



Full wwPDB X-ray Structure Validation Report

Feb 28, 2014 – 10:25 AM GMT

PDB ID : 1R4A
Title : Crystal Structure of GTP-bound ADP-ribosylation Factor Like Protein 1 (Arl1) and GRIP Domain of Golgin245 COMPLEX
Authors : Wu, M.; Lu, L.; Hong, W.; Song, H.
Deposited on : 2003-10-04
Resolution : 2.30 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

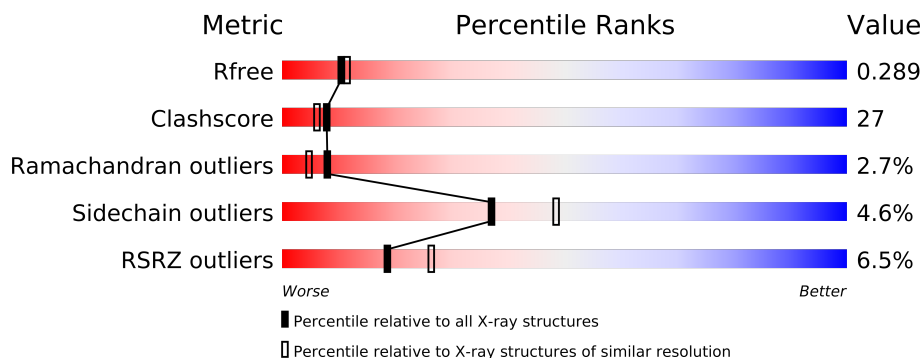
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.30 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}	66092	2929 (2.30-2.30)
Clashscore	79885	3679 (2.30-2.30)
Ramachandran outliers	78287	3642 (2.30-2.30)
Sidechain outliers	78261	3641 (2.30-2.30)
RSRZ outliers	66119	2930 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	165	
1	B	165	
1	C	165	
1	D	165	
2	E	51	
2	F	51	
2	G	51	
2	H	51	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
3	MG	B	902	-	X

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Mol	Type	Chain	Res	Geometry	Electron density
3	MG	C	903	-	X
3	MG	D	904	-	X

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 7380 atoms, of which 0 are hydrogen and 0 are deuterium.

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 ADP-ribosylation factor-like protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	165	Total	C	N	O	S	0	0	0
			1312	835	221	248	8			
1	B	165	Total	C	N	O	S	0	0	0
			1312	835	221	248	8			
1	C	165	Total	C	N	O	S	0	0	0
			1312	835	221	248	8			
1	D	165	Total	C	N	O	S	0	0	0
			1312	835	221	248	8			

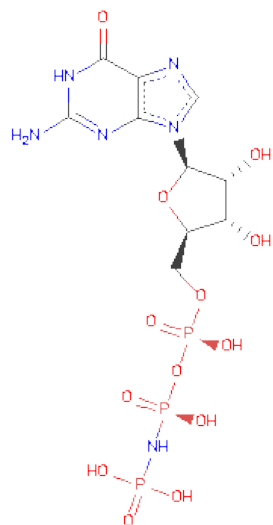
- Molecule 2 is a protein called Golgi autoantigen, golgin subfamily A member 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	E	51	Total	C	N	O	S	0	0	0
			433	279	70	80	4			
2	F	51	Total	C	N	O	S	0	0	0
			433	279	70	80	4			
2	G	51	Total	C	N	O	S	0	0	0
			433	279	70	80	4			
2	H	51	Total	C	N	O	S	0	0	0
			433	279	70	80	4			

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Mg	0	0
			1	1		
3	A	1	Total	Mg	0	0
			1	1		
3	D	1	Total	Mg	0	0
			1	1		
3	C	1	Total	Mg	0	0
			1	1		

- Molecule 4 is PHOSPHOAMINOPHOSPHONICACID-GUANYLATE ESTER (three-letter code: GNP) (formula: $C_{10}H_{17}N_6O_{13}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			32	10	6	13	3		
4	B	1	Total	C	N	O	P	0	0
			32	10	6	13	3		
4	C	1	Total	C	N	O	P	0	0
			32	10	6	13	3		
4	D	1	Total	C	N	O	P	0	0
			32	10	6	13	3		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	38	Total	O	0	0
			38	38		
5	B	46	Total	O	0	0
			46	46		
5	C	64	Total	O	0	0
			64	64		
5	D	64	Total	O	0	0
			64	64		
5	E	14	Total	O	0	0
			14	14		
5	F	13	Total	O	0	0
			13	13		

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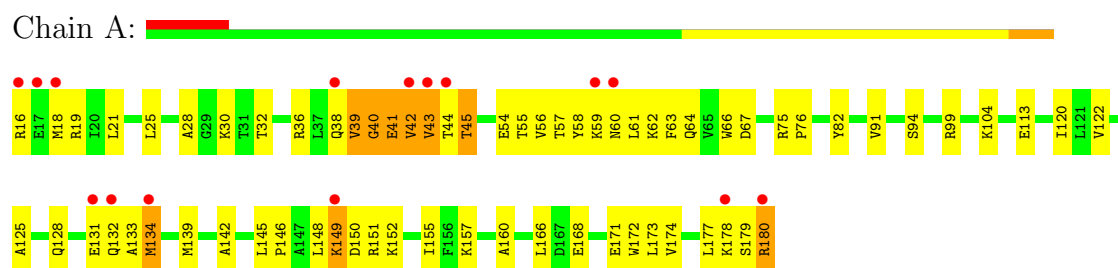
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	G	11	Total	O	0	0
			11	11		
5	H	18	Total	O	0	0
			18	18		

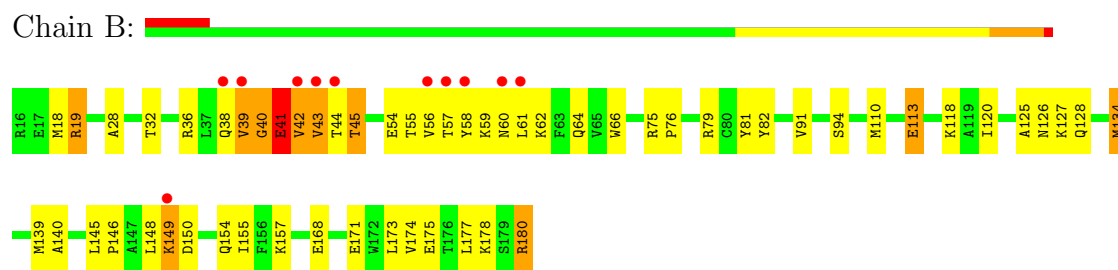
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

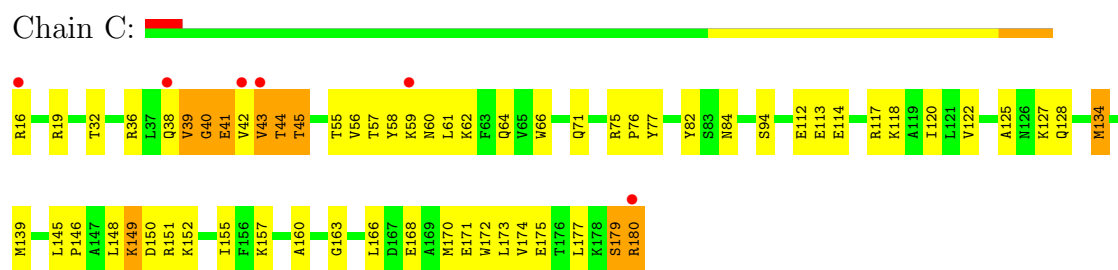
• Molecule 1: ADP-ribosylation factor-like protein 1



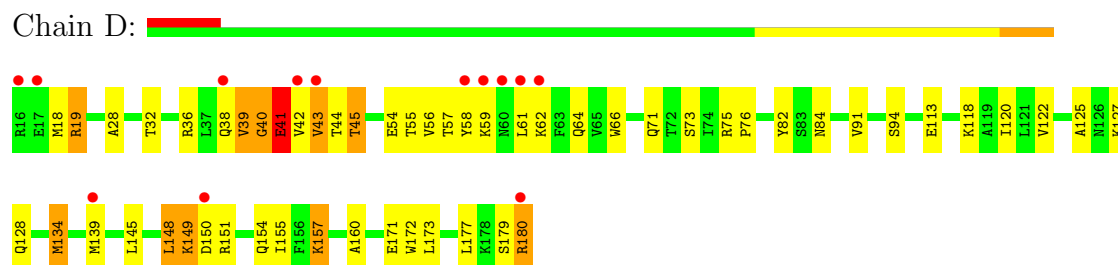
• Molecule 1: ADP-ribosylation factor-like protein 1



• Molecule 1: ADP-ribosylation factor-like protein 1

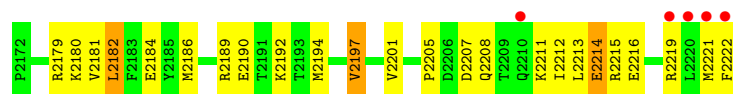


• Molecule 1: ADP-ribosylation factor-like protein 1



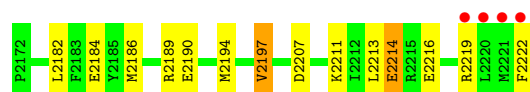
- Molecule 2: Golgi autoantigen, golgin subfamily A member 4

Chain E: 



- Molecule 2: Golgi autoantigen, golgin subfamily A member 4

Chain F: 



- Molecule 2: Golgi autoantigen, golgin subfamily A member 4

Chain G: 



- Molecule 2: Golgi autoantigen, golgin subfamily A member 4

Chain H: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	42.08Å 86.92Å 86.25Å 118.11° 99.65° 95.47°	Depositor
Resolution (Å)	20.00 – 2.30 39.19 – 2.10	Depositor EDS
% Data completeness (in resolution range)	97.3 (20.00-2.30) 91.0 (39.19-2.10)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.89 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5	Depositor
R, R_{free}	0.246 , 0.260 0.280 , 0.289	Depositor DCC
R_{free} test set	2295 reflections (5.36%)	DCC
Wilson B-factor (Å ²)	31.7	Xtriage
Anisotropy	0.747	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 35.6	EDS
Estimated twinning fraction	0.000 for -h,-k,h+k+l	Xtriage
L-test for twinning	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Outliers	0 of 55268 reflections	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	7380	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.32% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

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

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	0.38	0/1333	0.65	0/1802
1	B	0.39	0/1333	0.67	0/1802
1	C	0.42	0/1333	0.69	0/1802
1	D	0.43	0/1333	0.71	0/1802
2	E	0.41	0/440	0.62	0/586
2	F	0.42	0/440	0.60	0/586
2	G	0.42	0/440	0.62	0/586
2	H	0.46	0/440	0.62	0/586
All	All	0.41	0/7092	0.66	0/9552

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1312	0	1337	82	0
1	B	1312	0	1337	79	0
1	C	1312	0	1337	85	0
1	D	1312	0	1337	78	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	433	0	444	26	0
2	F	433	0	444	20	0
2	G	433	0	444	14	0
2	H	433	0	444	18	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	32	0	13	1	0
4	B	32	0	13	2	0
4	C	32	0	13	4	0
4	D	32	0	13	3	0
5	A	38	0	0	15	0
5	B	46	0	0	14	1
5	C	64	0	0	14	0
5	D	64	0	0	23	1
5	E	14	0	0	8	0
5	F	13	0	0	5	0
5	G	11	0	0	1	0
5	H	18	0	0	3	0
All	All	7380	0	7176	385	1

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 27.

All (385) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:E:2222:PHE:HA	5:E:138:HOH:O	1.20	1.34
1:C:175:GLU:HG2	5:C:1261:HOH:O	1.23	1.29
1:B:149:LYS:HA	5:B:1210:HOH:O	1.26	1.25
1:D:19:ARG:HB2	5:D:1227:HOH:O	1.38	1.20
1:A:128:GLN:HG3	1:A:157:LYS:HB2	1.23	1.18
1:D:151:ARG:HD2	5:D:1251:HOH:O	1.43	1.14
1:D:151:ARG:CD	5:D:1251:HOH:O	1.95	1.14
1:C:128:GLN:HG3	1:C:157:LYS:HB2	1.25	1.14
1:D:19:ARG:CD	5:D:1227:HOH:O	1.96	1.13
1:B:44:THR:HA	5:B:1228:HOH:O	1.58	1.04
1:B:128:GLN:HG3	1:B:157:LYS:HB2	1.39	1.03
1:C:113:GLU:HG3	5:C:1235:HOH:O	1.60	1.01
1:B:60:ASN:HB2	1:C:60:ASN:HD21	1.23	1.00
1:A:16:ARG:O	5:A:1212:HOH:O	1.81	0.99
1:D:38:GLN:HB2	1:D:56:VAL:HG13	1.43	0.99

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:120:ILE:HD11	1:B:173:LEU:HD12	1.46	0.97
1:B:149:LYS:CA	5:B:1210:HOH:O	1.90	0.96
1:C:112:GLU:OE2	5:C:1224:HOH:O	1.83	0.95
1:B:149:LYS:HD2	5:B:1229:HOH:O	1.64	0.95
1:A:64:GLN:HE21	1:A:66:TRP:HE1	1.14	0.95
1:B:150:ASP:N	5:B:1210:HOH:O	1.90	0.94
1:C:145:LEU:HA	1:C:148:LEU:HD23	1.50	0.94
1:B:145:LEU:HA	1:B:148:LEU:HD23	1.50	0.94
1:D:19:ARG:HD2	5:D:1227:HOH:O	1.62	0.93
1:D:120:ILE:HD11	1:D:173:LEU:HD12	1.47	0.93
1:D:180:ARG:N	5:D:1223:HOH:O	2.01	0.92
4:B:1202:GNP:O2G	5:B:1203:HOH:O	1.85	0.92
1:B:60:ASN:HB2	5:C:1209:HOH:O	1.69	0.91
2:F:2213:LEU:O	2:F:2214:GLU:HG3	1.71	0.90
1:A:36:ARG:HH11	1:A:41:GLU:HG3	1.36	0.90
1:A:120:ILE:HD11	1:A:173:LEU:HD12	1.52	0.89
1:D:179:SER:HB3	5:D:1223:HOH:O	1.71	0.89
1:D:179:SER:CB	5:D:1223:HOH:O	2.20	0.89
1:C:36:ARG:HH11	1:C:41:GLU:HG3	1.37	0.89
1:C:38:GLN:HB2	1:C:56:VAL:HG13	1.53	0.89
1:D:150:ASP:N	5:D:1232:HOH:O	1.80	0.88
1:D:19:ARG:HD3	1:D:84:ASN:O	1.73	0.88
4:D:1204:GNP:O1G	5:D:1207:HOH:O	1.89	0.88
1:A:134:MET:SD	1:A:139:MET:HB2	2.13	0.88
1:B:43:VAL:O	5:B:1206:HOH:O	1.92	0.87
1:B:120:ILE:HD11	1:B:173:LEU:CD1	2.03	0.87
1:C:59:LYS:HE3	5:C:1209:HOH:O	1.74	0.87
1:D:149:LYS:HA	5:D:1232:HOH:O	1.74	0.87
1:A:38:GLN:HB2	1:A:56:VAL:HG13	1.58	0.84
1:D:134:MET:SD	1:D:139:MET:HB2	2.19	0.82
1:B:55:THR:HG21	1:B:62:LYS:HE3	1.63	0.81
1:D:57:THR:HG22	1:D:62:LYS:HD2	1.63	0.80
1:B:125:ALA:HB2	1:B:139:MET:HE2	1.64	0.80
1:A:16:ARG:HG3	5:A:1225:HOH:O	1.82	0.79
1:C:16:ARG:O	5:C:1262:HOH:O	2.00	0.78
1:D:151:ARG:HD3	5:D:1251:HOH:O	1.73	0.78
1:A:64:GLN:NE2	1:A:66:TRP:HE1	1.81	0.77
1:D:120:ILE:HD11	1:D:173:LEU:CD1	2.14	0.77
1:D:19:ARG:CG	5:D:1227:HOH:O	2.21	0.77
1:A:60:ASN:HA	5:A:1233:HOH:O	1.84	0.77
1:D:64:GLN:NE2	1:D:66:TRP:HE1	1.83	0.75
1:A:59:LYS:HG2	5:A:1235:HOH:O	1.86	0.74

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:145:LEU:HA	1:D:148:LEU:HD23	1.69	0.74
1:B:61:LEU:HB2	5:B:1227:HOH:O	1.86	0.74
2:F:2182:LEU:HG	2:F:2186:MET:CE	2.17	0.74
1:B:145:LEU:HA	1:B:148:LEU:CD2	2.17	0.73
1:D:128:GLN:HG3	1:D:157:LYS:HB2	1.69	0.73
1:C:57:THR:HA	1:C:61:LEU:O	1.88	0.73
1:C:120:ILE:HD11	1:C:173:LEU:CD1	2.19	0.72
1:C:66:TRP:CH2	2:G:2190:GLU:HG2	2.25	0.72
1:D:128:GLN:HG3	1:D:157:LYS:CB	2.19	0.72
2:F:2222:PHE:CB	5:F:172:HOH:O	2.37	0.71
1:B:60:ASN:CB	5:C:1209:HOH:O	2.34	0.71
1:A:55:THR:HG21	1:A:62:LYS:HE3	1.71	0.71
1:A:120:ILE:HG22	1:A:152:LYS:HD2	1.71	0.71
1:C:120:ILE:HD11	1:C:173:LEU:HD12	1.71	0.71
1:A:57:THR:HG22	1:A:62:LYS:HD2	1.72	0.71
1:A:125:ALA:HB2	1:A:139:MET:HE2	1.73	0.71
2:G:2219:ARG:HG2	5:G:164:HOH:O	1.90	0.71
1:C:163:GLY:O	5:C:1208:HOH:O	2.09	0.70
1:A:36:ARG:NH1	1:A:41:GLU:HG3	2.07	0.70
1:C:66:TRP:HH2	2:G:2190:GLU:HG2	1.57	0.69
2:F:2182:LEU:HG	2:F:2186:MET:HE2	1.72	0.69
1:B:60:ASN:CB	1:C:60:ASN:HD21	2.02	0.69
1:D:55:THR:HG21	1:D:62:LYS:HE3	1.74	0.69
1:C:58:TYR:CD2	1:C:174:VAL:HG21	2.27	0.69
1:B:64:GLN:HE21	1:B:66:TRP:HE1	1.41	0.68
1:C:112:GLU:CD	5:C:1224:HOH:O	2.29	0.68
2:G:2192:LYS:HA	2:G:2216:GLU:HG2	1.76	0.68
2:E:2213:LEU:O	2:E:2214:GLU:HG3	1.94	0.68
1:B:66:TRP:HH2	2:F:2190:GLU:HG2	1.59	0.68
1:A:94:SER:O	1:A:134:MET:HG3	1.93	0.67
1:D:44:THR:HA	5:D:1262:HOH:O	1.95	0.67
1:D:122:VAL:HG22	1:D:172:TRP:HZ3	1.60	0.67
1:A:145:LEU:HA	1:A:148:LEU:HD23	1.77	0.66
2:E:2179:ARG:HD2	2:G:2202:LEU:O	1.96	0.66
1:A:18:MET:HE2	1:A:177:LEU:HD22	1.76	0.66
1:C:57:THR:HG22	1:C:62:LYS:HD2	1.78	0.66
1:D:73:SER:O	5:D:1226:HOH:O	2.13	0.66
1:B:82:TYR:HD2	1:B:113:GLU:HG2	1.60	0.65
1:C:82:TYR:HD2	1:C:113:GLU:HG2	1.61	0.65
1:A:66:TRP:HH2	2:E:2190:GLU:HG2	1.60	0.65
1:A:55:THR:CG2	1:A:62:LYS:HE3	2.25	0.65
1:C:43:VAL:O	1:C:45:THR:N	2.29	0.65

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:43:VAL:HG12	5:B:1206:HOH:O	1.97	0.65
1:C:134:MET:SD	1:C:139:MET:HB2	2.37	0.65
1:C:170:MET:O	1:C:174:VAL:HG23	1.96	0.64
1:B:60:ASN:HB2	1:C:60:ASN:ND2	2.06	0.64
1:D:18:MET:HE2	1:D:177:LEU:HD13	1.80	0.64
2:F:2222:PHE:C	5:F:172:HOH:O	2.35	0.64
1:B:64:GLN:NE2	1:B:66:TRP:HE1	1.96	0.64
1:A:148:LEU:HD12	1:A:151:ARG:HG3	1.79	0.63
1:D:82:TYR:HD2	1:D:113:GLU:HG2	1.62	0.63
1:B:36:ARG:HH11	1:B:41:GLU:HG3	1.63	0.63
1:D:179:SER:C	5:D:1223:HOH:O	2.33	0.63
1:A:180:ARG:NH1	5:A:1221:HOH:O	2.32	0.63
1:A:128:GLN:HG3	1:A:157:LYS:CB	2.15	0.63
1:C:38:GLN:O	1:C:39:VAL:HG23	1.99	0.63
1:D:38:GLN:O	1:D:39:VAL:HG23	1.99	0.62
1:A:38:GLN:O	1:A:39:VAL:HG23	1.99	0.62
1:A:66:TRP:CH2	2:E:2190:GLU:HG2	2.33	0.62
1:D:134:MET:SD	1:D:139:MET:SD	2.98	0.62
1:C:64:GLN:NE2	1:C:66:TRP:HE1	1.97	0.62
1:B:82:TYR:CD2	1:B:113:GLU:HG2	2.34	0.62
1:A:19:ARG:HH21	1:A:21:LEU:HD21	1.63	0.62
1:A:43:VAL:HG11	4:A:1201:GNP:O2'	1.99	0.62
1:A:41:GLU:OE1	1:A:43:VAL:HG23	1.99	0.61
1:B:32:THR:HG23	1:B:43:VAL:HG22	1.81	0.61
2:F:2184:GLU:OE2	2:F:2189:ARG:HD2	2.00	0.61
2:H:2213:LEU:O	2:H:2214:GLU:HG3	2.01	0.61
1:A:40:GLY:O	1:A:41:GLU:HB2	2.01	0.60
1:B:173:LEU:O	1:B:177:LEU:HG	2.01	0.60
1:C:145:LEU:HA	1:C:148:LEU:CD2	2.28	0.60
1:A:179:SER:O	1:A:180:ARG:HD3	2.01	0.60
1:D:32:THR:HG23	1:D:43:VAL:HG22	1.83	0.60
1:A:82:TYR:HD2	1:A:113:GLU:HG2	1.66	0.60
1:A:139:MET:HE2	1:A:155:ILE:HD11	1.83	0.60
1:A:120:ILE:HD11	1:A:173:LEU:CD1	2.29	0.59
1:A:16:ARG:CG	5:A:1225:HOH:O	2.45	0.59
2:G:2213:LEU:O	2:G:2214:GLU:HG3	2.02	0.59
1:B:38:GLN:HB2	1:B:56:VAL:HG13	1.84	0.59
1:B:40:GLY:O	1:B:41:GLU:HB2	2.01	0.59
1:C:58:TYR:OH	1:C:171:GLU:HG2	2.03	0.59
2:F:2216:GLU:O	2:F:2219:ARG:HB3	2.02	0.59
1:C:43:VAL:HG11	4:C:1203:GNP:O2'	2.02	0.59
1:A:149:LYS:O	1:A:149:LYS:HD2	2.03	0.59

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:66:TRP:CH2	2:H:2190:GLU:HG2	2.37	0.59
1:D:66:TRP:HH2	2:H:2190:GLU:HG2	1.66	0.59
1:C:149:LYS:HD2	1:C:149:LYS:O	2.04	0.58
1:A:122:VAL:HG21	1:A:173:LEU:HD13	1.85	0.58
1:D:134:MET:CE	1:D:139:MET:SD	2.92	0.58
1:D:64:GLN:HE21	1:D:66:TRP:HE1	1.51	0.58
1:C:36:ARG:NH1	1:C:41:GLU:HG3	2.13	0.58
1:C:120:ILE:HG22	1:C:152:LYS:HD2	1.85	0.58
2:E:2205:PRO:HB2	5:E:132:HOH:O	2.03	0.58
2:E:2181:VAL:HG13	2:E:2194:MET:SD	2.44	0.58
1:C:39:VAL:CG1	1:C:40:GLY:N	2.67	0.58
1:A:132:GLN:HG2	5:A:1229:HOH:O	2.02	0.58
1:C:36:ARG:HD2	1:C:41:GLU:HB2	1.86	0.58
1:A:36:ARG:HD2	1:A:41:GLU:HB2	1.86	0.57
1:D:149:LYS:O	1:D:149:LYS:HD2	2.03	0.57
1:D:179:SER:O	1:D:180:ARG:HD3	2.03	0.57
1:C:45:THR:HA	5:C:1248:HOH:O	2.03	0.57
1:B:55:THR:CG2	1:B:62:LYS:HE3	2.34	0.57
2:E:2216:GLU:O	2:E:2219:ARG:HB3	2.04	0.57
2:F:2222:PHE:OXT	5:F:172:HOH:O	2.17	0.57
5:D:1256:HOH:O	2:H:2180:LYS:HE3	2.04	0.57
1:B:58:TYR:CD2	1:B:174:VAL:HG21	2.40	0.57
1:B:66:TRP:CH2	2:F:2190:GLU:HG2	2.40	0.56
1:A:149:LYS:O	1:A:150:ASP:HB2	2.04	0.56
1:C:19:ARG:HD3	1:C:84:ASN:O	2.05	0.56
1:D:36:ARG:HH11	1:D:41:GLU:HG3	1.68	0.56
1:D:58:TYR:OH	1:D:171:GLU:HG2	2.05	0.56
1:A:99:ARG:HA	5:A:1232:HOH:O	2.06	0.56
1:B:18:MET:HE2	1:B:177:LEU:HD13	1.87	0.56
2:E:2205:PRO:CA	5:E:3:HOH:O	2.54	0.56
2:F:2182:LEU:HG	2:F:2186:MET:HE1	1.87	0.56
1:D:36:ARG:NH1	1:D:41:GLU:HG3	2.21	0.56
1:D:148:LEU:HD12	1:D:151:ARG:HG3	1.87	0.56
1:C:82:TYR:CD2	1:C:113:GLU:HG2	2.41	0.55
1:A:43:VAL:O	1:A:43:VAL:HG12	2.07	0.55
1:C:64:GLN:HE21	1:C:66:TRP:HE1	1.53	0.55
1:D:43:VAL:HG12	1:D:43:VAL:O	2.05	0.55
1:D:55:THR:CG2	1:D:62:LYS:HE3	2.37	0.55
2:G:2219:ARG:HD3	2:H:2222:PHE:CZ	2.42	0.55
2:F:2211:LYS:HG3	2:H:2187:MET:CE	2.36	0.55
1:C:125:ALA:HB2	1:C:139:MET:HE2	1.89	0.55
1:C:139:MET:HE2	1:C:155:ILE:HD11	1.87	0.55

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:179:SER:O	1:C:180:ARG:HD3	2.06	0.55
1:B:41:GLU:OE1	1:B:42:VAL:N	2.40	0.54
1:A:122:VAL:CG2	1:A:173:LEU:HD13	2.37	0.54
1:C:173:LEU:O	1:C:177:LEU:HG	2.07	0.54
2:H:2220:LEU:C	2:H:2222:PHE:H	2.10	0.54
1:B:57:THR:HG21	5:C:1255:HOH:O	2.07	0.54
1:B:57:THR:HG22	1:B:62:LYS:CD	2.37	0.54
1:B:145:LEU:CA	1:B:148:LEU:HD23	2.32	0.54
1:D:45:THR:HG21	4:D:1204:GNP:O2A	2.08	0.54
1:D:36:ARG:HD3	1:D:160:ALA:O	2.07	0.54
1:B:139:MET:HE2	1:B:155:ILE:HD11	1.90	0.54
2:F:2222:PHE:HB2	5:F:172:HOH:O	2.05	0.54
1:B:59:LYS:HG2	5:B:1225:HOH:O	2.08	0.54
1:B:75:ARG:NH2	5:B:1208:HOH:O	2.39	0.54
1:A:58:TYR:CD2	1:A:174:VAL:HG21	2.43	0.53
1:C:43:VAL:O	1:C:43:VAL:HG12	2.07	0.53
1:B:36:ARG:HD2	1:B:41:GLU:HB2	1.90	0.53
1:D:94:SER:HB3	1:D:134:MET:HE3	1.91	0.53
1:D:32:THR:HG22	1:D:160:ALA:HB1	1.91	0.53
1:D:32:THR:OG1	1:D:43:VAL:HG13	2.08	0.53
2:G:2210:GLN:O	2:G:2213:LEU:O	2.27	0.53
1:B:75:ARG:N	1:B:76:PRO:CD	2.72	0.53
1:C:114:GLU:O	1:C:117:ARG:HG2	2.08	0.53
1:D:19:ARG:CZ	5:D:1227:HOH:O	2.57	0.53
1:D:139:MET:HE2	1:D:155:ILE:HD11	1.91	0.53
1:C:77:TYR:HB2	5:C:1231:HOH:O	2.09	0.53
1:B:41:GLU:O	1:B:42:VAL:HG23	2.09	0.53
1:D:134:MET:HE2	1:D:139:MET:SD	2.48	0.53
1:B:134:MET:SD	1:B:139:MET:HB2	2.48	0.52
1:A:28:ALA:HB1	1:A:91:VAL:HG12	1.91	0.52
1:A:16:ARG:NH2	5:A:1216:HOH:O	2.43	0.52
1:B:28:ALA:HB1	1:B:91:VAL:HG12	1.91	0.52
1:B:139:MET:CE	1:B:155:ILE:HD11	2.39	0.52
2:E:2215:ARG:NE	5:E:51:HOH:O	2.12	0.52
2:F:2219:ARG:HD2	2:F:2219:ARG:O	2.10	0.52
1:D:127:LYS:HG2	4:D:1204:GNP:C6	2.40	0.52
1:D:82:TYR:CD2	1:D:113:GLU:HG2	2.44	0.52
2:E:2222:PHE:CA	5:E:138:HOH:O	2.06	0.52
1:C:75:ARG:N	1:C:76:PRO:CD	2.74	0.51
1:B:58:TYR:HD2	1:B:174:VAL:HG21	1.76	0.51
2:E:2207:ASP:OD2	2:E:2208:GLN:N	2.39	0.51
1:B:61:LEU:HD11	1:B:178:LYS:HE3	1.93	0.51

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:122:VAL:HG22	1:C:172:TRP:HZ3	1.75	0.51
1:A:59:LYS:HE3	5:A:1235:HOH:O	2.10	0.51
1:A:42:VAL:C	1:A:44:THR:H	2.13	0.51
1:C:59:LYS:HG2	1:C:59:LYS:O	2.09	0.51
2:F:2222:PHE:HB3	5:F:172:HOH:O	2.05	0.51
1:D:19:ARG:NE	5:D:1227:HOH:O	2.29	0.51
1:B:94:SER:O	1:B:134:MET:HG3	2.11	0.51
2:F:2213:LEU:O	2:F:2214:GLU:CG	2.53	0.51
2:H:2184:GLU:OE2	2:H:2189:ARG:HD2	2.11	0.50
1:A:43:VAL:O	1:A:45:THR:N	2.45	0.50
2:G:2181:VAL:HG13	2:G:2194:MET:SD	2.52	0.50
1:A:122:VAL:HG22	1:A:172:TRP:HZ3	1.76	0.50
1:B:59:LYS:CG	5:B:1225:HOH:O	2.59	0.50
1:D:94:SER:O	1:D:134:MET:HG3	2.11	0.50
1:B:128:GLN:CG	1:B:157:LYS:HB2	2.27	0.49
1:C:57:THR:CG2	1:C:62:LYS:NZ	2.75	0.49
1:C:94:SER:O	1:C:134:MET:HG3	2.12	0.49
1:B:168:GLU:N	1:B:168:GLU:OE1	2.37	0.49
1:A:61:LEU:HD11	1:A:178:LYS:HE3	1.93	0.49
1:C:122:VAL:HG22	1:C:172:TRP:CZ3	2.48	0.49
1:B:126:ASN:O	1:B:127:LYS:HB2	2.12	0.49
2:E:2184:GLU:OE2	2:E:2189:ARG:HD2	2.13	0.49
1:C:55:THR:HG21	1:C:62:LYS:HE3	1.95	0.49
1:A:82:TYR:CD2	1:A:113:GLU:HG2	2.46	0.49
1:A:131:GLU:HB3	5:A:1229:HOH:O	2.12	0.49
2:F:2207:ASP:N	2:F:2207:ASP:OD2	2.44	0.49
1:B:110:MET:O	1:B:113:GLU:HB2	2.13	0.48
2:E:2205:PRO:HA	5:E:3:HOH:O	2.10	0.48
2:G:2197:VAL:O	2:G:2201:VAL:HG23	2.13	0.48
1:A:177:LEU:HD12	1:A:178:LYS:N	2.28	0.48
1:C:45:THR:HG21	4:C:1203:GNP:O2A	2.13	0.48
2:H:2192:LYS:HA	2:H:2216:GLU:HG2	1.95	0.48
1:B:42:VAL:C	1:B:44:THR:H	2.16	0.48
1:D:40:GLY:O	1:D:41:GLU:HB2	2.11	0.48
2:G:2192:LYS:HA	2:G:2216:GLU:CG	2.43	0.48
1:A:16:ARG:NE	5:A:1225:HOH:O	2.34	0.48
1:D:41:GLU:OE1	1:D:43:VAL:HG23	2.14	0.48
1:B:57:THR:HA	1:B:61:LEU:O	2.14	0.48
1:C:42:VAL:C	1:C:44:THR:H	2.17	0.48
1:A:58:TYR:OH	1:A:171:GLU:HG2	2.13	0.48
1:A:36:ARG:NH1	1:A:41:GLU:CG	2.77	0.48
1:C:36:ARG:HD3	1:C:160:ALA:O	2.14	0.48

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:43:VAL:O	1:D:45:THR:N	2.47	0.48
1:D:125:ALA:HB2	1:D:139:MET:HE2	1.96	0.48
2:E:2215:ARG:NH1	5:E:51:HOH:O	2.46	0.47
2:H:2181:VAL:HG11	2:H:2197:VAL:HG22	1.96	0.47
1:B:19:ARG:NH2	1:B:81:TYR:O	2.47	0.47
1:D:134:MET:SD	1:D:139:MET:CB	2.98	0.47
2:E:2197:VAL:O	2:E:2201:VAL:HG23	2.14	0.47
1:B:44:THR:CA	5:B:1228:HOH:O	2.37	0.47
1:C:149:LYS:O	1:C:150:ASP:HB2	2.14	0.47
1:D:128:GLN:HG3	1:D:157:LYS:HB3	1.93	0.47
1:C:148:LEU:HD12	1:C:151:ARG:HG3	1.96	0.47
1:A:104:LYS:HD2	1:A:142:ALA:O	2.15	0.47
2:E:2180:LYS:O	2:E:2180:LYS:HD3	2.16	0.46
1:D:75:ARG:N	1:D:76:PRO:CD	2.79	0.46
1:D:122:VAL:HG22	1:D:172:TRP:CZ3	2.46	0.46
2:F:2194:MET:O	2:F:2197:VAL:HG13	2.15	0.46
2:H:2211:LYS:NZ	5:H:102:HOH:O	2.49	0.46
1:C:59:LYS:O	1:C:60:ASN:CG	2.54	0.46
1:C:145:LEU:CA	1:C:148:LEU:HD23	2.35	0.46
1:C:36:ARG:HG2	1:C:166:LEU:CD1	2.45	0.46
2:E:2211:LYS:HG3	2:G:2187:MET:CE	2.45	0.46
1:C:38:GLN:O	1:C:39:VAL:CB	2.63	0.46
1:B:180:ARG:C	1:B:180:ARG:HD3	2.36	0.46
1:D:59:LYS:HG2	5:D:1235:HOH:O	2.15	0.45
1:A:38:GLN:HE22	1:A:57:THR:HG23	1.82	0.45
1:D:19:ARG:NH1	5:D:1227:HOH:O	2.49	0.45
1:C:139:MET:CE	1:C:155:ILE:HD11	2.46	0.45
1:D:19:ARG:CD	1:D:84:ASN:O	2.57	0.45
2:H:2222:PHE:HB3	5:H:67:HOH:O	2.16	0.45
1:D:118:LYS:HA	1:D:118:LYS:HD3	1.83	0.45
1:A:64:GLN:NE2	1:A:66:TRP:NE1	2.58	0.45
1:C:32:THR:OG1	1:C:43:VAL:HG13	2.16	0.45
1:B:38:GLN:O	1:B:39:VAL:HB	2.17	0.45
1:B:154:GLN:HA	1:B:154:GLN:OE1	2.16	0.45
1:A:145:LEU:N	1:A:146:PRO:CD	2.79	0.45
1:A:94:SER:HA	1:A:134:MET:HE2	1.99	0.45
1:C:42:VAL:HG12	1:C:44:THR:OG1	2.17	0.44
2:E:2179:ARG:HG2	2:G:2204:PHE:CE1	2.51	0.44
1:B:42:VAL:O	1:B:44:THR:N	2.49	0.44
1:C:38:GLN:O	1:C:39:VAL:CG2	2.64	0.44
1:D:149:LYS:CA	5:D:1232:HOH:O	2.43	0.44
1:B:45:THR:HG21	4:B:1202:GNP:O2A	2.16	0.44

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:38:GLN:NE2	1:A:57:THR:HG23	2.33	0.44
1:B:32:THR:OG1	1:B:43:VAL:HG13	2.17	0.44
1:B:41:GLU:OE1	1:B:43:VAL:N	2.51	0.44
2:G:2219:ARG:HD3	2:H:2222:PHE:HZ	1.80	0.44
1:A:94:SER:HB3	1:A:133:ALA:HB1	1.98	0.44
1:A:42:VAL:O	1:A:44:THR:N	2.48	0.44
1:A:25:LEU:O	1:A:30:LYS:NZ	2.50	0.44
1:D:149:LYS:O	1:D:150:ASP:HB2	2.18	0.43
1:B:57:THR:HG22	1:B:62:LYS:HD2	1.99	0.43
1:A:57:THR:HA	1:A:61:LEU:O	2.18	0.43
1:C:36:ARG:NH1	1:C:41:GLU:CG	2.81	0.43
2:E:2208:GLN:O	2:E:2212:ILE:HG13	2.17	0.43
1:A:39:VAL:CG1	1:A:40:GLY:N	2.82	0.43
1:A:122:VAL:HG22	1:A:172:TRP:CZ3	2.54	0.43
2:E:2215:ARG:CZ	5:E:51:HOH:O	2.62	0.43
1:D:28:ALA:HB1	1:D:91:VAL:HG12	1.99	0.43
1:D:71:GLN:HG2	5:D:1248:HOH:O	2.18	0.43
1:C:175:GLU:CG	5:C:1261:HOH:O	2.09	0.43
1:A:120:ILE:CG2	1:A:152:LYS:HD2	2.45	0.43
1:C:168:GLU:N	1:C:168:GLU:OE1	2.39	0.43
1:C:127:LYS:HG2	4:C:1203:GNP:C6	2.49	0.43
1:D:57:THR:HA	1:D:61:LEU:O	2.19	0.43
1:A:75:ARG:N	1:A:76:PRO:CD	2.82	0.43
1:B:145:LEU:N	1:B:146:PRO:CD	2.82	0.42
1:C:179:SER:O	1:C:180:ARG:CD	2.67	0.42
1:C:41:GLU:OE1	1:C:42:VAL:N	2.52	0.42
2:E:2182:LEU:O	2:E:2186:MET:HG3	2.19	0.42
1:B:41:GLU:OE1	1:B:43:VAL:HG23	2.19	0.42
1:B:79:ARG:HA	1:B:82:TYR:CD2	2.54	0.42
1:A:132:GLN:NE2	5:A:1220:HOH:O	2.51	0.42
1:B:58:TYR:O	1:B:60:ASN:N	2.53	0.42
1:B:38:GLN:O	1:B:39:VAL:CB	2.67	0.42
1:B:177:LEU:HD12	1:B:178:LYS:N	2.34	0.42
1:C:36:ARG:HG2	1:C:166:LEU:HD12	2.01	0.42
1:B:57:THR:CG2	1:B:62:LYS:NZ	2.82	0.42
2:F:2222:PHE:CD1	2:F:2222:PHE:N	2.88	0.42
1:B:118:LYS:HA	1:B:118:LYS:HD3	1.75	0.42
1:D:148:LEU:HA	1:D:148:LEU:HD13	1.89	0.42
1:A:59:LYS:C	1:A:61:LEU:H	2.24	0.42
1:A:36:ARG:HG2	1:A:166:LEU:CD1	2.49	0.41
2:H:2220:LEU:C	2:H:2222:PHE:N	2.73	0.41
1:A:152:LYS:NZ	5:A:1224:HOH:O	2.53	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:19:ARG:O	1:A:19:ARG:HG3	2.20	0.41
1:C:32:THR:HG23	1:C:43:VAL:HG22	2.01	0.41
1:B:171:GLU:O	1:B:175:GLU:HG3	2.20	0.41
2:E:2222:PHE:N	2:E:2222:PHE:CD1	2.88	0.41
1:C:43:VAL:HG11	4:C:1203:GNP:C2'	2.50	0.41
1:D:43:VAL:O	1:D:45:THR:HB	2.21	0.41
2:E:2192:LYS:HD3	2:E:2216:GLU:HG3	2.03	0.41
1:C:128:GLN:CG	1:C:157:LYS:HB2	2.19	0.41
1:A:16:ARG:CZ	5:A:1216:HOH:O	2.69	0.41
1:B:140:ALA:O	1:B:146:PRO:HD3	2.20	0.41
1:D:180:ARG:HD3	1:D:180:ARG:C	2.40	0.41
1:C:118:LYS:HA	1:C:118:LYS:HD3	1.79	0.41
1:D:154:GLN:HA	1:D:154:GLN:OE1	2.21	0.41
2:E:2219:ARG:HH22	2:H:2222:PHE:HA	1.85	0.41
1:B:59:LYS:CD	5:B:1225:HOH:O	2.68	0.41
2:H:2177:TYR:OH	5:H:92:HOH:O	2.14	0.41
2:E:2221:MET:C	2:E:2222:PHE:CD1	2.93	0.41
1:C:58:TYR:CD2	1:C:59:LYS:N	2.89	0.41
1:C:134:MET:CE	1:C:139:MET:HB2	2.51	0.41
2:F:2211:LYS:HG3	2:H:2187:MET:HE1	2.00	0.41
1:A:18:MET:HB2	1:A:63:PHE:CD2	2.56	0.41
2:H:2221:MET:C	2:H:2222:PHE:CD1	2.94	0.41
1:B:41:GLU:OE1	1:B:42:VAL:CA	2.69	0.40
1:A:41:GLU:OE1	1:A:43:VAL:N	2.54	0.40
1:C:32:THR:HG22	1:C:160:ALA:HB1	2.03	0.40
1:C:39:VAL:HG12	1:C:40:GLY:N	2.35	0.40
1:A:32:THR:HG22	1:A:160:ALA:HB1	2.03	0.40
1:C:58:TYR:CG	1:C:59:LYS:N	2.89	0.40
1:C:145:LEU:HB2	1:C:146:PRO:HD3	2.02	0.40
1:C:57:THR:HG23	1:C:62:LYS:HZ2	1.87	0.40
1:A:168:GLU:N	1:A:168:GLU:OE1	2.50	0.40
1:D:42:VAL:C	1:D:44:THR:H	2.23	0.40
1:A:59:LYS:O	1:A:60:ASN:CG	2.60	0.40
1:C:71:GLN:HG2	5:C:1223:HOH:O	2.21	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
5:B:1223:HOH:O	5:D:1205:HOH:O[1_444]	2.08	0.12

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	163/165 (99%)	147 (90%)	11 (7%)	5 (3%)	7	3
1	B	163/165 (99%)	146 (90%)	12 (7%)	5 (3%)	7	3
1	C	163/165 (99%)	148 (91%)	10 (6%)	5 (3%)	7	3
1	D	163/165 (99%)	150 (92%)	9 (6%)	4 (2%)	9	6
2	E	49/51 (96%)	47 (96%)	1 (2%)	1 (2%)	11	8
2	F	49/51 (96%)	47 (96%)	1 (2%)	1 (2%)	11	8
2	G	49/51 (96%)	48 (98%)	0	1 (2%)	11	8
2	H	49/51 (96%)	46 (94%)	2 (4%)	1 (2%)	11	8
All	All	848/864 (98%)	779 (92%)	46 (5%)	23 (3%)	8	5

All (23) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	39	VAL
1	A	43	VAL
1	B	39	VAL
1	B	43	VAL
2	F	2214	GLU
1	C	39	VAL
2	G	2214	GLU
1	D	39	VAL
1	A	40	GLY
1	A	41	GLU
2	E	2214	GLU
1	B	40	GLY
1	B	42	VAL
1	C	43	VAL
1	C	179	SER
1	D	40	GLY
1	D	41	GLU
1	D	43	VAL
2	H	2214	GLU

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Mol	Chain	Res	Type
1	B	41	GLU
1	C	44	THR
1	C	40	GLY
1	A	42	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	143/143 (100%)	137 (96%)	6 (4%)	40	53
1	B	143/143 (100%)	135 (94%)	8 (6%)	30	38
1	C	143/143 (100%)	138 (96%)	5 (4%)	48	63
1	D	143/143 (100%)	134 (94%)	9 (6%)	25	32
2	E	48/48 (100%)	46 (96%)	2 (4%)	40	53
2	F	48/48 (100%)	47 (98%)	1 (2%)	66	83
2	G	48/48 (100%)	46 (96%)	2 (4%)	40	53
2	H	48/48 (100%)	46 (96%)	2 (4%)	40	53
All	All	764/764 (100%)	729 (95%)	35 (5%)	37	48

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	THR
1	A	54	GLU
1	A	67	ASP
1	A	134	MET
1	A	149	LYS
1	A	180	ARG
2	E	2182	LEU
2	E	2197	VAL
1	B	19	ARG
1	B	41	GLU
1	B	45	THR
1	B	54	GLU
1	B	113	GLU

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Mol	Chain	Res	Type
1	B	134	MET
1	B	149	LYS
1	B	180	ARG
2	F	2197	VAL
1	C	41	GLU
1	C	45	THR
1	C	134	MET
1	C	149	LYS
1	C	180	ARG
2	G	2182	LEU
2	G	2197	VAL
1	D	19	ARG
1	D	41	GLU
1	D	45	THR
1	D	54	GLU
1	D	134	MET
1	D	148	LEU
1	D	149	LYS
1	D	157	LYS
1	D	180	ARG
2	H	2182	LEU
2	H	2197	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	64	GLN
1	B	64	GLN
1	B	128	GLN
1	C	60	ASN
1	C	64	GLN
1	D	64	GLN

5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	GNP	A	1201	3	34,34,34	3.03	10 (29%)	50,54,54	5.52	11 (22%)
4	GNP	B	1202	3	34,34,34	3.38	13 (38%)	50,54,54	5.42	10 (20%)
4	GNP	C	1203	3	34,34,34	3.26	11 (32%)	50,54,54	5.28	10 (20%)
4	GNP	D	1204	3	34,34,34	3.33	11 (32%)	50,54,54	5.60	9 (18%)

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
4	GNP	A	1201	3	-	0/18/38/38	0/1/3/3
4	GNP	B	1202	3	-	1/18/38/38	0/1/3/3
4	GNP	C	1203	3	-	1/18/38/38	0/1/3/3
4	GNP	D	1204	3	-	0/18/38/38	0/1/3/3

All (45) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	1204	GNP	PG-N3B	13.34	1.75	1.64
4	B	1202	GNP	PG-N3B	12.66	1.75	1.64
4	C	1203	GNP	PG-N3B	11.79	1.74	1.64
4	A	1201	GNP	PG-N3B	9.12	1.72	1.64
4	C	1203	GNP	C2-N2	7.38	1.43	1.32
4	B	1202	GNP	C2-N2	7.33	1.43	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1201	GNP	C8-N9	7.27	1.47	1.36
4	D	1204	GNP	C2-N2	7.10	1.43	1.32
4	A	1201	GNP	C2-N2	7.07	1.43	1.32
4	D	1204	GNP	C8-N9	6.96	1.47	1.36
4	B	1202	GNP	C8-N9	6.74	1.46	1.36
4	C	1203	GNP	C8-N9	6.35	1.46	1.36
4	C	1203	GNP	PB-N3B	5.68	1.69	1.64
4	B	1202	GNP	PB-N3B	5.32	1.68	1.64
4	A	1201	GNP	PB-N3B	4.80	1.68	1.64
4	A	1201	GNP	PG-O1G	4.16	1.51	1.46
4	B	1202	GNP	C6-C5	3.91	1.47	1.41
4	C	1203	GNP	C6-C5	3.90	1.47	1.41
4	D	1204	GNP	C2-N3	-3.89	1.28	1.33
4	A	1201	GNP	C6-C5	3.74	1.47	1.41
4	B	1202	GNP	C2-N3	-3.67	1.29	1.33
4	D	1204	GNP	PB-N3B	3.56	1.67	1.64
4	D	1204	GNP	C6-C5	3.53	1.47	1.41
4	C	1203	GNP	O6-C6	-3.45	1.17	1.24
4	C	1203	GNP	C2-N3	-3.39	1.29	1.33
4	C	1203	GNP	PG-O1G	3.29	1.50	1.46
4	A	1201	GNP	O6-C6	-3.27	1.18	1.24
4	A	1201	GNP	PB-O3A	3.11	1.63	1.59
4	B	1202	GNP	O6-C6	-3.05	1.18	1.24
4	D	1204	GNP	O6-C6	-2.96	1.18	1.24
4	B	1202	GNP	PA-O3A	-2.92	1.54	1.59
4	A	1201	GNP	C2-N3	-2.79	1.30	1.33
4	C	1203	GNP	O4'-C4'	-2.72	1.38	1.45
4	D	1204	GNP	PG-O1G	2.60	1.49	1.46
4	B	1202	GNP	O4'-C4'	-2.32	1.39	1.45
4	B	1202	GNP	C5-N7	2.29	1.49	1.40
4	A	1201	GNP	C5-N7	2.29	1.49	1.40
4	B	1202	GNP	C2'-C1'	-2.28	1.50	1.53
4	B	1202	GNP	PG-O1G	2.27	1.49	1.46
4	D	1204	GNP	C5-N7	2.22	1.49	1.40
4	D	1204	GNP	PA-O3A	-2.19	1.55	1.59
4	C	1203	GNP	C5-N7	2.13	1.48	1.40
4	B	1202	GNP	PG-O3G	-2.12	1.49	1.55
4	C	1203	GNP	PB-O3A	2.11	1.62	1.59
4	D	1204	GNP	PB-O3A	2.02	1.62	1.59

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	1204	GNP	C6-C5-N7	-35.97	129.30	134.14
4	A	1201	GNP	C6-C5-N7	-35.04	129.42	134.14
4	B	1202	GNP	C6-C5-N7	-34.40	129.51	134.14
4	C	1203	GNP	C6-C5-N7	-33.26	129.66	134.14
4	B	1202	GNP	N1-C2-N3	8.79	134.10	121.78
4	D	1204	GNP	N1-C2-N3	8.58	133.81	121.78
4	A	1201	GNP	N1-C2-N3	8.50	133.69	121.78
4	C	1203	GNP	N1-C2-N3	8.46	133.64	121.78
4	B	1202	GNP	N2-C2-N1	-7.66	109.43	117.86
4	A	1201	GNP	N2-C2-N1	-7.55	109.54	117.86
4	D	1204	GNP	N2-C2-N1	-7.46	109.64	117.86
4	C	1203	GNP	N2-C2-N1	-7.46	109.65	117.86
4	A	1201	GNP	O1G-PG-N3B	-6.52	101.97	111.83
4	C	1203	GNP	O1G-PG-N3B	-6.41	102.14	111.83
4	D	1204	GNP	O1G-PG-N3B	-6.04	102.70	111.83
4	B	1202	GNP	C2-N3-C4	-5.73	107.04	115.09
4	B	1202	GNP	PB-N3B-PG	-5.65	120.57	130.07
4	A	1201	GNP	C2-N3-C4	-5.62	107.19	115.09
4	D	1204	GNP	PB-N3B-PG	-5.59	120.66	130.07
4	B	1202	GNP	O1G-PG-N3B	-5.55	103.44	111.83
4	D	1204	GNP	C2-N3-C4	-5.54	107.31	115.09
4	C	1203	GNP	PB-N3B-PG	-5.52	120.78	130.07
4	C	1203	GNP	C2-N3-C4	-5.41	107.49	115.09
4	A	1201	GNP	PB-N3B-PG	-4.95	121.75	130.07
4	A	1201	GNP	O2B-PB-O1B	3.58	118.16	109.89
4	A	1201	GNP	O1B-PB-N3B	-3.29	106.86	111.83
4	B	1202	GNP	O2B-PB-O1B	3.16	117.19	109.89
4	C	1203	GNP	O2B-PB-O1B	3.13	117.12	109.89
4	D	1204	GNP	O2B-PB-O1B	2.93	116.65	109.89
4	B	1202	GNP	N2-C2-N3	-2.82	116.48	120.30
4	D	1204	GNP	N2-C2-N3	-2.77	116.55	120.30
4	C	1203	GNP	N2-C2-N3	-2.65	116.71	120.30
4	A	1201	GNP	N2-C2-N3	-2.61	116.77	120.30
4	C	1203	GNP	O1B-PB-N3B	-2.50	108.06	111.83
4	C	1203	GNP	C4'-O4'-C1'	2.28	112.22	109.75
4	A	1201	GNP	C4'-O4'-C1'	2.23	112.17	109.75
4	A	1201	GNP	O3G-PG-N3B	2.11	112.34	106.61
4	D	1204	GNP	O4'-C4'-C5'	2.10	116.84	109.36
4	B	1202	GNP	O4'-C4'-C5'	2.07	116.75	109.36
4	B	1202	GNP	O1B-PB-N3B	-2.03	108.76	111.83

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	1202	GNP	O1B-PB-N3B-PG
4	C	1203	GNP	O1B-PB-N3B-PG

There are no ring outliers.

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, 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	165/165 (100%)	0.57	15 (9%) 9 15	14, 21, 30, 33	0
1	B	165/165 (100%)	0.22	11 (6%) 17 25	14, 21, 30, 35	0
1	C	165/165 (100%)	0.28	6 (3%) 41 51	16, 21, 31, 36	0
1	D	165/165 (100%)	0.49	13 (7%) 13 19	15, 21, 33, 38	0
2	E	51/51 (100%)	0.60	5 (9%) 8 13	15, 22, 29, 30	0
2	F	51/51 (100%)	0.23	4 (7%) 13 19	15, 22, 30, 33	0
2	G	51/51 (100%)	0.07	0 100 100	13, 22, 28, 30	0
2	H	51/51 (100%)	0.09	2 (3%) 37 48	15, 22, 31, 35	0
All	All	864/864 (100%)	0.36	56 (6%) 18 26	13, 21, 31, 38	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	43	VAL	9.9
1	A	42	VAL	8.7
1	D	43	VAL	7.8
2	E	2220	LEU	7.6
1	C	43	VAL	7.4
1	A	16	ARG	6.9
2	H	2222	PHE	6.1
1	D	59	LYS	5.9
1	D	60	ASN	5.6
2	E	2221	MET	5.4
1	C	42	VAL	5.3
2	E	2222	PHE	5.1
1	D	16	ARG	4.8
1	B	43	VAL	4.7
1	B	42	VAL	4.5
1	A	44	THR	4.4

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Mol	Chain	Res	Type	RSRZ
2	F	2222	PHE	4.2
1	C	38	GLN	4.2
2	F	2220	LEU	4.1
1	B	60	ASN	4.0
1	A	60	ASN	3.7
1	D	42	VAL	3.5
1	A	59	LYS	3.5
1	B	61	LEU	3.5
2	F	2221	MET	3.3
1	D	61	LEU	3.1
1	D	180	ARG	3.1
1	A	18	MET	3.1
1	C	16	ARG	3.1
1	D	58	TYR	3.0
1	A	180	ARG	3.0
1	A	131	GLU	2.9
2	E	2210	GLN	2.9
1	A	149	LYS	2.8
1	A	132	GLN	2.7
1	A	38	GLN	2.7
1	D	17	GLU	2.7
1	B	44	THR	2.6
1	D	139	MET	2.6
2	E	2219	ARG	2.6
1	A	134	MET	2.6
1	B	38	GLN	2.5
1	C	180	ARG	2.5
1	D	38	GLN	2.4
1	A	17	GLU	2.4
1	B	57	THR	2.3
1	D	62	LYS	2.3
2	H	2220	LEU	2.3
1	B	149	LYS	2.2
1	C	59	LYS	2.2
1	D	150	ASP	2.2
1	A	178	LYS	2.2
1	B	58	TYR	2.2
2	F	2219	ARG	2.1
1	B	39	VAL	2.1
1	B	56	VAL	2.1

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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	RSR	LLDF	B-factors(Å ²)	Q<0.9
3	MG	C	903	1/1	0.31	15.72	38,38,38,38	0
3	MG	D	904	1/1	0.27	5.49	41,41,41,41	0
3	MG	B	902	1/1	0.21	4.72	39,39,39,39	0
4	GNP	B	1202	32/32	0.18	0.94	27,40,43,43	0
4	GNP	C	1203	32/32	0.19	0.65	28,33,39,41	0
4	GNP	D	1204	32/32	0.22	0.63	27,35,40,42	0
4	GNP	A	1201	32/32	0.17	0.08	35,47,56,57	0
3	MG	A	901	1/1	0.15	-0.39	54,54,54,54	0

6.5 Other polymers ⓘ

There are no such residues in this entry.