



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 11, 2025 – 04:24 PM EDT

PDB ID : 9D57 / pdb_00009d57
Title : iGABASnFR2 fluorescent GABA sensor in complex with GABA
Authors : Zhang, Y.; Looger, L.L.
Deposited on : 2024-08-13
Resolution : 2.60 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 : 4-5-2 with Phenix2.0rc1
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0rc1
EDS : 3.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.006 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.45.1

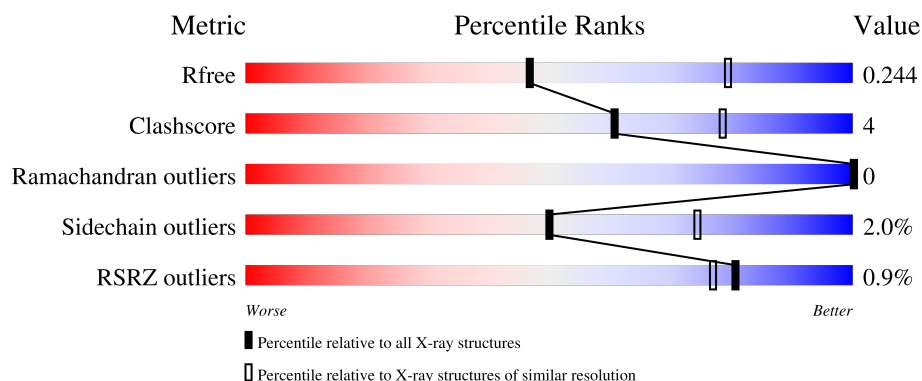
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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}	164625	3775 (2.60-2.60)
Clashscore	180529	4181 (2.60-2.60)
Ramachandran outliers	177936	4129 (2.60-2.60)
Sidechain outliers	177891	4129 (2.60-2.60)
RSRZ outliers	164620	3775 (2.60-2.60)

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	564	 85% 10% . .
1	B	564	 2% 85% 9% . .
1	C	564	 2% 84% 9% . 6%
1	D	564	 86% 9% . .
1	E	564	 2% 86% 8% . .

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Mol	Chain	Length	Quality of chain
1	F	564	% 84% 10% • 5%

2 Entry composition [i](#)

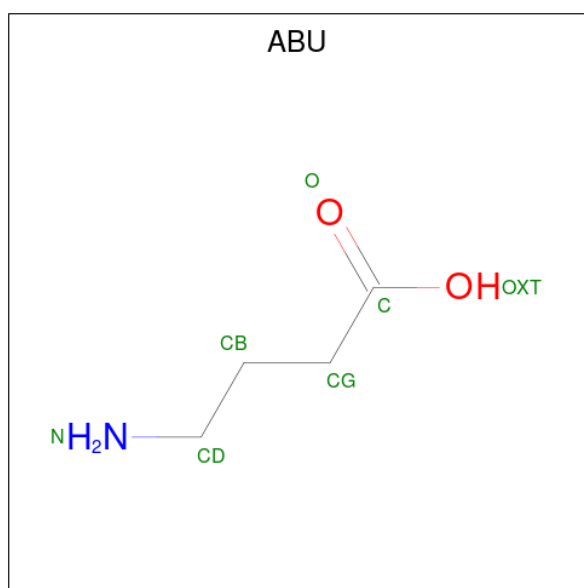
There are 3 unique types of molecules in this entry. The entry contains 24592 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 ABC transporter substrate-binding protein, Circular permuted superfolder GFP fusion.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	544	Total	C	N	O	S	0	0	0
			4216	2692	712	800	12			
1	B	539	Total	C	N	O	S	0	0	0
			4063	2590	687	775	11			
1	D	540	Total	C	N	O	S	0	0	0
			4114	2623	695	785	11			
1	F	538	Total	C	N	O	S	0	0	0
			4059	2596	680	773	10			
1	C	532	Total	C	N	O	S	0	0	0
			4021	2566	677	769	9			
1	E	539	Total	C	N	O	S	0	0	0
			4045	2583	688	763	11			

- Molecule 2 is GAMMA-AMINO-BUTANOIC ACID (CCD ID: ABU) (formula: $C_4H_9NO_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			7	4	1	2		
2	B	1	Total	C	N	O	0	0
			7	4	1	2		
2	D	1	Total	C	N	O	0	0
			7	4	1	2		
2	F	1	Total	C	N	O	0	0
			7	4	1	2		
2	C	1	Total	C	N	O	0	0
			7	4	1	2		
2	E	1	Total	C	N	O	0	0
			7	4	1	2		

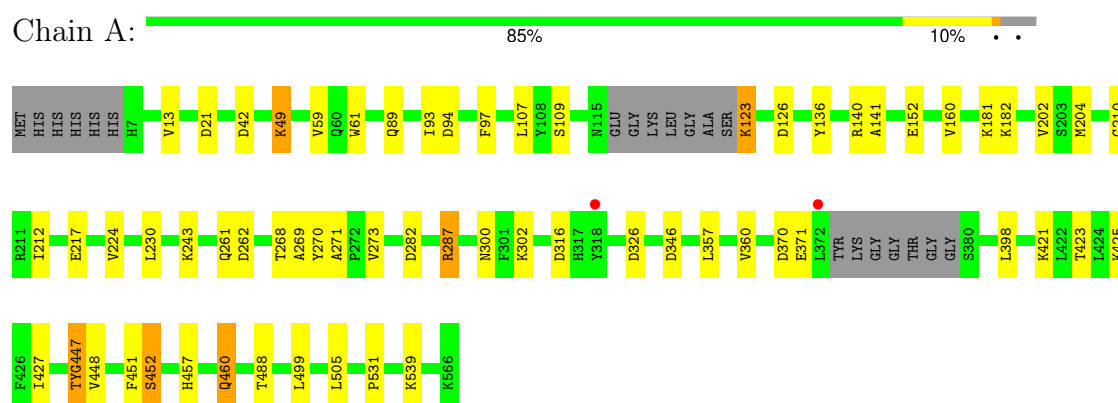
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	7	Total	O	0	0
			7	7		
3	B	8	Total	O	0	0
			8	8		
3	D	2	Total	O	0	0
			2	2		
3	F	4	Total	O	0	0
			4	4		
3	C	7	Total	O	0	0
			7	7		
3	E	4	Total	O	0	0
			4	4		

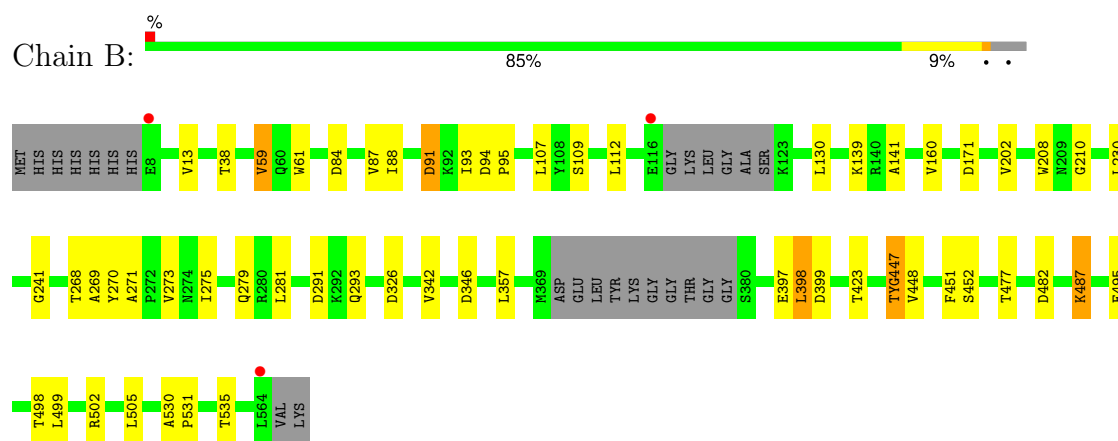
3 Residue-property plots

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.

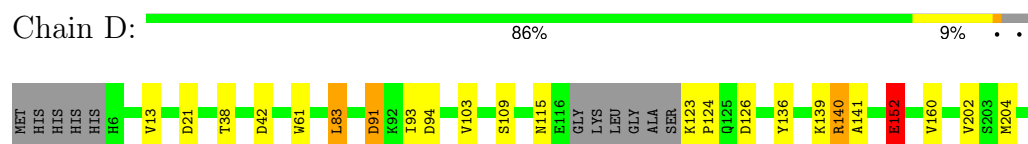
- Molecule 1: ABC transporter substrate-binding protein, Circular permuted superfolder GFP fusion



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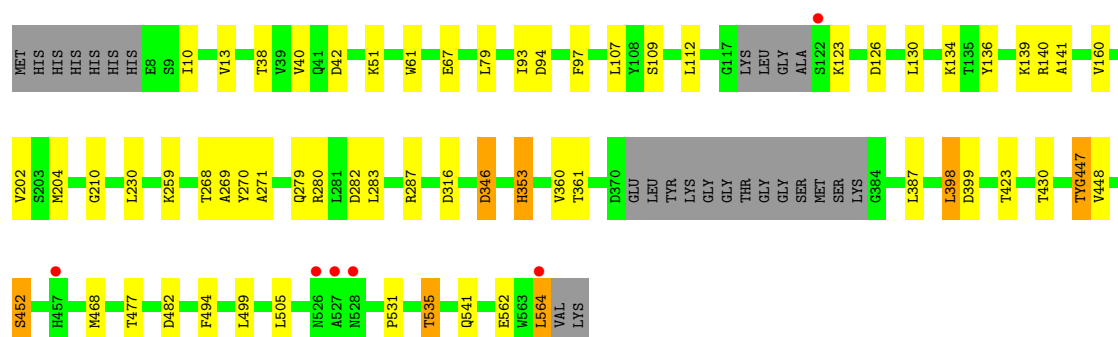
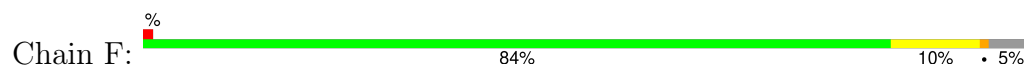


- Molecule 1: ABC transporter substrate-binding protein, Circular permuted superfolder GFP fusion

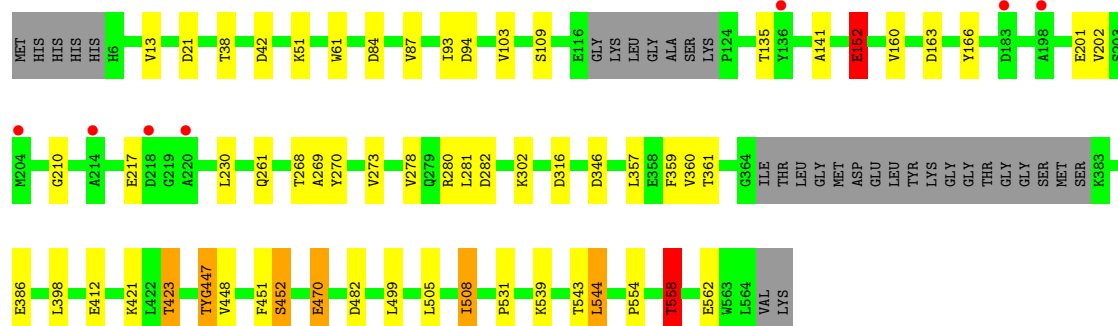
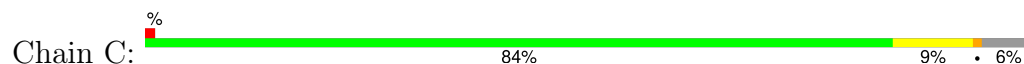




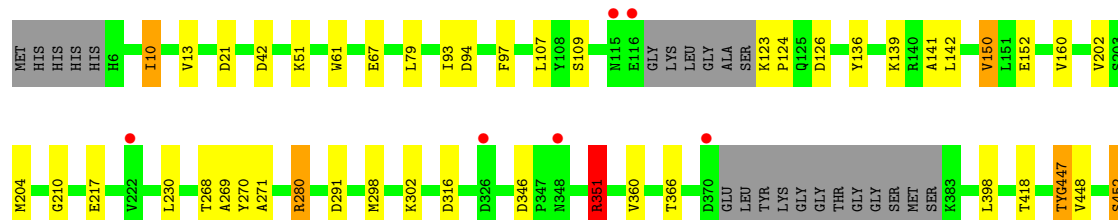
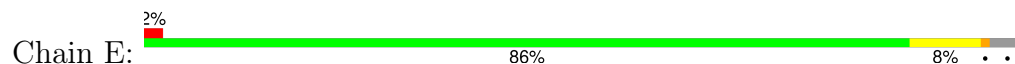
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4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	76.50Å 109.92Å 214.31Å 90.00° 100.25° 90.00°	Depositor
Resolution (Å)	47.39 – 2.60 47.39 – 2.60	Depositor EDS
% Data completeness (in resolution range)	98.3 (47.39-2.60) 93.7 (47.39-2.60)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.88 (at 2.61Å)	Xtriage
Refinement program	REFMAC 5.8.0425	Depositor
R, R_{free}	0.206 , 0.249 0.202 , 0.244	Depositor DCC
R_{free} test set	5396 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	52.7	Xtriage
Anisotropy	0.116	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 29.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.020 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	24592	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.77% 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

5.1 Standard geometry

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

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	0.60	0/4294	1.14	15/5836 (0.3%)
1	B	0.59	0/4140	1.12	12/5649 (0.2%)
1	C	0.59	0/4100	1.13	18/5593 (0.3%)
1	D	0.59	0/4193	1.13	18/5716 (0.3%)
1	E	0.59	0/4123	1.13	15/5625 (0.3%)
1	F	0.60	0/4136	1.14	18/5640 (0.3%)
All	All	0.59	0/24986	1.13	96/34059 (0.3%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	D	0	2
All	All	0	3

There are no bond length outliers.

All (96) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	351	ARG	CD-NE-CZ	9.21	137.30	124.40
1	C	201	GLU	CB-CG-CD	7.78	125.82	112.60
1	F	126	ASP	CA-CB-CG	7.58	120.18	112.60
1	A	42	ASP	CA-CB-CG	7.26	119.86	112.60
1	C	386	GLU	CB-CG-CD	7.25	124.92	112.60
1	F	316	ASP	CA-CB-CG	7.24	119.83	112.60
1	E	67	GLU	CB-CG-CD	6.88	124.30	112.60
1	F	160	VAL	N-CA-CB	6.61	116.23	110.08

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	482	ASP	CA-CB-CG	6.51	119.11	112.60
1	C	51	LYS	CG-CD-CE	6.49	126.22	111.30
1	D	126	ASP	CA-CB-CG	6.37	118.97	112.60
1	C	42	ASP	CA-CB-CG	6.35	118.95	112.60
1	C	21	ASP	CA-CB-CG	6.35	118.95	112.60
1	F	482	ASP	CA-CB-CG	6.31	118.91	112.60
1	E	418	THR	CA-CB-OG1	-6.29	100.16	109.60
1	B	38	THR	CA-CB-OG1	-6.28	100.17	109.60
1	D	38	THR	CA-CB-OG1	-6.21	100.28	109.60
1	E	126	ASP	CA-CB-CG	6.21	118.81	112.60
1	D	42	ASP	CA-CB-CG	6.20	118.80	112.60
1	A	21	ASP	CA-CB-CG	6.14	118.74	112.60
1	C	346	ASP	CB-CA-C	6.12	117.12	110.08
1	E	160	VAL	N-CA-CB	6.11	115.76	110.08
1	C	482	ASP	CA-CB-CG	6.08	118.68	112.60
1	C	412	GLU	CB-CG-CD	-6.03	102.35	112.60
1	C	160	VAL	N-CA-CB	6.00	115.66	110.08
1	E	21	ASP	CA-CB-CG	6.00	118.60	112.60
1	D	21	ASP	CA-CB-CG	5.99	118.59	112.60
1	A	371	GLU	CB-CA-C	5.94	121.12	109.72
1	B	160	VAL	N-CA-CB	5.93	115.60	110.08
1	D	91	ASP	CA-CB-CG	5.88	118.48	112.60
1	C	543	THR	OG1-CB-CG2	-5.85	97.61	109.30
1	F	477	THR	CA-CB-OG1	-5.83	100.86	109.60
1	B	487	LYS	CG-CD-CE	5.83	124.70	111.30
1	D	139	LYS	CB-CA-C	5.81	120.23	109.54
1	B	171	ASP	CA-CB-CG	5.79	118.39	112.60
1	D	160	VAL	N-CA-CB	5.78	115.45	110.08
1	A	160	VAL	N-CA-CB	5.73	115.41	110.08
1	A	287	ARG	CA-CB-CG	5.70	125.49	114.10
1	B	291	ASP	CA-CB-CG	5.70	118.30	112.60
1	A	346	ASP	CB-CA-C	5.67	116.60	110.08
1	D	346	ASP	CB-CA-C	5.65	116.58	110.08
1	F	499	LEU	N-CA-CB	5.63	119.05	109.87
1	F	535	THR	CA-CB-OG1	-5.63	101.16	109.60
1	A	126	ASP	CA-CB-CG	5.58	118.18	112.60
1	D	152	GLU	N-CA-CB	5.58	118.09	110.01
1	E	346	ASP	CB-CA-C	5.56	116.47	110.08
1	B	346	ASP	CB-CA-C	5.56	116.47	110.08
1	E	150	VAL	N-CA-CB	5.53	117.01	110.55
1	C	38	THR	CA-CB-OG1	-5.52	101.31	109.60
1	F	564	LEU	N-CA-CB	5.52	119.88	110.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	316	ASP	CA-CB-CG	5.50	118.10	112.60
1	B	91	ASP	CA-CB-CG	5.46	118.06	112.60
1	D	326	ASP	CA-CB-CG	5.45	118.05	112.60
1	A	370	ASP	N-CA-C	-5.42	106.67	113.28
1	E	366	THR	OG1-CB-CG2	-5.41	98.48	109.30
1	F	123	LYS	CB-CA-C	5.40	117.20	109.26
1	D	287	ARG	CA-CB-CG	5.38	124.86	114.10
1	B	482	ASP	CA-CB-CG	5.35	117.95	112.60
1	E	42	ASP	CA-CB-CG	5.32	117.92	112.60
1	B	477	THR	CA-CB-OG1	-5.30	101.65	109.60
1	D	221	PRO	N-CA-CB	-5.28	98.24	102.36
1	B	139	LYS	CB-CA-C	5.28	119.25	109.54
1	C	280	ARG	CG-CD-NE	-5.26	100.42	112.00
1	F	353	HIS	CB-CG-CD2	5.24	138.02	131.20
1	A	152	GLU	N-CA-CB	5.23	117.60	110.01
1	F	140	ARG	CA-CB-CG	5.20	124.51	114.10
1	D	401	ASP	CA-CB-CG	5.20	117.80	112.60
1	E	316	ASP	CA-CB-CG	5.20	117.80	112.60
1	F	42	ASP	CA-CB-CG	5.20	117.80	112.60
1	E	139	LYS	CB-CA-C	5.20	119.10	109.54
1	A	316	ASP	CA-CB-CG	5.18	117.78	112.60
1	C	152	GLU	N-CA-CB	5.17	117.51	110.01
1	A	326	ASP	CA-CB-CG	5.13	117.73	112.60
1	F	67	GLU	CB-CG-CD	5.12	121.30	112.60
1	A	49	LYS	CB-CA-C	5.11	120.08	110.63
1	F	139	LYS	CB-CA-C	5.11	118.94	109.54
1	F	140	ARG	CG-CD-NE	-5.08	100.82	112.00
1	C	280	ARG	CA-CB-CG	5.08	124.25	114.10
1	C	558	THR	CB-CA-C	5.07	118.83	110.88
1	D	423	THR	CA-CB-OG1	-5.06	102.01	109.60
1	F	346	ASP	CA-CB-CG	5.06	117.66	112.60
1	E	280	ARG	CB-CG-CD	5.06	122.94	111.30
1	D	140	ARG	CA-CB-CG	5.05	124.20	114.10
1	C	423	THR	CA-CB-OG1	-5.05	102.03	109.60
1	E	351	ARG	CG-CD-NE	5.04	123.10	112.00
1	A	370	ASP	CB-CA-C	5.04	119.40	109.72
1	A	421	LYS	CB-CG-CD	5.04	122.89	111.30
1	E	152	GLU	N-CA-CB	5.04	117.32	110.01
1	E	346	ASP	CA-CB-CG	5.04	117.64	112.60
1	B	423	THR	CA-CB-OG1	-5.04	102.05	109.60
1	A	182	LYS	CB-CG-CD	5.03	122.87	111.30
1	D	115	ASN	CB-CA-C	-5.03	101.50	109.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	498	THR	CA-CB-OG1	-5.02	102.07	109.60
1	F	346	ASP	CB-CA-C	5.02	115.85	110.08
1	C	163	ASP	CA-CB-CG	5.02	117.62	112.60
1	F	259	LYS	N-CA-CB	5.01	117.33	110.07

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	140	ARG	Sidechain
1	D	140	ARG	Sidechain
1	D	351	ARG	Sidechain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4216	0	4082	31	0
1	B	4063	0	3790	35	0
1	C	4021	0	3745	34	0
1	D	4114	0	3880	25	0
1	E	4045	0	3781	31	0
1	F	4059	0	3821	31	0
2	A	7	0	0	0	0
2	B	7	0	0	1	0
2	C	7	0	0	0	0
2	D	7	0	0	1	0
2	E	7	0	0	0	0
2	F	7	0	0	0	0
3	A	7	0	0	0	0
3	B	8	0	0	0	0
3	C	7	0	0	1	0
3	D	2	0	0	0	0
3	E	4	0	0	0	0
3	F	4	0	0	0	0
All	All	24592	0	23099	187	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 4.

All (187) 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:93:ILE:HD13	1:C:103:VAL:CG2	1.82	1.09
1:C:230:LEU:HB3	1:C:544:LEU:HD11	1.46	0.96
1:B:112:LEU:HD13	1:B:130:LEU:HD11	1.50	0.93
1:F:346:ASP:H	1:F:353:HIS:HE1	1.15	0.92
1:E:141:ALA:O	1:E:142:LEU:HD12	1.75	0.86
1:E:150:VAL:HG21	1:E:560:TRP:CH2	2.15	0.81
1:C:447:CRO:C3	1:C:448:VAL:CA	2.60	0.80
1:B:447:CRO:C3	1:B:448:VAL:CA	2.60	0.79
1:D:447:CRO:C3	1:D:448:VAL:CA	2.61	0.79
1:E:447:CRO:C3	1:E:448:VAL:CA	2.61	0.79
1:F:447:CRO:C3	1:F:448:VAL:CA	2.60	0.79
1:D:152:GLU:HG3	1:D:544:LEU:CD2	2.13	0.79
1:A:447:CRO:C3	1:A:448:VAL:CA	2.60	0.78
1:F:280:ARG:HH11	1:F:287:ARG:CB	1.97	0.78
1:C:93:ILE:CD1	1:C:103:VAL:CG2	2.62	0.77
1:B:59:VAL:HG11	1:B:241:GLY:C	2.10	0.77
1:E:141:ALA:C	1:E:142:LEU:HD12	2.11	0.76
1:F:346:ASP:H	1:F:353:HIS:CE1	2.00	0.74
1:B:447:CRO:CA3	1:B:448:VAL:N	2.51	0.73
1:C:447:CRO:CA3	1:C:448:VAL:N	2.52	0.73
1:F:447:CRO:CA3	1:F:448:VAL:N	2.52	0.72
1:E:351:ARG:HG3	1:E:351:ARG:HH11	1.54	0.72
1:B:112:LEU:CD1	1:B:130:LEU:HD11	2.19	0.72
1:C:93:ILE:HD13	1:C:103:VAL:HG22	1.70	0.71
1:B:398:LEU:HD12	1:B:399:ASP:N	2.06	0.71
1:D:447:CRO:CA3	1:D:448:VAL:N	2.53	0.71
1:A:447:CRO:CA3	1:A:448:VAL:N	2.52	0.71
1:E:447:CRO:CA3	1:E:448:VAL:N	2.53	0.71
1:C:93:ILE:HD13	1:C:103:VAL:HG23	1.68	0.70
1:D:152:GLU:HG3	1:D:544:LEU:HD22	1.73	0.70
1:F:398:LEU:HD12	1:F:399:ASP:N	2.06	0.69
1:F:112:LEU:HD13	1:F:130:LEU:HD11	1.75	0.68
1:B:397:GLU:OE1	1:B:502:ARG:NH1	2.26	0.68
1:F:280:ARG:NH1	1:F:287:ARG:CB	2.57	0.67
1:C:282:ASP:OD2	1:C:531:PRO:HA	1.94	0.67
1:A:398:LEU:C	1:A:398:LEU:HD23	2.20	0.66
1:B:94:ASP:HA	1:B:275:ILE:HD11	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:398:LEU:C	1:C:398:LEU:HD23	2.22	0.65
1:D:398:LEU:C	1:D:398:LEU:HD23	2.22	0.64
1:E:398:LEU:HD23	1:E:398:LEU:C	2.23	0.63
1:B:273:VAL:HG12	1:B:273:VAL:O	1.99	0.61
1:C:230:LEU:HB3	1:C:544:LEU:CD1	2.27	0.61
1:B:112:LEU:HD13	1:B:130:LEU:CD1	2.25	0.61
1:F:468:MET:HE3	1:F:494:PHE:CD1	2.36	0.61
1:A:212:ILE:HG21	1:A:224:VAL:HG22	1.83	0.60
1:F:112:LEU:CD1	1:F:130:LEU:HD11	2.31	0.60
1:B:59:VAL:HG11	1:B:241:GLY:O	2.03	0.59
1:D:273:VAL:HG12	1:D:273:VAL:O	2.01	0.59
1:B:273:VAL:O	1:B:273:VAL:CG1	2.52	0.58
1:B:59:VAL:CG1	1:B:241:GLY:O	2.52	0.57
1:C:554:PRO:O	1:C:558:THR:HG23	2.04	0.57
1:D:287:ARG:HH21	1:D:300:ASN:ND2	2.03	0.57
1:C:217:GLU:OE2	1:C:302:LYS:NZ	2.35	0.56
1:D:273:VAL:O	1:D:273:VAL:CG1	2.54	0.56
1:A:217:GLU:OE2	1:A:302:LYS:CD	2.54	0.55
1:A:287:ARG:HH21	1:A:300:ASN:ND2	2.04	0.55
1:B:495:GLU:OE2	1:B:502:ARG:NH2	2.40	0.55
1:B:279:GLN:HE21	1:B:535:THR:HG21	1.72	0.54
1:F:51:LYS:HG3	1:F:79:LEU:HD21	1.89	0.54
1:A:457:HIS:O	1:A:460:GLN:NE2	2.40	0.54
1:A:59:VAL:O	1:A:243:LYS:HE2	2.08	0.53
1:C:93:ILE:CD1	1:C:103:VAL:HG21	2.39	0.53
1:E:457:HIS:O	1:E:460:GLN:NE2	2.41	0.53
1:A:136:TYR:CB	1:A:204:MET:HE1	2.40	0.52
1:D:141:ALA:HB2	1:D:202:VAL:HG21	1.91	0.52
1:A:141:ALA:HB2	1:A:202:VAL:HG21	1.92	0.51
1:E:13:VAL:HG21	1:E:61:TRP:CG	2.45	0.51
1:E:136:TYR:CB	1:E:204:MET:HE1	2.41	0.51
1:E:351:ARG:HH11	1:E:351:ARG:CG	2.23	0.51
1:B:342:VAL:HG23	1:B:357:LEU:HB3	1.93	0.51
1:A:136:TYR:HB3	1:A:204:MET:HE1	1.92	0.50
1:A:217:GLU:OE2	1:A:302:LYS:NZ	2.32	0.50
1:D:136:TYR:CB	1:D:204:MET:HE1	2.41	0.50
1:E:217:GLU:OE2	1:E:302:LYS:NZ	2.35	0.50
1:B:398:LEU:HD12	1:B:398:LEU:C	2.36	0.50
1:D:13:VAL:HG21	1:D:61:TRP:CG	2.47	0.50
1:F:398:LEU:HD12	1:F:398:LEU:C	2.38	0.49
1:B:13:VAL:HG21	1:B:61:TRP:CG	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:141:ALA:HB2	1:B:202:VAL:HG21	1.93	0.49
1:F:112:LEU:HD13	1:F:130:LEU:CD1	2.42	0.49
1:C:13:VAL:HG21	1:C:61:TRP:CG	2.48	0.48
1:E:150:VAL:HG21	1:E:560:TRP:HH2	1.73	0.48
1:F:13:VAL:HG21	1:F:61:TRP:CG	2.48	0.48
1:F:141:ALA:HB2	1:F:202:VAL:HG21	1.95	0.48
1:B:342:VAL:CG2	1:B:357:LEU:HB3	2.44	0.48
1:F:136:TYR:CB	1:F:204:MET:HE1	2.44	0.48
1:A:13:VAL:HG21	1:A:61:TRP:CG	2.47	0.48
1:F:109:SER:HA	1:F:230:LEU:O	2.14	0.47
1:A:268:THR:O	1:A:269:ALA:HB3	2.13	0.47
1:C:141:ALA:HB2	1:C:202:VAL:HG21	1.96	0.47
1:E:268:THR:O	1:E:269:ALA:HB3	2.14	0.47
1:B:84:ASP:O	1:B:87:VAL:HG22	2.14	0.47
1:D:109:SER:HA	1:D:230:LEU:O	2.14	0.47
1:E:109:SER:HA	1:E:230:LEU:O	2.15	0.47
1:B:109:SER:HA	1:B:230:LEU:O	2.15	0.47
1:A:109:SER:HA	1:A:230:LEU:O	2.15	0.47
1:B:268:THR:O	1:B:269:ALA:HB3	2.14	0.47
1:E:136:TYR:HB3	1:E:204:MET:HE1	1.97	0.47
1:E:505:LEU:C	1:E:505:LEU:HD23	2.40	0.47
1:C:278:VAL:O	1:C:278:VAL:HG23	2.15	0.46
1:F:279:GLN:HE21	1:F:535:THR:HG21	1.79	0.46
1:C:93:ILE:CD1	1:C:103:VAL:HG23	2.41	0.46
1:B:505:LEU:C	1:B:505:LEU:HD23	2.41	0.46
1:F:268:THR:O	1:F:269:ALA:HB3	2.16	0.46
1:F:360:VAL:HG12	1:F:452:SER:HB3	1.98	0.46
1:E:141:ALA:HB2	1:E:202:VAL:HG21	1.97	0.46
1:A:505:LEU:C	1:A:505:LEU:HD23	2.41	0.46
1:E:107:LEU:HB3	1:E:271:ALA:HB3	1.97	0.46
1:C:84:ASP:O	1:C:87:VAL:HG22	2.16	0.46
1:D:505:LEU:C	1:D:505:LEU:HD23	2.42	0.45
1:F:107:LEU:HB3	1:F:271:ALA:HB3	1.99	0.45
1:F:97:PHE:CZ	1:F:107:LEU:HD11	2.52	0.45
1:C:109:SER:HA	1:C:230:LEU:O	2.16	0.45
1:B:95:PRO:HD3	1:B:275:ILE:HD11	1.99	0.45
1:E:93:ILE:O	1:E:94:ASP:C	2.59	0.45
1:A:93:ILE:O	1:A:94:ASP:C	2.59	0.45
1:F:280:ARG:HH21	1:F:283:LEU:CD2	2.30	0.45
1:E:51:LYS:HG3	1:E:79:LEU:HD21	1.98	0.45
1:B:210:GLY:HA3	1:B:270:TYR:CZ	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:505:LEU:C	1:C:505:LEU:HD23	2.42	0.45
1:A:217:GLU:OE2	1:A:302:LYS:HD3	2.16	0.45
1:D:360:VAL:HG12	1:D:452:SER:HB3	1.98	0.45
1:C:152:GLU:OE1	1:C:166:TYR:OH	2.30	0.45
1:C:268:THR:O	1:C:269:ALA:HB3	2.17	0.45
1:F:93:ILE:O	1:F:94:ASP:C	2.60	0.44
1:F:505:LEU:C	1:F:505:LEU:HD23	2.42	0.44
1:D:210:GLY:HA3	1:D:270:TYR:CZ	2.52	0.44
1:D:268:THR:O	1:D:269:ALA:HB3	2.16	0.44
1:A:425:LYS:HE2	1:A:427:ILE:HD11	1.99	0.44
1:B:130:LEU:HD12	1:B:130:LEU:N	2.33	0.44
1:C:451:PHE:CE2	1:C:499:LEU:HD22	2.52	0.44
1:B:13:VAL:HG21	1:B:61:TRP:CD2	2.51	0.44
1:C:210:GLY:HA3	1:C:270:TYR:CZ	2.53	0.44
1:D:93:ILE:O	1:D:94:ASP:C	2.60	0.44
1:F:562:GLU:O	1:F:564:LEU:HG	2.17	0.44
1:A:13:VAL:HG21	1:A:61:TRP:CD2	2.53	0.44
1:A:210:GLY:HA3	1:A:270:TYR:CZ	2.53	0.44
1:A:262:ASP:HB3	1:A:287:ARG:HH11	1.83	0.44
1:E:123:LYS:HA	1:E:124:PRO:HD3	1.87	0.44
1:E:210:GLY:HA3	1:E:270:TYR:CZ	2.52	0.44
1:C:93:ILE:O	1:C:94:ASP:C	2.60	0.44
1:D:217:GLU:OE2	1:D:302:LYS:NZ	2.37	0.43
1:A:451:PHE:CE2	1:A:499:LEU:HD22	2.53	0.43
1:F:13:VAL:HG21	1:F:61:TRP:CD2	2.52	0.43
1:F:210:GLY:HA3	1:F:270:TYR:CZ	2.53	0.43
1:D:278:VAL:HG22	1:D:334:ASN:HB3	1.99	0.43
1:E:97:PHE:CZ	1:E:107:LEU:HD11	2.53	0.43
1:A:460:GLN:H	1:A:460:GLN:HG3	1.33	0.43
1:D:208:TRP:CD2	2:D:600:ABU:CB	3.01	0.43
1:B:451:PHE:CE2	1:B:499:LEU:HD22	2.54	0.43
1:E:13:VAL:HG21	1:E:61:TRP:CD2	2.53	0.43
1:A:282:ASP:OD1	1:A:531:PRO:HA	2.19	0.43
1:C:357:LEU:CD1	1:C:423:THR:HG22	2.48	0.43
1:E:291:ASP:OD2	1:E:298:MET:HE3	2.18	0.43
1:B:93:ILE:O	1:B:94:ASP:C	2.61	0.43
1:C:13:VAL:HG21	1:C:61:TRP:CD2	2.53	0.42
1:E:107:LEU:HD12	1:E:107:LEU:HA	1.79	0.42
1:E:360:VAL:HG12	1:E:452:SER:HB3	2.01	0.42
1:E:530:ALA:HA	1:E:531:PRO:HD3	1.90	0.42
1:C:357:LEU:HD13	1:C:423:THR:HG22	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:107:LEU:HB3	1:A:271:ALA:HB3	2.00	0.42
1:B:87:VAL:HG23	1:B:88:ILE:HG13	2.01	0.42
1:D:13:VAL:HG21	1:D:61:TRP:CD2	2.53	0.42
1:F:282:ASP:OD1	1:F:531:PRO:HA	2.20	0.42
1:C:470:GLU:H	1:C:470:GLU:HG2	1.57	0.42
1:C:359:PHE:CE1	1:C:421:LYS:HG3	2.55	0.42
1:D:123:LYS:HA	1:D:124:PRO:HD3	1.86	0.41
1:D:262:ASP:HB3	1:D:287:ARG:HH11	1.84	0.41
1:C:539:LYS:HB2	3:C:704:HOH:O	2.19	0.41
1:A:261:GLN:OE1	1:A:273:VAL:HG22	2.20	0.41
1:F:430:THR:HG22	1:F:430:THR:O	2.20	0.41
1:B:107:LEU:HB3	1:B:271:ALA:HB3	2.02	0.41
1:B:208:TRP:CD2	2:B:600:ABU:CB	3.03	0.41
1:F:447:CRO:C3	1:F:448:VAL:HA	2.48	0.41
1:E:10:ILE:HD13	1:E:10:ILE:HA	1.81	0.41
1:B:94:ASP:HA	1:B:275:ILE:CD1	2.48	0.41
1:A:360:VAL:HG12	1:A:452:SER:HB3	2.02	0.41
1:D:282:ASP:OD1	1:D:531:PRO:HA	2.21	0.41
1:C:261:GLN:OE1	1:C:273:VAL:HG22	2.21	0.41
1:A:97:PHE:CZ	1:A:107:LEU:HD11	2.56	0.40
1:A:123:LYS:HE2	1:A:123:LYS:HB2	1.63	0.40
1:A:357:LEU:CD1	1:A:423:THR:HG22	2.50	0.40
1:D:83:LEU:HD23	1:D:103:VAL:HG13	2.02	0.40
1:C:360:VAL:HG12	1:C:452:SER:HB3	2.03	0.40
1:B:530:ALA:HA	1:B:531:PRO:HD3	1.90	0.40
1:C:508:ILE:N	1:C:508:ILE:HD13	2.36	0.40
1:E:460:GLN:H	1:E:460:GLN:HG3	1.33	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	535/564 (95%)	520 (97%)	15 (3%)	0	100	100
1	B	530/564 (94%)	513 (97%)	17 (3%)	0	100	100
1	C	523/564 (93%)	510 (98%)	13 (2%)	0	100	100
1	D	531/564 (94%)	516 (97%)	15 (3%)	0	100	100
1	E	530/564 (94%)	517 (98%)	13 (2%)	0	100	100
1	F	529/564 (94%)	515 (97%)	14 (3%)	0	100	100
All	All	3178/3384 (94%)	3091 (97%)	87 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	439/464 (95%)	431 (98%)	8 (2%)	54	77
1	B	402/464 (87%)	394 (98%)	8 (2%)	50	74
1	C	398/464 (86%)	388 (98%)	10 (2%)	42	68
1	D	416/464 (90%)	407 (98%)	9 (2%)	47	72
1	E	397/464 (86%)	392 (99%)	5 (1%)	65	84
1	F	404/464 (87%)	394 (98%)	10 (2%)	42	68
All	All	2456/2784 (88%)	2406 (98%)	50 (2%)	50	74

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	LYS
1	A	89	GLN
1	A	123	LYS
1	A	181	LYS
1	A	452	SER
1	A	460	GLN
1	A	488	THR

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Mol	Chain	Res	Type
1	A	539	LYS
1	B	59	VAL
1	B	91	ASP
1	B	281	LEU
1	B	293	GLN
1	B	326	ASP
1	B	398	LEU
1	B	452	SER
1	B	487	LYS
1	D	83	LEU
1	D	91	ASP
1	D	152	GLU
1	D	293	GLN
1	D	326	ASP
1	D	387	LEU
1	D	452	SER
1	D	488	THR
1	D	535	THR
1	F	10	ILE
1	F	38	THR
1	F	40	VAL
1	F	134	LYS
1	F	361	THR
1	F	387	LEU
1	F	398	LEU
1	F	423	THR
1	F	452	SER
1	F	541	GLN
1	C	135	THR
1	C	152	GLU
1	C	281	LEU
1	C	361	THR
1	C	452	SER
1	C	470	GLU
1	C	508	ILE
1	C	544	LEU
1	C	558	THR
1	C	562	GLU
1	E	10	ILE
1	E	280	ARG
1	E	351	ARG
1	E	452	SER

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Mol	Chain	Res	Type
1	E	460	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	115	ASN
1	A	216	GLN
1	A	279	GLN
1	A	300	ASN
1	A	334	ASN
1	A	340	GLN
1	B	279	GLN
1	D	7	HIS
1	D	25	GLN
1	D	125	GLN
1	D	300	ASN
1	D	340	GLN
1	D	419	ASN
1	D	552	ASN
1	F	279	GLN
1	F	300	ASN
1	F	353	HIS
1	F	419	ASN
1	F	552	ASN
1	C	115	ASN
1	C	419	ASN
1	C	552	ASN
1	E	60	GLN
1	E	101	HIS
1	E	228	GLN
1	E	340	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

6 non-standard protein/DNA/RNA residues are modelled in this entry.

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$
1	CRO	C	447	1	22,23,24	0.57	0	30,32,34	1.06	2 (6%)
1	CRO	F	447	1	22,23,24	0.63	0	30,32,34	1.02	2 (6%)
1	CRO	E	447	1	22,23,24	0.60	0	30,32,34	1.08	3 (10%)
1	CRO	D	447	1	22,23,24	0.55	0	30,32,34	1.01	3 (10%)
1	CRO	A	447	1	22,23,24	0.56	0	30,32,34	1.08	3 (10%)
1	CRO	B	447	1	22,23,24	0.53	0	30,32,34	1.05	4 (13%)

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
1	CRO	C	447	1	-	2/12/31/32	0/2/2/2
1	CRO	F	447	1	-	2/12/31/32	0/2/2/2
1	CRO	E	447	1	-	2/12/31/32	0/2/2/2
1	CRO	D	447	1	-	2/12/31/32	0/2/2/2
1	CRO	A	447	1	-	2/12/31/32	0/2/2/2
1	CRO	B	447	1	-	2/12/31/32	0/2/2/2

There are no bond length outliers.

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	447	CRO	C1-CA1-N1	-2.69	104.98	109.78
1	A	447	CRO	C1-CA1-N1	-2.64	105.06	109.78
1	E	447	CRO	C1-CA1-N1	-2.55	105.21	109.78
1	D	447	CRO	C1-CA1-N1	-2.54	105.23	109.78
1	B	447	CRO	C1-CA1-N1	-2.54	105.24	109.78
1	A	447	CRO	CG1-CB1-CA1	-2.45	106.58	112.18
1	C	447	CRO	C1-CA1-N1	-2.32	105.64	109.78
1	E	447	CRO	CG1-CB1-CA1	-2.31	106.91	112.18

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	447	CRO	CG2-CB2-CA2	2.28	132.58	129.87
1	B	447	CRO	CG2-CB2-CA2	2.15	132.42	129.87
1	D	447	CRO	CG1-CB1-CA1	-2.13	107.31	112.18
1	B	447	CRO	CG1-CB1-CA1	-2.11	107.35	112.18
1	C	447	CRO	C2-CA2-N2	-2.09	107.45	108.95
1	F	447	CRO	CG1-CB1-CA1	-2.06	107.47	112.18
1	B	447	CRO	C2-CA2-N2	-2.05	107.48	108.95
1	A	447	CRO	C2-CA2-N2	-2.05	107.48	108.95
1	E	447	CRO	C2-CA2-N2	-2.05	107.48	108.95

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	447	CRO	C3-CA3-N3-C2
1	D	447	CRO	C3-CA3-N3-C2
1	C	447	CRO	C3-CA3-N3-C2
1	E	447	CRO	C3-CA3-N3-C2
1	B	447	CRO	C3-CA3-N3-C2
1	F	447	CRO	C3-CA3-N3-C2
1	A	447	CRO	N3-C1-CA1-CB1
1	B	447	CRO	N3-C1-CA1-CB1
1	D	447	CRO	N3-C1-CA1-CB1
1	F	447	CRO	N3-C1-CA1-CB1
1	C	447	CRO	N3-C1-CA1-CB1
1	E	447	CRO	N3-C1-CA1-CB1

There are no ring outliers.

6 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	C	447	CRO	2	0
1	F	447	CRO	3	0
1	E	447	CRO	2	0
1	D	447	CRO	2	0
1	A	447	CRO	2	0
1	B	447	CRO	2	0

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

6 ligands are modelled in this entry.

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
2	ABU	C	600	-	6,6,6	0.84	0	6,6,6	1.36	1 (16%)
2	ABU	F	600	-	6,6,6	0.62	0	6,6,6	1.24	2 (33%)
2	ABU	E	600	-	6,6,6	0.81	0	6,6,6	1.85	1 (16%)
2	ABU	D	600	-	6,6,6	0.60	0	6,6,6	1.39	2 (33%)
2	ABU	A	600	-	6,6,6	0.87	0	6,6,6	0.97	0
2	ABU	B	600	-	6,6,6	0.97	0	6,6,6	1.33	1 (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
2	ABU	C	600	-	-	0/4/4/4	-
2	ABU	F	600	-	-	1/4/4/4	-
2	ABU	E	600	-	-	2/4/4/4	-
2	ABU	D	600	-	-	2/4/4/4	-
2	ABU	A	600	-	-	2/4/4/4	-
2	ABU	B	600	-	-	2/4/4/4	-

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	600	ABU	CB-CG-C	3.99	124.91	114.51
2	C	600	ABU	CB-CG-C	2.40	120.78	114.51
2	B	600	ABU	CB-CG-C	2.27	120.43	114.51
2	D	600	ABU	O-C-CG	-2.20	116.11	123.09
2	F	600	ABU	O-C-CG	-2.13	116.34	123.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	600	ABU	OXT-C-CG	2.08	120.57	114.00
2	D	600	ABU	OXT-C-CG	2.03	120.43	114.00

There are no chirality outliers.

All (9) torsion outliers are listed below:

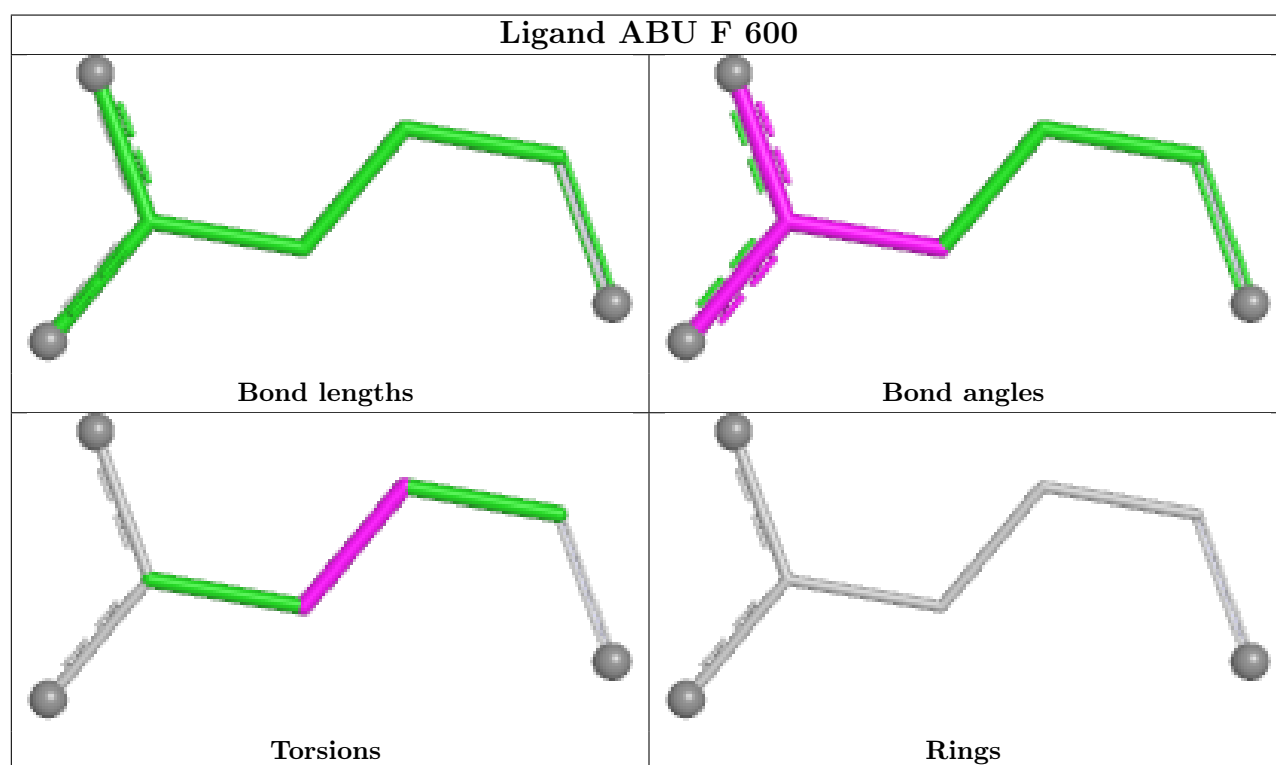
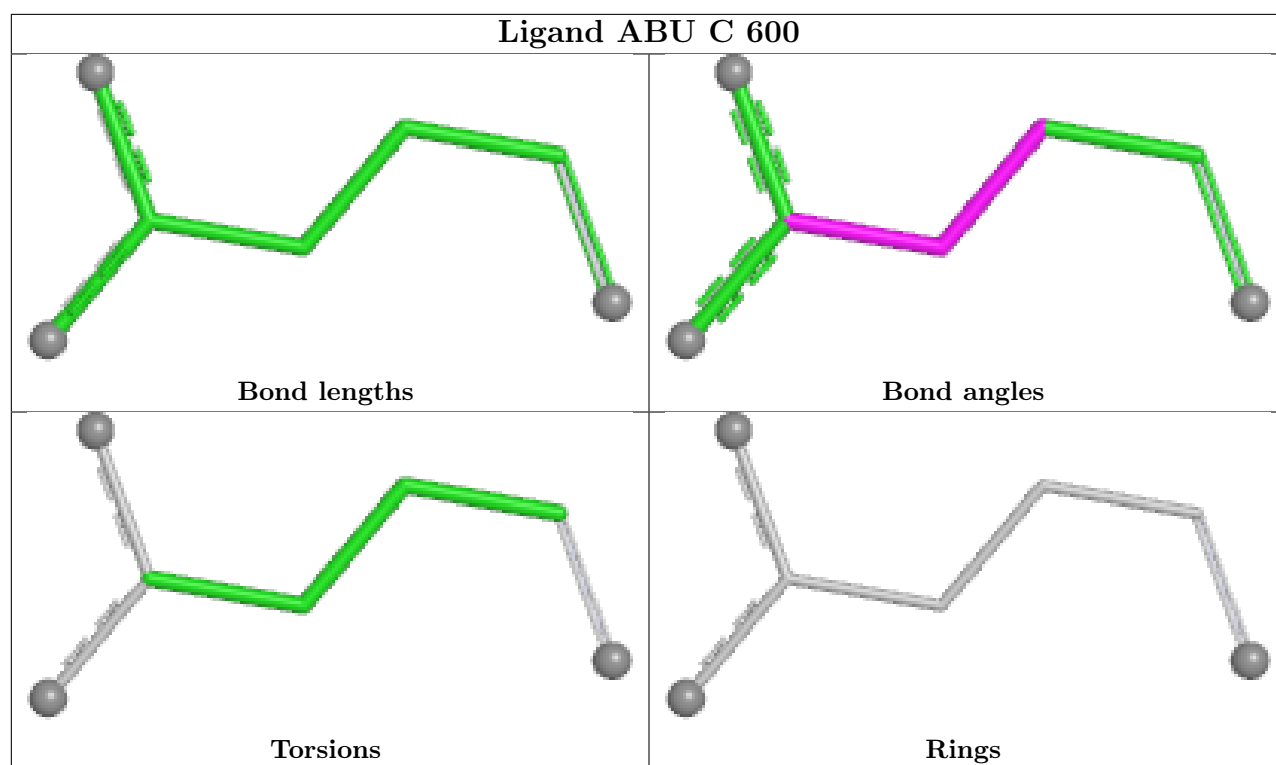
Mol	Chain	Res	Type	Atoms
2	F	600	ABU	CD-CB-CG-C
2	A	600	ABU	O-C-CG-CB
2	A	600	ABU	OXT-C-CG-CB
2	B	600	ABU	O-C-CG-CB
2	B	600	ABU	OXT-C-CG-CB
2	E	600	ABU	OXT-C-CG-CB
2	D	600	ABU	OXT-C-CG-CB
2	E	600	ABU	O-C-CG-CB
2	D	600	ABU	O-C-CG-CB

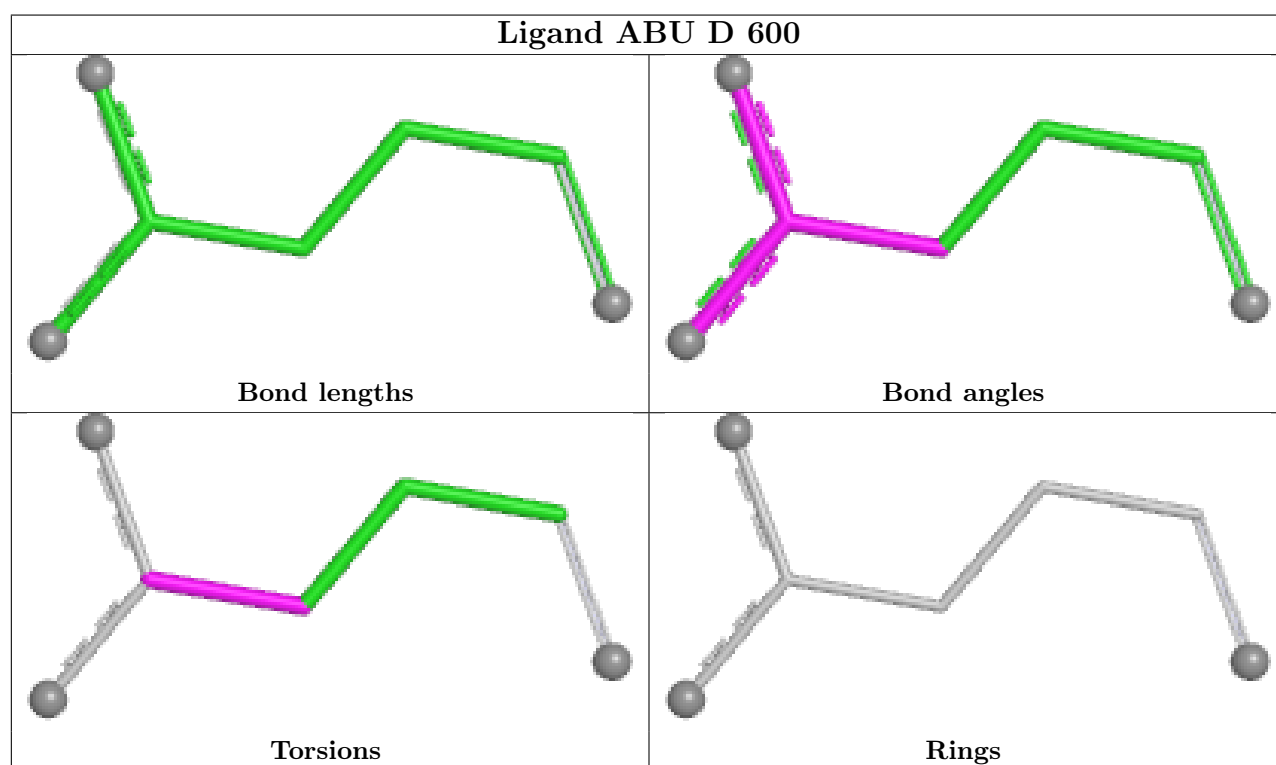
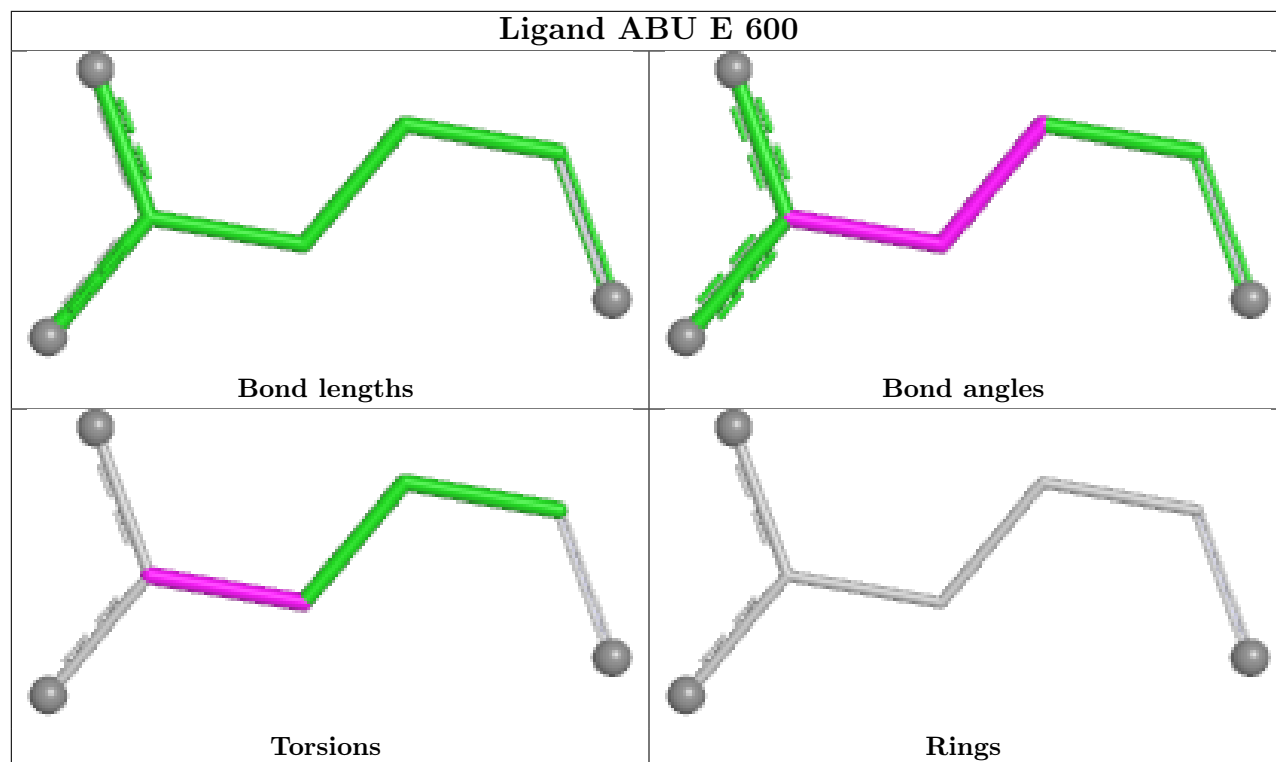
There are no ring outliers.

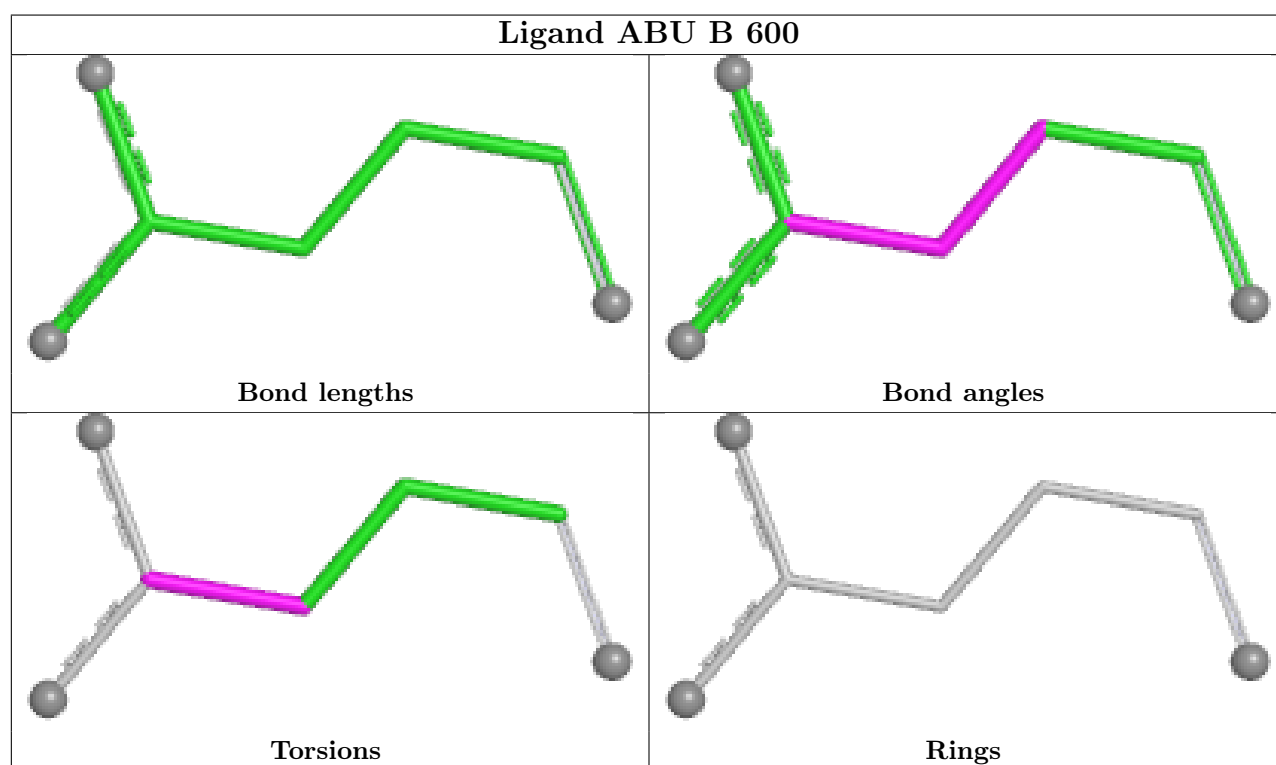
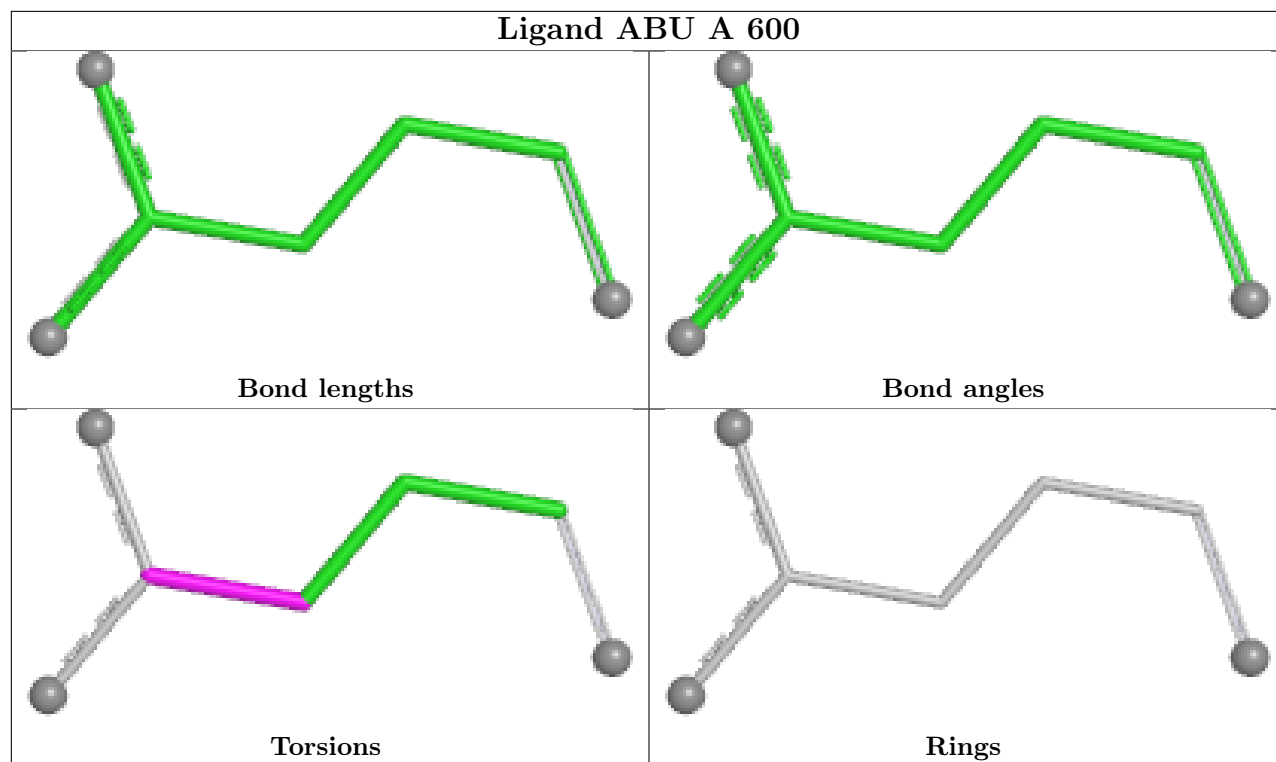
2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	600	ABU	1	0
2	B	600	ABU	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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	D	1
1	E	1
1	A	1
1	B	1
1	C	1
1	F	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	D	447:CRO	C3	448:VAL	N	1.76
1	E	447:CRO	C3	448:VAL	N	1.76
1	A	447:CRO	C3	448:VAL	N	1.75
1	B	447:CRO	C3	448:VAL	N	1.75
1	C	447:CRO	C3	448:VAL	N	1.75
1	F	447:CRO	C3	448:VAL	N	1.74

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	543/564 (96%)	-0.40	2 (0%) 89 86	27, 44, 69, 106	0
1	B	538/564 (95%)	-0.35	3 (0%) 85 83	26, 47, 78, 101	0
1	C	531/564 (94%)	-0.24	7 (1%) 74 70	30, 48, 82, 120	0
1	D	539/564 (95%)	-0.35	2 (0%) 89 86	31, 47, 71, 110	0
1	E	538/564 (95%)	-0.11	9 (1%) 69 64	25, 53, 86, 117	0
1	F	537/564 (95%)	-0.22	6 (1%) 77 74	28, 50, 76, 122	0
All	All	3226/3384 (95%)	-0.28	29 (0%) 81 77	25, 48, 79, 122	0

All (29) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	326	ASP	4.9
1	C	214	ALA	4.0
1	D	370	ASP	3.8
1	E	370	ASP	3.7
1	F	122	SER	3.7
1	F	528	ASN	3.5
1	F	526	ASN	3.4
1	D	565	VAL	3.3
1	B	564	LEU	3.1
1	A	372	LEU	2.9
1	E	115	ASN	2.8
1	E	499	LEU	2.6
1	F	564	LEU	2.5
1	F	457	HIS	2.5
1	E	348	ASN	2.5
1	E	116	GLU	2.3
1	C	204	MET	2.2
1	B	8	GLU	2.2
1	E	222	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	198	ALA	2.2
1	E	521	LEU	2.2
1	C	136	TYR	2.1
1	C	218	ASP	2.1
1	C	220	ALA	2.1
1	C	183	ASP	2.1
1	A	318	TYR	2.0
1	F	527	ALA	2.0
1	B	116	GLU	2.0
1	E	494	PHE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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
1	CRO	D	447	22/23	0.94	0.08	38,43,50,67	0
1	CRO	F	447	22/23	0.94	0.10	40,47,52,53	0
1	CRO	E	447	22/23	0.94	0.09	37,47,55,62	0
1	CRO	B	447	22/23	0.95	0.07	26,30,40,41	0
1	CRO	C	447	22/23	0.95	0.07	33,40,48,60	0
1	CRO	A	447	22/23	0.95	0.07	30,35,42,52	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides 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.

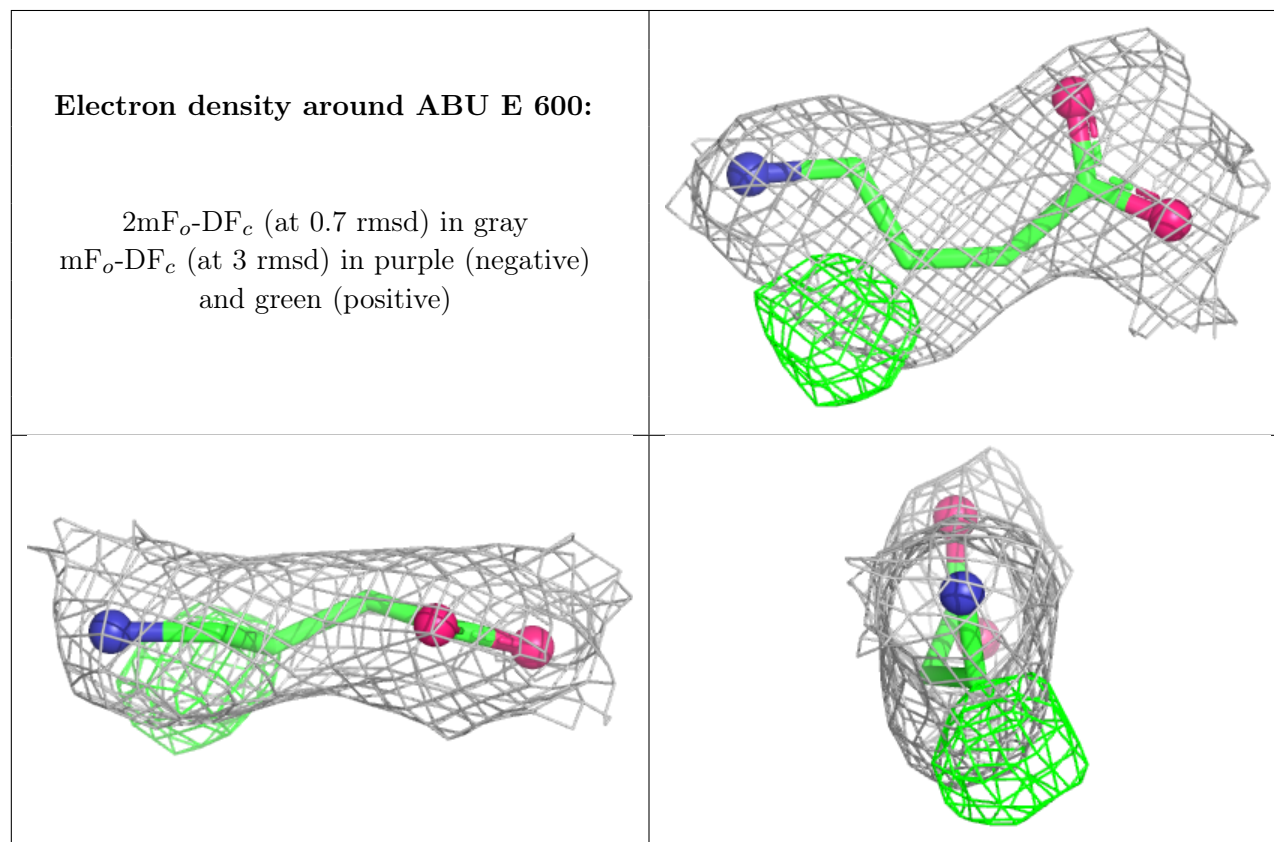
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	ABU	E	600	7/7	0.91	0.11	31,32,37,37	0
2	ABU	C	600	7/7	0.93	0.10	37,43,45,48	0

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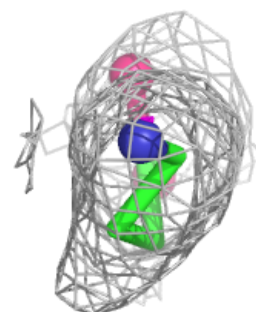
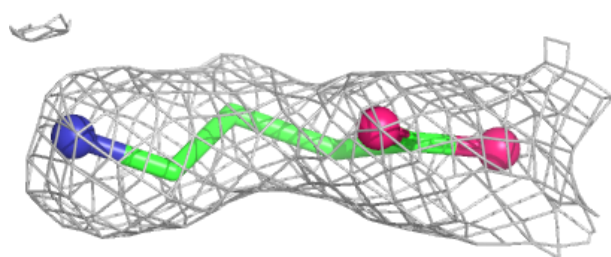
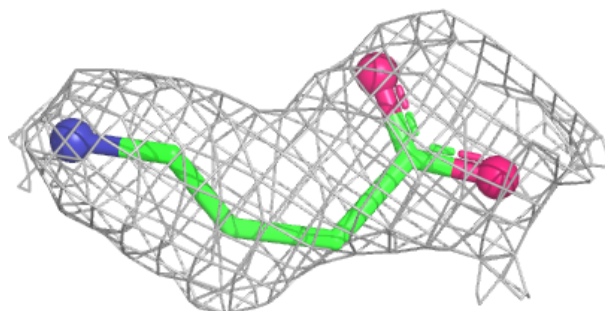
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	ABU	B	600	7/7	0.94	0.10	40,47,50,60	0
2	ABU	F	600	7/7	0.94	0.10	33,35,38,39	0
2	ABU	A	600	7/7	0.95	0.09	30,39,41,44	0
2	ABU	D	600	7/7	0.97	0.07	27,33,34,34	0

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.

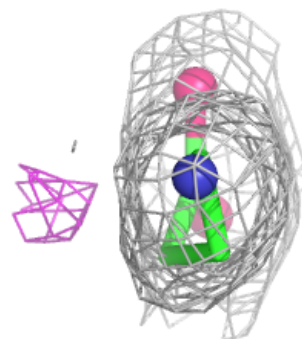
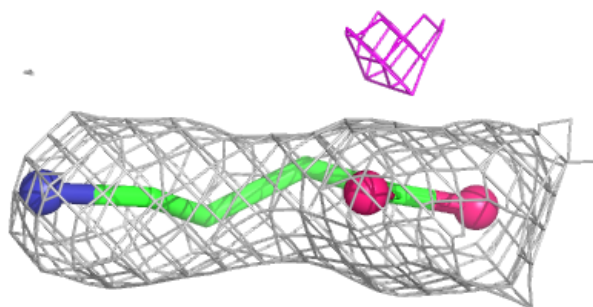
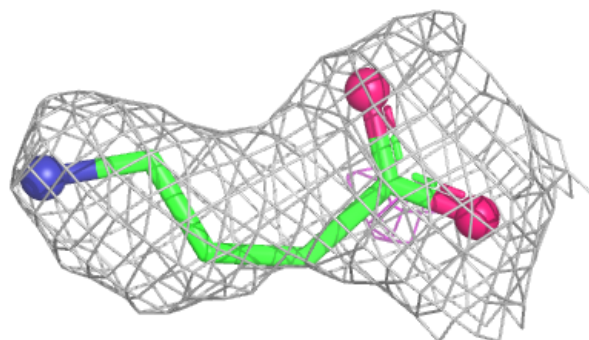


Electron density around ABU C 600:

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

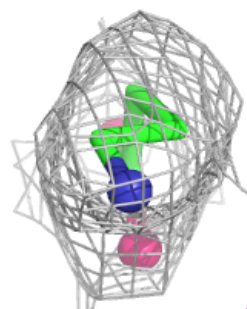
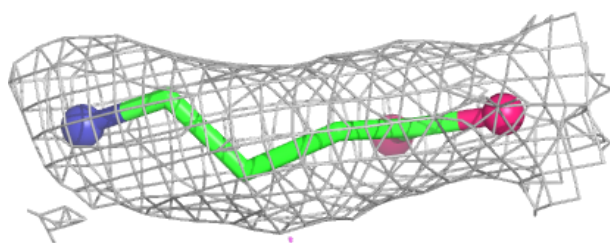
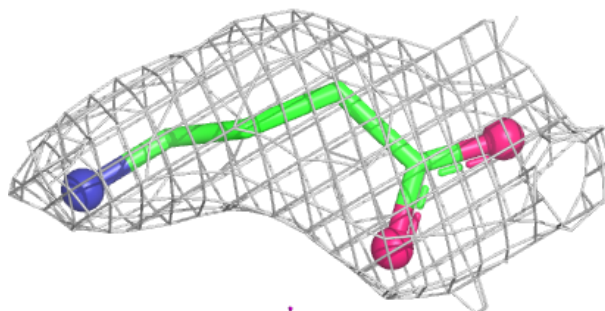
**Electron density around ABU B 600:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

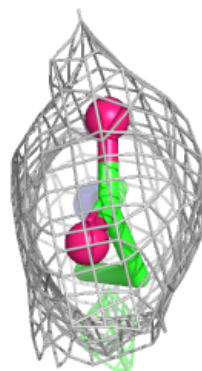
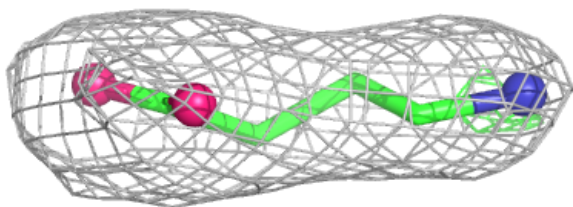
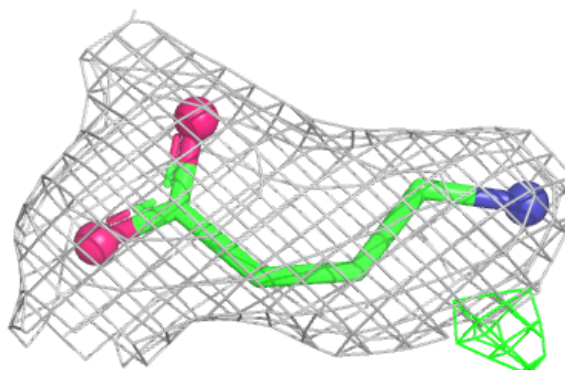


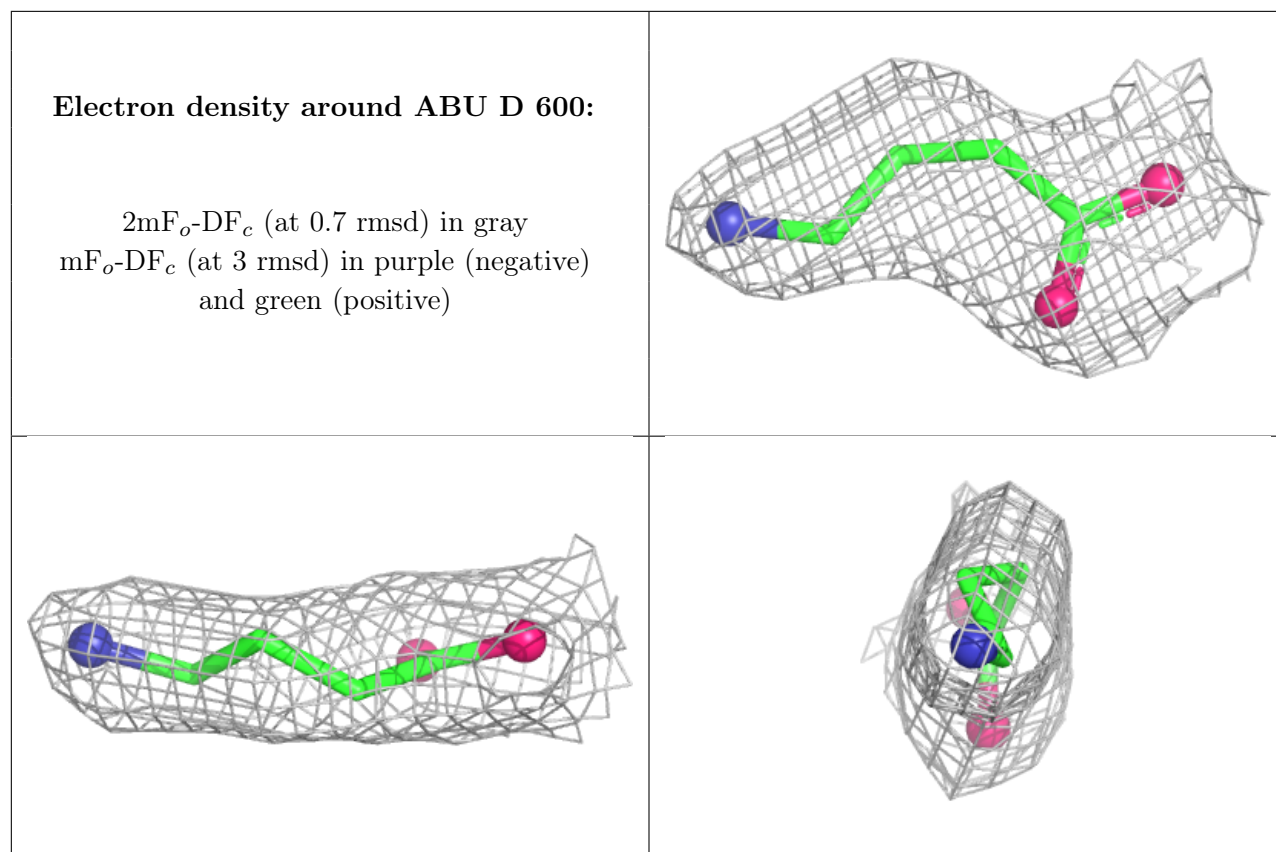
Electron density around ABU F 600:

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

**Electron density around ABU A 600:**

$2mF_o-DF_c$ (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.