



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 15, 2023 – 10:59 PM EDT

PDB ID : 1U4F
Title : Crystal Structure of Cytoplasmic Domains of IRK1 (Kir2.1) channel
Authors : Pegan, S.; Arrabit, C.; Zhou, W.; Kwiatkowski, W.; Slesinger, P.A.; Choe, S.
Deposited on : 2004-07-24
Resolution : 2.41 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
Xtrriage (Phenix) : 1.13
EDS : 2.35
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) : 2.35

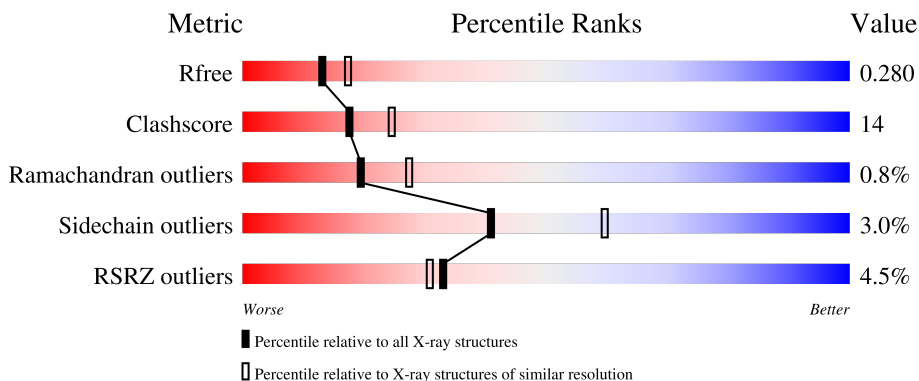
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.41 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	4647 (2.44-2.40)
Clashscore	141614	5161 (2.44-2.40)
Ramachandran outliers	138981	5073 (2.44-2.40)
Sidechain outliers	138945	5074 (2.44-2.40)
RSRZ outliers	127900	4543 (2.44-2.40)

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	270	 3% 54% 18% 27%
1	B	270	 3% 55% 16% 28%
1	C	270	 3% 50% 21% 28%
1	D	270	 3% 50% 22% 27%

2 Entry composition i

There are 2 unique types of molecules in this entry. The entry contains 6533 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 Inward rectifier potassium channel 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	197	1590	1006	277	299	8	0	0	0
1	B	195	1570	994	271	297	8	0	0	0
1	C	195	1570	994	271	297	8	0	0	0
1	D	197	1590	1012	273	297	8	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	35	PRO	-	cloning artifact	UNP P35561
A	36	ARG	-	cloning artifact	UNP P35561
A	37	GLY	-	cloning artifact	UNP P35561
A	38	SER	-	cloning artifact	UNP P35561
A	39	HIS	-	cloning artifact	UNP P35561
A	40	GLY	-	cloning artifact	UNP P35561
B	35	PRO	-	cloning artifact	UNP P35561
B	36	ARG	-	cloning artifact	UNP P35561
B	37	GLY	-	cloning artifact	UNP P35561
B	38	SER	-	cloning artifact	UNP P35561
B	39	HIS	-	cloning artifact	UNP P35561
B	40	GLY	-	cloning artifact	UNP P35561
C	35	PRO	-	cloning artifact	UNP P35561
C	36	ARG	-	cloning artifact	UNP P35561
C	37	GLY	-	cloning artifact	UNP P35561
C	38	SER	-	cloning artifact	UNP P35561
C	39	HIS	-	cloning artifact	UNP P35561
C	40	GLY	-	cloning artifact	UNP P35561
D	35	PRO	-	cloning artifact	UNP P35561
D	36	ARG	-	cloning artifact	UNP P35561
D	37	GLY	-	cloning artifact	UNP P35561

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Chain	Residue	Modelled	Actual	Comment	Reference
D	38	SER	-	cloning artifact	UNP P35561
D	39	HIS	-	cloning artifact	UNP P35561
D	40	GLY	-	cloning artifact	UNP P35561

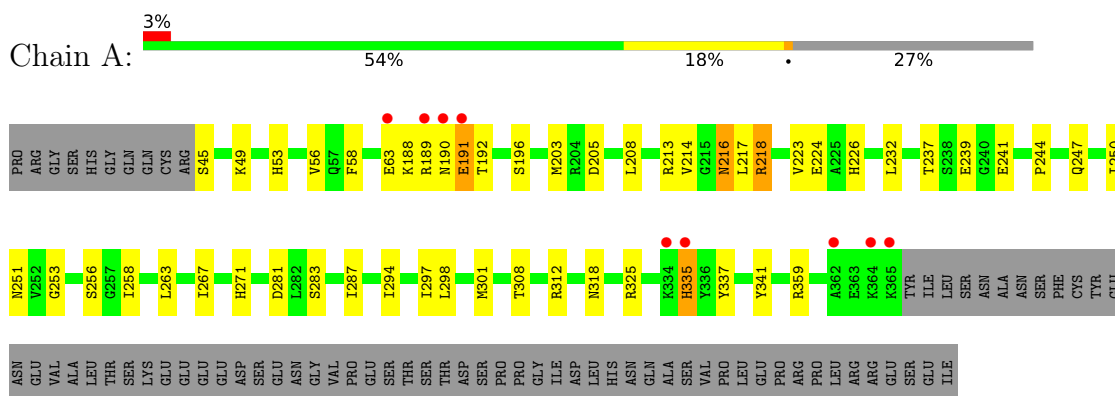
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	55	Total	O	0	0
			55	55		
2	B	48	Total	O	0	0
			48	48		
2	C	59	Total	O	0	0
			59	59		
2	D	51	Total	O	0	0
			51	51		

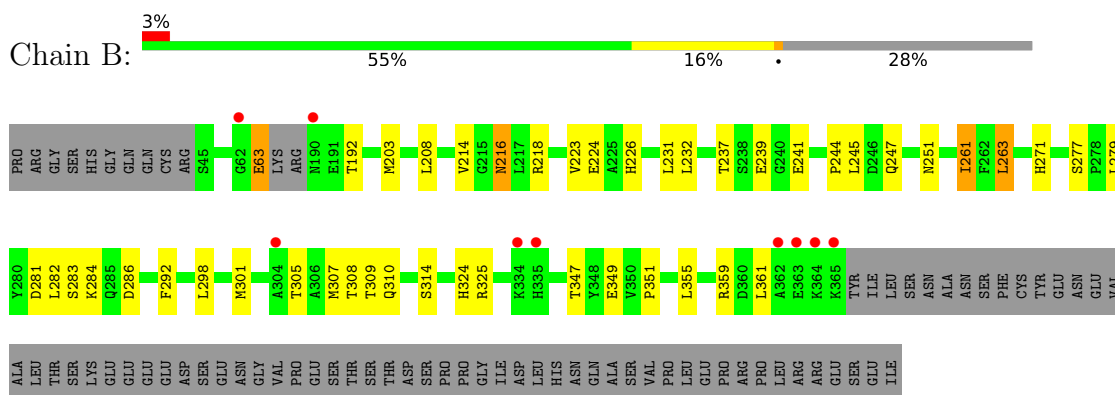
3 Residue-property plots

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.

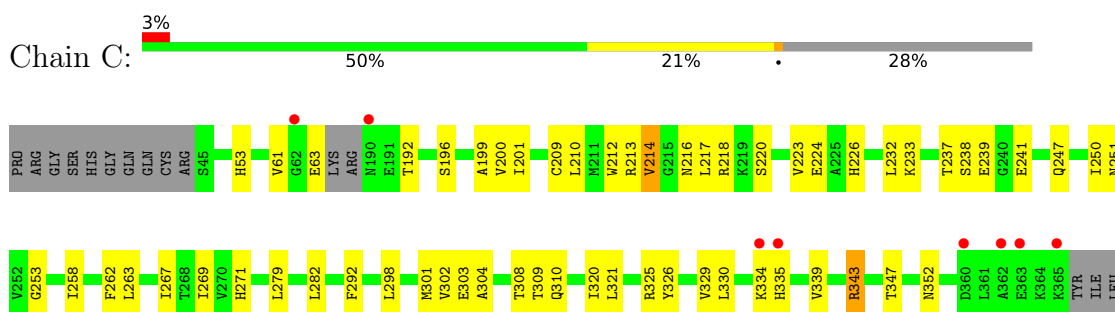
- Molecule 1: Inward rectifier potassium channel 2



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- Molecule 1: Inward rectifier potassium channel 2



SER ASN ALA ALA SER PHE CYS TYR GLU ASN VAL ALA LEU THR SER LYS GLU GLU GLU GLU ASP SER GLU ASN GLY VAL ASP PRO GLU THR SER THR ASP SER PRO GLY ILE ASP LEU HIS ASN GLN ALA VAL PRO LEU GLU ARG PRO LEU ARG GLU SER GLU ILE

• Molecule 1: Inward rectifier potassium channel 2



PRO ARG GLY SER HIS GLY GLN CYS ARG S45 K49 H53 C54 N55 V56 Q57 F58 V61 G62 E63 K188 ARG ASN ASP T192 L201 L202 M203 R204 D205 L208 C209 V214 G215 N216 L217 R218 K219 S220 V223 E224 R228 L232 K233 S234 T237 S238 E239 G240

E241 P244 Q247 V252 G253 I258 L263 I267 I269 E272 L279 Y280 D281 L282 S283 K284 I287 F292 V295 I296 L297 L298 E303 R312 S313 S314 H324 R325 Y326 E327 K334 H335 V339 S340 Y341 K346 E349 L355 R359

A362 E363 K364 K365 Y366 I367 L368 SER ASN ALA ASN PHE CYS TYR GLU ASN VAL ALA LEU THR SER LYS GLU GLU GLU ASP SER GLU ASN GLY VAL PRO GLU SER THR SER THR ASP SER PRO GLY ILE ASP LEU HIS ASN GLN ALA SER VAL PRO LEU GLU PRO ARG

PRO LEU ARG GLU SER GLU ILE

4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	112.46Å 138.29Å 138.75Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.44 – 2.41 41.62 – 2.41	Depositor EDS
% Data completeness (in resolution range)	(Not available) (38.44-2.41) 91.8 (41.62-2.41)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.05	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.11 (at 2.39Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.225 , 0.281 0.226 , 0.280	Depositor DCC
R_{free} test set	1977 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å ²)	41.8	Xtrriage
Anisotropy	0.849	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 45.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	6533	wwPDB-VP
Average B, all atoms (Å ²)	49.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 12.48% 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	0.38	0/1622	0.60	0/2192
1	B	0.39	0/1601	0.62	0/2164
1	C	0.41	0/1601	0.63	0/2164
1	D	0.38	0/1622	0.59	0/2192
All	All	0.39	0/6446	0.61	0/8712

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	1590	0	1570	47	0
1	B	1570	0	1543	42	0
1	C	1570	0	1543	47	0
1	D	1590	0	1575	51	0
2	A	55	0	0	0	0
2	B	48	0	0	1	0
2	C	59	0	0	2	0
2	D	51	0	0	2	0
All	All	6533	0	6231	172	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 14.

All (172) 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:A:301:MET:HG2	1:A:308:THR:HG22	1.50	0.93
1:B:237:THR:HG23	1:B:239:GLU:H	1.38	0.87
1:A:188:LYS:HA	1:A:191:GLU:HG2	1.58	0.84
1:B:237:THR:HG22	1:B:241:GLU:H	1.43	0.83
1:A:223:VAL:HG12	1:A:224:GLU:HG3	1.62	0.82
1:B:301:MET:HG2	1:B:308:THR:HG22	1.63	0.81
1:D:297:ILE:HD12	1:D:312:ARG:HG2	1.64	0.80
1:B:237:THR:HG22	1:B:241:GLU:N	1.97	0.78
1:A:214:VAL:HG21	1:A:298:LEU:HD22	1.66	0.75
1:B:203:MET:HE1	1:B:208:LEU:HB2	1.69	0.74
1:A:203:MET:HE1	1:A:208:LEU:HB2	1.72	0.72
1:B:305:THR:HG22	1:B:307:MET:H	1.56	0.70
1:D:367:ILE:HG13	1:D:368:LEU:HD12	1.72	0.70
1:A:196:SER:HB3	1:A:213:ARG:HB3	1.74	0.70
1:C:247:GLN:NE2	1:D:267:ILE:HD11	2.07	0.69
1:D:233:LYS:HD2	1:D:292:PHE:HB3	1.73	0.69
1:D:61:VAL:HG23	1:D:217:LEU:HD22	1.74	0.68
1:D:279:LEU:HD22	1:D:282:LEU:HD12	1.76	0.68
1:B:223:VAL:HG12	1:B:224:GLU:HG3	1.76	0.67
1:A:239:GLU:HB3	1:B:325:ARG:HH21	1.59	0.67
1:D:58:PHE:HD2	1:D:341:TYR:HE1	1.42	0.67
1:A:216:ASN:HD21	1:A:218:ARG:HB3	1.60	0.67
1:A:214:VAL:CG2	1:A:298:LEU:HD22	2.25	0.66
1:A:325:ARG:HD3	1:D:241:GLU:HG3	1.77	0.66
1:B:301:MET:CG	1:B:308:THR:HG22	2.26	0.65
1:C:223:VAL:HG12	1:C:224:GLU:HG3	1.77	0.65
1:B:203:MET:HE2	1:B:208:LEU:HD13	1.80	0.64
1:A:188:LYS:HA	1:A:191:GLU:CG	2.26	0.64
1:A:239:GLU:HB3	1:B:325:ARG:NH2	2.14	0.63
1:C:196:SER:HB3	1:C:213:ARG:HB3	1.82	0.62
1:B:214:VAL:HG21	1:B:298:LEU:HD22	1.82	0.62
1:D:281:ASP:OD2	1:D:359:ARG:HD2	2.00	0.62
1:A:203:MET:CE	1:A:208:LEU:HD13	2.29	0.61
1:A:297:ILE:HD12	1:A:312:ARG:HG2	1.80	0.61
1:D:327:GLU:HG3	1:D:346:LYS:HB3	1.82	0.61
1:C:247:GLN:HE22	1:D:267:ILE:HD11	1.65	0.61
1:A:267:ILE:HD11	1:D:247:GLN:HE22	1.64	0.60
1:A:216:ASN:HD21	1:A:218:ARG:CB	2.14	0.60
1:B:237:THR:HG23	1:B:239:GLU:N	2.13	0.60
1:B:237:THR:CG2	1:B:241:GLU:HB3	2.32	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:214:VAL:HG21	1:C:298:LEU:HD22	1.84	0.59
1:D:297:ILE:CD1	1:D:312:ARG:HG2	2.31	0.59
1:B:261:ILE:H	1:B:261:ILE:HD13	1.67	0.59
1:D:203:MET:HE2	1:D:208:LEU:HD13	1.85	0.58
1:B:214:VAL:CG2	1:B:298:LEU:HD22	2.33	0.58
1:D:203:MET:CE	1:D:208:LEU:HD13	2.34	0.58
1:D:237:THR:HG22	1:D:238:SER:N	2.19	0.58
1:B:251:ASN:O	1:B:271:HIS:HD2	1.87	0.57
1:B:237:THR:CG2	1:B:241:GLU:H	2.15	0.57
1:B:192:THR:HG22	1:B:218:ARG:CZ	2.35	0.56
1:D:363:GLU:O	1:D:367:ILE:HG23	2.06	0.56
1:A:281:ASP:OD1	1:A:359:ARG:HD2	2.06	0.56
1:C:233:LYS:HD3	1:C:292:PHE:HB3	1.87	0.56
1:D:232:LEU:HG	1:D:295:VAL:HG23	1.88	0.55
1:D:223:VAL:HG12	1:D:224:GLU:HG3	1.89	0.55
1:C:201:ILE:HD13	1:C:210:LEU:HA	1.89	0.55
1:C:214:VAL:HB	1:C:269:ILE:HD11	1.89	0.55
1:B:216:ASN:HB2	1:B:263:LEU:HD13	1.90	0.54
1:D:284:LYS:HD3	1:D:355:LEU:HD22	1.91	0.53
1:A:301:MET:CG	1:A:308:THR:HG22	2.31	0.53
1:B:203:MET:CE	1:B:208:LEU:HD13	2.38	0.53
1:C:53:HIS:HB2	2:C:477:HOH:O	2.08	0.53
1:A:253:GLY:HA3	1:A:258:ILE:HG13	1.90	0.53
1:B:63:GLU:CD	1:B:63:GLU:H	2.11	0.53
1:B:232:LEU:HD22	1:B:247:GLN:HG2	1.90	0.53
1:D:253:GLY:HA3	1:D:258:ILE:HG13	1.91	0.53
1:A:203:MET:HE2	1:A:208:LEU:HD13	1.91	0.53
1:D:214:VAL:HG21	1:D:298:LEU:HD22	1.91	0.53
1:A:188:LYS:HG2	1:A:191:GLU:HG3	1.90	0.52
1:A:56:VAL:HA	1:A:337:TYR:O	2.09	0.52
1:A:63:GLU:HG3	1:A:189:ARG:HD2	1.92	0.52
1:D:220:SER:HB2	1:D:303:GLU:HB3	1.92	0.52
1:B:283:SER:H	1:B:286:ASP:HB2	1.74	0.52
1:B:279:LEU:HD22	1:B:282:LEU:HD12	1.91	0.51
1:D:324:HIS:NE2	1:D:349:GLU:HG2	2.25	0.51
1:B:325:ARG:O	1:B:347:THR:HB	2.10	0.51
1:C:192:THR:HB	1:C:218:ARG:HH21	1.76	0.51
1:C:237:THR:HG22	1:C:238:SER:N	2.25	0.51
1:C:220:SER:HB2	1:C:303:GLU:HB3	1.93	0.51
1:B:237:THR:HG21	1:B:241:GLU:HB3	1.92	0.51
1:D:234:SER:HB3	1:D:244:PRO:O	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:214:VAL:CG1	1:D:269:ILE:HD11	2.41	0.50
1:D:216:ASN:HD21	1:D:218:ARG:HB2	1.77	0.50
1:B:271:HIS:HE1	1:B:277:SER:OG	1.95	0.50
1:C:218:ARG:NH1	1:C:302:VAL:HG21	2.27	0.49
1:B:226:HIS:HD2	2:B:444:HOH:O	1.95	0.49
1:B:301:MET:SD	1:B:308:THR:HG22	2.53	0.49
1:D:201:ILE:HA	1:D:209:CYS:O	2.13	0.48
1:C:232:LEU:CD2	1:C:247:GLN:HG2	2.43	0.48
1:C:303:GLU:O	1:C:304:ALA:HB3	2.13	0.48
1:C:334:LYS:HE3	1:C:335:HIS:NE2	2.28	0.48
1:A:45:SER:N	1:A:335:HIS:HA	2.29	0.48
1:A:283:SER:O	1:A:287:ILE:HG12	2.13	0.48
1:B:203:MET:HE3	1:B:361:LEU:HD13	1.95	0.47
1:A:226:HIS:HE1	1:B:224:GLU:OE2	1.97	0.47
1:A:205:ASP:OD2	1:D:237:THR:HG23	2.14	0.47
1:C:301:MET:HG2	1:C:308:THR:HG22	1.97	0.47
1:C:325:ARG:O	1:C:347:THR:HB	2.15	0.47
1:D:214:VAL:CG2	1:D:298:LEU:HD22	2.45	0.47
1:D:203:MET:HE2	1:D:208:LEU:CD1	2.44	0.47
1:D:216:ASN:HD21	1:D:218:ARG:CB	2.28	0.47
1:D:216:ASN:ND2	1:D:218:ARG:H	2.13	0.47
1:B:245:LEU:HD12	1:C:330:LEU:HD21	1.97	0.46
1:D:232:LEU:HD22	1:D:247:GLN:HG2	1.96	0.46
1:A:49:LYS:HE3	1:A:53:HIS:HB2	1.97	0.46
1:A:237:THR:HG22	1:A:241:GLU:H	1.81	0.46
1:D:61:VAL:O	1:D:61:VAL:HG22	2.15	0.46
1:D:58:PHE:CD2	1:D:341:TYR:HE1	2.28	0.46
1:B:216:ASN:HD21	1:B:218:ARG:HB3	1.80	0.46
1:D:272:GLU:HB2	2:D:467:HOH:O	2.14	0.45
1:C:309:THR:HG22	1:C:310:GLN:N	2.30	0.45
1:A:205:ASP:H	1:D:237:THR:CG2	2.30	0.45
1:C:61:VAL:HG23	1:C:217:LEU:HD22	1.99	0.45
1:C:251:ASN:O	1:C:271:HIS:HD2	2.00	0.45
1:D:232:LEU:HD11	1:D:295:VAL:HG21	1.99	0.45
1:A:237:THR:CG2	1:A:241:GLU:H	2.30	0.45
1:A:256:SER:OG	1:A:258:ILE:HG12	2.17	0.45
1:C:214:VAL:CG2	1:C:298:LEU:HD22	2.46	0.45
1:C:200:VAL:HG12	1:C:321:LEU:HB2	1.99	0.44
1:C:199:ALA:HB3	1:C:320:ILE:CD1	2.48	0.44
1:C:232:LEU:HD22	1:C:247:GLN:HG2	1.99	0.44
1:C:237:THR:CG2	1:D:205:ASP:H	2.30	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:190:ASN:HB3	1:A:217:LEU:HD13	1.98	0.44
1:A:232:LEU:HD22	1:A:247:GLN:HG2	2.00	0.44
1:A:251:ASN:O	1:A:271:HIS:HD2	2.01	0.44
1:B:284:LYS:HD3	1:B:355:LEU:HD22	2.00	0.44
1:C:226:HIS:HE1	1:D:224:GLU:OE2	2.01	0.44
1:A:190:ASN:HD22	1:A:190:ASN:N	2.15	0.44
1:A:203:MET:HE2	1:A:208:LEU:CD1	2.48	0.44
1:A:190:ASN:N	1:A:190:ASN:ND2	2.63	0.44
1:B:292:PHE:C	1:B:292:PHE:CD1	2.91	0.43
1:A:267:ILE:HD11	1:D:247:GLN:NE2	2.32	0.43
1:B:281:ASP:OD1	1:B:359:ARG:HD2	2.18	0.43
1:D:49:LYS:CE	1:D:53:HIS:HB2	2.48	0.43
1:A:58:PHE:CD2	1:A:341:TYR:HE1	2.37	0.43
1:A:241:GLU:HG3	1:B:325:ARG:HD3	2.00	0.43
1:C:250:ILE:HG23	1:C:271:HIS:CD2	2.53	0.43
1:D:228:ARG:HD2	2:D:470:HOH:O	2.19	0.43
1:C:269:ILE:HD12	1:C:269:ILE:H	1.84	0.43
1:A:190:ASN:HB3	1:A:217:LEU:CD1	2.48	0.43
1:C:292:PHE:CD1	1:C:292:PHE:C	2.93	0.42
1:D:283:SER:O	1:D:287:ILE:HG12	2.18	0.42
1:B:192:THR:HB	1:B:218:ARG:NH2	2.34	0.42
1:C:212:TRP:HA	1:C:326:TYR:OH	2.20	0.42
1:C:269:ILE:HD12	1:C:269:ILE:N	2.33	0.42
1:C:218:ARG:HE	1:C:218:ARG:HB2	1.74	0.42
1:D:237:THR:CG2	1:D:239:GLU:OE1	2.68	0.42
1:A:237:THR:CG2	1:A:241:GLU:HB3	2.50	0.42
1:B:192:THR:HG22	1:B:218:ARG:NH1	2.35	0.42
1:C:279:LEU:CD2	1:C:282:LEU:HD12	2.50	0.42
1:C:343:ARG:HG2	1:C:343:ARG:HH11	1.85	0.42
1:A:190:ASN:O	1:A:192:THR:HG23	2.19	0.41
1:A:250:ILE:CD1	1:A:294:ILE:HG23	2.49	0.41
1:A:237:THR:HG22	1:A:241:GLU:N	2.35	0.41
1:B:309:THR:HG22	1:B:310:GLN:N	2.35	0.41
1:C:253:GLY:HA3	1:C:258:ILE:HG13	2.01	0.41
1:D:49:LYS:HE2	1:D:53:HIS:HB2	2.03	0.41
1:A:203:MET:HE1	1:A:208:LEU:CB	2.45	0.41
1:C:237:THR:CG2	1:C:239:GLU:OE1	2.68	0.41
1:C:329:VAL:O	1:C:339:VAL:HA	2.21	0.41
1:C:262:PHE:O	1:C:267:ILE:HD11	2.21	0.41
1:B:324:HIS:CE1	1:B:349:GLU:HG2	2.56	0.41
1:C:201:ILE:HA	1:C:209:CYS:O	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:226:HIS:HD2	2:C:437:HOH:O	2.03	0.41
1:C:233:LYS:HD3	1:C:292:PHE:CB	2.51	0.41
1:C:192:THR:HB	1:C:218:ARG:NH2	2.36	0.41
1:C:241:GLU:HG3	1:D:325:ARG:HD3	2.03	0.41
1:D:56:VAL:CG2	1:D:339:VAL:HG23	2.51	0.41
1:D:203:MET:HE1	1:D:208:LEU:HB2	2.02	0.41
1:C:216:ASN:ND2	1:C:218:ARG:H	2.19	0.40
1:D:237:THR:CG2	1:D:238:SER:N	2.84	0.40
1:C:216:ASN:HD21	1:C:218:ARG:CB	2.35	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	195/270 (72%)	182 (93%)	9 (5%)	4 (2%)	7	7
1	B	191/270 (71%)	176 (92%)	13 (7%)	2 (1%)	15	22
1	C	191/270 (71%)	179 (94%)	12 (6%)	0	100	100
1	D	193/270 (72%)	182 (94%)	11 (6%)	0	100	100
All	All	770/1080 (71%)	719 (93%)	45 (6%)	6 (1%)	19	27

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	335	HIS
1	A	191	GLU
1	A	218	ARG
1	B	244	PRO
1	B	351	PRO
1	A	244	PRO

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	177/244 (72%)	174 (98%)	3 (2%)	60	77
1	B	175/244 (72%)	169 (97%)	6 (3%)	37	54
1	C	175/244 (72%)	170 (97%)	5 (3%)	42	61
1	D	177/244 (72%)	170 (96%)	7 (4%)	31	48
All	All	704/976 (72%)	683 (97%)	21 (3%)	41	59

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	216	ASN
1	A	263	LEU
1	A	318	ASN
1	B	63	GLU
1	B	216	ASN
1	B	231	LEU
1	B	261	ILE
1	B	263	LEU
1	B	314	SER
1	C	63	GLU
1	C	214	VAL
1	C	263	LEU
1	C	343	ARG
1	C	352	ASN
1	D	55	ASN
1	D	63	GLU
1	D	216	ASN
1	D	252	VAL
1	D	263	LEU
1	D	281	ASP
1	D	314	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	190	ASN
1	A	216	ASN
1	A	226	HIS
1	A	247	GLN
1	A	271	HIS
1	A	318	ASN
1	A	352	ASN
1	B	57	GLN
1	B	190	ASN
1	B	197	HIS
1	B	198	ASN
1	B	216	ASN
1	B	221	HIS
1	B	226	HIS
1	B	271	HIS
1	C	60	ASN
1	C	216	ASN
1	C	221	HIS
1	C	226	HIS
1	C	247	GLN
1	C	271	HIS
1	C	352	ASN
1	D	57	GLN
1	D	60	ASN
1	D	216	ASN
1	D	226	HIS
1	D	247	GLN
1	D	271	HIS

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

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	197/270 (72%)	-0.00	9 (4%) 32 30	28, 48, 84, 105	0
1	B	195/270 (72%)	0.09	9 (4%) 32 30	26, 46, 77, 100	0
1	C	195/270 (72%)	-0.09	8 (4%) 37 35	26, 44, 73, 96	0
1	D	197/270 (72%)	0.04	9 (4%) 32 30	29, 47, 81, 110	0
All	All	784/1080 (72%)	0.01	35 (4%) 33 31	26, 46, 80, 110	0

All (35) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	367	ILE	7.3
1	D	366	TYR	7.3
1	D	368	LEU	5.1
1	A	365	LYS	4.5
1	C	190	ASN	4.4
1	B	363	GLU	3.9
1	B	190	ASN	3.8
1	B	364	LYS	3.7
1	C	363	GLU	3.5
1	B	362	ALA	3.3
1	D	334	LYS	3.2
1	C	365	LYS	3.2
1	A	362	ALA	3.2
1	B	62	GLY	3.2
1	A	190	ASN	3.2
1	A	364	LYS	3.2
1	D	45	SER	3.1
1	A	189	ARG	3.1
1	B	334	LYS	2.8
1	B	335	HIS	2.7
1	C	360	ASP	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	335	HIS	2.5
1	B	365	LYS	2.5
1	D	364	LYS	2.5
1	C	362	ALA	2.5
1	A	191	GLU	2.4
1	D	335	HIS	2.4
1	D	63	GLU	2.4
1	B	304	ALA	2.3
1	A	334	LYS	2.3
1	A	63	GLU	2.2
1	C	62	GLY	2.1
1	C	335	HIS	2.1
1	D	362	ALA	2.1
1	C	334	LYS	2.1

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.