



# Full wwPDB X-ray Structure Validation Report ⓘ

May 26, 2020 – 09:45 am BST

PDB ID : 1EVT  
Title : CRYSTAL STRUCTURE OF FGF1 IN COMPLEX WITH THE EX-  
TRACELLULAR LIGAND BINDING DOMAIN OF FGF RECEPTOR 1  
(FGFR1)  
Authors : Plotnikov, A.N.; Hubbard, S.R.; Schlessinger, J.; Mohammadi, M.  
Deposited on : 2000-04-20  
Resolution : 2.80 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.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.11

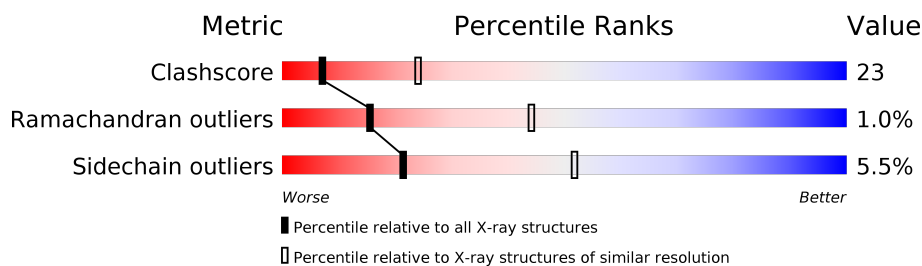
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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))
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

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  $\geq 3$ , 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  $\leq 5\%$ .

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	134	51% 46% ..
1	B	134	57% 37% . .
2	C	225	49% 33% . 15%
2	D	225	51% 33% . 15%

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 4983 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called PROTEIN (FIBROBLAST GROWTH FACTOR 1).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	131	1040	659	181	196	4	0	0	0
1	B	131	1040	659	181	196	4	0	0	0

- Molecule 2 is a protein called PROTEIN (FIBROBLAST GROWTH FACTOR RECEPTOR 1).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	191	1439	926	243	262	8	0	0	0
2	D	192	1444	929	244	263	8	0	0	0

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>			<b>ZeroOcc</b>	<b>AltConf</b>
3	A	1	Total 5	O 4	S 1	0	0
3	A	1	Total 5	O 4	S 1	0	0
3	B	1	Total 5	O 4	S 1	0	0
3	B	1	Total 5	O 4	S 1	0	0

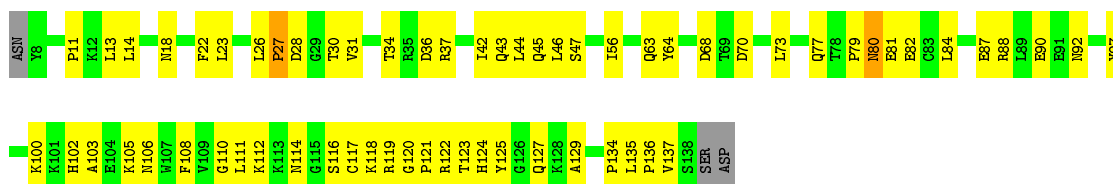
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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. 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. 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.

Note EDS was not executed.

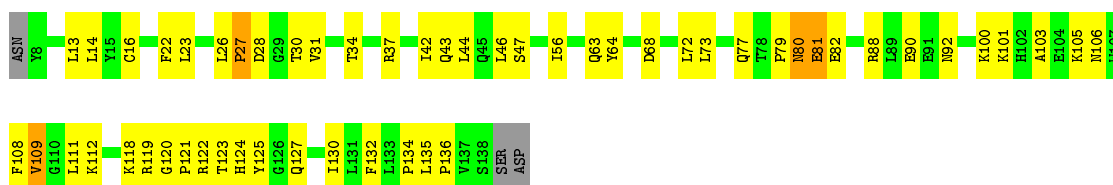
- Molecule 1: PROTEIN (FIBROBLAST GROWTH FACTOR 1)

Chain A: 



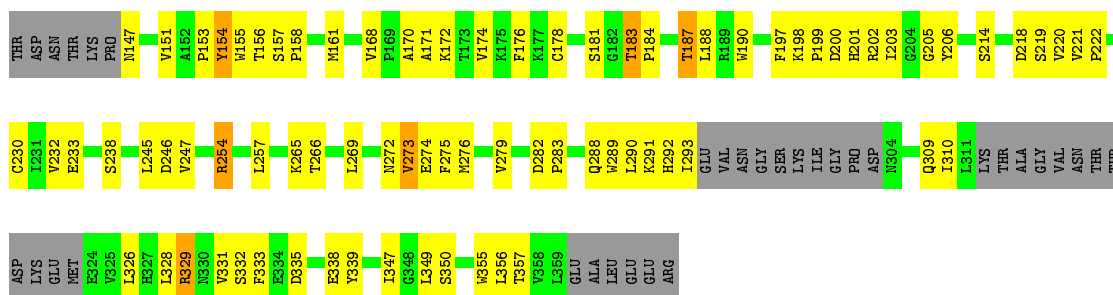
- Molecule 1: PROTEIN (FIBROBLAST GROWTH FACTOR 1)

Chain B: 



- Molecule 2: PROTEIN (FIBROBLAST GROWTH FACTOR RECEPTOR 1)

Chain C: 



- Molecule 2: PROTEIN (FIBROBLAST GROWTH FACTOR RECEPTOR 1)

Chain D: 

THR	V232	V325	THR	V232	V325
ASP	E233	L326	ASP	E233	L326
ASN	S238	H327	ASN	S238	H327
THR	L245	L328	THR	L245	L328
LYS	D246	R329	LYS	D246	R329
PRO	V247	N330	PRO	V247	N330
M147	R254	V331	M147	R254	V331
V151	L257	S332	V151	L257	S332
A152	K265	D335	A152	K265	D335
P153	T266	Y339	P153	T266	Y339
Y154	V273	L342	Y154	V273	L342
W155	E274	A343	W155	E274	A343
T156	F275	I347	T156	F275	I347
S157	V279	G348	S157	V279	G348
P158	D282	L349	P158	D282	L349
M161	P283	S350	M161	P283	S350
V168	L287	H351	V168	L287	H351
P169	Q288	R352	P169	Q288	R352
A170	W289	W355	A170	W289	W355
A171	L290	L356	A171	L290	L356
V174	K291	T357	V174	K291	T357
K175	H292	V388	K175	H292	V388
F176	I293	L389	F176	I293	L389
K177	GLU	GLU	K177	GLU	GLU
C178	VAL	ALA	C178	VAL	ALA
C178	ASN	LEU	C178	ASN	LEU
P179	GLY	GLU	P179	GLY	GLU
S180	SER	GLU	S180	SER	GLU
S181	LYS	GLU	S181	LYS	GLU
G182	ILE	ARG	G182	ILE	ARG
T183	GLY		T183	GLY	
P184	ASN		P184	ASN	
N185	GLY		N185	GLY	
P186	SER		P186	SER	
T187	LYS		T187	LYS	
L188	ILE		L188	ILE	
K198	GLY		K198	GLY	
P199	PRO		P199	PRO	
D200	ASP		D200	ASP	
E201	ASN		E201	ASN	
R202	LEU		R202	LEU	
I203	P306		I203	P306	
G204	Q309		G204	Q309	
G205	I310		G205	I310	
Y206	A314		Y206	A314	
W213	GLY		W213	GLY	
S214	VAL		S214	VAL	
D218	ASN		D218	ASN	
S219	THR		S219	THR	
V220	THR		V220	THR	
V221	ASP		V221	ASP	
D224	LYS		D224	LYS	
	GLU			GLU	
	MET			MET	
	E324			E324	

## 4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	62.55Å 64.06Å 64.14Å 93.40° 111.17° 97.18°	Depositor
Resolution (Å)	25.00 – 2.80	Depositor
% Data completeness (in resolution range)	95.7 (25.00-2.80)	Depositor
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
Refinement program	CNS	Depositor
R, $R_{free}$	0.249 , 0.300	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	4983	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	32.0	wwPDB-VP

## 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: SO4

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	0.46	0/1064	0.69	0/1437
1	B	0.43	0/1064	0.69	1/1437 (0.1%)
2	C	0.47	0/1483	0.69	0/2038
2	D	0.46	0/1488	0.68	0/2043
All	All	0.46	0/5099	0.68	1/6955 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	109	VAL	N-CA-C	-5.15	97.09	111.00

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	1040	0	1014	52	0
1	B	1040	0	1014	43	0
2	C	1439	0	1337	69	0
2	D	1444	0	1346	62	0
3	A	10	0	0	0	0
3	B	10	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	4983	0	4711	220	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 23.

All (220) 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)
2:D:293:ILE:HD11	2:D:309:GLN:HB2	1.40	1.00
2:D:273:VAL:HG13	2:D:328:LEU:HB2	1.44	0.97
1:B:80:ASN:HD22	1:B:82:GLU:H	1.08	0.94
2:C:293:ILE:HD11	2:C:309:GLN:HB2	1.50	0.93
1:A:27:PRO:HA	1:A:63:GLN:HE22	1.40	0.85
2:C:273:VAL:HG13	2:C:328:LEU:HB2	1.58	0.85
2:C:331:VAL:HG13	2:C:335:ASP:HB2	1.62	0.81
1:A:27:PRO:HA	1:A:63:GLN:NE2	1.96	0.80
2:D:288:GLN:NE2	2:D:310:ILE:HD12	1.98	0.79
1:A:119:ARG:HB2	1:A:122:ARG:HG2	1.62	0.79
1:B:123:THR:HA	1:B:127:GLN:OE1	1.84	0.78
1:A:80:ASN:HD22	1:A:82:GLU:H	1.32	0.77
1:B:119:ARG:HB2	1:B:122:ARG:HG2	1.67	0.77
1:B:80:ASN:HD22	1:B:82:GLU:N	1.83	0.76
1:A:134:PRO:O	1:A:135:LEU:HD23	1.85	0.75
1:B:80:ASN:ND2	1:B:82:GLU:H	1.83	0.75
2:C:332:SER:N	2:C:335:ASP:OD2	2.19	0.75
1:B:27:PRO:HA	1:B:63:GLN:HE22	1.53	0.73
2:C:190:TRP:CH2	2:C:230:CYS:HB3	2.24	0.72
2:C:269:LEU:HD11	2:C:333:PHE:CE1	2.26	0.71
2:D:155:TRP:HB2	2:D:158:PRO:HG3	1.72	0.70
1:B:80:ASN:HD21	1:B:82:GLU:HB2	1.54	0.70
2:C:290:LEU:HD22	2:C:310:ILE:HD13	1.73	0.70
1:B:27:PRO:HA	1:B:63:GLN:NE2	2.09	0.68
1:B:26:LEU:HD12	1:B:30:THR:CG2	2.24	0.67
1:B:68:ASP:OD1	1:B:72:LEU:HB2	1.92	0.67
2:D:174:VAL:HG11	2:D:245:LEU:HD11	1.76	0.67
1:A:123:THR:HA	1:A:127:GLN:OE1	1.95	0.67
2:D:291:LYS:HD3	2:D:339:TYR:CE2	2.30	0.66
2:C:218:ASP:OD2	2:D:265:LYS:HE3	1.95	0.66
2:C:245:LEU:HD23	2:C:246:ASP:N	2.11	0.66
2:D:183:THR:HA	2:D:184:PRO:C	2.17	0.65
2:D:290:LEU:HD22	2:D:310:ILE:HD13	1.78	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:291:LYS:HD3	2:D:339:TYR:CZ	2.32	0.65
2:D:170:ALA:O	2:D:171:ALA:HB3	1.96	0.64
1:B:42:ILE:HG13	1:B:43:GLN:NE2	2.13	0.64
1:A:77:GLN:CD	1:A:77:GLN:H	2.02	0.63
2:D:157:SER:N	2:D:158:PRO:HD3	2.13	0.63
1:B:26:LEU:HD12	1:B:30:THR:HG22	1.81	0.62
1:A:119:ARG:HH11	1:A:122:ARG:HD3	1.64	0.61
1:A:22:PHE:CE1	1:A:37:ARG:HG2	2.36	0.61
2:C:157:SER:N	2:C:158:PRO:HD3	2.16	0.61
2:D:273:VAL:CG1	2:D:331:VAL:HG21	2.30	0.61
1:B:88:ARG:HD3	1:B:90:GLU:OE2	2.00	0.61
2:D:342:LEU:HD23	2:D:343:ALA:N	2.17	0.60
2:C:183:THR:HA	2:C:184:PRO:C	2.21	0.60
1:B:112:LYS:HG3	1:B:118:LYS:HB2	1.83	0.60
2:C:331:VAL:HG13	2:C:335:ASP:CB	2.31	0.59
1:A:23:LEU:HD13	1:A:111:LEU:HD11	1.84	0.59
1:A:80:ASN:HD22	1:A:82:GLU:N	1.99	0.59
2:C:245:LEU:C	2:C:245:LEU:HD23	2.23	0.59
2:D:155:TRP:CB	2:D:158:PRO:HG3	2.32	0.59
2:C:170:ALA:O	2:C:171:ALA:HB3	2.03	0.59
2:C:187:THR:O	2:C:232:VAL:HA	2.01	0.59
1:A:42:ILE:HG13	1:A:43:GLN:NE2	2.18	0.58
1:B:16:CYS:HB2	1:B:132:PHE:CE1	2.39	0.58
2:D:187:THR:O	2:D:232:VAL:HA	2.04	0.58
1:B:134:PRO:O	1:B:135:LEU:HD23	2.04	0.57
1:B:77:GLN:CD	1:B:77:GLN:H	2.08	0.57
2:C:161:MET:CE	2:C:178:CYS:HA	2.34	0.57
2:C:291:LYS:HD3	2:C:339:TYR:CZ	2.39	0.56
2:D:174:VAL:HG11	2:D:245:LEU:CD1	2.35	0.56
2:C:276:MET:HE2	2:D:203:ILE:HD12	1.87	0.56
2:D:288:GLN:HE22	2:D:310:ILE:HD12	1.70	0.56
1:A:112:LYS:HG2	1:A:118:LYS:HD2	1.86	0.56
1:A:31:VAL:HG11	1:A:73:LEU:HB3	1.88	0.56
2:C:205:GLY:O	2:C:206:TYR:HB3	2.05	0.56
2:C:331:VAL:HA	2:C:335:ASP:OD2	2.05	0.56
2:C:233:GLU:HB3	2:C:238:SER:HB2	1.88	0.56
1:A:84:LEU:O	1:A:100:LYS:HB2	2.06	0.55
1:A:119:ARG:NH1	1:A:122:ARG:HD3	2.22	0.55
1:A:124:HIS:HB3	1:A:127:GLN:HG3	1.87	0.55
1:B:23:LEU:HD13	1:B:111:LEU:HD11	1.88	0.55
2:C:161:MET:HE2	2:C:178:CYS:HA	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:90:GLU:HB2	1:B:92:ASN:OD1	2.07	0.55
2:D:282:ASP:HB3	2:D:283:PRO:CD	2.37	0.54
2:C:155:TRP:HB2	2:C:158:PRO:HG3	1.88	0.54
2:D:331:VAL:HG13	2:D:335:ASP:HB2	1.90	0.54
2:C:276:MET:CE	2:D:203:ILE:HD12	2.37	0.54
1:A:80:ASN:ND2	1:A:82:GLU:H	2.03	0.54
2:D:176:PHE:CZ	2:D:245:LEU:HD12	2.43	0.54
2:C:154:TYR:CE1	2:C:181:SER:HB3	2.43	0.54
2:C:289:TRP:CD2	2:C:326:LEU:HB2	2.43	0.53
2:C:288:GLN:NE2	2:C:310:ILE:HD12	2.23	0.53
2:D:156:THR:HG22	2:D:156:THR:O	2.08	0.53
2:D:289:TRP:CD2	2:D:326:LEU:HB2	2.43	0.53
1:B:112:LYS:HG2	1:B:118:LYS:HD2	1.90	0.53
1:A:112:LYS:HG3	1:A:118:LYS:HB2	1.91	0.52
1:A:119:ARG:HB2	1:A:122:ARG:CG	2.37	0.52
2:D:349:LEU:HD12	2:D:349:LEU:C	2.29	0.52
1:B:46:LEU:HG	1:B:56:ILE:HG12	1.91	0.52
2:C:265:LYS:HE3	2:D:218:ASP:OD2	2.10	0.52
1:A:46:LEU:HG	1:A:56:ILE:HG12	1.92	0.52
1:A:102:HIS:ND1	1:A:105:LYS:HE2	2.25	0.51
2:C:257:LEU:CD2	2:C:279:VAL:HG22	2.40	0.51
2:D:170:ALA:O	2:D:171:ALA:CB	2.58	0.51
1:A:14:LEU:HG	1:A:44:LEU:HD12	1.93	0.51
2:D:233:GLU:HB3	2:D:238:SER:HB2	1.92	0.51
1:B:64:TYR:CE1	1:B:79:PRO:HD3	2.46	0.51
2:C:190:TRP:CZ2	2:C:230:CYS:HB3	2.46	0.51
1:A:64:TYR:CE1	1:A:79:PRO:HD3	2.46	0.50
2:C:269:LEU:HD11	2:C:333:PHE:CZ	2.45	0.50
2:D:347:ILE:N	2:D:347:ILE:HD12	2.27	0.50
2:C:156:THR:HG22	2:C:156:THR:O	2.11	0.50
2:C:198:LYS:O	2:C:201:HIS:HB2	2.11	0.50
1:A:80:ASN:HD21	1:A:82:GLU:HB2	1.77	0.50
2:D:151:VAL:HB	2:D:183:THR:HG23	1.93	0.50
2:D:168:VAL:O	2:D:247:VAL:HA	2.11	0.50
2:C:203:ILE:HD13	2:D:325:VAL:HG11	1.94	0.49
1:A:77:GLN:CD	1:A:77:GLN:N	2.65	0.49
2:D:205:GLY:O	2:D:206:TYR:HB3	2.11	0.49
2:D:174:VAL:CG2	2:D:220:VAL:HG11	2.42	0.49
2:D:176:PHE:O	2:D:214:SER:HA	2.12	0.49
2:C:168:VAL:O	2:C:247:VAL:HA	2.11	0.49
1:A:90:GLU:HB2	1:A:92:ASN:OD1	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:347:ILE:HD12	2:C:347:ILE:N	2.28	0.49
2:D:199:PRO:O	2:D:205:GLY:HA2	2.12	0.49
2:D:351:HIS:O	2:D:352:HIS:HD2	1.95	0.49
1:B:120:GLY:N	1:B:121:PRO:HD2	2.28	0.49
2:C:199:PRO:O	2:C:205:GLY:HA2	2.13	0.49
2:D:157:SER:N	2:D:158:PRO:CD	2.75	0.49
1:B:81:GLU:OE2	1:B:101:LYS:HD2	2.12	0.49
1:B:108:PHE:HD1	1:B:123:THR:OG1	1.96	0.49
1:A:88:ARG:HD3	1:A:90:GLU:OE2	2.13	0.48
2:D:161:MET:HE2	2:D:179:PRO:HD2	1.95	0.48
2:D:233:GLU:HB3	2:D:238:SER:CB	2.43	0.48
1:A:13:LEU:HD13	1:A:22:PHE:CE1	2.48	0.48
2:C:190:TRP:CZ3	2:C:230:CYS:HB3	2.48	0.48
1:A:26:LEU:HD12	1:A:30:THR:CG2	2.44	0.48
2:C:265:LYS:HB3	2:C:265:LYS:HE2	1.72	0.48
1:A:27:PRO:CA	1:A:63:GLN:HE22	2.21	0.48
1:B:31:VAL:HG11	1:B:73:LEU:HB3	1.96	0.48
1:B:124:HIS:HB3	1:B:127:GLN:HG3	1.96	0.47
1:B:80:ASN:ND2	1:B:82:GLU:HB2	2.27	0.47
2:C:282:ASP:HB3	2:C:283:PRO:CD	2.44	0.47
2:D:273:VAL:HG12	2:D:331:VAL:HG21	1.96	0.47
1:B:111:LEU:HD12	1:B:132:PHE:CE1	2.49	0.47
2:C:233:GLU:HB3	2:C:238:SER:CB	2.44	0.47
1:A:103:ALA:O	1:A:106:ASN:N	2.42	0.47
2:C:176:PHE:O	2:C:214:SER:HA	2.13	0.47
1:A:31:VAL:HG11	1:A:73:LEU:CB	2.44	0.47
1:B:80:ASN:ND2	1:B:82:GLU:N	2.53	0.47
1:A:42:ILE:HG13	1:A:43:GLN:HE21	1.80	0.47
1:B:73:LEU:HD21	1:B:109:VAL:HG22	1.96	0.47
2:C:257:LEU:HD22	2:C:279:VAL:HG22	1.96	0.46
2:C:254:ARG:HH11	2:C:254:ARG:CG	2.28	0.46
2:D:221:VAL:O	2:D:224:ASP:HB2	2.16	0.46
1:A:108:PHE:HD1	1:A:123:THR:OG1	1.97	0.46
1:A:68:ASP:OD2	1:A:70:ASP:HB2	2.15	0.46
2:C:273:VAL:CG2	2:C:274:GLU:N	2.79	0.46
2:D:153:PRO:HA	2:D:181:SER:O	2.15	0.46
1:A:13:LEU:HD13	1:A:22:PHE:HE1	1.81	0.46
1:A:11:PRO:HG3	1:A:45:GLN:OE1	2.16	0.46
2:C:292:HIS:CD2	2:C:338:GLU:HG2	2.50	0.46
2:D:206:TYR:C	2:D:206:TYR:CD1	2.89	0.46
1:B:100:LYS:O	1:B:100:LYS:HD3	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:151:VAL:HB	2:C:183:THR:H	1.82	0.45
2:C:290:LEU:CD2	2:C:310:ILE:HD13	2.43	0.45
2:C:275:PHE:HZ	2:C:356:LEU:HB2	1.82	0.45
2:C:153:PRO:HA	2:C:181:SER:O	2.16	0.45
2:C:154:TYR:N	2:C:154:TYR:CD1	2.84	0.45
2:C:157:SER:N	2:C:158:PRO:CD	2.79	0.45
1:B:37:ARG:NH2	1:B:136:PRO:O	2.50	0.45
2:D:257:LEU:HB2	2:D:352:HIS:CE1	2.51	0.45
2:C:172:LYS:O	2:C:220:VAL:HG22	2.17	0.45
2:C:291:LYS:HD3	2:C:339:TYR:CE2	2.51	0.45
2:C:349:LEU:C	2:C:349:LEU:HD12	2.37	0.45
2:C:154:TYR:CZ	2:C:181:SER:HB3	2.52	0.44
1:A:37:ARG:NH2	1:A:136:PRO:O	2.50	0.44
2:C:170:ALA:O	2:C:171:ALA:CB	2.65	0.44
1:A:105:LYS:O	1:A:106:ASN:HB2	2.17	0.44
1:B:111:LEU:HD12	1:B:132:PHE:HE1	1.82	0.44
2:D:273:VAL:HG11	2:D:331:VAL:HG21	1.99	0.44
1:B:124:HIS:ND1	1:B:125:TYR:N	2.65	0.44
1:B:108:PHE:HB2	1:B:130:ILE:HG21	2.00	0.44
2:D:198:LYS:O	2:D:201:HIS:HB2	2.18	0.44
1:A:87:GLU:HG3	1:A:97:TYR:CE1	2.53	0.43
1:A:124:HIS:ND1	1:A:125:TYR:N	2.65	0.43
2:C:155:TRP:CB	2:C:158:PRO:HG3	2.48	0.43
2:D:245:LEU:HD23	2:D:246:ASP:N	2.32	0.43
1:A:120:GLY:N	1:A:121:PRO:HD2	2.33	0.43
2:D:154:TYR:CZ	2:D:181:SER:HB3	2.54	0.43
1:A:36:ASP:C	1:A:36:ASP:OD2	2.57	0.43
1:B:105:LYS:O	1:B:106:ASN:HB2	2.19	0.43
1:B:14:LEU:HG	1:B:44:LEU:HD12	2.00	0.43
2:C:221:VAL:HB	2:C:222:PRO:HD2	2.01	0.43
1:B:103:ALA:O	1:B:106:ASN:N	2.44	0.42
1:A:110:GLY:O	1:A:111:LEU:HG	2.19	0.42
2:D:347:ILE:CD1	2:D:347:ILE:N	2.82	0.42
2:C:266:THR:HA	2:C:357:THR:O	2.19	0.42
1:A:22:PHE:N	1:A:22:PHE:CD2	2.87	0.42
2:D:176:PHE:CE2	2:D:245:LEU:HD12	2.54	0.42
1:B:108:PHE:CB	1:B:130:ILE:HG21	2.50	0.42
2:C:206:TYR:C	2:C:206:TYR:CD1	2.93	0.42
2:D:161:MET:CE	2:D:178:CYS:HA	2.50	0.42
2:C:161:MET:HE1	2:C:178:CYS:HA	2.01	0.42
1:A:88:ARG:NH1	1:A:90:GLU:OE1	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:275:PHE:HZ	2:D:356:LEU:HB2	1.84	0.42
2:C:276:MET:CE	2:D:203:ILE:HB	2.50	0.42
1:B:119:ARG:NH1	1:B:122:ARG:HD3	2.35	0.41
1:B:68:ASP:OD2	1:B:72:LEU:N	2.33	0.41
2:D:257:LEU:HD22	2:D:279:VAL:HG22	2.01	0.41
2:C:156:THR:CG2	2:C:156:THR:O	2.67	0.41
2:C:272:ASN:HA	2:C:329:ARG:O	2.20	0.41
1:A:37:ARG:HH21	1:A:137:VAL:C	2.24	0.41
2:D:186:PRO:HG2	2:D:213:TRP:CH2	2.54	0.41
2:D:287:ILE:HD12	2:D:287:ILE:N	2.36	0.41
1:A:124:HIS:H	1:A:127:GLN:CD	2.24	0.41
2:C:273:VAL:HG23	2:C:274:GLU:N	2.36	0.41
2:D:266:THR:HG23	2:D:357:THR:HB	2.03	0.41
2:C:197:PHE:HZ	2:C:202:ARG:HD2	1.86	0.41
1:A:106:ASN:HA	1:A:106:ASN:HD22	1.68	0.40
1:A:18:ASN:HB2	1:A:129:ALA:HA	2.03	0.40
2:C:174:VAL:HG11	2:C:245:LEU:CD1	2.52	0.40
2:D:332:SER:N	2:D:335:ASP:OD2	2.47	0.40
2:D:331:VAL:HA	2:D:335:ASP:OD2	2.22	0.40
2:D:342:LEU:C	2:D:342:LEU:HD23	2.42	0.40
1:A:114:ASN:OD1	1:A:116:SER:HB2	2.21	0.40
1:B:13:LEU:HD13	1:B:22:PHE:CE1	2.57	0.40
2:C:331:VAL:CG1	2:C:332:SER:N	2.85	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	129/134 (96%)	120 (93%)	8 (6%)	1 (1%)	19 49
1	B	129/134 (96%)	120 (93%)	8 (6%)	1 (1%)	19 49

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	C	185/225 (82%)	172 (93%)	11 (6%)	2 (1%)	14	41
2	D	186/225 (83%)	170 (91%)	14 (8%)	2 (1%)	14	41
All	All	629/718 (88%)	582 (92%)	41 (6%)	6 (1%)	15	44

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	C	329	ARG
2	D	329	ARG
2	D	219	SER
2	C	219	SER
1	A	27	PRO
1	B	27	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	112/118 (95%)	106 (95%)	6 (5%)	22	53
1	B	112/118 (95%)	107 (96%)	5 (4%)	27	60
2	C	150/198 (76%)	140 (93%)	10 (7%)	16	43
2	D	150/198 (76%)	142 (95%)	8 (5%)	22	54
All	All	524/632 (83%)	495 (94%)	29 (6%)	21	52

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	ASP
1	A	34	THR
1	A	47	SER
1	A	80	ASN
1	A	81	GLU
1	A	117	CYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	28	ASP
1	B	34	THR
1	B	47	SER
1	B	80	ASN
1	B	81	GLU
2	C	147	ASN
2	C	154	TYR
2	C	183	THR
2	C	187	THR
2	C	188	LEU
2	C	200	ASP
2	C	254	ARG
2	C	273	VAL
2	C	350	SER
2	C	355	TRP
2	D	147	ASN
2	D	183	THR
2	D	188	LEU
2	D	200	ASP
2	D	254	ARG
2	D	273	VAL
2	D	350	SER
2	D	355	TRP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	43	GLN
1	A	63	GLN
1	A	80	ASN
1	A	106	ASN
1	B	41	HIS
1	B	43	GLN
1	B	63	GLN
1	B	80	ASN
1	B	106	ASN
2	C	241	HIS
2	C	284	GLN
2	C	286	HIS
2	C	288	GLN
2	C	352	HIS
2	D	241	HIS

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Mol	Chain	Res	Type
2	D	284	GLN
2	D	286	HIS
2	D	288	GLN
2	D	327	HIS
2	D	352	HIS

### 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 carbohydrates 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	SO4	A	4003	-	4,4,4	0.20	0	6,6,6	0.15	0
3	SO4	B	4000	-	4,4,4	0.26	0	6,6,6	0.14	0
3	SO4	A	4002	-	4,4,4	0.26	0	6,6,6	0.22	0
3	SO4	B	4001	-	4,4,4	0.25	0	6,6,6	0.20	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

### 6.4 Ligands

EDS was not executed - this section is therefore empty.

### 6.5 Other polymers

EDS was not executed - this section is therefore empty.