wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 14, 2023 – 11:20 PM JST

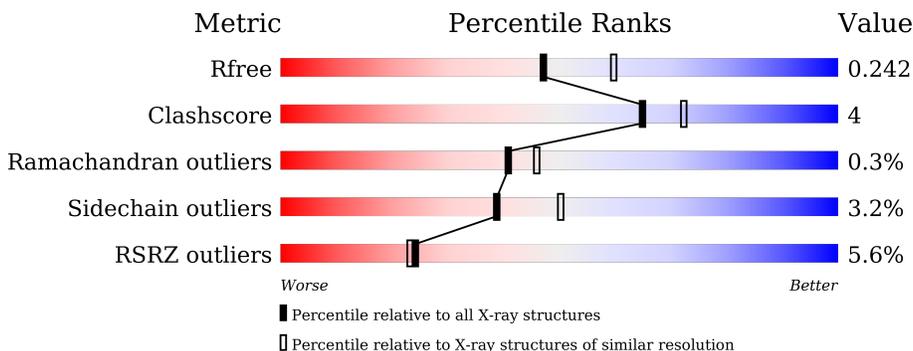|		
PDB ID	:	6IEM
Title	:	Argininosuccinate lyase from Mycobacterium tuberculosis
Authors	:	Paul, A.; Mishra, A.; Surolia, A.; Vijayan, M.
Deposited on	:	2018-09-14
Resolution	:	2.20 Å(reported)

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 2.20 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		0.242
Clashscore		4
Ramachandran outliers		0.3%
Sidechain outliers		3.2%
RSRZ outliers		5.6%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	470	7% / 88% / 7% · ·
1	B	470	3% / 90% / 7% · ·
1	C	470	4% / 86% / 8% · ·
1	D	470	4% / 84% / 11% · ·
1	E	470	5% / 86% / 9% / 5%
1	F	470	4% / 85% / 10% · ·

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WORLDWIDE PDB
PROTEIN DATA BANK

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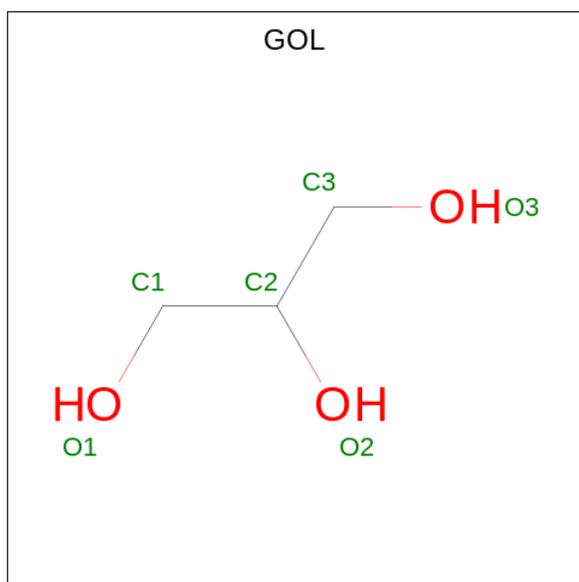| Mol	Chain	Length	Quality of chain
1	G	470	7% 87% 8% ·
1	H	470	8% 86% 10% · ·

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 27041 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 Argininosuccinate lyase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	450	Total	C	N	O	S	0	0	0
			3255	2046	587	615	7			
1	B	462	Total	C	N	O	S	0	1	0
			3343	2106	597	633	7			
1	C	450	Total	C	N	O	S	0	0	0
			3280	2061	591	621	7			
1	D	454	Total	C	N	O	S	0	1	0
			3325	2086	604	627	8			
1	E	448	Total	C	N	O	S	0	1	0
			3269	2053	586	623	7			
1	F	450	Total	C	N	O	S	0	0	0
			3274	2054	590	623	7			
1	G	449	Total	C	N	O	S	0	0	0
			3224	2026	582	609	7			
1	H	454	Total	C	N	O	S	0	1	0
			3269	2054	587	620	8			

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL

C3

OH O3

C1   C2

HO

O1

OH

O2

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).

EDO

O2

OH

C1

C2

HO

O1
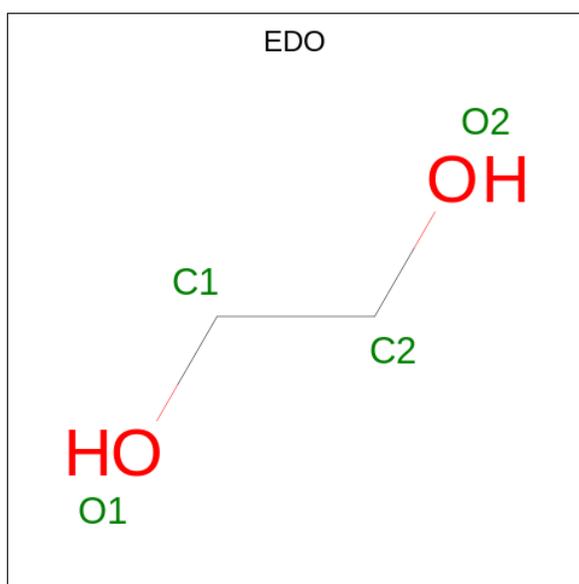
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 4	C 2	O 2	0	0
3	B	1	Total 4	C 2	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	C	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	F	1	Total 4	C 2	O 2	0	0

- Molecule 4 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).
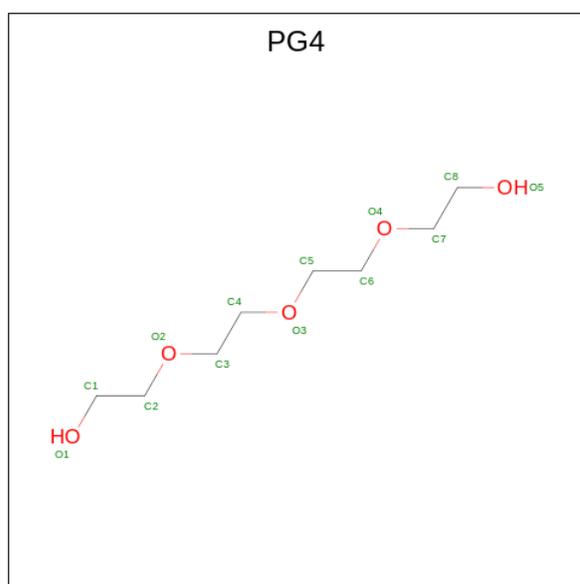
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total 13	C 8	O 5	0	0
4	C	1	Total 13	C 8	O 5	0	0

- Molecule 5 is 3,6,9,12,15-PENTAOXAHEPTADECANE (three-letter code: P3G) (formula: $C_{12}H_{26}O_5$).

P3G
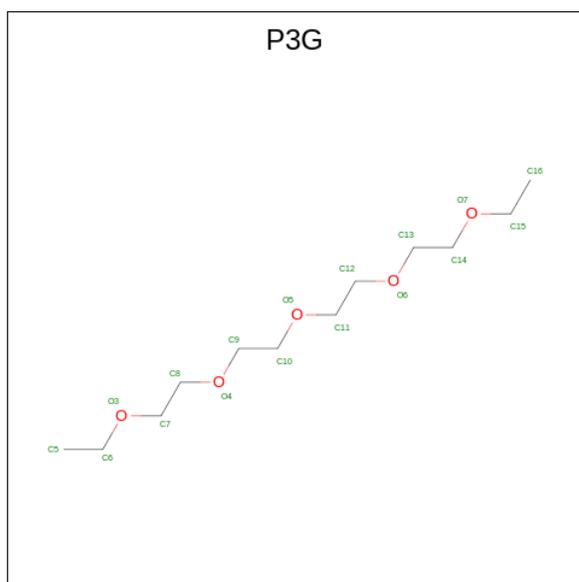
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	D	1	Total	C	O	0	0
			17	12	5		

- Molecule 6 is NONAETHYLENE GLYCOL (three-letter code: 2PE) (formula: $C_{18}H_{38}O_{10}$).

2PE
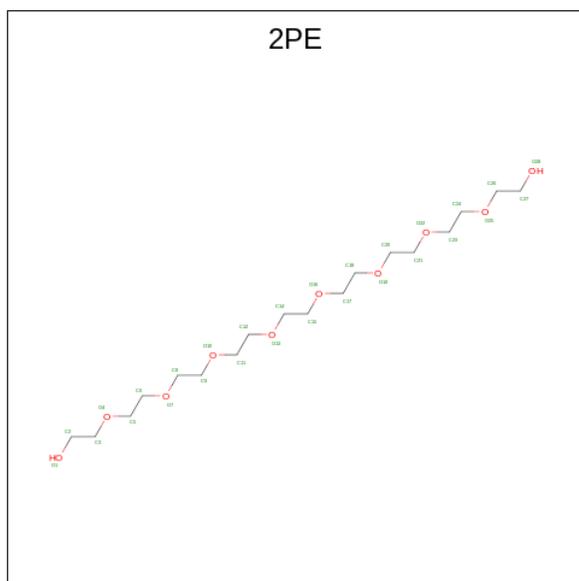
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	E	1	Total	C	O	0	0
			28	18	10		

- Molecule 7 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).

PGE
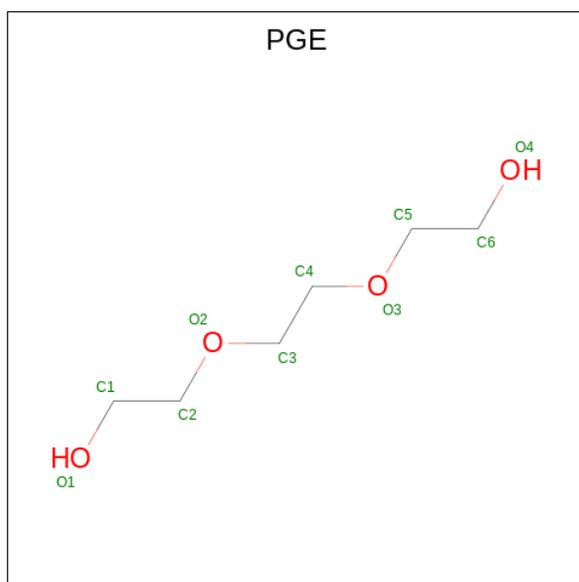
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	F	1	Total 10	C 6	O 4	0	0

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	78	Total 78	O 78	0	0
8	B	99	Total 99	O 99	0	0
8	C	87	Total 87	O 87	0	0
8	D	96	Total 96	O 96	0	0
8	E	95	Total 95	O 95	0	0
8	F	88	Total 88	O 88	0	0
8	G	67	Total 67	O 67	0	0
8	H	71	Total 71	O 71	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: Argininosuccinate lyase

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S419 P420 T423 P424 R439 R449 E462 R465 V469 R470
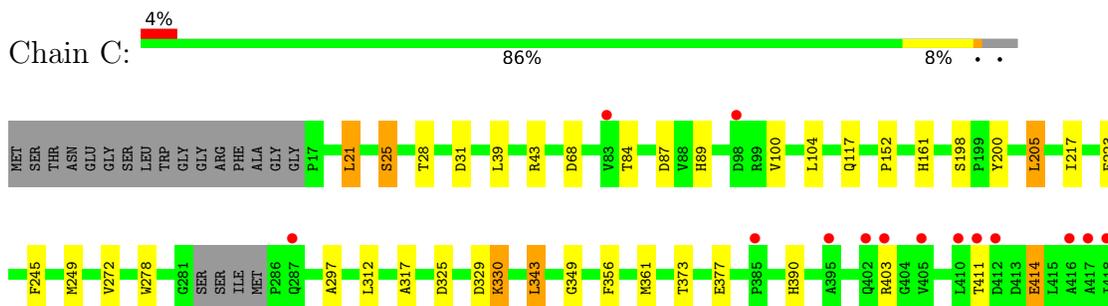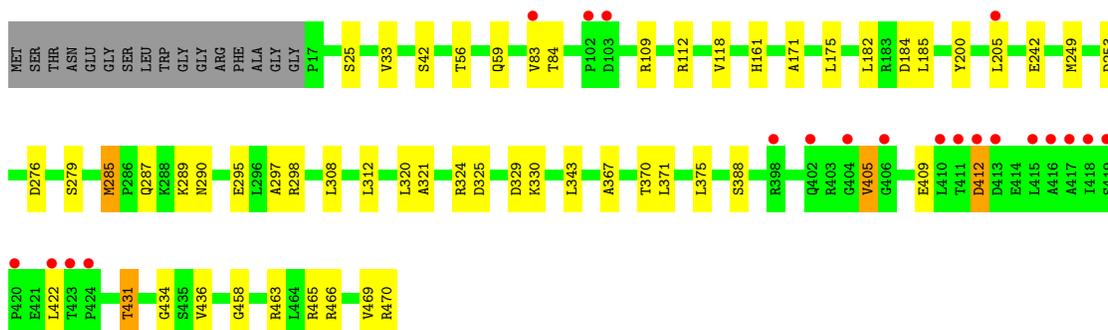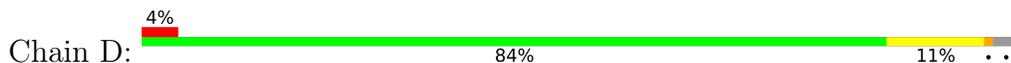
• Molecule 1: Argininosuccinate lyase

Chain D:

4%

84%   11%

MET SER THR ASN GLY SER LEU TRP GLY GLY ARG PHE ALA GLY GLY P17 S25 V33 S42 T56 Q59 V83 T84 P102 D103 R109 R112 V118 H161 A171 L175 L182 R183 D184 L185 Y200 L205 E242 M249 D253

D276 S279 M285 P286 Q287 K288 K289 N290 E295 L296 A297 R298 L308 L312 L320 A321 R324 D325 D329 K330 L343 A367 T370 L371 L375 S388 R398 Q402 R403 G404 V405 G406 E409 L410 T411 D412 D413 E414 L415 A416 A417 I418 S419

P420 E421 L422 T423 P424 T431 G434 S435 V436 G458 R463 L464 R465 R466 V469 R470

• Molecule 1: Argininosuccinate lyase

Chain E:

5%

86%   9%   5%

MET SER THR ASN GLY SER LEU TRP GLY GLY ARG PHE ALA GLY GLY P17 S18 D19 A20 L21 T28 D31 W32 V33 G53 D61 G62 D68 D73 V74 A75 D76 G77 S78 F79 G80 P81 L82 V83 T84 D85 E86 R94 D98 R99 V100 G101 P102 D103 L104

R123 L126 R127 H161 A171 L175 A176 H177 Y200 L205 G211 D238 M249 G281 SER SER ILE MET PRO GLN K288 E295 Q318 D325 V358 Q359 R360 M361 L364 A367 T370 W378 Q382 Q402 T411 E414 L415 A416

A417 I418 S419 P420 V436 R439 P447 G458 L468 V469 R470

• Molecule 1: Argininosuccinate lyase

Chain F:

4%

85%   10%   • •

MET SER THR ASN GLY SER LEU TRP GLY GLY ARG PHE ALA GLY GLY P17 T28 D31 A35 P36 L39 R43 A71 Q72 L82 V83 T84 D85 H89 E93 R94 R112 Q117 H161 S198 L205 A206 G207 F223 A241 F245

M249 R256 T267 D276 G281 SER SER ILE MET P286 Q287 E295 L320 R324 D325 D329 K330 D335 Q339 F356 M361 L371 Q382 P385 A399 A400 R403 G404 V405 G406 L407 Q408 E409 L410 T411 D412 D413 E414 L415 A416 A417 I418 S419
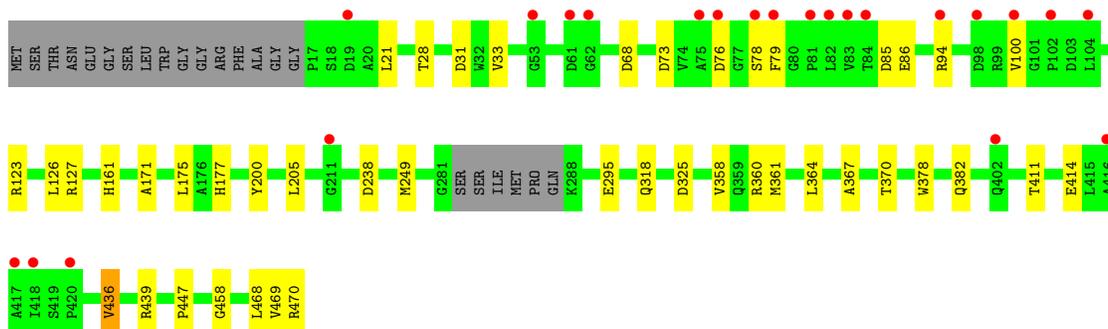
P420 E421 L422 T423 P424 Q425 E428 T431 G434 R449 R463 L464 R465 R466 Q467 L468 V469 R470

• Molecule 1: Argininosuccinate lyase

Chain G:

7%

87%   8%   •

MET SER THR ASN GLU GLY SER LEU TRP GLY GLY ARG PHE ALA GLY GLY P17 S18 L39 G53 L54 D61 A65 S69 L70 A71 Q72 D73 V74 A75 D76 G77 S78 F79 V83 T84 H89 D98 S113 V130 T160 H161 L175 F191 S198

L205 D220 F223 A241 S282 SER ILE MET PRO GLN K288 K289 N290 P291 D292 E295 L315 K316 A317 D325 D335 Q339 V358 M361 A367 T370 R381 Q382 A395 R403 G404 L407 Q408 E409 L410 T411 D412 D413 A416 A417 I418 S419

P420 E421 L422 T423 P424 Q425 V426 R427 T431 G434 S435 V436 P447 G448 R449 I457 L468 V469 R470

• Molecule 1: Argininosuccinate lyase

Chain H:

8%

86%

10%

MET SER THR ASN GLU GLY SER LEU TRP GLY GLY ARG PHE ALA GLY GLY P17 S18 D19 A20 L21 A22 K26 S27 T28 H29 D38 S42 R43 A44 H45 T46 M47 V48 G53 L54 L55 T56 E57 E58 G62 L63 L64 A65 D68 S69 D76 G77 S78 F79 G80 P81 L82

V83 T84 D85 E86 D87 L96 I97 D98 R99 V100 G101 P102 D103 L104 G105 G106 R107 R112 Q117 H161 S198 L205 A219 F223 F245 M249 V272 D276 S277 W278 S279 T280 G281 S282 P286 K289 D292 E295 R298 L308 L315

R324 D325 L326 Q327 G349 F356 N357 V358 M361 A367 T370 P385 S388 R398 T411 D412 D413 A416 A417 I418 S419 P420 T431 G434 C441 R449 V469 R470

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	127.55Å 183.82Å 190.60Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.48 – 2.20 40.42 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.9 (40.48-2.20) 100.0 (40.42-2.20)	Depositor EDS
R_{merge}	0.21	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.63 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.8.0049	Depositor
R, R_{free}	0.203 , 0.244 0.203 , 0.242	Depositor DCC
R_{free} test set	11347 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	29.4	Xtriage
Anisotropy	0.317	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 45.7	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.011 for -h,l,k	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	27041	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.16% 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: GOL, PGE, EDO, PG4, P3G, 2PE

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	0.47	0/3312	0.65	0/4517
1	B	0.49	0/3406	0.69	0/4645
1	C	0.49	0/3337	0.66	0/4548
1	D	0.47	0/3382	0.67	0/4607
1	E	0.47	0/3324	0.66	0/4529
1	F	0.48	0/3331	0.65	0/4541
1	G	0.43	0/3279	0.62	0/4476
1	H	0.44	0/3328	0.63	0/4541
All	All	0.47	0/26699	0.65	0/36404

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3255	0	3185	24	0
1	B	3343	0	3265	20	0
1	C	3280	0	3225	42	0
1	D	3325	0	3284	44	0
1	E	3269	0	3204	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	3274	0	3209	43	0
1	G	3224	0	3142	24	0
1	H	3269	0	3186	33	0
2	A	6	0	8	2	0
2	B	6	0	8	0	0
3	A	4	0	6	0	0
3	B	4	0	6	1	0
3	C	4	0	6	0	0
3	D	8	0	12	0	0
3	E	4	0	6	0	0
3	F	4	0	6	0	0
4	B	13	0	18	0	0
4	C	13	0	18	0	0
5	D	17	0	26	1	0
6	E	28	0	38	1	0
7	F	10	0	14	0	0
8	A	78	0	0	1	0
8	B	99	0	0	1	0
8	C	87	0	0	1	0
8	D	96	0	0	5	0
8	E	95	0	0	0	0
8	F	88	0	0	2	0
8	G	67	0	0	1	0
8	H	71	0	0	0	0
All	All	27041	0	25872	215	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 4.

The worst 5 of 215 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:G:431:THR:HG22	1:G:434:GLY:H	1.21	1.04
1:E:249:MET:HE1	1:F:241:ALA:HB3	1.48	0.94
1:C:87:ASP:OD2	1:C:89:HIS:HD2	1.54	0.89
1:G:431:THR:HG22	1:G:434:GLY:N	2.01	0.74
1:A:203:GLY:HA3	2:A:501:GOL:H32	1.70	0.71

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	446/470 (95%)	431 (97%)	14 (3%)	1 (0%)	47	55
1	B	459/470 (98%)	448 (98%)	9 (2%)	2 (0%)	34	37
1	C	446/470 (95%)	436 (98%)	9 (2%)	1 (0%)	47	55
1	D	452/470 (96%)	444 (98%)	7 (2%)	1 (0%)	47	55
1	E	444/470 (94%)	426 (96%)	16 (4%)	2 (0%)	29	31
1	F	446/470 (95%)	433 (97%)	12 (3%)	1 (0%)	47	55
1	G	445/470 (95%)	430 (97%)	13 (3%)	2 (0%)	34	37
1	H	453/470 (96%)	441 (97%)	10 (2%)	2 (0%)	34	37
All	All	3591/3760 (96%)	3489 (97%)	90 (2%)	12 (0%)	41	46

5 of 12 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	18	SER
1	A	205	LEU
1	C	205	LEU
1	E	205	LEU
1	F	205	LEU

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	312/352 (89%)	304 (97%)	8 (3%)	46	58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	320/352 (91%)	308 (96%)	12 (4%)	33	42
1	C	317/352 (90%)	306 (96%)	11 (4%)	36	46
1	D	324/352 (92%)	311 (96%)	13 (4%)	31	40
1	E	316/352 (90%)	306 (97%)	10 (3%)	39	50
1	F	317/352 (90%)	307 (97%)	10 (3%)	39	50
1	G	305/352 (87%)	297 (97%)	8 (3%)	46	58
1	H	311/352 (88%)	303 (97%)	8 (3%)	46	58
All	All	2522/2816 (90%)	2442 (97%)	80 (3%)	39	50

5 of 80 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	320	LEU
1	G	431	THR
1	F	371	LEU
1	G	113	SER
1	H	325	ASP

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

Mol	Chain	Res	Type
1	B	151	HIS
1	C	89	HIS
1	D	287	GLN
1	E	390	HIS
1	F	382	GLN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

14 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	EDO	D	501	-	3,3,3	0.49	0	2,2,2	0.37	0
3	EDO	B	503	-	3,3,3	0.55	0	2,2,2	0.14	0
4	PG4	C	501	-	12,12,12	0.48	0	11,11,11	0.33	0
5	P3G	D	503	-	16,16,16	0.59	0	15,15,15	0.23	0
7	PGE	F	501	-	9,9,9	0.50	0	8,8,8	0.35	0
2	GOL	A	501	-	5,5,5	0.40	0	5,5,5	1.01	0
3	EDO	A	502	-	3,3,3	0.66	0	2,2,2	0.13	0
3	EDO	F	502	-	3,3,3	0.68	0	2,2,2	0.24	0
3	EDO	E	502	-	3,3,3	0.55	0	2,2,2	0.44	0
6	2PE	E	501	-	27,27,27	0.56	0	26,26,26	0.34	0
3	EDO	C	502	-	3,3,3	0.46	0	2,2,2	0.34	0
4	PG4	B	501	-	12,12,12	0.45	0	11,11,11	0.62	0
3	EDO	D	502	-	3,3,3	0.49	0	2,2,2	0.52	0
2	GOL	B	502	-	5,5,5	0.40	0	5,5,5	0.37	0

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	EDO	D	501	-	-	1/1/1/1	-
3	EDO	B	503	-	-	1/1/1/1	-
4	PG4	C	501	-	-	8/10/10/10	-
5	P3G	D	503	-	-	6/14/14/14	-
7	PGE	F	501	-	-	4/7/7/7	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	A	501	-	-	3/4/4/4	-
3	EDO	A	502	-	-	1/1/1/1	-
3	EDO	F	502	-	-	0/1/1/1	-
3	EDO	E	502	-	-	1/1/1/1	-
6	2PE	E	501	-	-	16/25/25/25	-
3	EDO	C	502	-	-	1/1/1/1	-
4	PG4	B	501	-	-	6/10/10/10	-
3	EDO	D	502	-	-	1/1/1/1	-
2	GOL	B	502	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 51 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	502	GOL	C1-C2-C3-O3
4	C	501	PG4	O2-C3-C4-O3
7	F	501	PGE	O2-C3-C4-O3
5	D	503	P3G	O5-C11-C12-O6
5	D	503	P3G	O6-C13-C14-O7

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	503	EDO	1	0
5	D	503	P3G	1	0
2	A	501	GOL	2	0
6	E	501	2PE	1	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.
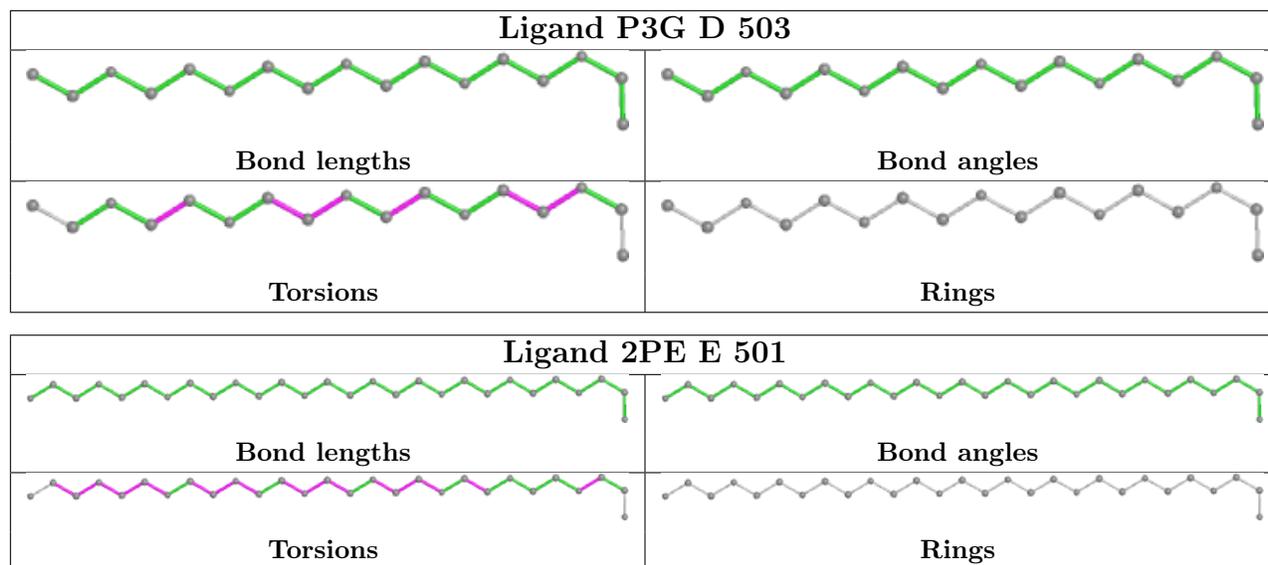
5.7 Other polymers ⓘ

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	450/470 (95%)	0.23	34 (7%)	13	12	15, 32, 63, 76	0
1	B	462/470 (98%)	-0.01	14 (3%)	50	48	14, 28, 60, 78	0
1	C	450/470 (95%)	-0.00	19 (4%)	36	34	14, 28, 56, 80	0
1	D	454/470 (96%)	0.02	21 (4%)	32	31	16, 29, 54, 65	0
1	E	448/470 (95%)	0.10	23 (5%)	28	26	14, 30, 62, 83	0
1	F	450/470 (95%)	0.08	20 (4%)	34	32	14, 30, 58, 74	0
1	G	449/470 (95%)	0.22	35 (7%)	13	11	17, 37, 65, 76	0
1	H	454/470 (96%)	0.34	37 (8%)	12	10	18, 36, 65, 76	0
All	All	3617/3760 (96%)	0.12	203 (5%)	24	23	14, 31, 62, 83	0

The worst 5 of 203 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	83	VAL	5.8
1	F	83	VAL	5.2
1	H	420	PRO	5.2
1	A	420	PRO	5.2
1	H	78	SER	5.1

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

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

6.3 Carbohydrates ⓘ

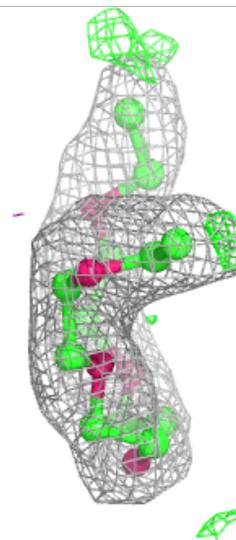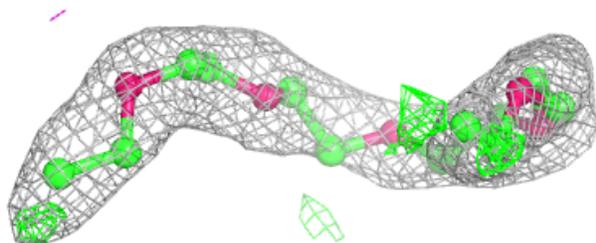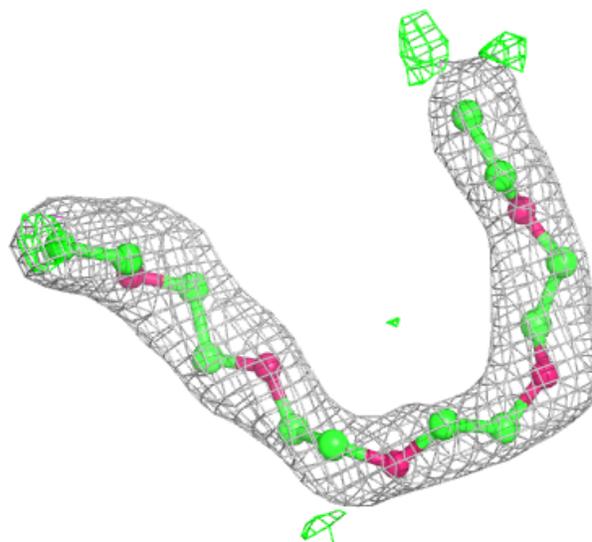There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.
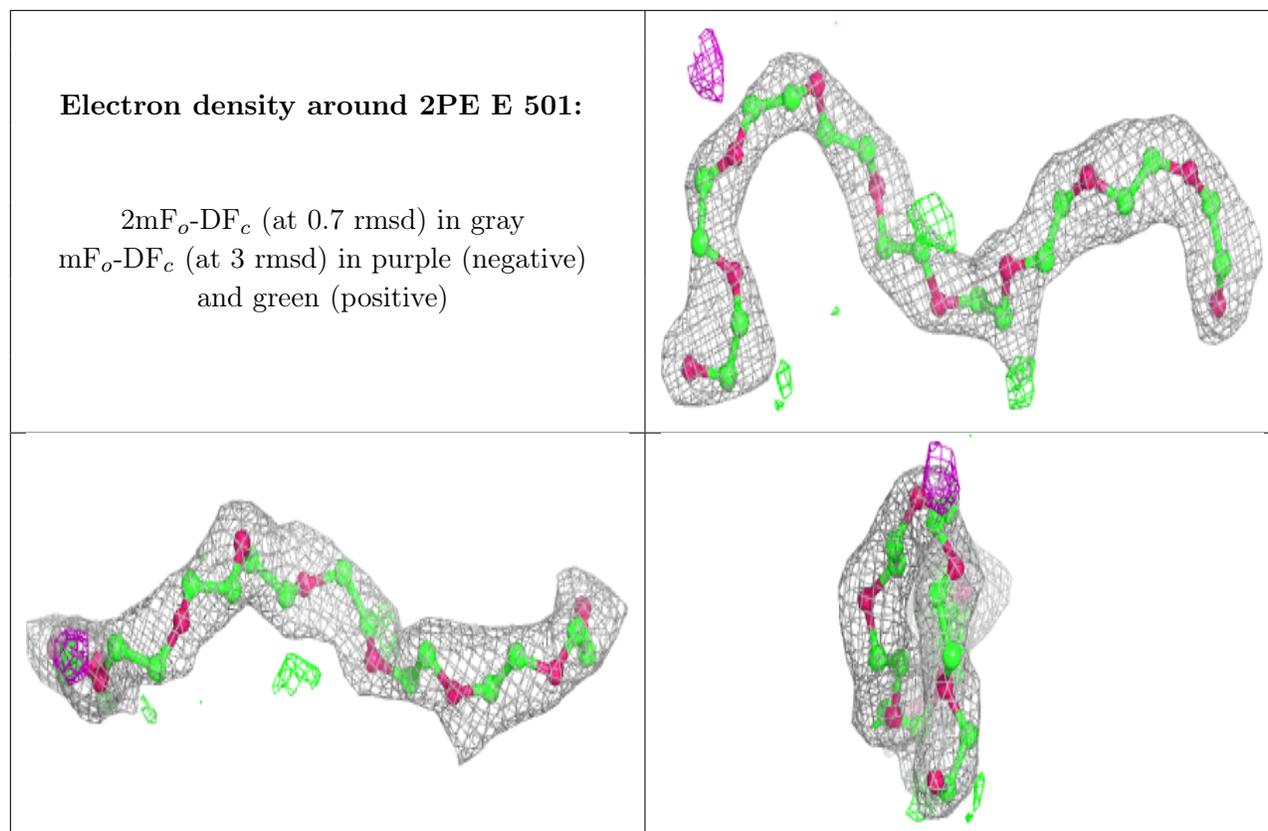
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
3	EDO	D	501	4/4	0.61	0.16	52,56,57,58	0
3	EDO	F	502	4/4	0.69	0.20	40,44,47,47	0
3	EDO	D	502	4/4	0.73	0.21	59,61,65,65	0
5	P3G	D	503	17/17	0.83	0.16	51,59,67,69	0
3	EDO	C	502	4/4	0.85	0.19	57,60,60,61	0
6	2PE	E	501	28/28	0.86	0.18	46,56,65,67	0
3	EDO	A	502	4/4	0.87	0.14	33,38,39,40	0
3	EDO	E	502	4/4	0.88	0.11	37,41,42,46	0
4	PG4	C	501	13/13	0.89	0.14	48,55,62,64	0
7	PGE	F	501	10/10	0.89	0.12	43,52,54,57	0
2	GOL	B	502	6/6	0.90	0.16	36,37,41,44	0
4	PG4	B	501	13/13	0.91	0.16	41,47,52,52	0
2	GOL	A	501	6/6	0.93	0.16	37,44,47,47	0
3	EDO	B	503	4/4	0.96	0.23	41,43,43,44	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 P3G D 503:

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

Electron density around 2PE E 501:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.