



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 31, 2016 – 09:39 PM GMT

PDB ID : 1Q19
Title : Carbapenam Synthetase
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Deposited on : 2003-07-18
Resolution : 2.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

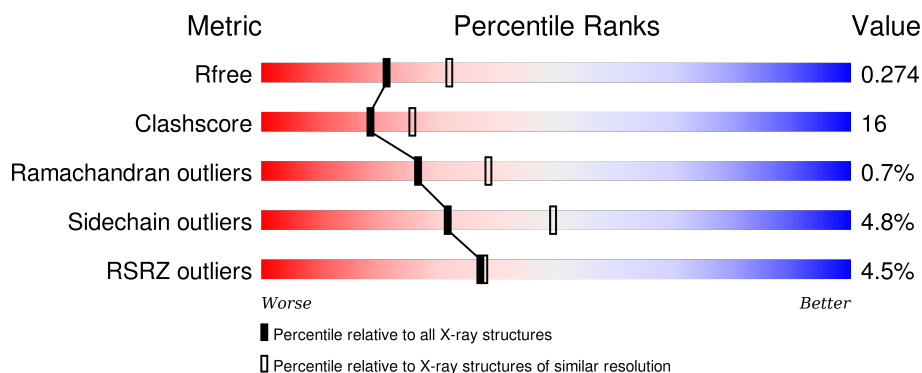
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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}	91344	2919 (2.40-2.40)
Clashscore	102246	3407 (2.40-2.40)
Ramachandran outliers	100387	3351 (2.40-2.40)
Sidechain outliers	100360	3352 (2.40-2.40)
RSRZ outliers	91569	2928 (2.40-2.40)

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. 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	503	<div> <div>2%</div> <div>70%</div> <div>27%</div> <div>..</div> </div>
1	B	503	<div> <div>2%</div> <div>68%</div> <div>28%</div> <div>..</div> </div>
1	C	503	<div> <div>11%</div> <div>67%</div> <div>30%</div> <div>..</div> </div>
1	D	503	<div> <div>3%</div> <div>67%</div> <div>31%</div> <div>..</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	SSC	A	506	-	-	-	X
4	SSC	B	506	-	-	-	X
4	SSC	C	506	-	-	-	X
4	SSC	D	506	-	-	-	X

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 16279 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.

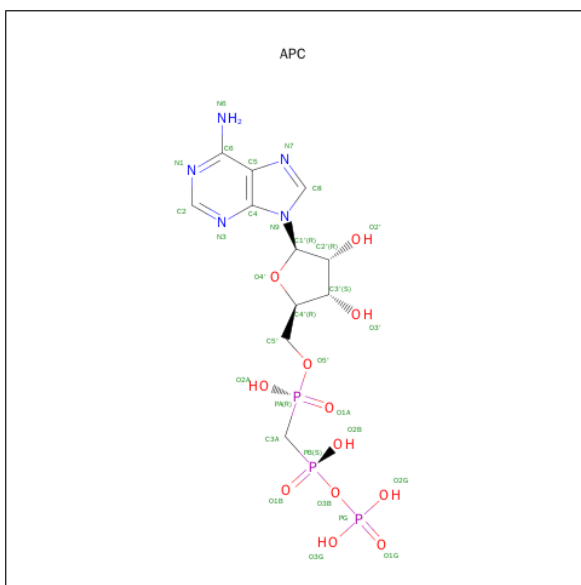
- Molecule 1 is a protein called CarA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	500	Total	C	N	O	S	0	0	0
			3926	2498	665	751	12			
1	B	500	Total	C	N	O	S	0	0	0
			3926	2498	665	751	12			
1	C	500	Total	C	N	O	S	0	0	0
			3926	2498	665	751	12			
1	D	500	Total	C	N	O	S	0	0	0
			3926	2498	665	751	12			

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

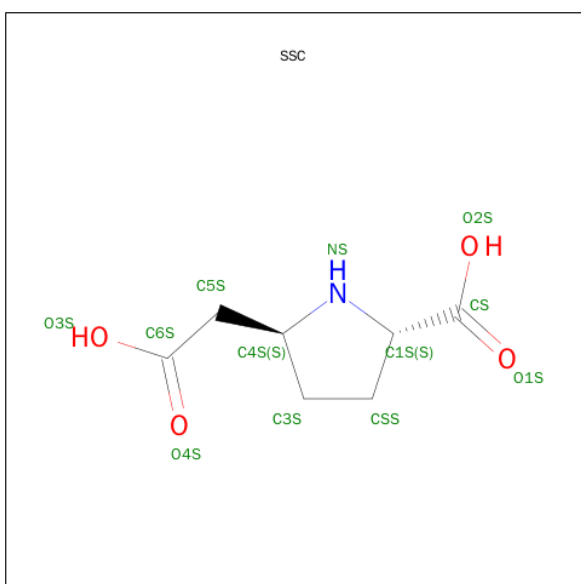
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total	Mg	0	0
			1	1		
2	A	1	Total	Mg	0	0
			1	1		
2	D	1	Total	Mg	0	0
			1	1		
2	C	1	Total	Mg	0	0
			1	1		

- Molecule 3 is DIPHOSPHOMETHYLPHOSPHONIC ACID ADENOSYL ESTER (three-letter code: APC) (formula: C₁₁H₁₈N₅O₁₂P₃).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
3	B	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
3	C	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
3	D	1	Total	C	N	O	P	0	0
			31	11	5	12	3		

- Molecule 4 is (2S,5S)-5-CARBOXYMETHYLPROLINE (three-letter code: SSC) (formula: $C_7H_{11}NO_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O 12 7 1 4	0	0
4	B	1	Total C N O 12 7 1 4	0	0
4	D	1	Total C N O 12 7 1 4	0	0
4	C	1	Total C N O 12 7 1 4	0	0

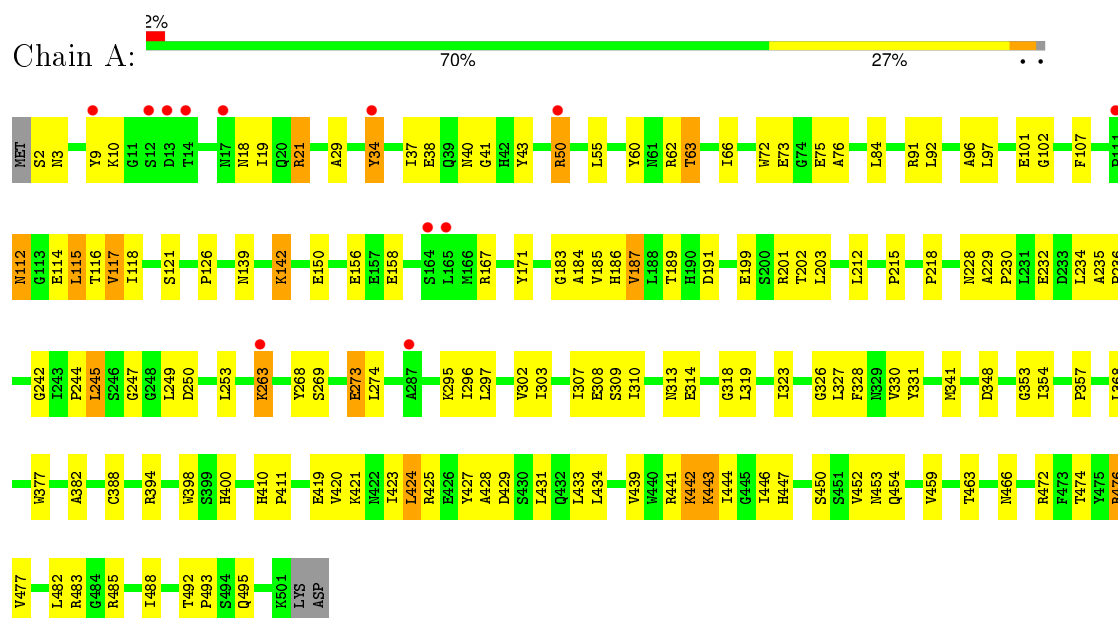
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	118	Total O 118 118	0	0
5	B	94	Total O 94 94	0	0
5	C	80	Total O 80 80	0	0
5	D	107	Total O 107 107	0	0

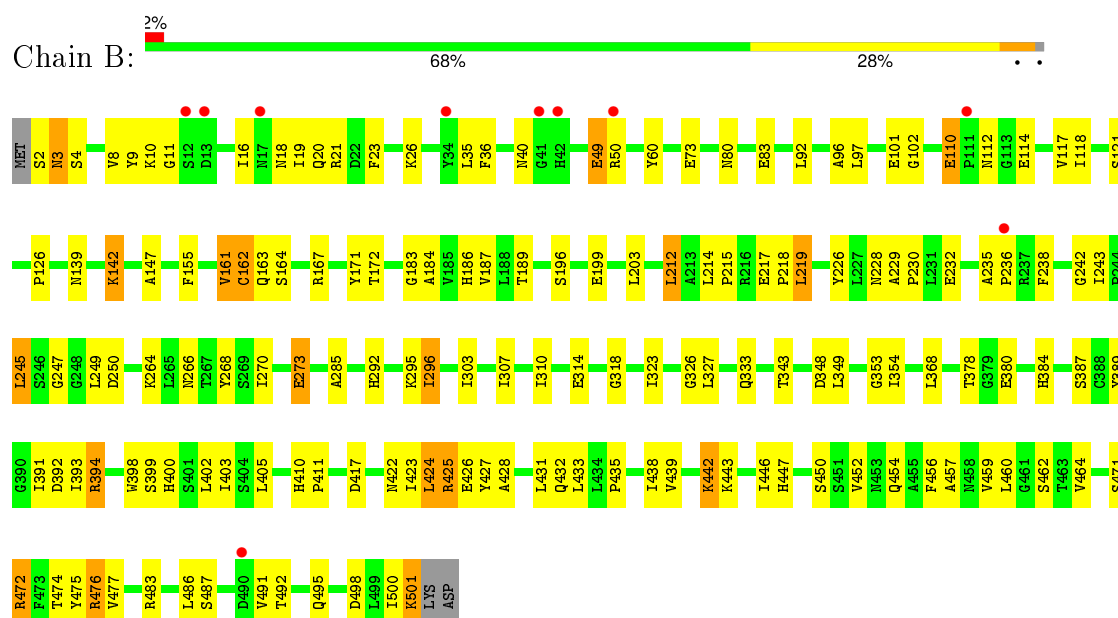
3 Residue-property plots

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.

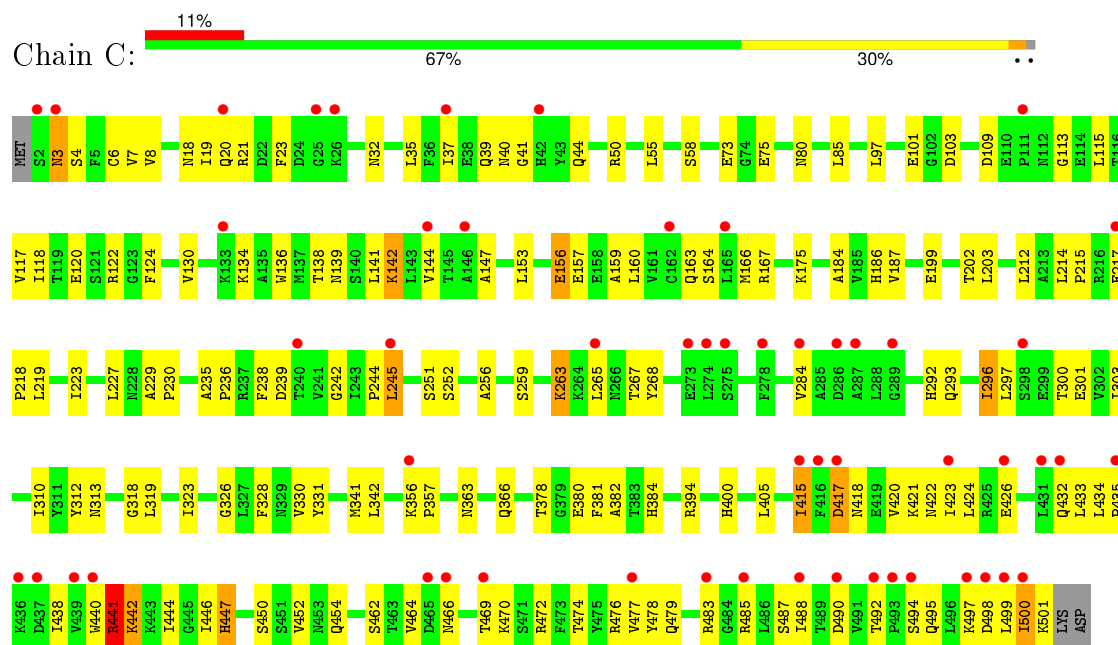
• Molecule 1: CarA



• Molecule 1: CarA



● Molecule 1: CarA



● Molecule 1: CarA



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	103.04Å 61.95Å 175.87Å 90.00° 97.01° 90.00°	Depositor
Resolution (Å)	49.83 – 2.40 49.83 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.1 (49.83-2.40) 98.9 (49.83-2.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.97 (at 2.29Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.220 , 0.273 0.220 , 0.274	Depositor DCC
R_{free} test set	8626 reflections (10.02%)	DCC
Wilson B-factor (Å ²)	29.5	Xtriage
Anisotropy	0.260	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 42.9	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Outliers	1 of 97443 reflections (0.001%)	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	16279	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.89% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: APC, MG, SSC

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	0.37	0/4012	0.56	0/5443
1	B	0.37	0/4012	0.56	0/5443
1	C	0.33	0/4011	0.53	0/5440
1	D	0.36	0/4012	0.54	0/5443
All	All	0.36	0/16047	0.55	0/21769

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3926	0	3840	117	0
1	B	3926	0	3840	113	0
1	C	3926	0	3839	128	0
1	D	3926	0	3840	129	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	31	0	12	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	31	0	12	4	0
3	C	31	0	12	5	0
3	D	31	0	12	6	0
4	A	12	0	10	0	0
4	B	12	0	10	2	0
4	C	12	0	10	0	0
4	D	12	0	10	0	0
5	A	118	0	0	2	0
5	B	94	0	0	1	0
5	C	80	0	0	1	0
5	D	107	0	0	5	0
All	All	16279	0	15447	486	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 (486) 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:C:420:VAL:HG12	1:C:421:LYS:HG3	1.38	1.03
1:C:323:ILE:HG23	1:C:446:ILE:HD12	1.42	0.99
1:C:442:LYS:HA	1:C:442:LYS:HE3	1.50	0.93
1:A:187:VAL:HG13	1:A:199:GLU:HB2	1.55	0.89
1:C:446:ILE:HG12	3:C:505:APC:H8	1.55	0.87
1:A:2:SER:HB3	1:A:40:ASN:HD22	1.42	0.82
1:B:3:ASN:HD22	1:B:384:HIS:HD2	1.25	0.81
1:C:202:THR:HG22	1:D:199:GLU:OE2	1.79	0.81
1:C:492:THR:HB	1:C:495:GLN:HG3	1.65	0.79
1:B:117:VAL:HG13	1:B:186:HIS:HB2	1.64	0.79
1:C:492:THR:HG22	1:C:494:SER:H	1.47	0.78
1:D:420:VAL:HG12	1:D:421:LYS:HG3	1.65	0.78
1:C:163:GLN:HG3	1:C:164:SER:H	1.49	0.77
1:A:97:LEU:HD22	1:A:118:ILE:HD12	1.67	0.76
1:D:477:VAL:HG12	1:D:499:LEU:HD13	1.68	0.75
1:C:199:GLU:OE2	1:D:202:THR:HG22	1.86	0.75
1:D:163:GLN:HG3	1:D:164:SER:H	1.52	0.75
1:C:117:VAL:HG13	1:C:186:HIS:HB2	1.67	0.74
1:A:234:LEU:HD11	1:A:394:ARG:HG3	1.68	0.74
1:D:310:ILE:HG21	1:D:477:VAL:HG23	1.69	0.74
1:C:495:GLN:HA	1:C:498:ASP:HB2	1.68	0.74
1:D:2:SER:N	1:D:388:CYS:HG	1.86	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:308:GLU:HG2	1:D:488:ILE:HD11	1.69	0.73
1:B:187:VAL:CG1	1:B:199:GLU:HB2	2.18	0.73
1:C:97:LEU:HD22	1:C:118:ILE:HD12	1.70	0.73
1:D:493:PRO:HA	1:D:496:LEU:HD12	1.72	0.71
1:B:214:LEU:HD12	1:B:215:PRO:HD2	1.70	0.71
1:A:446:ILE:HB	3:A:505:APC:H8	1.72	0.71
1:A:2:SER:HA	1:A:38:GLU:HG2	1.72	0.71
1:D:55:LEU:HD23	1:D:85:LEU:HD12	1.73	0.70
1:A:235:ALA:HB3	1:A:236:PRO:HD3	1.72	0.70
1:D:163:GLN:HA	1:D:468:GLN:HE21	1.57	0.69
1:D:21:ARG:HD3	5:D:593:HOH:O	1.93	0.69
1:B:446:ILE:HB	3:B:505:APC:H8	1.73	0.69
1:B:349:LEU:HD21	4:B:506:SSC:HNS	1.56	0.69
1:D:326:GLY:HA3	1:D:446:ILE:HD11	1.75	0.69
1:D:217:GLU:HB2	1:D:218:PRO:HD3	1.73	0.68
1:D:472:ARG:O	1:D:476:ARG:HG2	1.94	0.68
1:D:268:TYR:CE2	1:D:334:ALA:HB2	2.28	0.68
1:A:112:ASN:HD22	1:A:114:GLU:HG2	1.56	0.68
1:D:115:LEU:HD23	1:D:115:LEU:H	1.60	0.67
1:D:352:GLY:O	1:D:420:VAL:HG11	1.95	0.67
1:C:184:ALA:HA	1:C:203:LEU:HG	1.76	0.66
1:C:187:VAL:HG13	1:C:199:GLU:HB2	1.78	0.66
1:C:417:ASP:CG	1:C:418:ASN:H	1.99	0.65
1:C:130:VAL:HG22	1:C:136:TRP:HB2	1.77	0.65
1:B:184:ALA:HA	1:B:203:LEU:HG	1.78	0.65
1:C:310:ILE:HG21	1:C:477:VAL:HG23	1.77	0.65
1:C:215:PRO:HG2	1:C:218:PRO:HG2	1.76	0.65
1:C:447:HIS:HA	1:C:452:VAL:HB	1.78	0.65
1:D:450:SER:OG	1:D:452:VAL:HG23	1.97	0.65
1:A:421:LYS:O	1:A:425:ARG:HG3	1.95	0.65
1:C:319:LEU:HD13	1:C:323:ILE:HD13	1.79	0.65
1:B:378:THR:OG1	1:B:380:GLU:HG3	1.97	0.65
1:A:62:ARG:O	1:A:66:ILE:HG12	1.97	0.65
1:A:348:ASP:OD2	1:A:353:GLY:HA3	1.97	0.65
1:D:2:SER:HB2	1:D:388:CYS:SG	2.37	0.65
1:B:20:GLN:HA	1:B:23:PHE:O	1.97	0.64
1:C:256:ALA:HB2	1:C:434:LEU:HD11	1.78	0.64
1:B:492:THR:O	1:B:495:GLN:HG2	1.97	0.64
1:B:431:LEU:O	1:B:433:LEU:HD13	1.97	0.63
1:A:314:GLU:HG2	1:A:482:LEU:HD11	1.80	0.63
1:D:463:THR:HG23	1:D:466:ASN:H	1.64	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:422:ASN:O	1:B:426:GLU:HG3	1.99	0.63
1:A:273:GLU:CD	1:A:273:GLU:H	2.03	0.62
1:A:187:VAL:HG22	1:A:189:THR:HG23	1.81	0.62
1:B:228:ASN:O	1:B:232:GLU:HG3	2.00	0.62
1:C:300:THR:HA	1:C:303:ILE:HG22	1.79	0.62
1:C:378:THR:OG1	1:C:380:GLU:HG3	2.00	0.62
1:D:463:THR:HG22	1:D:466:ASN:HB2	1.81	0.62
1:B:110:GLU:HG3	1:B:114:GLU:O	2.00	0.61
1:A:425:ARG:NH1	1:A:441:ARG:O	2.32	0.61
1:D:304:ASN:OD1	1:D:307:ILE:HD11	2.00	0.61
1:D:485:ARG:HG3	1:D:485:ARG:HH11	1.66	0.61
1:C:296:ILE:HD13	1:C:297:LEU:N	2.14	0.61
1:D:422:ASN:O	1:D:426:GLU:HG3	2.01	0.61
1:A:187:VAL:CG1	1:A:199:GLU:HB2	2.29	0.61
1:C:432:GLN:O	1:C:433:LEU:HD12	2.01	0.60
1:A:327:LEU:HD21	3:A:505:APC:H1'	1.84	0.60
1:A:310:ILE:HG21	1:A:477:VAL:HG23	1.83	0.60
1:A:245:LEU:HD22	1:A:247:GLY:H	1.66	0.60
1:C:495:GLN:O	1:C:499:LEU:HG	2.00	0.59
1:C:229:ALA:HB3	1:C:230:PRO:HD3	1.85	0.59
1:D:242:GLY:O	1:D:341:MET:HA	2.02	0.59
1:A:112:ASN:HD22	1:A:114:GLU:CG	2.15	0.59
1:C:328:PHE:HA	1:C:331:TYR:CD2	2.37	0.59
1:B:163:GLN:HG3	1:B:164:SER:N	2.18	0.59
1:A:185:VAL:HG11	1:A:201:ARG:NH2	2.18	0.59
1:D:212:LEU:HD22	1:D:214:LEU:HB2	1.84	0.59
1:A:357:PRO:HG2	1:A:442:LYS:HE3	1.85	0.59
1:A:463:THR:HG23	1:A:466:ASN:HB2	1.85	0.59
1:B:326:GLY:HA3	1:B:446:ILE:HD11	1.85	0.59
1:C:450:SER:HB2	1:C:452:VAL:HG23	1.83	0.59
1:A:121:SER:HB3	1:A:183:GLY:CA	2.33	0.59
1:B:121:SER:HB2	5:B:596:HOH:O	2.01	0.59
1:D:446:ILE:HB	3:D:505:APC:H8	1.84	0.59
1:C:214:LEU:HD23	1:C:219:LEU:HD23	1.84	0.59
1:B:163:GLN:HG3	1:B:164:SER:H	1.68	0.58
1:B:245:LEU:HD22	1:B:247:GLY:H	1.68	0.58
1:A:167:ARG:HG3	1:A:167:ARG:HH11	1.69	0.58
1:D:117:VAL:HG13	1:D:186:HIS:HB2	1.85	0.58
1:C:422:ASN:O	1:C:426:GLU:HG3	2.04	0.57
1:C:73:GLU:OE2	1:C:75:GLU:HB2	2.04	0.57
1:B:264:LYS:HE2	1:B:266:ASN:OD1	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:LEU:HD22	1:A:118:ILE:CD1	2.33	0.57
1:D:163:GLN:CG	1:D:164:SER:H	2.17	0.57
1:A:302:VAL:HG13	1:A:452:VAL:HG13	1.86	0.57
1:B:456:PHE:O	1:B:459:VAL:HG22	2.05	0.57
1:C:318:GLY:HA2	1:C:474:THR:HG21	1.86	0.57
1:B:454:GLN:HA	1:B:464:VAL:HG22	1.86	0.57
1:D:167:ARG:HG2	1:D:171:TYR:CG	2.40	0.57
1:D:268:TYR:O	3:D:505:APC:H2	2.05	0.56
1:D:101:GLU:HG2	1:D:400:HIS:CD2	2.40	0.56
1:B:49:GLU:CD	1:B:49:GLU:H	2.09	0.56
1:A:72:TRP:CZ2	1:A:91:ARG:HG2	2.40	0.56
1:B:219:LEU:HD13	1:B:423:ILE:HG12	1.86	0.56
1:D:446:ILE:HG23	1:D:447:HIS:N	2.21	0.56
1:C:235:ALA:HB3	1:C:236:PRO:HD3	1.87	0.56
1:C:242:GLY:O	1:C:341:MET:HA	2.05	0.56
1:A:326:GLY:HA3	1:A:446:ILE:HD11	1.88	0.56
1:B:235:ALA:HB3	1:B:236:PRO:HD3	1.87	0.56
1:A:273:GLU:OE2	1:A:274:LEU:HG	2.06	0.55
1:A:60:TYR:CE2	1:A:102:GLY:HA2	2.41	0.55
1:C:487:SER:HB3	1:C:490:ASP:HB2	1.87	0.55
1:A:121:SER:HB3	1:A:183:GLY:HA3	1.89	0.55
1:D:18:ASN:O	1:D:21:ARG:HB3	2.06	0.55
1:D:268:TYR:HD2	1:D:333:GLN:HG2	1.71	0.55
1:D:435:PRO:HG2	1:D:438:ILE:HG12	1.88	0.55
1:C:300:THR:O	1:C:301:GLU:HB2	2.06	0.55
1:C:37:ILE:HD11	1:C:41:GLY:HA3	1.87	0.55
1:A:492:THR:HG23	1:A:495:GLN:HG2	1.89	0.55
1:B:310:ILE:O	1:B:314:GLU:HA	2.07	0.55
1:C:219:LEU:HD12	1:C:423:ILE:HG12	1.88	0.55
1:B:447:HIS:H	1:B:447:HIS:CD2	2.24	0.55
1:D:249:LEU:CD1	1:D:424:LEU:HD13	2.37	0.54
1:C:319:LEU:O	1:C:323:ILE:HD13	2.07	0.54
1:A:249:LEU:HD11	1:A:424:LEU:HD13	1.87	0.54
1:B:187:VAL:HG13	1:B:199:GLU:HB2	1.89	0.54
1:D:270:ILE:HD13	1:D:297:LEU:HD11	1.89	0.54
1:A:472:ARG:O	1:A:476:ARG:HB2	2.06	0.54
1:C:292:HIS:O	1:C:293:GLN:N	2.41	0.54
1:D:112:ASN:ND2	1:D:114:GLU:HB3	2.22	0.54
1:C:259:SER:HA	1:C:265:LEU:HD11	1.89	0.54
1:B:270:ILE:C	1:B:270:ILE:HD12	2.28	0.54
1:B:450:SER:OG	1:B:452:VAL:HG23	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:156:GLU:HG2	1:C:175:LYS:HG2	1.89	0.54
1:A:92:LEU:HB2	1:A:96:ALA:HB2	1.89	0.54
1:C:267:THR:OG1	1:C:292:HIS:HB2	2.08	0.54
3:C:505:APC:H3A1	3:C:505:APC:H3'	1.90	0.53
1:D:163:GLN:HA	1:D:468:GLN:NE2	2.24	0.53
1:D:112:ASN:HD22	1:D:114:GLU:HB3	1.73	0.53
1:A:450:SER:OG	1:A:452:VAL:HG23	2.09	0.53
1:B:250:ASP:HB2	3:B:505:APC:O2B	2.08	0.53
1:D:435:PRO:HG2	1:D:438:ILE:CG1	2.38	0.53
1:C:187:VAL:CG1	1:C:199:GLU:HB2	2.39	0.53
1:D:219:LEU:O	1:D:223:ILE:HG12	2.09	0.53
1:A:50:ARG:HH11	1:A:50:ARG:HA	1.74	0.53
1:C:166:MET:C	1:C:167:ARG:HD2	2.30	0.53
1:C:156:GLU:HG2	1:C:175:LYS:CG	2.39	0.53
1:D:184:ALA:HA	1:D:203:LEU:HG	1.90	0.53
1:A:184:ALA:HA	1:A:203:LEU:HG	1.89	0.53
1:B:2:SER:O	1:B:40:ASN:HB2	2.09	0.52
1:D:485:ARG:NH1	1:D:485:ARG:HG3	2.25	0.52
1:B:167:ARG:HD3	1:B:171:TYR:CD1	2.44	0.52
1:B:142:LYS:NZ	1:B:142:LYS:HB3	2.24	0.52
1:C:313:ASN:ND2	1:C:382:ALA:HB3	2.24	0.52
1:C:160:LEU:N	1:C:160:LEU:HD12	2.24	0.52
1:C:163:GLN:CG	1:C:164:SER:H	2.17	0.52
1:C:163:GLN:HG3	1:C:164:SER:N	2.23	0.52
1:D:273:GLU:C	1:D:275:SER:H	2.13	0.52
1:C:139:ASN:O	1:C:384:HIS:HE1	1.93	0.52
1:B:187:VAL:HG22	1:B:189:THR:HG23	1.91	0.52
1:A:117:VAL:HG13	1:A:186:HIS:HB2	1.92	0.52
1:C:259:SER:CA	1:C:265:LEU:HD11	2.40	0.52
1:D:309:SER:HA	1:D:328:PHE:CZ	2.45	0.52
1:C:447:HIS:CD2	1:C:447:HIS:H	2.28	0.52
1:A:72:TRP:CH2	1:A:91:ARG:HG2	2.45	0.52
1:B:3:ASN:HD22	1:B:384:HIS:CD2	2.16	0.51
1:A:323:ILE:HG23	1:A:446:ILE:HG21	1.92	0.51
1:A:2:SER:HB3	1:A:40:ASN:ND2	2.20	0.51
1:A:263:LYS:HA	1:A:263:LYS:HE2	1.91	0.51
1:C:263:LYS:HE3	1:C:263:LYS:HA	1.91	0.51
1:A:19:ILE:C	1:A:21:ARG:H	2.13	0.51
1:D:268:TYR:CD2	1:D:333:GLN:HG2	2.46	0.51
1:A:303:ILE:CD1	1:A:459:VAL:HG21	2.40	0.51
1:C:251:SER:HB3	3:C:505:APC:O3'	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:363:ASN:ND2	1:C:366:GLN:HB2	2.26	0.51
1:B:318:GLY:HA2	1:B:474:THR:HG21	1.91	0.51
1:B:97:LEU:HD22	1:B:118:ILE:CD1	2.40	0.51
1:B:2:SER:O	1:B:3:ASN:HB2	2.09	0.51
1:B:162:CYS:HB3	1:B:471:SER:HB3	1.92	0.51
1:B:229:ALA:HB3	1:B:230:PRO:HD3	1.91	0.51
1:D:420:VAL:HG12	1:D:421:LYS:N	2.24	0.51
1:B:296:ILE:C	1:B:296:ILE:HD13	2.32	0.51
1:B:101:GLU:HG2	1:B:400:HIS:CD2	2.46	0.51
1:A:310:ILE:HD13	1:A:477:VAL:CG2	2.41	0.51
1:C:6:CYS:HB2	1:C:138:THR:HB	1.91	0.51
1:C:217:GLU:HB2	1:C:218:PRO:HD3	1.93	0.50
1:A:21:ARG:HG3	1:A:21:ARG:HH11	1.76	0.50
1:C:7:VAL:HG22	1:C:35:LEU:HD23	1.93	0.50
1:A:244:PRO:HG3	1:A:330:VAL:HG11	1.92	0.50
1:B:212:LEU:HD22	1:B:214:LEU:HB2	1.93	0.50
1:A:303:ILE:HD11	1:A:459:VAL:HG21	1.94	0.50
1:A:318:GLY:HA2	1:A:474:THR:HG21	1.93	0.50
1:B:268:TYR:O	3:B:505:APC:H2	2.12	0.50
1:B:349:LEU:CD2	4:B:506:SSC:HNS	2.24	0.50
1:B:442:LYS:HA	1:B:442:LYS:HE2	1.92	0.50
1:D:463:THR:CG2	1:D:466:ASN:HB2	2.42	0.50
1:B:121:SER:HB3	1:B:183:GLY:HA3	1.94	0.50
1:B:16:ILE:HD12	1:B:36:PHE:HB2	1.93	0.50
1:A:215:PRO:O	1:A:218:PRO:HD2	2.11	0.50
1:C:447:HIS:CD2	1:C:447:HIS:N	2.79	0.50
1:B:435:PRO:HG2	1:B:438:ILE:CG1	2.42	0.49
1:C:444:ILE:HG23	1:C:444:ILE:O	2.12	0.49
1:D:378:THR:OG1	1:D:380:GLU:HG3	2.12	0.49
1:D:2:SER:N	1:D:388:CYS:SG	2.85	0.49
1:D:266:ASN:HB3	1:D:268:TYR:CE1	2.47	0.49
1:D:55:LEU:HD13	1:D:55:LEU:C	2.32	0.49
1:C:134:LYS:HG3	5:C:577:HOH:O	2.11	0.49
1:A:73:GLU:OE1	1:A:75:GLU:HG3	2.12	0.49
1:A:18:ASN:O	1:A:21:ARG:HB3	2.12	0.49
1:B:354:ILE:HD11	1:B:368:LEU:HD23	1.94	0.49
1:C:441:ARG:CG	1:C:442:LYS:H	2.25	0.49
1:D:19:ILE:CG1	1:D:147:ALA:HB2	2.42	0.49
1:C:499:LEU:C	1:C:501:LYS:H	2.15	0.49
1:A:60:TYR:CD2	1:A:102:GLY:HA2	2.47	0.49
1:C:446:ILE:HG23	3:C:505:APC:N7	2.28	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:8:VAL:HG13	1:B:11:GLY:HA3	1.95	0.49
1:A:142:LYS:NZ	1:A:142:LYS:HB3	2.28	0.48
1:C:415:ILE:O	1:C:415:ILE:HG23	2.13	0.48
1:A:66:ILE:HD12	1:A:76:ALA:O	2.13	0.48
1:D:343:THR:O	1:D:396:PRO:HD2	2.14	0.48
1:B:425:ARG:HG3	1:B:439:VAL:O	2.13	0.48
1:C:44:GLN:NE2	1:C:80:ASN:HB2	2.28	0.48
1:B:487:SER:O	1:B:491:VAL:HG13	2.13	0.48
1:D:218:PRO:O	1:D:222:LEU:HG	2.13	0.48
1:C:417:ASP:CG	1:C:418:ASN:N	2.66	0.48
1:A:29:ALA:HB2	1:A:34:TYR:CZ	2.48	0.48
1:B:215:PRO:HG2	1:B:218:PRO:HG2	1.95	0.48
1:C:219:LEU:CD1	1:C:423:ILE:HG12	2.43	0.48
1:D:19:ILE:HG13	1:D:147:ALA:HB2	1.94	0.48
1:A:37:ILE:HD11	1:A:41:GLY:HA3	1.95	0.48
1:D:500:ILE:O	1:D:501:LYS:HB2	2.14	0.48
1:A:323:ILE:HG23	1:A:446:ILE:CG2	2.44	0.48
1:D:73:GLU:HG2	5:D:583:HOH:O	2.12	0.48
1:C:20:GLN:HA	1:C:23:PHE:O	2.14	0.48
1:A:229:ALA:HB3	1:A:230:PRO:HD3	1.94	0.48
1:C:479:GLN:O	1:C:483:ARG:HG3	2.12	0.48
1:C:6:CYS:CB	1:C:138:THR:HB	2.43	0.48
1:A:63:THR:HG21	5:A:543:HOH:O	2.13	0.48
1:D:24:ASP:HB3	1:D:39:GLN:OE1	2.14	0.48
1:D:393:ILE:HG22	5:D:609:HOH:O	2.12	0.48
1:B:217:GLU:HB2	1:B:218:PRO:HD3	1.96	0.48
1:C:32:ASN:HD22	1:C:113:GLY:CA	2.27	0.48
1:C:310:ILE:HG21	1:C:477:VAL:CG2	2.43	0.47
1:D:166:MET:CE	1:D:370:GLU:HG2	2.44	0.47
1:A:443:LYS:HD2	1:A:444:ILE:N	2.29	0.47
1:D:296:ILE:HD13	1:D:296:ILE:C	2.35	0.47
1:A:492:THR:O	1:A:495:GLN:HG2	2.14	0.47
1:B:486:LEU:HD22	1:B:491:VAL:HG12	1.96	0.47
1:D:441:ARG:HH22	1:D:444:ILE:HD12	1.80	0.47
1:D:249:LEU:HD11	1:D:424:LEU:HD13	1.95	0.47
1:C:499:LEU:C	1:C:501:LYS:N	2.68	0.47
1:A:295:LYS:HD3	1:A:296:ILE:O	2.14	0.47
1:A:228:ASN:O	1:A:232:GLU:HG3	2.14	0.47
1:B:80:ASN:OD1	1:B:83:GLU:HG3	2.15	0.47
1:A:427:TYR:O	1:A:431:LEU:HD13	2.14	0.47
1:C:164:SER:HB3	1:C:167:ARG:HE	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:445:GLY:HA2	3:D:505:APC:O2A	2.15	0.47
1:C:252:SER:HB3	1:C:434:LEU:HD21	1.97	0.47
1:C:268:TYR:O	3:C:505:APC:H2	2.14	0.47
1:B:285:ALA:HB1	1:B:292:HIS:HB2	1.96	0.47
1:C:483:ARG:HD2	1:C:485:ARG:CZ	2.45	0.47
1:B:126:PRO:O	1:B:139:ASN:HA	2.15	0.47
1:C:141:LEU:O	1:C:144:VAL:HG12	2.15	0.47
1:C:101:GLU:HG2	1:C:400:HIS:CD2	2.49	0.46
1:A:354:ILE:HD11	1:A:368:LEU:HD23	1.96	0.46
1:B:392:ASP:OD2	1:B:394:ARG:NH1	2.48	0.46
1:A:167:ARG:HD2	1:A:171:TYR:CD2	2.51	0.46
1:A:167:ARG:HD2	1:A:171:TYR:CG	2.50	0.46
1:B:161:VAL:O	1:B:167:ARG:NH1	2.47	0.46
1:D:31:SER:HB3	1:D:109:ASP:OD2	2.16	0.46
1:D:4:SER:O	1:D:37:ILE:HD12	2.16	0.46
1:A:319:LEU:O	1:A:323:ILE:HG13	2.16	0.46
1:D:215:PRO:HG2	1:D:218:PRO:HG2	1.96	0.46
1:D:437:ASP:O	1:D:441:ARG:HB2	2.16	0.46
1:C:58:SER:HB3	1:C:103:ASP:OD1	2.16	0.46
1:A:328:PHE:HA	1:A:331:TYR:CD2	2.51	0.46
1:C:462:SER:CB	1:C:469:THR:HG21	2.45	0.46
1:D:163:GLN:HG3	1:D:164:SER:N	2.25	0.46
1:B:187:VAL:HG22	1:B:189:THR:CG2	2.46	0.46
1:D:446:ILE:HG23	1:D:447:HIS:H	1.81	0.46
1:D:244:PRO:HG3	1:D:341:MET:HE1	1.98	0.46
1:D:441:ARG:NH2	1:D:444:ILE:HD12	2.31	0.46
1:D:55:LEU:CD2	1:D:85:LEU:HD12	2.41	0.46
1:B:446:ILE:HG23	1:B:447:HIS:N	2.31	0.46
1:B:110:GLU:HB2	1:B:112:ASN:OD1	2.15	0.46
1:D:265:LEU:N	1:D:265:LEU:HD22	2.30	0.46
1:B:273:GLU:HG2	1:B:296:ILE:HD11	1.96	0.46
1:A:303:ILE:CG2	1:A:493:PRO:HB3	2.46	0.46
1:A:115:LEU:H	1:A:115:LEU:HD23	1.81	0.46
1:D:384:HIS:O	1:D:387:SER:HB3	2.16	0.46
1:A:250:ASP:HB2	3:A:505:APC:O2B	2.16	0.46
1:C:8:VAL:HB	1:C:136:TRP:CZ3	2.51	0.46
1:A:158:GLU:OE1	1:A:476:ARG:NH1	2.49	0.46
1:A:101:GLU:HG2	1:A:400:HIS:CD2	2.51	0.45
1:D:323:ILE:HG23	1:D:446:ILE:HG21	1.97	0.45
1:A:249:LEU:HD12	1:A:421:LYS:HE2	1.97	0.45
1:C:296:ILE:C	1:C:296:ILE:HD13	2.37	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:310:ILE:HG21	1:B:477:VAL:HG23	1.99	0.45
1:C:120:GLU:OE1	1:C:124:PHE:N	2.49	0.45
1:A:446:ILE:HB	3:A:505:APC:C8	2.44	0.45
1:B:327:LEU:HD21	3:B:505:APC:H1'	1.98	0.45
1:D:158:GLU:OE2	1:D:472:ARG:HD2	2.16	0.45
1:D:107:PHE:HA	1:D:116:THR:O	2.17	0.45
1:D:97:LEU:HD22	1:D:118:ILE:HD12	1.99	0.45
1:D:235:ALA:HB3	1:D:236:PRO:HD3	1.98	0.45
1:D:285:ALA:HB1	1:D:292:HIS:HB2	1.98	0.45
1:A:453:ASN:OD1	1:A:454:GLN:N	2.49	0.45
1:D:335:GLN:O	1:D:335:GLN:HG2	2.16	0.45
1:C:466:ASN:O	1:C:469:THR:HG22	2.17	0.45
1:C:469:THR:O	1:C:472:ARG:HB3	2.17	0.45
1:B:60:TYR:CE2	1:B:102:GLY:HA2	2.52	0.45
1:D:353:GLY:HA2	1:D:421:LYS:HD2	1.99	0.45
1:D:162:CYS:SG	1:D:472:ARG:HA	2.57	0.45
1:B:428:ALA:O	1:B:431:LEU:HB2	2.17	0.45
1:A:273:GLU:N	1:A:273:GLU:CD	2.70	0.45
1:A:310:ILE:HG21	1:A:477:VAL:CG2	2.45	0.45
1:B:161:VAL:HG21	1:B:475:TYR:CZ	2.51	0.45
1:B:97:LEU:HD22	1:B:118:ILE:HD13	1.99	0.45
1:B:249:LEU:HD11	1:B:424:LEU:HD13	1.99	0.45
1:A:43:TYR:HA	1:A:55:LEU:O	2.17	0.45
1:A:242:GLY:O	1:A:341:MET:HA	2.17	0.45
1:A:446:ILE:HG23	1:A:447:HIS:N	2.31	0.45
1:C:124:PHE:CD2	1:C:381:PHE:HB3	2.51	0.45
1:A:126:PRO:O	1:A:139:ASN:HA	2.17	0.45
1:D:60:TYR:CE2	1:D:102:GLY:HA2	2.51	0.45
1:A:295:LYS:HD2	1:A:297:LEU:HD23	1.99	0.45
1:C:8:VAL:O	1:C:8:VAL:HG13	2.16	0.44
1:B:427:TYR:O	1:B:431:LEU:HD13	2.16	0.44
1:C:160:LEU:HD12	1:C:160:LEU:H	1.80	0.44
1:A:55:LEU:HD13	1:A:55:LEU:C	2.38	0.44
1:C:142:LYS:NZ	1:C:142:LYS:HB3	2.32	0.44
1:D:492:THR:HB	1:D:493:PRO:HD2	1.98	0.44
1:B:9:TYR:O	1:B:10:LYS:HB2	2.17	0.44
1:D:134:LYS:HE2	5:D:573:HOH:O	2.17	0.44
1:D:16:ILE:HD11	1:D:34:TYR:HB3	1.98	0.44
1:D:20:GLN:HA	1:D:23:PHE:O	2.17	0.44
1:C:18:ASN:O	1:C:21:ARG:HB3	2.16	0.44
1:C:109:ASP:HA	1:C:115:LEU:HD12	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:353:GLY:O	1:A:443:LYS:HG2	2.18	0.44
1:D:59:LEU:HD12	1:D:81:ASP:OD1	2.18	0.44
1:C:130:VAL:HG21	1:C:144:VAL:HG21	1.99	0.44
1:A:313:ASN:CG	1:A:382:ALA:HB3	2.37	0.44
1:A:463:THR:CG2	1:A:466:ASN:HB2	2.47	0.44
1:C:156:GLU:OE1	1:C:156:GLU:HA	2.17	0.44
1:C:500:ILE:O	1:C:500:ILE:HG22	2.18	0.44
1:D:446:ILE:HB	3:D:505:APC:C8	2.47	0.43
1:A:309:SER:HA	1:A:328:PHE:CZ	2.53	0.43
1:B:60:TYR:CD2	1:B:102:GLY:HA2	2.52	0.43
1:C:435:PRO:HG2	1:C:438:ILE:CG1	2.48	0.43
1:A:107:PHE:HA	1:A:116:THR:O	2.18	0.43
1:C:97:LEU:HD22	1:C:118:ILE:CD1	2.43	0.43
1:A:269:SER:HA	3:A:505:APC:N1	2.33	0.43
1:D:166:MET:HE3	1:D:370:GLU:HG2	2.00	0.43
1:C:435:PRO:HG2	1:C:438:ILE:HG12	2.00	0.43
1:B:19:ILE:CG1	1:B:147:ALA:HB2	2.47	0.43
1:D:348:ASP:OD2	1:D:353:GLY:HA3	2.18	0.43
1:C:433:LEU:C	1:C:434:LEU:HD12	2.38	0.43
1:C:497:LYS:C	1:C:499:LEU:H	2.22	0.43
1:B:270:ILE:HD12	1:B:270:ILE:O	2.19	0.43
1:C:312:TYR:OH	1:C:488:ILE:HG12	2.19	0.43
1:D:456:PHE:O	1:D:459:VAL:HG22	2.18	0.43
1:A:249:LEU:O	1:A:249:LEU:HD22	2.18	0.43
1:B:18:ASN:O	1:B:21:ARG:HB3	2.18	0.43
1:B:187:VAL:HG12	1:B:199:GLU:HB2	1.95	0.43
1:C:144:VAL:CG1	1:C:153:LEU:HD21	2.49	0.43
1:C:477:VAL:CG2	1:C:478:TYR:N	2.82	0.43
1:C:470:LYS:O	1:C:474:THR:HG23	2.19	0.43
1:D:72:TRP:CE2	1:D:91:ARG:HG2	2.54	0.43
1:D:473:PHE:O	1:D:476:ARG:HB2	2.18	0.43
1:B:307:ILE:HA	1:B:310:ILE:HD12	2.01	0.43
1:B:226:TYR:O	1:B:230:PRO:HD3	2.19	0.43
1:B:92:LEU:HB2	1:B:96:ALA:HB2	2.01	0.43
1:D:495:GLN:HB3	1:D:495:GLN:HE21	1.59	0.43
1:A:268:TYR:O	3:A:505:APC:H2	2.19	0.43
1:B:121:SER:HB3	1:B:183:GLY:CA	2.49	0.43
1:B:49:GLU:CD	1:B:49:GLU:N	2.71	0.43
1:B:343:THR:CG2	1:B:393:ILE:HD11	2.49	0.43
1:C:356:LYS:HD2	1:C:357:PRO:HD2	2.01	0.43
1:B:457:ALA:HB1	1:B:462:SER:O	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:454:GLN:HA	1:C:464:VAL:HG12	2.00	0.43
1:B:472:ARG:O	1:B:476:ARG:HB2	2.18	0.43
1:B:399:SER:O	1:B:403:ILE:HG13	2.19	0.43
1:A:253:LEU:HD13	1:A:428:ALA:CB	2.49	0.43
1:A:9:TYR:OH	1:A:10:LYS:HE2	2.19	0.43
1:C:441:ARG:CG	1:C:442:LYS:N	2.82	0.42
1:C:440:TRP:O	1:C:441:ARG:O	2.37	0.42
1:D:306:ILE:HG12	1:D:325:SER:HB2	2.01	0.42
1:D:273:GLU:O	1:D:275:SER:N	2.51	0.42
1:D:50:ARG:O	1:D:110:GLU:HG2	2.20	0.42
1:A:483:ARG:HD2	1:A:485:ARG:HD2	2.02	0.42
1:C:3:ASN:HD22	1:C:3:ASN:HA	1.52	0.42
1:B:410:HIS:HA	1:B:411:PRO:HD3	1.88	0.42
1:D:306:ILE:O	1:D:310:ILE:HG13	2.20	0.42
1:C:223:ILE:HG22	1:C:227:LEU:HD12	2.00	0.42
1:B:323:ILE:HG23	1:B:446:ILE:HG21	2.00	0.42
1:A:310:ILE:HD13	1:A:477:VAL:HG22	2.01	0.42
1:A:9:TYR:CZ	1:A:10:LYS:HE2	2.55	0.42
1:B:389:TYR:O	1:B:391:ILE:HG13	2.19	0.42
1:D:454:GLN:OE1	1:D:464:VAL:HG21	2.20	0.42
1:D:470:LYS:O	1:D:474:THR:HG23	2.19	0.42
1:B:296:ILE:HG23	1:B:296:ILE:O	2.20	0.42
1:B:501:LYS:O	1:B:501:LYS:HD3	2.20	0.42
1:D:6:CYS:HB3	1:D:143:LEU:HD12	2.01	0.42
1:B:432:GLN:O	1:B:433:LEU:HD12	2.19	0.42
1:B:242:GLY:C	1:B:243:ILE:HG13	2.40	0.42
1:C:326:GLY:O	1:C:330:VAL:HG23	2.20	0.42
1:B:155:PHE:HD2	1:B:483:ARG:NH1	2.17	0.42
1:A:191:ASP:HB2	5:A:547:HOH:O	2.20	0.42
1:D:214:LEU:HD21	1:D:222:LEU:HD12	2.02	0.42
1:B:184:ALA:CA	1:B:203:LEU:HG	2.48	0.42
1:C:124:PHE:HD2	1:C:381:PHE:HB3	1.85	0.42
1:B:303:ILE:CD1	1:B:459:VAL:HG21	2.50	0.41
1:A:19:ILE:C	1:A:21:ARG:N	2.73	0.41
1:D:235:ALA:N	1:D:236:PRO:CD	2.83	0.41
1:B:26:LYS:O	1:B:26:LYS:HG3	2.20	0.41
1:D:316:PHE:HB3	1:D:478:TYR:CD1	2.54	0.41
1:C:55:LEU:HD23	1:C:85:LEU:HD12	2.03	0.41
1:C:245:LEU:HD11	1:C:284:VAL:CG1	2.50	0.41
1:C:122:ARG:HG2	1:C:400:HIS:HE1	1.85	0.41
1:A:150:GLU:OE2	1:A:485:ARG:HG2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:6:CYS:SG	1:D:36:PHE:HB3	2.61	0.41
1:C:19:ILE:CG1	1:C:147:ALA:HB2	2.51	0.41
1:B:348:ASP:OD2	1:B:353:GLY:HA3	2.20	0.41
1:A:2:SER:N	1:A:388:CYS:HG	2.19	0.41
3:D:505:APC:H3A1	3:D:505:APC:H3'	2.03	0.41
1:C:300:THR:HA	1:C:303:ILE:CG2	2.47	0.41
1:B:97:LEU:HD22	1:B:118:ILE:HD12	2.03	0.41
1:A:202:THR:HG22	1:B:199:GLU:OE2	2.21	0.41
1:D:268:TYR:CZ	1:D:334:ALA:HB2	2.55	0.41
1:C:472:ARG:HD2	1:C:476:ARG:CZ	2.50	0.41
1:B:402:LEU:HA	1:B:402:LEU:HD12	1.91	0.41
1:A:410:HIS:HA	1:A:411:PRO:HD3	1.88	0.41
1:D:167:ARG:HG2	1:D:171:TYR:CD2	2.56	0.41
1:B:161:VAL:HG12	1:B:162:CYS:N	2.36	0.41
1:D:225:ARG:NH1	5:D:596:HOH:O	2.51	0.41
1:B:323:ILE:HG23	1:B:446:ILE:CG2	2.51	0.41
1:D:447:HIS:ND1	1:D:447:HIS:N	2.63	0.41
1:A:66:ILE:HD13	1:A:84:LEU:HD13	2.03	0.41
1:D:307:ILE:HD12	1:D:491:VAL:HG11	2.03	0.41
1:A:91:ARG:HG3	1:A:92:LEU:HG	2.03	0.41
1:A:431:LEU:O	1:A:433:LEU:HD13	2.21	0.41
1:D:97:LEU:HD22	1:D:118:ILE:CD1	2.51	0.41
1:D:269:SER:OG	1:D:292:HIS:HE1	2.04	0.41
1:A:308:GLU:HG2	1:A:488:ILE:HD11	2.03	0.41
1:C:157:GLU:C	1:C:159:ALA:H	2.24	0.41
1:C:256:ALA:HB2	1:C:434:LEU:CD1	2.50	0.41
1:B:310:ILE:HD13	1:B:477:VAL:CG2	2.50	0.41
1:B:4:SER:HB2	1:B:139:ASN:OD1	2.21	0.41
1:A:249:LEU:HD23	1:A:439:VAL:HA	2.03	0.40
1:C:244:PRO:HD2	1:C:342:LEU:O	2.21	0.40
1:C:501:LYS:C	1:C:501:LYS:HD3	2.41	0.40
1:D:217:GLU:CB	1:D:218:PRO:HD3	2.47	0.40
1:B:310:ILE:HG21	1:B:477:VAL:CG2	2.52	0.40
1:B:270:ILE:HA	1:B:295:LYS:O	2.22	0.40
1:D:300:THR:O	1:D:303:ILE:HG22	2.21	0.40
1:C:310:ILE:HD12	1:C:477:VAL:HG21	2.02	0.40
1:D:462:SER:OG	1:D:463:THR:N	2.55	0.40
1:A:307:ILE:HA	1:A:310:ILE:HD12	2.04	0.40
1:A:302:VAL:CG1	1:A:452:VAL:HG13	2.49	0.40
1:D:257:LEU:HD21	1:D:431:LEU:HD11	2.02	0.40
1:D:415:ILE:O	1:D:415:ILE:HG23	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:460:LEU:HD23	1:B:500:ILE:HD12	2.03	0.40
1:B:3:ASN:HB2	1:B:387:SER:OG	2.21	0.40
1:D:446:ILE:HG13	3:D:505:APC:N7	2.37	0.40
1:A:423:ILE:HG23	1:A:424:LEU:N	2.36	0.40
1:A:167:ARG:HB2	1:A:377:TRP:CE2	2.56	0.40
1:C:245:LEU:HD12	1:C:267:THR:HG21	2.03	0.40
1:A:115:LEU:N	1:A:115:LEU:HD23	2.37	0.40
1:C:454:GLN:HA	1:C:464:VAL:CG1	2.51	0.40
1:D:256:ALA:HB1	1:D:433:LEU:HD23	2.02	0.40
1:D:342:LEU:HD23	1:D:394:ARG:HB3	2.03	0.40
1:D:279:GLU:O	1:D:283:GLN:HG3	2.22	0.40
1:D:341:MET:HG3	1:D:391:ILE:HG21	2.04	0.40
1:B:296:ILE:O	1:B:296:ILE:HD13	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	498/503 (99%)	480 (96%)	17 (3%)	1 (0%)	52	69
1	B	498/503 (99%)	473 (95%)	22 (4%)	3 (1%)	30	43
1	C	496/503 (99%)	452 (91%)	38 (8%)	6 (1%)	16	23
1	D	498/503 (99%)	469 (94%)	25 (5%)	4 (1%)	24	35
All	All	1990/2012 (99%)	1874 (94%)	102 (5%)	14 (1%)	26	38

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	3	ASN
1	C	441	ARG

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Mol	Chain	Res	Type
1	A	3	ASN
1	B	161	VAL
1	C	238	PHE
1	D	238	PHE
1	D	163	GLN
1	B	238	PHE
1	C	417	ASP
1	D	274	LEU
1	C	4	SER
1	C	500	ILE
1	C	415	ILE
1	D	236	PRO

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	421/424 (99%)	398 (94%)	23 (6%)	27	42
1	B	421/424 (99%)	394 (94%)	27 (6%)	22	34
1	C	421/424 (99%)	404 (96%)	17 (4%)	38	58
1	D	421/424 (99%)	407 (97%)	14 (3%)	45	66
All	All	1684/1696 (99%)	1603 (95%)	81 (5%)	31	49

All (81) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	ARG
1	A	34	TYR
1	A	50	ARG
1	A	63	THR
1	A	112	ASN
1	A	115	LEU
1	A	117	VAL
1	A	142	LYS
1	A	156	GLU

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Mol	Chain	Res	Type
1	A	187	VAL
1	A	212	LEU
1	A	245	LEU
1	A	263	LYS
1	A	273	GLU
1	A	398	TRP
1	A	419	GLU
1	A	420	VAL
1	A	424	LEU
1	A	429	ASP
1	A	434	LEU
1	A	442	LYS
1	A	443	LYS
1	A	476	ARG
1	B	35	LEU
1	B	49	GLU
1	B	50	ARG
1	B	73	GLU
1	B	110	GLU
1	B	142	LYS
1	B	162	CYS
1	B	172	THR
1	B	196	SER
1	B	212	LEU
1	B	219	LEU
1	B	245	LEU
1	B	273	GLU
1	B	296	ILE
1	B	333	GLN
1	B	394	ARG
1	B	398	TRP
1	B	405	LEU
1	B	417	ASP
1	B	424	LEU
1	B	425	ARG
1	B	442	LYS
1	B	443	LYS
1	B	472	ARG
1	B	476	ARG
1	B	498	ASP
1	B	501	LYS
1	C	3	ASN

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Mol	Chain	Res	Type
1	C	39	GLN
1	C	40	ASN
1	C	50	ARG
1	C	142	LYS
1	C	156	GLU
1	C	212	LEU
1	C	239	ASP
1	C	245	LEU
1	C	263	LYS
1	C	296	ILE
1	C	394	ARG
1	C	405	LEU
1	C	424	LEU
1	C	441	ARG
1	C	442	LYS
1	C	447	HIS
1	D	35	LEU
1	D	73	GLU
1	D	112	ASN
1	D	172	THR
1	D	212	LEU
1	D	245	LEU
1	D	296	ILE
1	D	394	ARG
1	D	398	TRP
1	D	405	LEU
1	D	419	GLU
1	D	424	LEU
1	D	443	LYS
1	D	466	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	20	GLN
1	A	40	ASN
1	A	282	GLN
1	B	3	ASN
1	B	163	GLN
1	B	282	GLN
1	B	283	GLN
1	B	447	HIS

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Mol	Chain	Res	Type
1	B	495	GLN
1	C	32	ASN
1	C	40	ASN
1	C	283	GLN
1	C	293	GLN
1	C	384	HIS
1	C	447	HIS
1	D	20	GLN
1	D	282	GLN
1	D	283	GLN
1	D	468	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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 4 are monoatomic - leaving 8 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	APC	A	505	2	25,33,33	4.88	11 (44%)	30,52,52	3.94	10 (33%)
4	SSC	A	506	-	3,12,12	0.93	0	4,16,16	6.92	2 (50%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	APC	B	505	2	25,33,33	4.94	11 (44%)	30,52,52	3.77	8 (26%)
4	SSC	B	506	-	3,12,12	0.70	0	4,16,16	7.03	2 (50%)
3	APC	C	505	2	25,33,33	4.90	9 (36%)	30,52,52	3.55	8 (26%)
4	SSC	C	506	-	3,12,12	0.80	0	4,16,16	7.06	2 (50%)
3	APC	D	505	2	25,33,33	4.99	12 (48%)	30,52,52	3.75	9 (30%)
4	SSC	D	506	-	3,12,12	0.95	0	4,16,16	7.07	2 (50%)

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
3	APC	A	505	2	-	0/15/38/38	0/3/3/3
4	SSC	A	506	-	-	0/2/17/17	0/1/1/1
3	APC	B	505	2	-	0/15/38/38	0/3/3/3
4	SSC	B	506	-	-	0/2/17/17	0/1/1/1
3	APC	C	505	2	-	0/15/38/38	0/3/3/3
4	SSC	C	506	-	-	0/2/17/17	0/1/1/1
3	APC	D	505	2	-	0/15/38/38	0/3/3/3
4	SSC	D	506	-	-	0/2/17/17	0/1/1/1

All (43) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	505	APC	PA-O5'	-20.28	1.34	1.57
3	C	505	APC	PA-O5'	-19.98	1.34	1.57
3	B	505	APC	PA-O5'	-19.92	1.34	1.57
3	A	505	APC	PA-O5'	-19.45	1.34	1.57
3	A	505	APC	O5'-C5'	-5.51	1.22	1.44
3	D	505	APC	O5'-C5'	-5.47	1.22	1.44
3	B	505	APC	O5'-C5'	-5.32	1.23	1.44
3	C	505	APC	O5'-C5'	-5.20	1.23	1.44
3	B	505	APC	PB-O2B	-5.20	1.43	1.56
3	A	505	APC	PB-O2B	-4.97	1.44	1.56
3	D	505	APC	PB-O2B	-4.93	1.44	1.56
3	C	505	APC	PB-O2B	-4.71	1.44	1.56
3	A	505	APC	C5'-C4'	-4.30	1.37	1.51
3	B	505	APC	C5'-C4'	-4.20	1.38	1.51
3	D	505	APC	C5'-C4'	-4.12	1.38	1.51
3	A	505	APC	C6-N6	-4.03	1.22	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	505	APC	C6-N6	-4.00	1.22	1.34
3	C	505	APC	C5'-C4'	-3.98	1.38	1.51
3	D	505	APC	C6-N6	-3.97	1.22	1.34
3	B	505	APC	C6-N6	-3.88	1.23	1.34
3	A	505	APC	O4'-C4'	-3.19	1.37	1.45
3	A	505	APC	PB-O3B	-3.15	1.54	1.58
3	B	505	APC	PB-O3B	-3.03	1.55	1.58
3	B	505	APC	O4'-C4'	-2.77	1.38	1.45
3	D	505	APC	PB-O3B	-2.48	1.55	1.58
3	D	505	APC	O4'-C4'	-2.15	1.40	1.45
3	D	505	APC	O4'-C1'	2.05	1.43	1.41
3	B	505	APC	C2-N3	2.53	1.36	1.32
3	A	505	APC	C2-N3	2.58	1.36	1.32
3	C	505	APC	C2-N3	2.82	1.37	1.32
3	D	505	APC	C2-N3	2.89	1.37	1.32
3	D	505	APC	C5-C4	2.90	1.47	1.40
3	A	505	APC	C5-C4	2.95	1.47	1.40
3	B	505	APC	C5-C4	3.04	1.47	1.40
3	C	505	APC	C5-C4	3.09	1.47	1.40
3	B	505	APC	C4-N3	5.59	1.43	1.35
3	A	505	APC	C4-N3	5.66	1.44	1.35
3	D	505	APC	C4-N3	5.95	1.44	1.35
3	C	505	APC	C2-N1	6.21	1.45	1.33
3	C	505	APC	C4-N3	6.38	1.45	1.35
3	B	505	APC	C2-N1	6.39	1.46	1.33
3	A	505	APC	C2-N1	6.40	1.46	1.33
3	D	505	APC	C2-N1	6.43	1.46	1.33

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	505	APC	N3-C2-N1	-11.20	120.32	128.89
3	C	505	APC	N3-C2-N1	-11.13	120.38	128.89
3	B	505	APC	N3-C2-N1	-11.10	120.40	128.89
3	D	505	APC	N3-C2-N1	-11.02	120.46	128.89
3	A	505	APC	O5'-PA-C3A	-8.19	81.52	104.42
3	D	505	APC	O5'-PA-C3A	-7.90	82.31	104.42
3	B	505	APC	O5'-PA-C3A	-7.83	82.52	104.42
3	C	505	APC	O5'-PA-C3A	-7.76	82.71	104.42
4	B	506	SSC	C5S-C4S-NS	-6.95	103.78	113.09
4	D	506	SSC	C5S-C4S-NS	-6.88	103.87	113.09
4	C	506	SSC	C5S-C4S-NS	-6.78	104.01	113.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	506	SSC	C5S-C4S-NS	-6.65	104.19	113.09
3	A	505	APC	C2'-C1'-N9	-6.23	104.78	114.29
3	D	505	APC	C2'-C1'-N9	-6.02	105.09	114.29
3	B	505	APC	C2'-C1'-N9	-5.76	105.49	114.29
3	D	505	APC	O2B-PB-C3A	-5.14	84.49	106.88
3	A	505	APC	O2B-PB-C3A	-5.05	84.89	106.88
3	C	505	APC	O2B-PB-C3A	-5.04	84.93	106.88
3	B	505	APC	O2B-PB-C3A	-4.91	85.48	106.88
3	C	505	APC	C2'-C1'-N9	-4.84	106.90	114.29
3	A	505	APC	N6-C6-N1	2.00	123.50	119.20
3	A	505	APC	O2A-PA-O1A	2.01	116.43	110.12
3	D	505	APC	O2A-PA-O1A	2.04	116.52	110.12
3	D	505	APC	O3'-C3'-C4'	2.83	119.54	111.05
3	A	505	APC	O3'-C3'-C4'	2.91	119.78	111.05
3	C	505	APC	O3'-C3'-C4'	2.95	119.91	111.05
3	B	505	APC	O3'-C3'-C4'	3.33	121.03	111.05
3	A	505	APC	C2-N1-C6	4.11	126.12	118.77
3	D	505	APC	C2-N1-C6	4.15	126.19	118.77
3	B	505	APC	C2-N1-C6	4.21	126.29	118.77
3	C	505	APC	C2-N1-C6	4.24	126.35	118.77
3	C	505	APC	O5'-C5'-C4'	6.68	133.75	109.12
3	C	505	APC	C4'-O4'-C1'	6.79	117.18	109.72
3	D	505	APC	O5'-C5'-C4'	6.82	134.27	109.12
3	B	505	APC	O5'-C5'-C4'	6.95	134.73	109.12
3	A	505	APC	O5'-C5'-C4'	7.29	135.99	109.12
3	D	505	APC	C4'-O4'-C1'	8.60	119.17	109.72
3	B	505	APC	C4'-O4'-C1'	8.92	119.52	109.72
3	A	505	APC	C4'-O4'-C1'	10.06	120.77	109.72
4	A	506	SSC	C6S-C5S-C4S	12.13	140.48	114.32
4	D	506	SSC	C6S-C5S-C4S	12.16	140.54	114.32
4	B	506	SSC	C6S-C5S-C4S	12.22	140.65	114.32
4	C	506	SSC	C6S-C5S-C4S	12.32	140.88	114.32

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 23 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	505	APC	6	0
3	B	505	APC	4	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	506	SSC	2	0
3	C	505	APC	5	0
3	D	505	APC	6	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	500/503 (99%)	0.18	12 (2%) 62 61	12, 26, 49, 67	0
1	B	500/503 (99%)	0.23	10 (2%) 68 68	14, 27, 51, 65	0
1	C	500/503 (99%)	0.73	54 (10%) 8 8	14, 41, 71, 94	0
1	D	500/503 (99%)	0.29	14 (2%) 56 55	12, 30, 56, 75	0
All	All	2000/2012 (99%)	0.36	90 (4%) 37 38	12, 30, 62, 94	0

All (90) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	490	ASP	5.4
1	C	490	ASP	4.8
1	C	492	THR	4.8
1	A	12	SER	4.8
1	C	494	SER	4.7
1	D	489	THR	4.3
1	C	417	ASP	4.1
1	B	111	PRO	4.0
1	B	12	SER	3.9
1	C	245	LEU	3.9
1	C	2	SER	3.9
1	C	498	ASP	3.9
1	C	437	ASP	3.8
1	C	493	PRO	3.7
1	C	436	LYS	3.7
1	C	497	LYS	3.6
1	C	465	ASP	3.4
1	D	273	GLU	3.3
1	C	286	ASP	3.3
1	C	37	ILE	3.3
1	C	273	GLU	3.3

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Mol	Chain	Res	Type	RSRZ
1	B	13	ASP	3.2
1	B	17	ASN	3.1
1	C	432	GLN	3.1
1	B	50	ARG	3.0
1	A	50	ARG	3.0
1	B	34	TYR	2.9
1	C	500	ILE	2.9
1	A	17	ASN	2.9
1	A	287	ALA	2.8
1	C	477	VAL	2.8
1	C	289	GLY	2.8
1	C	485	ARG	2.8
1	D	164	SER	2.8
1	C	426	GLU	2.7
1	D	284	VAL	2.7
1	C	469	THR	2.7
1	C	483	ARG	2.7
1	C	499	LEU	2.7
1	C	133	LYS	2.7
1	C	298	SER	2.6
1	D	334	ALA	2.6
1	C	440	TRP	2.6
1	C	488	ILE	2.6
1	C	25	GLY	2.6
1	D	465	ASP	2.6
1	D	333	GLN	2.6
1	A	164	SER	2.5
1	C	278	PHE	2.5
1	C	162	CYS	2.5
1	C	423	ILE	2.5
1	B	42	HIS	2.4
1	C	431	LEU	2.4
1	C	274	LEU	2.4
1	A	34	TYR	2.4
1	D	430	SER	2.4
1	B	236	PRO	2.3
1	C	275	SER	2.3
1	D	2	SER	2.3
1	C	165	LEU	2.3
1	C	240	THR	2.3
1	C	3	ASN	2.3
1	D	217	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	493	PRO	2.3
1	B	490	ASP	2.3
1	A	263	LYS	2.3
1	C	435	PRO	2.2
1	C	146	ALA	2.2
1	A	13	ASP	2.2
1	D	494	SER	2.2
1	A	165	LEU	2.2
1	C	284	VAL	2.2
1	C	415	ILE	2.2
1	C	416	PHE	2.2
1	A	111	PRO	2.2
1	D	417	ASP	2.2
1	B	41	GLY	2.2
1	A	9	TYR	2.1
1	C	265	LEU	2.1
1	C	217	GLU	2.1
1	C	356	LYS	2.1
1	A	14	THR	2.1
1	C	144	VAL	2.1
1	C	287	ALA	2.1
1	C	111	PRO	2.1
1	C	26	LYS	2.1
1	C	42	HIS	2.1
1	C	20	GLN	2.0
1	C	466	ASN	2.0
1	C	439	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 carbohydrates 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. 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	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
4	SSC	D	506	12/12	0.67	0.38	12.17	60,69,73,73	0
4	SSC	C	506	12/12	0.65	0.44	8.98	79,83,85,85	0
4	SSC	A	506	12/12	0.71	0.38	8.83	41,53,58,59	0
4	SSC	B	506	12/12	0.81	0.29	4.89	38,48,55,56	0
3	APC	A	505	31/31	0.91	0.22	2.00	32,41,44,45	0
3	APC	B	505	31/31	0.92	0.20	1.24	32,37,43,43	0
3	APC	D	505	31/31	0.94	0.18	-0.04	26,33,41,42	0
3	APC	C	505	31/31	0.91	0.20	-0.22	37,46,58,59	0
2	MG	C	504	1/1	0.84	0.15	-0.90	44,44,44,44	0
2	MG	D	504	1/1	0.93	0.11	-1.95	30,30,30,30	0
2	MG	A	504	1/1	0.93	0.07	-2.35	20,20,20,20	0
2	MG	B	504	1/1	0.88	0.10	-2.59	22,22,22,22	0

6.5 Other polymers [i](#)

There are no such residues in this entry.