



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2025 – 02:25 PM JST

PDB ID : 6KMZ
Title : caspase-4 P22/P10 C258A in complex with human GSDMD-C domain
Authors : Ding, J.; Sun, Q.
Deposited on : 2019-08-01
Resolution : 3.61 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Xtriage (Phenix) : 1.21
EDS : 3.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.004 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.41.2

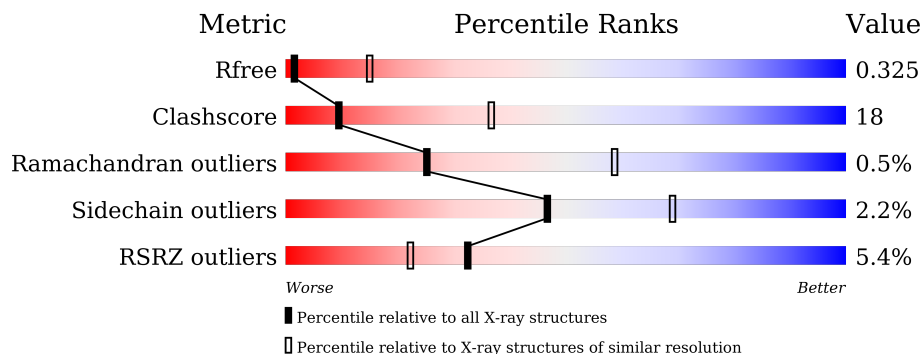
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.61 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.



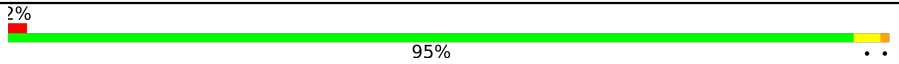
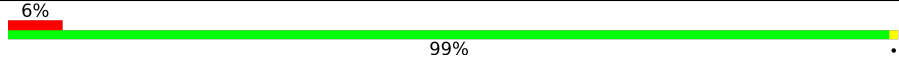
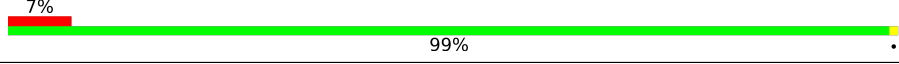
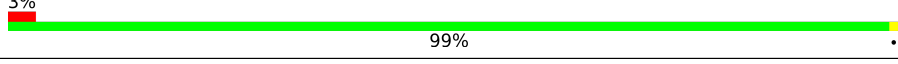
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1619 (3.74-3.50)
Clashscore	180529	1721 (3.74-3.50)
Ramachandran outliers	177936	1694 (3.74-3.50)
Sidechain outliers	177891	1693 (3.74-3.50)
RSRZ outliers	164620	1618 (3.74-3.50)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	185	
1	B	185	
1	C	185	
1	D	185	
2	E	194	
3	H	195	

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Mol	Chain	Length	Quality of chain
4	a	88	 2% 95% . .
4	b	88	 6% 99% .
4	c	88	 7% 99% .
4	d	88	 3% 99% .

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 10693 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 Caspase-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	173	1389	868	245	268	8	0	0	0
1	B	173	1389	868	245	268	8	0	0	0
1	C	173	1389	868	245	268	8	0	0	0
1	D	173	1389	868	245	268	8	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	258	ALA	CYS	engineered mutation	UNP P49662
B	258	ALA	CYS	engineered mutation	UNP P49662
C	258	ALA	CYS	engineered mutation	UNP P49662
D	258	ALA	CYS	engineered mutation	UNP P49662

- Molecule 2 is a protein called Gasdermin-D.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	E	162	1204	769	193	234	8	0	0	0

- Molecule 3 is a protein called Gasdermin-D.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	H	135	1005	640	160	199	6	0	0	0


- Molecule 4 is a protein called Caspase-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	a	88	Total 732	C 472	N 123	O 130	S 7	0	0	0
4	b	88	Total 732	C 472	N 123	O 130	S 7	0	0	0
4	c	88	Total 732	C 472	N 123	O 130	S 7	0	0	0
4	d	88	Total 732	C 472	N 123	O 130	S 7	0	0	0

3 Residue-property plots [i](#)

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.

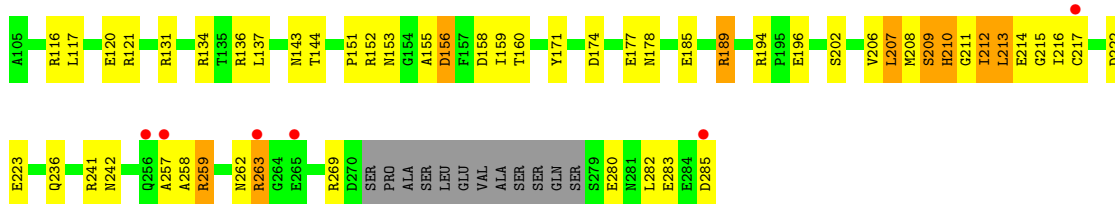
- Molecule 1: Caspase-4

Chain A: 




- Molecule 1: Caspase-4

Chain B: 




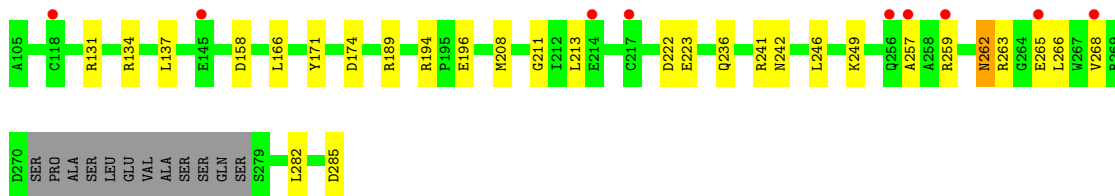
- Molecule 1: Caspase-4

Chain C: 

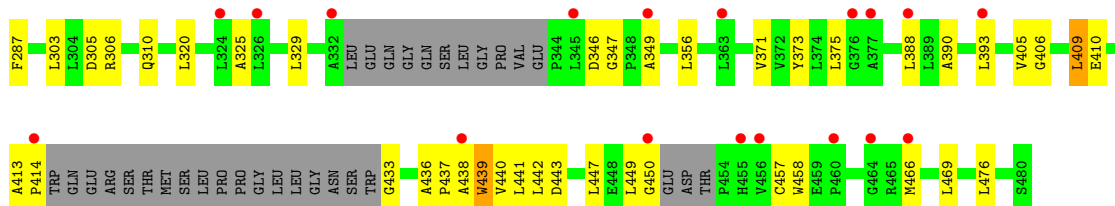


- Molecule 1: Caspase-4

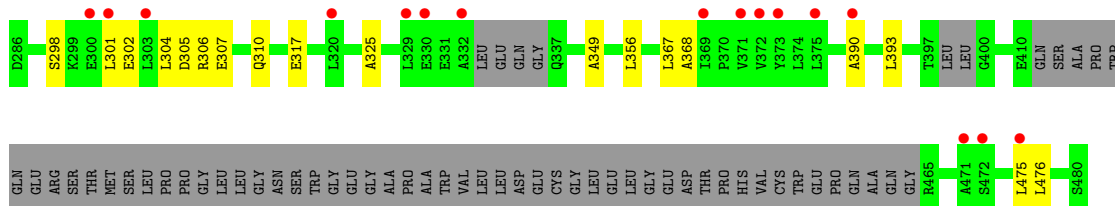
Chain D: 



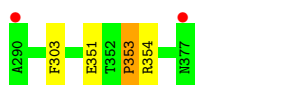
• Molecule 2: Gasdermin-D



• Molecule 3: Gasdermin-D



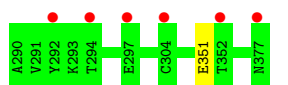
• Molecule 4: Caspase-4



• Molecule 4: Caspase-4

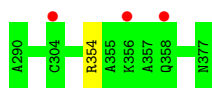


• Molecule 4: Caspase-4



● Molecule 4: Caspase-4

Chain d:  3% 99% .



4 Data and refinement statistics

Property	Value	Source
Space group	P 43 2 2	Depositor
Cell constants a, b, c, α , β , γ	140.57Å 140.57Å 329.36Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.48 – 3.61 45.48 – 3.61	Depositor EDS
% Data completeness (in resolution range)	97.0 (45.48-3.61) 99.7 (45.48-3.61)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.24 (at 3.57Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.311 , 0.319 0.316 , 0.325	Depositor DCC
R_{free} test set	36743 reflections (5.15%)	wwPDB-VP
Wilson B-factor (Å ²)	134.9	Xtrriage
Anisotropy	0.433	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 103.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	10693	wwPDB-VP
Average B, all atoms (Å ²)	156.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.29% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.23	0/1411	0.42	0/1902
1	B	0.31	0/1411	0.52	0/1902
1	C	0.24	0/1411	0.43	0/1902
1	D	0.26	0/1411	0.44	0/1902
2	E	0.28	0/1218	0.44	0/1651
3	H	0.23	0/1011	0.36	0/1367
4	a	0.29	0/754	0.50	1/1018 (0.1%)
4	b	0.25	0/754	0.48	0/1018
4	c	0.26	0/754	0.47	0/1018
4	d	0.31	0/754	0.54	0/1018
All	All	0.27	0/10889	0.46	1/14698 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	a	353	PRO	N-CA-CB	-5.14	96.94	102.60

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	1389	0	1374	18	0
1	B	1389	0	1374	83	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1389	0	1373	18	0
1	D	1389	0	1374	31	0
2	E	1204	0	1236	74	0
3	H	1005	0	1046	12	0
4	a	732	0	709	0	0
4	b	732	0	708	0	0
4	c	732	0	707	0	0
4	d	732	0	709	0	0
All	All	10693	0	10610	228	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 18.

All (228) 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)
2:E:433:GLY:N	2:E:439:TRP:CE3	1.86	1.42
2:E:433:GLY:CA	2:E:439:TRP:CE3	2.01	1.42
2:E:287:PHE:CE1	2:E:409:LEU:CD2	1.98	1.33
1:B:152:ARG:NH2	1:B:209:SER:CA	1.91	1.33
2:E:287:PHE:CE1	2:E:409:LEU:HD21	1.29	1.33
1:D:213:LEU:CD1	1:D:259:ARG:HH21	1.38	1.33
1:B:152:ARG:NH2	1:B:209:SER:C	1.85	1.30
2:E:433:GLY:N	2:E:439:TRP:HE3	1.16	1.30
1:B:152:ARG:NH2	1:B:209:SER:HA	1.53	1.23
2:E:433:GLY:HA2	2:E:439:TRP:CZ3	1.74	1.22
2:E:433:GLY:HA2	2:E:439:TRP:CE3	1.68	1.20
1:B:212:ILE:CD1	1:B:214:GLU:H	1.56	1.19
1:D:263:ARG:CD	1:D:265:GLU:OE2	1.91	1.17
2:E:287:PHE:CZ	2:E:409:LEU:HD21	1.78	1.17
1:D:213:LEU:HD12	1:D:259:ARG:HH21	1.08	1.15
1:D:263:ARG:HG2	1:D:265:GLU:HG3	1.27	1.15
1:D:263:ARG:HD2	1:D:265:GLU:OE2	0.96	1.14
2:E:439:TRP:CZ3	2:E:449:LEU:HB3	1.84	1.13
1:D:213:LEU:CD1	1:D:259:ARG:NH2	2.13	1.12
1:B:213:LEU:HA	1:B:259:ARG:HB3	1.27	1.11
2:E:406:GLY:HA2	2:E:409:LEU:CD2	1.81	1.10
2:E:439:TRP:CE3	2:E:449:LEU:HB3	1.88	1.09
2:E:406:GLY:O	2:E:409:LEU:HD23	1.51	1.08
2:E:439:TRP:CH2	2:E:449:LEU:HB2	1.89	1.08
1:B:206:VAL:C	1:B:207:LEU:HD23	1.74	1.07

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:263:ARG:HD2	1:D:265:GLU:CD	1.74	1.07
1:B:152:ARG:HH22	1:B:209:SER:CA	1.58	1.06
2:E:406:GLY:HA2	2:E:409:LEU:HD22	1.39	1.04
2:E:439:TRP:CZ3	2:E:449:LEU:CB	2.43	1.01
1:B:152:ARG:CZ	1:B:209:SER:HA	1.91	1.01
1:D:213:LEU:HD11	1:D:259:ARG:HH21	1.20	1.00
1:D:213:LEU:HD12	1:D:259:ARG:NH2	1.77	0.99
2:E:439:TRP:CD2	2:E:449:LEU:HD13	1.98	0.99
2:E:439:TRP:CG	2:E:449:LEU:HD13	2.00	0.97
1:B:212:ILE:HD12	1:B:214:GLU:H	1.28	0.97
1:D:213:LEU:HD11	1:D:259:ARG:NH2	1.80	0.94
1:B:152:ARG:HH22	1:B:209:SER:HA	1.18	0.90
2:E:439:TRP:CE2	2:E:449:LEU:HD12	2.07	0.89
2:E:433:GLY:O	2:E:439:TRP:CG	2.27	0.88
1:B:213:LEU:HA	1:B:259:ARG:CB	2.03	0.87
2:E:287:PHE:HE1	2:E:409:LEU:HD21	1.07	0.87
1:B:152:ARG:HH22	1:B:209:SER:C	1.59	0.87
1:B:143:ASN:O	1:B:152:ARG:NH1	2.08	0.87
1:B:212:ILE:HD12	1:B:213:LEU:N	1.91	0.86
1:B:152:ARG:HH21	1:B:209:SER:C	1.73	0.86
2:E:287:PHE:HE1	2:E:409:LEU:CD2	1.56	0.85
2:E:439:TRP:CH2	2:E:449:LEU:CB	2.58	0.85
2:E:439:TRP:CD2	2:E:449:LEU:CD1	2.60	0.85
1:B:212:ILE:CD1	1:B:214:GLU:N	2.40	0.84
2:E:439:TRP:CZ2	2:E:449:LEU:HB2	2.13	0.84
2:E:406:GLY:C	2:E:409:LEU:HD23	1.99	0.83
1:B:212:ILE:HD11	1:B:214:GLU:CG	2.10	0.82
1:B:152:ARG:HH22	1:B:210:HIS:N	1.80	0.79
2:E:433:GLY:C	2:E:439:TRP:CD2	2.55	0.79
2:E:433:GLY:CA	2:E:439:TRP:CD2	2.67	0.78
1:B:212:ILE:HD12	1:B:214:GLU:N	1.99	0.78
1:D:263:ARG:CD	1:D:265:GLU:CD	2.45	0.77
1:B:212:ILE:HD11	1:B:214:GLU:HG2	1.67	0.76
1:B:156:ASP:HA	1:B:159:ILE:HD12	1.65	0.76
2:E:406:GLY:CA	2:E:409:LEU:CD2	2.62	0.76
1:B:152:ARG:NH2	1:B:210:HIS:N	2.33	0.76
2:E:406:GLY:HA2	2:E:409:LEU:HD23	1.65	0.76
2:E:406:GLY:CA	2:E:409:LEU:HD23	2.16	0.76
2:E:439:TRP:CE2	2:E:449:LEU:CD1	2.70	0.75
1:B:212:ILE:HD11	1:B:214:GLU:H	1.46	0.75
2:E:439:TRP:CE3	2:E:449:LEU:CB	2.70	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:436:ALA:HB3	2:E:439:TRP:HB3	1.70	0.72
1:B:152:ARG:NH1	1:B:209:SER:HA	2.04	0.72
2:E:393:LEU:HD21	2:E:476:LEU:HD13	1.71	0.72
1:B:209:SER:HB3	1:B:216:ILE:HD11	1.70	0.71
1:B:152:ARG:CZ	1:B:209:SER:CA	2.61	0.71
1:B:153:ASN:HD21	1:B:283:GLU:CD	1.94	0.71
1:D:263:ARG:CG	1:D:265:GLU:HG3	2.16	0.69
1:D:262:ASN:O	1:D:262:ASN:ND2	2.24	0.69
1:B:207:LEU:HD23	1:B:207:LEU:N	2.04	0.69
1:D:236:GLN:O	1:D:242:ASN:ND2	2.23	0.69
1:D:263:ARG:HG2	1:D:265:GLU:CG	2.16	0.68
1:D:174:ASP:OD2	1:D:194:ARG:NH1	2.26	0.68
2:E:439:TRP:CG	2:E:449:LEU:CD1	2.75	0.68
1:B:153:ASN:OD1	1:B:153:ASN:N	2.24	0.67
1:B:213:LEU:CA	1:B:259:ARG:HB3	2.15	0.66
1:C:174:ASP:OD2	1:C:194:ARG:NH1	2.29	0.66
1:B:158:ASP:HB2	1:B:208:MET:HE1	1.77	0.65
1:C:281:ASN:H	1:C:282:LEU:HD23	1.62	0.65
1:B:158:ASP:HB3	1:B:208:MET:HE3	1.78	0.64
2:E:433:GLY:C	2:E:439:TRP:CE3	2.71	0.64
1:D:213:LEU:HD12	1:D:259:ARG:CZ	2.26	0.64
2:E:433:GLY:N	2:E:439:TRP:CD2	2.62	0.63
1:C:137:LEU:HD11	1:C:196:GLU:HB2	1.81	0.63
1:A:171:TYR:HH	1:A:202:SER:HG	1.46	0.63
1:D:213:LEU:HD12	1:D:259:ARG:HE	1.63	0.62
1:B:158:ASP:CB	1:B:208:MET:HE3	2.30	0.62
2:E:433:GLY:O	2:E:439:TRP:CB	2.48	0.61
2:E:439:TRP:HZ3	2:E:450:GLY:N	1.97	0.61
1:B:212:ILE:HD11	1:B:214:GLU:CB	2.29	0.61
1:C:247:LYS:HZ3	1:D:268:VAL:HG11	1.66	0.60
2:E:439:TRP:NE1	2:E:449:LEU:HD12	2.15	0.60
2:E:439:TRP:CZ3	2:E:450:GLY:N	2.68	0.60
1:D:213:LEU:HD12	1:D:259:ARG:NE	2.17	0.60
1:B:171:TYR:HH	1:B:202:SER:HG	1.47	0.60
1:C:246:LEU:HA	1:C:249:LYS:HD2	1.82	0.60
1:B:156:ASP:N	1:B:156:ASP:OD1	2.34	0.59
1:B:262:ASN:O	1:B:263:ARG:C	2.39	0.59
1:B:156:ASP:O	1:B:159:ILE:N	2.36	0.59
1:A:281:ASN:H	1:A:282:LEU:HD23	1.67	0.59
1:A:246:LEU:HA	1:A:249:LYS:HD2	1.85	0.58
2:E:325:ALA:HB1	2:E:349:ALA:HB2	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:174:ASP:OD2	1:A:194:ARG:NH1	2.37	0.58
1:A:263:ARG:HB2	2:E:303:LEU:HD21	1.86	0.58
1:B:212:ILE:HD12	1:B:212:ILE:C	2.24	0.58
1:B:158:ASP:HB2	1:B:208:MET:CE	2.34	0.57
2:E:433:GLY:O	2:E:439:TRP:CD2	2.56	0.57
1:B:210:HIS:N	1:B:210:HIS:CD2	2.73	0.57
3:H:317:GLU:HG3	3:H:390:ALA:HB1	1.85	0.57
1:B:156:ASP:O	1:B:160:THR:N	2.36	0.56
1:B:213:LEU:N	1:B:259:ARG:O	2.38	0.56
3:H:356:LEU:HD13	3:H:368:ALA:HA	1.86	0.56
1:C:140:ILE:HG12	1:C:206:VAL:HB	1.86	0.56
1:B:158:ASP:CB	1:B:208:MET:CE	2.84	0.56
1:C:209:SER:HB3	1:C:216:ILE:HD11	1.88	0.55
1:B:156:ASP:O	1:B:159:ILE:HB	2.06	0.55
1:B:212:ILE:O	1:B:214:GLU:N	2.40	0.55
2:E:406:GLY:O	2:E:409:LEU:CD2	2.41	0.55
2:E:458:TRP:HH2	2:E:466:MET:HG3	1.71	0.54
2:E:329:LEU:HD22	2:E:375:LEU:HD13	1.90	0.54
1:C:158:ASP:HB2	1:C:208:MET:HE1	1.90	0.54
1:A:158:ASP:HB2	1:A:208:MET:HE1	1.90	0.53
1:B:174:ASP:OD2	1:B:194:ARG:NH1	2.41	0.53
1:D:246:LEU:HA	1:D:249:LYS:HD2	1.89	0.53
1:B:206:VAL:O	1:B:207:LEU:HD23	2.07	0.53
1:B:236:GLN:O	1:B:242:ASN:ND2	2.24	0.53
1:C:171:TYR:OH	1:C:202:SER:OG	2.24	0.53
2:E:439:TRP:CD1	2:E:449:LEU:CD1	2.92	0.53
1:C:222:ASP:OD1	1:C:223:GLU:N	2.42	0.52
1:D:137:LEU:HD11	1:D:196:GLU:HB2	1.92	0.52
2:E:433:GLY:N	2:E:439:TRP:HB2	2.25	0.52
3:H:325:ALA:HB1	3:H:349:ALA:HB2	1.93	0.51
1:B:185:GLU:O	1:B:189:ARG:HG2	2.10	0.51
1:B:177:GLU:HB3	1:B:178:ASN:HD22	1.76	0.51
1:D:158:ASP:HB2	1:D:208:MET:HE1	1.93	0.51
2:E:388:LEU:HD11	2:E:440:VAL:HG11	1.93	0.50
1:D:222:ASP:OD1	1:D:223:GLU:N	2.45	0.50
1:B:151:PRO:O	1:B:151:PRO:HG2	2.11	0.50
1:A:222:ASP:OD1	1:A:223:GLU:N	2.44	0.50
1:B:137:LEU:HD11	1:B:196:GLU:HB2	1.92	0.50
1:B:212:ILE:O	1:B:213:LEU:C	2.50	0.50
1:B:222:ASP:OD1	1:B:223:GLU:N	2.44	0.50
2:E:439:TRP:O	2:E:443:ASP:N	2.43	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:176:GLU:HB3	1:A:179:LEU:HD11	1.94	0.49
1:B:210:HIS:CD2	1:B:210:HIS:H	2.31	0.49
1:A:209:SER:HB3	1:A:216:ILE:HD11	1.95	0.49
1:C:152:ARG:HH22	1:C:208:MET:HB3	1.78	0.49
2:E:305:ASP:OD1	2:E:306:ARG:N	2.45	0.48
2:E:437:PRO:O	2:E:441:LEU:N	2.35	0.48
2:E:409:LEU:HG	2:E:410:GLU:N	2.26	0.48
2:E:413:ALA:HB3	2:E:414:PRO:HD3	1.94	0.48
2:E:439:TRP:CD1	2:E:439:TRP:C	2.86	0.48
3:H:305:ASP:OD2	3:H:306:ARG:N	2.47	0.48
1:B:212:ILE:O	1:B:215:GLY:N	2.44	0.48
1:B:152:ARG:HG2	1:B:155:ALA:HB2	1.95	0.48
1:B:212:ILE:HD12	1:B:213:LEU:CA	2.43	0.48
1:B:282:LEU:HD23	1:B:282:LEU:H	1.79	0.48
1:B:156:ASP:HA	1:B:159:ILE:CD1	2.40	0.48
1:A:137:LEU:HD11	1:A:196:GLU:HB2	1.94	0.47
1:A:130:GLU:O	1:A:134:ARG:HB2	2.14	0.47
1:B:171:TYR:OH	1:B:202:SER:OG	2.21	0.47
1:A:267:TRP:O	2:E:305:ASP:HB2	2.15	0.46
2:E:413:ALA:N	2:E:414:PRO:CD	2.78	0.46
1:B:212:ILE:HD11	1:B:214:GLU:N	2.16	0.46
2:E:442:LEU:HB3	2:E:447:LEU:HD12	1.97	0.46
1:B:155:ALA:O	1:B:158:ASP:HB2	2.16	0.46
1:B:156:ASP:HA	1:B:159:ILE:HB	1.97	0.46
1:C:176:GLU:HB3	1:C:179:LEU:HD11	1.97	0.45
3:H:393:LEU:HD21	3:H:476:LEU:HB3	1.98	0.45
3:H:306:ARG:O	3:H:310:GLN:HG2	2.16	0.45
1:B:144:THR:O	1:B:151:PRO:HA	2.16	0.45
1:D:131:ARG:HG3	1:D:134:ARG:NH2	2.32	0.45
2:E:320:LEU:HD22	2:E:390:ALA:HB3	1.98	0.45
1:A:206:VAL:HA	1:A:254:ILE:O	2.17	0.45
1:A:140:ILE:HG12	1:A:206:VAL:HB	1.99	0.45
1:B:241:ARG:HH12	2:E:306:ARG:HH21	1.65	0.44
1:B:136:ARG:HB3	1:B:171:TYR:CD2	2.52	0.44
2:E:306:ARG:O	2:E:310:GLN:HG2	2.18	0.44
2:E:405:VAL:O	2:E:409:LEU:HB3	2.17	0.44
1:B:262:ASN:O	1:B:263:ARG:O	2.35	0.44
2:E:437:PRO:O	2:E:438:ALA:C	2.54	0.44
1:C:130:GLU:O	1:C:134:ARG:HB2	2.18	0.44
2:E:413:ALA:N	2:E:414:PRO:HD2	2.33	0.44
3:H:304:LEU:HD11	3:H:367:LEU:HD22	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:212:ILE:CD1	1:B:212:ILE:C	2.84	0.44
2:E:441:LEU:HD21	2:E:469:LEU:HD21	2.00	0.44
1:B:241:ARG:HH12	2:E:306:ARG:NH2	2.16	0.43
1:C:224:LYS:H	1:C:224:LYS:HG2	1.53	0.43
1:C:244:LEU:HD13	3:H:307:GLU:HG3	1.99	0.43
1:A:179:LEU:HB3	1:A:183:ASP:HB2	1.98	0.43
1:B:117:LEU:HD11	1:B:121:ARG:NH1	2.34	0.43
3:H:298:SER:O	3:H:302:GLU:HG3	2.18	0.43
2:E:439:TRP:CZ3	2:E:449:LEU:C	2.91	0.43
1:D:241:ARG:NH1	1:D:242:ASN:OD1	2.50	0.43
1:B:116:ARG:NH1	1:B:120:GLU:OE1	2.51	0.43
2:E:356:LEU:HD11	2:E:371:VAL:HG21	2.00	0.43
2:E:433:GLY:O	2:E:439:TRP:HB3	2.18	0.43
2:E:436:ALA:O	2:E:440:VAL:N	2.40	0.43
1:B:211:GLY:HA3	1:B:257:ALA:HB1	2.00	0.43
2:E:436:ALA:HB3	2:E:439:TRP:CB	2.45	0.43
1:D:282:LEU:HD23	1:D:282:LEU:H	1.82	0.42
1:B:213:LEU:HB2	1:B:259:ARG:O	2.19	0.42
1:B:152:ARG:HH12	1:B:209:SER:HA	1.80	0.42
1:B:210:HIS:O	1:B:217:CYS:HB2	2.19	0.42
1:B:212:ILE:CG1	1:B:214:GLU:H	2.25	0.42
1:C:244:LEU:HD22	3:H:307:GLU:HB2	2.00	0.42
3:H:301:LEU:HD12	3:H:475:LEU:HD22	2.02	0.42
1:B:131:ARG:HG3	1:B:134:ARG:NH2	2.35	0.41
1:D:266:LEU:HD13	3:H:305:ASP:OD1	2.20	0.41
1:D:213:LEU:CD1	1:D:259:ARG:CZ	2.87	0.41
1:C:163:LYS:NZ	1:C:167:GLU:OE1	2.30	0.41
1:D:211:GLY:HA3	1:D:257:ALA:HB1	2.01	0.41
1:B:211:GLY:O	1:B:258:ALA:O	2.39	0.41
2:E:458:TRP:CH2	2:E:466:MET:HG3	2.51	0.41
1:C:136:ARG:HB2	1:C:170:ASP:O	2.21	0.41
1:A:152:ARG:HH12	1:A:208:MET:HB3	1.86	0.41
1:B:210:HIS:H	1:B:210:HIS:HD2	1.68	0.41
1:A:153:ASN:OD1	1:A:153:ASN:N	2.42	0.40
2:E:346:ASP:OD1	2:E:347:GLY:N	2.49	0.40
1:D:166:LEU:HB3	1:D:171:TYR:HB2	2.03	0.40
1:B:189:ARG:HG2	1:B:189:ARG:H	1.63	0.40
1:A:224:LYS:H	1:A:224:LYS:HG2	1.59	0.40
1:B:178:ASN:N	1:B:178:ASN:ND2	2.69	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	169/185 (91%)	161 (95%)	8 (5%)	0	100	100
1	B	169/185 (91%)	158 (94%)	9 (5%)	2 (1%)	11	43
1	C	169/185 (91%)	160 (95%)	9 (5%)	0	100	100
1	D	169/185 (91%)	162 (96%)	7 (4%)	0	100	100
2	E	154/194 (79%)	149 (97%)	5 (3%)	0	100	100
3	H	127/195 (65%)	126 (99%)	1 (1%)	0	100	100
4	a	86/88 (98%)	81 (94%)	3 (4%)	2 (2%)	5	31
4	b	86/88 (98%)	80 (93%)	5 (6%)	1 (1%)	11	43
4	c	86/88 (98%)	80 (93%)	5 (6%)	1 (1%)	11	43
4	d	86/88 (98%)	81 (94%)	5 (6%)	0	100	100
All	All	1301/1481 (88%)	1238 (95%)	57 (4%)	6 (0%)	25	59

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	c	351	GLU
1	B	213	LEU
1	B	263	ARG
4	a	351	GLU
4	b	351	GLU
4	a	353	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	154/164 (94%)	151 (98%)	3 (2%)	52	72
1	B	154/164 (94%)	144 (94%)	10 (6%)	14	42
1	C	154/164 (94%)	151 (98%)	3 (2%)	52	72
1	D	154/164 (94%)	151 (98%)	3 (2%)	52	72
2	E	130/158 (82%)	126 (97%)	4 (3%)	35	61
3	H	111/159 (70%)	111 (100%)	0	100	100
4	a	82/82 (100%)	80 (98%)	2 (2%)	44	67
4	b	82/82 (100%)	82 (100%)	0	100	100
4	c	82/82 (100%)	82 (100%)	0	100	100
4	d	82/82 (100%)	81 (99%)	1 (1%)	67	82
All	All	1185/1301 (91%)	1159 (98%)	26 (2%)	47	69

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	265	GLU
1	A	282	LEU
1	A	285	ASP
1	B	156	ASP
1	B	189	ARG
1	B	207	LEU
1	B	209	SER
1	B	210	HIS
1	B	212	ILE
1	B	259	ARG
1	B	269	ARG
1	B	280	GLU
1	B	285	ASP
2	E	373	TYR
2	E	409	LEU
2	E	439	TRP
2	E	457	CYS
1	C	265	GLU
1	C	282	LEU
1	C	285	ASP
1	D	189	ARG
1	D	262	ASN
1	D	285	ASP
4	a	303	PHE

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Mol	Chain	Res	Type
4	a	354	ARG
4	d	354	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	210	HIS
1	D	262	ASN
4	c	310	ASN
4	d	358	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data i

6.1 Protein, DNA and RNA chains i

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	173/185 (93%)	0.28	2 (1%) 76 55	110, 138, 174, 184	0
1	B	173/185 (93%)	0.28	6 (3%) 47 31	115, 146, 175, 187	0
1	C	173/185 (93%)	0.43	6 (3%) 47 31	108, 142, 177, 197	0
1	D	173/185 (93%)	0.37	9 (5%) 34 23	109, 147, 183, 194	0
2	E	162/194 (83%)	0.78	18 (11%) 12 10	176, 210, 236, 243	0
3	H	135/195 (69%)	0.89	16 (11%) 10 9	177, 216, 231, 241	0
4	a	88/88 (100%)	0.30	2 (2%) 61 41	110, 127, 166, 187	0
4	b	88/88 (100%)	0.40	5 (5%) 30 21	115, 134, 172, 189	0
4	c	88/88 (100%)	0.51	6 (6%) 25 18	112, 128, 164, 189	0
4	d	88/88 (100%)	0.61	3 (3%) 48 31	116, 132, 171, 181	0
All	All	1341/1481 (90%)	0.48	73 (5%) 32 22	108, 149, 226, 243	0

All (73) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	d	356	LYS	6.3
1	C	283	GLU	4.8
2	E	464	GLY	4.4
4	a	290	ALA	4.4
3	H	475	LEU	4.1
1	C	264	GLY	4.1
1	D	214	GLU	3.8
3	H	330	GLU	3.7
1	B	256	GLN	3.6
3	H	320	LEU	3.6
2	E	450	GLY	3.5
4	d	358	GLN	3.5
3	H	371	VAL	3.5

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Mol	Chain	Res	Type	RSRZ
2	E	456	VAL	3.3
1	B	217	CYS	3.3
1	D	217	CYS	3.3
2	E	414	PRO	3.2
2	E	376	GLY	3.2
3	H	332	ALA	3.1
4	b	356	LYS	3.1
1	B	285	ASP	2.9
1	D	265	GLU	2.9
3	H	372	VAL	2.8
4	c	377	ASN	2.8
3	H	472	SER	2.8
1	D	145	GLU	2.7
1	B	263	ARG	2.7
2	E	363	LEU	2.6
3	H	329	LEU	2.6
3	H	471	ALA	2.6
3	H	303	LEU	2.5
1	B	257	ALA	2.5
2	E	388	LEU	2.4
1	A	217	CYS	2.4
3	H	390	ALA	2.4
4	b	313	TRP	2.4
1	D	256	GLN	2.4
2	E	349	ALA	2.3
4	b	340	GLU	2.3
1	C	131	ARG	2.3
2	E	345	LEU	2.3
1	B	265	GLU	2.3
4	c	294	THR	2.3
4	c	352	THR	2.3
2	E	324	LEU	2.3
3	H	373	TYR	2.3
4	c	292	TYR	2.2
1	D	257	ALA	2.2
2	E	438	ALA	2.2
1	D	268	VAL	2.2
1	A	118	CYS	2.2
1	D	259	ARG	2.2
2	E	455	HIS	2.2
1	D	118	CYS	2.2
4	d	304	CYS	2.2

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Mol	Chain	Res	Type	RSRZ
4	b	294	THR	2.1
4	a	377	ASN	2.1
2	E	377	ALA	2.1
2	E	460	PRO	2.1
2	E	332	ALA	2.1
4	b	358	GLN	2.1
1	C	267	TRP	2.1
4	c	304	CYS	2.1
3	H	300	GLU	2.1
2	E	393	LEU	2.1
3	H	375	LEU	2.1
1	C	219	THR	2.0
2	E	326	LEU	2.0
3	H	301	LEU	2.0
4	c	297	GLU	2.0
1	C	132	ASN	2.0
3	H	369	ILE	2.0
2	E	466	MET	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.