W O R L D W I D E
wwPDB
P R O T E I N   D A T A   B A N K

wwPDB X-ray Structure Validation Summary Report (i)

Sep 9, 2023 – 10:42 PM EDT

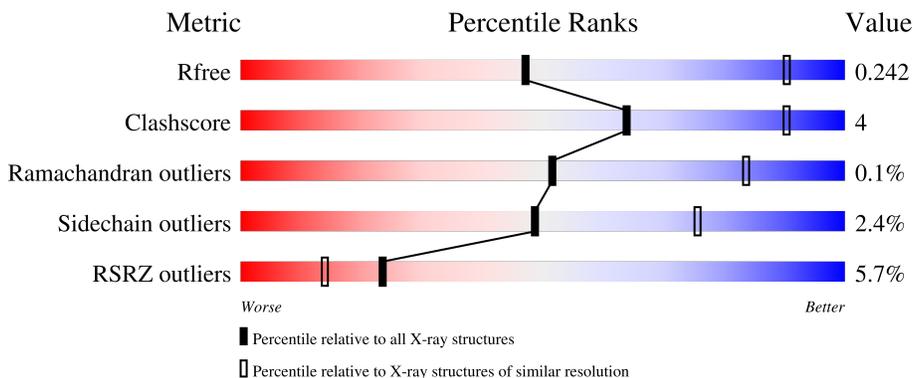|		
PDB ID	:	4ITV
Title	:	Structure of a 16 nm protein cage designed by fusing symmetric oligomeric domains, triple mutant, P212121 form
Authors	:	Lai, Y.-T.; Sawaya, M.R.; Yeates, T.O.
Deposited on	:	2013-01-18
Resolution	:	3.60 Å(reported)

1   Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.60 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	Percentile Ranks	Value
Rfree		0.242
Clashscore		4
Ramachandran outliers		0.1%
Sidechain outliers		2.4%
RSRZ outliers		5.7%

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	1257 (3.70-3.50)
Clashscore	141614	1353 (3.70-3.50)
Ramachandran outliers	138981	1307 (3.70-3.50)
Sidechain outliers	138945	1307 (3.70-3.50)
RSRZ outliers	127900	1161 (3.70-3.50)

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	456	82% 14% •
1	B	456	85% 11% •
1	C	456	2% 86% 10% • •
1	D	456	7% 85% 10% • •
1	E	456	85% 11% •

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WORLDWIDE

wwPDB

PROTEIN DATA BANK

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Mol	Chain	Length	Quality of chain
1	F	456	12% ... 85% ... 11% ·
1	G	456	7% ... 86% ... 11% ·
1	H	456	17% ... 85% ... 11% · ·
1	I	456	2% ... 86% ... 11% ·
1	J	456	86% ... 11% ·
1	K	456	2% ... 85% ... 11% ·
1	L	456	17% ... 84% ... 12% · ·

2 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 40776 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 Non-haem bromoperoxidase BPO-A2, Matrix protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	B	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	C	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	D	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	E	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	F	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	G	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	H	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	I	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	J	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	K	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0
1	L	440	Total 3398	C 2166	N 572	O 652	S 8	0	0	0

There are 216 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	24	THR	GLN	engineered mutation	UNP P29715
A	118	ALA	LYS	engineered mutation	UNP P29715
A	278	ALA	-	linker	UNP P03485
A	279	GLN	-	linker	UNP P03485
A	280	GLU	-	linker	UNP P03485

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Chain	Residue	Modelled	Actual	Comment	Reference
A	281	ALA	-	linker	UNP P03485
A	282	GLN	-	linker	UNP P03485
A	283	LYS	-	linker	UNP P03485
A	284	GLN	-	linker	UNP P03485
A	285	LYS	-	linker	UNP P03485
A	448	LEU	-	expression tag	UNP P03485
A	449	GLU	-	expression tag	UNP P03485
A	450	HIS	-	expression tag	UNP P03485
A	451	HIS	-	expression tag	UNP P03485
A	452	HIS	-	expression tag	UNP P03485
A	453	HIS	-	expression tag	UNP P03485
A	454	HIS	-	expression tag	UNP P03485
A	455	HIS	-	expression tag	UNP P03485
B	24	THR	GLN	engineered mutation	UNP P29715
B	118	ALA	LYS	engineered mutation	UNP P29715
B	278	ALA	-	linker	UNP P03485
B	279	GLN	-	linker	UNP P03485
B	280	GLU	-	linker	UNP P03485
B	281	ALA	-	linker	UNP P03485
B	282	GLN	-	linker	UNP P03485
B	283	LYS	-	linker	UNP P03485
B	284	GLN	-	linker	UNP P03485
B	285	LYS	-	linker	UNP P03485
B	448	LEU	-	expression tag	UNP P03485
B	449	GLU	-	expression tag	UNP P03485
B	450	HIS	-	expression tag	UNP P03485
B	451	HIS	-	expression tag	UNP P03485
B	452	HIS	-	expression tag	UNP P03485
B	453	HIS	-	expression tag	UNP P03485
B	454	HIS	-	expression tag	UNP P03485
B	455	HIS	-	expression tag	UNP P03485
C	24	THR	GLN	engineered mutation	UNP P29715
C	118	ALA	LYS	engineered mutation	UNP P29715
C	278	ALA	-	linker	UNP P03485
C	279	GLN	-	linker	UNP P03485
C	280	GLU	-	linker	UNP P03485
C	281	ALA	-	linker	UNP P03485
C	282	GLN	-	linker	UNP P03485
C	283	LYS	-	linker	UNP P03485
C	284	GLN	-	linker	UNP P03485
C	285	LYS	-	linker	UNP P03485
C	448	LEU	-	expression tag	UNP P03485

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Chain	Residue	Modelled	Actual	Comment	Reference
C	449	GLU	-	expression tag	UNP P03485
C	450	HIS	-	expression tag	UNP P03485
C	451	HIS	-	expression tag	UNP P03485
C	452	HIS	-	expression tag	UNP P03485
C	453	HIS	-	expression tag	UNP P03485
C	454	HIS	-	expression tag	UNP P03485
C	455	HIS	-	expression tag	UNP P03485
D	24	THR	GLN	engineered mutation	UNP P29715
D	118	ALA	LYS	engineered mutation	UNP P29715
D	278	ALA	-	linker	UNP P03485
D	279	GLN	-	linker	UNP P03485
D	280	GLU	-	linker	UNP P03485
D	281	ALA	-	linker	UNP P03485
D	282	GLN	-	linker	UNP P03485
D	283	LYS	-	linker	UNP P03485
D	284	GLN	-	linker	UNP P03485
D	285	LYS	-	linker	UNP P03485
D	448	LEU	-	expression tag	UNP P03485
D	449	GLU	-	expression tag	UNP P03485
D	450	HIS	-	expression tag	UNP P03485
D	451	HIS	-	expression tag	UNP P03485
D	452	HIS	-	expression tag	UNP P03485
D	453	HIS	-	expression tag	UNP P03485
D	454	HIS	-	expression tag	UNP P03485
D	455	HIS	-	expression tag	UNP P03485
E	24	THR	GLN	engineered mutation	UNP P29715
E	118	ALA	LYS	engineered mutation	UNP P29715
E	278	ALA	-	linker	UNP P03485
E	279	GLN	-	linker	UNP P03485
E	280	GLU	-	linker	UNP P03485
E	281	ALA	-	linker	UNP P03485
E	282	GLN	-	linker	UNP P03485
E	283	LYS	-	linker	UNP P03485
E	284	GLN	-	linker	UNP P03485
E	285	LYS	-	linker	UNP P03485
E	448	LEU	-	expression tag	UNP P03485
E	449	GLU	-	expression tag	UNP P03485
E	450	HIS	-	expression tag	UNP P03485
E	451	HIS	-	expression tag	UNP P03485
E	452	HIS	-	expression tag	UNP P03485
E	453	HIS	-	expression tag	UNP P03485
E	454	HIS	-	expression tag	UNP P03485

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
E	455	HIS	-	expression tag	UNP P03485
F	24	THR	GLN	engineered mutation	UNP P29715
F	118	ALA	LYS	engineered mutation	UNP P29715
F	278	ALA	-	linker	UNP P03485
F	279	GLN	-	linker	UNP P03485
F	280	GLU	-	linker	UNP P03485
F	281	ALA	-	linker	UNP P03485
F	282	GLN	-	linker	UNP P03485
F	283	LYS	-	linker	UNP P03485
F	284	GLN	-	linker	UNP P03485
F	285	LYS	-	linker	UNP P03485
F	448	LEU	-	expression tag	UNP P03485
F	449	GLU	-	expression tag	UNP P03485
F	450	HIS	-	expression tag	UNP P03485
F	451	HIS	-	expression tag	UNP P03485
F	452	HIS	-	expression tag	UNP P03485
F	453	HIS	-	expression tag	UNP P03485
F	454	HIS	-	expression tag	UNP P03485
F	455	HIS	-	expression tag	UNP P03485
G	24	THR	GLN	engineered mutation	UNP P29715
G	118	ALA	LYS	engineered mutation	UNP P29715
G	278	ALA	-	linker	UNP P03485
G	279	GLN	-	linker	UNP P03485
G	280	GLU	-	linker	UNP P03485
G	281	ALA	-	linker	UNP P03485
G	282	GLN	-	linker	UNP P03485
G	283	LYS	-	linker	UNP P03485
G	284	GLN	-	linker	UNP P03485
G	285	LYS	-	linker	UNP P03485
G	448	LEU	-	expression tag	UNP P03485
G	449	GLU	-	expression tag	UNP P03485
G	450	HIS	-	expression tag	UNP P03485
G	451	HIS	-	expression tag	UNP P03485
G	452	HIS	-	expression tag	UNP P03485
G	453	HIS	-	expression tag	UNP P03485
G	454	HIS	-	expression tag	UNP P03485
G	455	HIS	-	expression tag	UNP P03485
H	24	THR	GLN	engineered mutation	UNP P29715
H	118	ALA	LYS	engineered mutation	UNP P29715
H	278	ALA	-	linker	UNP P03485
H	279	GLN	-	linker	UNP P03485
H	280	GLU	-	linker	UNP P03485

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Chain	Residue	Modelled	Actual	Comment	Reference
H	281	ALA	-	linker	UNP P03485
H	282	GLN	-	linker	UNP P03485
H	283	LYS	-	linker	UNP P03485
H	284	GLN	-	linker	UNP P03485
H	285	LYS	-	linker	UNP P03485
H	448	LEU	-	expression tag	UNP P03485
H	449	GLU	-	expression tag	UNP P03485
H	450	HIS	-	expression tag	UNP P03485
H	451	HIS	-	expression tag	UNP P03485
H	452	HIS	-	expression tag	UNP P03485
H	453	HIS	-	expression tag	UNP P03485
H	454	HIS	-	expression tag	UNP P03485
H	455	HIS	-	expression tag	UNP P03485
I	24	THR	GLN	engineered mutation	UNP P29715
I	118	ALA	LYS	engineered mutation	UNP P29715
I	278	ALA	-	linker	UNP P03485
I	279	GLN	-	linker	UNP P03485
I	280	GLU	-	linker	UNP P03485
I	281	ALA	-	linker	UNP P03485
I	282	GLN	-	linker	UNP P03485
I	283	LYS	-	linker	UNP P03485
I	284	GLN	-	linker	UNP P03485
I	285	LYS	-	linker	UNP P03485
I	448	LEU	-	expression tag	UNP P03485
I	449	GLU	-	expression tag	UNP P03485
I	450	HIS	-	expression tag	UNP P03485
I	451	HIS	-	expression tag	UNP P03485
I	452	HIS	-	expression tag	UNP P03485
I	453	HIS	-	expression tag	UNP P03485
I	454	HIS	-	expression tag	UNP P03485
I	455	HIS	-	expression tag	UNP P03485
J	24	THR	GLN	engineered mutation	UNP P29715
J	118	ALA	LYS	engineered mutation	UNP P29715
J	278	ALA	-	linker	UNP P03485
J	279	GLN	-	linker	UNP P03485
J	280	GLU	-	linker	UNP P03485
J	281	ALA	-	linker	UNP P03485
J	282	GLN	-	linker	UNP P03485
J	283	LYS	-	linker	UNP P03485
J	284	GLN	-	linker	UNP P03485
J	285	LYS	-	linker	UNP P03485
J	448	LEU	-	expression tag	UNP P03485

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Chain	Residue	Modelled	Actual	Comment	Reference
J	449	GLU	-	expression tag	UNP P03485
J	450	HIS	-	expression tag	UNP P03485
J	451	HIS	-	expression tag	UNP P03485
J	452	HIS	-	expression tag	UNP P03485
J	453	HIS	-	expression tag	UNP P03485
J	454	HIS	-	expression tag	UNP P03485
J	455	HIS	-	expression tag	UNP P03485
K	24	THR	GLN	engineered mutation	UNP P29715
K	118	ALA	LYS	engineered mutation	UNP P29715
K	278	ALA	-	linker	UNP P03485
K	279	GLN	-	linker	UNP P03485
K	280	GLU	-	linker	UNP P03485
K	281	ALA	-	linker	UNP P03485
K	282	GLN	-	linker	UNP P03485
K	283	LYS	-	linker	UNP P03485
K	284	GLN	-	linker	UNP P03485
K	285	LYS	-	linker	UNP P03485
K	448	LEU	-	expression tag	UNP P03485
K	449	GLU	-	expression tag	UNP P03485
K	450	HIS	-	expression tag	UNP P03485
K	451	HIS	-	expression tag	UNP P03485
K	452	HIS	-	expression tag	UNP P03485
K	453	HIS	-	expression tag	UNP P03485
K	454	HIS	-	expression tag	UNP P03485
K	455	HIS	-	expression tag	UNP P03485
L	24	THR	GLN	engineered mutation	UNP P29715
L	118	ALA	LYS	engineered mutation	UNP P29715
L	278	ALA	-	linker	UNP P03485
L	279	GLN	-	linker	UNP P03485
L	280	GLU	-	linker	UNP P03485
L	281	ALA	-	linker	UNP P03485
L	282	GLN	-	linker	UNP P03485
L	283	LYS	-	linker	UNP P03485
L	284	GLN	-	linker	UNP P03485
L	285	LYS	-	linker	UNP P03485
L	448	LEU	-	expression tag	UNP P03485
L	449	GLU	-	expression tag	UNP P03485
L	450	HIS	-	expression tag	UNP P03485
L	451	HIS	-	expression tag	UNP P03485
L	452	HIS	-	expression tag	UNP P03485
L	453	HIS	-	expression tag	UNP P03485
L	454	HIS	-	expression tag	UNP P03485

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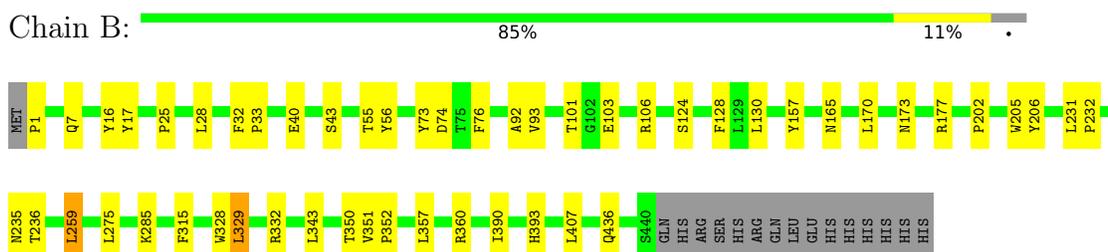| Chain	Residue	Modelled	Actual	Comment	Reference
L	455	HIS	-	expression tag	UNP P03485

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.
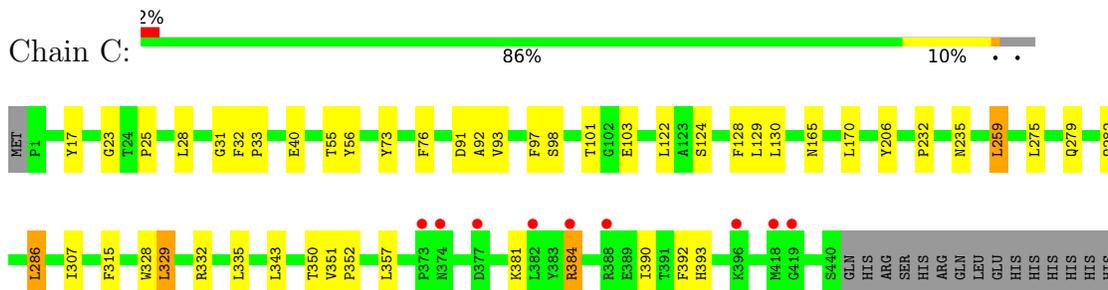
• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1
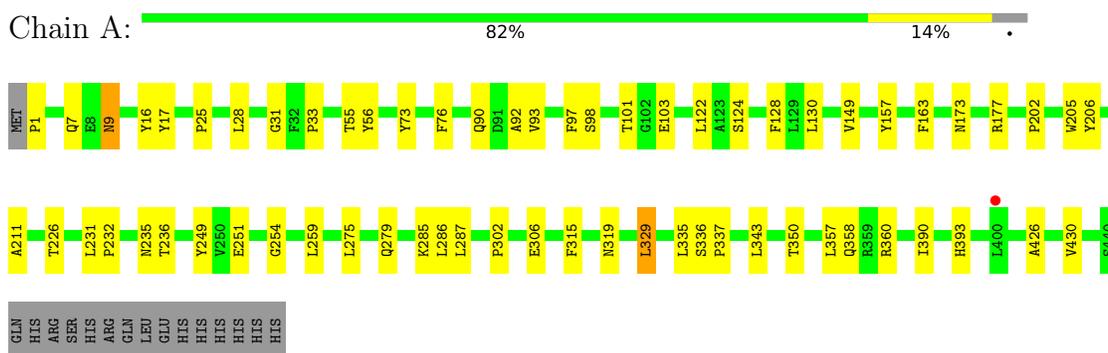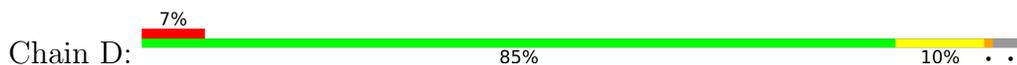
Chain A:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain B:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain C:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain D:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain E:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain F:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain G:

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1
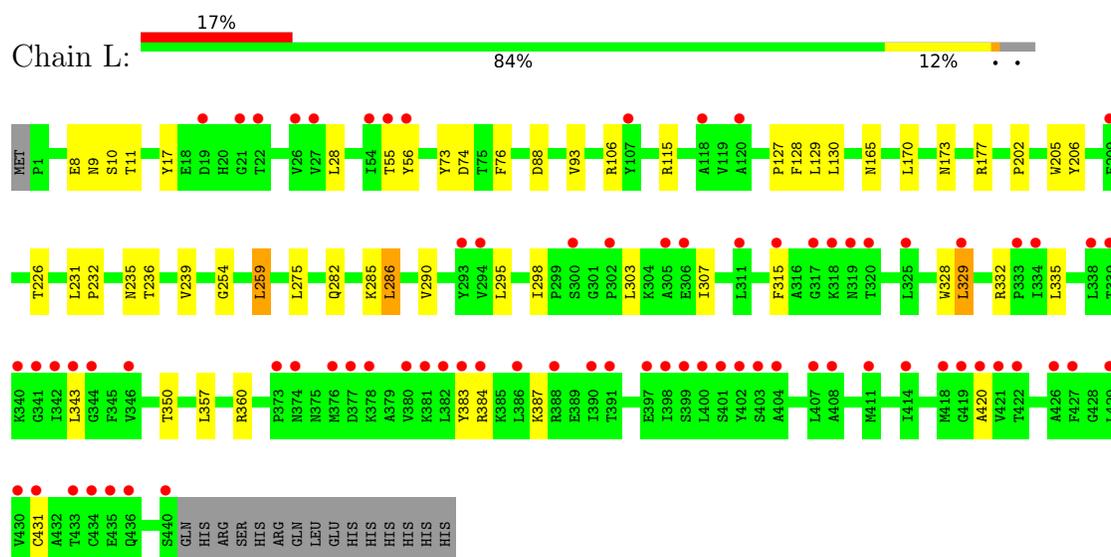
Chain H:

17%

85%

11%

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain I:

2%

86%

11%

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain J:

86%

11%

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain K:

2%

85%

11%

• Molecule 1: Non-haem bromoperoxidase BPO-A2, Matrix protein 1

Chain L:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	131.62Å 156.61Å 321.15Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	96.14 – 3.60 96.14 – 3.60	Depositor EDS
% Data completeness (in resolution range)	98.3 (96.14-3.60) 98.3 (96.14-3.60)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.43 (at 3.58Å)	Xtriage
Refinement program	PHENIX 1.8.1_1168	Depositor
R, R_{free}	0.206 , 0.240 0.208 , 0.242	Depositor DCC
R_{free} test set	3824 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	114.8	Xtriage
Anisotropy	0.164	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 82.3	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	40776	wwPDB-VP
Average B, all atoms (Å^2)	151.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.33% 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 ⓘ

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	0.24	0/3475	0.41	0/4729
1	B	0.23	0/3475	0.40	0/4729
1	C	0.22	0/3475	0.40	0/4729
1	D	0.22	0/3475	0.39	0/4729
1	E	0.23	0/3475	0.40	0/4729
1	F	0.22	0/3475	0.39	0/4729
1	G	0.23	0/3475	0.40	0/4729
1	H	0.22	0/3475	0.40	0/4729
1	I	0.22	0/3475	0.39	0/4729
1	J	0.23	0/3475	0.40	0/4729
1	K	0.22	0/3475	0.40	0/4729
1	L	0.22	0/3475	0.39	0/4729
All	All	0.22	0/41700	0.40	0/56748

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	3398	0	3326	37	0
1	B	3398	0	3326	32	0
1	C	3398	0	3326	28	0
1	D	3398	0	3326	32	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	3398	0	3326	29	0
1	F	3398	0	3326	27	0
1	G	3398	0	3326	31	0
1	H	3398	0	3326	32	0
1	I	3398	0	3326	27	0
1	J	3398	0	3326	26	0
1	K	3398	0	3326	26	0
1	L	3398	0	3326	37	0
All	All	40776	0	39912	335	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 335 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:E:130:LEU:HB2	1:E:206:TYR:HB2	1.70	0.73
1:A:90:GLN:HB2	1:A:390:ILE:HD13	1.71	0.73
1:L:387:LYS:NZ	1:L:420:ALA:O	2.22	0.72
1:B:130:LEU:HB2	1:B:206:TYR:HB2	1.71	0.72
1:B:1:PRO:HD2	1:B:16:TYR:HE1	1.57	0.69

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	438/456 (96%)	414 (94%)	23 (5%)	1 (0%)	47	79
1	B	438/456 (96%)	416 (95%)	22 (5%)	0	100	100
1	C	438/456 (96%)	415 (95%)	23 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	438/456 (96%)	414 (94%)	22 (5%)	2 (0%)	29	68
1	E	438/456 (96%)	413 (94%)	25 (6%)	0	100	100
1	F	438/456 (96%)	414 (94%)	24 (6%)	0	100	100
1	G	438/456 (96%)	418 (95%)	20 (5%)	0	100	100
1	H	438/456 (96%)	418 (95%)	19 (4%)	1 (0%)	47	79
1	I	438/456 (96%)	412 (94%)	26 (6%)	0	100	100
1	J	438/456 (96%)	414 (94%)	23 (5%)	1 (0%)	47	79
1	K	438/456 (96%)	414 (94%)	24 (6%)	0	100	100
1	L	438/456 (96%)	414 (94%)	24 (6%)	0	100	100
All	All	5256/5472 (96%)	4976 (95%)	275 (5%)	5 (0%)	51	83

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	9	ASN
1	D	9	ASN
1	H	9	ASN
1	J	9	ASN
1	D	319	ASN

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	354/370 (96%)	343 (97%)	11 (3%)	40	71
1	B	354/370 (96%)	347 (98%)	7 (2%)	55	79
1	C	354/370 (96%)	347 (98%)	7 (2%)	55	79
1	D	354/370 (96%)	345 (98%)	9 (2%)	47	75
1	E	354/370 (96%)	345 (98%)	9 (2%)	47	75
1	F	354/370 (96%)	345 (98%)	9 (2%)	47	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	354/370 (96%)	345 (98%)	9 (2%)	47	75
1	H	354/370 (96%)	344 (97%)	10 (3%)	43	72
1	I	354/370 (96%)	347 (98%)	7 (2%)	55	79
1	J	354/370 (96%)	346 (98%)	8 (2%)	50	76
1	K	354/370 (96%)	346 (98%)	8 (2%)	50	76
1	L	354/370 (96%)	347 (98%)	7 (2%)	55	79
All	All	4248/4440 (96%)	4147 (98%)	101 (2%)	49	75

5 of 101 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	G	303	LEU
1	I	103	GLU
1	L	357	LEU
1	G	357	LEU
1	H	282	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	9	ASN

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 ⓘ

There are no ligands in this entry.

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(Å²)	Q<0.9
1	A	440/456 (96%)	-0.09	1 (0%)	95	91	63, 94, 154, 182	0
1	B	440/456 (96%)	-0.17	0	100	100	72, 106, 155, 220	0
1	C	440/456 (96%)	-0.05	9 (2%)	65	49	68, 122, 214, 270	0
1	D	440/456 (96%)	0.33	34 (7%)	13	8	84, 135, 228, 266	0
1	E	440/456 (96%)	-0.19	0	100	100	74, 114, 155, 200	0
1	F	440/456 (96%)	0.54	54 (12%)	4	3	113, 184, 300, 340	0
1	G	440/456 (96%)	0.24	31 (7%)	16	9	118, 167, 247, 287	0
1	H	440/456 (96%)	0.75	79 (17%)	1	0	87, 129, 332, 377	0
1	I	440/456 (96%)	-0.01	7 (1%)	72	57	90, 132, 168, 218	0
1	J	440/456 (96%)	-0.15	0	100	100	81, 118, 153, 187	0
1	K	440/456 (96%)	0.00	7 (1%)	72	57	93, 156, 213, 271	0
1	L	440/456 (96%)	0.76	77 (17%)	1	1	130, 211, 375, 404	0
All	All	5280/5472 (96%)	0.16	299 (5%)	23	14	63, 134, 291, 404	0

The worst 5 of 299 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	L	399	SER	12.7
1	H	321	ASP	10.7
1	F	334	ILE	9.8
1	F	359	ARG	9.0
1	D	353	SER	8.8

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 ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.