

# Denovo comparison: Instanovo vs Casanovo

08 November, 2023

## Sample overview

Sample	Replicate	Comment	Sample complexity
1	1	1 Ab in the lowest concentration (1ng) + blood background	hard
2	1	1 Ab in the lowest concentration (1ng) + blood background	hard
3	1	1 Ab in the lowest concentration (1ng) + blood background	hard
4	1	1 Ab in the lowest concentration (1ng) + blood background	hard
5	1	1 Ab in the lowest concentration (1ng) + blood background	hard
6	1	1 Ab in the lowest concentration (1ng) + blood background	hard
39	1	1 Ab in the highest concentration (1000ng), no blood background	easy
43	1	1 Ab in the highest concentration (1000ng), no blood background	easy
47	1	1 Ab in the highest concentration (1000ng), no blood background	easy
70	1	all 6 Abs in the highest concentration (1000ng) + blood background	hard

## Comparison of coverage Instanovo vs Casanovo

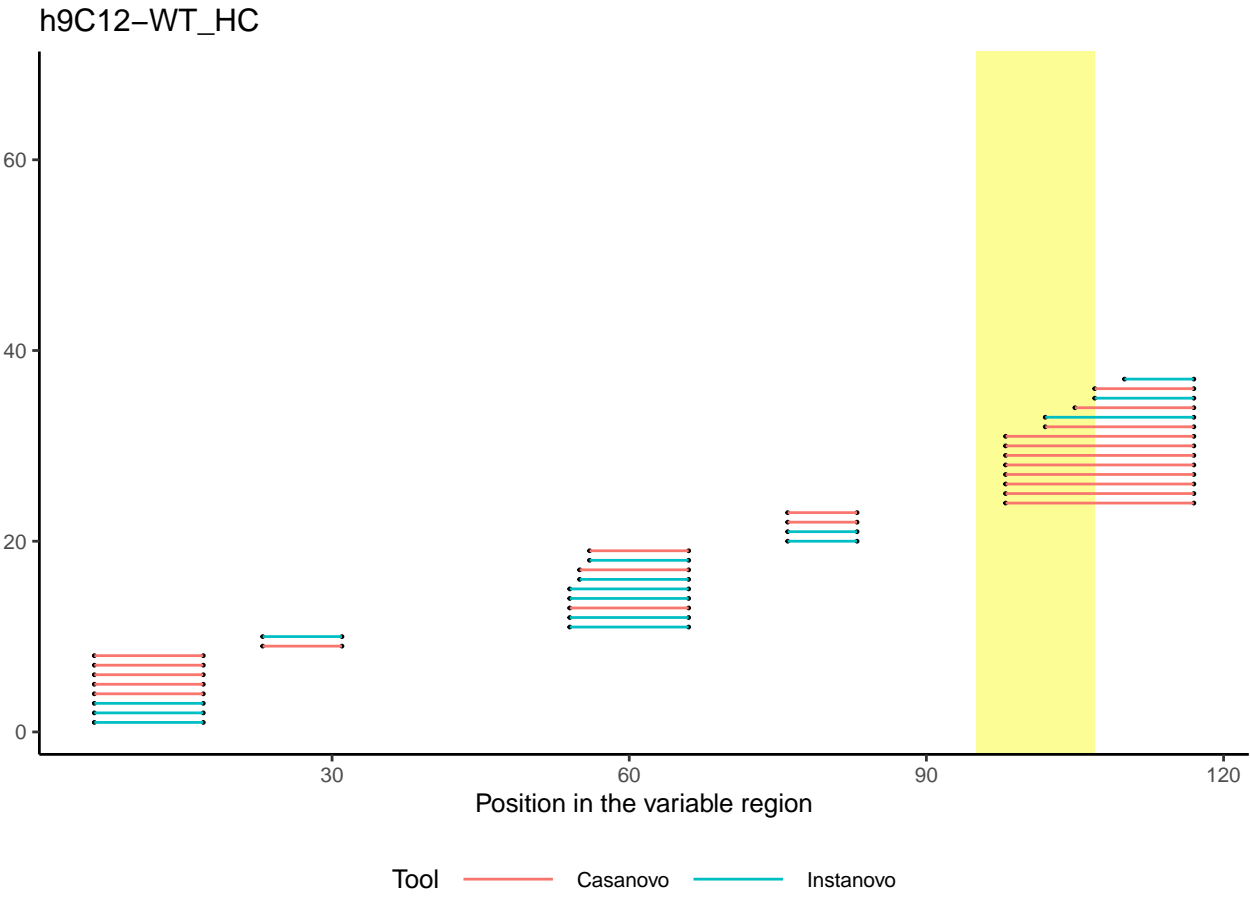
### Heavy chain

Sequence_name	Sample_number	Coverage_Vregion_Casanovo	Coverage_Vregion_Instanovo	Coverage_CDR3_Casanovo	Coverage_CDR3_Instanovo
h9C12-Q97A_HC	1	0.00	6.84	0.00	0.00
h9C12-WT_HC	2	0.00	0.00	0.00	0.00
Brimab_HC	3	28.70	31.30	0.00	0.00
Umab_HC	4	13.45	13.45	0.00	0.00
PGT121_HC	5	8.33	8.33	0.00	0.00
PGDM1400_HC	6	0.00	0.00	0.00	0.00
h9C12-WT_HC	39	52.99	49.57	76.92	46.15
Umab_HC	43	21.85	31.93	21.43	21.43
PGDM1400_HC	47	16.31	0.00	2.78	0.00
PGDM1400_HC	70	7.09	0.00	0.00	0.00
PGT121_HC	70	8.33	8.33	0.00	0.00
Umab_HC	70	0.00	0.00	0.00	0.00
Brimab_HC	70	0.00	0.00	0.00	0.00
h9C12-WT_HC	70	0.00	0.00	0.00	0.00
h9C12-Q97A_HC	70	0.00	0.00	0.00	0.00

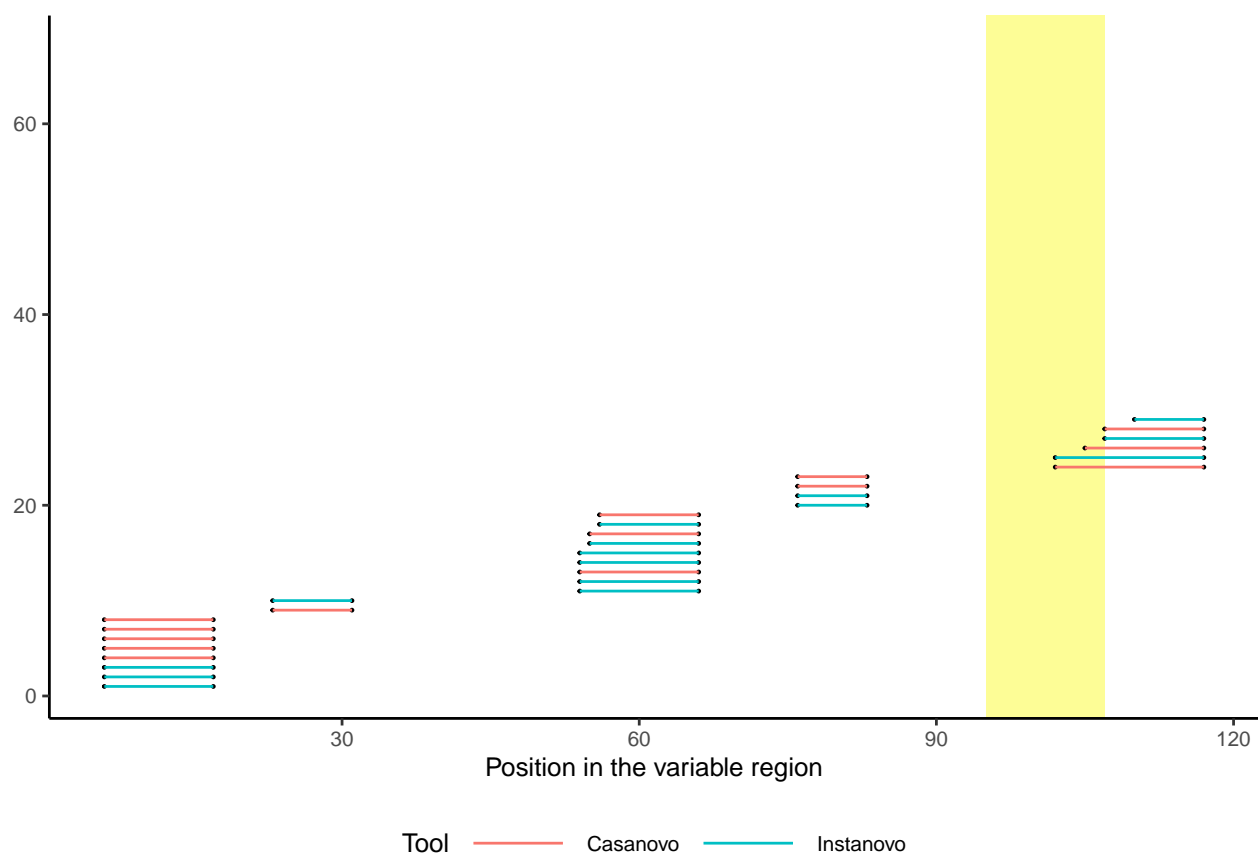
## Light chain

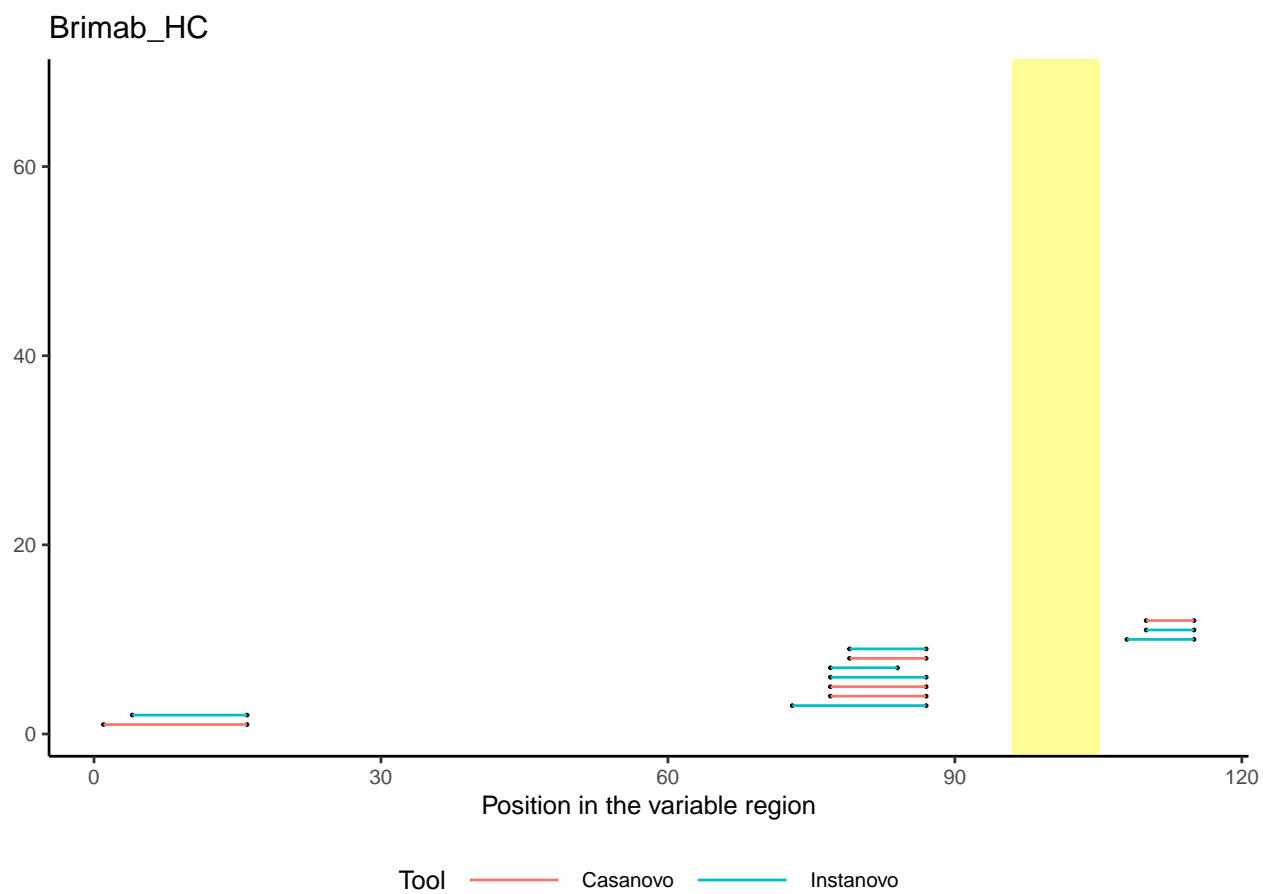
Sequence_name	Sample_number	Coverage_Vregion_Casanovo	Coverage_Vregion_Instanovo	Coverage_CDR3_Casanovo	Coverage_CDR3_Instanovo
h9C12-LC	1	0.00	0.00	0.00	0.00
h9C12-LC	2	0.00	0.00	0.00	0.00
Brimab_LC	3	0.00	11.71	0.00	0.00
Umab_LC	4	7.48	7.48	0.00	0.00
PGT121_LC	5	11.43	11.43	21.43	21.43
PGDM1400_LC	6	0.00	0.00	0.00	0.00
h9C12_LC	39	19.63	19.63	0.00	0.00
Umab_LC	43	0.00	0.00	0.00	0.00
PGDM1400_LC	47	18.75	21.43	54.55	54.55
PGDM1400_LC	70	0.00	0.00	0.00	0.00
PGT121_LC	70	7.62	7.62	0.00	0.00
Umab_LC	70	0.00	0.00	0.00	0.00
Brimab_LC	70	0.00	0.00	0.00	0.00
h9C12_LC	70	0.00	0.00	0.00	0.00
h9C12_LC	70	0.00	0.00	0.00	0.00

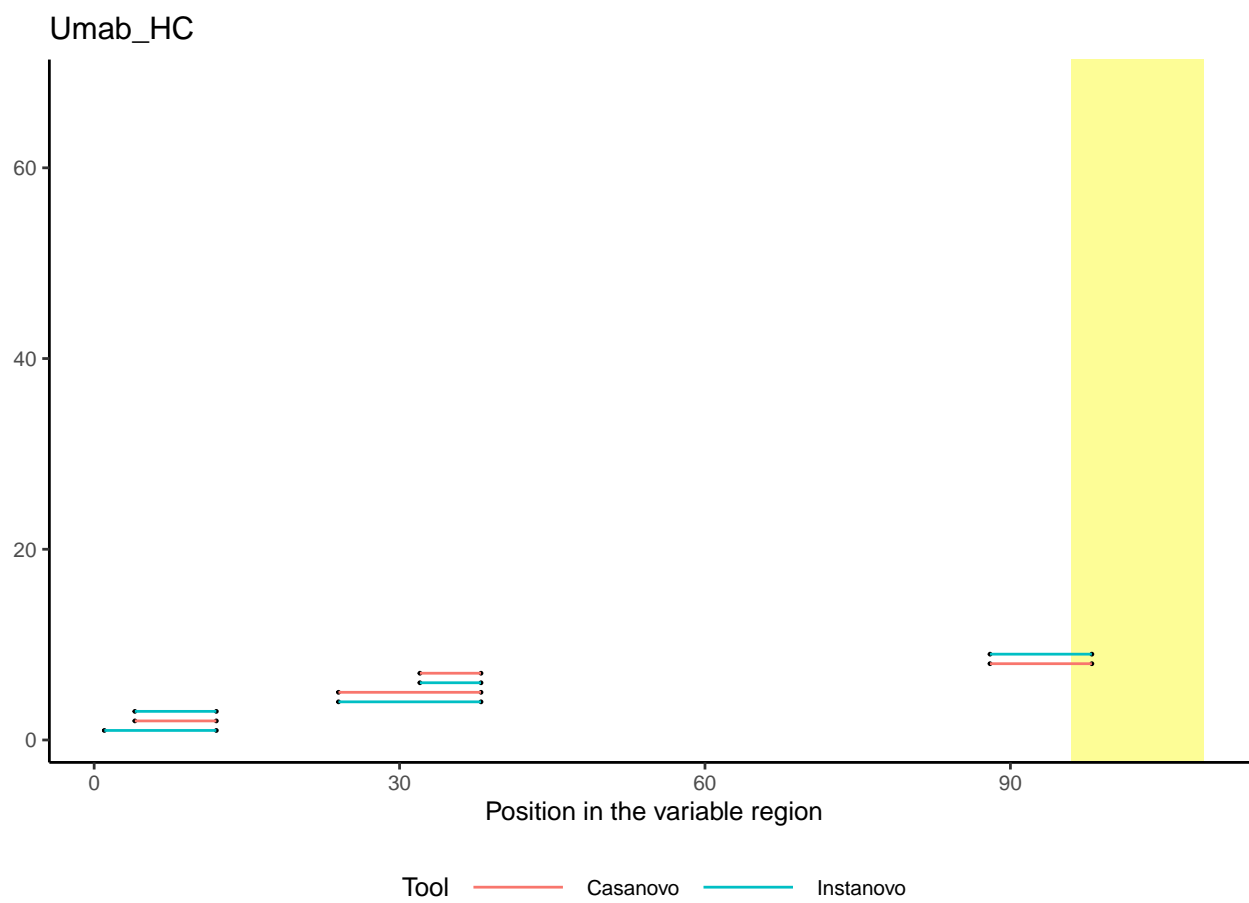
Heavy chain V region coverage by denovo tool

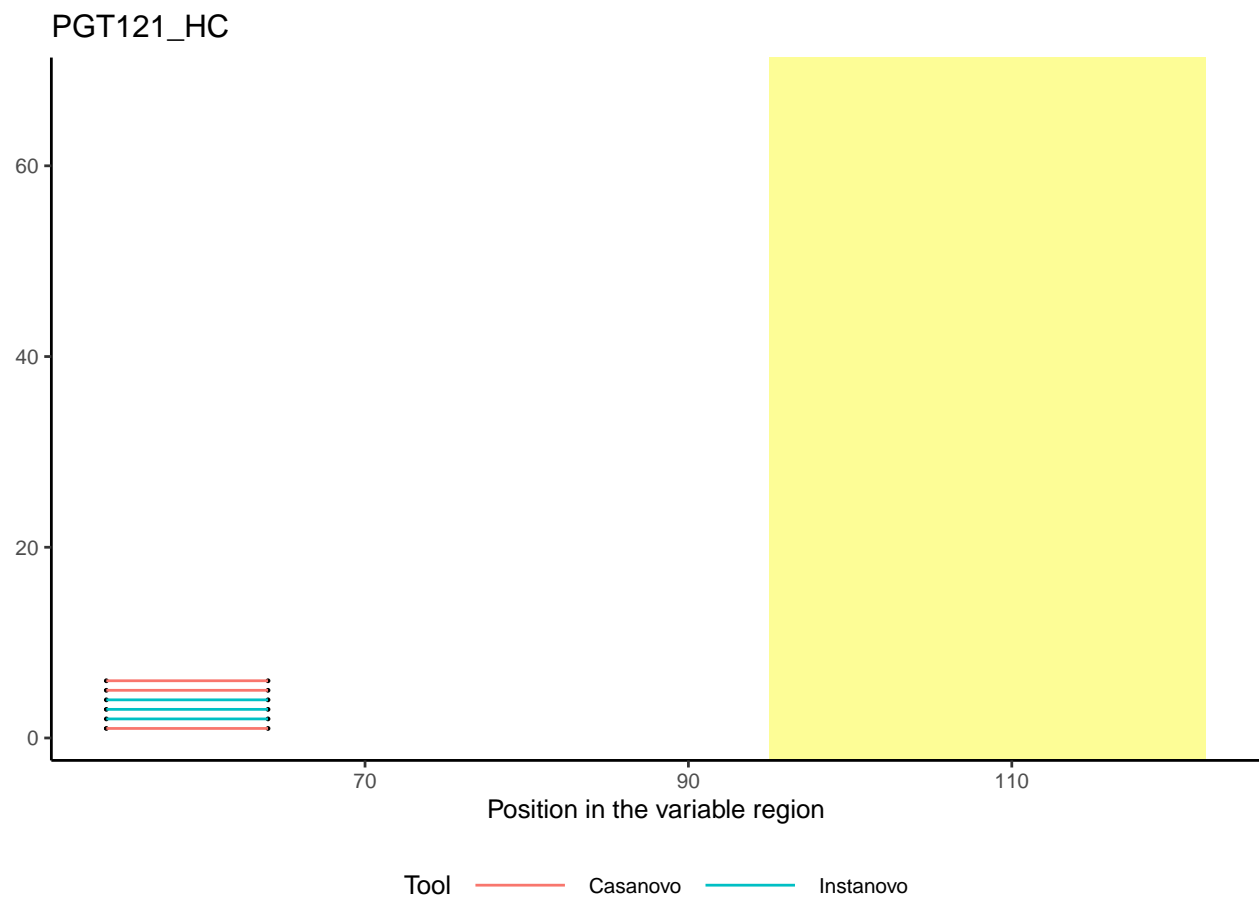


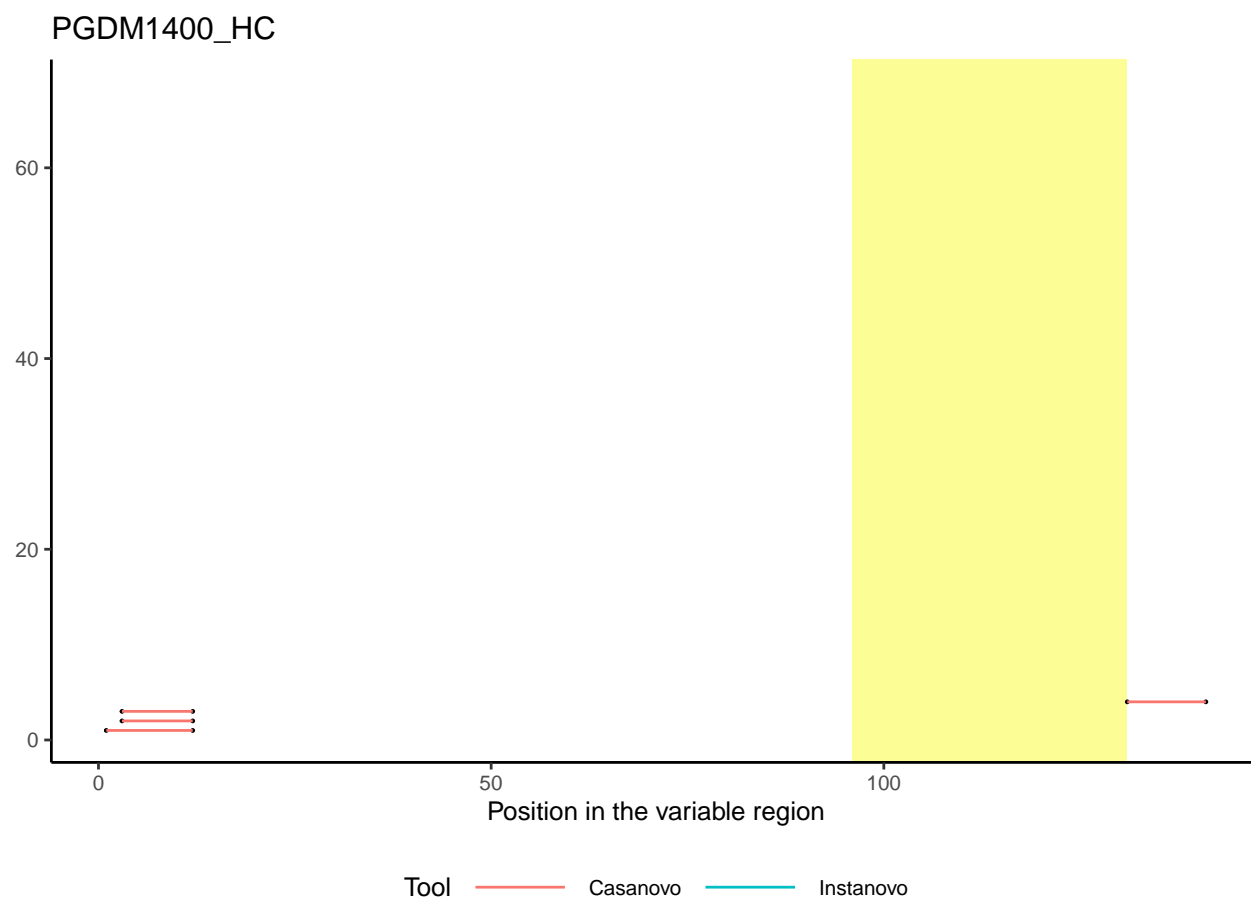
h9C12-Q97A\_HC







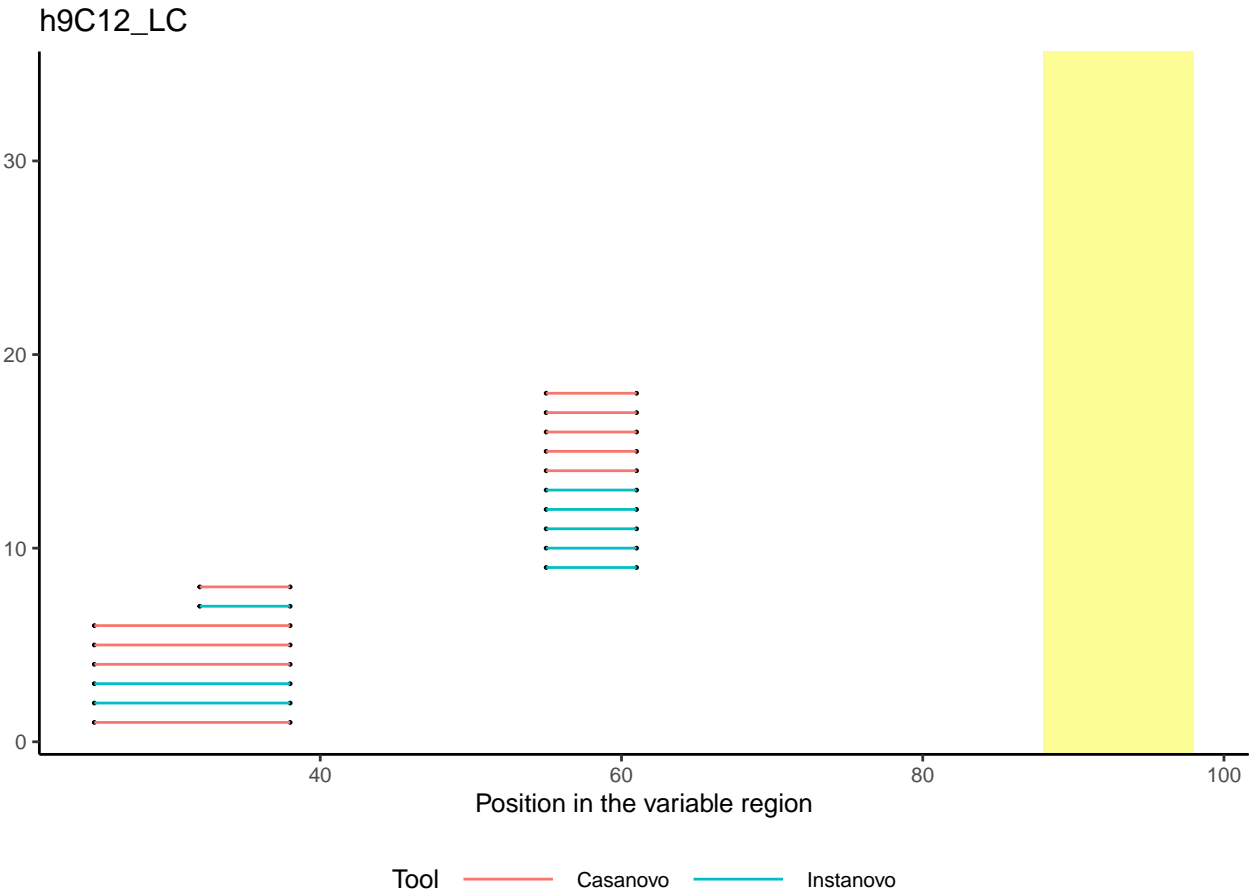


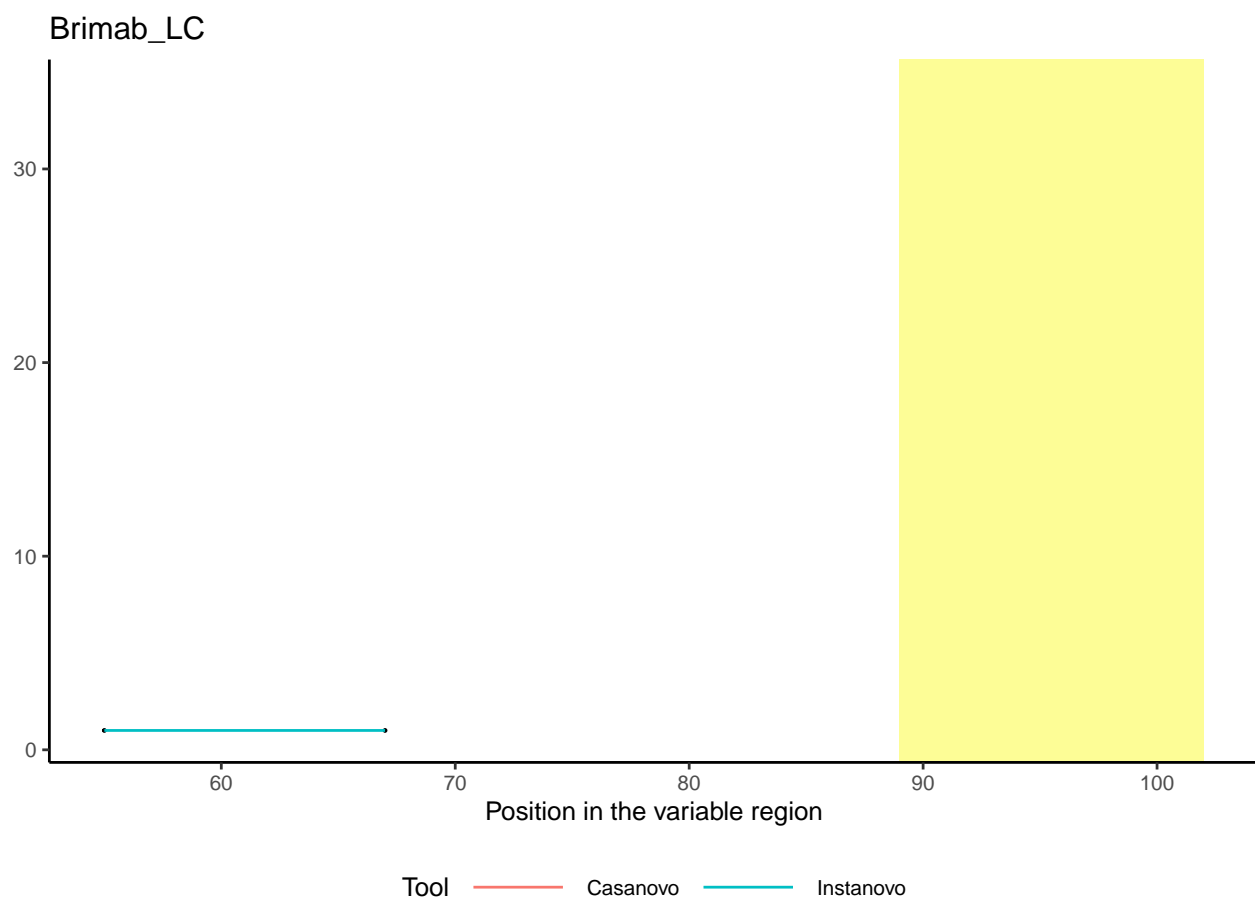


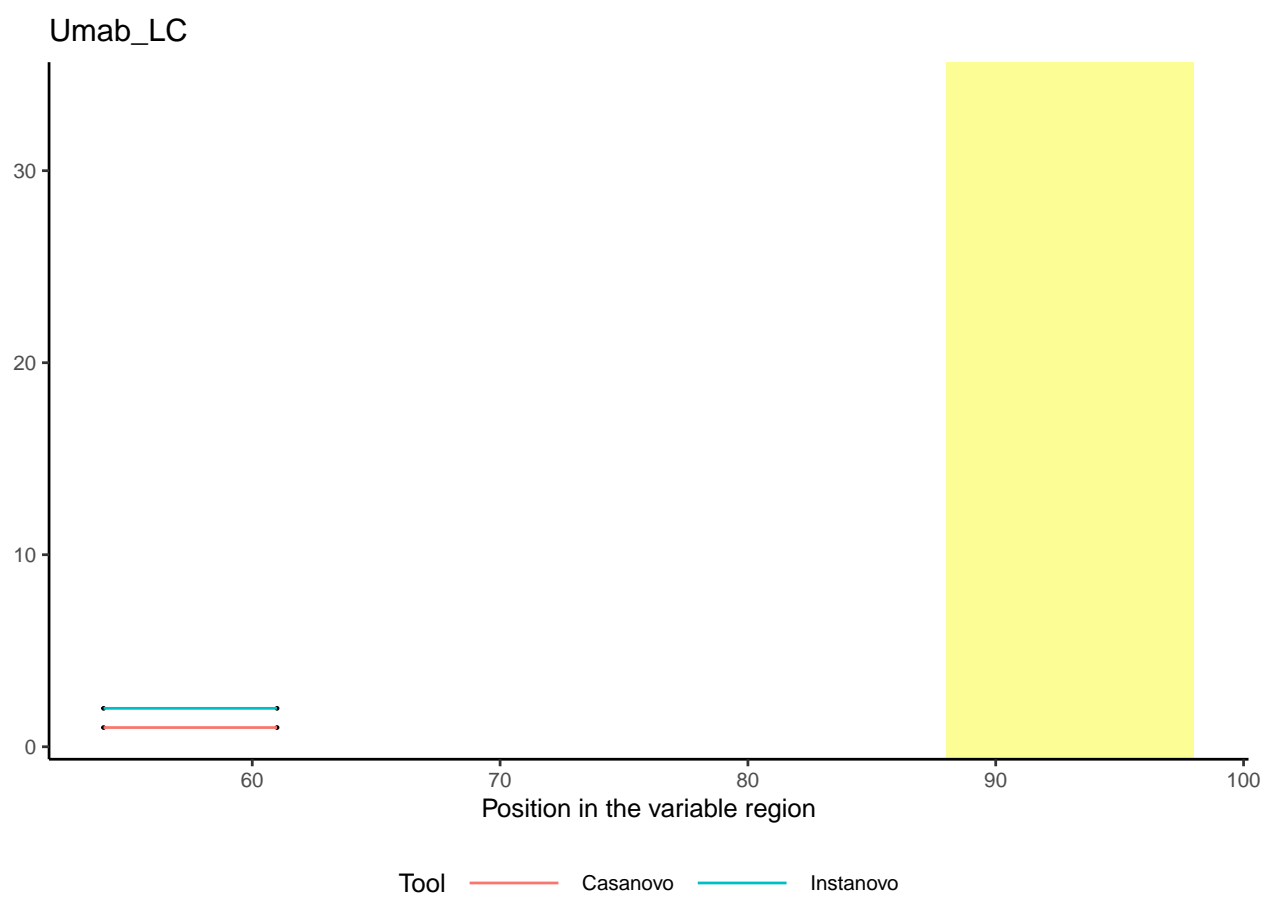
Overall, Casanovo and Instanovo inferred mostly identical peptides, with Casanovo inferred some peptides not seen in Instanovo, and a few exceptions where Instanovo peptides are slightly shorter/longer than their Casanovo counterparts

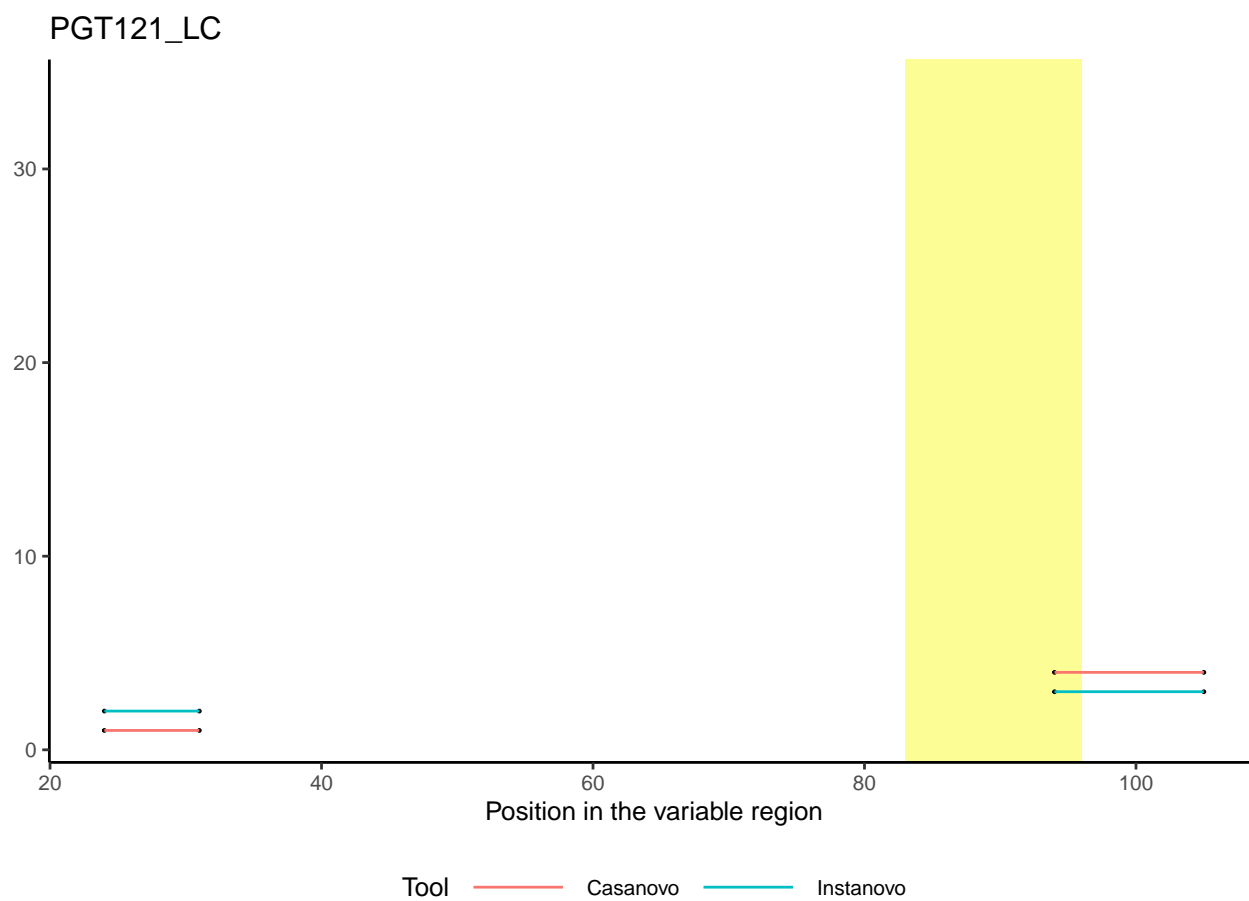


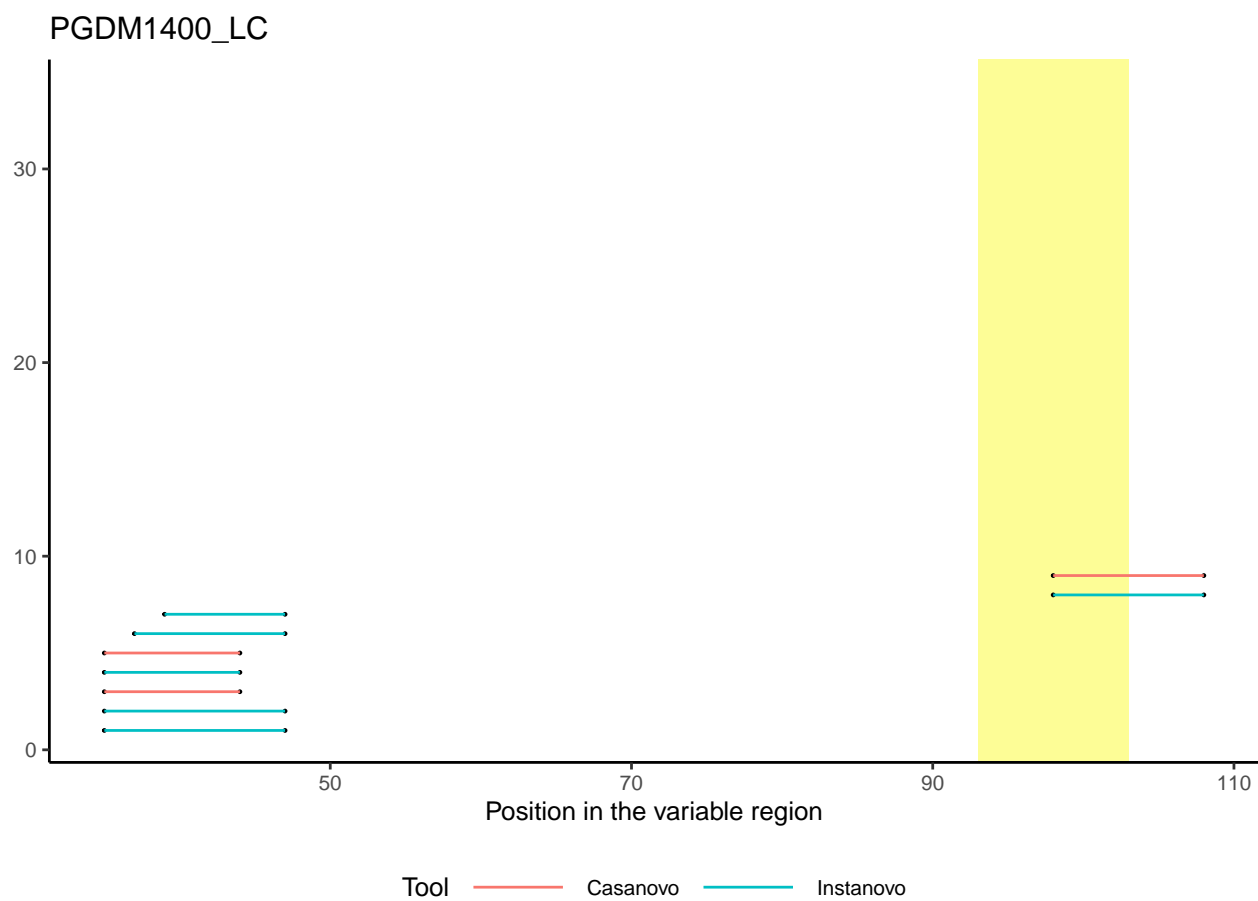
Light chain V region coverage by denovo tool











Similar patterns can be observed on the light chain, with the exception of Brimab where only Instanovo inferred peptides on the V region