



# wwPDB X-ray Structure Validation Summary Report

Feb 27, 2014 – 06:17 AM GMT

PDB ID : 1PPR  
Title : PERIDININ-CHLOROPHYLL-PROTEIN OF AMPHIDINIUM CARTERAE  
Authors : Hofmann, E.; Welte, W.; Diederichs, K.  
Deposited on : 1996-03-06  
Resolution : 2.00 Å (reported)

This is a wwPDB validation summary report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

---

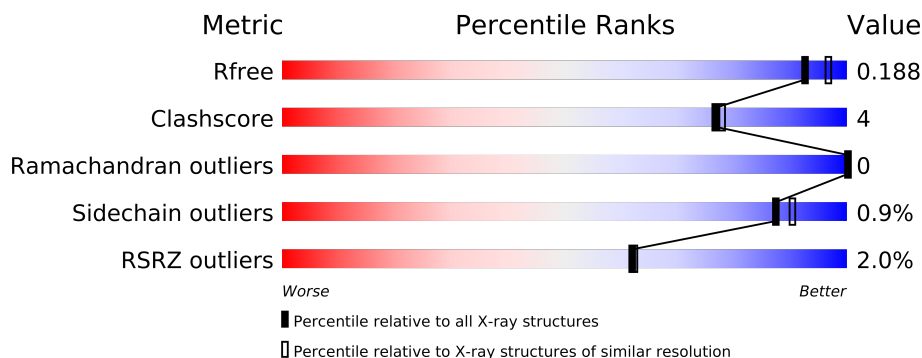
The following versions of software and data (see [references](#)) were used in the production of this report:

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 2.00 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	66092	4888 (2.00-2.00)
Clashscore	79885	6188 (2.00-2.00)
Ramachandran outliers	78287	6102 (2.00-2.00)
Sidechain outliers	78261	6100 (2.00-2.00)
RSRZ outliers	66119	4890 (2.00-2.00)

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  $\geq 3$ , 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	M	312	
1	N	312	
1	O	312	

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

Mol	Type	Chain	Res	Geometry	Electron density
2	CLA	N	601	-	X
2	CLA	N	602	-	X
2	CLA	O	601	-	X
3	PID	M	613	-	X
3	PID	N	613	-	X

*Continued on next page...*

*Continued from previous page...*

Mol	Type	Chain	Res	Geometry	Electron density
3	PID	N	622	-	X
4	DGD	M	615	-	X
4	DGD	N	615	-	X
4	DGD	O	615	-	X

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 9152 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.

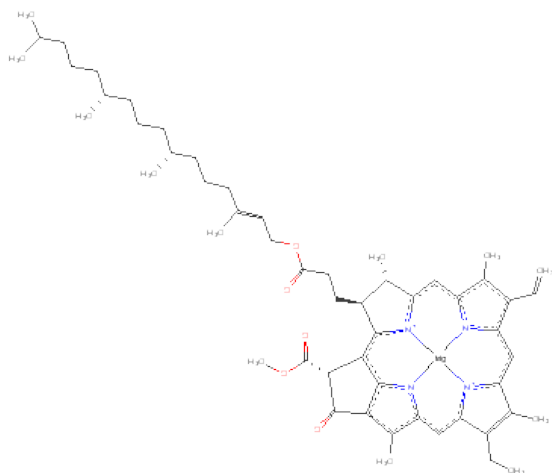
- Molecule 1 is a protein called PERIDININ-CHLOROPHYLLPROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	M	312	Total	C	N	O	S	0	0	0
			2282	1445	382	444	11			
1	N	312	Total	C	N	O	S	0	0	0
			2282	1445	382	444	11			
1	O	312	Total	C	N	O	S	0	0	0
			2282	1445	382	444	11			

There are 9 discrepancies between the modelled and reference sequences:

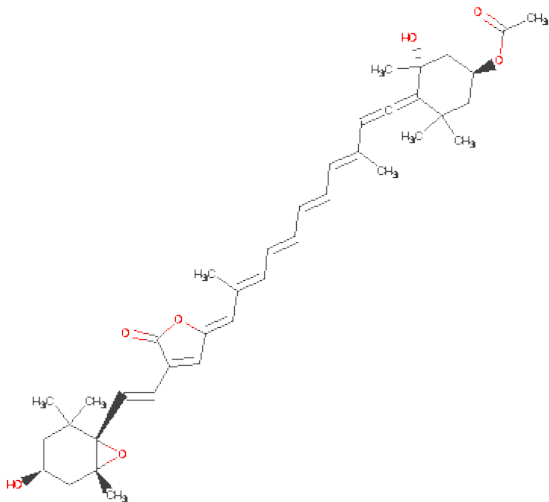
Chain	Residue	Modelled	Actual	Comment	Reference
M	73	ILE	VAL	CONFLICT	UNP P80484
M	128	ASN	SER	CONFLICT	UNP P80484
M	276	VAL	ALA	CONFLICT	UNP P80484
N	73	ILE	VAL	CONFLICT	UNP P80484
N	128	ASN	SER	CONFLICT	UNP P80484
N	276	VAL	ALA	CONFLICT	UNP P80484
O	73	ILE	VAL	CONFLICT	UNP P80484
O	128	ASN	SER	CONFLICT	UNP P80484
O	276	VAL	ALA	CONFLICT	UNP P80484

- Molecule 2 is CHLOROPHYLL A (three-letter code: CLA) (formula: C<sub>55</sub>H<sub>72</sub>MgN<sub>4</sub>O<sub>5</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	M	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		
2	M	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		
2	N	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		
2	N	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		
2	O	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		
2	O	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		

- Molecule 3 is PERIDININ (three-letter code: PID) (formula: C<sub>39</sub>H<sub>50</sub>O<sub>7</sub>).



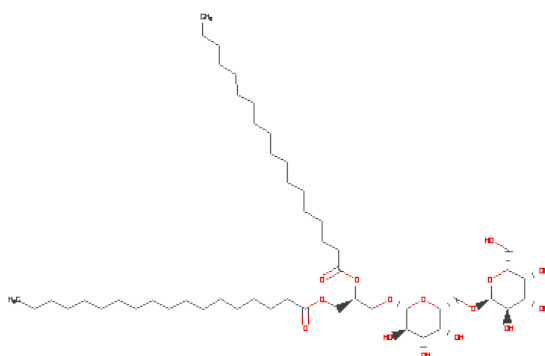
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	M	1	Total	C	O	0	0
			46	39	7		
3	M	1	Total	C	O	0	0
			46	39	7		
3	M	1	Total	C	O	0	0
			46	39	7		
3	M	1	Total	C	O	0	0
			46	39	7		
3	M	1	Total	C	O	0	0
			46	39	7		
3	M	1	Total	C	O	0	0
			46	39	7		
3	M	1	Total	C	O	0	0
			46	39	7		
3	N	1	Total	C	O	0	0
			46	39	7		
3	N	1	Total	C	O	0	0
			46	39	7		
3	N	1	Total	C	O	0	0
			46	39	7		
3	N	1	Total	C	O	0	0
			46	39	7		
3	N	1	Total	C	O	0	0
			46	39	7		

Continued on next page...

*Continued from previous page...*

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	N	1	Total	C	O	0	0
			46	39	7		
3	N	1	Total	C	O	0	0
			46	39	7		
3	O	1	Total	C	O	0	0
			46	39	7		
3	O	1	Total	C	O	0	0
			46	39	7		
3	O	1	Total	C	O	0	0
			46	39	7		
3	O	1	Total	C	O	0	0
			46	39	7		
3	O	1	Total	C	O	0	0
			46	39	7		
3	O	1	Total	C	O	0	0
			46	39	7		

- Molecule 4 is DIGALACTOSYL DIACYL GLYCEROL (DGDG) (three-letter code: DGD) (formula:  $C_{51}H_{96}O_{15}$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	M	1	Total	C	O	0	0
			66	51	15		

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	O	1	Total	C	O	0	0
			66	51	15		
4	N	1	Total	C	O	0	0
			66	51	15		
4	M	1	Total	C	O	0	0
			66	51	15		
4	O	1	Total	C	O	0	0
			66	51	15		
4	N	1	Total	C	O	0	0
			66	51	15		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	M	139	Total	O	0	0
			139	139		
5	N	137	Total	O	0	0
			137	137		
5	O	140	Total	O	0	0
			140	140		



### 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.

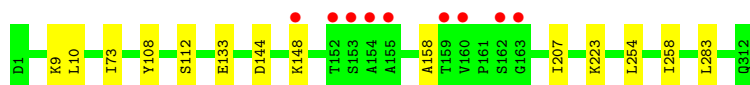
- Molecule 1: PERIDININ-CHLOROPHYLLPROTEIN

Chain M: 



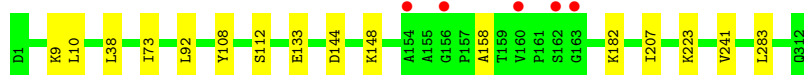
- Molecule 1: PERIDININ-CHLOROPHYLLPROTEIN

Chain N: 



- Molecule 1: PERIDININ-CHLOROPHYLLPROTEIN

Chain O: 



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	198.43Å 116.30Å 67.03Å 90.00° 94.89° 90.00°	Depositor
Resolution (Å)	40.00 – 2.00 33.84 – 1.99	Depositor EDS
% Data completeness (in resolution range)	92.5 (40.00-2.00) 89.5 (33.84-1.99)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	4.77 (at 2.00Å)	Xtriage
Refinement program	X-PLOR 3.1	Depositor
R, $R_{free}$	0.179 , 0.201 0.168 , 0.188	Depositor DCC
$R_{free}$ test set	2250 reflections (2.48%)	DCC
Wilson B-factor (Å <sup>2</sup> )	30.2	Xtriage
Anisotropy	0.044	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 42.1	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtriage
Outliers	2 of 96045 reflections (0.002%)	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	9152	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.27% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities 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: PID, CLA, DGD

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	M	0.58	0/2323	0.60	0/3154
1	N	0.56	0/2323	0.58	0/3154
1	O	0.59	0/2323	0.60	0/3154
All	All	0.58	0/6969	0.59	0/9462

There are no bond length outliers.

There are no bond angle outliers.

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	M	2282	0	2300	9	0
1	N	2282	0	2300	10	0
1	O	2282	0	2300	12	0
2	M	130	0	144	3	0
2	N	130	0	144	2	0
2	O	130	0	144	4	0
3	M	368	0	400	9	0
3	N	368	0	400	9	0
3	O	368	0	400	9	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	M	132	0	192	12	0
4	N	132	0	192	10	0
4	O	132	0	192	11	0
5	M	139	0	0	0	0
5	N	137	0	0	0	0
5	O	140	0	0	0	0
All	All	9152	0	9108	67	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 4.

The worst 5 of 67 close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:O:73:ILE:HD11	3:O:614:PID:HM72	1.27	1.15
1:M:73:ILE:HD11	3:M:614:PID:HM72	1.30	1.07
1:N:73:ILE:HD11	3:N:614:PID:HM72	1.31	1.06
1:O:73:ILE:HD11	3:O:614:PID:CM7	2.12	0.75
2:M:602:CLA:HBB1	2:M:602:CLA:HHC	1.71	0.72

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	M	310/312 (99%)	307 (99%)	3 (1%)	0	100	100
1	N	310/312 (99%)	307 (99%)	3 (1%)	0	100	100
1	O	310/312 (99%)	307 (99%)	3 (1%)	0	100	100
All	All	930/936 (99%)	921 (99%)	9 (1%)	0	100	100

There are no Ramachandran outliers to report.

### 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	M	233/233 (100%)	231 (99%)	2 (1%)	87	90
1	N	233/233 (100%)	231 (99%)	2 (1%)	87	90
1	O	233/233 (100%)	231 (99%)	2 (1%)	87	90
All	All	699/699 (100%)	693 (99%)	6 (1%)	87	90

5 of 6 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	N	10	LEU
1	O	283	LEU
1	N	283	LEU
1	M	283	LEU
1	O	10	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	M	216	GLN
1	N	216	GLN
1	O	216	GLN

### 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 ⓘ

36 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$
2	CLA	M	601	5	73,73,73	1.66	13 (17%)	95,113,113	1.42	12 (12%)
2	CLA	M	602	5	73,73,73	1.52	12 (16%)	95,113,113	1.47	17 (17%)
3	PID	M	611	-	49,49,49	2.12	17 (34%)	76,76,76	1.76	14 (18%)
3	PID	M	612	-	49,49,49	2.11	14 (28%)	76,76,76	1.87	23 (30%)
3	PID	M	613	-	49,49,49	2.01	13 (26%)	76,76,76	1.78	18 (23%)
3	PID	M	614	-	49,49,49	2.18	17 (34%)	76,76,76	1.80	15 (19%)
4	DGD	M	615	-	67,67,67	0.82	1 (1%)	81,81,81	1.40	7 (8%)
3	PID	M	621	-	49,49,49	2.01	15 (30%)	76,76,76	1.75	12 (15%)
3	PID	M	622	-	49,49,49	1.96	16 (32%)	76,76,76	1.91	20 (26%)
3	PID	M	623	-	49,49,49	2.07	14 (28%)	76,76,76	1.83	18 (23%)
3	PID	M	624	-	49,49,49	1.93	13 (26%)	76,76,76	1.68	18 (23%)
4	DGD	M	625	-	67,67,67	0.70	0	81,81,81	0.89	4 (4%)
2	CLA	N	601	5	73,73,73	1.75	16 (21%)	95,113,113	1.43	14 (14%)
2	CLA	N	602	5	73,73,73	1.71	11 (15%)	95,113,113	1.51	17 (17%)
3	PID	N	611	-	49,49,49	2.09	15 (30%)	76,76,76	1.75	19 (25%)
3	PID	N	612	-	49,49,49	2.07	17 (34%)	76,76,76	1.89	23 (30%)
3	PID	N	613	-	49,49,49	2.04	16 (32%)	76,76,76	1.75	20 (26%)
3	PID	N	614	-	49,49,49	2.14	18 (36%)	76,76,76	1.88	18 (23%)
4	DGD	N	615	-	67,67,67	0.75	1 (1%)	81,81,81	1.40	8 (9%)
3	PID	N	621	-	49,49,49	2.00	12 (24%)	76,76,76	1.79	15 (19%)
3	PID	N	622	-	49,49,49	2.05	16 (32%)	76,76,76	1.86	18 (23%)
3	PID	N	623	-	49,49,49	2.10	15 (30%)	76,76,76	1.85	18 (23%)
3	PID	N	624	-	49,49,49	2.10	15 (30%)	76,76,76	1.81	19 (25%)
4	DGD	N	625	-	67,67,67	0.75	1 (1%)	81,81,81	0.98	6 (7%)
2	CLA	O	601	5	73,73,73	1.65	14 (19%)	95,113,113	1.47	16 (16%)
2	CLA	O	602	5	73,73,73	1.59	12 (16%)	95,113,113	1.50	15 (15%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PID	O	611	-	49,49,49	2.00	15 (30%)	76,76,76	1.71	18 (23%)
3	PID	O	612	-	49,49,49	1.92	15 (30%)	76,76,76	1.89	22 (28%)
3	PID	O	613	-	49,49,49	1.93	13 (26%)	76,76,76	1.83	19 (25%)
3	PID	O	614	-	49,49,49	2.08	14 (28%)	76,76,76	1.75	17 (22%)
4	DGD	O	615	-	67,67,67	0.83	1 (1%)	81,81,81	1.40	8 (9%)
3	PID	O	621	-	49,49,49	1.91	11 (22%)	76,76,76	1.61	15 (19%)
3	PID	O	622	-	49,49,49	2.05	15 (30%)	76,76,76	1.89	20 (26%)
3	PID	O	623	-	49,49,49	1.93	12 (24%)	76,76,76	1.75	17 (22%)
3	PID	O	624	-	49,49,49	1.93	14 (28%)	76,76,76	1.72	17 (22%)
4	DGD	O	625	-	67,67,67	0.74	0	81,81,81	0.97	5 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CLA	M	601	5	1/1/20/25	0/37/135/135	0/0/9/9
2	CLA	M	602	5	-	0/37/135/135	0/0/9/9
3	PID	M	611	-	-	0/25/93/93	0/2/4/4
3	PID	M	612	-	-	0/25/93/93	0/2/4/4
3	PID	M	613	-	1/1/14/25	0/25/93/93	0/2/4/4
3	PID	M	614	-	-	0/25/93/93	0/2/4/4
4	DGD	M	615	-	3/3/13/13	0/55/95/95	0/2/2/2
3	PID	M	621	-	-	0/25/93/93	0/2/4/4
3	PID	M	622	-	-	0/25/93/93	0/2/4/4
3	PID	M	623	-	-	0/25/93/93	0/2/4/4
3	PID	M	624	-	-	0/25/93/93	0/2/4/4
4	DGD	M	625	-	-	0/55/95/95	0/2/2/2
2	CLA	N	601	5	1/1/20/25	0/37/135/135	0/0/9/9
2	CLA	N	602	5	-	0/37/135/135	0/0/9/9
3	PID	N	611	-	-	0/25/93/93	0/2/4/4
3	PID	N	612	-	-	0/25/93/93	0/2/4/4
3	PID	N	613	-	1/1/14/25	0/25/93/93	0/2/4/4
3	PID	N	614	-	-	0/25/93/93	0/2/4/4
4	DGD	N	615	-	3/3/13/13	0/55/95/95	0/2/2/2
3	PID	N	621	-	-	0/25/93/93	0/2/4/4
3	PID	N	622	-	-	0/25/93/93	0/2/4/4
3	PID	N	623	-	-	0/25/93/93	0/2/4/4
3	PID	N	624	-	-	0/25/93/93	0/2/4/4

Continued on next page...

*Continued from previous page...*

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	DGD	N	625	-	-	0/55/95/95	0/2/2/2
2	CLA	O	601	5	1/1/20/25	0/37/135/135	0/0/9/9
2	CLA	O	602	5	-	0/37/135/135	0/0/9/9
3	PID	O	611	-	-	0/25/93/93	0/2/4/4
3	PID	O	612	-	-	0/25/93/93	0/2/4/4
3	PID	O	613	-	1/1/14/25	0/25/93/93	0/2/4/4
3	PID	O	614	-	-	0/25/93/93	0/2/4/4
4	DGD	O	615	-	3/3/13/13	0/55/95/95	0/2/2/2
3	PID	O	621	-	-	0/25/93/93	0/2/4/4
3	PID	O	622	-	-	0/25/93/93	0/2/4/4
3	PID	O	623	-	-	0/25/93/93	0/2/4/4
3	PID	O	624	-	-	0/25/93/93	0/2/4/4
4	DGD	O	625	-	-	0/55/95/95	0/2/2/2

The worst 5 of 434 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	N	601	CLA	C3B-CAB	-7.02	1.42	1.49
2	N	602	CLA	C3B-CAB	-6.69	1.43	1.49
3	O	621	PID	C23-C24	5.84	1.38	1.30
2	M	602	CLA	MG-NA	5.76	2.24	2.07
3	N	612	PID	C8-C7	5.58	1.44	1.32

The worst 5 of 562 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	M	615	DGD	O6E-C5E-C4E	7.39	123.44	109.76
4	O	615	DGD	O6E-C5E-C4E	7.38	123.43	109.76
4	N	615	DGD	O6E-C5E-C4E	7.31	123.28	109.76
3	M	614	PID	O4-C12-C11	7.03	111.50	107.41
3	N	614	PID	O4-C12-C11	7.01	111.48	107.41

5 of 15 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	N	613	PID	C3
2	M	601	CLA	C8
4	N	615	DGD	C2D
4	N	615	DGD	C5D
4	N	615	DGD	C5E

There are no torsion outliers.



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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	M	312/312 (100%)	-0.61	3 (0%) 79 80	20, 31, 53, 63	0
1	N	312/312 (100%)	-0.47	9 (2%) 49 49	22, 34, 57, 66	0
1	O	312/312 (100%)	-0.62	5 (1%) 68 69	21, 29, 51, 64	0
All	All	936/936 (100%)	-0.57	17 (1%) 62 66	20, 31, 53, 66	0

The worst 5 of 17 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	N	159	THR	3.5
1	N	163	GLY	3.3
1	M	162	SER	3.3
1	N	162	SER	3.1
1	O	163	GLY	3.0

### 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, 95<sup>th</sup> 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( $\text{\AA}^2$ )	Q<0.9
4	DGD	O	615	66/66	0.24	3.85	37,49,104,104	0
2	CLA	O	601	65/65	0.14	3.40	21,26,43,45	0
4	DGD	M	615	66/66	0.23	3.08	38,50,105,105	0
4	DGD	N	615	66/66	0.24	3.01	42,51,105,106	0
3	PID	M	613	46/46	0.15	2.66	25,36,56,61	0
2	CLA	N	601	65/65	0.14	2.36	26,32,46,47	0
2	CLA	N	602	65/65	0.10	2.18	19,26,34,37	0
3	PID	N	622	46/46	0.10	2.15	21,26,33,37	0
3	PID	N	613	46/46	0.14	2.11	30,40,57,61	0
2	CLA	M	601	65/65	0.13	1.96	22,29,43,46	0
3	PID	N	612	46/46	0.14	1.96	26,29,40,51	0
3	PID	O	612	46/46	0.13	1.94	20,25,35,48	0
3	PID	N	623	46/46	0.12	1.91	22,30,38,42	0
3	PID	M	612	46/46	0.12	1.83	24,27,37,47	0
3	PID	M	622	46/46	0.11	1.60	18,25,29,33	0
2	CLA	M	602	65/65	0.10	1.45	19,23,33,35	0
3	PID	O	623	46/46	0.11	1.34	18,24,34,42	0
3	PID	O	611	46/46	0.11	1.30	19,26,36,43	0
4	DGD	O	625	66/66	0.10	1.28	19,24,39,41	0
3	PID	O	613	46/46	0.12	1.22	23,34,54,60	0
3	PID	M	623	46/46	0.10	1.20	18,26,33,38	0
2	CLA	O	602	65/65	0.11	1.19	18,22,31,34	0
3	PID	M	611	46/46	0.12	1.19	20,28,39,41	0
4	DGD	M	625	66/66	0.10	1.09	22,25,41,43	0
3	PID	N	621	46/46	0.07	0.95	20,22,28,29	0
4	DGD	N	625	66/66	0.10	0.92	19,24,38,41	0
3	PID	O	622	46/46	0.10	0.89	18,24,29,32	0
3	PID	M	621	46/46	0.08	0.86	17,21,26,28	0
3	PID	N	624	46/46	0.08	0.58	22,26,31,35	0
3	PID	O	624	46/46	0.08	0.53	19,23,28,32	0
3	PID	O	621	46/46	0.08	0.42	17,21,25,26	0
3	PID	O	614	46/46	0.09	0.41	20,30,38,41	0
3	PID	N	611	46/46	0.11	0.41	21,30,41,45	0
3	PID	M	624	46/46	0.07	0.27	19,22,26,34	0
3	PID	M	614	46/46	0.09	0.22	24,34,41,44	0
3	PID	N	614	46/46	0.09	-0.15	25,38,44,49	0

## 6.5 Other polymers ⓘ

There are no such residues in this entry.