Full wwPDB X-ray Structure Validation Report (i)

Dec 2, 2024 – 01:25 PM JST

PDB ID	:	9IIA
Title	:	Crystal structure of the free histidine prenyltransferase FunA
Authors	:	Chen, X.; Liu, Z.; Dai, S.; Zou, Y.
Deposited on	:	2024-06-19
Resolution	:	2.27 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 (i) 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 (1)) were used in the production of this report:

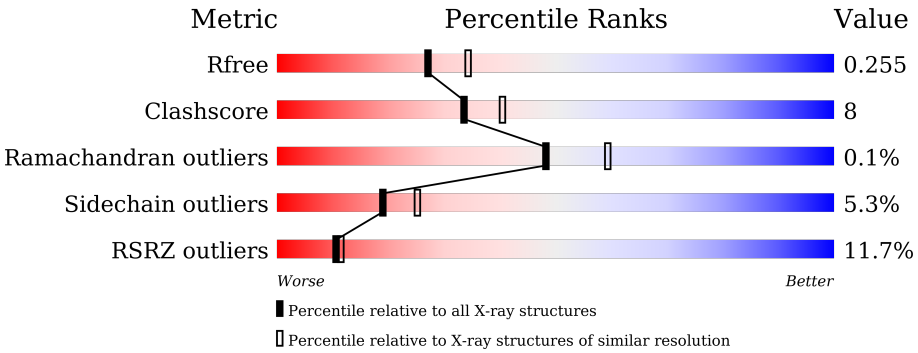
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.27 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	8487 (2.30-2.26)
Clashscore	180529	9437 (2.30-2.26)
Ramachandran outliers	177936	9341 (2.30-2.26)
Sidechain outliers	177891	9342 (2.30-2.26)
RSRZ outliers	164620	8487 (2.30-2.26)

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	441	10% 79% 16%
1	B	441	12% 74% 18% 7%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 6758 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.

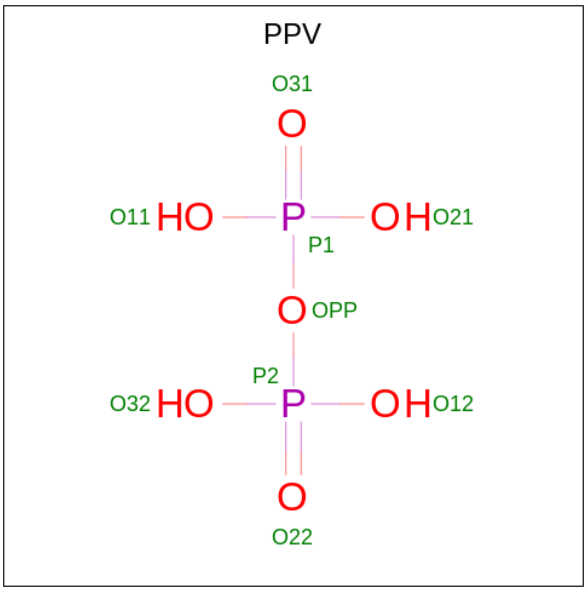
- Molecule 1 is a protein called Dimethylallyl tryptophan synthase GliD1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	425	Total	C	N	O	S	55	1	0
			3351	2140	567	625	19			
1	B	412	Total	C	N	O	S	134	1	0
			3257	2082	550	607	18			

There are 12 discrepancies between the modelled and reference sequences:

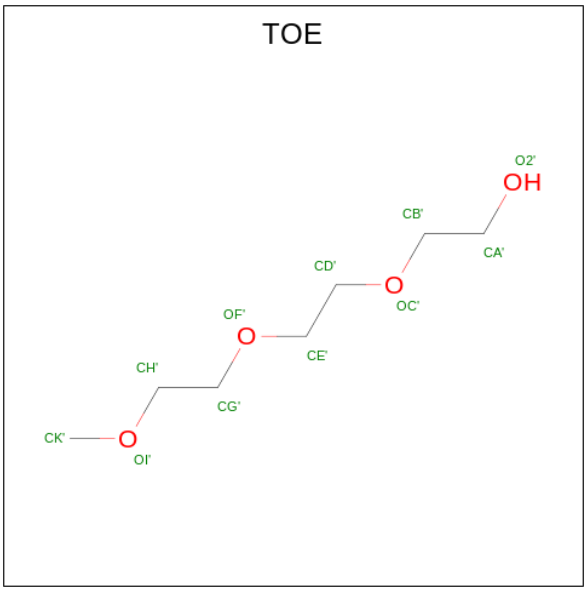
Chain	Residue	Modelled	Actual	Comment	Reference
A	5	SER	ASN	conflict	UNP A0A8K0WD55
A	82	GLU	LYS	conflict	UNP A0A8K0WD55
A	189	ASN	SER	conflict	UNP A0A8K0WD55
A	224	GLN	GLU	conflict	UNP A0A8K0WD55
A	230	ILE	MET	conflict	UNP A0A8K0WD55
A	335	PRO	SER	conflict	UNP A0A8K0WD55
B	5	SER	ASN	conflict	UNP A0A8K0WD55
B	82	GLU	LYS	conflict	UNP A0A8K0WD55
B	189	ASN	SER	conflict	UNP A0A8K0WD55
B	224	GLN	GLU	conflict	UNP A0A8K0WD55
B	230	ILE	MET	conflict	UNP A0A8K0WD55
B	335	PRO	SER	conflict	UNP A0A8K0WD55

- Molecule 2 is PYROPHOSPHATE (three-letter code: PPV) (formula: $H_4O_7P_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O P 9 7 2	0	0
2	B	1	Total O P 9 7 2	0	0

- Molecule 3 is 2-[2-(2-METHOXY-ETHOXY)-ETHOXY]-ETHOXYL (three-letter code: TOE) (formula: $C_7H_{16}O_4$).



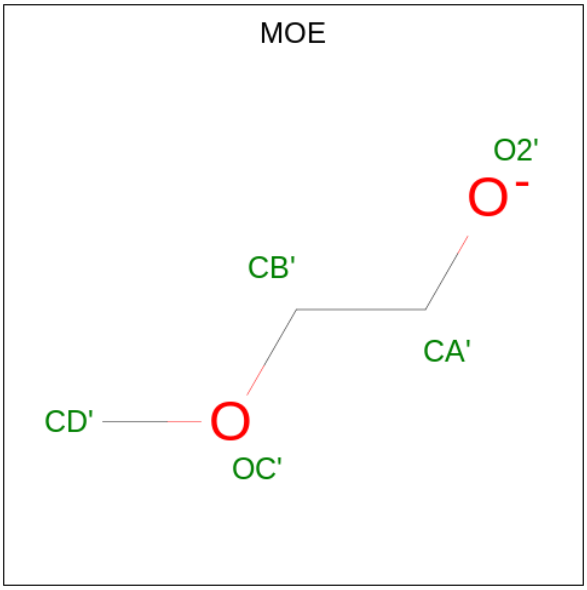
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 11 7 4	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total C O 11 7 4	0	0

- Molecule 4 is METHOXY-ETHOXYL (three-letter code: MOE) (formula: $C_3H_7O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 5 3 2	0	0

- Molecule 5 is water.

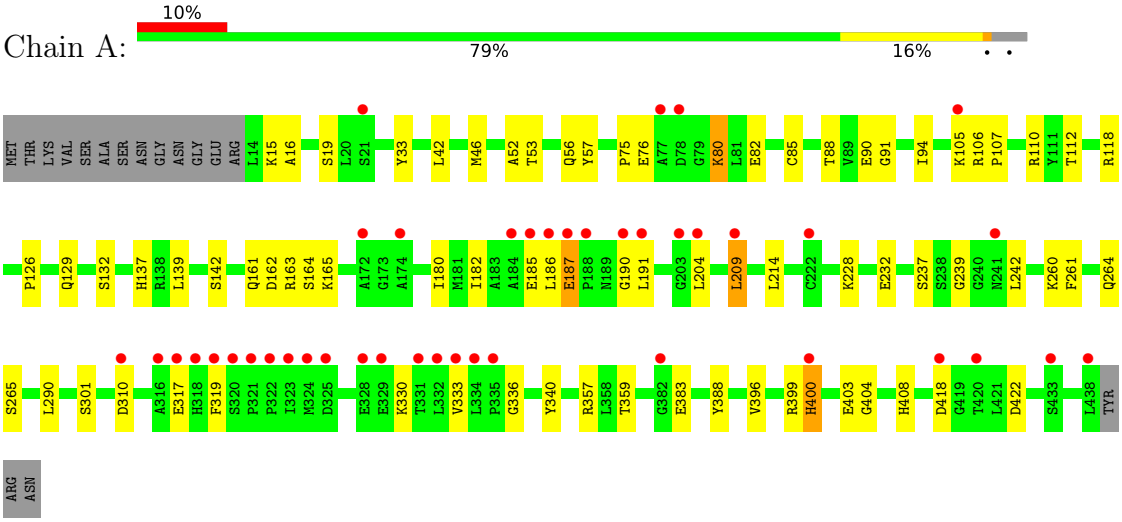
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	48	Total O 48 48	0	0
5	B	57	Total O 57 57	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

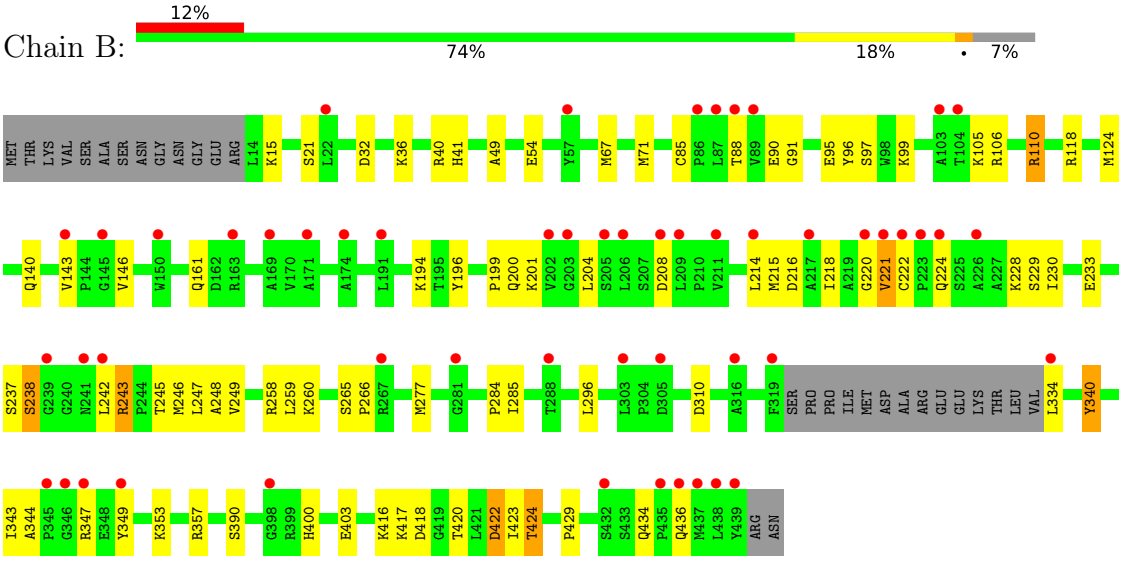
• Molecule 1: Dimethylallyl tryptophan synthase GliD1

Chain A:



• Molecule 1: Dimethylallyl tryptophan synthase GliD1

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 63 2 2	Depositor
Cell constants a, b, c, α, β, γ	202.21Å 202.21Å 111.04Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	31.45 – 2.27 31.45 – 2.27	Depositor EDS
% Data completeness (in resolution range)	99.8 (31.45-2.27) 99.8 (31.45-2.27)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.66 (at 2.26Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.213 , 0.252 0.223 , 0.255	Depositor DCC
R_{free} test set	59899 reflections (3.23%)	wwPDB-VP
Wilson B-factor (Å^2)	53.4	Xtriage
Anisotropy	0.042	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 53.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	6758	wwPDB-VP
Average B, all atoms (Å^2)	57.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.72% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: MOE, PPV, TOE

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	0.43	0/3443	0.64	0/4685
1	B	0.44	0/3347	0.65	0/4553
All	All	0.43	0/6790	0.65	0/9238

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	3351	0	3292	47	0
1	B	3257	0	3189	52	0
2	A	9	0	0	1	0
2	B	9	0	0	0	0
3	A	11	0	16	0	0
3	B	11	0	16	2	0
4	B	5	0	7	1	0
5	A	48	0	0	0	0
5	B	57	0	0	0	0
All	All	6758	0	6520	98	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 8.

All (98) 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:222:CYS:HB2	1:B:228:LYS:HE2	1.55	0.88
1:B:88:THR:HG22	1:B:90:GLU:H	1.38	0.85
1:B:196:TYR:HB3	1:B:246:MET:HE1	1.55	0.85
1:A:162:ASP:HB3	1:A:165:LYS:HD2	1.62	0.80
1:A:88:THR:HG22	1:A:90:GLU:H	1.49	0.78
1:B:243:ARG:NH1	1:B:266:PRO:HD3	2.00	0.77
1:B:196:TYR:HB3	1:B:246:MET:CE	2.16	0.74
1:B:222:CYS:O	1:B:228:LYS:HE3	1.89	0.72
1:A:319:PHE:HE1	1:A:404:GLY:HA2	1.56	0.70
1:B:105:LYS:HA	1:B:105:LYS:HE2	1.77	0.67
1:B:99:LYS:HA	1:B:424:THR:HB	1.79	0.64
1:A:186:LEU:HA	1:A:191:LEU:HD22	1.80	0.63
1:B:237:SER:OG	1:B:238:SER:N	2.34	0.60
1:A:88:THR:HG22	1:A:90:GLU:N	2.17	0.60
1:A:190:GLY:O	1:A:191:LEU:HD23	2.01	0.60
1:B:417:LYS:HD3	1:B:417:LYS:H	1.67	0.59
1:B:247:LEU:HD12	1:B:248:ALA:N	2.18	0.58
1:B:85:CYS:O	1:B:91:GLY:HA2	2.05	0.56
1:B:229:SER:O	1:B:233:GLU:HG3	2.05	0.56
1:A:264:GLN:OE1	1:A:357:ARG:NH1	2.27	0.56
1:B:242:LEU:HD23	1:B:265:SER:HB2	1.88	0.56
1:A:228:LYS:O	1:A:232:GLU:HG2	2.05	0.56
1:A:161:GLN:HG3	1:B:161:GLN:HG3	1.88	0.55
1:A:137:HIS:CG	1:B:124:MET:HB2	2.42	0.55
1:B:400:HIS:HB2	1:B:403:GLU:HG3	1.89	0.54
1:B:220:GLY:O	1:B:222:CYS:N	2.37	0.54
1:A:396:VAL:HG21	1:A:399:ARG:HG2	1.90	0.53
1:A:400:HIS:HB2	1:A:403:GLU:OE2	2.09	0.53
1:B:54:GLU:CD	1:B:54:GLU:H	2.13	0.53
1:A:209:LEU:HD13	1:A:214:LEU:HD21	1.90	0.52
1:B:96:TYR:CE2	1:B:429:PRO:HD3	2.45	0.52
1:B:99:LYS:HE3	1:B:422:ASP:OD2	2.10	0.52
1:A:105:LYS:HE3	1:A:106:ARG:H	1.76	0.51
1:B:199:PRO:HG2	1:B:214:LEU:HG	1.93	0.51
1:A:85:CYS:O	1:A:91:GLY:HA2	2.11	0.50
1:B:230:ILE:HD12	1:B:230:ILE:H	1.75	0.50
1:B:194:LYS:HE3	1:B:196:TYR:OH	2.12	0.49
1:A:388:TYR:OH	1:A:408:HIS:NE2	2.36	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:343:ILE:O	1:B:343:ILE:HD12	2.13	0.48
1:B:347:ARG:HD3	1:B:349:TYR:O	2.13	0.48
1:B:245:THR:HB	4:B:502:MOE:HB'1	1.95	0.48
1:B:201:LYS:HB2	1:B:208:ASP:O	2.14	0.48
1:A:129:GLN:HG2	1:A:180:ILE:HD12	1.95	0.47
1:B:249:VAL:HG12	1:B:259:LEU:HD12	1.95	0.47
1:B:296:LEU:HD22	1:B:423:ILE:HD12	1.96	0.47
1:A:185:GLU:HB3	1:A:187:GLU:CG	2.44	0.47
1:A:186:LEU:HA	1:A:191:LEU:CD2	2.42	0.47
1:B:417:LYS:H	1:B:417:LYS:CD	2.27	0.47
1:A:242:LEU:CD2	1:A:265:SER:HB2	2.45	0.46
1:A:317:GLU:O	1:A:319:PHE:N	2.43	0.46
1:B:334:LEU:O	1:B:357:ARG:NH1	2.43	0.46
1:B:418:ASP:OD1	1:B:420:THR:HG23	2.16	0.45
1:A:242:LEU:HD23	1:A:265:SER:HB2	1.99	0.45
3:B:503:TOE:H12	3:B:503:TOE:H9	1.61	0.45
1:A:16:ALA:HA	1:A:57:TYR:CE1	2.51	0.45
1:B:32:ASP:O	1:B:36:LYS:HG3	2.17	0.44
1:A:110:ARG:HE	1:A:110:ARG:HB2	1.59	0.44
1:B:41:HIS:CE1	1:B:429:PRO:HB3	2.52	0.44
1:B:258:ARG:HA	1:B:344:ALA:HB2	1.99	0.44
1:A:42:LEU:O	1:A:46:MET:HG3	2.17	0.44
1:B:67:MET:O	1:B:71:MET:HG3	2.18	0.44
1:B:260:LYS:HD3	1:B:340:TYR:CE2	2.53	0.43
1:A:76:GLU:OE1	1:A:80:LYS:HG2	2.18	0.43
1:A:333:VAL:HG13	1:A:359:THR:HG22	2.01	0.43
1:A:106:ARG:HG3	1:A:107:PRO:O	2.19	0.43
1:A:185:GLU:HB3	1:A:187:GLU:HG2	2.00	0.43
1:A:330:LYS:HB3	1:A:330:LYS:HE2	1.88	0.43
1:B:353:LYS:HE3	1:B:353:LYS:HB2	1.76	0.43
1:A:132:SER:HB3	1:A:182:ILE:HD11	1.99	0.43
1:A:139:LEU:HD23	1:A:139:LEU:HA	1.89	0.43
1:A:162:ASP:HB3	1:A:165:LYS:CD	2.41	0.43
1:A:110:ARG:HD2	1:A:185:GLU:HG2	1.99	0.43
1:A:418:ASP:OD1	1:A:418:ASP:N	2.35	0.43
1:B:334:LEU:O	1:B:357:ARG:NH2	2.50	0.42
1:B:416:LYS:HE3	1:B:416:LYS:HB3	1.73	0.42
1:B:49:ALA:O	1:B:106:ARG:HD3	2.20	0.42
1:B:97:SER:OG	1:B:110:ARG:NE	2.36	0.42
1:A:52:ALA:O	1:A:56:GLN:HG3	2.20	0.42
1:A:260:LYS:NZ	2:A:501:PPV:O32	2.52	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:15:LYS:C	1:B:15:LYS:HD3	2.40	0.42
1:A:15:LYS:HD3	1:A:53:THR:HG21	2.01	0.42
1:B:296:LEU:CD2	1:B:423:ILE:HD12	2.49	0.42
1:A:94:ILE:HA	1:A:112:THR:O	2.20	0.41
1:B:284:PRO:O	1:B:285:ILE:HD13	2.20	0.41
1:A:126:PRO:HD2	1:A:163[A]:ARG:HD3	2.02	0.41
1:A:237:SER:C	1:A:239:GLY:H	2.23	0.41
1:B:95:GLU:OE1	3:B:503:TOE:H8	2.20	0.41
1:A:110:ARG:HG2	1:A:185:GLU:HA	2.01	0.41
1:B:247:LEU:HD12	1:B:248:ALA:H	1.85	0.41
1:B:140:GLN:HA	1:B:146:VAL:HB	2.01	0.41
1:A:399:ARG:HG3	1:A:400:HIS:O	2.21	0.40
1:A:265:SER:O	1:A:336:GLY:HA3	2.21	0.40
1:A:290:LEU:HD23	1:A:290:LEU:HA	1.92	0.40
1:B:243:ARG:CZ	1:B:266:PRO:HD3	2.51	0.40
1:A:33:TYR:CE2	1:A:75:PRO:HD2	2.57	0.40
1:B:220:GLY:C	1:B:222:CYS:H	2.22	0.40
1:B:344:ALA:HB3	1:B:347:ARG:NH1	2.36	0.40
1:A:162:ASP:CB	1:A:165:LYS:HD2	2.40	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	424/441 (96%)	404 (95%)	20 (5%)	0	100 100
1	B	409/441 (93%)	387 (95%)	21 (5%)	1 (0%)	44 53
All	All	833/882 (94%)	791 (95%)	41 (5%)	1 (0%)	48 59

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	221	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	362/375 (96%)	346 (96%)	16 (4%)	24 33
1	B	351/375 (94%)	329 (94%)	22 (6%)	15 19
All	All	713/750 (95%)	675 (95%)	38 (5%)	19 25

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	19	SER
1	A	80	LYS
1	A	82	GLU
1	A	118	ARG
1	A	142	SER
1	A	164	SER
1	A	187	GLU
1	A	204	LEU
1	A	209	LEU
1	A	261	PHE
1	A	301	SER
1	A	310	ASP
1	A	340	TYR
1	A	383	GLU
1	A	400	HIS
1	A	422	ASP
1	B	21	SER
1	B	40	ARG
1	B	110	ARG
1	B	118	ARG
1	B	143	VAL
1	B	200	GLN
1	B	204	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	215	MET
1	B	216	ASP
1	B	218	ILE
1	B	221	VAL
1	B	224	GLN
1	B	238	SER
1	B	243	ARG
1	B	277	MET
1	B	310	ASP
1	B	340	TYR
1	B	390	SER
1	B	422	ASP
1	B	424	THR
1	B	434	GLN
1	B	436	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	224	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

5 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
4	MOE	B	502	-	4,4,4	0.33	0	3,3,3	0.34	0
3	TOE	B	503	-	10,10,10	0.37	0	9,9,9	0.37	0
3	TOE	A	502	-	10,10,10	0.37	0	9,9,9	0.32	0
2	PPV	A	501	-	6,8,8	0.98	0	13,13,13	1.29	1 (7%)
2	PPV	B	501	-	6,8,8	0.92	0	13,13,13	1.28	1 (7%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	MOE	B	502	-	-	1/2/2/2	-
3	TOE	B	503	-	-	3/8/8/8	-
3	TOE	A	502	-	-	5/8/8/8	-
2	PPV	A	501	-	-	0/6/6/6	-
2	PPV	B	501	-	-	0/6/6/6	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	501	PPV	P2-OPP-P1	-3.47	120.92	132.83
2	A	501	PPV	P2-OPP-P1	-3.16	122.00	132.83

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	502	TOE	OC'-CD'-CE'-OF'
3	B	503	TOE	CH'-CG'-OF'-CE'
3	B	503	TOE	OC'-CD'-CE'-OF'
4	B	502	MOE	CA'-CB'-OC'-CD'
3	A	502	TOE	CH'-CG'-OF'-CE'

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	A	502	TOE	CA'-CB'-OC'-CD'
3	A	502	TOE	CD'-CE'-OF'-CG'
3	A	502	TOE	CG'-CH'-OI'-CK'
3	B	503	TOE	OF'-CG'-CH'-OI'

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	502	MOE	1	0
3	B	503	TOE	2	0
2	A	501	PPV	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	418/441 (94%)	0.58	42 (10%)	14	15	12, 54, 87, 106	3 (0%)
1	B	394/441 (89%)	0.66	53 (13%)	8	9	25, 53, 84, 120	3 (0%)
All	All	812/882 (92%)	0.62	95 (11%)	10	11	12, 54, 85, 120	6 (0%)

All (95) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	78	ASP	24.0
1	B	435	PRO	13.5
1	B	241	ASN	7.7
1	B	217	ALA	6.7
1	A	318	HIS	5.9
1	B	220	GLY	5.8
1	A	191	LEU	5.6
1	B	221	VAL	5.4
1	B	143	VAL	5.0
1	B	239	GLY	4.9
1	B	87	LEU	4.8
1	A	323	ILE	4.6
1	B	436	GLN	4.5
1	B	206	LEU	4.4
1	B	319	PHE	4.3
1	B	208	ASP	4.3
1	B	438	LEU	4.2
1	B	334	LEU	4.2
1	A	186	LEU	3.8
1	A	187	GLU	3.8
1	B	223	PRO	3.8
1	B	191	LEU	3.7
1	A	335	PRO	3.7
1	B	209	LEU	3.7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	382	GLY	3.6
1	B	88	THR	3.6
1	A	184	ALA	3.5
1	B	145	GLY	3.5
1	B	211	VAL	3.5
1	B	345	PRO	3.4
1	A	331	THR	3.4
1	A	438	LEU	3.4
1	B	174	ALA	3.4
1	A	185	GLU	3.4
1	A	204	LEU	3.3
1	B	205	SER	3.2
1	A	321	PRO	3.2
1	A	319	PHE	3.2
1	A	77	ALA	3.2
1	B	226	ALA	3.2
1	A	334	LEU	3.2
1	A	328	GLU	3.2
1	A	324	MET	3.2
1	A	174	ALA	3.1
1	B	222	CYS	3.1
1	A	317	GLU	3.1
1	B	57	TYR	3.1
1	B	316	ALA	3.1
1	A	322	PRO	3.1
1	A	190	GLY	3.0
1	B	163[A]	ARG	3.0
1	B	104	THR	3.0
1	B	169	ALA	3.0
1	A	420	THR	2.9
1	B	437	MET	2.9
1	A	400	HIS	2.9
1	A	188	PRO	2.9
1	B	22	LEU	2.9
1	A	329	GLU	2.7
1	B	349	TYR	2.7
1	A	222	CYS	2.7
1	B	203	GLY	2.7
1	B	303	LEU	2.7
1	B	242	LEU	2.6
1	A	21	SER	2.6
1	A	316	ALA	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	171	ALA	2.6
1	A	433	SER	2.6
1	B	224	GLN	2.6
1	B	305	ASP	2.6
1	B	432	SER	2.6
1	B	281	GLY	2.5
1	A	310	ASP	2.5
1	A	203	GLY	2.5
1	A	209	LEU	2.5
1	B	150	TRP	2.5
1	B	202	VAL	2.5
1	A	241	ASN	2.5
1	B	347	ARG	2.5
1	A	105	LYS	2.4
1	A	332	LEU	2.4
1	B	398	GLY	2.4
1	A	172	ALA	2.4
1	B	214	LEU	2.4
1	A	320	SER	2.3
1	B	439	TYR	2.3
1	A	333	VAL	2.2
1	B	86	PRO	2.2
1	B	103	ALA	2.2
1	B	267	ARG	2.2
1	A	418	ASP	2.2
1	B	346	GLY	2.1
1	B	288	THR	2.1
1	B	89	VAL	2.1
1	A	325	ASP	2.1

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} 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	TOE	B	503	11/11	0.79	0.27	20,20,20,20	0
4	MOE	B	502	5/5	0.87	0.23	20,20,20,20	0
3	TOE	A	502	11/11	0.90	0.26	20,20,20,20	0
2	PPV	B	501	9/9	0.91	0.09	53,58,77,80	0
2	PPV	A	501	9/9	0.93	0.11	45,51,85,87	0

6.5 Other polymers (i)

There are no such residues in this entry.