



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 02:15 PM EDT

PDB ID : 3E01
Title : HIV-RT with non-nucleoside inhibitor annulated pyrazole 2
Authors : Harris, S.F.; Villasenor, A.
Deposited on : 2008-07-30
Resolution : 2.95 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 : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.20.1
EDS : 2.36.2
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) : 2.36.2

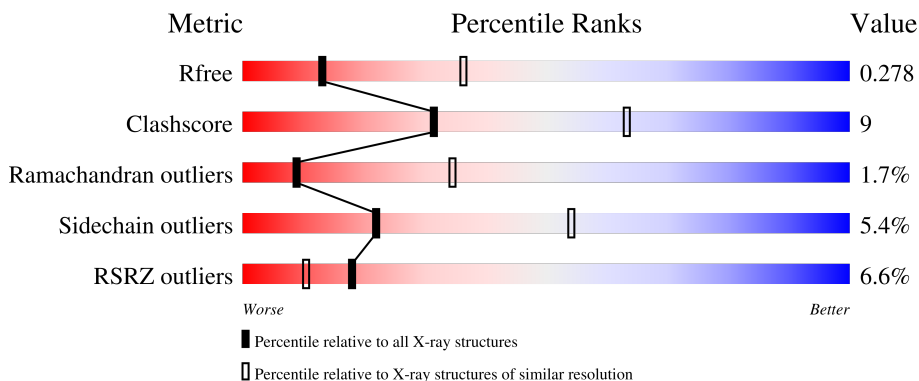
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.95 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	3104 (3.00-2.92)
Clashscore	141614	3462 (3.00-2.92)
Ramachandran outliers	138981	3340 (3.00-2.92)
Sidechain outliers	138945	3343 (3.00-2.92)
RSRZ outliers	127900	2986 (3.00-2.92)

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	561	
2	B	440	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 7840 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.

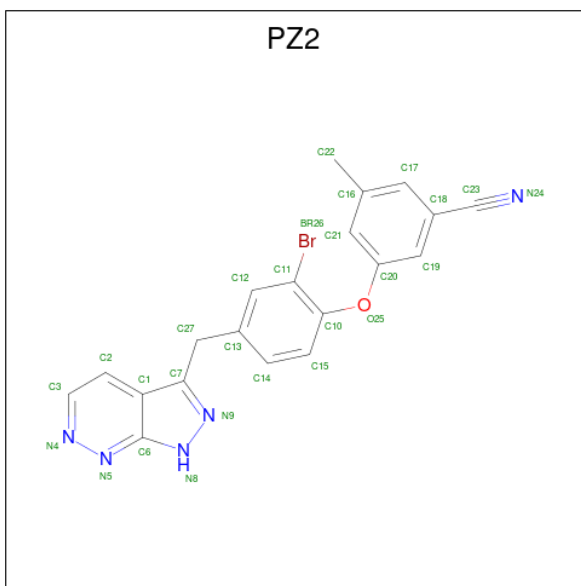
- Molecule 1 is a protein called Gag-Pol polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	552	4493	2906	749	830	8	0	0	0

- Molecule 2 is a protein called Gag-Pol polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	401	3320	2166	545	602	7	0	0	0

- Molecule 3 is 3-[2-bromo-4-(1H-pyrazolo[3,4-c]pyridazin-3-ylmethyl)phenoxy]-5-methylbenz nitrile (three-letter code: PZ2) (formula: C₂₀H₁₄BrN₅O).

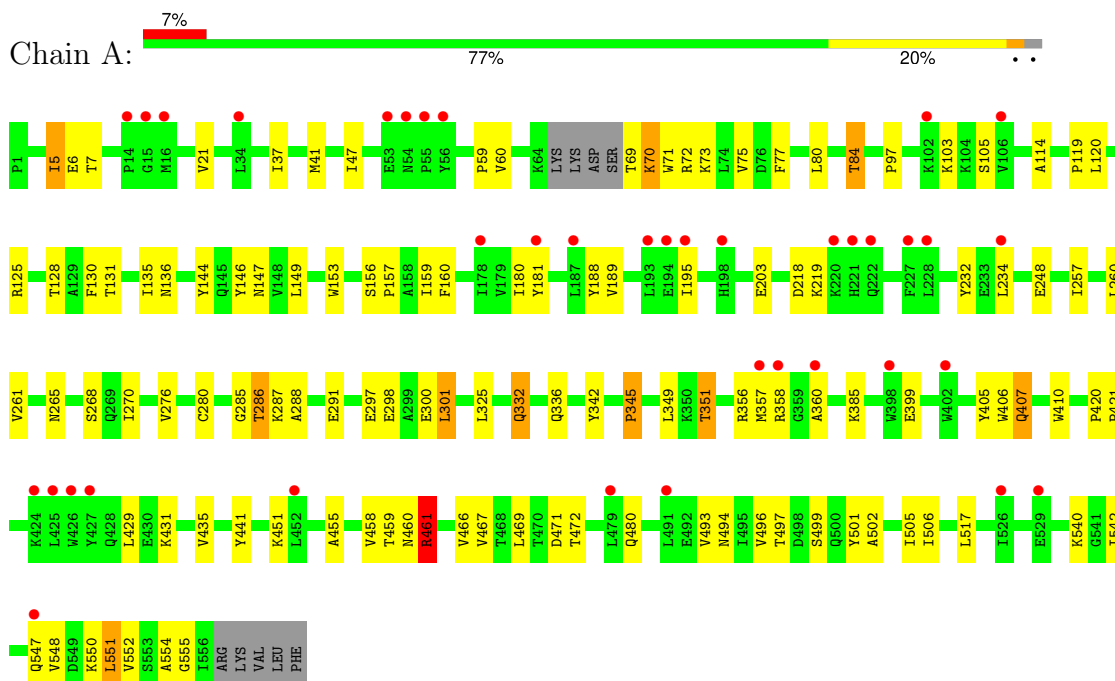


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	Br	C	N	O		
3	A	1	27	1	20	5	1	0	0

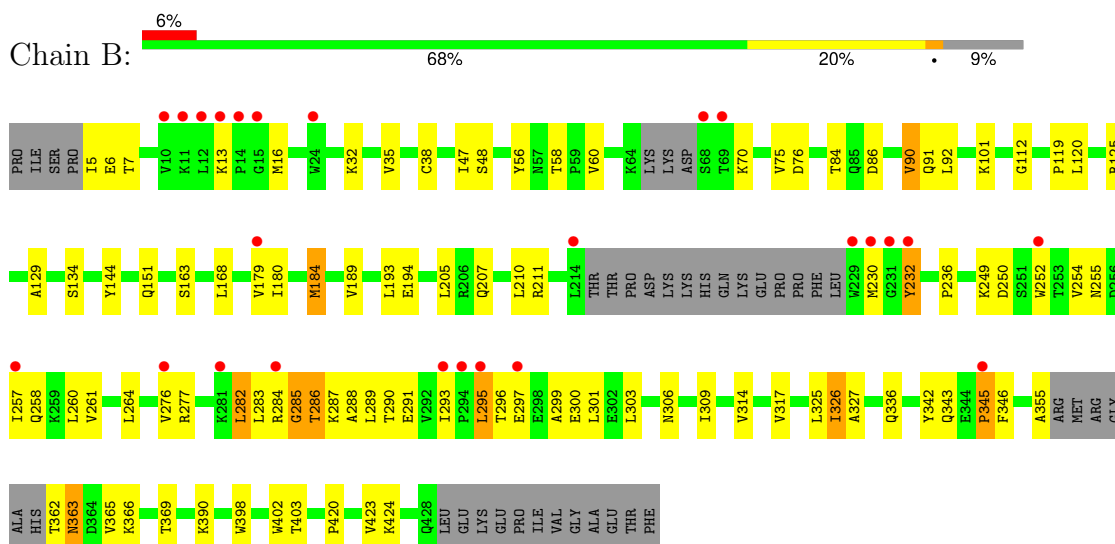
3 Residue-property plots [i](#)

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: Gag-Pol polyprotein



- Molecule 2: Gag-Pol polyprotein



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	117.90Å 152.28Å 153.99Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.83 – 2.95 46.61 – 2.95	Depositor EDS
% Data completeness (in resolution range)	(Not available) (46.83-2.95) 93.8 (46.61-2.95)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.99 (at 2.96Å)	Xtrriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.235 , 0.279 0.237 , 0.278	Depositor DCC
R_{free} test set	1398 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	84.9	Xtrriage
Anisotropy	0.579	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 63.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	7840	wwPDB-VP
Average B, all atoms (Å ²)	99.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.52% 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: PZ2

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.37	0/4609	0.53	1/6263 (0.0%)
2	B	0.38	0/3414	0.52	0/4640
All	All	0.37	0/8023	0.52	1/10903 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	461	ARG	NE-CZ-NH1	6.60	123.60	120.30

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	4493	0	4541	75	0
2	B	3320	0	3341	72	0
3	A	27	0	14	2	0
All	All	7840	0	7896	142	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 9.

All (142) 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)
2:B:254:VAL:HG12	2:B:258:GLN:HE21	1.35	0.91
2:B:91:GLN:HG2	2:B:92:LEU:HD13	1.58	0.86
2:B:369:THR:HG22	2:B:398:TRP:CH2	2.20	0.76
1:A:261:VAL:HG13	1:A:276:VAL:HG11	1.68	0.76
1:A:84:THR:HG21	1:A:153:TRP:HE1	1.51	0.75
2:B:282:LEU:HD11	2:B:296:THR:CG2	2.17	0.75
1:A:69:THR:HA	1:A:70:LYS:HB3	1.67	0.74
2:B:296:THR:HG23	2:B:299:ALA:HB3	1.69	0.74
1:A:37:ILE:HG22	1:A:41:MET:CE	2.17	0.74
1:A:149:LEU:HD21	1:A:159:ILE:HG21	1.69	0.74
2:B:296:THR:HG23	2:B:299:ALA:CB	2.18	0.73
2:B:365:VAL:O	2:B:369:THR:HG23	1.88	0.72
2:B:58:THR:HG23	2:B:76:ASP:O	1.90	0.71
1:A:80:LEU:O	1:A:84:THR:HG23	1.91	0.71
1:A:466:VAL:CG2	1:A:551:LEU:HD12	2.21	0.70
1:A:37:ILE:HG22	1:A:41:MET:HE1	1.73	0.70
1:A:114:ALA:HB1	1:A:160:PHE:CE1	2.26	0.70
2:B:326:ILE:HD13	2:B:390:LYS:HD2	1.73	0.69
1:A:501:TYR:CE1	1:A:505:ILE:HD11	2.28	0.69
1:A:268:SER:O	1:A:351:THR:HG22	1.95	0.66
2:B:286:THR:O	2:B:286:THR:HG22	1.95	0.65
2:B:326:ILE:HD12	2:B:327:ALA:N	2.10	0.65
2:B:260:LEU:HD21	2:B:303:LEU:CD1	2.27	0.65
2:B:282:LEU:HD11	2:B:296:THR:HG22	1.79	0.65
1:A:69:THR:HA	1:A:70:LYS:CB	2.27	0.65
2:B:326:ILE:HD11	2:B:342:TYR:CZ	2.31	0.64
1:A:149:LEU:HD11	1:A:159:ILE:HG22	1.79	0.64
2:B:60:VAL:HG12	2:B:75:VAL:HG22	1.80	0.63
1:A:461:ARG:HG2	1:A:461:ARG:HH11	1.63	0.62
1:A:435:VAL:HG22	2:B:290:THR:OG1	1.99	0.62
1:A:288:ALA:HB3	1:A:291:GLU:HB2	1.83	0.61
1:A:276:VAL:HG12	1:A:276:VAL:O	2.00	0.60
2:B:252:TRP:CZ3	2:B:260:LEU:HD22	2.37	0.60
1:A:75:VAL:HG11	1:A:77:PHE:CZ	2.36	0.60
2:B:282:LEU:HD11	2:B:296:THR:HG21	1.84	0.60
1:A:441:TYR:O	1:A:548:VAL:HG21	2.01	0.59
1:A:466:VAL:HG23	1:A:551:LEU:HD12	1.83	0.59
1:A:461:ARG:HH11	1:A:461:ARG:CG	2.16	0.59
1:A:501:TYR:CZ	1:A:505:ILE:HD11	2.38	0.58
2:B:326:ILE:HD11	2:B:342:TYR:OH	2.04	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:254:VAL:HG13	2:B:283:LEU:HD22	1.84	0.58
2:B:420:PRO:O	2:B:423:VAL:HG12	2.04	0.57
1:A:406:TRP:CZ3	1:A:407:GLN:HG3	2.39	0.57
1:A:37:ILE:HG22	1:A:41:MET:HE2	1.87	0.57
1:A:469:LEU:HD23	1:A:472:THR:HG21	1.86	0.56
2:B:91:GLN:CG	2:B:92:LEU:HD13	2.33	0.56
1:A:80:LEU:O	1:A:84:THR:CG2	2.54	0.56
1:A:297:GLU:O	1:A:301:LEU:HD13	2.06	0.56
1:A:60:VAL:HG11	1:A:130:PHE:CD2	2.41	0.55
2:B:326:ILE:HD12	2:B:326:ILE:C	2.25	0.55
1:A:451:LYS:HB3	1:A:471:ASP:HA	1.89	0.54
2:B:86:ASP:O	2:B:90:VAL:HG13	2.08	0.54
1:A:180:ILE:HG12	1:A:189:VAL:HG22	1.90	0.53
2:B:47:ILE:HD12	2:B:144:TYR:CD1	2.42	0.53
2:B:254:VAL:HG12	2:B:258:GLN:NE2	2.16	0.52
2:B:260:LEU:HD21	2:B:303:LEU:HD11	1.92	0.52
1:A:47:ILE:HD12	1:A:144:TYR:CD2	2.45	0.52
1:A:460:ASN:ND2	2:B:288:ALA:HB2	2.25	0.52
1:A:469:LEU:CD2	1:A:472:THR:HG21	2.40	0.52
2:B:184:MET:HE3	2:B:184:MET:HA	1.92	0.52
2:B:287:LYS:NZ	2:B:293:ILE:HD12	2.25	0.52
1:A:7:THR:HG22	1:A:119:PRO:HG2	1.92	0.51
1:A:420:PRO:HA	1:A:421:PRO:C	2.30	0.51
1:A:276:VAL:HG12	1:A:280:CYS:SG	2.52	0.50
1:A:469:LEU:HD11	1:A:480:GLN:HG2	1.93	0.50
1:A:218:ASP:OD1	1:A:219:LYS:N	2.44	0.50
2:B:295:LEU:HD12	2:B:300:GLU:OE1	2.11	0.50
2:B:306:ASN:HA	2:B:309:ILE:HD12	1.94	0.50
2:B:258:GLN:HE22	2:B:289:LEU:CD2	2.25	0.50
1:A:494:ASN:HB3	2:B:289:LEU:HD12	1.95	0.49
2:B:32:LYS:O	2:B:35:VAL:HG22	2.13	0.49
2:B:254:VAL:HG23	2:B:291:GLU:O	2.12	0.49
2:B:168:LEU:CD2	2:B:205:LEU:HD11	2.42	0.49
2:B:252:TRP:CH2	2:B:260:LEU:HD22	2.47	0.48
1:A:542:ILE:N	1:A:542:ILE:HD12	2.28	0.48
2:B:296:THR:HG23	2:B:299:ALA:HB2	1.94	0.47
1:A:181:TYR:HB2	1:A:188:TYR:HB2	1.97	0.47
1:A:285:GLY:O	1:A:286:THR:C	2.53	0.47
1:A:502:ALA:HA	1:A:505:ILE:HD12	1.95	0.47
2:B:180:ILE:HG12	2:B:189:VAL:HG22	1.96	0.47
2:B:112:GLY:HA3	2:B:151:GLN:HE21	1.79	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:455:ALA:O	1:A:467:VAL:HG22	2.15	0.46
2:B:258:GLN:HE22	2:B:289:LEU:HD23	1.80	0.46
1:A:37:ILE:CG2	1:A:41:MET:HE1	2.46	0.46
2:B:284:ARG:HG3	2:B:285:GLY:N	2.31	0.46
2:B:369:THR:HG22	2:B:398:TRP:CZ3	2.51	0.45
1:A:5:ILE:HD13	1:A:6:GLU:O	2.16	0.45
1:A:270:ILE:HA	1:A:351:THR:HB	1.97	0.45
1:A:103:LYS:O	3:A:562:PZ2:N8	2.44	0.45
1:A:332:GLN:O	1:A:336:GLN:HB2	2.17	0.45
2:B:264:LEU:HB3	2:B:276:VAL:HG12	1.99	0.45
1:A:342:TYR:HA	1:A:349:LEU:HD13	1.99	0.45
1:A:410:TRP:CE3	2:B:363:ASN:HB2	2.52	0.45
2:B:5:ILE:O	2:B:5:ILE:HG23	2.16	0.45
1:A:496:VAL:HG21	2:B:289:LEU:HD21	1.98	0.44
2:B:38:CYS:HB3	2:B:144:TYR:CE2	2.51	0.44
2:B:7:THR:HG22	2:B:119:PRO:HG2	1.99	0.44
1:A:459:THR:O	2:B:286:THR:HG21	2.18	0.44
2:B:314:VAL:HB	2:B:317:VAL:CG1	2.47	0.44
1:A:551:LEU:HD23	1:A:551:LEU:H	1.82	0.44
1:A:120:LEU:CD2	1:A:128:THR:HG21	2.48	0.43
1:A:73:LYS:NZ	1:A:146:TYR:OH	2.43	0.43
1:A:257:ILE:O	1:A:261:VAL:HG23	2.18	0.43
2:B:47:ILE:HD12	2:B:144:TYR:CG	2.53	0.43
2:B:257:ILE:O	2:B:261:VAL:HG23	2.19	0.43
1:A:261:VAL:HG12	1:A:265:ASN:ND2	2.33	0.43
2:B:402:TRP:CE2	2:B:403:THR:HG22	2.54	0.43
1:A:125:ARG:HD3	1:A:147:ASN:HA	2.00	0.43
2:B:184:MET:HA	2:B:184:MET:CE	2.49	0.42
1:A:357:MET:HE3	1:A:360:ALA:O	2.19	0.42
1:A:548:VAL:HG12	1:A:552:VAL:HG21	2.02	0.42
3:A:562:PZ2:C14	3:A:562:PZ2:H2	2.49	0.42
2:B:362:THR:N	2:B:366:LYS:HZ3	2.17	0.42
1:A:21:VAL:HB	1:A:59:PRO:HD3	2.02	0.42
1:A:265:ASN:O	1:A:268:SER:OG	2.36	0.42
1:A:105:SER:HB3	1:A:195:ILE:HD12	2.01	0.42
1:A:135:ILE:HG22	1:A:136:ASN:ND2	2.35	0.42
1:A:5:ILE:HD13	1:A:6:GLU:N	2.35	0.42
1:A:405:TYR:CE2	1:A:407:GLN:HB2	2.55	0.42
2:B:101:LYS:O	2:B:236:PRO:HB2	2.20	0.42
2:B:257:ILE:HD11	2:B:293:ILE:HG23	2.01	0.42
2:B:84:THR:O	2:B:84:THR:HG22	2.20	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:325:LEU:HD23	2:B:343:GLN:HG3	2.02	0.42
1:A:298:GLU:OE1	1:A:298:GLU:N	2.43	0.41
2:B:295:LEU:N	2:B:295:LEU:HD23	2.35	0.41
1:A:7:THR:HG22	1:A:119:PRO:HB2	2.02	0.41
2:B:56:TYR:O	2:B:129:ALA:HB3	2.19	0.41
2:B:297:GLU:O	2:B:301:LEU:HD23	2.20	0.41
2:B:314:VAL:HB	2:B:317:VAL:HG11	2.03	0.41
2:B:342:TYR:CE1	2:B:345:PRO:HA	2.55	0.41
2:B:250:ASP:OD2	2:B:250:ASP:N	2.52	0.41
1:A:429:LEU:HD11	1:A:506:ILE:HG22	2.01	0.41
2:B:284:ARG:CG	2:B:285:GLY:N	2.83	0.41
1:A:97:PRO:HG2	1:A:232:TYR:CD1	2.56	0.41
1:A:325:LEU:HD23	1:A:385:LYS:HE3	2.03	0.41
2:B:120:LEU:HD23	2:B:125:ARG:HG2	2.02	0.41
2:B:207:GLN:O	2:B:211:ARG:HD3	2.21	0.41
1:A:156:SER:HB2	1:A:157:PRO:HD3	2.03	0.40
2:B:336:GLN:NE2	2:B:355:ALA:HB2	2.37	0.40
1:A:458:VAL:HG23	1:A:548:VAL:HG22	2.04	0.40
1:A:466:VAL:HG21	1:A:551:LEU:HB2	2.04	0.40
2:B:336:GLN:HE22	2:B:355:ALA:HB2	1.87	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	548/561 (98%)	510 (93%)	30 (6%)	8 (2%)	10	38
2	B	393/440 (89%)	369 (94%)	16 (4%)	8 (2%)	7	30
All	All	941/1001 (94%)	879 (93%)	46 (5%)	16 (2%)	9	34

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	356	ARG
2	B	13	LYS
2	B	230	MET
2	B	249	LYS
1	A	70	LYS
1	A	71	TRP
1	A	286	THR
2	B	285	GLY
2	B	16	MET
1	A	345	PRO
1	A	554	ALA
2	B	232	TYR
2	B	286	THR
1	A	493	VAL
1	A	555	GLY
2	B	345	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	492/501 (98%)	466 (95%)	26 (5%)	22	55
2	B	365/400 (91%)	345 (94%)	20 (6%)	21	53
All	All	857/901 (95%)	811 (95%)	46 (5%)	22	54

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	ILE
1	A	72	ARG
1	A	84	THR
1	A	131	THR
1	A	203	GLU
1	A	234	LEU
1	A	248	GLU
1	A	260	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	287	LYS
1	A	300	GLU
1	A	301	LEU
1	A	332	GLN
1	A	345	PRO
1	A	351	THR
1	A	358	ARG
1	A	399	GLU
1	A	407	GLN
1	A	431	LYS
1	A	461	ARG
1	A	497	THR
1	A	499	SER
1	A	517	LEU
1	A	540	LYS
1	A	547	GLN
1	A	550	LYS
1	A	551	LEU
2	B	6	GLU
2	B	48	SER
2	B	70	LYS
2	B	90	VAL
2	B	134	SER
2	B	163	SER
2	B	179	VAL
2	B	184	MET
2	B	193	LEU
2	B	194	GLU
2	B	210	LEU
2	B	232	TYR
2	B	255	ASN
2	B	277	ARG
2	B	282	LEU
2	B	295	LEU
2	B	326	ILE
2	B	346	PHE
2	B	363	ASN
2	B	424	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	136	ASN
1	A	145	GLN
1	A	197	GLN
1	A	198	HIS
1	A	221	HIS
1	A	332	GLN
1	A	428	GLN
1	A	474	ASN
1	A	524	GLN
1	A	547	GLN
2	B	151	GLN
2	B	182	GLN
2	B	258	GLN
2	B	336	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](#)

1 ligand is 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	$\# Z > 2$
3	PZ2	A	562	-	28,30,30	0.97	2 (7%)	33,42,42	1.61	4 (12%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PZ2	A	562	-	-	0/10/10/10	0/4/4/4

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	562	PZ2	N4-N5	-2.85	1.30	1.34
3	A	562	PZ2	C7-N9	-2.46	1.30	1.34

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	562	PZ2	C3-N4-N5	6.38	123.81	118.91
3	A	562	PZ2	C2-C3-N4	-3.67	118.69	123.66
3	A	562	PZ2	C13-C27-C7	-3.03	105.78	113.00
3	A	562	PZ2	C21-C16-C17	2.46	120.84	118.11

There are no chirality outliers.

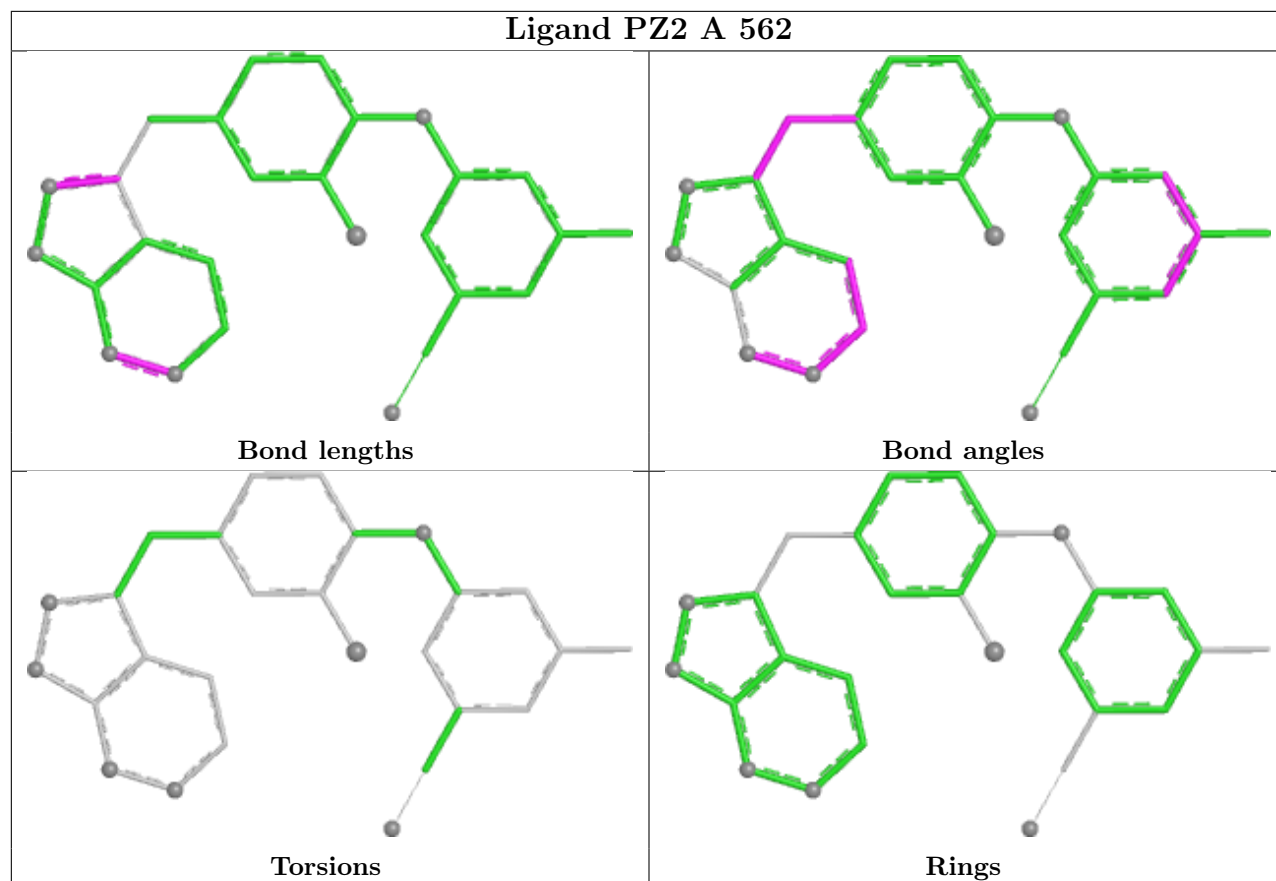
There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	562	PZ2	2	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	552/561 (98%)	0.61	38 (6%) 16 10	78, 99, 118, 142	0
2	B	401/440 (91%)	0.59	25 (6%) 20 12	77, 96, 123, 129	0
All	All	953/1001 (95%)	0.60	63 (6%) 18 10	77, 98, 122, 142	0

All (63) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	14	PRO	8.3
2	B	12	LEU	7.1
2	B	13	LYS	5.7
1	A	193	LEU	5.6
2	B	229	TRP	5.5
2	B	230	MET	5.2
2	B	294	PRO	4.6
1	A	360	ALA	4.4
2	B	232	TYR	4.0
2	B	295	LEU	4.0
2	B	11	LYS	3.9
2	B	252	TRP	3.8
1	A	222	GLN	3.7
2	B	231	GLY	3.7
1	A	426	TRP	3.6
1	A	55	PRO	3.4
2	B	10	VAL	3.4
2	B	293	ILE	3.4
1	A	357	MET	3.1
2	B	281	LYS	3.1
2	B	284	ARG	3.1
1	A	53	GLU	3.1
2	B	68	SER	3.0
1	A	34	LEU	3.0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	178	ILE	3.0
2	B	24	TRP	2.9
1	A	106	VAL	2.9
1	A	198	HIS	2.8
2	B	276	VAL	2.8
1	A	195	ILE	2.8
2	B	15	GLY	2.7
1	A	14	PRO	2.7
1	A	547	GLN	2.7
1	A	402	TRP	2.6
1	A	15	GLY	2.6
2	B	179	VAL	2.6
1	A	220	LYS	2.6
1	A	228	LEU	2.6
2	B	214	LEU	2.6
1	A	56	TYR	2.6
1	A	425	LEU	2.6
1	A	427	TYR	2.5
1	A	398	TRP	2.5
1	A	102	LYS	2.4
1	A	479	LEU	2.4
1	A	526	ILE	2.4
2	B	69	THR	2.4
1	A	181	TYR	2.3
1	A	234	LEU	2.3
1	A	194	GLU	2.3
1	A	187	LEU	2.2
1	A	491	LEU	2.2
1	A	16	MET	2.2
1	A	227	PHE	2.2
1	A	529	GLU	2.2
1	A	452	LEU	2.2
2	B	345	PRO	2.2
2	B	257	ILE	2.1
1	A	424	LYS	2.1
1	A	221	HIS	2.1
2	B	297	GLU	2.1
1	A	358	ARG	2.1
1	A	54	ASN	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](#)

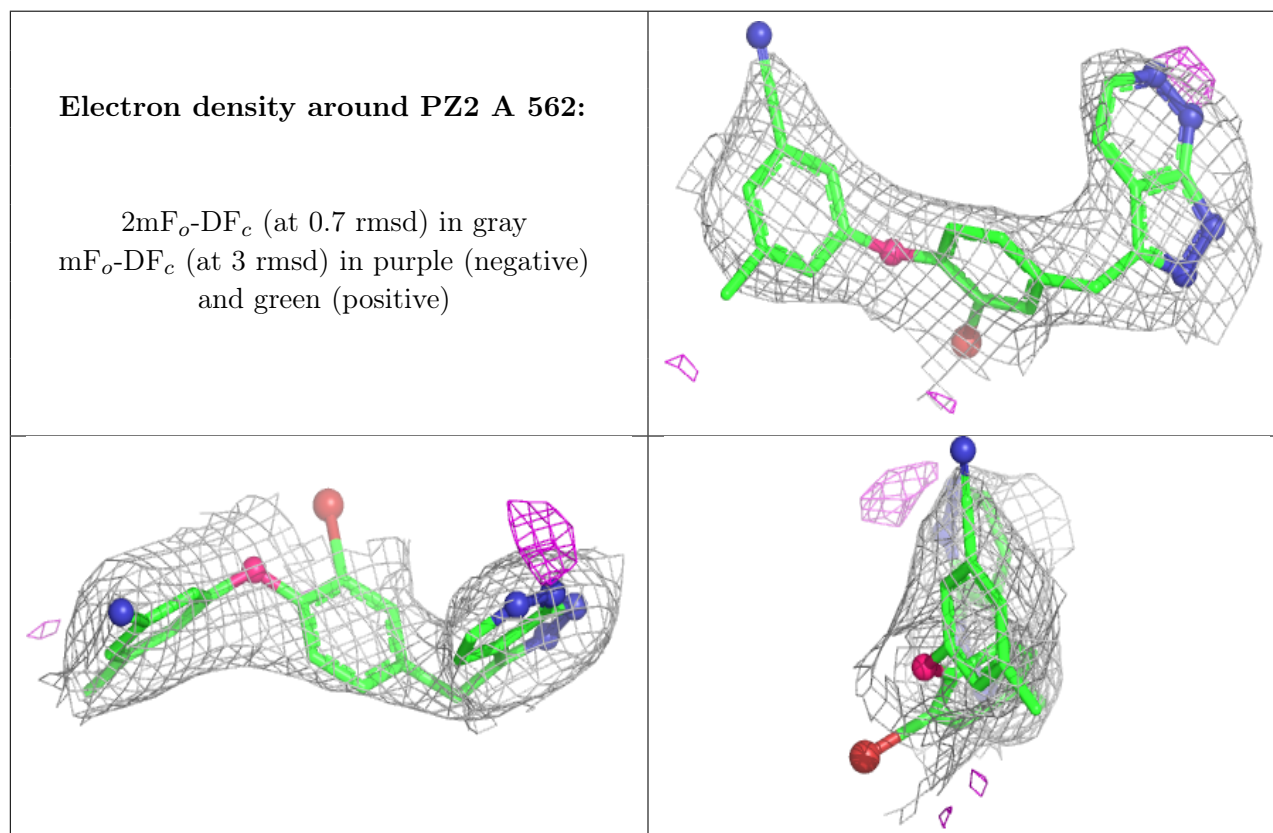
There are no monosaccharides in this entry.

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(\AA^2)	Q<0.9
3	PZ2	A	562	27/27	0.94	0.28	101,105,106,108	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.



6.5 Other polymers [i](#)

There are no such residues in this entry.