



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 14, 2023 – 09:29 PM JST

PDB ID : 6AD7  
Title : Crystal structure of the E148D mutant CLC-ec1 in 20 mM bromide  
Authors : Lim, H.-H.; Park, K.  
Deposited on : 2018-07-31  
Resolution : 2.95 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Xtrriage (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

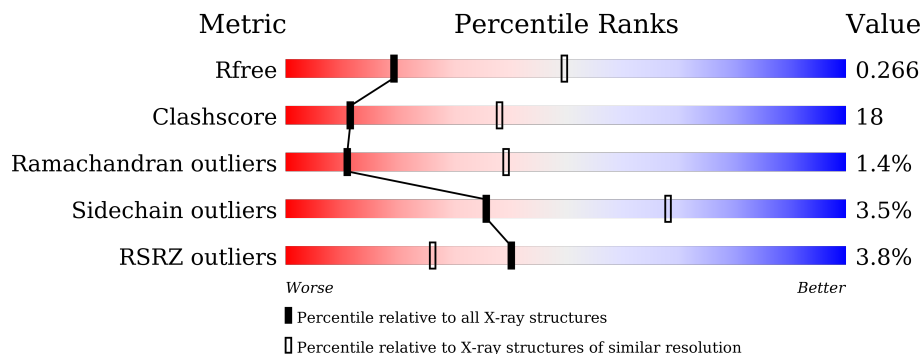
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.95 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	3104 (3.00-2.92)
Clashscore	141614	3462 (3.00-2.92)
Ramachandran outliers	138981	3340 (3.00-2.92)
Sidechain outliers	138945	3343 (3.00-2.92)
RSRZ outliers	127900	2986 (3.00-2.92)

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

Mol	Chain	Length	Quality of chain
1	A	473	<p>4% 63% 29% 6%</p>
1	B	473	<p>3% 60% 32% 7%</p>
2	C	222	<p>5% 68% 30% 2%</p>
2	E	222	<p>3% 76% 23% 1%</p>
3	D	211	<p>3% 61% 36% 1%</p>
3	F	211	<p>5% 72% 25% 1%</p>

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 13243 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
			Total	C	N	O	S			
1	A	444	Total 3332	C 2189	N 560	O 563	S 20	0	0	0
1	B	442	Total 3314	C 2179	N 557	O 558	S 20	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	148	ASP	GLU	engineered mutation	UNP P37019
B	148	ASP	GLU	engineered mutation	UNP P37019

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

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

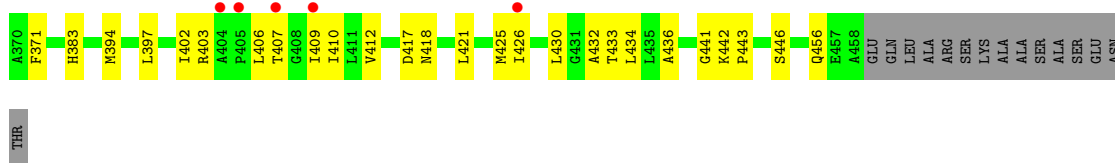
- Molecule 3 is a protein called antibody Fab fragment light chain.

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

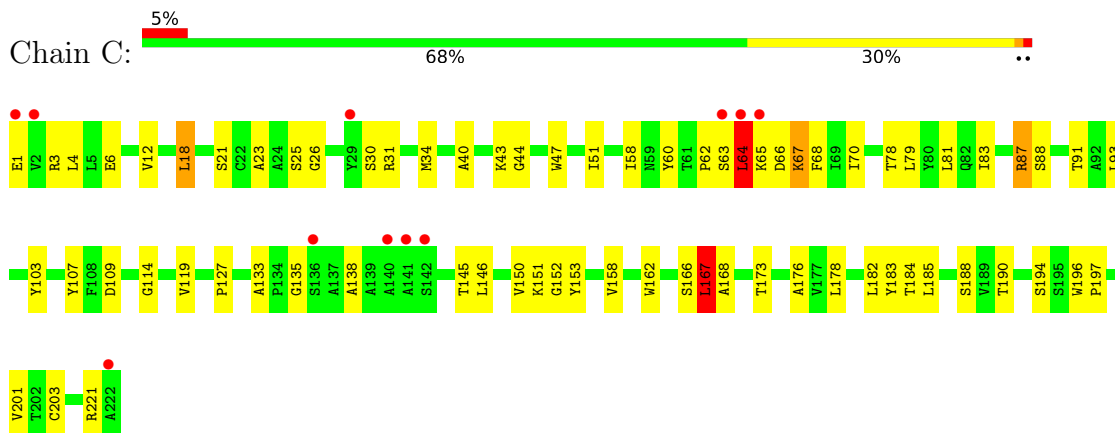
- Molecule 4 is BROMIDE ION (three-letter code: BR) (formula: Br) (labeled as "Ligand of Interest" by depositor).

<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
4	A	1	Total 1	Br 1	0	0
4	B	1	Total 1	Br 1	0	0

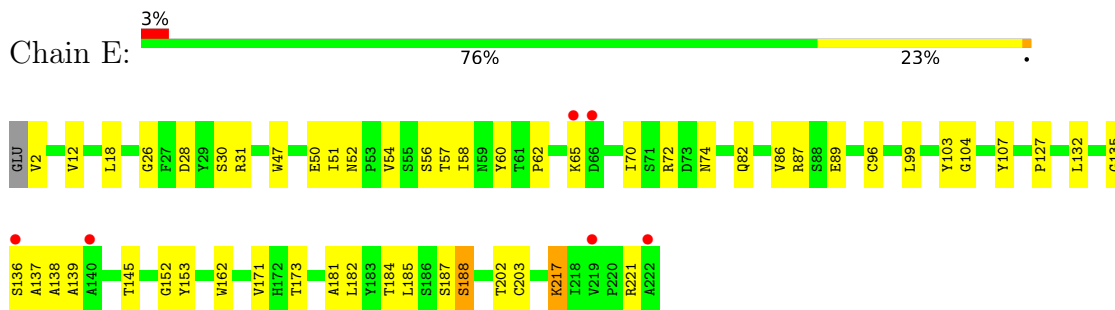




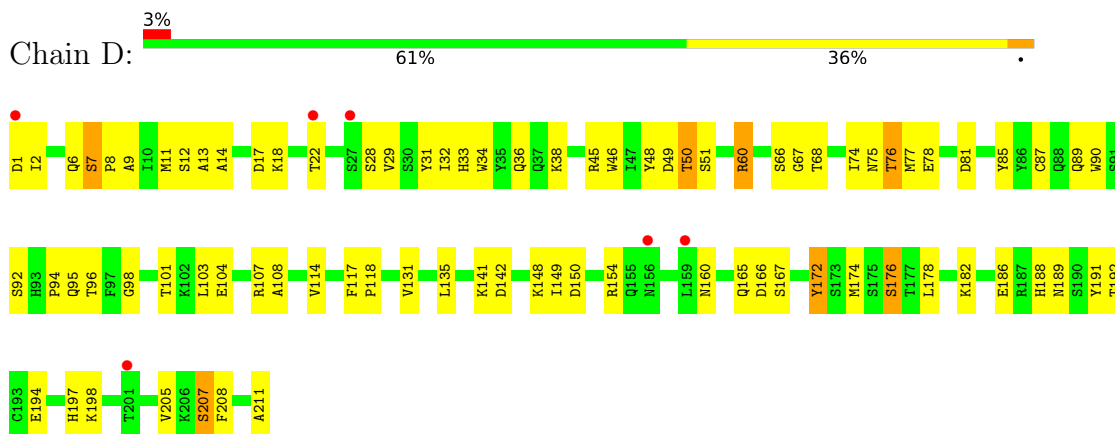
• Molecule 2: antibody Fab fragment heavy chain



• Molecule 2: antibody Fab fragment heavy chain

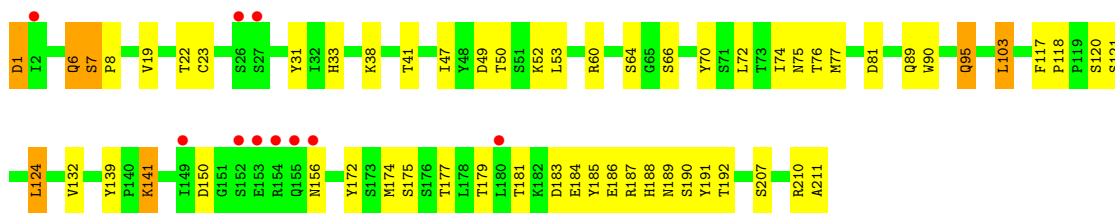


• Molecule 3: antibody Fab fragment light chain



• Molecule 3: antibody Fab fragment light chain





## 4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	233.18Å 97.61Å 170.80Å 90.00° 131.79° 90.00°	Depositor
Resolution (Å)	49.04 – 2.95 49.04 – 2.95	Depositor EDS
% Data completeness (in resolution range)	96.3 (49.04-2.95) 96.1 (49.04-2.95)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.61 (at 2.96Å)	Xtrriage
Refinement program	PHENIX 1.13_2998	Depositor
R, $R_{free}$	0.223 , 0.269 0.220 , 0.266	Depositor DCC
$R_{free}$ test set	2888 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	75.2	Xtrriage
Anisotropy	0.611	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 58.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.012 for h,-k,-h-l	Xtrriage
$F_o, F_c$ correlation	0.90	EDS
Total number of atoms	13243	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	72.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.71% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

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



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.46	0/3404	0.64	2/4620 (0.0%)
1	B	0.45	0/3386	0.64	1/4596 (0.0%)
2	C	0.55	0/1730	0.75	2/2367 (0.1%)
2	E	0.51	0/1721	0.70	1/2355 (0.0%)
3	D	0.55	1/1660 (0.1%)	0.69	0/2257
3	F	0.51	0/1660	0.73	2/2257 (0.1%)
All	All	0.49	1/13561 (0.0%)	0.68	8/18452 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	C	0	1
3	F	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	172	TYR	CE2-CZ	-5.18	1.31	1.38

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	64	LEU	CA-CB-CG	8.43	134.69	115.30
1	A	21	LEU	CB-CG-CD1	-7.82	97.71	111.00
1	A	220	ILE	CG1-CB-CG2	-7.44	95.03	111.40
1	B	170	GLY	N-CA-C	-6.03	98.03	113.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	F	103	LEU	CB-CG-CD2	-5.83	101.10	111.00
2	C	167	LEU	CB-CG-CD2	-5.75	101.23	111.00
3	F	6	GLN	C-N-CA	5.41	135.23	121.70
2	E	185	LEU	CB-CG-CD2	-5.04	102.44	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	C	66	ASP	Peptide
3	F	75	ASN	Peptide

## 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3332	0	3482	148	0
1	B	3314	0	3466	153	0
2	C	1681	0	1663	63	0
2	E	1672	0	1654	35	0
3	D	1621	0	1546	64	0
3	F	1621	0	1546	57	0
4	A	1	0	0	1	0
4	B	1	0	0	0	0
All	All	13243	0	13357	469	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 18.

All (469) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:150:PRO:O	1:A:154:ILE:HD12	1.41	1.19
1:A:430:LEU:HD22	1:B:223:ILE:CD1	1.79	1.12
1:A:430:LEU:HD22	1:B:223:ILE:HD11	1.34	1.09

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:119:GLN:HE21	1:B:18:ARG:HD3	1.15	1.08
1:B:17:ARG:HG2	1:B:20:GLN:HG2	1.33	1.06
1:A:119:GLN:NE2	1:B:18:ARG:HD3	1.72	1.05
2:C:60:TYR:HE2	2:C:70:ILE:HD12	1.22	1.01
1:A:150:PRO:C	1:A:154:ILE:HD12	1.82	1.00
2:C:60:TYR:CE2	2:C:70:ILE:CD1	2.44	0.99
3:D:95:GLN:OE1	3:D:95:GLN:N	1.99	0.95
1:A:223:ILE:HD11	1:B:430:LEU:HD13	1.47	0.95
3:F:77:MET:HE2	3:F:103:LEU:HD21	1.50	0.93
1:A:369:THR:HG22	1:A:390:ALA:HB2	1.51	0.92
2:C:60:TYR:CE2	2:C:70:ILE:HD13	2.07	0.90
2:C:60:TYR:HE2	2:C:70:ILE:CD1	1.80	0.89
3:D:194:GLU:HG2	3:D:205:VAL:HG12	1.55	0.88
2:E:60:TYR:HE2	2:E:70:ILE:HD12	1.39	0.88
3:F:7:SER:HB2	3:F:22:THR:H	1.38	0.86
1:A:457:GLU:OE2	1:B:18:ARG:NH1	2.07	0.85
1:B:150:PRO:HD3	1:B:354:GLY:HA2	1.59	0.84
3:F:95:GLN:OE1	3:F:95:GLN:N	2.09	0.84
1:B:59:TRP:CZ2	1:B:63:GLN:NE2	2.46	0.82
2:E:60:TYR:CE2	2:E:70:ILE:HD12	2.14	0.82
3:F:77:MET:CE	3:F:103:LEU:HD21	2.09	0.82
1:A:101:ALA:HB3	1:A:130:VAL:HG11	1.62	0.81
2:C:91:THR:HG22	2:C:119:VAL:H	1.46	0.81
1:B:403:ARG:NH2	1:B:436:ALA:HB1	1.95	0.80
1:A:123:ARG:HH21	1:A:126:ARG:HH11	1.30	0.80
3:F:1:ASP:N	3:F:1:ASP:OD1	2.13	0.80
1:B:198:LEU:HD12	1:B:410:ILE:HD12	1.62	0.79
3:D:89:GLN:HE21	3:D:92:SER:H	1.27	0.79
1:B:176:THR:HG22	1:B:213:ILE:HA	1.64	0.79
1:A:219:PHE:CD2	1:B:430:LEU:HD11	2.18	0.78
3:F:7:SER:CB	3:F:22:THR:H	1.95	0.78
2:C:60:TYR:CE2	2:C:70:ILE:HD12	2.10	0.77
3:F:141:LYS:H	3:F:141:LYS:HD2	1.48	0.77
1:A:150:PRO:C	1:A:154:ILE:CD1	2.53	0.76
1:A:110:PRO:HG2	1:A:448:ILE:HD11	1.67	0.76
3:D:89:GLN:NE2	3:D:92:SER:H	1.84	0.76
1:B:316:GLY:O	1:B:319:LEU:HD23	1.86	0.75
1:A:207:GLN:OE1	1:B:28:ARG:NH1	2.19	0.75
3:D:60:ARG:NH2	3:D:81:ASP:OD1	2.19	0.75
3:F:121:SER:HA	3:F:124:LEU:HD21	1.69	0.75
2:E:89:GLU:N	2:E:89:GLU:OE1	2.19	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:64:LEU:HD23	2:C:65:LYS:H	1.51	0.74
1:B:68:LEU:HD11	1:B:78:LEU:HB2	1.70	0.73
3:F:141:LYS:HG3	3:F:172:TYR:CE1	2.24	0.73
3:D:6:GLN:HE21	3:D:98:GLY:HA3	1.54	0.73
3:D:7:SER:HB3	3:D:22:THR:HB	1.70	0.72
3:D:141:LYS:HB3	3:D:172:TYR:CE2	2.25	0.72
2:E:135:GLY:O	2:E:137:ALA:N	2.21	0.72
1:A:430:LEU:HD22	1:B:223:ILE:HD12	1.72	0.72
1:A:219:PHE:CE2	1:B:430:LEU:HD11	2.24	0.72
1:B:332:MET:O	1:B:336:ILE:HG13	1.89	0.71
1:A:19:ARG:HA	1:A:22:ILE:HD12	1.71	0.71
1:A:430:LEU:CD2	1:B:223:ILE:CD1	2.64	0.71
1:A:426:ILE:HG23	1:B:219:PHE:CE2	2.26	0.71
2:C:34:MET:HB3	2:C:79:LEU:HD22	1.71	0.71
1:A:206:PRO:HD2	1:A:211:THR:HG21	1.73	0.70
2:C:67:LYS:HG3	2:C:68:PHE:H	1.58	0.69
3:F:95:GLN:H	3:F:95:GLN:CD	1.95	0.69
1:A:119:GLN:OE1	1:A:119:GLN:O	2.11	0.69
1:A:255:TYR:HB3	1:A:428:THR:HG23	1.75	0.68
3:D:95:GLN:H	3:D:95:GLN:CD	1.96	0.68
1:A:38:MET:HG3	1:A:168:LEU:HD11	1.76	0.68
2:E:47:TRP:CD2	3:F:95:GLN:NE2	2.62	0.68
1:B:98:ARG:HH21	1:B:102:PRO:HB3	1.57	0.68
1:A:75:TYR:CE1	1:A:79:LEU:HD11	2.29	0.67
1:B:98:ARG:NH2	1:B:102:PRO:HB3	2.10	0.67
1:B:280:LEU:O	1:B:283:VAL:HG12	1.95	0.66
3:D:141:LYS:HA	3:D:172:TYR:HD2	1.59	0.66
3:D:189:ASN:HD21	3:D:211:ALA:H	1.41	0.66
1:A:148:ASP:O	1:A:152:VAL:HG12	1.95	0.66
1:B:57:VAL:O	1:B:61:GLN:HG3	1.96	0.66
2:E:202:THR:HG22	2:E:217:LYS:HA	1.77	0.66
1:A:234:HIS:O	1:A:235:GLU:HB2	1.95	0.66
1:A:369:THR:HG22	1:A:390:ALA:CB	2.26	0.66
2:E:47:TRP:CG	3:F:95:GLN:NE2	2.64	0.66
1:B:98:ARG:HB2	1:B:288:ILE:HD12	1.78	0.65
1:A:403:ARG:NH1	1:B:29:ASP:OD1	2.27	0.65
3:D:107:ARG:NH1	3:D:108:ALA:O	2.29	0.65
3:F:139:TYR:CZ	3:F:141:LYS:NZ	2.63	0.65
1:A:125:TRP:CD1	1:A:126:ARG:HG3	2.31	0.65
1:A:217:ALA:O	1:A:220:ILE:HG22	1.95	0.65
1:B:59:TRP:O	1:B:63:GLN:OE1	2.13	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:361:LEU:O	1:A:365:THR:HG23	1.97	0.65
1:A:423:LEU:HD13	1:B:230:ARG:HH21	1.62	0.64
1:A:120:ARG:HG3	1:A:121:PRO:HD2	1.78	0.64
1:A:200:ILE:HA	1:A:204:MET:HB2	1.79	0.64
3:D:141:LYS:HB3	3:D:172:TYR:CD2	2.33	0.63
1:A:211:THR:HB	1:A:213:ILE:HD12	1.81	0.63
1:B:88:VAL:HA	1:B:91:MET:HE2	1.80	0.63
1:A:110:PRO:CG	1:A:448:ILE:HD11	2.28	0.63
1:B:98:ARG:CB	1:B:288:ILE:HD12	2.28	0.63
2:C:162:TRP:CZ3	2:C:203:CYS:HB3	2.34	0.63
3:D:14:ALA:O	3:D:17:ASP:HB3	1.98	0.63
3:D:160:ASN:OD1	3:D:176:SER:OG	2.11	0.63
1:A:434:LEU:HD11	1:B:220:ILE:HD11	1.80	0.63
3:F:90:TRP:CG	3:F:95:GLN:HB3	2.33	0.63
1:B:125:TRP:CD1	1:B:126:ARG:HG2	2.34	0.62
1:A:150:PRO:O	1:A:154:ILE:CD1	2.33	0.62
3:F:132:VAL:HG12	3:F:177:THR:HG23	1.82	0.62
1:A:83:PHE:HD1	1:A:84:LEU:HD23	1.64	0.62
3:F:7:SER:HB2	3:F:22:THR:N	2.13	0.62
1:A:62:ASN:OD1	1:A:63:GLN:N	2.32	0.62
2:E:137:ALA:O	2:E:139:ALA:N	2.32	0.62
2:E:162:TRP:CZ3	2:E:203:CYS:HB3	2.33	0.62
1:A:126:ARG:O	1:A:130:VAL:HG12	1.99	0.62
1:B:17:ARG:O	1:B:19:ARG:N	2.33	0.62
1:A:430:LEU:CD2	1:B:223:ILE:HD12	2.27	0.61
1:B:71:THR:HG21	1:B:81:VAL:HG11	1.83	0.61
1:A:400:ALA:HB2	1:A:432:ALA:HB1	1.83	0.61
3:D:189:ASN:HD21	3:D:211:ALA:N	1.98	0.61
1:B:17:ARG:CG	1:B:20:GLN:HG2	2.20	0.61
2:E:60:TYR:CE2	2:E:70:ILE:CD1	2.84	0.61
1:B:74:ASN:HB3	1:B:77:LEU:HB3	1.83	0.60
2:C:67:LYS:HG3	2:C:68:PHE:N	2.16	0.60
3:D:36:GLN:HB2	3:D:85:TYR:CE2	2.36	0.60
1:A:143:MET:HB3	1:A:347:CYS:SG	2.41	0.60
1:A:201:ILE:HG21	1:B:201:ILE:HD13	1.82	0.60
2:C:178:LEU:HB2	2:C:183:TYR:CE2	2.36	0.60
3:D:114:VAL:HG22	3:D:135:LEU:HD22	1.81	0.60
3:F:47:ILE:CD1	3:F:53:LEU:CD2	2.79	0.60
3:F:139:TYR:OH	3:F:141:LYS:NZ	2.34	0.60
1:A:191:ASN:OD1	1:A:230:ARG:NH1	2.34	0.60
1:A:219:PHE:HB3	1:B:430:LEU:HD21	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:141:LYS:HG3	3:D:142:ASP:OD2	2.02	0.60
2:E:51:ILE:HG13	2:E:58:ILE:HG12	1.84	0.60
2:C:151:LYS:HA	2:C:184:THR:HG23	1.84	0.60
3:F:181:THR:HG23	3:F:184:GLU:H	1.67	0.60
1:B:229:TYR:O	1:B:233:ASN:HB2	2.02	0.59
3:F:124:LEU:HD23	3:F:124:LEU:H	1.66	0.59
1:B:98:ARG:HB2	1:B:288:ILE:CD1	2.32	0.59
1:B:107:SER:OG	1:B:109:ILE:HD12	2.03	0.59
2:E:107:TYR:HB3	3:F:33:HIS:CD2	2.38	0.59
2:C:109:ASP:OD1	3:D:45:ARG:NH1	2.36	0.59
1:A:430:LEU:HD11	1:B:219:PHE:CE1	2.37	0.59
1:A:423:LEU:HB2	1:B:230:ARG:NH2	2.18	0.58
1:A:138:THR:OG1	1:A:143:MET:SD	2.59	0.58
2:C:87:ARG:O	2:C:119:VAL:HG11	2.02	0.58
3:D:77:MET:HG2	3:D:78:GLU:O	2.03	0.58
1:B:22:ILE:O	1:B:26:LEU:HD13	2.03	0.58
1:B:198:LEU:CD1	1:B:410:ILE:HD12	2.32	0.58
3:D:1:ASP:HB3	3:D:94:PRO:HD2	1.86	0.58
3:D:182:LYS:O	3:D:186:GLU:HG3	2.04	0.58
1:B:17:ARG:O	1:B:20:GLN:N	2.33	0.58
3:D:75:ASN:O	3:D:76:THR:HG22	2.04	0.58
1:B:176:THR:O	1:B:180:THR:HG23	2.04	0.57
2:C:3:ARG:HB2	2:C:25:SER:OG	2.05	0.57
3:F:77:MET:HE1	3:F:103:LEU:HD11	1.86	0.57
3:F:77:MET:HE2	3:F:103:LEU:CD2	2.29	0.57
3:F:89:GLN:O	3:F:95:GLN:HB2	2.04	0.57
1:B:68:LEU:HD12	1:B:71:THR:HG23	1.86	0.57
1:B:95:PHE:CE2	1:B:99:LYS:HD2	2.39	0.57
1:B:117:GLU:OE1	1:B:209:ARG:NH1	2.38	0.57
1:A:176:THR:O	1:A:180:THR:HG22	2.04	0.57
1:A:358:ALA:HA	1:A:361:LEU:HD12	1.87	0.57
1:B:320:ILE:O	1:B:324:THR:HG22	2.05	0.57
1:B:316:GLY:O	1:B:319:LEU:CD2	2.53	0.56
2:C:43:LYS:HG3	2:C:44:GLY:N	2.19	0.56
3:F:38:LYS:O	3:F:41:THR:HB	2.05	0.56
1:A:262:PHE:CZ	1:A:367:LEU:HD23	2.41	0.56
2:E:52:ASN:HD22	2:E:57:THR:HG22	1.68	0.56
3:D:166:ASP:OD1	3:D:167:SER:N	2.37	0.56
1:A:53:PHE:O	1:A:57:VAL:HG23	2.05	0.56
1:A:219:PHE:CE1	1:B:406:LEU:HD13	2.41	0.56
1:A:205:ARG:HH22	1:B:205:ARG:HH12	1.53	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:256:LEU:O	1:B:260:ILE:HG23	2.06	0.56
1:A:219:PHE:HE2	1:B:426:ILE:HG23	1.70	0.56
1:B:284:HIS:O	1:B:286:GLY:N	2.35	0.56
1:A:430:LEU:HD11	1:B:219:PHE:CD1	2.41	0.56
1:A:36:LEU:HD13	1:B:434:LEU:HD21	1.86	0.56
1:A:110:PRO:CB	1:A:448:ILE:HD11	2.36	0.56
3:D:18:LYS:NZ	3:D:75:ASN:OD1	2.29	0.55
3:D:33:HIS:HD2	3:D:48:TYR:HB2	1.70	0.55
3:D:31:TYR:HA	3:D:50:THR:OG1	2.06	0.55
1:B:38:MET:O	1:B:42:VAL:HG23	2.07	0.55
2:C:60:TYR:CD2	2:C:70:ILE:CD1	2.88	0.55
2:C:64:LEU:CD2	2:C:65:LYS:H	2.19	0.55
1:A:91:MET:HG2	1:A:292:VAL:O	2.05	0.55
1:A:430:LEU:N	1:A:430:LEU:HD12	2.21	0.55
2:C:70:ILE:HD12	2:C:70:ILE:N	2.22	0.55
1:A:144:VAL:HG23	1:A:144:VAL:O	2.06	0.55
3:D:8:PRO:O	3:D:101:THR:HB	2.06	0.55
2:C:47:TRP:CE2	3:D:95:GLN:NE2	2.75	0.55
2:E:87:ARG:HG3	2:E:89:GLU:OE1	2.06	0.55
2:E:173:THR:HG22	2:E:187:SER:OG	2.07	0.55
1:B:311:ALA:O	1:B:340:ARG:HD2	2.07	0.55
3:D:148:LYS:HB2	3:D:192:THR:OG1	2.07	0.55
1:B:199:PHE:HA	1:B:407:THR:HG21	1.88	0.55
1:A:255:TYR:CD1	1:A:424:PRO:HB3	2.41	0.54
3:D:165:GLN:HB2	3:D:172:TYR:HE1	1.72	0.54
1:A:86:SER:OG	1:A:303:GLY:HA3	2.08	0.54
3:D:8:PRO:HD2	3:D:101:THR:HG21	1.89	0.54
1:A:281:HIS:HA	1:A:284:HIS:CE1	2.43	0.54
2:E:18:LEU:O	2:E:82:GLN:HA	2.07	0.54
2:C:60:TYR:CD2	2:C:70:ILE:HD13	2.42	0.54
1:A:62:ASN:OD1	1:A:63:GLN:HG2	2.07	0.54
1:B:234:HIS:HE2	2:C:103:TYR:HE1	1.56	0.54
1:B:267:PRO:HB3	1:B:441:GLY:HA3	1.89	0.54
3:D:74:ILE:HG21	3:D:81:ASP:OD2	2.07	0.54
3:F:185:TYR:O	3:F:191:TYR:OH	2.26	0.54
1:A:77:LEU:O	1:A:81:VAL:HG23	2.07	0.54
1:B:172:GLU:O	1:B:176:THR:HG23	2.07	0.54
2:C:145:THR:HG22	2:C:190:THR:OG1	2.08	0.54
2:C:173:THR:HG23	2:C:185:LEU:HD13	1.89	0.54
1:A:109:ILE:HG13	1:A:152:VAL:HG11	1.90	0.53
2:C:40:ALA:HB3	2:C:43:LYS:HG2	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:ARG:HG2	1:A:98:ARG:HH11	1.72	0.53
1:B:68:LEU:HD11	1:B:78:LEU:CB	2.36	0.53
2:C:67:LYS:CG	2:C:68:PHE:H	2.18	0.53
1:A:92:PHE:O	1:A:96:LEU:HD23	2.09	0.53
1:B:165:ILE:HG22	1:B:166:PHE:CD2	2.44	0.53
3:F:184:GLU:HA	3:F:187:ARG:HD2	1.90	0.53
1:A:18:ARG:HH22	1:B:456:GLN:HG2	1.74	0.53
1:B:34:ALA:O	1:B:38:MET:HG2	2.09	0.53
1:A:318:ASN:O	1:A:321:PRO:HD2	2.08	0.53
1:B:59:TRP:CH2	1:B:63:GLN:NE2	2.77	0.53
3:F:186:GLU:HG2	3:F:210:ARG:NH1	2.23	0.53
1:B:91:MET:HG2	1:B:292:VAL:O	2.08	0.53
2:C:87:ARG:HG3	2:C:88:SER:N	2.24	0.53
1:B:158:ILE:O	1:B:162:VAL:HG23	2.09	0.53
1:B:180:THR:HG22	1:B:218:VAL:HG22	1.90	0.53
1:A:75:TYR:CE1	1:A:79:LEU:CD1	2.92	0.52
2:C:93:LEU:HD11	2:C:114:GLY:HA3	1.91	0.52
3:D:118:PRO:HB3	3:D:208:PHE:CE1	2.44	0.52
1:A:84:LEU:O	1:A:88:VAL:HG23	2.09	0.52
1:A:119:GLN:O	1:A:120:ARG:HB2	2.09	0.52
1:A:219:PHE:O	1:A:223:ILE:HG13	2.10	0.52
1:A:161:MET:O	1:A:165:ILE:HG22	2.09	0.52
1:B:123:ARG:HH21	1:B:126:ARG:HD2	1.74	0.52
1:A:205:ARG:HH12	1:B:205:ARG:HH22	1.57	0.52
3:D:60:ARG:CZ	3:D:78:GLU:HG2	2.39	0.52
2:E:127:PRO:HB3	2:E:153:TYR:HB3	1.92	0.51
2:C:12:VAL:HG21	2:C:18:LEU:HD23	1.93	0.51
1:A:75:TYR:CZ	1:A:79:LEU:HD11	2.45	0.51
1:A:219:PHE:HE1	1:B:406:LEU:HD13	1.76	0.51
1:B:257:ILE:O	1:B:260:ILE:HG12	2.11	0.51
1:A:177:LEU:HA	1:A:180:THR:CG2	2.41	0.51
1:B:426:ILE:O	1:B:430:LEU:HD12	2.09	0.51
3:D:17:ASP:OD2	3:D:18:LYS:N	2.43	0.51
1:A:20:GLN:HG3	1:A:23:ARG:HH22	1.76	0.51
1:A:60:LEU:O	1:A:64:ARG:HG3	2.11	0.51
1:B:288:ILE:O	1:B:292:VAL:HG13	2.11	0.51
3:F:47:ILE:HG13	3:F:72:LEU:HD13	1.93	0.51
3:D:49:ASP:O	3:D:51:SER:N	2.44	0.50
3:D:77:MET:SD	3:D:103:LEU:HD21	2.51	0.50
1:B:360:MET:HE3	1:B:402:ILE:HD13	1.93	0.50
2:C:91:THR:HG23	2:C:119:VAL:HG12	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1:ASP:OD2	3:D:1:ASP:N	2.34	0.50
3:F:95:GLN:N	3:F:95:GLN:CD	2.61	0.50
1:B:332:MET:HG3	1:B:336:ILE:HD11	1.92	0.50
3:D:12:SER:HA	3:D:104:GLU:O	2.10	0.50
3:F:189:ASN:HD21	3:F:211:ALA:HB3	1.77	0.50
3:F:47:ILE:HD13	3:F:53:LEU:CD2	2.42	0.50
1:A:365:THR:O	1:A:369:THR:HG23	2.12	0.50
1:B:205:ARG:HG3	1:B:207:GLN:HE21	1.76	0.50
1:B:319:LEU:HD23	1:B:319:LEU:H	1.76	0.50
2:E:135:GLY:HA2	2:E:221:ARG:HD2	1.94	0.50
1:A:249:LEU:H	1:A:249:LEU:HD22	1.77	0.49
1:A:376:VAL:HG22	1:A:384:LEU:HB2	1.94	0.49
2:E:12:VAL:HG22	2:E:18:LEU:HD13	1.94	0.49
3:D:192:THR:HG22	3:D:207:SER:CB	2.42	0.49
1:A:104:ALA:O	1:A:131:LYS:NZ	2.35	0.49
1:A:138:THR:HG21	1:A:353:PRO:O	2.12	0.49
1:A:449:LEU:CD2	1:A:453:LEU:HG	2.42	0.49
1:B:68:LEU:CD1	1:B:71:THR:HG23	2.43	0.49
1:B:234:HIS:O	1:B:235:GLU:HB2	2.13	0.49
2:C:1:GLU:O	2:C:26:GLY:HA3	2.13	0.49
2:E:152:GLY:H	2:E:184:THR:HG22	1.78	0.49
1:B:78:LEU:HA	1:B:81:VAL:HG12	1.95	0.49
1:B:284:HIS:C	1:B:286:GLY:H	2.16	0.49
3:D:31:TYR:HB3	3:D:49:ASP:HA	1.95	0.49
1:B:53:PHE:O	1:B:57:VAL:HG23	2.13	0.49
3:F:186:GLU:HG2	3:F:210:ARG:HH11	1.77	0.49
1:A:410:ILE:O	1:A:414:GLU:HG3	2.12	0.48
3:F:49:ASP:O	3:F:50:THR:HB	2.13	0.48
1:B:258:LEU:HD13	1:B:371:PHE:CG	2.48	0.48
3:D:149:ILE:HD11	3:D:178:LEU:HD21	1.95	0.48
2:C:196:TRP:CD1	2:C:197:PRO:HA	2.48	0.48
1:A:258:LEU:HD23	1:A:428:THR:HG21	1.96	0.48
1:B:91:MET:HG3	1:B:296:GLY:HA3	1.94	0.48
1:B:202:GLU:OE1	1:B:407:THR:HG23	2.14	0.48
1:A:252:LEU:HD11	1:A:423:LEU:HD23	1.95	0.48
1:B:360:MET:HE1	1:B:402:ILE:HD11	1.96	0.48
1:B:74:ASN:HB3	1:B:77:LEU:CB	2.44	0.48
1:A:96:LEU:HB3	1:A:130:VAL:HG23	1.94	0.48
3:D:165:GLN:CB	3:D:172:TYR:HE1	2.26	0.48
1:A:205:ARG:HH22	1:B:205:ARG:NH1	2.12	0.48
3:D:150:ASP:OD1	3:D:188:HIS:HB3	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:75:TYR:O	1:B:78:LEU:HG	2.14	0.47
1:A:97:VAL:HA	1:A:130:VAL:HG21	1.96	0.47
1:A:205:ARG:HH12	1:B:205:ARG:NH2	2.11	0.47
1:A:219:PHE:HB3	1:B:430:LEU:CD2	2.44	0.47
1:B:90:ALA:HB2	1:B:299:GLY:HA3	1.96	0.47
1:B:234:HIS:O	1:B:235:GLU:CB	2.62	0.47
1:B:417:ASP:C	1:B:418:ASN:HD22	2.18	0.47
3:F:121:SER:HA	3:F:124:LEU:CD2	2.40	0.47
1:A:219:PHE:CE2	1:B:426:ILE:HG23	2.46	0.47
2:C:64:LEU:HD23	2:C:65:LYS:HB3	1.97	0.47
1:B:230:ARG:O	1:B:234:HIS:HD2	1.98	0.47
2:E:132:LEU:HD13	3:F:132:VAL:HG21	1.95	0.47
2:C:166:SER:O	2:C:168:ALA:N	2.47	0.47
1:A:150:PRO:CA	1:A:154:ILE:HD12	2.43	0.47
1:B:94:TYR:CZ	1:B:352:ALA:HB2	2.49	0.47
2:E:181:ALA:O	2:E:182:LEU:HD12	2.15	0.47
1:A:219:PHE:CD2	1:B:430:LEU:CD1	2.96	0.47
1:A:18:ARG:NH2	1:B:456:GLN:HG2	2.30	0.47
1:A:234:HIS:O	1:A:235:GLU:CB	2.62	0.47
3:D:2:ILE:O	3:D:96:THR:HG21	2.15	0.47
1:A:116:LEU:HG	1:A:178:LEU:HD23	1.98	0.46
2:E:145:THR:HG22	3:F:117:PHE:HZ	1.80	0.46
1:A:101:ALA:CB	1:A:130:VAL:HG11	2.39	0.46
3:F:47:ILE:HD11	3:F:53:LEU:CD2	2.45	0.46
1:A:119:GLN:NE2	1:A:456:GLN:OE1	2.48	0.46
1:A:426:ILE:CG2	1:B:219:PHE:CE2	2.97	0.46
1:A:144:VAL:HG12	1:A:314:GLY:N	2.30	0.46
1:B:62:ASN:O	1:B:65:MET:HB2	2.14	0.46
2:C:6:GLU:N	2:C:6:GLU:OE1	2.49	0.46
2:E:54:VAL:HG23	2:E:56:SER:HB3	1.97	0.46
2:E:171:VAL:HA	2:E:188:SER:O	2.14	0.46
2:E:28:ASP:O	2:E:30:SER:O	2.34	0.46
1:A:450:ALA:HB1	1:B:26:LEU:HD11	1.98	0.46
1:B:409:ILE:HD13	1:B:426:ILE:HG12	1.97	0.46
3:F:47:ILE:CD1	3:F:53:LEU:HD22	2.45	0.46
3:F:60:ARG:HG3	3:F:74:ILE:HG23	1.97	0.46
2:C:18:LEU:HD11	2:C:83:ILE:HD12	1.97	0.46
1:A:22:ILE:O	1:A:26:LEU:HD12	2.15	0.46
3:D:34:TRP:CZ3	3:D:87:CYS:HB3	2.50	0.46
1:B:443:PRO:HB2	1:B:446:SER:HB2	1.98	0.46
3:F:183:ASP:HB3	3:F:187:ARG:NH1	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:191:TYR:HB2	3:D:208:PHE:CE2	2.52	0.45
1:A:263:GLY:HA3	1:A:435:LEU:HB2	1.97	0.45
1:A:123:ARG:NH2	1:A:126:ARG:HH11	2.06	0.45
1:A:403:ARG:NH2	1:A:441:GLY:O	2.49	0.45
1:A:430:LEU:N	1:A:430:LEU:CD1	2.79	0.45
1:A:449:LEU:HD23	1:A:453:LEU:HG	1.97	0.45
2:C:30:SER:O	2:C:31:ARG:HB2	2.16	0.45
1:A:255:TYR:O	1:A:428:THR:HG22	2.16	0.45
3:F:139:TYR:CE2	3:F:141:LYS:NZ	2.85	0.45
1:B:260:ILE:O	1:B:264:ILE:HG23	2.17	0.45
2:C:6:GLU:HA	2:C:21:SER:O	2.15	0.45
3:F:7:SER:CB	3:F:8:PRO:HD3	2.47	0.45
1:A:447:ALA:O	1:A:451:ARG:HG3	2.17	0.45
1:B:123:ARG:HE	1:B:126:ARG:NE	2.15	0.45
2:C:68:PHE:HB3	2:C:81:LEU:HD11	1.97	0.45
1:A:160:ARG:HD2	1:A:160:ARG:HA	1.63	0.44
2:C:166:SER:OG	2:C:167:LEU:N	2.50	0.44
3:D:141:LYS:CA	3:D:172:TYR:HD2	2.29	0.44
1:B:42:VAL:O	1:B:46:VAL:HG23	2.18	0.44
1:B:94:TYR:OH	1:B:352:ALA:HB2	2.17	0.44
1:B:78:LEU:HD12	1:B:79:LEU:HD23	1.98	0.44
2:C:23:ALA:HA	2:C:78:THR:HG22	1.99	0.44
2:C:176:ALA:HB2	2:C:185:LEU:HD23	1.99	0.44
3:D:13:ALA:O	3:D:77:MET:HE1	2.17	0.44
3:D:107:ARG:HG3	3:D:108:ALA:O	2.18	0.44
1:B:118:ASP:CG	1:B:174:ARG:HH21	2.21	0.44
1:B:211:THR:HG22	1:B:212:LEU:H	1.82	0.44
1:B:275:GLY:O	1:B:278:ASP:HB2	2.18	0.44
3:D:66:SER:O	3:D:68:THR:N	2.50	0.44
1:A:280:LEU:HD23	1:A:280:LEU:HA	1.89	0.44
3:D:90:TRP:CZ2	3:D:95:GLN:NE2	2.86	0.44
3:F:33:HIS:CE1	3:F:49:ASP:H	2.36	0.43
1:A:148:ASP:CG	1:A:357:PHE:HB2	2.38	0.43
1:B:47:GLY:O	1:B:51:VAL:HG13	2.18	0.43
1:B:262:PHE:CZ	1:B:367:LEU:HD23	2.53	0.43
2:C:127:PRO:HB2	2:C:150:VAL:HG23	2.00	0.43
3:F:192:THR:OG1	3:F:207:SER:HB3	2.18	0.43
1:A:150:PRO:CA	1:A:154:ILE:CD1	2.97	0.43
1:A:223:ILE:HG22	1:A:227:ILE:HD11	2.00	0.43
1:B:430:LEU:HA	1:B:433:THR:CG2	2.48	0.43
1:B:394:MET:HG2	1:B:412:VAL:HG22	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:146:LEU:HD12	2:C:201:VAL:HG11	2.01	0.43
3:F:120:SER:O	3:F:124:LEU:HD23	2.18	0.43
1:A:229:TYR:O	1:A:233:ASN:HB2	2.19	0.43
1:A:453:LEU:HB3	1:B:22:ILE:HD11	2.00	0.43
2:E:52:ASN:HB2	2:E:57:THR:CG2	2.48	0.43
1:A:107:SER:N	4:A:501:BR:BR	3.00	0.43
1:A:260:ILE:HG23	1:A:435:LEU:HG	2.00	0.43
1:B:180:THR:HG22	1:B:218:VAL:HA	2.01	0.43
1:B:259:GLY:O	1:B:432:ALA:HA	2.18	0.43
3:D:117:PHE:O	3:D:131:VAL:HG23	2.19	0.43
1:A:94:TYR:CZ	1:A:352:ALA:HB2	2.54	0.43
2:C:91:THR:CG2	2:C:119:VAL:H	2.25	0.43
1:A:184:ALA:HB1	1:A:225:SER:HB2	2.00	0.43
1:B:360:MET:CE	1:B:402:ILE:HD13	2.49	0.43
2:C:12:VAL:O	2:C:119:VAL:HA	2.19	0.43
3:F:77:MET:HE3	3:F:77:MET:HB2	1.75	0.43
2:C:167:LEU:CD2	2:C:201:VAL:HG23	2.49	0.43
2:C:64:LEU:O	2:C:67:LYS:HD3	2.19	0.42
1:A:423:LEU:HB2	1:B:230:ARG:HH21	1.83	0.42
1:B:41:VAL:O	1:B:45:LEU:HG	2.18	0.42
1:A:177:LEU:HA	1:A:180:THR:HG22	2.01	0.42
1:B:169:LYS:HE2	1:B:169:LYS:HB2	1.82	0.42
2:C:153:TYR:CZ	2:C:158:VAL:CG2	3.01	0.42
1:A:18:ARG:HB3	1:B:119:GLN:OE1	2.19	0.42
1:A:130:VAL:O	1:A:134:GLY:N	2.45	0.42
1:A:426:ILE:HG22	1:B:223:ILE:HD11	2.02	0.42
3:F:177:THR:HG22	3:F:179:THR:HG22	2.02	0.42
2:C:51:ILE:HG13	2:C:58:ILE:HG12	2.00	0.42
3:D:29:VAL:HB	3:D:32:ILE:HD11	2.01	0.42
1:A:150:PRO:HD3	1:A:354:GLY:HA2	2.00	0.42
3:F:23:CYS:N	3:F:70:TYR:O	2.33	0.42
2:E:103:TYR:HD2	3:F:31:TYR:CE2	2.38	0.42
3:F:19:VAL:HG21	3:F:77:MET:CE	2.49	0.42
2:C:67:LYS:CG	2:C:68:PHE:N	2.81	0.42
2:C:152:GLY:HA2	2:C:182:LEU:HB3	2.02	0.42
3:D:165:GLN:HA	3:D:172:TYR:CE1	2.55	0.42
1:B:231:ILE:HG22	1:B:232:PHE:CD1	2.55	0.42
3:D:8:PRO:HG2	3:D:11:MET:SD	2.60	0.42
3:F:49:ASP:HB2	3:F:52:LYS:HE3	2.01	0.42
1:A:109:ILE:HG23	1:A:204:MET:SD	2.60	0.42
3:D:192:THR:HG22	3:D:207:SER:HB3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:143:MET:HB2	1:A:145:LEU:HD12	2.01	0.41
1:A:158:ILE:O	1:A:162:VAL:HG23	2.20	0.41
1:B:93:GLY:O	1:B:97:VAL:HG23	2.20	0.41
1:B:346:LEU:O	1:B:350:SER:HB3	2.20	0.41
1:B:267:PRO:HA	1:B:270:ASN:HB2	2.02	0.41
1:B:160:ARG:HA	1:B:160:ARG:HD2	1.83	0.41
2:C:153:TYR:CZ	2:C:158:VAL:HG23	2.55	0.41
3:F:117:PHE:HA	3:F:118:PRO:HD3	1.87	0.41
1:A:264:ILE:O	1:A:267:PRO:HD2	2.20	0.41
1:B:148:ASP:OD2	1:B:357:PHE:HB2	2.21	0.41
1:B:430:LEU:HA	1:B:433:THR:HG22	2.02	0.41
2:E:2:VAL:HA	2:E:26:GLY:HA3	2.03	0.41
3:F:60:ARG:HD2	3:F:81:ASP:OD1	2.21	0.41
1:B:128:LEU:HD21	1:B:157:ASN:HB2	2.01	0.41
1:B:267:PRO:HB3	1:B:441:GLY:CA	2.50	0.41
1:B:383:HIS:NE2	2:E:50:GLU:OE2	2.47	0.41
2:C:70:ILE:HD12	2:C:70:ILE:H	1.84	0.41
1:A:421:LEU:O	1:A:425:MET:HG3	2.20	0.41
1:B:250:ASN:OD1	2:E:104:GLY:HA3	2.21	0.41
2:E:31:ARG:HG3	2:E:31:ARG:HH11	1.86	0.41
3:F:6:GLN:HE21	3:F:6:GLN:HB3	1.71	0.41
1:A:165:ILE:HD13	1:A:165:ILE:HG21	1.81	0.41
1:A:223:ILE:HG22	1:A:227:ILE:CD1	2.50	0.41
1:A:252:LEU:HD23	1:A:252:LEU:HA	1.81	0.41
1:A:403:ARG:NH2	1:A:437:GLN:HA	2.36	0.41
1:B:98:ARG:NH1	1:B:291:TRP:CZ3	2.88	0.41
1:B:333:LEU:HD11	1:B:369:THR:HG22	2.01	0.41
3:D:89:GLN:NE2	3:D:92:SER:N	2.63	0.41
3:D:197:HIS:CG	3:D:198:LYS:H	2.39	0.41
1:A:109:ILE:CG1	1:A:152:VAL:HG11	2.51	0.41
1:B:152:VAL:HG13	1:B:182:ALA:HB1	2.01	0.41
2:C:135:GLY:O	2:C:138:ALA:HB2	2.21	0.41
2:E:52:ASN:O	2:E:72:ARG:HD3	2.20	0.41
3:F:7:SER:HB3	3:F:8:PRO:CD	2.51	0.41
1:B:98:ARG:HE	1:B:98:ARG:HA	1.85	0.41
2:C:133:ALA:HB3	2:C:221:ARG:HG3	2.03	0.41
1:B:421:LEU:O	1:B:425:MET:HG3	2.22	0.40
1:A:76:PRO:O	1:A:80:THR:HG23	2.21	0.40
1:A:270:ASN:OD1	1:A:401:SER:HB3	2.21	0.40
1:B:17:ARG:HH11	1:B:17:ARG:HD3	1.75	0.40
1:B:148:ASP:CG	1:B:357:PHE:HB2	2.42	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:63:SER:O	2:C:64:LEU:O	2.39	0.40
2:C:127:PRO:HB3	2:C:153:TYR:HB3	2.03	0.40
2:C:196:TRP:CG	2:C:197:PRO:HA	2.56	0.40
2:E:99:LEU:HD23	2:E:99:LEU:HA	1.91	0.40
2:C:87:ARG:HG3	2:C:88:SER:H	1.86	0.40
3:D:18:LYS:HE3	3:D:18:LYS:HB2	1.92	0.40
3:D:60:ARG:NH2	3:D:78:GLU:HG2	2.36	0.40
1:A:238:LEU:HD13	1:A:238:LEU:HA	1.98	0.40
2:C:4:LEU:HD23	2:C:4:LEU:HA	1.85	0.40
2:E:12:VAL:HG11	2:E:86:VAL:HG21	2.04	0.40
1:B:138:THR:HG21	1:B:352:ALA:HB1	2.02	0.40
1:B:211:THR:HG22	1:B:212:LEU:N	2.37	0.40
2:C:88:SER:HA	2:C:119:VAL:HG13	2.04	0.40
3:D:192:THR:HG22	3:D:207:SER:HB2	2.02	0.40
3:F:150:ASP:OD2	3:F:188:HIS:HB3	2.21	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	442/473 (93%)	415 (94%)	24 (5%)	3 (1%)	22 56
1	B	440/473 (93%)	415 (94%)	20 (4%)	5 (1%)	14 46
2	C	220/222 (99%)	203 (92%)	13 (6%)	4 (2%)	8 33
2	E	219/222 (99%)	195 (89%)	20 (9%)	4 (2%)	8 33
3	D	209/211 (99%)	187 (90%)	17 (8%)	5 (2%)	6 26
3	F	209/211 (99%)	194 (93%)	12 (6%)	3 (1%)	11 39
All	All	1739/1812 (96%)	1609 (92%)	106 (6%)	24 (1%)	11 39

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	18	ARG
1	B	235	GLU
2	C	64	LEU
2	C	67	LYS
2	E	136	SER
2	E	138	ALA
3	F	7	SER
1	A	234	HIS
1	A	235	GLU
3	D	67	GLY
3	D	76	THR
2	E	65	LYS
3	F	76	THR
1	A	29	ASP
2	C	167	LEU
3	D	50	THR
3	F	66	SER
1	B	144	VAL
3	D	9	ALA
2	E	62	PRO
1	B	285	GLY
3	D	7	SER
1	B	121	PRO
2	C	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	335/358 (94%)	325 (97%)	10 (3%)	41 72
1	B	333/358 (93%)	320 (96%)	13 (4%)	32 65
2	C	182/182 (100%)	177 (97%)	5 (3%)	44 74
2	E	181/182 (100%)	177 (98%)	4 (2%)	52 79
3	D	185/185 (100%)	177 (96%)	8 (4%)	29 62
3	F	185/185 (100%)	176 (95%)	9 (5%)	25 58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1401/1450 (97%)	1352 (96%)	49 (4%)	36 68

All (49) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	96	LEU
1	A	119	GLN
1	A	120	ARG
1	A	139	LEU
1	A	145	LEU
1	A	205	ARG
1	A	219	PHE
1	A	282	ARG
1	A	379	PHE
1	A	456	GLN
1	B	17	ARG
1	B	98	ARG
1	B	99	LYS
1	B	107	SER
1	B	167	ARG
1	B	191	ASN
1	B	205	ARG
1	B	209	ARG
1	B	219	PHE
1	B	294	MET
1	B	329	SER
1	B	397	LEU
1	B	442	LYS
2	C	18	LEU
2	C	87	ARG
2	C	107	TYR
2	C	188	SER
2	C	194	SER
3	D	28	SER
3	D	38	LYS
3	D	46	TRP
3	D	60	ARG
3	D	154	ARG
3	D	174	MET
3	D	176	SER
3	D	207	SER
2	E	74	ASN

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Mol	Chain	Res	Type
2	E	96	CYS
2	E	188	SER
2	E	217	LYS
3	F	1	ASP
3	F	64	SER
3	F	95	GLN
3	F	124	LEU
3	F	141	LYS
3	F	156	ASN
3	F	174	MET
3	F	175	SER
3	F	190	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	24	GLN
1	A	119	GLN
1	A	456	GLN
1	B	20	GLN
1	B	61	GLN
1	B	207	GLN
2	C	82	GLN
3	D	6	GLN
3	D	33	HIS
3	D	89	GLN
3	D	189	ASN
3	F	36	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry

Of 2 ligands modelled in this entry, 2 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

### 6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	444/473 (93%)	0.11	18 (4%) 37 24	48, 72, 105, 144	0
1	B	442/473 (93%)	0.16	15 (3%) 45 29	49, 71, 114, 149	0
2	C	222/222 (100%)	-0.19	11 (4%) 28 18	35, 64, 112, 155	0
2	E	221/222 (99%)	-0.13	6 (2%) 54 38	41, 65, 105, 150	0
3	D	211/211 (100%)	-0.00	6 (2%) 53 36	46, 74, 98, 114	0
3	F	211/211 (100%)	0.05	10 (4%) 31 20	39, 57, 108, 132	0
All	All	1751/1812 (96%)	0.04	66 (3%) 40 26	35, 69, 109, 155	0

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	E	222	ALA	8.1
1	B	72	ALA	5.9
1	A	460	GLN	5.1
1	B	73	ASP	4.7
3	F	156	ASN	4.6
1	A	72	ALA	4.6
1	B	70	HIS	4.5
1	B	71	THR	4.4
1	A	168	LEU	4.4
1	B	307	PHE	3.9
1	A	288	ILE	3.6
2	C	64	LEU	3.5
2	C	222	ALA	3.3
2	C	141	ALA	3.2
3	D	156	ASN	3.2
3	F	26	SER	3.1
2	C	65	LYS	3.1
2	E	65	LYS	3.1
1	A	99	LYS	3.0

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
3	F	149	ILE	3.0
3	D	27	SER	3.0
1	B	18	ARG	2.9
2	E	136	SER	2.9
3	F	154	ARG	2.9
2	E	66	ASP	2.8
2	C	29	TYR	2.8
1	A	459	GLU	2.8
3	D	201	THR	2.7
3	F	153	GLU	2.7
1	A	95	PHE	2.7
1	A	119	GLN	2.6
1	B	66	GLY	2.6
2	C	142	SER	2.5
2	E	140	ALA	2.5
1	B	67	ALA	2.5
2	C	1	GLU	2.4
1	A	218	VAL	2.4
2	C	63	SER	2.4
3	D	1	ASP	2.4
1	A	197	ILE	2.4
3	F	2	ILE	2.4
1	B	405	PRO	2.4
3	F	180	LEU	2.4
2	C	140	ALA	2.3
1	A	222	VAL	2.3
1	B	75	TYR	2.3
1	B	409	ILE	2.3
3	F	152	SER	2.2
1	A	166	PHE	2.2
1	B	407	THR	2.2
1	B	59	TRP	2.2
1	B	404	ALA	2.2
3	F	27	SER	2.2
1	A	73	ASP	2.2
3	D	159	LEU	2.2
3	D	22	THR	2.2
3	F	155	GLN	2.2
2	C	136	SER	2.1
1	A	377	GLU	2.1
1	B	426	ILE	2.1
2	E	219	VAL	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	212	LEU	2.0
1	A	209	ARG	2.0
1	A	71	THR	2.0
1	A	65	MET	2.0
2	C	2	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](#)

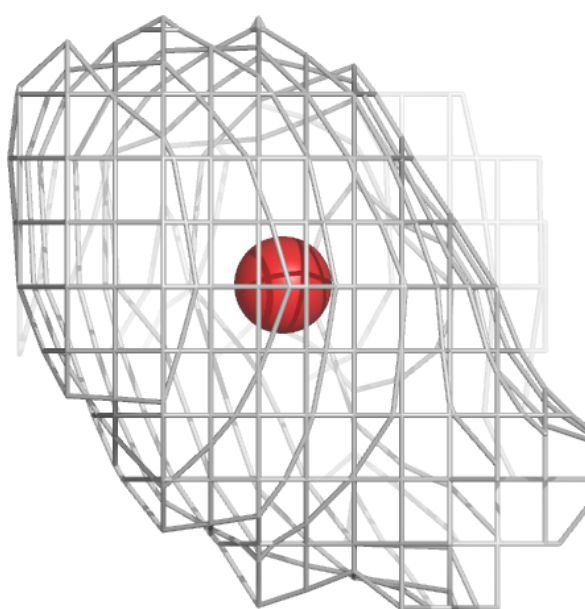
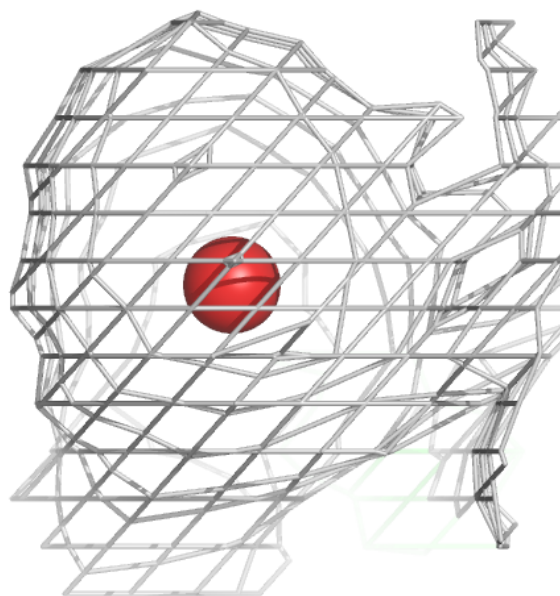
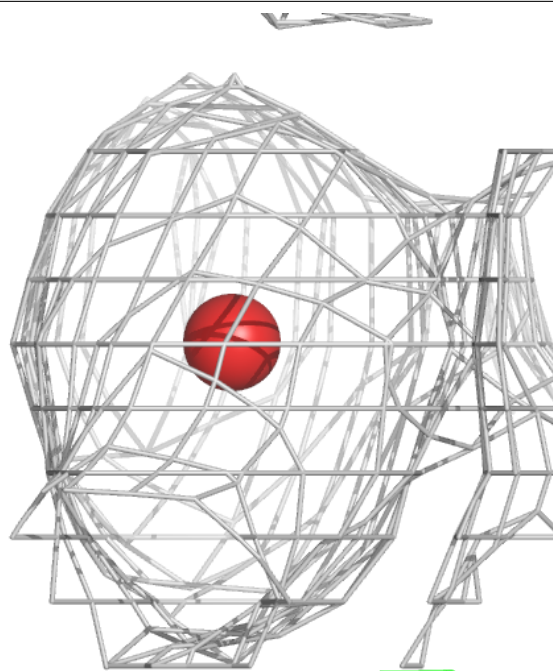
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

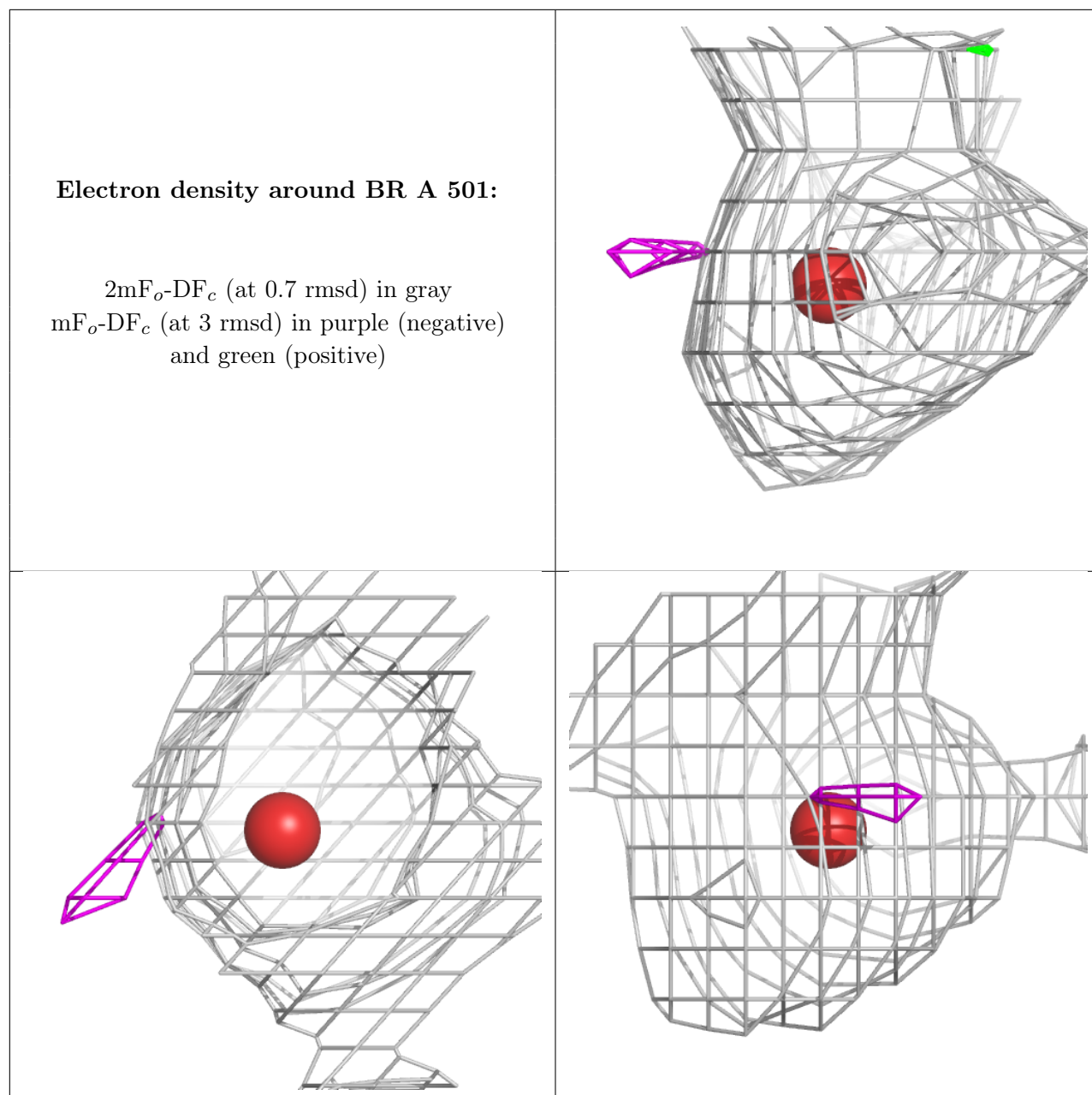
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	BR	B	501	1/1	0.91	0.06	117,117,117,117	0
4	BR	A	501	1/1	0.93	0.17	130,130,130,130	0

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 BR 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 [i](#)

There are no such residues in this entry.