Full wwPDB X-ray Structure Validation Report ⓘ

Feb 5, 2025 – 08:04 PM EST

PDB ID : 9BPX

Title : Estrogen Receptor Alpha Ligand Binding Domain Y537S Mutant in Complex with (1'-(4-((1-butylpyrrolidin-3-yl)methoxy)phenyl)-6'-hydroxy-1',4'-dihydro-2'-<i>H</i>-spiro[cyclopropane-1,3'-isoquinolin]-2'-yl)(phenyl)methanone

Authors : Young, K.Y.; Fanning, S.W.

Deposited on : 2024-05-08

Resolution : 2.20 Å(reported)

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

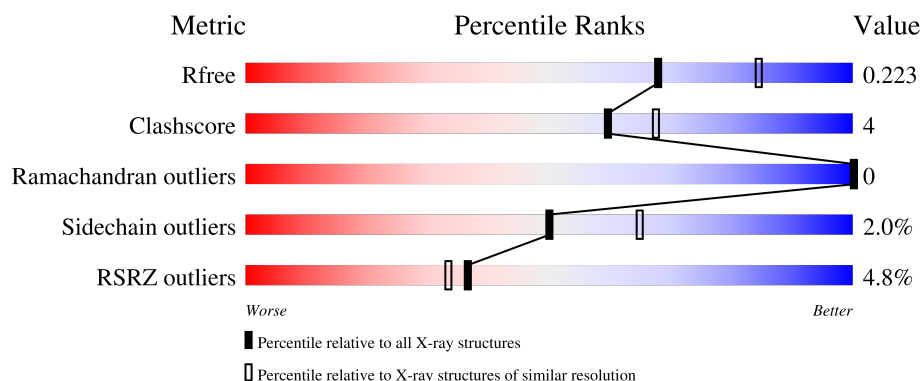|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 2.20 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	Percentile Ranks	Value
Rfree		0.223
Clashscore		4
Ramachandran outliers		0
Sidechain outliers		2.0%
RSRZ outliers		4.8%

Worse .... *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	5791 (2.20-2.20)
Clashscore	180529	6634 (2.20-2.20)
Ramachandran outliers	177936	6560 (2.20-2.20)
Sidechain outliers	177891	6561 (2.20-2.20)
RSRZ outliers	164620	5791 (2.20-2.20)

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 <=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	262	2% / 81% 8% · 10%
1	B	262	6% / 76% 10% 13%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 3917 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 Estrogen receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	235	Total	C	N	O	S	0	3	0
			1864	1195	314	339	16			
1	B	227	Total	C	N	O	S	0	2	0
			1781	1147	303	317	14			

There are 32 discrepancies between the modelled and reference sequences:
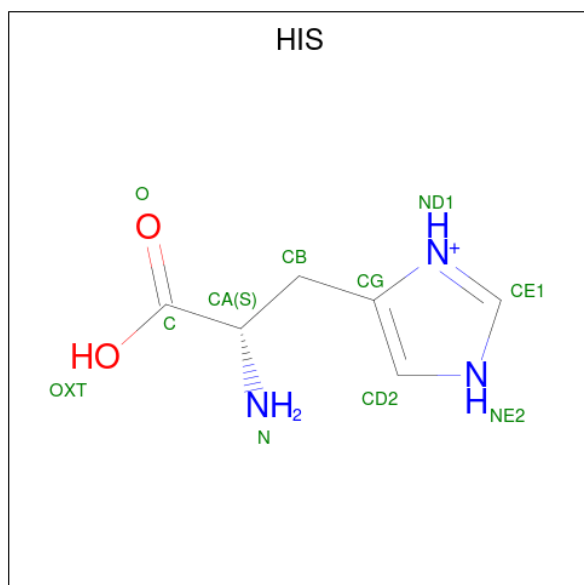
Chain	Residue	Modelled	Actual	Comment	Reference
A	293	HIS	-	expression tag	UNP P03372
A	294	HIS	-	expression tag	UNP P03372
A	295	HIS	-	expression tag	UNP P03372
A	296	HIS	-	expression tag	UNP P03372
A	297	HIS	-	expression tag	UNP P03372
A	298	HIS	-	expression tag	UNP P03372
A	299	GLU	-	expression tag	UNP P03372
A	300	ASN	-	expression tag	UNP P03372
A	301	LEU	-	expression tag	UNP P03372
A	302	TYR	-	expression tag	UNP P03372
A	303	PHE	-	expression tag	UNP P03372
A	304	GLN	-	expression tag	UNP P03372
A	381	SER	CYS	engineered mutation	UNP P03372
A	417	SER	CYS	engineered mutation	UNP P03372
A	530	SER	CYS	engineered mutation	UNP P03372
A	537	SER	TYR	engineered mutation	UNP P03372
B	293	HIS	-	expression tag	UNP P03372
B	294	HIS	-	expression tag	UNP P03372
B	295	HIS	-	expression tag	UNP P03372
B	296	HIS	-	expression tag	UNP P03372
B	297	HIS	-	expression tag	UNP P03372
B	298	HIS	-	expression tag	UNP P03372
B	299	GLU	-	expression tag	UNP P03372
B	300	ASN	-	expression tag	UNP P03372
B	301	LEU	-	expression tag	UNP P03372

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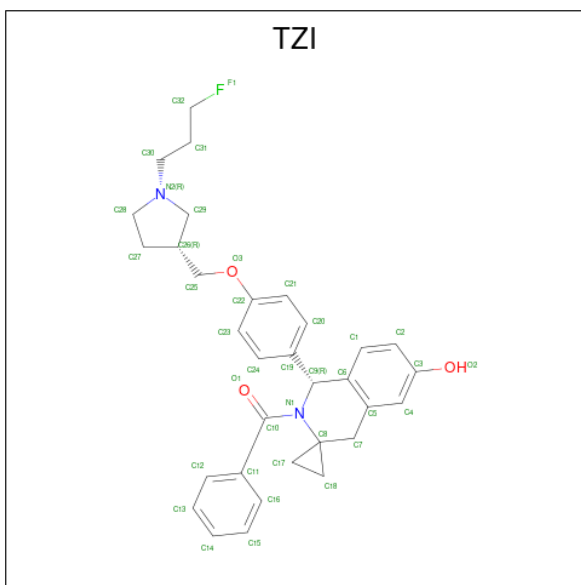
Chain	Residue	Modelled	Actual	Comment	Reference
B	302	TYR	-	expression tag	UNP P03372
B	303	PHE	-	expression tag	UNP P03372
B	304	GLN	-	expression tag	UNP P03372
B	381	SER	CYS	engineered mutation	UNP P03372
B	417	SER	CYS	engineered mutation	UNP P03372
B	530	SER	CYS	engineered mutation	UNP P03372
B	537	SER	TYR	engineered mutation	UNP P03372

- Molecule 2 is HISTIDINE (three-letter code: HIS) (formula: $C_6H_{10}N_3O_2$).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			10	6	3	1		

- Molecule 3 is [(1'R)-1'-(4-{[(3R)-1-(3-fluoropropyl)pyrrolidin-3-yl]methoxy}phenyl)-6'-hydroxy-1',4'-dihydro-2'H-spiro[cyclopropane-1,3'-isoquinolin]-2'-yl](phenyl)methanone (three-letter code: TZI) (formula: $C_{32}H_{35}FN_2O_3$) (labeled as "Ligand of Interest" by depositor).

TZI

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	F	N	O	0	0
			38	32	1	2	3		

- Molecule 4 is [(1'R)-1'-(4-{[(3S)-1-(3-fluoropropyl)-2,3-dihydro-1H-pyrrol-3-yl]methoxy}phenyl)-6'-hydroxy-1',4'-dihydro-2'H-spiro[cyclopropane-1,3'-isoquinolin]-2'-yl](phenyl)methanone (three-letter code: A1BV9) (formula: $C_{32}H_{33}FN_2O_3$).

A1BV9
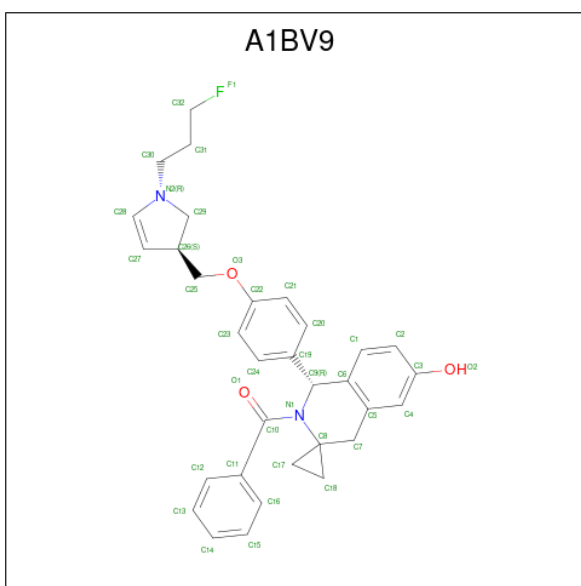
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	B	1	Total	C	F	N	O	0	0
			38	32	1	2	3		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	106	Total O 106 106	0	0
5	B	80	Total O 80 80	0	0

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 a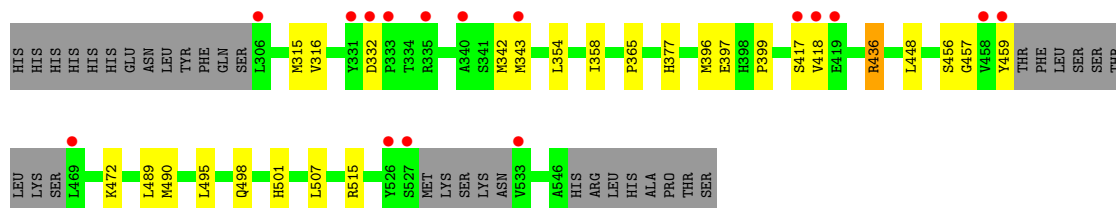t least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Estrogen receptor
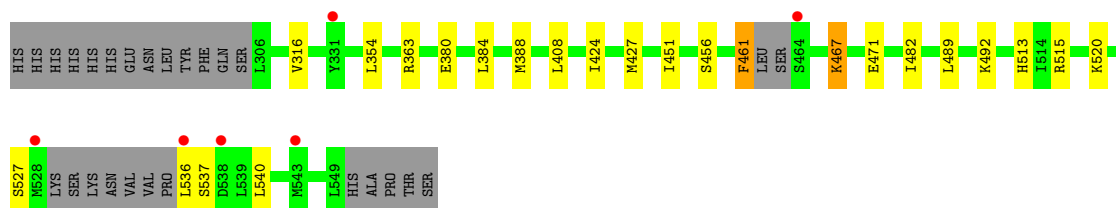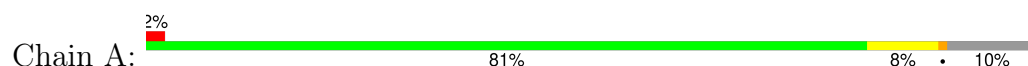
• Molecule 1: Estrogen receptor
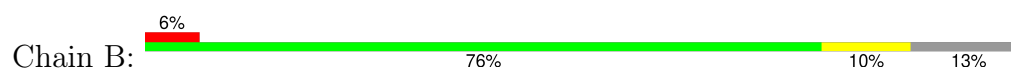
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	101.73Å 58.29Å 87.01Å 90.00° 103.52° 90.00°	Depositor
Resolution (Å)	45.63 – 2.20 45.63 – 2.20	Depositor EDS
% Data completeness (in resolution range)	94.0 (45.63-2.20) 94.0 (45.63-2.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.96 (at 2.20Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.186 , 0.221 0.188 , 0.223	Depositor DCC
R_{free} test set	1216 reflections (4.77%)	wwPDB-VP
Wilson B-factor (Å^2)	29.4	Xtriage
Anisotropy	0.105	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 51.5	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	3917	wwPDB-VP
Average B, all atoms (Å^2)	38.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.91% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: TZI, A1BV9

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	0.23	0/1897	0.43	0/2563
1	B	0.25	0/1813	0.44	0/2456
All	All	0.24	0/3710	0.44	0/5019

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 ⓘ

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	1864	0	1880	16	0
1	B	1781	0	1795	17	0
2	A	10	0	6	0	0
3	A	38	0	0	1	0
4	B	38	0	0	0	0
5	A	106	0	0	3	0
5	B	80	0	0	1	0
All	All	3917	0	3681	31	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.

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wwPDB
PROTEIN DATA BANK

All (31) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:363:ARG:NH2	5:A:701:HOH:O	2.25	0.69
1:B:501:HIS:ND1	5:B:702:HOH:O	2.27	0.67
1:B:342:MET:HB3	1:B:343:MET:HE2	1.82	0.62
1:B:490:MET:HB3	1:B:495:LEU:HD22	1.81	0.62
1:A:520:LYS:NZ	5:A:704:HOH:O	2.34	0.60
1:A:363:ARG:HH11	1:A:363:ARG:HG2	1.70	0.57
1:B:396:MET:O	1:B:436:ARG:HD3	2.05	0.55
1:A:424:ILE:HB	3:A:602:TZI:C14	2.37	0.54
1:B:498:GLN:HA	1:B:501:HIS:CE1	2.42	0.54
1:B:456:SER:HA	1:B:515:ARG:NH2	2.23	0.52
1:A:513:HIS:HB2	1:B:459[B]:TYR:CE1	2.45	0.51
1:A:467:LYS:HE3	1:A:471:GLU:HG3	1.92	0.50
1:A:354:LEU:HD21	1:A:536:LEU:HD11	1.93	0.50
1:A:456:SER:HA	1:A:515:ARG:NH2	2.26	0.49
1:B:315:MET:SD	1:B:365:PRO:HG2	2.51	0.49
1:B:343:MET:CE	1:B:418:VAL:HG21	2.42	0.49
1:B:377:HIS:HE1	1:B:457:GLY:O	1.96	0.48
1:B:448:LEU:HD11	1:B:507:LEU:HD22	1.95	0.48
1:A:380:GLU:HG3	1:A:540:LEU:HD12	1.96	0.48
1:B:354:LEU:O	1:B:358:ILE:HG12	2.13	0.47
1:A:316:VAL:HG21	1:A:489:LEU:HD21	1.97	0.47
1:B:316:VAL:HG21	1:B:489:LEU:HD21	1.95	0.46
1:A:384:LEU:O	1:A:388:MET:HG3	2.16	0.46
1:A:513:HIS:HB2	1:B:459[B]:TYR:CZ	2.50	0.46
1:B:472:LYS:HB2	1:B:472:LYS:HE2	1.89	0.45
1:B:397:GLU:C	1:B:399:PRO:HD3	2.37	0.45
1:B:343:MET:HE1	1:B:418:VAL:HG21	2.01	0.42
1:A:451:ILE:HG13	1:A:482:ILE:HG21	2.01	0.42
1:A:461:PHE:HB2	5:A:707:HOH:O	2.19	0.41
1:A:408:LEU:HD12	1:A:408:LEU:HA	1.90	0.41
1:A:424:ILE:HA	1:A:427:MET:HE2	2.02	0.41

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	231/262 (88%)	230 (100%)	1 (0%)	0	100	100
1	B	222/262 (85%)	221 (100%)	1 (0%)	0	100	100
All	All	453/524 (86%)	451 (100%)	2 (0%)	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	206/237 (87%)	201 (98%)	5 (2%)	44	57
1	B	193/237 (81%)	190 (98%)	3 (2%)	58	73
All	All	399/474 (84%)	391 (98%)	8 (2%)	50	65

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	461	PHE
1	A	467	LYS
1	A	492	LYS
1	A	527	SER
1	A	537	SER
1	B	332	ASP
1	B	417	SER
1	B	436	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	519	ASN
1	B	377	HIS
1	B	519	ASN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5   Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

3 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
4	A1BV9	B	601	-	40,43,43	5.45	27 (67%)	45,62,62	1.39	8 (17%)
3	TZI	A	602	-	42,43,43	5.27	27 (64%)	48,62,62	1.70	8 (16%)
2	HIS	A	601	-	5,10,11	0.62	0	3,12,14	1.70	1 (33%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	A1BV9	B	601	-	-	7/21/53/53	0/6/6/6
3	TZI	A	602	-	-	8/21/53/53	0/6/6/6
2	HIS	A	601	-	-	2/5/6/8	0/1/1/1

All (54) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	TZI	C1-C6	11.90	1.54	1.39
4	B	601	A1BV9	C1-C6	11.80	1.54	1.39
4	B	601	A1BV9	C30-N2	-11.02	1.22	1.46
3	A	602	TZI	C30-N2	-10.94	1.22	1.47
4	B	601	A1BV9	C16-C11	9.88	1.54	1.39
4	B	601	A1BV9	C24-C19	9.85	1.54	1.39
4	B	601	A1BV9	C21-C20	9.84	1.54	1.38
3	A	602	TZI	C24-C19	9.82	1.54	1.39
3	A	602	TZI	C16-C11	9.81	1.54	1.39
3	A	602	TZI	C21-C20	9.69	1.54	1.38
4	B	601	A1BV9	C4-C5	9.34	1.54	1.39
3	A	602	TZI	C4-C5	9.32	1.54	1.39
4	B	601	A1BV9	C13-C12	8.94	1.54	1.38
3	A	602	TZI	C13-C12	8.84	1.54	1.38
4	B	601	A1BV9	C23-C22	8.44	1.54	1.38
3	A	602	TZI	C23-C22	8.41	1.54	1.38
4	B	601	A1BV9	C2-C3	8.23	1.54	1.39
3	A	602	TZI	C2-C3	8.17	1.54	1.39
4	B	601	A1BV9	C14-C15	7.12	1.53	1.38
3	A	602	TZI	C14-C15	7.01	1.53	1.38
4	B	601	A1BV9	C10-N1	6.32	1.50	1.36
3	A	602	TZI	C10-N1	6.20	1.50	1.36
4	B	601	A1BV9	C28-N2	5.22	1.43	1.39
4	B	601	A1BV9	C17-C8	4.39	1.57	1.50
4	B	601	A1BV9	C11-C10	4.34	1.57	1.50
3	A	602	TZI	C17-C8	4.32	1.57	1.50
4	B	601	A1BV9	C5-C6	-4.27	1.32	1.40
3	A	602	TZI	C5-C6	-4.27	1.32	1.40
3	A	602	TZI	C18-C8	4.24	1.57	1.50
3	A	602	TZI	C11-C10	4.17	1.57	1.50
4	B	601	A1BV9	C18-C8	4.15	1.56	1.50
3	A	602	TZI	C29-N2	-4.15	1.40	1.47
4	B	601	A1BV9	C12-C11	-4.11	1.33	1.39
3	A	602	TZI	C12-C11	-4.08	1.33	1.39
4	B	601	A1BV9	C4-C3	-4.02	1.33	1.39
3	A	602	TZI	C4-C3	-4.02	1.33	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	TZI	C20-C19	-3.68	1.33	1.39
4	B	601	A1BV9	C29-N2	-3.67	1.41	1.47
4	B	601	A1BV9	C20-C19	-3.63	1.33	1.39
3	A	602	TZI	C15-C16	-3.52	1.32	1.38
4	B	601	A1BV9	C2-C1	-3.45	1.33	1.38
3	A	602	TZI	C2-C1	-3.44	1.33	1.38
4	B	601	A1BV9	C15-C16	-3.38	1.33	1.38
3	A	602	TZI	C23-C24	-3.21	1.33	1.38
4	B	601	A1BV9	C23-C24	-3.09	1.33	1.38
3	A	602	TZI	C21-C22	-2.84	1.33	1.38
4	B	601	A1BV9	C21-C22	-2.78	1.33	1.38
3	A	602	TZI	C25-C26	2.77	1.61	1.51
3	A	602	TZI	C27-C26	-2.45	1.40	1.53
4	B	601	A1BV9	C14-C13	-2.36	1.33	1.38
3	A	602	TZI	C14-C13	-2.33	1.33	1.38
4	B	601	A1BV9	O3-C22	2.21	1.42	1.37
4	B	601	A1BV9	C26-C27	-2.19	1.40	1.51
3	A	602	TZI	O3-C22	2.03	1.42	1.37

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	602	TZI	C28-N2-C29	5.02	109.92	104.02
3	A	602	TZI	C27-C26-C29	4.97	109.15	102.25
3	A	602	TZI	C7-C5-C4	-3.74	113.25	121.18
4	B	601	A1BV9	C7-C5-C4	-3.63	113.48	121.18
4	B	601	A1BV9	C17-C18-C8	3.12	61.81	59.67
3	A	602	TZI	C17-C18-C8	2.99	61.72	59.67
3	A	602	TZI	C7-C5-C6	2.90	125.01	120.67
3	A	602	TZI	C18-C17-C8	2.87	61.64	59.67
4	B	601	A1BV9	C7-C5-C6	2.76	124.80	120.67
4	B	601	A1BV9	C29-C26-C25	-2.75	109.34	112.39
4	B	601	A1BV9	C18-C17-C8	2.73	61.54	59.67
4	B	601	A1BV9	C11-C10-N1	2.50	122.43	117.83
4	B	601	A1BV9	O1-C10-N1	-2.19	118.70	121.84
4	B	601	A1BV9	C19-C9-C6	-2.17	108.87	112.75
3	A	602	TZI	C19-C9-C6	-2.15	108.92	112.75
3	A	602	TZI	C30-N2-C29	-2.13	108.23	113.18
2	A	601	HIS	CD2-NE2-CE1	2.03	108.93	105.72

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	601	HIS	CA-CB-CG-ND1
2	A	601	HIS	CA-CB-CG-CD2
3	A	602	TZI	C11-C10-N1-C8
3	A	602	TZI	O1-C10-N1-C8
3	A	602	TZI	O3-C25-C26-C27
3	A	602	TZI	O3-C25-C26-C29
3	A	602	TZI	C31-C30-N2-C28
3	A	602	TZI	C30-C31-C32-F1
4	B	601	A1BV9	C11-C10-N1-C8
4	B	601	A1BV9	O1-C10-N1-C8
4	B	601	A1BV9	O3-C25-C26-C27
4	B	601	A1BV9	O3-C25-C26-C29
4	B	601	A1BV9	C31-C30-N2-C29
4	B	601	A1BV9	C21-C22-O3-C25
4	B	601	A1BV9	C23-C22-O3-C25
3	A	602	TZI	C31-C30-N2-C29
3	A	602	TZI	N2-C30-C31-C32

There are no ring outliers.

1 monomer is involved in 1 short contact:
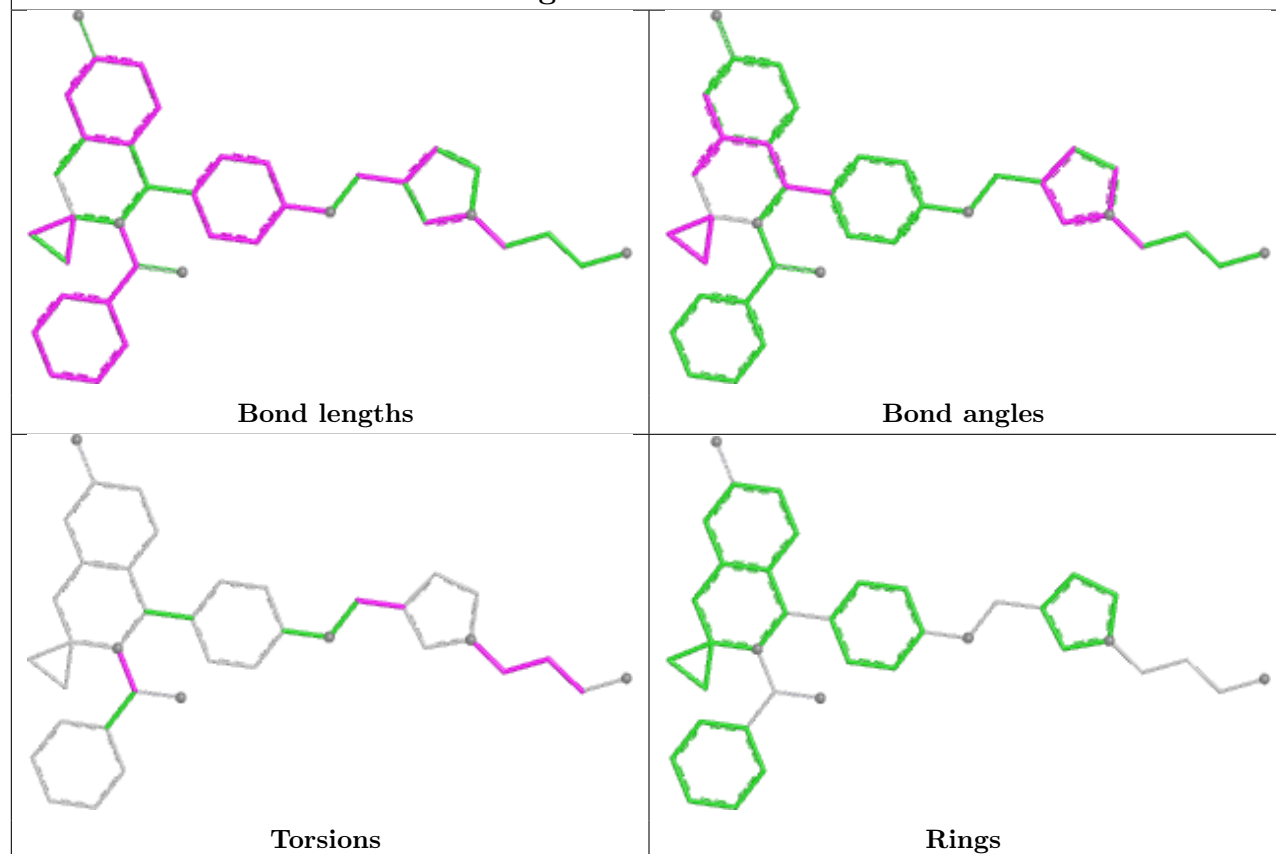
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	602	TZI	1	0

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 then 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.

Ligand A1BV9 B 601

Bond lengths

Bond angles

Torsions

Rings

Ligand TZI A 602

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	235/262 (89%)	-0.13	6 (2%)	57	54	16, 32, 60, 89	2 (0%)
1	B	227/262 (86%)	0.14	16 (7%)	24	21	15, 37, 80, 118	2 (0%)
All	All	462/524 (88%)	0.00	22 (4%)	36	33	15, 35, 70, 118	4 (0%)

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	459[A]	TYR	3.6
1	B	469	LEU	3.5
1	B	306	LEU	3.4
1	B	335	ARG	3.1
1	B	343	MET	3.1
1	B	526	TYR	2.9
1	B	333	PRO	2.9
1	B	419	GLU	2.8
1	A	528	MET	2.6
1	B	458	VAL	2.6
1	B	340	ALA	2.6
1	A	536	LEU	2.6
1	B	527	SER	2.5
1	B	417	SER	2.4
1	B	418	VAL	2.4
1	B	331	TYR	2.4
1	B	332	ASP	2.3
1	A	464	SER	2.2
1	B	533	VAL	2.2
1	A	543	MET	2.1
1	A	538	ASP	2.0
1	A	331	TYR	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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.

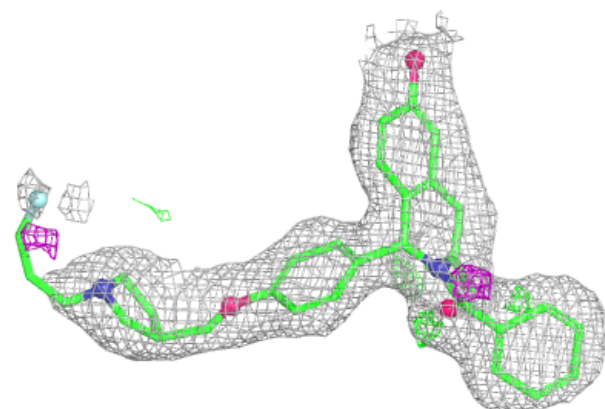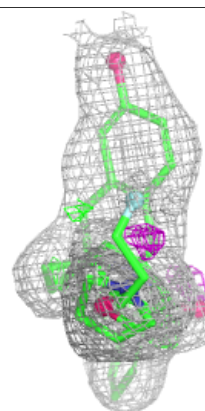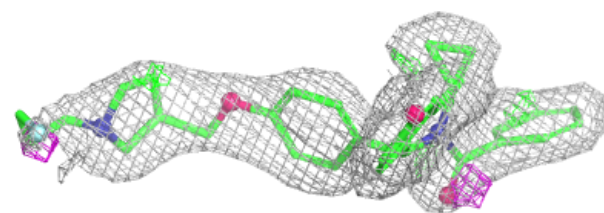| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	HIS	A	601	10/11	0.79	0.22	92,95,96,100	0
4	A1BV9	B	601	38/38	0.92	0.11	21,32,58,65	0
3	TZI	A	602	38/38	0.93	0.10	15,27,56,61	0

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 A1BV9 B 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
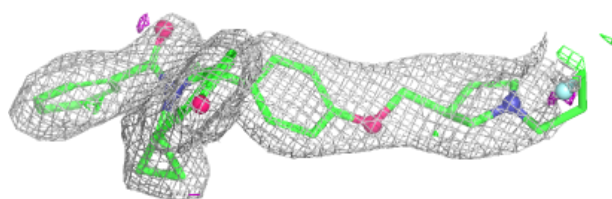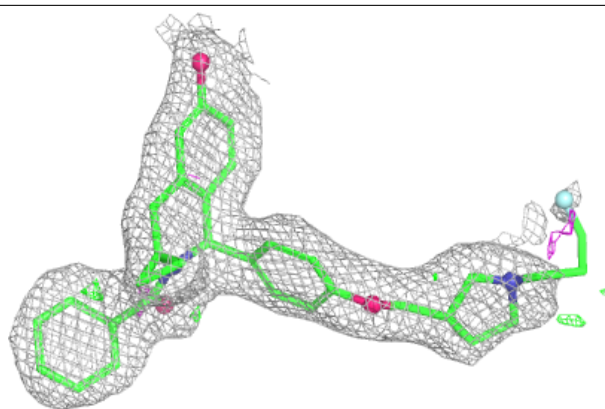
Electron density around TZI A 602:

$2mF_o$-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 ⓘ

There are no such residues in this entry.