Full wwPDB X-ray Structure Validation Report ⓘ

Feb 4, 2024 – 01:28 PM EST

PDB ID	:	1R20
Title	:	Crystal structure of the ligand-binding domains of the heterodimer EcR/USP bound to the synthetic agonist BYI06830
Authors	:	Billas, I.M.L.; Iwema, T.; Garnier, J.M.; Mitschler, A.; Rochel, N.; Moras, D.; Structural Proteomics in Europe (SPINE)
Deposited on	:	2003-09-25
Resolution	:	3.00 Å(reported)

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

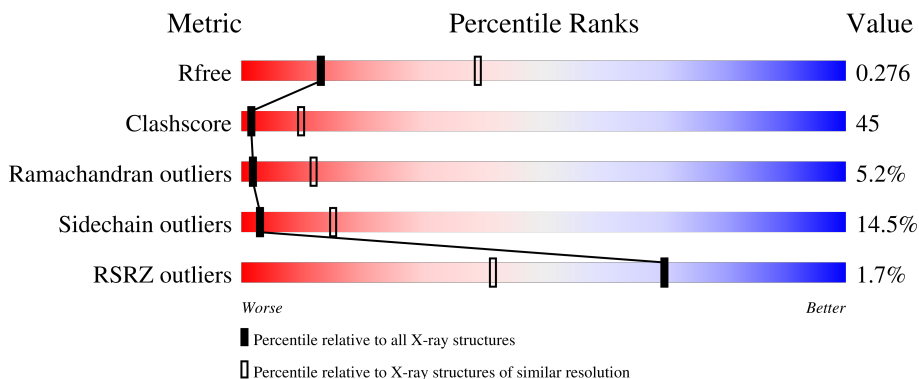|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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		0.276
Clashscore		45
Ramachandran outliers		5.2%
Sidechain outliers		14.5%
RSRZ outliers		1.7%

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}	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	263	.% 41% 41% 8% 9%
2	D	265	2% 27% 45% 12% • 14%

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
4	HWG	D	2000	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 3806 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 ULTRASPIRACLE PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	239	Total	C	N	O	S	0	0	0
			1897	1216	332	337	12			

- Molecule 2 is a protein called ECDYSONE RECEPTOR.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	228	Total	C	N	O	S	0	0	0
			1820	1162	307	336	15			

- Molecule 3 is L-ALPHA-PHOSPHATIDYL-BETA-OLEOYL-GAMMA-PALMITOYL-PH OSPHATIDYLETHANOLAMINE (three-letter code: EPH) (formula: $C_{39}H_{68}NO_8P$).
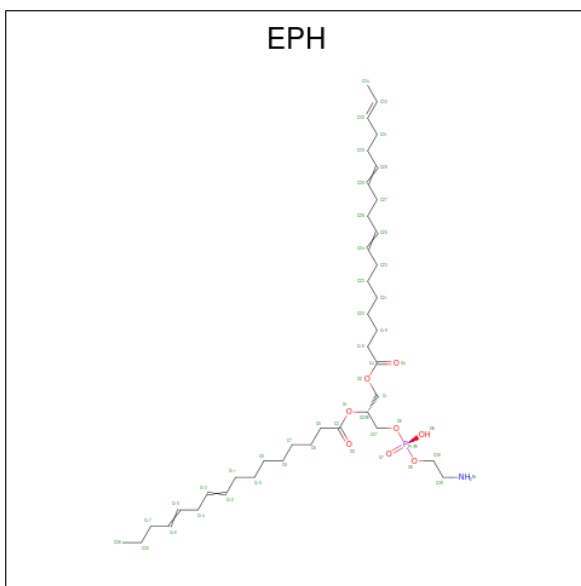
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			49	39	1	8	1		

- Molecule 4 is N-(TERT-BUTYL)-3,5-DIMETHYL-N'-[(5-METHYL-2,3-DIHYDRO-1,

4-BENZODIOXIN-6-YL)CARBONYL]BENZOHYDRAZIDE (three-letter code: HWG) (formula: $C_{23}H_{28}N_2O_4$).
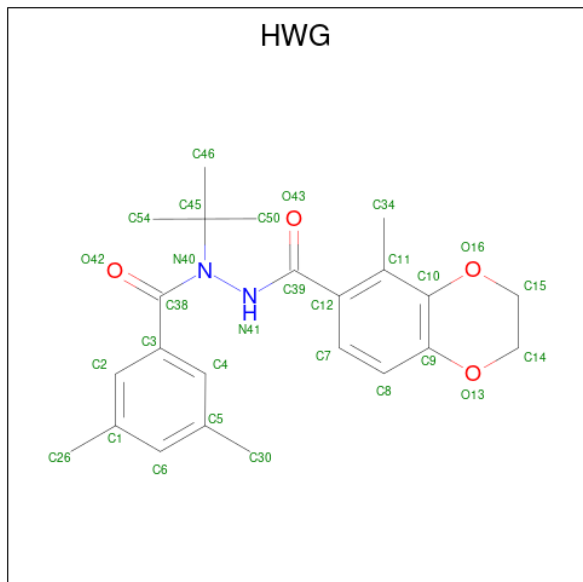
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
4	D	1	29	23	2	4	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	1	1	1	0	0
5	D	10	Total	O	0	0
			10	10		

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: ULTRASPIRACLE PROTEIN

Chain A:
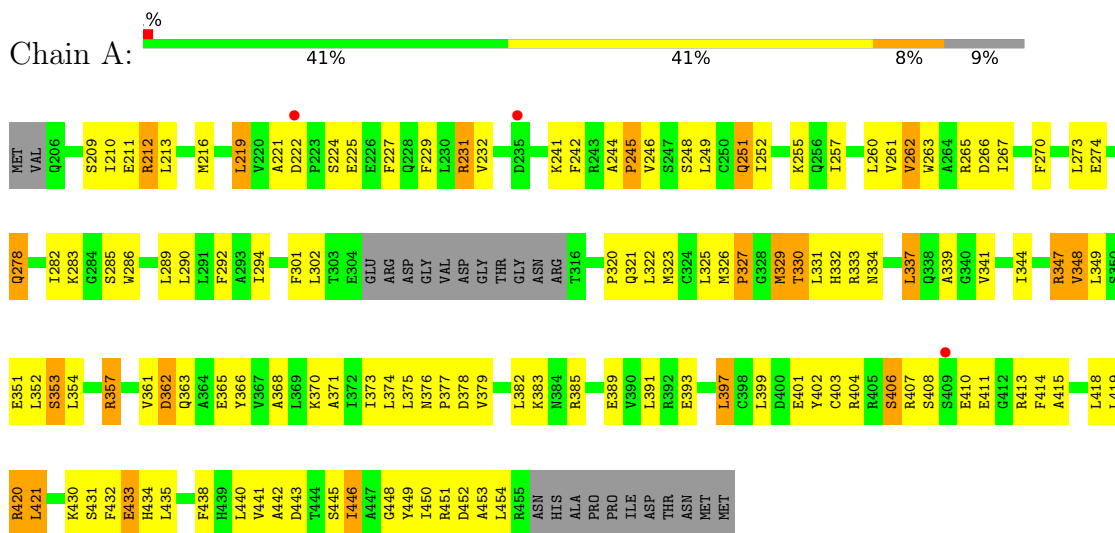
• Molecule 2: ECDYSONE RECEPTOR

Chain D:
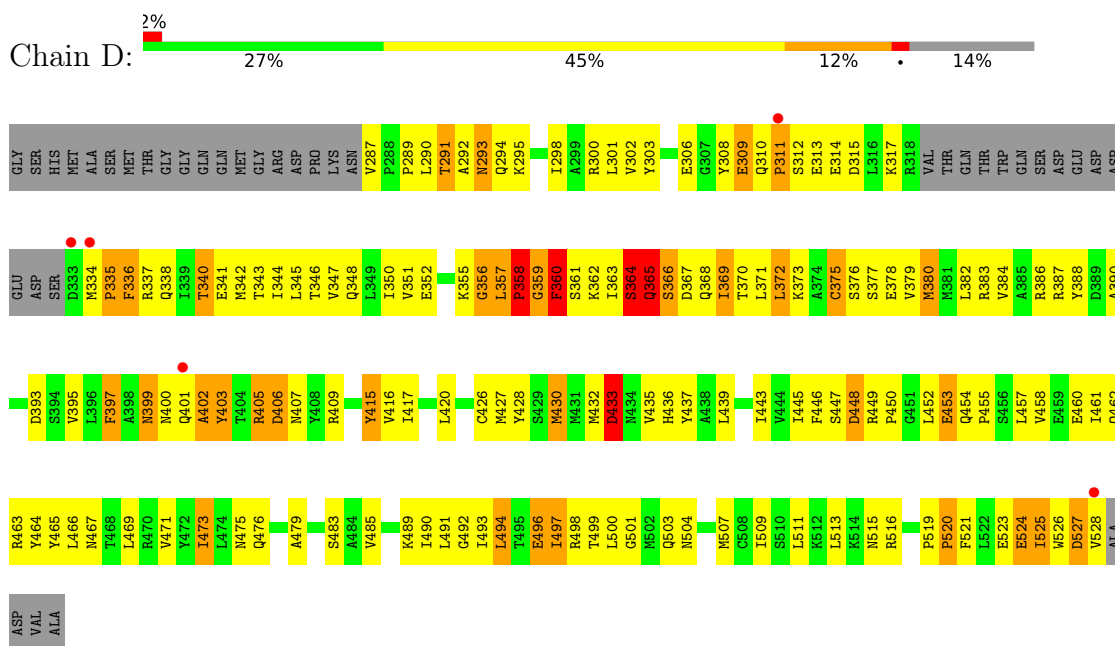
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 3 2 1	Depositor
Cell constants a, b, c, α, β, γ	149.43Å 149.43Å 61.06Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	15.00 – 3.00 14.84 – 3.00	Depositor EDS
% Data completeness (in resolution range)	(Not available) (15.00-3.00) 95.5 (14.84-3.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	4.48 (at 3.01Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.244 , 0.289 0.229 , 0.276	Depositor DCC
R_{free} test set	1532 reflections (10.14%)	wwPDB-VP
Wilson B-factor (Å²)	72.5	Xtriage
Anisotropy	0.790	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.27 , 44.4	EDS
L-test for twinning [2]	$< |L| > = 0.51, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.036 for -h,-k,l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	3806	wwPDB-VP
Average B, all atoms (Å²)	71.0	wwPDB-VP

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

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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: EPH, HWG

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	0.79	1/1932 (0.1%)	0.91	0/2606
2	D	0.83	5/1852 (0.3%)	0.90	1/2505 (0.0%)
All	All	0.81	6/3784 (0.2%)	0.91	1/5111 (0.0%)

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	360	PHE	CE1-CZ	7.10	1.50	1.37
2	D	426	CYS	CB-SG	-6.20	1.71	1.82
1	A	329	MET	SD-CE	6.17	2.12	1.77
2	D	360	PHE	CD2-CE2	5.29	1.49	1.39
2	D	364	SER	CB-OG	5.15	1.49	1.42
2	D	360	PHE	CE2-CZ	5.03	1.47	1.37

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	364	SER	CB-CA-C	-5.90	98.89	110.10

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	1897	0	1933	145	1
2	D	1820	0	1837	196	0
3	A	49	0	67	5	0
4	D	29	0	28	10	0
5	A	1	0	0	0	0
5	D	10	0	0	3	0
All	All	3806	0	3865	342	1

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 45.

All (342) 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:329:MET:SD	1:A:329:MET:CE	2.12	1.38
2:D:405:ARG:HH11	2:D:405:ARG:HB2	1.03	1.12
1:A:302:LEU:HD12	1:A:322:LEU:H	1.11	1.11
2:D:365:GLN:HE21	2:D:365:GLN:HA	1.14	1.05
2:D:291:THR:HG22	2:D:292:ALA:H	1.21	1.04
2:D:338:GLN:HE22	2:D:401:GLN:HB2	1.20	1.04
2:D:433:ASP:H	2:D:436:HIS:CD2	1.82	0.98
2:D:405:ARG:HB2	2:D:405:ARG:NH1	1.78	0.97
2:D:287:VAL:HG12	2:D:479:ALA:HB2	1.46	0.97
1:A:244:ALA:HB3	1:A:245:PRO:HD3	1.49	0.94
2:D:371:LEU:O	2:D:375:CYS:HB3	1.70	0.92
1:A:213:LEU:HA	1:A:216:MET:HE2	1.53	0.91
2:D:523:GLU:O	2:D:527:ASP:HA	1.71	0.91
2:D:430:MET:HE1	2:D:489:LYS:HB3	1.53	0.91
2:D:351:VAL:HG13	2:D:372:LEU:HD22	1.53	0.90
2:D:338:GLN:NE2	2:D:401:GLN:HB2	1.86	0.90
2:D:504:ASN:HA	4:D:2000:HWG:H343	1.55	0.89
2:D:405:ARG:HH11	2:D:405:ARG:CB	1.86	0.88
2:D:365:GLN:HE21	2:D:365:GLN:CA	1.89	0.86
2:D:452:LEU:HB2	2:D:455:PRO:HG3	1.58	0.86
1:A:302:LEU:HD12	1:A:322:LEU:N	1.93	0.84
2:D:289:PRO:HA	2:D:475:ASN:HD21	1.41	0.84
2:D:310:GLN:HG3	2:D:383:ARG:HB3	1.58	0.84
1:A:302:LEU:CD1	1:A:322:LEU:H	1.91	0.83
2:D:310:GLN:NE2	2:D:346:THR:HG23	1.94	0.82
2:D:467:ASN:O	2:D:471:VAL:HG23	1.80	0.82
2:D:383:ARG:HD3	2:D:437:TYR:OH	1.80	0.81
2:D:390:ALA:HB2	2:D:428:TYR:CE2	2.15	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:469:LEU:O	2:D:473:ILE:HG23	1.81	0.80
1:A:262:VAL:HG22	1:A:265:ARG:NH2	1.96	0.80
2:D:375:CYS:O	2:D:379:VAL:HG12	1.80	0.80
2:D:340:THR:O	2:D:344:ILE:HG13	1.80	0.80
1:A:344:ILE:O	1:A:348:VAL:HG23	1.82	0.80
2:D:520:PRO:HA	2:D:523:GLU:HG2	1.65	0.79
2:D:369:ILE:O	2:D:373:LYS:HG3	1.82	0.79
2:D:433:ASP:H	2:D:436:HIS:HD2	1.29	0.79
1:A:407:ARG:HA	1:A:407:ARG:NE	1.99	0.78
2:D:298:ILE:O	2:D:302:VAL:HG23	1.83	0.78
1:A:227:PHE:HB3	1:A:449:TYR:CD1	2.19	0.78
2:D:365:GLN:HA	2:D:365:GLN:NE2	1.97	0.76
1:A:435:LEU:HB3	1:A:441:VAL:HG23	1.68	0.76
1:A:354:LEU:O	1:A:357:ARG:HB3	1.85	0.76
2:D:384:VAL:HG22	2:D:397:PHE:CE2	2.21	0.76
2:D:473:ILE:CD1	2:D:483:SER:HB2	2.16	0.75
1:A:216:MET:HA	1:A:219:LEU:CD2	2.17	0.75
1:A:435:LEU:HD22	1:A:441:VAL:HG23	1.68	0.74
2:D:291:THR:HG22	2:D:292:ALA:N	1.98	0.74
1:A:210:ILE:HD11	1:A:368:ALA:HB2	1.69	0.74
1:A:413:ARG:HG2	1:A:413:ARG:HH11	1.51	0.74
2:D:439:LEU:O	2:D:443:ILE:HG13	1.88	0.74
1:A:349:LEU:HA	1:A:353:SER:HB2	1.68	0.73
1:A:376:ASN:HD21	1:A:378:ASP:HB2	1.52	0.73
2:D:415:TYR:HD1	2:D:415:TYR:H	1.33	0.73
1:A:415:ALA:O	1:A:419:LEU:HG	1.89	0.73
2:D:357:LEU:O	2:D:359:GLY:N	2.22	0.73
2:D:371:LEU:HD21	2:D:452:LEU:HD11	1.71	0.73
2:D:360:PHE:O	2:D:361:SER:C	2.28	0.72
2:D:355:LYS:O	2:D:357:LEU:N	2.22	0.72
1:A:270:PHE:CE2	1:A:278:GLN:HG2	2.25	0.72
2:D:400:ASN:C	2:D:402:ALA:H	1.92	0.72
2:D:336:PHE:HE2	2:D:511:LEU:HD13	1.55	0.72
2:D:351:VAL:HG13	2:D:372:LEU:CD2	2.19	0.72
2:D:310:GLN:HG2	2:D:383:ARG:HH11	1.56	0.70
1:A:213:LEU:HD23	1:A:216:MET:CE	2.21	0.70
2:D:513:LEU:O	2:D:513:LEU:HD12	1.92	0.70
2:D:306:GLU:O	2:D:309:GLU:HB2	1.92	0.70
2:D:420:LEU:HD13	4:D:2000:HWG:H8	1.74	0.69
2:D:366:SER:HA	2:D:369:ILE:CG2	2.22	0.69
2:D:289:PRO:HA	2:D:475:ASN:ND2	2.07	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:435:LEU:HD23	1:A:440:LEU:HB2	1.72	0.69
2:D:287:VAL:CG1	2:D:479:ALA:HB2	2.22	0.68
2:D:298:ILE:HG23	2:D:435:VAL:HG13	1.76	0.68
1:A:227:PHE:HD2	1:A:449:TYR:HD1	1.40	0.68
2:D:355:LYS:C	2:D:357:LEU:H	1.94	0.68
1:A:260:LEU:HD23	1:A:289:LEU:HD13	1.76	0.68
1:A:349:LEU:HA	1:A:353:SER:CB	2.25	0.67
1:A:375:LEU:HD13	1:A:391:LEU:HB3	1.78	0.65
2:D:473:ILE:HD11	2:D:483:SER:HB2	1.78	0.65
1:A:325:LEU:HD11	1:A:331:LEU:HG	1.79	0.65
2:D:345:LEU:O	2:D:348:GLN:HB2	1.96	0.65
2:D:401:GLN:H	2:D:401:GLN:NE2	1.94	0.65
2:D:365:GLN:CA	2:D:365:GLN:NE2	2.58	0.65
2:D:397:PHE:CD2	2:D:403:TYR:HE1	2.15	0.65
1:A:389:GLU:O	1:A:393:GLU:HG3	1.98	0.64
2:D:504:ASN:O	2:D:507:MET:N	2.30	0.64
1:A:301:PHE:HB3	1:A:322:LEU:HD12	1.78	0.64
2:D:504:ASN:ND2	4:D:2000:HWG:O43	2.31	0.64
2:D:501:GLY:O	2:D:504:ASN:HB3	1.97	0.63
2:D:525:ILE:HG22	2:D:526:TRP:CD1	2.33	0.63
2:D:347:VAL:O	2:D:351:VAL:HG23	1.98	0.63
2:D:415:TYR:CD1	2:D:415:TYR:N	2.66	0.63
1:A:274:GLU:HG2	1:A:383:LYS:HD3	1.80	0.63
2:D:473:ILE:C	2:D:473:ILE:HD12	2.18	0.63
1:A:260:LEU:HD21	1:A:289:LEU:HB3	1.80	0.63
2:D:310:GLN:HG3	2:D:383:ARG:CB	2.28	0.62
1:A:229:PHE:CD2	1:A:446:ILE:HD12	2.35	0.62
2:D:308:TYR:CE2	2:D:352:GLU:HB3	2.34	0.62
2:D:359:GLY:O	2:D:362:LYS:HB2	2.00	0.62
2:D:401:GLN:NE2	2:D:401:GLN:N	2.47	0.62
2:D:460:GLU:HA	2:D:463:ARG:NH1	2.14	0.62
1:A:365:GLU:OE2	1:A:413:ARG:NH1	2.32	0.62
2:D:500:LEU:HG	4:D:2000:HWG:H142	1.82	0.62
1:A:435:LEU:HD22	1:A:441:VAL:CG2	2.29	0.62
2:D:308:TYR:HE2	2:D:352:GLU:HB3	1.64	0.62
2:D:452:LEU:CB	2:D:455:PRO:HG3	2.29	0.61
1:A:227:PHE:CD2	1:A:449:TYR:HD1	2.19	0.61
2:D:384:VAL:HG22	2:D:397:PHE:HE2	1.66	0.61
2:D:521:PHE:O	2:D:524:GLU:HB3	2.01	0.60
1:A:213:LEU:HA	1:A:216:MET:CE	2.30	0.60
1:A:212:ARG:HG3	1:A:212:ARG:HH11	1.67	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:452:LEU:O	2:D:455:PRO:HD3	2.01	0.60
2:D:344:ILE:HD11	2:D:519:PRO:HG2	1.83	0.60
2:D:344:ILE:HG23	2:D:521:PHE:HD2	1.65	0.60
2:D:287:VAL:HG12	2:D:479:ALA:CB	2.28	0.60
2:D:415:TYR:HD1	2:D:415:TYR:N	1.99	0.60
2:D:366:SER:O	2:D:369:ILE:HG23	2.01	0.60
1:A:435:LEU:HB3	1:A:441:VAL:CG2	2.32	0.59
1:A:349:LEU:O	1:A:354:LEU:N	2.29	0.59
2:D:346:THR:O	2:D:350:ILE:HG13	2.02	0.59
2:D:310:GLN:O	2:D:312:SER:N	2.36	0.59
2:D:384:VAL:HG13	2:D:395:VAL:HG11	1.84	0.59
2:D:291:THR:CG2	2:D:292:ALA:H	2.05	0.58
2:D:310:GLN:HE22	2:D:346:THR:HG23	1.67	0.58
1:A:377:PRO:HG3	1:A:389:GLU:HG2	1.85	0.58
1:A:231:ARG:HD3	1:A:231:ARG:C	2.24	0.58
1:A:263:TRP:CZ2	1:A:267:ILE:HD11	2.39	0.58
2:D:433:ASP:N	2:D:436:HIS:HD2	2.00	0.58
2:D:287:VAL:O	2:D:287:VAL:HG23	2.02	0.57
2:D:386:ARG:NH2	2:D:433:ASP:O	2.37	0.57
2:D:400:ASN:C	2:D:402:ALA:N	2.57	0.57
2:D:334:MET:C	2:D:336:PHE:H	2.06	0.57
1:A:213:LEU:HD23	1:A:216:MET:HE1	1.86	0.57
1:A:231:ARG:HD3	1:A:231:ARG:O	2.05	0.56
1:A:251:GLN:OE1	1:A:255:LYS:HE3	2.05	0.56
1:A:332:HIS:CD2	1:A:334:ASN:H	2.24	0.56
2:D:372:LEU:O	2:D:376:SER:HB3	2.05	0.56
2:D:375:CYS:SG	2:D:445:ILE:HG13	2.46	0.56
2:D:344:ILE:HG22	2:D:348:GLN:HE21	1.70	0.56
1:A:373:ILE:HG22	1:A:373:ILE:O	2.05	0.56
1:A:407:ARG:NE	1:A:407:ARG:CA	2.69	0.55
2:D:364:SER:OG	2:D:365:GLN:N	2.34	0.55
2:D:313:GLU:O	2:D:315:ASP:N	2.39	0.55
2:D:289:PRO:CA	2:D:475:ASN:HD21	2.14	0.55
2:D:448:ASP:OD1	2:D:448:ASP:O	2.24	0.55
2:D:310:GLN:CG	2:D:383:ARG:HH11	2.20	0.55
2:D:433:ASP:HB2	2:D:436:HIS:CD2	2.42	0.54
2:D:290:LEU:HB2	2:D:295:LYS:HG3	1.89	0.54
2:D:360:PHE:O	2:D:363:ILE:N	2.40	0.54
2:D:446:PHE:HB3	2:D:462:GLN:HB2	1.90	0.54
1:A:262:VAL:HG22	1:A:265:ARG:HH21	1.72	0.54
1:A:333:ARG:HG2	1:A:333:ARG:HH11	1.72	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:364:SER:HG	2:D:367:ASP:H	1.56	0.54
1:A:265:ARG:NH1	1:A:454:LEU:O	2.41	0.54
1:A:302:LEU:CD1	1:A:321:GLN:N	2.71	0.54
2:D:378:GLU:OE1	2:D:498:ARG:HD3	2.08	0.54
2:D:485:VAL:O	2:D:489:LYS:HG3	2.09	0.53
2:D:310:GLN:HE22	2:D:346:THR:HA	1.73	0.53
1:A:222:ASP:O	1:A:224:SER:N	2.40	0.53
2:D:336:PHE:HD2	2:D:516:ARG:HH21	1.52	0.53
1:A:441:VAL:HG12	1:A:442:ALA:N	2.22	0.53
1:A:438:PHE:CE1	3:A:4000:EPH:H51	2.44	0.53
2:D:430:MET:CE	2:D:489:LYS:HB3	2.35	0.53
1:A:397:LEU:HD12	2:D:485:VAL:HG23	1.90	0.53
1:A:244:ALA:HB3	1:A:245:PRO:CD	2.31	0.52
2:D:380:MET:HB3	4:D:2000:HWG:H261	1.91	0.52
2:D:520:PRO:HA	2:D:523:GLU:CG	2.37	0.52
3:A:4000:EPH:H361	3:A:4000:EPH:H232	1.91	0.52
1:A:212:ARG:HG3	1:A:212:ARG:NH1	2.25	0.52
1:A:341:VAL:HG12	1:A:434:HIS:CE1	2.46	0.51
2:D:446:PHE:CB	2:D:462:GLN:HB2	2.40	0.51
1:A:406:SER:OG	1:A:407:ARG:N	2.40	0.51
2:D:382:LEU:HG	2:D:497:ILE:HD11	1.92	0.51
1:A:224:SER:OG	1:A:225:GLU:N	2.44	0.51
2:D:363:ILE:HG22	2:D:364:SER:O	2.10	0.51
1:A:373:ILE:O	1:A:373:ILE:CG2	2.59	0.51
1:A:401:GLU:O	1:A:402:TYR:C	2.48	0.51
2:D:343:THR:O	2:D:347:VAL:HG23	2.11	0.51
2:D:504:ASN:HA	4:D:2000:HWG:C34	2.33	0.51
2:D:294:GLN:HE22	2:D:471:VAL:HG21	1.76	0.51
2:D:449:ARG:HB3	2:D:450:PRO:HD2	1.93	0.51
2:D:466:LEU:HD21	2:D:491:LEU:HD21	1.91	0.51
1:A:323:MET:HG3	1:A:349:LEU:HD21	1.92	0.50
1:A:216:MET:HA	1:A:219:LEU:HD22	1.92	0.50
1:A:448:GLY:O	1:A:451:ARG:HB3	2.11	0.50
2:D:313:GLU:OE2	2:D:313:GLU:N	2.44	0.50
2:D:336:PHE:CE2	2:D:511:LEU:HD13	2.43	0.50
1:A:333:ARG:HH12	1:A:337:LEU:HD23	1.76	0.50
1:A:413:ARG:HG2	1:A:413:ARG:NH1	2.23	0.50
2:D:313:GLU:C	2:D:315:ASP:H	2.13	0.50
2:D:397:PHE:C	2:D:399:ASN:N	2.62	0.50
1:A:246:VAL:HG11	1:A:440:LEU:HD21	1.93	0.50
2:D:433:ASP:N	2:D:436:HIS:CD2	2.65	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:266:ASP:O	1:A:267:ILE:C	2.50	0.49
1:A:371:ALA:O	1:A:375:LEU:HG	2.12	0.49
1:A:407:ARG:O	1:A:410:GLU:HB2	2.12	0.49
2:D:503:GLN:HB3	4:D:2000:HWG:C15	2.42	0.49
1:A:278:GLN:HB3	1:A:454:LEU:HD11	1.94	0.49
2:D:336:PHE:CD1	2:D:336:PHE:C	2.86	0.49
1:A:229:PHE:CD2	1:A:257:ILE:HG21	2.47	0.49
1:A:210:ILE:CD1	1:A:368:ALA:HB2	2.42	0.49
1:A:325:LEU:HD11	1:A:331:LEU:CG	2.42	0.49
2:D:335:PRO:C	2:D:337:ARG:N	2.65	0.49
2:D:365:GLN:O	2:D:368:GLN:HG2	2.12	0.49
1:A:245:PRO:O	1:A:249:LEU:HG	2.11	0.49
1:A:325:LEU:CD1	1:A:331:LEU:HG	2.43	0.49
1:A:260:LEU:CD2	1:A:289:LEU:HB3	2.42	0.49
1:A:453:ALA:O	1:A:454:LEU:C	2.49	0.49
1:A:302:LEU:CD1	1:A:322:LEU:N	2.65	0.48
2:D:452:LEU:HD13	2:D:458:VAL:HG21	1.94	0.48
1:A:326:MET:O	1:A:327:PRO:C	2.52	0.48
2:D:397:PHE:HD2	2:D:403:TYR:CE1	2.31	0.48
1:A:432:PHE:O	1:A:433:GLU:C	2.51	0.48
2:D:334:MET:O	2:D:336:PHE:N	2.44	0.48
1:A:401:GLU:O	1:A:404:ARG:HG2	2.13	0.48
2:D:290:LEU:C	2:D:291:THR:O	2.50	0.48
2:D:397:PHE:CD2	2:D:403:TYR:CE1	2.99	0.48
2:D:432:MET:CE	2:D:490:ILE:HG23	2.44	0.48
1:A:347:ARG:O	1:A:351:GLU:HB2	2.14	0.48
1:A:407:ARG:CA	1:A:407:ARG:HE	2.27	0.48
1:A:376:ASN:HD22	1:A:379:VAL:HG23	1.78	0.48
1:A:209:SER:C	1:A:211:GLU:N	2.67	0.47
1:A:332:HIS:HD2	1:A:334:ASN:HB2	1.79	0.47
1:A:352:LEU:HD23	1:A:420:ARG:HG3	1.94	0.47
2:D:433:ASP:HB2	2:D:436:HIS:CG	2.49	0.47
1:A:273:LEU:O	1:A:274:GLU:C	2.51	0.47
1:A:407:ARG:HA	1:A:407:ARG:HE	1.77	0.47
2:D:308:TYR:O	2:D:310:GLN:N	2.47	0.47
2:D:341:GLU:O	2:D:342:MET:C	2.52	0.47
2:D:380:MET:HB3	4:D:2000:HWG:C26	2.44	0.47
2:D:390:ALA:HB2	2:D:428:TYR:HE2	1.75	0.47
2:D:406:ASP:O	2:D:409:ARG:N	2.47	0.47
2:D:356:GLY:O	2:D:358:PRO:HD3	2.15	0.47
2:D:461:ILE:O	2:D:464:TYR:N	2.42	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:376:ASN:ND2	1:A:378:ASP:HB2	2.23	0.47
2:D:317:LYS:O	2:D:317:LYS:HG3	2.15	0.47
2:D:293:ASN:OD1	2:D:293:ASN:N	2.46	0.46
2:D:388:TYR:OH	2:D:393:ASP:OD1	2.23	0.46
2:D:401:GLN:H	2:D:401:GLN:HE21	1.63	0.46
1:A:283:LYS:HG3	1:A:446:ILE:CG2	2.44	0.46
1:A:402:TYR:C	1:A:402:TYR:CD2	2.88	0.46
3:A:4000:EPH:H25	3:A:4000:EPH:H102	1.98	0.46
2:D:509:ILE:HD12	2:D:528:VAL:CB	2.45	0.46
2:D:313:GLU:C	2:D:315:ASP:N	2.69	0.46
1:A:323:MET:HE1	3:A:4000:EPH:H171	1.96	0.46
1:A:418:LEU:HA	1:A:418:LEU:HD23	1.66	0.46
1:A:283:LYS:HG3	1:A:446:ILE:HG22	1.97	0.46
1:A:302:LEU:HD13	1:A:321:GLN:N	2.30	0.46
2:D:445:ILE:HG22	2:D:446:PHE:CD2	2.50	0.46
1:A:413:ARG:HH11	1:A:413:ARG:CG	2.22	0.45
1:A:323:MET:HE1	1:A:331:LEU:HD12	1.99	0.45
1:A:441:VAL:CG1	1:A:442:ALA:N	2.79	0.45
2:D:430:MET:HB3	5:D:1010:HOH:O	2.16	0.45
1:A:362:ASP:OD1	1:A:363:GLN:N	2.49	0.45
1:A:370:LYS:O	1:A:371:ALA:C	2.55	0.45
2:D:406:ASP:O	2:D:407:ASN:C	2.52	0.45
2:D:311:PRO:HD3	2:D:397:PHE:HE1	1.81	0.45
2:D:336:PHE:CD1	2:D:336:PHE:O	2.69	0.45
1:A:443:ASP:HA	1:A:446:ILE:HG12	2.00	0.44
2:D:367:ASP:O	2:D:370:THR:HB	2.17	0.44
2:D:368:GLN:O	2:D:371:LEU:N	2.50	0.44
1:A:430:LYS:O	1:A:433:GLU:HB2	2.17	0.44
2:D:363:ILE:CG2	2:D:364:SER:N	2.81	0.44
2:D:489:LYS:HE2	5:D:1010:HOH:O	2.17	0.44
2:D:490:ILE:O	2:D:491:LEU:C	2.54	0.44
2:D:519:PRO:O	2:D:521:PHE:N	2.51	0.44
1:A:257:ILE:O	1:A:261:VAL:HG23	2.18	0.44
1:A:333:ARG:HG2	1:A:333:ARG:NH1	2.33	0.44
1:A:413:ARG:NH1	1:A:413:ARG:CG	2.80	0.44
2:D:363:ILE:HG22	2:D:364:SER:N	2.32	0.44
1:A:323:MET:CE	3:A:4000:EPH:H171	2.48	0.43
1:A:411:GLU:OE2	1:A:411:GLU:HA	2.18	0.43
2:D:338:GLN:HE21	2:D:338:GLN:HB3	1.62	0.43
1:A:248:SER:O	1:A:252:ILE:HG13	2.18	0.43
1:A:290:LEU:O	1:A:294:ILE:HG13	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:362:ASP:OD2	1:A:402:TYR:OH	2.28	0.43
1:A:365:GLU:OE2	1:A:413:ARG:CZ	2.67	0.43
2:D:309:GLU:O	2:D:310:GLN:C	2.57	0.43
1:A:285:SER:O	1:A:286:TRP:C	2.55	0.43
1:A:231:ARG:C	1:A:231:ARG:CD	2.85	0.43
2:D:376:SER:OG	2:D:377:SER:N	2.51	0.43
2:D:519:PRO:C	2:D:521:PHE:H	2.21	0.43
1:A:301:PHE:CE1	1:A:330:THR:HB	2.53	0.43
1:A:370:LYS:O	1:A:373:ILE:N	2.52	0.43
2:D:335:PRO:C	2:D:337:ARG:H	2.22	0.43
1:A:302:LEU:HD13	1:A:320:PRO:HA	1.99	0.43
1:A:337:LEU:O	1:A:339:ALA:N	2.52	0.43
2:D:360:PHE:CE2	2:D:372:LEU:HD11	2.54	0.43
2:D:409:ARG:HB3	2:D:409:ARG:NH1	2.33	0.43
1:A:292:PHE:CE2	1:A:366:TYR:CD1	3.07	0.42
2:D:290:LEU:HD13	2:D:298:ILE:HD12	2.00	0.42
1:A:282:ILE:HG22	1:A:450:ILE:HD13	2.01	0.42
2:D:290:LEU:O	2:D:291:THR:O	2.37	0.42
2:D:360:PHE:O	2:D:362:LYS:N	2.53	0.42
2:D:464:TYR:O	2:D:465:TYR:C	2.56	0.42
2:D:369:ILE:O	2:D:369:ILE:HG13	2.18	0.42
2:D:473:ILE:CD1	2:D:483:SER:CB	2.91	0.42
2:D:503:GLN:CD	4:D:2000:HWG:H151	2.40	0.42
2:D:504:ASN:O	2:D:507:MET:HB3	2.20	0.42
2:D:523:GLU:HG3	2:D:524:GLU:N	2.34	0.42
1:A:337:LEU:C	1:A:339:ALA:N	2.72	0.42
1:A:399:LEU:HD23	1:A:414:PHE:CE1	2.55	0.42
2:D:369:ILE:O	2:D:369:ILE:CG1	2.68	0.42
2:D:463:ARG:O	2:D:463:ARG:HG2	2.18	0.42
1:A:420:ARG:HD3	1:A:420:ARG:HA	1.69	0.42
1:A:402:TYR:HD2	1:A:403:CYS:N	2.18	0.42
2:D:355:LYS:C	2:D:357:LEU:N	2.63	0.42
2:D:390:ALA:HB2	2:D:428:TYR:CZ	2.55	0.42
2:D:371:LEU:HD23	2:D:371:LEU:HA	1.79	0.42
1:A:242:PHE:HA	1:A:245:PRO:HD2	2.02	0.41
1:A:344:ILE:HD11	1:A:431:SER:OG	2.20	0.41
1:A:379:VAL:O	1:A:382:LEU:HG	2.19	0.41
2:D:399:ASN:C	2:D:400:ASN:O	2.57	0.41
2:D:519:PRO:HA	2:D:520:PRO:HD3	1.92	0.41
1:A:241:LYS:HE2	1:A:242:PHE:HE1	1.85	0.41
1:A:278:GLN:HB3	1:A:454:LEU:CD1	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:298:ILE:O	2:D:302:VAL:CG2	2.63	0.41
2:D:490:ILE:C	2:D:492:GLY:N	2.72	0.41
2:D:507:MET:CE	2:D:507:MET:HA	2.50	0.41
1:A:333:ARG:NH1	1:A:337:LEU:HD23	2.34	0.41
1:A:454:LEU:HD23	1:A:454:LEU:HA	1.85	0.41
2:D:340:THR:O	2:D:344:ILE:CG1	2.62	0.41
1:A:241:LYS:HE2	1:A:242:PHE:CE1	2.56	0.41
1:A:229:PHE:HD2	1:A:446:ILE:HD12	1.81	0.41
1:A:231:ARG:O	1:A:231:ARG:CD	2.69	0.41
1:A:241:LYS:HG3	1:A:242:PHE:CD1	2.55	0.41
2:D:493:ILE:O	2:D:496:GLU:N	2.53	0.41
1:A:375:LEU:HD13	1:A:391:LEU:CB	2.48	0.41
2:D:340:THR:HG22	2:D:341:GLU:N	2.35	0.41
1:A:332:HIS:HD2	1:A:334:ASN:H	1.64	0.41
1:A:418:LEU:HD23	1:A:421:LEU:HD22	2.03	0.41
1:A:260:LEU:HD23	1:A:289:LEU:CD1	2.49	0.40
2:D:463:ARG:HA	2:D:466:LEU:HB2	2.02	0.40
1:A:418:LEU:O	1:A:421:LEU:HB2	2.21	0.40
1:A:349:LEU:HA	1:A:353:SER:HB3	2.03	0.40
1:A:445:SER:O	1:A:446:ILE:C	2.60	0.40
2:D:400:ASN:HB2	2:D:402:ALA:HB2	2.04	0.40
2:D:473:ILE:HD12	2:D:473:ILE:O	2.20	0.40
2:D:494:LEU:HG	5:D:1003:HOH:O	2.20	0.40
2:D:503:GLN:HB3	4:D:2000:HWG:H151	2.04	0.40
2:D:346:THR:HG21	2:D:380:MET:HE3	2.03	0.40
2:D:367:ASP:CG	2:D:453:GLU:HB2	2.41	0.40
2:D:416:VAL:O	2:D:417:ILE:C	2.57	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:329:MET:SD	1:A:329:MET:SD[4_556]	2.05	0.15

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	235/263 (89%)	199 (85%)	32 (14%)	4 (2%)	9	39
2	D	224/265 (84%)	147 (66%)	57 (25%)	20 (9%)	1	3
All	All	459/528 (87%)	346 (75%)	89 (19%)	24 (5%)	2	12

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	221	ALA
2	D	399	ASN
2	D	402	ALA
2	D	527	ASP
2	D	291	THR
2	D	314	GLU
2	D	356	GLY
2	D	358	PRO
2	D	360	PHE
2	D	365	GLN
2	D	433	ASP
2	D	515	ASN
2	D	335	PRO
2	D	359	GLY
2	D	309	GLU
2	D	366	SER
2	D	524	GLU
1	A	327	PRO
2	D	311	PRO
2	D	364	SER
2	D	525	ILE
1	A	348	VAL
2	D	520	PRO
1	A	446	ILE

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	206/232 (89%)	182 (88%)	24 (12%)	5	22
2	D	201/235 (86%)	166 (83%)	35 (17%)	2	10
All	All	407/467 (87%)	348 (86%)	59 (14%)	3	15

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	212	ARG
1	A	219	LEU
1	A	231	ARG
1	A	232	VAL
1	A	245	PRO
1	A	251	GLN
1	A	262	VAL
1	A	278	GLN
1	A	330	THR
1	A	337	LEU
1	A	347	ARG
1	A	353	SER
1	A	357	ARG
1	A	361	VAL
1	A	362	ASP
1	A	374	LEU
1	A	385	ARG
1	A	397	LEU
1	A	406	SER
1	A	408	SER
1	A	420	ARG
1	A	421	LEU
1	A	433	GLU
1	A	452	ASP
2	D	293	ASN
2	D	300	ARG
2	D	301	LEU
2	D	303	TYR
2	D	336	PHE
2	D	340	THR
2	D	357	LEU
2	D	358	PRO
2	D	360	PHE

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Mol	Chain	Res	Type
2	D	364	SER
2	D	365	GLN
2	D	369	ILE
2	D	372	LEU
2	D	375	CYS
2	D	380	MET
2	D	387	ARG
2	D	397	PHE
2	D	403	TYR
2	D	405	ARG
2	D	406	ASP
2	D	415	TYR
2	D	427	MET
2	D	430	MET
2	D	433	ASP
2	D	447	SER
2	D	448	ASP
2	D	453	GLU
2	D	454	GLN
2	D	457	LEU
2	D	473	ILE
2	D	476	GLN
2	D	494	LEU
2	D	496	GLU
2	D	497	ILE
2	D	499	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	278	GLN
1	A	332	HIS
1	A	343	GLN
1	A	363	GLN
1	A	376	ASN
2	D	338	GLN
2	D	348	GLN
2	D	365	GLN
2	D	368	GLN
2	D	400	ASN
2	D	401	GLN
2	D	436	HIS

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Mol	Chain	Res	Type
2	D	462	GLN
2	D	475	ASN
2	D	476	GLN
2	D	504	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 monosaccharides 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	$\#|Z| > 2$
3	EPH	A	4000	-	48,48,48	1.84	13 (27%)	51,53,53	1.61	6 (11%)
4	HWG	D	2000	-	31,31,31	3.43	12 (38%)	42,46,46	2.40	13 (30%)

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	EPH	A	4000	-	-	20/52/52/52	-
4	HWG	D	2000	-	-	2/22/29/29	0/3/3/3

All (25) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	2000	HWG	C12-C11	11.78	1.56	1.40
4	D	2000	HWG	C38-N40	6.78	1.44	1.35
4	D	2000	HWG	C9-C10	5.63	1.52	1.41
4	D	2000	HWG	C2-C3	5.53	1.47	1.39
4	D	2000	HWG	C3-C38	5.12	1.58	1.50
4	D	2000	HWG	C45-N40	4.51	1.57	1.52
3	A	4000	EPH	C25-C24	4.15	1.55	1.31
3	A	4000	EPH	C16-C15	4.14	1.55	1.31
4	D	2000	HWG	C4-C3	3.90	1.45	1.39
3	A	4000	EPH	C1-C2	-3.88	1.38	1.50
3	A	4000	EPH	C29-C28	3.73	1.53	1.31
3	A	4000	EPH	C13-C12	3.64	1.52	1.31
3	A	4000	EPH	C32-C33	3.57	1.56	1.29
4	D	2000	HWG	N41-N40	-3.33	1.36	1.39
3	A	4000	EPH	P1-O8	-3.25	1.46	1.59
4	D	2000	HWG	C39-N41	3.04	1.39	1.35
4	D	2000	HWG	C4-C5	3.00	1.44	1.39
3	A	4000	EPH	C22-C23	-2.99	1.40	1.52
3	A	4000	EPH	C21-C20	-2.81	1.35	1.51
3	A	4000	EPH	C20-C19	-2.80	1.35	1.51
3	A	4000	EPH	O8-C38	2.36	1.54	1.44
4	D	2000	HWG	O16-C10	2.27	1.41	1.37
3	A	4000	EPH	C18-C4	2.17	1.57	1.50
3	A	4000	EPH	P1-O6	-2.03	1.45	1.55
4	D	2000	HWG	C6-C5	2.00	1.42	1.39

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	2000	HWG	O13-C9-C10	-6.61	117.02	121.79
4	D	2000	HWG	C46-C45-N40	6.49	114.59	108.88
4	D	2000	HWG	O16-C10-C11	6.03	124.85	115.77
3	A	4000	EPH	O8-P1-O7	-5.01	89.48	109.07
3	A	4000	EPH	O6-P1-O7	-4.84	88.33	112.24
3	A	4000	EPH	O5-P1-O7	-4.47	91.60	109.07
4	D	2000	HWG	C14-O13-C9	4.10	120.72	113.65
3	A	4000	EPH	O6-P1-O8	4.04	126.50	107.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	2000	HWG	C54-C45-N40	3.92	112.33	108.88
4	D	2000	HWG	C9-C10-C11	-3.65	116.61	121.06
4	D	2000	HWG	C12-C39-N41	3.63	122.01	114.77
4	D	2000	HWG	C4-C3-C2	-2.77	116.30	119.63
4	D	2000	HWG	C34-C11-C10	-2.52	117.42	121.30
4	D	2000	HWG	O13-C9-C8	2.46	120.79	116.85
4	D	2000	HWG	O16-C10-C9	-2.40	118.54	121.64
3	A	4000	EPH	P1-O8-C38	-2.12	111.16	121.59
4	D	2000	HWG	O43-C39-N41	-2.03	119.25	122.32
4	D	2000	HWG	C54-C45-C46	-2.03	104.59	109.45
3	A	4000	EPH	C1-O2-C4	2.00	124.53	117.12

There are no chirality outliers.

All (22) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	4000	EPH	C25-C26-C27-C28
3	A	4000	EPH	C37-O5-P1-O6
3	A	4000	EPH	C16-C17-C35-C36
3	A	4000	EPH	C38-O8-P1-O5
3	A	4000	EPH	O8-C38-C39-N1
3	A	4000	EPH	C27-C28-C29-C30
3	A	4000	EPH	C23-C24-C25-C26
3	A	4000	EPH	C14-C15-C16-C17
3	A	4000	EPH	C5-C6-C7-C8
4	D	2000	HWG	C2-C3-C38-N40
3	A	4000	EPH	C31-C32-C33-C34
3	A	4000	EPH	C29-C30-C31-C32
3	A	4000	EPH	C38-O8-P1-O7
4	D	2000	HWG	C4-C3-C38-N40
3	A	4000	EPH	C39-C38-O8-P1
3	A	4000	EPH	C15-C16-C17-C35
3	A	4000	EPH	C7-C8-C9-C10
3	A	4000	EPH	C11-C10-C9-C8
3	A	4000	EPH	C11-C12-C13-C14
3	A	4000	EPH	C28-C29-C30-C31
3	A	4000	EPH	C30-C31-C32-C33
3	A	4000	EPH	C22-C23-C24-C25

There are no ring outliers.

2 monomers are involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	4000	EPH	5	0
4	D	2000	HWG	10	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 EPH A 4000

Bond lengths Bond angles

Torsions Rings

Ligand HWG D 2000
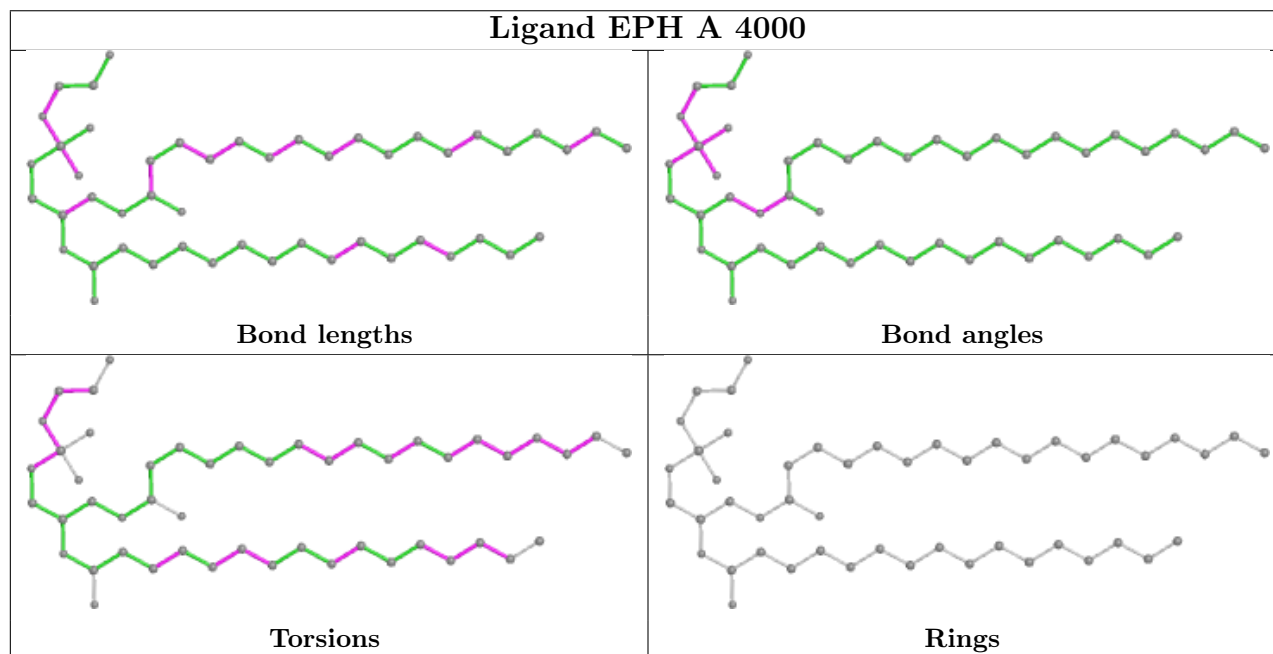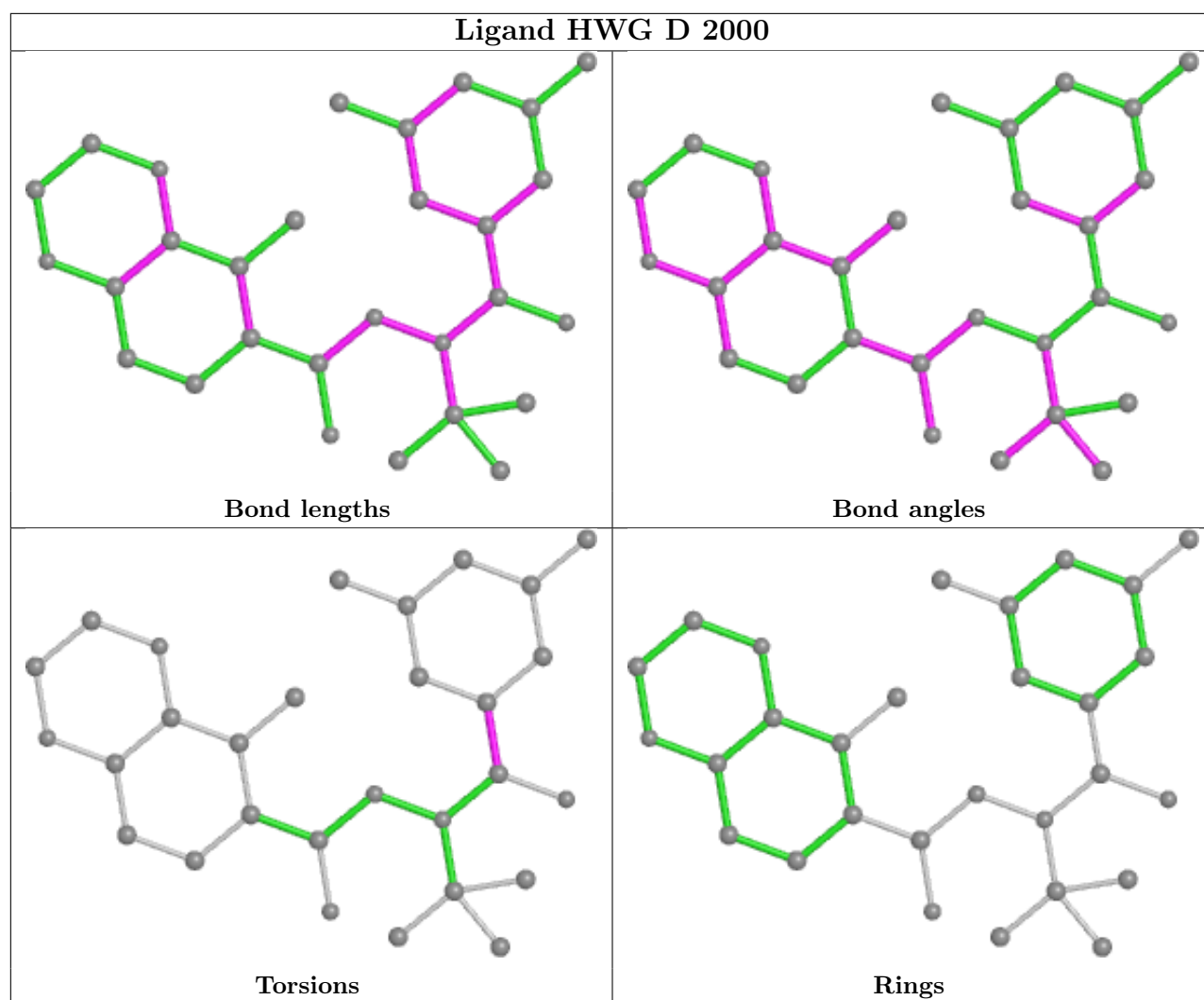
5.7 Other polymers ⓘ

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(Å^2)	Q<0.9
1	A	239/263 (90%)	-0.41	3 (1%)	77	51	34, 62, 105, 123	0
2	D	228/265 (86%)	-0.26	5 (2%)	62	33	40, 74, 128, 139	0
All	All	467/528 (88%)	-0.34	8 (1%)	70	41	34, 68, 109, 139	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	528	VAL	4.0
2	D	333	ASP	4.0
2	D	401	GLN	3.5
2	D	334	MET	3.2
2	D	311	PRO	2.4
1	A	409	SER	2.2
1	A	235	ASP	2.1
1	A	222	ASP	2.0

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

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

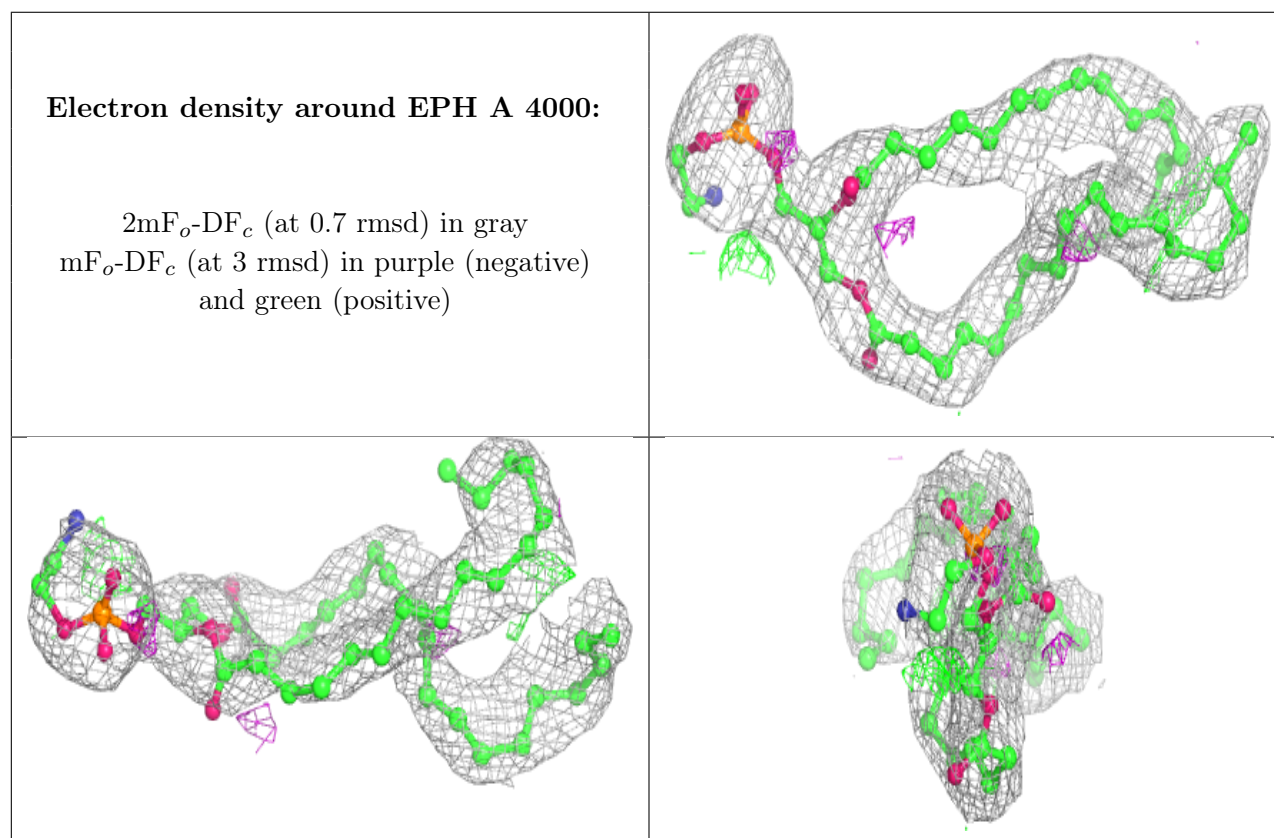## 6.3　Carbohydrates ⓘ

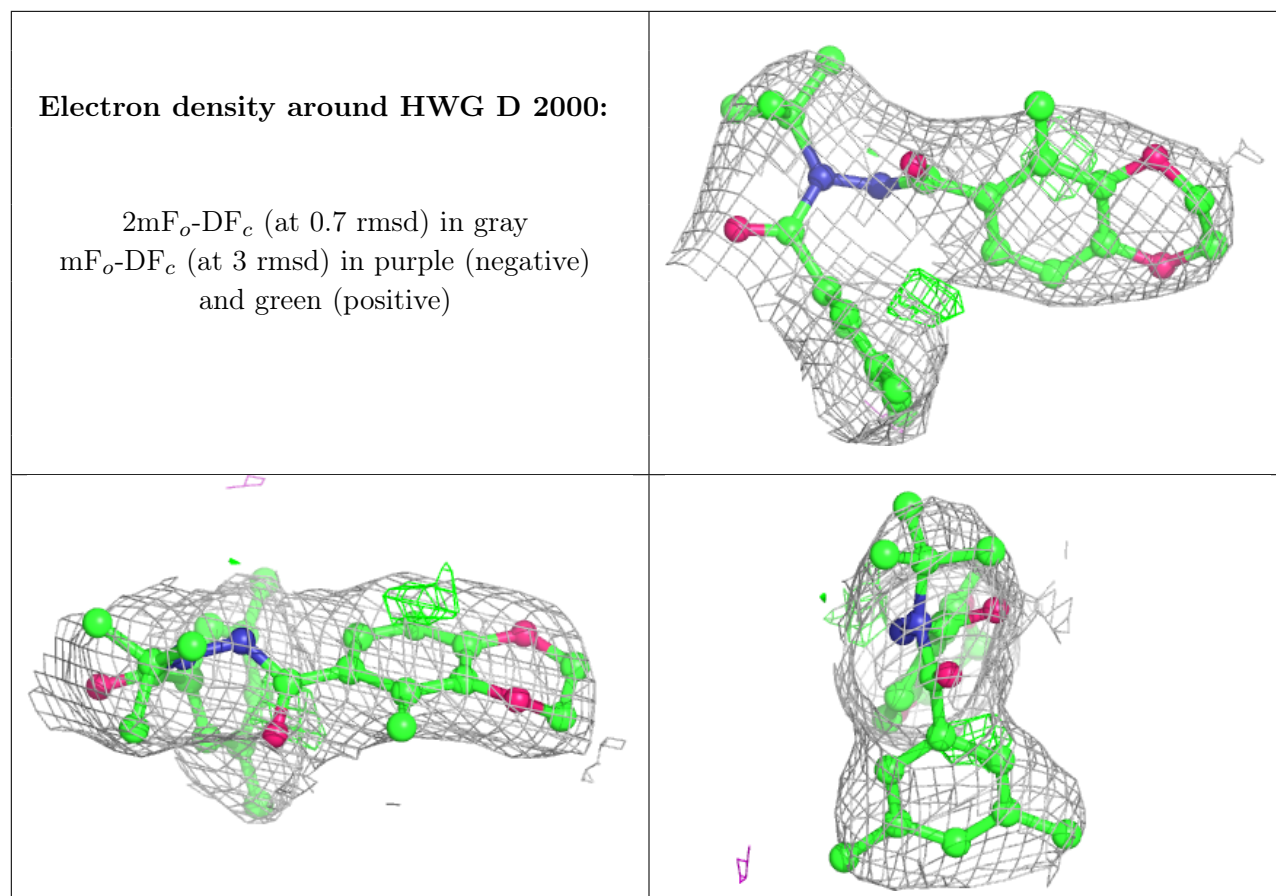There are no monosaccharides in this entry.

6.4　Ligands ⓘ

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
3	EPH	A	4000	49/49	0.88	0.22	79,82,100,101	0
4	HWG	D	2000	29/29	0.95	0.20	63,69,76,77	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 EPH A 4000:

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

Electron density around HWG D 2000:

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.