Full wwPDB X-ray Structure Validation Report (i)

Apr 30, 2024 – 07:20 pm BST

PDB ID	:	2X3X
Title	:	structure of mouse syndapin I (crystal form 1)
Authors	:	Ma, Q.; Rao, Y.; Vahedi-Faridi, A.; Saenger, W.; Haucke, V.
Deposited on	:	2010-01-28
Resolution	:	3.35 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 (i) 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 (i)) were used in the production of this report:

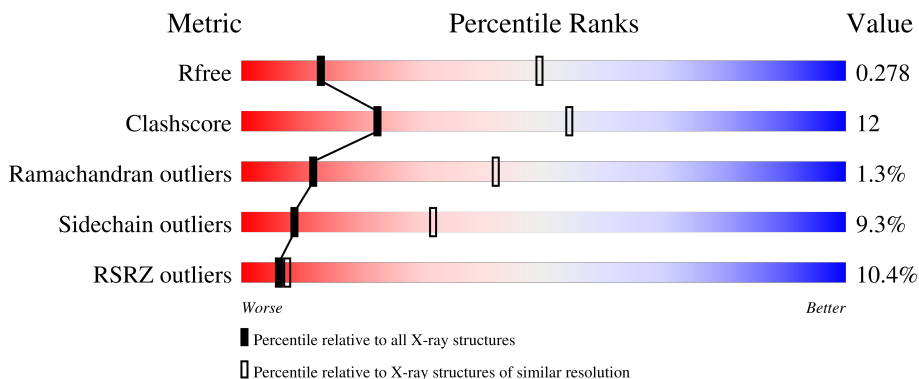|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 3.35 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Rfree		0.278
Clashscore		12
Ramachandran outliers		1.3%
Sidechain outliers		9.3%
RSRZ outliers		10.4%

Worse   *Better*

▌ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	1558 (3.42-3.30)
Clashscore	141614	1627 (3.42-3.30)
Ramachandran outliers	138981	1599 (3.42-3.30)
Sidechain outliers	138945	1598 (3.42-3.30)
RSRZ outliers	127900	1507 (3.42-3.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	337	2% 58% 26% • 14%
1	B	337	4% 60% 18% • 19%
1	C	337	11% 61% 23% • 14%
2	D	60	10% 67% 22% 5% 7%
2	E	60	62% 68% 17% 8% 7%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 8006 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 PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PROTEIN 1.

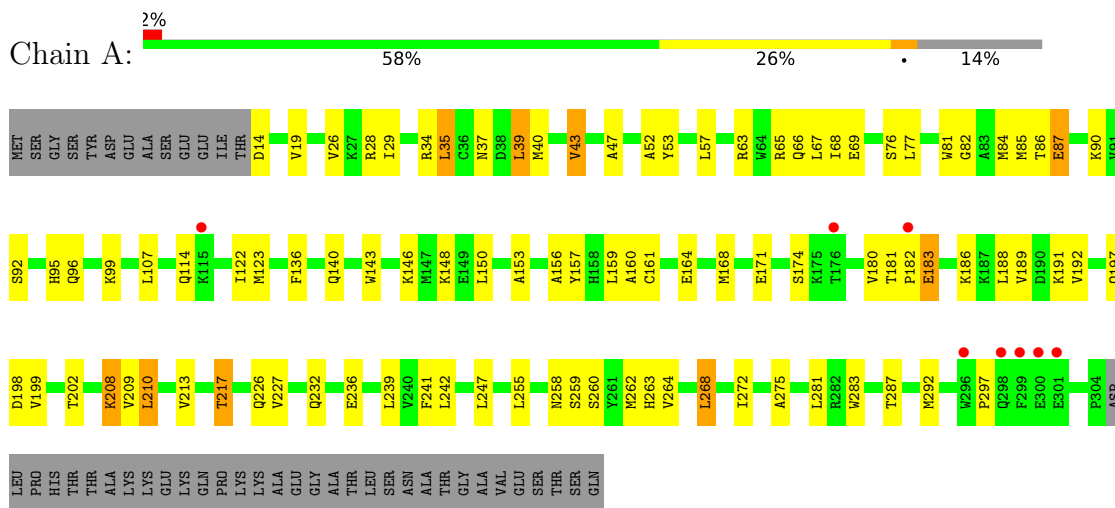| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	291	Total	C	N	O	S	0	0	0
			2418	1514	430	457	17			
1	B	274	Total	C	N	O	S	0	0	0
			2277	1431	403	427	16			
1	C	291	Total	C	N	O	S	0	0	0
			2417	1513	430	457	17			

- Molecule 2 is a protein called PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PROTEIN 1.

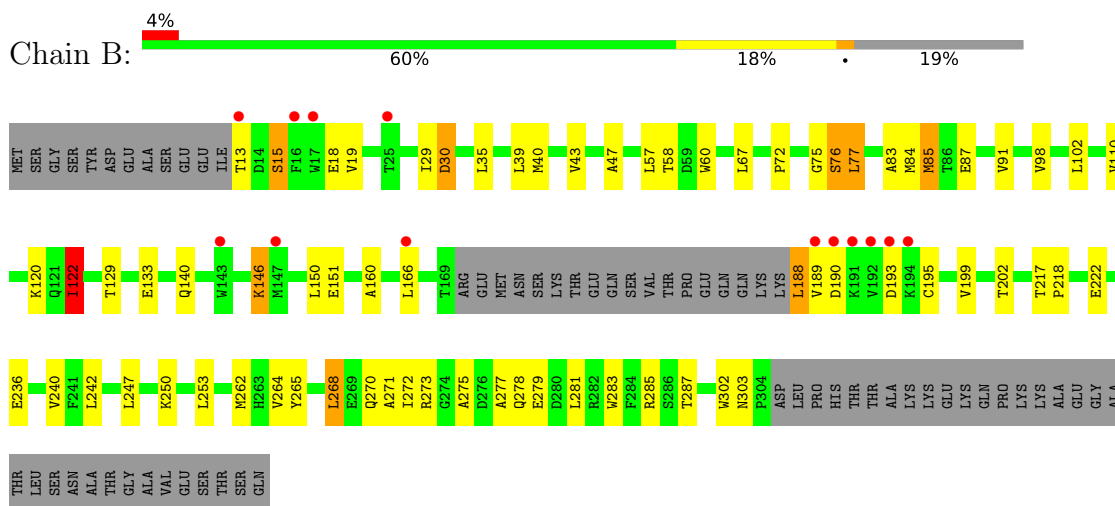| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	56	Total	C	N	O	S	0	0	0
			447	276	76	94	1			
2	E	56	Total	C	N	O	S	0	0	0
			447	276	76	94	1			

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.
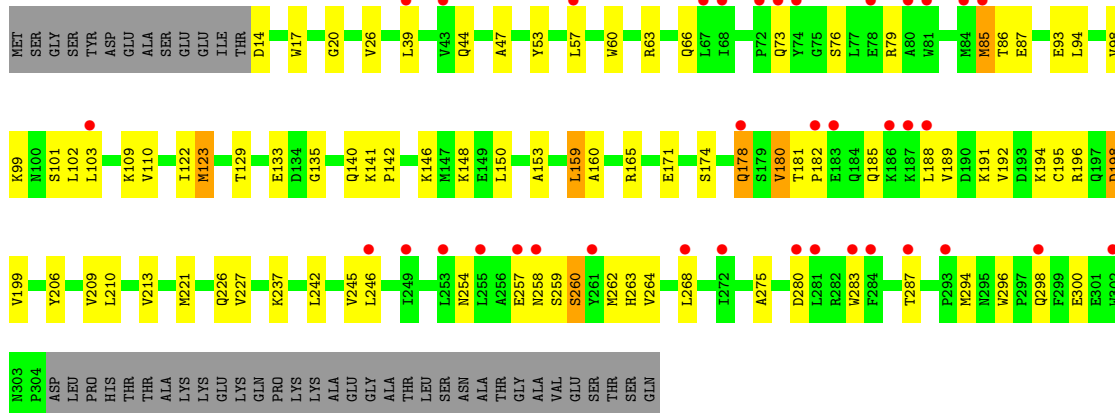
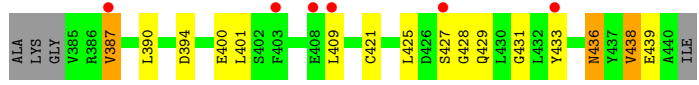- Molecule 1: PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PRO-TEIN 1

- Molecule 1: PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PRO-TEIN 1

- Molecule 1: PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PRO-TEIN 1

Chain C:

11%

61%   23%   •   14%

MET SER GLY SER TYR ASP GLU ALA SER GLU GLU ILE THR D14 W17 G20 V26 L39 V43 Q44 A47 Y53 L57 W60 R63 Q66 L67 I68 P72 Q73 Y74 G75 S76 L77 E78 R79 A80 W81 M84 M85 T86 E87 E93 L94 V98

K99 N100 S101 L102 L103 K109 V110 I122 M123 T129 E133 D134 G135 Q140 K141 P142 K146 M147 K148 E149 L150 A153 L159 A160 R165 E171 S174 Q178 S179 V180 T181 P182 E183 Q184 Q185 K186 K187 L188 V189 D190 K191 V192 D193 K194 C195 R196 Q197 D198

V199 Y206 V209 L210 V213 M221 Q226 V227 K237 L242 V245 L246 I249 L253 N254 L255 A256 E257 N258 S259 S260 Y261 M262 H263 V264 L268 I272 A275 D280 L281 R282 W283 F284 T287 P293 M294 N295 W296 P297 Q298 F299 E300 E301 W302

N303 P304 ASP LEU PRO HIS THR THR ALA LYS LYS GLU LYS GLN PRO LYS LYS ALA GLU GLY ALA THR LEU SER ASN ALA THR GLY ALA VAL GLU SER THR SER GLN

• Molecule 2: PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PROTEIN 1

Chain D:

10%

67%   22%   5% 7%

ALA LYS GLY V385 R386 V387 L390 D394 E400 L401 S402 F403 E408 L409 C421 L425 D426 S427 G428 Q429 L430 G431 L432 Y433 N436 Y437 V438 E439 A440 ILE

• Molecule 2: PROTEIN KINASE C AND CASEIN KINASE SUBSTRATE IN NEURONS PROTEIN 1

Chain E:

62%

68%   17%   8% 7%

ALA LYS GLY V385 R386 V387 R388 A389 L390 Y391 D392 Y393 D394 G395 Q396 D399 E400 L401 S402 F403 E408 L409 T410 K411 L412 G413 E414 Q418 G419 W420 C421 R422 G423 R424 L425 D426 S427 G428 Q429 L430 G431 L432 Y433 P434 A435 N436 Y437 V438 E439 A440 ILE

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	83.08Å 154.54Å 255.81Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	73.13 – 3.35 73.17 – 3.35	Depositor EDS
% Data completeness (in resolution range)	100.0 (73.13-3.35) 98.5 (73.17-3.35)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.77 (at 3.33Å)	Xtriage
Refinement program	REFMAC 5.3.0040	Depositor
R, R_{free}	0.221 , 0.277 0.225 , 0.278	Depositor DCC
R_{free} test set	1192 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	74.6	Xtriage
Anisotropy	1.155	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 104.0	EDS
L-test for twinning[2]	$< |L| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	8006	wwPDB-VP
Average B, all atoms (Å^2)	103.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.98% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$>5	RMSZ	#$|Z|$>5
1	A	0.42	0/2466	0.54	0/3305
1	B	0.40	0/2323	0.52	0/3114
1	C	0.36	0/2465	0.49	0/3304
2	D	0.34	0/454	0.57	0/611
2	E	0.39	0/454	0.53	0/611
All	All	0.39	0/8162	0.52	0/10945

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2418	0	2377	76	0
1	B	2277	0	2234	51	0
1	C	2417	0	2372	50	0
2	D	447	0	410	13	0
2	E	447	0	410	13	0
All	All	8006	0	7803	184	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 12.

All (184) 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:35:LEU:HD11	1:B:72:PRO:HD2	1.34	1.05
1:A:150:LEU:HD11	1:A:210:LEU:HD22	1.46	0.97
2:D:387:VAL:HG13	2:D:438:VAL:HG13	1.54	0.89
2:D:387:VAL:HG13	2:D:438:VAL:CG1	2.04	0.88
1:A:143:TRP:CZ3	1:A:217:THR:HG23	2.08	0.86
2:D:387:VAL:CG1	2:D:438:VAL:HG11	2.08	0.83
1:A:35:LEU:HD11	1:B:72:PRO:CD	2.09	0.81
2:D:387:VAL:CG1	2:D:438:VAL:CG1	2.61	0.79
1:C:26:VAL:HG21	1:C:133:GLU:HG2	1.65	0.78
2:D:387:VAL:HG11	2:D:438:VAL:HG11	1.63	0.78
1:A:160:ALA:HB1	1:A:199:VAL:HG22	1.67	0.77
1:C:47:ALA:HB1	1:C:103:LEU:HD11	1.66	0.77
1:A:68:ILE:HD12	1:A:85:MET:HE3	1.67	0.76
1:B:57:LEU:HD13	1:B:91:VAL:CG2	2.18	0.73
1:B:188:LEU:HD13	1:B:189:VAL:HG23	1.68	0.73
1:B:57:LEU:HD13	1:B:91:VAL:HG23	1.70	0.72
1:B:39:LEU:CD2	1:B:110:VAL:HG21	2.20	0.71
2:E:401:LEU:HD11	2:E:425:LEU:HD13	1.69	0.71
1:A:143:TRP:HZ3	1:A:217:THR:HG23	1.55	0.71
2:E:387:VAL:HG23	2:E:438:VAL:HG13	1.72	0.70
1:C:60:TRP:CZ3	1:C:85:MET:HE3	2.26	0.70
1:A:239:LEU:HD12	1:B:281:LEU:HD11	1.72	0.69
1:C:47:ALA:CB	1:C:103:LEU:HD11	2.23	0.69
1:A:95:HIS:NE2	1:A:255:LEU:HD11	2.08	0.68
1:A:180:VAL:O	1:A:180:VAL:HG23	1.94	0.67
1:A:68:ILE:HD12	1:A:85:MET:CE	2.25	0.67
1:A:247:LEU:HD21	1:B:273:ARG:NH1	2.10	0.66
1:C:150:LEU:HD21	1:C:210:LEU:HD12	1.77	0.66
1:C:195:CYS:O	1:C:199:VAL:HG23	1.96	0.65
1:A:160:ALA:CB	1:A:199:VAL:HG22	2.26	0.65
1:A:40:MET:HG2	1:A:107:LEU:HD22	1.80	0.64
1:B:122:ILE:HG23	1:B:122:ILE:O	1.97	0.63
1:A:199:VAL:HA	1:A:202:THR:HG22	1.80	0.63
1:A:82:GLY:HA2	1:A:85:MET:CE	2.31	0.60
1:A:283:TRP:CE2	1:A:287:THR:HG21	2.36	0.60
1:A:150:LEU:HD11	1:A:210:LEU:CD2	2.27	0.60
1:B:83:ALA:HB1	1:B:268:LEU:CD2	2.31	0.60
1:A:43:VAL:HG12	1:A:107:LEU:HD23	1.84	0.59
1:C:94:LEU:HD22	1:C:258:ASN:HD21	1.67	0.59
2:E:387:VAL:HG23	2:E:438:VAL:CG1	2.33	0.59
2:D:401:LEU:HD21	2:D:425:LEU:HD13	1.85	0.59
1:C:189:VAL:O	1:C:192:VAL:HG22	2.03	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:427:SER:N	2:D:428:GLY:HA2	2.18	0.59
1:C:192:VAL:HA	1:C:195:CYS:HB3	1.84	0.57
1:B:146:LYS:O	1:B:150:LEU:N	2.38	0.57
1:A:122:ILE:HD12	1:A:123:MET:N	2.20	0.57
1:A:186:LYS:NZ	1:A:189:VAL:HG11	2.20	0.56
1:A:77:LEU:HD22	1:A:275:ALA:HB1	1.88	0.55
1:A:241:PHE:HD1	1:A:242:LEU:HD22	1.72	0.55
1:A:292:MET:CE	1:B:15:SER:HA	2.37	0.55
1:A:174:SER:HB3	1:A:180:VAL:HG11	1.90	0.54
1:C:60:TRP:CH2	1:C:85:MET:HE3	2.43	0.54
1:A:160:ALA:HB1	1:A:199:VAL:CG2	2.37	0.54
1:A:65:ARG:O	1:A:69:GLU:HB2	2.09	0.53
1:B:83:ALA:HB1	1:B:268:LEU:HD22	1.91	0.53
1:A:43:VAL:CG1	1:A:107:LEU:HD23	2.38	0.53
1:B:188:LEU:CD1	1:B:189:VAL:HG23	2.36	0.53
1:C:150:LEU:HD21	1:C:210:LEU:CD1	2.39	0.52
1:B:160:ALA:HB3	1:B:202:THR:HG21	1.90	0.52
2:E:387:VAL:CG2	2:E:438:VAL:CG1	2.86	0.52
1:A:146:LYS:HB3	1:A:213:VAL:HG22	1.91	0.52
1:C:159:LEU:HD23	1:C:160:ALA:N	2.24	0.52
1:A:239:LEU:CD1	1:B:281:LEU:HD11	2.39	0.51
1:A:150:LEU:HD13	1:A:209:VAL:HG12	1.92	0.51
1:A:86:THR:HG22	1:A:90:LYS:HD3	1.92	0.51
2:D:387:VAL:HG12	2:D:409:LEU:HD13	1.93	0.51
1:A:19:VAL:HG13	1:A:140:GLN:NE2	2.25	0.50
1:A:242:LEU:HB3	1:B:77:LEU:HD11	1.93	0.50
1:B:283:TRP:CE2	1:B:287:THR:HG21	2.46	0.50
1:C:174:SER:HB2	1:C:188:LEU:HD22	1.94	0.50
1:C:178:GLN:CG	1:C:180:VAL:HG23	2.42	0.50
1:A:87:GLU:OE2	1:B:253:LEU:HD13	2.12	0.50
1:A:160:ALA:HB3	1:A:202:THR:HG21	1.93	0.50
1:A:208:LYS:HE3	2:D:436:ASN:HD22	1.76	0.50
1:B:76:SER:HB2	1:B:275:ALA:HA	1.94	0.50
2:E:412:LEU:HD11	2:E:424:ARG:HB2	1.94	0.50
1:C:76:SER:OG	1:C:275:ALA:HA	2.12	0.50
1:A:161:CYS:HB3	1:B:302:TRP:CE3	2.47	0.49
1:C:153:ALA:HB1	1:C:206:TYR:HA	1.94	0.49
1:B:40:MET:O	1:B:43:VAL:HG22	2.13	0.49
1:C:254:ASN:HB3	1:C:257:GLU:HG3	1.93	0.49
1:A:26:VAL:HA	1:A:29:ILE:HD12	1.93	0.49
1:A:136:PHE:CZ	1:A:227:VAL:HG12	2.48	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:19:VAL:HG13	1:B:140:GLN:NE2	2.28	0.49
1:C:294:MET:HE3	1:C:296:TRP:HA	1.94	0.49
1:A:96:GLN:HE21	1:A:96:GLN:HA	1.78	0.49
1:A:143:TRP:CZ3	1:A:217:THR:CG2	2.90	0.49
1:C:283:TRP:NE1	1:C:287:THR:HG21	2.28	0.48
2:E:387:VAL:HG21	2:E:438:VAL:HG11	1.94	0.48
1:C:283:TRP:CE2	1:C:287:THR:HG21	2.48	0.48
1:A:272:ILE:HG21	1:B:247:LEU:HG	1.95	0.48
1:A:76:SER:HB2	1:A:275:ALA:HA	1.96	0.48
1:A:150:LEU:HA	1:A:209:VAL:HG11	1.96	0.48
1:C:76:SER:N	1:C:280:ASP:OD1	2.47	0.48
2:E:402:SER:O	2:E:425:LEU:HD21	2.13	0.48
1:A:84:MET:O	1:A:87:GLU:HG3	2.14	0.48
1:C:122:ILE:HD12	1:C:123:MET:N	2.29	0.47
2:E:411:LYS:NZ	2:E:414:GLU:OE2	2.34	0.47
1:A:82:GLY:HA2	1:A:85:MET:HE1	1.95	0.47
1:B:98:VAL:O	1:B:102:LEU:HB2	2.14	0.47
1:B:83:ALA:C	1:B:268:LEU:HD21	2.34	0.47
1:B:29:ILE:HG22	1:B:129:THR:OG1	2.14	0.47
1:A:68:ILE:HD11	1:A:81:TRP:CE2	2.50	0.47
1:B:236:GLU:O	1:B:240:VAL:HG22	2.14	0.47
1:B:122:ILE:O	1:B:122:ILE:CD1	2.62	0.46
1:C:109:LYS:HD3	1:C:245:VAL:HG22	1.97	0.46
1:C:194:LYS:O	1:C:198:ASP:N	2.45	0.46
1:C:185:GLN:HG2	1:C:189:VAL:HG22	1.99	0.45
1:A:52:ALA:O	1:A:53:TYR:C	2.55	0.45
1:B:39:LEU:HD13	1:B:242:LEU:CD1	2.46	0.45
1:B:217:THR:HG22	1:C:221:MET:HE1	1.98	0.45
1:C:150:LEU:HD23	1:C:209:VAL:HG13	1.98	0.45
1:A:236:GLU:HB2	1:B:281:LEU:HD21	1.98	0.45
1:A:268:LEU:HD13	1:B:250:LYS:HG3	1.98	0.45
1:A:283:TRP:NE1	1:A:287:THR:HG21	2.31	0.45
1:B:278:GLN:O	1:B:279:GLU:C	2.53	0.45
2:E:401:LEU:HD21	2:E:425:LEU:CD1	2.46	0.45
1:A:186:LYS:HZ3	1:A:189:VAL:HG11	1.81	0.45
1:B:60:TRP:CZ3	1:B:85:MET:HE3	2.52	0.45
1:A:37:ASN:HA	1:A:40:MET:HE3	1.97	0.45
1:C:76:SER:O	1:C:79:ARG:N	2.50	0.45
1:C:209:VAL:O	1:C:213:VAL:HG23	2.17	0.45
1:B:190:ASP:HA	1:B:193:ASP:HB3	1.99	0.45
1:A:268:LEU:HD22	1:A:272:ILE:HD11	1.99	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:281:LEU:HD21	1:B:236:GLU:HB2	1.98	0.45
2:E:427:SER:N	2:E:428:GLY:CA	2.79	0.45
1:B:270:GLN:O	1:B:271:ALA:C	2.55	0.44
1:A:174:SER:CB	1:A:180:VAL:HG11	2.46	0.44
1:A:232:GLN:HE21	1:B:285:ARG:NH1	2.15	0.44
2:D:390:LEU:HD21	2:D:439:GLU:HB3	2.00	0.44
1:C:94:LEU:CD2	1:C:258:ASN:HD21	2.30	0.44
1:A:157:TYR:HA	1:A:202:THR:CG2	2.47	0.44
1:A:63:ARG:O	1:A:67:LEU:HD13	2.17	0.44
1:C:185:GLN:NE2	1:C:189:VAL:HG11	2.33	0.44
1:B:30:ASP:OD1	1:B:129:THR:HG21	2.17	0.44
1:A:181:THR:O	1:A:183:GLU:N	2.51	0.43
1:C:99:LYS:O	1:C:103:LEU:HD12	2.18	0.43
1:C:17:TRP:CZ3	1:C:221:MET:HA	2.54	0.43
1:A:66:GLN:OE1	2:E:385:VAL:HG23	2.18	0.43
1:C:39:LEU:HD23	1:C:110:VAL:HG21	2.01	0.43
1:C:98:VAL:O	1:C:102:LEU:HB2	2.17	0.43
2:D:421:CYS:HB2	2:D:433:TYR:CE2	2.53	0.43
1:C:182:PRO:HA	1:C:185:GLN:HB3	2.00	0.43
1:A:260:SER:O	1:A:264:VAL:HG23	2.18	0.43
1:B:47:ALA:HB2	1:B:102:LEU:HD23	2.00	0.43
1:C:85:MET:N	1:C:85:MET:SD	2.92	0.43
2:E:387:VAL:CG2	2:E:438:VAL:HG11	2.49	0.43
1:A:153:ALA:O	1:A:156:ALA:HB3	2.18	0.43
1:A:159:LEU:HD23	1:A:160:ALA:N	2.34	0.43
1:C:53:TYR:CE2	1:C:57:LEU:HD21	2.54	0.43
1:A:47:ALA:O	1:A:99:LYS:HG3	2.19	0.42
1:B:195:CYS:O	1:B:199:VAL:HG23	2.19	0.42
1:B:278:GLN:O	1:B:281:LEU:N	2.53	0.42
1:A:39:LEU:HD22	1:A:39:LEU:O	2.19	0.42
1:C:178:GLN:HG2	1:C:180:VAL:HG23	2.02	0.42
1:B:277:ALA:O	1:B:281:LEU:HD13	2.19	0.42
1:C:242:LEU:HD23	1:C:246:LEU:HD13	2.01	0.42
1:C:260:SER:O	1:C:264:VAL:HG23	2.19	0.42
1:A:82:GLY:HA2	1:A:85:MET:HE2	2.01	0.42
1:A:57:LEU:HB2	1:A:92:SER:HB2	2.02	0.42
1:B:75:GLY:O	1:B:76:SER:C	2.58	0.42
1:C:141:LYS:HB3	1:C:142:PRO:HD3	2.01	0.42
1:A:96:GLN:HA	1:A:96:GLN:NE2	2.35	0.42
2:E:385:VAL:HG13	2:E:411:LYS:HB2	2.01	0.42
1:A:247:LEU:HD13	1:B:272:ILE:CG2	2.50	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:160:ALA:C	1:A:199:VAL:HG22	2.40	0.41
1:C:20:GLY:N	1:C:140:GLN:HE22	2.18	0.41
1:B:83:ALA:CB	1:B:268:LEU:CD2	2.97	0.41
1:B:264:VAL:HG12	1:B:265:TYR:CD2	2.55	0.41
1:C:150:LEU:CD2	1:C:209:VAL:HG13	2.50	0.41
1:A:157:TYR:HD2	1:A:202:THR:HG23	1.85	0.41
1:C:135:GLY:C	1:C:227:VAL:HG21	2.41	0.41
1:A:188:LEU:O	1:A:192:VAL:HG22	2.21	0.41
1:C:160:ALA:O	1:C:199:VAL:HG22	2.21	0.41
1:B:277:ALA:HB3	1:B:278:GLN:HE21	1.85	0.41
1:C:129:THR:O	1:C:133:GLU:HB2	2.21	0.41
1:C:259:SER:O	1:C:262:MET:N	2.54	0.41
1:A:199:VAL:CA	1:A:202:THR:HG22	2.49	0.41
1:B:218:PRO:HG3	1:C:221:MET:HE3	2.02	0.40
1:A:259:SER:HB3	1:A:263:HIS:CE1	2.56	0.40
1:B:122:ILE:O	1:B:122:ILE:CG2	2.68	0.40
2:D:401:LEU:CD2	2:D:425:LEU:HD13	2.50	0.40
1:C:181:THR:CG2	1:C:182:PRO:HD2	2.52	0.40
2:D:401:LEU:HD13	2:D:431:GLY:CA	2.51	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	289/337 (86%)	262 (91%)	22 (8%)	5 (2%)	9	36
1	B	270/337 (80%)	249 (92%)	18 (7%)	3 (1%)	14	46
1	C	289/337 (86%)	260 (90%)	26 (9%)	3 (1%)	15	49
2	D	54/60 (90%)	52 (96%)	2 (4%)	0	100	100
2	E	54/60 (90%)	48 (89%)	5 (9%)	1 (2%)	8	34

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	956/1131 (84%)	871 (91%)	73 (8%)	12 (1%)	12	42

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	303	ASN
1	A	183	GLU
1	B	122	ILE
1	B	76	SER
1	C	178	GLN
1	A	182	PRO
1	A	191	LYS
1	C	260	SER
1	A	258	ASN
2	E	428	GLY
1	A	297	PRO
1	C	180	VAL

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	258/295 (88%)	238 (92%)	20 (8%)	12	40
1	B	241/295 (82%)	220 (91%)	21 (9%)	10	35
1	C	257/295 (87%)	232 (90%)	25 (10%)	8	30
2	D	45/47 (96%)	39 (87%)	6 (13%)	4	16
2	E	45/47 (96%)	38 (84%)	7 (16%)	2	11
All	All	846/979 (86%)	767 (91%)	79 (9%)	9	32

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	ASP
1	A	28	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	34	ARG
1	A	35	LEU
1	A	39	LEU
1	A	43	VAL
1	A	87	GLU
1	A	114	GLN
1	A	148	LYS
1	A	164	GLU
1	A	168	MET
1	A	171	GLU
1	A	197	GLN
1	A	198	ASP
1	A	208	LYS
1	A	210	LEU
1	A	217	THR
1	A	226	GLN
1	A	262	MET
1	A	268	LEU
1	B	13	THR
1	B	15	SER
1	B	18	GLU
1	B	30	ASP
1	B	35	LEU
1	B	58	THR
1	B	67	LEU
1	B	77	LEU
1	B	84	MET
1	B	85	MET
1	B	87	GLU
1	B	120	LYS
1	B	122	ILE
1	B	133	GLU
1	B	146	LYS
1	B	151	GLU
1	B	166	LEU
1	B	188	LEU
1	B	222	GLU
1	B	262	MET
1	B	268	LEU
1	C	14	ASP
1	C	44	GLN
1	C	63	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	66	GLN
1	C	73	GLN
1	C	85	MET
1	C	86	THR
1	C	87	GLU
1	C	93	GLU
1	C	101	SER
1	C	123	MET
1	C	146	LYS
1	C	148	LYS
1	C	159	LEU
1	C	165	ARG
1	C	171	GLU
1	C	191	LYS
1	C	196	ARG
1	C	198	ASP
1	C	226	GLN
1	C	237	LYS
1	C	263	HIS
1	C	268	LEU
1	C	298	GLN
1	C	300	GLU
2	D	387	VAL
2	D	394	ASP
2	D	400	GLU
2	D	429	GLN
2	D	436	ASN
2	D	438	VAL
2	E	387	VAL
2	E	396	GLN
2	E	399	ASP
2	E	400	GLU
2	E	414	GLU
2	E	427	SER
2	E	438	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	37	ASN
1	A	55	GLN
1	A	96	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	114	GLN
1	A	173	ASN
1	A	219	GLN
1	B	44	GLN
1	B	55	GLN
1	B	96	GLN
1	B	140	GLN
1	B	233	GLN
1	B	278	GLN
1	C	73	GLN
1	C	95	HIS
1	C	173	ASN
1	C	184	GLN
1	C	185	GLN
1	C	200	GLN
1	C	226	GLN
1	C	258	ASN
2	D	436	ASN
2	E	396	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues (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	291/337 (86%)	0.56	8 (2%)	54	57	87, 102, 115, 127	0
1	B	274/337 (81%)	0.58	13 (4%)	31	34	87, 102, 120, 136	0
1	C	291/337 (86%)	0.76	37 (12%)	3	4	86, 103, 121, 124	0
2	D	56/60 (93%)	0.95	6 (10%)	6	7	96, 102, 111, 116	0
2	E	56/60 (93%)	2.77	37 (66%)	0	0	92, 102, 108, 113	0
All	All	968/1131 (85%)	0.78	101 (10%)	6	7	86, 102, 119, 136	0

All (101) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	193	ASP	6.4
2	E	437	TYR	6.4
1	B	189	VAL	6.0
1	A	298	GLN	5.8
2	E	391	TYR	5.8
2	E	419	GLY	5.6
2	E	436	ASN	5.6
2	E	390	LEU	5.6
1	C	73	GLN	5.3
1	C	74	TYR	5.0
1	A	299	PHE	5.0
2	E	403	PHE	4.9
1	B	191	LYS	4.8
2	E	393	TYR	4.7
2	D	409	LEU	4.7
1	B	190	ASP	4.6
2	E	387	VAL	4.5
2	E	389	ALA	4.5
2	E	409	LEU	4.4
1	B	13	THR	4.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	176	THR	4.1
2	E	392	ASP	4.1
1	C	57	LEU	4.0
1	B	143	TRP	3.9
1	C	72	PRO	3.9
1	C	81	TRP	3.8
2	E	401	LEU	3.8
1	B	192	VAL	3.8
2	E	420	TRP	3.8
1	B	166	LEU	3.8
1	C	85	MET	3.7
2	E	433	TYR	3.7
2	E	438	VAL	3.6
2	E	425	LEU	3.6
2	E	427	SER	3.6
2	E	400	GLU	3.6
2	E	402	SER	3.5
2	E	408	GLU	3.5
2	E	410	THR	3.3
2	E	424	ARG	3.3
2	E	423	GLY	3.3
2	E	386	ARG	3.3
1	C	283	TRP	3.1
1	C	182	PRO	3.1
2	E	385	VAL	3.1
1	C	80	ALA	3.1
1	C	178	GLN	3.1
1	B	194	LYS	3.0
2	E	418	GLN	3.0
1	C	43	VAL	3.0
1	C	293	PRO	2.9
1	C	261	TYR	2.9
1	C	302	TRP	2.9
1	C	186	LYS	2.9
1	A	300	GLU	2.9
1	C	39	LEU	2.9
2	E	396	GLN	2.9
1	C	253	LEU	2.8
2	E	432	LEU	2.8
2	D	387	VAL	2.8
1	A	301	GLU	2.8
2	E	394	ASP	2.8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	249	ILE	2.7
1	C	268	LEU	2.7
1	C	68	ILE	2.7
1	C	258	ASN	2.6
1	C	255	LEU	2.6
1	C	103	LEU	2.6
2	E	429	GLN	2.6
1	A	182	PRO	2.6
2	E	413	GLY	2.5
1	C	257	GLU	2.5
2	E	421	CYS	2.5
1	C	78	GLU	2.5
1	A	115	LYS	2.5
1	B	16	PHE	2.5
1	C	284	PHE	2.4
1	C	67	LEU	2.4
1	B	25	THR	2.4
1	C	187	LYS	2.4
1	C	280	ASP	2.3
2	E	422	ARG	2.3
2	E	439	GLU	2.3
1	C	246	LEU	2.2
1	C	188	LEU	2.2
2	E	431	GLY	2.2
2	E	434	PRO	2.2
2	D	427	SER	2.1
2	E	426	ASP	2.1
1	B	17	TRP	2.1
1	C	287	THR	2.1
1	C	183	GLU	2.1
1	C	84	MET	2.1
2	D	408	GLU	2.1
2	D	403	PHE	2.1
1	B	147	MET	2.1
2	D	433	TYR	2.1
1	A	296	TRP	2.0
1	C	298	GLN	2.0
1	C	272	ILE	2.0
1	C	281	LEU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.