



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 08:10 PM UTC

PDB ID : 2V11 / pdb_00002v11
Title : Crystal Structure of Renin with Inhibitor 6
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Deposited on : 2007-05-21
Resolution : 3.10 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 Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

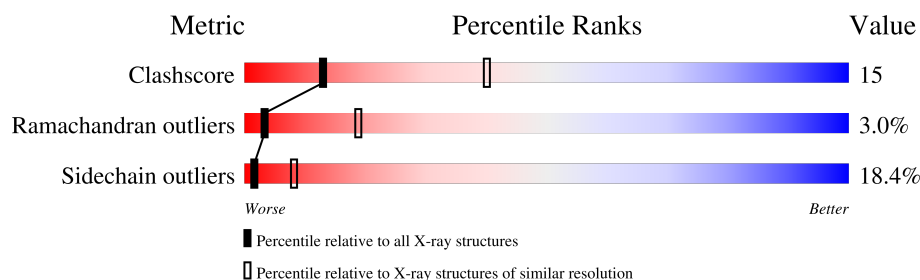
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 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))
Clashscore	190562	1539 (3.10-3.10)
Ramachandran outliers	187476	1467 (3.10-3.10)
Sidechain outliers	187428	1467 (3.10-3.10)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	C	340	44% 38% 12% • •
1	O	340	36% 39% 18% • •

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	C80	C	1341	X	-	-	-
2	C80	O	1341	X	-	-	-

2 Entry composition [i](#)

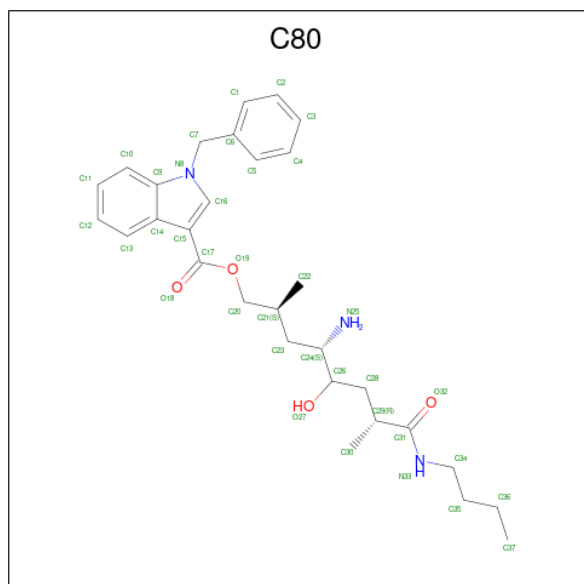
There are 2 unique types of molecules in this entry. The entry contains 5198 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 RENIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	334	Total	C	N	O	S	0	0	1
			2567	1639	416	498	14			
1	O	332	Total	C	N	O	S	0	0	1
			2557	1634	414	495	14			

- Molecule 2 is (2S,4S,5R,7R)-4-AMINO-8-(BUTYLAMINO)-5-HYDROXY-2,7-DIMETHYL-8-OXOOCTYL 1-BENZYL-1H-INDOLE-3-CARBOXYLATE (CCD ID: C80) (formula: $C_{30}H_{41}N_3O_4$).



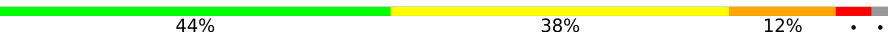
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	C	1	Total	C	N	O	0	0
			37	30	3	4		
2	O	1	Total	C	N	O	0	0
			37	30	3	4		

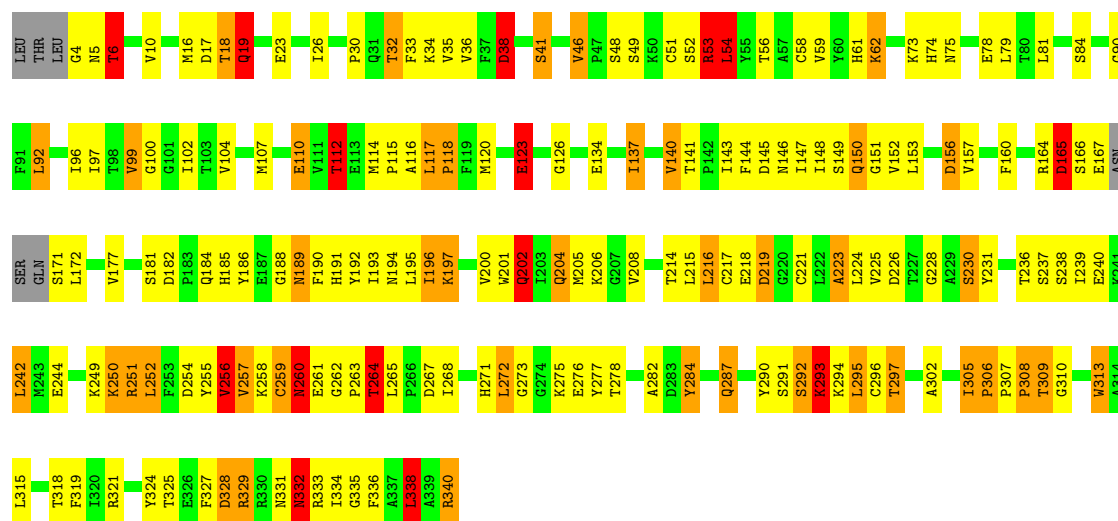
3 Residue-property plots

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. 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. 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.

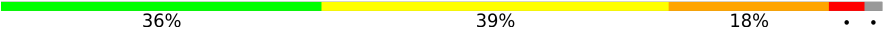
Note EDS was not executed.

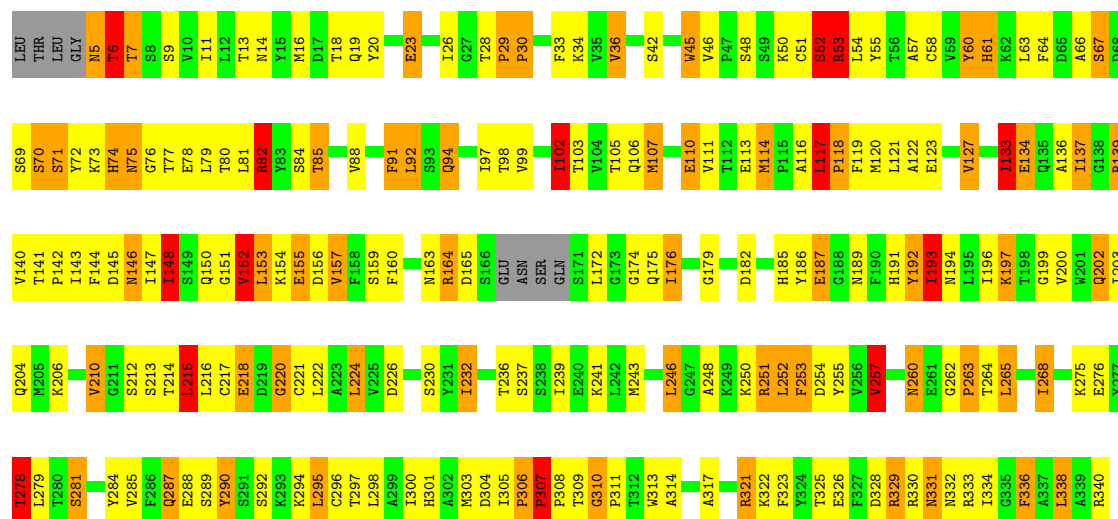
• Molecule 1: RENIN

Chain C: 



• Molecule 1: RENIN

Chain O: 



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, α , β , γ	142.90Å 142.90Å 142.90Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	10.00 – 3.10	Depositor
% Data completeness (in resolution range)	96.0 (10.00-3.10)	Depositor
R_{merge}	0.22	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.217 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	5198	wwPDB-VP
Average B, all atoms (Å ²)	15.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: C80

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	C	1.42	12/2626 (0.5%)	2.27	139/3560 (3.9%)
1	O	1.43	11/2616 (0.4%)	2.42	169/3547 (4.8%)
All	All	1.42	23/5242 (0.4%)	2.34	308/7107 (4.3%)

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	C	0	2
1	O	0	5
All	All	0	7

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	61	HIS	CD2-NE2	-8.06	1.28	1.37
1	O	193	ILE	CA-CB	-8.04	1.44	1.54
1	O	185	HIS	CD2-NE2	-7.92	1.29	1.37
1	O	191	HIS	CB-CG	7.40	1.60	1.50
1	C	61	HIS	CG-ND1	-6.67	1.30	1.38
1	O	61	HIS	CD2-NE2	-6.65	1.30	1.37
1	C	327	PHE	CA-CB	-6.48	1.44	1.53
1	C	34	LYS	CA-CB	-6.18	1.44	1.53
1	C	185	HIS	CD2-NE2	-6.17	1.31	1.37
1	O	301	HIS	CA-CB	-5.73	1.44	1.53
1	C	251	ARG	CA-CB	5.55	1.61	1.53
1	C	251	ARG	NE-CZ	5.40	1.39	1.33
1	C	164	ARG	NE-CZ	5.34	1.39	1.33
1	C	10	VAL	CA-CB	-5.26	1.48	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	O	338	LEU	CA-CB	-5.26	1.45	1.53
1	O	74	HIS	CD2-NE2	-5.23	1.32	1.37
1	O	191	HIS	CG-CD2	5.20	1.41	1.35
1	O	165	ASP	C-N	-5.18	1.26	1.33
1	C	190	PHE	CA-C	-5.08	1.46	1.53
1	C	257	VAL	CA-CB	-5.08	1.47	1.55
1	C	204	GLN	CA-C	-5.07	1.46	1.52
1	O	296	CYS	CA-CB	-5.04	1.45	1.53
1	O	102	ILE	CA-CB	-5.03	1.47	1.54

All (308) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	O	5	ASN	CA-CB-CG	13.17	125.77	112.60
1	O	165	ASP	CA-CB-CG	12.57	125.17	112.60
1	O	114	MET	O-C-N	-11.59	114.31	121.27
1	O	253	PHE	N-CA-C	-11.49	92.33	110.14
1	O	58	CYS	CA-CB-SG	-11.19	88.67	114.40
1	C	6	THR	CA-CB-OG1	-10.97	93.14	109.60
1	C	204	GLN	CA-CB-CG	-10.61	92.88	114.10
1	C	219	ASP	CA-CB-CG	-10.32	102.28	112.60
1	C	309	THR	N-CA-C	-9.88	97.81	112.04
1	C	54	LEU	N-CA-C	-9.37	101.84	113.18
1	O	331	ASN	CA-CB-CG	9.35	121.95	112.60
1	C	256	VAL	N-CA-CB	-9.35	99.43	112.52
1	O	113	GLU	CB-CG-CD	9.29	128.40	112.60
1	C	282	ALA	N-CA-C	-9.17	92.76	110.56
1	O	152	VAL	N-CA-CB	-9.14	101.35	111.41
1	C	275	LYS	N-CA-C	9.13	123.95	110.17
1	C	156	ASP	CA-CB-CG	9.10	121.70	112.60
1	C	46	VAL	N-CA-CB	-8.81	98.88	111.21
1	O	305	ILE	N-CA-C	-8.70	97.79	108.05
1	O	332	ASN	CB-CG-ND2	8.67	129.41	116.40
1	C	244	GLU	CA-CB-CG	8.66	131.42	114.10
1	C	165	ASP	CA-CB-CG	8.64	121.24	112.60
1	C	6	THR	CA-CB-CG2	8.63	125.17	110.50
1	O	218	GLU	N-CA-C	-8.61	97.54	110.28
1	O	52	SER	N-CA-C	8.61	129.13	110.80
1	O	152	VAL	CB-CA-C	8.61	119.62	111.44
1	C	332	ASN	OD1-CG-ND2	-8.28	114.32	122.60
1	O	6	THR	N-CA-C	8.27	122.33	109.52
1	C	165	ASP	CA-C-N	8.23	136.51	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	165	ASP	C-N-CA	8.23	136.51	121.70
1	C	338	LEU	N-CA-C	8.20	122.26	109.96
1	O	105	THR	N-CA-C	-8.18	95.90	109.07
1	C	112	THR	CA-CB-OG1	-8.14	97.39	109.60
1	C	287	GLN	OE1-CD-NE2	-8.04	114.56	122.60
1	O	336	PHE	CA-CB-CG	-8.03	105.77	113.80
1	C	208	VAL	N-CA-C	-8.02	96.91	108.53
1	O	110	GLU	N-CA-C	-7.92	95.61	108.52
1	O	146	ASN	N-CA-C	7.82	119.88	111.36
1	C	292	SER	N-CA-C	-7.80	101.17	111.24
1	C	53	ARG	NE-CZ-NH2	-7.77	112.21	119.20
1	C	5	ASN	O-C-N	7.76	132.98	123.44
1	O	317	ALA	CA-C-O	-7.73	111.97	121.02
1	O	102	ILE	CA-CB-CG2	-7.68	97.45	110.50
1	O	251	ARG	CA-CB-CG	-7.61	98.87	114.10
1	O	148	ILE	CA-CB-CG1	-7.59	97.50	110.40
1	O	69	SER	CA-C-O	7.56	130.51	120.15
1	C	189	ASN	OD1-CG-ND2	-7.55	115.05	122.60
1	C	146	ASN	OD1-CG-ND2	-7.52	115.08	122.60
1	O	185	HIS	CA-CB-CG	-7.50	106.30	113.80
1	O	23	GLU	N-CA-C	7.50	121.76	109.24
1	O	189	ASN	CA-CB-CG	-7.49	105.11	112.60
1	O	194	ASN	CA-CB-CG	7.48	120.08	112.60
1	C	259	CYS	N-CA-C	7.45	120.34	111.33
1	C	145	ASP	N-CA-C	-7.44	103.19	111.82
1	C	251	ARG	CB-CG-CD	7.44	128.42	111.30
1	O	146	ASN	CA-CB-CG	-7.44	105.16	112.60
1	O	329	ARG	CA-C-O	-7.44	113.24	120.90
1	C	201	TRP	CG-CD2-CE3	7.43	141.33	133.90
1	O	33	PHE	CA-C-O	-7.35	112.80	121.11
1	O	153	LEU	CA-C-N	-7.34	113.06	123.20
1	O	153	LEU	C-N-CA	-7.34	113.06	123.20
1	O	16	MET	N-CA-CB	-7.34	100.99	112.08
1	O	232	ILE	N-CA-C	-7.31	97.56	109.12
1	O	210	VAL	N-CA-C	-7.31	97.93	108.17
1	C	260	ASN	OD1-CG-ND2	-7.29	115.31	122.60
1	O	151	GLY	CA-C-N	-7.26	115.75	123.08
1	O	151	GLY	C-N-CA	-7.26	115.75	123.08
1	O	215	LEU	N-CA-C	-7.25	103.31	111.14
1	C	202	GLN	OE1-CD-NE2	-7.23	115.37	122.60
1	O	214	THR	O-C-N	7.18	132.34	122.29
1	O	64	PHE	CA-CB-CG	-7.14	106.66	113.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	267	ASP	CA-CB-CG	7.13	119.73	112.60
1	O	265	LEU	CA-C-N	7.06	127.06	119.78
1	O	265	LEU	C-N-CA	7.06	127.06	119.78
1	O	88	VAL	N-CA-C	-7.05	97.95	108.46
1	O	46	VAL	CA-C-N	7.04	127.01	119.76
1	O	46	VAL	C-N-CA	7.04	127.01	119.76
1	C	293	LYS	N-CA-C	7.04	119.94	108.26
1	C	38	ASP	CA-CB-CG	7.02	119.62	112.60
1	O	313	TRP	N-CA-C	-7.00	100.12	110.48
1	C	251	ARG	N-CA-C	-6.95	99.91	109.71
1	C	112	THR	CA-CB-CG2	6.92	122.27	110.50
1	O	301	HIS	CB-CG-CD2	-6.92	122.21	131.20
1	O	137	ILE	N-CA-C	-6.88	100.70	109.30
1	O	164	ARG	N-CA-C	-6.85	100.34	110.48
1	C	181	SER	CA-C-O	-6.83	113.38	120.89
1	C	258	LYS	N-CA-C	-6.80	98.85	109.25
1	C	165	ASP	O-C-N	6.79	131.62	122.59
1	O	142	PRO	N-CA-C	6.75	121.53	111.41
1	O	297	THR	CA-CB-OG1	-6.71	99.53	109.60
1	O	251	ARG	NE-CZ-NH2	-6.68	113.19	119.20
1	C	190	PHE	N-CA-C	6.66	119.15	110.43
1	O	94	GLN	OE1-CD-NE2	-6.63	115.97	122.60
1	C	19	GLN	CA-C-O	-6.62	113.22	120.30
1	O	103	THR	CA-CB-OG1	-6.60	99.70	109.60
1	O	71	SER	CA-C-O	6.59	125.71	118.65
1	C	324	TYR	CA-C-O	-6.58	113.78	120.96
1	C	272	LEU	O-C-N	6.58	131.02	122.93
1	O	332	ASN	OD1-CG-ND2	-6.56	116.04	122.60
1	O	176	ILE	CB-CG1-CD1	-6.56	100.03	113.80
1	C	293	LYS	O-C-N	6.55	131.67	123.28
1	C	216	LEU	N-CA-C	6.54	118.70	108.96
1	C	190	PHE	CA-CB-CG	-6.51	107.29	113.80
1	C	242	LEU	N-CA-C	-6.50	104.11	111.07
1	C	110	GLU	N-CA-C	-6.49	98.14	108.73
1	O	51	CYS	CA-C-O	6.49	127.99	120.98
1	O	92	LEU	N-CA-C	6.48	120.60	110.17
1	O	202	GLN	OE1-CD-NE2	-6.48	116.12	122.60
1	C	193	ILE	N-CA-C	-6.47	99.06	108.11
1	O	276	GLU	CA-CB-CG	-6.46	101.17	114.10
1	O	45	TRP	CB-CG-CD1	-6.46	117.22	126.90
1	O	91	PHE	CA-C-O	-6.46	113.76	120.99
1	O	252	LEU	N-CA-C	-6.45	101.72	111.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	O	338	LEU	CB-CA-C	-6.42	100.63	110.26
1	C	226	ASP	N-CA-C	6.40	120.33	107.41
1	C	185	HIS	CB-CG-CD2	-6.39	122.89	131.20
1	O	185	HIS	N-CA-C	6.39	120.39	112.59
1	C	332	ASN	CA-CB-CG	-6.38	106.22	112.60
1	O	303	MET	CA-C-N	-6.37	114.56	122.84
1	O	303	MET	C-N-CA	-6.37	114.56	122.84
1	C	250	LYS	CA-C-O	-6.36	113.65	120.46
1	O	99	VAL	N-CA-C	-6.36	99.26	108.17
1	O	257	VAL	CA-CB-CG1	-6.32	99.67	110.40
1	C	319	PHE	CA-CB-CG	6.31	120.11	113.80
1	O	133	ILE	N-CA-CB	6.30	118.63	110.57
1	O	67	SER	N-CA-C	-6.25	104.47	111.28
1	O	145	ASP	N-CA-C	-6.25	104.47	111.28
1	C	251	ARG	NE-CZ-NH2	6.25	124.82	119.20
1	O	20	TYR	N-CA-C	-6.23	97.67	108.69
1	O	313	TRP	CG-CD2-CE3	6.21	140.11	133.90
1	C	116	ALA	CB-CA-C	-6.20	101.11	110.90
1	O	52	SER	CA-C-O	-6.19	111.67	120.51
1	C	74	HIS	CB-CG-CD2	-6.15	123.20	131.20
1	C	112	THR	N-CA-CB	-6.15	101.49	110.53
1	C	46	VAL	CA-C-N	6.15	126.09	119.76
1	C	46	VAL	C-N-CA	6.15	126.09	119.76
1	C	276	GLU	CA-CB-CG	6.14	126.37	114.10
1	O	275	LYS	N-CA-C	-6.12	101.15	110.14
1	O	301	HIS	N-CA-CB	-6.10	100.59	110.71
1	C	46	VAL	O-C-N	-6.09	114.16	121.10
1	C	336	PHE	CA-CB-CG	6.08	119.88	113.80
1	C	257	VAL	CA-CB-CG2	-6.07	100.07	110.40
1	O	226	ASP	N-CA-C	6.07	118.74	107.99
1	O	5	ASN	OD1-CG-ND2	-6.06	116.54	122.60
1	O	295	LEU	N-CA-CB	-6.05	101.06	110.57
1	C	30	PRO	O-C-N	6.04	130.68	123.06
1	C	184	GLN	OE1-CD-NE2	-6.01	116.59	122.60
1	O	16	MET	CA-CB-CG	6.00	126.10	114.10
1	O	268	ILE	N-CA-C	-6.00	99.76	108.87
1	O	321	ARG	NE-CZ-NH2	5.97	124.57	119.20
1	O	185	HIS	CB-CG-CD2	-5.97	123.44	131.20
1	O	7	THR	CA-CB-OG1	-5.96	100.65	109.60
1	O	163	ASN	CA-CB-CG	5.96	118.56	112.60
1	C	92	LEU	CA-C-O	5.96	128.31	121.28
1	C	58	CYS	N-CA-C	-5.96	104.72	112.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	O	214	THR	CA-C-N	5.94	128.52	120.44
1	O	214	THR	C-N-CA	5.94	128.52	120.44
1	C	306	PRO	N-CA-C	5.94	117.95	110.70
1	O	182	ASP	CA-C-N	5.93	125.61	119.56
1	O	182	ASP	C-N-CA	5.93	125.61	119.56
1	C	143	ILE	CA-C-O	-5.91	114.91	121.05
1	O	287	GLN	OE1-CD-NE2	-5.91	116.69	122.60
1	O	290	TYR	N-CA-CB	-5.91	101.79	111.01
1	O	106	GLN	CA-CB-CG	5.91	125.91	114.10
1	C	191	HIS	CA-CB-CG	-5.89	107.91	113.80
1	C	165	ASP	N-CA-C	5.88	123.33	110.80
1	O	144	PHE	CA-C-O	-5.88	114.19	120.42
1	C	313	TRP	CG-CD2-CE3	5.87	139.77	133.90
1	C	114	MET	CA-C-N	5.86	127.16	119.84
1	C	114	MET	C-N-CA	5.86	127.16	119.84
1	C	140	VAL	N-CA-CB	-5.83	104.35	110.82
1	O	52	SER	N-CA-CB	-5.80	100.68	110.49
1	O	160	PHE	CA-C-O	-5.79	114.57	121.11
1	C	226	ASP	CA-CB-CG	5.78	118.38	112.60
1	O	278	THR	CA-CB-OG1	-5.78	100.93	109.60
1	O	73	LYS	CA-C-O	5.78	126.64	120.46
1	O	323	PHE	CA-CB-CG	-5.78	108.02	113.80
1	C	328	ASP	CA-CB-CG	5.78	118.38	112.60
1	C	224	LEU	CA-C-O	-5.77	114.70	121.16
1	C	189	ASN	CB-CG-ND2	5.76	125.05	116.40
1	C	75	ASN	O-C-N	-5.76	114.93	122.59
1	O	157	VAL	CA-C-O	-5.76	115.17	121.28
1	O	133	ILE	CB-CA-C	-5.75	104.48	112.02
1	C	23	GLU	N-CA-C	5.74	118.85	108.69
1	C	332	ASN	N-CA-C	5.74	119.11	111.30
1	O	139	ARG	N-CA-CB	-5.74	103.73	112.28
1	O	297	THR	CA-CB-CG2	5.72	120.23	110.50
1	O	174	GLY	CA-C-O	-5.71	116.02	121.62
1	O	191	HIS	N-CA-C	-5.71	99.88	109.07
1	O	212	SER	N-CA-C	-5.70	103.60	110.44
1	O	106	GLN	CG-CD-NE2	5.70	124.95	116.40
1	O	333	ARG	CG-CD-NE	-5.69	99.47	112.00
1	C	204	GLN	O-C-N	5.69	129.85	123.19
1	O	210	VAL	CA-C-O	5.69	126.51	120.48
1	C	295	LEU	O-C-N	5.68	129.96	123.31
1	C	318	THR	N-CA-C	-5.68	105.23	111.82
1	C	201	TRP	CB-CG-CD1	-5.68	118.38	126.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	O	305	ILE	CA-C-N	5.68	126.23	120.38
1	O	305	ILE	C-N-CA	5.68	126.23	120.38
1	O	75	ASN	N-CA-C	-5.64	100.58	109.50
1	C	188	GLY	CA-C-N	-5.64	113.34	122.82
1	C	188	GLY	C-N-CA	-5.64	113.34	122.82
1	O	66	ALA	N-CA-C	5.64	119.67	112.34
1	O	117	LEU	N-CA-C	-5.64	97.35	109.81
1	O	152	VAL	N-CA-C	-5.63	106.72	111.56
1	C	149	SER	CA-CB-OG	-5.62	99.85	111.10
1	C	51	CYS	CA-C-O	-5.62	114.51	120.92
1	C	120	MET	N-CA-C	-5.59	106.46	113.28
1	O	264	THR	N-CA-C	5.58	120.25	113.38
1	C	334	ILE	CA-C-O	-5.58	114.36	120.72
1	C	251	ARG	N-CA-CB	5.56	116.58	110.35
1	C	146	ASN	CB-CG-ND2	5.56	124.74	116.40
1	O	300	ILE	N-CA-C	-5.55	100.19	108.46
1	C	251	ARG	CA-CB-CG	5.53	125.16	114.10
1	C	75	ASN	CB-CG-ND2	5.52	124.68	116.40
1	C	49	SER	N-CA-C	-5.51	104.67	111.33
1	C	112	THR	N-CA-C	-5.50	106.73	113.50
1	O	281	SER	O-C-N	5.50	127.95	122.12
1	O	50	LYS	N-CA-C	-5.49	105.94	113.30
1	O	334	ILE	O-C-N	-5.49	117.47	123.18
1	C	84	SER	CA-CB-OG	5.48	122.06	111.10
1	C	331	ASN	CA-CB-CG	-5.47	107.12	112.60
1	O	7	THR	N-CA-CB	-5.46	101.11	111.00
1	O	263	PRO	N-CA-C	5.44	123.68	112.47
1	O	329	ARG	CB-CA-C	-5.44	102.53	110.95
1	O	212	SER	CA-C-N	-5.43	114.32	122.47
1	O	212	SER	C-N-CA	-5.43	114.32	122.47
1	C	225	VAL	N-CA-C	-5.43	98.63	106.88
1	C	306	PRO	CA-C-N	5.43	125.97	120.38
1	C	306	PRO	C-N-CA	5.43	125.97	120.38
1	O	103	THR	N-CA-CB	-5.41	101.44	110.80
1	O	80	THR	CA-C-O	5.41	127.56	120.15
1	C	18	THR	N-CA-C	-5.40	107.34	114.04
1	O	121	LEU	O-C-N	-5.40	114.55	122.43
1	O	265	LEU	N-CA-CB	-5.40	102.23	110.11
1	O	325	THR	CA-CB-OG1	-5.38	101.54	109.60
1	O	322	LYS	CA-CB-CG	-5.37	103.36	114.10
1	C	16	MET	CA-CB-CG	-5.37	103.37	114.10
1	O	187	GLU	CB-CG-CD	-5.36	103.48	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	328	ASP	N-CA-C	5.33	117.43	107.99
1	O	304	ASP	CA-CB-CG	-5.33	107.27	112.60
1	O	111	VAL	N-CA-C	-5.33	101.85	108.89
1	O	82	ARG	NE-CZ-NH1	5.33	126.83	121.50
1	O	276	GLU	CB-CG-CD	5.33	121.65	112.60
1	C	292	SER	CA-C-N	-5.32	114.52	122.39
1	C	292	SER	C-N-CA	-5.32	114.52	122.39
1	C	141	THR	CA-CB-OG1	-5.32	101.62	109.60
1	C	177	VAL	N-CA-C	-5.32	100.67	108.11
1	C	271	HIS	CB-CG-CD2	-5.31	124.29	131.20
1	O	78	GLU	CB-CG-CD	5.31	121.62	112.60
1	C	297	THR	CA-C-O	-5.29	115.79	121.56
1	O	191	HIS	CB-CG-ND1	5.29	130.63	122.70
1	C	123	GLU	N-CA-C	-5.27	106.85	113.28
1	O	7	THR	CA-CB-CG2	5.27	119.46	110.50
1	C	223	ALA	O-C-N	-5.26	116.13	123.34
1	C	240	GLU	CA-C-O	-5.26	114.94	120.63
1	O	113	GLU	N-CA-C	-5.26	99.72	108.34
1	O	45	TRP	CG-CD2-CE3	5.25	139.15	133.90
1	O	313	TRP	CB-CG-CD1	-5.25	119.02	126.90
1	C	231	TYR	N-CA-C	5.25	117.51	109.95
1	C	264	THR	N-CA-CB	-5.24	103.05	110.81
1	C	53	ARG	NE-CZ-NH1	5.21	126.71	121.50
1	C	73	LYS	CA-C-O	5.20	125.95	120.33
1	C	148	ILE	CA-C-O	-5.20	115.54	120.95
1	O	192	TYR	N-CA-C	5.20	118.59	110.32
1	O	288	GLU	CA-C-O	5.20	127.95	120.51
1	O	301	HIS	ND1-CG-CD2	5.20	111.30	106.10
1	O	103	THR	CA-CB-CG2	5.19	119.33	110.50
1	O	193	ILE	CB-CG1-CD1	5.19	124.69	113.80
1	O	14	ASN	CA-CB-CG	5.18	117.78	112.60
1	O	36	VAL	CA-CB-CG2	-5.17	101.61	110.40
1	C	191	HIS	CB-CG-CD2	-5.17	124.48	131.20
1	O	102	ILE	CA-CB-CG1	5.16	119.17	110.40
1	C	324	TYR	N-CA-C	-5.15	102.67	110.24
1	O	74	HIS	N-CA-C	5.15	118.03	110.30
1	O	311	PRO	CB-CA-C	5.14	117.13	111.11
1	C	32	THR	CA-CB-OG1	-5.14	101.89	109.60
1	O	248	ALA	N-CA-C	-5.13	102.88	110.48
1	O	34	LYS	O-C-N	-5.12	116.72	123.02
1	O	60	TYR	CA-CB-CG	-5.12	104.68	113.90
1	O	133	ILE	CA-CB-CG1	-5.11	101.71	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	278	THR	N-CA-CB	-5.11	102.22	110.71
1	O	329	ARG	N-CA-CB	5.11	117.39	109.98
1	O	63	LEU	CA-C-O	5.11	126.53	120.66
1	O	147	ILE	CA-C-N	-5.10	112.27	120.64
1	O	147	ILE	C-N-CA	-5.10	112.27	120.64
1	C	36	VAL	CG1-CB-CG2	-5.10	99.58	110.80
1	O	311	PRO	N-CA-C	-5.08	102.27	110.55
1	O	150	GLN	CB-CG-CD	-5.08	103.97	112.60
1	C	41	SER	CA-CB-OG	5.07	121.23	111.10
1	C	156	ASP	N-CA-CB	-5.07	102.95	110.60
1	O	301	HIS	CA-C-O	-5.06	113.38	120.21
1	C	325	THR	O-C-N	-5.06	117.30	123.27
1	C	144	PHE	CA-CB-CG	-5.05	108.75	113.80
1	C	284	TYR	CA-CB-CG	5.05	122.99	113.90
1	O	164	ARG	CA-C-N	-5.04	112.63	121.70
1	O	164	ARG	C-N-CA	-5.04	112.63	121.70
1	O	189	ASN	N-CA-C	5.03	116.59	108.34
1	C	160	PHE	N-CA-C	5.03	117.17	109.07
1	O	143	ILE	CA-C-O	-5.03	116.04	121.27
1	C	219	ASP	N-CA-C	5.03	118.45	112.72
1	O	220	GLY	N-CA-C	5.02	125.08	113.18
1	C	305	ILE	CA-C-N	5.02	125.55	120.38
1	C	305	ILE	C-N-CA	5.02	125.55	120.38
1	C	182	ASP	CA-CB-CG	5.01	117.61	112.60
1	C	117	LEU	CB-CA-C	5.01	115.56	109.85
1	C	340	ARG	N-CA-C	-5.01	96.97	111.00
1	C	137	ILE	N-CA-C	-5.00	102.62	109.37

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	290	TYR	Sidechain
1	C	310	GLY	Peptide
1	O	186	TYR	Sidechain
1	O	29	PRO	Peptide
1	O	306	PRO	Peptide
1	O	307	PRO	Peptide
1	O	310	GLY	Peptide

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	C	2567	0	2498	71	0
1	O	2557	0	2490	83	0
2	C	37	0	40	4	0
2	O	37	0	40	2	0
All	All	5198	0	5068	154	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 (154) 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:19:GLN:HE21	1:C:123:GLU:H	1.19	0.89
1:O:48:SER:HB2	1:O:110:GLU:HB3	1.56	0.88
1:C:102:ILE:HG21	1:C:147:ILE:HG23	1.62	0.82
1:O:81:LEU:HD23	1:O:137:ILE:HD12	1.63	0.80
1:O:260:ASN:ND2	1:O:292:SER:HA	2.01	0.74
1:O:200:VAL:HG12	1:O:202:GLN:HB2	1.72	0.72
1:C:340:ARG:HH22	1:O:7:THR:HG22	1.54	0.71
1:O:5:ASN:N	1:O:154:LYS:HG3	2.05	0.71
1:O:52:SER:HG	1:O:55:TYR:HE1	1.36	0.71
1:O:5:ASN:CA	1:O:154:LYS:HG3	2.21	0.70
1:O:77:THR:HB	1:O:92:LEU:CD2	2.21	0.70
1:O:5:ASN:HA	1:O:154:LYS:HG3	1.74	0.69
1:O:196:ILE:HG23	1:O:197:LYS:HD3	1.74	0.69
1:O:246:LEU:HD11	1:O:268:ILE:HD11	1.76	0.68
1:O:210:VAL:HG12	1:O:268:ILE:HG12	1.76	0.68
1:C:157:VAL:HG12	1:C:328:ASP:HA	1.77	0.67
1:C:62:LYS:NZ	1:C:62:LYS:HB3	2.10	0.67
1:C:340:ARG:NH2	1:O:7:THR:HG22	2.09	0.67
1:C:261:GLU:O	1:C:264:THR:HB	1.94	0.66
1:O:257:VAL:HG21	1:O:265:LEU:HD11	1.76	0.66
1:C:260:ASN:OD1	1:C:292:SER:HA	1.94	0.65
1:C:48:SER:HB2	1:C:110:GLU:HB3	1.77	0.65
1:C:41:SER:HA	2:C:1341:C80:H373	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:79:LEU:HD12	1:O:92:LEU:HD22	1.80	0.64
1:O:77:THR:HB	1:O:92:LEU:HD21	1.79	0.64
1:O:26:ILE:HG12	1:O:97:ILE:HG12	1.81	0.62
1:O:213:SER:O	1:O:215:LEU:HB2	2.00	0.62
1:O:134:GLU:HG3	1:O:199:GLY:HA2	1.82	0.62
1:O:102:ILE:HG21	1:O:152:VAL:HG11	1.82	0.62
1:O:133:ILE:HD13	1:O:139:ARG:NE	2.15	0.61
1:O:187:GLU:HB3	1:O:338:LEU:HB2	1.82	0.61
1:O:60:TYR:CD1	1:O:120:MET:SD	2.93	0.60
1:O:196:ILE:HD12	1:O:204:GLN:HB2	1.84	0.60
1:C:56:THR:HA	1:C:59:VAL:HG12	1.83	0.60
1:C:150:GLN:HB3	1:C:152:VAL:HG13	1.83	0.59
1:C:26:ILE:HG12	1:C:97:ILE:HG12	1.85	0.59
1:O:133:ILE:HD13	1:O:139:ARG:HE	1.67	0.59
1:O:157:VAL:HG23	1:O:328:ASP:HA	1.85	0.59
1:C:200:VAL:HG12	1:C:202:GLN:HB2	1.86	0.58
1:C:19:GLN:HE21	1:C:123:GLU:N	1.97	0.57
1:C:156:ASP:OD1	1:C:329:ARG:HB2	2.04	0.57
1:C:265:LEU:HB3	1:C:284:TYR:OH	2.04	0.57
1:C:217:CYS:SG	1:C:221:CYS:N	2.78	0.57
1:O:134:GLU:HG3	1:O:199:GLY:CA	2.35	0.56
1:C:90:GLY:HA2	1:C:112:THR:HB	1.87	0.56
1:O:76:GLY:O	1:O:91:PHE:HB2	2.05	0.56
1:O:77:THR:HB	1:O:92:LEU:HD23	1.88	0.55
1:C:99:VAL:HG21	1:C:147:ILE:HD11	1.89	0.55
1:O:57:ALA:HB1	1:O:114:MET:HE2	1.89	0.55
1:C:38:ASP:HB2	1:C:228:GLY:HA3	1.89	0.55
1:O:19:GLN:OE1	1:O:123:GLU:HB2	2.07	0.54
1:C:306:PRO:HG2	1:C:308:PRO:HG2	1.89	0.54
1:O:84:SER:O	1:O:85:THR:HG23	2.08	0.54
1:C:35:VAL:HA	1:C:126:GLY:O	2.09	0.53
1:C:195:LEU:HD22	1:C:332:ASN:HD22	1.73	0.53
1:C:107:MET:HB2	1:C:140:VAL:HG13	1.90	0.53
1:C:262:GLY:HA2	1:C:265:LEU:HD13	1.91	0.53
1:C:4:GLY:HA3	1:C:151:GLY:O	2.08	0.53
1:O:28:THR:HB	1:O:70:SER:HB2	1.90	0.52
1:C:194:ASN:HA	1:C:333:ARG:HB3	1.91	0.52
1:C:17:ASP:HB3	1:C:321:ARG:NH2	2.25	0.52
1:O:156:ASP:HB3	1:O:330:ARG:HB2	1.91	0.51
1:C:62:LYS:HB3	1:C:62:LYS:HZ3	1.76	0.51
1:O:60:TYR:HD1	1:O:120:MET:SD	2.33	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:38:ASP:OD2	1:C:41:SER:HB3	2.11	0.51
1:C:200:VAL:CG1	1:C:202:GLN:HB2	2.41	0.51
1:C:204:GLN:HG2	1:C:205:MET:N	2.25	0.50
1:O:217:CYS:SG	1:O:221:CYS:N	2.84	0.50
1:C:217:CYS:SG	1:C:217:CYS:O	2.70	0.50
1:O:156:ASP:O	1:O:329:ARG:HB2	2.12	0.50
1:O:243:MET:HG3	1:O:255:TYR:CD2	2.46	0.50
1:C:26:ILE:HD12	1:C:33:PHE:CD1	2.47	0.49
1:C:223:ALA:HA	1:C:313:TRP:O	2.12	0.49
2:C:1341:C80:H16	2:C:1341:C80:H201	1.94	0.49
1:O:215:LEU:HD11	1:O:241:LYS:HD2	1.92	0.49
1:C:262:GLY:N	1:C:263:PRO:HD2	2.26	0.49
1:C:307:PRO:HG2	1:C:308:PRO:HD2	1.94	0.49
1:C:167:GLU:N	1:C:171:SER:N	2.61	0.49
1:C:251:ARG:HG3	1:C:254:ASP:OD2	2.13	0.49
1:C:216:LEU:HD11	1:C:238:SER:O	2.12	0.49
1:C:6:THR:O	1:C:153:LEU:HA	2.13	0.49
1:C:250:LYS:HG2	1:C:252:LEU:N	2.29	0.48
1:O:213:SER:O	1:O:215:LEU:N	2.46	0.48
1:O:260:ASN:H	1:O:260:ASN:HD22	1.60	0.48
1:O:278:THR:O	1:O:279:LEU:HD23	2.13	0.48
1:O:6:THR:O	1:O:153:LEU:HA	2.13	0.48
1:C:205:MET:HE3	1:C:221:CYS:SG	2.53	0.48
1:O:60:TYR:CE1	1:O:120:MET:SD	3.07	0.48
1:C:196:ILE:HG23	1:C:197:LYS:HD2	1.94	0.48
1:C:239:ILE:HG13	1:C:302:ALA:HA	1.95	0.47
1:O:75:ASN:HB3	1:O:92:LEU:O	2.14	0.47
2:C:1341:C80:H201	2:C:1341:C80:C16	2.44	0.47
1:C:53:ARG:HD2	1:C:53:ARG:N	2.30	0.47
1:O:61:HIS:HE1	1:O:122:ALA:HB3	1.78	0.47
1:O:82:ARG:HG3	1:O:137:ILE:HD11	1.97	0.47
1:O:45:TRP:CD1	1:O:127:VAL:HG22	2.50	0.47
1:O:48:SER:HB2	1:O:110:GLU:CB	2.37	0.47
1:O:155:GLU:O	1:O:179:GLY:HA2	2.15	0.47
1:O:246:LEU:HD23	1:O:298:LEU:HD11	1.97	0.47
1:C:272:LEU:HB2	1:C:277:TYR:CE1	2.50	0.47
1:C:249:LYS:O	1:C:255:TYR:HA	2.15	0.47
1:O:217:CYS:SG	1:O:217:CYS:O	2.73	0.46
1:C:259:CYS:SG	1:C:296:CYS:N	2.88	0.46
1:C:308:PRO:HB2	1:C:309:THR:HG23	1.97	0.46
1:O:42:SER:HB2	1:O:136:ALA:HA	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:307:PRO:HA	1:O:310:GLY:H	1.81	0.46
1:C:18:THR:HA	1:C:230:SER:HB3	1.97	0.46
1:C:79:LEU:HD22	1:C:92:LEU:HD21	1.98	0.46
1:O:193:ILE:HG21	1:O:203:ILE:HD12	1.98	0.45
1:O:281:SER:HA	1:O:284:TYR:CE2	2.50	0.45
1:O:81:LEU:HA	1:O:137:ILE:HD12	1.97	0.45
1:C:19:GLN:NE2	1:C:123:GLU:H	1.99	0.45
1:C:196:ILE:CG2	1:C:197:LYS:HD2	2.47	0.45
1:O:53:ARG:HH11	1:O:53:ARG:HB3	1.80	0.45
1:C:256:VAL:HG11	1:C:295:LEU:HD13	1.99	0.45
1:O:192:TYR:CD1	1:O:192:TYR:N	2.85	0.44
1:O:92:LEU:HD12	1:O:107:MET:HG2	1.99	0.44
1:O:200:VAL:CG1	1:O:202:GLN:HB2	2.43	0.44
1:C:117:LEU:HA	1:C:118:PRO:HA	1.71	0.44
1:C:53:ARG:HD2	1:C:54:LEU:N	2.32	0.44
1:O:224:LEU:O	1:O:314:ALA:HA	2.16	0.44
1:C:250:LYS:HG2	1:C:252:LEU:H	1.83	0.44
1:C:260:ASN:N	1:C:291:SER:O	2.50	0.43
1:O:36:VAL:CG2	2:O:1341:C80:H4	2.47	0.43
1:C:96:ILE:HD13	1:C:96:ILE:HG21	1.79	0.43
1:O:116:ALA:O	1:O:120:MET:HB2	2.19	0.43
1:O:75:ASN:OD1	1:O:76:GLY:N	2.52	0.43
1:O:77:THR:O	1:O:91:PHE:HA	2.19	0.43
1:O:193:ILE:HD13	1:O:336:PHE:HD1	1.84	0.42
1:O:285:VAL:HG22	1:O:298:LEU:HD22	2.00	0.42
1:O:114:MET:HE3	1:O:119:PHE:HB3	2.02	0.42
1:O:176:ILE:HD13	1:O:176:ILE:HG21	1.78	0.42
1:O:262:GLY:HA3	1:O:287:GLN:OE1	2.18	0.42
1:O:117:LEU:HA	1:O:118:PRO:HA	1.83	0.42
1:C:307:PRO:O	1:C:308:PRO:C	2.62	0.42
1:O:260:ASN:CG	1:O:292:SER:HA	2.45	0.42
1:C:192:TYR:HA	1:C:335:GLY:HA2	2.00	0.41
1:C:186:TYR:HA	1:C:338:LEU:O	2.20	0.41
1:O:52:SER:O	1:O:54:LEU:N	2.52	0.41
1:O:148:ILE:HD12	1:O:148:ILE:HA	1.62	0.41
1:O:321:ARG:HH11	1:O:321:ARG:HD2	1.70	0.41
1:C:215:LEU:O	1:C:216:LEU:HD23	2.20	0.41
1:C:262:GLY:C	1:C:264:THR:H	2.28	0.41
1:C:194:ASN:HA	1:C:333:ARG:CB	2.50	0.41
1:C:272:LEU:HB2	1:C:277:TYR:CD1	2.56	0.41
1:O:139:ARG:HA	1:O:139:ARG:HD2	1.75	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:292:SER:O	1:C:293:LYS:HG2	2.21	0.41
1:O:159:SER:HB3	1:O:326:GLU:HA	2.02	0.41
1:O:36:VAL:HG21	2:O:1341:C80:C4	2.51	0.41
1:O:61:HIS:ND1	1:O:114:MET:HE1	2.36	0.41
1:O:72:TYR:CZ	1:O:74:HIS:HA	2.55	0.41
1:C:272:LEU:HD11	1:C:315:LEU:HD11	2.02	0.40
1:C:230:SER:N	2:C:1341:C80:H5	2.35	0.40
1:O:196:ILE:HG23	1:O:197:LYS:CD	2.44	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	C	330/340 (97%)	298 (90%)	25 (8%)	7 (2%)	5	25
1	O	328/340 (96%)	281 (86%)	34 (10%)	13 (4%)	2	13
All	All	658/680 (97%)	579 (88%)	59 (9%)	20 (3%)	3	19

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	214	THR
1	C	308	PRO
1	O	52	SER
1	O	85	THR
1	O	220	GLY
1	O	308	PRO
1	C	6	THR
1	C	166	SER
1	C	273	GLY
1	O	53	ARG

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Mol	Chain	Res	Type
1	O	155	GLU
1	O	254	ASP
1	O	309	THR
1	C	100	GLY
1	C	165	ASP
1	O	30	PRO
1	O	70	SER
1	O	289	SER
1	O	263	PRO
1	O	307	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	C	283/290 (98%)	236 (83%)	47 (17%)	2	10
1	O	282/290 (97%)	225 (80%)	57 (20%)	1	5
All	All	565/580 (97%)	461 (82%)	104 (18%)	1	8

All (104) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	6	THR
1	C	19	GLN
1	C	32	THR
1	C	38	ASP
1	C	46	VAL
1	C	52	SER
1	C	53	ARG
1	C	54	LEU
1	C	62	LYS
1	C	78	GLU
1	C	81	LEU
1	C	99	VAL
1	C	104	VAL

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Mol	Chain	Res	Type
1	C	112	THR
1	C	115	PRO
1	C	118	PRO
1	C	123	GLU
1	C	134	GLU
1	C	137	ILE
1	C	150	GLN
1	C	165	ASP
1	C	172	LEU
1	C	189	ASN
1	C	196	ILE
1	C	197	LYS
1	C	202	GLN
1	C	206	LYS
1	C	218	GLU
1	C	219	ASP
1	C	230	SER
1	C	236	THR
1	C	237	SER
1	C	242	LEU
1	C	252	LEU
1	C	256	VAL
1	C	257	VAL
1	C	260	ASN
1	C	264	THR
1	C	268	ILE
1	C	287	GLN
1	C	293	LYS
1	C	294	LYS
1	C	297	THR
1	C	305	ILE
1	C	329	ARG
1	C	332	ASN
1	C	338	LEU
1	O	6	THR
1	O	9	SER
1	O	11	ILE
1	O	13	THR
1	O	18	THR
1	O	23	GLU
1	O	29	PRO
1	O	30	PRO

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Mol	Chain	Res	Type
1	O	52	SER
1	O	53	ARG
1	O	67	SER
1	O	71	SER
1	O	82	ARG
1	O	94	GLN
1	O	98	THR
1	O	102	ILE
1	O	107	MET
1	O	117	LEU
1	O	118	PRO
1	O	127	VAL
1	O	133	ILE
1	O	134	GLU
1	O	140	VAL
1	O	141	THR
1	O	146	ASN
1	O	148	ILE
1	O	152	VAL
1	O	164	ARG
1	O	172	LEU
1	O	175	GLN
1	O	193	ILE
1	O	197	LYS
1	O	206	LYS
1	O	215	LEU
1	O	216	LEU
1	O	218	GLU
1	O	222	LEU
1	O	224	LEU
1	O	230	SER
1	O	232	ILE
1	O	236	THR
1	O	237	SER
1	O	239	ILE
1	O	246	LEU
1	O	250	LYS
1	O	251	ARG
1	O	252	LEU
1	O	253	PHE
1	O	257	VAL
1	O	260	ASN

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Mol	Chain	Res	Type
1	O	278	THR
1	O	290	TYR
1	O	294	LYS
1	O	295	LEU
1	O	306	PRO
1	O	331	ASN
1	O	340	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	19	GLN
1	C	74	HIS
1	C	94	GLN
1	C	189	ASN
1	C	191	HIS
1	C	332	ASN
1	O	146	ASN
1	O	163	ASN
1	O	184	GLN
1	O	191	HIS
1	O	202	GLN
1	O	260	ASN
1	O	301	HIS

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

2 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	C80	O	1341	-	39,39,39	2.16	6 (15%)	45,52,52	3.73	16 (35%)
2	C80	C	1341	-	39,39,39	1.76	5 (12%)	45,52,52	3.89	18 (40%)

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	C80	O	1341	-	1/1/6/7	16/34/34/34	0/3/3/3
2	C80	C	1341	-	1/1/6/7	15/34/34/34	0/3/3/3

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	O	1341	C80	C26-C24	-8.97	1.44	1.53
2	C	1341	C80	C26-C24	-6.01	1.47	1.53
2	O	1341	C80	C14-C15	-5.08	1.36	1.45
2	O	1341	C80	O19-C17	-4.98	1.24	1.33
2	C	1341	C80	C14-C15	-4.68	1.37	1.45
2	O	1341	C80	C16-N8	-4.67	1.29	1.36
2	C	1341	C80	O19-C17	-4.42	1.25	1.33
2	C	1341	C80	C16-N8	-3.72	1.31	1.36
2	O	1341	C80	C15-C17	-3.36	1.40	1.48
2	C	1341	C80	C15-C17	-2.98	1.41	1.48
2	O	1341	C80	C7-C6	2.22	1.55	1.51

All (34) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1341	C80	O19-C17-C15	12.45	124.53	112.19
2	C	1341	C80	C15-C16-N8	-10.23	103.79	110.81
2	O	1341	C80	C14-C15-C16	10.16	115.44	106.29
2	O	1341	C80	C15-C16-N8	-10.08	103.89	110.81
2	C	1341	C80	C14-C15-C16	9.72	115.05	106.29
2	O	1341	C80	O27-C26-C28	9.51	128.18	109.15
2	C	1341	C80	O27-C26-C28	9.50	128.17	109.15
2	O	1341	C80	O19-C17-C15	8.88	121.00	112.19
2	O	1341	C80	C9-C14-C15	-7.72	99.27	106.76
2	C	1341	C80	C9-C14-C15	-7.10	99.88	106.76
2	O	1341	C80	C6-C7-N8	6.44	122.57	112.78
2	O	1341	C80	C14-C9-N8	5.52	110.62	107.92
2	C	1341	C80	C14-C15-C17	-5.35	114.14	126.77
2	O	1341	C80	C20-O19-C17	-5.30	108.38	116.45
2	C	1341	C80	C14-C9-N8	5.30	110.51	107.92
2	C	1341	C80	C29-C31-N33	4.49	122.51	116.68
2	O	1341	C80	C14-C15-C17	-3.91	117.53	126.77
2	C	1341	C80	C9-N8-C16	3.67	110.68	108.49
2	O	1341	C80	C13-C14-C15	3.48	140.20	133.81
2	O	1341	C80	C9-N8-C16	3.47	110.56	108.49
2	C	1341	C80	C28-C29-C31	-3.36	103.37	109.84
2	C	1341	C80	O18-C17-C15	-3.30	117.57	124.50
2	C	1341	C80	O19-C17-O18	-3.07	117.84	123.37
2	O	1341	C80	C3-C4-C5	2.95	123.88	120.24
2	C	1341	C80	C6-C7-N8	2.79	117.02	112.78
2	C	1341	C80	C22-C21-C20	-2.76	98.19	110.08
2	C	1341	C80	C16-C15-C17	2.70	130.78	125.36
2	O	1341	C80	O19-C17-O18	-2.64	118.63	123.37
2	C	1341	C80	O32-C31-N33	-2.62	117.44	122.98
2	C	1341	C80	C13-C14-C15	2.58	138.56	133.81
2	O	1341	C80	C2-C1-C6	2.22	123.73	120.61
2	O	1341	C80	C29-C31-N33	-2.11	113.95	116.68
2	O	1341	C80	C4-C3-C2	-2.05	117.06	119.87
2	C	1341	C80	C13-C14-C9	2.02	121.56	119.24

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	C	1341	C80	C26
2	O	1341	C80	C26

All (31) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	1341	C80	C16-C15-C17-O18
2	C	1341	C80	C16-C15-C17-O19
2	C	1341	C80	C14-C15-C17-O18
2	C	1341	C80	C14-C15-C17-O19
2	C	1341	C80	C15-C17-O19-C20
2	C	1341	C80	O18-C17-O19-C20
2	C	1341	C80	O19-C20-C21-C23
2	C	1341	C80	C23-C24-C26-C28
2	C	1341	C80	N25-C24-C26-C28
2	C	1341	C80	C29-C31-N33-C34
2	C	1341	C80	O32-C31-N33-C34
2	O	1341	C80	C14-C15-C17-O18
2	O	1341	C80	C14-C15-C17-O19
2	O	1341	C80	C21-C23-C24-C26
2	O	1341	C80	C23-C24-C26-C28
2	O	1341	C80	N25-C24-C26-C28
2	O	1341	C80	O27-C26-C28-C29
2	O	1341	C80	O18-C17-O19-C20
2	O	1341	C80	C15-C17-O19-C20
2	O	1341	C80	O32-C31-N33-C34
2	C	1341	C80	O19-C20-C21-C22
2	O	1341	C80	O19-C20-C21-C22
2	O	1341	C80	O19-C20-C21-C23
2	O	1341	C80	C29-C31-N33-C34
2	O	1341	C80	C34-C35-C36-C37
2	C	1341	C80	C24-C26-C28-C29
2	O	1341	C80	C16-C15-C17-O18
2	O	1341	C80	C16-C15-C17-O19
2	C	1341	C80	C26-C28-C29-C30
2	O	1341	C80	C6-C7-N8-C9
2	C	1341	C80	C6-C7-N8-C16

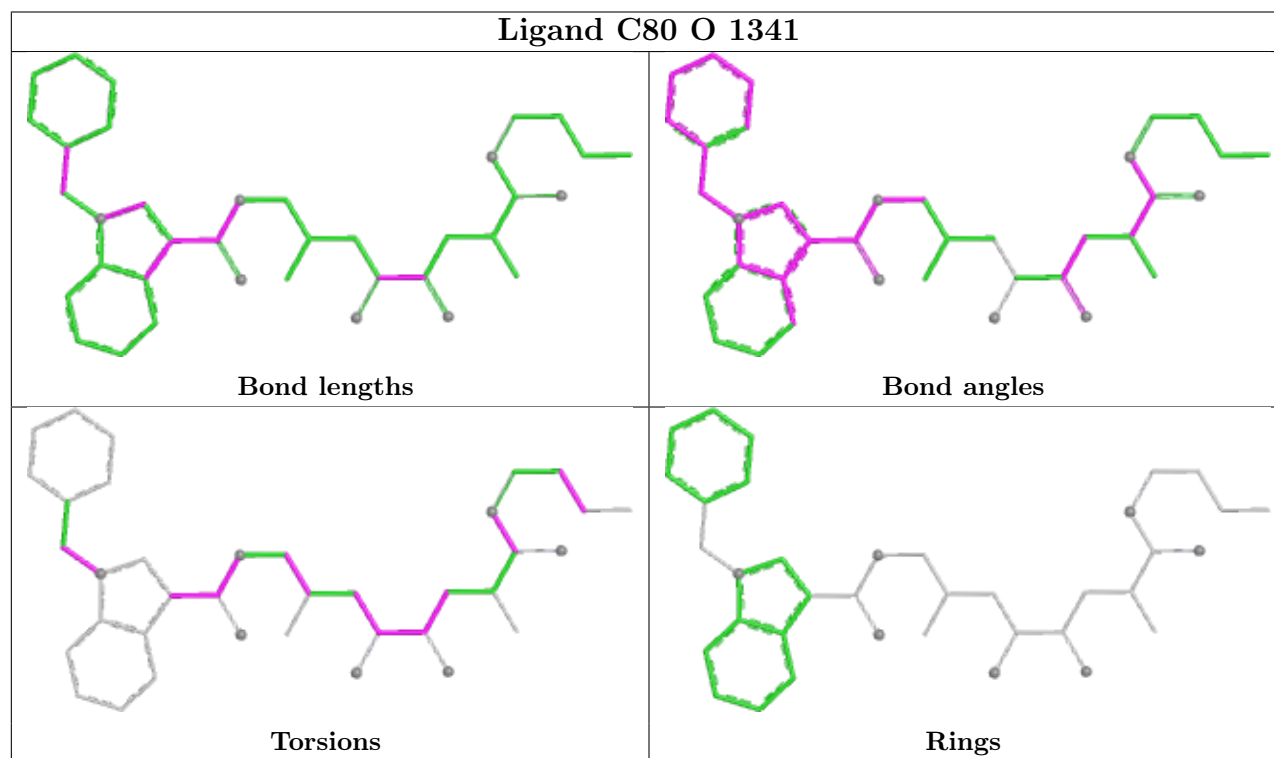
There are no ring outliers.

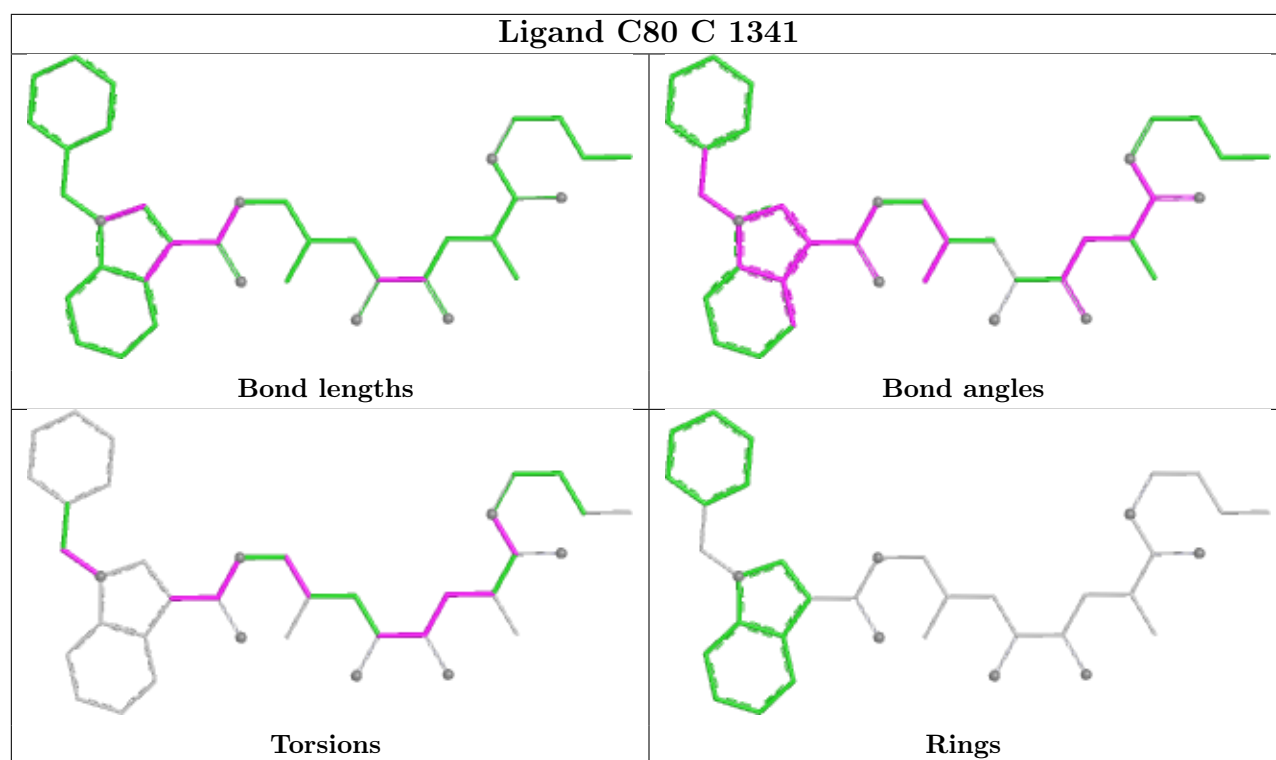
2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	O	1341	C80	2	0
2	C	1341	C80	4	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

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.