



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 2, 2023 – 11:42 AM EDT

PDB ID : 3R2A  
Title : Crystal structure of RXRalpha ligand-binding domain complexed with corepressor SMRT2 and antagonist rhein  
Authors : Zhang, H.; Chen, L.; Chen, J.; Jiang, H.; Shen, X.  
Deposited on : 2011-03-14  
Resolution : 3.00 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>.

---

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 : 2.35  
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) : 2.35

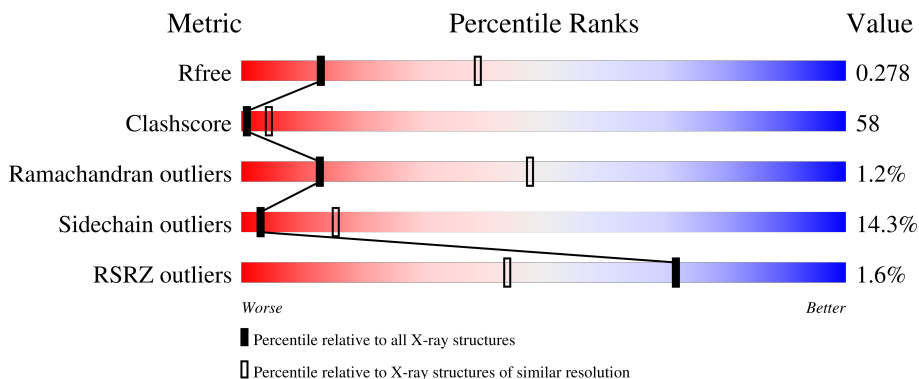
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.00 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.



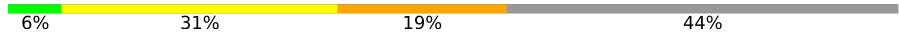
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	240	
1	B	240	
1	C	240	
1	D	240	
2	E	16	

Continued on next page...

*Continued from previous page...*

Mol	Chain	Length	Quality of chain
2	F	16	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	RHN	A	1	-	-	-	X
3	RHN	C	2	-	-	-	X

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6940 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 Retinoic acid receptor RXR-alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	211	Total 1666	C 1069	N 287	O 301	S 9	0	0	0
1	B	217	Total 1717	C 1099	N 296	O 311	S 11	0	0	0
1	C	203	Total 1607	C 1034	N 276	O 288	S 9	0	0	0
1	D	219	Total 1733	C 1111	N 298	O 313	S 11	0	0	0

- Molecule 2 is a protein called Nuclear receptor corepressor 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	E	7	Total 50	C 31	N 8	O 10	S 1	0	0	0
2	F	9	Total 65	C 41	N 10	O 13	S 1	0	0	0

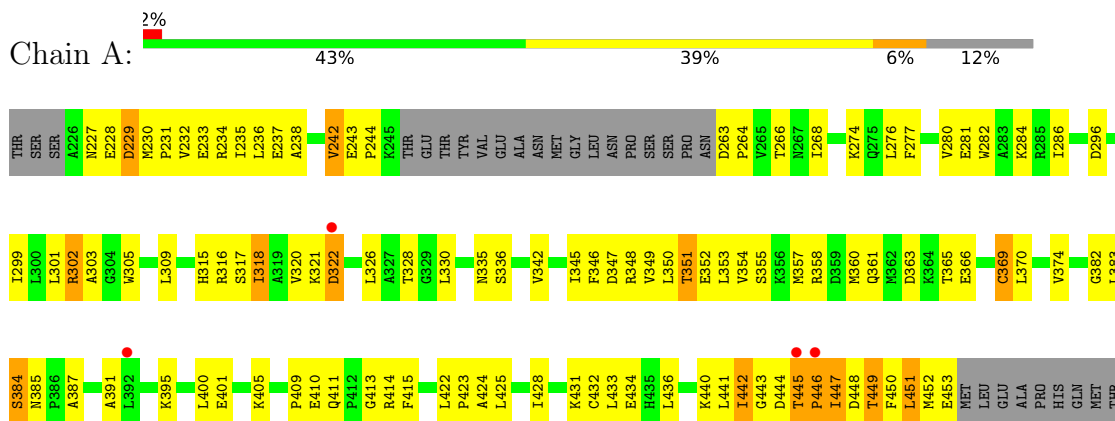
- Molecule 3 is 4,5-dihydroxy-9,10-dioxo-9,10-dihydroanthracene-2-carboxylic acid (three-letter code: RHN) (formula: C<sub>15</sub>H<sub>8</sub>O<sub>6</sub>).



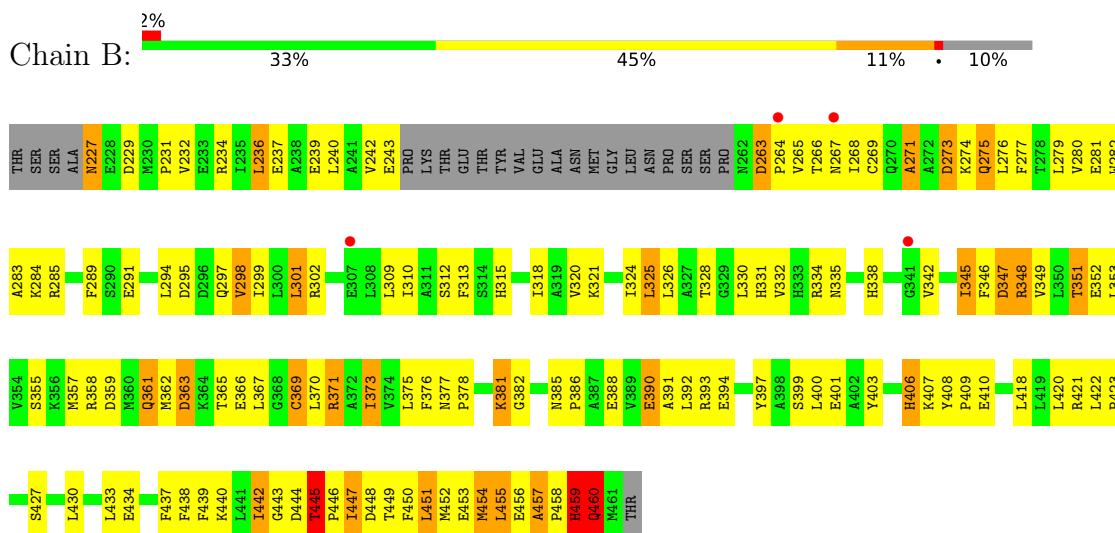
### 3 Residue-property plots i

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.

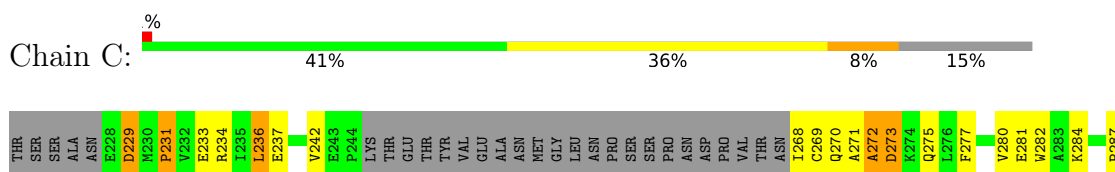
- Molecule 1: Retinoic acid receptor RXR-alpha

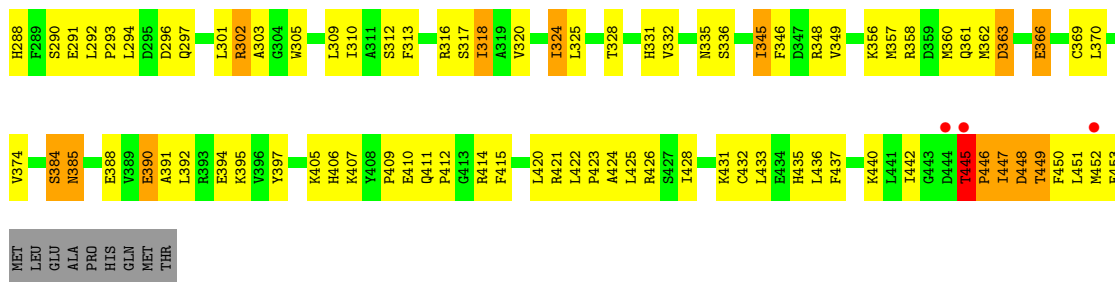


- Molecule 1: Retinoic acid receptor RXR-alpha

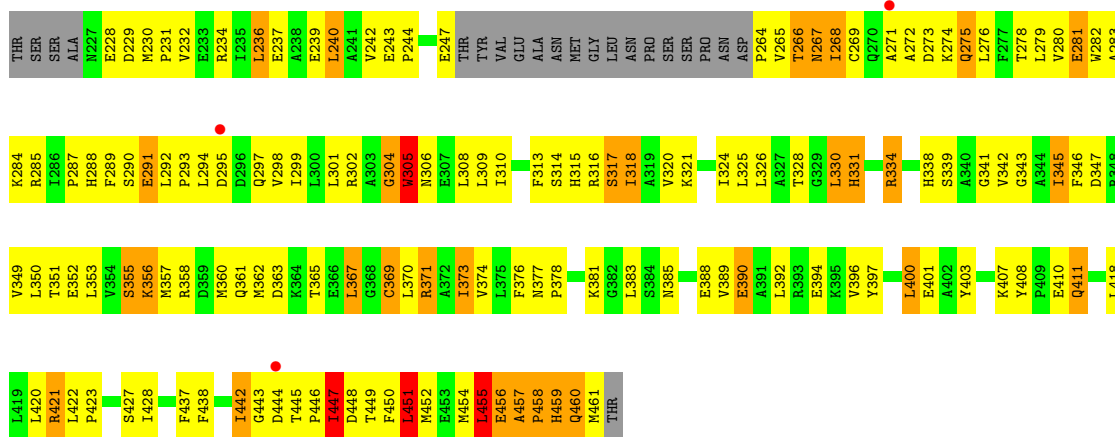


- Molecule 1: Retinoic acid receptor RXR-alpha

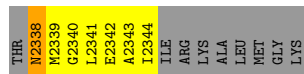
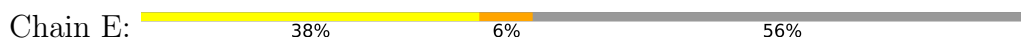




• Molecule 1: Retinoic acid receptor RXR-alpha



• Molecule 2: Nuclear receptor corepressor 2



• Molecule 2: Nuclear receptor corepressor 2



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	85.03Å 117.58Å 117.12Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	42.52 – 3.00 44.70 – 3.00	Depositor EDS
% Data completeness (in resolution range)	100.0 (42.52-3.00) 93.6 (44.70-3.00)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	4.22 (at 3.01Å)	Xtrriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.254 , 0.335 0.268 , 0.278	Depositor DCC
$R_{free}$ test set	1191 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	72.3	Xtrriage
Anisotropy	0.242	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 47.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.447 for -h,l,k	Xtrriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	6940	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	70.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.05% 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: RHN

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	1.38	2/1699 (0.1%)	0.93	3/2297 (0.1%)
1	B	1.25	4/1751 (0.2%)	1.09	12/2367 (0.5%)
1	C	1.40	3/1639 (0.2%)	1.21	5/2214 (0.2%)
1	D	1.18	1/1768 (0.1%)	1.02	9/2389 (0.4%)
2	E	0.87	0/49	1.04	1/64 (1.6%)
2	F	0.89	0/64	1.06	0/85
All	All	1.30	10/6970 (0.1%)	1.06	30/9416 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	D	0	1

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	371	ARG	CZ-NH1	-10.83	1.19	1.33
1	B	371	ARG	CG-CD	-8.97	1.29	1.51
1	B	371	ARG	CD-NE	-7.02	1.34	1.46
1	C	366	GLU	CD-OE2	6.94	1.33	1.25
1	A	369	CYS	CB-SG	-6.76	1.70	1.82
1	A	432	CYS	CB-SG	-6.76	1.70	1.82
1	B	369	CYS	CB-SG	-6.33	1.71	1.82
1	C	369	CYS	CB-SG	-5.94	1.72	1.81
1	C	432	CYS	CB-SG	-5.87	1.72	1.81
1	D	369	CYS	CB-SG	-5.13	1.73	1.81

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	366	GLU	OE1-CD-OE2	-27.93	89.78	123.30
1	C	366	GLU	CG-CD-OE2	17.80	153.90	118.30
1	B	371	ARG	CG-CD-NE	12.84	138.77	111.80
1	B	371	ARG	NE-CZ-NH1	-8.72	115.94	120.30
1	B	371	ARG	CD-NE-CZ	-8.32	111.95	123.60
1	A	442	ILE	N-CA-C	-8.21	88.84	111.00
1	D	447	ILE	CB-CA-C	-8.14	95.32	111.60
1	B	459	HIS	N-CA-C	-7.59	90.51	111.00
1	C	273	ASP	N-CA-C	-7.11	91.81	111.00
1	C	449	THR	N-CA-C	-7.08	91.90	111.00
1	B	451	LEU	N-CA-C	-6.70	92.91	111.00
1	B	457	ALA	C-N-CD	-6.55	106.18	120.60
1	D	304	GLY	N-CA-C	-6.33	97.27	113.10
1	D	451	LEU	N-CA-C	-6.08	94.57	111.00
1	D	452	MET	N-CA-C	6.08	127.41	111.00
1	B	309	LEU	CA-CB-CG	5.99	129.07	115.30
1	D	305	TRP	C-N-CA	-5.92	106.91	121.70
1	C	270	GLN	N-CA-C	-5.86	95.18	111.00
1	D	330	LEU	N-CA-C	5.66	126.29	111.00
2	E	2343	ALA	N-CA-C	-5.63	95.80	111.00
1	B	445	THR	N-CA-C	-5.62	95.82	111.00
1	D	455	LEU	CA-CB-CG	-5.52	102.60	115.30
1	B	382	GLY	N-CA-C	5.45	126.73	113.10
1	A	449	THR	N-CA-C	-5.33	96.61	111.00
1	B	271	ALA	N-CA-C	5.25	125.16	111.00
1	D	459	HIS	N-CA-C	-5.23	96.88	111.00
1	D	457	ALA	C-N-CD	-5.15	109.27	120.60
1	B	371	ARG	NH1-CZ-NH2	5.14	125.06	119.40
1	A	230	MET	C-N-CD	-5.11	109.36	120.60
1	B	445	THR	C-N-CD	-5.10	109.39	120.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	443	GLY	Peptide

## 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	1666	0	1701	142	0
1	B	1717	0	1736	262	3
1	C	1607	0	1639	145	1
1	D	1733	0	1764	270	2
2	E	50	0	50	14	0
2	F	65	0	68	17	0
3	A	21	0	5	3	0
3	C	21	0	6	3	0
4	A	17	0	0	3	0
4	B	15	0	0	0	0
4	C	13	0	0	1	0
4	D	12	0	0	3	0
4	E	2	0	0	0	0
4	F	1	0	0	0	0
All	All	6940	0	6969	803	3

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 58.

All (803) 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:B:324:ILE:HG13	1:B:346:PHE:CE1	1.44	1.52
1:D:236:LEU:O	1:D:240:LEU:CD1	1.65	1.43
1:D:385:ASN:CG	1:D:388:GLU:HB2	1.38	1.43
1:D:305:TRP:N	1:D:308:LEU:HD23	1.30	1.38
1:B:381:LYS:CE	1:C:445:THR:OG1	1.63	1.37
1:B:456:GLU:O	1:B:459:HIS:CB	1.71	1.37
1:B:264:PRO:O	1:B:267:ASN:HB3	1.27	1.30
1:D:385:ASN:ND2	1:D:388:GLU:HB2	1.46	1.29
1:D:389:VAL:HA	1:D:392:LEU:CD2	1.65	1.27
1:D:400:LEU:O	1:D:400:LEU:HD12	1.35	1.26
1:D:385:ASN:OD1	1:D:388:GLU:CB	1.83	1.25
1:B:442:ILE:HG21	4:D:55:HOH:O	1.06	1.23
1:D:385:ASN:CG	1:D:388:GLU:CB	2.08	1.22
1:A:448:ASP:O	1:A:451:LEU:HD12	1.38	1.21
1:D:281:GLU:OE2	1:D:285:ARG:NH2	1.72	1.21
1:B:454:MET:CE	1:B:455:LEU:HA	1.70	1.21
1:C:410:GLU:O	1:C:412:PRO:HD3	1.43	1.19
1:D:236:LEU:O	1:D:240:LEU:HD11	1.15	1.19

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:267:ASN:OD1	1:B:326:LEU:CD1	1.91	1.18
1:D:283:ALA:O	1:D:289:PHE:HD2	1.28	1.16
1:B:298:VAL:HG13	2:E:2341:LEU:CD1	1.74	1.15
1:D:264:PRO:O	1:D:267:ASN:ND2	1.77	1.15
1:A:445:THR:HB	1:A:446:PRO:HD3	1.27	1.15
1:B:298:VAL:CG1	2:E:2341:LEU:HD12	1.76	1.14
1:C:363:ASP:HB2	1:C:366:GLU:OE1	1.49	1.13
1:D:236:LEU:HD22	1:D:240:LEU:HD11	1.25	1.13
1:A:447:ILE:CD1	1:A:448:ASP:H	1.59	1.12
1:C:271:ALA:O	1:C:272:ALA:HB3	1.37	1.12
1:A:409:PRO:HD2	1:A:410:GLU:OE1	1.47	1.12
1:B:455:LEU:O	1:B:455:LEU:HD23	1.46	1.12
1:B:324:ILE:CG1	1:B:346:PHE:CE1	2.32	1.11
1:D:389:VAL:HA	1:D:392:LEU:HD21	1.31	1.11
1:A:425:LEU:HD12	1:A:425:LEU:O	1.46	1.11
1:D:305:TRP:H	1:D:308:LEU:CD2	1.63	1.11
1:B:454:MET:CE	1:B:455:LEU:CA	2.29	1.10
1:A:451:LEU:HD22	1:A:451:LEU:O	1.50	1.09
1:B:348:ARG:HG3	1:B:348:ARG:HH11	1.02	1.09
1:B:361:GLN:HE21	1:B:361:GLN:HA	1.02	1.09
1:A:447:ILE:HD12	1:A:448:ASP:N	1.68	1.08
1:B:454:MET:HE2	1:B:455:LEU:N	1.69	1.08
1:D:456:GLU:O	1:D:459:HIS:CD2	2.06	1.08
1:B:361:GLN:HE21	1:B:361:GLN:CA	1.64	1.07
1:B:448:ASP:O	1:B:451:LEU:O	1.72	1.07
1:D:283:ALA:O	1:D:289:PHE:CD2	2.07	1.07
1:D:385:ASN:OD1	1:D:388:GLU:HB2	1.45	1.07
1:D:448:ASP:O	1:D:451:LEU:O	1.71	1.06
1:B:454:MET:HE1	1:B:455:LEU:HA	1.24	1.05
1:D:240:LEU:H	1:D:240:LEU:HD12	0.92	1.05
1:B:454:MET:HE2	1:B:455:LEU:CA	1.84	1.05
1:B:455:LEU:HD22	1:B:455:LEU:H	0.92	1.05
1:A:227:ASN:O	1:A:231:PRO:HG3	1.57	1.05
1:D:275:GLN:OE1	1:D:275:GLN:HA	1.54	1.04
1:A:445:THR:CB	1:A:446:PRO:HD3	1.86	1.04
1:D:236:LEU:CD2	1:D:240:LEU:HD11	1.87	1.04
1:D:330:LEU:O	1:D:330:LEU:HG	1.51	1.04
1:B:347:ASP:O	1:B:351:THR:HG23	1.56	1.04
1:A:447:ILE:HD12	1:A:448:ASP:H	0.89	1.03
1:C:296:ASP:OD1	1:C:384:SER:OG	1.77	1.03
1:C:357:MET:HG2	1:C:362:MET:CE	1.88	1.03

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:455:LEU:N	1:B:455:LEU:HD22	1.58	1.02
1:D:305:TRP:N	1:D:308:LEU:CD2	2.21	1.02
1:A:315:HIS:O	1:A:318:ILE:HD13	1.59	1.02
1:C:451:LEU:HD12	1:C:453:GLU:N	1.73	1.02
1:B:455:LEU:HD23	1:B:455:LEU:C	1.74	1.02
1:B:312:SER:OG	1:B:371:ARG:NH1	1.92	1.01
1:B:264:PRO:O	1:B:267:ASN:CB	2.08	1.01
1:B:324:ILE:CG1	1:B:346:PHE:HE1	1.69	1.01
1:C:345:ILE:O	1:C:349:VAL:HG23	1.61	1.01
1:D:242:VAL:O	1:D:244:PRO:HD3	1.60	1.01
1:B:460:GLN:HA	1:C:284:LYS:NZ	1.76	1.01
1:D:361:GLN:HG2	1:D:361:GLN:O	1.60	1.00
1:D:283:ALA:HB1	1:D:289:PHE:CE2	1.97	1.00
1:D:240:LEU:CD1	1:D:240:LEU:H	1.70	0.99
1:B:229:ASP:O	1:B:231:PRO:CD	2.11	0.99
1:B:298:VAL:HG13	2:E:2341:LEU:HD12	1.00	0.99
1:B:239:GLU:OE1	1:B:282:TRP:NE1	1.94	0.99
1:D:385:ASN:OD1	1:D:388:GLU:N	1.93	0.99
1:B:455:LEU:C	1:B:455:LEU:CD2	2.30	0.99
1:B:456:GLU:O	1:B:459:HIS:HB3	0.82	0.99
1:C:271:ALA:O	1:C:272:ALA:CB	2.01	0.98
1:C:357:MET:HG2	1:C:362:MET:HE3	1.00	0.98
1:D:240:LEU:HD12	1:D:240:LEU:N	1.77	0.98
1:A:296:ASP:OD1	1:A:384:SER:OG	1.80	0.98
1:D:304:GLY:HA3	1:D:308:LEU:HD21	1.46	0.98
1:B:348:ARG:HH11	1:B:348:ARG:CG	1.74	0.97
1:A:450:PHE:HE2	1:D:450:PHE:CD1	1.83	0.97
1:B:457:ALA:HB3	1:B:458:PRO:HD3	1.46	0.97
1:D:325:LEU:O	1:D:325:LEU:HD12	1.63	0.97
1:A:363:ASP:OD2	1:A:366:GLU:HG3	1.64	0.96
1:C:269:CYS:C	1:C:271:ALA:H	1.65	0.96
1:D:389:VAL:O	1:D:392:LEU:HD23	1.64	0.96
1:B:381:LYS:HE2	1:C:445:THR:OG1	0.84	0.96
2:E:2344:ILE:O	2:E:2344:ILE:HG22	1.63	0.96
1:B:460:GLN:HA	1:C:284:LYS:HZ1	1.24	0.96
1:C:445:THR:HB	1:C:446:PRO:HD3	1.49	0.95
1:D:444:ASP:O	1:D:445:THR:HG22	1.65	0.95
1:D:266:THR:HA	1:D:269:CYS:HB2	1.49	0.94
1:A:363:ASP:OD2	1:A:366:GLU:OE2	1.86	0.94
1:D:236:LEU:O	1:D:240:LEU:HD12	1.68	0.93
1:D:284:LYS:HG2	4:D:6:HOH:O	1.66	0.93

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:389:VAL:CA	1:D:392:LEU:CD2	2.48	0.92
1:B:229:ASP:O	1:B:231:PRO:HD3	1.68	0.91
1:C:357:MET:CG	1:C:362:MET:HE3	1.96	0.91
1:C:445:THR:HB	1:C:446:PRO:CD	2.01	0.91
1:B:267:ASN:OD1	1:B:326:LEU:HD13	1.71	0.90
1:B:361:GLN:CA	1:B:361:GLN:NE2	2.30	0.90
1:C:410:GLU:C	1:C:412:PRO:HD3	1.92	0.90
1:D:454:MET:O	1:D:454:MET:SD	2.30	0.90
1:D:279:LEU:HD23	1:D:305:TRP:CE3	2.05	0.90
1:B:385:ASN:ND2	1:B:388:GLU:HB2	1.84	0.90
1:C:424:ALA:O	1:C:428:ILE:HG13	1.72	0.90
1:C:269:CYS:O	1:C:269:CYS:SG	2.30	0.89
1:B:361:GLN:HA	1:B:361:GLN:NE2	1.85	0.89
1:D:454:MET:SD	1:D:454:MET:C	2.50	0.89
1:B:324:ILE:HG13	1:B:346:PHE:CZ	2.07	0.89
1:A:445:THR:CB	1:A:446:PRO:CD	2.51	0.89
1:B:457:ALA:O	1:B:460:GLN:HG3	1.73	0.88
1:D:456:GLU:O	1:D:459:HIS:HD2	1.48	0.88
1:D:400:LEU:HD12	1:D:400:LEU:C	1.81	0.88
1:D:448:ASP:OD2	1:D:449:THR:HG23	1.73	0.87
1:B:334:ARG:HG3	1:B:338:HIS:HD2	1.37	0.87
1:B:334:ARG:HG3	1:B:338:HIS:CD2	2.10	0.87
1:C:449:THR:CG2	1:C:450:PHE:N	2.37	0.87
1:D:239:GLU:O	1:D:242:VAL:HG22	1.73	0.87
1:B:460:GLN:CA	1:C:284:LYS:HZ1	1.87	0.87
1:A:264:PRO:O	1:A:268:ILE:HG13	1.75	0.87
1:A:342:VAL:O	1:A:342:VAL:HG23	1.74	0.87
1:A:447:ILE:CD1	1:A:448:ASP:N	2.29	0.86
1:A:450:PHE:CE2	1:D:450:PHE:CD1	2.63	0.86
1:B:442:ILE:CG2	4:D:55:HOH:O	1.81	0.86
1:C:447:ILE:O	1:C:448:ASP:OD1	1.94	0.86
1:B:455:LEU:N	1:B:455:LEU:CD2	2.37	0.86
1:A:440:LYS:HG2	1:D:450:PHE:HE1	1.40	0.85
1:D:350:LEU:O	1:D:355:SER:OG	1.93	0.85
1:A:232:VAL:HG23	1:A:233:GLU:N	1.91	0.85
1:C:272:ALA:HA	1:C:275:GLN:HB2	1.59	0.85
1:D:457:ALA:HB3	1:D:458:PRO:HD3	1.59	0.85
1:B:267:ASN:OD1	1:B:326:LEU:HD12	1.76	0.85
1:C:451:LEU:HD12	1:C:451:LEU:O	1.77	0.84
1:C:410:GLU:O	1:C:412:PRO:CD	2.24	0.84
1:D:410:GLU:HG3	1:D:411:GLN:HG3	1.56	0.84

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:345:ILE:HD11	1:A:428:ILE:CG2	2.06	0.84
1:B:454:MET:CE	1:B:454:MET:C	2.44	0.84
1:D:330:LEU:O	1:D:330:LEU:CG	2.26	0.84
1:D:385:ASN:OD1	1:D:388:GLU:CA	2.26	0.84
1:D:385:ASN:ND2	1:D:388:GLU:CB	2.36	0.83
1:D:230:MET:N	1:D:231:PRO:HD3	1.92	0.83
1:A:452:MET:SD	2:F:2338:ASN:OD1	2.36	0.83
1:D:447:ILE:O	1:D:451:LEU:HB2	1.76	0.83
1:A:425:LEU:HD12	1:A:425:LEU:C	1.88	0.82
1:B:229:ASP:C	1:B:231:PRO:HD3	2.00	0.82
1:B:229:ASP:O	1:B:231:PRO:HD2	1.76	0.82
1:D:457:ALA:HB3	1:D:458:PRO:CD	2.09	0.82
1:B:348:ARG:HG3	1:B:348:ARG:NH1	1.85	0.82
1:A:302:ARG:HD2	1:D:445:THR:OG1	1.80	0.82
1:D:304:GLY:CA	1:D:308:LEU:HD21	2.10	0.81
1:D:298:VAL:HG23	2:F:2341:LEU:HD22	1.61	0.81
1:C:331:HIS:HE1	4:C:32:HOH:O	1.62	0.81
1:D:342:VAL:HB	1:D:345:ILE:CG2	2.11	0.81
1:B:444:ASP:OD2	1:B:445:THR:N	2.14	0.81
1:D:265:VAL:O	1:D:268:ILE:HG13	1.79	0.81
1:A:442:ILE:CG2	1:A:442:ILE:O	2.28	0.81
1:A:345:ILE:HD11	1:A:428:ILE:HG23	1.62	0.81
1:B:283:ALA:O	1:B:289:PHE:CD2	2.34	0.81
1:D:385:ASN:OD1	1:D:388:GLU:HB3	1.81	0.81
1:A:232:VAL:CG2	1:A:233:GLU:N	2.44	0.81
1:A:451:LEU:O	1:A:451:LEU:CD2	2.29	0.81
1:D:276:LEU:O	1:D:280:VAL:HG23	1.80	0.81
1:D:295:ASP:O	1:D:298:VAL:HG12	1.81	0.81
1:A:328:THR:HG1	1:A:330:LEU:H	1.29	0.80
1:A:447:ILE:CG1	1:A:448:ASP:N	2.44	0.80
1:B:320:VAL:CG1	1:B:321:LYS:N	2.44	0.80
1:A:452:MET:O	1:A:453:GLU:O	1.98	0.80
1:C:451:LEU:O	1:C:451:LEU:HG	1.81	0.80
1:A:445:THR:OG1	1:A:446:PRO:CD	2.30	0.80
1:B:454:MET:CE	1:B:454:MET:O	2.30	0.80
1:D:455:LEU:O	1:D:455:LEU:CD1	2.30	0.80
1:C:451:LEU:CD1	1:C:453:GLU:N	2.44	0.80
2:E:2338:ASN:O	2:E:2342:GLU:HG2	1.81	0.80
1:D:247:GLU:H	1:D:247:GLU:CD	1.85	0.80
1:D:446:PRO:O	1:D:447:ILE:CG1	2.29	0.80
1:D:275:GLN:OE1	1:D:275:GLN:CA	2.29	0.80

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:459:HIS:ND1	1:B:460:GLN:N	2.28	0.80
1:C:451:LEU:O	1:C:451:LEU:CD1	2.30	0.80
1:D:236:LEU:O	1:D:236:LEU:CD2	2.30	0.80
1:D:304:GLY:O	1:D:305:TRP:CB	2.30	0.80
1:D:455:LEU:O	1:D:455:LEU:HD13	1.80	0.80
1:D:460:GLN:NE2	1:D:460:GLN:N	2.30	0.80
1:C:451:LEU:CD1	1:C:453:GLU:CA	2.60	0.79
1:D:285:ARG:O	1:D:287:PRO:HD3	1.82	0.79
2:E:2344:ILE:O	2:E:2344:ILE:CG2	2.30	0.79
1:A:424:ALA:O	1:A:428:ILE:HG13	1.82	0.79
1:C:366:GLU:OE2	1:C:414:ARG:NH2	2.15	0.79
1:D:315:HIS:O	1:D:318:ILE:HG23	1.81	0.79
1:B:454:MET:CE	1:B:455:LEU:N	2.42	0.79
1:C:451:LEU:O	1:C:451:LEU:CG	2.30	0.78
1:D:385:ASN:CG	1:D:388:GLU:HB3	2.03	0.78
1:D:266:THR:CA	1:D:269:CYS:HB2	2.13	0.78
1:B:283:ALA:O	1:B:289:PHE:HD2	1.66	0.78
1:A:425:LEU:O	1:A:425:LEU:CD1	2.30	0.78
1:D:287:PRO:O	1:D:288:HIS:HB2	1.82	0.78
1:A:363:ASP:OD2	1:A:366:GLU:CG	2.30	0.78
1:C:445:THR:CB	1:C:446:PRO:HD3	2.13	0.78
1:D:455:LEU:C	1:D:455:LEU:HD12	2.02	0.78
1:B:320:VAL:HG12	1:B:321:LYS:N	1.98	0.77
1:B:454:MET:HE1	1:B:454:MET:O	1.84	0.77
1:D:304:GLY:C	1:D:308:LEU:HD23	2.04	0.77
1:B:348:ARG:HD3	1:B:352:GLU:OE2	1.83	0.77
1:D:389:VAL:C	1:D:392:LEU:HD23	2.03	0.77
1:B:298:VAL:CG1	2:E:2341:LEU:CD1	2.48	0.77
1:B:456:GLU:C	1:B:459:HIS:HB3	1.97	0.77
1:C:451:LEU:HD12	1:C:451:LEU:C	2.04	0.77
1:D:361:GLN:O	1:D:361:GLN:CG	2.30	0.77
1:A:328:THR:OG1	1:A:330:LEU:N	2.16	0.76
1:D:310:ILE:O	1:D:314:SER:OG	2.03	0.76
1:A:445:THR:HB	1:A:446:PRO:CD	2.11	0.76
1:C:447:ILE:C	1:C:449:THR:H	1.89	0.76
1:C:449:THR:HG22	1:C:450:PHE:N	2.01	0.76
1:B:361:GLN:NE2	1:B:361:GLN:N	2.34	0.76
1:B:456:GLU:O	1:B:459:HIS:N	2.18	0.76
1:B:264:PRO:HA	1:B:267:ASN:HB2	1.68	0.76
1:D:342:VAL:O	1:D:345:ILE:HG22	1.86	0.76
1:D:385:ASN:HD21	1:D:388:GLU:HB2	1.43	0.75

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:316:ARG:HB3	1:D:325:LEU:HD11	1.68	0.75
1:B:442:ILE:HG22	1:B:443:GLY:N	2.01	0.75
1:B:454:MET:HE2	1:B:454:MET:C	2.06	0.75
1:C:316:ARG:NH1	1:C:325:LEU:O	2.19	0.75
1:B:457:ALA:HB3	1:B:458:PRO:CD	2.15	0.75
1:A:447:ILE:O	1:A:448:ASP:HB3	1.85	0.75
1:B:283:ALA:HB1	1:B:289:PHE:CE2	2.22	0.75
1:B:267:ASN:CG	1:B:326:LEU:HD12	2.07	0.75
1:D:236:LEU:CD2	1:D:236:LEU:C	2.55	0.75
2:E:2341:LEU:HD13	2:E:2341:LEU:O	1.86	0.75
1:B:442:ILE:CG2	1:B:443:GLY:N	2.49	0.74
1:D:304:GLY:CA	1:D:308:LEU:CD2	2.65	0.74
1:A:436:LEU:HB2	3:A:1:RHN:OAE	1.88	0.74
1:C:296:ASP:CG	1:C:384:SER:OG	2.25	0.74
1:C:363:ASP:HB2	1:C:366:GLU:CD	2.07	0.74
1:D:236:LEU:O	1:D:236:LEU:HD22	1.87	0.74
1:D:271:ALA:O	1:D:275:GLN:HB2	1.87	0.74
1:B:381:LYS:HG3	1:B:381:LYS:O	1.85	0.74
1:A:409:PRO:CD	1:A:410:GLU:OE1	2.34	0.74
1:D:228:GLU:CG	1:D:228:GLU:O	2.31	0.74
2:F:2338:ASN:O	2:F:2339:MET:SD	2.45	0.74
1:C:269:CYS:C	1:C:271:ALA:N	2.35	0.74
1:B:324:ILE:HG13	1:B:346:PHE:HE1	0.96	0.73
1:B:444:ASP:OD2	1:B:445:THR:HG23	1.88	0.73
1:D:448:ASP:OD2	1:D:449:THR:N	2.19	0.73
1:C:345:ILE:HG22	1:C:346:PHE:N	2.04	0.73
1:D:236:LEU:C	1:D:240:LEU:HD11	2.07	0.73
1:D:444:ASP:O	1:D:445:THR:CG2	2.34	0.73
1:B:267:ASN:CG	1:B:326:LEU:CD1	2.57	0.73
1:D:455:LEU:HD12	1:D:455:LEU:H	1.54	0.72
1:A:441:LEU:C	1:A:443:GLY:N	2.41	0.72
1:B:438:PHE:HD2	1:B:439:PHE:CE2	2.06	0.72
1:C:451:LEU:CD1	1:C:453:GLU:HA	2.19	0.72
1:D:445:THR:N	1:D:446:PRO:HD2	2.04	0.72
1:D:455:LEU:CD1	1:D:455:LEU:C	2.57	0.72
1:A:433:LEU:HD21	1:D:447:ILE:HG12	1.69	0.72
1:A:440:LYS:HG2	1:D:450:PHE:CE1	2.24	0.72
1:D:304:GLY:O	1:D:305:TRP:HB2	1.88	0.71
1:D:279:LEU:HD23	1:D:305:TRP:CZ3	2.24	0.71
1:D:445:THR:N	1:D:446:PRO:CD	2.54	0.71
1:B:267:ASN:ND2	1:B:326:LEU:HD12	2.05	0.71

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:456:GLU:O	1:B:459:HIS:CA	2.37	0.71
1:D:236:LEU:HD22	1:D:240:LEU:CD1	2.15	0.71
1:D:295:ASP:O	1:D:298:VAL:CG1	2.39	0.71
2:F:2341:LEU:O	2:F:2345:ILE:HG13	1.89	0.71
1:B:407:LYS:NZ	1:B:408:TYR:OH	2.23	0.71
1:B:363:ASP:OD2	1:B:363:ASP:C	2.30	0.70
1:D:242:VAL:O	1:D:244:PRO:CD	2.38	0.70
1:B:227:ASN:HB2	1:B:231:PRO:HA	1.72	0.70
1:C:409:PRO:HD2	1:C:410:GLU:OE1	1.91	0.70
1:C:448:ASP:OD1	1:C:448:ASP:C	2.29	0.70
1:B:348:ARG:O	1:B:352:GLU:HB2	1.91	0.70
1:D:320:VAL:CG1	1:D:321:LYS:N	2.54	0.70
1:D:363:ASP:C	1:D:363:ASP:OD2	2.30	0.70
1:D:397:TYR:O	1:D:400:LEU:HB3	1.92	0.70
1:D:446:PRO:C	1:D:447:ILE:HG13	2.11	0.70
2:F:2340:GLY:O	2:F:2343:ALA:HB3	1.91	0.70
1:D:334:ARG:O	1:D:338:HIS:HD2	1.75	0.70
1:A:447:ILE:HG13	1:A:448:ASP:N	2.06	0.70
1:B:324:ILE:CD1	1:B:346:PHE:CE1	2.75	0.69
1:C:447:ILE:HG13	1:C:448:ASP:HB3	1.73	0.69
1:D:342:VAL:HB	1:D:345:ILE:HG22	1.73	0.69
1:B:381:LYS:O	1:B:381:LYS:CG	2.40	0.69
1:B:242:VAL:O	1:B:243:GLU:C	2.29	0.69
1:B:348:ARG:CD	1:B:352:GLU:OE2	2.41	0.69
1:C:288:HIS:HB2	1:C:392:LEU:HD21	1.75	0.69
1:D:446:PRO:O	1:D:447:ILE:CB	2.41	0.69
1:A:263:ASP:N	1:A:264:PRO:CD	2.55	0.68
1:A:335:ASN:OD1	1:A:336:SER:N	2.26	0.68
1:A:347:ASP:O	1:A:351:THR:HG23	1.92	0.68
1:B:385:ASN:CG	1:B:388:GLU:HB2	2.11	0.68
1:D:305:TRP:H	1:D:308:LEU:HD23	0.87	0.68
1:D:290:SER:O	1:D:297:GLN:NE2	2.26	0.68
1:D:279:LEU:CD2	1:D:305:TRP:CE3	2.77	0.68
1:B:457:ALA:CB	1:B:458:PRO:HD3	2.19	0.67
1:C:370:LEU:O	1:C:374:VAL:HG23	1.95	0.67
1:D:316:ARG:NH1	1:D:325:LEU:O	2.27	0.67
1:A:232:VAL:O	1:A:233:GLU:C	2.27	0.67
1:B:455:LEU:O	1:B:455:LEU:CD2	2.30	0.67
1:C:288:HIS:HB2	1:C:392:LEU:CD2	2.24	0.67
1:B:444:ASP:CG	1:B:445:THR:H	1.98	0.67
1:A:442:ILE:O	1:A:442:ILE:HG23	1.94	0.67

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:264:PRO:C	1:B:267:ASN:HB3	2.13	0.67
2:F:2341:LEU:HD21	2:F:2345:ILE:HD11	1.77	0.67
1:C:335:ASN:OD1	1:C:336:SER:N	2.27	0.66
1:D:229:ASP:OD2	1:D:230:MET:N	2.28	0.66
1:C:363:ASP:CB	1:C:366:GLU:HG3	2.25	0.66
1:D:236:LEU:HD22	1:D:236:LEU:C	2.16	0.66
1:B:438:PHE:HD2	1:B:439:PHE:CD2	2.13	0.66
1:C:421:ARG:NE	1:C:421:ARG:HA	2.10	0.66
1:D:234:ARG:O	1:D:237:GLU:HB2	1.96	0.66
1:D:325:LEU:HB3	1:D:331:HIS:HB2	1.77	0.66
1:D:389:VAL:CA	1:D:392:LEU:HD23	2.24	0.66
1:D:446:PRO:O	1:D:447:ILE:HD12	1.95	0.66
1:D:455:LEU:HD12	1:D:455:LEU:N	2.10	0.66
1:A:231:PRO:O	1:A:234:ARG:HB2	1.96	0.66
1:D:403:TYR:OH	1:D:407:LYS:HD2	1.95	0.66
1:A:345:ILE:O	1:A:349:VAL:HG23	1.95	0.66
1:B:263:ASP:OD1	1:B:263:ASP:C	2.34	0.66
1:B:348:ARG:CG	1:B:348:ARG:NH1	2.42	0.66
1:D:272:ALA:CB	1:D:309:LEU:HD11	2.26	0.65
1:C:447:ILE:C	1:C:449:THR:N	2.49	0.65
1:C:269:CYS:O	1:C:271:ALA:N	2.29	0.65
1:D:369:CYS:O	1:D:373:ILE:HG13	1.97	0.65
1:C:363:ASP:HB2	1:C:366:GLU:CG	2.25	0.65
1:D:291:GLU:N	1:D:291:GLU:OE1	2.30	0.65
1:D:283:ALA:HB1	1:D:289:PHE:HE2	1.57	0.65
1:D:228:GLU:O	1:D:228:GLU:HG3	1.96	0.65
1:D:236:LEU:O	1:D:236:LEU:HD23	1.95	0.65
1:D:390:GLU:O	1:D:394:GLU:HG3	1.96	0.65
1:D:420:LEU:O	1:D:423:PRO:HD2	1.97	0.65
1:A:450:PHE:CE2	1:D:450:PHE:CE1	2.85	0.65
1:B:381:LYS:HB3	1:C:445:THR:HA	1.77	0.65
1:B:444:ASP:CG	1:B:445:THR:N	2.51	0.65
1:A:350:LEU:O	1:A:355:SER:OG	2.07	0.64
1:C:363:ASP:HB3	1:C:366:GLU:H	1.62	0.64
1:C:385:ASN:ND2	1:C:385:ASN:O	2.30	0.64
1:A:441:LEU:O	1:A:443:GLY:N	2.30	0.64
1:A:444:ASP:HA	1:C:348:ARG:HH11	1.62	0.64
1:A:263:ASP:O	1:A:266:THR:HB	1.97	0.64
1:D:345:ILE:O	1:D:349:VAL:HG23	1.98	0.64
1:D:460:GLN:N	1:D:460:GLN:HE21	1.94	0.64
1:A:452:MET:O	1:A:453:GLU:C	2.34	0.64

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:373:ILE:HD11	1:B:397:TYR:HB3	1.80	0.64
1:D:230:MET:N	1:D:231:PRO:CD	2.60	0.64
1:A:345:ILE:HD11	1:A:428:ILE:HG22	1.79	0.64
1:B:455:LEU:H	1:B:455:LEU:CD2	1.85	0.64
1:B:403:TYR:O	1:B:406:HIS:HB2	1.98	0.64
1:B:227:ASN:ND2	1:B:227:ASN:O	2.30	0.64
1:B:448:ASP:OD2	1:B:448:ASP:N	2.30	0.64
1:D:389:VAL:CA	1:D:392:LEU:HD21	2.15	0.64
1:A:440:LYS:CG	1:D:450:PHE:HE1	2.11	0.63
1:B:236:LEU:HD22	1:B:240:LEU:CD1	2.29	0.63
1:D:390:GLU:OE2	1:D:394:GLU:OE2	2.16	0.63
1:D:457:ALA:O	1:D:460:GLN:NE2	2.30	0.63
1:B:457:ALA:C	1:B:459:HIS:H	1.96	0.63
1:A:449:THR:HG22	1:A:450:PHE:N	2.13	0.63
2:E:2338:ASN:OD1	2:E:2338:ASN:C	2.37	0.63
1:B:236:LEU:CD2	1:B:240:LEU:HG	2.28	0.63
1:C:268:ILE:O	1:C:268:ILE:HG22	1.97	0.63
1:A:321:LYS:HE2	1:A:322:ASP:OD1	1.97	0.63
1:A:449:THR:CG2	1:A:450:PHE:N	2.62	0.63
1:A:447:ILE:O	1:A:448:ASP:CB	2.47	0.63
1:B:342:VAL:HG23	1:B:342:VAL:O	1.99	0.62
1:D:273:ASP:OD1	1:D:273:ASP:C	2.37	0.62
1:A:442:ILE:HG12	1:C:435:HIS:NE2	2.13	0.62
1:B:363:ASP:N	1:B:366:GLU:OE2	2.32	0.62
2:F:2337:THR:HG23	2:F:2338:ASN:H	1.64	0.62
1:B:227:ASN:C	1:B:227:ASN:HD22	2.03	0.62
1:B:454:MET:HE1	1:B:455:LEU:CA	2.08	0.62
2:F:2341:LEU:CD2	2:F:2345:ILE:HD11	2.29	0.62
1:D:389:VAL:O	1:D:392:LEU:CD2	2.44	0.62
1:C:236:LEU:HD22	1:C:236:LEU:O	1.99	0.61
1:D:356:LYS:O	1:D:360:MET:HG2	1.99	0.61
1:D:400:LEU:O	1:D:400:LEU:CD1	2.30	0.61
1:C:229:ASP:OD1	1:C:229:ASP:N	2.30	0.61
1:A:363:ASP:CG	1:A:366:GLU:HG3	2.20	0.61
1:A:385:ASN:C	1:A:385:ASN:OD1	2.38	0.61
1:D:446:PRO:O	1:D:447:ILE:HG13	1.98	0.61
1:B:361:GLN:NE2	1:B:361:GLN:H	1.99	0.61
1:B:454:MET:HE2	1:B:456:GLU:N	2.16	0.61
1:B:275:GLN:OE1	1:B:275:GLN:HA	1.99	0.61
1:B:264:PRO:HA	1:B:267:ASN:CB	2.31	0.61
1:B:315:HIS:O	1:B:318:ILE:HG23	2.01	0.61

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:312:SER:OG	1:B:371:ARG:CZ	2.48	0.61
1:A:229:ASP:HB3	1:A:395:LYS:HD3	1.83	0.60
1:A:363:ASP:OD2	1:A:366:GLU:CD	2.39	0.60
1:D:266:THR:O	1:D:269:CYS:HB2	2.01	0.60
1:B:454:MET:O	1:B:454:MET:SD	2.59	0.60
1:D:446:PRO:O	1:D:447:ILE:CD1	2.50	0.60
1:A:227:ASN:O	1:A:231:PRO:CG	2.42	0.60
1:D:369:CYS:HB2	1:D:400:LEU:HD22	1.84	0.60
1:C:272:ALA:HA	1:C:275:GLN:H	1.67	0.60
1:B:236:LEU:HD22	1:B:240:LEU:HG	1.84	0.60
1:C:410:GLU:OE1	1:C:410:GLU:N	2.30	0.60
1:D:272:ALA:HB2	1:D:309:LEU:HD11	1.84	0.60
1:C:363:ASP:CB	1:C:366:GLU:CG	2.79	0.59
1:B:239:GLU:OE1	1:B:282:TRP:CD1	2.54	0.59
1:D:369:CYS:CB	1:D:400:LEU:HD22	2.32	0.59
1:D:457:ALA:CB	1:D:458:PRO:HD3	2.32	0.59
1:A:350:LEU:HA	1:A:354:VAL:HB	1.84	0.59
1:B:232:VAL:HG22	1:B:399:SER:HB3	1.83	0.59
1:B:457:ALA:CB	1:B:458:PRO:CD	2.78	0.59
1:C:391:ALA:O	1:C:395:LYS:HG3	2.02	0.59
1:C:447:ILE:O	1:C:449:THR:N	2.35	0.59
1:B:447:ILE:O	1:B:451:LEU:N	2.25	0.59
1:A:315:HIS:O	1:A:318:ILE:HG23	2.03	0.58
1:A:445:THR:OG1	1:A:446:PRO:HD3	1.99	0.58
1:B:459:HIS:CG	1:B:460:GLN:N	2.71	0.58
1:C:363:ASP:HB3	1:C:366:GLU:HG3	1.84	0.58
1:D:274:LYS:O	1:D:275:GLN:OE1	2.21	0.58
1:D:320:VAL:HG13	1:D:321:LYS:N	2.18	0.58
1:A:445:THR:OG1	1:A:446:PRO:HD2	2.02	0.58
1:A:446:PRO:CG	1:A:446:PRO:O	2.50	0.58
1:D:460:GLN:HE21	1:D:460:GLN:H	1.50	0.58
1:D:458:PRO:HB3	1:D:461:MET:HG2	1.85	0.58
1:B:454:MET:HE2	1:B:456:GLU:H	1.67	0.58
1:B:457:ALA:N	1:B:458:PRO:HD2	2.17	0.58
1:C:449:THR:HG23	1:C:450:PHE:N	2.15	0.58
1:D:274:LYS:C	1:D:275:GLN:OE1	2.41	0.58
1:B:453:GLU:O	1:B:455:LEU:HD13	2.03	0.58
1:B:454:MET:CE	1:B:456:GLU:H	2.16	0.58
1:C:449:THR:HG22	1:C:450:PHE:H	1.69	0.57
1:A:296:ASP:CG	1:A:384:SER:OG	2.42	0.57
1:C:425:LEU:HD12	1:C:425:LEU:O	2.04	0.57

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:395:LYS:NZ	4:A:48:HOH:O	2.37	0.57
1:D:342:VAL:HB	1:D:345:ILE:HG21	1.86	0.57
1:C:233:GLU:O	1:C:237:GLU:HG3	2.03	0.57
1:D:334:ARG:O	1:D:338:HIS:CD2	2.57	0.57
1:D:407:LYS:HD3	1:D:408:TYR:CE1	2.40	0.57
1:D:458:PRO:HA	1:D:460:GLN:H	1.69	0.57
1:A:353:LEU:O	1:A:357:MET:HG3	2.05	0.57
1:B:459:HIS:ND1	1:B:459:HIS:C	2.58	0.57
1:D:283:ALA:CB	1:D:289:PHE:CE2	2.81	0.57
1:A:351:THR:OG1	1:A:352:GLU:N	2.35	0.56
1:B:362:MET:CE	1:B:418:LEU:HD23	2.35	0.56
1:B:457:ALA:N	1:B:458:PRO:CD	2.64	0.56
1:C:290:SER:HA	1:C:297:GLN:NE2	2.19	0.56
1:D:305:TRP:O	1:D:306:ASN:C	2.39	0.56
1:D:367:LEU:O	1:D:367:LEU:HD12	2.05	0.56
1:D:394:GLU:HA	1:D:397:TYR:CZ	2.41	0.56
1:D:291:GLU:OE1	1:D:291:GLU:CA	2.53	0.56
1:A:284:LYS:HE2	1:D:459:HIS:O	2.05	0.56
1:B:376:PHE:CZ	1:B:392:LEU:HD12	2.40	0.56
1:A:345:ILE:CD1	1:A:428:ILE:HG23	2.34	0.56
1:D:458:PRO:HA	1:D:460:GLN:HB2	1.87	0.56
1:A:280:VAL:HG22	1:A:301:LEU:CD1	2.35	0.56
1:B:320:VAL:CG1	1:B:321:LYS:H	2.18	0.56
1:A:242:VAL:HG11	1:A:282:TRP:HB2	1.87	0.56
1:A:444:ASP:HA	1:C:348:ARG:NH1	2.20	0.56
1:B:325:LEU:CD1	1:B:331:HIS:CD2	2.88	0.56
1:B:377:ASN:OD1	1:B:377:ASN:C	2.44	0.56
1:B:438:PHE:CD2	1:B:439:PHE:CD2	2.93	0.56
1:B:454:MET:CE	1:B:456:GLU:N	2.69	0.56
1:A:447:ILE:C	1:A:449:THR:H	2.09	0.56
1:D:266:THR:C	1:D:269:CYS:HB2	2.26	0.56
1:D:275:GLN:NE2	1:D:278:THR:OG1	2.39	0.56
1:D:353:LEU:CD1	1:D:428:ILE:HD12	2.36	0.56
1:D:447:ILE:O	1:D:447:ILE:HG22	2.05	0.56
1:A:233:GLU:O	1:A:237:GLU:HG3	2.06	0.55
1:B:385:ASN:ND2	1:B:388:GLU:CB	2.64	0.55
1:D:421:ARG:HA	1:D:421:ARG:NE	2.21	0.55
1:C:268:ILE:HD12	1:C:268:ILE:N	2.22	0.55
1:D:373:ILE:CD1	1:D:397:TYR:HB3	2.36	0.55
1:D:376:PHE:CZ	1:D:392:LEU:HD12	2.40	0.55
1:B:342:VAL:HB	1:B:345:ILE:HG22	1.87	0.55

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:390:GLU:O	1:D:394:GLU:CG	2.55	0.55
1:A:349:VAL:O	1:A:353:LEU:HB2	2.06	0.55
1:B:351:THR:OG1	1:B:352:GLU:N	2.38	0.55
1:D:304:GLY:HA3	1:D:308:LEU:CD2	2.27	0.55
1:D:438:PHE:O	1:D:442:ILE:HB	2.06	0.55
1:B:264:PRO:O	1:B:267:ASN:N	2.40	0.55
1:D:240:LEU:O	1:D:243:GLU:CB	2.55	0.55
1:D:373:ILE:HD11	1:D:397:TYR:HB3	1.89	0.54
1:A:348:ARG:O	1:A:352:GLU:HB2	2.07	0.54
1:D:289:PHE:O	1:D:292:LEU:HD12	2.08	0.54
1:C:324:ILE:HG12	1:C:332:VAL:HB	1.90	0.54
1:C:448:ASP:C	1:C:450:PHE:N	2.53	0.54
1:D:266:THR:HA	1:D:269:CYS:CB	2.32	0.54
1:C:450:PHE:O	1:C:451:LEU:C	2.45	0.54
1:D:304:GLY:C	1:D:308:LEU:CD2	2.73	0.54
1:B:450:PHE:HA	1:C:450:PHE:HZ	1.73	0.54
1:D:444:ASP:C	1:D:445:THR:HG22	2.29	0.54
1:B:376:PHE:CE1	1:B:392:LEU:HD12	2.43	0.53
1:B:310:ILE:HA	1:B:313:PHE:CE2	2.43	0.53
1:B:456:GLU:N	1:B:456:GLU:OE2	2.41	0.53
1:C:451:LEU:HD11	1:C:453:GLU:HA	1.90	0.53
1:D:320:VAL:O	1:D:358:ARG:NH2	2.41	0.53
1:C:277:PHE:O	1:C:281:GLU:HG2	2.09	0.53
1:B:363:ASP:OD2	1:B:365:THR:N	2.42	0.53
1:C:356:LYS:O	1:C:360:MET:HG2	2.08	0.53
1:B:376:PHE:CE1	1:B:392:LEU:HB3	2.44	0.53
1:D:283:ALA:CB	1:D:289:PHE:HE2	2.21	0.53
1:D:275:GLN:O	1:D:279:LEU:HB2	2.08	0.53
1:D:376:PHE:CE2	1:D:392:LEU:HD11	2.44	0.53
1:A:442:ILE:O	1:A:442:ILE:HG22	2.08	0.53
1:D:240:LEU:O	1:D:243:GLU:HB2	2.08	0.53
1:A:440:LYS:HD3	1:D:450:PHE:CE1	2.44	0.52
1:D:392:LEU:O	1:D:396:VAL:HG23	2.09	0.52
1:B:438:PHE:CD2	1:B:439:PHE:CE2	2.94	0.52
1:B:451:LEU:HD21	1:C:305:TRP:CZ2	2.44	0.52
1:A:451:LEU:O	1:A:451:LEU:CG	2.57	0.52
1:B:362:MET:HE2	1:B:370:LEU:HD11	1.92	0.52
1:A:277:PHE:O	1:A:281:GLU:HG2	2.10	0.52
1:A:280:VAL:O	1:A:284:LYS:HG3	2.10	0.52
1:A:410:GLU:OE1	1:A:410:GLU:N	2.30	0.52
1:D:237:GLU:HA	1:D:240:LEU:HD13	1.91	0.52

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:240:LEU:O	1:D:243:GLU:N	2.37	0.52
1:D:341:GLY:C	1:D:343:GLY:H	2.13	0.52
1:B:312:SER:HG	1:B:371:ARG:NH1	2.02	0.52
1:D:457:ALA:CB	1:D:458:PRO:CD	2.79	0.52
1:B:362:MET:HE3	1:B:418:LEU:HD23	1.90	0.52
1:D:247:GLU:CD	1:D:247:GLU:N	2.58	0.52
1:C:451:LEU:HD13	1:C:453:GLU:CA	2.39	0.51
1:D:445:THR:O	1:D:448:ASP:OD1	2.29	0.51
1:B:459:HIS:CG	1:B:460:GLN:H	2.29	0.51
1:D:446:PRO:O	1:D:447:ILE:HB	2.08	0.51
2:E:2338:ASN:OD1	2:E:2340:GLY:N	2.44	0.51
1:D:310:ILE:HA	1:D:313:PHE:CE2	2.45	0.51
1:B:320:VAL:HG13	1:B:321:LYS:H	1.75	0.51
1:D:383:LEU:HD13	1:D:389:VAL:HG21	1.91	0.51
1:C:280:VAL:HG22	1:C:301:LEU:HD13	1.92	0.51
2:F:2341:LEU:HD21	2:F:2345:ILE:CD1	2.41	0.51
1:B:273:ASP:OD1	1:B:273:ASP:O	2.29	0.51
1:B:298:VAL:CG1	2:E:2341:LEU:CG	2.89	0.51
1:B:437:PHE:HD2	1:C:437:PHE:HD2	1.58	0.51
1:C:269:CYS:HB2	1:C:271:ALA:HB3	1.91	0.51
1:C:302:ARG:HG3	1:C:303:ALA:N	2.25	0.51
1:A:411:GLN:C	1:A:413:GLY:N	2.63	0.51
1:A:446:PRO:O	1:A:446:PRO:HG2	2.11	0.51
1:B:362:MET:CE	1:B:418:LEU:CD2	2.89	0.51
1:C:445:THR:CG2	1:C:446:PRO:HD3	2.41	0.51
1:D:385:ASN:O	1:D:388:GLU:HB3	2.11	0.51
1:B:276:LEU:HD23	1:B:276:LEU:O	2.11	0.50
1:A:413:GLY:HA3	4:A:40:HOH:O	2.11	0.50
1:B:407:LYS:HB3	1:B:408:TYR:CD1	2.47	0.50
1:D:292:LEU:HB2	1:D:297:GLN:HG2	1.94	0.50
1:D:273:ASP:OD1	1:D:273:ASP:O	2.30	0.50
1:B:362:MET:CE	1:B:370:LEU:HD11	2.40	0.50
2:E:2341:LEU:HD13	2:E:2341:LEU:C	2.31	0.50
1:A:448:ASP:O	1:A:448:ASP:OD2	2.30	0.50
1:B:264:PRO:O	1:B:267:ASN:CA	2.58	0.50
1:B:409:PRO:CD	1:B:410:GLU:H	2.25	0.50
1:B:460:GLN:HG2	1:C:294:LEU:HD11	1.93	0.50
1:C:310:ILE:HA	1:C:313:PHE:CE2	2.47	0.50
1:D:385:ASN:OD1	1:D:385:ASN:O	2.30	0.50
1:A:446:PRO:CD	1:A:446:PRO:O	2.60	0.50
1:B:460:GLN:HA	1:C:284:LYS:CE	2.42	0.50

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:320:VAL:HG13	1:D:321:LYS:H	1.75	0.50
1:B:271:ALA:CB	1:B:328:THR:HG21	2.42	0.50
1:B:460:GLN:O	1:B:460:GLN:OE1	2.30	0.50
1:C:451:LEU:HD13	1:C:453:GLU:C	2.32	0.50
1:C:296:ASP:OD2	1:C:384:SER:OG	2.30	0.49
1:C:309:LEU:O	1:C:312:SER:HB2	2.12	0.49
1:D:285:ARG:O	1:D:287:PRO:CD	2.58	0.49
1:D:308:LEU:HD22	1:D:308:LEU:H	1.76	0.49
1:B:264:PRO:C	1:B:267:ASN:H	2.15	0.49
1:D:242:VAL:O	1:D:243:GLU:C	2.46	0.49
2:F:2344:ILE:O	2:F:2345:ILE:O	2.30	0.49
1:B:273:ASP:OD1	1:B:273:ASP:C	2.49	0.49
1:C:452:MET:O	1:C:453:GLU:O	2.30	0.49
1:A:280:VAL:HG22	1:A:301:LEU:HD11	1.94	0.49
1:B:280:VAL:HG12	1:B:284:LYS:HE3	1.94	0.49
1:C:242:VAL:HG11	1:C:282:TRP:HB2	1.93	0.49
1:B:242:VAL:O	1:B:243:GLU:O	2.30	0.49
1:B:271:ALA:HB2	1:B:328:THR:HG21	1.94	0.49
1:B:448:ASP:HA	1:B:451:LEU:HB2	1.94	0.49
1:B:263:ASP:OD1	1:B:263:ASP:O	2.30	0.49
1:D:385:ASN:OD1	1:D:385:ASN:C	2.51	0.49
1:B:236:LEU:HD22	1:B:240:LEU:CG	2.42	0.49
1:B:282:TRP:HZ3	1:B:375:LEU:HD13	1.77	0.49
1:B:454:MET:C	1:B:454:MET:SD	2.91	0.49
1:C:292:LEU:O	1:C:293:PRO:C	2.46	0.49
1:D:353:LEU:HD12	1:D:428:ILE:HD12	1.94	0.49
1:B:376:PHE:CE1	1:B:392:LEU:CD1	2.96	0.49
1:B:409:PRO:HD2	1:B:410:GLU:H	1.78	0.48
1:C:420:LEU:CD1	1:D:397:TYR:CE2	2.95	0.48
1:A:391:ALA:O	1:A:395:LYS:HG3	2.12	0.48
1:A:425:LEU:C	1:A:425:LEU:CD1	2.60	0.48
1:A:445:THR:HA	1:D:381:LYS:HG3	1.94	0.48
1:C:436:LEU:HD13	3:C:2:RHN:OAC	2.12	0.48
1:B:390:GLU:O	1:B:393:ARG:HB3	2.13	0.48
1:C:272:ALA:CA	1:C:275:GLN:H	2.26	0.48
1:B:295:ASP:O	1:B:299:ILE:HG13	2.13	0.48
1:B:438:PHE:HD2	1:B:439:PHE:HE2	1.58	0.48
1:D:389:VAL:HA	1:D:392:LEU:HD22	1.80	0.48
1:D:265:VAL:O	1:D:269:CYS:N	2.47	0.48
1:B:229:ASP:C	1:B:231:PRO:CD	2.72	0.48
1:B:437:PHE:CD2	1:C:437:PHE:HD2	2.30	0.48

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:231:PRO:HG2	1:C:234:ARG:HB2	1.94	0.48
1:D:357:MET:HG2	1:D:362:MET:SD	2.53	0.48
1:D:363:ASP:OD2	1:D:365:THR:N	2.46	0.48
1:D:376:PHE:CZ	1:D:392:LEU:CD1	2.96	0.48
1:A:315:HIS:ND1	4:A:24:HOH:O	2.35	0.48
1:B:447:ILE:H	1:B:447:ILE:HG13	1.25	0.48
1:C:324:ILE:HD13	1:C:346:PHE:CD1	2.48	0.48
1:D:275:GLN:O	1:D:279:LEU:N	2.35	0.48
1:A:370:LEU:O	1:A:374:VAL:HG23	2.13	0.48
1:A:447:ILE:C	1:A:449:THR:N	2.66	0.48
1:D:455:LEU:CD1	1:D:455:LEU:H	2.18	0.48
1:B:450:PHE:O	1:B:451:LEU:C	2.49	0.47
1:A:440:LYS:O	1:A:443:GLY:HA3	2.14	0.47
1:C:420:LEU:HD11	1:D:397:TYR:CD2	2.50	0.47
1:C:288:HIS:CB	1:C:392:LEU:HD21	2.44	0.47
1:D:345:ILE:HG23	1:D:346:PHE:N	2.28	0.47
1:B:397:TYR:O	1:B:400:LEU:HB3	2.14	0.47
1:A:238:ALA:O	1:A:242:VAL:HG22	2.14	0.47
1:C:320:VAL:O	1:C:358:ARG:NH2	2.47	0.47
1:D:229:ASP:O	1:D:230:MET:C	2.51	0.47
1:A:434:GLU:OE1	1:B:434:GLU:OE1	2.32	0.47
1:D:265:VAL:HA	1:D:268:ILE:CG1	2.45	0.47
1:B:298:VAL:HG12	2:E:2341:LEU:HG	1.95	0.47
1:B:439:PHE:CD2	1:B:439:PHE:N	2.83	0.47
1:B:460:GLN:CB	1:C:284:LYS:HZ1	2.26	0.47
1:D:228:GLU:O	1:D:228:GLU:HG2	2.13	0.47
1:D:438:PHE:O	1:D:442:ILE:N	2.39	0.47
1:A:305:TRP:NE1	1:A:309:LEU:HD11	2.29	0.47
1:B:312:SER:OG	1:B:371:ARG:NE	2.48	0.47
1:B:376:PHE:CD1	1:B:392:LEU:HB3	2.50	0.47
1:C:360:MET:O	1:C:361:GLN:C	2.51	0.47
1:C:409:PRO:CD	1:C:410:GLU:OE1	2.62	0.47
1:B:227:ASN:HA	1:B:399:SER:OG	2.14	0.47
1:B:454:MET:HE2	1:B:455:LEU:C	2.31	0.47
1:B:437:PHE:CE1	1:C:447:ILE:HG12	2.50	0.47
1:C:290:SER:HA	1:C:297:GLN:HE22	1.80	0.47
1:D:282:TRP:CE2	1:D:371:ARG:NH1	2.84	0.47
1:B:265:VAL:C	1:B:267:ASN:N	2.62	0.46
1:A:448:ASP:C	1:A:450:PHE:N	2.62	0.46
1:B:391:ALA:HA	1:B:394:GLU:CD	2.36	0.46
1:C:313:PHE:O	1:C:317:SER:OG	2.23	0.46

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:376:PHE:O	1:D:378:PRO:HD3	2.16	0.46
1:A:382:GLY:O	1:A:383:LEU:C	2.51	0.46
1:B:362:MET:HE2	1:B:418:LEU:CD2	2.45	0.46
1:D:444:ASP:O	1:D:444:ASP:OD2	2.34	0.46
1:B:381:LYS:HE3	1:C:445:THR:HB	1.45	0.46
1:B:438:PHE:CD2	1:B:439:PHE:HD2	2.33	0.46
1:D:345:ILE:CG2	1:D:346:PHE:N	2.78	0.46
1:A:305:TRP:CD1	1:A:305:TRP:C	2.88	0.46
1:B:297:GLN:O	1:B:301:LEU:HD12	2.16	0.46
1:B:386:PRO:C	1:B:388:GLU:N	2.67	0.46
1:B:442:ILE:HA	1:B:442:ILE:HD12	1.51	0.46
1:D:320:VAL:HG12	1:D:321:LYS:N	2.29	0.46
1:B:324:ILE:CD1	1:B:346:PHE:CD1	2.99	0.46
1:B:455:LEU:HD22	1:B:455:LEU:C	2.24	0.46
1:D:313:PHE:O	1:D:317:SER:OG	2.33	0.46
1:B:271:ALA:HB1	1:B:328:THR:CG2	2.45	0.46
1:A:316:ARG:HH12	1:A:326:LEU:C	2.19	0.45
1:C:268:ILE:N	1:C:268:ILE:CD1	2.79	0.45
1:C:335:ASN:O	1:C:336:SER:C	2.52	0.45
1:C:421:ARG:NE	1:C:421:ARG:CA	2.78	0.45
1:A:299:ILE:O	1:A:303:ALA:HB2	2.16	0.45
1:A:414:ARG:O	1:A:415:PHE:C	2.52	0.45
1:B:381:LYS:O	1:B:381:LYS:CD	2.63	0.45
1:D:283:ALA:C	1:D:289:PHE:CD2	2.85	0.45
1:B:342:VAL:HB	1:B:345:ILE:CG2	2.46	0.45
1:B:345:ILE:O	1:B:349:VAL:HG23	2.17	0.45
1:C:431:LYS:O	1:C:435:HIS:HD2	2.00	0.45
1:D:265:VAL:C	1:D:268:ILE:HG13	2.36	0.45
1:D:457:ALA:HB3	1:D:458:PRO:HD2	1.96	0.45
1:B:460:GLN:O	1:B:460:GLN:CG	2.64	0.45
2:F:2341:LEU:C	2:F:2341:LEU:HD23	2.37	0.45
1:A:411:GLN:C	1:A:413:GLY:H	2.19	0.45
1:B:266:THR:O	1:B:267:ASN:C	2.53	0.45
1:B:377:ASN:HA	1:B:378:PRO:HD3	1.75	0.45
1:B:437:PHE:HE1	1:C:447:ILE:HG12	1.80	0.45
1:D:267:ASN:ND2	1:D:267:ASN:H	2.13	0.45
1:D:422:LEU:N	1:D:423:PRO:CD	2.80	0.45
1:A:232:VAL:C	1:A:234:ARG:N	2.68	0.45
1:B:279:LEU:HD12	1:B:279:LEU:HA	1.79	0.45
1:B:430:LEU:O	1:B:434:GLU:HG3	2.16	0.45
1:A:360:MET:O	1:A:361:GLN:C	2.52	0.45

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:394:GLU:H	1:B:394:GLU:HG3	1.60	0.45
1:B:420:LEU:HA	1:B:420:LEU:HD23	1.71	0.45
1:D:389:VAL:HG13	1:D:392:LEU:HD21	1.97	0.45
1:B:267:ASN:OD1	1:B:326:LEU:HD11	2.04	0.45
1:B:347:ASP:OD2	1:B:347:ASP:N	2.50	0.45
1:B:447:ILE:HG21	3:C:2:RHN:HAH	1.99	0.45
1:D:266:THR:C	1:D:269:CYS:H	2.21	0.45
1:D:367:LEU:HD12	1:D:367:LEU:C	2.37	0.45
1:D:460:GLN:NE2	1:D:460:GLN:CA	2.78	0.45
2:F:2344:ILE:C	2:F:2345:ILE:O	2.54	0.44
1:B:456:GLU:C	1:B:459:HIS:H	2.18	0.44
1:A:385:ASN:OD1	1:A:387:ALA:N	2.50	0.44
1:A:433:LEU:HD21	1:D:447:ILE:CG1	2.42	0.44
1:B:353:LEU:O	1:B:357:MET:HB2	2.17	0.44
1:D:347:ASP:O	1:D:351:THR:HG23	2.17	0.44
1:B:422:LEU:N	1:B:423:PRO:CD	2.80	0.44
1:D:383:LEU:CD1	1:D:389:VAL:HG21	2.47	0.44
1:C:385:ASN:HD21	1:C:388:GLU:HB2	1.82	0.44
1:C:451:LEU:CD1	1:C:451:LEU:C	2.69	0.44
1:D:456:GLU:O	1:D:459:HIS:NE2	2.47	0.44
1:B:274:LYS:O	1:B:277:PHE:HB3	2.17	0.44
1:C:345:ILE:HD12	1:C:345:ILE:HG23	1.68	0.44
1:B:294:LEU:O	1:B:298:VAL:HG23	2.17	0.44
1:A:346:PHE:C	1:A:346:PHE:CD2	2.91	0.44
1:C:236:LEU:HD22	1:C:236:LEU:C	2.37	0.44
1:C:363:ASP:CB	1:C:366:GLU:OE1	2.42	0.44
1:C:451:LEU:HD12	1:C:453:GLU:H	1.69	0.44
1:D:228:GLU:OE2	1:D:231:PRO:HA	2.18	0.43
2:F:2341:LEU:CD2	2:F:2345:ILE:CD1	2.95	0.43
1:A:317:SER:O	1:A:320:VAL:HB	2.19	0.43
1:D:265:VAL:HA	1:D:268:ILE:HG13	2.00	0.43
1:D:315:HIS:HB2	1:D:367:LEU:HD21	1.29	0.43
1:A:422:LEU:HB2	1:A:423:PRO:HD3	2.01	0.43
1:B:421:ARG:HA	1:B:421:ARG:NE	2.33	0.43
1:C:360:MET:O	1:C:361:GLN:HB2	2.16	0.43
1:D:326:LEU:HD12	1:D:330:LEU:HD23	2.00	0.43
1:A:232:VAL:HB	1:A:365:THR:HG23	2.00	0.43
1:A:263:ASP:N	1:A:263:ASP:OD1	2.52	0.43
1:B:234:ARG:O	1:B:237:GLU:HB2	2.18	0.43
1:C:397:TYR:HB2	1:C:415:PHE:HZ	1.82	0.43
1:C:452:MET:O	1:C:453:GLU:C	2.57	0.43

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:264:PRO:HG3	1:B:332:VAL:HG13	1.99	0.43
1:B:268:ILE:O	1:B:268:ILE:HG22	2.18	0.43
1:A:277:PHE:O	1:A:281:GLU:HB2	2.18	0.43
1:D:292:LEU:O	1:D:293:PRO:C	2.54	0.43
1:D:362:MET:HE2	1:D:370:LEU:HD11	2.00	0.43
1:A:401:GLU:HG2	1:A:405:LYS:HE2	1.99	0.43
1:C:451:LEU:HD12	1:C:452:MET:C	2.34	0.43
1:B:450:PHE:HE1	1:C:440:LYS:HG3	1.84	0.43
1:B:454:MET:HG2	1:B:456:GLU:OE2	2.19	0.43
1:D:351:THR:OG1	1:D:352:GLU:N	2.51	0.43
1:A:440:LYS:CG	1:D:450:PHE:CE1	2.95	0.42
1:D:351:THR:OG1	1:D:352:GLU:HG3	2.19	0.42
1:B:449:THR:O	1:B:451:LEU:O	2.36	0.42
1:D:301:LEU:HB3	2:F:2341:LEU:HD11	2.01	0.42
1:B:439:PHE:N	1:B:439:PHE:HD2	2.17	0.42
1:B:449:THR:OG1	1:B:450:PHE:N	2.51	0.42
1:B:454:MET:CE	1:B:455:LEU:C	2.86	0.42
1:D:374:VAL:O	1:D:377:ASN:HB2	2.19	0.42
1:D:445:THR:O	1:D:445:THR:HG23	2.20	0.42
1:A:447:ILE:CD1	1:D:437:PHE:HZ	2.33	0.42
1:B:430:LEU:HD23	1:B:433:LEU:HD12	2.00	0.42
1:D:240:LEU:CD1	1:D:240:LEU:N	2.49	0.42
1:D:389:VAL:CG1	1:D:392:LEU:HD21	2.49	0.42
1:B:394:GLU:HA	1:B:397:TYR:CZ	2.55	0.42
1:D:275:GLN:OE1	1:D:275:GLN:N	2.52	0.42
1:B:409:PRO:CG	1:B:410:GLU:N	2.82	0.42
1:A:263:ASP:N	1:A:264:PRO:HD2	2.35	0.42
1:B:407:LYS:NZ	1:B:408:TYR:CZ	2.86	0.42
1:B:458:PRO:O	1:B:459:HIS:O	2.37	0.42
1:D:302:ARG:HE	1:D:302:ARG:HB3	1.58	0.42
3:A:1:RHN:OAE	3:A:1:RHN:OAC	2.37	0.42
1:B:355:SER:O	1:B:359:ASP:OD1	2.38	0.42
1:B:460:GLN:O	1:B:460:GLN:CD	2.58	0.42
1:D:237:GLU:CA	1:D:240:LEU:HD13	2.50	0.42
1:A:299:ILE:O	1:A:303:ALA:CB	2.68	0.41
1:B:456:GLU:HB3	1:B:459:HIS:HB2	2.02	0.41
1:C:328:THR:H	1:C:328:THR:HG23	1.57	0.41
1:B:334:ARG:HG2	1:B:335:ASN:N	2.33	0.41
1:D:397:TYR:O	1:D:401:GLU:N	2.51	0.41
1:D:442:ILE:HD12	1:D:442:ILE:HA	1.62	0.41
1:A:286:ILE:HG23	1:A:286:ILE:HD12	1.77	0.41

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:324:ILE:O	1:D:324:ILE:HG13	2.20	0.41
1:D:362:MET:HE2	1:D:418:LEU:CD2	2.51	0.41
1:B:298:VAL:CG1	2:E:2341:LEU:HG	2.50	0.41
1:B:457:ALA:C	1:B:459:HIS:N	2.65	0.41
1:C:288:HIS:HB2	1:C:392:LEU:HD22	1.99	0.41
1:A:452:MET:C	1:A:453:GLU:O	2.58	0.41
1:C:272:ALA:O	1:C:273:ASP:C	2.54	0.41
1:C:405:LYS:O	1:C:406:HIS:C	2.58	0.41
1:C:433:LEU:HD23	1:C:433:LEU:HA	1.86	0.41
2:F:2340:GLY:O	2:F:2343:ALA:CB	2.64	0.41
1:A:369:CYS:CB	1:A:400:LEU:HD13	2.50	0.41
1:A:440:LYS:CD	1:D:450:PHE:HE1	2.33	0.41
1:B:345:ILE:CG2	1:B:346:PHE:N	2.83	0.41
1:C:448:ASP:O	1:C:448:ASP:CG	2.54	0.41
1:D:229:ASP:C	1:D:231:PRO:HD3	2.39	0.41
1:A:436:LEU:HD22	3:A:1:RHN:HAH	2.03	0.41
1:B:362:MET:HE3	1:B:418:LEU:CD2	2.51	0.41
1:B:420:LEU:O	1:B:423:PRO:HD2	2.20	0.41
1:C:422:LEU:HB2	1:C:423:PRO:HD3	2.03	0.41
1:D:376:PHE:CE1	1:D:392:LEU:HD12	2.56	0.41
2:F:2338:ASN:C	2:F:2339:MET:SD	2.98	0.41
1:A:232:VAL:O	1:A:235:ILE:N	2.54	0.41
1:A:363:ASP:OD2	1:A:363:ASP:N	2.54	0.41
1:B:351:THR:HG23	1:B:351:THR:H	1.54	0.41
1:B:397:TYR:O	1:B:401:GLU:N	2.52	0.41
1:B:438:PHE:CD2	1:B:439:PHE:HE2	2.37	0.41
1:B:455:LEU:N	1:B:455:LEU:HD13	2.35	0.41
1:C:335:ASN:CG	1:C:336:SER:N	2.74	0.41
1:C:390:GLU:O	1:C:390:GLU:HG3	2.17	0.41
1:C:436:LEU:HD22	3:C:2:RHN:OAE	2.20	0.41
1:A:302:ARG:HG3	1:A:303:ALA:N	2.36	0.41
1:B:236:LEU:CD2	1:B:236:LEU:O	2.70	0.40
1:C:318:ILE:HD13	1:C:318:ILE:HG21	1.66	0.40
1:A:243:GLU:HA	1:A:244:PRO:HD3	1.85	0.40
1:B:264:PRO:C	1:B:267:ASN:CB	2.80	0.40
1:C:288:HIS:ND1	1:C:291:GLU:OE2	2.48	0.40
1:C:411:GLN:HB3	1:C:414:ARG:HB2	2.03	0.40
1:B:263:ASP:HA	1:B:264:PRO:HD3	1.65	0.40
1:B:239:GLU:O	1:B:242:VAL:HG22	2.21	0.40
1:B:358:ARG:O	1:B:361:GLN:NE2	2.55	0.40
1:B:369:CYS:O	1:B:373:ILE:HG13	2.22	0.40

*Continued on next page...*

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:348:ARG:O	1:C:349:VAL:C	2.59	0.40
1:D:308:LEU:HD22	1:D:308:LEU:N	2.35	0.40
2:F:2341:LEU:C	2:F:2343:ALA:N	2.74	0.40
1:B:232:VAL:HG12	1:B:365:THR:CG2	2.52	0.40
1:B:373:ILE:HG23	1:B:373:ILE:HD13	1.78	0.40
1:D:287:PRO:O	1:D:288:HIS:CB	2.58	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:285:ARG:NH1	1:D:237:GLU:OE1[1_655]	2.00	0.20
1:B:285:ARG:NH1	1:D:237:GLU:OE2[1_655]	2.15	0.05
1:B:321:LYS:NZ	1:C:273:ASP:OD1[3_454]	2.18	0.02

## 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	207/240 (86%)	199 (96%)	6 (3%)	2 (1%)	15	53
1	B	213/240 (89%)	203 (95%)	8 (4%)	2 (1%)	17	55
1	C	199/240 (83%)	189 (95%)	6 (3%)	4 (2%)	7	34
1	D	215/240 (90%)	208 (97%)	5 (2%)	2 (1%)	17	55
2	E	5/16 (31%)	4 (80%)	1 (20%)	0	100	100
2	F	7/16 (44%)	6 (86%)	1 (14%)	0	100	100
All	All	846/992 (85%)	809 (96%)	27 (3%)	10 (1%)	13	48

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	445	THR
1	C	445	THR
1	D	305	TRP
1	D	447	ILE
1	A	446	PRO
1	C	272	ALA
1	B	446	PRO
1	B	460	GLN
1	C	446	PRO
1	C	231	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	181/207 (87%)	166 (92%)	15 (8%)	11	39
1	B	187/207 (90%)	153 (82%)	34 (18%)	1	9
1	C	174/207 (84%)	156 (90%)	18 (10%)	7	28
1	D	189/207 (91%)	155 (82%)	34 (18%)	1	9
2	E	5/12 (42%)	3 (60%)	2 (40%)	0	0
2	F	7/12 (58%)	4 (57%)	3 (43%)	0	0
All	All	743/852 (87%)	637 (86%)	106 (14%)	3	15

All (106) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	228	GLU
1	A	229	ASP
1	A	236	LEU
1	A	242	VAL
1	A	274	LYS
1	A	276	LEU
1	A	302	ARG
1	A	318	ILE
1	A	322	ASP

*Continued on next page...*



*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	351	THR
1	A	358	ARG
1	A	384	SER
1	A	431	LYS
1	A	447	ILE
1	A	451	LEU
1	B	227	ASN
1	B	236	LEU
1	B	263	ASP
1	B	269	CYS
1	B	273	ASP
1	B	275	GLN
1	B	281	GLU
1	B	291	GLU
1	B	298	VAL
1	B	301	LEU
1	B	302	ARG
1	B	325	LEU
1	B	330	LEU
1	B	345	ILE
1	B	347	ASP
1	B	348	ARG
1	B	351	THR
1	B	361	GLN
1	B	363	ASP
1	B	367	LEU
1	B	373	ILE
1	B	381	LYS
1	B	390	GLU
1	B	406	HIS
1	B	427	SER
1	B	440	LYS
1	B	442	ILE
1	B	445	THR
1	B	447	ILE
1	B	452	MET
1	B	454	MET
1	B	455	LEU
1	B	459	HIS
1	B	460	GLN
1	C	229	ASP
1	C	236	LEU

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	287	PRO
1	C	302	ARG
1	C	318	ILE
1	C	324	ILE
1	C	345	ILE
1	C	363	ASP
1	C	384	SER
1	C	385	ASN
1	C	390	GLU
1	C	394	GLU
1	C	407	LYS
1	C	426	ARG
1	C	442	ILE
1	C	445	THR
1	C	447	ILE
1	C	448	ASP
1	D	232	VAL
1	D	236	LEU
1	D	240	LEU
1	D	266	THR
1	D	267	ASN
1	D	268	ILE
1	D	275	GLN
1	D	281	GLU
1	D	291	GLU
1	D	294	LEU
1	D	299	ILE
1	D	317	SER
1	D	318	ILE
1	D	328	THR
1	D	331	HIS
1	D	334	ARG
1	D	339	SER
1	D	345	ILE
1	D	355	SER
1	D	356	LYS
1	D	367	LEU
1	D	371	ARG
1	D	373	ILE
1	D	390	GLU
1	D	400	LEU
1	D	411	GLN

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
1	D	421	ARG
1	D	427	SER
1	D	442	ILE
1	D	451	LEU
1	D	455	LEU
1	D	456	GLU
1	D	458	PRO
1	D	460	GLN
2	E	2338	ASN
2	E	2339	MET
2	F	2337	THR
2	F	2339	MET
2	F	2345	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	333	HIS
1	A	338	HIS
1	B	331	HIS
1	B	338	HIS
1	B	361	GLN
1	B	411	GLN
1	C	385	ASN
1	C	435	HIS
1	D	315	HIS
1	D	338	HIS
1	D	411	GLN
1	D	459	HIS
1	D	460	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](#)

2 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	RHN	C	2	-	23,23,23	1.77	5 (21%)	35,35,35	0.90	3 (8%)
3	RHN	A	1	-	23,23,23	1.80	5 (21%)	35,35,35	0.88	3 (8%)

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	RHN	C	2	-	-	0/4/20/20	0/3/3/3
3	RHN	A	1	-	-	4/4/20/20	0/3/3/3

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1	RHN	CAM-CAL	-4.43	1.40	1.49
3	C	2	RHN	CAR-CAP	-4.10	1.39	1.48
3	C	2	RHN	CAM-CAL	-4.01	1.40	1.49
3	A	1	RHN	CAR-CAP	-3.86	1.40	1.48
3	C	2	RHN	CAS-CAP	-3.77	1.40	1.48
3	A	1	RHN	CAS-CAP	-3.76	1.40	1.48
3	A	1	RHN	CAT-CAQ	-3.10	1.40	1.47
3	A	1	RHN	CAU-CAQ	-3.08	1.40	1.47
3	C	2	RHN	CAU-CAQ	-2.97	1.40	1.47
3	C	2	RHN	CAT-CAQ	-2.93	1.40	1.47

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1	RHN	OAE-CAN-CAT	-2.34	116.76	121.14
3	C	2	RHN	OAD-CAL-CAM	2.31	120.85	114.85
3	C	2	RHN	OAD-CAL-OAA	-2.08	118.72	123.35
3	C	2	RHN	OAE-CAN-CAT	-2.07	117.26	121.14
3	A	1	RHN	OAD-CAL-CAM	2.04	120.14	114.85
3	A	1	RHN	OAF-CAO-CAU	-2.00	117.40	121.14

There are no chirality outliers.

All (4) torsion outliers are listed below:

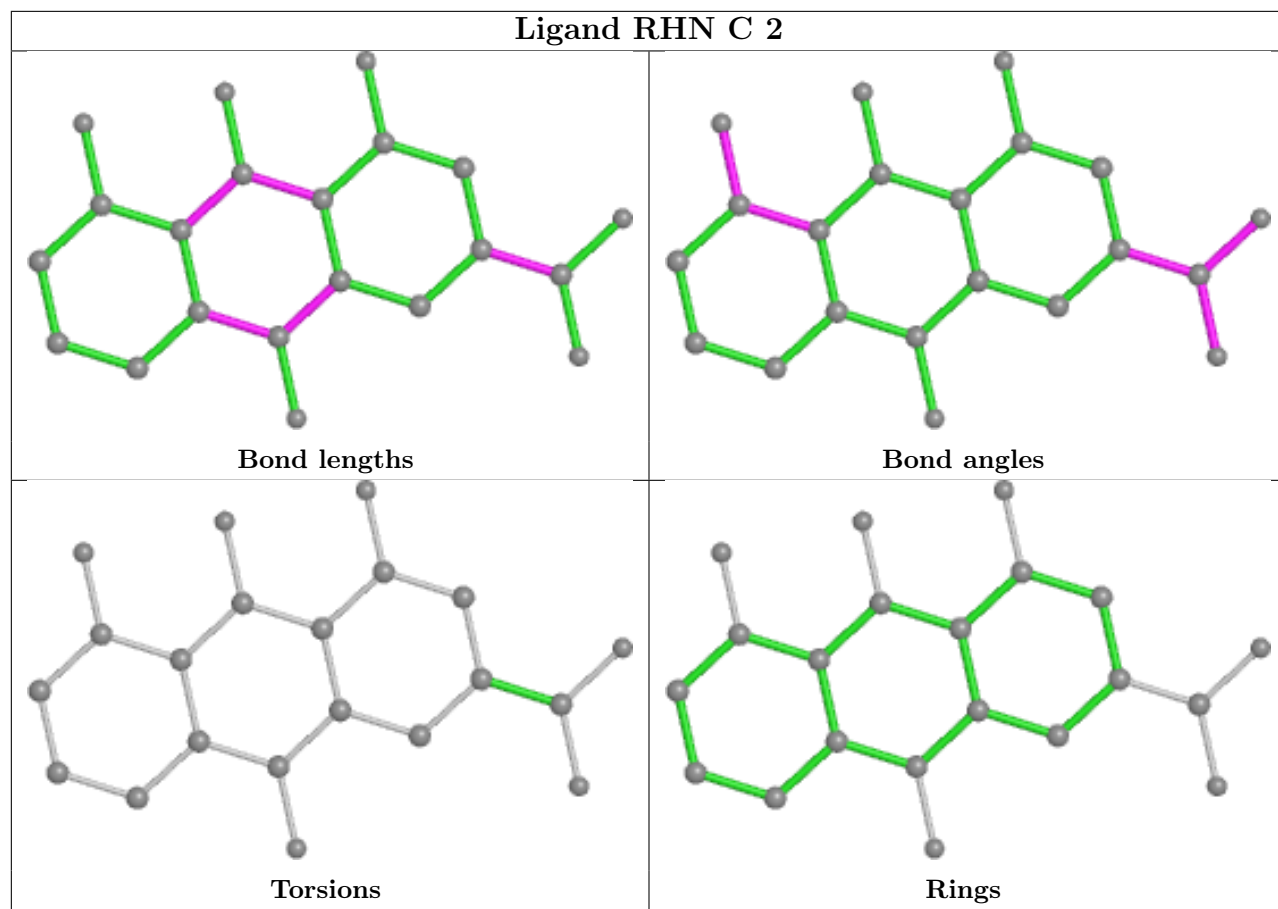
Mol	Chain	Res	Type	Atoms
3	A	1	RHN	OAA-CAL-CAM-CAK
3	A	1	RHN	OAD-CAL-CAM-CAJ
3	A	1	RHN	OAA-CAL-CAM-CAJ
3	A	1	RHN	OAD-CAL-CAM-CAK

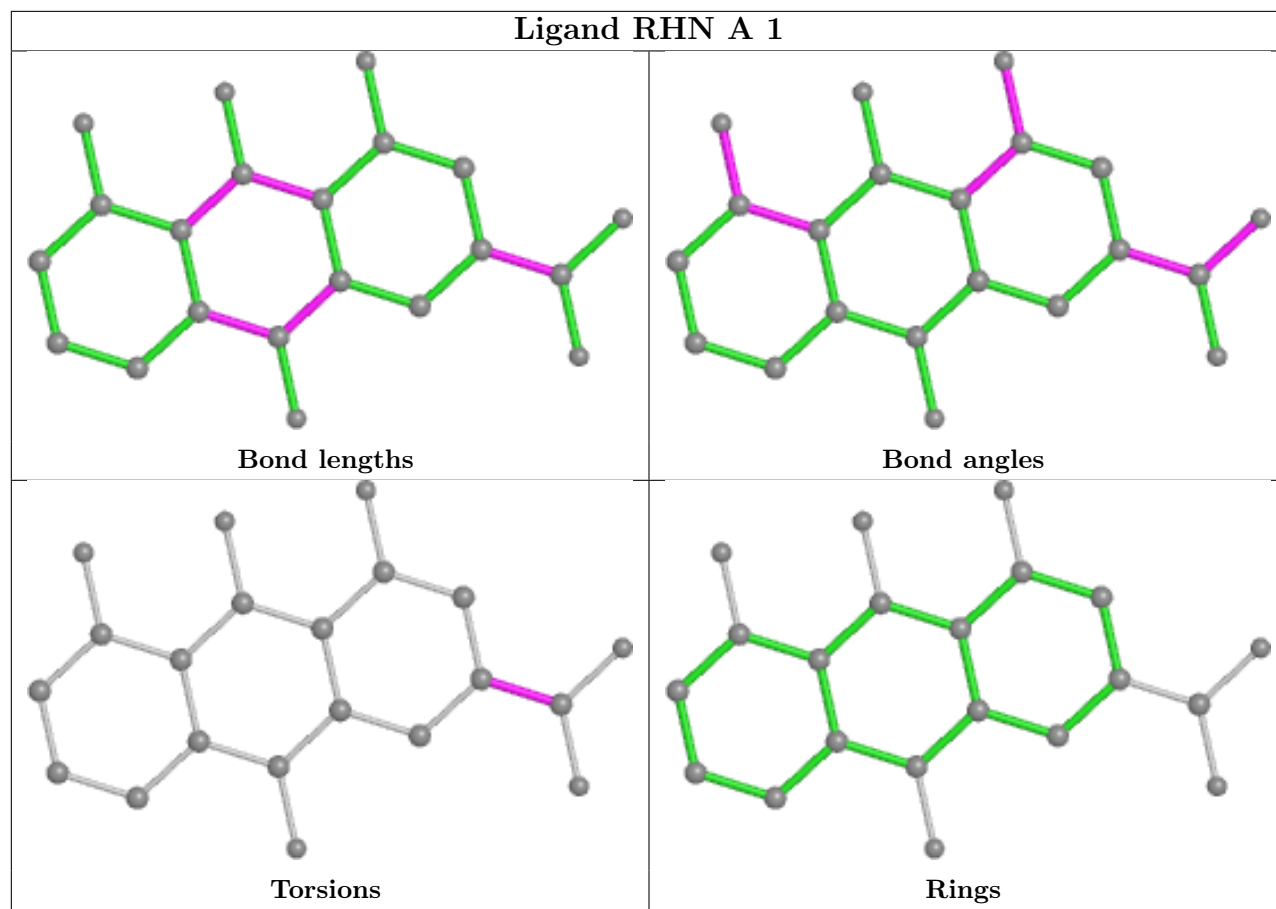
There are no ring outliers.

2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	2	RHN	3	0
3	A	1	RHN	3	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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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	211/240 (87%)	0.06	4 (1%) 66 37	20, 62, 94, 103	0
1	B	217/240 (90%)	0.21	4 (1%) 68 40	20, 75, 112, 122	0
1	C	203/240 (84%)	0.10	3 (1%) 73 46	20, 61, 86, 99	0
1	D	219/240 (91%)	0.27	3 (1%) 75 49	20, 75, 104, 116	0
2	E	7/16 (43%)	0.49	0 100 100	101, 102, 103, 104	0
2	F	9/16 (56%)	0.26	0 100 100	99, 100, 100, 101	0
All	All	866/992 (87%)	0.17	14 (1%) 72 44	20, 68, 100, 122	0

All (14) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	267	ASN	5.6
1	B	341	GLY	4.1
1	A	322	ASP	3.3
1	C	445	THR	2.9
1	D	271	ALA	2.7
1	C	444	ASP	2.4
1	A	392	LEU	2.4
1	C	452	MET	2.4
1	A	446	PRO	2.3
1	B	264	PRO	2.3
1	D	444	ASP	2.2
1	B	307	GLU	2.2
1	A	445	THR	2.2
1	D	295	ASP	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](#)

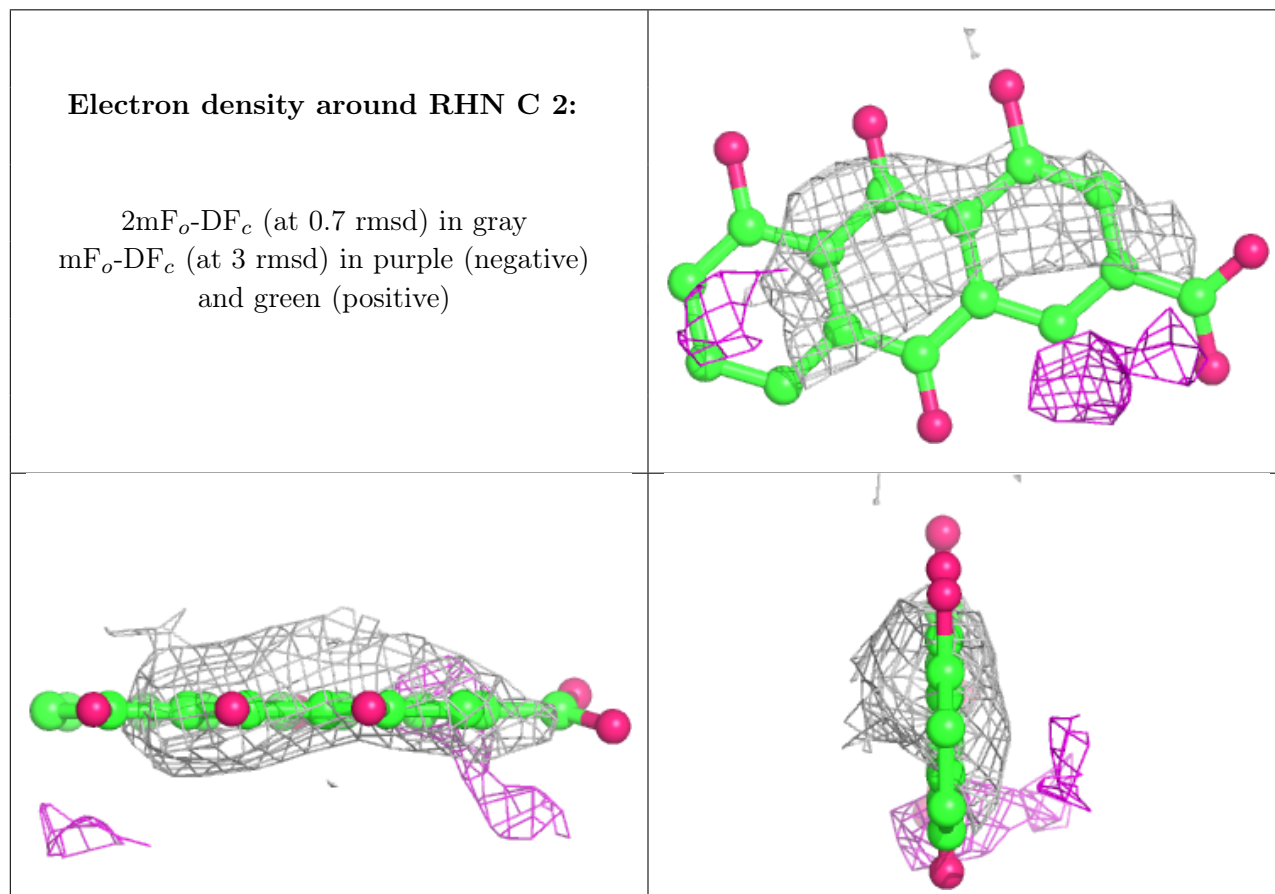
There are no monosaccharides in this entry.

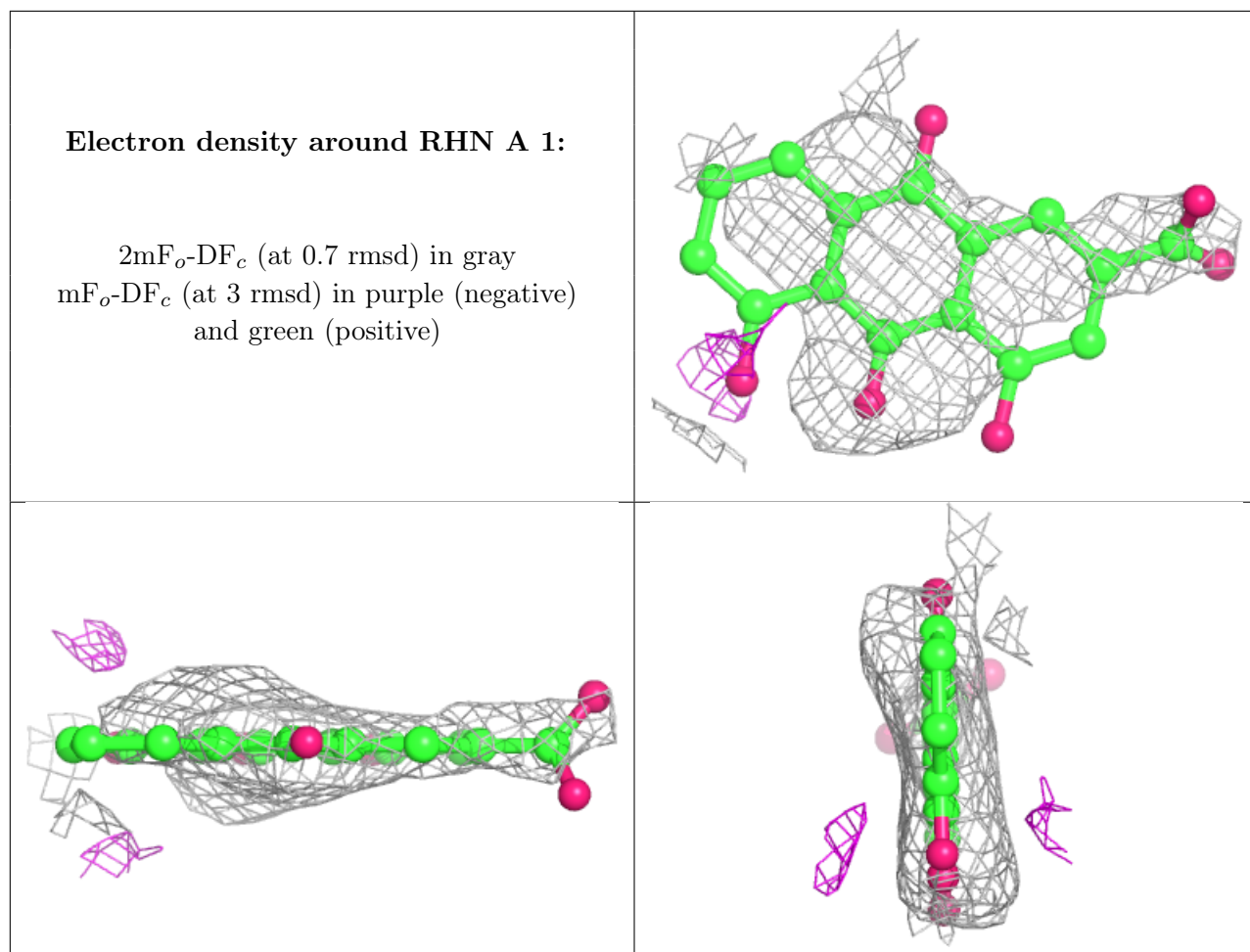
### 6.4 Ligands [i](#)

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
3	RHN	C	2	21/21	0.71	0.92	138,139,139,139	0
3	RHN	A	1	21/21	0.75	0.62	129,129,129,129	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.





## 6.5 Other polymers [i](#)

There are no such residues in this entry.