:131:PRO:HB2	2:E:218:ILE:HG23	1.79	0.62
1:B:98:ARG:NH2	1:B:102:PRO:HB3	2.15	0.62
3:F:105:ILE:H	3:F:165:GLN:HE22	1.47	0.62
1:B:64:ARG:O	1:B:68:LEU:HD12	2.00	0.62
1:A:270:ASN:OD1	1:A:401:SER:OG	2.17	0.62
1:A:147:ARG:HG2	1:A:147:ARG:NH1	2.15	0.61
1:B:223:ILE:HG13	1:B:224:MET:N	2.14	0.61
2:E:91:THR:CG2	2:E:119:VAL:H	2.12	0.61
3:F:149:ILE:HD11	3:F:154:ARG:HB2	1.81	0.61
1:A:413:LEU:HD11	1:A:419:TYR:HD1	1.65	0.61
3:F:194:GLU:HA	3:F:205:VAL:HG12	1.81	0.61
1:A:71:THR:HG23	1:A:77:LEU:HG	1.81	0.61
1:B:148:GLU:HG2	1:B:149:GLY:N	2.15	0.61
3:D:153:GLU:OE2	3:D:153:GLU:N	2.33	0.61
1:B:430:LEU:HA	1:B:433:THR:HG22	1.83	0.60
1:A:83:PHE:HD1	1:A:84:LEU:HD12	1.67	0.60
1:A:403:ARG:NH2	1:B:29:ASP:O	2.35	0.60
1:B:61:GLN:HA	1:B:64:ARG:HH22	1.66	0.60
3:D:2:ILE:HD11	3:D:25:ALA:HB1	1.82	0.60
3:D:160:ASN:OD1	3:D:176:SER:CB	2.49	0.60
1:B:58:ALA:O	1:B:61:GLN:HB2	2.01	0.60
3:F:148:LYS:HB2	3:F:192:THR:HB	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:309:ALA:O	1:B:312:THR:OG1	2.18	0.60
1:B:116:LEU:HG	1:B:178:LEU:HD23	1.84	0.60
3:D:104:GLU:OE2	3:D:165:GLN:NE2	2.35	0.59
3:D:181:THR:HG23	3:D:184:GLU:HG2	1.84	0.59
1:B:23:ARG:HG3	1:B:23:ARG:O	2.03	0.59
1:B:27:GLU:OE1	1:B:27:GLU:HA	2.03	0.59
1:B:356:ILE:N	4:B:501:CL:CL	2.70	0.59
1:B:424:PRO:O	1:B:428:THR:HG22	2.02	0.59
2:C:52:ASN:HD21	2:C:56:SER:N	2.01	0.59
2:C:79:LEU:HD23	2:C:96:CYS:SG	2.42	0.59
1:A:255:TYR:CE2	1:A:424:PRO:HB2	2.38	0.59
1:A:219:PHE:CD1	1:B:430:LEU:HD13	2.28	0.58
3:F:114:VAL:HG13	3:F:206:LYS:HG3	1.86	0.58
2:E:45:LEU:HD21	3:F:43:PRO:HG2	1.84	0.58
1:B:284:HIS:C	1:B:286:GLY:H	2.07	0.58
1:B:392:ALA:HB1	1:B:428:THR:HG21	1.84	0.58
1:B:320:ILE:HG23	1:B:365:THR:HG21	1.86	0.58
3:D:141:LYS:NZ	3:D:172:TYR:CZ	2.65	0.58
3:D:2:ILE:CD1	3:D:29:VAL:HG13	2.33	0.58
1:B:241:VAL:HG13	1:B:324:THR:HG21	1.85	0.58
3:F:150:ASP:OD2	3:F:188:HIS:HD2	1.87	0.58
1:B:74:ASN:HB2	1:B:77:LEU:HD23	1.86	0.57
3:D:141:LYS:CE	3:D:172:TYR:CZ	2.87	0.57
3:F:149:ILE:CD1	3:F:154:ARG:HB2	2.34	0.57
3:D:141:LYS:HG2	3:D:172:TYR:CD1	2.40	0.57
1:A:219:PHE:CZ	1:B:426:ILE:HG23	2.39	0.57
1:A:180:THR:HG22	1:A:218:VAL:HG22	1.87	0.57
1:B:148:GLU:HG3	1:B:357:PHE:HB3	1.87	0.57
1:B:109:ILE:HD12	1:B:199:PHE:HE2	1.70	0.57
2:C:37:VAL:HG13	2:C:95:TYR:HB2	1.86	0.57
1:B:274:LEU:HD21	1:B:448:ILE:HG22	1.86	0.56
1:B:77:LEU:O	1:B:81:VAL:HG23	2.05	0.56
1:B:276:MET:HG3	1:B:280:LEU:HD13	1.88	0.56
1:A:21:LEU:HG	1:A:25:LEU:HD11	1.88	0.56
3:F:114:VAL:HA	3:F:134:PHE:O	2.05	0.56
3:D:2:ILE:HD13	3:D:29:VAL:HG13	1.86	0.56
1:A:71:THR:HG22	1:A:78:LEU:HA	1.88	0.56
1:A:201:ILE:HD11	1:A:215:ILE:HG12	1.88	0.56
3:D:77:MET:CE	3:D:103:LEU:CD2	2.83	0.56
3:D:195:ALA:HB3	3:D:204:ILE:HG23	1.88	0.56
3:F:122:GLU:OE2	3:F:122:GLU:N	2.36	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:124:THR:HG22	2:E:155:PRO:HD3	1.86	0.56
1:A:120:ARG:NH1	1:A:121:PRO:HD2	2.21	0.55
1:A:206:PRO:HG2	1:A:211:THR:HG21	1.88	0.55
1:A:356:ILE:O	1:A:360:MET:HG3	2.07	0.55
1:A:281:HIS:HA	1:A:284:HIS:CE1	2.40	0.55
1:B:109:ILE:HD13	1:B:152:VAL:HG11	1.88	0.55
3:D:17:ASP:OD1	3:D:18:LYS:N	2.40	0.55
3:D:163:THR:HG22	3:D:164:ASP:N	2.21	0.55
1:A:201:ILE:HG21	1:B:201:ILE:HD13	1.86	0.55
2:C:178:LEU:HB2	2:C:183:TYR:CE1	2.42	0.55
1:A:219:PHE:CD1	1:B:430:LEU:HD12	2.42	0.55
1:A:101:ALA:HB3	1:A:130:VAL:HG11	1.88	0.55
1:B:176:THR:O	1:B:180:THR:HG23	2.07	0.55
3:D:27:SER:OG	3:D:28:SER:N	2.40	0.55
1:A:403:ARG:NH2	1:A:437:GLN:HB2	2.23	0.54
1:A:426:ILE:HG23	1:B:219:PHE:CE1	2.42	0.54
1:B:144:VAL:O	1:B:144:VAL:HG23	2.07	0.54
1:B:281:HIS:O	1:B:285:GLY:N	2.40	0.54
1:B:319:LEU:HD12	1:B:320:ILE:CA	2.37	0.54
3:F:109:ASP:OD1	3:F:198:LYS:HE2	2.06	0.54
1:B:222:VAL:O	1:B:226:THR:HG22	2.08	0.54
2:C:34:MET:HB3	2:C:79:LEU:HD22	1.89	0.54
1:A:176:THR:O	1:A:180:THR:HG23	2.06	0.53
1:B:47:GLY:O	1:B:51:VAL:HG23	2.09	0.53
2:C:163:ASN:HB2	2:C:167:LEU:HD12	1.91	0.53
3:F:7:SER:CB	3:F:22:THR:H	2.15	0.53
3:F:186:GLU:HG2	3:F:210:ARG:CZ	2.39	0.53
1:B:158:ILE:O	1:B:162:VAL:HG12	2.09	0.53
3:D:116:ILE:HD11	3:D:147:TRP:CZ3	2.43	0.53
1:A:148:GLU:HG3	1:A:357:PHE:HB3	1.91	0.53
1:A:244:LEU:H	1:A:418:ASN:HD21	1.56	0.53
1:A:287:ASN:HB3	1:A:290:LYS:HE3	1.90	0.53
3:D:149:ILE:HD13	3:D:191:TYR:HE2	1.72	0.53
3:F:7:SER:OG	3:F:8:PRO:CD	2.57	0.53
1:B:95:PHE:CE1	1:B:99:LYS:HD3	2.44	0.53
1:B:118:ASP:CG	1:B:174:ARG:HH21	2.11	0.53
1:B:210:TYR:CE1	1:B:212:LEU:HD12	2.38	0.53
1:B:219:PHE:O	1:B:223:ILE:HG23	2.08	0.53
3:F:152:SER:OG	3:F:153:GLU:N	2.41	0.53
1:A:249:LEU:HD11	1:B:234:CYS:SG	2.49	0.52
1:B:313:SER:OG	1:B:314:GLY:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:162:TRP:CG	2:C:189:VAL:HG11	2.44	0.52
2:E:127:PRO:HB3	2:E:153:TYR:HB3	1.91	0.52
1:A:94:TYR:CZ	1:A:352:ALA:HB2	2.44	0.52
3:D:88:GLN:HG2	3:D:89:GLN:N	2.23	0.52
1:A:305:LEU:HB3	1:A:312:THR:OG1	2.09	0.52
1:B:153:GLN:O	1:B:157:ASN:ND2	2.36	0.52
1:B:210:TYR:HE1	1:B:212:LEU:CD1	2.20	0.52
2:E:107:TYR:HB3	3:F:33:HIS:CD2	2.45	0.52
3:D:150:ASP:HA	3:D:190:SER:HB3	1.92	0.52
3:F:186:GLU:HG2	3:F:210:ARG:NH2	2.25	0.52
3:D:2:ILE:HG21	3:D:89:GLN:NE2	2.25	0.52
3:D:131:VAL:HG13	3:D:178:LEU:HB3	1.93	0.51
1:B:198:LEU:HD13	1:B:201:ILE:HD11	1.93	0.51
1:A:365:THR:HG22	1:A:394:MET:HB2	1.92	0.51
1:B:110:PRO:HB2	1:B:448:ILE:HD11	1.93	0.51
2:C:52:ASN:OD1	2:C:54:VAL:N	2.44	0.51
3:D:180:LEU:HB3	3:D:184:GLU:HG3	1.91	0.51
2:E:135:GLY:HA2	2:E:221:ARG:HD2	1.93	0.51
1:B:298:ILE:HD12	1:B:299:GLY:H	1.70	0.51
1:B:122:VAL:HG13	1:B:160:ARG:HG2	1.92	0.51
1:A:113:GLU:CG	1:A:204:MET:HG2	2.39	0.51
1:A:219:PHE:CE1	1:B:426:ILE:HG23	2.45	0.51
1:B:284:HIS:HB2	1:B:290:LYS:HG3	1.92	0.51
1:A:414:GLU:HG2	1:B:419:TYR:HE1	1.77	0.50
1:B:360:MET:HA	1:B:363:LEU:HD12	1.94	0.50
2:C:47:TRP:CE2	3:D:95:GLN:NE2	2.80	0.50
1:A:53:PHE:O	1:A:57:VAL:HG12	2.12	0.50
3:D:16:GLY:N	3:D:77:MET:O	2.34	0.50
3:D:29:VAL:CG1	3:D:89:GLN:HG3	2.42	0.50
3:F:186:GLU:HG2	3:F:210:ARG:HH22	1.77	0.50
1:B:180:THR:HG22	1:B:218:VAL:HG22	1.94	0.50
1:A:148:GLU:HG2	1:A:149:GLY:N	2.27	0.50
2:C:177:VAL:HG11	3:D:159:LEU:HD13	1.93	0.50
2:E:47:TRP:CE3	3:F:95:GLN:NE2	2.80	0.50
1:B:183:ALA:HB2	1:B:200:ILE:HG12	1.94	0.49
2:E:134:PRO:HD3	2:E:146:LEU:HD23	1.94	0.49
1:B:124:TRP:CD1	1:B:160:ARG:HG3	2.47	0.49
1:B:437:GLN:HG2	1:B:438:PHE:CD2	2.47	0.49
1:A:216:LYS:HD3	1:B:434:LEU:HD23	1.94	0.49
1:B:27:GLU:OE1	1:B:30:LYS:CD	2.60	0.49
1:B:94:TYR:CZ	1:B:352:ALA:HB2	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:362:ALA:O	1:B:366:VAL:HG23	2.12	0.49
1:B:138:THR:HG21	1:B:352:ALA:HB1	1.93	0.49
1:B:280:LEU:HD23	1:B:350:SER:HA	1.93	0.49
3:D:7:SER:CB	3:D:22:THR:HB	2.43	0.49
1:A:144:VAL:HG21	1:A:343:THR:HB	1.93	0.49
2:C:83:ILE:HG22	2:C:86:VAL:HG12	1.93	0.49
3:D:11:MET:HG3	3:D:103:LEU:HD12	1.94	0.49
1:B:227:ILE:O	1:B:231:ILE:HG13	2.12	0.49
1:B:51:VAL:O	1:B:55:LYS:HG3	2.13	0.48
1:B:200:ILE:HA	1:B:204:MET:HB2	1.94	0.48
1:B:93:GLY:O	1:B:97:VAL:HG22	2.12	0.48
3:F:94:PRO:HB2	3:F:95:GLN:NE2	2.27	0.48
3:D:89:GLN:HG2	3:D:91:SER:H	1.79	0.48
2:E:10:GLY:O	2:E:118:THR:N	2.36	0.48
1:A:111:GLU:OE1	1:A:120:ARG:NH2	2.45	0.47
1:A:226:THR:HG21	1:B:423:LEU:HD11	1.95	0.47
1:B:99:LYS:HG2	1:B:100:TYR:CD1	2.49	0.47
2:E:162:TRP:CZ3	2:E:203:CYS:HB3	2.49	0.47
3:F:2:ILE:HD11	3:F:92:SER:HB2	1.96	0.47
1:A:281:HIS:O	1:A:285:GLY:N	2.44	0.47
2:E:22:CYS:HB3	2:E:79:LEU:HB3	1.96	0.47
1:B:112:ILE:HD11	1:B:178:LEU:HD11	1.96	0.47
3:D:60:ARG:HB2	3:D:74:ILE:HG23	1.95	0.47
2:E:11:LEU:HA	2:E:118:THR:O	2.14	0.47
1:A:219:PHE:CE1	1:B:430:LEU:HB2	2.49	0.47
1:A:267:PRO:O	1:A:271:LYS:HD3	2.14	0.47
1:B:109:ILE:CD1	1:B:152:VAL:HG11	2.44	0.47
2:C:195:SER:O	2:C:199:GLU:N	2.41	0.47
3:F:132:VAL:HG22	3:F:177:THR:HG23	1.95	0.47
3:F:119:PRO:HD3	3:F:131:VAL:HG22	1.96	0.47
1:A:287:ASN:HB3	1:A:290:LYS:CE	2.44	0.47
1:A:434:LEU:HD11	1:B:220:ILE:HD11	1.96	0.47
1:B:319:LEU:C	1:B:319:LEU:CD1	2.83	0.47
2:C:179:GLN:OE1	3:D:159:LEU:HD11	2.14	0.47
3:D:19:VAL:HG22	3:D:74:ILE:HB	1.95	0.47
1:B:57:VAL:HG12	1:B:61:GLN:HE21	1.80	0.47
1:A:92:PHE:CE1	1:A:96:LEU:HD11	2.50	0.47
1:A:128:LEU:HD21	1:A:157:ASN:HB2	1.96	0.47
3:D:147:TRP:O	3:D:153:GLU:HA	2.15	0.47
2:C:65:LYS:HG3	2:C:66:ASP:OD2	2.15	0.46
1:B:172:GLU:O	1:B:176:THR:HG23	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:404:ALA:O	1:A:407:THR:HG22	2.15	0.46
1:A:109:ILE:HG23	1:A:204:MET:SD	2.56	0.46
1:B:241:VAL:CG1	1:B:324:THR:HG21	2.45	0.46
3:F:94:PRO:HB2	3:F:95:GLN:HE22	1.81	0.46
1:A:403:ARG:NH2	1:B:29:ASP:OD2	2.46	0.46
1:A:400:ALA:HB2	1:A:432:ALA:HB1	1.97	0.46
1:B:356:ILE:O	1:B:360:MET:HG3	2.16	0.46
1:B:383:HIS:HD2	2:E:33:TRP:CE3	2.34	0.46
2:E:87:ARG:NH1	2:E:90:ASP:OD1	2.49	0.46
1:A:36:LEU:HB2	1:A:220:ILE:HD12	1.97	0.46
1:A:36:LEU:HD21	1:B:438:PHE:HZ	1.80	0.45
1:B:274:LEU:CD2	1:B:448:ILE:HG22	2.46	0.45
1:B:411:LEU:O	1:B:415:MET:HG3	2.16	0.45
3:D:121:SER:O	3:D:125:THR:HG23	2.15	0.45
2:E:35:SER:HB2	2:E:99:LEU:HD11	1.98	0.45
1:B:229:TYR:O	1:B:233:ASN:HB2	2.16	0.45
2:E:11:LEU:HD13	2:E:124:THR:HG23	1.98	0.45
1:B:339:ALA:O	1:B:343:THR:HG23	2.17	0.45
1:A:249:LEU:HD12	1:A:249:LEU:H	1.81	0.45
3:F:12:SER:HB3	3:F:106:LEU:HD21	1.98	0.45
1:B:288:ILE:O	1:B:292:VAL:HG13	2.16	0.45
2:E:12:VAL:HG11	2:E:18:LEU:HB3	1.99	0.45
3:F:149:ILE:HD12	3:F:149:ILE:H	1.82	0.45
1:B:71:THR:HG22	1:B:78:LEU:HD12	1.99	0.45
3:D:165:GLN:HE21	3:D:165:GLN:HB2	1.63	0.45
3:D:185:TYR:CZ	3:D:210:ARG:HD3	2.52	0.45
3:F:38:LYS:HG2	3:F:83:ALA:HB2	1.99	0.45
1:A:74:ASN:OD1	1:A:74:ASN:N	2.50	0.45
1:A:160:ARG:HD3	1:A:163:LEU:HD23	1.98	0.45
1:B:31:THR:HB	1:B:36:LEU:HD21	1.99	0.45
2:E:29:TYR:CD2	2:E:77:ASP:HA	2.52	0.45
2:E:47:TRP:CZ2	2:E:49:GLY:HA2	2.52	0.45
3:F:65:GLY:HA3	3:F:70:TYR:HA	1.99	0.45
2:E:181:ALA:O	2:E:182:LEU:HD23	2.17	0.45
3:F:7:SER:HG	3:F:8:PRO:HD3	1.81	0.45
3:F:75:ASN:O	3:F:76:THR:OG1	2.33	0.45
2:C:47:TRP:CZ2	2:C:49:GLY:HA2	2.51	0.44
1:B:280:LEU:O	1:B:283:VAL:HG12	2.17	0.44
2:E:141:ALA:O	2:E:193:SER:OG	2.25	0.44
2:E:171:VAL:HA	2:E:188:SER:O	2.18	0.44
1:A:414:GLU:HG2	1:B:419:TYR:CE1	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:71:THR:HG21	1:B:81:VAL:HG21	1.99	0.44
1:A:36:LEU:HD21	1:B:438:PHE:CZ	2.53	0.44
1:A:98:ARG:HD2	1:A:291:TRP:CE3	2.53	0.44
3:D:65:GLY:HA3	3:D:70:TYR:HA	1.98	0.44
3:D:114:VAL:HG22	3:D:135:LEU:HD13	1.98	0.44
3:D:135:LEU:HD11	3:D:195:ALA:HB2	1.99	0.44
1:A:271:LYS:HD2	1:A:271:LYS:N	2.33	0.44
1:A:26:LEU:HD12	1:A:26:LEU:HA	1.85	0.44
2:C:146:LEU:CD1	2:C:201:VAL:HG11	2.48	0.44
3:D:77:MET:HE3	3:D:103:LEU:CD2	2.48	0.44
1:B:46:VAL:HG22	1:B:155:GLY:HA2	1.98	0.44
2:E:10:GLY:N	2:E:116:THR:O	2.51	0.44
1:B:150:PRO:HD3	1:B:354:GLY:HA2	2.00	0.44
1:B:148:GLU:HG3	1:B:357:PHE:CB	2.47	0.44
3:D:90:TRP:CZ2	3:D:95:GLN:NE2	2.86	0.44
3:D:77:MET:CE	3:D:103:LEU:HD23	2.44	0.43
1:A:123:ARG:NH2	1:A:126:ARG:HH21	2.16	0.43
1:A:139:LEU:CD2	1:A:145:LEU:HB2	2.48	0.43
1:A:430:LEU:HD21	1:B:223:ILE:HD13	2.01	0.43
1:A:447:ALA:O	1:A:451:ARG:HG3	2.18	0.43
1:B:71:THR:HG21	1:B:81:VAL:CG2	2.49	0.43
3:D:66:SER:O	3:D:68:THR:N	2.51	0.43
2:E:137:ALA:O	2:E:139:ALA:N	2.47	0.43
1:A:219:PHE:CD1	1:B:430:LEU:HB2	2.54	0.43
1:B:124:TRP:HD1	1:B:160:ARG:HG3	1.83	0.43
2:C:217:LYS:CD	2:C:217:LYS:H	2.31	0.43
3:D:7:SER:HB2	3:D:22:THR:HB	2.00	0.43
3:D:95:GLN:H	3:D:95:GLN:CD	2.19	0.43
1:A:57:VAL:HG23	1:A:140:GLY:HA2	2.00	0.43
1:B:77:LEU:O	1:B:80:THR:HB	2.17	0.43
2:E:11:LEU:HD23	2:E:11:LEU:N	2.25	0.43
1:A:287:ASN:OD1	1:A:288:ILE:N	2.52	0.43
3:D:7:SER:HB3	3:D:8:PRO:HD3	2.00	0.43
1:A:36:LEU:HD12	1:A:37:PHE:N	2.33	0.43
1:B:301:LEU:O	1:B:305:LEU:HD12	2.19	0.43
1:B:447:ALA:O	1:B:451:ARG:HG3	2.19	0.43
3:D:104:GLU:HB2	3:D:165:GLN:NE2	2.33	0.43
3:D:116:ILE:HD12	3:D:193:CYS:HB2	2.00	0.43
1:A:410:ILE:O	1:A:414:GLU:HG3	2.18	0.43
3:D:31:TYR:HB3	3:D:49:ASP:HA	2.00	0.43
3:F:11:MET:HE1	3:F:19:VAL:HG23	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:89:GLN:HG2	3:D:90:TRP:N	2.34	0.42
1:A:200:ILE:HG22	1:A:201:ILE:HD12	2.01	0.42
1:B:163:LEU:HD22	1:B:174:ARG:HA	2.01	0.42
3:F:192:THR:HA	3:F:207:SER:HB3	2.01	0.42
1:B:298:ILE:HD12	1:B:298:ILE:C	2.37	0.42
2:C:162:TRP:CZ3	2:C:203:CYS:HB3	2.55	0.42
1:A:18:ARG:H	1:A:18:ARG:HE	1.67	0.42
1:A:287:ASN:OD1	1:A:287:ASN:C	2.57	0.42
1:B:23:ARG:O	1:B:27:GLU:HB2	2.19	0.42
2:E:11:LEU:HD22	2:E:124:THR:CG2	2.49	0.42
1:A:209:ARG:HG3	1:A:210:TYR:O	2.20	0.42
1:B:145:LEU:HD11	1:B:347:CYS:HB3	2.00	0.42
1:A:77:LEU:O	1:A:81:VAL:HG23	2.20	0.42
1:B:94:TYR:HB3	1:B:292:VAL:HG12	2.01	0.42
1:B:112:ILE:CD1	1:B:178:LEU:HD11	2.50	0.42
1:B:176:THR:HG22	1:B:214:SER:H	1.85	0.42
3:F:186:GLU:HA	3:F:210:ARG:NH1	2.34	0.42
1:A:397:LEU:HD23	1:A:397:LEU:HA	1.89	0.42
2:C:196:TRP:CD1	2:C:197:PRO:HA	2.55	0.42
1:A:71:THR:CG2	1:A:78:LEU:HA	2.49	0.42
2:C:18:LEU:HD11	2:C:83:ILE:HD12	2.01	0.42
3:F:90:TRP:CD2	3:F:95:GLN:HB3	2.55	0.42
1:A:147:ARG:H	1:A:147:ARG:HG3	1.55	0.41
1:A:239:ILE:HD11	1:A:415:MET:HB3	2.00	0.41
2:E:11:LEU:H	2:E:11:LEU:CD2	2.24	0.41
1:A:71:THR:HG22	1:A:71:THR:O	2.20	0.41
1:A:340:ARG:HA	1:A:343:THR:OG1	2.20	0.41
1:B:287:ASN:O	1:B:290:LYS:HG2	2.20	0.41
2:C:46:LYS:HB3	2:C:46:LYS:HE3	1.78	0.41
3:F:105:ILE:H	3:F:165:GLN:NE2	2.16	0.41
1:A:62:ASN:OD1	1:A:63:GLN:N	2.52	0.41
2:C:7:SER:HA	2:C:115:THR:HG21	2.03	0.41
3:D:141:LYS:HZ1	3:D:172:TYR:HE2	1.39	0.41
2:E:88:SER:O	2:E:91:THR:OG1	2.33	0.41
3:F:20:THR:HG22	3:F:73:THR:OG1	2.20	0.41
1:A:323:ALA:HB1	1:A:369:THR:HG21	2.02	0.41
1:B:112:ILE:HD12	1:B:112:ILE:HA	1.90	0.41
1:B:120:ARG:HE	1:B:120:ARG:HB3	1.57	0.41
3:D:162:TRP:CE2	3:D:174:MET:HG3	2.56	0.41
3:F:194:GLU:HG2	3:F:205:VAL:HG12	2.03	0.41
1:A:360:MET:HG3	1:A:360:MET:H	1.73	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:156:ASN:OD1	3:D:157:GLY:N	2.54	0.41
1:A:138:THR:HG21	1:A:353:PRO:HD2	2.03	0.41
1:B:58:ALA:HA	1:B:61:GLN:HB2	2.02	0.41
2:C:134:PRO:HD2	2:C:196:TRP:CH2	2.56	0.41
1:A:169:LYS:HG2	1:A:170:GLY:N	2.30	0.41
1:A:434:LEU:HD23	1:A:434:LEU:HA	1.97	0.41
1:B:162:VAL:HG23	1:B:166:PHE:CD2	2.55	0.41
1:A:17:ARG:NH1	1:B:119:GLN:HE21	2.19	0.41
1:A:421:LEU:O	1:A:425:MET:HG3	2.21	0.41
1:B:65:MET:SD	1:B:307:PHE:CZ	3.14	0.40
1:B:320:ILE:CG2	1:B:365:THR:HG21	2.51	0.40
3:F:77:MET:SD	3:F:103:LEU:HD21	2.61	0.40
1:B:250:ASN:OD1	2:E:104:GLY:HA3	2.22	0.40
1:B:269:PHE:HE1	1:B:341:VAL:HG23	1.87	0.40
1:B:284:HIS:CE1	1:B:291:TRP:CE3	3.09	0.40
1:A:74:ASN:HB2	1:A:77:LEU:CB	2.46	0.40
1:A:445:TYR:OH	4:A:501:CL:CL	2.69	0.40
3:F:30:SER:HA	3:F:70:TYR:OH	2.21	0.40
3:F:60:ARG:NH2	3:F:81:ASP:OD1	2.54	0.40
1:B:284:HIS:CE1	1:B:291:TRP:CZ3	3.09	0.40
3:D:141:LYS:HG2	3:D:172:TYR:CG	2.57	0.40
3:D:146:LYS:CB	3:D:194:GLU:HB2	2.51	0.40
3:F:2:ILE:CD1	3:F:92:SER:HB2	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	442/473 (93%)	424 (96%)	17 (4%)	1 (0%)	47	78
1	B	442/473 (93%)	423 (96%)	18 (4%)	1 (0%)	47	78

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	C	220/222 (99%)	204 (93%)	12 (6%)	4 (2%)	8	29
2	E	219/222 (99%)	203 (93%)	11 (5%)	5 (2%)	6	23
3	D	209/211 (99%)	189 (90%)	16 (8%)	4 (2%)	8	28
3	F	209/211 (99%)	196 (94%)	10 (5%)	3 (1%)	11	36
All	All	1741/1812 (96%)	1639 (94%)	84 (5%)	18 (1%)	15	45

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	C	64	LEU
2	C	65	LYS
3	D	67	GLY
2	E	65	LYS
2	E	136	SER
3	F	7	SER
1	B	285	GLY
3	D	8	PRO
3	D	76	THR
2	E	64	LEU
3	F	152	SER
2	C	198	SER
2	E	138	ALA
3	F	76	THR
2	C	62	PRO
3	D	142	ASP
1	A	285	GLY
2	E	62	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	333/356 (94%)	321 (96%)	12 (4%)	35	69
1	B	333/356 (94%)	319 (96%)	14 (4%)	30	63

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C	182/182 (100%)	177 (97%)	5 (3%)	44	77
2	E	181/182 (100%)	179 (99%)	2 (1%)	73	92
3	D	185/185 (100%)	177 (96%)	8 (4%)	29	62
3	F	185/185 (100%)	179 (97%)	6 (3%)	39	73
All	All	1399/1446 (97%)	1352 (97%)	47 (3%)	37	71

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	ARG
1	A	19	ARG
1	A	20	GLN
1	A	28	ARG
1	A	74	ASN
1	A	98	ARG
1	A	147	ARG
1	A	167	ARG
1	A	172	GLU
1	A	229	TYR
1	A	243	LYS
1	A	442	LYS
1	B	18	ARG
1	B	27	GLU
1	B	84	LEU
1	B	117	GLU
1	B	126	ARG
1	B	212	LEU
1	B	219	PHE
1	B	243	LYS
1	B	246	ASP
1	B	294	MET
1	B	305	LEU
1	B	430	LEU
1	B	442	LYS
1	B	455	LYS
2	C	31	ARG
2	C	178	LEU
2	C	188	SER
2	C	203	CYS
2	C	217	LYS
3	D	60	ARG

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Mol	Chain	Res	Type
3	D	77	MET
3	D	89	GLN
3	D	103	LEU
3	D	126	SER
3	D	141	LYS
3	D	155	GLN
3	D	201	THR
2	E	96	CYS
2	E	188	SER
3	F	1	ASP
3	F	24	SER
3	F	69	SER
3	F	88	GLN
3	F	175	SER
3	F	182	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	418	ASN
1	B	61	GLN
1	B	153	GLN
1	B	284	HIS
3	D	89	GLN
3	F	88	GLN
3	F	95	GLN
3	F	165	GLN
3	F	188	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

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	444/473 (93%)	1.03	83 (18%)	1	0	79, 107, 149, 234	0
1	B	444/473 (93%)	1.25	92 (20%)	1	0	76, 122, 177, 245	0
2	C	222/222 (100%)	0.45	13 (5%)	22	18	66, 99, 166, 228	0
2	E	221/222 (99%)	0.44	12 (5%)	25	22	65, 96, 142, 242	0
3	D	211/211 (100%)	0.96	38 (18%)	1	1	85, 124, 167, 195	0
3	F	211/211 (100%)	0.67	23 (10%)	5	4	66, 94, 160, 190	0
All	All	1753/1812 (96%)	0.89	261 (14%)	2	1	65, 110, 166, 245	0

All (261) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	66	GLY	10.5
1	B	67	ALA	8.0
1	B	167	ARG	7.8
3	D	7	SER	7.5
1	A	234	CYS	6.9
1	B	234	CYS	6.6
1	B	82	ALA	6.5
1	A	291	TRP	6.5
2	C	141	ALA	6.4
1	B	70	HIS	6.2
1	B	68	LEU	6.1
3	D	138	PHE	6.1
1	B	168	LEU	5.9
1	B	460	GLN	5.5
1	B	65	MET	5.4
1	B	63	GLN	5.3
1	B	71	THR	5.3
1	B	304	LEU	5.3
3	D	195	ALA	5.2

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Mol	Chain	Res	Type	RSRZ
3	D	76	THR	5.1
1	A	235	GLU	5.1
1	A	284	HIS	5.1
1	B	75	TYR	5.1
1	B	235	GLU	4.9
1	A	18	ARG	4.9
1	B	79	LEU	4.8
1	B	280	LEU	4.8
2	E	138	ALA	4.7
1	A	290	LYS	4.6
2	C	29	TYR	4.6
1	B	163	LEU	4.6
1	A	299	GLY	4.6
3	F	148	LYS	4.5
1	A	312	THR	4.5
1	B	72	ALA	4.3
1	B	457	GLU	4.3
1	B	288	ILE	4.3
1	B	74	ASN	4.2
1	B	407	THR	4.2
1	A	198	LEU	4.2
3	D	77	MET	4.2
1	B	413	LEU	4.1
1	B	76	PRO	4.1
2	C	221	ARG	4.0
1	A	194	ALA	4.0
2	E	140	ALA	4.0
2	E	221	ARG	3.9
3	F	189	ASN	3.8
3	D	155	GLN	3.8
2	E	29	TYR	3.8
1	B	409	ILE	3.8
1	B	194	ALA	3.7
1	B	73	ASP	3.7
1	A	78	LEU	3.7
1	B	404	ALA	3.7
1	B	86	SER	3.7
3	D	148	LYS	3.7
1	B	90	ALA	3.6
2	C	140	ALA	3.6
1	B	283	VAL	3.6
1	B	408	GLY	3.6

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Mol	Chain	Res	Type	RSRZ
1	B	456	GLN	3.6
1	A	458	ALA	3.6
1	A	195	ALA	3.5
1	B	69	VAL	3.5
1	B	198	LEU	3.5
2	E	65	LYS	3.5
1	A	459	GLU	3.5
1	B	84	LEU	3.4
1	A	457	GLU	3.4
1	A	336	ILE	3.4
1	A	84	LEU	3.4
1	A	407	THR	3.3
1	B	36	LEU	3.3
1	B	405	PRO	3.3
1	B	410	ILE	3.3
3	F	127	GLY	3.3
1	B	406	LEU	3.3
3	D	32	ILE	3.3
1	B	275	GLY	3.3
2	C	139	ALA	3.3
1	A	436	ALA	3.3
1	B	412	VAL	3.2
2	C	218	ILE	3.2
1	A	93	GLY	3.2
3	F	190	SER	3.1
3	F	149	ILE	3.1
1	B	279	LEU	3.1
1	B	287	ASN	3.1
3	F	156	ASN	3.1
1	A	456	GLN	3.1
2	C	196	TRP	3.1
3	D	74	ILE	3.1
1	B	459	GLU	3.1
1	B	333	LEU	3.1
1	A	406	LEU	3.1
1	A	289	THR	3.1
3	F	191	TYR	3.1
3	D	105	ILE	3.1
3	D	75	ASN	3.0
3	D	150	ASP	3.0
1	B	125	TRP	3.0
1	A	280	LEU	3.0

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Full wwPDB X-ray Structure Validation Report

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Mol	Chain	Res	Type	RSRZ
3	D	194	GLU	3.0
1	B	307	PHE	3.0
1	B	303	GLY	3.0
3	F	150	ASP	3.0
1	A	72	ALA	3.0
1	A	410	ILE	2.9
1	B	177	LEU	2.9
3	D	196	THR	2.9
1	A	193	PRO	2.9
1	A	74	ASN	2.9
1	B	193	PRO	2.9
1	B	78	LEU	2.9
3	D	18	LYS	2.9
1	B	81	VAL	2.9
1	A	86	SER	2.8
1	B	411	LEU	2.8
1	A	201	ILE	2.8
1	B	51	VAL	2.8
1	A	168	LEU	2.8
3	D	53	LEU	2.8
1	B	202	GLU	2.8
3	D	172	TYR	2.8
1	A	144	VAL	2.8
1	A	101	ALA	2.8
1	A	202	GLU	2.8
1	A	376	VAL	2.8
3	D	139	TYR	2.8
3	F	154	ARG	2.8
3	F	66	SER	2.8
2	E	201	VAL	2.8
2	C	136	SER	2.8
1	B	282	ARG	2.7
3	D	2	ILE	2.7
2	E	136	SER	2.7
1	B	278	ASP	2.7
1	A	411	LEU	2.7
1	A	143	MET	2.7
3	F	128	GLY	2.7
1	B	93	GLY	2.7
1	B	302	CYS	2.7
2	E	222	ALA	2.6
1	B	225	SER	2.6

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Mol	Chain	Res	Type	RSRZ
3	D	70	TYR	2.6
1	B	89	LEU	2.6
1	A	292	VAL	2.6
1	A	71	THR	2.6
3	D	61	PHE	2.6
1	A	70	HIS	2.6
1	B	281	HIS	2.6
1	B	96	LEU	2.6
1	B	293	LEU	2.6
3	D	171	THR	2.6
1	A	192	ALA	2.6
1	B	195	ALA	2.6
1	B	199	PHE	2.6
1	B	415	MET	2.6
1	A	225	SER	2.6
3	D	19	VAL	2.6
1	A	96	LEU	2.6
1	A	134	GLY	2.6
1	A	100	TYR	2.6
1	A	130	VAL	2.6
1	B	414	GLU	2.6
1	B	77	LEU	2.6
1	B	196	GLY	2.6
2	C	4	LEU	2.5
3	F	186	GLU	2.5
1	A	287	ASN	2.5
1	B	423	LEU	2.5
1	A	373	MET	2.5
1	A	53	PHE	2.5
1	A	219	PHE	2.5
3	F	185	TYR	2.5
1	A	17	ARG	2.5
1	A	89	LEU	2.5
1	B	95	PHE	2.5
3	D	101	THR	2.5
1	B	422	ILE	2.5
2	E	4	LEU	2.5
3	D	17	ASP	2.5
1	B	197	ILE	2.5
3	D	31	TYR	2.5
1	A	68	LEU	2.4
2	C	105	TYR	2.4

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Mol	Chain	Res	Type	RSRZ
3	D	143	ILE	2.4
2	E	13	GLN	2.4
2	C	79	LEU	2.4
3	D	16	GLY	2.4
1	B	394	MET	2.4
3	D	202	SER	2.4
3	F	152	SER	2.4
1	A	400	ALA	2.4
1	B	436	ALA	2.4
3	F	129	ALA	2.4
1	B	201	ILE	2.4
1	A	127	VAL	2.4
3	F	209	ASN	2.4
1	A	30	LYS	2.4
1	A	177	LEU	2.4
2	E	18	LEU	2.4
1	A	307	PHE	2.3
1	A	332	MET	2.3
1	B	192	ALA	2.3
1	A	288	ILE	2.3
2	C	174	PHE	2.3
1	A	94	TYR	2.3
1	A	229	TYR	2.3
1	A	26	LEU	2.3
2	E	64	LEU	2.3
3	F	2	ILE	2.3
1	A	204	MET	2.3
1	B	104	ALA	2.3
1	B	438	PHE	2.3
1	B	291	TRP	2.3
1	A	196	GLY	2.3
3	D	156	ASN	2.2
1	A	375	ALA	2.2
3	F	151	GLY	2.2
1	B	426	ILE	2.2
1	A	258	LEU	2.2
1	A	296	GLY	2.2
3	F	79	ALA	2.2
3	F	204	ILE	2.2
1	B	127	VAL	2.2
1	A	104	ALA	2.2
1	A	405	PRO	2.2

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Mol	Chain	Res	Type	RSRZ
3	D	4	LEU	2.2
1	B	335	PHE	2.2
1	A	38	MET	2.2
1	A	293	LEU	2.2
1	B	298	ILE	2.2
1	B	353	PRO	2.2
3	D	151	GLY	2.2
3	D	149	ILE	2.2
1	B	246	ASP	2.1
1	B	392	ALA	2.1
3	F	34	TRP	2.1
1	A	414	GLU	2.1
1	B	377	GLU	2.1
3	F	50	THR	2.1
1	A	22	ILE	2.1
1	A	35	ILE	2.1
3	D	174	MET	2.1
1	A	328	PHE	2.1
3	D	135	LEU	2.1
3	D	73	THR	2.1
1	B	424	PRO	2.1
1	A	217	ALA	2.0
3	D	197	HIS	2.0
1	A	197	ILE	2.0
1	A	218	VAL	2.0
1	A	415	MET	2.0
3	D	58	PRO	2.0
1	A	87	ALA	2.0
1	A	237	ALA	2.0
2	C	133	ALA	2.0
3	F	181	THR	2.0
1	A	304	LEU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

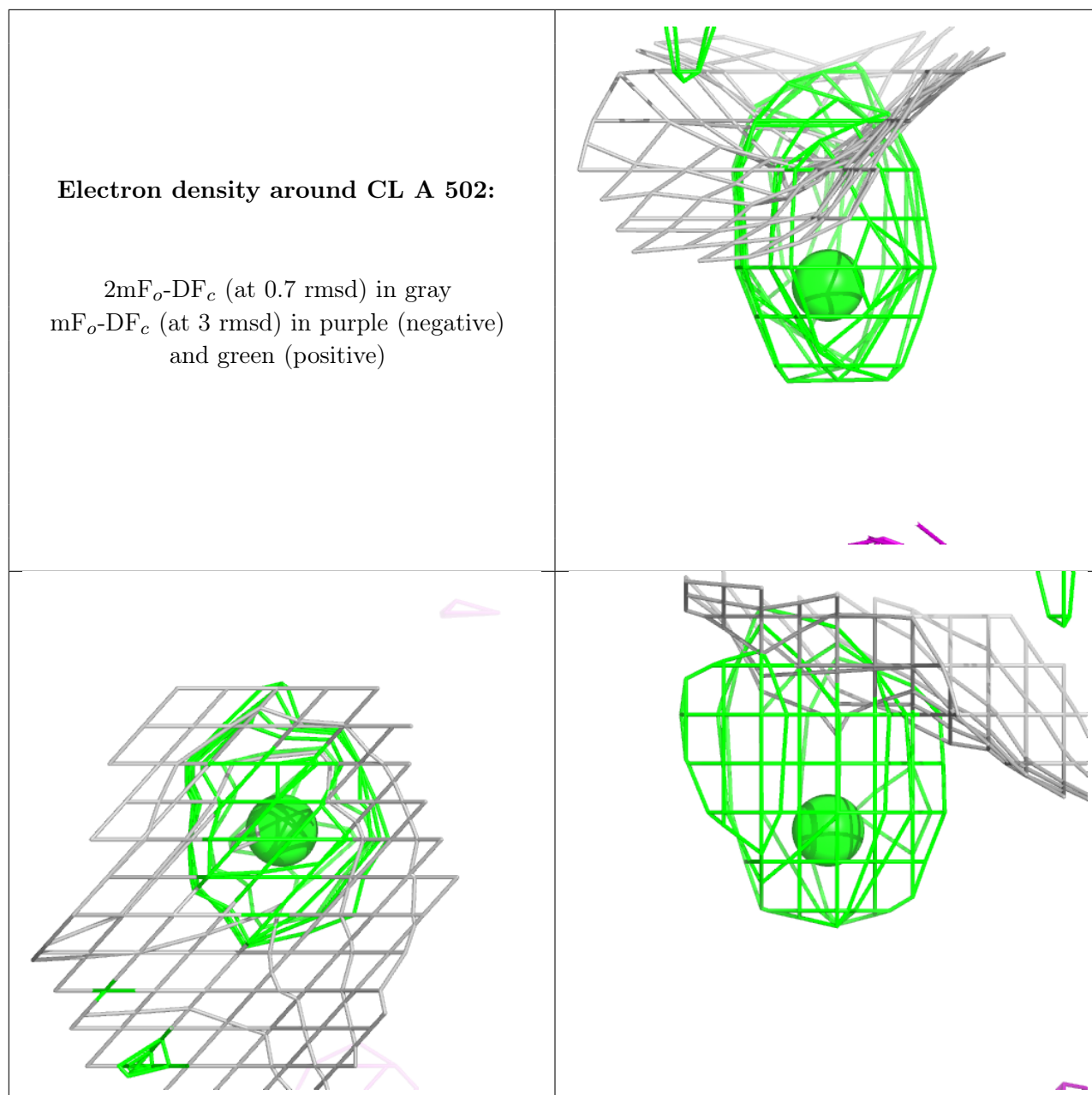There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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.

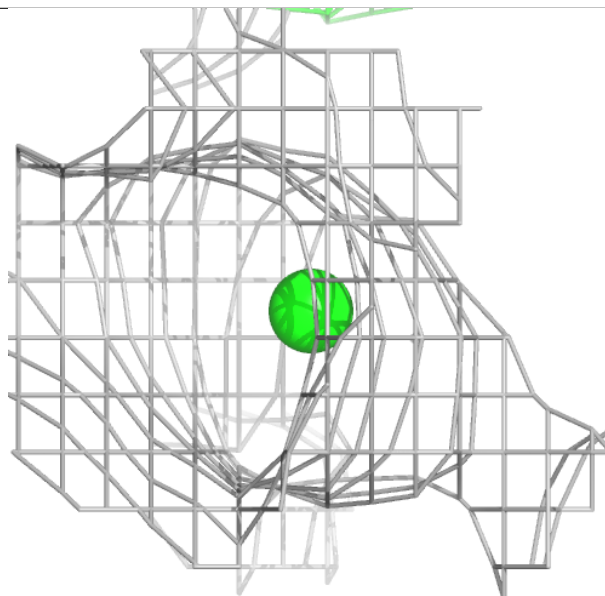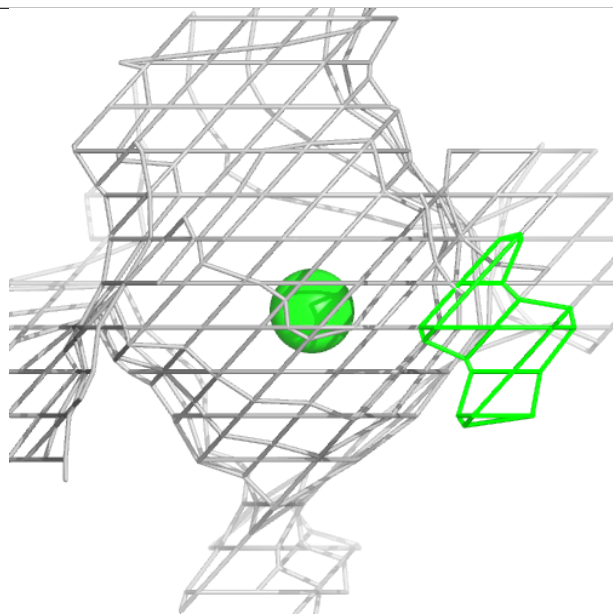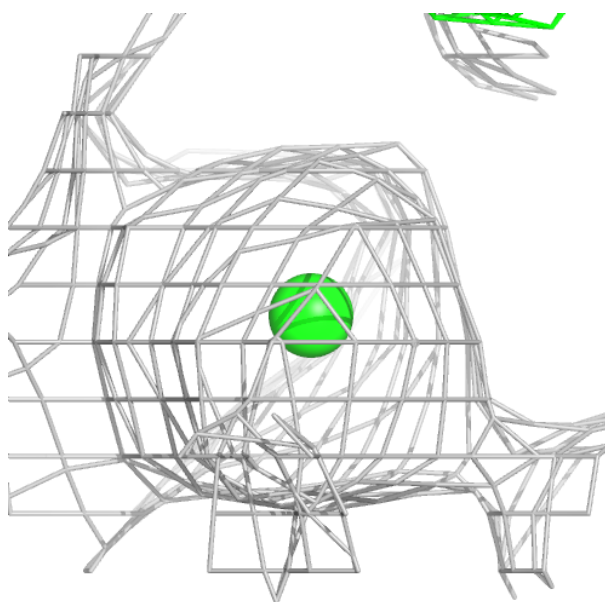| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	CL	A	502	1/1	0.83	1.09	360,360,360,360	0
4	CL	A	501	1/1	0.92	0.15	114,114,114,114	0
4	CL	B	501	1/1	0.98	0.14	104,104,104,104	0

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.
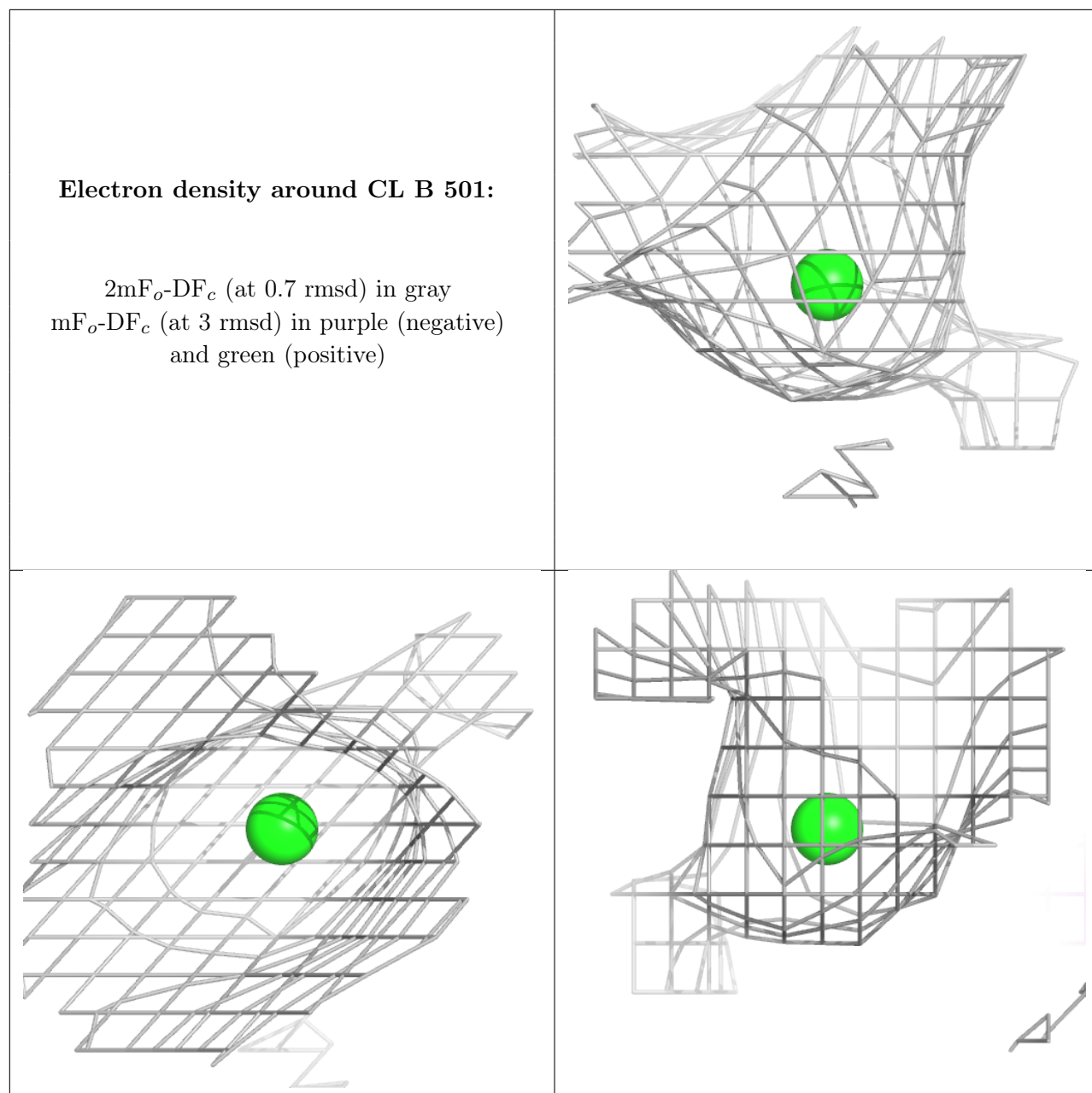
Electron density around CL A 502:

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

Electron density around CL A 501:

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

Electron density around CL B 501:

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 ⓘ

There are no such residues in this entry.