Full wwPDB X-ray Structure Validation Report ⓘ

Jun 23, 2024 – 01:24 AM EDT

PDB ID	:	6S62
Title	:	Crystal structure of 2-methylcitrate dehydratase (PrpD) from Pseudomonas aeruginosa in apo form.
Authors	:	Wijaya, A.J.; Brear, P.; Dolan, S.K.; Welch, M.
Deposited on	:	2019-07-02
Resolution	:	2.36 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:

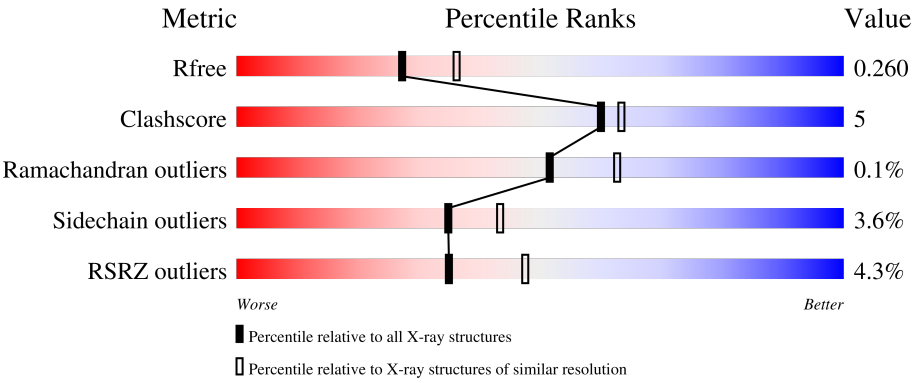
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.36 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	1164 (2.36-2.36)
Clashscore	141614	1232 (2.36-2.36)
Ramachandran outliers	138981	1211 (2.36-2.36)
Sidechain outliers	138945	1212 (2.36-2.36)
RSRZ outliers	127900	1150 (2.36-2.36)

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	494	7% 85% 12%
1	B	494	6% 81% 16%
1	C	494	87% 10%
1	D	494	% 86% 11%
1	E	494	3% 85% 13%

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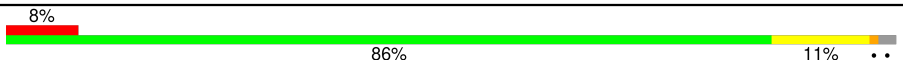
Mol	Chain	Length	Quality of chain
1	F	494	

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 22926 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 Propionate catabolic protein PrpD.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	485	Total	C	N	O	S	0	0	0
			3796	2400	685	693	18			
1	B	484	Total	C	N	O	S	0	0	0
			3786	2394	681	693	18			
1	C	483	Total	C	N	O	S	0	0	0
			3777	2388	680	691	18			
1	D	484	Total	C	N	O	S	0	0	0
			3780	2390	684	688	18			
1	E	485	Total	C	N	O	S	0	0	0
			3797	2400	685	694	18			
1	F	485	Total	C	N	O	S	0	0	0
			3797	2400	685	694	18			

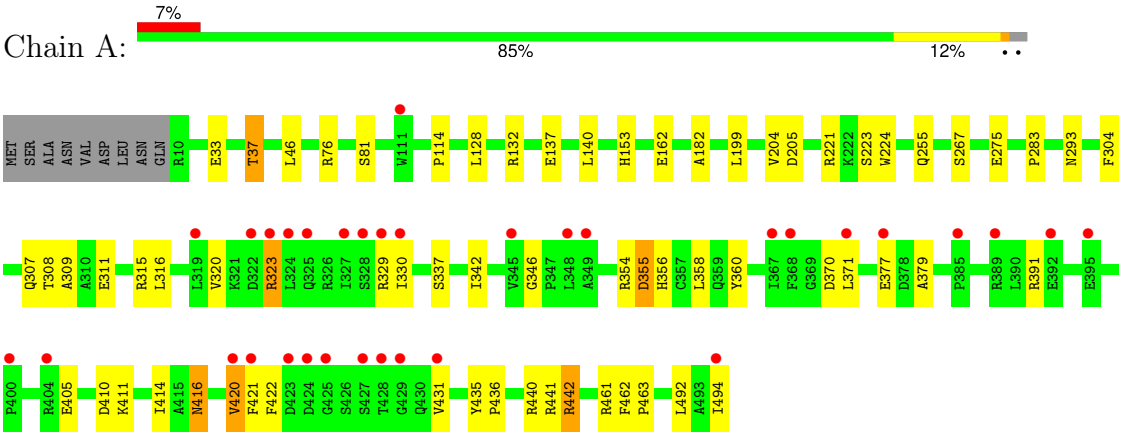
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	22	Total	O	0	0
			22	22		
2	B	41	Total	O	0	0
			41	41		
2	C	50	Total	O	0	0
			50	50		
2	D	33	Total	O	0	0
			33	33		
2	E	24	Total	O	0	0
			24	24		
2	F	23	Total	O	0	0
			23	23		

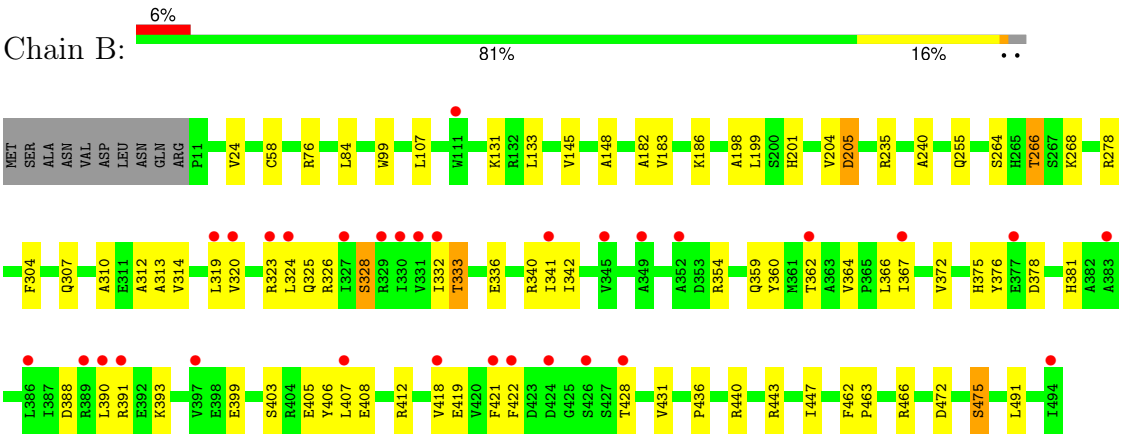
3 Residue-property plots (i)

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.

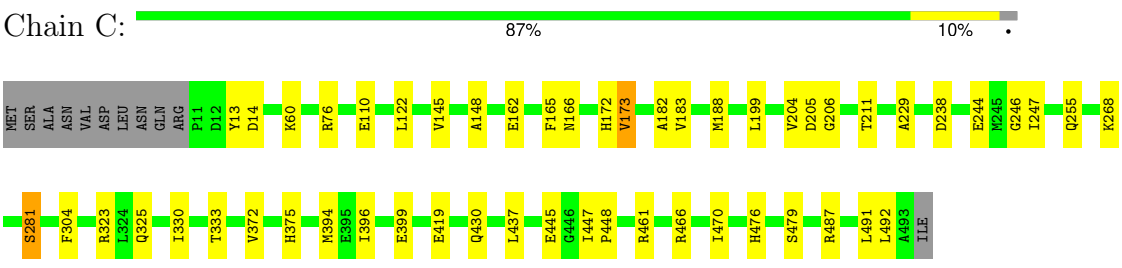
• Molecule 1: Propionate catabolic protein PrpD



• Molecule 1: Propionate catabolic protein PrpD

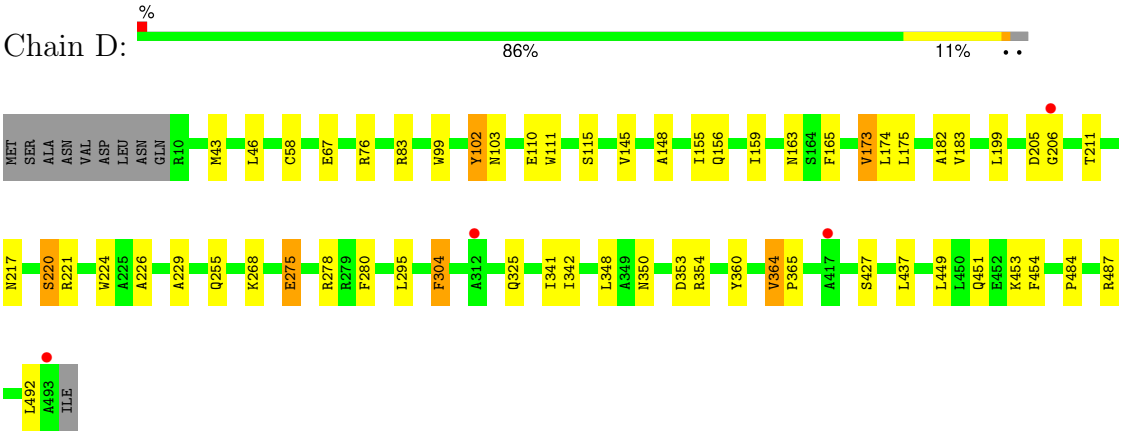


• Molecule 1: Propionate catabolic protein PrpD



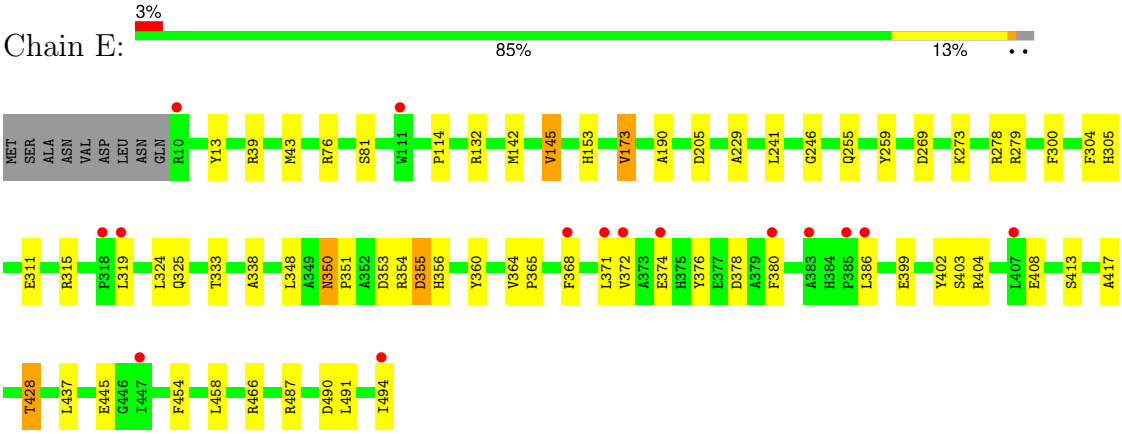
• Molecule 1: Propionate catabolic protein PrpD

Chain D:



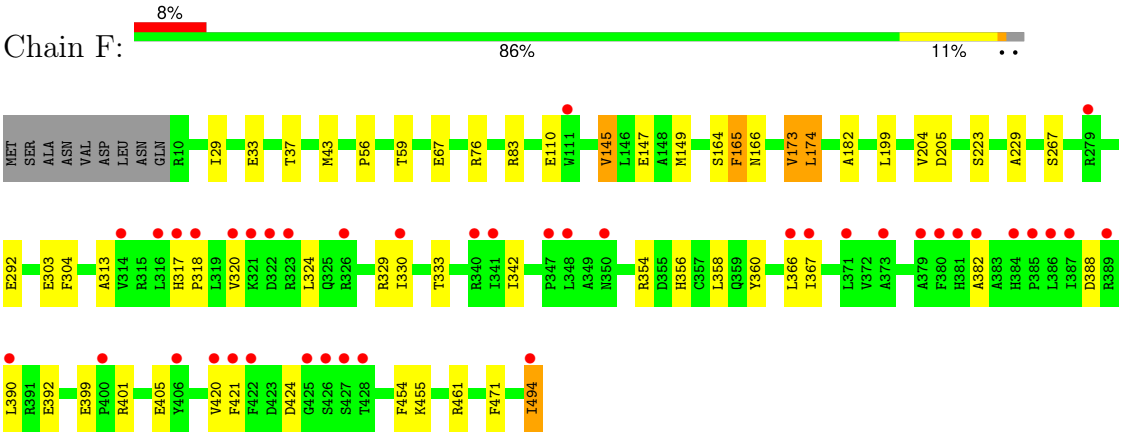
• Molecule 1: Propionate catabolic protein PrpD

Chain E:



• Molecule 1: Propionate catabolic protein PrpD

Chain F:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	123.48Å 124.54Å 126.85Å 90.00° 116.85° 90.00°	Depositor
Resolution (Å)	113.17 – 2.36 113.17 – 2.36	Depositor EDS
% Data completeness (in resolution range)	99.3 (113.17-2.36) 99.4 (113.17-2.36)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.67 (at 2.37Å)	Xtriage
Refinement program	PHENIX 1.12_2829	Depositor
R, R_{free}	0.206 , 0.260 0.208 , 0.260	Depositor DCC
R_{free} test set	7175 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å^2)	24.7	Xtriage
Anisotropy	0.775	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 42.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.012 for l,-k,h	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	22926	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.93% 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	0.44	0/3882	0.58	0/5269
1	B	0.49	0/3872	0.63	0/5254
1	C	0.53	0/3863	0.65	0/5243
1	D	0.47	0/3866	0.63	0/5248
1	E	0.44	0/3883	0.60	0/5269
1	F	0.42	0/3883	0.58	1/5269 (0.0%)
All	All	0.47	0/23249	0.61	1/31552 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	165	PHE	CB-CA-C	5.05	120.50	110.40

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	3796	0	3767	35	0
1	B	3786	0	3755	47	0
1	C	3777	0	3744	32	0
1	D	3780	0	3748	37	0
1	E	3797	0	3767	38	0
1	F	3797	0	3767	31	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	22	0	0	0	0
2	B	41	0	0	1	0
2	C	50	0	0	1	0
2	D	33	0	0	0	0
2	E	24	0	0	0	0
2	F	23	0	0	0	0
All	All	22926	0	22548	207	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 5.

All (207) 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:C:244:GLU:OE1	1:D:220:SER:HB3	1.56	1.03
1:C:476:HIS:HD2	1:C:479:SER:H	1.21	0.88
1:C:476:HIS:CD2	1:C:479:SER:H	1.96	0.83
1:B:332:ILE:HD13	1:B:418:VAL:HG22	1.74	0.70
1:C:244:GLU:OE1	1:D:220:SER:CB	2.38	0.69
1:D:182:ALA:HB2	1:D:199:LEU:HD21	1.76	0.68
1:B:341:ILE:HG22	1:B:342:ILE:HG23	1.74	0.68
1:A:182:ALA:HB2	1:A:199:LEU:HD21	1.78	0.66
1:B:312:ALA:HB1	1:B:431:VAL:HG23	1.78	0.65
1:D:173:VAL:HG13	1:D:229:ALA:HB2	1.78	0.65
1:C:173:VAL:HG13	1:C:229:ALA:HB2	1.79	0.65
1:F:329:ARG:HB3	1:F:421:PHE:HB2	1.79	0.65
1:F:342:ILE:HG23	1:F:358:LEU:HB2	1.77	0.64
1:B:319:LEU:HB3	1:B:428:THR:HG21	1.79	0.64
1:E:319:LEU:HD22	1:E:428:THR:HG22	1.78	0.64
1:E:273:LYS:O	1:E:278:ARG:NH1	2.31	0.64
1:D:83:ARG:HD2	1:F:67:GLU:OE2	1.98	0.63
1:A:255:GLN:HG3	1:B:268:LYS:HA	1.81	0.62
1:C:268:LYS:HA	1:D:255:GLN:HG3	1.81	0.62
1:D:221:ARG:HD2	1:D:224:TRP:CH2	2.36	0.61
1:E:350:ASN:N	1:E:350:ASN:OD1	2.32	0.60
1:A:316:LEU:HD11	1:A:431:VAL:HB	1.83	0.60
1:C:162:GLU:OE2	1:C:281:SER:HB3	2.02	0.59
1:A:320:VAL:HG11	1:A:420:VAL:HG11	1.84	0.59
1:A:323:ARG:HB2	1:A:422:PHE:CE1	2.38	0.59
1:F:110:GLU:OE1	1:F:165:PHE:N	2.30	0.58
1:E:114:PRO:HB2	1:E:153:HIS:CE1	2.39	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:374:GLU:N	1:E:374:GLU:OE1	2.37	0.57
1:A:377:GLU:OE1	1:A:379:ALA:N	2.35	0.57
1:F:320:VAL:CG1	1:F:420:VAL:HG11	2.34	0.57
1:B:354:ARG:HH12	1:B:378:ASP:HA	1.70	0.56
1:E:255:GLN:O	1:F:267:SER:OG	2.22	0.56
1:E:372:VAL:HG23	1:E:374:GLU:H	1.70	0.56
1:B:388:ASP:HA	1:B:391:ARG:HB2	1.88	0.56
1:D:67:GLU:OE2	1:F:83:ARG:HD2	2.06	0.56
1:A:132:ARG:HD2	1:A:140:LEU:HD12	1.86	0.55
1:E:466:ARG:NH1	1:E:491:LEU:O	2.35	0.55
1:A:33:GLU:O	1:A:37:THR:HG23	2.06	0.55
1:D:58:CYS:HB2	1:D:99:TRP:CD2	2.43	0.54
1:A:405:GLU:HG2	1:A:411:LYS:HD2	1.88	0.54
1:A:342:ILE:HD12	1:A:358:LEU:HB2	1.89	0.54
1:E:365:PRO:HG3	1:E:371:LEU:HB2	1.88	0.54
1:A:309:ALA:HB2	1:A:416:ASN:OD1	2.08	0.54
1:B:354:ARG:HH12	1:B:378:ASP:CA	2.20	0.53
1:C:148:ALA:HB1	1:C:183:VAL:CG1	2.39	0.53
1:B:320:VAL:HG12	1:B:422:PHE:CZ	2.43	0.53
1:F:320:VAL:HG11	1:F:420:VAL:HG11	1.91	0.53
1:F:173:VAL:HG13	1:F:229:ALA:HB2	1.90	0.53
1:F:33:GLU:HG2	1:F:292:GLU:HG2	1.90	0.52
1:F:342:ILE:CG2	1:F:358:LEU:HB2	2.38	0.52
1:A:81:SER:HB3	1:A:494:ILE:HG12	1.92	0.52
1:A:414:ILE:HD12	1:A:436:PRO:HG3	1.91	0.52
1:B:463:PRO:HG3	1:C:60:LYS:HB3	1.91	0.52
1:F:330:ILE:HG12	1:F:420:VAL:HG23	1.92	0.52
1:A:81:SER:CB	1:A:494:ILE:HD11	2.40	0.52
1:D:43:MET:HG2	1:D:454:PHE:CE2	2.44	0.52
1:E:494:ILE:O	1:E:494:ILE:HG22	2.08	0.52
1:B:266:THR:HG23	2:B:530:HOH:O	2.11	0.51
1:C:447:ILE:HB	1:C:448:PRO:HD3	1.91	0.51
1:B:148:ALA:HB1	1:B:183:VAL:HG13	1.92	0.51
1:D:341:ILE:HG22	1:D:342:ILE:HG23	1.93	0.51
1:E:355:ASP:HB3	1:E:356:HIS:ND1	2.26	0.51
1:C:13:TYR:OH	1:C:246:GLY:HA3	2.11	0.51
1:D:156:GLN:HG3	1:D:175:LEU:HB3	1.93	0.51
1:B:264:SER:HB2	1:B:278:ARG:HD2	1.92	0.50
1:E:364:VAL:HB	1:E:365:PRO:HD3	1.94	0.50
1:A:46:LEU:HD13	1:A:492:LEU:HD11	1.93	0.50
1:B:406:TYR:HD1	1:B:407:LEU:HD22	1.76	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:340:ARG:HG3	1:B:341:ILE:HD12	1.93	0.50
1:D:295:LEU:HB3	1:D:304:PHE:CZ	2.47	0.50
1:E:351:PRO:HB3	1:E:376:TYR:O	2.12	0.50
1:A:346:GLY:O	1:A:391:ARG:NH2	2.36	0.49
1:F:313:ALA:HB1	1:F:366:LEU:HG	1.93	0.49
1:B:24:VAL:O	1:B:186:LYS:HE2	2.12	0.49
1:F:455:LYS:HE3	1:F:471:PHE:CE2	2.46	0.49
1:B:354:ARG:HB3	1:B:376:TYR:HD1	1.78	0.49
1:E:325:GLN:NE2	1:E:386:LEU:HD21	2.27	0.49
1:B:107:LEU:O	1:B:412:ARG:NH2	2.45	0.49
1:A:81:SER:HB2	1:A:494:ILE:HD11	1.94	0.49
1:A:114:PRO:HB2	1:A:153:HIS:CD2	2.47	0.49
1:C:476:HIS:HD2	1:C:479:SER:N	2.01	0.49
1:E:173:VAL:HG13	1:E:229:ALA:HB2	1.95	0.48
1:C:182:ALA:HB2	1:C:199:LEU:HD21	1.95	0.48
1:A:267:SER:OG	1:B:255:GLN:O	2.31	0.48
1:A:355:ASP:HB3	1:A:356:HIS:ND1	2.27	0.48
1:E:368:PHE:CE2	1:E:380:PHE:HZ	2.32	0.48
1:E:487:ARG:NH1	1:E:490:ASP:OD2	2.46	0.48
1:A:435:TYR:O	1:A:442:ARG:HD3	2.14	0.48
1:B:333:THR:HG22	1:B:399:GLU:HB2	1.96	0.48
1:F:29:ILE:HD12	1:F:147:GLU:HG2	1.95	0.48
1:F:401:ARG:O	1:F:405:GLU:HG3	2.14	0.48
1:B:336:GLU:N	1:B:403:SER:OG	2.45	0.48
1:C:14:ASP:HB3	2:C:517:HOH:O	2.13	0.48
1:C:419:GLU:HB2	1:C:430:GLN:HG3	1.96	0.48
1:E:81:SER:HB3	1:E:494:ILE:CG1	2.44	0.48
1:D:360:TYR:O	1:D:364:VAL:HG13	2.14	0.47
1:A:330:ILE:HG12	1:A:420:VAL:HB	1.96	0.47
1:D:484:PRO:HD2	1:D:487:ARG:HD3	1.97	0.47
1:F:354:ARG:HB3	1:F:360:TYR:CD2	2.49	0.47
1:F:43:MET:HE3	1:F:454:PHE:CD2	2.49	0.47
1:B:405:GLU:HA	1:B:408:GLU:HG3	1.97	0.47
1:C:470:ILE:HD13	1:C:492:LEU:HD23	1.97	0.47
1:D:275:GLU:HA	1:D:278:ARG:HG3	1.97	0.47
1:A:370:ASP:OD1	1:A:371:LEU:N	2.48	0.46
1:B:201:HIS:HA	1:B:204:VAL:HG12	1.96	0.46
1:C:255:GLN:CD	1:D:268:LYS:HG2	2.35	0.46
1:D:348:LEU:HD22	1:D:353:ASP:HB3	1.96	0.46
1:D:148:ALA:HB1	1:D:183:VAL:HG13	1.96	0.46
1:E:81:SER:HB3	1:E:494:ILE:HG13	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:324:LEU:HA	1:B:324:LEU:HD12	1.63	0.46
1:B:367:ILE:HD11	1:B:390:LEU:HD12	1.97	0.46
1:D:111:TRP:HH2	1:D:341:ILE:HD13	1.80	0.46
1:E:190:ALA:HB2	1:E:241:LEU:HD21	1.98	0.46
1:E:354:ARG:HD3	1:E:360:TYR:CZ	2.50	0.46
1:E:13:TYR:OH	1:E:246:GLY:HA3	2.16	0.46
1:E:142:MET:HA	1:E:145:VAL:HG13	1.97	0.46
1:E:350:ASN:HB2	1:E:351:PRO:HD2	1.97	0.46
1:B:58:CYS:HB2	1:B:99:TRP:CD2	2.51	0.46
1:D:174:LEU:C	1:D:174:LEU:HD23	2.35	0.46
1:A:308:THR:OG1	1:A:416:ASN:HB2	2.16	0.46
1:B:320:VAL:HG12	1:B:422:PHE:HZ	1.80	0.46
1:D:103:ASN:ND2	1:D:115:SER:OG	2.48	0.46
1:B:182:ALA:HB2	1:B:199:LEU:HD21	1.98	0.46
1:A:132:ARG:HB2	1:A:137:GLU:HB2	1.98	0.45
1:B:364:VAL:HG11	1:B:375:HIS:CG	2.51	0.45
1:D:43:MET:HE1	1:D:451:GLN:HG2	1.98	0.45
1:C:437:LEU:HD23	1:C:437:LEU:HA	1.84	0.45
1:E:333:THR:HB	1:E:417:ALA:HB3	1.98	0.45
1:F:388:ASP:O	1:F:392:GLU:HG2	2.17	0.45
1:C:247:ILE:HG23	1:D:217:ASN:HB3	1.99	0.45
1:F:33:GLU:O	1:F:37:THR:HG23	2.17	0.45
1:F:317:HIS:HB3	1:F:318:PRO:HD3	1.97	0.45
1:C:206:GLY:C	1:D:206:GLY:HA3	2.36	0.45
1:F:333:THR:HG22	1:F:399:GLU:HB2	1.99	0.45
1:A:162:GLU:HG3	1:A:283:PRO:HD3	1.99	0.45
1:A:293:ASN:ND2	1:A:440:ARG:HD2	2.31	0.45
1:C:372:VAL:HG22	1:C:375:HIS:CE1	2.52	0.45
1:B:354:ARG:NH1	1:B:378:ASP:HA	2.33	0.44
1:D:110:GLU:OE1	1:D:165:PHE:N	2.50	0.44
1:C:206:GLY:HA3	1:D:206:GLY:C	2.37	0.44
1:F:494:ILE:O	1:F:494:ILE:HG23	2.18	0.44
1:B:419:GLU:HG2	1:B:421:PHE:CE1	2.52	0.44
1:B:359:GLN:HB2	1:B:391:ARG:HE	1.81	0.44
1:C:333:THR:CG2	1:C:399:GLU:HB2	2.48	0.44
1:E:259:TYR:CE1	1:E:279:ARG:HA	2.53	0.44
1:E:311:GLU:OE1	1:E:315:ARG:NH2	2.50	0.44
1:D:354:ARG:HD3	1:D:360:TYR:CZ	2.53	0.44
1:E:350:ASN:O	1:E:354:ARG:HG3	2.17	0.44
1:B:462:PHE:CD1	1:B:466:ARG:HD2	2.54	0.43
1:B:372:VAL:HG22	1:B:375:HIS:CE1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:476:HIS:CD2	1:C:479:SER:OG	2.72	0.43
1:E:348:LEU:HD22	1:E:353:ASP:HB3	2.00	0.43
1:C:188:MET:HE3	1:C:238:ASP:HA	2.01	0.43
1:D:364:VAL:HG22	1:D:365:PRO:HD3	1.99	0.43
1:B:332:ILE:HD11	1:B:362:THR:HG21	2.01	0.43
1:F:56:PRO:HA	1:F:59:THR:OG1	2.18	0.43
1:F:145:VAL:O	1:F:149:MET:HG3	2.19	0.43
1:A:132:ARG:HE	1:A:132:ARG:HB3	1.52	0.43
1:C:110:GLU:OE1	1:C:165:PHE:N	2.51	0.43
1:E:39:ARG:O	1:E:43:MET:HG3	2.19	0.43
1:B:472:ASP:O	1:B:475:SER:HB2	2.19	0.43
1:C:148:ALA:HB1	1:C:183:VAL:HG11	2.00	0.43
1:E:325:GLN:HE22	1:E:386:LEU:HD21	1.83	0.43
1:C:445:GLU:O	1:C:448:PRO:HD2	2.19	0.43
1:F:367:ILE:HD11	1:F:390:LEU:HD13	2.01	0.43
1:A:311:GLU:O	1:A:315:ARG:HG2	2.19	0.42
1:D:174:LEU:HD23	1:D:175:LEU:HD23	2.01	0.42
1:F:182:ALA:HB2	1:F:199:LEU:HD21	2.01	0.42
1:C:466:ARG:NH1	1:C:491:LEU:O	2.44	0.42
1:F:354:ARG:HD3	1:F:360:TYR:CZ	2.54	0.42
1:A:221:ARG:HD2	1:A:224:TRP:CH2	2.55	0.42
1:A:329:ARG:O	1:A:421:PHE:N	2.45	0.42
1:C:330:ILE:O	1:C:394:MET:HA	2.19	0.42
1:E:324:LEU:N	1:E:324:LEU:HD12	2.34	0.42
1:B:148:ALA:HB1	1:B:183:VAL:CG1	2.50	0.42
1:D:102:TYR:CZ	1:D:453:LYS:HE3	2.54	0.42
1:C:110:GLU:OE2	1:C:172:HIS:HB3	2.20	0.42
1:F:342:ILE:HD11	1:F:356:HIS:HA	2.00	0.42
1:B:323:ARG:HG2	1:B:326:ARG:HE	1.84	0.42
1:E:300:PHE:HB3	1:E:371:LEU:HD22	2.01	0.42
1:E:305:HIS:HB3	1:E:338:ALA:HB2	2.02	0.42
1:B:313:ALA:HB1	1:B:366:LEU:HG	2.02	0.42
1:D:437:LEU:HD21	1:D:449:LEU:HD12	2.02	0.42
1:E:404:ARG:HG2	1:E:408:GLU:OE2	2.19	0.42
1:F:165:PHE:CD1	1:F:174:LEU:HD21	2.55	0.42
1:D:46:LEU:HD13	1:D:492:LEU:HD11	2.03	0.41
1:B:354:ARG:HG2	1:B:360:TYR:CD2	2.55	0.41
1:A:435:TYR:CE2	1:A:441:ARG:HD3	2.56	0.41
1:D:163:ASN:OD1	1:D:280:PHE:HA	2.20	0.41
1:B:198:ALA:HB2	1:B:240:ALA:CB	2.51	0.41
1:B:324:LEU:HB3	1:B:325:GLN:HE21	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:128:LEU:HA	1:A:128:LEU:HD23	1.86	0.41
1:B:440:ARG:HA	1:B:443:ARG:HG2	2.02	0.41
1:C:487:ARG:HA	1:C:487:ARG:HD2	1.96	0.41
1:D:155:ILE:O	1:D:159:ILE:HG13	2.21	0.41
1:E:399:GLU:HG3	1:E:402:TYR:H	1.86	0.41
1:F:354:ARG:HB3	1:F:360:TYR:CE2	2.56	0.41
1:A:354:ARG:HB3	1:A:360:TYR:CD2	2.55	0.40
1:D:58:CYS:HB2	1:D:99:TRP:CE2	2.56	0.40
1:D:173:VAL:HG22	1:D:226:ALA:HA	2.03	0.40
1:B:328:SER:O	1:B:393:LYS:HG2	2.21	0.40
1:E:132:ARG:HH11	1:E:132:ARG:HG2	1.86	0.40
1:A:462:PHE:HA	1:A:463:PRO:HD3	1.90	0.40
1:B:310:ALA:O	1:B:314:VAL:HG23	2.20	0.40
1:E:454:PHE:CZ	1:E:458:LEU:HD11	2.56	0.40
1:B:307:GLN:HB3	1:B:436:PRO:HB3	2.04	0.40
1:B:381:HIS:HE2	1:B:388:ASP:CG	2.25	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	483/494 (98%)	465 (96%)	18 (4%)	0	100	100
1	B	482/494 (98%)	469 (97%)	12 (2%)	1 (0%)	47	56
1	C	481/494 (97%)	467 (97%)	14 (3%)	0	100	100
1	D	482/494 (98%)	470 (98%)	12 (2%)	0	100	100
1	E	483/494 (98%)	467 (97%)	15 (3%)	1 (0%)	47	56
1	F	483/494 (98%)	467 (97%)	15 (3%)	1 (0%)	47	56
All	All	2894/2964 (98%)	2805 (97%)	86 (3%)	3 (0%)	51	63

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	205	ASP
1	E	428	THR
1	F	382	ALA

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	397/405 (98%)	381 (96%)	16 (4%)	31	39
1	B	396/405 (98%)	382 (96%)	14 (4%)	36	44
1	C	395/405 (98%)	381 (96%)	14 (4%)	36	44
1	D	394/405 (97%)	381 (97%)	13 (3%)	38	46
1	E	397/405 (98%)	384 (97%)	13 (3%)	38	46
1	F	397/405 (98%)	382 (96%)	15 (4%)	33	41
All	All	2376/2430 (98%)	2291 (96%)	85 (4%)	35	43

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	37	THR
1	A	76	ARG
1	A	204	VAL
1	A	205	ASP
1	A	223	SER
1	A	275	GLU
1	A	304	PHE
1	A	307	GLN
1	A	323	ARG
1	A	337	SER
1	A	355	ASP
1	A	410	ASP
1	A	416	ASN
1	A	420	VAL

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Mol	Chain	Res	Type
1	A	442	ARG
1	A	461	ARG
1	B	76	ARG
1	B	84	LEU
1	B	131	LYS
1	B	133	LEU
1	B	145	VAL
1	B	205	ASP
1	B	235	ARG
1	B	266	THR
1	B	304	PHE
1	B	328	SER
1	B	333	THR
1	B	447	ILE
1	B	475	SER
1	B	491	LEU
1	C	76	ARG
1	C	122	LEU
1	C	145	VAL
1	C	166	ASN
1	C	173	VAL
1	C	204	VAL
1	C	205	ASP
1	C	211	THR
1	C	281	SER
1	C	304	PHE
1	C	323	ARG
1	C	325	GLN
1	C	396	ILE
1	C	461	ARG
1	D	76	ARG
1	D	102	TYR
1	D	145	VAL
1	D	173	VAL
1	D	205	ASP
1	D	211	THR
1	D	220	SER
1	D	275	GLU
1	D	304	PHE
1	D	325	GLN
1	D	350	ASN
1	D	364	VAL

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Mol	Chain	Res	Type
1	D	427	SER
1	E	76	ARG
1	E	145	VAL
1	E	173	VAL
1	E	205	ASP
1	E	269	ASP
1	E	304	PHE
1	E	350	ASN
1	E	355	ASP
1	E	378	ASP
1	E	403	SER
1	E	413	SER
1	E	437	LEU
1	E	445	GLU
1	F	76	ARG
1	F	145	VAL
1	F	164	SER
1	F	166	ASN
1	F	173	VAL
1	F	174	LEU
1	F	204	VAL
1	F	205	ASP
1	F	223	SER
1	F	303	GLU
1	F	304	PHE
1	F	324	LEU
1	F	424	ASP
1	F	461	ARG
1	F	494	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	307	GLN
1	C	476	HIS

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

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^{th} 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	485/494 (98%)	0.38	33 (6%) 17 25	16, 33, 77, 94	0
1	B	484/494 (97%)	0.30	31 (6%) 19 28	14, 26, 70, 78	0
1	C	483/494 (97%)	-0.09	0 100 100	13, 23, 35, 53	0
1	D	484/494 (97%)	-0.05	4 (0%) 86 91	16, 28, 45, 164	0
1	E	485/494 (98%)	0.17	15 (3%) 49 61	17, 30, 65, 77	0
1	F	485/494 (98%)	0.39	41 (8%) 10 16	17, 32, 75, 89	0
All	All	2906/2964 (98%)	0.18	124 (4%) 35 47	13, 28, 70, 164	0

All (124) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	494	ILE	6.9
1	D	312	ALA	6.4
1	B	320	VAL	6.2
1	A	345	VAL	6.1
1	E	386	LEU	5.9
1	B	494	ILE	5.5
1	A	423	ASP	5.0
1	A	395	GLU	4.9
1	F	348	LEU	4.9
1	A	427	SER	4.8
1	A	385	PRO	4.7
1	A	111	TRP	4.7
1	F	323	ARG	4.6
1	A	324	LEU	4.4
1	B	319	LEU	4.3
1	F	318	PRO	4.1
1	F	321	LYS	4.1
1	F	322	ASP	4.1
1	F	389	ARG	4.1

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Mol	Chain	Res	Type	RSRZ
1	A	319	LEU	3.9
1	A	421	PHE	3.9
1	F	494	ILE	3.8
1	F	111	TRP	3.8
1	D	417	ALA	3.8
1	F	421	PHE	3.7
1	A	330	ILE	3.7
1	A	349	ALA	3.6
1	A	368	PHE	3.6
1	A	425	GLY	3.5
1	A	392	GLU	3.5
1	F	386	LEU	3.5
1	F	326	ARG	3.5
1	B	324	LEU	3.4
1	B	345	VAL	3.4
1	F	428	THR	3.4
1	F	279	ARG	3.4
1	A	420	VAL	3.4
1	F	330	ILE	3.4
1	F	367	ILE	3.4
1	B	111	TRP	3.3
1	E	368	PHE	3.3
1	A	377	GLU	3.3
1	E	494	ILE	3.3
1	A	322	ASP	3.3
1	F	347	PRO	3.2
1	B	390	LEU	3.2
1	F	314	VAL	3.2
1	B	421	PHE	3.1
1	E	372	VAL	3.1
1	A	328	SER	3.1
1	A	348	LEU	3.1
1	F	366	LEU	3.1
1	F	406	TYR	3.1
1	E	380	PHE	3.1
1	A	429	GLY	3.0
1	B	323	ARG	3.0
1	F	420	VAL	3.0
1	F	382	ALA	2.9
1	A	404	ARG	2.9
1	F	422	PHE	2.8
1	B	418	VAL	2.8

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Mol	Chain	Res	Type	RSRZ
1	E	374	GLU	2.8
1	B	327	ILE	2.8
1	F	340	ARG	2.7
1	F	341	ILE	2.7
1	B	330	ILE	2.7
1	E	383	ALA	2.7
1	F	380	PHE	2.7
1	B	428	THR	2.7
1	F	400	PRO	2.7
1	B	386	LEU	2.6
1	F	426	SER	2.6
1	B	329	ARG	2.6
1	B	341	ILE	2.6
1	F	425	GLY	2.6
1	F	320	VAL	2.6
1	B	389	ARG	2.6
1	B	422	PHE	2.5
1	A	325	GLN	2.5
1	F	384	HIS	2.5
1	F	390	LEU	2.5
1	B	383	ALA	2.5
1	A	367	ILE	2.5
1	E	371	LEU	2.5
1	E	407	LEU	2.4
1	F	427	SER	2.4
1	A	400	PRO	2.4
1	A	431	VAL	2.4
1	B	362	THR	2.4
1	F	317	HIS	2.4
1	A	327	ILE	2.4
1	A	424	ASP	2.4
1	D	493	ALA	2.4
1	B	332	ILE	2.3
1	F	373	ALA	2.3
1	B	397	VAL	2.3
1	A	389	ARG	2.3
1	A	329	ARG	2.3
1	A	323	ARG	2.3
1	D	206	GLY	2.3
1	E	111	TRP	2.2
1	F	350	ASN	2.2
1	E	319	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	367	ILE	2.2
1	B	407	LEU	2.2
1	B	349	ALA	2.2
1	B	391	ARG	2.1
1	B	424	ASP	2.1
1	F	371	LEU	2.1
1	A	428	THR	2.1
1	F	316	LEU	2.1
1	F	381	HIS	2.1
1	F	379	ALA	2.1
1	B	377	GLU	2.1
1	B	331	VAL	2.1
1	B	352	ALA	2.1
1	A	371	LEU	2.0
1	E	447	ILE	2.0
1	F	385	PRO	2.0
1	B	426	SER	2.0
1	E	10	ARG	2.0
1	E	318	PRO	2.0
1	E	385	PRO	2.0
1	F	387	ILE	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)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.