



Full wwPDB X-ray Structure Validation Report

Feb 27, 2014 – 07:25 AM GMT

PDB ID : 3O6R
Title : Crystal Structure of 4-Chlorocatechol Dioxygenase from *Rhodococcus opacus* 1CP in complex with pyrogallol
Authors : Ferraroni, M.; Briganti, F.; Kolomitseva, M.; Golovleva, L.
Deposited on : 2010-07-29
Resolution : 2.60 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

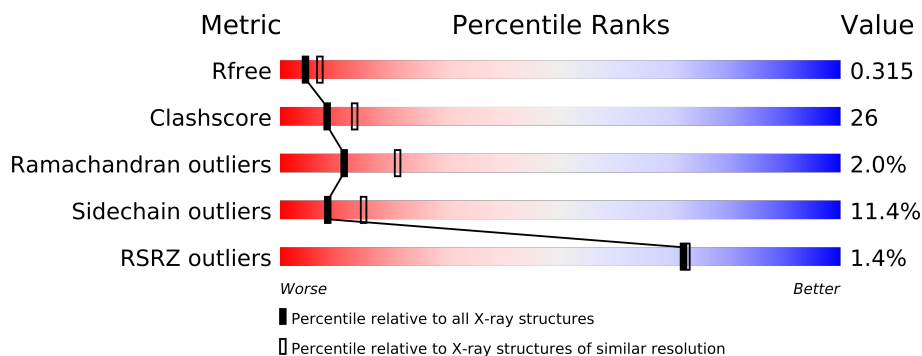
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.60 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}	66092	1718 (2.60-2.60)
Clashscore	79885	2154 (2.60-2.60)
Ramachandran outliers	78287	2113 (2.60-2.60)
Sidechain outliers	78261	2113 (2.60-2.60)
RSRZ outliers	66119	1718 (2.60-2.60)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	257	
1	B	257	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
3	MYG	A	303	-	X
3	MYG	A	304	-	X

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 4217 atoms, of which 0 are hydrogen and 0 are deuterium.

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.

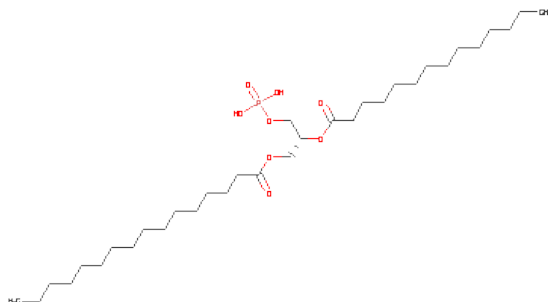
- Molecule 1 is a protein called Chlorocatechol 1,2-dioxygenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	256	Total	C	N	O	S	0	0	0
			2030	1299	338	387	6			
1	B	256	Total	C	N	O	S	0	0	0
			2011	1284	334	387	6			

- Molecule 2 is FE (III) ION (three-letter code: FE) (formula: Fe).

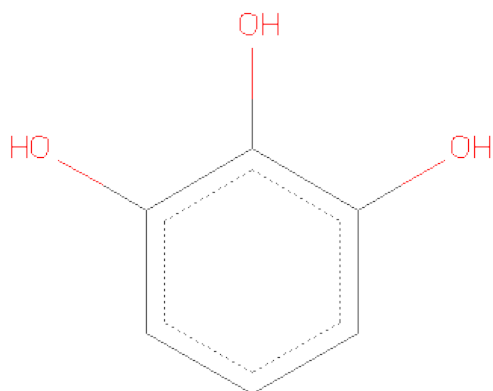
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total	Fe	0	0
			1	1		
2	A	1	Total	Fe	0	0
			1	1		

- Molecule 3 is (2R)-3-(PHOSPHONOOXY)-2-(TETRADECANOYLOXY)PROPYLPALMITATE (three-letter code: MYY) (formula: C₃₃H₆₅O₈P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			36	32	4		
3	A	1	Total	C	O	P	0
			38	32	5	1	0

- Molecule 4 is BENZENE-1,2,3-TRIOL (three-letter code: PYG) (formula: C₆H₆O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			9	6	3		
4	B	1	Total	C	O	0	0
			8	6	2		

- Molecule 5 is water.

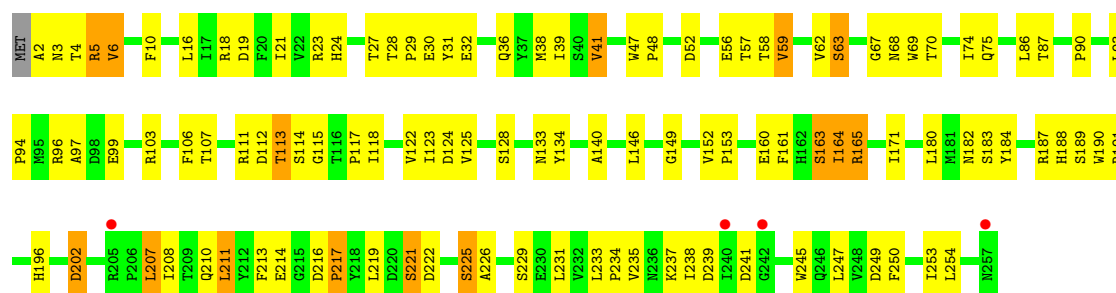
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	55	Total	O	0	0
			55	55		
5	B	28	Total	O	0	0
			28	28		

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

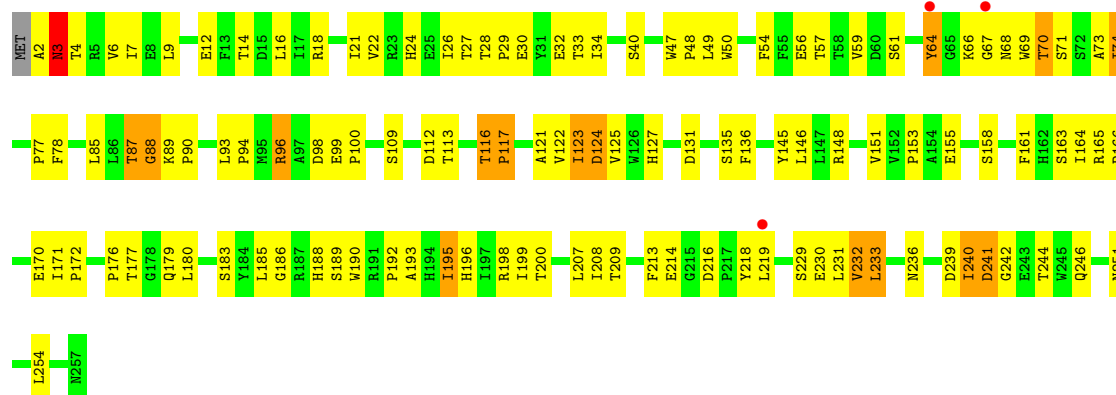
• Molecule 1: Chlorocatechol 1,2-dioxygenase

Chain A: 



• Molecule 1: Chlorocatechol 1,2-dioxygenase

Chain B: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 63 2 2	Depositor
Cell constants a, b, c, α , β , γ	89.65Å 89.65Å 312.31Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	10.00 – 2.60 31.68 – 2.60	Depositor EDS
% Data completeness (in resolution range)	82.9 (10.00-2.60) 82.9 (31.68-2.60)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.56 (at 2.61Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.225 , 0.316 0.229 , 0.315	Depositor DCC
R_{free} test set	400 reflections (2.06%)	DCC
Wilson B-factor (Å ²)	67.2	Xtriage
Anisotropy	0.206	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 43.1	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.40$, $\langle L^2 \rangle = 0.22$	Xtriage
Outliers	0 of 19842 reflections	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	4217	wwPDB-VP
Average B, all atoms (Å ²)	65.0	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.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MYY, FE, PYG

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	0/2091	0.99	3/2854 (0.1%)
1	B	0.84	0/2070	0.90	1/2825 (0.0%)
All	All	0.90	0/4161	0.95	4/5679 (0.1%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	52	ASP	CB-CG-OD2	-5.89	113.00	118.30
1	A	247	LEU	CA-CB-CG	5.36	127.63	115.30
1	A	52	ASP	CB-CG-OD1	5.34	123.11	118.30
1	B	233	LEU	CA-CB-CG	5.18	127.21	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2030	0	1932	104	0
1	B	2011	0	1905	110	0
2	A	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1	0	0	0	0
3	A	74	0	114	18	0
4	A	9	0	4	1	0
4	B	8	0	3	1	0
5	A	55	0	0	15	0
5	B	28	0	0	4	0
All	All	4217	0	3958	212	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 26.

All (212) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:135:SER:OG	1:B:148:ARG:HD2	1.43	1.17
1:A:23:ARG:HG3	5:A:277:HOH:O	1.50	1.11
1:B:166:PRO:HG2	1:B:195:ILE:HG22	1.14	1.09
1:A:27:THR:OG1	1:A:30:GLU:HG3	1.50	1.08
1:B:96:ARG:HG3	1:B:99:GLU:OE1	1.55	1.05
1:A:6:VAL:HG13	3:A:304:MYE:H132	1.45	0.95
1:A:57:THR:HB	5:A:286:HOH:O	1.64	0.95
1:B:3:ASN:O	1:B:7:ILE:HG13	1.69	0.92
1:B:166:PRO:HG2	1:B:195:ILE:CG2	2.02	0.90
1:B:135:SER:O	1:B:136:PHE:HB2	1.74	0.87
1:B:99:GLU:OE2	1:B:100:PRO:HD2	1.75	0.86
1:A:31:TYR:CD2	1:B:59:VAL:HG21	2.14	0.82
1:B:27:THR:OG1	1:B:30:GLU:HG3	1.81	0.81
1:A:6:VAL:HG13	3:A:304:MYE:C13	2.11	0.81
1:B:21:ILE:HA	1:B:26:ILE:HD12	1.64	0.80
1:A:6:VAL:CG1	3:A:304:MYE:H132	2.12	0.79
1:A:107:THR:O	1:A:249:ASP:HA	1.83	0.79
1:B:28:THR:HG22	1:B:32:GLU:OE2	1.83	0.78
1:B:99:GLU:CD	1:B:100:PRO:HD2	2.03	0.78
1:B:166:PRO:CG	1:B:195:ILE:HG22	2.07	0.76
1:A:16:LEU:HD23	1:B:16:LEU:HD11	1.70	0.74
1:A:96:ARG:HD3	1:A:99:GLU:OE1	1.88	0.73
1:B:73:ALA:HB3	1:B:209:THR:HA	1.70	0.73
1:B:78:PHE:O	1:B:148:ARG:NH2	2.21	0.72
1:A:225:SER:HB3	5:A:290:HOH:O	1.90	0.72
1:A:68:ASN:HD21	1:A:113:THR:HB	1.55	0.71
3:A:303:MYE:H271	3:A:303:MYE:H121	1.73	0.70
1:A:86:LEU:HA	5:A:294:HOH:O	1.92	0.70
1:B:135:SER:HG	1:B:148:ARG:HD2	1.57	0.69

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:165:ARG:HD2	1:B:246:GLN:CD	2.12	0.68
3:A:303:MYE:H6C2	3:A:303:MYE:H8C1	1.76	0.66
1:A:106:PHE:O	1:A:160:GLU:HA	1.97	0.65
1:A:58:THR:OG1	1:B:18:ARG:HG2	1.97	0.65
1:A:214:GLU:HG2	5:A:308:HOH:O	1.97	0.65
1:B:56:GLU:HG2	1:B:74:ILE:HB	1.80	0.64
1:B:216:ASP:HB3	1:B:219:LEU:HG	1.79	0.64
1:A:56:GLU:HB3	1:A:74:ILE:HG21	1.78	0.64
1:B:14:THR:CG2	1:B:18:ARG:CZ	2.75	0.64
1:A:188:HIS:HD2	1:A:190:TRP:H	1.45	0.64
1:B:64:TYR:HE1	1:B:207:LEU:HD12	1.62	0.63
1:A:118:ILE:CD1	1:A:254:LEU:HD22	2.29	0.63
1:B:163:SER:OG	1:B:164:ILE:N	2.31	0.63
1:A:219:LEU:HD23	5:A:267:HOH:O	1.99	0.63
1:A:93:LEU:HG	1:A:163:SER:HB2	1.80	0.63
1:A:123:ILE:HD12	1:A:123:ILE:N	2.14	0.62
1:B:180:LEU:O	1:B:185:LEU:HB2	2.00	0.62
1:A:196:HIS:HE1	4:A:258:PYG:O1	1.65	0.61
1:B:239:ASP:C	1:B:241:ASP:H	2.03	0.60
1:A:62:VAL:HG11	1:B:22:VAL:HA	1.83	0.60
3:A:304:MYE:H382	3:A:303:MYE:H322	1.82	0.60
1:A:57:THR:HG23	5:A:298:HOH:O	2.01	0.60
1:B:70:THR:HG21	1:B:207:LEU:HD21	1.83	0.60
1:A:41:VAL:HG12	1:A:47:TRP:CE2	2.37	0.59
1:B:96:ARG:CG	1:B:99:GLU:OE1	2.40	0.59
1:A:57:THR:CG2	5:A:298:HOH:O	2.51	0.58
1:B:192:PRO:O	1:B:193:ALA:C	2.42	0.57
1:A:118:ILE:HD13	1:A:254:LEU:HD22	1.86	0.57
1:A:233:LEU:HD21	1:A:250:PHE:HB2	1.87	0.57
1:A:28:THR:HB	1:A:29:PRO:HD3	1.87	0.57
1:A:184:TYR:CD1	3:A:303:MYE:H6C1	2.40	0.57
1:B:207:LEU:HG	1:B:208:ILE:N	2.19	0.57
1:A:165:ARG:O	5:A:279:HOH:O	2.18	0.56
1:A:188:HIS:CD2	1:A:190:TRP:H	2.24	0.55
1:B:121:ALA:HB3	1:B:153:PRO:HG3	1.86	0.55
1:B:27:THR:OG1	1:B:30:GLU:CG	2.52	0.55
1:A:16:LEU:CD2	1:B:16:LEU:HD11	2.36	0.55
1:A:229:SER:C	1:A:231:LEU:H	2.09	0.55
1:B:213:PHE:CD2	1:B:213:PHE:N	2.74	0.55
1:B:67:GLY:HA3	1:B:69:TRP:CZ3	2.42	0.54
1:B:188:HIS:HD2	1:B:190:TRP:H	1.56	0.54
1:B:145:TYR:HB2	5:B:275:HOH:O	2.08	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:69:TRP:HA	1:A:253:ILE:HB	1.89	0.54
1:B:14:THR:HG23	1:B:18:ARG:CZ	2.37	0.54
1:B:229:SER:O	1:B:232:VAL:HG13	2.08	0.54
1:B:2:ALA:O	1:B:3:ASN:C	2.46	0.54
1:A:152:VAL:O	1:A:153:PRO:C	2.46	0.53
1:A:128:SER:HB3	1:A:134:TYR:CZ	2.43	0.53
1:B:27:THR:HG1	1:B:30:GLU:HG3	1.74	0.53
1:B:67:GLY:HA3	1:B:69:TRP:HZ3	1.73	0.53
1:B:209:THR:OG1	1:B:231:LEU:HD21	2.09	0.53
1:B:66:LYS:O	1:B:69:TRP:CE3	2.62	0.53
1:B:69:TRP:O	1:B:70:THR:C	2.45	0.53
1:A:47:TRP:N	1:A:48:PRO:CD	2.71	0.53
1:A:216:ASP:O	1:A:219:LEU:HB2	2.09	0.53
1:B:49:LEU:HD21	1:B:171:ILE:CG2	2.38	0.53
1:B:87:THR:O	1:B:88:GLY:O	2.28	0.52
3:A:303:MYH:H112	1:B:6:VAL:HB	1.91	0.52
1:B:27:THR:HB	1:B:29:PRO:HD2	1.92	0.52
1:B:218:TYR:O	1:B:219:LEU:C	2.47	0.52
1:B:14:THR:CG2	1:B:18:ARG:NH1	2.74	0.51
1:B:93:LEU:HD12	1:B:163:SER:HB2	1.91	0.51
1:A:171:ILE:HB	1:A:189:SER:HB2	1.92	0.51
1:A:3:ASN:HB3	1:A:6:VAL:HG23	1.94	0.50
1:B:240:ILE:HG22	1:B:240:ILE:O	2.11	0.50
1:A:16:LEU:HD21	5:B:272:HOH:O	2.11	0.50
1:B:188:HIS:CD2	1:B:190:TRP:HB2	2.47	0.50
1:B:2:ALA:O	1:B:6:VAL:HG13	2.11	0.50
1:B:50:TRP:CE2	1:B:54:PHE:HE2	2.30	0.50
3:A:304:MYH:H292	3:A:304:MYH:H141	1.94	0.49
1:A:111:ARG:O	1:A:253:ILE:HA	2.12	0.49
1:B:112:ASP:OD1	1:B:112:ASP:C	2.49	0.49
3:A:304:MYH:H8C2	5:B:266:HOH:O	2.12	0.49
1:B:96:ARG:O	1:B:99:GLU:HB2	2.11	0.49
1:B:87:THR:O	1:B:88:GLY:C	2.50	0.49
1:B:56:GLU:CG	1:B:74:ILE:HB	2.42	0.49
1:A:68:ASN:O	1:A:68:ASN:ND2	2.45	0.49
1:A:75:GLN:HB2	1:A:208:ILE:HG21	1.94	0.49
1:B:47:TRP:N	1:B:48:PRO:CD	2.75	0.49
1:A:27:THR:OG1	1:A:30:GLU:CG	2.42	0.49
1:B:14:THR:HG21	1:B:18:ARG:NH1	2.28	0.49
1:B:50:TRP:CE2	1:B:54:PHE:CE2	3.01	0.49
1:A:111:ARG:HH11	1:A:115:GLY:HA2	1.78	0.49
1:A:213:PHE:O	1:A:216:ASP:HB2	2.13	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:161:PHE:C	1:A:161:PHE:CD2	2.86	0.48
1:B:165:ARG:HD2	1:B:246:GLN:OE1	2.12	0.48
1:A:202:ASP:N	1:A:202:ASP:OD2	2.45	0.48
1:A:27:THR:OG1	1:A:29:PRO:HD2	2.14	0.48
1:B:127:HIS:CE1	1:B:163:SER:OG	2.67	0.48
1:A:56:GLU:CD	1:A:74:ILE:HB	2.33	0.48
3:A:304:MYE:H6C2	5:A:299:HOH:O	2.15	0.47
1:B:70:THR:HG22	1:B:207:LEU:HD11	1.96	0.47
1:B:198:ARG:HG3	1:B:208:ILE:HG12	1.96	0.47
1:A:165:ARG:HH12	1:A:235:VAL:HG21	1.79	0.47
1:A:47:TRP:CE3	1:A:47:TRP:HA	2.49	0.47
3:A:304:MYE:H301	1:B:34:ILE:HG23	1.97	0.47
1:A:216:ASP:HA	1:A:217:PRO:HD2	1.52	0.47
1:A:213:PHE:HD2	1:A:235:VAL:HG22	1.79	0.47
1:B:93:LEU:HD23	1:B:94:PRO:HD2	1.96	0.47
1:B:123:ILE:HB	1:B:199:ILE:HG12	1.96	0.47
1:A:86:LEU:CA	5:A:294:HOH:O	2.56	0.47
1:B:70:THR:CG2	1:B:207:LEU:HD21	2.45	0.47
1:A:118:ILE:HD12	1:A:254:LEU:HD22	1.97	0.47
1:A:123:ILE:N	1:A:123:ILE:CD1	2.78	0.47
1:A:111:ARG:HD2	1:A:115:GLY:O	2.15	0.47
1:B:179:GLN:O	1:B:183:SER:N	2.47	0.47
1:A:59:VAL:O	1:A:63:SER:HB3	2.14	0.47
1:B:109:SER:OG	1:B:251:ASN:OD1	2.33	0.47
1:A:56:GLU:HB3	1:A:74:ILE:CG2	2.43	0.46
1:A:111:ARG:NH1	1:A:115:GLY:HA2	2.30	0.46
1:A:70:THR:HB	1:A:207:LEU:HD11	1.97	0.46
1:A:38:MET:O	1:A:39:ILE:C	2.54	0.46
1:A:188:HIS:CD2	1:A:188:HIS:C	2.89	0.46
1:A:111:ARG:HG2	1:A:117:PRO:HA	1.98	0.46
1:A:163:SER:OG	1:A:164:ILE:N	2.49	0.45
1:B:121:ALA:HA	1:B:200:THR:O	2.16	0.45
1:A:191:ARG:NH2	1:A:226:ALA:HB3	2.31	0.45
1:B:56:GLU:O	1:B:57:THR:C	2.53	0.45
1:A:106:PHE:HE2	1:A:211:LEU:HD23	1.81	0.45
1:A:187:ARG:HB3	1:A:188:HIS:H	1.67	0.45
1:A:67:GLY:HA3	1:A:69:TRP:CZ2	2.51	0.45
1:B:14:THR:HG21	1:B:18:ARG:CZ	2.46	0.45
1:B:165:ARG:HG2	1:B:166:PRO:O	2.17	0.45
1:B:155:GLU:O	1:B:155:GLU:HG3	2.17	0.45
1:B:98:ASP:O	1:B:99:GLU:C	2.54	0.45
1:B:151:VAL:HG21	1:B:161:PHE:HB3	1.98	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
3:A:303:MY Y:H6C2	3:A:303:MY Y:C8	2.44	0.44
1:A:188:HIS:HD2	1:A:190:TRP:N	2.13	0.44
1:A:41:VAL:CG1	1:A:47:TRP:CE2	3.00	0.44
1:B:176:PRO:O	1:B:177:THR:C	2.51	0.44
1:A:32:GLU:O	1:A:36:GLN:HB2	2.17	0.44
1:A:5:ARG:HH22	1:B:24:HIS:HB3	1.82	0.44
1:A:87:THR:N	5:A:294:HOH:O	2.51	0.43
1:B:170:GLU:HA	1:B:189:SER:O	2.18	0.43
1:B:196:HIS:CE1	4:B:258:PYG:O2	2.71	0.43
1:B:2:ALA:O	1:B:4:THR:N	2.51	0.43
1:B:188:HIS:HB2	5:B:259:HOH:O	2.16	0.43
1:B:188:HIS:HB2	1:B:190:TRP:HD1	1.83	0.43
1:A:229:SER:C	1:A:231:LEU:N	2.71	0.43
1:B:47:TRP:HB2	1:B:48:PRO:HD3	2.01	0.43
1:B:64:TYR:CE1	1:B:207:LEU:HD12	2.49	0.43
1:B:135:SER:O	1:B:136:PHE:CB	2.52	0.43
3:A:304:MY Y:H182	1:B:34:ILE:HD13	2.00	0.43
1:A:216:ASP:O	1:A:217:PRO:C	2.57	0.43
1:B:165:ARG:HD2	1:B:246:GLN:NE2	2.33	0.43
1:A:86:LEU:HD12	5:A:294:HOH:O	2.18	0.43
1:B:123:ILE:HG23	1:B:151:VAL:O	2.19	0.43
1:A:58:THR:CG2	1:B:22:VAL:HG23	2.49	0.42
1:A:10:PHE:CD1	1:B:185:LEU:HD11	2.53	0.42
1:A:221:SER:O	1:A:222:ASP:C	2.58	0.42
1:A:237:LYS:HG3	5:A:270:HOH:O	2.19	0.42
1:A:74:ILE:HG13	1:A:210:GLN:HE22	1.85	0.42
1:A:233:LEU:HA	1:A:234:PRO:HD2	1.78	0.42
1:A:93:LEU:O	1:A:94:PRO:C	2.57	0.42
1:A:18:ARG:O	1:A:21:ILE:HB	2.19	0.41
1:A:86:LEU:CD2	1:A:149:GLY:HA3	2.50	0.41
1:A:41:VAL:CG1	1:A:47:TRP:CD2	3.03	0.41
1:B:124:ASP:N	1:B:124:ASP:OD1	2.53	0.41
1:A:96:ARG:O	1:A:97:ALA:C	2.58	0.41
1:B:89:LYS:N	1:B:90:PRO:CD	2.82	0.41
1:B:170:GLU:HB2	1:B:190:TRP:CD2	2.56	0.41
1:A:2:ALA:HB2	1:B:186:GLY:HA3	2.02	0.41
1:B:171:ILE:HB	1:B:189:SER:HB2	2.02	0.41
1:B:47:TRP:N	1:B:48:PRO:HD2	2.35	0.41
3:A:304:MY Y:C38	3:A:303:MY Y:H322	2.49	0.41
1:A:180:LEU:HA	1:A:184:TYR:HB2	2.01	0.41
1:A:133:ASN:ND2	1:A:140:ALA:HB3	2.36	0.41
1:B:3:ASN:O	1:B:7:ILE:CG1	2.54	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:182:ASN:OD1	1:A:188:HIS:HA	2.21	0.41
1:B:40:SER:HB3	1:B:176:PRO:HG3	2.02	0.41
1:A:24:HIS:HB3	1:B:9:LEU:HD21	2.03	0.41
3:A:304:MYE:H8C1	1:B:33:THR:HG21	2.03	0.41
1:B:127:HIS:HE1	1:B:163:SER:OG	2.04	0.41
1:A:180:LEU:HD13	3:A:303:MYE:H262	2.02	0.40
1:A:214:GLU:CG	5:A:308:HOH:O	2.61	0.40
1:A:47:TRP:N	1:A:48:PRO:HD3	2.36	0.40
1:A:103:ARG:HB3	1:A:245:TRP:CZ3	2.56	0.40
1:B:146:LEU:O	1:B:148:ARG:HG3	2.21	0.40
1:A:112:ASP:O	1:A:114:SER:N	2.53	0.40
1:A:122:VAL:O	1:A:122:VAL:HG23	2.21	0.40
1:B:116:THR:HA	1:B:117:PRO:HD2	1.66	0.40
1:A:165:ARG:NH1	1:A:235:VAL:HG21	2.36	0.40
3:A:304:MYE:H332	1:B:50:TRP:CH2	2.56	0.40

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	254/257 (99%)	231 (91%)	20 (8%)	3 (1%)	19	39
1	B	254/257 (99%)	217 (85%)	30 (12%)	7 (3%)	8	12
All	All	508/514 (99%)	448 (88%)	50 (10%)	10 (2%)	11	21

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	90	PRO
1	B	3	ASN
1	B	88	GLY
1	B	242	GLY
1	A	113	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	217	PRO
1	B	172	PRO
1	B	77	PRO
1	B	241	ASP
1	B	117	PRO

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	220/223 (99%)	198 (90%)	22 (10%)	11	20
1	B	217/223 (97%)	189 (87%)	28 (13%)	6	11
All	All	437/446 (98%)	387 (89%)	50 (11%)	8	15

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	THR
1	A	5	ARG
1	A	6	VAL
1	A	19	ASP
1	A	41	VAL
1	A	59	VAL
1	A	63	SER
1	A	124	ASP
1	A	125	VAL
1	A	146	LEU
1	A	163	SER
1	A	164	ILE
1	A	165	ARG
1	A	183	SER
1	A	202	ASP
1	A	207	LEU
1	A	211	LEU
1	A	221	SER
1	A	225	SER
1	A	238	ILE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	239	ASP
1	A	241	ASP
1	B	3	ASN
1	B	12	GLU
1	B	61	SER
1	B	64	TYR
1	B	68	ASN
1	B	70	THR
1	B	71	SER
1	B	74	ILE
1	B	85	LEU
1	B	87	THR
1	B	96	ARG
1	B	113	THR
1	B	116	THR
1	B	122	VAL
1	B	123	ILE
1	B	124	ASP
1	B	125	VAL
1	B	131	ASP
1	B	158	SER
1	B	195	ILE
1	B	214	GLU
1	B	230	GLU
1	B	232	VAL
1	B	233	LEU
1	B	236	ASN
1	B	240	ILE
1	B	244	THR
1	B	254	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	68	ASN
1	A	162	HIS
1	A	188	HIS
1	A	246	GLN
1	B	127	HIS
1	B	144	GLN
1	B	179	GLN
1	B	182	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	188	HIS
1	B	236	ASN
1	B	251	ASN

5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 6 ligands modelled in this entry, 2 are monoatomic - leaving 4 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	PYG	A	258	2	9,9,9	3.24	2 (22%)	12,12,12	2.29	2 (16%)
3	MYY	A	303	-	36,37,41	1.43	3 (8%)	38,39,46	1.34	4 (10%)
3	MYY	A	304	-	34,35,41	1.82	3 (8%)	35,37,46	1.51	6 (17%)
4	PYG	B	258	2	8,8,9	679.79	2 (25%)	7,10,12	1.18	1 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PYG	A	258	2	-	0/0/0/0	0/1/1/1
3	MYY	A	303	-	-	1/39/39/43	0/0/0/0
3	MYY	A	304	-	-	0/36/36/43	0/0/0/0
4	PYG	B	258	2	-	0/0/0/0	0/1/1/1

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	258	PYG	C1-C2	1922.75	1.49	1.39
3	A	304	MYY	C19-C18	-8.00	1.52	1.55
4	A	258	PYG	C3-C2	7.34	1.48	1.39
4	A	258	PYG	C1-C2	6.26	1.47	1.39
3	A	303	MYY	O7-C7	5.27	1.50	1.34
3	A	303	MYY	O8-C23	4.95	1.48	1.33
3	A	304	MYY	O8-C23	4.83	1.48	1.33
3	A	304	MYY	O7-C7	4.30	1.47	1.34
3	A	303	MYY	C19-C18	-2.87	1.54	1.55
4	B	258	PYG	C2-C3	2.32	1.45	1.38

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	258	PYG	C3-C2-C1	-7.14	115.79	119.56
3	A	303	MYY	O7-C7-C8	5.48	123.56	111.56
3	A	304	MYY	O7-C7-C8	4.35	121.08	111.56
3	A	304	MYY	O8-C6-C5	3.14	114.47	108.20
3	A	304	MYY	O7-C5-C6	3.02	110.65	106.66
3	A	303	MYY	O8-C23-C24	2.86	120.94	111.94
3	A	303	MYY	O8-C6-C5	2.44	115.21	108.83
3	A	304	MYY	O8-C23-C24	2.43	119.58	111.94
3	A	304	MYY	C5-O7-C7	-2.36	113.08	116.52
3	A	303	MYY	C6-O8-C23	-2.17	110.76	117.13
4	A	258	PYG	O2-C2-C3	2.17	124.94	119.48
4	B	258	PYG	O3-C3-C4	2.14	125.22	119.37
3	A	304	MYY	C6-O8-C23	-2.11	110.93	117.13

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	303	MYY	C5-O7-C7-C8

There are no ring outliers.

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	256/257 (99%)	-0.43	4 (1%) 68 69	38, 59, 77, 97	0
1	B	256/257 (99%)	-0.24	3 (1%) 75 77	42, 75, 98, 108	0
All	All	512/514 (99%)	-0.34	7 (1%) 72 72	38, 64, 91, 108	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	67	GLY	4.1
1	A	257	ASN	3.0
1	B	64	TYR	2.5
1	A	240	ILE	2.5
1	A	242	GLY	2.4
1	B	219	LEU	2.4
1	A	205	ARG	2.1

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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	RSR	LLDF	B-factors(\AA^2)	Q<0.9
3	MYG	A	303	38/42	0.22	3.03	47,54,83,86	0
3	MYG	A	304	36/42	0.24	2.18	45,55,78,80	0
4	PYG	B	258	8/9	0.21	0.80	78,79,81,83	0
4	PYG	A	258	9/9	0.16	0.40	52,54,60,64	0
2	FE	B	301	1/1	0.15	-0.87	67,67,67,67	0
2	FE	A	300	1/1	0.11	-2.06	53,53,53,53	0

6.5 Other polymers ⓘ

There are no such residues in this entry.