



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 3, 2024 – 11:32 AM EST

PDB ID : 1JHN  
Title : Crystal Structure of the Luminal Domain of Calnexin  
Authors : Schrag, J.D.; Bergeron, J.M.; Li, Y.; Borisova, S.; Hahn, M.; Thomas, D.Y.;  
Cygler, M.  
Deposited on : 2001-06-28  
Resolution : 2.90 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](mailto: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>.

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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 : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

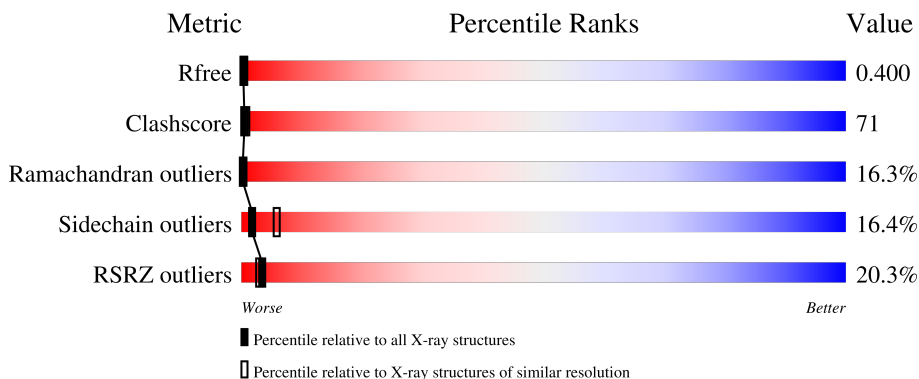
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.90 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	2335 (2.90-2.90)
Clashscore	180529	2564 (2.90-2.90)
Ramachandran outliers	177936	2514 (2.90-2.90)
Sidechain outliers	177891	2516 (2.90-2.90)
RSRZ outliers	164620	2337 (2.90-2.90)

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  $\geq 3$ , 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	424	

## 2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 2854 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 calnexin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	380	2853	1819	466	555	13	0	0	0

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Ca	0	0
			1	1		



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	85.77Å 85.77Å 143.48Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	33.80 – 2.90 33.80 – 2.91	Depositor EDS
% Data completeness (in resolution range)	(Not available) (33.80-2.90) 99.5 (33.80-2.91)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	0.05	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	5.15 (at 2.90Å)	Xtrriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.327 , 0.377 0.342 , 0.400	Depositor DCC
$R_{free}$ test set	590 reflections (4.79%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	73.3	Xtrriage
Anisotropy	0.388	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.28 , 76.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.85	EDS
Total number of atoms	2854	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	60.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.13% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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](#)

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

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	0.54	0/2948	0.75	0/4046

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	2853	0	2454	374	0
2	A	1	0	0	0	0
All	All	2854	0	2454	374	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 71.

All (374) 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:LYS:HE3	1:A:384:TRP:HB2	1.36	1.07
1:A:123:LEU:HD12	1:A:124:MET:H	1.26	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:172:THR:OG1	1:A:173:PRO:HD2	1.63	0.97
1:A:248:SER:HA	1:A:262:ASN:HA	1.47	0.96
1:A:159:ILE:HD11	1:A:231:PHE:HB3	1.47	0.93
1:A:154:ASN:C	1:A:154:ASN:HD22	1.75	0.91
1:A:347:MET:C	1:A:349:GLY:H	1.74	0.91
1:A:276:GLU:HG2	1:A:277:ILE:H	1.38	0.88
1:A:201:LEU:HD21	1:A:251:ILE:HG21	1.56	0.88
1:A:84:TRP:HB3	1:A:132:ILE:HD11	1.53	0.88
1:A:164:ALA:HA	1:A:427:LEU:HD13	1.56	0.85
1:A:71:TYR:N	1:A:137:ASN:HD21	1.76	0.84
1:A:181:HIS:NE2	1:A:183:LYS:HB2	1.92	0.84
1:A:391:ASN:O	1:A:393:ASN:N	2.10	0.84
1:A:173:PRO:HG2	1:A:174:GLU:H	1.44	0.83
1:A:233:ASP:O	1:A:235:LYS:N	2.12	0.82
1:A:71:TYR:H	1:A:137:ASN:HD21	1.26	0.82
1:A:332:VAL:HG13	1:A:358:ASN:HB2	1.61	0.81
1:A:148:ILE:HG13	1:A:242:ILE:HG23	1.63	0.81
1:A:167:LYS:HD2	1:A:186:TYR:CD2	2.15	0.80
1:A:154:ASN:HB2	1:A:236:THR:HA	1.64	0.80
1:A:250:GLU:HB2	1:A:257:ILE:HG23	1.64	0.79
1:A:147:LEU:C	1:A:148:ILE:HD12	2.03	0.79
1:A:242:ILE:HD12	1:A:242:ILE:N	1.99	0.78
1:A:153:VAL:HA	1:A:435:PHE:O	1.83	0.77
1:A:295:PRO:HA	1:A:388:MET:HE2	1.67	0.76
1:A:107:VAL:O	1:A:107:VAL:HG12	1.86	0.76
1:A:412:LEU:C	1:A:414:PRO:HD3	2.04	0.76
1:A:153:VAL:HG12	1:A:239:TYR:CE1	2.20	0.76
1:A:81:LEU:H	1:A:81:LEU:HD23	1.50	0.75
1:A:149:VAL:HG13	1:A:241:LEU:HB3	1.68	0.75
1:A:275:ARG:HH11	1:A:275:ARG:HA	1.51	0.75
1:A:87:SER:O	1:A:88:LYS:HD3	1.87	0.74
1:A:105:TRP:CE3	1:A:121:LEU:HD21	2.22	0.74
1:A:323:GLY:O	1:A:365:PRO:HD2	1.88	0.74
1:A:127:ALA:O	1:A:128:LYS:HB2	1.88	0.73
1:A:201:LEU:HD21	1:A:251:ILE:CG2	2.19	0.72
1:A:390:ASP:O	1:A:392:PRO:HD3	1.89	0.72
1:A:209:ASN:HB3	1:A:214:VAL:N	2.04	0.72
1:A:153:VAL:HG12	1:A:239:TYR:HE1	1.53	0.72
1:A:64:PRO:HG3	1:A:454:ASP:C	2.10	0.72
1:A:148:ILE:HB	1:A:442:CYS:O	1.91	0.70
1:A:123:LEU:HD12	1:A:124:MET:N	2.04	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:75:SER:HB3	1:A:451:TRP:HH2	1.57	0.69
1:A:80:THR:C	1:A:82:SER:H	1.94	0.69
1:A:423:ILE:HG23	1:A:423:ILE:O	1.90	0.69
1:A:294:ILE:HB	1:A:295:PRO:HD2	1.75	0.69
1:A:274:SER:O	1:A:275:ARG:HD2	1.91	0.69
1:A:181:HIS:CE1	1:A:183:LYS:H	2.10	0.68
1:A:154:ASN:C	1:A:154:ASN:ND2	2.46	0.68
1:A:154:ASN:ND2	1:A:154:ASN:O	2.26	0.68
1:A:84:TRP:HB3	1:A:132:ILE:CD1	2.21	0.67
1:A:276:GLU:HG2	1:A:277:ILE:N	2.08	0.67
1:A:347:MET:C	1:A:349:GLY:N	2.40	0.67
1:A:399:LYS:HE2	1:A:400:PRO:HD2	1.76	0.67
1:A:242:ILE:HD12	1:A:242:ILE:H	1.57	0.67
1:A:177:LEU:O	1:A:180:PHE:N	2.28	0.67
1:A:208:LYS:O	1:A:210:PRO:HD3	1.94	0.67
1:A:340:PRO:C	1:A:342:ASP:H	1.97	0.67
1:A:68:GLY:H	1:A:447:VAL:HG13	1.61	0.66
1:A:255:GLN:HE21	1:A:255:GLN:N	1.93	0.66
1:A:203:PHE:CD1	1:A:203:PHE:C	2.65	0.66
1:A:154:ASN:OD1	1:A:236:THR:N	2.29	0.66
1:A:209:ASN:HB3	1:A:214:VAL:H	1.61	0.66
1:A:405:ASN:ND2	1:A:408:PHE:HA	2.11	0.66
1:A:161:CYS:CB	1:A:195:CYS:HG	2.09	0.65
1:A:136:LEU:HG	1:A:421:SER:C	2.16	0.65
1:A:328:GLU:OE1	1:A:360:LYS:HD2	1.95	0.65
1:A:412:LEU:O	1:A:414:PRO:HD3	1.97	0.65
1:A:86:LEU:HD12	1:A:131:ALA:CB	2.27	0.64
1:A:250:GLU:HA	1:A:259:ASN:O	1.97	0.64
1:A:182:ASP:OD2	1:A:183:LYS:HD3	1.98	0.64
1:A:75:SER:HB3	1:A:451:TRP:CH2	2.33	0.64
1:A:252:LEU:HA	1:A:257:ILE:HA	1.80	0.64
1:A:203:PHE:C	1:A:203:PHE:HD1	2.00	0.64
1:A:160:GLU:HB2	1:A:430:MET:HG2	1.80	0.63
1:A:330:GLU:HG3	1:A:331:TYR:CD1	2.34	0.63
1:A:384:TRP:HA	1:A:384:TRP:CE3	2.32	0.63
1:A:87:SER:H	1:A:131:ALA:HB1	1.63	0.63
1:A:154:ASN:O	1:A:156:GLN:N	2.32	0.63
1:A:224:ASP:O	1:A:225:ALA:HB2	1.97	0.63
1:A:377:ASN:C	1:A:377:ASN:OD1	2.37	0.63
1:A:177:LEU:O	1:A:179:GLN:N	2.32	0.63
1:A:179:GLN:O	1:A:181:HIS:N	2.31	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:84:TRP:HE3	1:A:132:ILE:HG13	1.65	0.62
1:A:384:TRP:HA	1:A:384:TRP:HE3	1.64	0.62
1:A:223:PRO:HG3	1:A:259:ASN:HD22	1.63	0.62
1:A:148:ILE:HG21	1:A:448:VAL:HG21	1.80	0.61
1:A:150:GLN:HG3	1:A:239:TYR:O	2.00	0.61
1:A:175:LEU:H	1:A:175:LEU:HD23	1.65	0.61
1:A:394:TYR:CG	1:A:394:TYR:O	2.52	0.61
1:A:161:CYS:HG	1:A:195:CYS:HG	0.62	0.61
1:A:206:ARG:HA	1:A:217:GLU:HA	1.81	0.61
1:A:250:GLU:HB2	1:A:257:ILE:CG2	2.29	0.61
1:A:339:LYS:HB3	1:A:351:TRP:CG	2.36	0.61
1:A:136:LEU:HG	1:A:421:SER:O	2.01	0.61
1:A:375:ILE:HG13	1:A:376:ASP:O	2.00	0.61
1:A:394:TYR:O	1:A:394:TYR:CD2	2.54	0.61
1:A:173:PRO:HG2	1:A:174:GLU:N	2.16	0.60
1:A:161:CYS:HA	1:A:195:CYS:HA	1.81	0.60
1:A:285:PRO:HG2	1:A:288:TRP:HB2	1.84	0.60
1:A:209:ASN:O	1:A:213:GLY:HA2	2.02	0.60
1:A:147:LEU:HD12	1:A:148:ILE:H	1.66	0.60
1:A:223:PRO:HB3	1:A:259:ASN:HB2	1.83	0.60
1:A:143:ASP:CG	1:A:144:THR:H	2.04	0.60
1:A:162:GLY:HA3	1:A:429:SER:HA	1.84	0.60
1:A:250:GLU:HA	1:A:260:SER:HA	1.85	0.59
1:A:391:ASN:O	1:A:394:TYR:N	2.35	0.59
1:A:136:LEU:HD11	1:A:420:PHE:CD2	2.38	0.59
1:A:136:LEU:HD11	1:A:420:PHE:CE2	2.38	0.59
1:A:161:CYS:HB2	1:A:195:CYS:SG	2.43	0.59
1:A:172:THR:CB	1:A:173:PRO:HD2	2.31	0.59
1:A:253:VAL:O	1:A:254:ASP:HB2	2.03	0.59
1:A:157:ASN:O	1:A:158:GLY:O	2.21	0.59
1:A:147:LEU:HD12	1:A:148:ILE:N	2.18	0.58
1:A:179:GLN:O	1:A:179:GLN:NE2	2.36	0.58
1:A:398:TRP:O	1:A:399:LYS:HG2	2.02	0.58
1:A:395:GLN:O	1:A:396:GLY:O	2.20	0.58
1:A:68:GLY:O	1:A:447:VAL:HG11	2.03	0.58
1:A:129:HIS:O	1:A:131:ALA:N	2.36	0.58
1:A:238:LEU:HD23	1:A:254:ASP:H	1.68	0.58
1:A:229:THR:O	1:A:233:ASP:OD2	2.22	0.58
1:A:169:LEU:HD13	1:A:169:LEU:H	1.69	0.58
1:A:72:PHE:O	1:A:441:VAL:N	2.36	0.57
1:A:246:ASP:O	1:A:247:ASN:HB2	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:71:TYR:HB3	1:A:441:VAL:O	2.04	0.57
1:A:181:HIS:CG	1:A:182:ASP:N	2.73	0.57
1:A:394:TYR:CZ	1:A:396:GLY:HA2	2.40	0.57
1:A:291:ARG:NH2	1:A:294:ILE:HG21	2.20	0.57
1:A:84:TRP:CE3	1:A:132:ILE:HG13	2.40	0.57
1:A:202:HIS:HB3	1:A:204:ILE:CD1	2.34	0.57
1:A:217:GLU:O	1:A:217:GLU:HG3	2.05	0.56
1:A:391:ASN:C	1:A:393:ASN:H	2.08	0.56
1:A:175:LEU:O	1:A:177:LEU:N	2.38	0.56
1:A:169:LEU:O	1:A:420:PHE:HB2	2.06	0.56
1:A:410:GLU:CD	1:A:411:ASP:H	2.09	0.56
1:A:175:LEU:HD23	1:A:175:LEU:N	2.21	0.56
1:A:86:LEU:HD12	1:A:131:ALA:HB1	1.88	0.56
1:A:73:ALA:HA	1:A:439:PHE:O	2.06	0.55
1:A:148:ILE:HD12	1:A:148:ILE:N	2.21	0.55
1:A:161:CYS:O	1:A:430:MET:HB2	2.06	0.55
1:A:126:ARG:HD3	1:A:126:ARG:O	2.07	0.55
1:A:161:CYS:CB	1:A:195:CYS:SG	2.94	0.55
1:A:279:ASP:C	1:A:281:GLU:H	2.09	0.55
1:A:84:TRP:CB	1:A:132:ILE:HD11	2.29	0.55
1:A:387:PRO:O	1:A:388:MET:HE2	2.07	0.55
1:A:69:GLU:HG3	1:A:70:VAL:H	1.71	0.55
1:A:356:ILE:O	1:A:357:ALA:HB2	2.06	0.55
1:A:111:LYS:O	1:A:112:GLU:C	2.45	0.55
1:A:124:MET:O	1:A:125:SER:OG	2.21	0.55
1:A:398:TRP:C	1:A:399:LYS:HG2	2.28	0.55
1:A:181:HIS:ND1	1:A:182:ASP:N	2.50	0.55
1:A:78:ARG:H	1:A:78:ARG:HD3	1.72	0.54
1:A:159:ILE:HD11	1:A:231:PHE:CB	2.29	0.54
1:A:105:TRP:HE3	1:A:121:LEU:HD21	1.71	0.54
1:A:126:ARG:O	1:A:126:ARG:CZ	2.55	0.54
1:A:199:TYR:CD1	1:A:228:LYS:HA	2.42	0.54
1:A:317:GLU:OE1	1:A:317:GLU:HA	2.06	0.54
1:A:140:PHE:CD1	1:A:140:PHE:C	2.80	0.54
1:A:276:GLU:CG	1:A:277:ILE:N	2.70	0.54
1:A:413:GLU:O	1:A:415:PHE:N	2.40	0.54
1:A:190:PHE:CZ	1:A:241:LEU:HB2	2.43	0.53
1:A:273:PRO:HG3	1:A:411:ASP:CB	2.38	0.53
1:A:329:PRO:O	1:A:330:GLU:C	2.46	0.53
1:A:151:TYR:OH	1:A:165:TYR:HA	2.08	0.53
1:A:202:HIS:HB3	1:A:204:ILE:HD11	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:424:GLY:C	1:A:425:LEU:HD12	2.29	0.53
1:A:128:LYS:C	1:A:130:HIS:H	2.11	0.53
1:A:131:ALA:O	1:A:132:ILE:O	2.27	0.53
1:A:255:GLN:N	1:A:255:GLN:NE2	2.57	0.53
1:A:347:MET:C	1:A:347:MET:SD	2.88	0.52
1:A:76:PHE:HA	1:A:78:ARG:HE	1.73	0.52
1:A:282:ASP:OD1	1:A:283:GLN:N	2.42	0.52
1:A:291:ARG:HH21	1:A:294:ILE:HG21	1.72	0.52
1:A:182:ASP:HB2	1:A:426:GLU:OE2	2.09	0.52
1:A:181:HIS:CD2	1:A:183:LYS:H	2.27	0.52
1:A:169:LEU:HD13	1:A:169:LEU:N	2.25	0.52
1:A:414:PRO:O	1:A:416:LYS:N	2.43	0.52
1:A:233:ASP:CG	1:A:237:HIS:HE2	2.14	0.51
1:A:276:GLU:HA	1:A:405:ASN:HB2	1.91	0.51
1:A:204:ILE:N	1:A:204:ILE:HD12	2.25	0.51
1:A:272:ASN:N	1:A:272:ASN:OD1	2.44	0.51
1:A:399:LYS:HE2	1:A:399:LYS:HA	1.91	0.51
1:A:71:TYR:CB	1:A:441:VAL:O	2.59	0.51
1:A:80:THR:C	1:A:82:SER:N	2.63	0.51
1:A:105:TRP:HZ2	1:A:129:HIS:O	1.93	0.51
1:A:423:ILE:O	1:A:423:ILE:CG2	2.58	0.51
1:A:224:ASP:O	1:A:225:ALA:CB	2.59	0.51
1:A:70:VAL:HB	1:A:137:ASN:ND2	2.26	0.51
1:A:203:PHE:HD1	1:A:204:ILE:N	2.09	0.51
1:A:315:ASP:HB2	1:A:375:ILE:HG23	1.93	0.51
1:A:74:ASP:OD1	1:A:74:ASP:C	2.49	0.51
1:A:126:ARG:NH1	1:A:428:TRP:CH2	2.79	0.51
1:A:208:LYS:O	1:A:210:PRO:CD	2.59	0.50
1:A:153:VAL:HG11	1:A:192:PRO:HG3	1.93	0.50
1:A:215:TYR:OH	1:A:418:THR:HG21	2.10	0.50
1:A:126:ARG:O	1:A:126:ARG:CD	2.59	0.50
1:A:340:PRO:C	1:A:342:ASP:N	2.63	0.50
1:A:450:ASP:O	1:A:452:ALA:N	2.44	0.50
1:A:290:GLU:OE2	1:A:397:ILE:HD12	2.12	0.50
1:A:442:CYS:HB3	1:A:448:VAL:CG2	2.41	0.50
1:A:281:GLU:OE1	1:A:281:GLU:HA	2.12	0.50
1:A:242:ILE:N	1:A:242:ILE:CD1	2.65	0.50
1:A:332:VAL:HG22	1:A:358:ASN:N	2.26	0.50
1:A:107:VAL:HA	1:A:120:GLY:O	2.12	0.49
1:A:248:SER:CA	1:A:262:ASN:HA	2.30	0.49
1:A:325:LEU:CB	1:A:328:GLU:HB2	2.42	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:73:ALA:HA	1:A:440:ILE:HA	1.94	0.49
1:A:275:ARG:HH11	1:A:275:ARG:CA	2.22	0.49
1:A:450:ASP:C	1:A:452:ALA:N	2.65	0.49
1:A:71:TYR:N	1:A:137:ASN:ND2	2.52	0.49
1:A:71:TYR:O	1:A:72:PHE:HB2	2.13	0.49
1:A:223:PRO:HB3	1:A:258:VAL:O	2.11	0.49
1:A:278:GLU:O	1:A:280:PRO:HD3	2.12	0.49
1:A:406:PRO:C	1:A:408:PHE:H	2.15	0.49
1:A:150:GLN:NE2	1:A:238:LEU:HD11	2.28	0.49
1:A:209:ASN:OD1	1:A:212:THR:N	2.46	0.49
1:A:227:LEU:O	1:A:228:LYS:C	2.50	0.49
1:A:126:ARG:O	1:A:126:ARG:NE	2.46	0.49
1:A:201:LEU:O	1:A:201:LEU:HG	2.12	0.48
1:A:393:ASN:N	1:A:393:ASN:ND2	2.61	0.48
1:A:250:GLU:OE1	1:A:250:GLU:N	2.47	0.48
1:A:107:VAL:O	1:A:107:VAL:CG1	2.56	0.48
1:A:250:GLU:N	1:A:250:GLU:CD	2.66	0.48
1:A:343:TRP:CZ2	1:A:351:TRP:N	2.81	0.48
1:A:64:PRO:HG3	1:A:454:ASP:O	2.13	0.48
1:A:251:ILE:O	1:A:253:VAL:HG23	2.13	0.48
1:A:303:ASP:N	1:A:303:ASP:OD1	2.46	0.48
1:A:169:LEU:N	1:A:169:LEU:CD1	2.77	0.48
1:A:346:ASP:C	1:A:347:MET:HG3	2.34	0.48
1:A:272:ASN:CG	1:A:273:PRO:HD2	2.34	0.48
1:A:127:ALA:O	1:A:428:TRP:HZ3	1.96	0.48
1:A:320:LYS:HD2	1:A:370:TRP:HB2	1.96	0.47
1:A:325:LEU:HB3	1:A:328:GLU:HB2	1.95	0.47
1:A:339:LYS:HB3	1:A:351:TRP:CD2	2.49	0.47
1:A:133:SER:HA	1:A:424:GLY:HA2	1.96	0.47
1:A:150:GLN:CD	1:A:238:LEU:HD11	2.34	0.47
1:A:86:LEU:HG	1:A:87:SER:O	2.14	0.47
1:A:442:CYS:SG	1:A:443:GLY:N	2.87	0.47
1:A:153:VAL:HG22	1:A:154:ASN:N	2.29	0.47
1:A:279:ASP:C	1:A:281:GLU:N	2.67	0.47
1:A:203:PHE:CD2	1:A:241:LEU:HD21	2.50	0.47
1:A:328:GLU:OE1	1:A:358:ASN:ND2	2.39	0.47
1:A:181:HIS:NE2	1:A:183:LYS:CB	2.72	0.47
1:A:276:GLU:CG	1:A:277:ILE:H	2.07	0.47
1:A:447:VAL:O	1:A:450:ASP:OD1	2.33	0.47
1:A:170:SER:HA	1:A:420:PHE:HA	1.96	0.47
1:A:393:ASN:O	1:A:395:GLN:N	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:384:TRP:O	1:A:386:PRO:HD3	2.16	0.46
1:A:80:THR:CB	1:A:82:SER:OG	2.63	0.46
1:A:414:PRO:C	1:A:416:LYS:N	2.67	0.46
1:A:62:LYS:HD3	1:A:117:GLY:HA3	1.98	0.46
1:A:377:ASN:OD1	1:A:379:ASN:N	2.48	0.46
1:A:63:ALA:N	1:A:64:PRO:HD2	2.31	0.46
1:A:148:ILE:HD13	1:A:443:GLY:C	2.36	0.46
1:A:153:VAL:HG22	1:A:154:ASN:H	1.80	0.46
1:A:189:MET:HG2	1:A:190:PHE:N	2.31	0.46
1:A:344:ASP:O	1:A:346:ASP:N	2.48	0.46
1:A:395:GLN:H	1:A:395:GLN:HG2	1.52	0.46
1:A:173:PRO:CG	1:A:174:GLU:N	2.77	0.46
1:A:121:LEU:HD23	1:A:122:VAL:N	2.30	0.46
1:A:245:PRO:HA	1:A:415:PHE:CG	2.51	0.46
1:A:209:ASN:OD1	1:A:211:LYS:N	2.46	0.45
1:A:121:LEU:HD23	1:A:121:LEU:C	2.36	0.45
1:A:161:CYS:O	1:A:161:CYS:SG	2.74	0.45
1:A:391:ASN:C	1:A:393:ASN:N	2.69	0.45
1:A:233:ASP:O	1:A:234:LYS:C	2.53	0.45
1:A:244:ASN:C	1:A:246:ASP:N	2.70	0.45
1:A:63:ALA:HB3	1:A:64:PRO:CD	2.46	0.45
1:A:246:ASP:O	1:A:247:ASN:CB	2.64	0.45
1:A:255:GLN:NE2	1:A:456:TRP:CZ3	2.85	0.45
1:A:410:GLU:CD	1:A:411:ASP:N	2.70	0.45
1:A:244:ASN:C	1:A:246:ASP:H	2.20	0.45
1:A:320:LYS:O	1:A:321:PRO:O	2.34	0.45
1:A:169:LEU:HB2	1:A:422:ALA:HB3	1.99	0.45
1:A:257:ILE:O	1:A:257:ILE:HG22	2.17	0.45
1:A:345:GLU:O	1:A:347:MET:N	2.50	0.45
1:A:177:LEU:O	1:A:178:ASP:C	2.55	0.44
1:A:295:PRO:HA	1:A:387:PRO:O	2.17	0.44
1:A:313:ILE:HD11	1:A:378:PRO:HD2	1.98	0.44
1:A:324:TRP:CE3	1:A:366:GLY:HA3	2.53	0.44
1:A:393:ASN:N	1:A:393:ASN:HD22	2.16	0.44
1:A:112:GLU:O	1:A:113:THR:O	2.35	0.44
1:A:334:ASP:OD1	1:A:335:PRO:N	2.51	0.44
1:A:105:TRP:HE3	1:A:121:LEU:CD2	2.30	0.44
1:A:166:VAL:CG1	1:A:167:LYS:N	2.80	0.44
1:A:70:VAL:C	1:A:72:PHE:H	2.19	0.44
1:A:343:TRP:HE1	1:A:345:GLU:HA	1.83	0.44
1:A:255:GLN:NE2	1:A:255:GLN:CA	2.80	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:SER:H	1:A:186:TYR:HA	1.83	0.44
1:A:344:ASP:O	1:A:345:GLU:C	2.55	0.44
1:A:87:SER:H	1:A:131:ALA:CB	2.31	0.44
1:A:165:TYR:CD1	1:A:165:TYR:N	2.80	0.44
1:A:288:TRP:NE1	1:A:398:TRP:HB2	2.33	0.44
1:A:412:LEU:HD12	1:A:414:PRO:CD	2.48	0.44
1:A:276:GLU:HG2	1:A:277:ILE:O	2.18	0.43
1:A:217:GLU:O	1:A:217:GLU:CG	2.66	0.43
1:A:323:GLY:CA	1:A:365:PRO:HG2	2.48	0.43
1:A:377:ASN:OD1	1:A:378:PRO:N	2.51	0.43
1:A:412:LEU:HB2	1:A:413:GLU:H	1.53	0.43
1:A:412:LEU:CD1	1:A:414:PRO:N	2.81	0.43
1:A:414:PRO:C	1:A:416:LYS:H	2.20	0.43
1:A:432:SER:OG	1:A:433:ASP:N	2.50	0.43
1:A:78:ARG:HG2	1:A:80:THR:H	1.84	0.43
1:A:158:GLY:O	1:A:431:THR:HG21	2.19	0.43
1:A:399:LYS:HE2	1:A:400:PRO:CD	2.45	0.43
1:A:238:LEU:HG	1:A:239:TYR:N	2.33	0.43
1:A:62:LYS:CD	1:A:117:GLY:HA3	2.48	0.43
1:A:434:ILE:HG22	1:A:436:PHE:CE1	2.54	0.43
1:A:72:PHE:C	1:A:72:PHE:CD1	2.91	0.43
1:A:84:TRP:O	1:A:85:ILE:HD13	2.18	0.43
1:A:324:TRP:CZ3	1:A:366:GLY:HA3	2.54	0.43
1:A:444:ASP:OD1	1:A:447:VAL:N	2.41	0.43
1:A:143:ASP:CG	1:A:144:THR:N	2.72	0.42
1:A:399:LYS:HA	1:A:399:LYS:CE	2.48	0.42
1:A:233:ASP:C	1:A:235:LYS:N	2.71	0.42
1:A:345:GLU:C	1:A:347:MET:N	2.72	0.42
1:A:392:PRO:HB2	1:A:393:ASN:ND2	2.34	0.42
1:A:438:ASN:HA	1:A:451:TRP:HZ2	1.84	0.42
1:A:140:PHE:O	1:A:140:PHE:HD1	2.02	0.42
1:A:162:GLY:O	1:A:193:ASP:OD1	2.37	0.42
1:A:181:HIS:CG	1:A:182:ASP:H	2.31	0.42
1:A:255:GLN:NE2	1:A:456:TRP:HZ3	2.17	0.42
1:A:259:ASN:OD1	1:A:260:SER:N	2.53	0.42
1:A:150:GLN:HB2	1:A:240:THR:HA	2.00	0.42
1:A:309:ALA:HA	1:A:310:PRO:HD3	1.85	0.42
1:A:322:ASP:C	1:A:324:TRP:H	2.23	0.42
1:A:361:CYS:O	1:A:364:ALA:N	2.51	0.42
1:A:232:THR:C	1:A:234:LYS:H	2.23	0.42
1:A:278:GLU:CB	1:A:400:PRO:HB2	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:346:ASP:O	1:A:347:MET:CB	2.67	0.42
1:A:351:TRP:CG	1:A:352:GLU:N	2.87	0.42
1:A:428:TRP:CE3	1:A:428:TRP:HA	2.55	0.42
1:A:123:LEU:HD13	1:A:129:HIS:CB	2.50	0.42
1:A:355:GLN:HA	1:A:355:GLN:NE2	2.35	0.42
1:A:355:GLN:HA	1:A:355:GLN:HE21	1.85	0.42
1:A:209:ASN:O	1:A:213:GLY:CA	2.67	0.42
1:A:251:ILE:O	1:A:251:ILE:HG22	2.19	0.42
1:A:291:ARG:O	1:A:292:PRO:C	2.58	0.42
1:A:332:VAL:CG1	1:A:358:ASN:HB2	2.43	0.42
1:A:412:LEU:CD1	1:A:414:PRO:HA	2.50	0.42
1:A:291:ARG:HH21	1:A:294:ILE:CG2	2.33	0.41
1:A:334:ASP:HA	1:A:335:PRO:HD3	1.68	0.41
1:A:177:LEU:C	1:A:179:GLN:N	2.74	0.41
1:A:450:ASP:C	1:A:452:ALA:H	2.22	0.41
1:A:148:ILE:HD13	1:A:443:GLY:HA2	2.02	0.41
1:A:223:PRO:CG	1:A:259:ASN:HD22	2.32	0.41
1:A:301:LYS:HB2	1:A:384:TRP:CG	2.55	0.41
1:A:396:GLY:O	1:A:397:ILE:C	2.59	0.41
1:A:187:THR:HG22	1:A:188:ILE:HG13	2.03	0.41
1:A:298:ASP:OD1	1:A:298:ASP:N	2.52	0.41
1:A:328:GLU:HA	1:A:329:PRO:HD2	1.68	0.41
1:A:62:LYS:O	1:A:63:ALA:HB2	2.20	0.41
1:A:344:ASP:C	1:A:346:ASP:N	2.74	0.41
1:A:405:ASN:ND2	1:A:408:PHE:CA	2.81	0.41
1:A:159:ILE:HD12	1:A:159:ILE:O	2.20	0.41
1:A:209:ASN:C	1:A:211:LYS:H	2.24	0.41
1:A:227:LEU:O	1:A:230:TYR:HD2	2.03	0.41
1:A:272:ASN:CG	1:A:273:PRO:CD	2.89	0.41
1:A:328:GLU:HB3	1:A:367:CYS:SG	2.60	0.41
1:A:78:ARG:HG2	1:A:79:GLY:N	2.36	0.41
1:A:138:LYS:HA	1:A:139:PRO:HD3	1.97	0.41
1:A:279:ASP:O	1:A:281:GLU:N	2.54	0.41
1:A:330:GLU:HG3	1:A:331:TYR:CE1	2.55	0.41
1:A:364:ALA:HA	1:A:365:PRO:HD3	1.94	0.41
1:A:105:TRP:CE3	1:A:121:LEU:CD2	2.99	0.40
1:A:128:LYS:HG2	1:A:130:HIS:HB2	2.03	0.40
1:A:233:ASP:OD2	1:A:237:HIS:NE2	2.44	0.40
1:A:302:PRO:HG2	1:A:305:TRP:HB2	2.02	0.40
1:A:327:ASP:O	1:A:329:PRO:HD3	2.21	0.40
1:A:339:LYS:O	1:A:340:PRO:C	2.59	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:254:ASP:O	1:A:256:SER:N	2.50	0.40
1:A:346:ASP:O	1:A:347:MET:HB3	2.22	0.40
1:A:320:LYS:HE3	1:A:326:ASP:OD1	2.20	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	374/424 (88%)	237 (63%)	76 (20%)	61 (16%)	<b>0</b> <b>0</b>

All (61) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	63	ALA
1	A	64	PRO
1	A	89	ALA
1	A	113	THR
1	A	126	ARG
1	A	128	LYS
1	A	130	HIS
1	A	132	ILE
1	A	155	PHE
1	A	158	GLY
1	A	178	ASP
1	A	180	PHE
1	A	225	ALA
1	A	228	LYS
1	A	234	LYS
1	A	247	ASN
1	A	272	ASN
1	A	330	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	347	MET
1	A	357	ALA
1	A	392	PRO
1	A	396	GLY
1	A	404	PRO
1	A	412	LEU
1	A	414	PRO
1	A	62	LYS
1	A	70	VAL
1	A	72	PHE
1	A	114	LYS
1	A	125	SER
1	A	176	ASN
1	A	197	GLU
1	A	199	TYR
1	A	277	ILE
1	A	292	PRO
1	A	337	ALA
1	A	415	PHE
1	A	429	SER
1	A	129	HIS
1	A	173	PRO
1	A	257	ILE
1	A	346	ASP
1	A	394	TYR
1	A	451	TRP
1	A	455	GLY
1	A	131	ALA
1	A	136	LEU
1	A	154	ASN
1	A	321	PRO
1	A	351	TRP
1	A	402	LYS
1	A	430	MET
1	A	340	PRO
1	A	345	GLU
1	A	428	TRP
1	A	233	ASP
1	A	433	ASP
1	A	279	ASP
1	A	385	LYS
1	A	397	ILE

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Mol	Chain	Res	Type
1	A	329	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	275/375 (73%)	230 (84%)	45 (16%)	<b>2</b> <b>6</b>

All (45) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	61	TYR
1	A	64	PRO
1	A	71	TYR
1	A	78	ARG
1	A	82	SER
1	A	102	ASP
1	A	126	ARG
1	A	149	VAL
1	A	154	ASN
1	A	155	PHE
1	A	161	CYS
1	A	169	LEU
1	A	175	LEU
1	A	179	GLN
1	A	180	PHE
1	A	182	ASP
1	A	203	PHE
1	A	215	TYR
1	A	236	THR
1	A	238	LEU
1	A	242	ILE
1	A	250	GLU
1	A	255	GLN
1	A	272	ASN
1	A	274	SER

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Mol	Chain	Res	Type
1	A	275	ARG
1	A	287	ASP
1	A	298	ASP
1	A	304	ASP
1	A	317	GLU
1	A	319	THR
1	A	321	PRO
1	A	342	ASP
1	A	347	MET
1	A	348	ASP
1	A	384	TRP
1	A	392	PRO
1	A	393	ASN
1	A	404	PRO
1	A	412	LEU
1	A	414	PRO
1	A	423	ILE
1	A	428	TRP
1	A	449	ASP
1	A	458	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	130	HIS
1	A	137	ASN
1	A	207	HIS
1	A	255	GLN
1	A	355	GLN
1	A	371	GLN
1	A	393	ASN
1	A	395	GLN
1	A	405	ASN
1	A	438	ASN

### 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	380/424 (89%)	1.26	77 (20%) <b>3</b> <b>3</b>	23, 59, 89, 100	0

All (77) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	130	HIS	5.2
1	A	448	VAL	5.1
1	A	341	GLU	4.9
1	A	90	LYS	4.8
1	A	63	ALA	4.8
1	A	64	PRO	4.7
1	A	65	VAL	4.2
1	A	458	LEU	3.9
1	A	430	MET	3.9
1	A	152	GLU	3.8
1	A	287	ASP	3.7
1	A	272	ASN	3.6
1	A	262	ASN	3.6
1	A	451	TRP	3.6
1	A	114	LYS	3.4
1	A	325	LEU	3.4
1	A	435	PHE	3.3
1	A	413	GLU	3.2
1	A	260	SER	3.1
1	A	442	CYS	3.1
1	A	398	TRP	3.0
1	A	244	ASN	3.0
1	A	455	GLY	2.9
1	A	126	ARG	2.9
1	A	79	GLY	2.9
1	A	431	THR	2.8
1	A	68	GLY	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	125	SER	2.8
1	A	81	LEU	2.8
1	A	163	GLY	2.8
1	A	236	THR	2.7
1	A	229	THR	2.6
1	A	360	LYS	2.6
1	A	160	GLU	2.6
1	A	281	GLU	2.6
1	A	337	ALA	2.5
1	A	301	LYS	2.5
1	A	366	GLY	2.5
1	A	76	PHE	2.5
1	A	428	TRP	2.5
1	A	66	PRO	2.5
1	A	150	GLN	2.5
1	A	220	ALA	2.5
1	A	338	GLU	2.4
1	A	246	ASP	2.4
1	A	169	LEU	2.4
1	A	382	GLY	2.4
1	A	444	ASP	2.4
1	A	115	LEU	2.3
1	A	147	LEU	2.3
1	A	323	GLY	2.3
1	A	70	VAL	2.3
1	A	148	ILE	2.3
1	A	159	ILE	2.3
1	A	456	TRP	2.3
1	A	127	ALA	2.3
1	A	270	PRO	2.3
1	A	404	PRO	2.3
1	A	408	PHE	2.2
1	A	248	SER	2.2
1	A	429	SER	2.2
1	A	179	GLN	2.2
1	A	156	GLN	2.2
1	A	132	ILE	2.1
1	A	251	ILE	2.1
1	A	344	ASP	2.1
1	A	452	ALA	2.1
1	A	300	VAL	2.1
1	A	118	ASP	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	215	TYR	2.1
1	A	324	TRP	2.1
1	A	73	ALA	2.0
1	A	131	ALA	2.0
1	A	243	LEU	2.0
1	A	400	PRO	2.0
1	A	249	PHE	2.0
1	A	207	HIS	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

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, 95<sup>th</sup> 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.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	CA	A	900	1/1	0.92	0.08	70,70,70,70	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.