



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 21, 2020 – 06:57 PM BST

PDB ID : 6KE3
Title : Crystal structure of the alpha beta heterodimer of human IDH3 in complex with NADH
Authors : Sun, P.; Ding, J.
Deposited on : 2019-07-03
Resolution : 3.31 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.13.1
buster-report : 1.1.7 (2018)
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) : 2.13.1

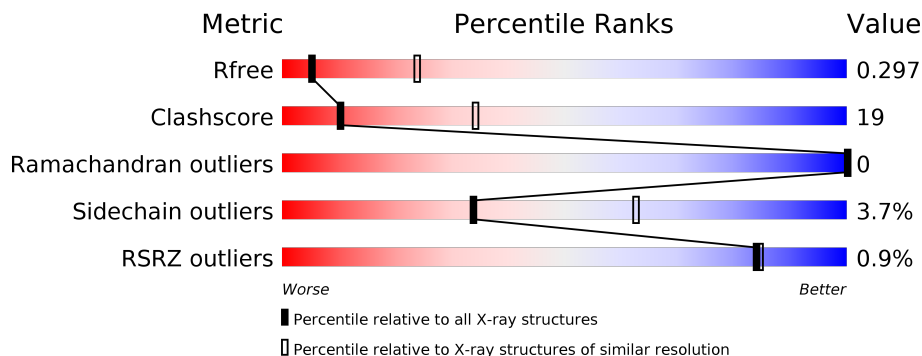
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.31 Å.

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





Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1149 (3.34-3.26)
Clashscore	141614	1205 (3.34-3.26)
Ramachandran outliers	138981	1183 (3.34-3.26)
Sidechain outliers	138945	1182 (3.34-3.26)
RSRZ outliers	127900	1115 (3.34-3.26)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on 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	341	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 58%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 38%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="font-size: small; margin-top: 5px;">2% 58% 38% • •</p>
1	C	341	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 61%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 34%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: grey;"></div> </div> <p style="font-size: small; margin-top: 5px;">2% 61% 34% • 5%</p>
1	E	341	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 65%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 26%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="font-size: small; margin-top: 5px;">% 65% 26% • 7%</p>
1	G	341	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 71%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 23%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 3%; height: 10px; background-color: grey;"></div> </div> <p style="font-size: small; margin-top: 5px;">2% 71% 23% 6%</p>
2	B	356	<div style="display: flex; align-items: center;"> <div style="width: 56%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 38%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="font-size: small; margin-top: 5px;">56% 38% • 5%</p>
2	D	356	<div style="display: flex; align-items: center;"> <div style="width: 58%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 36%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="font-size: small; margin-top: 5px;">58% 36% • 5%</p>

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Mol	Chain	Length	Quality of chain
2	F	356	 62% 32% • 5%
2	H	356	 64% 30% • 5%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 19231 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 Isocitrate dehydrogenase [NAD] subunit alpha, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	335	Total 2422	C 1521	N 418	O 462	S 21	0	0	0
1	C	325	Total 2299	C 1438	N 400	O 442	S 19	0	0	0
1	E	318	Total 2136	C 1327	N 375	O 419	S 15	0	0	0
1	G	320	Total 2161	C 1353	N 375	O 417	S 16	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP P50213
A	0	SER	-	expression tag	UNP P50213
C	-1	GLY	-	expression tag	UNP P50213
C	0	SER	-	expression tag	UNP P50213
E	-1	GLY	-	expression tag	UNP P50213
E	0	SER	-	expression tag	UNP P50213
G	-1	GLY	-	expression tag	UNP P50213
G	0	SER	-	expression tag	UNP P50213

- Molecule 2 is a protein called Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	338	Total 2525	C 1594	N 434	O 476	S 21	0	0	0
2	D	338	Total 2519	C 1590	N 438	O 471	S 20	0	0	0
2	F	338	Total 2502	C 1585	N 430	O 466	S 21	0	0	0
2	H	338	Total 2491	C 1573	N 435	O 464	S 19	0	0	0

There are 64 discrepancies between the modelled and reference sequences:

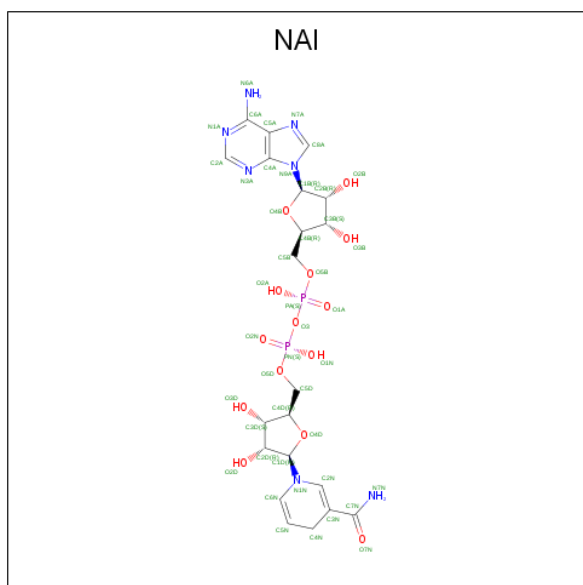
Chain	Residue	Modelled	Actual	Comment	Reference
B	341	GLU	-	expression tag	UNP O43837
B	342	ILE	-	expression tag	UNP O43837
B	343	CYS	-	expression tag	UNP O43837
B	344	ARG	-	expression tag	UNP O43837
B	345	ARG	-	expression tag	UNP O43837
B	346	VAL	-	expression tag	UNP O43837
B	347	LYS	-	expression tag	UNP O43837
B	348	ASP	-	expression tag	UNP O43837
B	349	LEU	-	expression tag	UNP O43837
B	350	ASP	-	expression tag	UNP O43837
B	351	GLU	-	expression tag	UNP O43837
B	352	ASN	-	expression tag	UNP O43837
B	353	LEU	-	expression tag	UNP O43837
B	354	TYR	-	expression tag	UNP O43837
B	355	PHE	-	expression tag	UNP O43837
B	356	GLN	-	expression tag	UNP O43837
D	341	GLU	-	expression tag	UNP O43837
D	342	ILE	-	expression tag	UNP O43837
D	343	CYS	-	expression tag	UNP O43837
D	344	ARG	-	expression tag	UNP O43837
D	345	ARG	-	expression tag	UNP O43837
D	346	VAL	-	expression tag	UNP O43837
D	347	LYS	-	expression tag	UNP O43837
D	348	ASP	-	expression tag	UNP O43837
D	349	LEU	-	expression tag	UNP O43837
D	350	ASP	-	expression tag	UNP O43837
D	351	GLU	-	expression tag	UNP O43837
D	352	ASN	-	expression tag	UNP O43837
D	353	LEU	-	expression tag	UNP O43837
D	354	TYR	-	expression tag	UNP O43837
D	355	PHE	-	expression tag	UNP O43837
D	356	GLN	-	expression tag	UNP O43837
F	341	GLU	-	expression tag	UNP O43837
F	342	ILE	-	expression tag	UNP O43837
F	343	CYS	-	expression tag	UNP O43837
F	344	ARG	-	expression tag	UNP O43837
F	345	ARG	-	expression tag	UNP O43837
F	346	VAL	-	expression tag	UNP O43837
F	347	LYS	-	expression tag	UNP O43837
F	348	ASP	-	expression tag	UNP O43837
F	349	LEU	-	expression tag	UNP O43837
F	350	ASP	-	expression tag	UNP O43837

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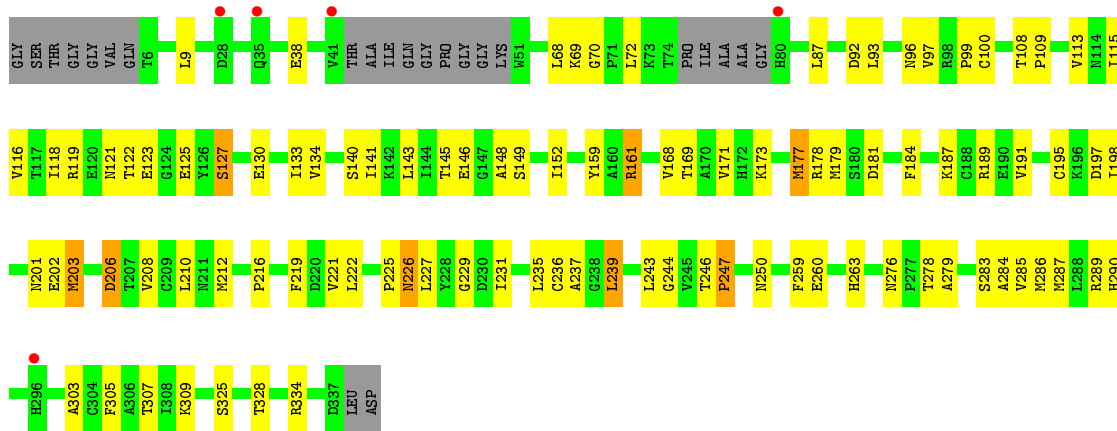
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Chain	Residue	Modelled	Actual	Comment	Reference
F	351	GLU	-	expression tag	UNP O43837
F	352	ASN	-	expression tag	UNP O43837
F	353	LEU	-	expression tag	UNP O43837
F	354	TYR	-	expression tag	UNP O43837
F	355	PHE	-	expression tag	UNP O43837
F	356	GLN	-	expression tag	UNP O43837
H	341	GLU	-	expression tag	UNP O43837
H	342	ILE	-	expression tag	UNP O43837
H	343	CYS	-	expression tag	UNP O43837
H	344	ARG	-	expression tag	UNP O43837
H	345	ARG	-	expression tag	UNP O43837
H	346	VAL	-	expression tag	UNP O43837
H	347	LYS	-	expression tag	UNP O43837
H	348	ASP	-	expression tag	UNP O43837
H	349	LEU	-	expression tag	UNP O43837
H	350	ASP	-	expression tag	UNP O43837
H	351	GLU	-	expression tag	UNP O43837
H	352	ASN	-	expression tag	UNP O43837
H	353	LEU	-	expression tag	UNP O43837
H	354	TYR	-	expression tag	UNP O43837
H	355	PHE	-	expression tag	UNP O43837
H	356	GLN	-	expression tag	UNP O43837

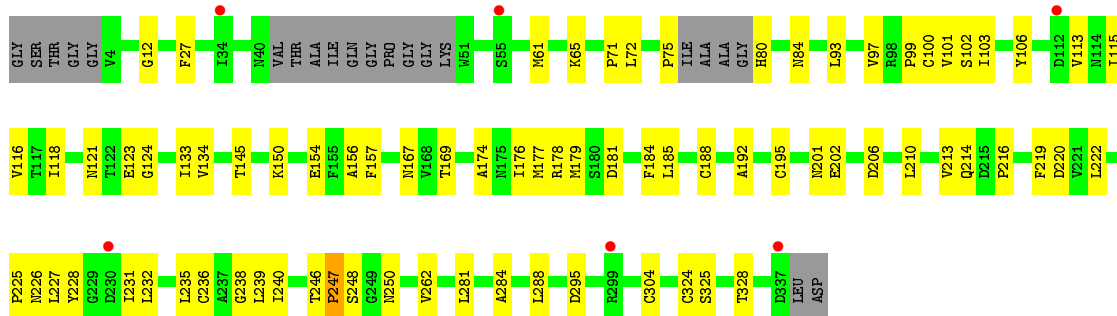
- Molecule 3 is 1,4-DIHYDRONICOTINAMIDE ADENINE DINUCLEOTIDE (three-letter code: NAI) (formula: C₂₁H₂₉N₇O₁₄P₂) (labeled as "Ligand of Interest" by author).



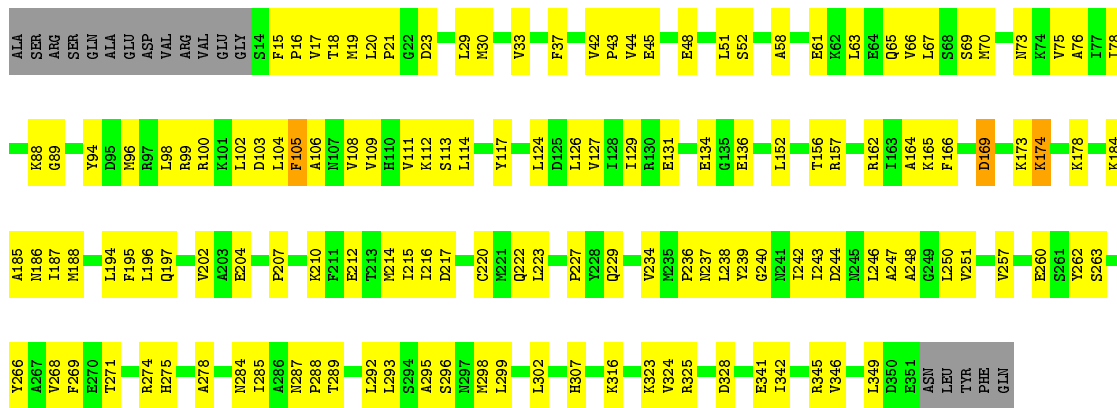
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 44	C 21	N 7	O 14	P 2	0	0
3	C	1	Total 44	C 21	N 7	O 14	P 2	0	0
3	E	1	Total 44	C 21	N 7	O 14	P 2	0	0
3	G	1	Total 44	C 21	N 7	O 14	P 2	0	0



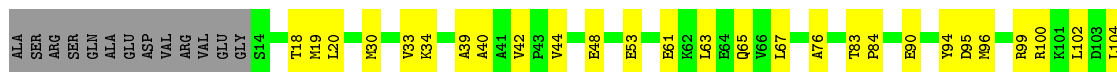
• Molecule 1: Isocitrate dehydrogenase [NAD] subunit alpha, mitochondrial

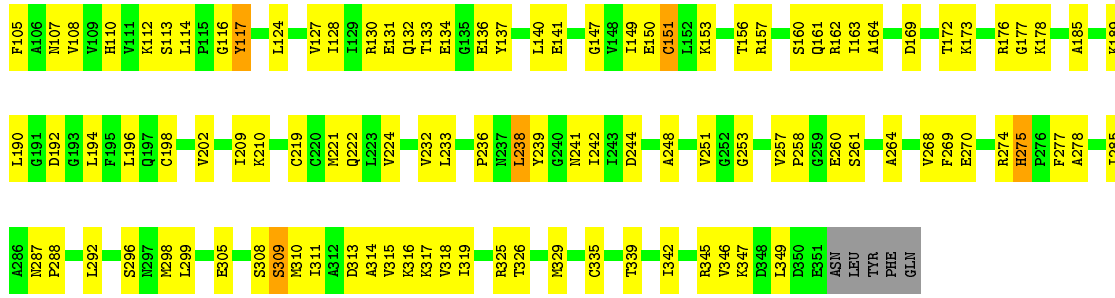


• Molecule 2: Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial



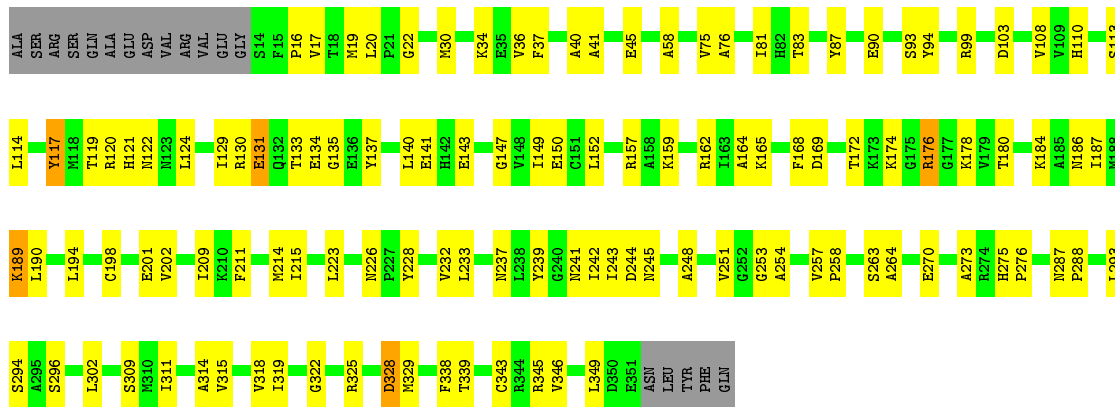
• Molecule 2: Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial





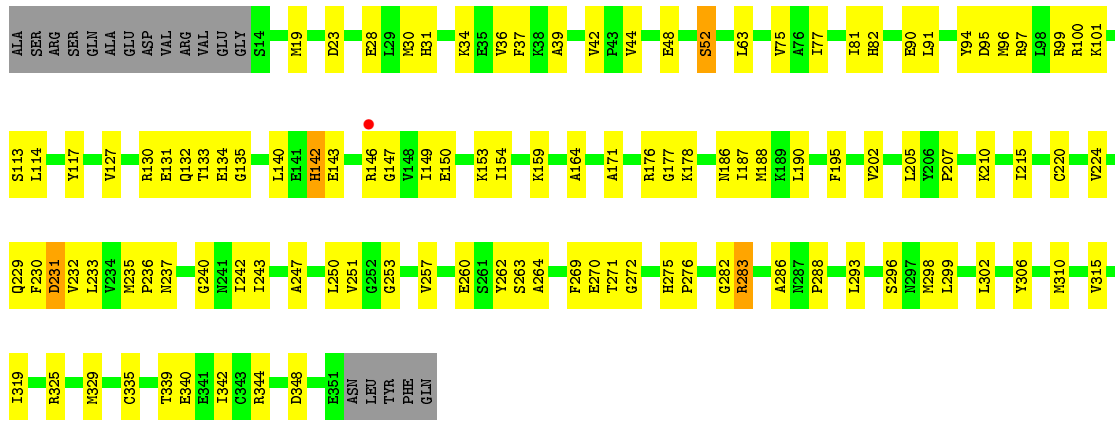
• Molecule 2: Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial

Chain F: • 5%



• Molecule 2: Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial

Chain H: • 5%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	99.36Å 162.67Å 114.78Å 90.00° 100.38° 90.00°	Depositor
Resolution (Å)	42.16 – 3.31 42.16 – 3.31	Depositor EDS
% Data completeness (in resolution range)	89.1 (42.16-3.31) 89.9 (42.16-3.31)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.20 (at 3.32Å)	Xtrriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.250 , 0.299 0.248 , 0.297	Depositor DCC
R_{free} test set	2331 reflections (4.81%)	wwPDB-VP
Wilson B-factor (Å ²)	60.4	Xtrriage
Anisotropy	0.416	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.26 , 36.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.81	EDS
Total number of atoms	19231	wwPDB-VP
Average B, all atoms (Å ²)	60.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.62% 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](#)

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

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	0.52	0/2464	0.69	1/3352 (0.0%)
1	C	0.45	0/2335	0.65	1/3179 (0.0%)
1	E	0.55	1/2170 (0.0%)	0.63	0/2971
1	G	0.49	1/2199 (0.0%)	0.59	0/3011
2	B	0.54	0/2570	0.71	0/3484
2	D	0.55	1/2564 (0.0%)	0.71	0/3474
2	F	0.52	0/2547	0.70	0/3454
2	H	0.52	0/2536	0.71	2/3445 (0.1%)
All	All	0.52	3/19385 (0.0%)	0.68	4/26370 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	247	PRO	N-CD	-13.38	1.29	1.47
2	D	258	PRO	N-CD	-13.18	1.29	1.47
1	G	247	PRO	N-CD	-12.28	1.30	1.47

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	283	ARG	CB-CA-C	6.63	123.67	110.40
1	C	33	PRO	N-CA-C	-6.14	96.14	112.10
2	H	140	LEU	CB-CG-CD1	-5.50	101.66	111.00
1	A	314	LEU	CA-CB-CG	5.08	126.98	115.30

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	2422	0	2312	116	0
1	C	2299	0	2109	96	0
1	E	2136	0	1822	83	0
1	G	2161	0	1826	58	0
2	B	2525	0	2443	104	0
2	D	2519	0	2439	96	0
2	F	2502	0	2425	94	0
2	H	2491	0	2386	89	0
3	A	44	0	27	9	0
3	C	44	0	25	6	0
3	E	44	0	27	7	0
3	G	44	0	27	3	0
All	All	19231	0	17868	695	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 19.

All (695) 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:268:ASP:OD2	3:A:401:NAI:O3B	1.72	1.07
2:H:135:GLY:HA3	2:H:237:ASN:HB3	1.31	1.06
1:C:30:ALA:O	1:C:299:ARG:NH1	1.99	0.96
1:C:236:CYS:HA	1:C:239:LEU:HD13	1.48	0.95
1:A:6:THR:HG22	1:A:35:GLN:HB3	1.55	0.90
2:H:99:ARG:HE	2:H:132:GLN:HE22	1.19	0.89
3:A:401:NAI:C8A	3:A:401:NAI:H52A	2.04	0.87
2:D:287:ASN:ND2	2:D:326:THR:OG1	2.08	0.86
2:H:113:SER:HA	2:H:251:VAL:HG13	1.57	0.86
3:E:401:NAI:O2B	3:E:401:NAI:N3A	2.08	0.85
2:B:242:ILE:HG22	2:B:243:ILE:HD13	1.58	0.84
1:E:97:VAL:HG12	1:E:99:PRO:HD3	1.58	0.84
1:A:181:ASP:OD2	1:A:228:TYR:OH	1.98	0.81
2:H:99:ARG:HE	2:H:132:GLN:NE2	1.78	0.81
2:H:99:ARG:NE	2:H:132:GLN:NE2	2.30	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:99:ARG:NH2	2:D:270:GLU:OE2	2.15	0.79
2:H:178:LYS:HE3	2:H:210:LYS:HD3	1.62	0.79
2:H:99:ARG:NE	2:H:132:GLN:HE22	1.81	0.78
2:F:275:HIS:ND1	2:F:276:PRO:O	2.17	0.78
2:F:113:SER:HA	2:F:251:VAL:HG13	1.65	0.77
2:F:239:TYR:O	2:F:242:ILE:HD13	1.86	0.75
2:B:75:VAL:HG11	2:B:302:LEU:HD11	1.66	0.75
2:D:315:VAL:HG12	2:D:342:ILE:HG12	1.68	0.75
1:E:243:LEU:HD12	1:E:263:HIS:HA	1.68	0.74
1:E:96:ASN:ND2	1:E:250:ASN:OD1	2.19	0.74
2:F:119:THR:HG23	2:F:121:HIS:O	1.87	0.74
2:D:130:ARG:NH2	2:D:137:TYR:OH	2.21	0.74
2:H:286:ALA:O	2:H:335:CYS:SG	2.46	0.73
1:C:120:GLU:O	1:C:226:ASN:HB2	1.89	0.73
1:C:161:ARG:HH12	1:C:195:CYS:HB3	1.54	0.72
2:B:113:SER:HA	2:B:251:VAL:HG13	1.69	0.72
2:B:178:LYS:HG2	2:B:210:LYS:HB3	1.71	0.72
2:B:108:VAL:HB	2:B:260:GLU:HG2	1.72	0.71
1:E:284:ALA:O	1:E:287:MET:N	2.23	0.71
2:H:99:ARG:NH2	2:H:270:GLU:OE2	2.23	0.71
2:H:135:GLY:HA3	2:H:237:ASN:CB	2.17	0.71
1:A:30:ALA:O	1:A:299:ARG:NH1	2.22	0.71
2:H:75:VAL:HG11	2:H:302:LEU:HD11	1.72	0.71
1:G:169:THR:HG23	1:G:222:LEU:HD23	1.71	0.71
2:B:248:ALA:HB1	2:B:257:VAL:HG11	1.71	0.71
1:A:178:ARG:HD3	2:B:89:GLY:HA2	1.73	0.70
1:E:122:THR:HG22	1:E:123:GLU:HG3	1.74	0.70
1:A:285:VAL:HG21	1:A:301:GLU:HB2	1.72	0.70
2:D:248:ALA:HB1	2:D:257:VAL:HG11	1.73	0.70
1:E:276:ASN:H	3:E:401:NAI:H62A	1.39	0.70
1:A:137:VAL:HG22	2:B:156:THR:HG22	1.73	0.70
1:E:173:LYS:N	1:E:181:ASP:OD2	2.21	0.69
1:A:69:LYS:HG2	1:A:260:GLU:HB3	1.74	0.69
1:C:97:VAL:HG12	1:C:99:PRO:HD3	1.75	0.69
2:D:128:ILE:HD13	2:D:233:LEU:HB2	1.72	0.69
1:A:51:TRP:CZ3	1:A:80:HIS:HB3	2.28	0.69
1:E:145:THR:CG2	1:E:148:ALA:H	2.05	0.69
1:E:133:ILE:HG22	1:E:134:VAL:HG13	1.75	0.68
1:G:231:ILE:HD12	2:H:242:ILE:HG21	1.75	0.68
1:A:134:VAL:HG22	1:A:137:VAL:HB	1.76	0.68
1:A:51:TRP:HZ3	1:A:80:HIS:HB3	1.58	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:269:ILE:HD13	3:C:401:NAI:C2A	2.24	0.68
1:E:72:LEU:O	3:E:401:NAI:H1D	1.94	0.67
2:F:99:ARG:NH2	2:F:270:GLU:OE2	2.26	0.67
1:C:88:ARG:NH2	1:C:260:GLU:OE2	2.27	0.67
1:E:236:CYS:HA	1:E:239:LEU:HD21	1.75	0.67
1:A:231:ILE:HD11	2:B:242:ILE:HG21	1.76	0.67
2:F:117:TYR:CD2	2:F:329:MET:HG2	2.30	0.67
1:C:314:LEU:HD12	1:C:314:LEU:H	1.59	0.67
1:E:173:LYS:HE2	2:F:242:ILE:HD11	1.77	0.67
2:B:18:THR:OG1	2:B:69:SER:OG	2.12	0.67
2:B:42:VAL:HG22	2:B:307:HIS:HD2	1.59	0.67
1:C:325:SER:HA	1:C:328:THR:HG22	1.76	0.67
2:F:248:ALA:HB1	2:F:257:VAL:HG11	1.77	0.67
1:A:161:ARG:HH12	1:A:195:CYS:CB	2.07	0.66
2:F:180:THR:HB	2:F:233:LEU:HD23	1.78	0.66
2:H:275:HIS:ND1	2:H:276:PRO:O	2.28	0.66
1:A:325:SER:O	1:A:328:THR:HG22	1.96	0.66
2:H:23:ASP:OD1	2:H:52:SER:HB2	1.95	0.66
2:D:260:GLU:HB3	2:D:269:PHE:CD1	2.31	0.65
1:C:119:ARG:NE	1:C:226:ASN:OD1	2.22	0.65
2:D:261:SER:N	2:D:268:VAL:O	2.29	0.65
1:E:161:ARG:HD3	1:E:198:ILE:HD11	1.78	0.65
1:A:99:PRO:HA	1:A:116:VAL:HG22	1.78	0.65
2:F:131:GLU:OE1	2:F:133:THR:HG22	1.96	0.65
1:G:71:PRO:HA	3:G:401:NAI:N7N	2.12	0.65
2:B:112:LYS:NZ	2:B:316:LYS:HE3	2.12	0.65
1:C:129:ILE:HG22	1:C:141:ILE:H	1.62	0.65
2:H:260:GLU:HG3	2:H:262:TYR:HE1	1.62	0.65
1:A:33:PRO:HD3	1:A:296:HIS:CD2	2.33	0.65
2:B:112:LYS:HA	2:B:124:LEU:O	1.96	0.64
2:B:238:LEU:HD13	2:B:239:TYR:CG	2.32	0.64
2:B:220:CYS:SG	2:B:243:ILE:HD12	2.38	0.64
2:D:318:VAL:HG11	2:D:342:ILE:HD12	1.79	0.64
1:E:231:ILE:HD12	2:F:242:ILE:HG21	1.79	0.64
2:H:176:ARG:HG2	2:H:232:VAL:HG23	1.80	0.64
1:C:173:LYS:NZ	2:D:239:TYR:O	2.31	0.63
2:D:275:HIS:NE2	2:D:278:ALA:HA	2.12	0.63
1:E:146:GLU:HB3	2:F:147:GLY:HA3	1.80	0.63
1:A:146:GLU:HG3	1:A:187:LYS:HE2	1.80	0.63
1:C:132:VAL:HG12	1:C:138:VAL:HG13	1.79	0.63
2:D:107:ASN:OD1	2:D:132:GLN:NE2	2.30	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:268:ASP:CG	3:A:401:NAI:HO3A	1.95	0.63
2:B:345:ARG:O	2:B:349:LEU:HD23	1.97	0.63
1:C:251:ILE:HG22	1:C:252:GLY:H	1.63	0.63
2:F:157:ARG:HB2	2:F:194:LEU:HD11	1.79	0.63
1:G:248:SER:HB3	1:G:262:VAL:HG22	1.81	0.62
1:A:61:MET:HG2	1:A:91:PHE:CE2	2.34	0.62
1:A:165:ARG:HD2	1:A:220:ASP:OD1	1.98	0.62
1:C:60:SER:O	1:C:64:ASN:ND2	2.27	0.62
1:C:311:GLY:HA2	1:C:314:LEU:HD11	1.82	0.62
1:C:9:LEU:HD13	1:C:68:LEU:HD23	1.80	0.62
2:F:22:GLY:HA2	2:F:81:ILE:HD13	1.82	0.62
2:B:114:LEU:HD21	2:B:293:LEU:HD21	1.82	0.62
1:G:121:ASN:ND2	1:G:250:ASN:OD1	2.33	0.62
2:H:325:ARG:HB3	2:H:329:MET:HB2	1.82	0.62
2:B:21:PRO:HA	2:B:30:MET:HG3	1.82	0.61
2:B:342:ILE:O	2:B:346:VAL:HG23	2.00	0.61
2:B:131:GLU:O	2:B:237:ASN:HB2	2.01	0.61
1:E:69:LYS:NZ	1:E:70:GLY:O	2.27	0.61
1:A:259:PHE:CE2	1:A:287:MET:HA	2.35	0.61
2:D:288:PRO:HG3	2:D:339:THR:HG22	1.83	0.61
1:C:7:VAL:HG23	1:C:66:MET:HB3	1.81	0.61
2:B:17:VAL:HG23	2:B:44:VAL:HG13	1.82	0.61
1:E:187:LYS:O	1:E:191:VAL:HG12	2.00	0.61
2:F:254:ALA:HB2	2:F:273:ALA:HB3	1.83	0.61
1:A:133:ILE:HG23	1:A:134:VAL:HG13	1.83	0.60
2:B:263:SER:HB3	2:B:266:TYR:H	1.67	0.60
1:E:169:THR:HG23	1:E:222:LEU:HD23	1.83	0.60
1:G:71:PRO:HA	3:G:401:NAI:H72N	1.66	0.60
2:D:178:LYS:HG3	2:D:210:LYS:HB3	1.82	0.60
2:D:95:ASP:O	2:D:99:ARG:HG3	2.02	0.60
1:E:127:SER:OG	1:E:127:SER:O	2.19	0.60
2:F:242:ILE:HG22	2:F:243:ILE:HD13	1.84	0.60
1:A:144:ILE:HD11	1:A:225:PRO:HB3	1.83	0.59
2:D:107:ASN:HD21	2:D:274:ARG:HH22	1.50	0.59
2:F:143:GLU:HG3	2:F:149:ILE:CD1	2.31	0.59
1:A:144:ILE:HD12	1:A:227:LEU:HD21	1.84	0.59
1:E:145:THR:HG23	1:E:148:ALA:H	1.67	0.59
1:A:145:THR:HG21	1:A:148:ALA:H	1.67	0.59
1:A:177:MET:CE	1:A:227:LEU:HD13	2.32	0.59
2:B:105:PHE:CE2	2:B:162:ARG:HG2	2.37	0.59
1:A:100:CYS:HA	1:A:240:ILE:HD11	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:189:LYS:HB2	2:F:190:LEU:HD12	1.84	0.59
2:F:19:MET:SD	2:F:30:MET:HB3	2.43	0.59
1:A:169:THR:HB	1:A:201:ASN:OD1	2.01	0.59
1:A:268:ASP:OD2	3:A:401:NAI:C3B	2.51	0.59
1:G:102:SER:HG	1:G:113:VAL:H	1.49	0.59
1:G:61:MET:O	1:G:65:LYS:N	2.27	0.59
1:G:97:VAL:HG12	1:G:99:PRO:HD3	1.84	0.59
1:C:160:ALA:HB3	1:C:198:ILE:HD13	1.83	0.59
1:A:72:LEU:HD12	1:A:83:MET:HB3	1.84	0.59
2:B:42:VAL:HG22	2:B:307:HIS:CD2	2.38	0.59
1:C:74:THR:HA	1:C:80:HIS:NE2	2.18	0.59
2:H:132:GLN:O	2:H:132:GLN:HG2	2.03	0.59
2:H:282:GLY:O	2:H:283:ARG:C	2.41	0.59
1:E:178:ARG:NH1	2:F:87:TYR:O	2.36	0.58
1:G:103:ILE:HG22	1:G:106:TYR:H	1.67	0.58
1:G:133:ILE:HG22	1:G:134:VAL:HG13	1.85	0.58
1:C:72:LEU:HD12	1:C:83:MET:HB3	1.86	0.58
2:F:293:LEU:HD11	2:F:315:VAL:HG21	1.85	0.58
2:H:142:HIS:NE2	2:H:150:GLU:OE1	2.36	0.58
2:B:129:ILE:HD12	2:B:166:PHE:HE1	1.68	0.58
2:B:69:SER:O	2:B:73:ASN:ND2	2.36	0.58
1:C:281:LEU:O	1:C:285:VAL:HG23	2.04	0.58
1:G:176:ILE:HA	2:H:90:GLU:HB3	1.84	0.58
2:D:113:SER:HA	2:D:251:VAL:HG13	1.86	0.58
1:A:259:PHE:HE2	1:A:287:MET:HA	1.69	0.58
2:D:39:ALA:HB1	2:D:347:LYS:HG3	1.86	0.58
2:B:222:GLN:HB3	2:B:229:GLN:OE1	2.04	0.57
1:G:169:THR:HB	1:G:201:ASN:OD1	2.05	0.57
2:B:324:VAL:HG21	2:B:341:GLU:HG2	1.86	0.57
1:E:210:LEU:HB2	2:F:245:ASN:HB3	1.87	0.57
1:E:179:MET:SD	2:F:149:ILE:HD11	2.44	0.57
1:A:119:ARG:NE	1:A:226:ASN:OD1	2.26	0.57
2:F:124:LEU:HB2	2:F:228:TYR:CE1	2.39	0.57
2:B:76:ALA:O	2:B:268:VAL:HA	2.05	0.57
2:D:116:GLY:O	2:D:325:ARG:NH1	2.30	0.57
2:D:33:VAL:HG22	2:D:292:LEU:HD23	1.86	0.57
2:B:66:VAL:HG11	2:B:98:LEU:HD21	1.86	0.57
1:A:145:THR:CG2	1:A:148:ALA:H	2.17	0.57
1:E:189:ARG:NE	1:E:202:GLU:OE2	2.34	0.57
1:A:161:ARG:HH12	1:A:195:CYS:HB2	1.69	0.56
3:E:401:NAI:O2N	2:F:215:ILE:HD12	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:143:GLU:HA	2:H:149:ILE:HD13	1.86	0.56
1:A:145:THR:HG23	1:A:147:GLY:N	2.20	0.56
2:D:53:GLU:HG2	2:D:84:PRO:HG3	1.87	0.56
1:A:96:ASN:OD1	1:A:98:ARG:NE	2.39	0.56
2:B:112:LYS:HZ1	2:B:316:LYS:HE3	1.70	0.56
2:D:305:GLU:O	2:D:309:SER:HB2	2.05	0.56
2:D:318:VAL:HG21	2:D:342:ILE:HG13	1.86	0.56
1:G:124:GLY:HA3	1:G:226:ASN:O	2.05	0.56
2:H:260:GLU:HG3	2:H:262:TYR:CE1	2.41	0.56
2:D:96:MET:O	2:D:100:ARG:HG2	2.06	0.56
2:D:299:LEU:HB2	2:D:308:SER:HB2	1.87	0.56
2:F:40:ALA:HB2	2:F:346:VAL:HG11	1.88	0.56
2:H:319:ILE:O	2:H:325:ARG:NH1	2.39	0.56
1:A:7:VAL:HG23	1:A:66:MET:HB3	1.86	0.56
1:A:235:LEU:HD12	2:B:246:LEU:HD12	1.88	0.56
2:B:129:ILE:O	2:B:234:VAL:HA	2.04	0.56
1:C:131:HIS:CG	2:F:140:LEU:HD22	2.42	0.56
1:A:329:GLU:HA	1:A:332:CYS:HB2	1.88	0.55
1:A:249:GLY:HA3	1:A:286:MET:HE1	1.88	0.55
1:C:101:VAL:HA	1:C:113:VAL:O	2.05	0.55
1:A:231:ILE:CD1	2:B:242:ILE:HG21	2.36	0.55
1:G:213:VAL:HG12	1:G:235:LEU:HD21	1.89	0.55
1:A:178:ARG:NH2	2:B:88:LYS:O	2.39	0.55
2:B:42:VAL:O	2:B:44:VAL:N	2.30	0.55
2:B:61:GLU:O	2:B:65:GLN:HG3	2.05	0.55
2:H:282:GLY:O	2:H:283:ARG:O	2.24	0.55
1:E:146:GLU:N	2:F:147:GLY:O	2.34	0.55
2:F:165:LYS:O	2:F:169:ASP:HB2	2.06	0.55
1:E:237:ALA:HB1	1:E:246:THR:HG21	1.88	0.55
2:F:143:GLU:HG3	2:F:149:ILE:HD12	1.89	0.55
1:E:92:ASP:O	1:E:92:ASP:CG	2.44	0.54
1:A:268:ASP:CG	3:A:401:NAI:O3B	2.42	0.54
1:E:305:PHE:O	1:E:309:LYS:N	2.38	0.54
2:F:263:SER:OG	2:F:264:ALA:N	2.41	0.54
2:B:136:GLU:HG3	2:B:240:GLY:N	2.23	0.54
2:B:323:LYS:HD2	2:H:306:TYR:OH	2.08	0.54
1:C:248:SER:HB3	1:C:260:GLU:O	2.08	0.54
2:F:288:PRO:HG3	2:F:339:THR:HG23	1.88	0.54
2:F:293:LEU:CD1	2:F:315:VAL:HG21	2.38	0.54
1:C:161:ARG:HH12	1:C:195:CYS:CB	2.20	0.54
1:C:173:LYS:HE3	1:C:228:TYR:CE1	2.43	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:52:SER:O	2:B:58:ALA:HB2	2.08	0.54
1:E:244:GLY:O	1:E:278:THR:HB	2.08	0.53
2:F:114:LEU:HB3	2:F:319:ILE:HD11	1.90	0.53
2:H:96:MET:O	2:H:100:ARG:HG2	2.08	0.53
1:C:231:ILE:CD1	2:D:242:ILE:HG21	2.38	0.53
1:E:116:VAL:HG11	1:E:159:TYR:CE2	2.44	0.53
2:B:216:ILE:HD13	2:B:239:TYR:HD2	1.72	0.53
2:B:271:THR:O	2:B:274:ARG:NE	2.41	0.53
2:B:178:LYS:HE3	2:B:210:LYS:HD3	1.90	0.53
2:B:33:VAL:HG22	2:B:292:LEU:HD23	1.90	0.53
2:F:134:GLU:OE2	2:F:159:LYS:HB2	2.09	0.53
2:F:17:VAL:HG13	2:F:76:ALA:HA	1.91	0.53
2:D:275:HIS:HE2	2:D:278:ALA:HA	1.72	0.53
1:E:212:MET:HG2	1:E:235:LEU:HD22	1.91	0.53
1:A:30:ALA:HB2	1:A:335:VAL:HG11	1.91	0.53
1:C:173:LYS:HB2	1:C:228:TYR:OH	2.09	0.53
1:A:169:THR:HG23	1:A:222:LEU:HD23	1.91	0.53
1:A:88:ARG:HD2	1:A:126:TYR:HE2	1.73	0.53
2:B:289:THR:HG22	2:B:293:LEU:HD22	1.89	0.53
1:C:259:PHE:CE2	1:C:287:MET:HA	2.43	0.53
2:F:140:LEU:HG	2:F:141:GLU:N	2.24	0.53
1:G:176:ILE:HG13	1:G:177:MET:HG3	1.91	0.53
2:H:164:ALA:HB1	2:H:202:VAL:HG21	1.91	0.53
2:B:186:ASN:ND2	2:B:215:ILE:HD13	2.24	0.53
2:D:236:PRO:O	2:D:238:LEU:N	2.39	0.53
1:A:100:CYS:CA	1:A:240:ILE:HD11	2.39	0.53
1:A:167:ASN:O	1:A:220:ASP:HB3	2.09	0.53
1:A:282:LEU:O	1:A:285:VAL:HG12	2.09	0.53
1:E:236:CYS:HA	1:E:239:LEU:CD2	2.39	0.53
1:A:189:ARG:O	1:A:193:GLU:HG2	2.09	0.52
1:E:149:SER:O	1:E:152:ILE:HG22	2.09	0.52
1:E:259:PHE:CE2	1:E:287:MET:HA	2.45	0.52
2:D:310:MET:HE1	2:D:346:VAL:HG13	1.90	0.52
1:E:119:ARG:NH1	1:E:121:ASN:OD1	2.42	0.52
2:D:161:GLN:HG3	2:D:198:CYS:SG	2.49	0.52
2:D:127:VAL:HG23	2:D:232:VAL:HA	1.92	0.52
2:B:102:LEU:HB2	2:B:104:LEU:HG	1.91	0.52
2:D:61:GLU:O	2:D:65:GLN:HG3	2.10	0.52
2:D:314:ALA:O	2:D:317:LYS:N	2.42	0.52
1:E:168:VAL:HG22	1:E:221:VAL:HB	1.91	0.52
2:H:263:SER:OG	2:H:264:ALA:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:259:PHE:HE2	1:E:287:MET:HA	1.74	0.52
1:E:72:LEU:O	3:E:401:NAI:H2N	2.09	0.52
2:F:164:ALA:HB1	2:F:202:VAL:HG21	1.91	0.52
1:A:101:VAL:HA	1:A:113:VAL:O	2.10	0.52
3:E:401:NAI:C2B	3:E:401:NAI:N3A	2.73	0.52
1:C:161:ARG:NH1	1:C:195:CYS:HB3	2.23	0.52
1:C:201:ASN:N	1:C:201:ASN:OD1	2.42	0.52
1:C:27:PHE:HD2	1:C:36:TRP:HZ2	1.57	0.52
1:E:210:LEU:HD11	2:F:253:GLY:HA2	1.91	0.52
1:G:181:ASP:OD2	1:G:228:TYR:OH	2.23	0.52
1:C:278:THR:HG22	1:C:282:LEU:HG	1.92	0.52
1:E:108:THR:HB	1:E:109:PRO:HD2	1.92	0.52
1:E:286:MET:O	1:E:290:HIS:N	2.43	0.52
2:H:178:LYS:HG3	2:H:210:LYS:HB3	1.92	0.52
2:H:178:LYS:HB2	2:H:231:ASP:HB2	1.93	0.52
2:H:42:VAL:HG12	2:H:44:VAL:HG23	1.90	0.52
2:B:238:LEU:O	2:B:239:TYR:HB2	2.09	0.51
1:A:76:ILE:O	2:B:185:ALA:HB1	2.09	0.51
2:B:67:LEU:HD12	2:B:70:MET:HB2	1.92	0.51
1:C:5:GLN:O	1:C:34:ILE:HA	2.10	0.51
2:H:81:ILE:HD13	2:H:95:ASP:HA	1.92	0.51
2:D:285:ILE:O	2:D:285:ILE:HG23	2.10	0.51
2:H:195:PHE:CD2	2:H:236:PRO:HB3	2.45	0.51
2:F:345:ARG:O	2:F:349:LEU:HD23	2.11	0.51
1:G:185:LEU:HD13	1:G:202:GLU:OE2	2.10	0.51
1:A:75:PRO:HD3	1:A:80:HIS:NE2	2.26	0.51
2:B:296:SER:HA	2:B:299:LEU:HD12	1.91	0.51
2:D:63:LEU:HD11	2:D:94:TYR:CD1	2.46	0.51
1:E:244:GLY:O	1:E:279:ALA:N	2.43	0.51
1:A:185:LEU:HD13	1:A:202:GLU:OE2	2.11	0.51
2:D:83:THR:HG21	2:D:90:GLU:HG3	1.91	0.51
1:A:88:ARG:HD3	1:A:121:ASN:ND2	2.26	0.51
1:E:203:MET:CE	1:E:208:VAL:HG22	2.40	0.51
1:A:276:ASN:HD21	1:A:318:LEU:HD23	1.76	0.51
1:C:180:SER:O	1:C:183:LEU:HB3	2.11	0.50
2:D:287:ASN:HD22	2:D:326:THR:HG1	1.57	0.50
2:F:176:ARG:HG2	2:F:232:VAL:HG13	1.93	0.50
1:G:157:PHE:HZ	1:G:192:ALA:HB2	1.76	0.50
1:E:177:MET:CE	1:E:227:LEU:HD13	2.41	0.50
1:G:150:LYS:O	1:G:154:GLU:HG3	2.11	0.50
1:A:23:VAL:HG11	1:A:280:LEU:HD23	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:207:THR:HA	2:D:275:HIS:ND1	2.27	0.50
1:C:146:GLU:HB3	2:D:147:GLY:HA3	1.93	0.50
1:C:27:PHE:CD2	1:C:36:TRP:HZ2	2.30	0.50
2:F:322:GLY:HA2	2:F:325:ARG:HH21	1.76	0.50
2:B:78:ILE:HG12	2:B:268:VAL:HG13	1.93	0.50
1:A:100:CYS:HB3	1:A:115:ILE:HG22	1.92	0.50
2:D:157:ARG:HG3	2:D:198:CYS:SG	2.51	0.50
3:A:401:NAI:C5B	3:A:401:NAI:C8A	2.85	0.50
2:D:131:GLU:OE1	2:D:133:THR:HG22	2.11	0.50
2:D:253:GLY:O	2:D:257:VAL:HG12	2.12	0.50
2:F:319:ILE:HG22	2:F:338:PHE:HZ	1.76	0.50
2:B:247:ALA:O	2:B:250:LEU:HG	2.12	0.50
1:C:146:GLU:HA	1:C:183:LEU:HD21	1.93	0.50
1:C:273:ASP:OD1	1:C:324:CYS:HB3	2.11	0.49
2:D:18:THR:HB	2:D:76:ALA:HB2	1.94	0.49
2:D:269:PHE:CD2	2:D:298:MET:HB2	2.47	0.49
2:F:172:THR:HG23	2:F:209:ILE:HD11	1.93	0.49
2:D:310:MET:CE	2:D:346:VAL:HG13	2.42	0.49
2:F:19:MET:HE3	2:F:34:LYS:HD3	1.94	0.49
2:F:319:ILE:HG22	2:F:338:PHE:CZ	2.47	0.49
2:H:190:LEU:HD12	2:H:190:LEU:H	1.76	0.49
1:A:115:ILE:HD13	1:A:236:CYS:SG	2.52	0.49
1:E:161:ARG:HD3	1:E:198:ILE:CD1	2.42	0.49
1:C:84:ASN:HA	1:C:87:LEU:HB2	1.95	0.49
1:E:119:ARG:HD2	1:E:229:GLY:O	2.13	0.49
1:G:238:GLY:HA3	2:H:224:VAL:CG2	2.42	0.49
1:C:176:ILE:HG13	1:C:177:MET:HG2	1.94	0.49
2:H:28:GLU:O	2:H:31:HIS:N	2.46	0.49
2:D:157:ARG:HB2	2:D:194:LEU:HD11	1.95	0.49
1:E:201:ASN:N	1:E:201:ASN:OD1	2.45	0.49
1:E:125:GLU:OE1	2:F:184:LYS:HE2	2.13	0.49
2:H:23:ASP:HB2	2:H:82:HIS:ND1	2.28	0.49
1:A:106:TYR:CZ	1:A:318:LEU:HD13	2.48	0.48
1:A:222:LEU:HD13	1:A:232:LEU:HD21	1.94	0.48
1:C:167:ASN:O	1:C:220:ASP:HB3	2.14	0.48
1:E:325:SER:HA	1:E:328:THR:HG22	1.95	0.48
1:G:93:LEU:O	1:G:121:ASN:HB3	2.13	0.48
2:B:106:ALA:HB1	2:B:166:PHE:CE1	2.49	0.48
2:F:137:TYR:CD1	2:F:237:ASN:ND2	2.81	0.48
1:A:249:GLY:HA2	1:A:259:PHE:HD1	1.79	0.48
1:A:289:ARG:NH2	1:A:301:GLU:OE1	2.39	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:204:TYR:HE1	2:D:277:PHE:CE2	2.30	0.48
2:D:257:VAL:O	2:D:257:VAL:HG13	2.12	0.48
2:F:83:THR:HG22	2:F:93:SER:CB	2.43	0.48
2:B:187:ILE:HG13	2:B:188:MET:N	2.28	0.48
2:B:104:LEU:HD23	2:B:263:SER:HB2	1.94	0.48
1:A:113:VAL:HG12	1:A:216:PRO:HB2	1.95	0.48
2:B:66:VAL:O	2:B:69:SER:HB3	2.13	0.48
1:C:292:GLY:HA2	1:C:294:PHE:CE1	2.49	0.48
1:A:51:TRP:O	1:A:86:LEU:HD11	2.13	0.48
2:B:210:LYS:NZ	2:B:212:GLU:OE2	2.42	0.48
1:G:177:MET:HE1	1:G:227:LEU:HD13	1.96	0.48
1:G:100:CYS:HA	1:G:240:ILE:HD11	1.96	0.48
1:A:330:GLU:O	1:A:334:ARG:HB2	2.13	0.48
1:C:131:HIS:CD2	1:C:133:ILE:HD11	2.49	0.48
1:C:172:HIS:CE1	1:C:185:LEU:HD11	2.48	0.48
1:E:195:CYS:O	1:E:197:ASP:N	2.47	0.48
2:F:186:ASN:O	2:F:189:LYS:HE3	2.14	0.48
2:B:184:LYS:HE2	2:B:239:TYR:OH	2.14	0.47
2:B:58:ALA:HB1	2:B:94:TYR:CE2	2.49	0.47
1:C:32:ALA:O	1:C:33:PRO:C	2.51	0.47
1:A:124:GLY:O	1:A:126:TYR:N	2.47	0.47
1:A:27:PHE:CD2	1:A:36:TRP:HZ2	2.33	0.47
1:C:27:PHE:CE1	1:C:300:ILE:HD13	2.50	0.47
1:C:51:TRP:CZ3	1:C:80:HIS:HB2	2.50	0.47
2:B:103:ASP:OD2	2:B:162:ARG:NH2	2.48	0.47
2:B:186:ASN:HD22	2:B:215:ILE:HD13	1.79	0.47
2:D:76:ALA:HB3	2:D:268:VAL:HG22	1.95	0.47
1:E:206:ASP:OD1	2:F:275:HIS:HB2	2.14	0.47
2:F:198:CYS:O	2:F:201:GLU:HB2	2.15	0.47
2:H:37:PHE:CE1	2:H:299:LEU:HD11	2.49	0.47
2:H:315:VAL:HG12	2:H:342:ILE:HD13	1.96	0.47
2:D:42:VAL:O	2:D:44:VAL:N	2.42	0.47
1:C:231:ILE:HD12	2:D:242:ILE:HG21	1.96	0.47
1:C:68:LEU:HD12	1:C:259:PHE:O	2.14	0.47
3:C:401:NAI:PA	3:C:401:NAI:C5D	3.02	0.47
1:A:169:THR:CG2	1:A:222:LEU:HD23	2.43	0.47
2:F:20:LEU:HD12	2:F:20:LEU:HA	1.73	0.47
2:F:176:ARG:HG2	2:F:232:VAL:CG1	2.44	0.47
1:G:101:VAL:N	1:G:240:ILE:HD11	2.29	0.47
2:H:19:MET:HE1	2:H:48:GLU:OE2	2.15	0.47
1:A:147:GLY:O	1:A:150:LYS:HE2	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:401:NAI:H51N	3:C:401:NAI:PA	2.54	0.47
2:D:136:GLU:HA	2:D:153:LYS:HE3	1.97	0.47
1:E:208:VAL:O	1:E:212:MET:N	2.48	0.47
1:G:246:THR:HA	1:G:247:PRO:HD3	1.74	0.47
2:D:112:LYS:HA	2:D:124:LEU:O	2.14	0.47
2:F:346:VAL:O	2:F:349:LEU:N	2.40	0.47
2:H:186:ASN:ND2	2:H:215:ILE:HD13	2.30	0.47
1:E:115:ILE:HD11	1:E:219:PHE:HB2	1.96	0.47
2:F:119:THR:OG1	2:F:120:ARG:N	2.46	0.47
1:G:116:VAL:HG12	1:G:118:ILE:HG12	1.97	0.47
1:G:231:ILE:CD1	2:H:242:ILE:HG21	2.44	0.47
2:H:63:LEU:HD11	2:H:94:TYR:HD2	1.79	0.47
1:A:263:HIS:HB2	3:A:401:NAI:N7A	2.30	0.47
1:C:98:ARG:HH11	1:C:233:SER:HB2	1.80	0.47
1:A:287:MET:O	1:A:291:MET:N	2.46	0.46
1:C:130:GLU:O	2:D:190:LEU:HD22	2.15	0.46
1:C:129:ILE:HG21	1:C:141:ILE:HD12	1.97	0.46
1:E:247:PRO:HB2	1:E:283:SER:HA	1.97	0.46
1:A:168:VAL:O	1:A:200:PHE:HA	2.14	0.46
2:B:96:MET:O	2:B:100:ARG:HG3	2.14	0.46
2:B:164:ALA:CB	2:B:202:VAL:HG21	2.45	0.46
2:B:17:VAL:HG11	2:B:298:MET:SD	2.54	0.46
1:C:304:CYS:HA	1:C:331:ILE:HD13	1.98	0.46
2:D:141:GLU:HA	2:D:150:GLU:O	2.14	0.46
2:B:223:LEU:O	2:B:227:PRO:HG3	2.15	0.46
1:C:265:THR:OG1	3:C:401:NAI:H4D	2.15	0.46
2:H:293:LEU:HD11	2:H:315:VAL:HG21	1.98	0.46
1:A:100:CYS:SG	1:A:236:CYS:HB3	2.56	0.46
2:D:185:ALA:O	2:D:189:LYS:HE3	2.16	0.46
2:H:127:VAL:CG2	2:H:232:VAL:HG22	2.45	0.46
2:H:344:ARG:O	2:H:348:ASP:HB2	2.16	0.46
1:A:261:SER:CB	1:A:279:ALA:HB1	2.46	0.46
2:F:241:ASN:O	2:F:245:ASN:ND2	2.48	0.46
1:C:210:LEU:O	1:C:212:MET:N	2.49	0.46
1:G:325:SER:HA	1:G:328:THR:HG22	1.98	0.46
1:A:141:ILE:O	1:A:141:ILE:HG22	2.15	0.46
1:A:82:SER:HB3	1:A:85:LEU:HG	1.98	0.46
2:B:19:MET:O	2:B:48:GLU:HA	2.16	0.46
1:C:137:VAL:HG22	2:D:156:THR:HG22	1.96	0.46
1:C:276:ASN:HD22	1:C:318:LEU:HD23	1.79	0.46
2:D:116:GLY:C	2:D:325:ARG:HH12	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:103:ASP:OD2	2:F:162:ARG:NH2	2.49	0.46
1:G:179:MET:HB2	1:G:179:MET:HE2	1.65	0.46
1:E:68:LEU:HB2	1:E:287:MET:SD	2.55	0.46
2:H:19:MET:SD	2:H:30:MET:HB3	2.56	0.46
1:A:15:ILE:O	1:A:19:ILE:HG12	2.16	0.46
1:A:97:VAL:HG12	1:A:99:PRO:HD3	1.97	0.46
1:C:173:LYS:HB2	1:C:228:TYR:CZ	2.50	0.46
1:E:93:LEU:O	1:E:121:ASN:HB3	2.16	0.46
1:G:115:ILE:CD1	1:G:219:PHE:HB2	2.46	0.46
2:H:288:PRO:HG3	2:H:339:THR:HG23	1.97	0.46
1:A:169:THR:CB	1:A:201:ASN:OD1	2.64	0.45
1:E:130:GLU:HA	1:E:140:SER:HA	1.98	0.45
2:F:108:VAL:HG22	2:F:129:ILE:HD13	1.99	0.45
1:G:210:LEU:HD11	1:G:214:GLN:NE2	2.31	0.45
1:G:222:LEU:HD13	1:G:232:LEU:HD21	1.98	0.45
2:H:91:LEU:HD23	2:H:91:LEU:HA	1.77	0.45
1:E:171:VAL:HG21	1:E:222:LEU:HD22	1.97	0.45
1:E:260:GLU:O	1:E:283:SER:OG	2.22	0.45
1:A:69:LYS:HE3	1:A:260:GLU:OE2	2.17	0.45
2:D:140:LEU:O	2:D:151:CYS:HA	2.16	0.45
1:G:214:GLN:HE22	2:H:253:GLY:HA3	1.81	0.45
1:C:185:LEU:HD23	1:C:185:LEU:HA	1.76	0.45
1:A:88:ARG:HD3	1:A:121:ASN:HD21	1.80	0.45
2:B:109:VAL:O	2:B:127:VAL:HA	2.17	0.45
1:C:136:GLY:O	1:C:137:VAL:HG23	2.16	0.45
1:C:275:ALA:HA	3:C:401:NAI:N1A	2.32	0.45
1:C:206:ASP:OD1	2:D:275:HIS:HB2	2.17	0.45
2:H:134:GLU:OE1	2:H:159:LYS:HB2	2.16	0.45
2:H:306:TYR:OH	2:H:310:MET:HE1	2.16	0.45
2:H:114:LEU:HB3	2:H:319:ILE:HD11	1.99	0.45
2:D:117:TYR:CE2	2:D:329:MET:HG2	2.51	0.45
2:H:178:LYS:O	2:H:231:ASP:HB3	2.16	0.45
2:B:70:MET:SD	2:B:76:ALA:HB2	2.56	0.45
1:E:239:LEU:H	1:E:239:LEU:HD23	1.82	0.45
2:F:287:ASN:HD22	2:F:328:ASP:HB2	1.82	0.45
2:D:18:THR:HB	2:D:76:ALA:CB	2.47	0.45
1:E:97:VAL:HG22	1:E:118:ILE:HD12	1.99	0.45
1:E:113:VAL:HG11	1:E:216:PRO:HG2	1.98	0.45
2:F:119:THR:H	2:F:122:ASN:HD21	1.65	0.45
1:G:100:CYS:SG	1:G:236:CYS:HB3	2.57	0.45
1:G:27:PHE:CE2	1:G:288:LEU:HD11	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:220:CYS:SG	2:H:243:ILE:HD12	2.56	0.45
1:A:181:ASP:OD1	1:A:225:PRO:HG2	2.17	0.45
2:D:105:PHE:CE2	2:D:162:ARG:HG2	2.52	0.45
1:E:69:LYS:HE2	1:E:87:LEU:HD12	1.99	0.45
1:G:184:PHE:CZ	1:G:225:PRO:HD3	2.52	0.45
2:F:141:GLU:HA	2:F:150:GLU:O	2.17	0.44
1:G:157:PHE:CZ	1:G:192:ALA:HB2	2.51	0.44
1:A:160:ALA:HB3	1:A:198:ILE:HD13	1.99	0.44
2:B:105:PHE:CD1	2:B:105:PHE:N	2.85	0.44
1:C:259:PHE:HE2	1:C:287:MET:HA	1.80	0.44
2:D:260:GLU:HB3	2:D:269:PHE:CE1	2.52	0.44
1:E:100:CYS:N	1:E:115:ILE:O	2.49	0.44
2:H:176:ARG:HG3	2:H:231:ASP:OD1	2.18	0.44
1:E:203:MET:HE3	1:E:208:VAL:HG22	1.99	0.44
1:G:115:ILE:HD11	1:G:219:PHE:HB2	1.99	0.44
1:A:16:GLY:N	1:A:17:PRO:HD2	2.31	0.44
1:A:41:VAL:HG13	1:A:41:VAL:O	2.18	0.44
2:B:287:ASN:OD1	2:B:289:THR:N	2.32	0.44
2:D:30:MET:O	2:D:34:LYS:HG2	2.18	0.44
1:A:172:HIS:CD2	1:A:185:LEU:HD21	2.52	0.44
2:B:17:VAL:CG2	2:B:44:VAL:HG13	2.47	0.44
1:C:103:ILE:HG21	1:C:308:ILE:HG21	2.00	0.44
1:C:247:PRO:HA	1:C:283:SER:OG	2.18	0.44
2:D:164:ALA:HB1	2:D:202:VAL:HG21	1.99	0.44
1:E:263:HIS:HD2	3:E:401:NAI:N7A	2.15	0.44
2:F:110:HIS:O	2:F:257:VAL:HG23	2.17	0.44
2:H:247:ALA:HA	2:H:250:LEU:HG	2.00	0.44
1:A:237:ALA:HB1	1:A:246:THR:HG21	1.99	0.44
3:A:401:NAI:H2D	3:A:401:NAI:H6N	1.65	0.44
2:B:246:LEU:C	2:B:246:LEU:HD23	2.38	0.44
2:B:269:PHE:CE2	2:B:298:MET:HA	2.52	0.44
2:D:196:LEU:HA	2:D:196:LEU:HD12	1.68	0.44
2:F:16:PRO:HA	2:F:45:GLU:O	2.17	0.44
1:A:161:ARG:HH12	1:A:195:CYS:HB3	1.83	0.44
2:B:124:LEU:HD11	2:B:227:PRO:HB2	2.00	0.44
2:B:18:THR:HB	2:B:76:ALA:HB2	1.99	0.44
1:C:102:SER:OG	1:C:113:VAL:HG22	2.18	0.44
1:C:263:HIS:HB2	3:C:401:NAI:H8A	1.99	0.44
1:G:206:ASP:OD1	2:H:275:HIS:HB2	2.17	0.44
1:A:171:VAL:HG22	1:A:208:VAL:HG21	1.99	0.44
2:B:51:LEU:HD21	2:B:63:LEU:HD12	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:19:MET:HE3	2:D:48:GLU:OE2	2.18	0.44
2:D:345:ARG:O	2:D:349:LEU:HD23	2.17	0.44
1:A:172:HIS:O	1:A:204:TYR:HA	2.18	0.43
1:A:242:GLY:H	1:A:245:VAL:HG22	1.83	0.43
1:C:153:ALA:HB1	1:C:191:VAL:HG11	1.99	0.43
1:C:26:ILE:O	1:C:30:ALA:HB2	2.18	0.43
2:D:99:ARG:HA	2:D:104:LEU:HD12	2.00	0.43
2:D:20:LEU:HA	2:D:20:LEU:HD12	1.79	0.43
2:F:58:ALA:HB1	2:F:94:TYR:CE2	2.52	0.43
2:H:97:ARG:O	2:H:101:LYS:N	2.38	0.43
1:A:286:MET:O	1:A:290:HIS:N	2.50	0.43
1:E:284:ALA:O	1:E:286:MET:N	2.51	0.43
2:F:293:LEU:HD11	2:F:315:VAL:CG2	2.47	0.43
1:G:133:ILE:HD13	1:G:133:ILE:HA	1.87	0.43
2:H:30:MET:O	2:H:34:LYS:HG3	2.17	0.43
2:H:340:GLU:O	2:H:344:ARG:NH2	2.51	0.43
2:H:36:VAL:O	2:H:39:ALA:HB3	2.17	0.43
2:D:160:SER:HA	2:D:163:ILE:HG22	2.00	0.43
2:F:258:PRO:HB2	2:F:294:SER:HB2	2.01	0.43
2:H:171:ALA:O	2:H:176:ARG:N	2.47	0.43
2:H:187:ILE:HG13	2:H:188:MET:N	2.33	0.43
2:H:230:PHE:CD2	2:H:233:LEU:HD21	2.53	0.43
2:D:130:ARG:NH2	2:D:241:ASN:HB3	2.33	0.43
1:G:179:MET:HE3	2:H:149:ILE:HD12	1.99	0.43
1:A:25:LYS:HA	1:A:25:LYS:HD2	1.83	0.43
1:A:86:LEU:O	1:A:90:THR:HG23	2.19	0.43
2:B:157:ARG:HB2	2:B:194:LEU:HD11	2.00	0.43
2:D:260:GLU:HA	2:D:269:PHE:HA	2.01	0.43
1:E:123:GLU:OE1	1:E:145:THR:HB	2.18	0.43
2:H:293:LEU:CD1	2:H:315:VAL:HG21	2.48	0.43
2:B:165:LYS:O	2:B:169:ASP:HB2	2.19	0.43
2:F:311:ILE:O	2:F:315:VAL:HG13	2.18	0.43
2:F:36:VAL:HG22	2:F:343:CYS:SG	2.59	0.43
1:G:145:THR:HA	2:H:147:GLY:O	2.18	0.43
2:B:134:GLU:O	2:B:237:ASN:HB3	2.19	0.43
1:E:145:THR:HG21	1:E:148:ALA:H	1.80	0.43
1:A:98:ARG:HD3	1:A:233:SER:HB3	2.01	0.43
2:F:90:GLU:O	2:F:93:SER:N	2.44	0.43
2:H:205:LEU:O	2:H:207:PRO:HD3	2.19	0.43
2:B:63:LEU:O	2:B:66:VAL:HB	2.18	0.43
2:F:157:ARG:HG3	2:F:198:CYS:SG	2.59	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:315:VAL:O	2:F:319:ILE:HG23	2.19	0.43
2:F:40:ALA:HB2	2:F:346:VAL:CG1	2.49	0.43
2:B:216:ILE:HD13	2:B:239:TYR:CD2	2.53	0.43
2:F:168:PHE:HZ	2:F:211:PHE:CD2	2.37	0.43
1:G:123:GLU:OE2	1:G:145:THR:HG23	2.18	0.43
2:H:260:GLU:CG	2:H:262:TYR:HE1	2.31	0.43
3:A:401:NAI:H8A	3:A:401:NAI:H52A	1.97	0.42
2:B:196:LEU:HA	2:B:196:LEU:HD12	1.74	0.42
2:B:243:ILE:N	2:B:243:ILE:HD13	2.32	0.42
1:C:145:THR:HA	2:D:147:GLY:O	2.19	0.42
2:D:172:THR:OG1	2:D:173:LYS:N	2.52	0.42
1:E:210:LEU:O	1:E:210:LEU:HG	2.19	0.42
2:F:75:VAL:HG11	2:F:302:LEU:HD11	2.01	0.42
1:A:14:GLY:O	1:A:17:PRO:HD2	2.19	0.42
2:F:130:ARG:HG2	2:F:131:GLU:O	2.19	0.42
2:H:63:LEU:HD11	2:H:94:TYR:CD2	2.54	0.42
2:H:77:ILE:O	2:H:77:ILE:HG23	2.19	0.42
2:B:16:PRO:HA	2:B:45:GLU:O	2.18	0.42
2:B:20:LEU:HD12	2:B:21:PRO:CD	2.49	0.42
1:C:180:SER:HA	2:D:149:ILE:HG21	2.01	0.42
2:H:176:ARG:HG3	2:H:177:GLY:H	1.84	0.42
1:A:218:GLN:HG3	1:A:219:PHE:CE2	2.55	0.42
2:B:15:PHE:HB2	2:B:43:PRO:O	2.20	0.42
1:C:94:TYR:HA	1:C:122:THR:HG23	2.01	0.42
2:D:110:HIS:NE2	2:D:260:GLU:OE2	2.51	0.42
2:D:318:VAL:HG21	2:D:342:ILE:CD1	2.50	0.42
1:G:281:LEU:O	1:G:284:ALA:HB3	2.19	0.42
2:B:275:HIS:NE2	2:B:278:ALA:HA	2.34	0.42
2:F:114:LEU:CB	2:F:319:ILE:HD11	2.48	0.42
2:F:328:ASP:N	2:F:328:ASP:OD1	2.51	0.42
1:A:208:VAL:O	1:A:212:MET:N	2.52	0.42
1:A:140:SER:O	2:B:152:LEU:HA	2.20	0.42
2:B:20:LEU:HD12	2:B:21:PRO:HD2	2.01	0.42
1:E:145:THR:HA	2:F:147:GLY:O	2.20	0.42
1:G:167:ASN:HB2	1:G:220:ASP:OD2	2.19	0.42
2:H:130:ARG:HA	2:H:235:MET:O	2.19	0.42
2:H:260:GLU:OE1	2:H:262:TYR:OH	2.30	0.42
2:B:111:VAL:N	2:B:126:LEU:O	2.49	0.42
1:C:9:LEU:CD1	1:C:68:LEU:HD23	2.47	0.42
2:D:134:GLU:OE2	2:D:156:THR:HG23	2.19	0.42
1:C:139:GLN:HA	2:D:153:LYS:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:112:LYS:NZ	2:D:316:LYS:HE2	2.35	0.42
2:D:335:CYS:O	2:D:339:THR:HG23	2.19	0.42
2:D:63:LEU:HD11	2:D:94:TYR:HD1	1.85	0.42
1:E:97:VAL:HG22	1:E:118:ILE:CD1	2.50	0.42
1:G:238:GLY:HA3	2:H:224:VAL:HG23	2.00	0.42
1:A:152:ILE:HA	1:A:152:ILE:HD12	1.91	0.42
1:A:187:LYS:O	1:A:191:VAL:HG12	2.19	0.42
2:D:67:LEU:HD13	2:D:102:LEU:HD23	2.00	0.42
2:F:314:ALA:O	2:F:318:VAL:HG23	2.20	0.42
2:H:153:LYS:O	2:H:154:ILE:HD13	2.19	0.42
1:A:184:PHE:CG	1:A:225:PRO:HG3	2.55	0.42
1:A:263:HIS:C	1:A:263:HIS:CD2	2.93	0.42
2:H:142:HIS:CD2	2:H:150:GLU:HB3	2.55	0.42
2:B:164:ALA:HB1	2:B:202:VAL:HG21	2.01	0.42
2:B:260:GLU:HG3	2:B:262:TYR:CE1	2.55	0.42
2:B:112:LYS:HZ2	2:B:316:LYS:HE3	1.83	0.42
1:C:129:ILE:HG22	1:C:141:ILE:N	2.32	0.42
1:C:134:VAL:HG22	1:C:137:VAL:HB	2.02	0.42
1:C:181:ASP:HA	1:C:184:PHE:HB3	2.01	0.42
1:G:118:ILE:HG21	1:G:156:ALA:HB2	2.02	0.42
1:C:181:ASP:OD1	1:C:181:ASP:N	2.51	0.41
2:D:177:GLY:O	2:D:209:ILE:HG23	2.20	0.41
2:D:117:TYR:CD2	2:D:329:MET:HG2	2.55	0.41
1:E:141:ILE:HG12	2:F:152:LEU:CD2	2.50	0.41
1:G:185:LEU:HA	1:G:188:CYS:HB2	2.02	0.41
2:H:127:VAL:HG21	2:H:232:VAL:HG22	2.03	0.41
2:H:237:ASN:OD1	2:H:240:GLY:HA2	2.20	0.41
1:A:75:PRO:HD3	1:A:80:HIS:CE1	2.55	0.41
2:F:178:LYS:O	2:F:232:VAL:HG22	2.20	0.41
1:A:276:ASN:ND2	1:A:318:LEU:HD23	2.35	0.41
1:A:328:THR:HA	1:A:331:ILE:HG22	2.00	0.41
1:E:226:ASN:O	1:E:226:ASN:ND2	2.53	0.41
2:F:184:LYS:HE3	2:F:187:ILE:HG12	2.02	0.41
1:A:263:HIS:O	1:A:263:HIS:CD2	2.74	0.41
2:B:284:ASN:HB3	2:B:285:ILE:H	1.75	0.41
1:G:113:VAL:HG12	1:G:216:PRO:HG2	2.01	0.41
2:H:131:GLU:OE1	2:H:133:THR:HG22	2.19	0.41
2:H:134:GLU:HB3	2:H:135:GLY:H	1.65	0.41
1:A:41:VAL:HG23	1:A:54:PRO:HD2	2.02	0.41
2:B:204:GLU:O	2:B:207:PRO:HG3	2.20	0.41
2:B:42:VAL:C	2:B:44:VAL:H	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:32:ALA:O	1:C:34:ILE:N	2.52	0.41
1:C:51:TRP:CZ3	1:C:81:PRO:HD2	2.55	0.41
2:D:114:LEU:CB	2:D:319:ILE:HD11	2.50	0.41
2:F:37:PHE:O	2:F:41:ALA:N	2.53	0.41
1:E:285:VAL:O	1:E:289:ARG:HG3	2.21	0.41
1:E:173:LYS:CE	2:F:242:ILE:HD11	2.48	0.41
1:C:131:HIS:HD2	1:C:133:ILE:HD11	1.85	0.41
1:C:172:HIS:CD2	1:C:185:LEU:HD11	2.56	0.41
2:D:221:MET:HB3	2:D:221:MET:HE2	1.83	0.41
1:G:174:ALA:HB2	1:G:181:ASP:HB3	2.02	0.41
3:G:401:NAI:H2D	3:G:401:NAI:H6N	1.76	0.41
1:A:175:ASN:N	1:A:175:ASN:OD1	2.53	0.41
2:B:29:LEU:HD22	2:B:288:PRO:HA	2.02	0.41
1:C:160:ALA:HA	1:C:165:ARG:HG2	2.03	0.41
1:C:189:ARG:O	1:C:193:GLU:HG2	2.20	0.41
2:D:133:THR:HG23	2:D:134:GLU:HG3	2.03	0.41
1:E:303:ALA:O	1:E:307:THR:N	2.50	0.41
1:G:169:THR:CG2	1:G:222:LEU:HD23	2.46	0.41
1:G:97:VAL:HG22	1:G:118:ILE:HD13	2.02	0.41
2:H:253:GLY:O	2:H:257:VAL:HG12	2.21	0.41
2:H:269:PHE:CZ	2:H:298:MET:HA	2.56	0.41
2:B:173:LYS:HD2	2:B:174:LYS:NZ	2.36	0.41
1:C:238:GLY:HA3	2:D:224:VAL:HG23	2.02	0.41
1:C:88:ARG:HE	1:C:250:ASN:HD21	1.67	0.41
2:F:58:ALA:HB1	2:F:94:TYR:CD2	2.55	0.41
2:H:229:GLN:HG3	2:H:230:PHE:N	2.36	0.41
1:A:69:LYS:HG3	1:A:70:GLY:O	2.21	0.41
1:C:285:VAL:CG1	1:C:289:ARG:NH1	2.84	0.41
1:C:231:ILE:HD11	2:D:242:ILE:HG21	2.02	0.41
2:D:287:ASN:HD21	2:D:329:MET:HE1	1.85	0.41
2:B:195:PHE:CE1	2:B:236:PRO:HD3	2.55	0.41
1:E:9:LEU:O	1:E:38:GLU:HA	2.20	0.41
2:F:233:LEU:HD23	2:F:233:LEU:HA	1.93	0.41
1:G:12:GLY:HA2	1:G:72:LEU:HD23	2.02	0.41
1:A:69:LYS:HD3	1:A:258:ILE:HG21	2.03	0.40
1:A:173:LYS:NZ	2:B:239:TYR:O	2.51	0.40
1:C:141:ILE:HD11	2:F:152:LEU:HD11	2.02	0.40
1:C:80:HIS:CD2	1:C:80:HIS:H	2.40	0.40
2:D:108:VAL:HB	2:D:260:GLU:HG3	2.03	0.40
2:F:223:LEU:HA	2:F:223:LEU:HD23	1.90	0.40
2:F:135:GLY:HA3	2:F:237:ASN:HB3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:288:PRO:HG3	2:F:339:THR:CG2	2.51	0.40
2:F:114:LEU:HD13	2:F:319:ILE:CD1	2.51	0.40
1:A:61:MET:HB2	1:A:61:MET:HE2	1.99	0.40
2:B:328:ASP:N	2:B:328:ASP:OD1	2.48	0.40
1:E:143:LEU:HB3	2:F:150:GLU:CG	2.52	0.40
1:G:72:LEU:HD12	1:G:84:ASN:OD1	2.21	0.40
1:G:75:PRO:HG2	1:G:80:HIS:N	2.37	0.40
2:B:37:PHE:CZ	2:B:295:ALA:HB1	2.57	0.40
1:C:184:PHE:CD2	1:C:225:PRO:HG3	2.56	0.40
2:D:40:ALA:CB	2:D:311:ILE:HD11	2.51	0.40
1:E:246:THR:HA	1:E:247:PRO:HD3	1.90	0.40
2:F:172:THR:O	2:F:174:LYS:N	2.55	0.40
1:G:210:LEU:HD23	2:H:275:HIS:NE2	2.36	0.40
1:A:259:PHE:HD2	1:A:287:MET:HG3	1.85	0.40
2:B:108:VAL:HG13	2:B:129:ILE:HD11	2.02	0.40
1:C:250:ASN:HB2	1:C:258:ILE:O	2.22	0.40
2:D:162:ARG:HH22	2:D:264:ALA:HB2	1.87	0.40
1:E:203:MET:HE2	1:E:208:VAL:HG22	2.02	0.40
1:E:184:PHE:CG	1:E:225:PRO:HG3	2.57	0.40
2:H:271:THR:HG22	2:H:272:GLY:N	2.35	0.40
1:A:184:PHE:CD2	1:A:225:PRO:HG3	2.57	0.40
1:E:100:CYS:SG	1:E:236:CYS:HB3	2.62	0.40
1:G:236:CYS:HA	1:G:239:LEU:HG	2.03	0.40
2:H:164:ALA:CB	2:H:202:VAL:HG21	2.50	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	333/341 (98%)	291 (87%)	42 (13%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	319/341 (94%)	272 (85%)	47 (15%)	0	100	100
1	E	312/341 (92%)	271 (87%)	41 (13%)	0	100	100
1	G	314/341 (92%)	272 (87%)	42 (13%)	0	100	100
2	B	336/356 (94%)	296 (88%)	40 (12%)	0	100	100
2	D	336/356 (94%)	289 (86%)	47 (14%)	0	100	100
2	F	336/356 (94%)	284 (84%)	52 (16%)	0	100	100
2	H	336/356 (94%)	281 (84%)	55 (16%)	0	100	100
All	All	2622/2788 (94%)	2256 (86%)	366 (14%)	0	100	100

There are no Ramachandran outliers to report.

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	243/278 (87%)	232 (96%)	11 (4%)	27	58
1	C	219/278 (79%)	214 (98%)	5 (2%)	50	73
1	E	182/278 (66%)	174 (96%)	8 (4%)	28	59
1	G	180/278 (65%)	175 (97%)	5 (3%)	43	70
2	B	260/300 (87%)	249 (96%)	11 (4%)	30	60
2	D	257/300 (86%)	244 (95%)	13 (5%)	24	54
2	F	255/300 (85%)	245 (96%)	10 (4%)	32	62
2	H	250/300 (83%)	244 (98%)	6 (2%)	49	73
All	All	1846/2312 (80%)	1777 (96%)	69 (4%)	34	63

All (69) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	69	LYS
1	A	94	TYR

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Mol	Chain	Res	Type
1	A	126	TYR
1	A	161	ARG
1	A	177	MET
1	A	195	CYS
1	A	248	SER
1	A	314	LEU
1	A	327	PHE
1	A	333	ARG
1	A	334	ARG
2	B	23	ASP
2	B	99	ARG
2	B	105	PHE
2	B	117	TYR
2	B	169	ASP
2	B	174	LYS
2	B	197	GLN
2	B	214	MET
2	B	217	ASP
2	B	244	ASP
2	B	325	ARG
1	C	13	ASP
1	C	84	ASN
1	C	230	ASP
1	C	304	CYS
1	C	305	PHE
2	D	117	TYR
2	D	151	CYS
2	D	169	ASP
2	D	176	ARG
2	D	192	ASP
2	D	219	CYS
2	D	222	GLN
2	D	238	LEU
2	D	244	ASP
2	D	275	HIS
2	D	296	SER
2	D	309	SER
2	D	313	ASP
1	E	127	SER
1	E	161	ARG
1	E	177	MET
1	E	203	MET

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Mol	Chain	Res	Type
1	E	206	ASP
1	E	226	ASN
1	E	239	LEU
1	E	334	ARG
2	F	117	TYR
2	F	131	GLU
2	F	176	ARG
2	F	189	LYS
2	F	214	MET
2	F	226	ASN
2	F	244	ASP
2	F	296	SER
2	F	309	SER
2	F	328	ASP
1	G	178	ARG
1	G	195	CYS
1	G	295	ASP
1	G	304	CYS
1	G	324	CYS
2	H	52	SER
2	H	117	TYR
2	H	142	HIS
2	H	146	ARG
2	H	231	ASP
2	H	296	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	307	HIS
2	D	107	ASN
2	D	132	GLN
2	D	222	GLN
2	D	287	ASN
2	F	218	ASN
2	F	222	GLN
1	G	96	ASN
1	G	121	ASN
1	G	214	GLN
2	H	132	GLN

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](#)

4 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAI	G	401	-	42,48,48	1.12	3 (7%)	47,73,73	1.27	4 (8%)
3	NAI	A	401	-	42,48,48	1.39	7 (16%)	47,73,73	1.31	3 (6%)
3	NAI	C	401	-	42,48,48	1.25	1 (2%)	47,73,73	1.85	10 (21%)
3	NAI	E	401	-	42,48,48	1.17	4 (9%)	47,73,73	1.59	14 (29%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAI	G	401	-	-	9/25/72/72	0/5/5/5
3	NAI	A	401	-	-	9/25/72/72	0/5/5/5
3	NAI	C	401	-	-	14/25/72/72	0/5/5/5
3	NAI	E	401	-	-	8/25/72/72	0/5/5/5

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	G	401	NAI	C6N-C5N	3.51	1.39	1.33
3	A	401	NAI	C2B-C1B	-3.37	1.48	1.53
3	E	401	NAI	C2B-C1B	-3.20	1.48	1.53
3	A	401	NAI	O4B-C4B	-2.61	1.39	1.45
3	G	401	NAI	C2B-C1B	-2.56	1.49	1.53
3	E	401	NAI	C6N-C5N	2.54	1.37	1.33
3	E	401	NAI	C4A-N3A	-2.51	1.32	1.35
3	A	401	NAI	O4D-C4D	-2.50	1.39	1.45
3	A	401	NAI	C5A-N7A	-2.46	1.30	1.39
3	C	401	NAI	C6N-N1N	-2.31	1.31	1.37
3	A	401	NAI	C6N-C5N	2.29	1.37	1.33
3	A	401	NAI	PN-O1N	-2.21	1.44	1.55
3	A	401	NAI	C6N-N1N	-2.19	1.31	1.37
3	G	401	NAI	C5A-C4A	2.04	1.46	1.40
3	E	401	NAI	C6N-N1N	-2.04	1.32	1.37

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	401	NAI	PN-O3-PA	-5.81	112.88	132.83
3	C	401	NAI	C4A-C5A-N7A	-5.00	104.19	109.40
3	C	401	NAI	O4B-C1B-C2B	-4.01	101.06	106.93
3	G	401	NAI	PN-O3-PA	-3.98	119.16	132.83
3	A	401	NAI	N3A-C2A-N1A	-3.85	122.66	128.68
3	E	401	NAI	C1B-N9A-C4A	-3.82	119.92	126.64
3	G	401	NAI	N3A-C2A-N1A	-3.80	122.74	128.68
3	E	401	NAI	C2D-C1D-N1N	-3.67	104.12	113.30
3	C	401	NAI	C5B-C4B-C3B	-3.43	102.31	115.18
3	C	401	NAI	C5A-C6A-N6A	3.42	125.55	120.35
3	E	401	NAI	N3A-C2A-N1A	-3.10	123.84	128.68
3	C	401	NAI	N3A-C2A-N1A	-3.07	123.88	128.68
3	A	401	NAI	PN-O3-PA	-2.81	123.19	132.83
3	E	401	NAI	O5B-C5B-C4B	-2.80	99.35	108.99
3	A	401	NAI	C2D-C1D-N1N	-2.76	106.39	113.30
3	C	401	NAI	O4D-C1D-N1N	2.72	113.38	108.06
3	E	401	NAI	PN-O3-PA	-2.57	124.02	132.83
3	E	401	NAI	O1N-PN-O2N	2.41	124.14	112.24
3	C	401	NAI	O3D-C3D-C4D	-2.38	104.18	111.05
3	G	401	NAI	C3B-C2B-C1B	2.35	104.51	100.98
3	E	401	NAI	C3N-C2N-N1N	-2.32	119.79	123.10
3	E	401	NAI	C1D-N1N-C6N	-2.31	115.85	120.83
3	G	401	NAI	C2A-N1A-C6A	2.21	122.53	118.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	401	NAI	C4A-C5A-N7A	-2.18	107.12	109.40
3	E	401	NAI	O2B-C2B-C1B	-2.17	102.83	110.85
3	C	401	NAI	C1B-N9A-C4A	-2.14	122.88	126.64
3	E	401	NAI	O4B-C4B-C5B	-2.13	102.35	109.37
3	C	401	NAI	C3N-C7N-N7N	2.11	121.42	117.67
3	E	401	NAI	N6A-C6A-N1A	2.09	122.91	118.57
3	E	401	NAI	C2D-C3D-C4D	2.06	106.64	102.64
3	E	401	NAI	C2A-N1A-C6A	2.04	122.25	118.75

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	G	401	NAI	C5D-O5D-PN-O1N
3	G	401	NAI	C5D-O5D-PN-O2N
3	A	401	NAI	C5D-O5D-PN-O3
3	A	401	NAI	C5D-O5D-PN-O1N
3	C	401	NAI	C2N-C3N-C7N-N7N
3	E	401	NAI	C5D-O5D-PN-O3
3	E	401	NAI	C5D-O5D-PN-O1N
3	E	401	NAI	C5D-O5D-PN-O2N
3	A	401	NAI	O4D-C4D-C5D-O5D
3	E	401	NAI	O4D-C4D-C5D-O5D
3	C	401	NAI	C3D-C4D-C5D-O5D
3	C	401	NAI	C2D-C1D-N1N-C6N
3	C	401	NAI	O4D-C4D-C5D-O5D
3	G	401	NAI	C2D-C1D-N1N-C2N
3	G	401	NAI	C2D-C1D-N1N-C6N
3	C	401	NAI	C2D-C1D-N1N-C2N
3	E	401	NAI	C3D-C4D-C5D-O5D
3	G	401	NAI	PA-O3-PN-O2N
3	A	401	NAI	C2D-C1D-N1N-C2N
3	C	401	NAI	PA-O3-PN-O5D
3	A	401	NAI	C2D-C1D-N1N-C6N
3	C	401	NAI	C5B-O5B-PA-O3
3	C	401	NAI	C5D-O5D-PN-O3
3	G	401	NAI	O4D-C1D-N1N-C2N
3	C	401	NAI	O4D-C1D-N1N-C2N
3	A	401	NAI	C5D-O5D-PN-O2N
3	A	401	NAI	O4D-C1D-N1N-C2N
3	C	401	NAI	O4D-C1D-N1N-C6N
3	E	401	NAI	C4B-C5B-O5B-PA

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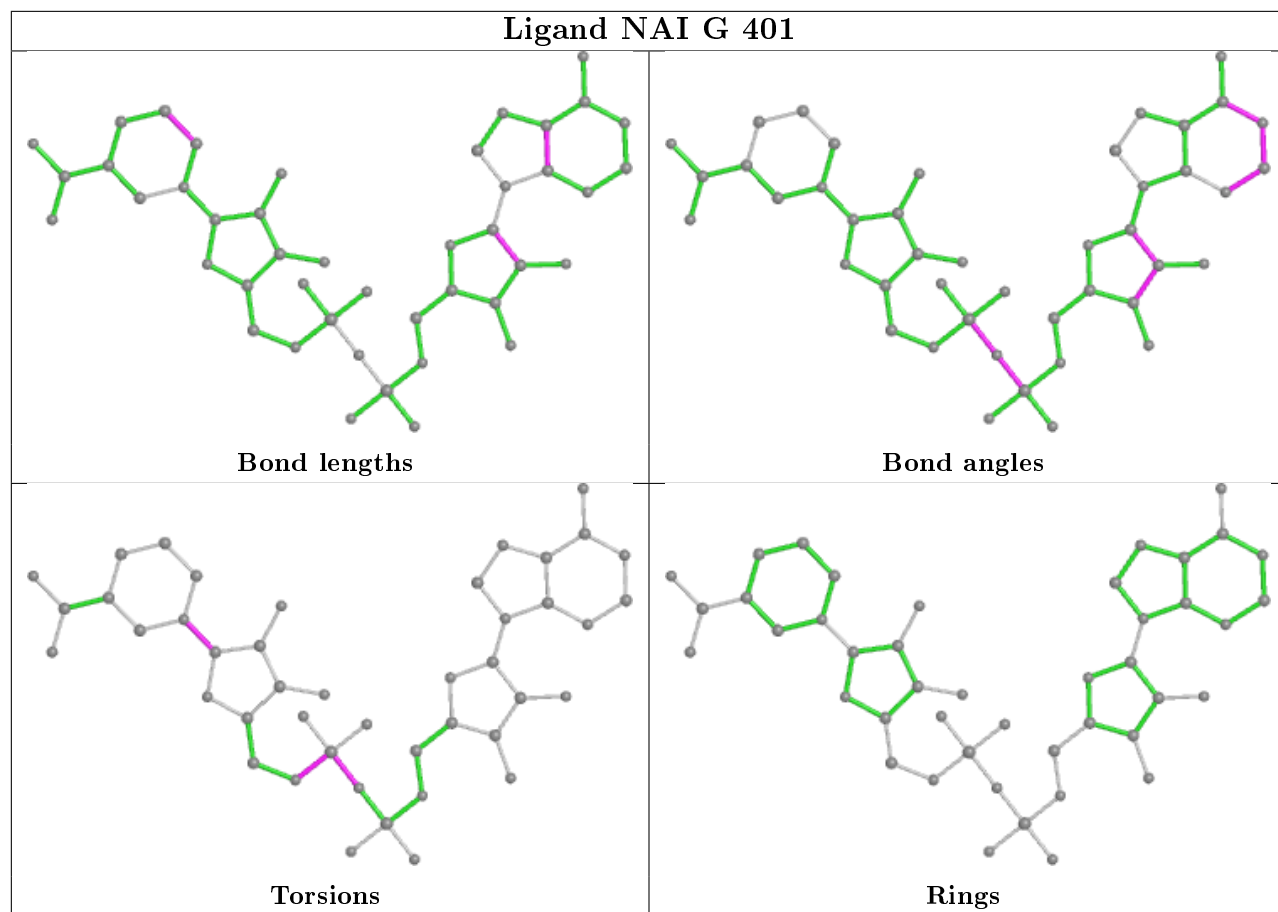
Mol	Chain	Res	Type	Atoms
3	G	401	NAI	PA-O3-PN-O1N
3	A	401	NAI	PA-O3-PN-O1N
3	E	401	NAI	C2D-C1D-N1N-C2N
3	E	401	NAI	O4D-C1D-N1N-C2N
3	G	401	NAI	O4D-C1D-N1N-C6N
3	A	401	NAI	O4D-C1D-N1N-C6N
3	C	401	NAI	PN-O3-PA-O1A
3	C	401	NAI	C3B-C4B-C5B-O5B
3	G	401	NAI	C5D-O5D-PN-O3
3	C	401	NAI	PN-O3-PA-O2A
3	C	401	NAI	C5B-O5B-PA-O1A

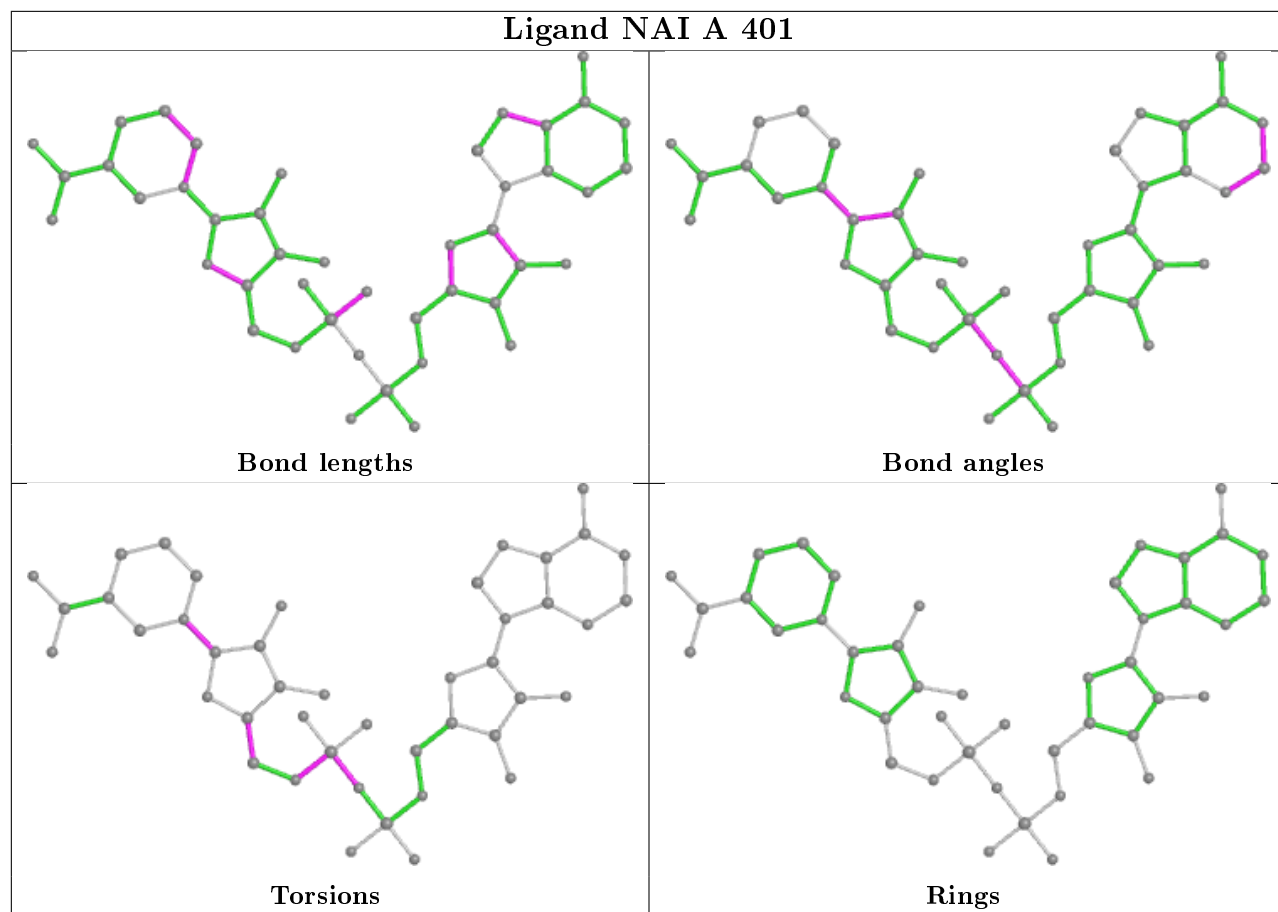
There are no ring outliers.

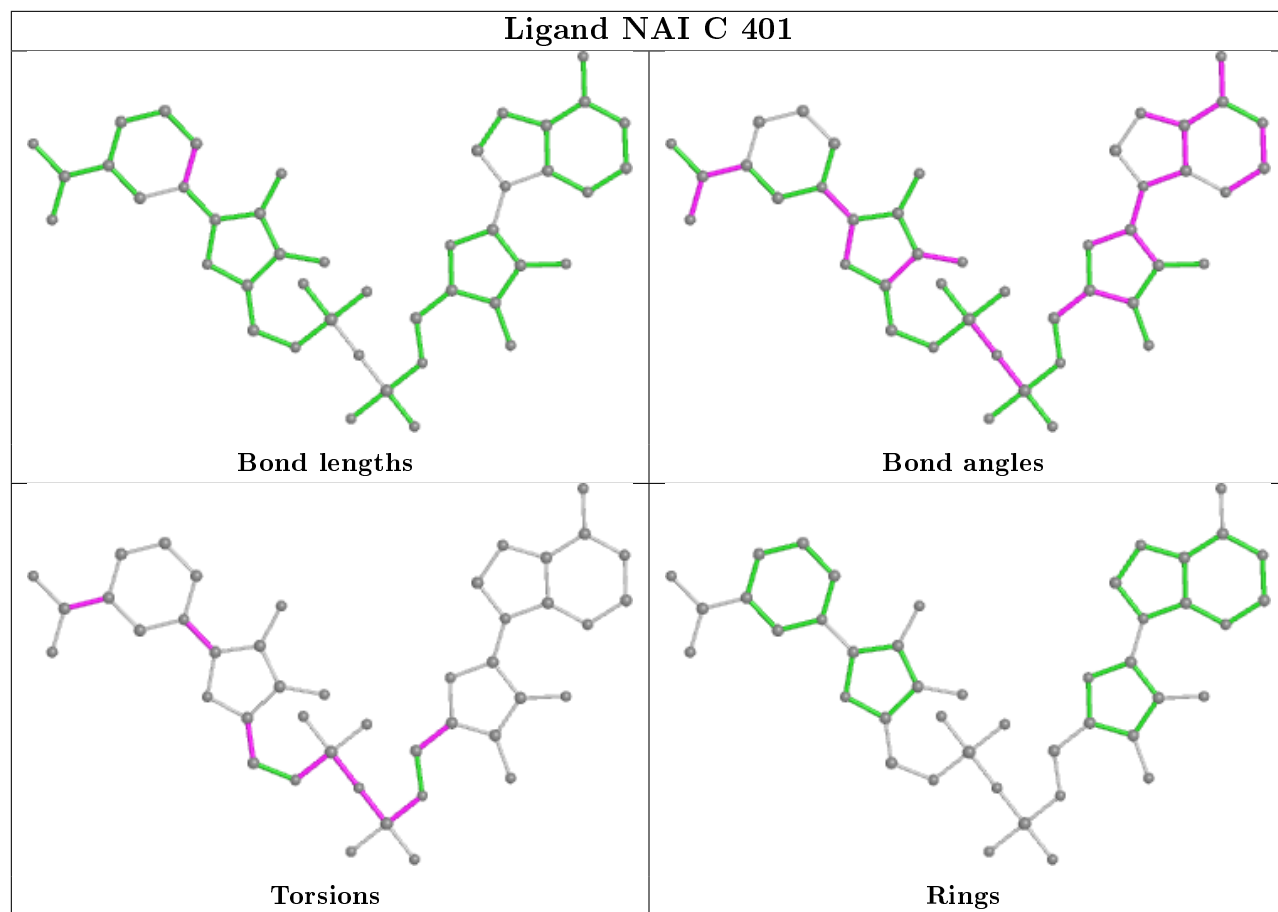
4 monomers are involved in 25 short contacts:

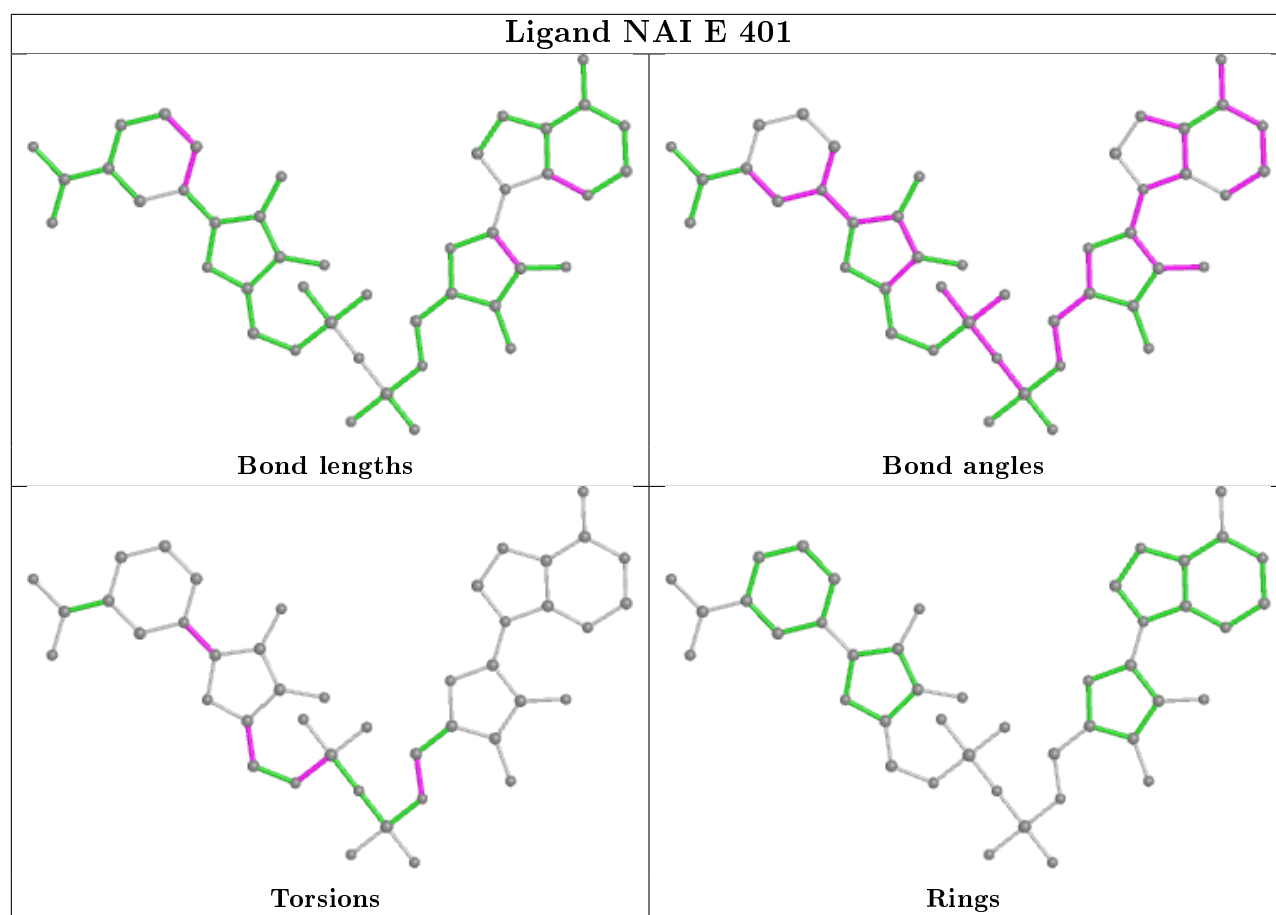
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	401	NAI	3	0
3	A	401	NAI	9	0
3	C	401	NAI	6	0
3	E	401	NAI	7	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.









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	335/341 (98%)	-0.25	4 (1%) 79 78	30, 48, 77, 121	0
1	C	325/341 (95%)	-0.23	7 (2%) 62 60	30, 63, 105, 133	0
1	E	318/341 (93%)	-0.13	5 (1%) 72 70	28, 79, 121, 132	0
1	G	320/341 (93%)	-0.07	6 (1%) 66 65	33, 81, 116, 139	0
2	B	338/356 (94%)	-0.25	0 100 100	28, 47, 67, 87	0
2	D	338/356 (94%)	-0.22	0 100 100	27, 51, 81, 111	0
2	F	338/356 (94%)	-0.30	0 100 100	29, 53, 83, 94	0
2	H	338/356 (94%)	-0.34	1 (0%) 94 94	27, 50, 77, 89	0
All	All	2650/2788 (95%)	-0.22	23 (0%) 84 84	27, 56, 107, 139	0

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	230	ASP	4.0
1	A	47	PRO	3.9
1	E	296	HIS	3.8
1	C	48	GLY	3.8
1	G	55	SER	3.6
1	C	86	LEU	3.2
1	E	80	HIS	3.2
1	E	28	ASP	3.0
1	A	146	GLU	2.9
1	C	80	HIS	2.8
1	A	48	GLY	2.6
1	G	34	ILE	2.5
1	C	56	GLU	2.4
1	E	41	VAL	2.4
1	C	313	SER	2.4
1	A	150	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	E	35	GLN	2.2
1	G	337	ASP	2.1
1	G	299	ARG	2.1
1	C	50	LYS	2.1
1	C	49	GLY	2.1
1	G	112	ASP	2.0
2	H	146	ARG	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](#)

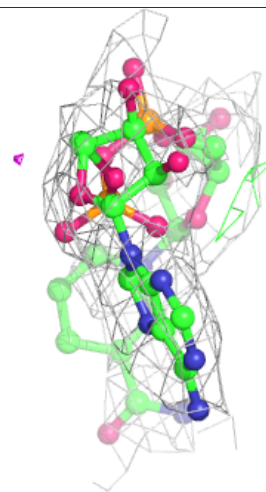
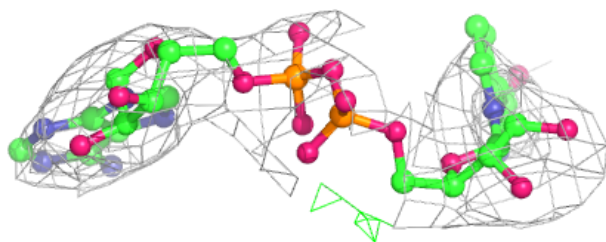
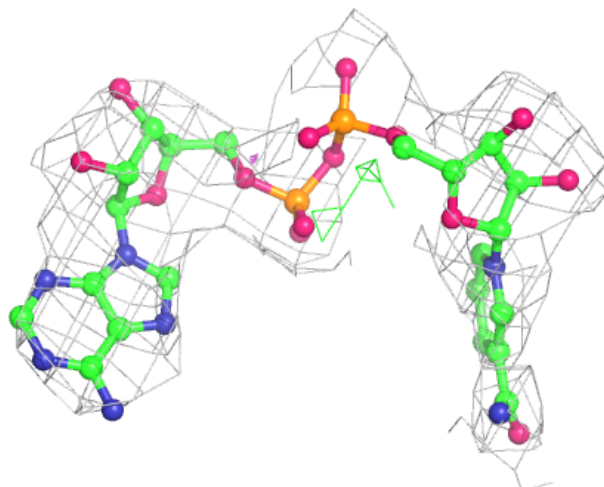
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	NAI	G	401	44/44	0.88	0.20	98,98,98,98	0
3	NAI	C	401	44/44	0.89	0.20	70,70,70,70	0
3	NAI	E	401	44/44	0.90	0.15	91,91,91,91	0
3	NAI	A	401	44/44	0.93	0.18	56,56,56,56	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

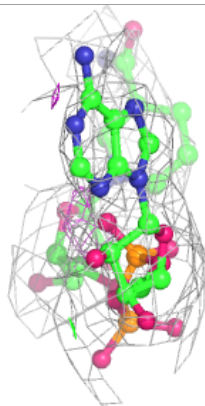
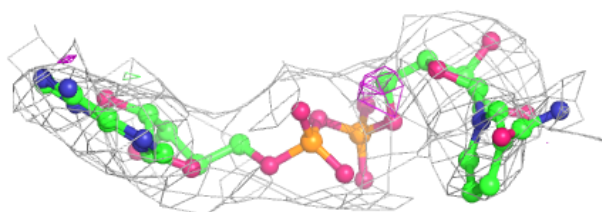
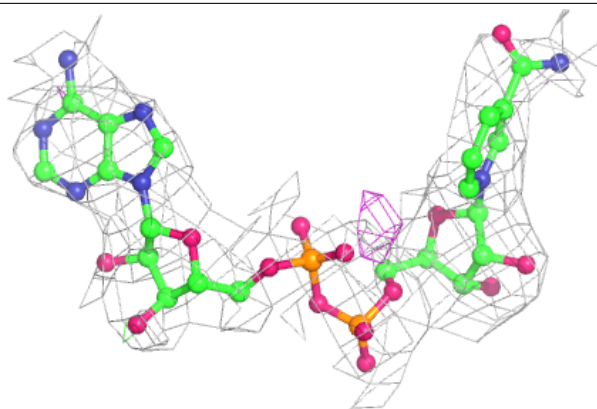
Electron density around NAI G 401:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

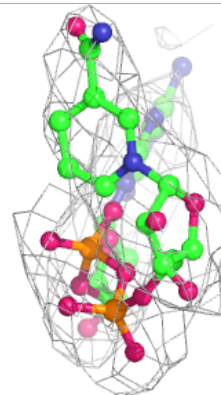
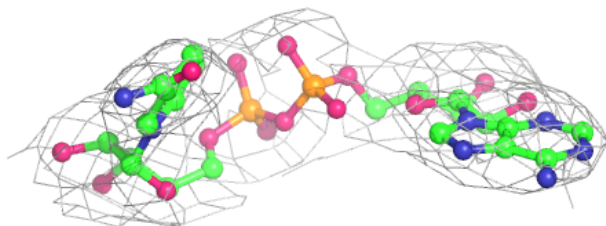
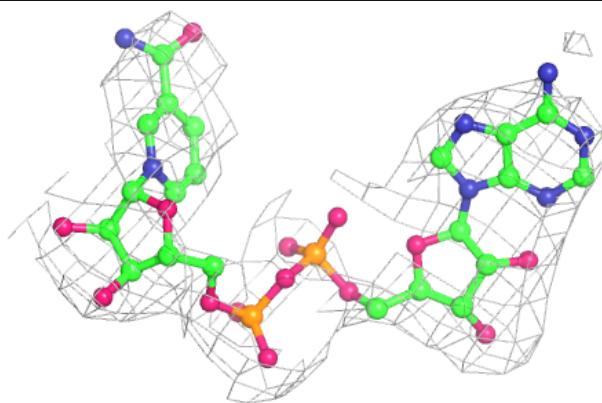


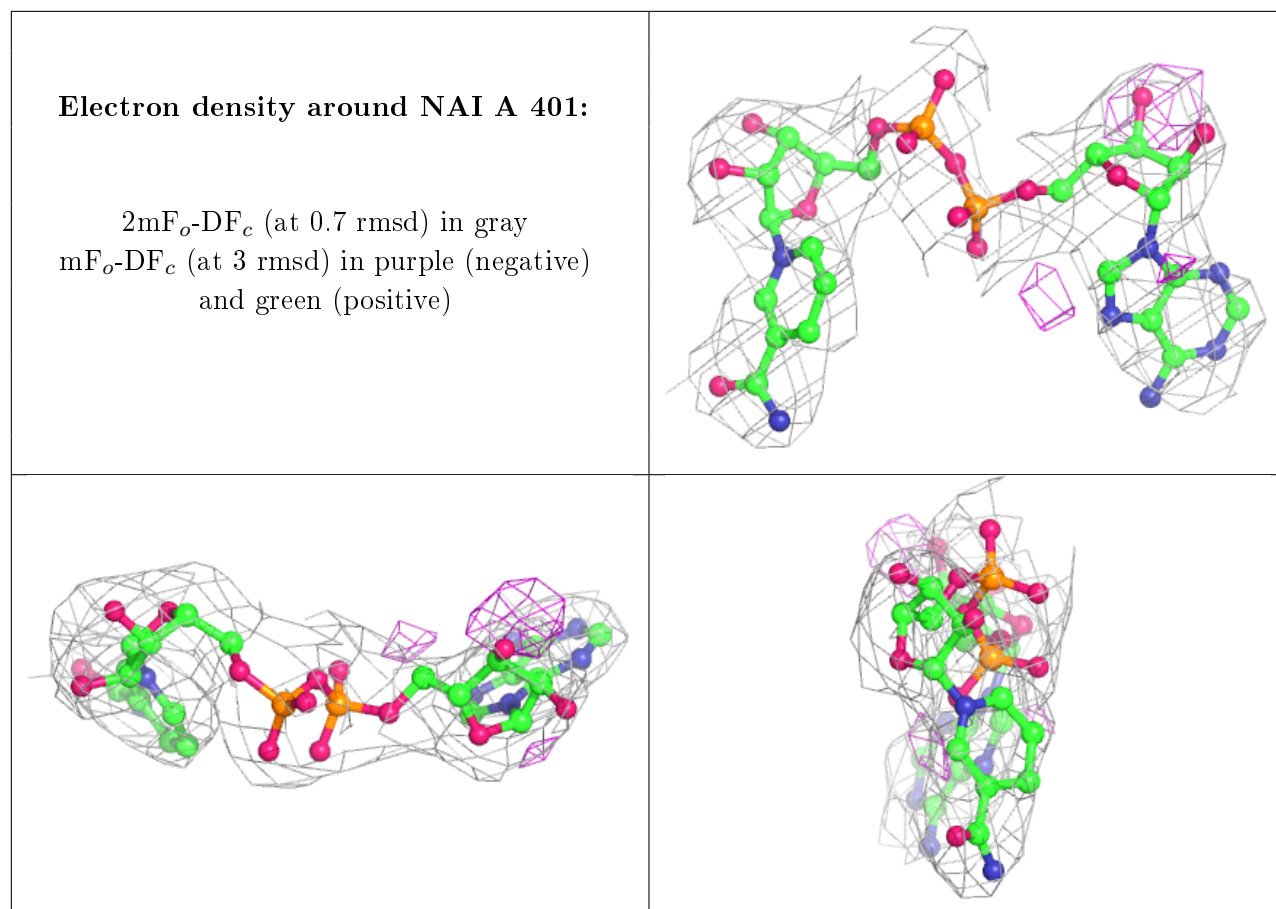
Electron density around NAI C 401:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around NAI E 401:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.