WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Oct 23, 2023 – 05:03 AM EDT

PDB ID	:	3FOE
Title	:	Structural insight into the quinolone-DNA cleavage complex of type IIA topoisomerases
Authors	:	Laponogov, I.; Sohi, M.K.; Veselkov, D.A.; Pan, X.-S.; Sawhney, R.; Thompson, A.W.; McAuley, K.E.; Fisher, L.M.; Sanderson, M.R.
Deposited on	:	2008-12-30
Resolution	:	4.00 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

|		
MolProbity	:	4.02b-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 4.00 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		0.306
Clashscore		39
Ramachandran outliers		11.6%
Sidechain outliers		9.7%
RSRZ outliers		0.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
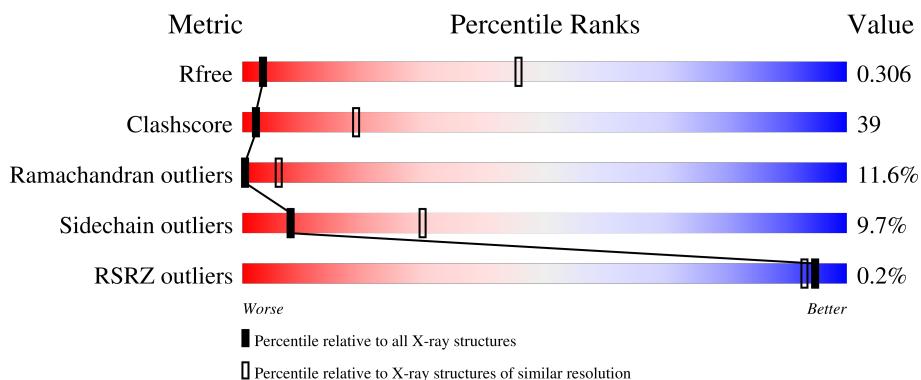
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	1087 (4.30-3.70)
Clashscore	141614	1148 (4.30-3.70)
Ramachandran outliers	138981	1108 (4.30-3.70)
Sidechain outliers	138945	1099 (4.30-3.70)
RSRZ outliers	127900	1028 (4.34-3.66)

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	496	55% 25% 7% 13%
1	B	496	56% 24% 6% 13%
2	C	268	44% 22% 6% • 27%
2	D	268	45% 23% 6% 26%

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Mol	Chain	Length	Quality of chain
3	E	15	7% 73% 20%
4	F	19	5% 21% 58% 21%
5	G	15	27% 60% 13%
6	H	19	5% 16% 68% 16%
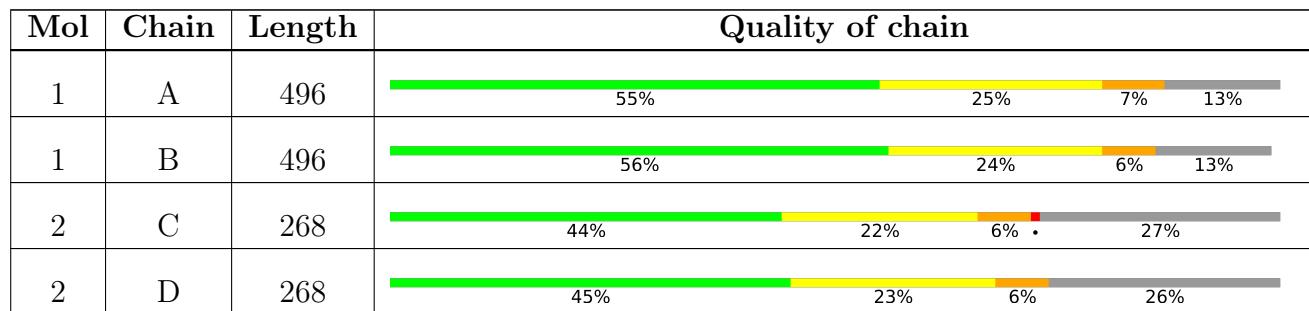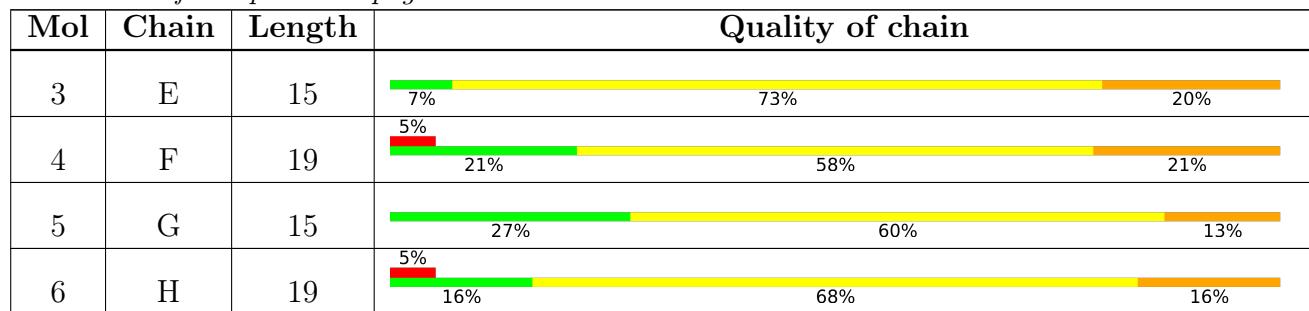
2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 8367 atoms, of which 26 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 DNA topoisomerase 4 subunit A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	432	Total	C	N	O	S	0	0	0
			2426	1483	471	470	2			
1	B	433	Total	C	N	O	S	0	0	0
			2410	1471	473	465	1			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	489	LEU	-	expression tag	UNP P72525
A	490	GLU	-	expression tag	UNP P72525
A	491	HIS	-	expression tag	UNP P72525
A	492	HIS	-	expression tag	UNP P72525
A	493	HIS	-	expression tag	UNP P72525
A	494	HIS	-	expression tag	UNP P72525
A	495	HIS	-	expression tag	UNP P72525
A	496	HIS	-	expression tag	UNP P72525
B	489	LEU	-	expression tag	UNP P72525
B	490	GLU	-	expression tag	UNP P72525
B	491	HIS	-	expression tag	UNP P72525
B	492	HIS	-	expression tag	UNP P72525
B	493	HIS	-	expression tag	UNP P72525
B	494	HIS	-	expression tag	UNP P72525
B	495	HIS	-	expression tag	UNP P72525
B	496	HIS	-	expression tag	UNP P72525

- Molecule 2 is a protein called DNA topoisomerase 4 subunit B.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	196	Total	C	N	O	0	0	0
			1039	628	203	208			
2	D	198	Total	C	N	O	0	0	0
			1042	630	204	208			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	380	MET	-	initiating methionine	UNP Q59961
C	381	GLY	-	expression tag	UNP Q59961
C	382	HIS	-	expression tag	UNP Q59961
C	383	HIS	-	expression tag	UNP Q59961
C	384	HIS	-	expression tag	UNP Q59961
C	385	HIS	-	expression tag	UNP Q59961
C	386	HIS	-	expression tag	UNP Q59961
C	387	HIS	-	expression tag	UNP Q59961
C	388	HIS	-	expression tag	UNP Q59961
C	389	HIS	-	expression tag	UNP Q59961
C	390	HIS	-	expression tag	UNP Q59961
C	391	HIS	-	expression tag	UNP Q59961
C	392	SER	-	expression tag	UNP Q59961
C	393	SER	-	expression tag	UNP Q59961
C	394	GLY	-	expression tag	UNP Q59961
C	395	HIS	-	expression tag	UNP Q59961
C	396	ILE	-	expression tag	UNP Q59961
C	397	ASP	-	expression tag	UNP Q59961
C	398	ASP	-	expression tag	UNP Q59961
C	399	ASP	-	expression tag	UNP Q59961
C	400	ASP	-	expression tag	UNP Q59961
C	401	LYS	-	expression tag	UNP Q59961
C	402	HIS	-	expression tag	UNP Q59961
C	403	MET	-	expression tag	UNP Q59961
D	380	MET	-	initiating methionine	UNP Q59961
D	381	GLY	-	expression tag	UNP Q59961
D	382	HIS	-	expression tag	UNP Q59961
D	383	HIS	-	expression tag	UNP Q59961
D	384	HIS	-	expression tag	UNP Q59961
D	385	HIS	-	expression tag	UNP Q59961
D	386	HIS	-	expression tag	UNP Q59961
D	387	HIS	-	expression tag	UNP Q59961
D	388	HIS	-	expression tag	UNP Q59961
D	389	HIS	-	expression tag	UNP Q59961
D	390	HIS	-	expression tag	UNP Q59961
D	391	HIS	-	expression tag	UNP Q59961
D	392	SER	-	expression tag	UNP Q59961
D	393	SER	-	expression tag	UNP Q59961
D	394	GLY	-	expression tag	UNP Q59961
D	395	HIS	-	expression tag	UNP Q59961
D	396	ILE	-	expression tag	UNP Q59961
D	397	ASP	-	expression tag	UNP Q59961

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Chain	Residue	Modelled	Actual	Comment	Reference
D	398	ASP	-	expression tag	UNP Q59961
D	399	ASP	-	expression tag	UNP Q59961
D	400	ASP	-	expression tag	UNP Q59961
D	401	LYS	-	expression tag	UNP Q59961
D	402	HIS	-	expression tag	UNP Q59961
D	403	MET	-	expression tag	UNP Q59961

- Molecule 3 is a DNA chain called DNA (5'-D(P*AP*CP*CP*AP*AP*GP*GP*TP*CP*AP *TP*GP*AP*AP*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	E	15	306	144	60	87	15	0	0	0

- Molecule 4 is a DNA chain called DNA (5'-D(P*AP*GP*TP*CP*AP*TP*TP*CP*AP*TP *GP*AP*CP*CP*TP*TP*GP*GP*T)-3').

| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
4	F	19	381	179	66	117	19	0	0	0

- Molecule 5 is a DNA chain called DNA (5'-D(P*CP*TP*GP*TP*TP*TP*TP*AP*CP*GP *TP*GP*CP*AP*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
5	G	15	298	140	48	95	15	0	0	0

- Molecule 6 is a DNA chain called DNA (5'-D(P*GP*AP*CP*TP*AP*TP*GP*CP*AP*CP *GP*TP*AP*AP*AP*AP*CP*AP*G)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
6	H	19	389	183	78	109	19	0	0	0

- Molecule 7 is 7-[(3R)-3-aminopyrrolidin-1-yl]-8-chloro-1-cyclopropyl-6-fluoro-4-oxo-1,4-dihydroquinoline-3-carboxylic acid (three-letter code: NFX) (formula: $C_{17}H_{17}ClFN_3O_3$).

NFX
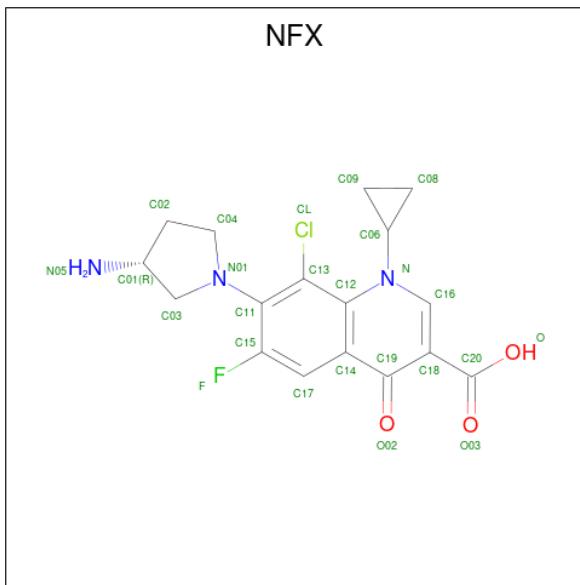
Mol	Chain	Residues	Atoms							ZeroOcc	AltConf
7	F	1	Total	C	Cl	F	H	N	O	0	0
			38	17	1	1	13	3	3		
7	H	1	Total	C	Cl	F	H	N	O	0	0
			38	17	1	1	13	3	3		

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: DNA topoisomerase 4 subunit A

Chain A:

• Molecule 1: DNA topoisomerase 4 subunit A

Chain B:

S395 E396 K402 E403 N404 L405 K406 V407 S408 Y409 T412 E413 E414 Q415 A416 E417 A418 I419 V420 Q423 T430 V434 L435 Q436 E437 E438 E439 R443 M448 A451 K471 K472 K473 F474 A475 L479 SER LEU GLU ASP THR ALA LYS ALA LEU GLU HIS HIS
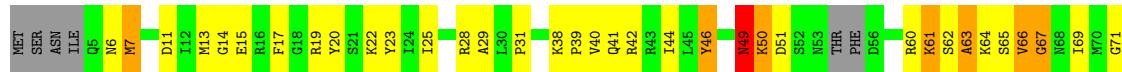
HIS HIS HIS HIS

• Molecule 2: DNA topoisomerase 4 subunit B

Chain C:

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP ASP LYS HIS HIS MET LYS ASN LYS LYS ASP LYS GLY LEU LEU SER GLY LYS LEU T417 P418 K422 Y430 E433 G434 A437 G444 R445 D446 R447 K448 F449 GLN ALA I452 R456

GLY LYS V459 I460 N461 T462 A463 K464 E474 M477 T478 I483 G484 A485 G486 V487 G488 ALA ASP PHE SER ILE GLU ASP ALA ASN TYR ASP K500 I501 I502 I503 D506 A507 D508 G511 A512 H513 I514 Q515 F521 F522 Y523 R524 R527 P528 L529 V530 G533 H534 V535 Y536

I537 G548 E553 GLU VAL A556 L567 ARG LYS GLN PHE GLY K573 G584 E585 M586 ASN ALA D589 Q590 L591 W592 E593 T594 T595 P598 E599 T602 L603 V606 T607 I608 E609 D610 L611 A612 R613 A614 V618 N619 V620 L621 M622 G623 D624 K625 V626 E627 P628 R629 R630 K631

W632 I633 N636 VAL LYS PHE THR LEU GLU GLU ALA THR VAL PHE

• Molecule 2: DNA topoisomerase 4 subunit B

Chain D:

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP ASP LYS HIS HIS MET LYS ASN LYS LYS ASP LYS GLY LEU LEU SER GLY LYS LYS LEU T417 P418 K422 N423 P424 Y430 E433 G434 A437 G444 R445 D446 R447 K448 F449 GLN ALA I452

R456 GLY LYS V459 I460 N461 T462 A463 I483 G484 A485 G486 V487 G488 ALA ASP PHE SER ILE GLU ASP ALA ASN TYR ASP K500 I501 I502 I503 D506 A507 D508 G511 A512 H513 I514 Q515 F521 F522 Y523 R524 Y525 M526 R527 P528 L529 V530 G533 H534 V535 Y536 I537 G548

V555 A556 L567 ARG LYS GLN PHE GLY K573 G584 E585 M586 ASN ALA D589 Q590 L591 W592 E593 T594 T595 P598 E599 T602 L603 V606 I607 I608 E609 D610 L611 A612 R613 A614 L621 M622 G623 D624 K625 V626 E627 P628 R629 R630 K631 W632 I633 N636 VAL LYS PHE THR

LEU GLU GLU ALA THR VAL PHE

• Molecule 3: DNA (5'-D(P*AP*CP*CP*AP*AP*GP*GP*TP*CP*AP*TP*GP*AP*AP*T)-3')

Chain E:

A1 C2 C3 A4 A5 G6 G7 T8 C9 A10 T11 G12 A13 A14 T15

• Molecule 4: DNA (5'-D(P*AP*GP*TP*CP*AP*TP*TP*CP*AP*TP*GP*AP*CP*CP*TP*TP*GP*GP*T)-3')

Chain F:

A1 G2 T3 C4 A5 T6 T7 C8 A9 T10 G11 A12 T15 T16 G17 G18 T19

• Molecule 5: DNA (5'-D(P*CP*TP*GP*TP*TP*TP*TP*AP*CP*GP*TP*GP*CP*AP*T)-3')

Chain G:

C1 T2 G3 T4 T5 T6 T7 A8 T11 G12 C13 A14 T15

• Molecule 6: DNA (5'-D(P*GP*AP*CP*TP*AP*TP*GP*CP*AP*CP*GP*TP*AP*AP*AP*A P*CP*AP*G)-3')

Chain H:

G1 A2 C3 T4 A5 T6 G7 C8 A9 C10 G11 T12 A13 A14 A15 A16 C17 A18 G19
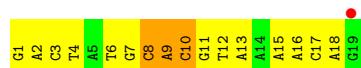
4　Data and refinement statistics　ⓘ

Property	Value	Source
Space group	P 32	Depositor
Cell constants a, b, c, α, β, γ	121.68Å　　121.68Å　　179.39Å 90.00°　　90.00°　　120.00°	Depositor
Resolution (Å)	36.10　–　4.00 36.10　–　3.60	Depositor EDS
% Data completeness (in resolution range)	99.4 (36.10-4.00) 97.1 (36.10-3.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.04 (at 3.56Å)	Xtriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, R_{free}	0.258　,　0.313 0.251　,　0.306	Depositor DCC
R_{free} test set	3354 reflections (10.05%)	wwPDB-VP
Wilson B-factor (Å^2)	171.7	Xtriage
Anisotropy	0.085	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.19 , 299.7	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.410 for -h,-k,l 0.048 for h,-h-k,-l 0.043 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	8367	wwPDB-VP
Average B, all atoms (Å^2)	202.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.49% 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 $< \lvert L \rvert >$, $< L^2 >$ 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: NFX

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	0.35	0/2455	0.50	0/3397
1	B	0.35	0/2439	0.49	0/3380
2	C	0.30	0/1042	0.47	0/1439
2	D	0.27	0/1046	0.43	0/1446
3	E	0.60	0/344	1.51	4/527 (0.8%)
4	F	0.60	0/426	1.44	6/652 (0.9%)
5	G	0.60	0/332	1.67	5/507 (1.0%)
6	H	0.61	0/438	1.66	10/672 (1.5%)
All	All	0.40	0/8522	0.82	25/12020 (0.2%)

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
2	C	0	1

There are no bond length outliers.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	G	12	DG	O4'-C4'-C3'	-17.31	95.61	106.00
3	E	12	DG	O4'-C4'-C3'	-14.89	97.06	106.00
6	H	9	DA	O4'-C1'-N9	-10.58	100.60	108.00
6	H	6	DT	O4'-C1'-N1	10.18	115.13	108.00
6	H	6	DT	O4'-C4'-C3'	-9.29	100.43	106.00
6	H	8	DC	O4'-C4'-C3'	-8.22	101.07	106.00
6	H	10	DC	O4'-C1'-N1	7.92	113.55	108.00
5	G	13	DC	C1'-O4'-C4'	-7.69	102.41	110.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	E	13	DA	C1'-O4'-C4'	-7.43	102.67	110.10
6	H	10	DC	C1'-O4'-C4'	-7.41	102.69	110.10
6	H	8	DC	O4'-C1'-N1	6.81	112.77	108.00
3	E	12	DG	C4'-C3'-C2'	-6.52	97.24	103.10
4	F	8	DC	C1'-O4'-C4'	-6.40	103.70	110.10
6	H	10	DC	O4'-C4'-C3'	-6.30	101.98	104.50
4	F	15	DT	N3-C4-O4	5.99	123.49	119.90
6	H	8	DC	C1'-O4'-C4'	-5.90	104.20	110.10
5	G	12	DG	C4'-C3'-C2'	-5.89	97.80	103.10
5	G	11	DT	O4'-C1'-N1	5.88	112.11	108.00
4	F	10	DT	C1'-O4'-C4'	-5.83	104.27	110.10
6	H	8	DC	P-O3'-C3'	5.60	126.42	119.70
5	G	7	DT	N3-C4-O4	5.56	123.23	119.90
4	F	15	DT	C5-C4-O4	-5.38	121.13	124.90
3	E	11	DT	O4'-C1'-N1	5.26	111.68	108.00
4	F	8	DC	O4'-C1'-N1	5.19	111.64	108.00
4	F	6	DT	O4'-C1'-N1	5.04	111.53	108.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	C	507	ALA	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2426	0	1390	144	0
1	B	2410	0	1366	131	0
2	C	1039	0	595	74	0
2	D	1042	0	590	65	0
3	E	306	0	160	27	0
4	F	381	0	196	22	0
5	G	298	0	152	27	0
6	H	389	0	204	25	0
7	F	25	13	15	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	H	25	13	15	6	0
All	All	8341	26	4683	512	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 39.

All (512) 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)
5:G:12:DG:C8	5:G:12:DG:H5'	1.84	1.12
1:B:130:LEU:HA	1:B:157:ALA:HA	1.33	1.11
2:C:527:ARG:NH1	2:C:527:ARG:HB2	1.66	1.09
1:A:130:LEU:HA	1:A:157:ALA:HA	1.34	1.09
2:C:527:ARG:HB2	2:C:527:ARG:HH11	1.14	1.08
2:D:512:ALA:O	2:D:514:ILE:N	1.88	1.07
2:C:592:TRP:HA	2:C:595:THR:CB	1.87	1.04
2:D:527:ARG:HB2	2:D:527:ARG:NH1	1.72	1.04
2:C:512:ALA:O	2:C:514:ILE:N	1.91	1.03
1:B:79:SER:O	1:B:83:ASP:HB2	1.58	1.01
1:A:79:SER:O	1:A:83:ASP:HB2	1.62	0.98
2:C:621:LEU:O	2:C:623:GLY:N	1.97	0.97
2:D:592:TRP:HA	2:D:595:THR:CB	1.95	0.97
2:C:524:ARG:NH1	2:C:524:ARG:HB3	1.80	0.96
2:D:524:ARG:HB3	2:D:524:ARG:NH1	1.81	0.95
2:D:527:ARG:HB2	2:D:527:ARG:HH11	1.22	0.94
5:G:12:DG:H5'	5:G:12:DG:H8	1.33	0.94
1:B:13:MET:O	1:B:17:PHE:CD1	2.23	0.92
1:A:46:TYR:CD2	1:A:152:PRO:HG2	2.06	0.90
1:A:13:MET:O	1:A:17:PHE:CD1	2.24	0.89
1:A:62:SER:O	1:A:64:LYS:N	2.05	0.89
1:A:363:PHE:O	1:A:366:GLU:N	2.07	0.87
1:B:46:TYR:CD2	1:B:152:PRO:HG2	2.08	0.87
1:A:358:LEU:O	1:A:362:ARG:HG2	1.75	0.87
1:B:358:LEU:O	1:B:362:ARG:HG2	1.73	0.86
1:B:82:TYR:O	1:B:85:MET:N	2.09	0.85
1:A:86:VAL:O	1:A:89:SER:N	2.08	0.85
1:B:62:SER:O	1:B:64:LYS:N	2.10	0.85
1:B:363:PHE:O	1:B:366:GLU:N	2.09	0.84
1:A:82:TYR:O	1:A:85:MET:N	2.11	0.84
2:C:512:ALA:O	2:C:515:GLN:N	2.11	0.83
4:F:11:DG:H2'	4:F:12:DA:C8	2.13	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:359:ALA:HA	1:A:362:ARG:CG	2.09	0.82
1:B:15:GLU:O	1:B:19:ARG:HG2	1.79	0.82
1:A:237:VAL:HA	1:A:324:ASN:O	1.80	0.82
1:A:124:SER:O	1:A:127:ALA:HB3	1.81	0.81
1:B:407:VAL:O	1:B:409:TYR:N	2.13	0.80
1:B:359:ALA:HA	1:B:362:ARG:CG	2.12	0.80
1:A:15:GLU:O	1:A:19:ARG:HG2	1.81	0.79
1:A:23:TYR:CD1	2:C:513:HIS:HB2	2.18	0.79
2:C:444:GLY:O	2:C:446:ASP:N	2.16	0.78
1:B:180:PRO:HB2	1:B:212:ASP:O	1.82	0.78
1:B:412:THR:H	1:B:415:GLN:CB	1.96	0.78
2:C:462:THR:HG21	2:C:521:PHE:HA	1.66	0.78
1:B:181:HIS:HA	1:B:212:ASP:H	1.47	0.78
2:D:512:ALA:O	2:D:515:GLN:N	2.15	0.78
2:D:444:GLY:O	2:D:446:ASP:N	2.15	0.77
1:A:407:VAL:O	1:A:409:TYR:N	2.16	0.77
2:C:618:VAL:HG12	2:C:618:VAL:O	1.85	0.77
1:A:423:GLN:HA	1:B:423:GLN:HA	1.66	0.76
5:G:12:DG:C8	5:G:12:DG:C5'	2.67	0.76
1:B:86:VAL:O	1:B:89:SER:N	2.14	0.76
1:A:62:SER:O	1:A:65:SER:N	2.19	0.76
2:C:508:ASP:O	2:C:511:GLY:N	2.18	0.76
1:B:124:SER:O	1:B:127:ALA:HB3	1.85	0.76
2:D:462:THR:HG21	2:D:521:PHE:HA	1.66	0.76
2:C:611:LEU:O	2:C:613:ARG:N	2.19	0.76
2:C:623:GLY:O	2:C:624:ASP:O	2.04	0.75
2:C:524:ARG:HB3	2:C:524:ARG:CZ	2.15	0.75
1:A:412:THR:H	1:A:415:GLN:CB	1.98	0.75
2:D:524:ARG:HB3	2:D:524:ARG:CZ	2.15	0.74
1:B:29:ALA:HB1	1:B:39:PRO:HG2	1.69	0.74
1:A:341:GLY:H	1:A:344:PRO:HG2	1.51	0.74
1:B:341:GLY:H	1:B:344:PRO:HG2	1.52	0.74
2:D:508:ASP:O	2:D:511:GLY:N	2.21	0.74
1:B:62:SER:O	1:B:65:SER:N	2.20	0.74
2:C:527:ARG:HH11	2:C:527:ARG:CB	1.97	0.73
1:A:180:PRO:HB2	1:A:212:ASP:O	1.88	0.73
1:A:181:HIS:HA	1:A:212:ASP:H	1.53	0.73
1:B:79:SER:O	1:B:83:ASP:CB	2.34	0.73
2:C:621:LEU:O	2:C:622:MET:C	2.28	0.72
1:A:359:ALA:HA	1:A:362:ARG:HG2	1.71	0.72
3:E:5:DA:C4	3:E:6:DG:C8	2.77	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:536:TYR:CB	2:D:603:LEU:O	2.38	0.72
1:A:375:VAL:O	1:A:378:LEU:N	2.23	0.71
2:D:608:ILE:O	2:D:609:GLU:O	2.09	0.71
1:A:29:ALA:HB1	1:A:39:PRO:HG2	1.73	0.70
1:B:412:THR:O	1:B:416:ALA:N	2.24	0.70
5:G:14:DA:C2	5:G:15:DT:C4	2.79	0.70
1:A:28:ARG:O	1:A:28:ARG:HG2	1.91	0.70
2:C:611:LEU:C	2:C:613:ARG:H	1.93	0.70
2:D:611:LEU:O	2:D:613:ARG:N	2.24	0.70
1:B:31:PRO:O	1:B:331:ALA:HB1	1.92	0.70
3:E:6:DG:N2	4:F:15:DT:C2	2.60	0.70
2:D:530:VAL:O	2:D:533:GLY:N	2.25	0.70
2:D:527:ARG:HH11	2:D:527:ARG:CB	2.03	0.69
1:B:375:VAL:O	1:B:378:LEU:N	2.25	0.69
2:C:536:TYR:CB	2:C:603:LEU:O	2.40	0.69
1:B:23:TYR:CD1	2:D:513:HIS:HB2	2.26	0.69
1:B:359:ALA:HA	1:B:362:ARG:HG2	1.74	0.69
6:H:12:DT:H2"	6:H:13:DA:N7	2.07	0.69
1:A:128:GLY:O	1:A:129:TYR:C	2.29	0.68
6:H:11:DG:H2'	6:H:12:DT:C6	2.28	0.68
1:B:84:ALA:O	1:B:87:ARG:HB3	1.93	0.68
1:A:349:TYR:O	1:A:353:ARG:HB2	1.93	0.68
1:A:359:ALA:HA	1:A:362:ARG:HG3	1.76	0.68
5:G:13:DC:C2	5:G:14:DA:N7	2.62	0.68
3:E:4:DA:C2	4:F:17:DG:C2	2.82	0.68
1:A:31:PRO:O	1:A:331:ALA:HB1	1.93	0.67
1:B:128:GLY:O	1:B:129:TYR:C	2.32	0.67
1:B:471:LYS:O	1:B:475:ALA:HA	1.94	0.67
4:F:10:DT:H2"	4:F:11:DG:C8	2.29	0.67
1:A:46:TYR:CE2	1:A:152:PRO:CG	2.76	0.67
6:H:9:DA:H2"	6:H:10:DC:C6	2.30	0.67
1:B:20:TYR:O	1:B:20:TYR:CD2	2.48	0.67
1:B:46:TYR:CE2	1:B:152:PRO:CG	2.77	0.67
1:A:79:SER:O	1:A:83:ASP:CB	2.39	0.67
1:B:46:TYR:CE2	1:B:152:PRO:HG2	2.29	0.67
1:A:403:GLU:O	1:A:405:LEU:N	2.28	0.67
2:C:477:ASN:OD1	2:C:478:THR:N	2.28	0.67
3:E:12:DG:C8	3:E:12:DG:H5"	2.30	0.67
3:E:12:DG:C8	3:E:12:DG:C5'	2.78	0.67
1:A:20:TYR:CD2	1:A:20:TYR:O	2.47	0.66
2:D:611:LEU:C	2:D:613:ARG:H	1.94	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:439:GLU:O	1:A:443:ARG:HB2	1.96	0.66
1:A:28:ARG:O	1:A:28:ARG:CG	2.44	0.66
1:B:471:LYS:O	1:B:475:ALA:HB2	1.96	0.65
2:D:523:TYR:OH	2:D:614:ALA:HB2	1.97	0.65
1:B:41:GLN:O	1:B:44:ILE:N	2.29	0.65
1:A:471:LYS:O	1:A:475:ALA:HB2	1.97	0.65
2:C:624:ASP:CB	2:C:628:PRO:HG2	2.26	0.65
1:B:130:LEU:CA	1:B:157:ALA:HA	2.20	0.65
1:B:359:ALA:HA	1:B:362:ARG:HG3	1.78	0.65
2:C:530:VAL:O	2:C:533:GLY:N	2.29	0.65
1:A:46:TYR:CE2	1:A:152:PRO:HG2	2.32	0.64
2:C:608:ILE:O	2:C:609:GLU:O	2.14	0.64
1:A:412:THR:O	1:A:416:ALA:N	2.26	0.64
1:A:471:LYS:O	1:A:475:ALA:HA	1.97	0.64
1:B:395:SER:O	1:B:396:GLU:CB	2.45	0.64
5:G:13:DC:C2	5:G:14:DA:C8	2.86	0.64
5:G:13:DC:H2"	5:G:14:DA:O5'	1.98	0.64
1:A:158:ALA:O	1:A:349:TYR:OH	2.16	0.64
1:A:130:LEU:CA	1:A:157:ALA:HA	2.22	0.64
1:B:471:LYS:O	1:B:475:ALA:CA	2.46	0.64
2:C:484:GLY:O	2:C:486:GLY:N	2.31	0.64
1:A:141:PHE:CZ	1:A:152:PRO:HD3	2.33	0.64
1:B:349:TYR:O	1:B:353:ARG:HB2	1.97	0.64
2:C:609:GLU:O	2:C:610:ASP:CB	2.46	0.64
1:A:341:GLY:N	1:A:344:PRO:HG2	2.13	0.63
1:B:439:GLU:O	1:B:443:ARG:HB2	1.98	0.63
2:C:508:ASP:C	2:C:511:GLY:H	2.02	0.63
5:G:12:DG:H2"	5:G:13:DC:OP2	1.99	0.63
2:C:445:ARG:C	2:C:447:ARG:H	2.00	0.63
2:C:474:GLU:O	2:C:477:ASN:OD1	2.17	0.63
1:B:403:GLU:O	1:B:405:LEU:N	2.32	0.63
1:A:39:PRO:O	1:A:41:GLN:N	2.31	0.63
1:B:434:VAL:O	1:B:437:GLU:N	2.32	0.63
1:B:11:ASP:O	1:B:15:GLU:N	2.31	0.62
2:C:523:TYR:OH	2:C:614:ALA:HB2	1.99	0.62
1:A:41:GLN:O	1:A:44:ILE:N	2.32	0.62
1:A:395:SER:O	1:A:396:GLU:CB	2.47	0.62
1:B:38:LYS:O	1:B:41:GLN:N	2.28	0.62
1:B:472:LYS:O	1:B:473:LYS:C	2.36	0.62
2:D:445:ARG:C	2:D:447:ARG:H	2.01	0.62
1:A:11:ASP:O	1:A:15:GLU:N	2.32	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:66:VAL:O	1:A:69:ILE:N	2.33	0.62
1:A:66:VAL:O	1:A:67:GLY:C	2.38	0.62
1:A:86:VAL:O	1:A:87:ARG:C	2.38	0.62
1:A:472:LYS:O	1:A:473:LYS:C	2.38	0.62
2:C:502:ILE:HA	2:C:536:TYR:O	2.00	0.62
2:D:484:GLY:O	2:D:486:GLY:N	2.32	0.62
2:D:609:GLU:O	2:D:610:ASP:CB	2.48	0.62
2:D:512:ALA:C	2:D:514:ILE:N	2.54	0.61
1:A:85:MET:O	1:A:86:VAL:C	2.38	0.61
6:H:12:DT:H2”	6:H:13:DA:C8	2.35	0.61
1:A:107:SER:H	1:A:111:ASP:CB	2.13	0.61
1:A:434:VAL:O	1:A:437:GLU:N	2.33	0.61
2:C:512:ALA:C	2:C:514:ILE:N	2.54	0.61
1:B:86:VAL:O	1:B:87:ARG:C	2.39	0.61
1:B:39:PRO:O	1:B:41:GLN:N	2.34	0.61
2:D:508:ASP:C	2:D:511:GLY:H	2.03	0.61
5:G:13:DC:N4	5:G:14:DA:H62	1.99	0.60
1:B:85:MET:O	1:B:86:VAL:C	2.40	0.60
5:G:5:DT:C2	5:G:6:DT:C6	2.89	0.60
1:B:101:MET:CB	1:B:121:ALA:HB2	2.31	0.60
1:A:62:SER:O	1:A:63:ALA:C	2.39	0.60
1:A:132:GLN:O	1:A:133:ASP:CB	2.50	0.60
4:F:1:DA:H5’	7:F:0:NFX:H17	1.82	0.60
5:G:5:DT:C4	5:G:6:DT:C4	2.90	0.60
1:B:158:ALA:O	1:B:349:TYR:OH	2.20	0.60
3:E:6:DG:H2”	3:E:7:DG:H8	1.67	0.60
1:B:66:VAL:O	1:B:67:GLY:C	2.39	0.60
1:B:471:LYS:O	1:B:475:ALA:CB	2.50	0.60
1:B:107:SER:H	1:B:111:ASP:CB	2.15	0.59
5:G:13:DC:N4	5:G:14:DA:N6	2.49	0.59
1:B:341:GLY:N	1:B:344:PRO:HG2	2.16	0.59
1:A:341:GLY:C	1:A:344:PRO:HD2	2.22	0.59
2:D:621:LEU:O	2:D:622:MET:C	2.41	0.59
6:H:1:DG:H1’	6:H:2:DA:C8	2.37	0.59
2:C:512:ALA:C	2:C:514:ILE:H	2.06	0.59
1:A:471:LYS:O	1:A:475:ALA:CA	2.51	0.58
1:B:11:ASP:C	1:B:14:GLY:H	2.07	0.58
1:B:341:GLY:C	1:B:344:PRO:HD2	2.24	0.58
2:D:502:ILE:HA	2:D:536:TYR:O	2.02	0.58
1:B:132:GLN:O	1:B:133:ASP:CB	2.50	0.58
1:B:66:VAL:O	1:B:69:ILE:N	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:508:ASP:CB	2:C:511:GLY:H	2.17	0.58
1:B:39:PRO:C	1:B:41:GLN:N	2.57	0.58
3:E:5:DA:C2	3:E:6:DG:C4	2.90	0.58
1:A:471:LYS:O	1:A:475:ALA:CB	2.51	0.58
7:F:0:NFX:C06	7:F:0:NFX:CL	2.88	0.58
1:B:46:TYR:HD2	1:B:152:PRO:HG2	1.65	0.58
1:A:23:TYR:CE1	2:C:513:HIS:HB2	2.38	0.58
2:D:512:ALA:O	2:D:513:HIS:C	2.41	0.58
1:B:81:ILE:O	1:B:84:ALA:HB3	2.04	0.58
1:B:153:THR:O	1:B:154:VAL:CB	2.51	0.58
1:B:413:GLU:O	1:B:416:ALA:N	2.37	0.58
2:C:590:GLN:O	2:C:593:GLU:N	2.28	0.58
1:A:101:MET:CB	1:A:121:ALA:HB2	2.34	0.57
1:B:46:TYR:O	1:B:46:TYR:CD1	2.57	0.57
1:A:46:TYR:HD2	1:A:152:PRO:HG2	1.61	0.57
1:A:128:GLY:O	1:A:131:LEU:N	2.36	0.57
1:A:153:THR:O	1:A:154:VAL:CB	2.53	0.57
1:B:62:SER:O	1:B:63:ALA:C	2.42	0.57
2:C:618:VAL:O	2:C:618:VAL:CG1	2.53	0.57
2:D:433:GLU:O	2:D:437:ALA:HB3	2.04	0.57
1:A:6:ASN:O	1:A:7:MET:O	2.24	0.56
1:B:49:ASN:O	1:B:51:ASP:N	2.38	0.56
1:B:158:ALA:HA	1:B:353:ARG:NH2	2.19	0.56
7:H:0:NFX:CL	7:H:0:NFX:C06	2.90	0.56
1:B:375:VAL:O	1:B:377:GLY:N	2.39	0.56
2:C:433:GLU:O	2:C:437:ALA:HB3	2.04	0.56
3:E:13:DA:C4	3:E:14:DA:N7	2.74	0.56
1:A:11:ASP:C	1:A:14:GLY:H	2.08	0.56
1:B:412:THR:N	1:B:415:GLN:CB	2.67	0.56
5:G:14:DA:H2"	5:G:15:DT:H5'	1.88	0.56
1:A:49:ASN:O	1:A:50:LYS:C	2.43	0.56
2:D:503:ILE:HG23	2:D:537:ILE:HA	1.87	0.56
1:B:128:GLY:O	1:B:131:LEU:N	2.33	0.56
2:D:512:ALA:C	2:D:514:ILE:H	2.09	0.56
6:H:10:DC:H2'	6:H:11:DG:C8	2.41	0.56
1:B:13:MET:O	1:B:17:PHE:CE1	2.59	0.56
1:B:159:PHE:O	1:B:161:ASN:N	2.39	0.56
1:A:39:PRO:C	1:A:41:GLN:N	2.57	0.56
1:B:55:PHE:O	1:B:122:ARG:NH1	2.39	0.56
6:H:7:DG:C5	6:H:8:DC:C4	2.94	0.56
5:G:14:DA:H2'	5:G:15:DT:C6	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:160:PRO:O	1:A:162:LEU:N	2.39	0.55
2:C:592:TRP:CA	2:C:595:THR:CB	2.74	0.55
1:B:160:PRO:O	1:B:162:LEU:N	2.39	0.55
1:A:158:ALA:HA	1:A:353:ARG:NH2	2.22	0.55
1:B:49:ASN:O	1:B:50:LYS:C	2.45	0.55
1:A:49:ASN:O	1:A:51:ASP:N	2.40	0.55
1:B:341:GLY:H	1:B:344:PRO:CG	2.19	0.55
2:D:627:GLU:N	2:D:628:PRO:CD	2.70	0.55
1:A:341:GLY:H	1:A:344:PRO:CG	2.19	0.54
1:B:82:TYR:O	1:B:85:MET:HB3	2.06	0.54
3:E:13:DA:N6	3:E:14:DA:N6	2.56	0.54
1:A:76:HIS:H	1:A:76:HIS:CD2	2.24	0.54
2:D:524:ARG:HB3	2:D:524:ARG:HH11	1.70	0.54
6:H:10:DC:C2'	6:H:11:DG:C8	2.91	0.54
1:B:6:ASN:O	1:B:7:MET:O	2.26	0.54
3:E:12:DG:C6	3:E:13:DA:N6	2.75	0.54
1:A:343:VAL:N	1:A:344:PRO:CD	2.70	0.54
1:A:412:THR:N	1:A:415:GLN:CB	2.70	0.54
2:C:512:ALA:O	2:C:513:HIS:C	2.46	0.54
5:G:6:DT:O2	6:H:15:DA:C2	2.60	0.54
1:A:13:MET:O	1:A:17:PHE:CE1	2.60	0.54
1:B:343:VAL:N	1:B:344:PRO:CD	2.71	0.54
2:D:590:GLN:O	2:D:593:GLU:N	2.30	0.54
5:G:3:DG:C4	5:G:4:DT:C5	2.95	0.54
4:F:1:DA:H2"	4:F:2:DG:O5'	2.08	0.54
4:F:5:DA:H1'	4:F:6:DT:H5"	1.90	0.54
1:B:23:TYR:CE1	2:D:513:HIS:HB2	2.42	0.53
1:A:82:TYR:O	1:A:85:MET:HB3	2.08	0.53
1:B:189:ALA:O	1:B:192:TYR:N	2.41	0.53
1:A:82:TYR:O	1:A:83:ASP:C	2.47	0.53
1:B:434:VAL:O	1:B:435:LEU:C	2.46	0.53
3:E:12:DG:C8	3:E:12:DG:H5'	2.43	0.53
1:A:72:ASN:O	1:A:73:PHE:CD1	2.61	0.53
4:F:10:DT:H2"	4:F:11:DG:H8	1.74	0.53
2:C:503:ILE:HG23	2:C:537:ILE:HA	1.90	0.53
4:F:10:DT:C2'	4:F:11:DG:C8	2.91	0.53
1:B:39:PRO:C	1:B:41:GLN:H	2.11	0.53
2:C:627:GLU:N	2:C:628:PRO:CD	2.72	0.52
6:H:1:DG:N2	6:H:2:DA:C2	2.77	0.52
1:A:62:SER:C	1:A:64:LYS:N	2.62	0.52
1:B:125:GLU:O	1:B:126:ILE:C	2.47	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:11:DG:C2'	4:F:12:DA:C8	2.91	0.52
7:H:0:NFX:CL	7:H:0:NFX:C04	2.95	0.52
1:A:85:MET:O	1:A:88:MET:N	2.41	0.52
1:B:82:TYR:O	1:B:83:ASP:C	2.48	0.52
4:F:4:DC:N3	7:H:0:NFX:H04	2.25	0.52
1:B:23:TYR:O	1:B:23:TYR:CD2	2.64	0.51
1:A:46:TYR:O	1:A:46:TYR:CD1	2.64	0.51
1:A:159:PHE:O	1:A:161:ASN:N	2.40	0.51
2:C:524:ARG:HB3	2:C:524:ARG:HH11	1.69	0.51
3:E:12:DG:H5'	3:E:12:DG:H8	1.74	0.51
4:F:7:DT:C4	4:F:8:DC:N4	2.78	0.51
1:A:375:VAL:O	1:A:377:GLY:N	2.44	0.51
1:A:125:GLU:O	1:A:126:ILE:C	2.48	0.51
1:A:75:PRO:O	1:A:76:HIS:O	2.29	0.51
2:C:620:VAL:O	2:C:621:LEU:O	2.29	0.51
2:D:611:LEU:C	2:D:613:ARG:N	2.62	0.51
1:A:189:ALA:O	1:A:192:TYR:N	2.43	0.51
1:A:391:LEU:C	1:A:391:LEU:HD23	2.31	0.51
1:A:434:VAL:O	1:A:435:LEU:C	2.49	0.51
1:A:359:ALA:CA	1:A:362:ARG:HG2	2.40	0.50
4:F:16:DT:C2	4:F:17:DG:N7	2.79	0.50
1:A:41:GLN:O	1:A:42:ARG:C	2.50	0.50
1:B:62:SER:C	1:B:64:LYS:N	2.64	0.50
1:A:72:ASN:C	1:A:73:PHE:CD1	2.85	0.50
2:D:623:GLY:O	2:D:624:ASP:C	2.50	0.50
4:F:7:DT:C4	4:F:8:DC:C4	2.99	0.50
2:D:508:ASP:CB	2:D:511:GLY:H	2.24	0.50
6:H:17:DC:H2'	6:H:18:DA:C8	2.47	0.50
2:D:417:THR:N	2:D:418:PRO:CD	2.75	0.50
2:C:506:ASP:O	2:C:507:ALA:HB2	2.12	0.50
1:A:38:LYS:O	1:A:41:GLN:N	2.30	0.50
1:A:39:PRO:C	1:A:41:GLN:H	2.14	0.49
1:B:359:ALA:CA	1:B:362:ARG:HG2	2.42	0.49
7:F:0:NFX:CL	7:F:0:NFX:C03	2.97	0.49
6:H:12:DT:O3'	6:H:13:DA:H8	1.94	0.49
4:F:1:DA:C8	7:F:0:NFX:C17	2.96	0.49
1:A:182:ASN:O	1:A:184:ALA:N	2.45	0.49
5:G:8:DA:C2	6:H:13:DA:C2	3.00	0.49
2:C:417:THR:N	2:C:418:PRO:CD	2.75	0.49
2:C:445:ARG:C	2:C:447:ARG:N	2.66	0.49
1:A:338:ARG:HA	1:A:338:ARG:NE	2.27	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:508:ASP:HB2	2:C:511:GLY:N	2.27	0.49
4:F:3:DT:H2'	4:F:4:DC:O4'	2.13	0.49
1:A:81:ILE:O	1:A:84:ALA:HB3	2.13	0.49
1:B:391:LEU:C	1:B:391:LEU:HD23	2.33	0.48
5:G:5:DT:H2"	5:G:6:DT:H6	1.78	0.48
3:E:13:DA:H2"	3:E:14:DA:H8	1.77	0.48
6:H:10:DC:H2'	6:H:11:DG:H8	1.78	0.48
1:B:416:ALA:O	1:B:417:GLU:C	2.52	0.48
2:C:599:GLU:CB	2:C:602:THR:CB	2.92	0.48
2:D:599:GLU:CB	2:D:602:THR:CB	2.91	0.48
1:B:85:MET:O	1:B:88:MET:N	2.46	0.48
1:B:101:MET:HA	1:B:121:ALA:HB2	1.95	0.48
1:A:23:TYR:CD2	1:A:23:TYR:O	2.66	0.48
1:A:101:MET:HA	1:A:121:ALA:HB2	1.96	0.48
1:B:349:TYR:C	1:B:349:TYR:CD2	2.87	0.48
1:A:109:ASP:O	1:A:111:ASP:N	2.46	0.48
1:A:417:GLU:O	1:A:420:VAL:N	2.45	0.48
2:D:445:ARG:C	2:D:447:ARG:N	2.67	0.48
6:H:7:DG:C8	6:H:8:DC:C5	3.02	0.48
7:H:0:NFX:CL	7:H:0:NFX:H06	2.49	0.48
2:D:500:LYS:HA	2:D:534:HIS:O	2.14	0.48
1:B:363:PHE:O	1:B:364:ASP:C	2.53	0.47
2:D:461:ASN:O	2:D:462:THR:C	2.53	0.47
2:D:621:LEU:O	2:D:623:GLY:N	2.47	0.47
1:B:76:HIS:H	1:B:76:HIS:CD2	2.31	0.47
6:H:8:DC:H2"	6:H:9:DA:O5'	2.15	0.47
1:A:363:PHE:O	1:A:364:ASP:C	2.53	0.47
1:A:416:ALA:O	1:A:417:GLU:C	2.52	0.47
1:B:75:PRO:O	1:B:76:HIS:O	2.32	0.47
1:B:109:ASP:O	1:B:111:ASP:N	2.47	0.47
2:C:629:ARG:C	2:C:631:LYS:H	2.18	0.47
2:D:584:GLY:O	2:D:585:GLU:C	2.53	0.47
5:G:14:DA:N3	5:G:15:DT:C5	2.83	0.47
1:A:130:LEU:O	1:A:156:PRO:HD2	2.14	0.47
1:A:413:GLU:O	1:A:416:ALA:N	2.48	0.47
2:C:500:LYS:HA	2:C:534:HIS:O	2.14	0.47
2:D:506:ASP:O	2:D:507:ALA:HB2	2.15	0.47
1:B:417:GLU:O	1:B:420:VAL:N	2.46	0.47
2:D:528:PRO:O	2:D:529:LEU:C	2.52	0.47
1:A:60:ARG:O	1:A:61:LYS:O	2.33	0.47
6:H:2:DA:C4	6:H:3:DC:C5	3.03	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:46:TYR:CD1	1:B:46:TYR:C	2.88	0.47
1:B:55:PHE:O	1:B:56:ASP:C	2.54	0.46
1:B:375:VAL:O	1:B:376:GLU:C	2.53	0.46
2:C:524:ARG:NH1	2:C:524:ARG:CB	2.66	0.46
2:D:624:ASP:CB	2:D:628:PRO:HG2	2.45	0.46
7:F:0:NFX:CL	7:F:0:NFX:H06	2.51	0.46
2:C:508:ASP:O	2:C:511:GLY:CA	2.63	0.46
1:B:41:GLN:O	1:B:42:ARG:C	2.54	0.46
4:F:1:DA:H1'	4:F:2:DG:C8	2.51	0.46
1:A:46:TYR:CD1	1:A:46:TYR:C	2.89	0.46
2:C:528:PRO:O	2:C:529:LEU:C	2.52	0.46
6:H:16:DA:C4	6:H:17:DC:C5	3.03	0.46
2:D:608:ILE:O	2:D:609:GLU:C	2.54	0.46
2:C:507:ALA:O	2:C:508:ASP:C	2.54	0.46
3:E:5:DA:C6	3:E:6:DG:C5	3.04	0.46
3:E:13:DA:H2"	3:E:14:DA:O5'	2.16	0.46
3:E:13:DA:C6	3:E:14:DA:N6	2.83	0.46
1:A:133:ASP:O	1:A:138:THR:CB	2.64	0.46
1:B:101:MET:HA	1:B:121:ALA:CB	2.46	0.45
2:C:625:LYS:O	2:C:626:VAL:CB	2.63	0.45
2:D:590:GLN:O	2:D:591:LEU:C	2.54	0.45
3:E:3:DC:C2	3:E:4:DA:N7	2.84	0.45
3:E:12:DG:C6	3:E:13:DA:C6	3.04	0.45
1:A:349:TYR:C	1:A:349:TYR:CD2	2.89	0.45
1:B:60:ARG:O	1:B:61:LYS:O	2.34	0.45
2:D:508:ASP:O	2:D:511:GLY:CA	2.64	0.45
2:D:527:ARG:HB3	2:D:528:PRO:HD3	1.99	0.45
1:B:87:ARG:NH1	5:G:12:DG:OP1	2.49	0.45
1:A:379:ILE:O	1:A:382:ILE:N	2.50	0.45
2:C:508:ASP:CB	2:C:511:GLY:N	2.79	0.45
2:C:584:GLY:O	2:C:585:GLU:C	2.54	0.45
5:G:14:DA:C4	5:G:15:DT:C5	3.04	0.45
1:A:448:MET:O	1:A:451:ALA:HB3	2.16	0.45
2:D:524:ARG:NH1	2:D:524:ARG:CB	2.67	0.45
1:A:72:ASN:O	1:A:73:PHE:CG	2.69	0.45
1:A:381:VAL:O	1:A:382:ILE:C	2.55	0.45
2:C:590:GLN:O	2:C:591:LEU:C	2.54	0.45
3:E:14:DA:H2'	3:E:15:DT:C6	2.51	0.45
1:A:158:ALA:O	1:A:160:PRO:HD3	2.17	0.45
2:C:508:ASP:HB2	2:C:511:GLY:H	1.81	0.45
5:G:13:DC:C4	5:G:14:DA:N7	2.85	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:182:ASN:O	1:A:183:LEU:C	2.55	0.44
1:A:375:VAL:O	1:A:376:GLU:C	2.55	0.44
1:B:448:MET:O	1:B:451:ALA:HB3	2.17	0.44
2:C:417:THR:HG23	2:C:418:PRO:HD3	2.00	0.44
2:C:523:TYR:HD2	2:C:524:ARG:HG2	1.82	0.44
3:E:12:DG:H5'	3:E:12:DG:H2'	1.69	0.44
5:G:13:DC:N3	5:G:14:DA:N7	2.64	0.44
2:D:523:TYR:HD2	2:D:524:ARG:HG2	1.82	0.44
3:E:6:DG:H2"	3:E:7:DG:C8	2.49	0.44
1:B:349:TYR:O	1:B:349:TYR:CD2	2.69	0.44
1:B:412:THR:O	1:B:415:GLN:CB	2.66	0.44
1:A:22:LYS:O	1:A:25:ILE:HG12	2.17	0.44
4:F:9:DA:C5	4:F:10:DT:C4	3.06	0.44
4:F:9:DA:H2"	4:F:10:DT:C6	2.52	0.44
1:B:379:ILE:O	1:B:382:ILE:N	2.50	0.44
2:C:590:GLN:O	2:C:592:TRP:N	2.51	0.44
3:E:13:DA:C5	3:E:14:DA:N7	2.85	0.44
2:C:629:ARG:C	2:C:631:LYS:N	2.71	0.43
1:A:101:MET:HA	1:A:121:ALA:CB	2.48	0.43
1:A:379:ILE:O	1:A:381:VAL:N	2.50	0.43
1:B:182:ASN:O	1:B:184:ALA:N	2.51	0.43
2:C:461:ASN:O	2:C:462:THR:C	2.56	0.43
1:A:334:ASN:O	1:A:334:ASN:ND2	2.52	0.43
1:B:379:ILE:O	1:B:381:VAL:N	2.51	0.43
2:C:608:ILE:O	2:C:609:GLU:C	2.56	0.43
5:G:5:DT:C2	5:G:6:DT:C5	3.07	0.43
1:B:38:LYS:O	1:B:41:GLN:CB	2.67	0.43
4:F:11:DG:H2'	4:F:12:DA:N7	2.32	0.43
1:A:178:ILE:HA	1:A:179:PRO:HD3	1.78	0.43
2:C:503:ILE:CG2	2:C:537:ILE:HA	2.48	0.43
5:G:3:DG:C5	5:G:4:DT:C4	3.05	0.43
1:B:381:VAL:O	1:B:382:ILE:C	2.57	0.43
6:H:12:DT:O3'	6:H:13:DA:C8	2.71	0.43
1:A:25:ILE:O	1:A:28:ARG:HB3	2.19	0.43
1:B:128:GLY:O	1:B:130:LEU:N	2.51	0.43
2:D:555:VAL:O	2:D:556:ALA:HB2	2.19	0.43
2:D:592:TRP:CA	2:D:595:THR:CB	2.82	0.43
2:D:629:ARG:C	2:D:631:LYS:N	2.72	0.43
2:C:527:ARG:HB2	2:C:527:ARG:CZ	2.41	0.43
2:D:625:LYS:O	2:D:626:VAL:CB	2.66	0.43
2:D:463:ALA:HB2	2:D:524:ARG:HE	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:6:ASN:C	1:B:7:MET:O	2.58	0.42
1:B:130:LEU:O	1:B:156:PRO:HD2	2.18	0.42
2:C:527:ARG:HB3	2:C:528:PRO:HD3	2.00	0.42
1:A:6:ASN:C	1:A:7:MET:O	2.57	0.42
1:A:146:ASP:O	1:A:147:ASP:HB2	2.20	0.42
1:B:21:SER:O	1:B:22:LYS:C	2.58	0.42
1:B:22:LYS:O	1:B:25:ILE:HG12	2.19	0.42
1:A:403:GLU:C	1:A:405:LEU:N	2.73	0.42
6:H:1:DG:C2	6:H:2:DA:C6	3.07	0.42
6:H:3:DC:H2'	6:H:4:DT:C6	2.55	0.42
1:A:141:PHE:CE1	1:A:152:PRO:HG3	2.55	0.42
2:D:430:TYR:HA	2:D:502:ILE:HG13	2.02	0.42
2:D:445:ARG:O	2:D:447:ARG:N	2.52	0.42
1:A:125:GLU:O	1:A:128:GLY:N	2.53	0.42
1:A:417:GLU:O	1:A:418:ALA:C	2.56	0.42
2:D:461:ASN:O	2:D:463:ALA:N	2.52	0.42
2:D:629:ARG:C	2:D:631:LYS:H	2.22	0.42
6:H:12:DT:C2'	6:H:13:DA:C8	3.03	0.42
1:A:128:GLY:O	1:A:130:LEU:N	2.53	0.42
1:A:324:ASN:HA	1:A:325:TYR:HA	1.68	0.42
1:B:20:TYR:CD2	1:B:20:TYR:C	2.92	0.42
3:E:2:DC:N4	3:E:3:DC:N4	2.68	0.42
1:A:20:TYR:CD2	1:A:20:TYR:C	2.94	0.42
1:B:46:TYR:CE2	1:B:152:PRO:CD	3.03	0.42
1:B:402:LYS:O	1:B:403:GLU:C	2.59	0.41
2:D:423:ASN:HA	2:D:424:PRO:HD3	1.84	0.41
6:H:7:DG:H2'	6:H:7:DG:O5'	2.20	0.41
7:H:0:NFX:CL	7:H:0:NFX:H04A	2.56	0.41
1:A:222:ARG:O	1:A:223:ASP:C	2.58	0.41
1:B:114:ALA:O	1:B:115:ALA:O	2.38	0.41
2:C:503:ILE:HG23	2:C:503:ILE:O	2.20	0.41
1:B:407:VAL:C	1:B:409:TYR:N	2.73	0.41
3:E:5:DA:C5	3:E:6:DG:C5	3.07	0.41
3:E:8:DT:H2"	3:E:9:DC:C6	2.56	0.41
1:B:101:MET:CA	1:B:121:ALA:HB2	2.51	0.41
2:D:585:GLU:O	2:D:586:MET:CB	2.69	0.41
6:H:9:DA:C2'	6:H:10:DC:C6	3.03	0.41
1:B:82:TYR:O	1:B:85:MET:CB	2.68	0.41
1:B:139:VAL:HA	1:B:140:PRO:HD3	1.85	0.41
1:B:413:GLU:O	1:B:414:GLU:C	2.59	0.41
2:C:523:TYR:CD2	2:C:524:ARG:N	2.89	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:462:THR:CG2	2:D:521:PHE:HA	2.45	0.41
5:G:14:DA:C2	5:G:15:DT:C5	3.09	0.41
1:B:368:ALA:O	1:B:369:GLU:C	2.59	0.41
2:C:445:ARG:O	2:C:447:ARG:N	2.51	0.41
1:A:86:VAL:O	1:A:88:MET:N	2.53	0.41
1:A:103:GLY:HA2	1:A:104:ASN:HA	1.66	0.41
1:A:435:LEU:O	1:A:438:GLU:N	2.54	0.41
4:F:9:DA:C2'	4:F:10:DT:C6	3.04	0.41
1:A:22:LYS:O	1:A:25:ILE:CG1	2.70	0.40
1:A:82:TYR:O	1:A:85:MET:CB	2.69	0.40
2:C:430:TYR:HA	2:C:502:ILE:HG13	2.03	0.40
2:C:524:ARG:HH11	2:C:524:ARG:CB	2.32	0.40
1:B:417:GLU:O	1:B:418:ALA:C	2.60	0.40
3:E:10:DA:C5	3:E:11:DT:C4	3.09	0.40
6:H:16:DA:C5	6:H:17:DC:C4	3.10	0.40
1:A:368:ALA:O	1:A:369:GLU:C	2.59	0.40
1:A:391:LEU:HD23	1:A:391:LEU:O	2.21	0.40
1:A:413:GLU:O	1:A:414:GLU:C	2.59	0.40
1:B:182:ASN:C	1:B:184:ALA:N	2.75	0.40
1:A:38:LYS:O	1:A:39:PRO:C	2.60	0.40
1:A:160:PRO:C	1:A:162:LEU:H	2.25	0.40
1:A:182:ASN:C	1:A:184:ALA:N	2.73	0.40
1:B:439:GLU:O	1:B:443:ARG:CB	2.69	0.40
2:C:461:ASN:O	2:C:463:ALA:N	2.55	0.40
2:D:523:TYR:C	2:D:525:TYR:N	2.75	0.40
4:F:5:DA:N6	7:H:0:NFX:CL	2.92	0.40
5:G:14:DA:N1	5:G:15:DT:C4	2.89	0.40
1:A:160:PRO:HA	1:A:349:TYR:CE1	2.56	0.40
3:E:14:DA:H2'	3:E:15:DT:H6	1.85	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	414/496 (84%)	298 (72%)	72 (17%)	44 (11%)	0	7
1	B	417/496 (84%)	297 (71%)	73 (18%)	47 (11%)	0	6
2	C	182/268 (68%)	116 (64%)	40 (22%)	26 (14%)	0	3
2	D	186/268 (69%)	120 (64%)	44 (24%)	22 (12%)	0	6
All	All	1199/1528 (78%)	831 (69%)	229 (19%)	139 (12%)	0	6

All (139) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	7	MET
1	A	61	LYS
1	A	63	ALA
1	A	76	HIS
1	A	86	VAL
1	A	133	ASP
1	A	138	THR
1	A	194	ILE
1	A	323	ILE
1	A	396	GLU
1	A	408	SER
1	A	417	GLU
1	B	7	MET
1	B	61	LYS
1	B	63	ALA
1	B	76	HIS
1	B	86	VAL
1	B	104	ASN
1	B	133	ASP
1	B	138	THR
1	B	194	ILE
1	B	396	GLU
1	B	408	SER
1	B	417	GLU
2	C	445	ARG
2	C	462	THR
2	C	507	ALA
2	C	513	HIS
2	C	585	GLU
2	C	606	VAL
2	C	609	GLU
2	C	612	ALA
2	C	621	LEU

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Mol	Chain	Res	Type
2	C	622	MET
2	C	624	ASP
2	D	445	ARG
2	D	462	THR
2	D	507	ALA
2	D	513	HIS
2	D	585	GLU
2	D	606	VAL
2	D	609	GLU
2	D	612	ALA
1	A	40	VAL
1	A	50	LYS
1	A	67	GLY
1	A	110	GLY
1	A	115	ALA
1	A	154	VAL
1	A	157	ALA
1	A	375	VAL
1	A	376	GLU
1	A	404	ASN
1	A	423	GLN
1	B	40	VAL
1	B	50	LYS
1	B	56	ASP
1	B	67	GLY
1	B	110	GLY
1	B	115	ALA
1	B	154	VAL
1	B	375	VAL
1	B	376	GLU
1	B	404	ASN
1	B	423	GLN
1	B	434	VAL
2	C	446	ASP
2	C	463	ALA
2	C	485	ALA
2	C	512	ALA
2	C	610	ASP
2	D	446	ASP
2	D	485	ALA
2	D	512	ALA
2	D	610	ASP

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Mol	Chain	Res	Type
2	D	624	ASP
1	A	85	MET
1	A	129	TYR
1	A	161	ASN
1	A	183	LEU
1	A	197	PRO
1	A	380	ARG
1	A	413	GLU
1	A	434	VAL
1	B	129	TYR
1	B	157	ALA
1	B	161	ASN
1	B	197	PRO
1	B	380	ARG
1	B	413	GLU
2	C	422	LYS
2	C	483	ILE
2	C	508	ASP
2	D	422	LYS
2	D	447	ARG
2	D	463	ALA
2	D	483	ILE
2	D	508	ASP
1	A	49	ASN
1	A	71	GLY
1	A	126	ILE
1	A	347	SER
1	A	430	THR
1	B	49	ASN
1	B	54	THR
1	B	71	GLY
1	B	73	PHE
1	B	85	MET
1	B	183	LEU
1	B	407	VAL
1	B	430	THR
2	C	447	ARG
2	D	548	GLY
1	A	66	VAL
1	A	83	ASP
1	A	407	VAL
1	B	66	VAL

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Mol	Chain	Res	Type
1	B	126	ILE
1	B	347	SER
1	B	363	PHE
1	B	379	ILE
2	C	464	LYS
2	C	524	ARG
2	C	548	GLY
2	C	598	PRO
2	D	598	PRO
1	A	73	PHE
1	A	379	ILE
1	B	83	ASP
2	C	434	GLY
1	B	160	PRO
2	C	633	ILE
2	D	633	ILE
2	D	434	GLY
1	A	103	GLY
1	A	160	PRO
1	A	330	VAL
1	B	236	VAL
1	B	330	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	68/431 (16%)	63 (93%)	5 (7%)	13	41
1	B	63/431 (15%)	57 (90%)	6 (10%)	8	31
2	C	23/224 (10%)	20 (87%)	3 (13%)	4	22
2	D	21/224 (9%)	18 (86%)	3 (14%)	3	19
All	All	175/1310 (13%)	158 (90%)	17 (10%)	8	30

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	TYR
1	A	49	ASN
1	A	143	TRP
1	A	334	ASN
1	A	353	ARG
1	B	46	TYR
1	B	49	ASN
1	B	72	ASN
1	B	143	TRP
1	B	334	ASN
1	B	353	ARG
2	C	503	ILE
2	C	524	ARG
2	C	527	ARG
2	D	503	ILE
2	D	524	ARG
2	D	527	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	49	ASN
1	A	72	ASN
1	A	74	HIS
1	A	334	ASN
1	A	423	GLN
1	B	49	ASN
1	B	72	ASN
1	B	74	HIS
1	B	334	ASN
1	B	423	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 (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

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	#$|Z| > 2$
7	NFX	H	0	-	28,28,28	5.63	19 (67%)	36,43,43	2.32	6 (16%)
7	NFX	F	0	-	28,28,28	6.10	18 (64%)	36,43,43	2.46	9 (25%)

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
7	NFX	H	0	-	-	7/12/23/23	0/4/4/4
7	NFX	F	0	-	-	5/12/23/23	0/4/4/4

All (37) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	F	0	NFX	C12-C13	15.72	1.62	1.39
7	H	0	NFX	C12-N	15.43	1.59	1.40
7	F	0	NFX	C12-N	15.06	1.59	1.40
7	F	0	NFX	C16-N	14.25	1.56	1.34
7	H	0	NFX	C12-C13	13.52	1.59	1.39
7	F	0	NFX	C17-C14	12.26	1.59	1.39
7	H	0	NFX	C16-N	11.48	1.52	1.34
7	H	0	NFX	C17-C14	11.36	1.57	1.39
7	F	0	NFX	C11-C15	7.62	1.56	1.39
7	H	0	NFX	C11-C15	7.41	1.55	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	F	0	NFX	C14-C12	-5.48	1.33	1.40
7	F	0	NFX	C02-C01	-5.03	1.44	1.53
7	H	0	NFX	C18-C19	4.91	1.56	1.44
7	H	0	NFX	C14-C12	-4.13	1.35	1.40
7	H	0	NFX	O-C20	-4.04	1.18	1.30
7	H	0	NFX	C02-C01	-4.00	1.46	1.53
7	F	0	NFX	O-C20	-3.79	1.19	1.30
7	F	0	NFX	C14-C19	3.64	1.55	1.48
7	F	0	NFX	C18-C19	3.32	1.52	1.44
7	H	0	NFX	C04-N01	-2.88	1.42	1.47
7	H	0	NFX	C18-C20	2.83	1.53	1.48
7	H	0	NFX	C13-CL	2.80	1.78	1.72
7	H	0	NFX	C03-C01	-2.80	1.47	1.52
7	F	0	NFX	C01-N05	-2.75	1.37	1.46
7	F	0	NFX	C18-C20	2.72	1.53	1.48
7	H	0	NFX	C11-N01	2.71	1.48	1.40
7	F	0	NFX	C13-CL	2.69	1.78	1.72
7	H	0	NFX	C01-N05	-2.63	1.38	1.46
7	F	0	NFX	C03-C01	-2.57	1.47	1.52
7	F	0	NFX	C11-N01	2.53	1.48	1.40
7	H	0	NFX	O02-C19	-2.43	1.18	1.23
7	F	0	NFX	C04-N01	-2.42	1.43	1.47
7	F	0	NFX	C08-C06	2.27	1.53	1.48
7	H	0	NFX	C09-C06	2.24	1.53	1.48
7	H	0	NFX	C08-C06	2.24	1.53	1.48
7	F	0	NFX	C09-C06	2.20	1.53	1.48
7	H	0	NFX	C14-C19	2.18	1.52	1.48

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	F	0	NFX	C02-C01-C03	-10.08	85.52	102.20
7	H	0	NFX	C02-C01-C03	-10.04	85.58	102.20
7	H	0	NFX	C04-N01-C03	-4.24	100.59	111.55
7	F	0	NFX	C03-N01-C11	4.13	130.91	123.04
7	F	0	NFX	C04-N01-C03	-4.10	100.94	111.55
7	F	0	NFX	C14-C19-C18	3.74	120.34	115.59
7	H	0	NFX	C18-C16-N	-3.72	120.33	124.49
7	H	0	NFX	C14-C19-C18	3.61	120.17	115.59
7	F	0	NFX	C18-C16-N	-3.56	120.50	124.49
7	H	0	NFX	C03-N01-C11	2.86	128.49	123.04
7	F	0	NFX	C12-N-C16	-2.82	117.81	119.81

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	F	0	NFX	C02-C04-N01	-2.61	100.30	103.35
7	F	0	NFX	C17-C15-C11	-2.25	119.97	123.22
7	H	0	NFX	C09-C06-N	-2.21	115.52	118.84
7	F	0	NFX	O02-C19-C18	-2.06	119.76	123.22

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	F	0	NFX	C16-C18-C20-O03
7	F	0	NFX	C16-C18-C20-O
7	F	0	NFX	C19-C18-C20-O03
7	F	0	NFX	C19-C18-C20-O
7	H	0	NFX	C16-C18-C20-O03
7	H	0	NFX	C16-C18-C20-O
7	H	0	NFX	C19-C18-C20-O03
7	H	0	NFX	C19-C18-C20-O
7	H	0	NFX	C09-C06-N-C16
7	H	0	NFX	C09-C06-N-C12
7	F	0	NFX	C09-C06-N-C16
7	H	0	NFX	C08-C06-N-C16

There are no ring outliers.

2 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	H	0	NFX	6	0
7	F	0	NFX	5	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 NFX H 0

Bond lengths

Bond angles

Torsions

Rings

Ligand NFX F 0

Bond lengths

Bond angles

Torsions

Rings
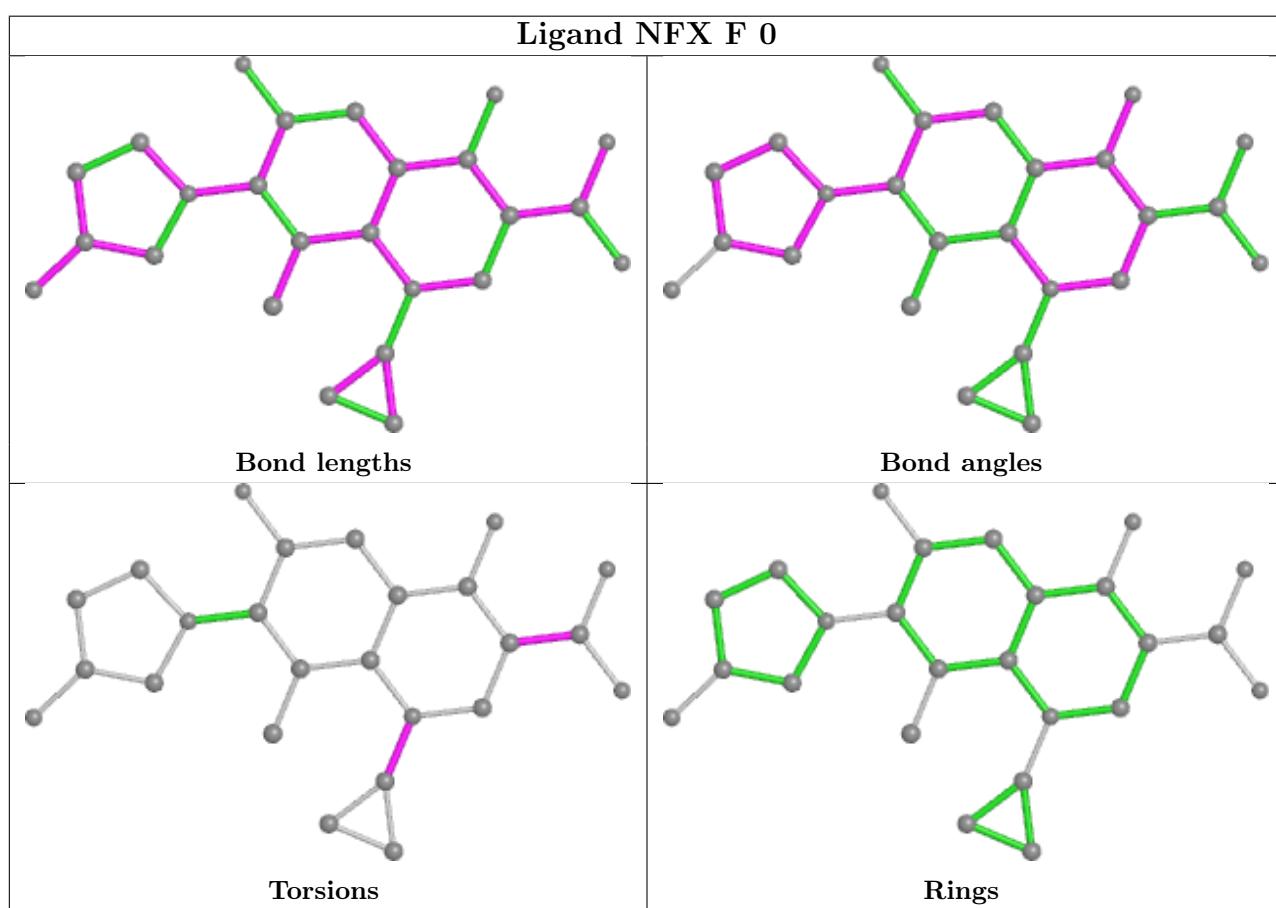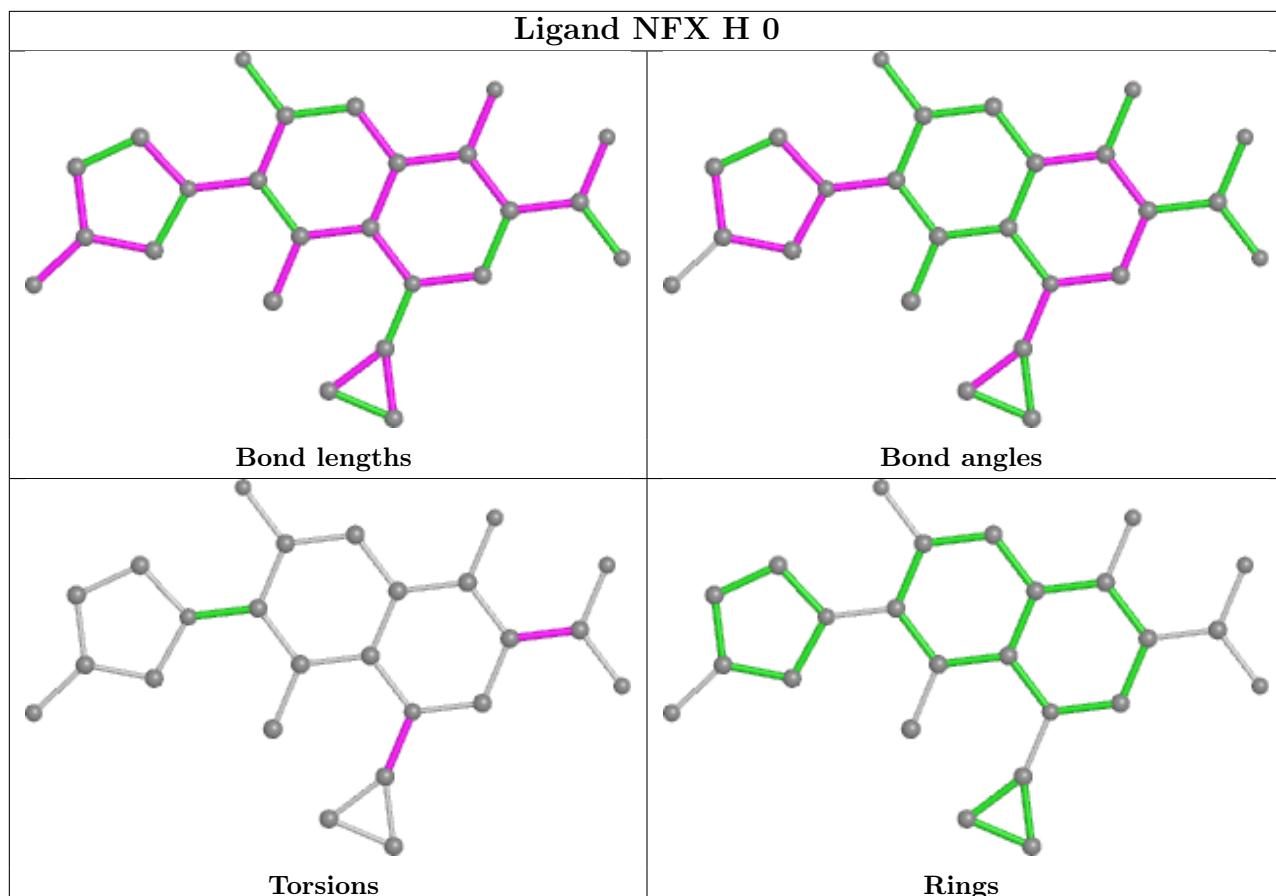
5.7 Other polymers ⓘ

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	432/496 (87%)	-1.07	0	100	100	66, 174, 275, 370	0
1	B	433/496 (87%)	-1.09	0	100	100	72, 173, 275, 372	0
2	C	196/268 (73%)	-0.96	0	100	100	97, 176, 290, 370	0
2	D	198/268 (73%)	-0.97	0	100	100	97, 178, 292, 371	0
3	E	15/15 (100%)	-0.95	0	100	100	132, 294, 394, 554	0
4	F	19/19 (100%)	-0.59	1 (5%)	26	23	144, 231, 588, 600	0
5	G	15/15 (100%)	-0.94	0	100	100	119, 277, 378, 526	0
6	H	19/19 (100%)	-0.79	1 (5%)	26	23	148, 229, 556, 566	0
All	All	1327/1596 (83%)	-1.03	2 (0%)	95	93	66, 177, 302, 600	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	19	DT	5.0
6	H	19	DG	2.3

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
7	NFX	F	0	25/25	0.85	0.24	372,383,454,472	0
7	NFX	H	0	25/25	0.90	0.17	250,266,316,356	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 NFX F 0:

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

Electron density around NFX H 0:

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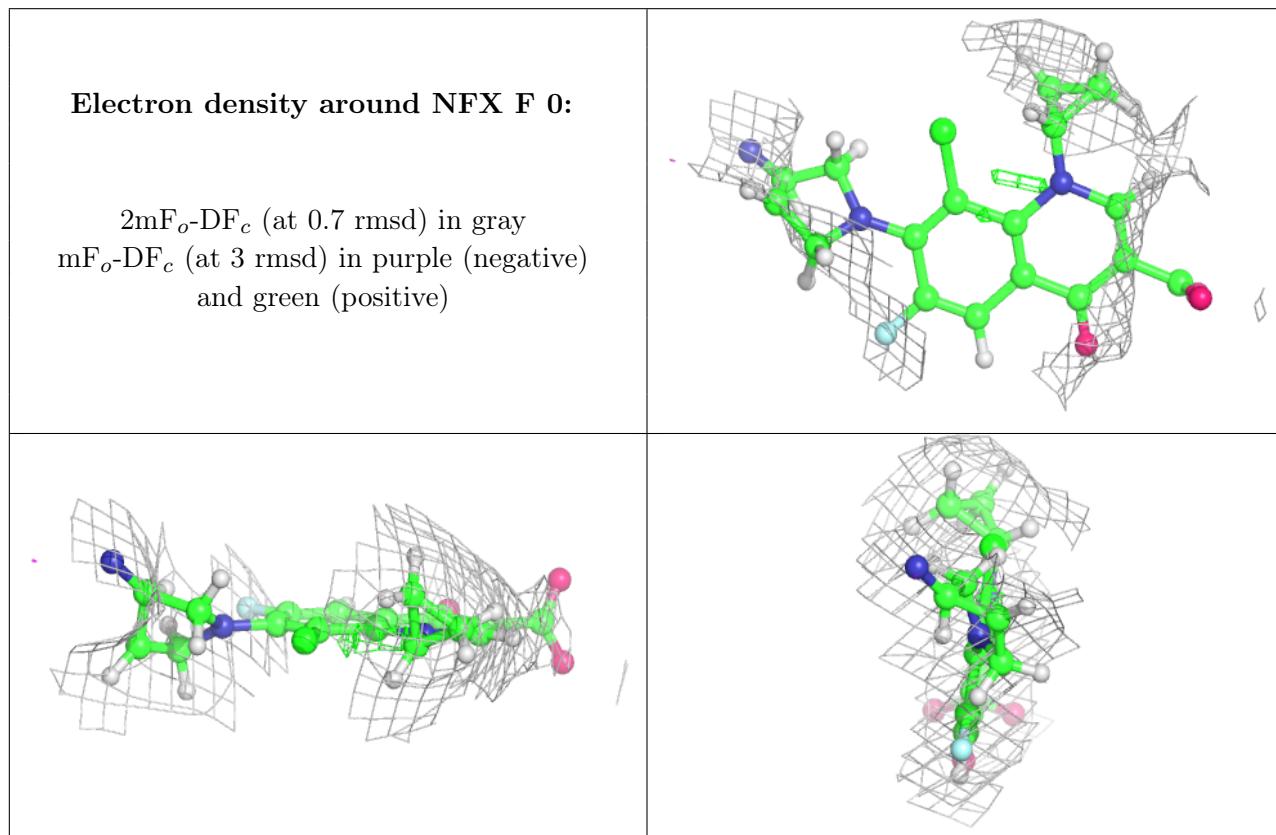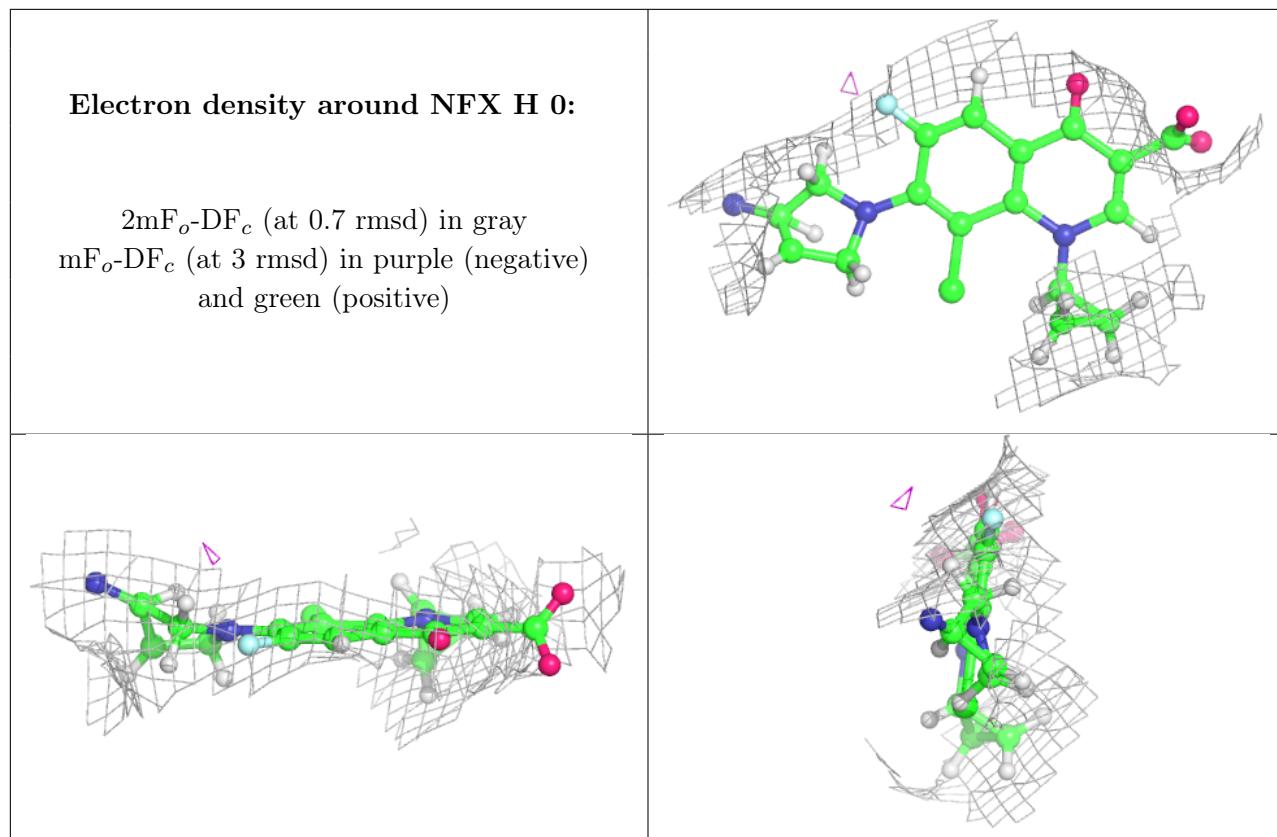
6.5 Other polymers (i)

There are no such residues in this entry.