



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 9, 2026 – 12:52 PM UTC

PDB ID : 3PVO / pdb_00003pvo
Title : Monoclinic form of Human C-Reactive Protein
Authors : Guillon, C.; Mavoungou Bigouagou, U.; Jeannin, P.; Delneste, Y.; Gouet, P.
Deposited on : 2010-12-07
Resolution : 3.00 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

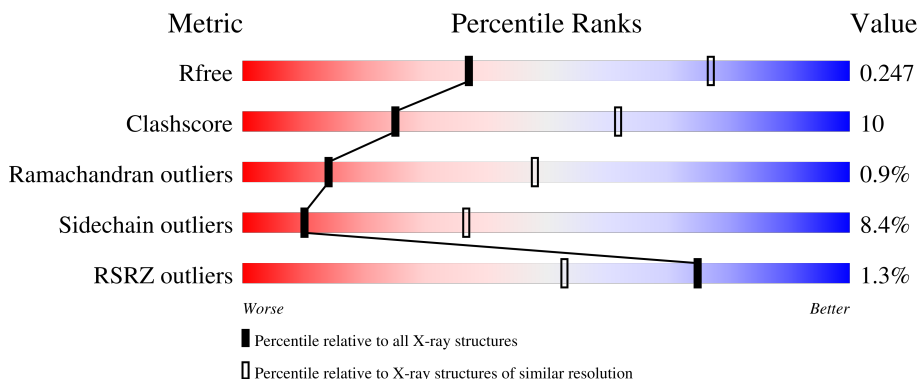
1 Overall quality at a glance

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}	180053	2672 (3.00-3.00)
Clashscore	190562	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)
RSRZ outliers	180081	2671 (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 ≥ 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	206	2% 77% 19% .
1	B	206	% 68% 25% 5% .
1	C	206	% 78% 18% .
1	D	206	79% 18% .
1	E	206	% 75% 22% .

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Mol	Chain	Length	Quality of chain
1	F	206	
1	G	206	
1	H	206	
1	I	206	
1	J	206	
1	K	206	
1	L	206	
1	M	206	
1	N	206	
1	O	206	
1	P	206	
1	Q	206	
1	R	206	
1	S	206	
1	T	206	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 33077 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 C-Reactive Protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	B	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	C	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	D	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	E	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	F	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	G	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	H	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	I	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	J	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	K	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	L	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	M	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	N	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	O	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			
1	P	206	Total	C	N	O	S	0	0	0
			1632	1058	261	309	4			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Q	206	Total 1632	C 1058	N 261	O 309	S 4	0	0	0
1	R	206	Total 1632	C 1058	N 261	O 309	S 4	0	0	0
1	S	206	Total 1632	C 1058	N 261	O 309	S 4	0	0	0
1	T	206	Total 1632	C 1058	N 261	O 309	S 4	0	0	0

- Molecule 2 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Ca 2	0	0
2	B	2	Total 2	Ca 2	0	0
2	C	2	Total 2	Ca 2	0	0
2	D	2	Total 2	Ca 2	0	0
2	E	2	Total 2	Ca 2	0	0
2	F	2	Total 2	Ca 2	0	0
2	G	2	Total 2	Ca 2	0	0
2	H	2	Total 2	Ca 2	0	0
2	I	2	Total 2	Ca 2	0	0
2	J	2	Total 2	Ca 2	0	0
2	K	2	Total 2	Ca 2	0	0
2	L	2	Total 2	Ca 2	0	0
2	M	2	Total 2	Ca 2	0	0
2	N	2	Total 2	Ca 2	0	0
2	O	2	Total 2	Ca 2	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	P	2	Total 2	Ca 2	0	0
2	Q	2	Total 2	Ca 2	0	0
2	R	2	Total 2	Ca 2	0	0
2	S	2	Total 2	Ca 2	0	0
2	T	2	Total 2	Ca 2	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	12	Total 12	O 12	0	0
3	B	20	Total 20	O 20	0	0
3	C	20	Total 20	O 20	0	0
3	D	14	Total 14	O 14	0	0
3	E	10	Total 10	O 10	0	0
3	F	20	Total 20	O 20	0	0
3	G	15	Total 15	O 15	0	0
3	H	16	Total 16	O 16	0	0
3	I	14	Total 14	O 14	0	0
3	J	30	Total 30	O 30	0	0
3	K	24	Total 24	O 24	0	0
3	L	24	Total 24	O 24	0	0
3	M	19	Total 19	O 19	0	0
3	N	19	Total 19	O 19	0	0

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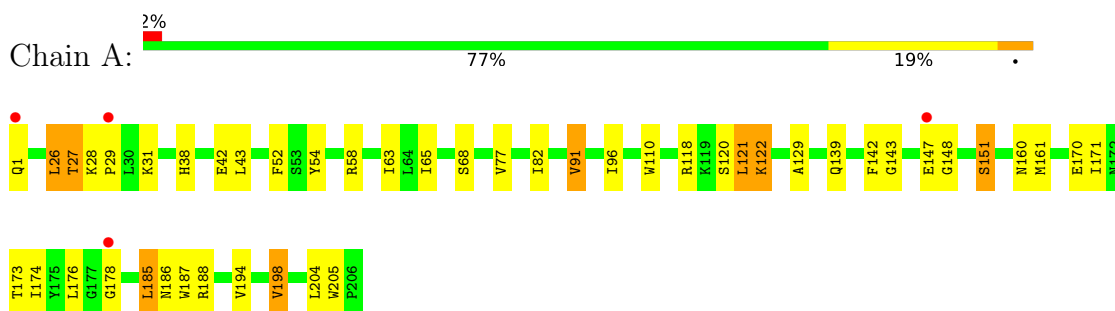
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	O	25	Total 25	O 25	0	0
3	P	19	Total 19	O 19	0	0
3	Q	28	Total 28	O 28	0	0
3	R	30	Total 30	O 30	0	0
3	S	21	Total 21	O 21	0	0
3	T	17	Total 17	O 17	0	0

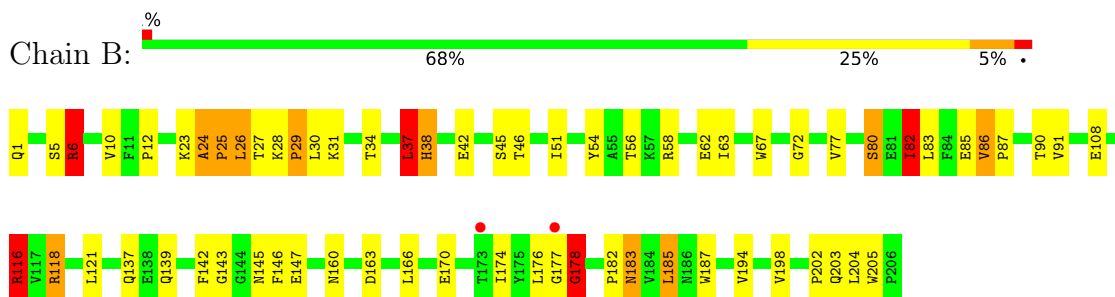
3 Residue-property plots [i](#)

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.

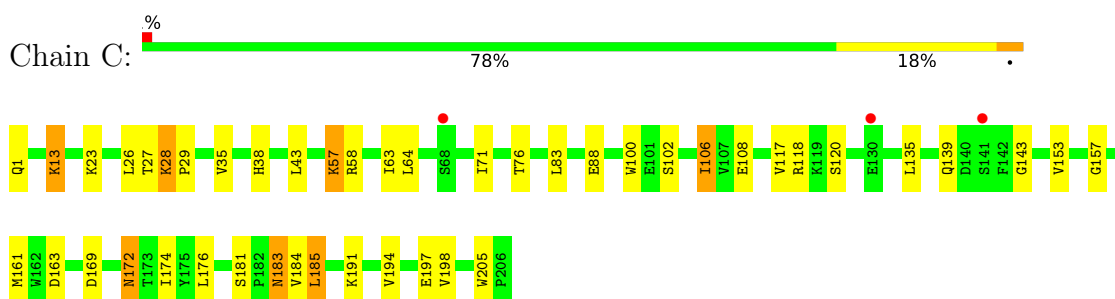
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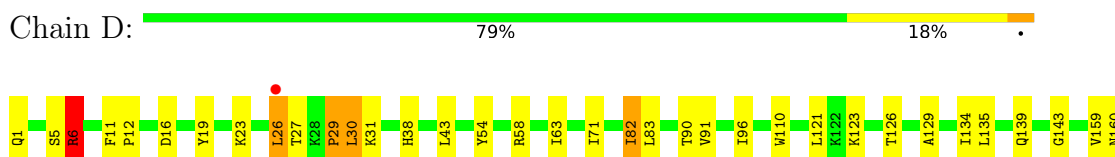
• Molecule 1: C-Reactive Protein



• Molecule 1: C-Reactive Protein

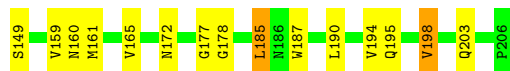
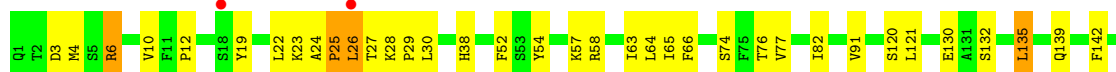
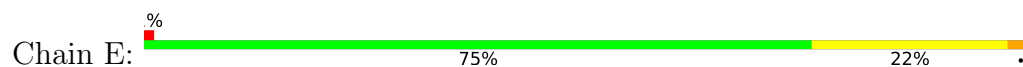


• Molecule 1: C-Reactive Protein

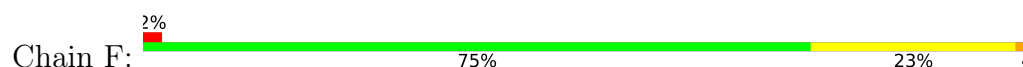




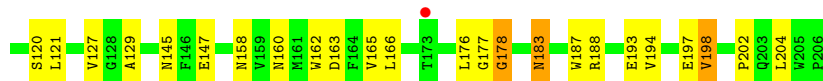
- Molecule 1: C-Reactive Protein



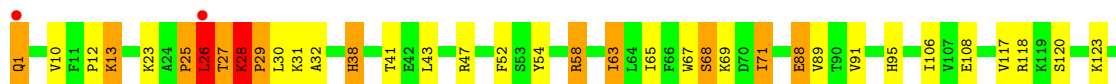
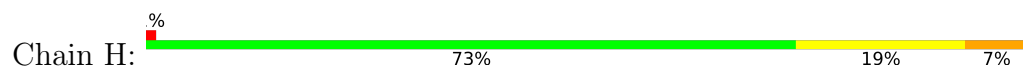
- Molecule 1: C-Reactive Protein



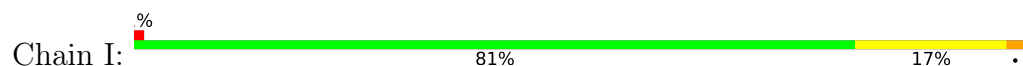
- Molecule 1: C-Reactive Protein



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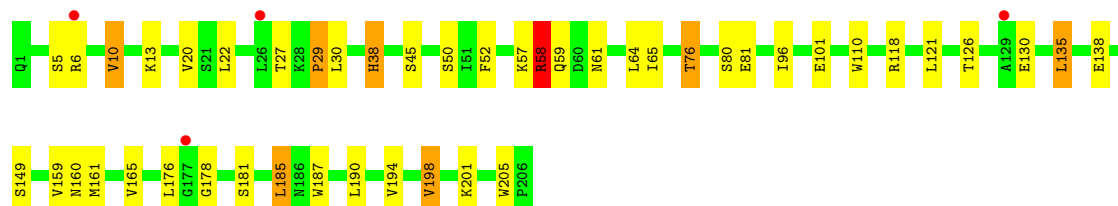
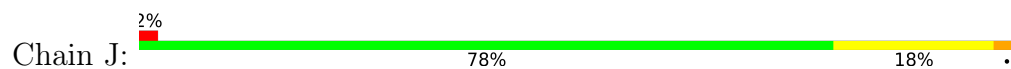


- Molecule 1: C-Reactive Protein

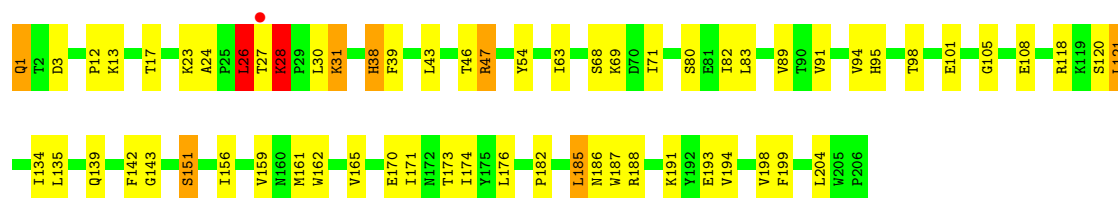




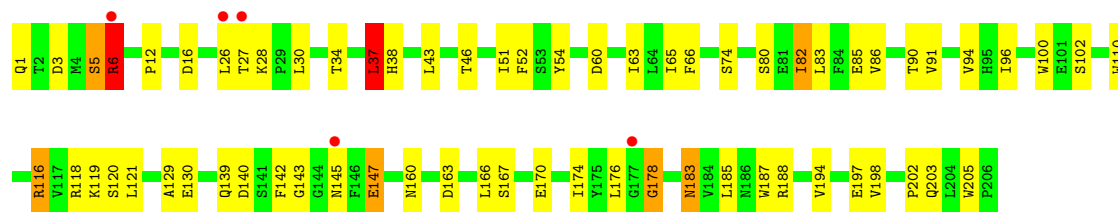
- Molecule 1: C-Reactive Protein



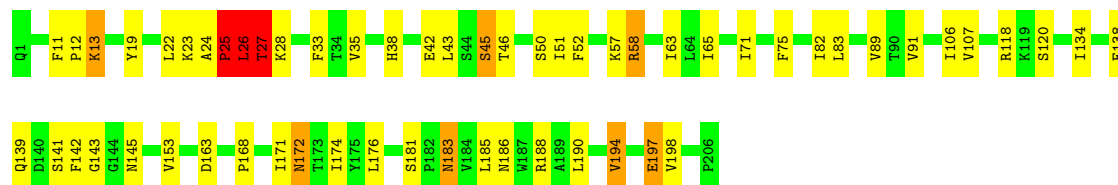
- Molecule 1: C-Reactive Protein



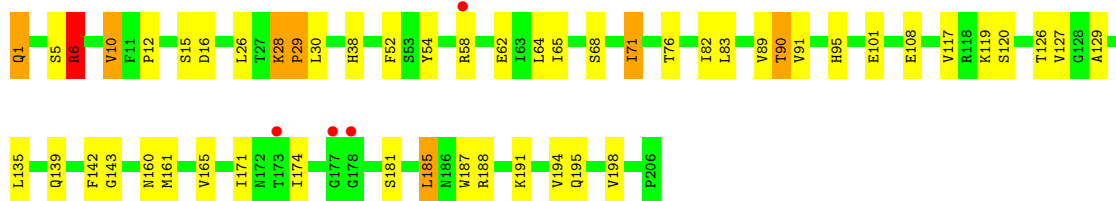
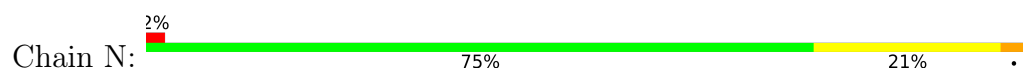
- Molecule 1: C-Reactive Protein



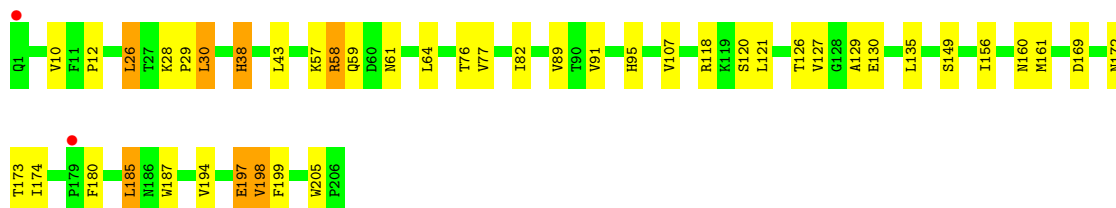
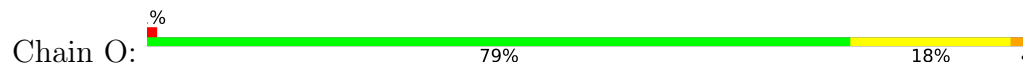
- Molecule 1: C-Reactive Protein



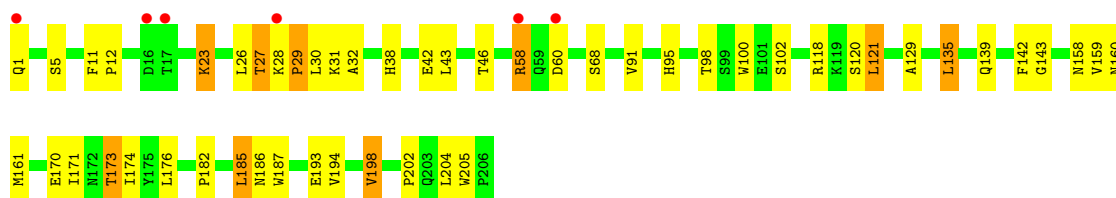
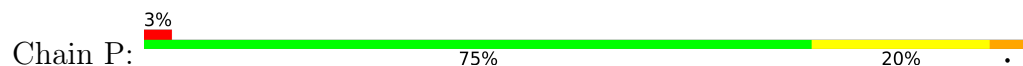
- Molecule 1: C-Reactive Protein



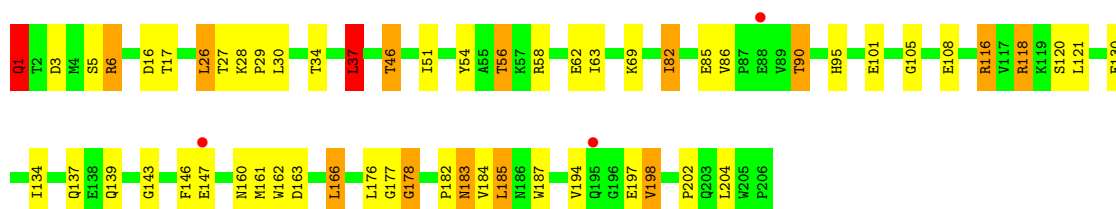
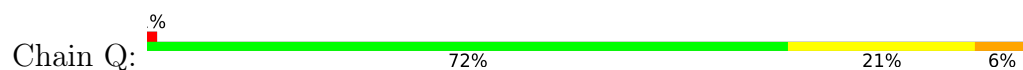
● Molecule 1: C-Reactive Protein



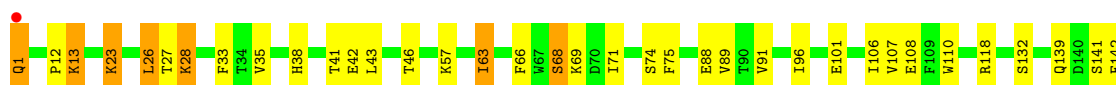
● Molecule 1: C-Reactive Protein



● Molecule 1: C-Reactive Protein



● Molecule 1: C-Reactive Protein

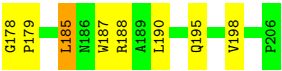
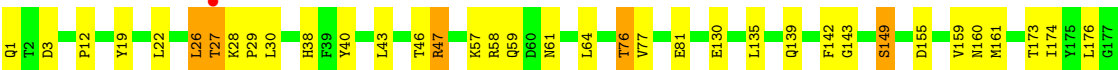
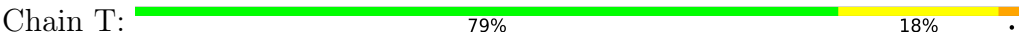




• Molecule 1: C-Reactive Protein



• Molecule 1: C-Reactive Protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	97.60Å 143.20Å 161.20Å 90.00° 89.70° 90.00°	Depositor
Resolution (Å)	20.00 – 3.00 20.00 – 3.00	Depositor EDS
% Data completeness (in resolution range)	97.8 (20.00-3.00) 97.5 (20.00-3.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.15	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.24 (at 2.98Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.227 , 0.285 (Not available) , 0.247	Depositor DCC
R_{free} test set	4380 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å ²)	25.6	Xtriage
Anisotropy	0.386	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 9.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.026 for h,-k,-l	Xtriage
F_o, F_c correlation	0.87	EDS
Total number of atoms	33077	wwPDB-VP
Average B, all atoms (Å ²)	16.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.37% 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 ⓘ

5.1 Standard geometry ⓘ

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	1.00	2/1678 (0.1%)	1.03	4/2279 (0.2%)
1	B	1.01	3/1678 (0.2%)	1.12	15/2279 (0.7%)
1	C	1.03	1/1678 (0.1%)	1.07	7/2279 (0.3%)
1	D	0.98	2/1678 (0.1%)	1.04	6/2279 (0.3%)
1	E	0.95	1/1678 (0.1%)	1.00	3/2279 (0.1%)
1	F	0.94	1/1678 (0.1%)	1.02	3/2279 (0.1%)
1	G	1.00	2/1678 (0.1%)	1.05	8/2279 (0.4%)
1	H	1.05	5/1678 (0.3%)	1.02	7/2279 (0.3%)
1	I	0.97	1/1678 (0.1%)	1.04	3/2279 (0.1%)
1	J	0.93	2/1678 (0.1%)	0.99	3/2279 (0.1%)
1	K	0.94	0/1678	1.02	6/2279 (0.3%)
1	L	1.02	3/1678 (0.2%)	1.13	10/2279 (0.4%)
1	M	1.06	4/1678 (0.2%)	1.05	2/2279 (0.1%)
1	N	0.96	1/1678 (0.1%)	1.03	7/2279 (0.3%)
1	O	0.91	0/1678	0.96	0/2279
1	P	0.93	1/1678 (0.1%)	1.00	5/2279 (0.2%)
1	Q	1.02	5/1678 (0.3%)	1.13	14/2279 (0.6%)
1	R	1.02	2/1678 (0.1%)	1.03	4/2279 (0.2%)
1	S	0.95	3/1678 (0.2%)	1.05	8/2279 (0.4%)
1	T	0.94	1/1678 (0.1%)	0.98	1/2279 (0.0%)
All	All	0.98	40/33560 (0.1%)	1.04	116/45580 (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	H	0	1
1	M	0	1
1	R	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
All	All	0	3

The worst 5 of 40 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	29	PRO	C-N	12.76	1.50	1.33
1	T	29	PRO	C-N	12.33	1.50	1.33
1	E	29	PRO	C-N	12.03	1.50	1.33
1	P	29	PRO	C-N	-8.31	1.21	1.33
1	F	29	PRO	C-N	-8.26	1.22	1.33

The worst 5 of 116 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	6	ARG	CG-CD-NE	-9.52	91.05	112.00
1	G	116	ARG	NE-CZ-NH2	8.62	126.96	119.20
1	E	23	LYS	O-C-N	-8.60	113.15	123.29
1	B	6	ARG	CG-CD-NE	-8.48	93.34	112.00
1	N	16	ASP	N-CA-CB	-8.26	100.08	110.98

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	H	26	LEU	Peptide
1	M	26	LEU	Peptide
1	R	23	LYS	Mainchain

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1632	0	1593	27	0
1	B	1632	0	1593	54	0
1	C	1632	0	1593	23	1
1	D	1632	0	1593	24	5

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	1632	0	1593	30	0
1	F	1632	0	1593	24	1
1	G	1632	0	1593	38	0
1	H	1632	0	1593	46	1
1	I	1632	0	1593	17	3
1	J	1632	0	1593	30	1
1	K	1632	0	1593	42	0
1	L	1632	0	1593	48	1
1	M	1632	0	1593	47	0
1	N	1632	0	1593	38	5
1	O	1632	0	1593	27	0
1	P	1632	0	1593	29	1
1	Q	1632	0	1593	41	0
1	R	1632	0	1593	30	0
1	S	1632	0	1593	33	0
1	T	1632	0	1593	24	3
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
2	G	2	0	0	0	0
2	H	2	0	0	0	0
2	I	2	0	0	0	0
2	J	2	0	0	0	0
2	K	2	0	0	0	0
2	L	2	0	0	0	0
2	M	2	0	0	0	0
2	N	2	0	0	0	0
2	O	2	0	0	0	0
2	P	2	0	0	0	0
2	Q	2	0	0	0	0
2	R	2	0	0	0	0
2	S	2	0	0	0	0
2	T	2	0	0	0	0
3	A	12	0	0	2	0
3	B	20	0	0	8	0
3	C	20	0	0	0	0
3	D	14	0	0	5	0
3	E	10	0	0	6	0
3	F	20	0	0	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	G	15	0	0	6	0
3	H	16	0	0	8	0
3	I	14	0	0	1	0
3	J	30	0	0	4	0
3	K	24	0	0	5	0
3	L	24	0	0	8	0
3	M	19	0	0	8	0
3	N	19	0	0	10	0
3	O	25	0	0	6	0
3	P	19	0	0	5	0
3	Q	28	0	0	3	0
3	R	30	0	0	3	0
3	S	21	0	0	7	0
3	T	17	0	0	2	0
All	All	33077	0	31860	628	11

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 10.

The worst 5 of 628 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:D:31:LYS:HB2	3:D:208:HOH:O	1.30	1.24
1:S:30:LEU:HD12	1:S:30:LEU:N	1.57	1.18
1:J:58:ARG:HG2	1:J:58:ARG:HH11	1.07	1.15
1:F:13:LYS:HE2	3:F:221:HOH:O	1.47	1.11
1:L:130:GLU:HB3	3:L:392:HOH:O	1.49	1.09

The worst 5 of 11 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:N:58:ARG:NH1	1:T:143:GLY:CA[2_656]	1.49	0.71
1:D:123:LYS:NZ	1:I:195:GLN:OE1[2_645]	1.55	0.65
1:D:6:ARG:CD	1:N:188:ARG:NH2[2_646]	1.83	0.37
1:F:145:ASN:ND2	1:L:147:GLU:OE2[2_546]	1.98	0.22
1:D:123:LYS:CE	1:I:195:GLN:OE1[2_645]	2.06	0.14

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	204/206 (99%)	192 (94%)	10 (5%)	2 (1%)	12	45
1	B	204/206 (99%)	191 (94%)	8 (4%)	5 (2%)	4	23
1	C	204/206 (99%)	191 (94%)	11 (5%)	2 (1%)	12	45
1	D	204/206 (99%)	192 (94%)	12 (6%)	0	100	100
1	E	204/206 (99%)	191 (94%)	9 (4%)	4 (2%)	6	28
1	F	204/206 (99%)	197 (97%)	6 (3%)	1 (0%)	24	60
1	G	204/206 (99%)	193 (95%)	10 (5%)	1 (0%)	24	60
1	H	204/206 (99%)	194 (95%)	8 (4%)	2 (1%)	12	45
1	I	204/206 (99%)	191 (94%)	13 (6%)	0	100	100
1	J	204/206 (99%)	193 (95%)	10 (5%)	1 (0%)	24	60
1	K	204/206 (99%)	192 (94%)	10 (5%)	2 (1%)	12	45
1	L	204/206 (99%)	194 (95%)	8 (4%)	2 (1%)	12	45
1	M	204/206 (99%)	193 (95%)	9 (4%)	2 (1%)	12	45
1	N	204/206 (99%)	196 (96%)	7 (3%)	1 (0%)	24	60
1	O	204/206 (99%)	193 (95%)	11 (5%)	0	100	100
1	P	204/206 (99%)	191 (94%)	10 (5%)	3 (2%)	8	35
1	Q	204/206 (99%)	191 (94%)	12 (6%)	1 (0%)	24	60
1	R	204/206 (99%)	191 (94%)	11 (5%)	2 (1%)	12	45
1	S	204/206 (99%)	193 (95%)	10 (5%)	1 (0%)	24	60
1	T	204/206 (99%)	192 (94%)	9 (4%)	3 (2%)	8	35
All	All	4080/4120 (99%)	3851 (94%)	194 (5%)	35 (1%)	14	48

5 of 35 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	178	GLY

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Mol	Chain	Res	Type
1	E	26	LEU
1	G	178	GLY
1	L	178	GLY
1	Q	178	GLY

5.3.2 Protein sidechains ⓘ

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	180/180 (100%)	166 (92%)	14 (8%)	11	39
1	B	180/180 (100%)	159 (88%)	21 (12%)	5	23
1	C	180/180 (100%)	166 (92%)	14 (8%)	11	39
1	D	180/180 (100%)	169 (94%)	11 (6%)	17	49
1	E	180/180 (100%)	170 (94%)	10 (6%)	19	52
1	F	180/180 (100%)	163 (91%)	17 (9%)	8	32
1	G	180/180 (100%)	168 (93%)	12 (7%)	15	46
1	H	180/180 (100%)	160 (89%)	20 (11%)	6	25
1	I	180/180 (100%)	164 (91%)	16 (9%)	9	34
1	J	180/180 (100%)	170 (94%)	10 (6%)	19	52
1	K	180/180 (100%)	162 (90%)	18 (10%)	7	29
1	L	180/180 (100%)	161 (89%)	19 (11%)	6	27
1	M	180/180 (100%)	159 (88%)	21 (12%)	5	23
1	N	180/180 (100%)	167 (93%)	13 (7%)	13	43
1	O	180/180 (100%)	166 (92%)	14 (8%)	11	39
1	P	180/180 (100%)	165 (92%)	15 (8%)	10	37
1	Q	180/180 (100%)	164 (91%)	16 (9%)	9	34
1	R	180/180 (100%)	164 (91%)	16 (9%)	9	34
1	S	180/180 (100%)	169 (94%)	11 (6%)	17	49
1	T	180/180 (100%)	166 (92%)	14 (8%)	11	39

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
All	All	3600/3600 (100%)	3298 (92%)	302 (8%)	10	37

5 of 302 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	P	23	LYS
1	S	195	GLN
1	P	121	LEU
1	Q	198	VAL
1	T	185	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 132 such sidechains are listed below:

Mol	Chain	Res	Type
1	R	158	ASN
1	R	203	GLN
1	T	160	ASN
1	H	137	GLN
1	G	203	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 40 ligands modelled in this entry, 40 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	206/206 (100%)	0.07	4 (1%) 66 43	6, 16, 27, 32	0
1	B	206/206 (100%)	-0.11	2 (0%) 79 59	4, 14, 25, 31	0
1	C	206/206 (100%)	-0.10	3 (1%) 72 49	4, 13, 22, 34	0
1	D	206/206 (100%)	-0.00	1 (0%) 87 72	4, 16, 28, 33	0
1	E	206/206 (100%)	0.03	2 (0%) 79 59	7, 17, 28, 33	0
1	F	206/206 (100%)	0.07	4 (1%) 66 43	5, 16, 28, 34	0
1	G	206/206 (100%)	0.02	4 (1%) 66 43	8, 17, 28, 32	0
1	H	206/206 (100%)	0.05	3 (1%) 72 49	9, 18, 29, 35	0
1	I	206/206 (100%)	0.02	2 (0%) 79 59	9, 17, 29, 35	0
1	J	206/206 (100%)	-0.09	4 (1%) 66 43	6, 15, 25, 33	0
1	K	206/206 (100%)	0.02	1 (0%) 87 72	7, 16, 27, 36	0
1	L	206/206 (100%)	-0.06	5 (2%) 59 36	6, 15, 27, 38	0
1	M	206/206 (100%)	-0.04	0 100 100	6, 15, 27, 36	0
1	N	206/206 (100%)	0.03	4 (1%) 66 43	6, 17, 28, 34	0
1	O	206/206 (100%)	0.03	2 (0%) 79 59	7, 16, 27, 36	0
1	P	206/206 (100%)	0.31	6 (2%) 53 31	8, 20, 32, 44	0
1	Q	206/206 (100%)	-0.00	3 (1%) 72 49	7, 15, 26, 35	0
1	R	206/206 (100%)	-0.11	1 (0%) 87 72	5, 14, 26, 35	0
1	S	206/206 (100%)	-0.02	0 100 100	7, 17, 29, 34	0
1	T	206/206 (100%)	0.18	1 (0%) 87 72	10, 20, 32, 43	0
All	All	4120/4120 (100%)	0.01	52 (1%) 75 53	4, 16, 29, 44	0

The worst 5 of 52 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1	GLN	5.7
1	N	177	GLY	4.6
1	H	1	GLN	3.3
1	O	1	GLN	3.3
1	Q	195	GLN	3.2

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 oligosaccharides 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($\text{\AA}^2$)	Q<0.9
2	CA	I	5018	1/1	0.83	0.13	65,65,65,65	0
2	CA	E	5010	1/1	0.84	0.09	80,80,80,80	0
2	CA	B	5004	1/1	0.86	0.09	55,55,55,55	0
2	CA	D	5008	1/1	0.86	0.14	49,49,49,49	0
2	CA	K	5022	1/1	0.86	0.11	40,40,40,40	0
2	CA	N	5028	1/1	0.86	0.06	48,48,48,48	0
2	CA	O	5030	1/1	0.87	0.12	54,54,54,54	0
2	CA	P	5032	1/1	0.87	0.13	72,72,72,72	0
2	CA	M	5026	1/1	0.88	0.12	59,59,59,59	0
2	CA	H	5016	1/1	0.88	0.08	57,57,57,57	0
2	CA	T	5040	1/1	0.88	0.07	50,50,50,50	0
2	CA	L	5024	1/1	0.89	0.08	52,52,52,52	0
2	CA	A	5002	1/1	0.89	0.30	62,62,62,62	0
2	CA	F	5012	1/1	0.90	0.09	68,68,68,68	0
2	CA	S	5037	1/1	0.90	0.05	22,22,22,22	0
2	CA	P	5031	1/1	0.90	0.06	35,35,35,35	0
2	CA	J	5019	1/1	0.91	0.08	41,41,41,41	0
2	CA	J	5020	1/1	0.91	0.09	43,43,43,43	0
2	CA	R	5036	1/1	0.91	0.07	53,53,53,53	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	CA	K	5021	1/1	0.91	0.08	32,32,32,32	0
2	CA	C	5005	1/1	0.91	0.06	32,32,32,32	0
2	CA	O	5029	1/1	0.92	0.05	40,40,40,40	0
2	CA	G	5013	1/1	0.94	0.05	48,48,48,48	0
2	CA	H	5015	1/1	0.95	0.06	44,44,44,44	0
2	CA	N	5027	1/1	0.95	0.06	30,30,30,30	0
2	CA	L	5023	1/1	0.95	0.05	37,37,37,37	0
2	CA	D	5007	1/1	0.95	0.05	25,25,25,25	0
2	CA	M	5025	1/1	0.95	0.05	36,36,36,36	0
2	CA	G	5014	1/1	0.96	0.04	51,51,51,51	0
2	CA	Q	5034	1/1	0.96	0.04	32,32,32,32	0
2	CA	S	5038	1/1	0.96	0.05	29,29,29,29	0
2	CA	R	5035	1/1	0.96	0.05	35,35,35,35	0
2	CA	I	5017	1/1	0.97	0.05	35,35,35,35	0
2	CA	Q	5033	1/1	0.97	0.04	36,36,36,36	0
2	CA	F	5011	1/1	0.97	0.04	27,27,27,27	0
2	CA	T	5039	1/1	0.97	0.04	45,45,45,45	0
2	CA	E	5009	1/1	0.97	0.04	23,23,23,23	0
2	CA	C	5003	1/1	0.98	0.03	28,28,28,28	0
2	CA	B	5006	1/1	0.98	0.04	34,34,34,34	0
2	CA	A	5001	1/1	0.99	0.03	20,20,20,20	0

6.5 Other polymers [i](#)

There are no such residues in this entry.