WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Dec 9, 2023 – 05:06 pm GMT

PDB ID	:	2VUF
Title	:	Human serum albumin complexed with fusidic acid
Authors	:	Zunszain, P.A.; Ghuman, J.; Curry, S.
Deposited on	:	2008-05-24
Resolution	:	3.05 Å(reported)

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

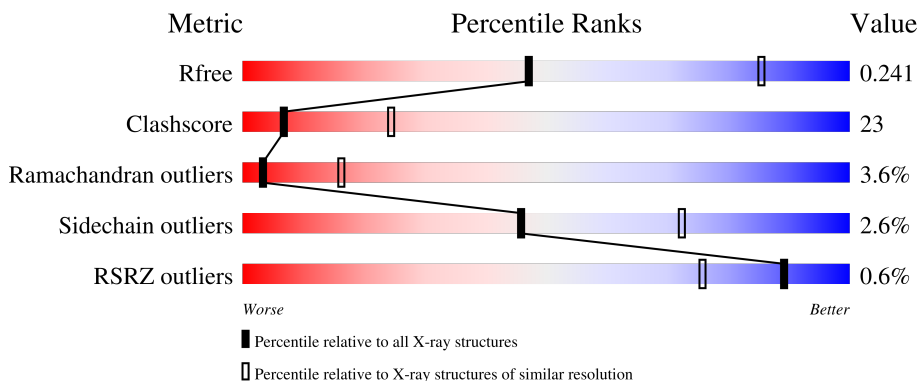|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.05 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		0.241
Clashscore		23
Ramachandran outliers		3.6%
Sidechain outliers		2.6%
RSRZ outliers		0.6%

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	1754 (3.10-3.02)
Clashscore	141614	1864 (3.10-3.02)
Ramachandran outliers	138981	1794 (3.10-3.02)
Sidechain outliers	138945	1793 (3.10-3.02)
RSRZ outliers	127900	1713 (3.10-3.02)

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.

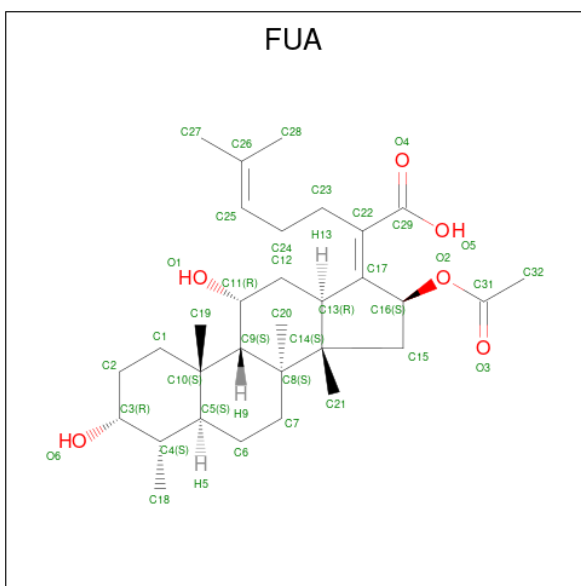| Mol	Chain	Length	Quality of chain
1	A	585	60% 32% · 5%
1	B	585	57% 35% · 6%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 8338 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 SERUM ALBUMIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	556	Total	C	N	O	S	0	0	0
			4141	2624	684	793	40			
1	B	549	Total	C	N	O	S	0	0	0
			4049	2567	673	770	39			

- Molecule 2 is FUSIDIC ACID (three-letter code: FUA) (formula: $C_{31}H_{48}O_6$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			37	31	6		
2	A	1	Total	C	O	0	0
			37	31	6		
2	B	1	Total	C	O	0	0
			37	31	6		
2	B	1	Total	C	O	0	0
			37	31	6		

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: SERUM ALBUMIN
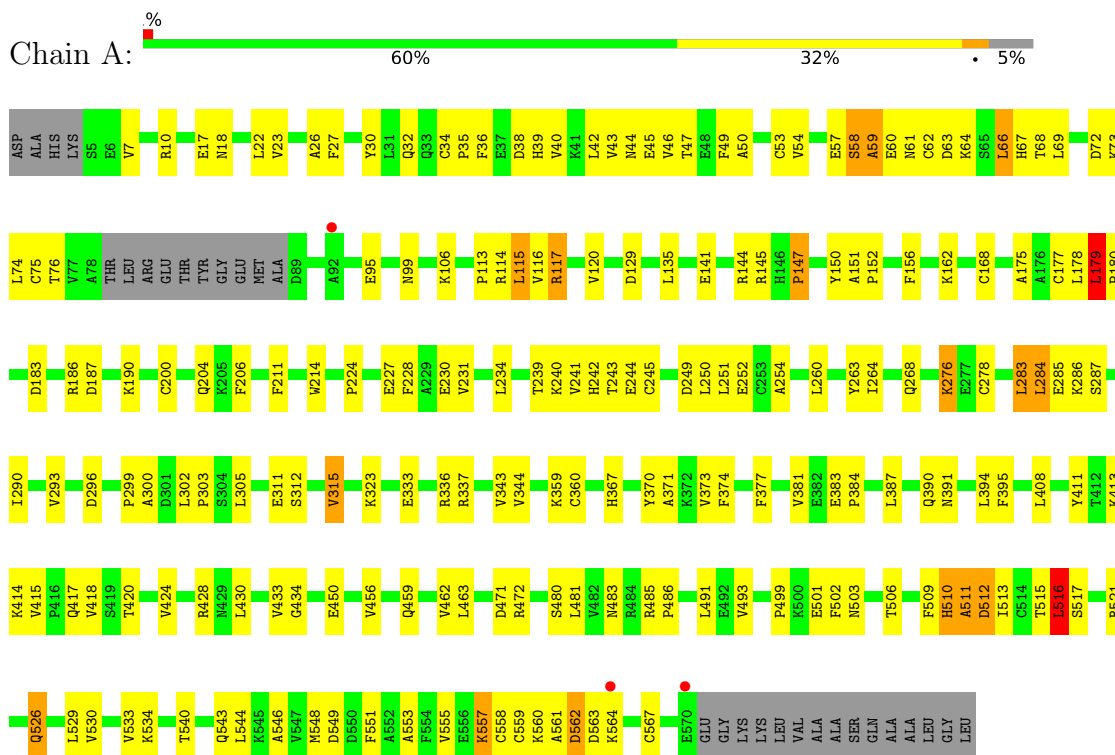
- Molecule 1: SERUM ALBUMIN
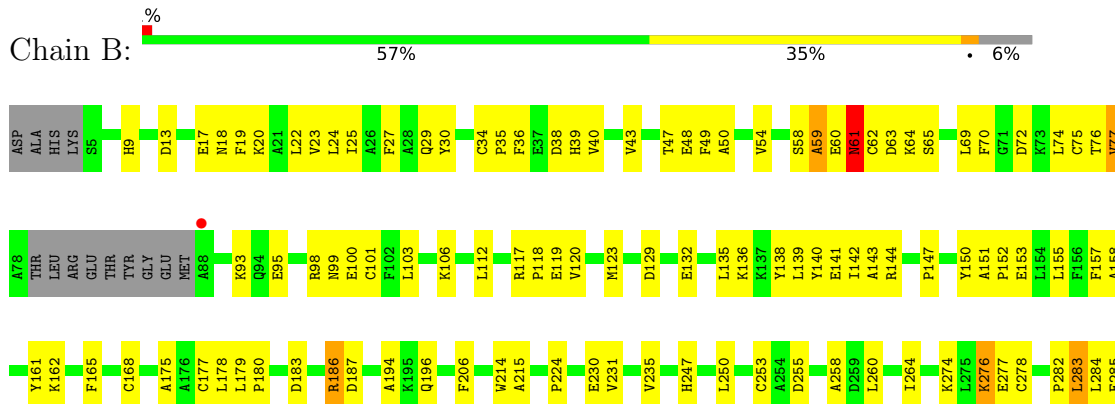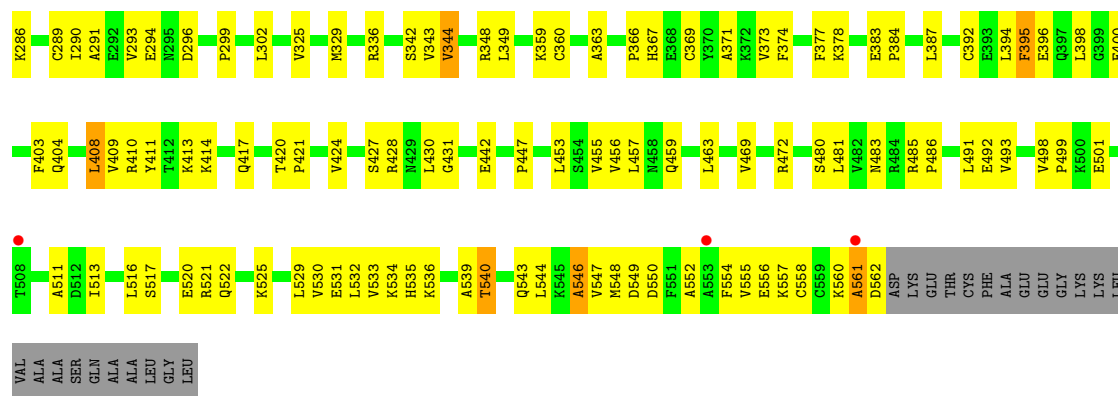
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	55.18Å　55.32Å　119.83Å 81.69°　90.73°　65.83°	Depositor
Resolution (Å)	35.33　–　3.05 35.33　–　3.05	Depositor EDS
% Data completeness (in resolution range)	92.4 (35.33-3.05) 92.5 (35.33-3.05)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	2.11 (at 3.06Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.206　,　0.250 0.201　,　0.241	Depositor DCC
R_{free} test set	1140 reflections (4.70%)	wwPDB-VP
Wilson B-factor (Å^2)	63.1	Xtriage
Anisotropy	0.178	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 76.5	EDS
L-test for twinning[2]	$<|L|>=0.48, <L^2>=0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	8338	wwPDB-VP
Average B, all atoms (Å^2)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.64% 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: FUA

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	0.49	0/4224	0.68	0/5758
1	B	0.49	0/4129	0.66	0/5632
All	All	0.49	0/8353	0.67	0/11390

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4141	0	3755	168	0
1	B	4049	0	3665	203	0
2	A	74	0	94	12	0
2	B	74	0	94	7	0
All	All	8338	0	7608	372	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 23.

All (372) 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:B:27:PHE:CD2	1:B:74:LEU:HD21	1.76	1.21
1:B:532:LEU:HD12	1:B:548:MET:CE	1.89	1.02
1:B:480:SER:OG	1:B:483:ASN:HB2	1.61	1.00
1:B:302:LEU:HD21	1:B:336:ARG:NH2	1.79	0.97
1:B:532:LEU:HD12	1:B:548:MET:HE2	1.48	0.96
1:A:562:ASP:O	1:A:564:LYS:HG3	1.64	0.95
1:B:424:VAL:O	1:B:428:ARG:HG3	1.67	0.94
1:A:224:PRO:HB2	1:A:299:PRO:HD3	1.52	0.90
1:B:106:LYS:HD3	1:B:147:PRO:HB2	1.53	0.88
1:B:27:PHE:CD2	1:B:74:LEU:CD2	2.57	0.88
1:A:66:LEU:HD23	1:A:252:GLU:OE2	1.74	0.86
1:B:540:THR:HG23	1:B:543:GLN:HB3	1.56	0.85
1:B:39:HIS:O	1:B:43:VAL:HG23	1.76	0.85
1:B:117:ARG:HB3	2:B:2001:FUA:H152	1.60	0.84
1:B:206:PHE:CD2	1:B:481:LEU:HD22	2.12	0.83
1:A:424:VAL:O	1:A:428:ARG:HG3	1.77	0.83
1:B:50:ALA:O	1:B:54:VAL:HG23	1.78	0.83
1:A:553:ALA:O	1:A:557:LYS:HG3	1.80	0.82
1:B:344:VAL:O	1:B:348:ARG:HG3	1.80	0.82
1:A:480:SER:OG	1:A:483:ASN:HB2	1.81	0.81
1:A:383:GLU:HB3	1:A:384:PRO:HD3	1.61	0.80
1:B:532:LEU:HD12	1:B:548:MET:HE1	1.62	0.80
1:A:560:LYS:CB	2:A:2002:FUA:H22	2.13	0.79
1:B:552:ALA:O	1:B:555:VAL:HG12	1.84	0.78
1:B:214:TRP:CD1	1:B:343:VAL:HG11	2.17	0.78
1:B:485:ARG:HB3	1:B:486:PRO:HD3	1.65	0.78
1:B:561:ALA:O	1:B:562:ASP:CB	2.32	0.78
1:A:66:LEU:CD2	1:A:252:GLU:OE2	2.31	0.77
1:B:274:LYS:HE3	1:B:296:ASP:HA	1.68	0.75
1:A:95:GLU:OE1	1:A:99:ASN:HB2	1.87	0.75
1:B:206:PHE:CE2	1:B:481:LEU:HD13	2.21	0.75
1:A:408:LEU:HD11	1:A:526:GLN:HG2	1.67	0.75
1:B:150:TYR:HB2	1:B:196:GLN:NE2	2.02	0.75
1:A:408:LEU:CD1	1:A:526:GLN:HG2	2.17	0.74
1:B:151:ALA:HB3	1:B:152:PRO:HD3	1.68	0.74
1:B:179:LEU:HB2	1:B:180:PRO:HD3	1.69	0.74
1:A:106:LYS:HD3	1:A:147:PRO:HB2	1.70	0.73
1:B:151:ALA:HB3	1:B:152:PRO:CD	2.19	0.73
1:B:36:PHE:O	1:B:40:VAL:HG23	1.89	0.72
1:B:529:LEU:HA	1:B:548:MET:HE1	1.73	0.70
1:A:290:ILE:O	1:A:293:VAL:HG12	1.92	0.70
1:A:483:ASN:C	1:A:486:PRO:HD2	2.13	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:302:LEU:HD23	1:A:303:PRO:HD2	1.75	0.69
1:B:48:GLU:O	1:B:48:GLU:HG2	1.92	0.69
1:B:274:LYS:CE	1:B:296:ASP:HA	2.23	0.68
1:B:411:TYR:HA	1:B:414:LYS:HD3	1.74	0.68
1:A:117:ARG:O	1:A:117:ARG:HG2	1.93	0.68
1:B:400:GLU:O	1:B:404:GLN:HG3	1.93	0.68
1:A:418:VAL:O	1:A:534:LYS:NZ	2.26	0.67
1:B:194:ALA:HB1	1:B:455:VAL:CG1	2.24	0.67
1:A:503:ASN:HB3	1:A:506:THR:OG1	1.94	0.66
1:B:224:PRO:HD2	1:B:296:ASP:OD1	1.96	0.66
1:A:156:PHE:HE1	1:A:285:GLU:HG3	1.60	0.65
1:B:135:LEU:HD11	1:B:162:LYS:HD3	1.76	0.65
1:B:536:LYS:CB	1:B:539:ALA:HB2	2.25	0.65
1:B:60:GLU:C	1:B:61:ASN:CG	2.52	0.65
1:B:529:LEU:HA	1:B:548:MET:CE	2.25	0.65
1:A:168:CYS:SG	1:A:177:CYS:C	2.75	0.65
1:B:98:ARG:O	1:B:101:CYS:HB3	1.97	0.64
1:B:117:ARG:HG3	1:B:117:ARG:O	1.95	0.64
1:A:302:LEU:CD2	1:A:303:PRO:HD2	2.27	0.64
1:A:551:PHE:CE2	2:A:2002:FUA:H283	2.32	0.64
1:A:305:LEU:HG	1:A:337:ARG:HH11	1.62	0.64
1:A:206:PHE:CD2	1:A:481:LEU:HD22	2.33	0.64
1:B:387:LEU:HD12	1:B:485:ARG:NH1	2.12	0.64
1:B:549:ASP:O	1:B:552:ALA:HB3	1.97	0.64
1:B:61:ASN:O	1:B:64:LYS:N	2.29	0.63
1:A:540:THR:OG1	1:A:543:GLN:HG3	1.99	0.63
1:A:10:ARG:CZ	1:A:252:GLU:HG3	2.28	0.63
1:A:283:LEU:HG	1:A:284:LEU:HD23	1.80	0.63
1:A:512:ASP:O	1:A:515:THR:HG22	1.99	0.62
1:B:536:LYS:O	1:B:539:ALA:CB	2.48	0.62
1:A:373:VAL:HG13	1:A:374:PHE:HD1	1.63	0.62
1:B:472:ARG:NH2	1:B:491:LEU:HD22	2.15	0.62
1:B:558:CYS:C	1:B:560:LYS:H	2.03	0.62
1:A:516:LEU:HD23	1:A:516:LEU:O	2.00	0.61
1:B:555:VAL:HG11	2:B:2002:FUA:H232	1.82	0.61
1:B:27:PHE:HD2	1:B:74:LEU:HD21	1.56	0.61
1:A:485:ARG:HB3	1:A:486:PRO:HD3	1.83	0.61
1:B:540:THR:CG2	1:B:543:GLN:HB3	2.31	0.61
1:B:19:PHE:O	1:B:23:VAL:HG23	2.01	0.61
1:B:472:ARG:CZ	1:B:491:LEU:HD22	2.29	0.61
1:B:61:ASN:HB3	1:B:64:LYS:CD	2.31	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:141:GLU:OE1	1:A:144:ARG:HD3	2.01	0.60
1:A:413:LYS:HB3	1:A:493:VAL:HG23	1.84	0.60
1:B:260:LEU:O	1:B:264:ILE:HG13	2.02	0.60
1:A:151:ALA:HB3	1:A:152:PRO:HD3	1.84	0.60
1:B:22:LEU:HD21	1:B:155:LEU:HD11	1.84	0.60
1:B:120:VAL:HG21	1:B:175:ALA:HA	1.84	0.59
1:A:36:PHE:O	1:A:40:VAL:HG23	2.02	0.59
1:B:299:PRO:HG2	1:B:336:ARG:HH21	1.67	0.59
1:A:214:TRP:CD1	1:A:343:VAL:HG11	2.37	0.59
1:B:61:ASN:O	1:B:63:ASP:N	2.36	0.59
1:B:532:LEU:CD1	1:B:548:MET:CE	2.73	0.59
1:A:26:ALA:HB2	1:A:250:LEU:HD13	1.84	0.58
1:A:515:THR:HG23	1:A:516:LEU:N	2.18	0.58
1:B:150:TYR:HB2	1:B:196:GLN:CD	2.23	0.58
1:A:141:GLU:O	1:A:144:ARG:HG2	2.02	0.58
1:B:24:LEU:HD13	1:B:43:VAL:HG21	1.85	0.58
1:A:483:ASN:O	1:A:486:PRO:HD2	2.02	0.58
1:B:530:VAL:O	1:B:534:LYS:HG3	2.02	0.58
1:B:558:CYS:C	1:B:560:LYS:N	2.54	0.58
1:B:140:TYR:OH	1:B:144:ARG:NH1	2.37	0.58
1:B:414:LYS:O	1:B:472:ARG:NH1	2.37	0.57
1:A:38:ASP:O	1:A:42:LEU:HG	2.03	0.57
1:B:61:ASN:HB3	1:B:64:LYS:HE3	1.86	0.57
1:A:117:ARG:HB2	2:A:2001:FUA:H71	1.86	0.57
1:A:57:GLU:O	1:A:57:GLU:HG2	2.05	0.57
1:B:394:LEU:HD11	1:B:398:LEU:HD11	1.87	0.57
1:B:529:LEU:HB2	1:B:548:MET:HE3	1.86	0.56
1:A:417:GLN:H	1:A:417:GLN:CD	2.08	0.56
1:B:359:LYS:CG	1:B:360:CYS:N	2.68	0.56
1:B:532:LEU:CD1	1:B:548:MET:HE2	2.30	0.56
1:A:551:PHE:HE2	2:A:2002:FUA:H283	1.70	0.56
1:B:230:GLU:OE1	1:B:230:GLU:HA	2.05	0.56
1:A:141:GLU:OE1	1:A:141:GLU:HA	2.06	0.56
1:B:373:VAL:HG13	1:B:374:PHE:HD1	1.71	0.56
1:A:206:PHE:CE2	1:A:481:LEU:HD13	2.41	0.56
1:A:312:SER:O	1:A:315:VAL:HG23	2.05	0.56
1:B:61:ASN:HB3	1:B:64:LYS:HD2	1.88	0.56
1:B:60:GLU:CB	1:B:61:ASN:ND2	2.68	0.56
1:B:383:GLU:HB3	1:B:384:PRO:HD3	1.87	0.56
1:A:414:LYS:O	1:A:472:ARG:NH1	2.40	0.55
1:A:529:LEU:HD13	1:A:548:MET:HE3	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:46:VAL:HG22	1:A:73:LYS:HG3	1.88	0.55
1:B:555:VAL:HG11	2:B:2002:FUA:C23	2.37	0.55
1:B:529:LEU:HD13	1:B:548:MET:HE3	1.88	0.55
1:A:17:GLU:HG3	1:A:18:ASN:N	2.22	0.55
1:A:39:HIS:O	1:A:43:VAL:HG23	2.05	0.55
1:A:513:ILE:HD12	2:A:2002:FUA:H272	1.87	0.55
1:A:517:SER:O	1:A:521:ARG:HG3	2.06	0.55
1:B:112:LEU:HD13	1:B:144:ARG:HE	1.70	0.55
1:B:117:ARG:HB3	2:B:2001:FUA:C15	2.34	0.55
1:B:286:LYS:O	1:B:290:ILE:HG13	2.07	0.55
1:A:115:LEU:HD12	1:A:145:ARG:NH1	2.23	0.54
1:B:529:LEU:CB	1:B:548:MET:HE3	2.37	0.54
1:B:367:HIS:O	1:B:371:ALA:HB2	2.08	0.54
1:B:61:ASN:HB3	1:B:64:LYS:CE	2.38	0.54
1:A:227:GLU:O	1:A:230:GLU:N	2.37	0.54
1:A:485:ARG:HD2	1:A:485:ARG:O	2.08	0.54
1:A:555:VAL:O	1:A:559:CYS:HB2	2.08	0.54
1:B:522:GLN:HA	1:B:525:LYS:HB2	1.90	0.54
1:A:23:VAL:O	1:A:27:PHE:HD1	1.92	0.53
1:B:529:LEU:CA	1:B:548:MET:HE1	2.38	0.53
1:B:516:LEU:HB3	1:B:520:GLU:HG3	1.89	0.53
1:B:138:TYR:O	1:B:142:ILE:HG12	2.08	0.53
1:B:456:VAL:O	1:B:459:GLN:HB2	2.08	0.53
1:B:65:SER:O	1:B:69:LEU:HD12	2.09	0.53
1:B:387:LEU:HD23	1:B:387:LEU:O	2.07	0.53
1:B:387:LEU:HD23	1:B:387:LEU:C	2.30	0.53
1:A:46:VAL:CG2	1:A:73:LYS:HG3	2.39	0.52
1:B:417:GLN:CD	1:B:417:GLN:H	2.12	0.52
1:B:430:LEU:HD22	1:B:453:LEU:HD22	1.90	0.52
1:A:224:PRO:HD2	1:A:296:ASP:HB3	1.90	0.52
1:A:305:LEU:HG	1:A:337:ARG:NH1	2.24	0.52
1:A:151:ALA:HB2	1:A:250:LEU:HD23	1.91	0.52
1:B:132:GLU:O	1:B:136:LYS:HG3	2.09	0.52
1:B:430:LEU:HG	1:B:456:VAL:HG11	1.92	0.52
1:A:45:GLU:HB3	1:A:73:LYS:NZ	2.25	0.52
1:A:511:ALA:C	1:A:513:ILE:H	2.14	0.52
1:B:151:ALA:CB	1:B:152:PRO:CD	2.85	0.52
1:B:540:THR:HG23	1:B:543:GLN:CB	2.35	0.51
1:A:120:VAL:HG21	1:A:175:ALA:HA	1.93	0.51
1:B:302:LEU:CD2	1:B:336:ARG:NH2	2.63	0.51
1:B:61:ASN:C	1:B:63:ASP:H	2.13	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:112:LEU:HD13	1:B:144:ARG:NE	2.25	0.51
1:B:349:LEU:HD22	1:B:377:PHE:CG	2.46	0.51
1:B:18:ASN:O	1:B:22:LEU:HG	2.10	0.51
1:B:554:PHE:O	1:B:557:LYS:HB2	2.10	0.51
1:B:9:HIS:CD2	1:B:13:ASP:OD2	2.63	0.51
1:B:153:GLU:O	1:B:157:PHE:HD1	1.93	0.51
1:B:543:GLN:O	1:B:546:ALA:HB3	2.11	0.51
1:B:529:LEU:CA	1:B:548:MET:CE	2.88	0.51
1:B:546:ALA:O	1:B:549:ASP:N	2.44	0.51
1:A:268:GLN:OE1	1:A:276:LYS:N	2.44	0.51
1:B:25:ILE:O	1:B:29:GLN:HG3	2.11	0.51
1:B:214:TRP:CD1	1:B:343:VAL:CG1	2.93	0.50
1:A:187:ASP:O	1:A:190:LYS:N	2.45	0.50
1:B:283:LEU:HG	1:B:284:LEU:HD23	1.92	0.50
1:B:404:GLN:NE2	1:B:428:ARG:HA	2.26	0.50
1:B:420:THR:HB	1:B:421:PRO:HD3	1.94	0.50
1:A:61:ASN:HB3	1:A:64:LYS:CD	2.41	0.50
1:A:249:ASP:HB3	1:A:252:GLU:OE1	2.12	0.50
1:A:515:THR:HG23	1:A:516:LEU:H	1.76	0.50
1:B:511:ALA:C	1:B:513:ILE:H	2.15	0.50
1:A:485:ARG:HD2	1:A:485:ARG:C	2.32	0.50
1:A:564:LYS:HB3	1:A:567:CYS:HB2	1.94	0.50
1:B:293:VAL:HG22	1:B:294:GLU:N	2.27	0.50
1:B:409:VAL:O	1:B:413:LYS:HG3	2.10	0.50
1:A:117:ARG:HB3	2:A:2001:FUA:H152	1.94	0.49
1:A:23:VAL:HG13	1:A:27:PHE:HE1	1.77	0.49
1:B:17:GLU:HA	1:B:20:LYS:HE2	1.95	0.49
1:B:186:ARG:HG2	1:B:186:ARG:HH11	1.78	0.49
1:B:302:LEU:HD21	1:B:336:ARG:HH22	1.68	0.49
1:B:60:GLU:O	1:B:61:ASN:CG	2.50	0.49
1:B:342:SER:HA	1:B:447:PRO:HA	1.95	0.49
1:B:151:ALA:CB	1:B:152:PRO:HD3	2.41	0.49
1:B:186:ARG:CG	1:B:187:ASP:N	2.74	0.49
1:B:214:TRP:NE1	1:B:343:VAL:HG11	2.27	0.49
1:B:516:LEU:HA	1:B:520:GLU:OE2	2.13	0.49
1:A:7:VAL:HG21	1:A:69:LEU:CD1	2.43	0.49
1:B:103:LEU:HD21	1:B:247:HIS:O	2.13	0.49
1:B:139:LEU:HD21	1:B:158:ALA:HB2	1.94	0.49
1:A:151:ALA:HB2	1:A:250:LEU:CD2	2.43	0.49
1:B:95:GLU:OE1	1:B:99:ASN:HB2	2.13	0.48
1:A:135:LEU:HD11	1:A:162:LYS:HB2	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:509:PHE:O	1:A:510:HIS:C	2.52	0.48
1:A:513:ILE:CD1	2:A:2002:FUA:H272	2.42	0.48
1:A:179:LEU:HB2	1:A:180:PRO:HD3	1.95	0.48
1:A:45:GLU:HB3	1:A:73:LYS:HZ1	1.78	0.48
1:B:498:VAL:O	1:B:498:VAL:HG23	2.13	0.48
1:B:547:VAL:O	1:B:550:ASP:HB3	2.13	0.48
1:A:186:ARG:HB2	2:A:2001:FUA:H241	1.95	0.48
1:B:250:LEU:HD23	1:B:250:LEU:N	2.29	0.48
1:B:27:PHE:HD2	1:B:74:LEU:CD2	2.17	0.48
1:A:178:LEU:O	1:A:179:LEU:C	2.52	0.48
1:B:29:GLN:HG2	1:B:143:ALA:O	2.14	0.48
1:B:290:ILE:O	1:B:293:VAL:HG12	2.13	0.48
1:B:58:SER:O	1:B:59:ALA:O	2.32	0.48
1:B:168:CYS:SG	1:B:177:CYS:C	2.93	0.48
1:B:492:GLU:OE1	1:B:492:GLU:HA	2.13	0.48
1:A:66:LEU:O	1:A:69:LEU:HB2	2.14	0.47
1:A:529:LEU:O	1:A:533:VAL:HG23	2.14	0.47
1:B:408:LEU:HD23	1:B:427:SER:OG	2.14	0.47
1:A:42:LEU:O	1:A:46:VAL:HG23	2.14	0.47
1:B:485:ARG:NH2	1:B:486:PRO:HG3	2.28	0.47
1:A:260:LEU:O	1:A:264:ILE:HG13	2.15	0.47
1:A:417:GLN:CD	1:A:417:GLN:N	2.67	0.47
1:B:285:GLU:O	1:B:289:CYS:HB2	2.14	0.47
1:B:532:LEU:CD1	1:B:548:MET:HE1	2.39	0.47
1:A:278:CYS:O	1:A:286:LYS:HG3	2.15	0.47
1:A:433:VAL:HG13	1:A:434:GLY:N	2.29	0.47
1:A:501:GLU:OE1	1:A:501:GLU:HA	2.15	0.47
1:A:74:LEU:C	1:A:76:THR:H	2.17	0.47
1:B:100:GLU:HA	1:B:100:GLU:OE1	2.15	0.47
1:B:536:LYS:O	1:B:539:ALA:HB3	2.13	0.47
1:A:224:PRO:CB	1:A:299:PRO:HD3	2.36	0.46
1:A:420:THR:HG23	1:A:530:VAL:CG1	2.45	0.46
1:A:367:HIS:HA	1:A:370:TYR:CZ	2.50	0.46
1:B:215:ALA:HB3	1:B:235:VAL:HG13	1.96	0.46
1:A:179:LEU:CB	1:A:180:PRO:HD3	2.45	0.46
1:A:373:VAL:HG13	1:A:374:PHE:N	2.30	0.46
1:B:536:LYS:O	1:B:539:ALA:HB2	2.15	0.46
1:B:117:ARG:HB2	1:B:123:MET:CE	2.46	0.46
1:A:387:LEU:O	1:A:391:ASN:HB2	2.14	0.46
1:B:410:ARG:O	1:B:414:LYS:HG3	2.15	0.46
1:A:61:ASN:O	1:A:63:ASP:N	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:ASN:C	1:A:63:ASP:H	2.19	0.46
1:A:367:HIS:O	1:A:371:ALA:HB2	2.16	0.46
1:B:278:CYS:O	1:B:286:LYS:HG3	2.15	0.46
1:B:457:LEU:HD23	1:B:457:LEU:HA	1.80	0.46
1:A:72:ASP:O	1:A:76:THR:HG23	2.15	0.45
1:A:521:ARG:NH1	2:A:2002:FUA:H201	2.30	0.45
1:B:61:ASN:C	1:B:63:ASP:N	2.70	0.45
1:B:511:ALA:C	1:B:513:ILE:N	2.70	0.45
1:A:117:ARG:NH2	1:A:179:LEU:HD11	2.31	0.45
1:B:118:PRO:O	1:B:123:MET:HE3	2.16	0.45
1:B:120:VAL:HG21	1:B:175:ALA:CB	2.47	0.45
1:B:392:CYS:O	1:B:396:GLU:HG2	2.16	0.45
1:A:116:VAL:HG22	1:A:117:ARG:N	2.32	0.45
1:A:241:VAL:O	1:A:244:GLU:HB2	2.16	0.45
1:A:561:ALA:O	1:A:562:ASP:C	2.55	0.45
1:B:24:LEU:CD1	1:B:43:VAL:HG21	2.45	0.45
1:A:333:GLU:OE1	1:A:336:ARG:HD3	2.16	0.45
1:A:395:PHE:CD1	1:A:434:GLY:HA3	2.52	0.45
1:A:411:TYR:O	1:A:414:LYS:HB2	2.16	0.45
1:A:459:GLN:O	1:A:462:VAL:HG22	2.17	0.45
1:B:325:VAL:HG12	1:B:329:MET:HE3	1.98	0.45
1:A:529:LEU:HA	1:A:548:MET:HE1	1.98	0.45
1:B:60:GLU:CB	1:B:61:ASN:HD21	2.30	0.45
1:B:60:GLU:O	1:B:61:ASN:OD1	2.35	0.45
1:B:492:GLU:HG3	1:B:493:VAL:HG23	1.99	0.45
1:A:242:HIS:O	1:A:243:THR:C	2.55	0.45
1:A:268:GLN:OE1	1:A:276:LYS:HA	2.17	0.45
1:A:387:LEU:HD22	1:A:485:ARG:NH1	2.31	0.45
1:A:540:THR:O	1:A:544:LEU:HB2	2.16	0.45
1:B:135:LEU:HD11	1:B:162:LYS:CD	2.46	0.45
1:A:383:GLU:CB	1:A:384:PRO:HD3	2.42	0.44
1:B:325:VAL:HG12	1:B:329:MET:CE	2.47	0.44
1:A:23:VAL:HG13	1:A:27:PHE:CE1	2.52	0.44
1:A:183:ASP:OD1	1:A:186:ARG:NH2	2.51	0.44
1:A:211:PHE:CE2	1:A:239:THR:HA	2.52	0.44
1:B:276:LYS:O	1:B:277:GLU:C	2.55	0.44
1:A:383:GLU:HB3	1:A:384:PRO:CD	2.38	0.44
1:B:27:PHE:CE2	1:B:74:LEU:CD2	3.01	0.44
1:B:47:THR:C	1:B:49:PHE:H	2.21	0.44
1:B:529:LEU:O	1:B:533:VAL:HG23	2.16	0.44
1:B:531:GLU:HA	1:B:531:GLU:OE1	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:27:PHE:CE2	1:B:74:LEU:HD21	2.42	0.44
1:B:120:VAL:HG21	1:B:175:ALA:CA	2.47	0.44
1:B:168:CYS:SG	1:B:178:LEU:N	2.90	0.44
1:B:183:ASP:OD1	1:B:186:ARG:NH2	2.51	0.44
1:A:529:LEU:HA	1:A:548:MET:CE	2.48	0.43
1:A:34:CYS:HA	1:A:35:PRO:HD3	1.85	0.43
1:B:377:PHE:O	1:B:378:LYS:C	2.56	0.43
1:B:72:ASP:O	1:B:75:CYS:N	2.50	0.43
1:B:387:LEU:C	1:B:387:LEU:CD2	2.87	0.43
1:A:200:CYS:O	1:A:204:GLN:HG3	2.18	0.43
1:A:377:PHE:O	1:A:381:VAL:HG23	2.19	0.43
1:A:151:ALA:CB	1:A:250:LEU:HD23	2.48	0.43
1:A:344:VAL:HG21	1:A:450:GLU:HG2	2.01	0.43
1:B:282:PRO:O	1:B:283:LEU:C	2.57	0.43
1:A:227:GLU:O	1:A:228:PHE:C	2.57	0.43
1:B:517:SER:OG	1:B:520:GLU:HG2	2.19	0.43
1:A:359:LYS:CG	1:A:360:CYS:N	2.82	0.43
1:B:404:GLN:HG2	1:B:431:GLY:HA3	2.00	0.43
1:A:240:LYS:HE2	1:A:244:GLU:OE2	2.19	0.42
1:B:76:THR:O	1:B:77:VAL:HG13	2.19	0.42
1:B:529:LEU:CD1	1:B:548:MET:HE3	2.49	0.42
1:A:263:TYR:CD2	1:A:263:TYR:C	2.92	0.42
1:B:34:CYS:HA	1:B:35:PRO:HD3	1.79	0.42
1:A:22:LEU:HD11	1:A:254:ALA:CB	2.49	0.42
1:A:50:ALA:O	1:A:54:VAL:HG23	2.19	0.42
1:A:420:THR:HG23	1:A:530:VAL:HG11	2.01	0.42
1:B:194:ALA:HB1	1:B:455:VAL:HG12	1.99	0.42
1:B:483:ASN:O	1:B:486:PRO:HD2	2.19	0.42
1:A:543:GLN:O	1:A:546:ALA:HB3	2.20	0.42
1:A:61:ASN:C	1:A:63:ASP:N	2.73	0.42
1:A:420:THR:O	1:A:424:VAL:HG23	2.18	0.42
1:B:22:LEU:CD2	1:B:155:LEU:HD11	2.49	0.42
1:B:529:LEU:HD11	1:B:544:LEU:CD2	2.49	0.42
1:B:555:VAL:CG1	1:B:556:GLU:N	2.82	0.42
1:A:49:PHE:CE2	1:A:53:CYS:SG	3.13	0.42
1:A:268:GLN:OE1	1:A:276:LYS:CA	2.67	0.42
1:B:395:PHE:HD1	1:B:403:PHE:CD2	2.37	0.42
1:B:555:VAL:HG13	2:B:2002:FUA:H121	2.01	0.42
1:A:186:ARG:NE	2:A:2001:FUA:O5	2.39	0.42
1:B:373:VAL:HG13	1:B:374:PHE:N	2.34	0.42
1:B:513:ILE:HG23	2:B:2002:FUA:H273	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:22:LEU:HD12	1:A:251:LEU:HD23	2.01	0.42
1:A:168:CYS:SG	1:A:178:LEU:N	2.93	0.42
1:A:511:ALA:C	1:A:513:ILE:N	2.74	0.42
1:B:521:ARG:HG2	2:B:2002:FUA:H241	2.01	0.42
1:A:66:LEU:HD21	1:A:252:GLU:OE2	2.18	0.41
1:B:30:TYR:HD1	1:B:30:TYR:HA	1.75	0.41
1:B:70:PHE:HD1	1:B:70:PHE:H	1.67	0.41
1:A:58:SER:O	1:A:59:ALA:O	2.38	0.41
1:A:186:ARG:CB	2:A:2001:FUA:H241	2.51	0.41
1:A:231:VAL:O	1:A:234:LEU:N	2.53	0.41
1:B:158:ALA:O	1:B:161:TYR:HB3	2.20	0.41
1:A:23:VAL:O	1:A:27:PHE:CD1	2.73	0.41
1:A:430:LEU:O	1:A:433:VAL:HG12	2.21	0.41
1:A:370:TYR:CD1	1:A:370:TYR:C	2.94	0.41
1:B:17:GLU:O	1:B:18:ASN:C	2.59	0.41
1:B:360:CYS:SG	1:B:369:CYS:C	2.99	0.41
1:B:123:MET:HB3	1:B:165:PHE:HE1	1.86	0.41
1:B:141:GLU:O	1:B:144:ARG:HG2	2.21	0.41
2:A:2002:FUA:H122	2:A:2002:FUA:H232	2.02	0.41
1:B:119:GLU:O	1:B:120:VAL:C	2.58	0.41
1:B:366:PRO:O	1:B:369:CYS:N	2.54	0.41
1:B:530:VAL:HG12	1:B:534:LYS:HD2	2.02	0.41
1:A:430:LEU:HG	1:A:456:VAL:HG11	2.02	0.41
1:A:501:GLU:O	1:A:502:PHE:C	2.59	0.41
1:B:463:LEU:HD23	1:B:463:LEU:HA	1.91	0.41
1:B:499:PRO:HB3	1:B:535:HIS:O	2.21	0.41
1:A:32:GLN:HG2	1:A:144:ARG:O	2.21	0.41
1:A:463:LEU:HD23	1:A:463:LEU:HA	1.85	0.41
1:A:113:PRO:O	1:A:114:ARG:C	2.58	0.40
1:A:414:LYS:HE2	1:A:491:LEU:O	2.21	0.40
1:A:433:VAL:CG1	1:A:434:GLY:N	2.84	0.40
1:A:44:ASN:O	1:A:47:THR:N	2.54	0.40
1:A:67:HIS:O	1:A:68:THR:C	2.58	0.40
1:A:283:LEU:HG	1:A:284:LEU:N	2.36	0.40
1:A:415:VAL:HG23	1:A:415:VAL:O	2.21	0.40
1:A:394:LEU:HD12	1:A:394:LEU:HA	1.92	0.40
1:B:231:VAL:O	1:B:235:VAL:HG23	2.22	0.40
1:B:255:ASP:O	1:B:258:ALA:N	2.50	0.40
1:B:485:ARG:HB3	1:B:486:PRO:CD	2.43	0.40
1:A:47:THR:O	1:A:50:ALA:HB3	2.21	0.40
1:A:462:VAL:HG23	1:A:463:LEU:N	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:550:ASP:C	1:B:552:ALA:N	2.75	0.40
1:A:302:LEU:HD23	1:A:302:LEU:HA	1.93	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	552/585 (94%)	455 (82%)	73 (13%)	24 (4%)	2	13
1	B	545/585 (93%)	441 (81%)	89 (16%)	15 (3%)	5	21
All	All	1097/1170 (94%)	896 (82%)	162 (15%)	39 (4%)	3	16

All (39) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	59	ALA
1	A	300	ALA
1	A	557	LYS
1	A	563	ASP
1	B	59	ALA
1	B	93	LYS
1	B	546	ALA
1	A	60	GLU
1	A	150	TYR
1	A	499	PRO
1	A	510	HIS
1	A	562	ASP
1	B	62	CYS
1	B	276	LYS
1	A	62	CYS
1	A	75	CYS

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Mol	Chain	Res	Type
1	A	129	ASP
1	A	511	ALA
1	B	129	ASP
1	A	179	LEU
1	A	283	LEU
1	A	323	LYS
1	A	390	GLN
1	A	512	ASP
1	A	516	LEU
1	B	283	LEU
1	B	363	ALA
1	B	561	ALA
1	A	558	CYS
1	B	61	ASN
1	B	291	ALA
1	B	395	PHE
1	B	469	VAL
1	B	501	GLU
1	A	58	SER
1	A	147	PRO
1	A	276	LYS
1	B	77	VAL
1	A	315	VAL

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	408/511 (80%)	395 (97%)	13 (3%)	39	68
1	B	394/511 (77%)	386 (98%)	8 (2%)	55	78
All	All	802/1022 (78%)	781 (97%)	21 (3%)	46	72

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	TYR
1	A	66	LEU
1	A	115	LEU
1	A	117	ARG
1	A	179	LEU
1	A	245	CYS
1	A	284	LEU
1	A	287	SER
1	A	311	GLU
1	A	471	ASP
1	A	516	LEU
1	A	526	GLN
1	A	549	ASP
1	B	38	ASP
1	B	61	ASN
1	B	186	ARG
1	B	253	CYS
1	B	344	VAL
1	B	408	LEU
1	B	442	GLU
1	B	540	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	61	ASN
1	B	404	GLN

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 ⓘ

4 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	FUA	B	2001	-	39,40,40	2.10	17 (43%)	49,64,64	2.00	14 (28%)
2	FUA	B	2002	-	39,40,40	2.31	16 (41%)	49,64,64	2.09	16 (32%)
2	FUA	A	2001	-	39,40,40	2.16	18 (46%)	49,64,64	2.04	14 (28%)
2	FUA	A	2002	-	39,40,40	2.42	18 (46%)	49,64,64	2.05	18 (36%)

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	FUA	B	2001	-	-	5/15/92/92	0/4/4/4
2	FUA	B	2002	-	-	4/15/92/92	0/4/4/4
2	FUA	A	2001	-	-	4/15/92/92	0/4/4/4
2	FUA	A	2002	-	-	5/15/92/92	0/4/4/4

All (69) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2002	FUA	C28-C26	6.33	1.67	1.50
2	B	2002	FUA	C28-C26	5.32	1.64	1.50
2	A	2001	FUA	C9-C11	5.31	1.62	1.54
2	A	2002	FUA	C9-C11	5.29	1.62	1.54
2	B	2002	FUA	C9-C11	5.01	1.61	1.54
2	B	2001	FUA	C9-C11	4.64	1.61	1.54
2	A	2002	FUA	C14-C8	4.30	1.66	1.59
2	B	2002	FUA	C14-C8	4.18	1.66	1.59
2	B	2002	FUA	C18-C4	-3.83	1.45	1.53
2	A	2001	FUA	C28-C26	3.80	1.60	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2001	FUA	C28-C26	3.74	1.60	1.50
2	A	2002	FUA	C10-C9	3.62	1.63	1.57
2	A	2002	FUA	C18-C4	-3.61	1.45	1.53
2	A	2001	FUA	C10-C9	3.46	1.62	1.57
2	A	2001	FUA	C4-C3	3.45	1.63	1.53
2	B	2002	FUA	C4-C3	3.44	1.63	1.53
2	B	2001	FUA	C4-C3	3.38	1.63	1.53
2	A	2001	FUA	C14-C8	3.35	1.64	1.59
2	A	2002	FUA	C4-C3	3.25	1.63	1.53
2	B	2002	FUA	C16-C17	3.23	1.57	1.50
2	B	2001	FUA	C14-C8	3.21	1.64	1.59
2	A	2001	FUA	C16-C17	3.21	1.57	1.50
2	A	2002	FUA	C7-C6	3.19	1.60	1.53
2	B	2002	FUA	C7-C6	3.18	1.60	1.53
2	B	2001	FUA	C10-C9	3.16	1.62	1.57
2	B	2001	FUA	C27-C26	2.96	1.58	1.50
2	B	2001	FUA	C16-C17	2.96	1.56	1.50
2	B	2002	FUA	C6-C5	2.95	1.58	1.53
2	A	2002	FUA	C20-C8	-2.95	1.48	1.54
2	B	2002	FUA	C10-C9	2.93	1.61	1.57
2	A	2001	FUA	C18-C4	-2.81	1.47	1.53
2	A	2002	FUA	C8-C9	2.79	1.61	1.56
2	B	2002	FUA	C20-C8	-2.78	1.48	1.54
2	B	2001	FUA	C7-C6	2.78	1.59	1.53
2	A	2002	FUA	C6-C5	2.77	1.58	1.53
2	B	2001	FUA	C18-C4	-2.76	1.47	1.53
2	A	2002	FUA	C27-C26	2.70	1.57	1.50
2	A	2001	FUA	C27-C26	2.64	1.57	1.50
2	A	2001	FUA	C25-C26	-2.63	1.24	1.32
2	A	2002	FUA	C24-C25	-2.58	1.42	1.50
2	B	2001	FUA	C8-C9	2.57	1.61	1.56
2	B	2001	FUA	C6-C5	2.57	1.58	1.53
2	A	2001	FUA	C19-C10	2.54	1.58	1.54
2	B	2001	FUA	C25-C26	-2.51	1.25	1.32
2	A	2001	FUA	C32-C31	-2.49	1.41	1.49
2	B	2002	FUA	C27-C26	2.45	1.57	1.50
2	A	2001	FUA	C20-C8	-2.42	1.49	1.54
2	A	2001	FUA	C7-C6	2.42	1.58	1.53
2	B	2001	FUA	C20-C8	-2.38	1.49	1.54
2	B	2002	FUA	C25-C26	-2.36	1.25	1.32
2	B	2001	FUA	C32-C31	-2.35	1.41	1.49
2	A	2002	FUA	C32-C31	-2.29	1.41	1.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2002	FUA	C19-C10	2.28	1.58	1.54
2	B	2002	FUA	C7-C8	2.27	1.58	1.54
2	A	2002	FUA	C16-C17	2.26	1.55	1.50
2	B	2001	FUA	C15-C14	-2.22	1.50	1.54
2	B	2001	FUA	C19-C10	2.21	1.58	1.54
2	A	2001	FUA	C7-C8	2.20	1.58	1.54
2	A	2001	FUA	C21-C14	2.19	1.58	1.54
2	A	2002	FUA	C7-C8	2.18	1.58	1.54
2	B	2002	FUA	C19-C10	2.17	1.58	1.54
2	B	2002	FUA	C32-C31	-2.16	1.42	1.49
2	B	2001	FUA	C7-C8	2.14	1.58	1.54
2	A	2001	FUA	C23-C22	2.11	1.56	1.51
2	A	2002	FUA	C25-C26	-2.09	1.26	1.32
2	A	2001	FUA	C15-C14	-2.08	1.50	1.54
2	A	2002	FUA	O3-C31	-2.08	1.13	1.20
2	A	2001	FUA	C6-C5	2.07	1.57	1.53
2	B	2002	FUA	O3-C31	-2.05	1.13	1.20

All (62) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	2002	FUA	C19-C10-C9	-5.42	100.03	113.09
2	A	2002	FUA	C19-C10-C9	-5.34	100.20	113.09
2	A	2001	FUA	C19-C10-C9	-5.24	100.45	113.09
2	B	2001	FUA	C19-C10-C9	-5.22	100.49	113.09
2	B	2002	FUA	C18-C4-C5	5.16	120.32	113.04
2	B	2002	FUA	C28-C26-C27	-5.14	103.25	114.60
2	A	2001	FUA	C28-C26-C27	-5.04	103.46	114.60
2	B	2001	FUA	C28-C26-C27	-4.99	103.57	114.60
2	A	2002	FUA	C18-C4-C5	4.87	119.92	113.04
2	A	2002	FUA	C28-C26-C27	-4.65	104.34	114.60
2	A	2001	FUA	C18-C4-C5	4.62	119.56	113.04
2	B	2001	FUA	C18-C4-C5	4.35	119.17	113.04
2	A	2002	FUA	C23-C24-C25	3.79	124.34	111.88
2	B	2002	FUA	C16-O2-C31	3.52	122.41	117.06
2	B	2002	FUA	C5-C10-C9	3.35	116.01	108.09
2	A	2001	FUA	C7-C8-C14	-3.21	107.87	110.77
2	A	2002	FUA	C5-C10-C9	3.20	115.66	108.09
2	A	2001	FUA	C23-C24-C25	3.14	122.20	111.88
2	B	2002	FUA	C18-C4-C3	-3.10	107.56	111.36
2	A	2001	FUA	C6-C5-C10	3.07	115.48	111.65
2	B	2001	FUA	C16-O2-C31	3.06	121.71	117.06

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	2001	FUA	C5-C10-C9	2.99	115.15	108.09
2	B	2002	FUA	C6-C5-C10	2.97	115.36	111.65
2	B	2001	FUA	C23-C24-C25	2.95	121.58	111.88
2	B	2001	FUA	C6-C5-C10	2.93	115.30	111.65
2	A	2002	FUA	C6-C5-C10	2.90	115.27	111.65
2	A	2001	FUA	C16-O2-C31	2.90	121.46	117.06
2	A	2002	FUA	C16-O2-C31	2.89	121.45	117.06
2	B	2001	FUA	C6-C5-C4	-2.81	109.88	114.32
2	B	2001	FUA	C5-C10-C9	2.78	114.66	108.09
2	A	2002	FUA	C18-C4-C3	-2.68	108.07	111.36
2	B	2001	FUA	C1-C10-C9	2.67	115.42	109.13
2	A	2002	FUA	C13-C12-C11	2.63	115.58	111.90
2	A	2001	FUA	C6-C5-C4	-2.62	110.19	114.32
2	B	2001	FUA	C7-C8-C14	-2.57	108.45	110.77
2	A	2002	FUA	C1-C10-C9	2.55	115.14	109.13
2	B	2002	FUA	C27-C26-C25	2.52	129.93	122.65
2	B	2002	FUA	C7-C8-C14	-2.47	108.54	110.77
2	A	2001	FUA	C1-C10-C9	2.46	114.94	109.13
2	B	2001	FUA	C27-C26-C25	2.46	129.74	122.65
2	B	2002	FUA	C13-C12-C11	2.42	115.30	111.90
2	B	2002	FUA	C23-C24-C25	2.39	119.73	111.88
2	A	2002	FUA	C27-C26-C25	2.38	129.54	122.65
2	A	2002	FUA	O5-C29-O4	-2.38	118.16	123.61
2	A	2001	FUA	C27-C26-C25	2.36	129.48	122.65
2	A	2002	FUA	C7-C8-C9	-2.32	103.32	108.89
2	B	2002	FUA	C1-C10-C9	2.30	114.56	109.13
2	A	2001	FUA	C10-C9-C11	2.29	119.55	114.76
2	B	2002	FUA	C7-C8-C9	-2.28	103.42	108.89
2	B	2002	FUA	O5-C29-O4	-2.24	118.49	123.61
2	B	2002	FUA	C2-C1-C10	2.24	116.61	112.78
2	A	2001	FUA	O5-C29-O4	-2.22	118.54	123.61
2	B	2001	FUA	C20-C8-C9	2.15	116.91	111.92
2	B	2002	FUA	O2-C31-C32	2.14	115.03	111.09
2	A	2002	FUA	C6-C5-C4	-2.13	110.95	114.32
2	A	2001	FUA	C5-C4-C3	-2.09	106.81	110.60
2	A	2002	FUA	C7-C8-C14	-2.08	108.89	110.77
2	A	2002	FUA	C2-C1-C10	2.07	116.33	112.78
2	A	2002	FUA	C20-C8-C9	2.07	116.73	111.92
2	B	2001	FUA	O5-C29-O4	-2.04	118.94	123.61
2	B	2001	FUA	O2-C31-C32	2.03	114.83	111.09
2	A	2002	FUA	O2-C31-C32	2.00	114.78	111.09

There are no chirality outliers.
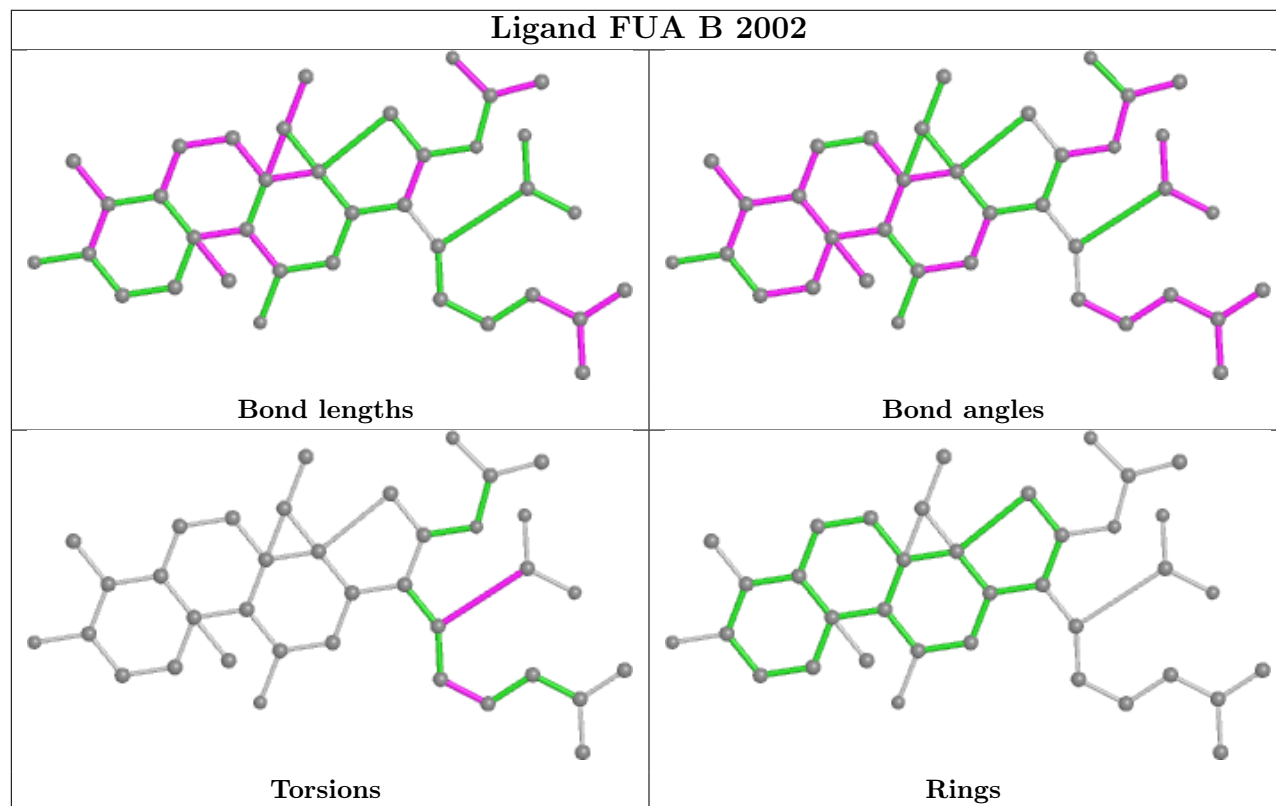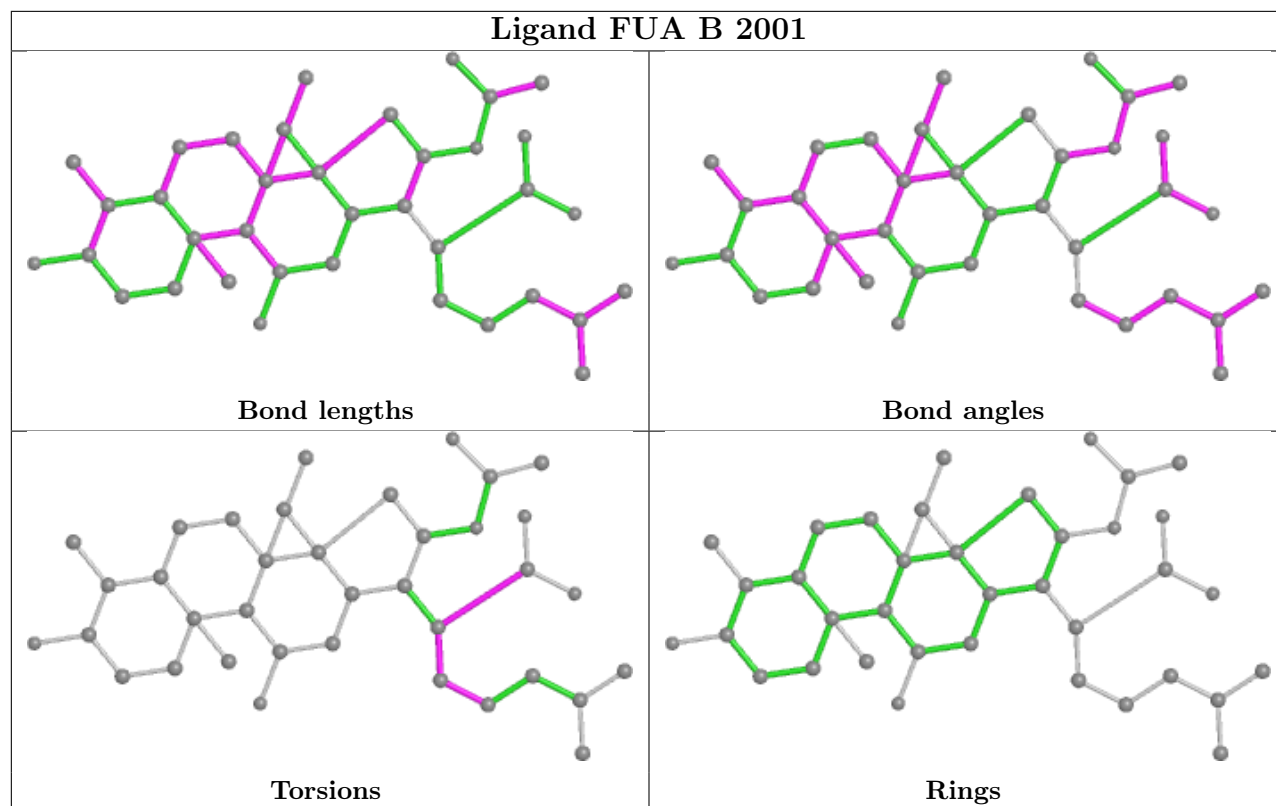
All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	2001	FUA	C23-C22-C29-O4
2	A	2001	FUA	C23-C22-C29-O5
2	A	2002	FUA	C23-C22-C29-O4
2	A	2002	FUA	C23-C22-C29-O5
2	B	2001	FUA	C23-C22-C29-O4
2	B	2001	FUA	C23-C22-C29-O5
2	B	2002	FUA	C23-C22-C29-O4
2	B	2002	FUA	C23-C22-C29-O5
2	A	2001	FUA	C22-C23-C24-C25
2	A	2002	FUA	C22-C23-C24-C25
2	B	2001	FUA	C22-C23-C24-C25
2	B	2002	FUA	C22-C23-C24-C25
2	A	2002	FUA	C29-C22-C23-C24
2	A	2001	FUA	C29-C22-C23-C24
2	B	2001	FUA	C29-C22-C23-C24
2	A	2002	FUA	C17-C22-C29-O4
2	B	2001	FUA	C17-C22-C29-O4
2	B	2002	FUA	C17-C22-C29-O4

There are no ring outliers.

4 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2001	FUA	2	0
2	B	2002	FUA	5	0
2	A	2001	FUA	5	0
2	A	2002	FUA	7	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 FUA B 2001

Bond lengths

Bond angles

Torsions

Rings

Ligand FUA B 2002

Bond lengths

Bond angles

Torsions

Rings

Ligand FUA A 2001

Bond lengths

Bond angles

Torsions

Rings

Ligand FUA A 2002

Bond lengths

Bond angles

Torsions

Rings
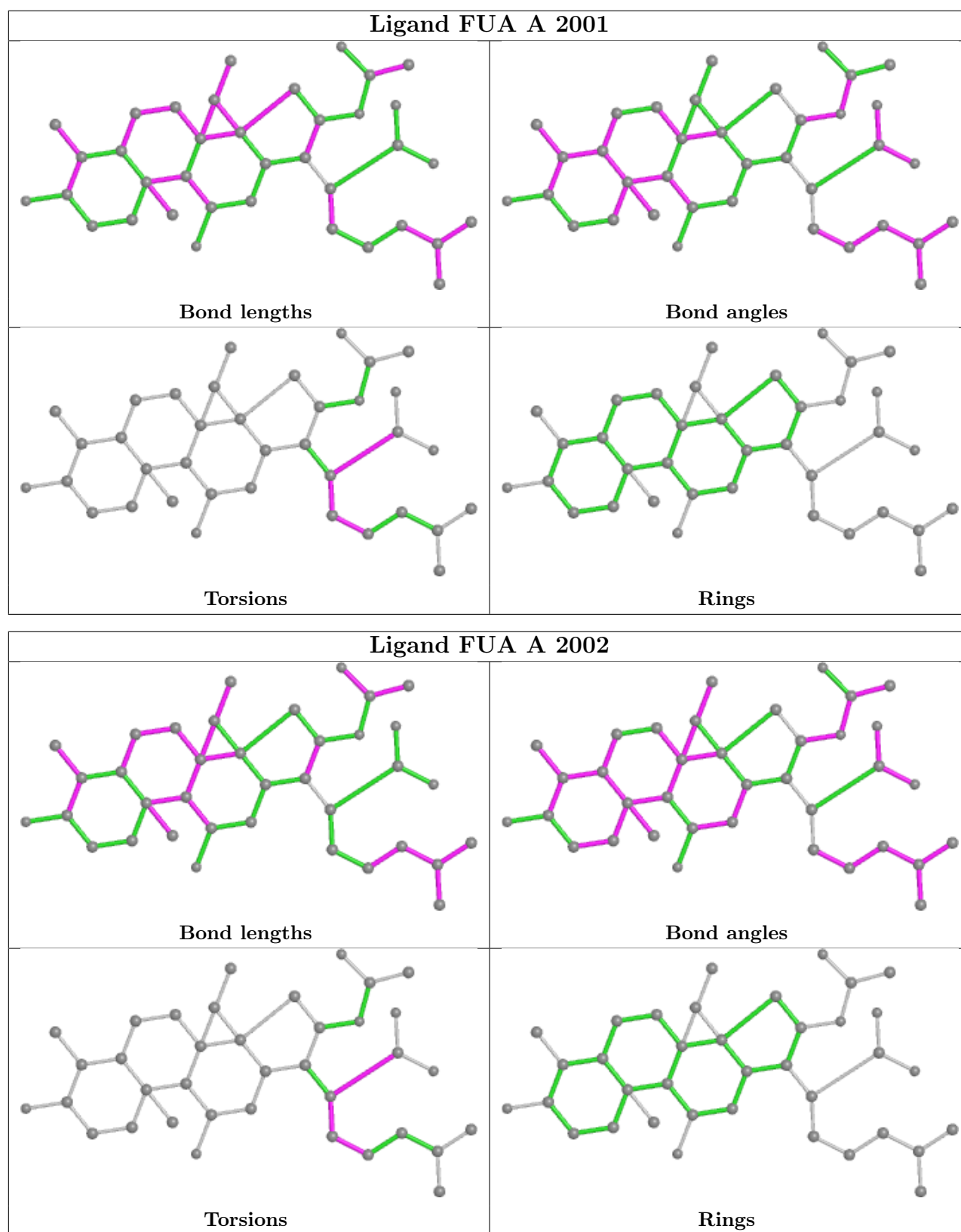
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Fit of model and data ⓘ

6.1　Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	556/585 (95%)	-0.72	3 (0%)	91	79	19, 54, 101, 137	0
1	B	549/585 (93%)	-0.68	4 (0%)	87	72	23, 56, 102, 116	0
All	All	1105/1170 (94%)	-0.70	7 (0%)	89	76	19, 55, 101, 137	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	561	ALA	2.8
1	B	508	THR	2.7
1	B	553	ALA	2.4
1	B	88	ALA	2.2
1	A	92	ALA	2.1
1	A	570	GLU	2.1
1	A	564	LYS	2.1

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
2	FUA	B	2002	37/37	0.81	0.38	110,114,121,122	0
2	FUA	A	2002	37/37	0.85	0.36	110,115,122,123	0
2	FUA	B	2001	37/37	0.91	0.21	75,79,84,85	0
2	FUA	A	2001	37/37	0.91	0.24	78,81,88,90	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.
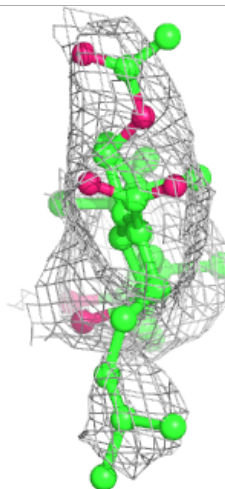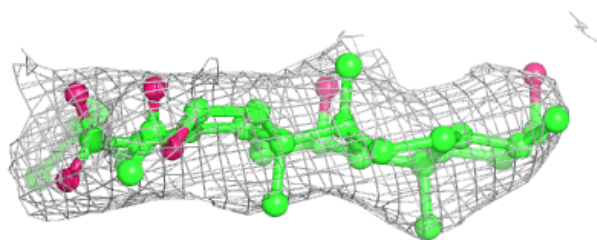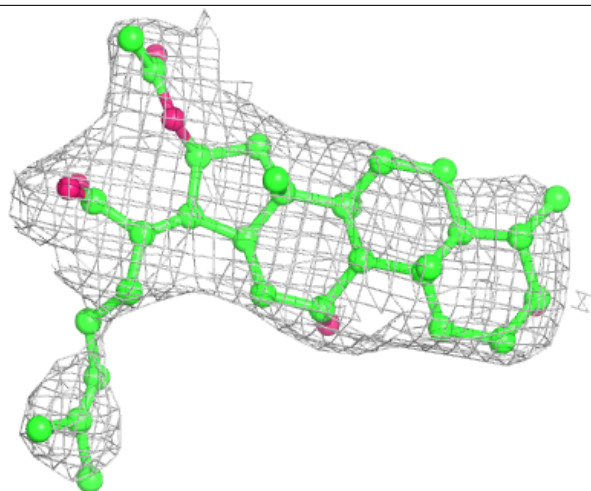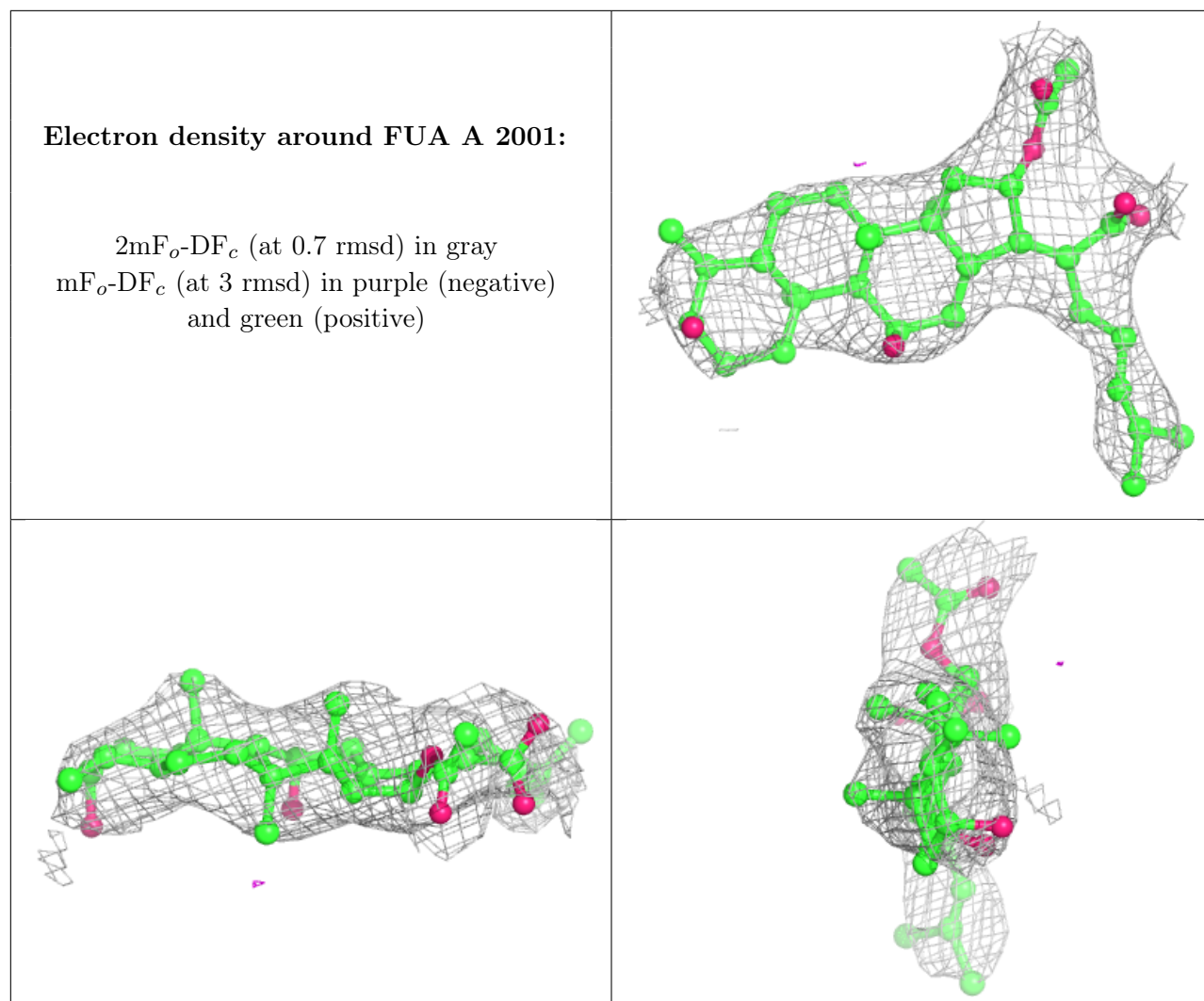

Electron density around FUA B 2002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)
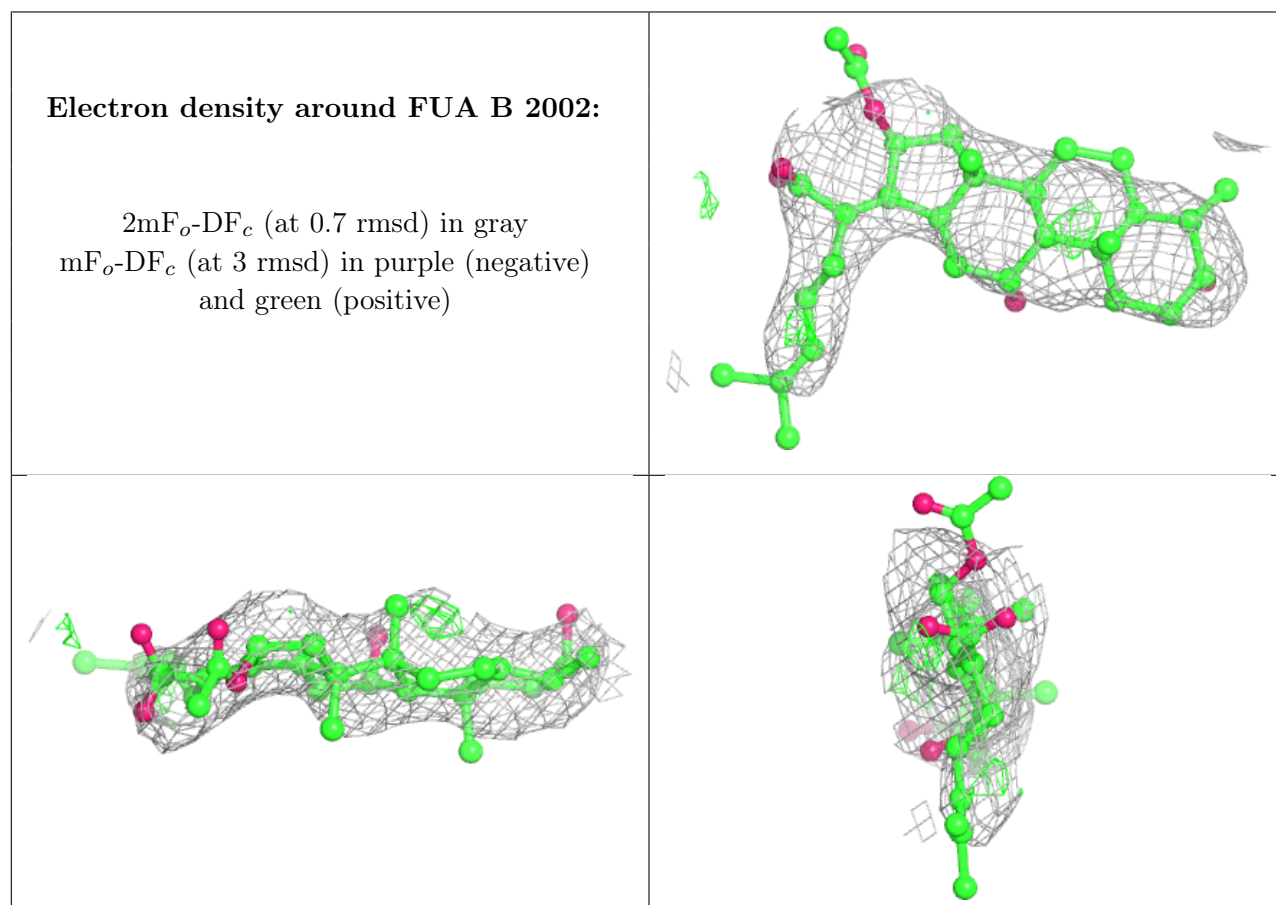
Electron density around FUA A 2002:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
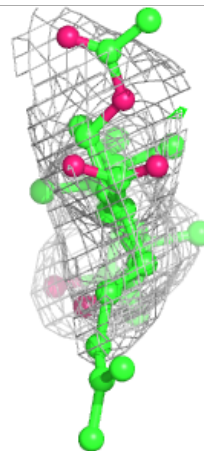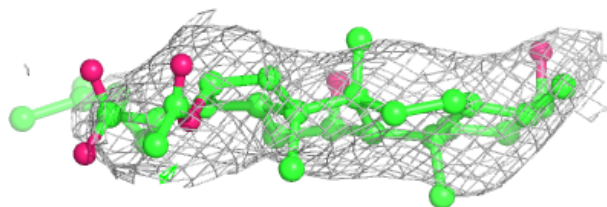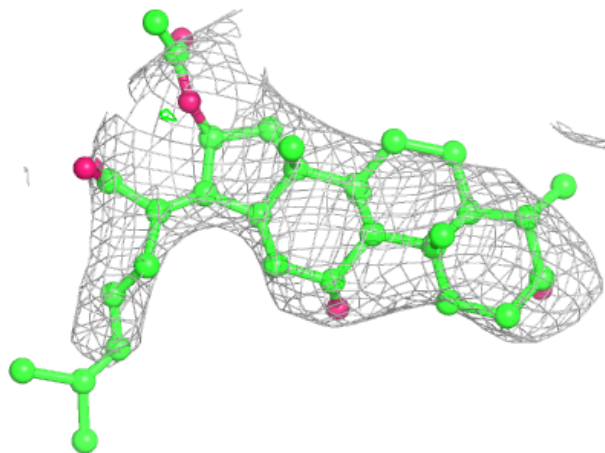
Electron density around FUA B 2001:

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

Electron density around FUA A 2001:

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.