



Full wwPDB X-ray Structure Validation Report ⓘ

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PDB ID : 3A36 / pdb_00003a36
Title : Structural insight into the membrane insertion of tail-anchored proteins by Get3
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Deposited on : 2009-06-10
Resolution : 2.80 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	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

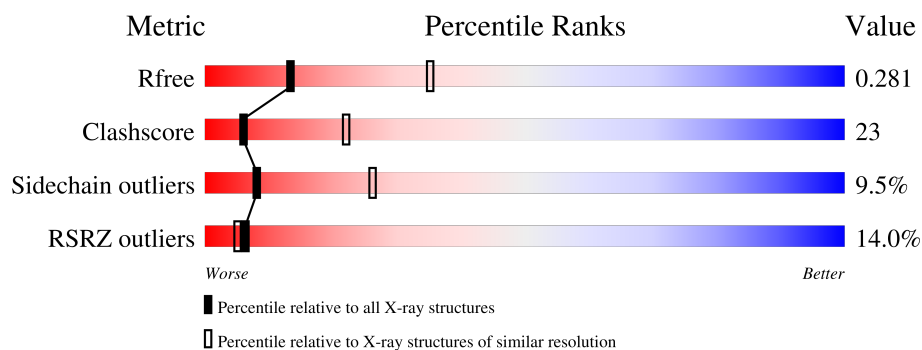
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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}	180053	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	362	<div> <div>15%</div> <div> <div>46%</div> <div>34%</div> <div>6% •</div> <div>13%</div> </div> </div>
1	B	362	<div> <div>10%</div> <div> <div>54%</div> <div>29%</div> <div>5%</div> <div>11%</div> </div> </div>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 4897 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 ATPase GET3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	314	Total	C	N	O	S	0	0	0
			2407	1519	402	470	16			
1	B	321	Total	C	N	O	S	0	0	0
			2489	1569	416	487	17			

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	155	ASP	GLY	conflict	UNP Q12154
A	355	LEU	-	expression tag	UNP Q12154
A	356	GLU	-	expression tag	UNP Q12154
A	357	HIS	-	expression tag	UNP Q12154
A	358	HIS	-	expression tag	UNP Q12154
A	359	HIS	-	expression tag	UNP Q12154
A	360	HIS	-	expression tag	UNP Q12154
A	361	HIS	-	expression tag	UNP Q12154
A	362	HIS	-	expression tag	UNP Q12154
B	155	ASP	GLY	conflict	UNP Q12154
B	355	LEU	-	expression tag	UNP Q12154
B	356	GLU	-	expression tag	UNP Q12154
B	357	HIS	-	expression tag	UNP Q12154
B	358	HIS	-	expression tag	UNP Q12154
B	359	HIS	-	expression tag	UNP Q12154
B	360	HIS	-	expression tag	UNP Q12154
B	361	HIS	-	expression tag	UNP Q12154
B	362	HIS	-	expression tag	UNP Q12154

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total	Zn	0	0
			1	1		

E351	
D352	
LYS	
GLU	
LEU	
GLU	
HIS	
HIS	
HIS	
HIS	
HIS	
HIS	

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	114.92Å 221.64Å 49.27Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.36 – 2.80 45.36 – 2.80	Depositor EDS
% Data completeness (in resolution range)	96.8 (45.36-2.80) 96.7 (45.36-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.83 (at 2.81Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.237 , 0.281 0.237 , 0.281	Depositor DCC
R_{free} test set	3117 reflections (9.77%)	wwPDB-VP
Wilson B-factor (Å ²)	66.8	Xtriage
Anisotropy	0.528	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 62.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	4897	wwPDB-VP
Average B, all atoms (Å ²)	79.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.60% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

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	0.49	1/2447 (0.0%)	1.02	15/3309 (0.5%)
1	B	0.55	1/2527 (0.0%)	1.01	13/3412 (0.4%)
All	All	0.52	2/4974 (0.0%)	1.01	28/6721 (0.4%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	100	MET	SD-CE	-6.11	1.64	1.79
1	A	42	MET	SD-CE	-5.64	1.65	1.79

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	126	LEU	N-CA-C	-9.64	101.19	113.72
1	A	349	GLU	N-CA-C	-9.49	102.30	112.93
1	A	129	LEU	N-CA-C	-7.65	104.09	113.19
1	B	349	GLU	N-CA-C	-6.79	104.99	113.28
1	B	46	GLN	CA-C-N	6.67	127.21	119.47
1	B	46	GLN	C-N-CA	6.67	127.21	119.47
1	A	211	ASP	N-CA-C	-6.63	105.30	113.19
1	B	342	THR	N-CA-C	6.55	118.22	111.14
1	B	314	MET	CA-C-N	6.36	126.31	119.76
1	B	314	MET	C-N-CA	6.36	126.31	119.76
1	A	281	GLN	N-CA-C	-6.33	105.97	113.38
1	B	310	HIS	N-CA-C	-5.77	99.11	108.41
1	A	232	ASP	CA-C-N	5.68	125.80	119.32
1	A	232	ASP	C-N-CA	5.68	125.80	119.32
1	A	133	ILE	CA-C-N	5.60	125.53	119.76
1	A	133	ILE	C-N-CA	5.60	125.53	119.76
1	A	273	GLN	N-CA-C	5.36	118.98	111.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	89	ASP	CA-C-N	5.34	124.80	119.24
1	A	89	ASP	C-N-CA	5.34	124.80	119.24
1	B	168	ALA	CA-C-N	5.34	125.05	119.82
1	B	168	ALA	C-N-CA	5.34	125.05	119.82
1	B	232	ASP	CA-C-N	5.22	125.53	119.47
1	B	232	ASP	C-N-CA	5.22	125.53	119.47
1	A	253	GLU	N-CA-C	-5.21	105.52	111.14
1	B	29	VAL	N-CA-C	5.07	116.99	112.17
1	A	57	ASP	CA-C-N	5.03	124.69	119.56
1	A	57	ASP	C-N-CA	5.03	124.69	119.56
1	A	289	GLN	N-CA-C	-5.01	105.82	111.28

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	2407	0	2336	133	0
1	B	2489	0	2452	96	0
2	B	1	0	0	0	0
All	All	4897	0	4788	220	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 23.

All (220) 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:B:52:LEU:HD21	1:B:86:MET:HG2	1.49	0.94
1:B:230:PHE:HA	1:B:236:THR:HG21	1.54	0.89
1:B:324:LEU:O	1:B:328:THR:HG23	1.73	0.88
1:B:243:ILE:HD12	1:B:244:SER:H	1.38	0.86
1:A:245:GLU:HG2	1:A:294:MET:HE1	1.59	0.85
1:A:21:ILE:HD13	1:A:42:MET:HE1	1.60	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:291:ARG:NH1	1:B:291:ARG:HD3	1.93	0.81
1:A:242:CYS:HB3	1:A:252:THR:HG21	1.62	0.81
1:A:291:ARG:HD3	1:B:291:ARG:NH1	1.96	0.80
1:A:8:ASN:HD22	1:A:10:HIS:H	1.30	0.80
1:A:249:LEU:HD21	1:A:302:ILE:HD11	1.64	0.78
1:A:249:LEU:HD11	1:A:298:TYR:HB3	1.68	0.76
1:B:345:LYS:O	1:B:349:GLU:HG3	1.85	0.75
1:B:227:ARG:O	1:B:231:THR:HB	1.86	0.75
1:A:248:SER:O	1:A:252:THR:HG23	1.87	0.75
1:A:345:LYS:HE2	1:A:345:LYS:HA	1.69	0.74
1:A:54:ILE:HD11	1:A:88:ILE:HD12	1.68	0.73
1:A:291:ARG:HH11	1:B:291:ARG:HH11	1.37	0.73
1:B:253:GLU:HG2	1:B:306:TYR:OH	1.89	0.72
1:A:282:GLU:C	1:A:284:ASN:H	1.96	0.72
1:A:345:LYS:O	1:A:349:GLU:HG3	1.91	0.71
1:A:34:SER:OG	1:A:270:ILE:HD11	1.91	0.70
1:B:20:TRP:HB2	1:B:236:THR:HB	1.73	0.70
1:B:100:MET:CE	1:B:104:ARG:HE	2.05	0.70
1:A:129:LEU:H	1:A:129:LEU:HD12	1.57	0.69
1:B:318:ALA:O	1:B:351:GLU:HG3	1.92	0.69
1:B:100:MET:HE1	1:B:104:ARG:HE	1.57	0.68
1:A:52:LEU:HB3	1:A:163:VAL:HG22	1.75	0.67
1:B:10:HIS:O	1:B:14:THR:HB	1.95	0.67
1:A:221:ALA:O	1:A:225:THR:HG23	1.95	0.67
1:B:285:CYS:O	1:B:289:GLN:HG2	1.94	0.67
1:A:54:ILE:HD11	1:A:88:ILE:CD1	2.25	0.66
1:B:185:LYS:O	1:B:188:GLU:HG2	1.96	0.66
1:A:133:ILE:HB	1:A:136:ILE:CD1	2.26	0.66
1:B:245:GLU:HG2	1:B:294:MET:HE1	1.78	0.65
1:B:121:LEU:HA	1:B:215:LYS:HD2	1.79	0.64
1:A:129:LEU:HD21	1:A:212:ILE:HG21	1.79	0.64
1:B:230:PHE:HA	1:B:236:THR:CG2	2.27	0.64
1:A:88:ILE:HG22	1:A:89:ASP:N	2.14	0.63
1:A:20:TRP:CD1	1:A:236:THR:HG22	2.34	0.63
1:B:179:LEU:HB3	1:B:180:PRO:HD3	1.80	0.63
1:A:21:ILE:CD1	1:A:42:MET:HE1	2.29	0.62
1:B:19:LYS:NZ	1:B:229:GLN:NE2	2.47	0.62
1:A:291:ARG:HH11	1:B:291:ARG:NH1	1.97	0.62
1:A:227:ARG:O	1:A:231:THR:HB	2.00	0.61
1:A:254:ARG:HH12	1:A:255:LEU:HA	1.65	0.61
1:B:318:ALA:HB3	1:B:351:GLU:CG	2.30	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:207:ALA:O	1:A:209:ASN:N	2.33	0.61
1:A:88:ILE:HG22	1:A:89:ASP:H	1.65	0.61
1:A:6:GLU:O	1:A:310:HIS:HD2	1.84	0.60
1:B:275:LEU:HD23	1:B:295:GLN:OE1	2.01	0.60
1:A:133:ILE:HB	1:A:136:ILE:HD11	1.83	0.60
1:A:348:TYR:C	1:A:350:LEU:H	2.10	0.60
1:A:139:ALA:O	1:A:143:MET:HG2	2.01	0.59
1:B:172:HIS:HB2	1:B:175:ARG:HH21	1.68	0.59
1:B:249:LEU:HD13	1:B:302:ILE:HG12	1.84	0.59
1:B:19:LYS:NZ	1:B:229:GLN:HE22	2.00	0.59
1:A:291:ARG:NH1	1:B:291:ARG:HH11	2.00	0.59
1:A:20:TRP:HB2	1:A:236:THR:HG22	1.84	0.59
1:A:186:LEU:C	1:A:188:GLU:H	2.09	0.58
1:B:122:GLN:O	1:B:123:GLY:C	2.45	0.58
1:A:138:GLU:N	1:A:138:GLU:OE1	2.37	0.58
1:B:318:ALA:HB3	1:B:351:GLU:CD	2.29	0.58
1:A:10:HIS:O	1:A:14:THR:HB	2.03	0.58
1:A:31:LYS:NZ	1:A:31:LYS:HB3	2.19	0.57
1:B:3:LEU:N	1:B:3:LEU:HD23	2.20	0.56
1:B:88:ILE:HD11	1:B:145:VAL:HG13	1.87	0.56
1:B:174:LEU:H	1:B:174:LEU:CD2	2.17	0.56
1:A:130:THR:HG23	1:A:137:ASP:HB2	1.88	0.56
1:A:20:TRP:HD1	1:A:236:THR:HG22	1.70	0.56
1:A:280:ASP:C	1:A:282:GLU:N	2.62	0.55
1:A:138:GLU:OE2	1:A:175:ARG:NH1	2.40	0.55
1:A:50:GLN:NE2	1:A:82:ASN:HA	2.22	0.55
1:A:174:LEU:HD23	1:A:174:LEU:H	1.70	0.55
1:B:243:ILE:HD12	1:B:244:SER:N	2.16	0.55
1:B:188:GLU:HG3	1:B:189:LYS:N	2.21	0.55
1:A:142:PHE:HE2	1:A:226:ILE:HD13	1.72	0.55
1:B:21:ILE:N	1:B:21:ILE:HD12	2.21	0.55
1:A:210:VAL:C	1:A:212:ILE:H	2.15	0.55
1:B:148:HIS:O	1:B:152:GLN:HG2	2.08	0.55
1:A:282:GLU:O	1:A:284:ASN:N	2.38	0.54
1:B:287:ARG:HG3	1:B:287:ARG:HH11	1.72	0.54
1:A:349:GLU:O	1:A:350:LEU:HD23	2.07	0.54
1:B:49:LYS:O	1:B:82:ASN:HB2	2.07	0.54
1:A:150:LYS:HB2	1:A:150:LYS:HZ2	1.73	0.54
1:A:345:LYS:HE2	1:A:345:LYS:CA	2.37	0.54
1:A:254:ARG:NH1	1:A:254:ARG:HG2	2.22	0.53
1:A:17:THR:HG23	1:A:234:ASP:O	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:40:ILE:HG23	1:A:80:MET:HE1	1.89	0.53
1:A:270:ILE:HG13	1:A:270:ILE:O	2.09	0.53
1:A:149:ILE:O	1:A:153:GLU:HG3	2.08	0.53
1:A:291:ARG:CZ	1:B:291:ARG:HD3	2.38	0.53
1:B:100:MET:CE	1:B:104:ARG:NE	2.71	0.53
1:B:346:VAL:O	1:B:350:LEU:HD13	2.09	0.53
1:A:22:PHE:CE2	1:A:264:MET:HE1	2.44	0.52
1:A:256:ILE:HG12	1:A:266:VAL:HG11	1.91	0.52
1:B:20:TRP:CH2	1:B:146:MET:HE1	2.44	0.52
1:B:313:LYS:HD3	1:B:313:LYS:N	2.25	0.52
1:B:6:GLU:HB3	1:B:8:ASN:ND2	2.25	0.52
1:A:285:CYS:O	1:A:289:GLN:HG2	2.09	0.52
1:A:254:ARG:HG2	1:A:254:ARG:HH11	1.75	0.52
1:B:183:LEU:HD12	1:B:220:LYS:HB2	1.92	0.52
1:A:280:ASP:C	1:A:282:GLU:H	2.16	0.51
1:A:241:VAL:HG13	1:A:270:ILE:CG1	2.40	0.51
1:B:318:ALA:HB3	1:B:351:GLU:HG3	1.92	0.51
1:B:130:THR:C	1:B:132:SER:H	2.18	0.51
1:A:164:ILE:N	1:A:164:ILE:HD12	2.26	0.51
1:A:282:GLU:C	1:A:284:ASN:N	2.66	0.51
1:A:279:ASN:C	1:A:281:GLN:H	2.19	0.51
1:A:130:THR:C	1:A:132:SER:H	2.19	0.50
1:A:242:CYS:CB	1:A:252:THR:HG21	2.35	0.50
1:A:179:LEU:HB3	1:A:180:PRO:HD3	1.94	0.50
1:A:34:SER:OG	1:A:270:ILE:CD1	2.59	0.50
1:A:206:GLY:O	1:A:207:ALA:HB2	2.12	0.50
1:A:232:ASP:OD2	1:A:235:LEU:HG	2.12	0.50
1:B:94:LEU:HD11	1:B:140:LEU:HB3	1.93	0.50
1:B:264:MET:HG3	1:B:265:ASP:N	2.24	0.50
1:A:49:LYS:O	1:A:82:ASN:HB2	2.12	0.50
1:A:80:MET:HE2	1:A:324:LEU:HD21	1.92	0.50
1:B:19:LYS:HZ1	1:B:229:GLN:NE2	2.10	0.50
1:A:254:ARG:HH11	1:A:254:ARG:CG	2.26	0.49
1:A:213:SER:O	1:A:217:ASN:ND2	2.46	0.49
1:A:270:ILE:HD12	1:A:272:ASN:OD1	2.13	0.49
1:A:150:LYS:HB2	1:A:150:LYS:NZ	2.28	0.49
1:A:177:LEU:HD12	1:A:262:TYR:HB3	1.94	0.49
1:A:246:PHE:CD2	1:B:27:GLY:HA2	2.48	0.48
1:A:70:PHE:CD2	1:A:85:CYS:HB2	2.48	0.48
1:A:52:LEU:HD12	1:A:163:VAL:HG22	1.94	0.48
1:A:52:LEU:HB2	1:A:160:PHE:CD2	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:31:LYS:HB3	1:A:31:LYS:HZ2	1.78	0.47
1:B:15:SER:OG	1:B:17:THR:HG22	2.14	0.47
1:A:278:GLU:HG3	1:A:292:TRP:CD1	2.49	0.47
1:B:68:GLU:OE1	1:B:78:THR:N	2.42	0.47
1:B:174:LEU:CD2	1:B:174:LEU:N	2.77	0.47
1:A:209:ASN:O	1:A:212:ILE:HB	2.14	0.47
1:B:68:GLU:OE1	1:B:78:THR:HB	2.14	0.47
1:A:246:PHE:CD2	1:A:246:PHE:C	2.93	0.47
1:A:13:ILE:HD13	1:A:41:GLN:CG	2.45	0.46
1:B:6:GLU:HB3	1:B:8:ASN:HD21	1.78	0.46
1:A:90:PRO:HG2	1:A:91:SER:H	1.81	0.46
1:A:262:TYR:O	1:A:263:ASP:HB2	2.14	0.46
1:B:294:MET:O	1:B:297:LYS:HB3	2.15	0.46
1:A:210:VAL:C	1:A:212:ILE:N	2.74	0.46
1:B:70:PHE:CD2	1:B:85:CYS:HB2	2.51	0.46
1:A:238:PHE:CD2	1:A:259:LEU:HD11	2.51	0.46
1:B:242:CYS:HB2	1:B:248:SER:OG	2.16	0.46
1:A:128:ASP:C	1:A:130:THR:H	2.23	0.46
1:A:291:ARG:HD3	1:B:291:ARG:CZ	2.45	0.46
1:B:150:LYS:HD2	1:B:153:GLU:OE1	2.16	0.46
1:A:20:TRP:HD1	1:A:236:THR:CG2	2.28	0.46
1:B:20:TRP:HE3	1:B:165:PHE:HE1	1.63	0.46
1:A:38:ILE:HD11	1:A:239:VAL:HG21	1.98	0.45
1:A:254:ARG:NH1	1:A:255:LEU:HA	2.30	0.45
1:B:94:LEU:HD11	1:B:140:LEU:CB	2.47	0.45
1:B:20:TRP:HE3	1:B:165:PHE:CE1	2.35	0.45
1:A:59:ALA:O	1:A:60:HIS:HB2	2.17	0.45
1:A:60:HIS:HA	1:A:87:GLU:OE1	2.17	0.45
1:A:242:CYS:HB3	1:A:252:THR:CG2	2.40	0.45
1:A:144:GLU:OE1	1:A:144:GLU:HA	2.17	0.45
1:A:57:ASP:OD2	1:A:59:ALA:HB3	2.17	0.45
1:A:212:ILE:HG22	1:A:216:LEU:HG	1.98	0.45
1:A:279:ASN:O	1:A:281:GLN:N	2.40	0.45
1:A:19:LYS:NZ	1:A:229:GLN:NE2	2.65	0.44
1:B:292:TRP:NE1	1:B:296:LYS:HD2	2.32	0.44
1:A:27:GLY:HA2	1:B:246:PHE:CD2	2.52	0.44
1:A:20:TRP:CD1	1:A:236:THR:CG2	3.00	0.44
1:A:321:ILE:HG22	1:A:327:LEU:HD23	1.98	0.44
1:A:70:PHE:HB2	1:A:87:GLU:HG3	2.00	0.44
1:B:174:LEU:HA	1:B:176:PHE:CE1	2.52	0.44
1:A:222:ASN:HD22	1:A:222:ASN:HA	1.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:128:ASP:C	1:A:130:THR:N	2.76	0.44
1:B:211:ASP:O	1:B:212:ILE:C	2.61	0.44
1:B:225:THR:O	1:B:228:GLN:HB3	2.18	0.44
1:B:291:ARG:O	1:B:294:MET:HB3	2.18	0.44
1:B:19:LYS:HZ3	1:B:229:GLN:NE2	2.16	0.43
1:A:22:PHE:CD1	1:A:165:PHE:HB2	2.53	0.43
1:A:180:PRO:HD3	1:A:223:VAL:HG11	1.99	0.43
1:B:254:ARG:HG2	1:B:254:ARG:HH11	1.83	0.43
1:A:230:PHE:HA	1:A:236:THR:HG21	1.99	0.43
1:B:64:ASP:OD1	1:B:322:ARG:NH2	2.49	0.43
1:B:273:GLN:HA	1:B:316:LEU:HA	2.00	0.43
1:A:80:MET:HG2	1:A:324:LEU:HD11	2.01	0.43
1:A:243:ILE:HG12	1:A:245:GLU:HG3	2.00	0.43
1:A:21:ILE:CD1	1:A:42:MET:CE	2.97	0.43
1:B:19:LYS:HZ1	1:B:229:GLN:HE22	1.65	0.42
1:B:275:LEU:HD23	1:B:275:LEU:H	1.84	0.42
1:A:186:LEU:C	1:A:188:GLU:N	2.73	0.42
1:B:262:TYR:O	1:B:263:ASP:HB2	2.19	0.42
1:A:64:ASP:O	1:A:322:ARG:HD3	2.20	0.42
1:A:5:VAL:HG12	1:A:310:HIS:CD2	2.54	0.42
1:B:180:PRO:HD3	1:B:223:VAL:HG11	2.02	0.42
1:B:350:LEU:C	1:B:352:ASP:H	2.28	0.42
1:A:86:MET:SD	1:A:88:ILE:HD11	2.59	0.42
1:B:19:LYS:HZ3	1:B:229:GLN:HE22	1.67	0.42
1:A:133:ILE:HA	1:A:134:PRO:HD3	1.91	0.42
1:B:188:GLU:CG	1:B:189:LYS:N	2.83	0.42
1:A:180:PRO:HA	1:A:220:LYS:HG3	2.02	0.42
1:B:222:ASN:O	1:B:226:ILE:HG13	2.20	0.41
1:B:277:ALA:HB1	1:B:289:GLN:OE1	2.20	0.41
1:A:29:VAL:HG12	1:A:243:ILE:HG22	2.02	0.41
1:A:151:ARG:HG2	1:A:151:ARG:HH11	1.86	0.41
1:A:347:ILE:HD12	1:A:347:ILE:C	2.45	0.41
1:B:16:THR:HG22	1:B:46:GLN:NE2	2.35	0.41
1:A:129:LEU:HD12	1:A:129:LEU:N	2.30	0.41
1:A:256:ILE:O	1:A:260:ILE:HG13	2.20	0.41
1:A:329:LYS:O	1:A:332:GLN:HG2	2.20	0.41
1:A:249:LEU:CD1	1:A:298:TYR:HB3	2.45	0.41
1:B:57:ASP:HA	1:B:58:PRO:HD3	1.90	0.41
1:B:221:ALA:O	1:B:225:THR:HG23	2.19	0.41
1:B:174:LEU:H	1:B:174:LEU:HD22	1.84	0.41
1:A:227:ARG:HH11	1:A:227:ARG:HG2	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:145:VAL:O	1:B:149:ILE:HG13	2.21	0.41
1:A:68:GLU:CD	1:A:78:THR:H	2.29	0.41
1:B:126:LEU:HD11	1:B:216:LEU:HD23	2.03	0.40
1:B:183:LEU:O	1:B:184:SER:C	2.64	0.40
1:A:183:LEU:O	1:A:184:SER:C	2.65	0.40
1:B:20:TRP:C	1:B:21:ILE:HD12	2.47	0.40
1:B:243:ILE:HD13	1:B:273:GLN:HB2	2.02	0.40
1:B:275:LEU:O	1:B:277:ALA:N	2.52	0.40
1:B:350:LEU:C	1:B:352:ASP:N	2.79	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

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	261/318 (82%)	235 (90%)	26 (10%)	7	24
1	B	276/318 (87%)	251 (91%)	25 (9%)	9	28
All	All	537/636 (84%)	486 (90%)	51 (10%)	8	26

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	LEU
1	A	14	THR
1	A	31	LYS
1	A	42	MET

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Mol	Chain	Res	Type
1	A	52	LEU
1	A	80	MET
1	A	128	ASP
1	A	129	LEU
1	A	174	LEU
1	A	222	ASN
1	A	228	GLN
1	A	231	THR
1	A	239	VAL
1	A	253	GLU
1	A	254	ARG
1	A	255	LEU
1	A	269	ILE
1	A	274	LEU
1	A	275	LEU
1	A	279	ASN
1	A	286	LYS
1	A	300	ASP
1	A	313	LYS
1	A	324	LEU
1	A	329	LYS
1	A	347	ILE
1	B	3	LEU
1	B	12	LEU
1	B	14	THR
1	B	33	THR
1	B	52	LEU
1	B	80	MET
1	B	84	SER
1	B	121	LEU
1	B	150	LYS
1	B	174	LEU
1	B	175	ARG
1	B	179	LEU
1	B	186	LEU
1	B	231	THR
1	B	236	THR
1	B	239	VAL
1	B	243	ILE
1	B	253	GLU
1	B	255	LEU
1	B	264	MET

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Mol	Chain	Res	Type
1	B	266	VAL
1	B	274	LEU
1	B	312	VAL
1	B	313	LYS
1	B	328	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	8	ASN
1	A	148	HIS
1	A	178	GLN
1	A	222	ASN
1	A	229	GLN
1	A	279	ASN
1	A	310	HIS
1	B	98	ASN
1	B	178	GLN
1	B	181	ASN
1	B	222	ASN
1	B	229	GLN
1	B	310	HIS
1	B	332	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](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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

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	314/362 (86%)	0.98	54 (17%) 4 3	46, 80, 153, 160	0
1	B	321/362 (88%)	0.54	35 (10%) 10 8	42, 68, 113, 140	0
All	All	635/724 (87%)	0.76	89 (14%) 6 5	42, 74, 141, 160	0

All (89) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	210	VAL	7.2
1	A	127	ALA	6.2
1	A	208	GLY	5.4
1	B	281	GLN	5.4
1	A	283	HIS	4.6
1	A	90	PRO	4.6
1	B	211	ASP	4.5
1	A	212	ILE	4.4
1	B	352	ASP	4.2
1	A	280	ASP	4.2
1	A	187	LEU	4.1
1	B	277	ALA	4.0
1	B	284	ASN	3.9
1	B	123	GLY	3.9
1	B	289	GLN	3.8
1	B	155	ASP	3.7
1	A	215	LYS	3.7
1	A	173	THR	3.6
1	A	211	ASP	3.6
1	A	351	GLU	3.5
1	A	284	ASN	3.4
1	B	320	GLU	3.3
1	A	201	LEU	3.3
1	B	279	ASN	3.3

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Mol	Chain	Res	Type	RSRZ
1	A	281	GLN	3.2
1	A	132	SER	3.2
1	A	282	GLU	3.2
1	B	119	SER	3.2
1	A	263	ASP	3.1
1	B	212	ILE	3.1
1	B	243	ILE	3.1
1	B	120	LEU	3.0
1	A	320	GLU	2.9
1	A	174	LEU	2.9
1	A	318	ALA	2.8
1	A	91	SER	2.8
1	A	73	ASP	2.8
1	A	28	GLY	2.8
1	A	199	PRO	2.8
1	B	107	ASN	2.8
1	A	216	LEU	2.7
1	B	342	THR	2.7
1	A	128	ASP	2.7
1	A	321	ILE	2.6
1	B	156	GLU	2.6
1	B	351	GLU	2.6
1	A	14	THR	2.6
1	A	158	GLU	2.6
1	A	317	CYS	2.6
1	A	203	SER	2.5
1	A	129	LEU	2.5
1	A	197	LEU	2.5
1	B	282	GLU	2.5
1	A	205	MET	2.5
1	A	348	TYR	2.5
1	B	86	MET	2.4
1	B	280	ASP	2.4
1	B	191	GLY	2.4
1	A	192	GLU	2.4
1	A	186	LEU	2.4
1	B	108	ASN	2.4
1	A	350	LEU	2.4
1	A	202	ASN	2.4
1	B	317	CYS	2.3
1	A	194	THR	2.3
1	B	215	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	278	GLU	2.3
1	B	125	ALA	2.3
1	A	159	THR	2.3
1	B	64	ASP	2.3
1	B	154	GLN	2.3
1	B	213	SER	2.3
1	A	88	ILE	2.2
1	A	130	THR	2.2
1	A	195	ASN	2.2
1	A	50	GLN	2.2
1	A	213	SER	2.2
1	B	121	LEU	2.2
1	A	93	ALA	2.1
1	A	146	MET	2.1
1	A	206	GLY	2.1
1	A	133	ILE	2.1
1	B	122	GLN	2.1
1	B	126	LEU	2.1
1	A	156	GLU	2.1
1	A	204	PHE	2.0
1	B	124	GLY	2.0
1	A	150	LYS	2.0
1	B	3	LEU	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists the number of atoms with occupancy less than 0.9.

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	ZN	B	500	1/1	0.99	0.02	81,81,81,81	0

6.5 Other polymers [i](#)

There are no such residues in this entry.