WORLDWIDE PDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 17, 2024 – 02:50 PM EST

PDB ID	:	4NHG
Title	:	Crystal Structure of 2G12 IgG Dimer
Authors	:	Wu, Y.; West Jr., A.P.; Kim, H.J.; Thornton, M.E.; Ward, A.B.; Bjorkman, P.J.
Deposited on	:	2013-11-05
Resolution	:	8.00 Å(reported)

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 8.00 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	Percentile Ranks	Value
Rfree		0.370
Clashscore		24
Ramachandran outliers		2.6%
Sidechain outliers		7.9%
RSRZ outliers		32.5%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
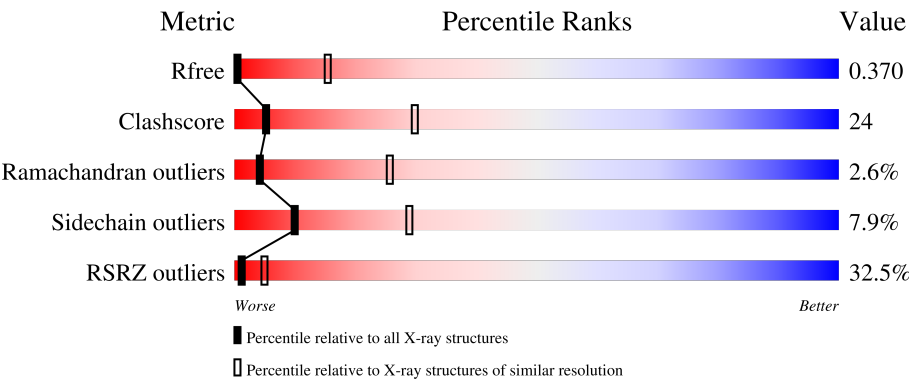
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	164625	1107 (10.00-4.00)
Clashscore	180529	1146 (10.00-4.00)
Ramachandran outliers	177936	1014 (10.00-4.00)
Sidechain outliers	177891	1035 (10.00-3.96)
RSRZ outliers	164620	1102 (10.00-4.00)

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 <=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	243	21% / 53% 33% • 12%
1	D	243	21% / 50% 33% 5% 12%
1	E	243	35% / 50% 33% 5% 12%
1	H	243	19% / 50% 35% • 12%
1	I	243	24% / 50% 36% • 12%

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Mol	Chain	Length	Quality of chain
1	M	243	19% · 52% · 32% · 5% · 12%
2	B	213	24% · 62% · 33% · · ·
2	C	213	32% · 59% · 35% · 5% ·
2	F	213	36% · 61% · 34% · · ·
2	G	213	36% · 58% · 38% · · ·
2	K	213	24% · 60% · 34% · · ·
2	L	213	23% · 61% · 33% · 5% ·
3	J	211	39% · 49% · 43% · 7% ·
3	N	211	34% · 40% · 50% · 8% ·
3	O	211	45% · 49% · 43% · 7% ·
3	P	211	38% · 38% · 52% · 8% ·
3	X	211	45% · 49% · 43% · 7% ·
3	Y	211	39% · 39% · 50% · 8% ·

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 29250 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 2G12 IgG dimer heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	215	Total	C	N	O	S	38	0	0
			1600	1007	273	314	6			
1	D	215	Total	C	N	O	S	51	0	0
			1600	1007	273	314	6			
1	E	215	Total	C	N	O	S	38	0	0
			1600	1007	273	314	6			
1	I	215	Total	C	N	O	S	51	0	0
			1600	1007	273	314	6			
1	H	215	Total	C	N	O	S	38	0	0
			1600	1007	273	314	6			
1	M	215	Total	C	N	O	S	51	0	0
			1600	1007	273	314	6			

- Molecule 2 is a protein called 2G12 IgG dimer light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	211	Total	C	N	O	S	0	0	0
			1618	1018	272	323	5			
2	C	211	Total	C	N	O	S	0	0	0
			1618	1018	272	323	5			
2	F	211	Total	C	N	O	S	0	0	0
			1618	1018	272	323	5			
2	G	211	Total	C	N	O	S	0	0	0
			1618	1018	272	323	5			
2	K	211	Total	C	N	O	S	0	0	0
			1618	1018	272	323	5			
2	L	211	Total	C	N	O	S	0	0	0
			1618	1018	272	323	5			

- Molecule 3 is a protein called Hepatitis B virus receptor binding protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	J	207	Total 1660	C 1057	N 282	O 314	S 7	0	0	0
3	N	206	Total 1654	C 1054	N 280	O 313	S 7	0	0	0
3	X	207	Total 1660	C 1057	N 282	O 314	S 7	0	0	0
3	Y	206	Total 1654	C 1054	N 280	O 313	S 7	0	0	0
3	O	207	Total 1660	C 1057	N 282	O 314	S 7	0	0	0
3	P	206	Total 1654	C 1054	N 280	O 313	S 7	0	0	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	272	GLN	GLU	conflict	UNP Q6PYX1
X	283	GLN	GLU	conflict	UNP Q6PYX1
X	294	GLN	GLU	conflict	UNP Q6PYX1
X	312	ASN	ASP	conflict	UNP Q6PYX1
X	315	ASP	ASN	conflict	UNP Q6PYX1
X	448	GLY	-	expression tag	UNP Q6PYX1
Y	272	GLN	GLU	conflict	UNP Q6PYX1
Y	283	GLN	GLU	conflict	UNP Q6PYX1
Y	294	GLN	GLU	conflict	UNP Q6PYX1
Y	312	ASN	ASP	conflict	UNP Q6PYX1
Y	315	ASP	ASN	conflict	UNP Q6PYX1
Y	448	GLY	-	expression tag	UNP Q6PYX1
J	272	GLN	GLU	conflict	UNP Q6PYX1
J	283	GLN	GLU	conflict	UNP Q6PYX1
J	294	GLN	GLU	conflict	UNP Q6PYX1
J	312	ASN	ASP	conflict	UNP Q6PYX1
J	315	ASP	ASN	conflict	UNP Q6PYX1
J	448	GLY	-	expression tag	UNP Q6PYX1
N	272	GLN	GLU	conflict	UNP Q6PYX1
N	283	GLN	GLU	conflict	UNP Q6PYX1
N	294	GLN	GLU	conflict	UNP Q6PYX1
N	312	ASN	ASP	conflict	UNP Q6PYX1
N	315	ASP	ASN	conflict	UNP Q6PYX1
N	448	GLY	-	expression tag	UNP Q6PYX1
O	272	GLN	GLU	conflict	UNP Q6PYX1
O	283	GLN	GLU	conflict	UNP Q6PYX1
O	294	GLN	GLU	conflict	UNP Q6PYX1
O	312	ASN	ASP	conflict	UNP Q6PYX1

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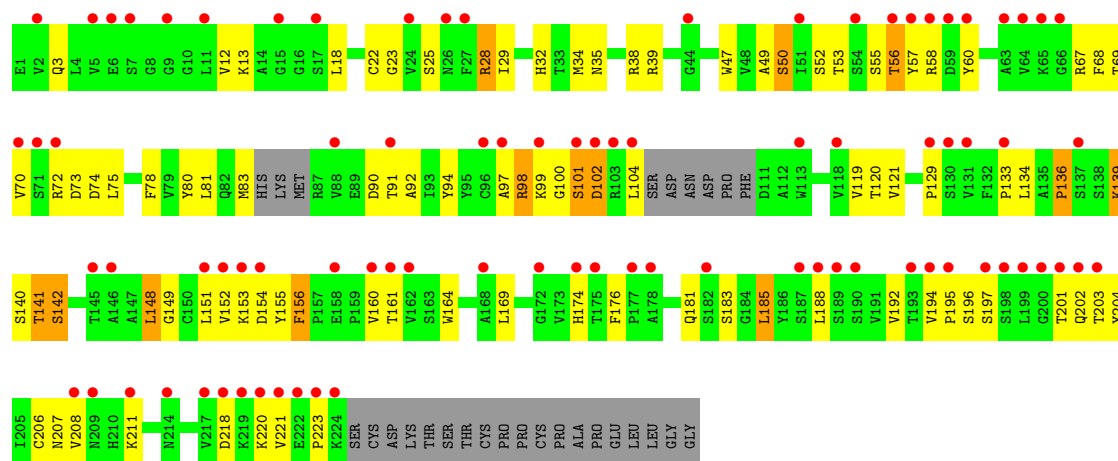| Chain	Residue	Modelled	Actual	Comment	Reference
O	315	ASP	ASN	conflict	UNP Q6PYX1
O	448	GLY	-	expression tag	UNP Q6PYX1
P	272	GLN	GLU	conflict	UNP Q6PYX1
P	283	GLN	GLU	conflict	UNP Q6PYX1
P	294	GLN	GLU	conflict	UNP Q6PYX1
P	312	ASN	ASP	conflict	UNP Q6PYX1
P	315	ASP	ASN	conflict	UNP Q6PYX1
P	448	GLY	-	expression tag	UNP Q6PYX1

3 Residue-property plots ⓘ

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: 2G12 IgG dimer heavy chain

• Molecule 1: 2G12 IgG dimer heavy chain

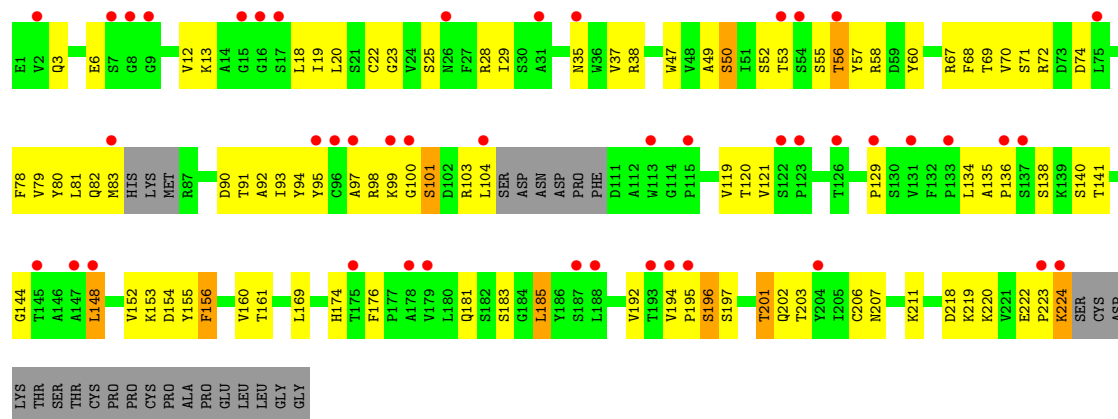
• Molecule 1: 2G12 IgG dimer heavy chain

• Molecule 1: 2G12 IgG dimer heavy chain

Chain I:

• Molecule 1: 2G12 IgG dimer heavy chain

Chain H:

• Molecule 1: 2G12 IgG dimer heavy chain

Chain M:

• Molecule 2: 2G12 IgG dimer light chain

Chain B:

• Molecule 2: 2G12 IgG dimer light chain

Chain C:

• Molecule 2: 2G12 IgG dimer light chain

Chain F:
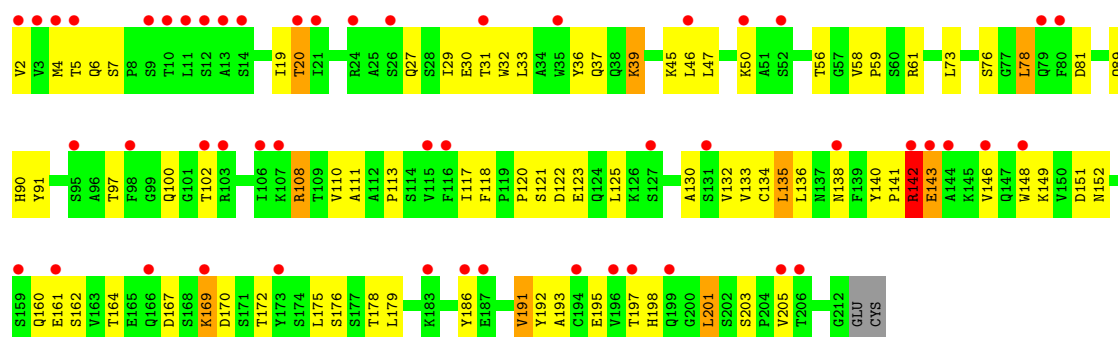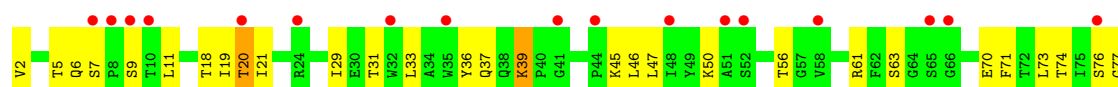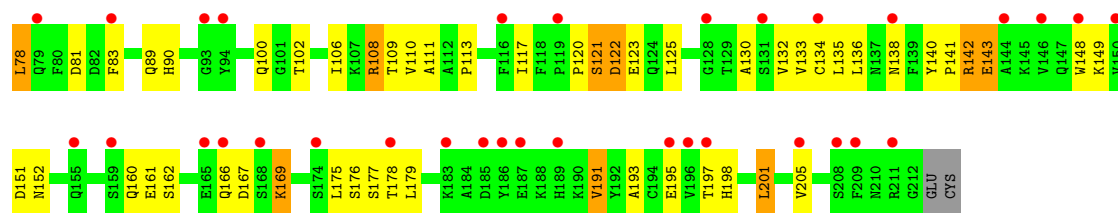
• Molecule 2: 2G12 IgG dimer light chain

Chain G:
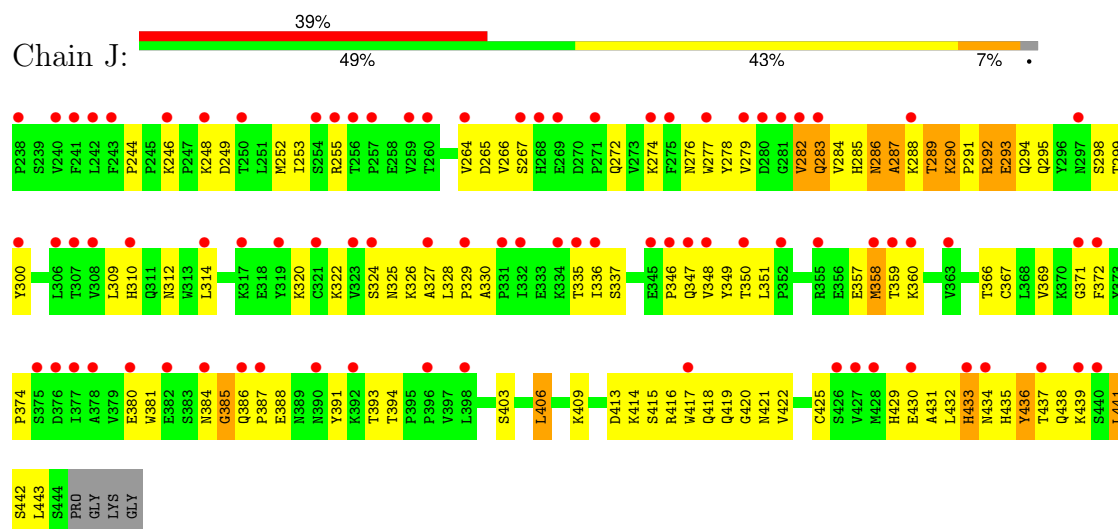
• Molecule 2: 2G12 IgG dimer light chain

Chain K:

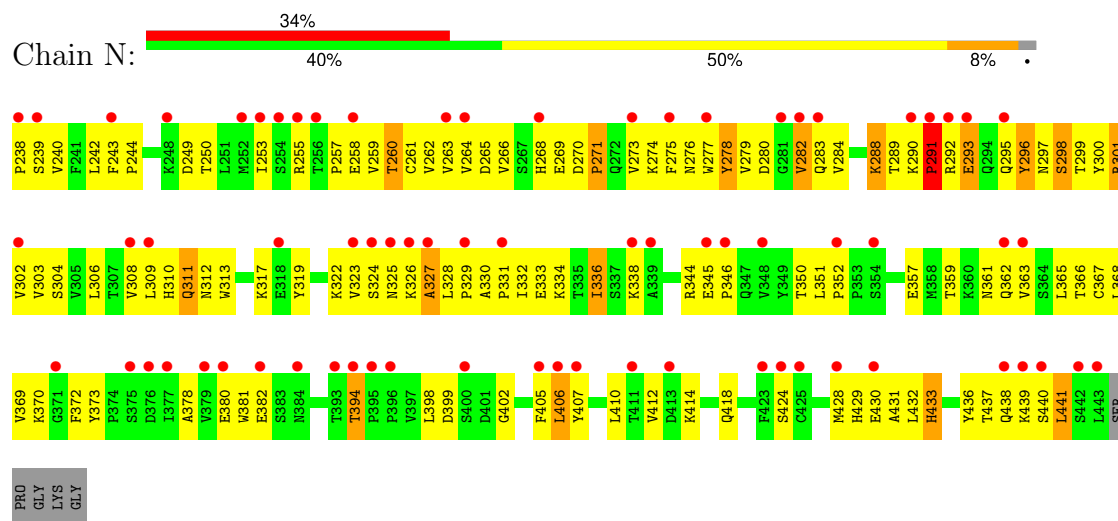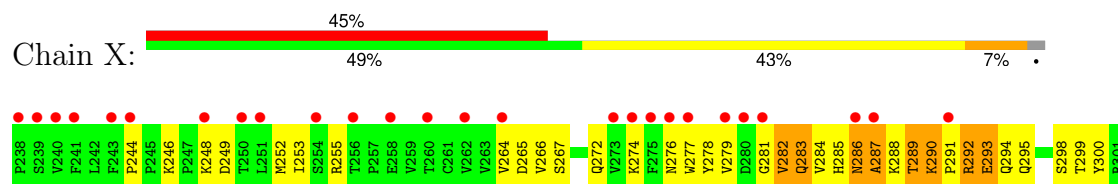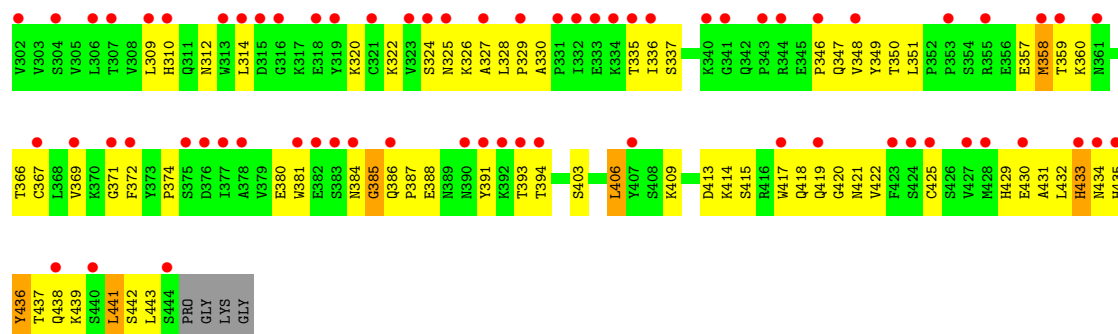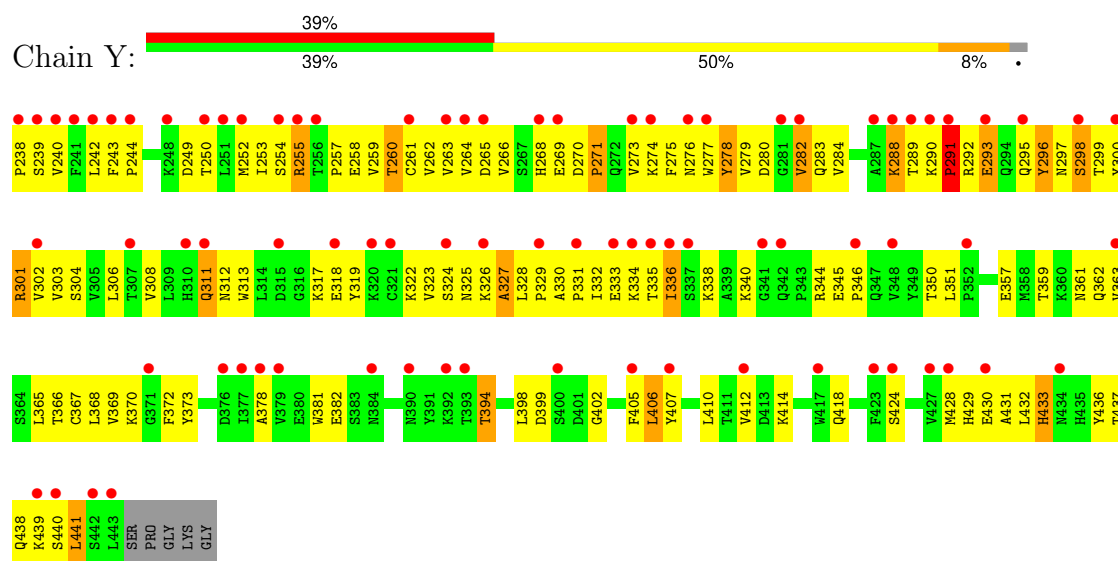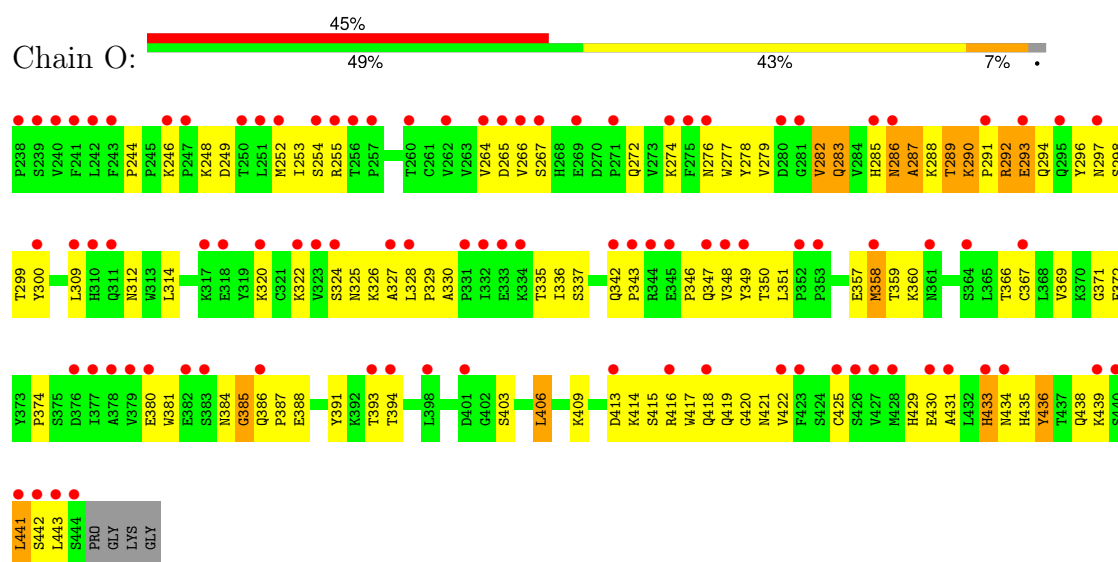• Molecule 2: 2G12 IgG dimer light chain

Chain L:

• Molecule 3: Hepatitis B virus receptor binding protein

• Molecule 3: Hepatitis B virus receptor binding protein

• Molecule 3: Hepatitis B virus receptor binding protein

• Molecule 3: Hepatitis B virus receptor binding protein

V302 V303 S304 V305 L306 T307 V308 L309 H310 Q311 N312 W313 L314 D315 G316 K317 E318 Y319 K320 C321 K322 V323 S324 N325 K326 A327 L328 P329 A330 P331 I332 E333 K334 T335 I336 S337 K340 G341 Q342 P343 R344 E345 P346 Q347 V348 Y349 T350 L351 P352 P353 S354 R355 E356 E357 M358 T359 K360 N361

T366 C367 L368 V369 K370 G371 F372 Y373 P374 S375 D376 I377 A378 V379 E380 W381 E382 S383 N384 Q385 P387 E388 N389 N390 Y391 K392 T393 T394 S403 L406 Y407 S408 K409 D413 K414 S415 R416 W417 Q418 Q419 G420 N421 V422 F423 S424 C425 S426 V427 M428 H429 E430 A431 L432 H433 N434 H435

Y436 T437 Q438 K439 S440 L441 S442 L443 S444 PRO GLY LYS GLY

● Molecule 3: Hepatitis B virus receptor binding protein

Chain Y:

39%

39% 50% 8%

P238 S239 V240 F241 L242 F243 P244 K248 D249 T250 L251 M252 I253 S254 R255 T256 P257 E258 V259 T260 C261 V262 V263 V264 D265 V266 S267 H268 E269 D270 P271 Q272 V273 K274 F275 N276 W277 Y278 V279 D280 G281 V282 Q283 V284 A287 K288 T289 K290 P291 R292 E293 Q294 Q295 N297 S298 T299 Y300

R301 V302 V303 S304 V305 L306 T307 V308 L309 H310 Q311 N312 W313 L314 D315 G316 K317 E318 Y319 K320 C321 K322 V323 S324 N325 K326 A327 L328 P329 A330 P331 I332 E333 K334 T335 I336 S337 K338 A339 K340 G341 Q342 P343 R344 E345 P346 Q347 V348 Y349 T350 L351 P352 E357 M358 T359 K360 N361 Q362 V363

S364 L365 T366 C367 L368 V369 K370 G371 P372 Y373 D376 I377 A378 V379 E380 W381 E382 S383 N384 N390 Y391 K392 T393 T394 L398 D399 S400 D401 G402 F405 L406 Y407 L410 T411 V412 D413 K414 W417 Q418 F423 S424 V427 M428 H429 E430 A431 L432 H433 N434 H435 Y436 T437

Q438 K439 S440 L441 S442 L443 SER PRO GLY LYS GLY

● Molecule 3: Hepatitis B virus receptor binding protein

Chain O:

45%

49% 43% 7%

P238 S239 V240 F241 L242 F243 P244 P245 K246 P247 K248 D249 T250 L251 M252 I253 S254 R255 T256 P257 T260 C261 V262 V263 V264 D265 V266 S267 H268 E269 D270 P271 Q272 V273 K274 F275 N276 W277 Y278 V279 D280 G281 V282 Q283 V284 H285 N286 A287 K288 K290 P291 E293 Q294 Q295 Y296 N297 S298

T299 Y300 L309 H310 Q311 N312 W313 L314 K317 E318 Y319 K320 C321 K322 V323 S324 N325 K326 A327 L328 P329 A330 P331 I332 E333 K334 T335 I336 S337 Q342 P343 R344 E345 P346 Q347 V348 Y349 T350 L351 P352 P353 E357 M358 T359 K360 N361 S364 L365 T366 C367 L368 V369 K370 G371 F372

Y373 P374 S375 D376 I377 A378 V379 E380 W381 E382 S383 N384 Q385 G386 Q386 P387 E388 Y391 K392 T393 T394 L398 D401 G402 S403 L406 K409 D413 K414 S415 R416 W417 Q418 Q419 G420 N421 V422 F423 S424 C425 S426 V427 M428 H429 E430 A431 L432 H433 N434 H435 Y436 T437 Q438 K439 S440

L441 S442 L443 S444 PRO GLY LYS GLY

● Molecule 3: Hepatitis B virus receptor binding protein

Chain P:

38%

38% 52% 8%

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α, β, γ	246.25Å 246.25Å 657.31Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	39.75 – 8.00 39.75 – 8.00	Depositor EDS
% Data completeness (in resolution range)	96.9 (39.75-8.00) 95.8 (39.75-8.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.00 (at 7.33Å)	Xtriage
Refinement program	PHENIX 1.8.2_1309, REFMAC	Depositor
R, R_{free}	0.359 , 0.369 0.356 , 0.370	Depositor DCC
R_{free} test set	1265 reflections (10.00%)	wwPDB-VP
Wilson B-factor (Å^2)	296.1	Xtriage
Anisotropy	0.075	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 365.6	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.40, < L^2 > = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.59	EDS
Total number of atoms	29250	wwPDB-VP
Average B, all atoms (Å^2)	158.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.66% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< \lvert L \rvert >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

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	0.69	1/1633 (0.1%)	0.95	4/2220 (0.2%)
1	D	0.63	0/1631	0.85	3/2214 (0.1%)
1	E	0.67	0/1633	0.93	4/2220 (0.2%)
1	H	0.63	0/1633	0.92	3/2220 (0.1%)
1	I	0.68	0/1631	0.83	3/2214 (0.1%)
1	M	0.68	2/1631 (0.1%)	0.85	3/2214 (0.1%)
2	B	0.63	0/1654	0.75	1/2246 (0.0%)
2	C	0.70	1/1654 (0.1%)	0.78	2/2246 (0.1%)
2	F	0.69	0/1654	0.77	2/2246 (0.1%)
2	G	0.69	1/1654 (0.1%)	0.77	1/2246 (0.0%)
2	K	0.63	0/1654	0.77	3/2246 (0.1%)
2	L	0.67	1/1654 (0.1%)	0.78	1/2246 (0.0%)
3	J	0.43	0/1706	0.68	0/2323
3	N	0.48	1/1699 (0.1%)	0.67	2/2312 (0.1%)
3	O	0.43	0/1706	0.68	0/2323
3	P	0.48	1/1699 (0.1%)	0.67	2/2312 (0.1%)
3	X	0.43	0/1706	0.68	0/2323
3	Y	0.48	1/1699 (0.1%)	0.67	2/2312 (0.1%)
All	All	0.60	9/29931 (0.0%)	0.78	36/40683 (0.1%)

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	E	0	3
3	N	0	1
3	P	0	1
3	Y	0	1
All	All	0	6

The worst 5 of 9 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	Y	433	HIS	CA-C	11.57	1.83	1.52
3	N	433	HIS	CA-C	11.50	1.82	1.52
3	P	433	HIS	CA-C	11.50	1.82	1.52
1	M	36	TRP	CB-CG	6.40	1.61	1.50
2	C	143	GLU	CB-CG	6.03	1.63	1.52

The worst 5 of 36 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	28	ARG	NE-CZ-NH1	-17.15	111.73	120.30
1	H	28	ARG	NE-CZ-NH1	-16.64	111.98	120.30
1	E	28	ARG	NE-CZ-NH1	-15.56	112.52	120.30
1	A	28	ARG	NE-CZ-NH2	14.53	127.56	120.30
1	E	28	ARG	NE-CZ-NH2	13.74	127.17	120.30

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	139	LYS	Peptide
1	E	140	SER	Peptide
1	E	142	SER	Peptide
3	N	373	TYR	Sidechain
3	Y	373	TYR	Sidechain

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	1600	0	1581	73	0
1	D	1600	0	1579	96	11
1	E	1600	0	1581	72	0
1	H	1600	0	1580	78	2
1	I	1600	0	1578	78	0
1	M	1600	0	1579	85	0
2	B	1618	0	1580	49	23
2	C	1618	0	1580	54	0
2	F	1618	0	1580	69	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	G	1618	0	1580	58	2
2	K	1618	0	1580	54	0
2	L	1618	0	1580	57	19
3	J	1660	0	1632	99	60
3	N	1654	0	1627	114	37
3	O	1660	0	1630	93	19
3	P	1654	0	1624	123	37
3	X	1660	0	1632	98	56
3	Y	1654	0	1627	118	37
All	All	29250	0	28730	1381	174

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 24.

The worst 5 of 1381 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:103:ARG:C	2:F:50:LYS:HZ2	1.05	1.59
3:P:433:HIS:C	3:P:433:HIS:CA	1.82	1.45
3:N:433:HIS:C	3:N:433:HIS:CA	1.82	1.45
3:Y:433:HIS:C	3:Y:433:HIS:CA	1.83	1.45
1:D:103:ARG:CA	2:F:50:LYS:NZ	1.90	1.34

The worst 5 of 174 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)
3:Y:252:MET:O	3:Y:253:ILE:CG1[12_555]	0.41	1.79
3:J:252:MET:O	3:X:253:ILE:CD1[12_545]	0.48	1.72
3:O:253:ILE:CA	3:O:253:ILE:CB[10_444]	0.59	1.61
3:J:253:ILE:CD1	3:X:252:MET:O[12_545]	0.66	1.54
3:Y:253:ILE:CA	3:Y:253:ILE:CA[12_555]	0.70	1.50

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	207/243 (85%)	184 (89%)	19 (9%)	4 (2%)	6	32
1	D	204/243 (84%)	185 (91%)	15 (7%)	4 (2%)	6	32
1	E	207/243 (85%)	186 (90%)	18 (9%)	3 (1%)	9	41
1	H	207/243 (85%)	187 (90%)	16 (8%)	4 (2%)	6	32
1	I	204/243 (84%)	182 (89%)	17 (8%)	5 (2%)	4	26
1	M	204/243 (84%)	186 (91%)	13 (6%)	5 (2%)	4	26
2	B	209/213 (98%)	187 (90%)	21 (10%)	1 (0%)	25	64
2	C	209/213 (98%)	185 (88%)	23 (11%)	1 (0%)	25	64
2	F	209/213 (98%)	184 (88%)	24 (12%)	1 (0%)	25	64
2	G	209/213 (98%)	186 (89%)	22 (10%)	1 (0%)	25	64
2	K	209/213 (98%)	185 (88%)	23 (11%)	1 (0%)	25	64
2	L	209/213 (98%)	186 (89%)	21 (10%)	2 (1%)	13	49
3	J	205/211 (97%)	174 (85%)	20 (10%)	11 (5%)	1	15
3	N	204/211 (97%)	177 (87%)	17 (8%)	10 (5%)	2	16
3	O	205/211 (97%)	174 (85%)	20 (10%)	11 (5%)	1	15
3	P	204/211 (97%)	177 (87%)	17 (8%)	10 (5%)	2	16
3	X	205/211 (97%)	174 (85%)	20 (10%)	11 (5%)	1	15
3	Y	204/211 (97%)	177 (87%)	17 (8%)	10 (5%)	2	16
All	All	3714/4002 (93%)	3276 (88%)	343 (9%)	95 (3%)	4	26

5 of 95 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	140	SER
1	A	141	THR
1	A	223	PRO
1	D	136	PRO
1	D	140	SER

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	180/205 (88%)	163 (91%)	17 (9%)	7	23
1	D	180/205 (88%)	162 (90%)	18 (10%)	6	20
1	E	180/205 (88%)	162 (90%)	18 (10%)	6	20
1	H	180/205 (88%)	165 (92%)	15 (8%)	9	27
1	I	180/205 (88%)	165 (92%)	15 (8%)	9	27
1	M	180/205 (88%)	163 (91%)	17 (9%)	7	23
2	B	182/184 (99%)	164 (90%)	18 (10%)	6	21
2	C	182/184 (99%)	165 (91%)	17 (9%)	7	23
2	F	182/184 (99%)	164 (90%)	18 (10%)	6	21
2	G	182/184 (99%)	164 (90%)	18 (10%)	6	21
2	K	182/184 (99%)	163 (90%)	19 (10%)	5	19
2	L	182/184 (99%)	164 (90%)	18 (10%)	6	21
3	J	193/196 (98%)	187 (97%)	6 (3%)	35	54
3	N	192/196 (98%)	180 (94%)	12 (6%)	15	36
3	O	193/196 (98%)	187 (97%)	6 (3%)	35	54
3	P	192/196 (98%)	180 (94%)	12 (6%)	15	36
3	X	193/196 (98%)	187 (97%)	6 (3%)	35	54
3	Y	192/196 (98%)	180 (94%)	12 (6%)	15	36
All	All	3327/3510 (95%)	3065 (92%)	262 (8%)	10	29

5 of 262 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	M	57	TYR
1	M	163	SER
3	P	406	LEU
2	F	132	VAL
2	F	108	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 92 such sidechains are listed below:

Mol	Chain	Res	Type
3	Y	419	GLN
3	O	361	ASN
3	Y	434	ASN
2	L	199	GLN
3	O	421	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	I	3
1	D	3
1	M	3
1	A	1
1	E	1
1	H	1

The worst 5 of 12 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	I	202:GLN	C	203:THR	N	3.88
1	D	202:GLN	C	203:THR	N	3.77
1	M	202:GLN	C	203:THR	N	3.62
1	A	202:GLN	C	203:THR	N	3.50
1	E	202:GLN	C	203:THR	N	3.41

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(Å²)	Q<0.9
1	A	209/243 (86%)	1.37	52 (24%)	2	7	114, 118, 126, 134	0
1	D	207/243 (85%)	1.41	51 (24%)	2	7	113, 118, 125, 139	0
1	E	209/243 (86%)	1.90	85 (40%)	1	4	178, 182, 190, 198	0
1	H	209/243 (86%)	1.17	45 (21%)	3	8	96, 100, 107, 115	0
1	I	207/243 (85%)	1.53	59 (28%)	1	5	177, 182, 189, 203	0
1	M	207/243 (85%)	1.22	47 (22%)	3	7	94, 100, 107, 121	0
2	B	211/213 (99%)	1.29	52 (24%)	2	7	113, 118, 124, 139	0
2	C	211/213 (99%)	1.59	69 (32%)	1	5	113, 118, 123, 143	0
2	F	211/213 (99%)	1.76	77 (36%)	1	4	177, 182, 188, 203	0
2	G	211/213 (99%)	1.66	77 (36%)	1	4	177, 182, 187, 207	0
2	K	211/213 (99%)	1.22	51 (24%)	2	7	94, 100, 105, 120	0
2	L	211/213 (99%)	1.36	50 (23%)	2	7	94, 100, 105, 124	0
3	J	207/211 (98%)	2.07	83 (40%)	1	4	176, 176, 176, 176	0
3	N	206/211 (97%)	1.75	72 (34%)	1	5	179, 179, 179, 179	0
3	O	207/211 (98%)	2.04	94 (45%)	1	3	274, 274, 274, 274	0
3	P	206/211 (97%)	1.90	80 (38%)	1	4	277, 277, 277, 277	0
3	X	207/211 (98%)	1.98	94 (45%)	1	3	167, 167, 167, 167	0
3	Y	206/211 (97%)	1.79	82 (39%)	1	4	171, 171, 171, 171	0
All	All	3753/4002 (93%)	1.61	1220 (32%)	1	5	94, 167, 277, 277	0

The worst 5 of 1220 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	F	134	CYS	21.4
1	D	147	ALA	12.8
1	M	131	VAL	11.5

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Mol	Chain	Res	Type	RSRZ
3	O	332	ILE	11.1
3	Y	288	LYS	10.0

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

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.