



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 10:22 PM EDT

PDB ID : 6G70
Title : Structure of murine Prpf39
Authors : De Bortoli, F.D.; Loll, B.; Wahl, M.; Heyd, F.
Deposited on : 2018-04-04
Resolution : 3.30 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) : 1.20.1
EDS : 2.37.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

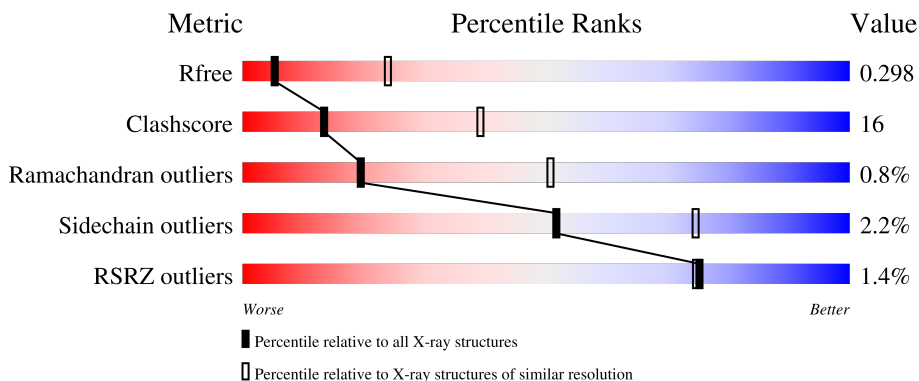
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.30 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}	130704	1149 (3.34-3.26)
Clashscore	141614	1205 (3.34-3.26)
Ramachandran outliers	138981	1183 (3.34-3.26)
Sidechain outliers	138945	1182 (3.34-3.26)
RSRZ outliers	127900	1115 (3.34-3.26)

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	670	
1	B	670	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 8592 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 Pre-mRNA-processing factor 39.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	509	Total	C	N	O	S	0	0	0
			4294	2747	747	781	19			
1	B	510	Total	C	N	O	S	0	0	0
			4298	2749	748	782	19			

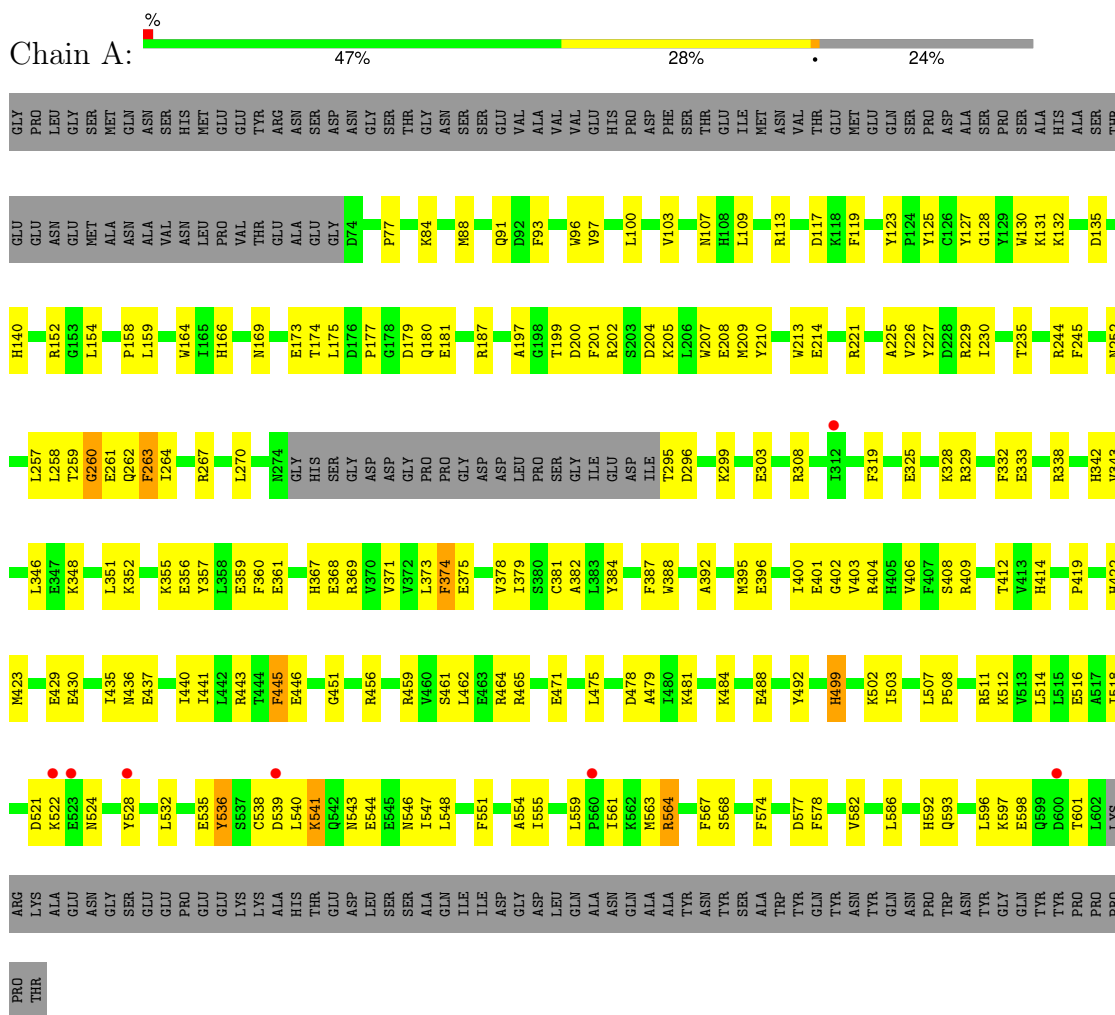
There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	GLY	-	expression tag	UNP E9QJV4
A	-3	PRO	-	expression tag	UNP E9QJV4
A	-2	LEU	-	expression tag	UNP E9QJV4
A	-1	GLY	-	expression tag	UNP E9QJV4
A	0	SER	-	expression tag	UNP E9QJV4
B	-4	GLY	-	expression tag	UNP E9QJV4
B	-3	PRO	-	expression tag	UNP E9QJV4
B	-2	LEU	-	expression tag	UNP E9QJV4
B	-1	GLY	-	expression tag	UNP E9QJV4
B	0	SER	-	expression tag	UNP E9QJV4

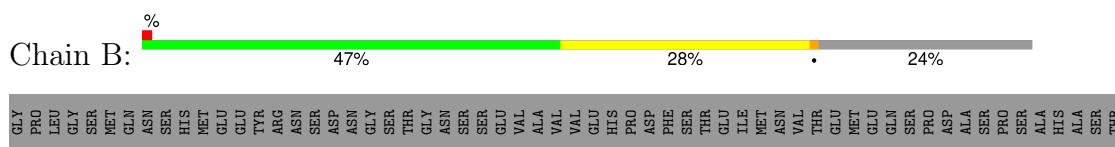
3 Residue-property plots

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: Pre-mRNA-processing factor 39



- Molecule 1: Pre-mRNA-processing factor 39



PRO	THR	ARG	LYS	ALA	GLU	GLY	SER	GLU	GLU	PRO	GLU	GLY	LYS	LYS	ALA	HIS	THR	GLU	ASP	LEU	SER	SER	ALA	GLN	ILE	ILE	ASP	GLY	ASP	LEU	GLN	ALA	ASN	ASN	TYR	SER	ALA	TRP	TYR	GLN	TYR	ASN	TYR	TYR	ASN	GLN	ASN	PRO	TRP	ASN	TYR	GLY	GLN	TYR	ASN	PRO	PRO	PRO	PRO	LYS	K512	V513	L514	L515	E516	A517	I518	D521	K522	E523	N524	L527	Y528	L532	L533	E535	Y536	S537	C538	D539	L540	K541	Q542	N543	N546	F551	D552	I561	K562	N563	R564	I565	T566	F567	K571	E576	D577	F578	V582	D590	L595	L596	K597	E598	Q599	D600	L602	LYS	P419	W423	A427	G433	W434	I435	W436	E437	K438	A438	R439	I440	L441	L442	R443	T444	F445	E446	E447	C448	G451	R456	L457	R458	R459	V460	S461	L462	E463	R464	E471	L475	L476	Q477	D478	A479	I480	K484	E488	F491	Y492	K495	K502	I503	L507	P508	R511	K337	R338	H342	V343	K344	F345	L346	E347	K348	A349	Q350	L351	K355	L358	F359	F360	E361	I362	R369	F374	E375	V378	I379	K380	C381	A382	E386	F387	K388	L389	K390	Y391	A392	K393	E396	K397	H398	S399	I400	E401	C402	Y403	R404	S408	R409	T412	K417	K418	Q243	R244	F245	K246	E247	N252	L257	W164	L258	T259	Q260	E261	Q262	F263	I264	Q265	L266	R267	K268	E269	L270	G275	HIS	SER	GLY	ASP	ASP	ASP	GLY	PRO	PRO	GLY	ASP	ASP	ASP	LEU	PRO	SER	GLY	ILE	GLU	ASP	ILE	T295	D296	P297	A298	K299	T302	E303	R308	H309	R310	F319	R329	I143	S146	L154	F156	L159	W164	I165	H166	T174	L175	P176	P177	G178	D179	Q180	E181	T182	N183	T184	T185	I186	R187	E191	A197	D200	F201	R202	S203	D204	W207	E208	M209	Y210	W213	E214	N219	L220	R221	A225	V226	Y227	D228	R229	I230	L231	T235	GLU	GLU	ASN	GLU	MET	ALA	ASN	ALA	VAL	ASN	LEU	PRO	VAL	THR	GLU	ALA	GLU	GLY	D7A	P77	Q91	D92	F93	W96	L100	Q101	Y102	V103	M107	H108	L109	R113	F116	F119	F120	Y123	P124	Y125	C126	G128	Y129	W130	K131	K132	D135	L136	R139	H140
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4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	189.49Å 72.76Å 207.10Å 90.00° 112.46° 90.00°	Depositor
Resolution (Å)	47.85 – 3.30 47.85 – 3.30	Depositor EDS
% Data completeness (in resolution range)	97.9 (47.85-3.30) 98.6 (47.85-3.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.26 (at 3.33Å)	Xtrriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
R, R_{free}	0.247 , 0.295 0.251 , 0.298	Depositor DCC
R_{free} test set	3056 reflections (7.80%)	wwPDB-VP
Wilson B-factor (Å ²)	120.3	Xtrriage
Anisotropy	0.622	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 100.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	8592	wwPDB-VP
Average B, all atoms (Å ²)	154.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.37% 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	0.31	0/4399	0.49	0/5934
1	B	0.31	0/4403	0.49	0/5939
All	All	0.31	0/8802	0.49	0/11873

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 [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	4294	0	4203	139	0
1	B	4298	0	4204	144	0
All	All	8592	0	8407	273	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 16.

All (273) 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:561:ILE:N	1:B:564:ARG:HD3	1.62	1.13
1:B:561:ILE:H	1:B:564:ARG:HD3	0.93	1.10

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:400:ILE:HG22	1:B:402:GLY:H	1.36	0.88
1:A:400:ILE:HG22	1:A:402:GLY:H	1.48	0.79
1:B:417:LYS:NZ	1:B:448:CYS:SG	2.58	0.76
1:B:552:ASP:OD1	1:B:571:LYS:NZ	2.18	0.75
1:B:221:ARG:NH1	1:B:258:LEU:O	2.18	0.75
1:B:329:ARG:NH1	1:B:361:GLU:OE2	2.20	0.75
1:A:446:GLU:OE1	1:A:459:ARG:NH1	2.20	0.74
1:A:329:ARG:NH2	1:A:361:GLU:OE2	2.21	0.74
1:A:456:ARG:NH2	1:A:478:ASP:OD1	2.21	0.73
1:A:555:ILE:O	1:A:564:ARG:NH2	2.21	0.73
1:A:577:ASP:O	1:B:464:ARG:NH1	2.22	0.73
1:A:117:ASP:OD1	1:A:152:ARG:NH1	2.22	0.73
1:A:329:ARG:HH22	1:A:369:ARG:HE	1.36	0.72
1:B:514:LEU:O	1:B:518:ILE:HG12	1.91	0.71
1:A:187:ARG:NH1	1:A:214:GLU:OE2	2.21	0.71
1:B:456:ARG:NH1	1:B:475:LEU:O	2.24	0.70
1:A:296:ASP:HB3	1:A:299:LYS:HB2	1.73	0.70
1:A:352:LYS:O	1:A:356:GLU:HG2	1.91	0.70
1:A:514:LEU:O	1:A:518:ILE:HG12	1.91	0.70
1:B:183:ASN:O	1:B:187:ARG:HG3	1.92	0.70
1:B:258:LEU:HB3	1:B:262:GLN:HB2	1.73	0.69
1:A:543:ASN:HA	1:A:546:ASN:HB2	1.75	0.69
1:B:561:ILE:N	1:B:564:ARG:CD	2.49	0.69
1:A:446:GLU:OE1	1:A:456:ARG:NH1	2.26	0.69
1:A:325:GLU:HA	1:A:328:LYS:HE2	1.76	0.67
1:A:461:SER:HB2	1:A:465:ARG:HH12	1.59	0.67
1:B:456:ARG:NH2	1:B:478:ASP:OD2	2.19	0.66
1:A:561:ILE:HG22	1:A:563:MET:H	1.60	0.65
1:B:252:ASN:O	1:B:308:ARG:NH2	2.24	0.65
1:A:93:PHE:HA	1:A:96:TRP:HD1	1.62	0.65
1:A:201:PHE:CD2	1:A:333:GLU:HG2	2.32	0.65
1:B:187:ARG:NH1	1:B:214:GLU:OE1	2.27	0.64
1:B:227:TYR:CD1	1:B:245:PHE:HB2	2.32	0.64
1:A:127:TYR:HA	1:A:130:TRP:HD1	1.61	0.64
1:A:536:TYR:O	1:B:502:LYS:NZ	2.19	0.64
1:A:107:ASN:OD1	1:A:140:HIS:NE2	2.22	0.64
1:A:258:LEU:HB3	1:A:262:GLN:HB2	1.80	0.64
1:A:440:ILE:HD12	1:A:443:ARG:HH21	1.61	0.64
1:B:346:LEU:HD12	1:B:381:CYS:HB3	1.80	0.64
1:B:511:ARG:NH2	1:B:543:ASN:OD1	2.31	0.64
1:A:252:ASN:O	1:A:308:ARG:NH2	2.25	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:127:TYR:HA	1:B:130:TRP:HD1	1.64	0.63
1:A:518:ILE:O	1:A:522:LYS:N	2.32	0.63
1:A:539:ASP:OD1	1:A:540:LEU:N	2.32	0.63
1:B:329:ARG:HH12	1:B:369:ARG:HD3	1.64	0.62
1:B:358:LEU:HD21	1:B:374:PHE:CE1	2.34	0.62
1:A:208:GLU:HG3	1:A:244:ARG:HH12	1.64	0.61
1:A:538:CYS:HB3	1:A:543:ASN:ND2	2.15	0.61
1:B:437:GLU:O	1:B:441:ILE:HG13	2.01	0.60
1:A:169:ASN:O	1:A:173:GLU:HG3	2.01	0.60
1:A:403:VAL:O	1:A:406:VAL:HG22	2.01	0.59
1:A:462:LEU:HD12	1:A:465:ARG:HH21	1.67	0.59
1:B:204:ASP:OD1	1:B:235:THR:HB	2.01	0.59
1:B:538:CYS:HB3	1:B:543:ASN:HD22	1.67	0.59
1:B:518:ILE:HD12	1:B:528:TYR:CE1	2.37	0.59
1:A:371:VAL:HG22	1:A:395:MET:HE1	1.85	0.59
1:A:538:CYS:HB3	1:A:543:ASN:HD22	1.67	0.59
1:B:561:ILE:HG22	1:B:563:MET:H	1.67	0.59
1:A:100:LEU:HA	1:A:103:VAL:HG12	1.84	0.59
1:A:131:LYS:NZ	1:A:135:ASP:OD2	2.35	0.58
1:A:207:TRP:CD1	1:A:230:ILE:HD13	2.39	0.58
1:A:329:ARG:NH2	1:A:369:ARG:HE	2.00	0.58
1:B:267:ARG:HA	1:B:270:LEU:HD12	1.84	0.58
1:B:401:GLU:O	1:B:404:ARG:HB3	2.04	0.57
1:A:93:PHE:CG	1:A:343:VAL:HG11	2.39	0.57
1:B:208:GLU:CG	1:B:244:ARG:HH12	2.17	0.57
1:B:532:LEU:HD11	1:B:551:PHE:CZ	2.39	0.57
1:B:539:ASP:OD1	1:B:540:LEU:N	2.36	0.57
1:B:107:ASN:OD1	1:B:140:HIS:NE2	2.29	0.57
1:B:484:LYS:N	1:B:488:GLU:OE2	2.32	0.57
1:A:159:LEU:HA	1:A:197:ALA:HB2	1.85	0.57
1:A:375:GLU:OE2	1:A:409:ARG:NH1	2.34	0.56
1:A:511:ARG:NH1	1:A:535:GLU:OE2	2.38	0.56
1:B:136:LEU:HD12	1:B:139:ARG:HE	1.71	0.56
1:B:259:THR:O	1:B:262:GLN:N	2.39	0.56
1:B:119:PHE:CE1	1:B:123:TYR:HB2	2.41	0.56
1:A:175:LEU:O	1:A:177:PRO:HD3	2.06	0.56
1:B:91:GLN:N	1:B:91:GLN:OE1	2.39	0.56
1:B:457:LEU:O	1:B:461:SER:OG	2.20	0.56
1:A:538:CYS:SG	1:A:539:ASP:N	2.79	0.55
1:B:348:LYS:HA	1:B:351:LEU:HD12	1.88	0.55
1:B:131:LYS:NZ	1:B:135:ASP:OD2	2.39	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:84:LYS:O	1:A:88:MET:N	2.39	0.54
1:A:430:GLU:OE1	1:B:582:VAL:HG21	2.06	0.54
1:A:259:THR:O	1:A:262:GLN:N	2.40	0.54
1:B:200:ASP:OD1	1:B:202:ARG:N	2.32	0.54
1:A:119:PHE:CE1	1:A:123:TYR:HB2	2.42	0.54
1:B:375:GLU:OE2	1:B:409:ARG:NH2	2.40	0.54
1:A:267:ARG:HA	1:A:270:LEU:HD12	1.90	0.54
1:A:518:ILE:HD12	1:A:528:TYR:CE1	2.43	0.54
1:B:561:ILE:O	1:B:564:ARG:HG2	2.07	0.54
1:B:329:ARG:NH1	1:B:369:ARG:HD3	2.22	0.53
1:B:100:LEU:HA	1:B:103:VAL:HG22	1.89	0.53
1:B:518:ILE:O	1:B:522:LYS:N	2.41	0.53
1:A:204:ASP:OD1	1:A:235:THR:HB	2.07	0.53
1:A:554:ALA:HB1	1:A:567:PHE:CD2	2.43	0.53
1:B:128:GLY:O	1:B:132:LYS:HG3	2.08	0.53
1:A:227:TYR:CD2	1:A:245:PHE:HB2	2.43	0.53
1:A:348:LYS:HA	1:A:351:LEU:HD12	1.90	0.53
1:B:358:LEU:HD11	1:B:374:PHE:CG	2.43	0.53
1:A:559:LEU:HB3	1:A:561:ILE:HG13	1.91	0.52
1:B:359:GLU:OE2	1:B:390:LYS:NZ	2.39	0.52
1:A:154:LEU:HD22	1:A:164:TRP:CE2	2.43	0.52
1:B:131:LYS:HE3	1:B:166:HIS:ND1	2.25	0.52
1:A:346:LEU:HD12	1:A:381:CYS:HB3	1.92	0.52
1:A:479:ALA:HB1	1:A:492:TYR:CD2	2.44	0.52
1:A:484:LYS:N	1:A:488:GLU:OE1	2.36	0.52
1:A:392:ALA:O	1:A:396:GLU:HG3	2.10	0.52
1:A:464:ARG:NE	1:B:577:ASP:O	2.43	0.52
1:B:93:PHE:HA	1:B:96:TRP:HD1	1.75	0.52
1:B:179:ASP:OD1	1:B:181:GLU:N	2.36	0.52
1:B:207:TRP:CD1	1:B:230:ILE:HD13	2.45	0.52
1:B:446:GLU:HG3	1:B:451:GLY:HA2	1.92	0.52
1:B:392:ALA:O	1:B:396:GLU:HG3	2.10	0.51
1:A:91:GLN:N	1:A:91:GLN:OE1	2.43	0.51
1:B:511:ARG:NH2	1:B:535:GLU:OE2	2.40	0.51
1:A:125:TYR:CD2	1:A:379:ILE:HA	2.45	0.51
1:A:437:GLU:O	1:A:441:ILE:HG12	2.10	0.51
1:B:462:LEU:HD12	1:B:463:GLU:HG2	1.93	0.51
1:A:208:GLU:OE2	1:A:244:ARG:NH2	2.43	0.51
1:A:179:ASP:OD1	1:A:181:GLU:N	2.28	0.51
1:B:564:ARG:HG2	1:B:565:ILE:N	2.25	0.51
1:B:125:TYR:CD2	1:B:379:ILE:HA	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:374:PHE:O	1:B:378:VAL:HG23	2.12	0.50
1:A:355:LYS:O	1:A:359:GLU:HG3	2.11	0.50
1:B:267:ARG:NE	1:B:303:GLU:OE2	2.39	0.50
1:B:358:LEU:HD11	1:B:374:PHE:CD2	2.46	0.50
1:B:419:PRO:HA	1:B:445:PHE:HE2	1.74	0.50
1:A:464:ARG:NH1	1:A:499:HIS:HD2	2.10	0.50
1:B:93:PHE:CG	1:B:343:VAL:HG21	2.47	0.50
1:A:521:ASP:OD1	1:A:524:ASN:N	2.43	0.50
1:B:159:LEU:HA	1:B:197:ALA:HB2	1.93	0.50
1:B:208:GLU:HG3	1:B:244:ARG:HH12	1.76	0.50
1:B:359:GLU:HA	1:B:362:ILE:HD12	1.94	0.49
1:B:398:HIS:O	1:B:400:ILE:HG13	2.12	0.49
1:B:154:LEU:HD22	1:B:164:TRP:CE2	2.46	0.49
1:B:561:ILE:O	1:B:564:ARG:CG	2.60	0.49
1:B:597:LYS:O	1:B:601:THR:HG23	2.13	0.49
1:A:461:SER:HB2	1:A:465:ARG:NH1	2.25	0.49
1:B:260:GLY:O	1:B:264:ILE:HG13	2.13	0.49
1:B:521:ASP:OD1	1:B:524:ASN:N	2.32	0.49
1:A:502:LYS:HE2	1:B:536:TYR:CE1	2.47	0.49
1:A:174:THR:O	1:A:174:THR:OG1	2.28	0.49
1:A:402:GLY:O	1:A:406:VAL:HG13	2.13	0.49
1:B:538:CYS:SG	1:B:539:ASP:N	2.85	0.49
1:A:544:GLU:O	1:A:548:LEU:HG	2.13	0.48
1:B:442:LEU:HD11	1:B:462:LEU:HD21	1.94	0.48
1:B:563:MET:O	1:B:566:THR:OG1	2.25	0.48
1:A:260:GLY:O	1:A:264:ILE:HG13	2.14	0.48
1:A:512:LYS:O	1:A:516:GLU:HG3	2.14	0.48
1:B:382:ALA:O	1:B:388:TRP:NE1	2.45	0.48
1:B:226:VAL:O	1:B:230:ILE:HG22	2.13	0.48
1:B:393:LYS:O	1:B:396:GLU:HB2	2.14	0.48
1:B:518:ILE:HD13	1:B:527:LEU:HD13	1.96	0.48
1:B:446:GLU:OE2	1:B:456:ARG:NE	2.46	0.48
1:B:477:GLN:O	1:B:480:ILE:HG13	2.14	0.48
1:A:419:PRO:O	1:A:423:MET:HG2	2.14	0.47
1:A:507:LEU:N	1:A:508:PRO:HD2	2.29	0.47
1:A:367:HIS:O	1:A:371:VAL:HG23	2.14	0.47
1:A:200:ASP:OD1	1:A:202:ARG:N	2.32	0.47
1:A:361:GLU:HG3	1:A:373:LEU:CD2	2.44	0.47
1:A:461:SER:HB3	1:B:576:GLU:O	2.14	0.47
1:A:598:GLU:O	1:A:601:THR:OG1	2.26	0.47
1:A:267:ARG:NE	1:A:303:GLU:OE2	2.35	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:131:LYS:HE3	1:A:166:HIS:ND1	2.30	0.47
1:A:226:VAL:O	1:A:230:ILE:HG22	2.14	0.47
1:A:597:LYS:O	1:A:601:THR:HG23	2.14	0.47
1:B:181:GLU:O	1:B:185:THR:HG23	2.15	0.47
1:B:337:LYS:HD2	1:B:350:GLN:NE2	2.29	0.47
1:A:199:THR:HG22	1:A:369:ARG:NH1	2.30	0.47
1:A:199:THR:HG22	1:A:369:ARG:HH11	1.78	0.47
1:B:109:LEU:HD21	1:B:113:ARG:CZ	2.45	0.47
1:B:187:ARG:NH2	1:B:219:ASN:HD22	2.13	0.47
1:A:464:ARG:HH22	1:A:499:HIS:HB2	1.79	0.47
1:A:471:GLU:O	1:A:475:LEU:HG	2.15	0.47
1:B:175:LEU:O	1:B:177:PRO:HD3	2.15	0.47
1:B:346:LEU:CD1	1:B:381:CYS:HB3	2.44	0.47
1:B:446:GLU:OE1	1:B:459:ARG:NH1	2.47	0.47
1:B:269:GLU:OE1	1:B:310:ARG:NH2	2.43	0.46
1:B:143:ILE:O	1:B:146:SER:N	2.48	0.46
1:B:213:TRP:HD1	1:B:214:GLU:HG2	1.79	0.46
1:B:543:ASN:HA	1:B:546:ASN:HB2	1.97	0.46
1:A:478:ASP:HA	1:A:481:LYS:HD2	1.96	0.46
1:B:119:PHE:HE1	1:B:123:TYR:HB2	1.81	0.46
1:B:561:ILE:O	1:B:564:ARG:CD	2.63	0.46
1:A:586:LEU:HD11	1:B:427:ALA:HB1	1.98	0.46
1:A:559:LEU:O	1:A:564:ARG:NE	2.47	0.46
1:A:128:GLY:O	1:A:132:LYS:HG3	2.15	0.46
1:A:374:PHE:O	1:A:378:VAL:HG23	2.16	0.46
1:B:479:ALA:HB1	1:B:492:TYR:CD2	2.51	0.46
1:B:296:ASP:HB3	1:B:299:LYS:HB2	1.97	0.46
1:A:532:LEU:HD11	1:A:551:PHE:CZ	2.50	0.46
1:B:419:PRO:HA	1:B:445:PHE:CE2	2.50	0.46
1:B:507:LEU:N	1:B:508:PRO:HD2	2.31	0.45
1:B:563:MET:O	1:B:567:PHE:HD1	1.99	0.45
1:A:559:LEU:HB2	1:A:564:ARG:HD3	1.97	0.45
1:B:263:PHE:O	1:B:266:LEU:HB3	2.17	0.45
1:A:208:GLU:CG	1:A:244:ARG:HH12	2.29	0.45
1:A:332:PHE:CD1	1:A:357:TYR:HB2	2.52	0.45
1:A:436:ASN:O	1:A:440:ILE:HG12	2.16	0.45
1:B:521:ASP:CG	1:B:524:ASN:HD22	2.20	0.45
1:A:338:ARG:NH2	1:A:342:HIS:HB3	2.31	0.45
1:B:419:PRO:O	1:B:423:MET:HG2	2.17	0.45
1:B:439:ARG:O	1:B:443:ARG:HG3	2.17	0.45
1:A:578:PHE:CD1	1:B:503:ILE:HD11	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:442:LEU:CD1	1:B:462:LEU:HD21	2.47	0.45
1:A:409:ARG:O	1:A:414:HIS:ND1	2.45	0.44
1:B:344:LYS:HD2	1:B:344:LYS:HA	1.82	0.44
1:B:512:LYS:O	1:B:516:GLU:HG3	2.17	0.44
1:A:541:LYS:O	1:A:544:GLU:HB3	2.17	0.44
1:B:221:ARG:HA	1:B:257:LEU:O	2.18	0.44
1:A:404:ARG:NH1	1:A:429:GLU:OE2	2.51	0.44
1:B:338:ARG:NH1	1:B:342:HIS:HB3	2.32	0.44
1:A:388:TRP:HH2	1:A:414:HIS:CE1	2.36	0.44
1:A:593:GLN:HA	1:A:596:LEU:HD12	2.00	0.44
1:A:574:PHE:CE1	1:A:578:PHE:HD2	2.35	0.43
1:A:351:LEU:HD21	1:A:384:TYR:CE2	2.53	0.43
1:A:109:LEU:HD21	1:A:113:ARG:CZ	2.49	0.43
1:A:419:PRO:HA	1:A:445:PHE:CE2	2.53	0.43
1:B:471:GLU:O	1:B:475:LEU:HG	2.18	0.43
1:B:408:SER:O	1:B:412:THR:N	2.48	0.43
1:A:179:ASP:OD1	1:A:180:GLN:N	2.52	0.43
1:B:491:PHE:O	1:B:495:LYS:HG2	2.18	0.43
1:A:435:ILE:HG23	1:A:436:ASN:H	1.84	0.43
1:A:419:PRO:HA	1:A:445:PHE:HE2	1.84	0.43
1:B:158:PRO:HD2	1:B:159:LEU:HD12	2.00	0.43
1:B:174:THR:O	1:B:175:LEU:HG	2.19	0.43
1:A:446:GLU:HG3	1:A:451:GLY:HA2	2.01	0.42
1:B:260:GLY:O	1:B:263:PHE:HB3	2.19	0.42
1:A:205:LYS:O	1:A:209:MET:HB2	2.19	0.42
1:A:351:LEU:HD22	1:A:387:PHE:HE2	1.83	0.42
1:B:116:PHE:HD1	1:B:120:PHE:CE2	2.37	0.42
1:B:298:ALA:O	1:B:302:THR:HG23	2.19	0.42
1:B:433:GLY:O	1:B:435:ILE:HG12	2.19	0.42
1:B:401:GLU:H	1:B:401:GLU:HG2	1.56	0.42
1:A:125:TYR:CE2	1:A:379:ILE:HA	2.55	0.42
1:A:582:VAL:HG12	1:A:586:LEU:HG	2.01	0.42
1:A:259:THR:O	1:A:261:GLU:N	2.53	0.42
1:A:368:GLU:H	1:A:368:GLU:CD	2.23	0.42
1:B:598:GLU:O	1:B:601:THR:OG1	2.32	0.42
1:A:536:TYR:CE1	1:B:502:LYS:HE3	2.54	0.42
1:A:464:ARG:NH1	1:A:503:ILE:HG13	2.35	0.41
1:B:355:LYS:O	1:B:359:GLU:HG3	2.20	0.41
1:B:458:ARG:HE	1:B:458:ARG:HB2	1.70	0.41
1:B:386:GLU:H	1:B:386:GLU:HG3	1.58	0.41
1:A:225:ALA:O	1:A:229:ARG:HG3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:260:GLY:O	1:A:263:PHE:HB3	2.20	0.41
1:B:191:GLU:OE1	1:B:229:ARG:NH1	2.51	0.41
1:A:401:GLU:O	1:A:404:ARG:HB3	2.20	0.41
1:B:93:PHE:HD1	1:B:123:TYR:CD2	2.37	0.41
1:A:93:PHE:O	1:A:97:VAL:HG23	2.19	0.41
1:B:243:GLN:O	1:B:247:GLU:HG3	2.20	0.41
1:A:568:SER:HG	1:A:592:HIS:CG	2.38	0.41
1:B:518:ILE:HD12	1:B:528:TYR:HE1	1.86	0.41
1:A:127:TYR:O	1:A:130:TRP:HB2	2.20	0.41
1:A:382:ALA:O	1:A:388:TRP:NE1	2.52	0.41
1:A:536:TYR:O	1:A:536:TYR:HD1	2.04	0.41
1:A:547:ILE:HG21	1:A:574:PHE:CE2	2.56	0.41
1:A:577:ASP:OD1	1:B:495:LYS:HE3	2.21	0.41
1:B:337:LYS:HD2	1:B:350:GLN:HE21	1.86	0.41
1:A:213:TRP:HD1	1:A:214:GLU:HG2	1.86	0.41
1:A:221:ARG:HA	1:A:257:LEU:O	2.21	0.41
1:A:408:SER:O	1:A:412:THR:N	2.50	0.41
1:B:358:LEU:HD21	1:B:374:PHE:CZ	2.56	0.41
1:A:392:ALA:HB1	1:A:403:VAL:HG13	2.03	0.40
1:B:259:THR:O	1:B:260:GLY:C	2.60	0.40
1:B:225:ALA:O	1:B:229:ARG:HG3	2.21	0.40
1:B:231:LEU:HD23	1:B:231:LEU:HA	1.84	0.40
1:B:351:LEU:HD22	1:B:387:PHE:HE2	1.86	0.40
1:A:295:THR:OG1	1:A:296:ASP:N	2.52	0.40
1:B:120:PHE:HZ	1:B:129:TYR:C	2.24	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	505/670 (75%)	479 (95%)	22 (4%)	4 (1%)	19 51

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	506/670 (76%)	478 (94%)	24 (5%)	4 (1%)	19	51
All	All	1011/1340 (75%)	957 (95%)	46 (4%)	8 (1%)	19	51

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	260	GLY
1	B	260	GLY
1	A	77	PRO
1	B	541	LYS
1	A	541	LYS
1	B	77	PRO
1	A	158	PRO
1	B	158	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	464/598 (78%)	454 (98%)	10 (2%)	52	74
1	B	464/598 (78%)	454 (98%)	10 (2%)	52	74
All	All	928/1196 (78%)	908 (98%)	20 (2%)	52	74

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	210	TYR
1	A	263	PHE
1	A	319	PHE
1	A	360	PHE
1	A	374	PHE
1	A	422	HIS
1	A	445	PHE
1	A	499	HIS

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Mol	Chain	Res	Type
1	A	536	TYR
1	A	564	ARG
1	B	101	GLN
1	B	210	TYR
1	B	319	PHE
1	B	360	PHE
1	B	374	PHE
1	B	445	PHE
1	B	536	TYR
1	B	564	ARG
1	B	578	PHE
1	B	590	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 monosaccharides 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	509/670 (75%)	0.09	7 (1%) 75 75	88, 153, 222, 286	0
1	B	510/670 (76%)	0.05	7 (1%) 75 75	86, 151, 209, 307	0
All	All	1019/1340 (76%)	0.07	14 (1%) 75 75	86, 152, 216, 307	0

All (14) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	597	LYS	4.4
1	A	528	TYR	3.4
1	A	560	PRO	3.3
1	B	361	GLU	3.2
1	B	600	ASP	2.9
1	A	523	GLU	2.9
1	B	175	LEU	2.8
1	A	312	ILE	2.5
1	B	595	LEU	2.5
1	B	596	LEU	2.5
1	A	522	LYS	2.4
1	A	600	ASP	2.2
1	A	539	ASP	2.1
1	B	539	ASP	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

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.