



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 17, 2026 – 09:25 PM UTC

PDB ID : 5WT5 / pdb_00005wt5
Title : L-homocysteine-bound NifS from *Helicobacter pylori*
Authors : Fujishiro, T.; Takahashi, Y.
Deposited on : 2016-12-09
Resolution : 1.90 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

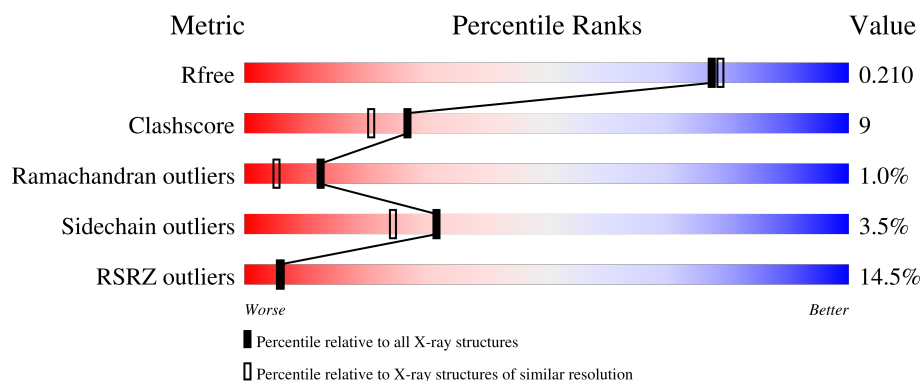
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.90 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}	180053	7789 (1.90-1.90)
Clashscore	190562	8410 (1.90-1.90)
Ramachandran outliers	187476	8333 (1.90-1.90)
Sidechain outliers	187428	8333 (1.90-1.90)
RSRZ outliers	180081	7790 (1.90-1.90)

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 $\leq 5\%$. 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	401	<div> <div>11%</div> <div> <div></div> <div>75%</div> <div>15%</div> <div>•</div> <div>9%</div> </div> </div>
1	B	401	<div> <div>12%</div> <div> <div></div> <div>72%</div> <div>16%</div> <div>•</div> <div>9%</div> </div> </div>
1	C	401	<div> <div>14%</div> <div> <div></div> <div>74%</div> <div>14%</div> <div>•</div> <div>9%</div> </div> </div>
1	D	401	<div> <div>15%</div> <div> <div></div> <div>73%</div> <div>16%</div> <div>•</div> <div>9%</div> </div> </div>

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 12116 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 Cysteine desulfurase IscS.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	363	Total	C	N	O	P	S	0	1	0
			2826	1782	494	537	1	12			
1	B	363	Total	C	N	O	P	S	0	0	0
			2822	1780	494	535	1	12			
1	C	364	Total	C	N	O	P	S	0	0	0
			2829	1783	495	538	1	12			
1	D	365	Total	C	N	O	P	S	0	0	0
			2834	1786	496	539	1	12			

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	2	VAL	LEU	engineered mutation	UNP O25008
A	138	ARG	LYS	engineered mutation	UNP O25008
A	388	VAL	-	expression tag	UNP O25008
A	389	ASP	-	expression tag	UNP O25008
A	390	LEU	-	expression tag	UNP O25008
A	391	VAL	-	expression tag	UNP O25008
A	392	PRO	-	expression tag	UNP O25008
A	393	ARG	-	expression tag	UNP O25008
A	394	GLY	-	expression tag	UNP O25008
A	395	SER	-	expression tag	UNP O25008
A	396	HIS	-	expression tag	UNP O25008
A	397	HIS	-	expression tag	UNP O25008
A	398	HIS	-	expression tag	UNP O25008
A	399	HIS	-	expression tag	UNP O25008
A	400	HIS	-	expression tag	UNP O25008
A	401	HIS	-	expression tag	UNP O25008
B	2	VAL	LEU	engineered mutation	UNP O25008
B	138	ARG	LYS	engineered mutation	UNP O25008
B	388	VAL	-	expression tag	UNP O25008
B	389	ASP	-	expression tag	UNP O25008
B	390	LEU	-	expression tag	UNP O25008

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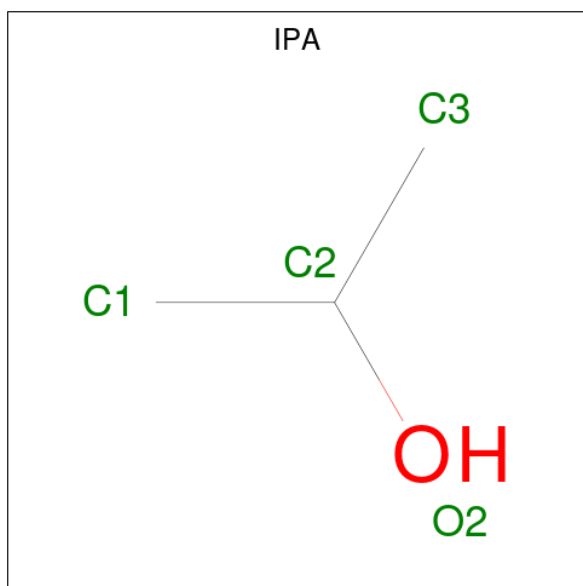
Chain	Residue	Modelled	Actual	Comment	Reference
B	391	VAL	-	expression tag	UNP O25008
B	392	PRO	-	expression tag	UNP O25008
B	393	ARG	-	expression tag	UNP O25008
B	394	GLY	-	expression tag	UNP O25008
B	395	SER	-	expression tag	UNP O25008
B	396	HIS	-	expression tag	UNP O25008
B	397	HIS	-	expression tag	UNP O25008
B	398	HIS	-	expression tag	UNP O25008
B	399	HIS	-	expression tag	UNP O25008
B	400	HIS	-	expression tag	UNP O25008
B	401	HIS	-	expression tag	UNP O25008
C	2	VAL	LEU	engineered mutation	UNP O25008
C	138	ARG	LYS	engineered mutation	UNP O25008
C	388	VAL	-	expression tag	UNP O25008
C	389	ASP	-	expression tag	UNP O25008
C	390	LEU	-	expression tag	UNP O25008
C	391	VAL	-	expression tag	UNP O25008
C	392	PRO	-	expression tag	UNP O25008
C	393	ARG	-	expression tag	UNP O25008
C	394	GLY	-	expression tag	UNP O25008
C	395	SER	-	expression tag	UNP O25008
C	396	HIS	-	expression tag	UNP O25008
C	397	HIS	-	expression tag	UNP O25008
C	398	HIS	-	expression tag	UNP O25008
C	399	HIS	-	expression tag	UNP O25008
C	400	HIS	-	expression tag	UNP O25008
C	401	HIS	-	expression tag	UNP O25008
D	2	VAL	LEU	engineered mutation	UNP O25008
D	138	ARG	LYS	engineered mutation	UNP O25008
D	388	VAL	-	expression tag	UNP O25008
D	389	ASP	-	expression tag	UNP O25008
D	390	LEU	-	expression tag	UNP O25008
D	391	VAL	-	expression tag	UNP O25008
D	392	PRO	-	expression tag	UNP O25008
D	393	ARG	-	expression tag	UNP O25008
D	394	GLY	-	expression tag	UNP O25008
D	395	SER	-	expression tag	UNP O25008
D	396	HIS	-	expression tag	UNP O25008
D	397	HIS	-	expression tag	UNP O25008
D	398	HIS	-	expression tag	UNP O25008
D	399	HIS	-	expression tag	UNP O25008
D	400	HIS	-	expression tag	UNP O25008

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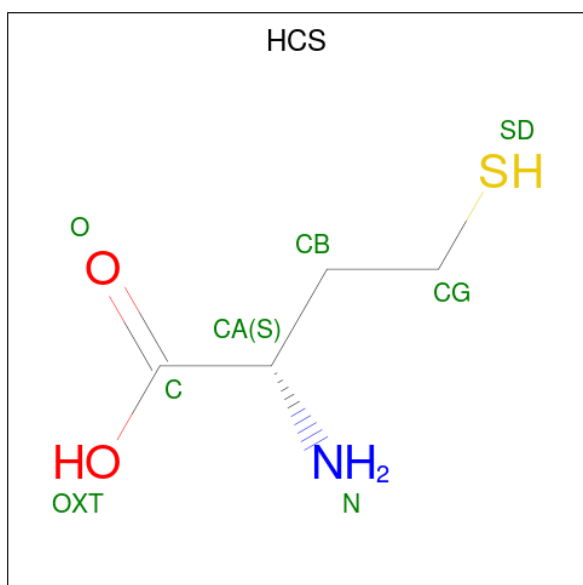
Chain	Residue	Modelled	Actual	Comment	Reference
D	401	HIS	-	expression tag	UNP O25008

- Molecule 2 is ISOPROPYL ALCOHOL (CCD ID: IPA) (formula: C_3H_8O).



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

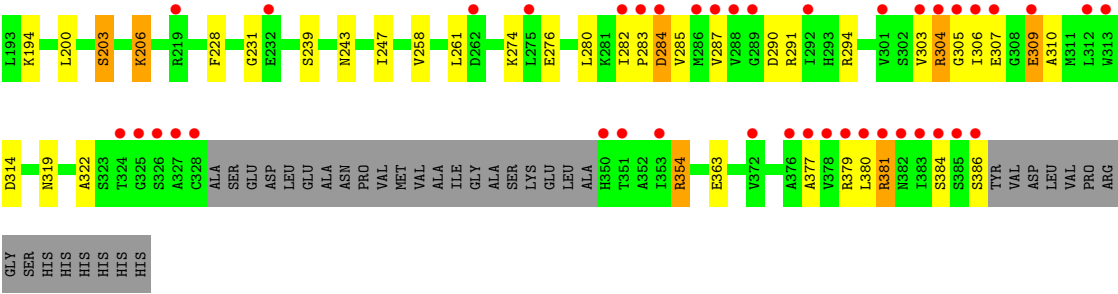
- Molecule 3 is 2-AMINO-4-MERCAPTO-BUTYRIC ACID (CCD ID: HCS) (formula: $C_4H_9NO_2S$).



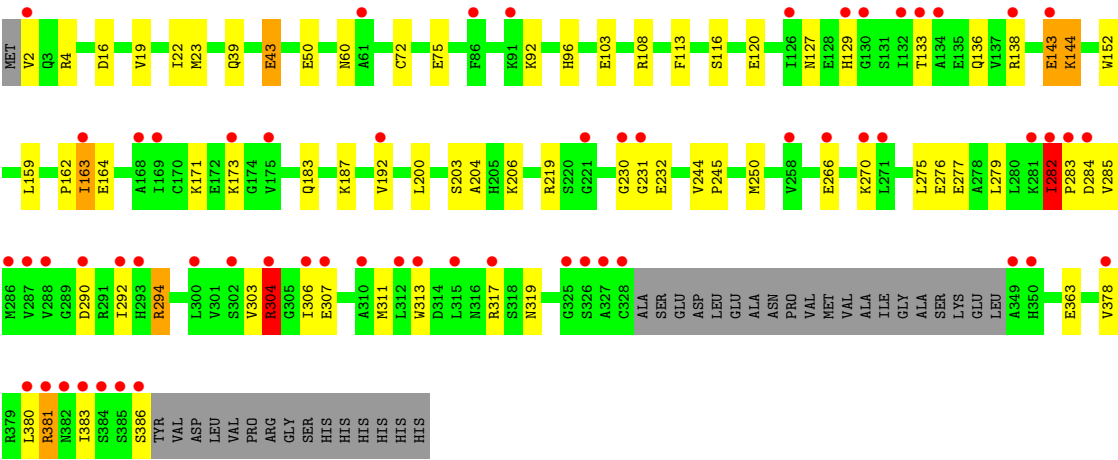
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	S	0	0
			8	4	1	2	1		
3	B	1	Total	C	N	O	S	0	0
			8	4	1	2	1		
3	C	1	Total	C	N	O	S	0	0
			8	4	1	2	1		
3	D	1	Total	C	N	O	S	0	0
			8	4	1	2	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	215	Total	O	0	0
			215	215		
4	B	175	Total	O	0	0
			175	175		
4	C	180	Total	O	0	0
			180	180		
4	D	199	Total	O	0	0
			199	199		



● Molecule 1: Cysteine desulfurase IscS



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	102.44Å 102.32Å 132.05Å 90.00° 90.10° 90.00°	Depositor
Resolution (Å)	47.78 – 1.90 47.78 – 1.90	Depositor EDS
% Data completeness (in resolution range)	99.9 (47.78-1.90) 99.9 (47.78-1.90)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	23.88 (at 1.90Å)	Xtriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.184 , 0.209 0.185 , 0.210	Depositor DCC
R_{free} test set	10809 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å ²)	29.7	Xtriage
Anisotropy	0.064	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 49.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.000 for k,h,-l 0.000 for -k,-h,-l 0.146 for h,-k,-l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	12116	wwPDB-VP
Average B, all atoms (Å ²)	40.0	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.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: HCS, LLP, IPA

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	0.95	0/2855	1.03	4/3866 (0.1%)
1	B	0.95	0/2848	1.03	1/3857 (0.0%)
1	C	0.95	1/2855 (0.0%)	1.03	3/3866 (0.1%)
1	D	0.87	0/2860	1.02	7/3873 (0.2%)
All	All	0.93	1/11418 (0.0%)	1.02	15/15462 (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
1	C	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	354	ARG	CZ-NH1	6.44	1.41	1.32

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	144	LYS	N-CA-C	-13.42	94.30	114.16
1	B	231	GLY	N-CA-C	7.45	122.67	114.40
1	D	143	GLU	CA-C-N	6.97	132.06	120.70
1	D	143	GLU	C-N-CA	6.97	132.06	120.70
1	C	144	LYS	N-CA-C	-6.94	104.43	113.17

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	143	GLU	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	2826	0	2830	63	0
1	B	2822	0	2825	55	0
1	C	2829	0	2830	59	0
1	D	2834	0	2835	40	0
2	A	4	0	8	0	0
3	A	8	0	8	2	0
3	B	8	0	8	0	0
3	C	8	0	9	3	0
3	D	8	0	8	0	0
4	A	215	0	0	7	0
4	B	175	0	0	6	0
4	C	180	0	0	10	0
4	D	199	0	0	7	0
All	All	12116	0	11361	209	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 9.

The worst 5 of 209 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4:ARG:HH11	1:B:39:GLN:HE22	0.96	0.92
1:B:148:VAL:HG11	1:B:170:CYS:SG	2.16	0.86
1:C:307:GLU:HG2	1:C:310:ALA:H	1.41	0.86
1:C:306:ILE:HD11	1:C:381:ARG:HG2	1.58	0.85
1:A:4:ARG:HH11	1:B:39:GLN:NE2	1.74	0.85

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	359/401 (90%)	347 (97%)	11 (3%)	1 (0%)	36	29
1	B	358/401 (89%)	346 (97%)	7 (2%)	5 (1%)	9	3
1	C	359/401 (90%)	346 (96%)	10 (3%)	3 (1%)	16	8
1	D	360/401 (90%)	347 (96%)	8 (2%)	5 (1%)	9	3
All	All	1436/1604 (90%)	1386 (96%)	36 (2%)	14 (1%)	12	5

5 of 14 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	283	PRO
1	B	304	ARG
1	C	304	ARG
1	D	163	ILE
1	D	304	ARG

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	306/336 (91%)	298 (97%)	8 (3%)	40	35
1	B	304/336 (90%)	292 (96%)	12 (4%)	28	21
1	C	306/336 (91%)	299 (98%)	7 (2%)	44	40
1	D	306/336 (91%)	290 (95%)	16 (5%)	21	13
All	All	1222/1344 (91%)	1179 (96%)	43 (4%)	32	24

5 of 43 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	43	GLU
1	D	277	GLU
1	D	138	ARG
1	D	171	LYS
1	D	303	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	129	HIS
1	A	196	ASN
1	B	39	GLN
1	B	319	ASN
1	D	95	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 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
1	LLP	D	206	1	23,24,25	2.92	9 (39%)	25,32,34	1.88	8 (32%)
1	LLP	B	206	1	23,24,25	2.56	6 (26%)	25,32,34	2.25	10 (40%)
1	LLP	A	206	1	23,24,25	2.51	7 (30%)	25,32,34	1.66	7 (28%)
1	LLP	C	206	1	23,24,25	2.70	6 (26%)	25,32,34	2.38	13 (52%)

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
1	LLP	D	206	1	-	4/16/17/19	0/1/1/1
1	LLP	B	206	1	-	3/16/17/19	0/1/1/1
1	LLP	A	206	1	-	3/16/17/19	0/1/1/1
1	LLP	C	206	1	-	3/16/17/19	0/1/1/1

The worst 5 of 28 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	206	LLP	C4'-NZ	8.81	1.56	1.27
1	C	206	LLP	C4'-NZ	7.97	1.53	1.27
1	D	206	LLP	C4'-NZ	7.85	1.53	1.27
1	C	206	LLP	C4-C4'	7.22	1.62	1.46
1	D	206	LLP	C4-C4'	6.83	1.61	1.46

The worst 5 of 38 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	206	LLP	OP3-P-OP4	-4.85	94.02	106.67
1	D	206	LLP	C3-C4-C5	-4.50	114.66	118.28
1	B	206	LLP	C4-C3-C2	-4.24	117.75	120.14
1	B	206	LLP	C5-C4-C4'	-4.16	115.05	121.47
1	C	206	LLP	CD-CE-NZ	3.94	121.25	110.83

There are no chirality outliers.

5 of 13 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	206	LLP	C-CA-CB-CG
1	D	206	LLP	C-CA-CB-CG
1	A	206	LLP	C4-C4'-NZ-CE
1	B	206	LLP	C4-C4'-NZ-CE
1	C	206	LLP	C4-C4'-NZ-CE

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	206	LLP	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	C	206	LLP	1	0

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	$\# Z > 2$
3	HCS	D	501	-	6,7,7	2.27	2 (33%)	5,8,8	2.05	2 (40%)
2	IPA	A	501	-	3,3,3	0.52	0	3,3,3	0.54	0
3	HCS	C	501	-	6,7,7	1.17	1 (16%)	5,8,8	4.22	3 (60%)
3	HCS	B	501	-	6,7,7	2.29	2 (33%)	5,8,8	2.68	2 (40%)
3	HCS	A	502	-	6,7,7	1.23	1 (16%)	5,8,8	4.95	3 (60%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	HCS	B	501	-	-	2/7/7/7	-
3	HCS	D	501	-	-	3/7/7/7	-
3	HCS	C	501	-	-	1/7/7/7	-
3	HCS	A	502	-	-	3/7/7/7	-

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	501	HCS	O-C	4.84	1.36	1.22
3	B	501	HCS	O-C	4.59	1.35	1.22
3	B	501	HCS	OXT-C	-2.72	1.22	1.30
3	C	501	HCS	OXT-C	2.33	1.38	1.30
3	D	501	HCS	OXT-C	-2.32	1.23	1.30

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	502	HCS	CB-CG-SD	-10.16	103.16	113.74
3	C	501	HCS	CB-CG-SD	-7.75	105.67	113.74
3	C	501	HCS	OXT-C-O	-4.59	113.66	124.08
3	B	501	HCS	OXT-C-O	-4.21	114.52	124.08
3	B	501	HCS	CB-CG-SD	-3.92	109.65	113.74

There are no chirality outliers.

5 of 9 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	501	HCS	O-C-CA-N
3	D	501	HCS	CA-CB-CG-SD
3	D	501	HCS	OXT-C-CA-N
3	A	502	HCS	OXT-C-CA-N
3	B	501	HCS	CA-CB-CG-SD

There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	501	HCS	3	0
3	A	502	HCS	2	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	362/401 (90%)	0.83	44 (12%) 8 9	19, 36, 66, 97	1 (0%)
1	B	362/401 (90%)	0.86	50 (13%) 6 6	21, 35, 64, 79	0
1	C	363/401 (90%)	0.90	58 (15%) 5 5	19, 37, 64, 108	0
1	D	364/401 (90%)	1.02	59 (16%) 4 4	21, 39, 64, 81	0
All	All	1451/1604 (90%)	0.90	211 (14%) 6 6	19, 37, 65, 108	1 (0%)

The worst 5 of 211 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	386	SER	6.7
1	D	349	ALA	6.0
1	A	2	VAL	5.6
1	C	386	SER	5.6
1	C	307	GLU	5.6

6.2 Non-standard residues in protein, DNA, RNA chains [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
1	LLP	D	206	24/25	0.96	0.09	21,26,34,41	0
1	LLP	C	206	24/25	0.97	0.08	18,24,43,45	0
1	LLP	A	206	24/25	0.98	0.06	20,24,29,33	0
1	LLP	B	206	24/25	0.98	0.06	20,25,34,35	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides 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(\AA^2)	Q<0.9
3	HCS	A	502	8/8	0.85	0.16	44,48,50,55	0
2	IPA	A	501	4/4	0.86	0.28	60,64,65,67	0
3	HCS	C	501	8/8	0.87	0.16	44,46,51,54	0
3	HCS	D	501	8/8	0.89	0.14	49,53,56,59	0
3	HCS	B	501	8/8	0.93	0.12	37,43,48,50	0

6.5 Other polymers [i](#)

There are no such residues in this entry.