



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 14, 2023 – 04:28 PM EDT

PDB ID : 6NAK
Title : BACTERIAL PROTEIN COMPLEX TM BDE complex
Authors : Stec, B.
Deposited on : 2018-12-05
Resolution : 3.14 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
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

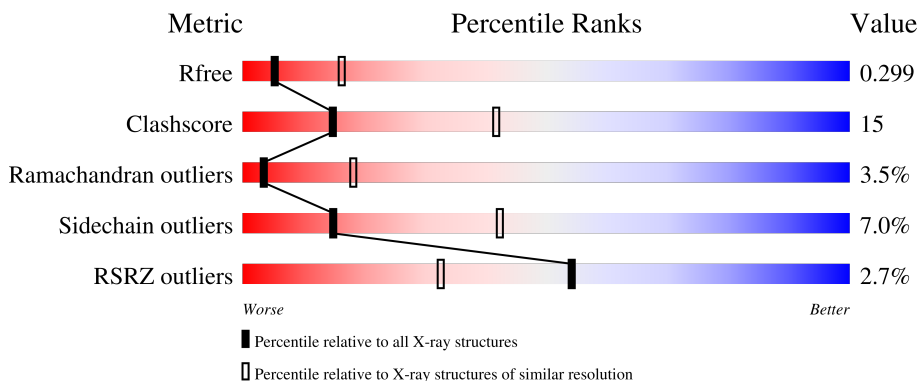
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.14 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	1626 (3.18-3.10)
Clashscore	141614	1735 (3.18-3.10)
Ramachandran outliers	138981	1677 (3.18-3.10)
Sidechain outliers	138945	1677 (3.18-3.10)
RSRZ outliers	127900	1588 (3.18-3.10)

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

Mol	Chain	Length	Quality of chain
1	A	206	 3% 61% 34% ..
1	C	206	 65% 33% .
2	B	327	 3% 62% 32% 5% .
2	G	327	 4% 64% 30% 5% .
3	D	184	 4% 55% 32% . 10%

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Mol	Chain	Length	Quality of chain
3	E	184	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into four segments: a small red segment at the beginning labeled '2%', a large green segment labeled '59%', a yellow segment labeled '26%', and a small grey segment at the end labeled '12%'. There are two small black dots on the grey segment.</p>

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 10983 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 tRNA threonylcarbamoyladenine biosynthesis protein TsaB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	203	Total	C	N	O	S	0	0	0
			1594	1028	263	299	4			
1	C	206	Total	C	N	O	S	0	0	0
			1619	1042	270	303	4			

- Molecule 2 is a protein called tRNA N6-adenosine threonylcarbamoyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	327	Total	C	N	O	S	0	0	0
			2510	1612	425	463	10			
2	G	321	Total	C	N	O	S	0	0	0
			2466	1581	418	457	10			

- Molecule 3 is a protein called TsaE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	D	165	Total	C	N	O	S	0	0	0
			1346	860	221	260	5			
3	E	161	Total	C	N	O	S	0	0	0
			1312	841	216	250	5			

There are 30 discrepancies between the modelled and reference sequences:

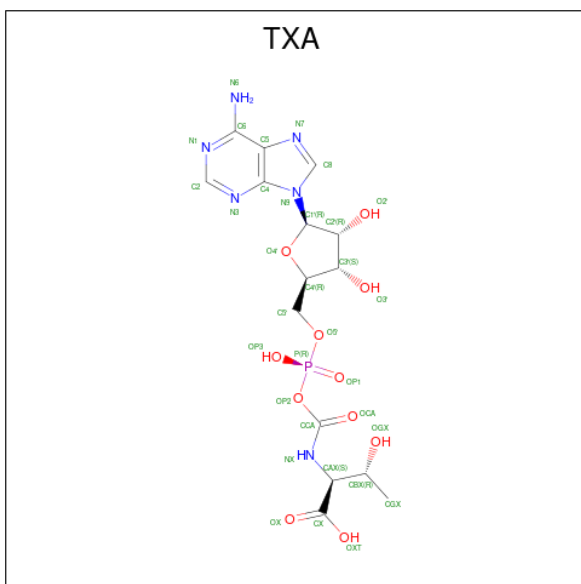
Chain	Residue	Modelled	Actual	Comment	Reference
D	-22	MET	-	expression tag	UNP R4NRX5
D	-21	GLY	-	expression tag	UNP R4NRX5
D	-20	HIS	-	expression tag	UNP R4NRX5
D	-19	HIS	-	expression tag	UNP R4NRX5
D	-18	HIS	-	expression tag	UNP R4NRX5
D	-17	HIS	-	expression tag	UNP R4NRX5
D	-16	HIS	-	expression tag	UNP R4NRX5
D	-15	HIS	-	expression tag	UNP R4NRX5

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-14	GLU	-	expression tag	UNP R4NRX5
D	-13	ASN	-	expression tag	UNP R4NRX5
D	-12	LEU	-	expression tag	UNP R4NRX5
D	-11	TYR	-	expression tag	UNP R4NRX5
D	-10	PHE	-	expression tag	UNP R4NRX5
D	-9	GLN	-	expression tag	UNP R4NRX5
D	-8	GLY	-	expression tag	UNP R4NRX5
E	-22	MET	-	expression tag	UNP R4NRX5
E	-21	GLY	-	expression tag	UNP R4NRX5
E	-20	HIS	-	expression tag	UNP R4NRX5
E	-19	HIS	-	expression tag	UNP R4NRX5
E	-18	HIS	-	expression tag	UNP R4NRX5
E	-17	HIS	-	expression tag	UNP R4NRX5
E	-16	HIS	-	expression tag	UNP R4NRX5
E	-15	HIS	-	expression tag	UNP R4NRX5
E	-14	GLU	-	expression tag	UNP R4NRX5
E	-13	ASN	-	expression tag	UNP R4NRX5
E	-12	LEU	-	expression tag	UNP R4NRX5
E	-11	TYR	-	expression tag	UNP R4NRX5
E	-10	PHE	-	expression tag	UNP R4NRX5
E	-9	GLN	-	expression tag	UNP R4NRX5
E	-8	GLY	-	expression tag	UNP R4NRX5

- Molecule 4 is threonylcarbamoyladenylate (three-letter code: TXA) (formula: $C_{15}H_{21}N_6O_{11}P$).



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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
7	E	1	31	11	5	12	3	0	0

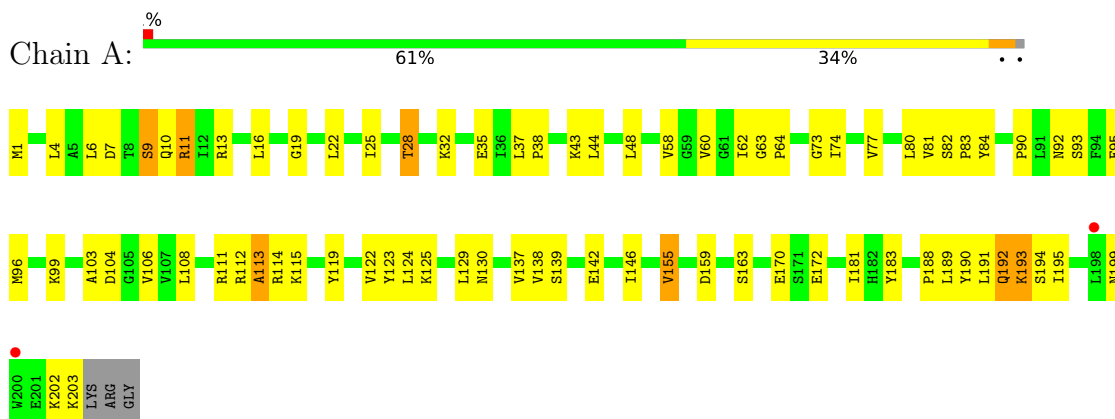
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	2	Total	O	0	0
			2	2		
8	G	1	Total	O	0	0
			1	1		
8	E	1	Total	O	0	0
			1	1		

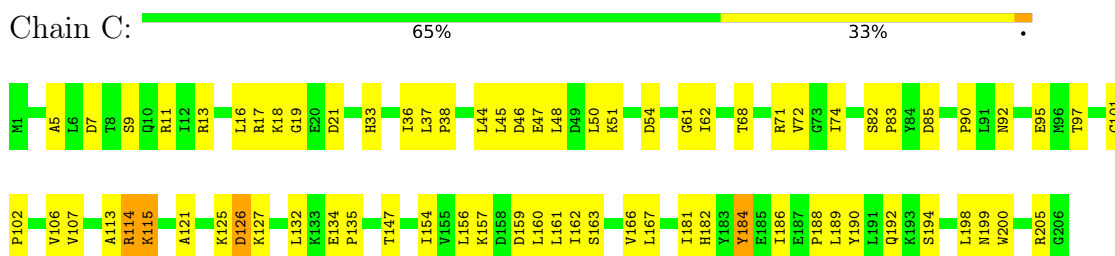
3 Residue-property plots

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

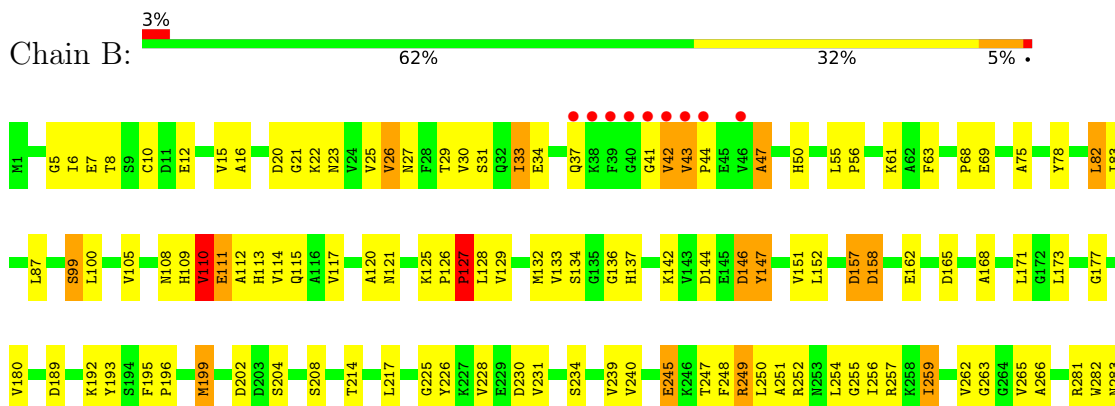
- Molecule 1: tRNA threonylcarbamoyladenosine biosynthesis protein TsaB

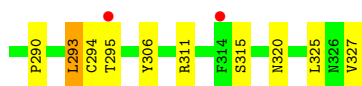


- Molecule 1: tRNA threonylcarbamoyladenosine biosynthesis protein TsaB

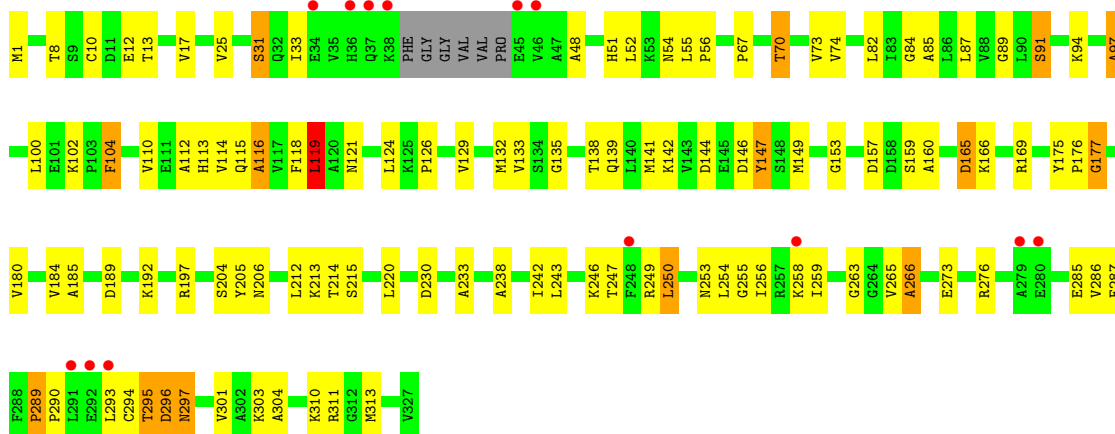


- Molecule 2: tRNA N6-adenosine threonylcarbamoyltransferase

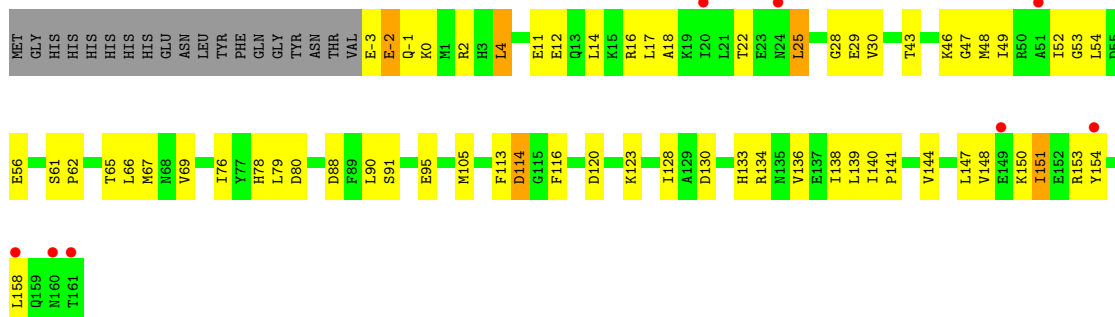




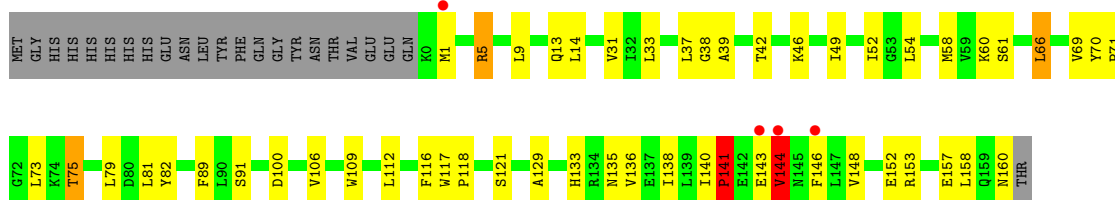
- Molecule 2: tRNA N6-adenosine threonylcarbamoyltransferase



- Molecule 3: TsaE



- Molecule 3: TsaE



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	84.31Å 113.99Å 177.57Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.40 – 3.14 48.44 – 3.14	Depositor EDS
% Data completeness (in resolution range)	99.0 (48.40-3.14) 99.1 (48.44-3.14)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.35 (at 3.12Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.192 , 0.302 0.198 , 0.299	Depositor DCC
R_{free} test set	1550 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å ²)	93.4	Xtrriage
Anisotropy	0.292	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 57.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10983	wwPDB-VP
Average B, all atoms (Å ²)	94.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.35% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.71	0/1621	0.92	0/2192
1	C	0.72	0/1646	0.95	0/2222
2	B	0.71	0/2560	0.89	0/3467
2	G	0.71	0/2513	0.93	0/3402
3	D	0.72	0/1367	0.86	0/1841
3	E	0.70	0/1333	0.92	0/1795
All	All	0.71	0/11040	0.91	0/14919

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	1594	0	1670	61	0
1	C	1619	0	1699	45	0
2	B	2510	0	2562	82	0
2	G	2466	0	2510	83	0
3	D	1346	0	1358	42	0
3	E	1312	0	1331	39	0
4	B	33	0	20	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	G	33	0	20	0	0
5	B	1	0	0	0	0
5	G	1	0	0	0	0
6	D	1	0	0	0	0
6	E	1	0	0	0	0
7	D	31	0	14	1	0
7	E	31	0	14	2	0
8	B	2	0	0	0	0
8	E	1	0	0	0	0
8	G	1	0	0	0	0
All	All	10983	0	11198	337	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 15.

All (337) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:13:GLN:NE2	3:E:158:LEU:HD22	1.77	0.98
1:A:139:SER:OG	1:A:142:GLU:HB2	1.71	0.89
3:D:154:TYR:OH	3:D:158:LEU:HD12	1.79	0.81
1:C:101:CYS:O	1:C:125:LYS:NZ	2.13	0.81
2:B:247:THR:HG22	2:B:259:ILE:HD11	1.61	0.80
1:A:103:ALA:HB2	1:C:154:ILE:HD13	1.63	0.78
2:G:87:LEU:O	2:G:91:SER:HB2	1.84	0.77
3:E:13:GLN:HE21	3:E:158:LEU:HD22	1.45	0.77
1:C:97:THR:HG21	1:C:160:LEU:HD23	1.65	0.77
1:A:16:LEU:HD23	1:A:48:LEU:HD12	1.66	0.76
2:B:12:GLU:OE2	2:B:31:SER:OG	2.03	0.76
2:G:254:LEU:HD11	2:G:256:ILE:HG13	1.66	0.76
2:G:254:LEU:HD11	2:G:256:ILE:CG1	2.16	0.75
2:G:250:LEU:HD12	2:G:250:LEU:O	1.86	0.75
2:G:254:LEU:HD12	2:G:255:GLY:N	2.02	0.73
2:B:108:ASN:OD1	2:B:325:LEU:HD21	1.88	0.73
2:G:205:TYR:CD2	2:G:250:LEU:HD22	2.23	0.73
2:G:289:PRO:HB2	2:G:290:PRO:HD2	1.70	0.73
3:E:13:GLN:HE21	3:E:158:LEU:CD2	2.02	0.72
1:A:25:ILE:HD12	1:A:44:LEU:HD22	1.73	0.71
2:B:5:GLY:HA2	2:B:75:ALA:O	1.90	0.71
2:G:175:TYR:CG	2:G:176:PRO:HA	2.26	0.70
1:C:13:ARG:HD2	1:C:162:ILE:O	1.92	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:75:ALA:HA	2:B:105:VAL:O	1.93	0.69
3:E:42:THR:OG1	7:E:201:APC:O2B	2.10	0.69
2:B:12:GLU:OE1	2:B:30:VAL:HG12	1.93	0.68
1:C:16:LEU:HD23	1:C:44:LEU:HG	1.74	0.68
2:G:247:THR:HG22	2:G:259:ILE:HD11	1.76	0.68
2:B:41:GLY:O	2:B:42:VAL:HG23	1.94	0.68
2:B:254:LEU:HD23	2:B:256:ILE:HD12	1.77	0.67
2:G:289:PRO:HB2	2:G:290:PRO:CD	2.23	0.67
1:C:126:ASP:OD1	1:C:127:LYS:N	2.27	0.67
1:C:92:ASN:HB3	1:C:95:GLU:HB2	1.76	0.66
2:B:25:VAL:O	2:B:26:VAL:HG23	1.94	0.66
1:C:163:SER:HB3	1:C:166:VAL:HG23	1.77	0.66
2:G:13:THR:HG21	2:G:54:ASN:HB2	1.78	0.66
1:C:199:ASN:ND2	3:E:117:TRP:O	2.29	0.65
1:A:37:LEU:HB3	1:A:38:PRO:HD3	1.76	0.65
3:E:141:PRO:O	3:E:144:VAL:HG12	1.97	0.65
1:C:7:ASP:OD1	1:C:9:SER:HB3	1.95	0.65
2:G:144:ASP:HB3	2:G:146:ASP:OD1	1.97	0.65
2:B:257:ARG:NH2	2:B:283:ASN:O	2.30	0.65
3:E:13:GLN:NE2	3:E:158:LEU:CD2	2.57	0.64
2:B:281:ARG:O	2:B:282:TRP:HD1	1.80	0.64
3:E:31:VAL:HG12	3:E:33:LEU:CD1	2.27	0.64
2:B:16:ALA:HB2	2:B:27:ASN:HD22	1.63	0.64
1:A:11:ARG:HG2	1:A:28:THR:HA	1.80	0.64
1:A:114:ARG:HD2	3:D:95:GLU:OE2	1.98	0.64
2:B:294:CYS:SG	2:B:294:CYS:O	2.55	0.63
2:G:204:SER:O	2:G:249:ARG:NH1	2.32	0.63
3:D:25:LEU:HB2	3:D:29:GLU:OE2	1.99	0.62
1:C:5:ALA:HB1	1:C:167:LEU:HB3	1.81	0.62
2:G:250:LEU:HD11	2:G:254:LEU:HD23	1.82	0.62
3:D:14:LEU:HD11	3:D:136:VAL:HG11	1.82	0.62
3:D:46:LYS:O	3:D:49:ILE:HG22	2.01	0.61
2:G:294:CYS:O	2:G:294:CYS:SG	2.58	0.61
2:B:157:ASP:OD2	2:B:208:SER:HA	2.01	0.60
2:B:173:LEU:HB3	2:B:180:VAL:HG11	1.82	0.60
2:B:125:LYS:C	2:B:127:PRO:HD3	2.22	0.60
3:E:1:MET:HB3	3:E:141:PRO:HA	1.84	0.60
3:D:-1:GLN:HE22	3:D:123:LYS:CD	2.14	0.60
3:D:140:ILE:HG23	3:D:144:VAL:HB	1.84	0.60
2:G:114:VAL:HG11	2:G:149:MET:SD	2.41	0.60
1:C:107:VAL:HA	1:C:154:ILE:HG23	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:193:LYS:HE3	3:D:88:ASP:OD1	2.02	0.59
2:B:254:LEU:O	2:B:254:LEU:HG	2.03	0.59
1:C:18:LYS:HG3	1:C:50:LEU:HD13	1.84	0.59
2:G:13:THR:OG1	2:G:51:HIS:ND1	2.32	0.59
3:E:153:ARG:O	3:E:157:GLU:HB2	2.02	0.59
2:G:139:GLN:HA	2:G:153:GLY:O	2.03	0.58
2:G:206:ASN:O	2:G:246:LYS:NZ	2.24	0.58
3:E:138:ILE:HG22	3:E:140:ILE:HD11	1.84	0.58
1:C:97:THR:HG22	1:C:156:LEU:HD22	1.86	0.58
2:B:7:GLU:O	2:B:8:THR:HG23	2.04	0.58
2:G:294:CYS:O	2:G:296:ASP:N	2.36	0.58
1:A:74:ILE:O	1:A:77:VAL:HB	2.04	0.58
3:D:66:LEU:O	3:D:79:LEU:HA	2.04	0.58
2:B:146:ASP:O	2:B:147:TYR:HB2	2.03	0.58
2:B:245:GLU:O	2:B:249:ARG:HB2	2.04	0.57
1:A:114:ARG:NH2	3:D:116:PHE:O	2.37	0.57
2:B:199:MET:O	2:B:202:ASP:HB3	2.04	0.57
1:C:182:HIS:HD1	1:C:184:TYR:HH	1.52	0.57
2:G:180:VAL:O	2:G:184:VAL:HG13	2.04	0.57
2:G:254:LEU:HD12	2:G:254:LEU:C	2.24	0.57
2:G:74:VAL:O	2:G:104:PHE:HA	2.05	0.57
2:G:12:GLU:CG	2:G:31:SER:OG	2.52	0.56
1:A:62:ILE:HD12	1:A:189:LEU:HG	1.86	0.56
1:A:92:ASN:HB3	1:A:95:GLU:HB2	1.86	0.56
1:A:95:GLU:O	1:A:99:LYS:HG3	2.05	0.56
2:B:162:GLU:OE1	3:D:61:SER:OG	2.22	0.56
2:B:21:GLY:O	2:B:23:ASN:N	2.39	0.56
1:A:77:VAL:HA	1:A:80:LEU:HD12	1.86	0.56
1:A:96:MET:SD	1:A:170:GLU:HG3	2.45	0.56
1:C:121:ALA:HB2	1:C:135:PRO:HA	1.86	0.56
2:G:146:ASP:O	2:G:147:TYR:HB2	2.06	0.56
1:A:139:SER:OG	1:A:142:GLU:CB	2.50	0.55
3:D:150:LYS:O	3:D:153:ARG:HB3	2.07	0.55
3:D:18:ALA:HB3	3:D:47:GLY:HA3	1.87	0.55
2:G:33:ILE:HG22	2:G:33:ILE:O	2.06	0.55
3:D:90:LEU:HD22	3:D:116:PHE:CE2	2.42	0.54
1:C:7:ASP:OD2	1:C:61:GLY:HA3	2.07	0.54
3:E:66:LEU:HD23	3:E:89:PHE:CZ	2.43	0.54
1:A:6:LEU:HD12	1:A:6:LEU:O	2.07	0.54
1:A:92:ASN:O	1:A:96:MET:HG2	2.08	0.54
1:C:114:ARG:HG2	1:C:115:LYS:N	2.22	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:17:VAL:O	2:G:25:VAL:HG12	2.08	0.54
1:A:190:TYR:O	1:A:191:LEU:C	2.46	0.54
1:C:82:SER:OG	1:C:83:PRO:HD3	2.08	0.54
1:A:62:ILE:CD1	1:A:189:LEU:HG	2.38	0.54
2:B:132:MET:HA	2:B:262:VAL:HG13	1.90	0.54
2:G:192:LYS:HG2	2:G:230:ASP:HB3	1.89	0.54
1:A:82:SER:OG	1:A:83:PRO:HD3	2.07	0.53
3:D:53:GLY:C	3:D:54:LEU:HD12	2.29	0.53
3:E:129:ALA:HB2	3:E:135:ASN:ND2	2.23	0.53
2:G:259:ILE:CG2	2:G:286:VAL:HG12	2.38	0.53
2:G:254:LEU:HD11	2:G:256:ILE:HG12	1.89	0.53
2:B:110:VAL:O	2:B:112:ALA:N	2.40	0.53
3:D:128:ILE:HA	3:D:134:ARG:HD3	1.90	0.53
2:G:129:VAL:HG13	2:G:259:ILE:HG13	1.91	0.53
2:G:94:LYS:O	2:G:97:ALA:HB3	2.08	0.53
1:C:121:ALA:HB2	1:C:135:PRO:CA	2.38	0.53
2:B:126:PRO:HG2	2:B:147:TYR:CE1	2.44	0.53
3:D:29:GLU:OE1	3:D:29:GLU:N	2.41	0.53
2:G:142:LYS:O	2:G:149:MET:HA	2.08	0.53
2:G:91:SER:HA	2:G:94:LYS:HZ1	1.74	0.52
2:G:204:SER:HB2	2:G:206:ASN:HD22	1.74	0.52
1:A:114:ARG:CD	3:D:95:GLU:OE2	2.58	0.52
3:E:69:VAL:O	3:E:71:PRO:HD3	2.08	0.52
3:D:67:MET:HA	3:D:78:HIS:O	2.09	0.52
2:G:250:LEU:HD12	2:G:250:LEU:C	2.29	0.52
3:E:54:LEU:HB3	3:E:58:MET:HE3	1.92	0.52
2:B:111:GLU:O	2:B:115:GLN:HG2	2.09	0.52
2:G:263:GLY:O	2:G:266:ALA:HB3	2.10	0.52
2:B:133:VAL:O	2:B:265:VAL:HB	2.09	0.52
3:D:113:PHE:O	3:D:114:ASP:O	2.27	0.52
1:A:188:PRO:CG	1:A:190:TYR:CZ	2.93	0.51
1:A:90:PRO:HG3	1:A:181:ILE:HD13	1.91	0.51
1:C:71:ARG:NH1	2:G:84:GLY:HA3	2.25	0.51
3:E:144:VAL:HG23	3:E:146:PHE:CZ	2.46	0.51
1:C:37:LEU:N	1:C:38:PRO:CD	2.74	0.51
1:C:126:ASP:CG	1:C:127:LYS:N	2.63	0.51
2:B:171:LEU:HD22	2:B:228:VAL:HG13	1.92	0.51
2:G:116:ALA:O	2:G:119:LEU:HB3	2.11	0.51
2:B:55:LEU:N	2:B:56:PRO:CD	2.73	0.50
2:B:248:PHE:C	2:B:250:LEU:H	2.14	0.50
2:G:132:MET:O	2:G:138:THR:HA	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:52:ILE:HA	3:E:73:LEU:HB2	1.94	0.50
1:A:124:LEU:HB3	1:A:130:ASN:HB2	1.93	0.50
2:G:17:VAL:HB	2:G:25:VAL:HG13	1.91	0.50
3:E:138:ILE:CG2	3:E:140:ILE:HD11	2.41	0.50
2:B:239:VAL:O	2:B:240:VAL:C	2.50	0.50
2:G:295:THR:O	2:G:296:ASP:OD1	2.30	0.50
3:E:129:ALA:HB2	3:E:135:ASN:HD21	1.75	0.50
1:A:73:GLY:O	1:A:77:VAL:HG23	2.12	0.50
1:A:137:VAL:HG11	1:A:195:ILE:HG12	1.94	0.50
2:G:297:ASN:OD1	2:G:297:ASN:N	2.44	0.50
1:A:64:PRO:HB3	1:A:191:LEU:HG	1.94	0.49
2:B:63:PHE:CE1	2:B:68:PRO:HB3	2.47	0.49
3:D:-2:GLU:OE2	3:D:0:LYS:HE3	2.12	0.49
2:G:133:VAL:HB	2:G:265:VAL:HB	1.93	0.49
1:A:37:LEU:O	1:A:38:PRO:C	2.51	0.49
3:E:79:LEU:N	3:E:79:LEU:HD12	2.26	0.49
1:A:4:LEU:O	1:A:58:VAL:HA	2.12	0.49
2:G:303:LYS:O	2:G:304:ALA:C	2.50	0.49
3:E:109:TRP:HB3	3:E:112:LEU:HD12	1.95	0.49
2:B:129:VAL:HG11	2:B:251:ALA:HB2	1.93	0.49
1:C:194:SER:O	1:C:198:LEU:HD13	2.13	0.49
1:C:134:GLU:HG3	1:C:135:PRO:CD	2.43	0.49
2:B:248:PHE:O	2:B:250:LEU:N	2.46	0.48
3:D:62:PRO:HG2	3:D:80:ASP:HB2	1.94	0.48
2:B:110:VAL:C	2:B:112:ALA:N	2.67	0.48
2:G:250:LEU:CD1	2:G:254:LEU:HD23	2.42	0.48
2:G:165:ASP:HA	2:G:177:GLY:HA3	1.95	0.48
3:E:31:VAL:O	3:E:106:VAL:HA	2.13	0.48
2:B:120:ALA:O	2:B:121:ASN:ND2	2.47	0.48
1:A:1:MET:CE	1:A:172:GLU:HG3	2.43	0.48
1:A:108:LEU:HD13	1:A:122:VAL:HG22	1.94	0.48
2:G:254:LEU:CD1	2:G:256:ILE:HG12	2.44	0.48
3:E:31:VAL:HG12	3:E:33:LEU:HD13	1.96	0.48
1:A:123:TYR:CD1	1:A:129:LEU:HD21	2.49	0.48
2:B:165:ASP:O	2:B:168:ALA:HB3	2.13	0.48
3:E:14:LEU:HD23	7:E:201:APC:H2	1.96	0.48
2:B:263:GLY:O	2:B:266:ALA:HB3	2.14	0.48
3:D:14:LEU:CD1	3:D:136:VAL:HG11	2.43	0.48
2:G:175:TYR:CD1	2:G:176:PRO:HA	2.48	0.47
3:E:148:VAL:O	3:E:152:GLU:HB2	2.14	0.47
2:G:12:GLU:HG2	2:G:31:SER:OG	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:67:PRO:O	2:G:70:THR:HG23	2.14	0.47
2:B:6:ILE:HG12	2:B:15:VAL:HG22	1.96	0.47
2:B:33:ILE:HG21	2:B:61:LYS:HE3	1.95	0.47
2:B:245:GLU:OE1	2:B:245:GLU:HA	2.15	0.47
2:G:12:GLU:HG3	2:G:31:SER:OG	2.15	0.47
2:G:119:LEU:HD12	2:G:119:LEU:O	2.15	0.47
2:B:47:ALA:HB3	2:B:50:HIS:HB2	1.96	0.47
3:D:22:THR:HG21	3:D:48:MET:HB3	1.97	0.47
2:G:133:VAL:HG12	2:G:160:ALA:HB3	1.95	0.47
2:G:205:TYR:CE2	2:G:250:LEU:HD22	2.50	0.47
1:A:115:LYS:HE3	3:D:28:GLY:O	2.14	0.47
3:D:11:GLU:HA	7:D:201:APC:C6	2.44	0.47
2:B:20:ASP:HA	2:B:306:TYR:CE1	2.50	0.46
2:B:83:ILE:HG22	2:B:87:LEU:HD11	1.96	0.46
2:G:115:GLN:O	2:G:118:PHE:N	2.44	0.46
1:A:63:GLY:HA3	1:A:93:SER:H	1.80	0.46
1:A:32:LYS:HD3	2:B:320:ASN:HD21	1.79	0.46
3:E:60:LYS:O	3:E:61:SER:C	2.54	0.46
1:A:7:ASP:OD2	1:A:9:SER:HB3	2.16	0.46
1:A:82:SER:HA	1:A:183:TYR:CE2	2.50	0.46
3:D:139:LEU:O	3:D:140:ILE:HG13	2.15	0.46
1:A:74:ILE:O	1:A:77:VAL:N	2.49	0.46
2:B:263:GLY:O	2:B:266:ALA:N	2.43	0.46
1:C:134:GLU:HG3	1:C:135:PRO:HD3	1.97	0.46
2:B:33:ILE:HG22	2:B:37:GLN:HE21	1.80	0.46
2:B:165:ASP:HA	2:B:177:GLY:HA3	1.98	0.46
1:C:161:LEU:HD12	1:C:161:LEU:O	2.16	0.46
2:B:142:LYS:CD	2:B:254:LEU:HD21	2.46	0.46
2:B:214:THR:O	2:B:217:LEU:N	2.48	0.46
1:A:188:PRO:HG2	1:A:190:TYR:CZ	2.50	0.46
2:B:114:VAL:O	2:B:117:VAL:HG23	2.16	0.46
2:B:281:ARG:O	2:B:281:ARG:HG2	2.15	0.46
2:B:125:LYS:HG2	2:B:127:PRO:HD3	1.97	0.45
3:E:138:ILE:HG22	3:E:140:ILE:CD1	2.47	0.45
1:C:33:HIS:HB3	1:C:72:VAL:HG11	1.98	0.45
2:B:189:ASP:HB3	2:B:192:LYS:HB2	1.99	0.45
3:D:43:THR:O	3:D:46:LYS:HB2	2.17	0.45
1:C:45:LEU:C	1:C:47:GLU:H	2.20	0.45
1:C:114:ARG:HG2	1:C:115:LYS:HB2	1.99	0.45
3:E:37:LEU:HD11	3:E:82:TYR:HE2	1.81	0.45
3:D:53:GLY:O	3:D:54:LEU:HD12	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:71:PRO:HA	3:E:75:THR:HB	1.97	0.45
1:A:188:PRO:HG2	1:A:190:TYR:CE2	2.52	0.45
2:B:171:LEU:HD21	2:B:231:VAL:HG11	1.99	0.45
2:B:83:ILE:HG22	2:B:87:LEU:CD1	2.47	0.45
1:A:111:ARG:O	1:A:113:ALA:N	2.51	0.44
2:B:134:SER:HG	2:B:137:HIS:H	1.65	0.44
2:B:195:PHE:HB3	2:B:196:PRO:HD2	1.99	0.44
1:C:74:ILE:HG22	2:G:52:LEU:HD11	1.99	0.44
3:E:13:GLN:HE22	3:E:158:LEU:HD22	1.75	0.44
1:A:32:LYS:O	1:A:35:GLU:HB2	2.17	0.44
3:E:118:PRO:HD2	3:E:121:SER:OG	2.18	0.44
2:G:133:VAL:CG1	2:G:160:ALA:HB3	2.48	0.44
2:G:311:ARG:HB2	2:G:313:MET:HG3	2.00	0.44
2:B:43:VAL:HB	2:B:44:PRO:CD	2.47	0.44
2:G:100:LEU:HB3	2:G:102:LYS:HG3	1.99	0.44
2:B:248:PHE:C	2:B:250:LEU:N	2.71	0.44
1:A:142:GLU:O	1:A:146:ILE:HG12	2.18	0.44
2:B:109:HIS:O	2:B:112:ALA:HB3	2.17	0.44
2:G:8:THR:OG1	2:G:89:GLY:HA3	2.17	0.44
3:E:144:VAL:O	3:E:144:VAL:HG13	2.17	0.44
2:B:113:HIS:CE1	2:B:295:THR:HB	2.52	0.44
3:D:-1:GLN:HE22	3:D:123:LYS:HD3	1.82	0.44
3:E:46:LYS:O	3:E:49:ILE:HG22	2.17	0.43
3:D:16:ARG:NH1	3:D:158:LEU:HD13	2.32	0.43
3:D:30:VAL:HG22	3:D:105:MET:HB3	2.00	0.43
1:C:113:ALA:O	1:C:114:ARG:O	2.35	0.43
1:C:161:LEU:HD12	1:C:161:LEU:C	2.38	0.43
2:G:17:VAL:O	2:G:25:VAL:CG1	2.66	0.43
2:G:263:GLY:O	2:G:266:ALA:CB	2.66	0.43
1:A:188:PRO:HG3	1:A:190:TYR:OH	2.18	0.43
1:C:37:LEU:HB3	1:C:38:PRO:HD3	2.00	0.43
2:B:144:ASP:O	2:B:147:TYR:N	2.52	0.43
3:D:12:GLU:OE2	3:D:16:ARG:HG3	2.18	0.43
3:D:52:ILE:HG13	3:D:54:LEU:HD13	2.00	0.43
3:D:113:PHE:O	3:D:114:ASP:C	2.56	0.43
2:B:151:VAL:C	2:B:152:LEU:HD12	2.39	0.43
2:B:157:ASP:HB2	2:B:158:ASP:H	1.54	0.43
1:C:17:ARG:HA	1:C:21:ASP:O	2.19	0.43
2:B:128:LEU:C	2:B:128:LEU:HD12	2.38	0.43
2:G:67:PRO:HD2	2:G:70:THR:HG21	2.00	0.43
1:A:81:VAL:C	1:A:83:PRO:HD2	2.39	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:130:ASP:HB3	3:D:133:HIS:H	1.84	0.43
2:B:134:SER:OG	2:B:136:GLY:N	2.52	0.43
3:D:17:LEU:HD21	3:D:138:ILE:HD11	2.01	0.43
3:E:70:TYR:O	3:E:75:THR:HA	2.19	0.43
1:A:103:ALA:O	1:A:125:LYS:HD3	2.18	0.43
1:A:6:LEU:HD12	1:A:6:LEU:C	2.39	0.42
1:A:60:VAL:HB	1:A:77:VAL:HG21	2.00	0.42
2:G:189:ASP:HB3	2:G:192:LYS:HB2	1.99	0.42
2:G:10:CYS:SG	2:G:296:ASP:OD2	2.77	0.42
2:B:68:PRO:HB2	2:B:100:LEU:HD21	2.02	0.42
2:G:135:GLY:O	2:G:159:SER:CB	2.68	0.42
2:G:185:ALA:HB1	2:G:233:ALA:HA	2.02	0.42
2:G:197:ARG:HG3	2:G:197:ARG:HH11	1.83	0.42
1:C:16:LEU:HG	1:C:48:LEU:HD12	2.02	0.42
2:G:55:LEU:HB3	2:G:56:PRO:HD3	2.02	0.42
1:A:25:ILE:CD1	1:A:44:LEU:HD22	2.45	0.42
1:A:80:LEU:O	2:B:99:SER:HB3	2.20	0.42
1:A:111:ARG:HB3	1:A:119:TYR:HB2	2.02	0.42
2:B:247:THR:CG2	2:B:259:ILE:HD11	2.42	0.42
1:A:138:VAL:HB	1:A:142:GLU:HB3	2.02	0.41
2:B:263:GLY:O	2:B:266:ALA:CB	2.68	0.41
1:C:90:PRO:HD3	1:C:181:ILE:HG12	2.02	0.41
3:E:38:GLY:O	3:E:39:ALA:C	2.57	0.41
1:A:190:TYR:O	1:A:192:GLN:N	2.52	0.41
2:B:110:VAL:C	2:B:112:ALA:H	2.23	0.41
1:C:62:ILE:C	1:C:62:ILE:HD12	2.40	0.41
2:G:212:LEU:HD23	2:G:212:LEU:HA	1.91	0.41
2:B:252:ARG:O	2:B:255:GLY:N	2.50	0.41
1:C:114:ARG:NH2	3:E:116:PHE:O	2.53	0.41
2:G:258:LYS:HA	2:G:285:GLU:O	2.20	0.41
3:E:5:ARG:HE	3:E:5:ARG:HB2	1.65	0.41
1:A:155:VAL:O	1:A:155:VAL:CG2	2.68	0.41
2:B:82:LEU:CD1	2:B:82:LEU:N	2.83	0.41
2:B:108:ASN:ND2	2:B:110:VAL:HG23	2.35	0.41
1:A:43:LYS:CD	1:C:47:GLU:OE2	2.68	0.41
2:B:113:HIS:NE2	2:B:295:THR:HB	2.36	0.41
2:G:124:LEU:HD13	2:G:287:PHE:CZ	2.55	0.41
3:D:2:ARG:HD2	3:D:148:VAL:HG21	2.03	0.41
3:D:4:LEU:HD21	3:D:151:ILE:HB	2.02	0.41
3:D:151:ILE:O	3:D:153:ARG:N	2.54	0.41
1:C:82:SER:N	1:C:83:PRO:CD	2.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:1:MET:HE3	2:G:73:VAL:HG21	2.02	0.41
2:G:8:THR:O	2:G:85:ALA:HB1	2.21	0.41
2:G:55:LEU:HB3	2:G:56:PRO:CD	2.49	0.41
2:G:126:PRO:HG2	2:G:147:TYR:CE1	2.56	0.41
2:G:212:LEU:O	2:G:213:LYS:C	2.59	0.41
2:G:238:ALA:O	2:G:242:ILE:HG22	2.21	0.41
3:E:144:VAL:CG2	3:E:146:PHE:CZ	3.04	0.41
1:A:6:LEU:HA	1:A:13:ARG:O	2.20	0.41
2:G:166:LYS:O	2:G:169:ARG:HB3	2.21	0.41
3:E:9:LEU:O	3:E:133:HIS:HA	2.21	0.41
1:A:193:LYS:HE2	1:A:193:LYS:HB3	1.77	0.40
2:B:293:LEU:HD11	4:B:401:TXA:OP3	2.21	0.40
1:C:106:VAL:O	1:C:154:ILE:HG22	2.21	0.40
2:G:176:PRO:O	2:G:180:VAL:HG23	2.21	0.40
1:A:82:SER:N	1:A:83:PRO:CD	2.84	0.40
1:A:106:VAL:HG22	1:A:124:LEU:HD13	2.03	0.40
2:G:112:ALA:O	2:G:115:GLN:HB2	2.20	0.40
1:A:114:ARG:NE	3:D:95:GLU:OE2	2.55	0.40
2:B:33:ILE:HG22	2:B:37:GLN:NE2	2.37	0.40
1:C:181:ILE:HD11	1:C:186:ILE:HG12	2.03	0.40
1:C:188:PRO:HG2	1:C:190:TYR:CE2	2.56	0.40
2:B:125:LYS:C	2:B:127:PRO:CD	2.90	0.40
1:C:51:LYS:O	1:C:54:ASP:HB2	2.21	0.40
2:G:273:GLU:OE1	2:G:276:ARG:NH1	2.54	0.40
2:B:158:ASP:OD1	2:B:158:ASP:N	2.55	0.40
2:B:193:TYR:CE2	2:B:230:ASP:HB3	2.57	0.40
3:D:147:LEU:O	3:D:150:LYS:N	2.54	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	201/206 (98%)	164 (82%)	32 (16%)	5 (2%)	5	25
1	C	204/206 (99%)	170 (83%)	27 (13%)	7 (3%)	3	18
2	B	325/327 (99%)	255 (78%)	52 (16%)	18 (6%)	2	10
2	G	317/327 (97%)	261 (82%)	43 (14%)	13 (4%)	3	15
3	D	163/184 (89%)	134 (82%)	26 (16%)	3 (2%)	8	33
3	E	159/184 (86%)	136 (86%)	21 (13%)	2 (1%)	12	41
All	All	1369/1434 (96%)	1120 (82%)	201 (15%)	48 (4%)	3	18

All (48) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	112	ARG
2	B	22	LYS
2	B	43	VAL
2	B	293	LEU
3	D	114	ASP
1	C	114	ARG
1	C	115	LYS
2	G	119	LEU
2	G	293	LEU
2	G	295	THR
1	A	19	GLY
1	A	199	ASN
2	B	42	VAL
2	B	47	ALA
2	B	111	GLU
2	B	127	PRO
2	B	147	TYR
2	B	199	MET
2	B	225	GLY
1	C	19	GLY
2	G	48	ALA
2	G	147	TYR
2	G	266	ALA
2	G	296	ASP
3	E	144	VAL
1	A	113	ALA
1	A	202	LYS
2	B	249	ARG
1	C	205	ARG
2	G	97	ALA

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Mol	Chain	Res	Type
2	B	69	GLU
3	D	151	ILE
1	C	46	ASP
1	C	85	ASP
2	G	116	ALA
3	E	141	PRO
2	B	259	ILE
2	B	290	PRO
2	G	243	LEU
2	G	310	LYS
2	B	226	TYR
2	B	234	SER
2	B	26	VAL
2	B	110	VAL
1	C	102	PRO
2	G	177	GLY
2	G	289	PRO
3	D	141	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	178/180 (99%)	164 (92%)	14 (8%)	12	38
1	C	180/180 (100%)	168 (93%)	12 (7%)	16	44
2	B	269/269 (100%)	252 (94%)	17 (6%)	18	46
2	G	264/269 (98%)	245 (93%)	19 (7%)	14	41
3	D	150/167 (90%)	140 (93%)	10 (7%)	16	44
3	E	146/167 (87%)	135 (92%)	11 (8%)	13	40
All	All	1187/1232 (96%)	1104 (93%)	83 (7%)	15	42

All (83) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	SER
1	A	10	GLN
1	A	11	ARG
1	A	22	LEU
1	A	28	THR
1	A	84	TYR
1	A	104	ASP
1	A	155	VAL
1	A	159	ASP
1	A	163	SER
1	A	192	GLN
1	A	193	LYS
1	A	194	SER
1	A	203	LYS
2	B	10	CYS
2	B	29	THR
2	B	33	ILE
2	B	34	GLU
2	B	78	TYR
2	B	82	LEU
2	B	99	SER
2	B	110	VAL
2	B	127	PRO
2	B	146	ASP
2	B	157	ASP
2	B	158	ASP
2	B	204	SER
2	B	245	GLU
2	B	311	ARG
2	B	315	SER
2	B	327	VAL
3	D	-3	GLU
3	D	-2	GLU
3	D	4	LEU
3	D	25	LEU
3	D	56	GLU
3	D	65	THR
3	D	69	VAL
3	D	76	ILE
3	D	91	SER
3	D	120	ASP
1	C	11	ARG
1	C	36	ILE

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Mol	Chain	Res	Type
1	C	68	THR
1	C	126	ASP
1	C	132	LEU
1	C	147	THR
1	C	157	LYS
1	C	159	ASP
1	C	184	TYR
1	C	189	LEU
1	C	192	GLN
1	C	200	TRP
2	G	31	SER
2	G	70	THR
2	G	82	LEU
2	G	91	SER
2	G	104	PHE
2	G	110	VAL
2	G	113	HIS
2	G	119	LEU
2	G	121	ASN
2	G	141	MET
2	G	157	ASP
2	G	165	ASP
2	G	214	THR
2	G	215	SER
2	G	220	LEU
2	G	250	LEU
2	G	253	ASN
2	G	297	ASN
2	G	301	VAL
3	E	5	ARG
3	E	66	LEU
3	E	75	THR
3	E	81	LEU
3	E	91	SER
3	E	100	ASP
3	E	136	VAL
3	E	141	PRO
3	E	143	GLU
3	E	144	VAL
3	E	160	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	192	GLN
2	B	27	ASN
2	B	37	GLN
2	B	121	ASN
2	B	139	GLN
2	B	206	ASN
2	B	297	ASN
3	D	-1	GLN
1	C	118	HIS
2	G	32	GLN
2	G	121	ASN
2	G	139	GLN
2	G	206	ASN
2	G	320	ASN
3	E	13	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 [i](#)

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
7	APC	D	201	6	27,33,33	0.96	3 (11%)	31,52,52	1.04	3 (9%)
4	TXA	G	401	-	31,35,35	2.21	3 (9%)	37,52,52	3.35	7 (18%)
7	APC	E	201	6	27,33,33	0.87	2 (7%)	31,52,52	1.20	4 (12%)
4	TXA	B	401	5	31,35,35	2.29	3 (9%)	37,52,52	2.66	6 (16%)

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
7	APC	D	201	6	-	4/15/38/38	0/3/3/3
4	TXA	G	401	-	-	0/21/43/43	0/3/3/3
7	APC	E	201	6	-	8/15/38/38	0/3/3/3
4	TXA	B	401	5	-	3/21/43/43	0/3/3/3

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	401	TXA	C2-N3	9.40	1.47	1.32
4	G	401	TXA	C2-N3	9.22	1.47	1.32
4	B	401	TXA	C2-N1	7.23	1.47	1.33
4	G	401	TXA	C2-N1	6.97	1.46	1.33
7	D	201	APC	PB-O2B	-2.63	1.50	1.56
4	B	401	TXA	C5-C4	2.35	1.47	1.40
7	E	201	APC	PB-O2B	-2.31	1.51	1.56
4	G	401	TXA	C5-C4	2.24	1.46	1.40
7	D	201	APC	C8-N7	-2.19	1.30	1.34
7	D	201	APC	PA-O2A	-2.12	1.51	1.56
7	E	201	APC	PA-O2A	-2.09	1.51	1.56

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	G	401	TXA	OP2-CCA-NX	16.27	119.27	109.93
4	B	401	TXA	OP2-CCA-NX	11.01	116.26	109.93
4	G	401	TXA	N3-C2-N1	-9.43	113.95	128.68
4	B	401	TXA	N3-C2-N1	-8.61	115.22	128.68
4	B	401	TXA	CBX-CAX-CX	4.13	117.23	110.19
4	G	401	TXA	C2-N1-C6	3.21	124.25	118.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	G	401	TXA	C4-C5-N7	-3.07	106.20	109.40
4	B	401	TXA	C4-C5-N7	-2.91	106.37	109.40
4	B	401	TXA	C2-N1-C6	2.87	123.66	118.75
7	E	201	APC	O4'-C1'-C2'	-2.76	102.89	106.93
7	D	201	APC	O2B-PB-O1B	2.70	119.09	110.07
7	E	201	APC	C5-C6-N6	2.52	124.19	120.35
7	D	201	APC	O2A-PA-O1A	2.43	118.19	110.07
4	B	401	TXA	CBX-CAX-NX	-2.38	105.64	111.72
7	E	201	APC	O2A-PA-O1A	2.30	117.74	110.07
4	G	401	TXA	CBX-CAX-CX	2.27	114.05	110.19
7	D	201	APC	C5-C6-N6	2.25	123.77	120.35
7	E	201	APC	C3'-C2'-C1'	-2.13	97.77	100.98
4	G	401	TXA	C1'-N9-C4	-2.06	123.02	126.64
4	G	401	TXA	CAX-NX-CCA	2.01	125.25	120.86

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	D	201	APC	PB-C3A-PA-O1A
7	D	201	APC	PB-C3A-PA-O2A
7	D	201	APC	PB-C3A-PA-O5'
7	E	201	APC	PA-C3A-PB-O1B
7	E	201	APC	PA-C3A-PB-O2B
7	E	201	APC	PA-C3A-PB-O3B
7	E	201	APC	C5'-O5'-PA-O1A
7	E	201	APC	O4'-C4'-C5'-O5'
7	E	201	APC	C3'-C4'-C5'-O5'
4	B	401	TXA	C5'-O5'-P-OP2
7	E	201	APC	PB-O3B-PG-O1G
4	B	401	TXA	C5'-O5'-P-OP3
7	E	201	APC	C5'-O5'-PA-O2A
4	B	401	TXA	C5'-O5'-P-OP1
7	D	201	APC	O4'-C4'-C5'-O5'

There are no ring outliers.

3 monomers are involved in 4 short contacts:

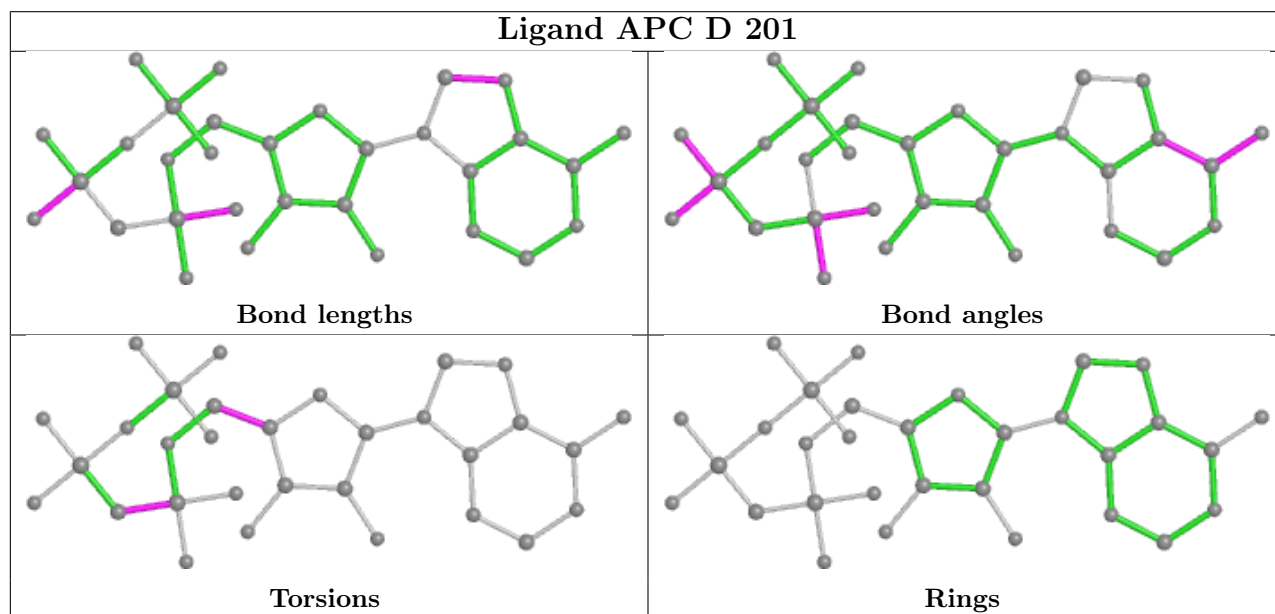
Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	D	201	APC	1	0
7	E	201	APC	2	0

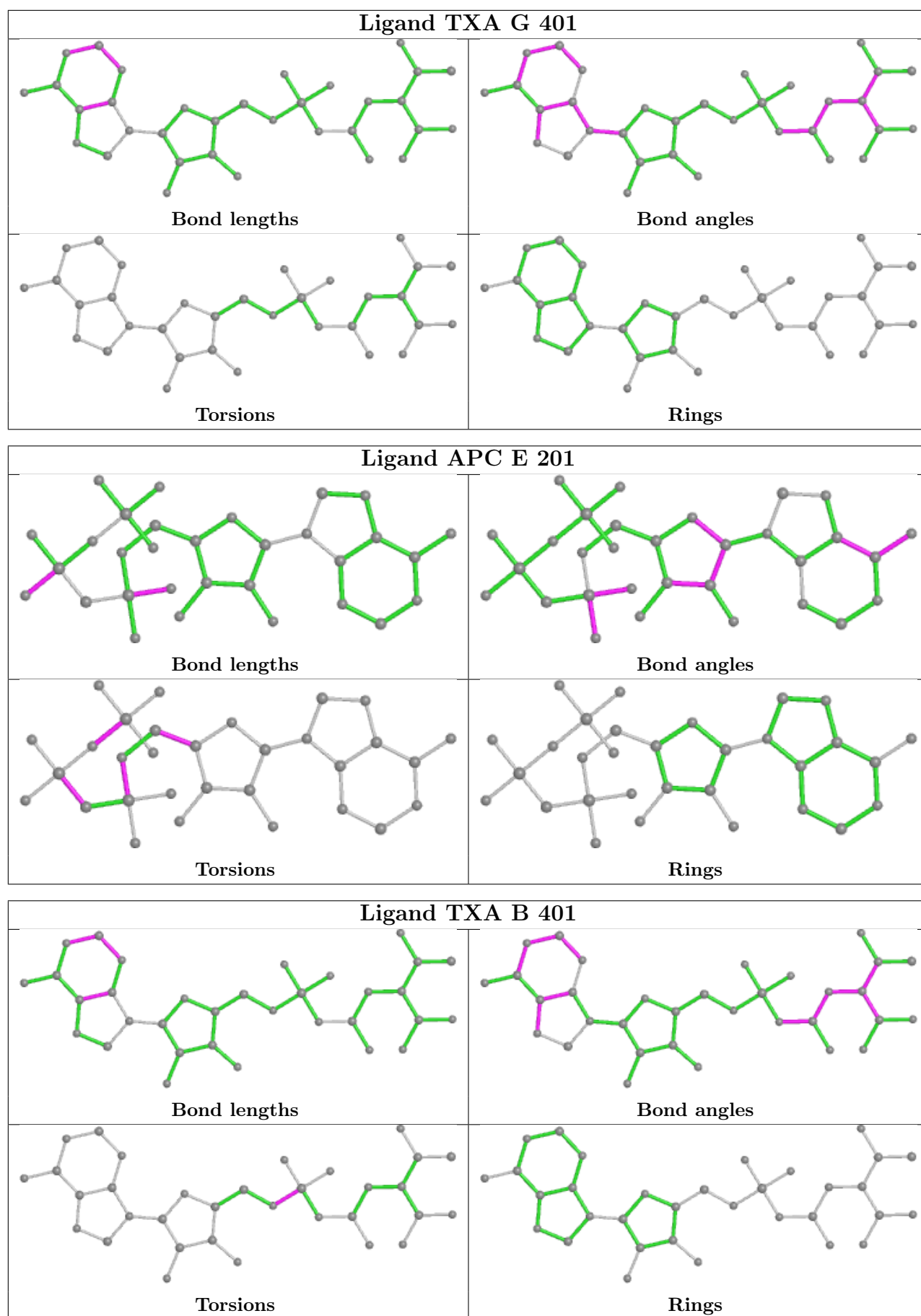
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	401	TXA	1	0

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





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	203/206 (98%)	-0.17	2 (0%) 82 70	58, 85, 122, 157	0
1	C	206/206 (100%)	-0.16	0 100 100	52, 74, 114, 141	0
2	B	327/327 (100%)	0.07	11 (3%) 45 24	71, 99, 145, 205	0
2	G	321/327 (98%)	0.06	13 (4%) 38 20	56, 84, 135, 187	0
3	D	165/184 (89%)	0.22	8 (4%) 30 14	79, 110, 147, 174	0
3	E	161/184 (87%)	0.02	4 (2%) 57 37	56, 79, 120, 142	0
All	All	1383/1434 (96%)	0.01	38 (2%) 54 32	52, 89, 136, 205	0

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	42	VAL	7.9
2	B	40	GLY	7.0
2	B	41	GLY	6.5
2	B	39	PHE	5.7
2	G	291	LEU	5.0
2	G	36	HIS	4.7
2	G	38	LYS	4.5
2	B	43	VAL	3.8
2	G	258	LYS	3.6
2	G	37	GLN	3.5
3	D	161	THR	3.4
1	A	200	TRP	3.3
2	G	45	GLU	3.2
3	E	143	GLU	3.1
3	D	160	ASN	3.0
2	G	292	GLU	3.0
3	D	20	ILE	2.9
2	B	44	PRO	2.9
2	B	295	THR	2.9

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Mol	Chain	Res	Type	RSRZ
2	G	46	VAL	2.9
2	G	293	LEU	2.8
2	B	46	VAL	2.7
2	G	248	PHE	2.6
2	G	34	GLU	2.6
2	B	314	PHE	2.5
3	D	51	ALA	2.5
2	G	279	ALA	2.4
3	E	144	VAL	2.4
2	B	37	GLN	2.4
3	D	24	ASN	2.4
2	B	38	LYS	2.3
3	D	158	LEU	2.2
3	E	146	PHE	2.2
3	E	1	MET	2.2
2	G	280	GLU	2.2
1	A	198	LEU	2.1
3	D	149	GLU	2.1
3	D	154	TYR	2.1

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

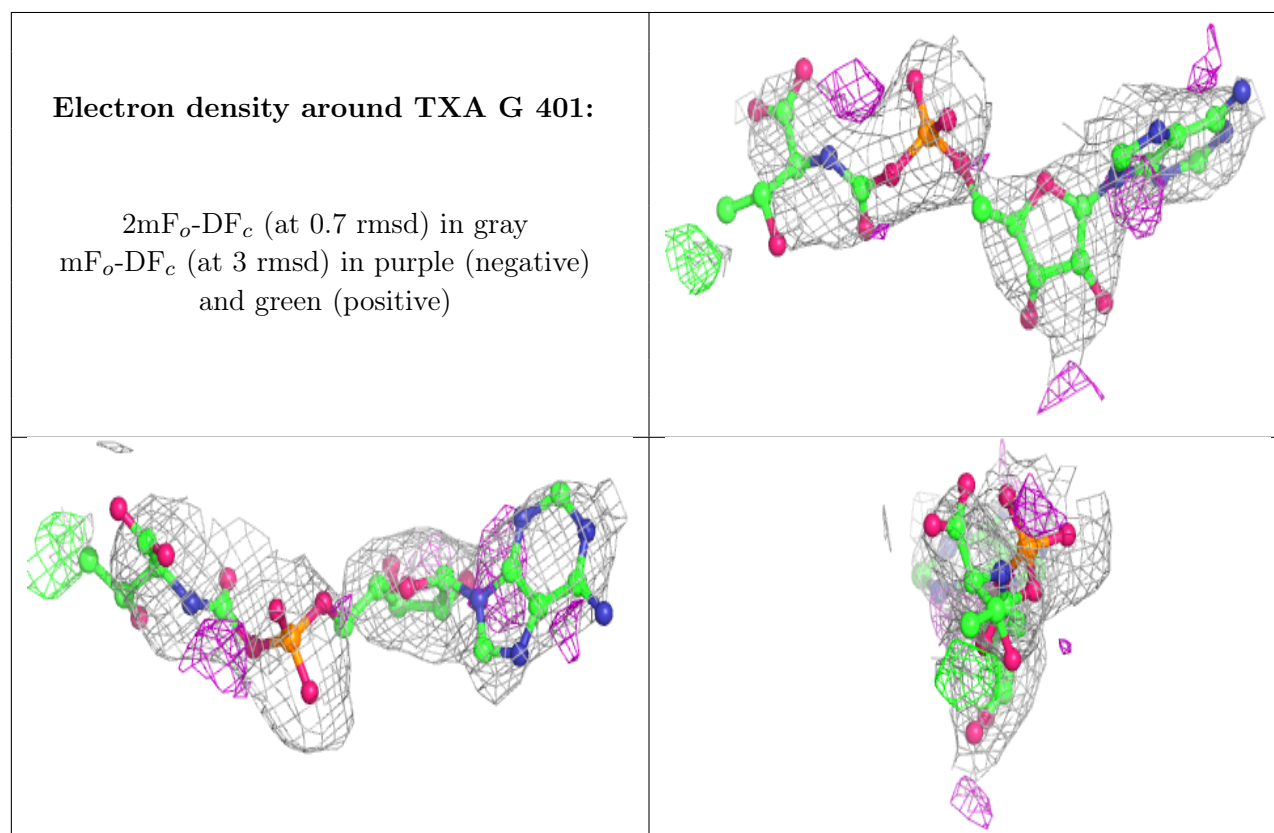
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	TXA	G	401	33/33	0.83	0.29	83,106,136,140	0
5	ZN	B	402	1/1	0.87	0.17	108,108,108,108	1
5	ZN	G	402	1/1	0.91	0.17	106,106,106,106	1
4	TXA	B	401	33/33	0.92	0.20	88,101,121,128	0

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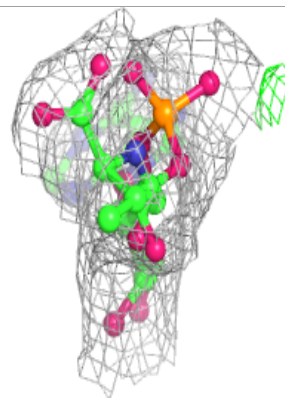
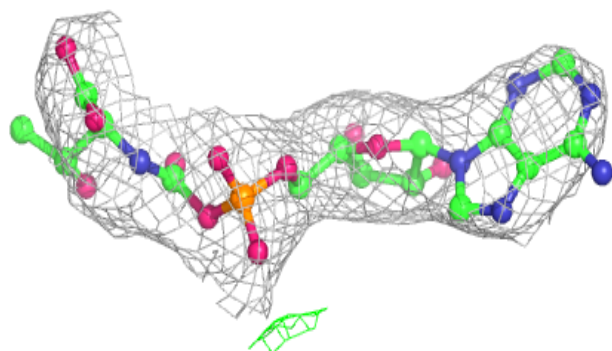
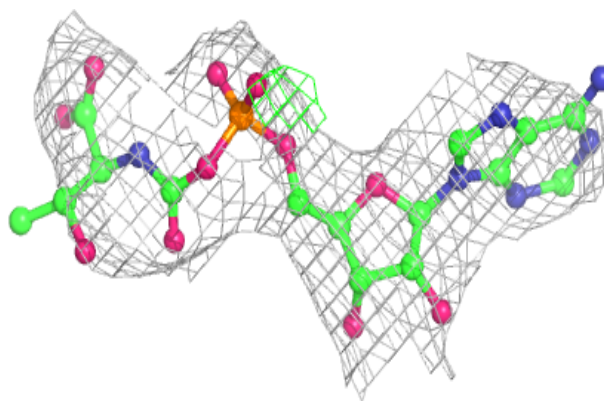
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
7	APC	D	201	31/31	0.95	0.17	77,85,105,108	0
7	APC	E	201	31/31	0.96	0.17	62,75,88,89	0
6	MG	D	200	1/1	0.97	0.12	61,61,61,61	0
6	MG	E	200	1/1	0.98	0.18	39,39,39,39	0

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.

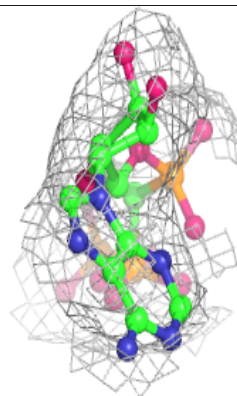
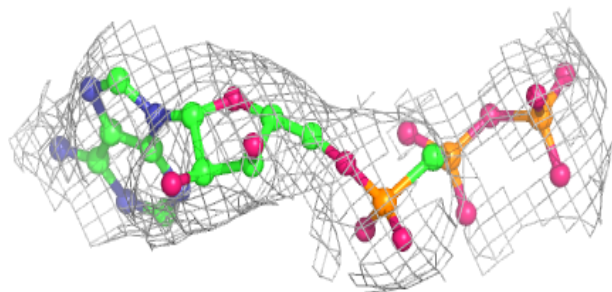
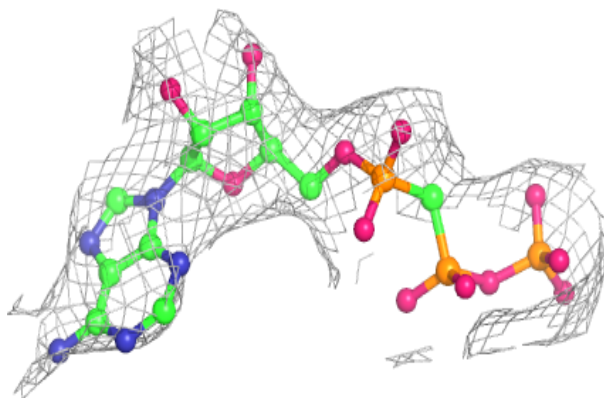


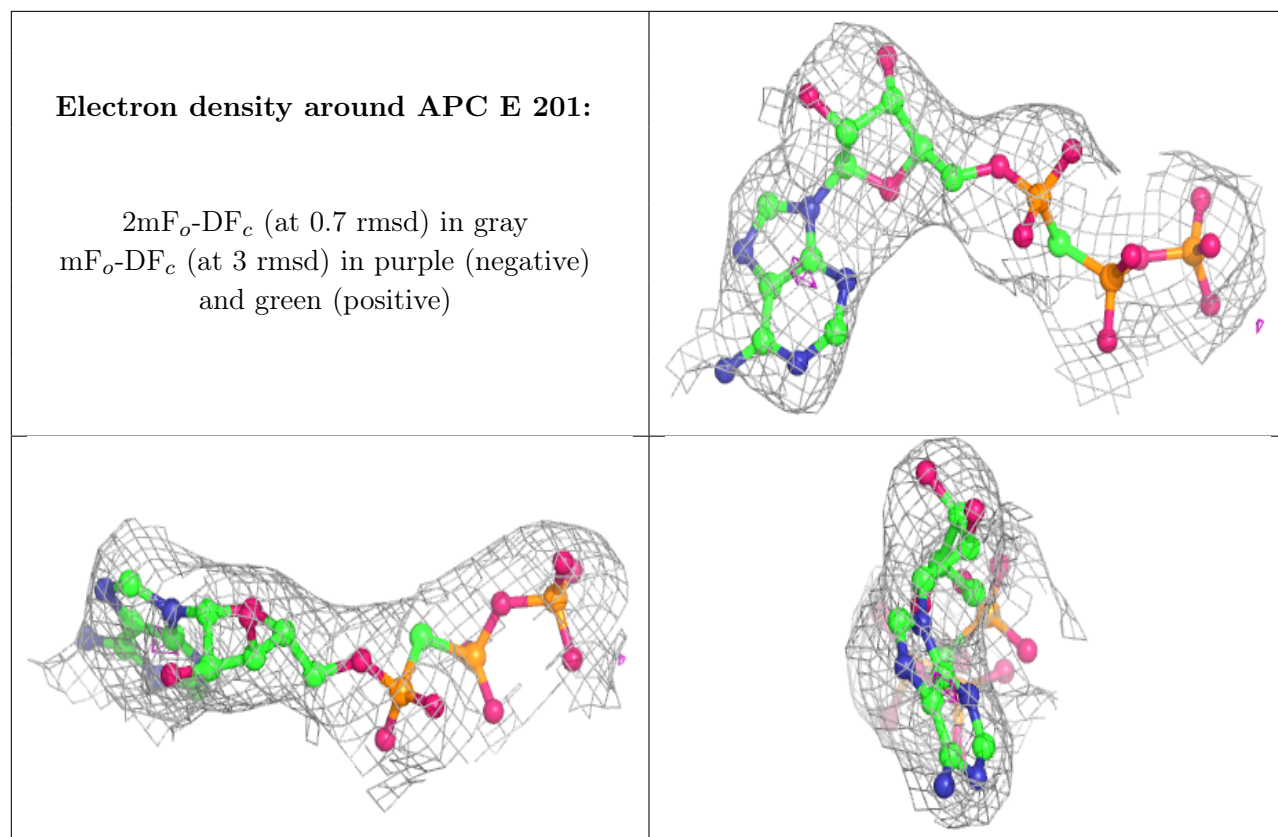
Electron density around TXA B 401:

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

**Electron density around APC D 201:**

$2mF_o-DF_c$ (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.