wwPDB X-ray Structure Validation Summary Report (i)

Aug 15, 2023 – 06:27 PM EDT

PDB ID	:	1T03
Title	:	HIV-1 reverse transcriptase crosslinked to tenofovir terminated template-primer (complex P)
Authors	:	Tuske, S.; Sarafianos, S.G.; Ding, J.; Arnold, E.
Deposited on	:	2004-04-07
Resolution	:	3.10 Å(reported)

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

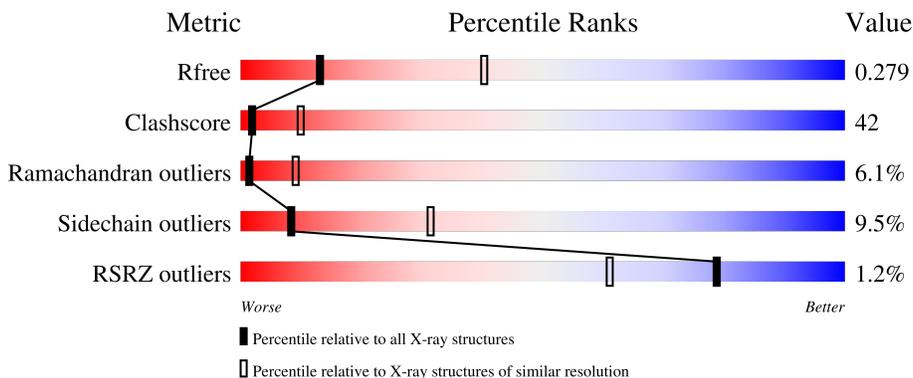|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.10 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.
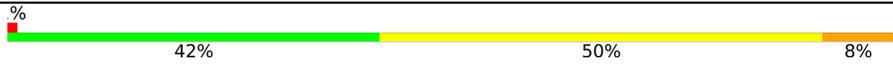
Metric	Percentile Ranks	Value
Rfree		0.279
Clashscore		42
Ramachandran outliers		6.1%
Sidechain outliers		9.5%
RSRZ outliers		1.2%

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	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	T	27	4% / 33% / 44% / 7% / 15%
2	P	21	24% / 52% / 19% / 5%
3	A	558	2% / 41% / 51% / 8%
4	B	437	36% / 51% / 10% / · ·
5	L	211	39% / 53% / 7%

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Mol	Chain	Length	Quality of chain
6	H	225	

%

42% 50% 8%

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 12252 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 DNA chain called Synthetic oligonucleotide template.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	T	23	Total	C	N	O	P	0	0	0
			473	223	95	133	22			

- Molecule 2 is a DNA chain called Synthetic oligonucleotide primer.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	P	20	Total	C	N	O	P	0	2	0
			434	209	80	125	20			

- Molecule 3 is a protein called POL polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	A	558	Total	C	N	O	S	15	0	0
			4482	2901	741	832	8			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	258	CYS	GLN	engineered mutation	UNP P03366
A	280	SER	CYS	engineered mutation	UNP P03366

- Molecule 4 is a protein called POL polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	B	429	Total	C	N	O	S	4	0	0
			3534	2304	586	637	7			

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	280	SER	CYS	engineered mutation	UNP P03366
B	430	GLY	-	cloning artifact	UNP P03366

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Chain	Residue	Modelled	Actual	Comment	Reference
B	431	GLY	-	cloning artifact	UNP P03366
B	432	HIS	-	expression tag	UNP P03366
B	433	HIS	-	expression tag	UNP P03366
B	434	HIS	-	expression tag	UNP P03366
B	435	HIS	-	expression tag	UNP P03366
B	436	HIS	-	expression tag	UNP P03366
B	437	HIS	-	expression tag	UNP P03366

- Molecule 5 is a protein called monoclonal antibody light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	L	211	1643	1025	270	342	6	0	0	0

- Molecule 6 is a protein called monoclonal antibody heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	H	225	1685	1060	276	340	9	0	0	0

- Molecule 7 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
7	A	1	1	1	0	0

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.
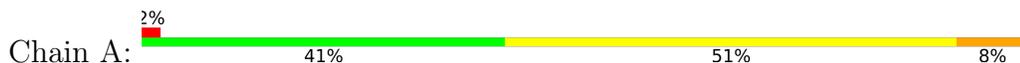
• Molecule 1: Synthetic oligonucleotide template

Chain T:

• Molecule 2: Synthetic oligonucleotide primer

Chain P:

• Molecule 3: POL polyprotein

Chain A:

K451 L452 G453 K454 A455 G456 Y457 V458 T459 N460 K461 G462 R463 Q464 K465 V466 L469 T470 N471 T472 T473 N474 Q475 K476 T477 E478 L479 Q480 A481 I482 Y483 L484 A485 L486 Q487 D488 S489 V493 N494 I495 V496 T497 D498 S499 Q500 Y501 A502 L503 G504 I505 I506 Q507 A508 Q509 P510 D511 K512 S513

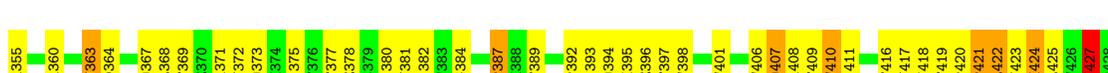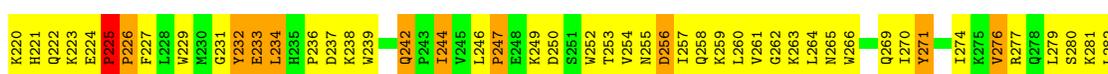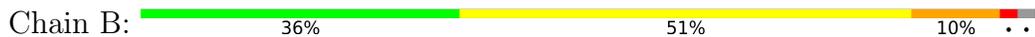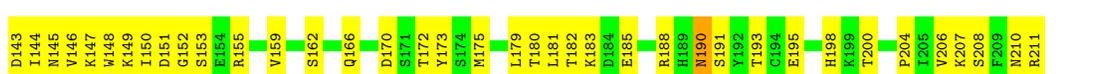E514 S515 E516 L517 V518 N519 Q520 I521 L525 K528 E529 K530 V531 Y532 L533 A534 W535 V536 P537 A538 H539 I542 G543 G544 N545 E546 Q547 V548 D549 K550 L551 V552 S553 A554 G555 I556 R557 K558

• Molecule 4: POL polyprotein

Chain B:

36% 51% 10% • •

P1 I2 S3 P4 I5 E6 T7 V8 P9 V10 K11 L12 K13 G18 Q23 W24 T27 E28 E29 K30 I31 K32 A33 L34 V35 E36 I37 C38 M41 E42 K43 E44 G45 K46 I47 I50 P55 Y56 N57 T58 P59 V60 F61 A62 I63 D67 S68 T69 K70 W71 R72 K73 L74

V75 D76 F77 R78 E79 L80 N81 K82 R83 T84 Q85 D86 F87 G93 I94 P95 H96 P97 A98 G99 L100 K101 K104 S105 V106 T107 V108 L109 D110 V111 G112 D113 A114 Y115 F116 S117 V118 D121 E122 D123 F124 R125 K126 Y127 T131 I132 I135 P140 G141 Q145 Y146 N147 V148

L149 P150 Q151 G152 W153 K154 G155 S156 P157 A158 I159 F160 Q161 S162 S163 M164 T165 K166 I167 I178 V179 I180 Y181 P170 F171 N175 Y188 V189 G190 S191 D192 L193 E194 I195 G196 Q197 H198 R199 T200 K201 L205 R206 Q207 H208 L209 L210 R211 W212 G213 L214 T215 T216 P217 D218 K219

K220 H221 Q222 K223 E224 P225 P226 F227 L228 W229 M230 G231 Y232 E233 L234 H235 P236 D237 K238 W239 Q242 P243 I244 V245 L246 P247 E248 K249 D250 S251 W252 T253 V254 N255 D256 I257 Q258 K259 L260 V261 G262 K263 L264 N266 W266 Q269 I270 Y271 I274 K275 V276 R277 Q278 L279 S280 K281 L282

L283 T286 K287 A288 L289 T290 E291 V292 I293 P294 L295 T296 E297 E298 A299 E300 L301 E302 L303 A304 E305 N306 R307 E312 P313 V314 H315 G316 V317 K323 D324 L325 I326 A327 E328 I329 Q330 K331 Q332 G333 Q334 G335 Q336 W337 T338 Y339 Q340 I341 Y342 Q343 N348 T351 G352 K353 Y354

A355 A360 N363 D364 Q367 L368 T369 E370 A371 V372 Q373 K374 I375 T376 T377 E378 S379 I380 V381 I382 W383 G384 P387 K388 F389 P392 I393 Q394 K395 E396 T397 W398 W401 V406 Q407 A408 T409 W410 I411 F416 V417 N418 T419 P420 P421 L422 V423 K424 L425 W426 Y427 Q428

L429 GLY GLY HIS HIS HIS HIS HIS HIS

• Molecule 5: monoclonal antibody light chain

Chain L:

39% 53% 7%

D1 I2 Q3 M4 T5 Q6 T7 T8 L11 L15 G16 D17 R18 V19 T20 C23 Q27 D28 I29 S30 S31 Y32 L33 N34 W35 Y36 Q37 Q38 K39 L46 L47 I48 Y49 Y50 T51 S52 S53 L54 H55 V58 S59 S60 R61 F62 S63 G66 S67 G68 T69 D70 Y71 S72 L73

T74 I75 S76 N77 L78 E79 P80 E81 D82 I83 A84 T85 Y86 Y87 C88 Q89 Q90 Y91 S92 K93 F94 P95 W96 T97 F98 G101 L104 I106 K107 R108 A109 D110 V115 S116 I117 F118 P119 P120 S121 S122 L125 G129 A130 S131 V132 V133 C134 F135 L136 N137 Y140 P141 K142

D143 I144 N145 V146 K147 W148 K149 I150 D151 G152 S153 E154 R155 V159 S162 Q166 D170 S171 T172 Y173 S174 M175 L179 T180 L181 T182 L183 D184 E185 R188 H189 N190 S191 Y192 T193 C194 E195 H198 K199 T200 P204 I205 V206 K207 S208 F209 N210 R211

• Molecule 6: monoclonal antibody heavy chain

Chain H:

% 42% 50% 8%

Q1 I2 T3 L4 K5 E6 S7 G8 P9 G10 I11 V12 Q13 Q16 P17 F18 T21 C22 T23 F24 F27 S28 L29 S30 T31 S32 G33 I34 G35 W38 I39 R40 Q41 P42 S43 L47 E48 W49 L50 I53 W54 W55 D56 D57 D58 N59 R60 Y61 N62 P63 S64 L69 T70

V71 S72 K73 N77 N78 Q79 A80 F81 L82 N83 M84 M85 T86 V87 E88 T89 A90 D91 T92 A93 I94 Y95 Y96 C97 A98 Q99 S104 V105 T106 D107 S108 A109 M110 D111 H112 W113 G116 T117 S118 V119 T120 V121 S122 S123 A124 K125 T126 T127 P128 P129 P133 L134 S138 A139 A140

Q141 T142 N143 S144 T147 L148 G149 C150 L151 V152 Y155 F156 P157 E158 P159 V160 T161 V162 T163 W164 N165 S166 L169 S170 H174 P177 D183 L184 Y185 T186 L187 S188 S189 S190 V191 T192 S195 S196 T197 W198 P199 S200 E201 T202 V203 T204 C205 N206 V207 A208 H209 P210 A211

S212 K215 V216 D217 I220 V221 P222 C225

4   Data and refinement statistics   ⓘ

Property	Value	Source
Space group	P 32 1 2	Depositor
Cell constants a, b, c, α, β, γ	166.78Å 166.78Å 221.13Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 3.10 32.57 – 3.10	Depositor EDS
% Data completeness (in resolution range)	93.9 (20.00-3.10) 95.0 (32.57-3.10)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.01 (at 3.12Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.256 , 0.295 0.237 , 0.279	Depositor DCC
R_{free} test set	2454 reflections (4.04%)	wwPDB-VP
Wilson B-factor (Å^2)	70.1	Xtriage
Anisotropy	0.010	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 45.5	EDS
L-test for twinning[2]	$< |L| > = 0.43, < L^2 > = 0.26$	Xtriage
Estimated twinning fraction	0.057 for -h,-k,l	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	12252	wwPDB-VP
Average B, all atoms (Å^2)	64.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.92% 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: MRG, TFO, MG

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	T	0.73	2/532 (0.4%)	1.04	4/820 (0.5%)
2	P	0.90	2/420 (0.5%)	1.01	3/640 (0.5%)
3	A	0.45	1/4600 (0.0%)	0.65	0/6259
4	B	0.52	1/3639 (0.0%)	0.74	3/4949 (0.1%)
5	L	0.43	0/1681	0.71	1/2283 (0.0%)
6	H	0.48	0/1729	0.77	0/2372
All	All	0.51	6/12601 (0.0%)	0.74	11/17323 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
4	B	0	1

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	248	GLU	CD-OE2	7.06	1.33	1.25
2	P	821[A]	DC	C2'-C1'	6.65	1.58	1.52
2	P	821[B]	DC	C2'-C1'	6.65	1.58	1.52
1	T	705	DA	C3'-C2'	-6.58	1.44	1.52
4	B	212	TRP	CB-CG	-5.57	1.40	1.50

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	706	DT	O5'-P-OP1	8.87	121.34	110.70
1	T	705	DA	OP1-P-O3'	-8.69	86.08	105.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	705	DA	N9-C1'-C2'	-7.34	98.66	112.60
2	P	821[A]	DC	N1-C1'-C2'	-7.32	98.69	112.60
2	P	821[B]	DC	N1-C1'-C2'	-7.32	98.69	112.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	B	188	TYR	Sidechain

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	T	473	0	257	32	0
2	P	434	0	248	23	0
3	A	4482	0	4485	398	0
4	B	3534	0	3568	318	1
5	L	1643	0	1565	160	0
6	H	1685	0	1640	119	0
7	A	1	0	0	0	0
All	All	12252	0	11763	1008	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 42.

The worst 5 of 1008 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)
3:A:501:TYR:CE1	3:A:505:ILE:HD11	1.86	1.10
3:A:50:ILE:HD11	3:A:145:GLN:HB2	1.10	1.09
3:A:344:GLU:HG3	3:A:345:PRO:HD2	1.36	1.07
3:A:138:GLU:HG2	3:A:139:THR:H	1.10	1.06
5:L:61:ARG:HB2	5:L:76:SER:HB3	1.36	1.06

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the sym-

metry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:2:ILE:O	4:B:2:ILE:O[6_565]	1.67	0.53

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	
3	A	556/558 (100%)	431 (78%)	92 (16%)	33 (6%)	1	10
4	B	427/437 (98%)	324 (76%)	75 (18%)	28 (7%)	1	7
5	L	209/211 (99%)	165 (79%)	34 (16%)	10 (5%)	2	14
6	H	223/225 (99%)	185 (83%)	23 (10%)	15 (7%)	1	7
All	All	1415/1431 (99%)	1105 (78%)	224 (16%)	86 (6%)	1	9

5 of 86 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	67	ASP
3	A	138	GLU
3	A	273	GLY
3	A	466	VAL
3	A	474	ASN

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	
3	A	485/498 (97%)	444 (92%)	41 (8%)	10	37
4	B	388/397 (98%)	343 (88%)	45 (12%)	5	22
5	L	190/190 (100%)	178 (94%)	12 (6%)	18	48
6	H	196/196 (100%)	174 (89%)	22 (11%)	6	24
All	All	1259/1281 (98%)	1139 (90%)	120 (10%)	8	31

5 of 120 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	B	220	LYS
6	H	123	SER
4	B	324	ASP
6	H	111	ASP
6	H	200	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 43 such sidechains are listed below:

Mol	Chain	Res	Type
4	B	363	ASN
5	L	138	ASN
4	B	373	GLN
5	L	77	ASN
5	L	210	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

3 non-standard protein/DNA/RNA residues 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	TFO	P	822[B]	2	13,19,20	1.15	2 (15%)	7,26,29	1.05	1 (14%)
2	MRG	P	817	2,1	18,24,29	1.15	2 (11%)	19,35,42	0.91	2 (10%)
2	TFO	P	822[A]	2	13,19,20	3.79	6 (46%)	7,26,29	2.12	2 (28%)

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	TFO	P	822[B]	2	-	0/5/9/10	0/2/2/2
2	MRG	P	817	2,1	-	0/3/21/27	0/3/3/3
2	TFO	P	822[A]	2	-	2/5/9/10	0/2/2/2

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	P	822[A]	TFO	C6'-N9	-8.28	1.39	1.48
2	P	822[A]	TFO	O9'-C9'	7.59	1.52	1.42
2	P	822[A]	TFO	C8'-C7'	5.65	1.73	1.51
2	P	822[A]	TFO	C4-N3	-3.83	1.30	1.35
2	P	817	MRG	C5-C6	-2.83	1.41	1.47

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	P	822[A]	TFO	C5-C6-N6	4.32	126.91	120.35
2	P	817	MRG	O3'-C3'-C2'	-2.77	101.00	110.90
2	P	822[A]	TFO	N3-C2-N1	-2.06	125.45	128.68
2	P	822[B]	TFO	C5-C6-N6	2.04	123.46	120.35
2	P	817	MRG	O6-C6-C5	2.03	128.34	124.37

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	P	822[A]	TFO	N9-C6'-C7'-O9'
2	P	822[A]	TFO	N9-C6'-C7'-C8'

There are no ring outliers.

3 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	P	822[B]	TFO	5	0
2	P	817	MRG	3	0
2	P	822[A]	TFO	2	0

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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(Å²)	Q<0.9
1	T	23/27 (85%)	0.11	1 (4%)	35	17	53, 99, 132, 135	0
2	P	18/21 (85%)	0.08	0	100	100	61, 87, 109, 121	0
3	A	556/558 (99%)	-0.26	12 (2%)	62	41	16, 69, 117, 131	1 (0%)
4	B	429/437 (98%)	-0.41	2 (0%)	91	81	15, 48, 112, 128	1 (0%)
5	L	211/211 (100%)	-0.33	0	100	100	26, 60, 105, 116	0
6	H	225/225 (100%)	-0.44	3 (1%)	77	59	16, 48, 92, 129	0
All	All	1462/1479 (98%)	-0.33	18 (1%)	79	61	15, 58, 113, 135	2 (0%)

The worst 5 of 18 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	B	315	HIS	4.2
6	H	141	GLN	3.7
3	A	222	GLN	3.5
3	A	258	CYS	3.1
6	H	138	SER	2.7

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

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(Å²)	Q<0.9
2	TFO	P	822[A]	18/19	0.80	0.42	85,98,98,98	18
2	TFO	P	822[B]	18/19	0.80	0.42	86,98,98,98	18
2	MRG	P	817	22/27	0.94	0.15	97,109,112,115	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
7	MG	A	559	1/1	0.98	0.26	18,18,18,18	0

6.5 Other polymers (i)

There are no such residues in this entry.