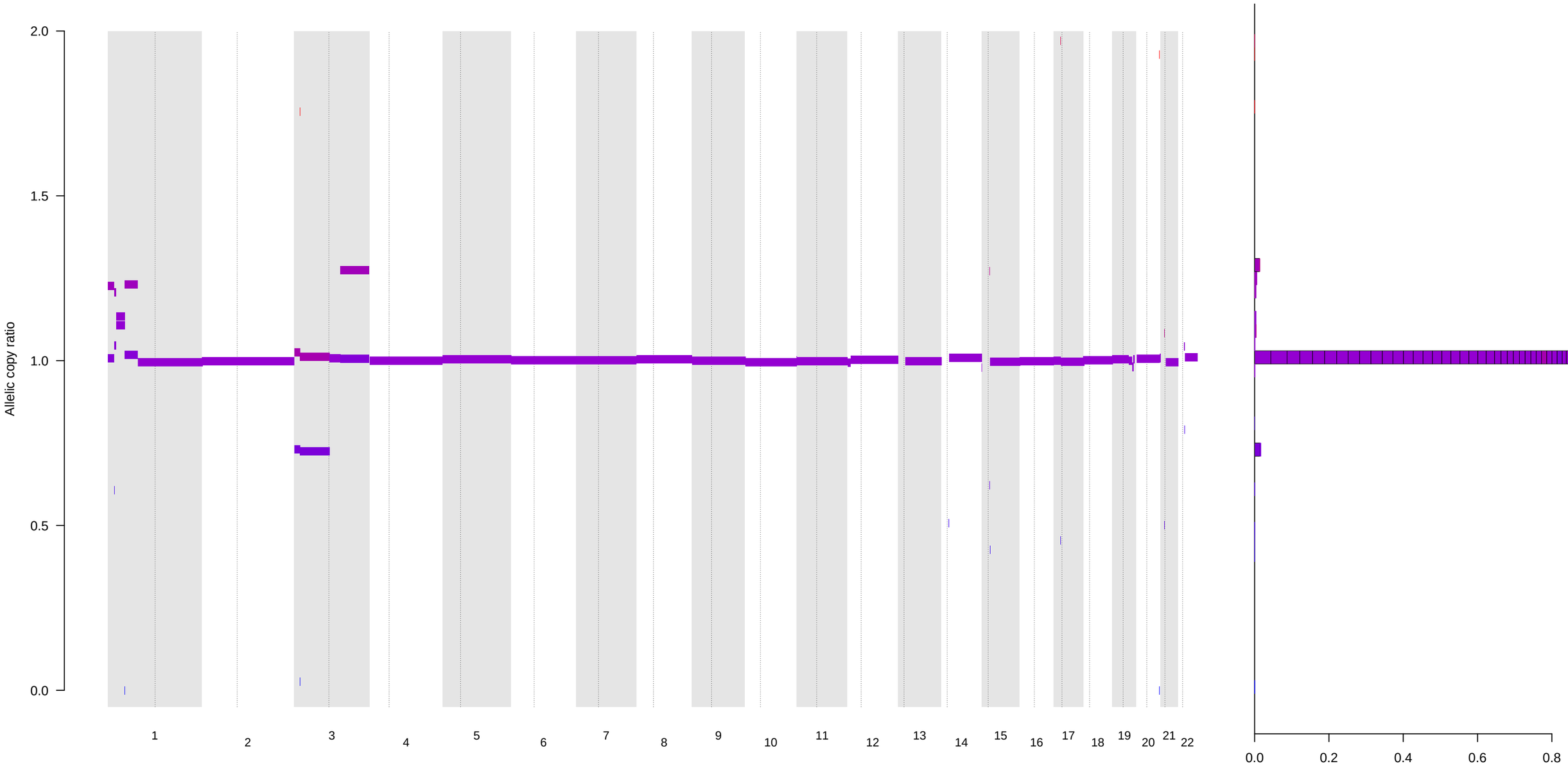
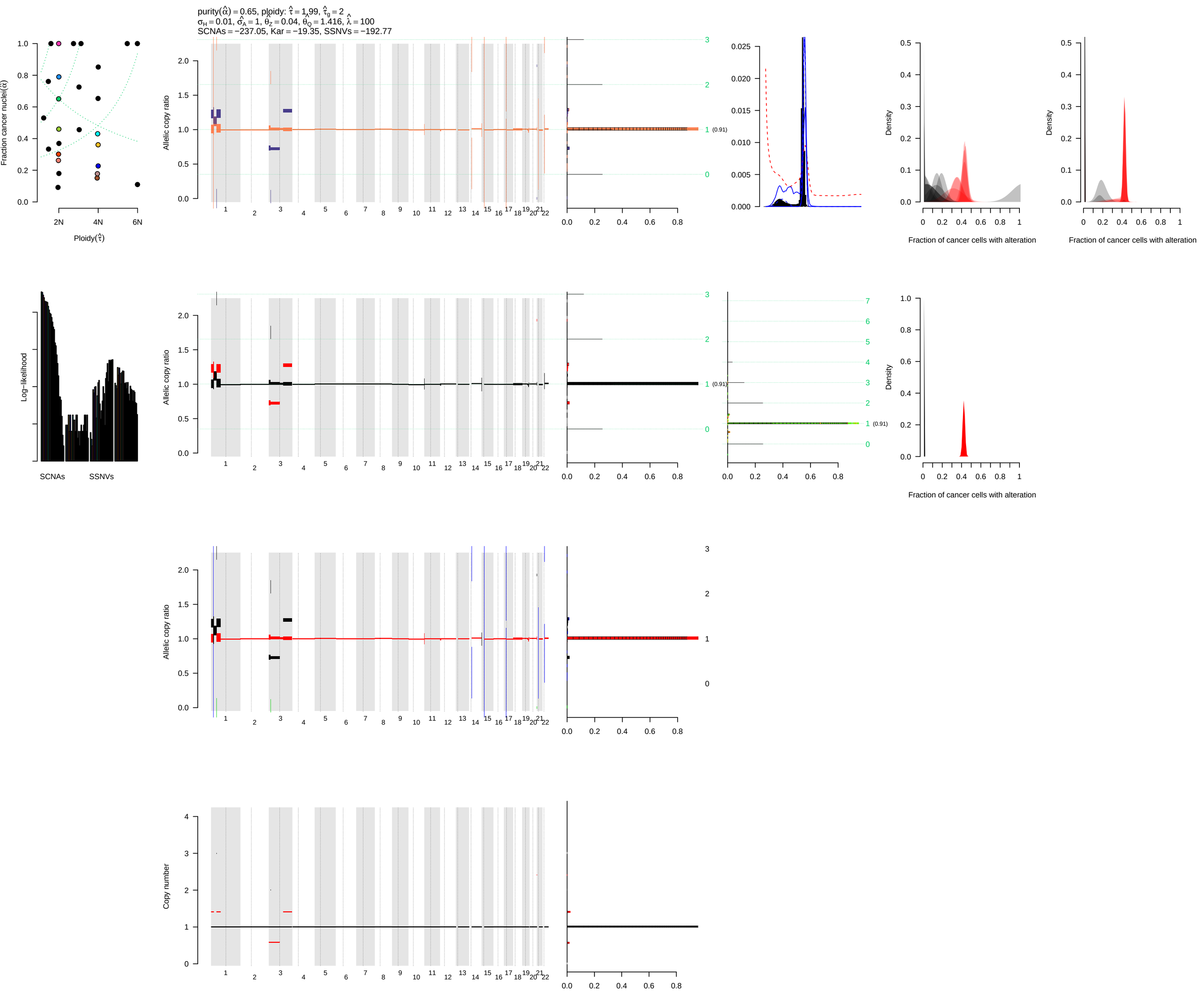
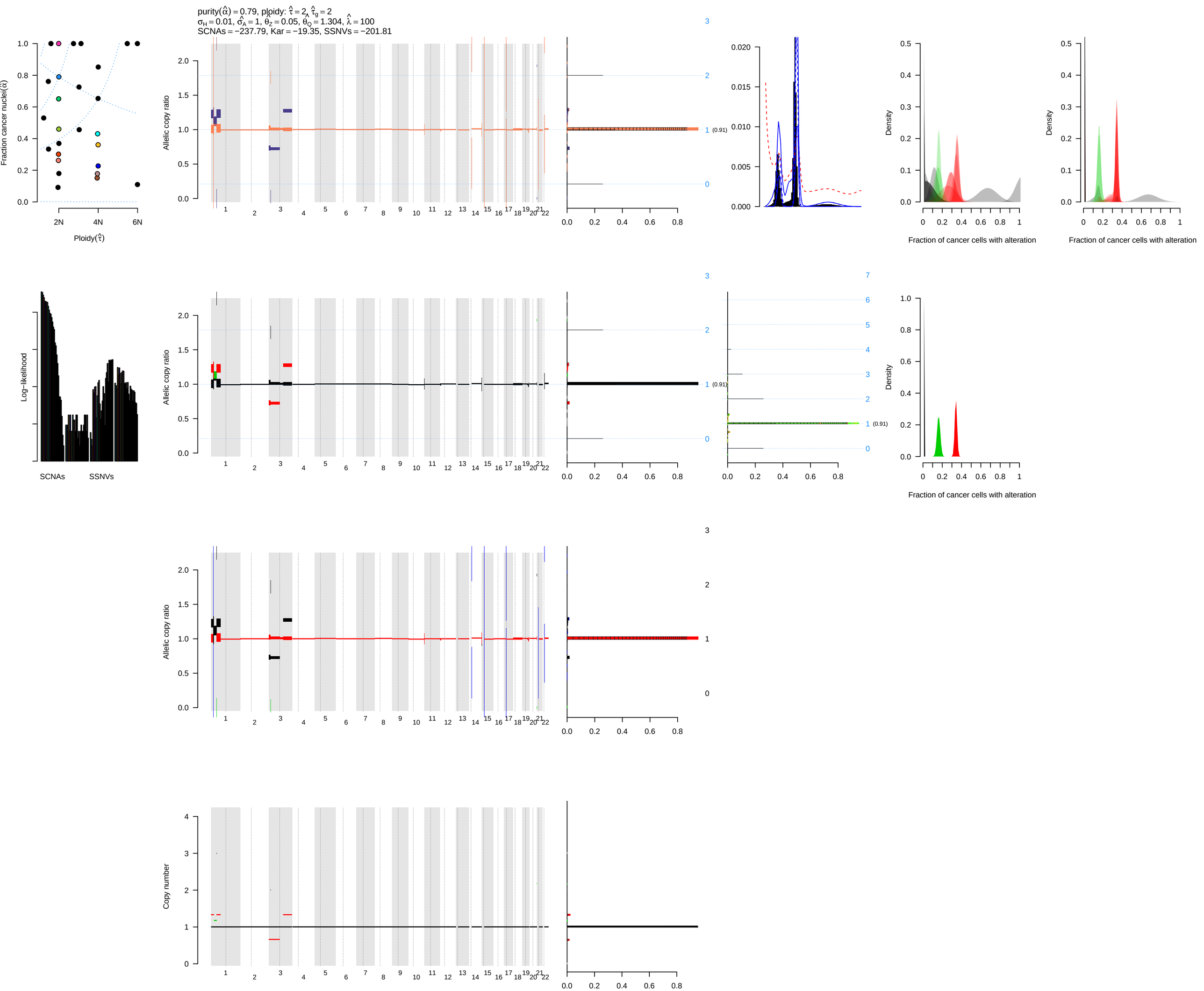
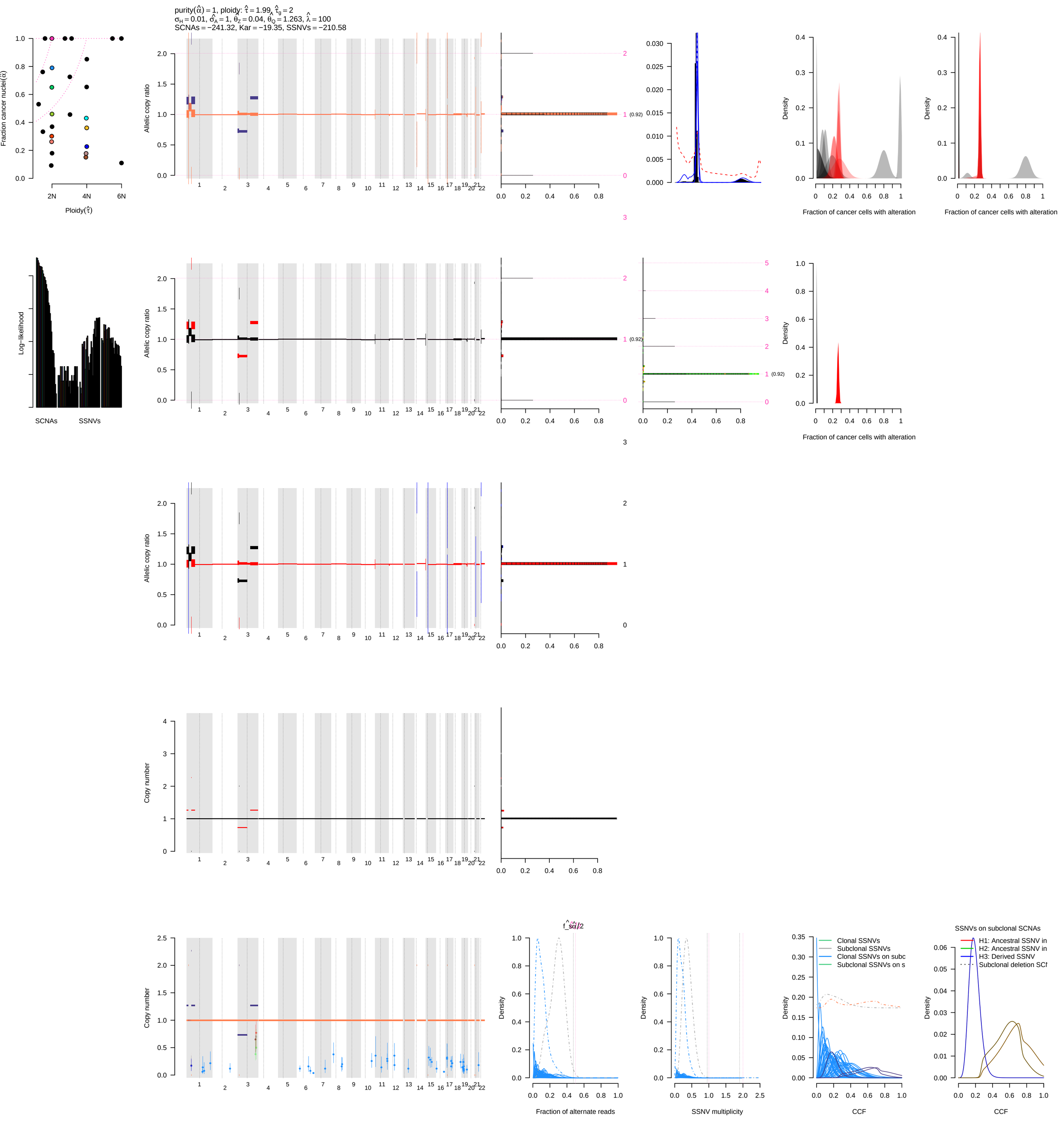
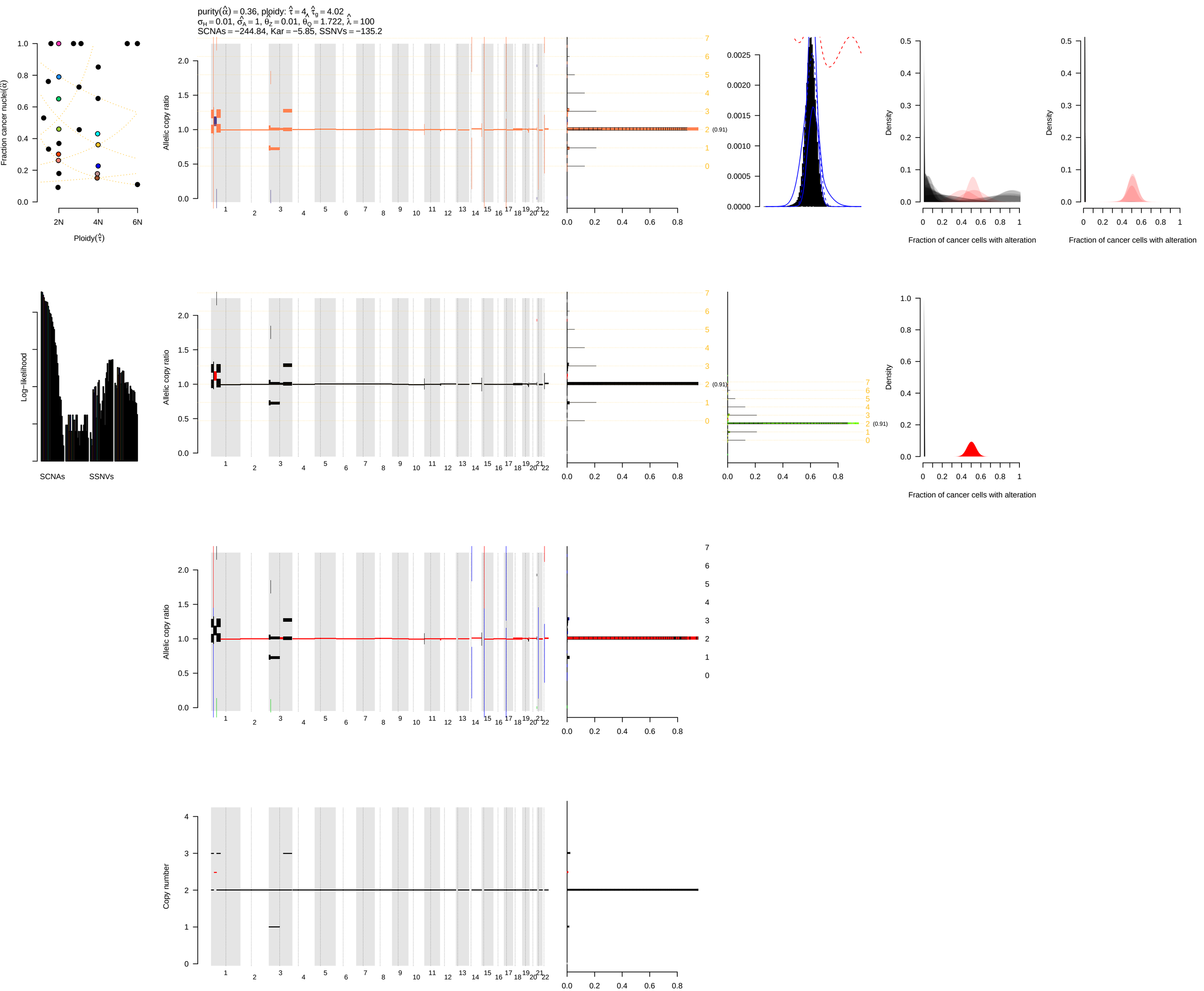
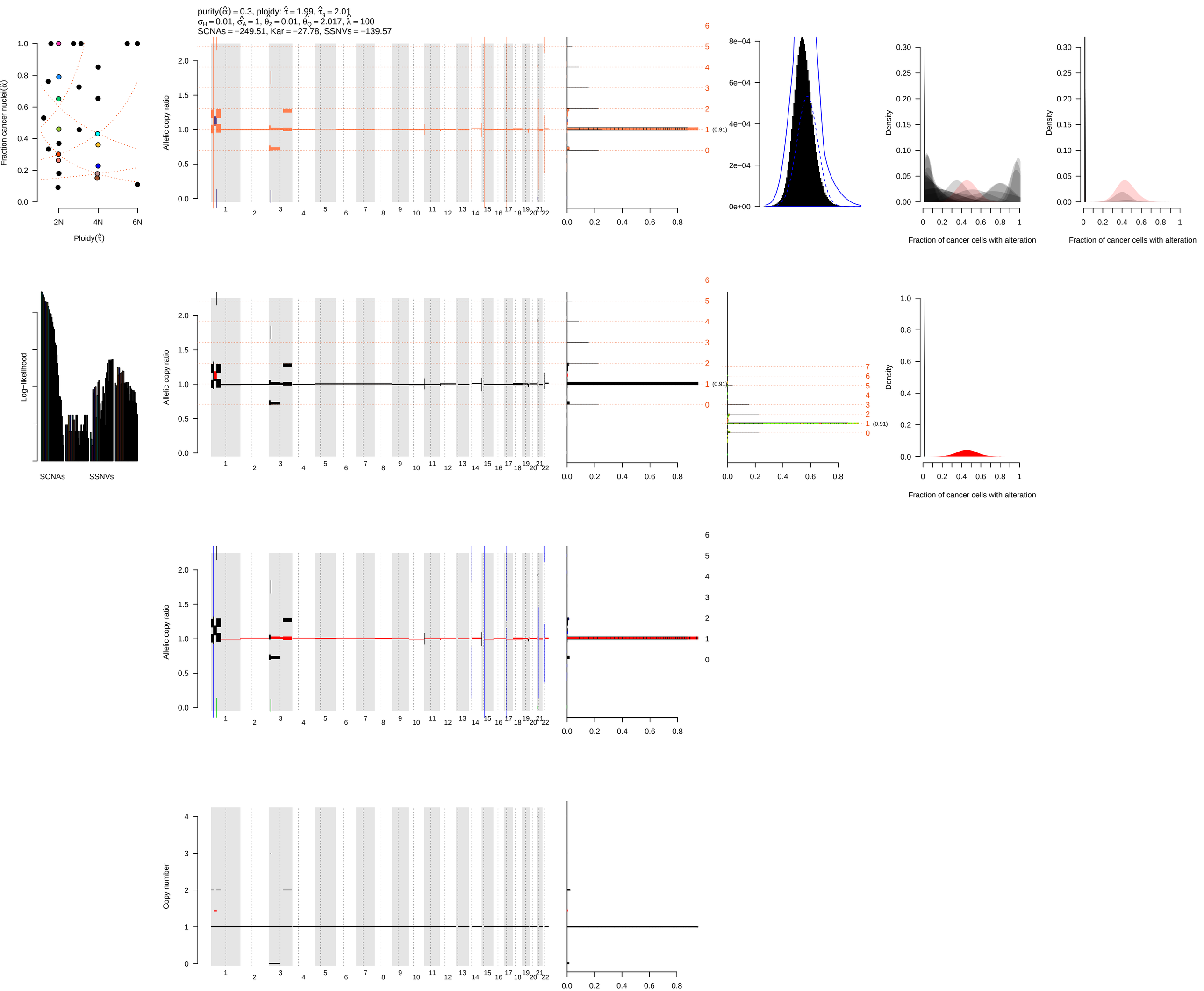

Allelic copy ratio
2.0
1.5
1.0
0.5
0.0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
0.0
0.2
0.4
0.6
0.8

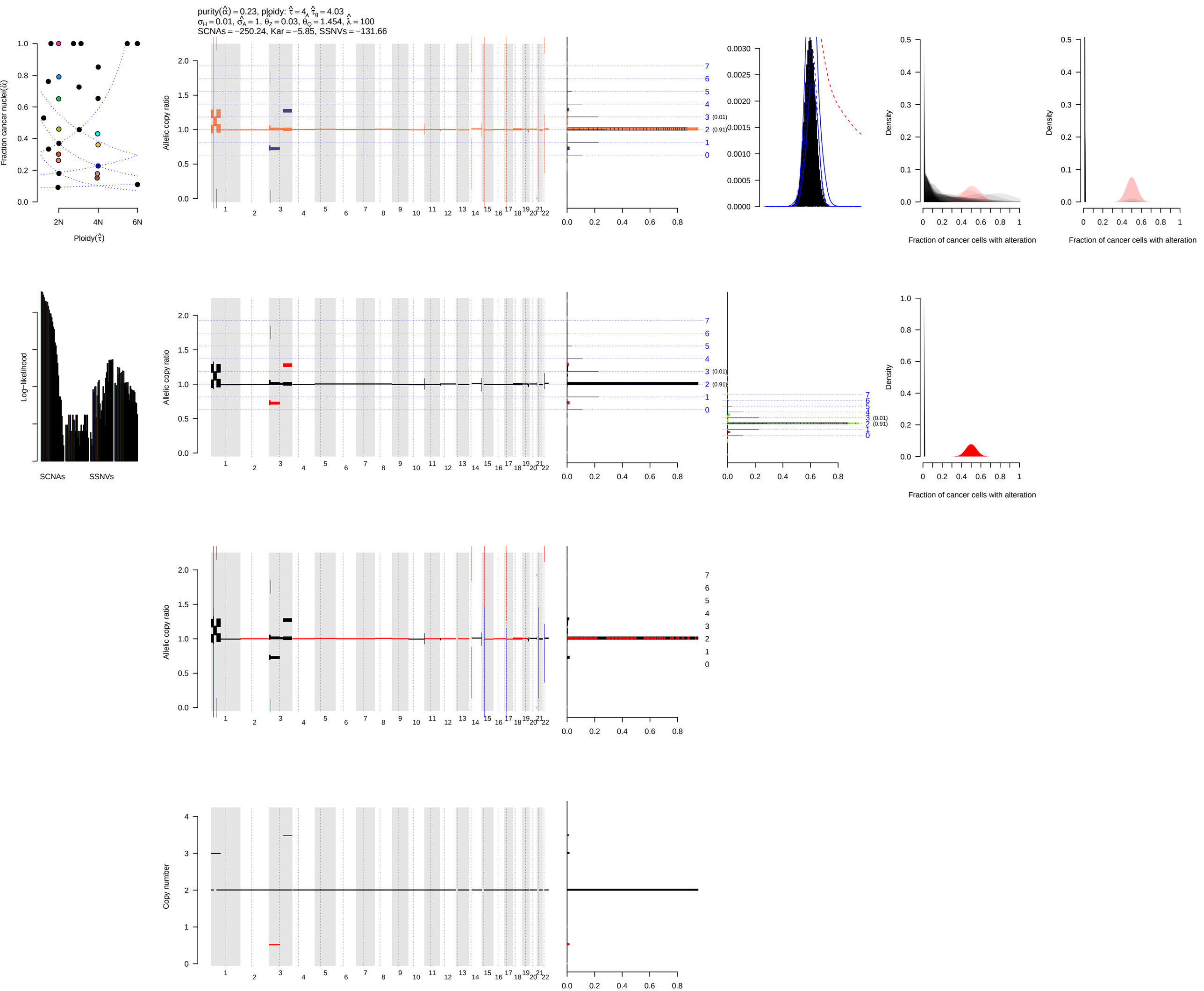

purity($\hat{\alpha}$) = 0.65, ploidy: $\hat{\tau}$ = 1.99, $\hat{\tau}_g$ = 2
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.04, θ_Q = 1.416, $\hat{\lambda}$ = 100
SCNAs = −237.05, Kar = −19.35, SSNVs = −192.77
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
SSNVs on subclonal SCNAs

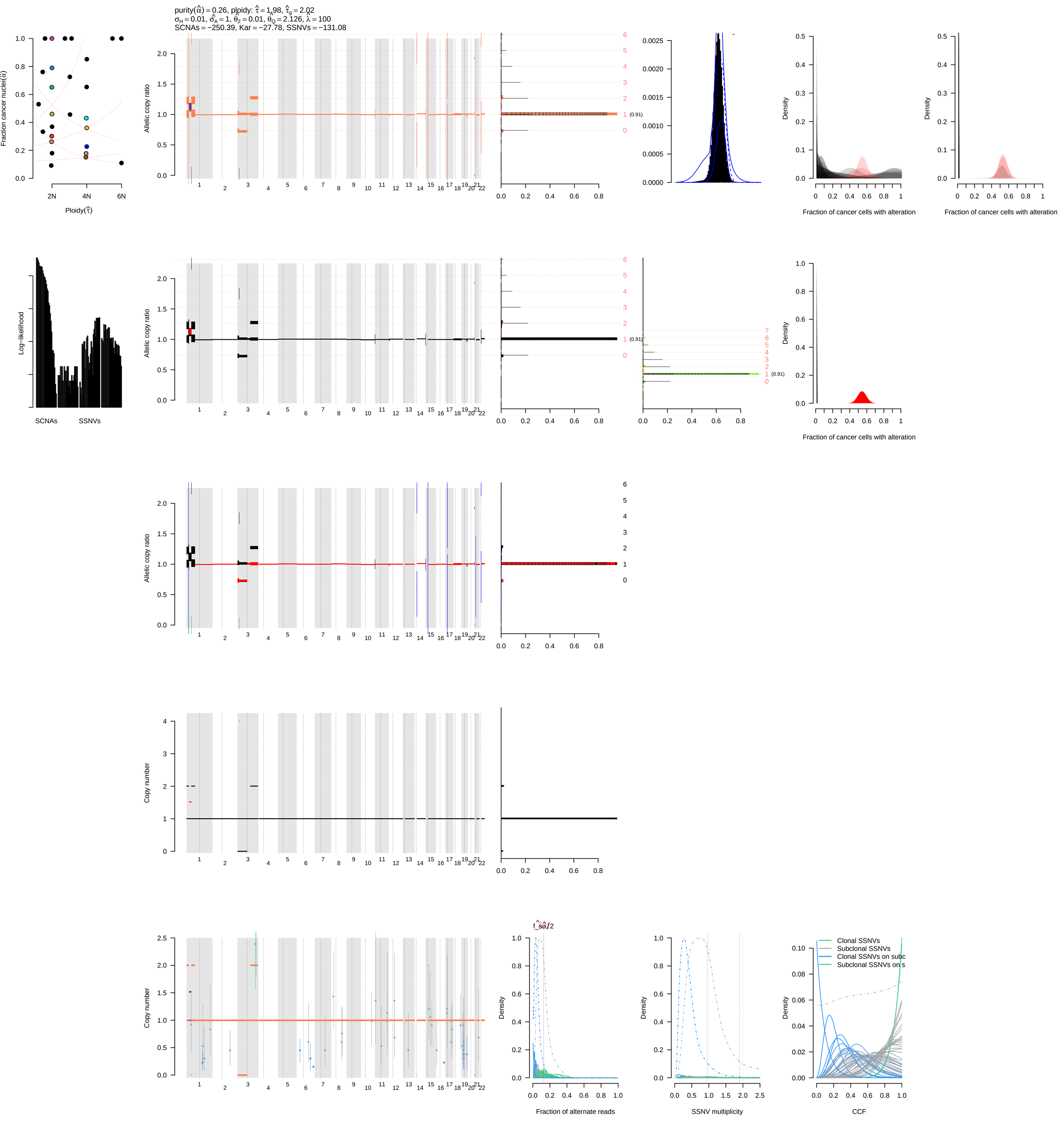

purity($\hat{\alpha}$) = 0.79, ploidy: $\hat{\tau}$ = 2, $\hat{\tau}_g$ = 2
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.05, θ_Q = 1.304, $\hat{\lambda}$ = 100
SCNAs = −237.79, Kar = −19.35, SSNVs = −201.81
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
(0.91)
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_sc/2
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

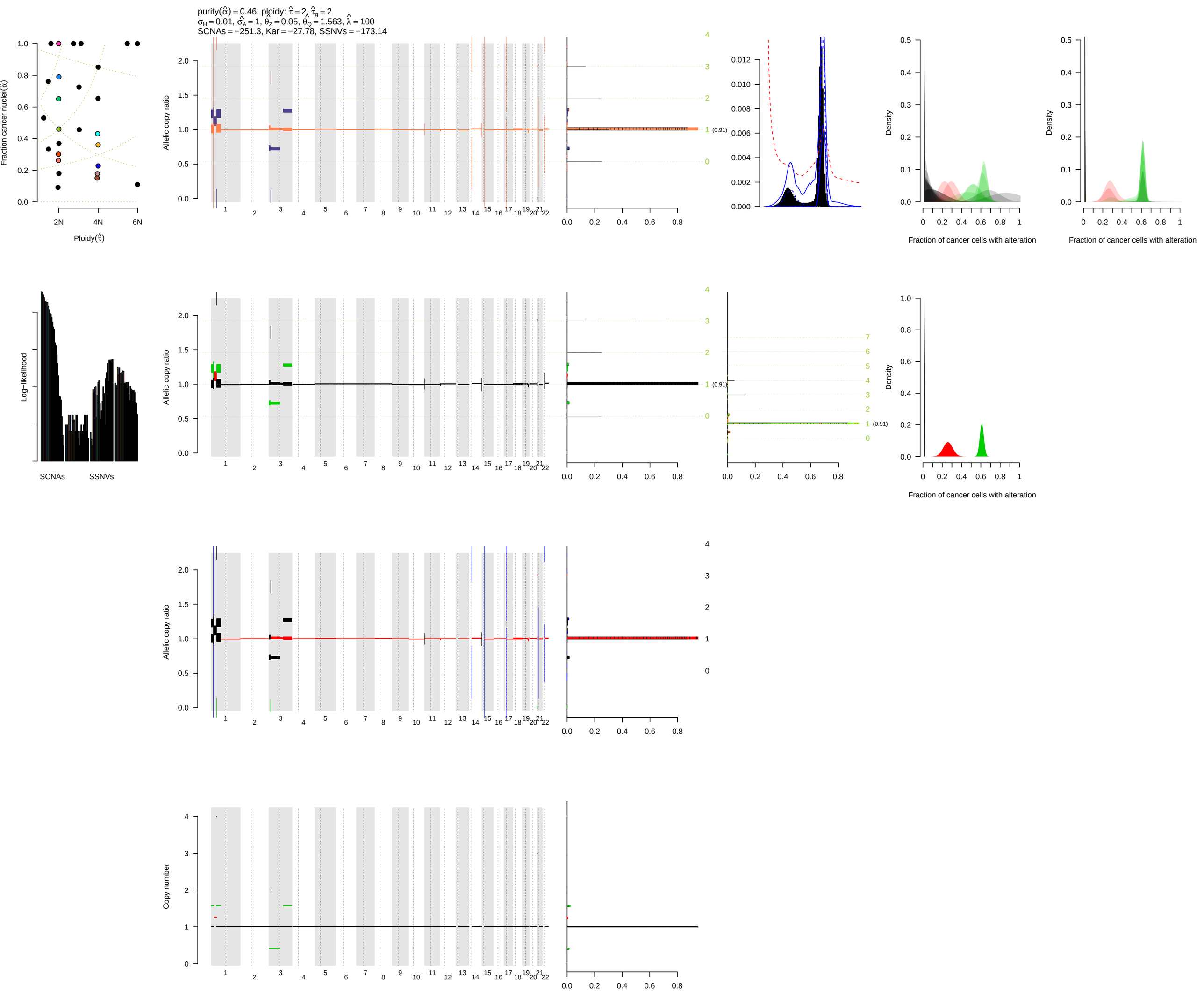

purity($\hat{\alpha}$) = 1, ploidy: $\hat{\tau}$ = 1.99, $\hat{\tau}_g$ = 2
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.04, θ_Q = 1.263, $\hat{\lambda}$ = 100
SCNAs = −241.32, Kar = −19.35, SSNVs = −210.58
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_s
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

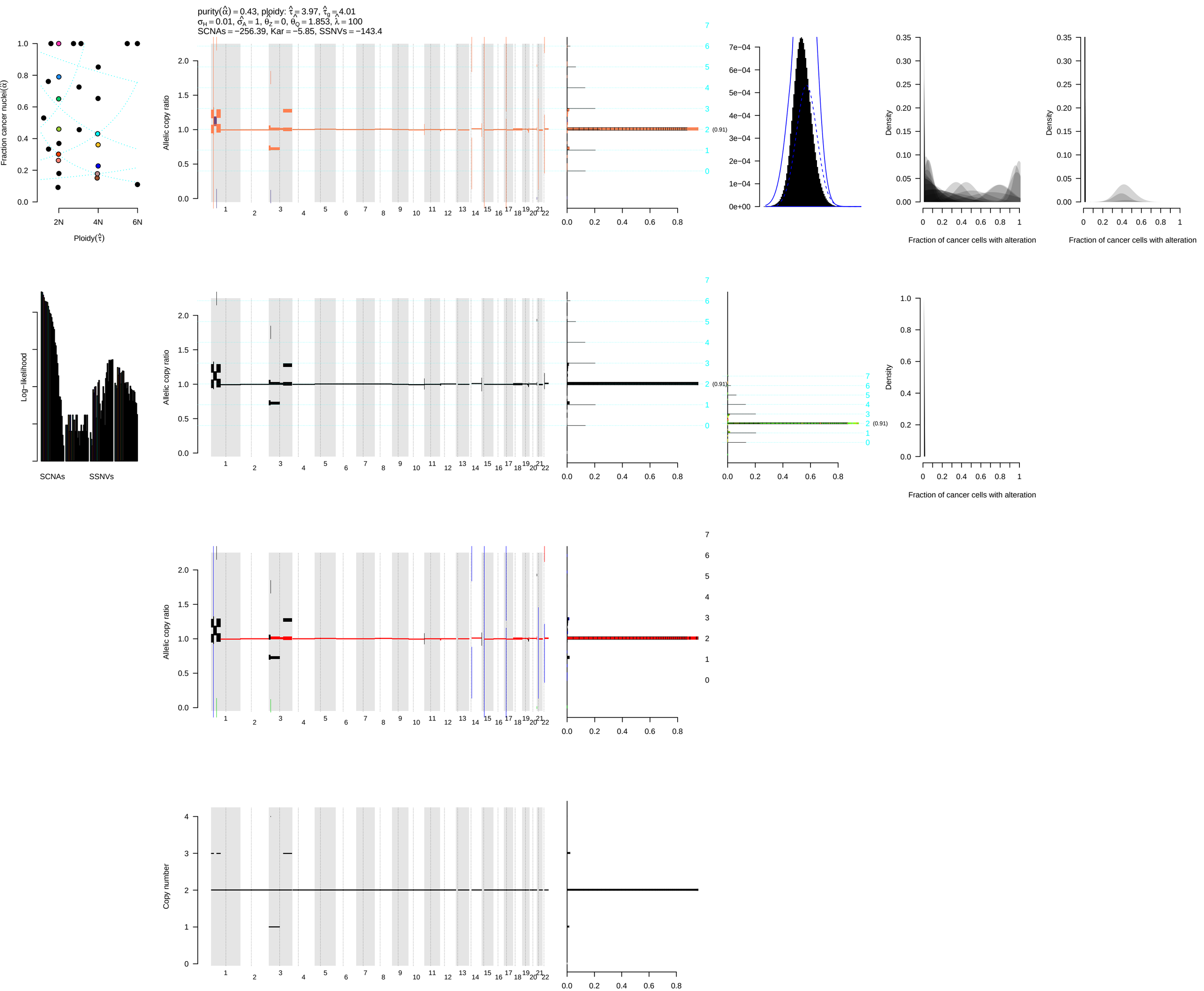

purity($\hat{\alpha}$) = 0.36, ploidy: $\hat{\tau}$ = 4, $\hat{\tau}_g$ = 4.02
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.01, θ_Q = 1.722, $\hat{\lambda}$ = 100
SCNAs = −244.84, Kar = −5.85, SSNVs = −135.2
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
(0.91)
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_s
$\hat{\alpha}$/2
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s

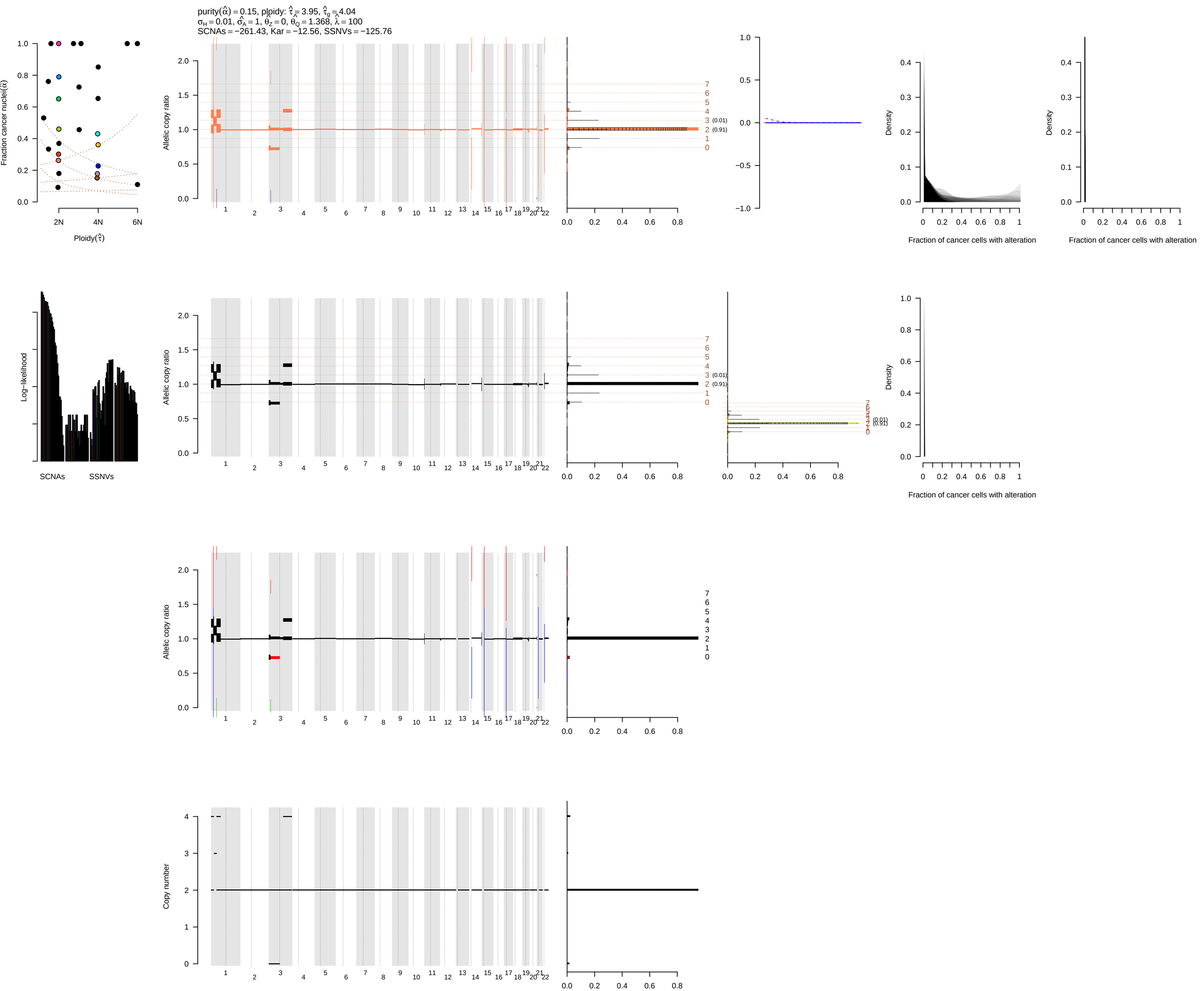

purity($\hat{\alpha}$) = 0.3, ploidy: $\hat{\tau}$ = 1.99, $\hat{\tau}_g$ = 2.01
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.01, θ_Q = 2.017, $\hat{\lambda}$ = 100
SCNAs = −249.51, Kar = −27.78, SSNVs = −139.57
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_sol
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s

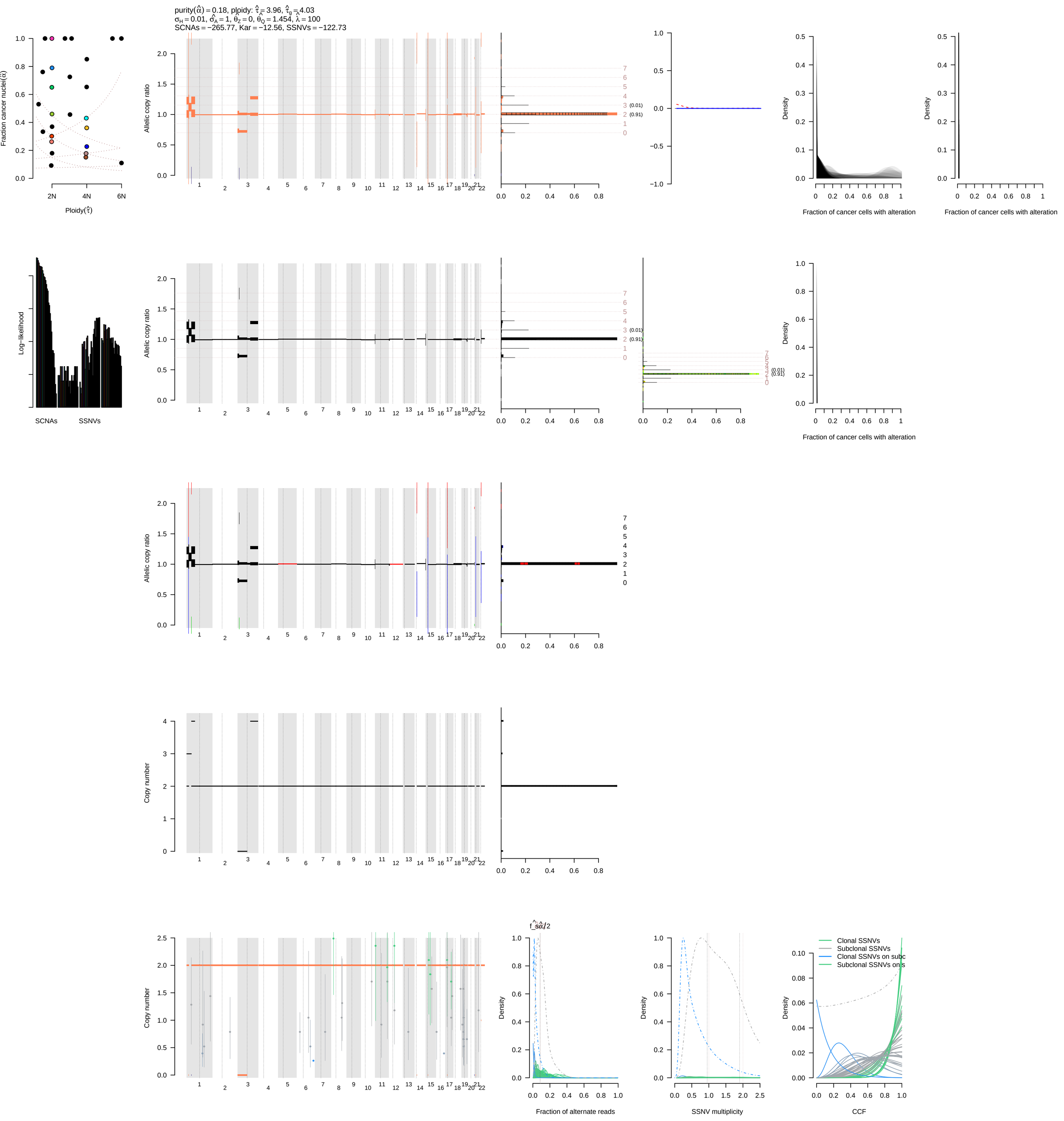

purity($\hat{\alpha}$) = 0.23, ploidy: $\hat{\tau}$ = 4, $\hat{\tau}_g$ = 4.03
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.03, θ_Q = 1.454, $\hat{\lambda}$ = 100
SCNAs = −250.24, Kar = −5.85, SSNVs = −131.66
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
SSNVs on subclonal SCNAs
H3: Derived SSNV

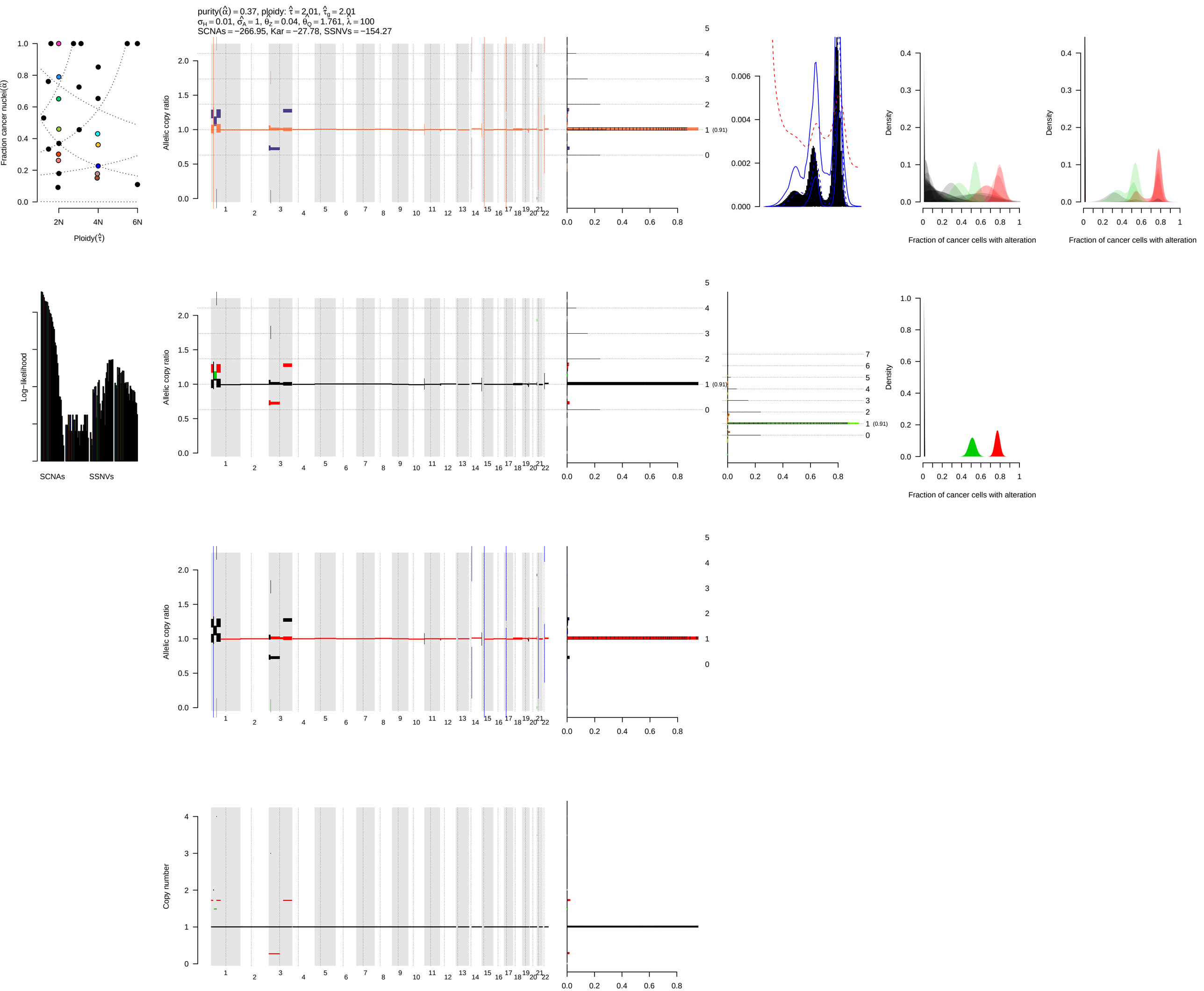

purity($\hat{\alpha}$) = 0.26, ploidy: $\hat{\tau}$ = 1.98, $\hat{\tau}_g$ = 2.02
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.01, θ_Q = 2.126, $\hat{\lambda}$ = 100
SCNAs = −250.39, Kar = −27.78, SSNVs = −131.08
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_sc/2
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s

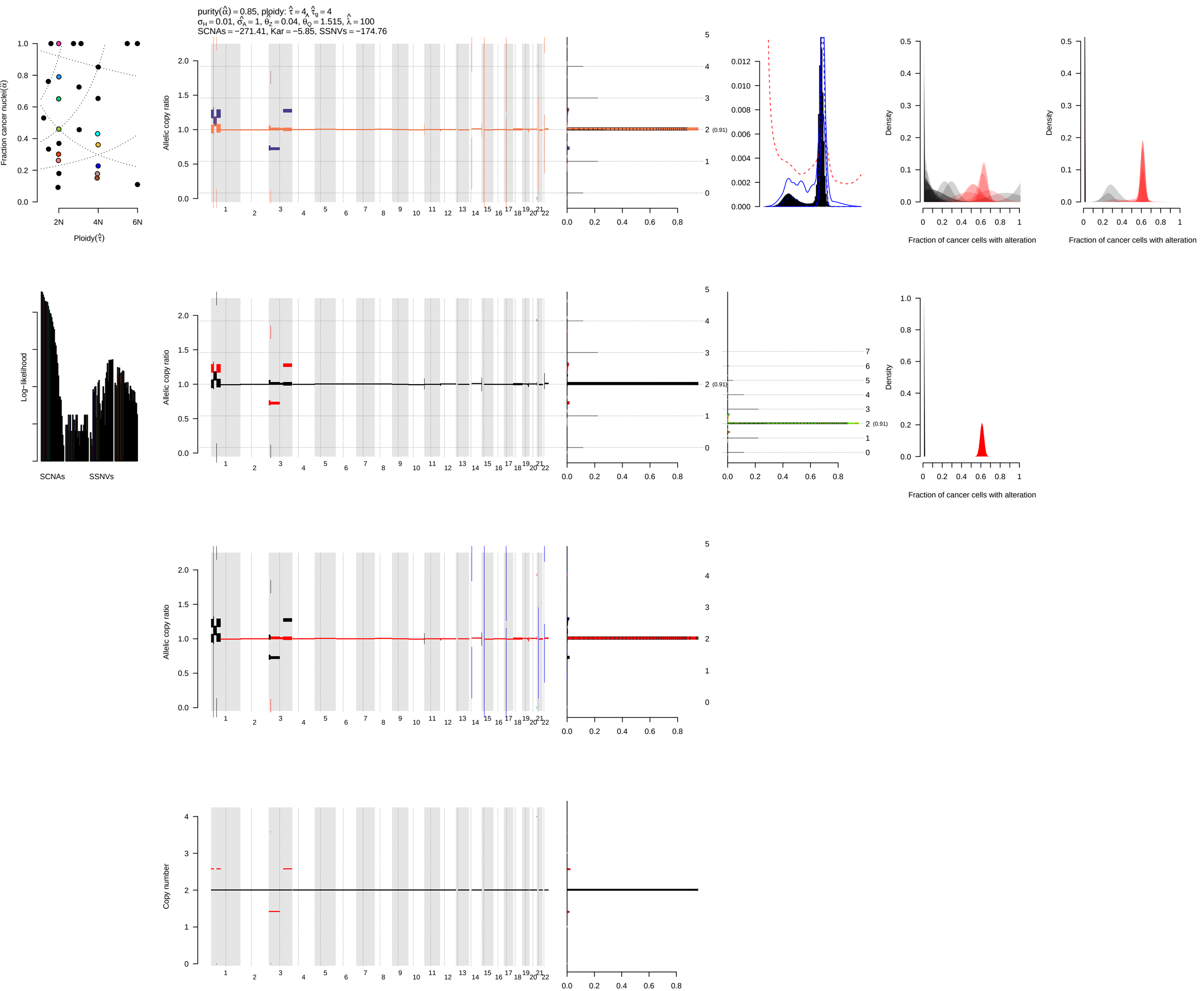

purity($\hat{\alpha}$) = 0.46, ploidy: $\hat{\tau}$ = 2, $\hat{\tau}_g$ = 2
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.05, θ_Q = 1.563, $\hat{\lambda}$ = 100
SCNAs = −251.3, Kar = −27.78, SSNVs = −173.14
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_s$\hat{\alpha}$/2
Fraction of alternate reads
SSNV multiplicity
CCF
SSNVs on subclonal SCNAs
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

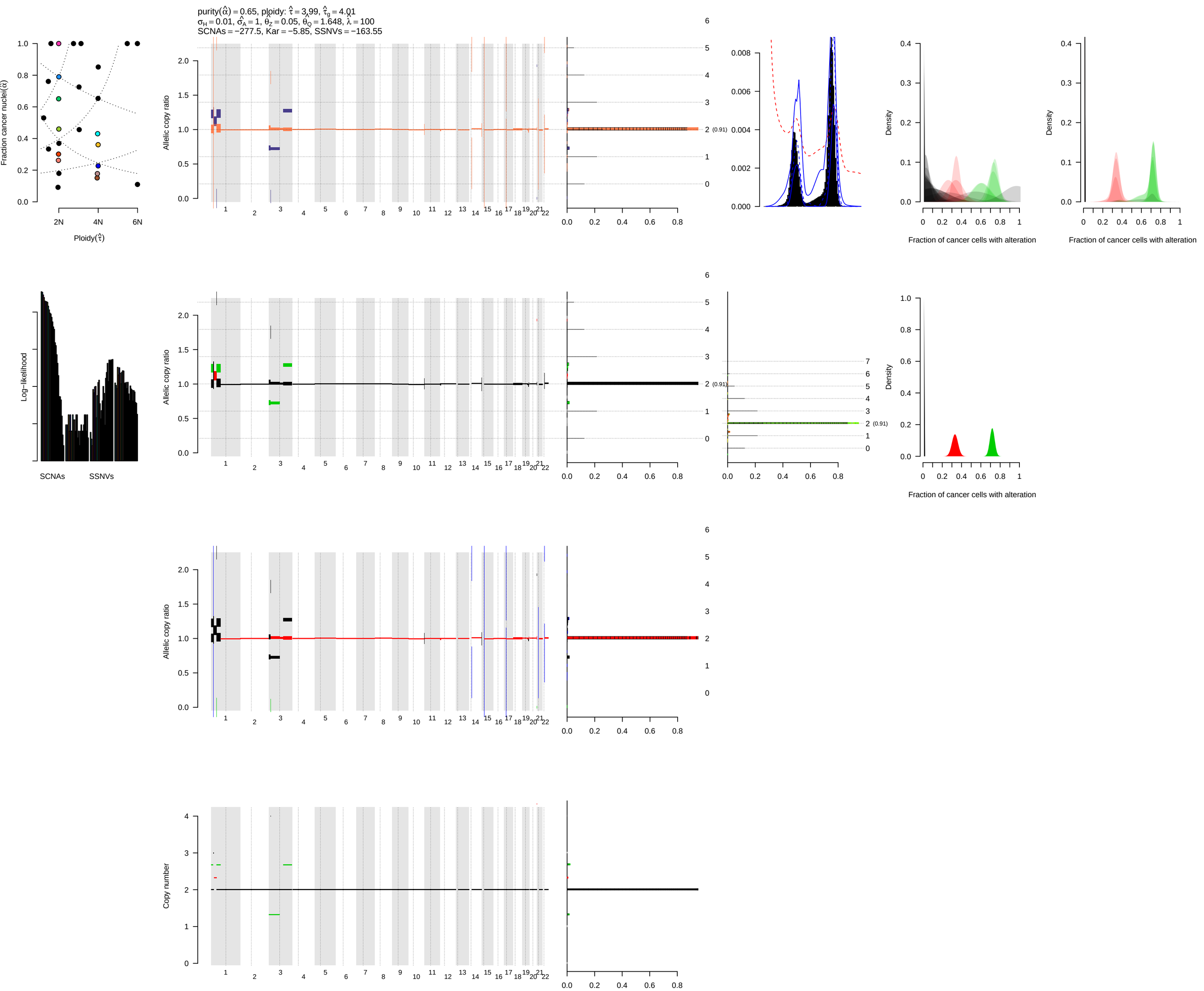

purity($\hat{\alpha}$) = 0.43, ploidy: $\hat{\tau}$ = 3.97, $\hat{\tau}_g$ = 4.01
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0, θ_Q = 1.853, $\hat{\lambda}$ = 100
SCNAs = −256.39, Kar = −5.85, SSNVs = −143.4
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_s
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s

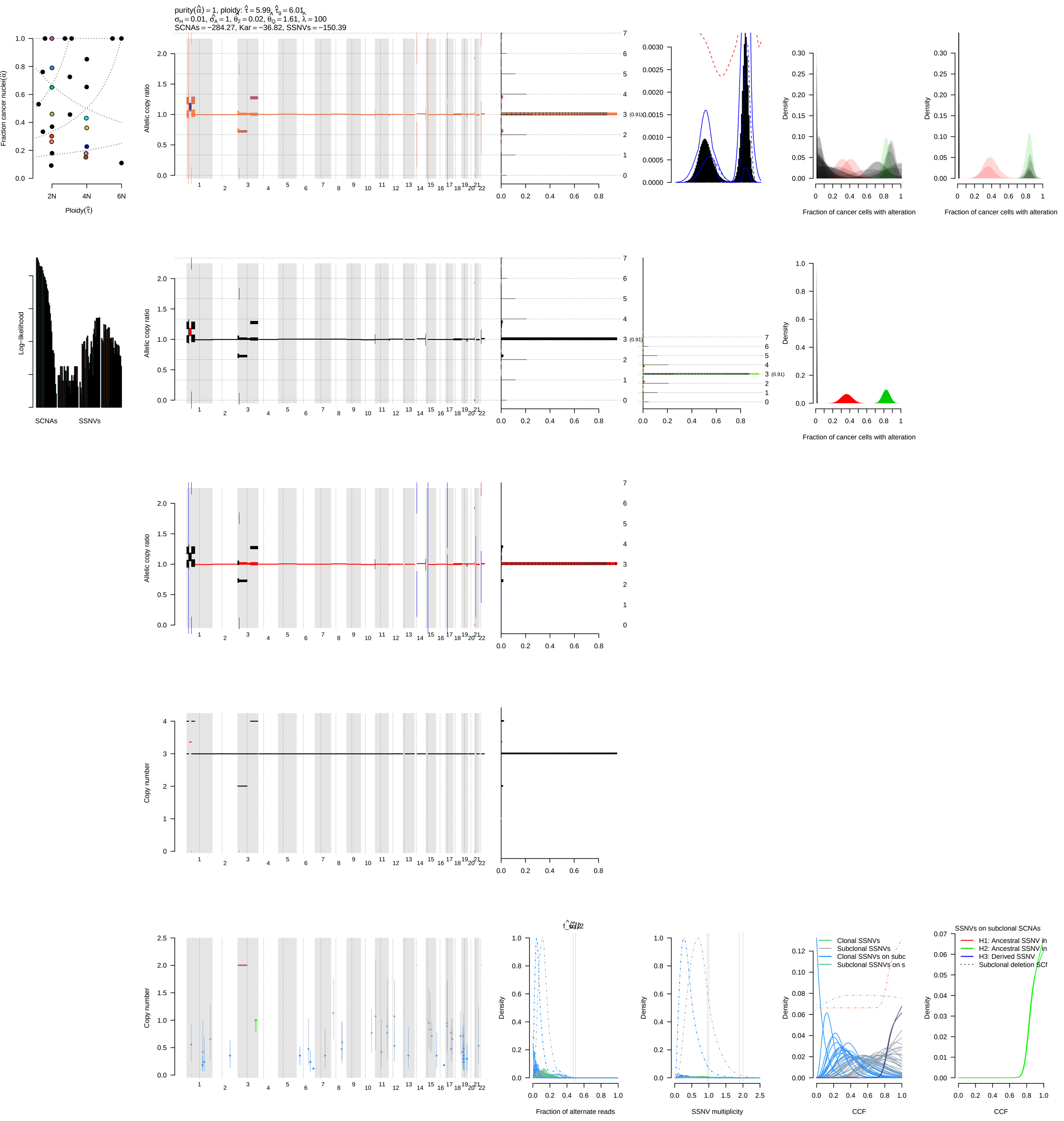

purity($\hat{\alpha}$) = 0.15, ploidy: $\hat{\tau}$ = 3.95, $\hat{\tau}_g$ = 4.04
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0, θ_Q = 1.368, $\hat{\lambda}$ = 100
SCNAs = −261.43, Kar = −12.56, SSNVs = −125.76
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs

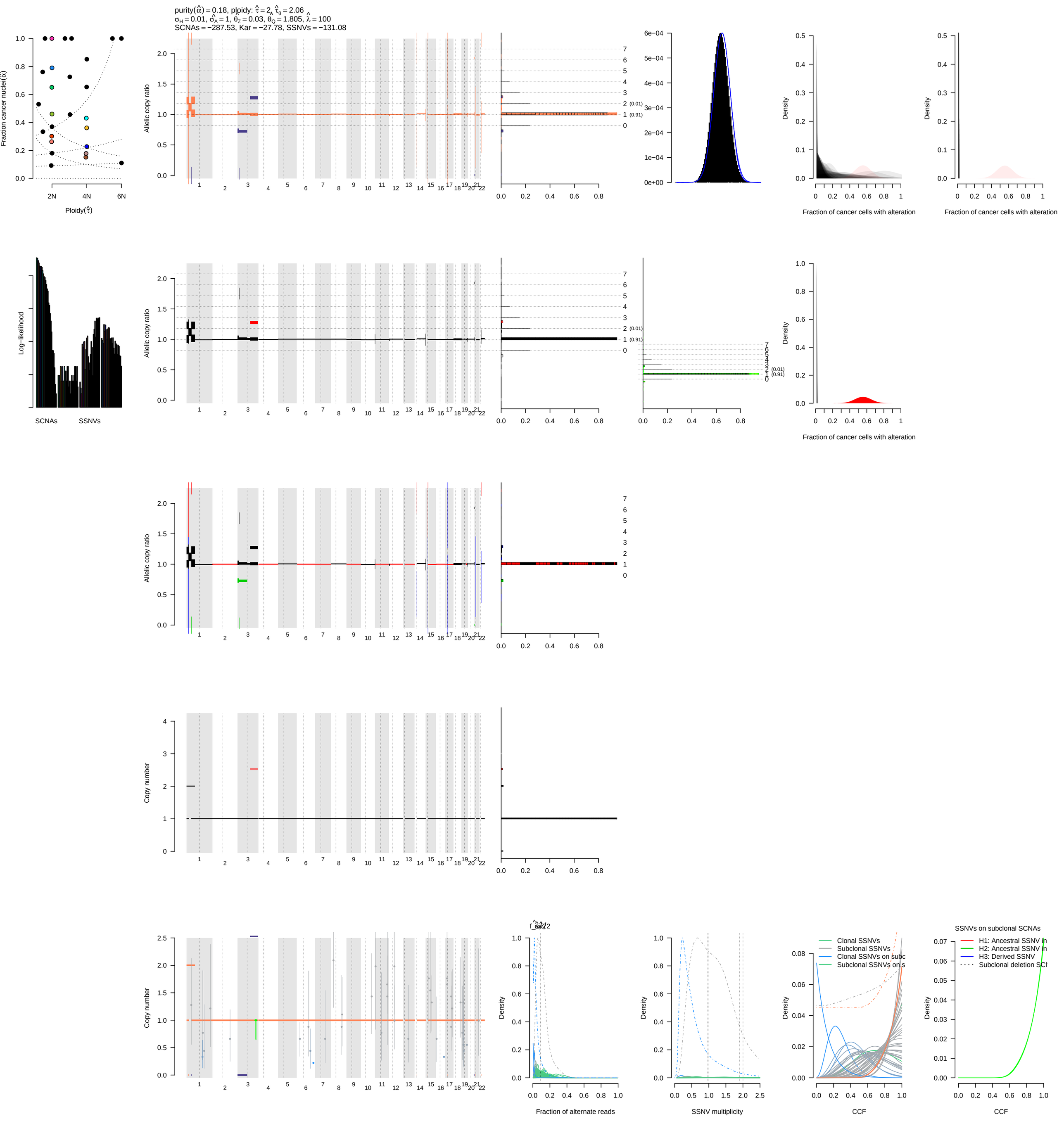

purity($\hat{\alpha}$) = 0.18, ploidy: $\hat{\tau}$ = 3.96, $\hat{\tau}_g$ = 4.03
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0, θ_Q = 1.454, $\hat{\lambda}$ = 100
SCNAs = −265.77, Kar = −12.56, SSNVs = −122.73
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
(0.01)
(0.91)
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
$\hat{f}_s\hat{\alpha}/2$
Fraction of alternate reads
SSNV multiplicity
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
CCF

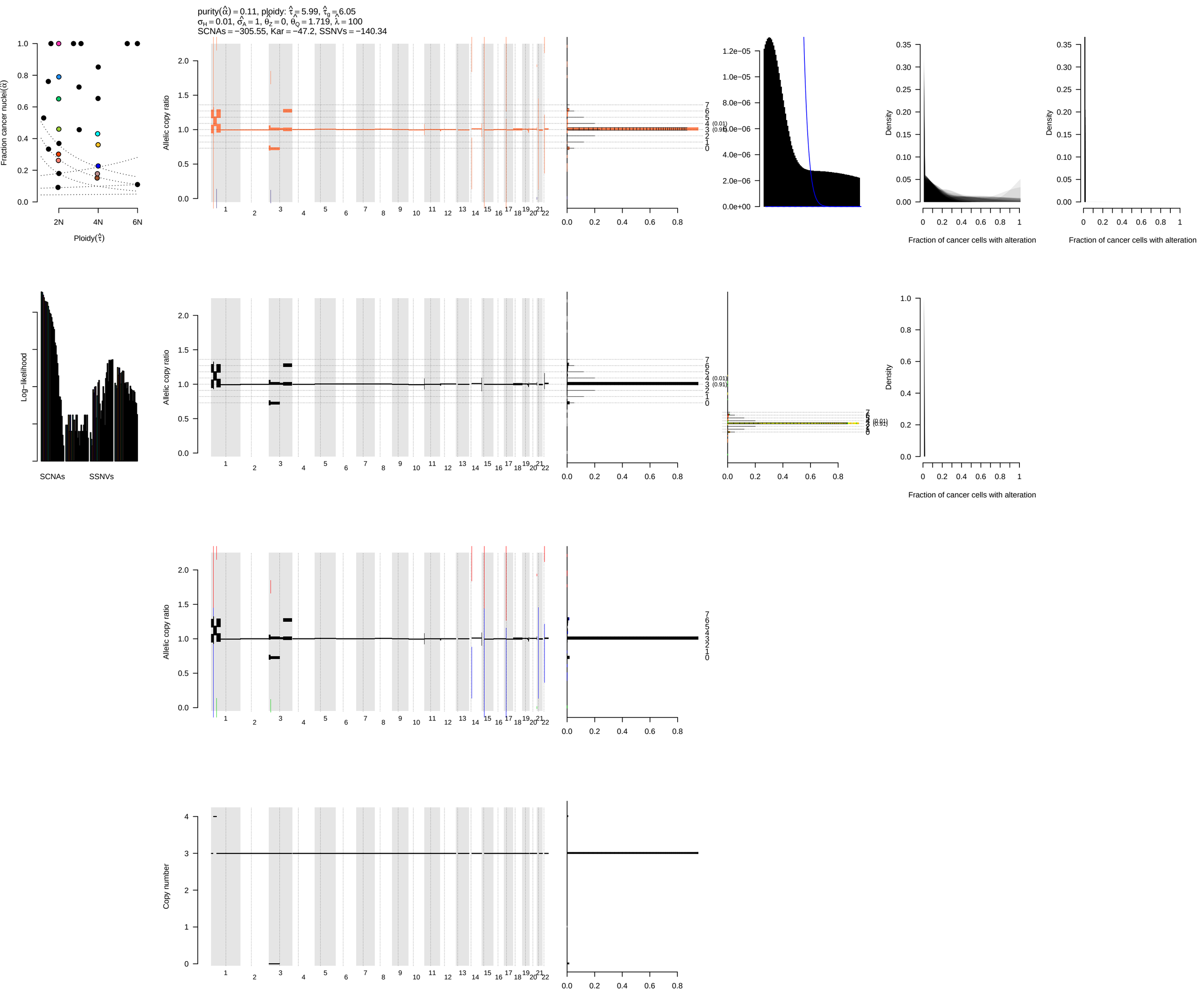

purity($\hat{\alpha}$) = 0.37, ploidy: $\hat{\tau}$ = 2.01, $\hat{\tau}_g$ = 2.01
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.04, θ_Q = 1.761, $\hat{\lambda}$ = 100
SCNAs = −266.95, Kar = −27.78, SSNVs = −154.27
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
(0.91)
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_g
f
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

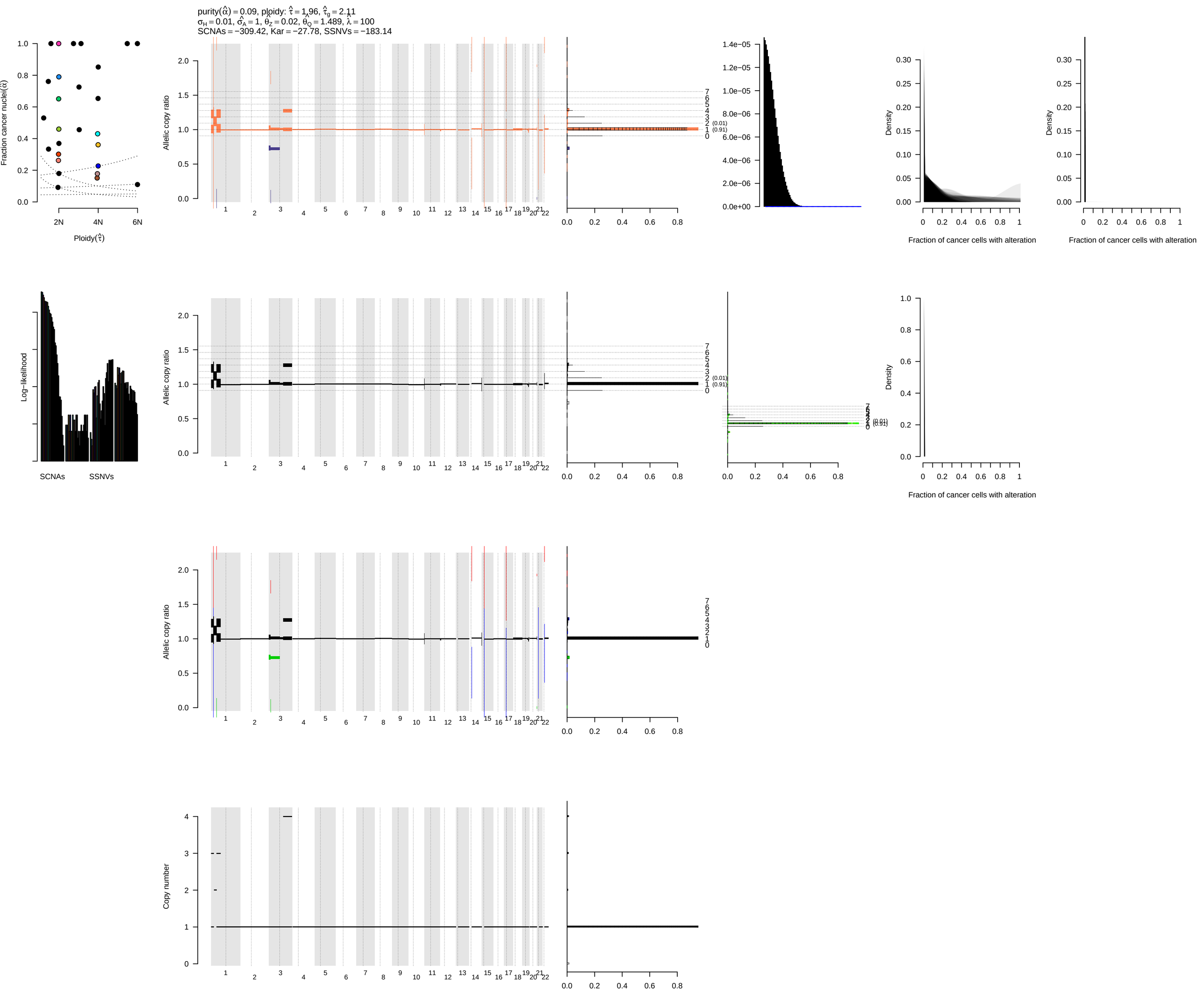

purity($\hat{\alpha}$) = 0.85, ploidy: $\hat{\tau}$ = 4, $\hat{\tau}_g$ = 4
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.04, θ_Q = 1.515, $\hat{\lambda}$ = 100
SCNAs = −271.41, Kar = −5.85, SSNVs = −174.76
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_sc
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCN

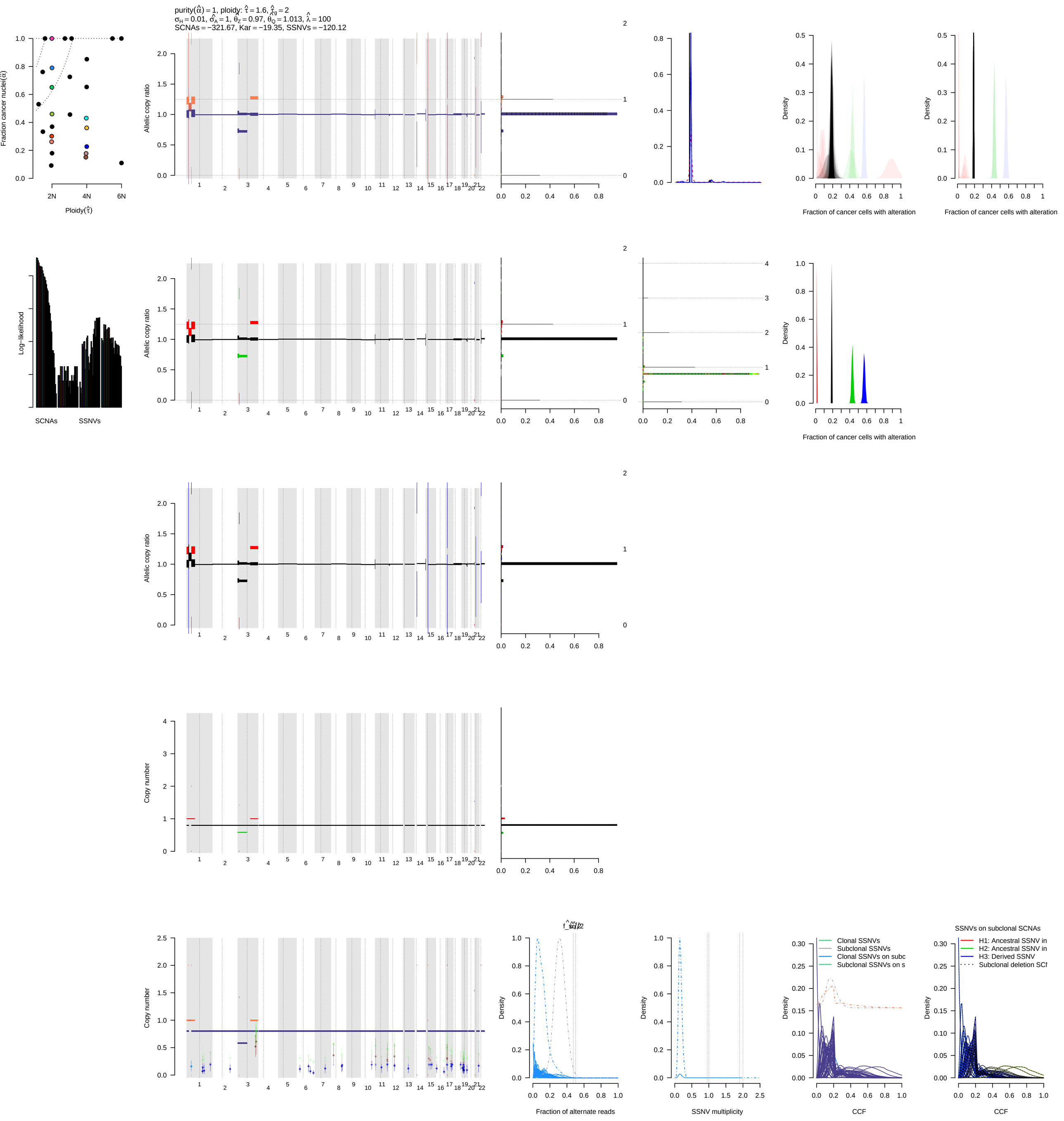

purity($\hat{\alpha}$) = 0.65, ploidy: $\hat{\tau}$ = 3.99, $\hat{\tau}_g$ = 4.01
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.05, θ_Q = 1.648, $\hat{\lambda}$ = 100
SCNAs = −277.5, Kar = −5.85, SSNVs = −163.55
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCN

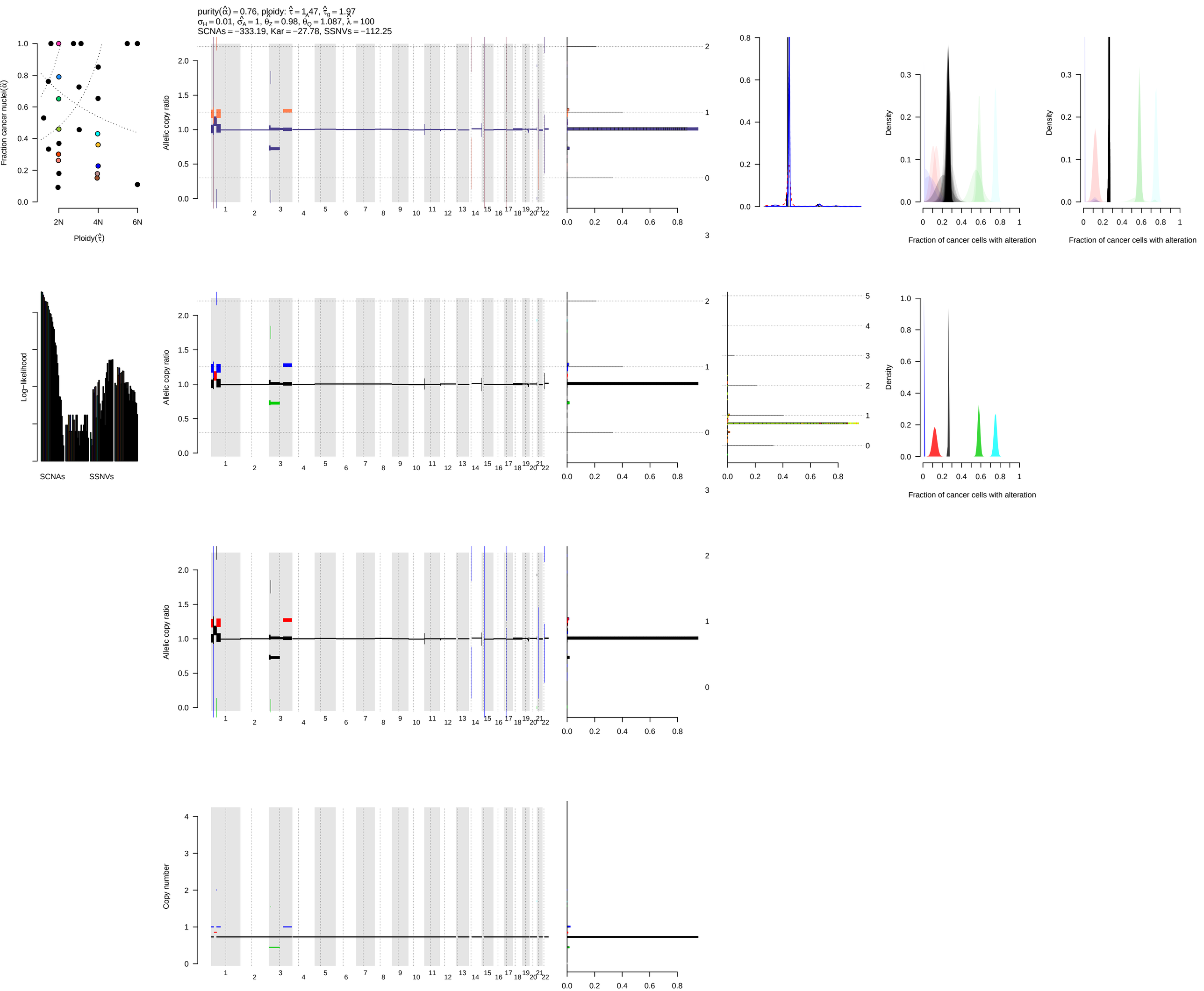

purity($\hat{\alpha}$) = 1, ploidy: $\hat{\tau}$ = 5.99, $\hat{\tau}_g$ = 6.01
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.02, θ_Q = 1.61, $\hat{\lambda}$ = 100
SCNAs = −284.27, Kar = −36.82, SSNVs = −150.39
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

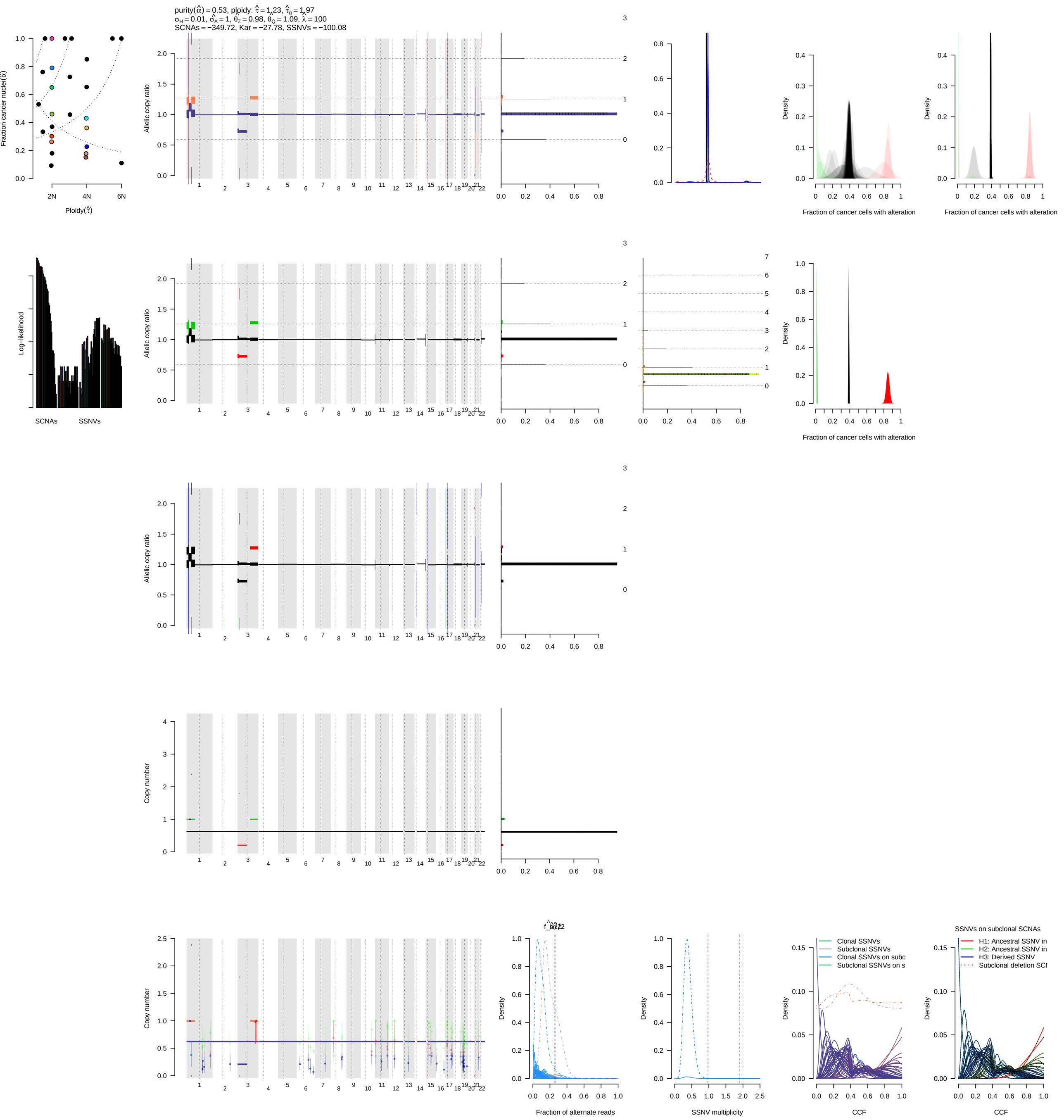

purity($\hat{\alpha}$) = 0.18, ploidy: $\hat{\tau}$ = 2, $\hat{\tau}_g$ = 2.06
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.03, θ_Q = 1.805, $\hat{\lambda}$ = 100
SCNAs = −287.53, Kar = −27.78, SSNVs = −131.08
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
(0.01)
(0.91)
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
f_alt
Fraction of alternate reads
SSNV multiplicity
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
CCF
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCN

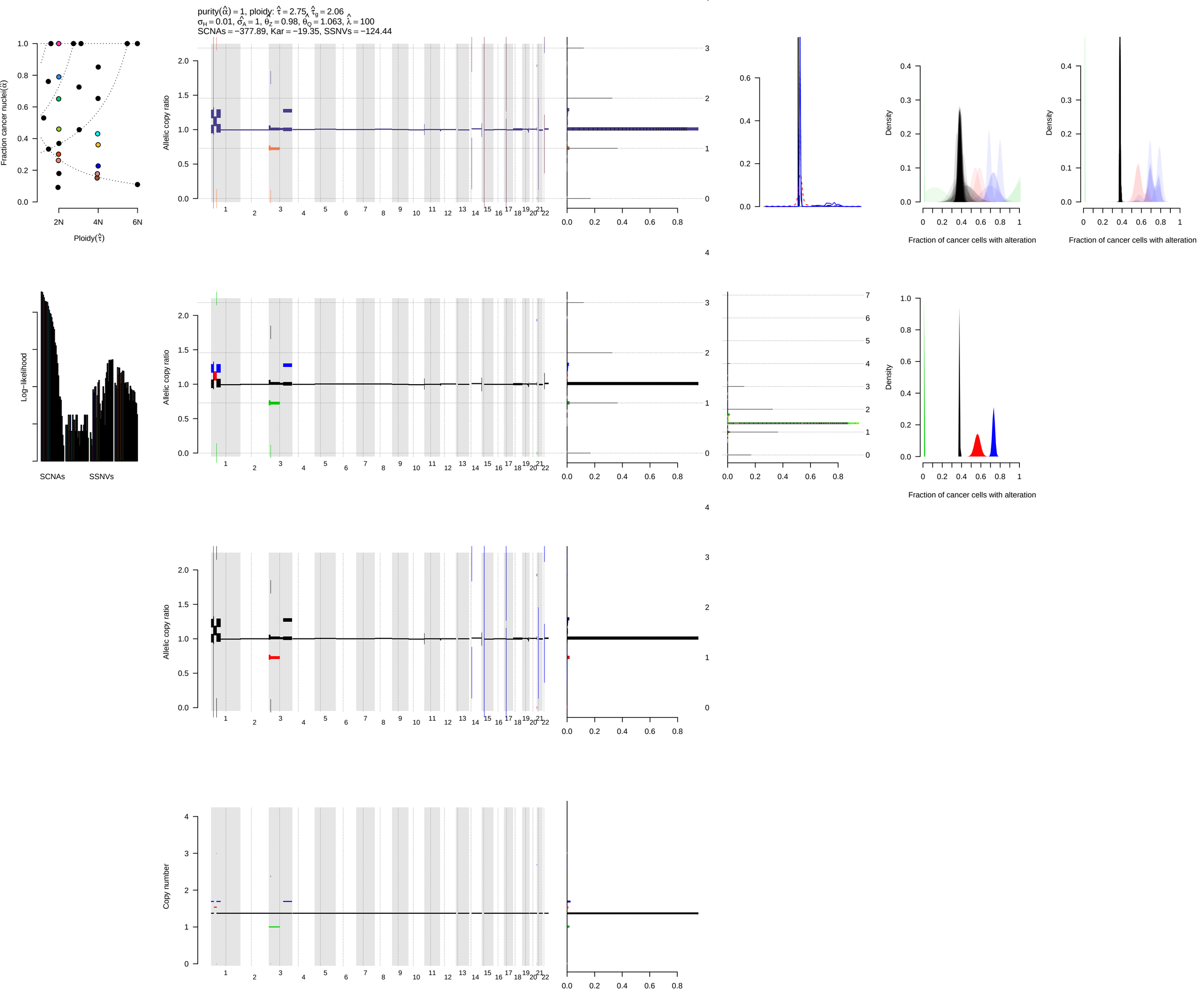

purity($\hat{\alpha}$) = 0.11, ploidy: $\hat{\tau}_A$ = 5.99, $\hat{\tau}_g$ = 6.05
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0, θ_Q = 1.719, $\hat{\lambda}$ = 100
SCNAs = −305.55, Kar = −47.2, SSNVs = −140.34
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s

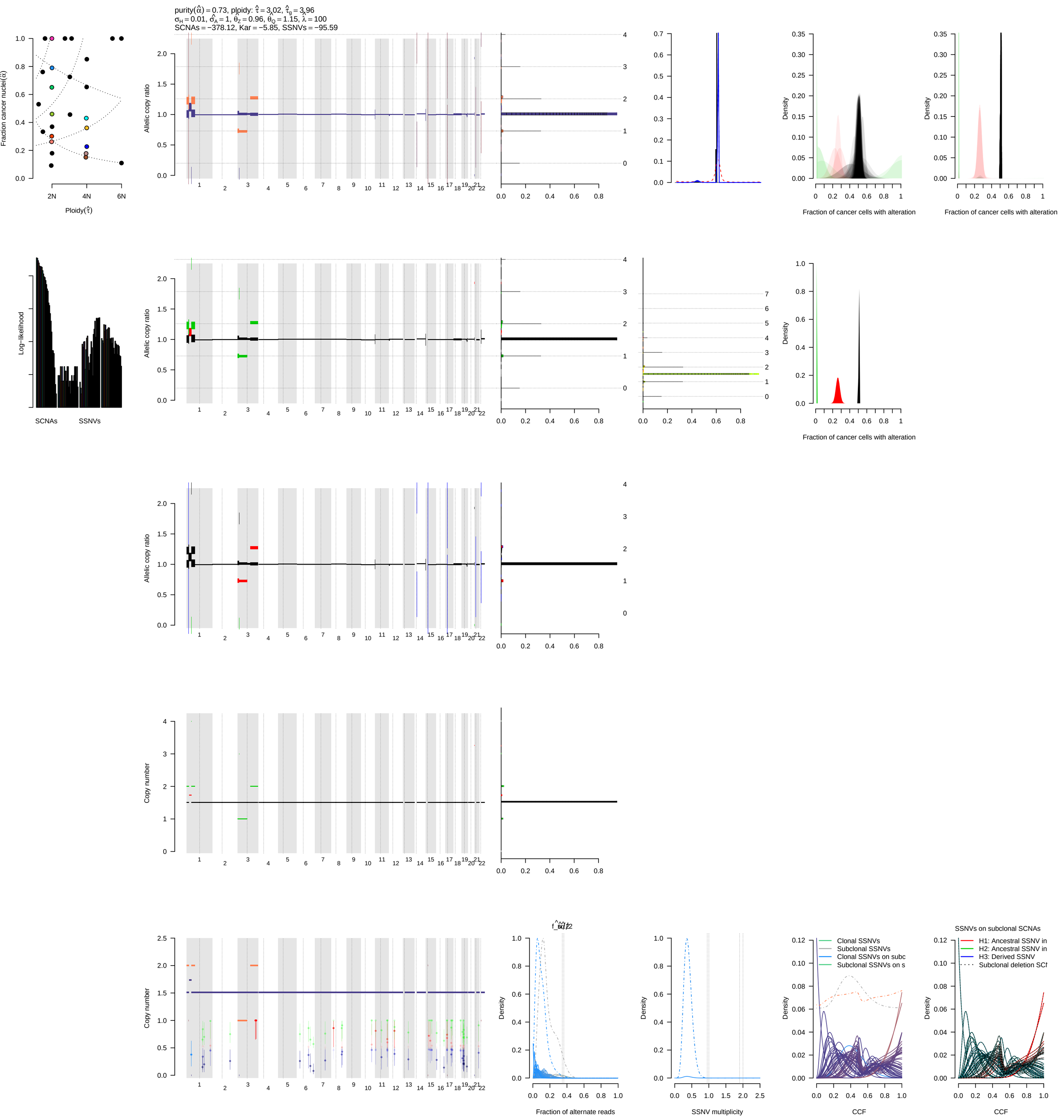

purity($\hat{\alpha}$) = 0.09, ploidy: $\hat{\tau}$ = 1.96, $\hat{\tau}_g$ = 2.11
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.02, θ_Q = 1.489, $\hat{\lambda}$ = 100
SCNAs = −309.42, Kar = −27.78, SSNVs = −183.14
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs

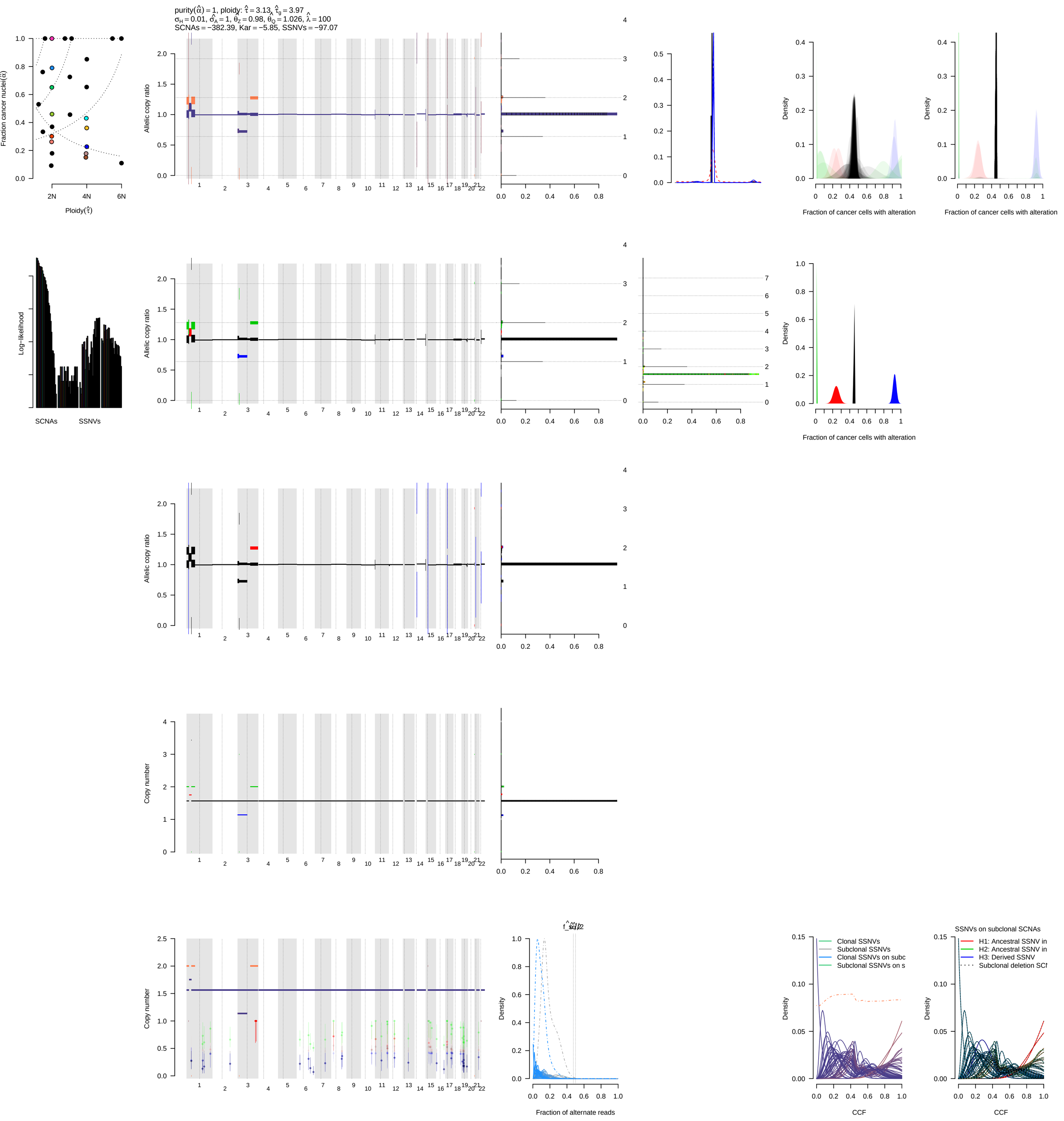

purity($\hat{\alpha}$) = 1, ploidy: $\hat{\tau}$ = 1.6, $\hat{\lambda}_g$ = 2
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.97, θ_Q = 1.013, $\hat{\lambda}$ = 100
SCNAs = −321.67, Kar = −19.35, SSNVs = −120.12
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

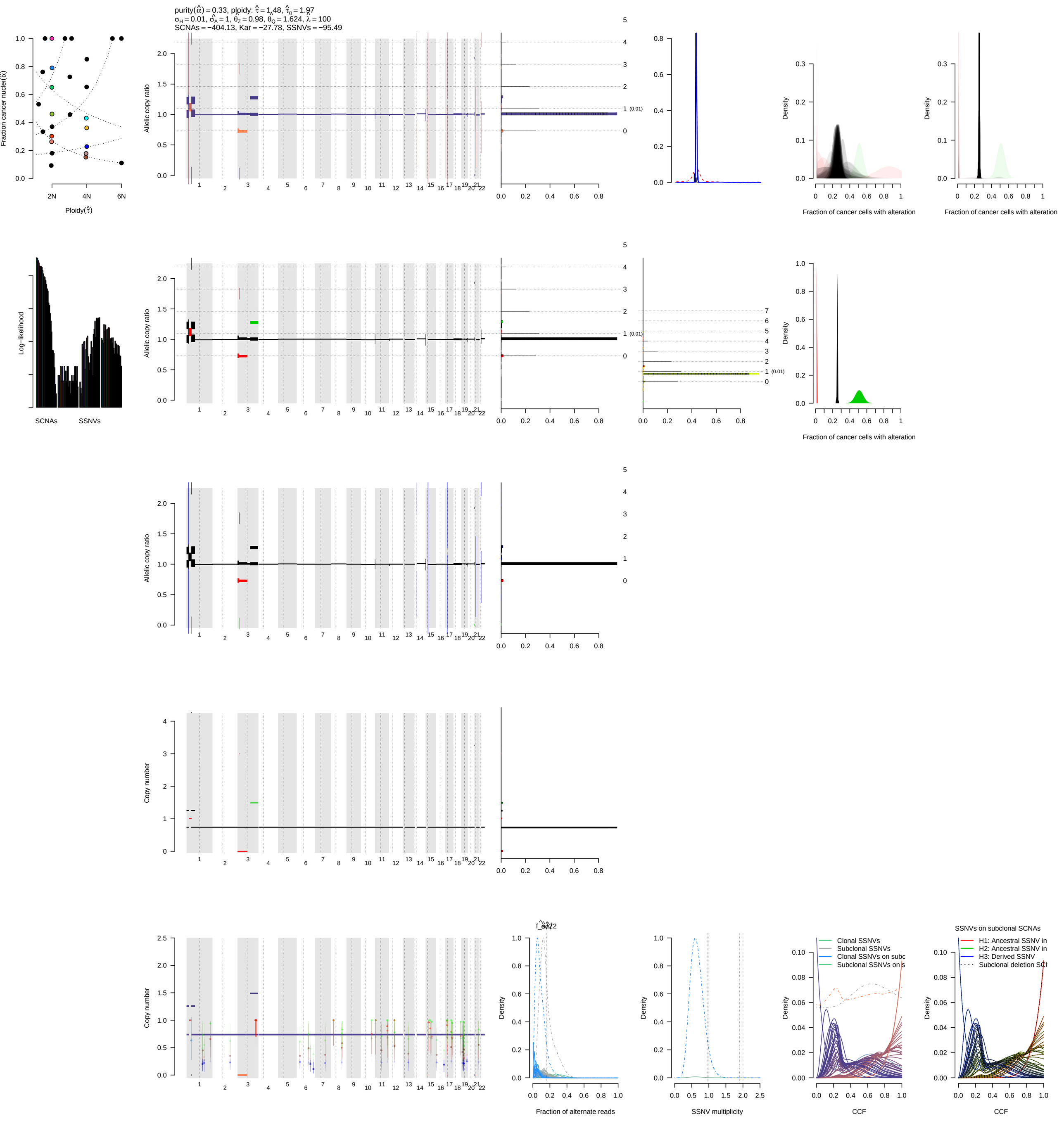

purity($\hat{\alpha}$) = 0.76, ploidy: $\hat{\tau}$ = 1.47, $\hat{\tau}_g$ = 1.97
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.98, θ_Q = 1.087, $\hat{\lambda}$ = 100
SCNAs = −333.19, Kar = −27.78, SSNVs = −112.25
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

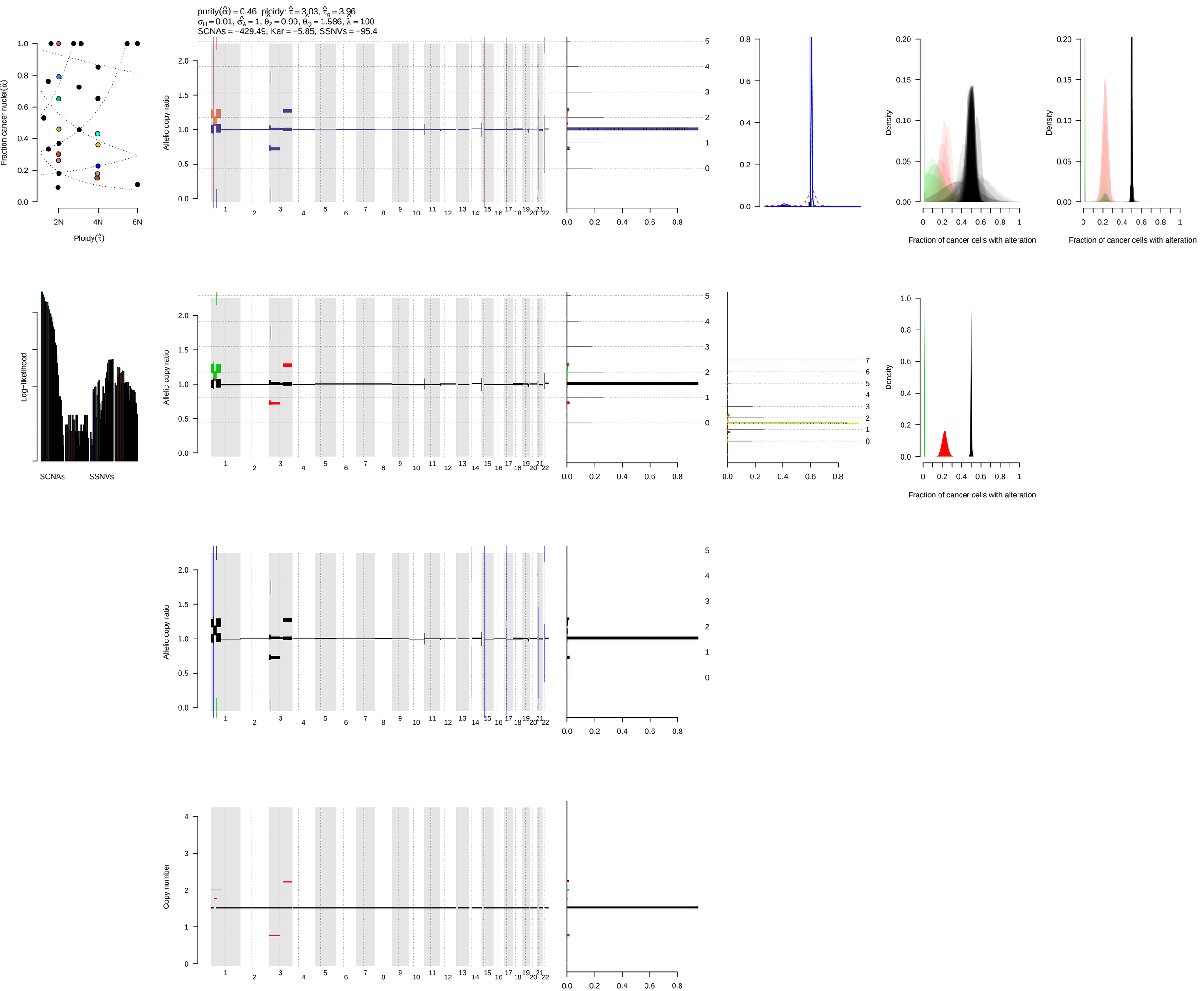

purity($\hat{\alpha}$) = 0.53, ploidy: $\hat{\tau}$ = 1.23, $\hat{\tau}_g$ = 1.97
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.98, θ_Q = 1.09, $\hat{\lambda}$ = 100
SCNAs = −349.72, Kar = −27.78, SSNVs = −100.08
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI

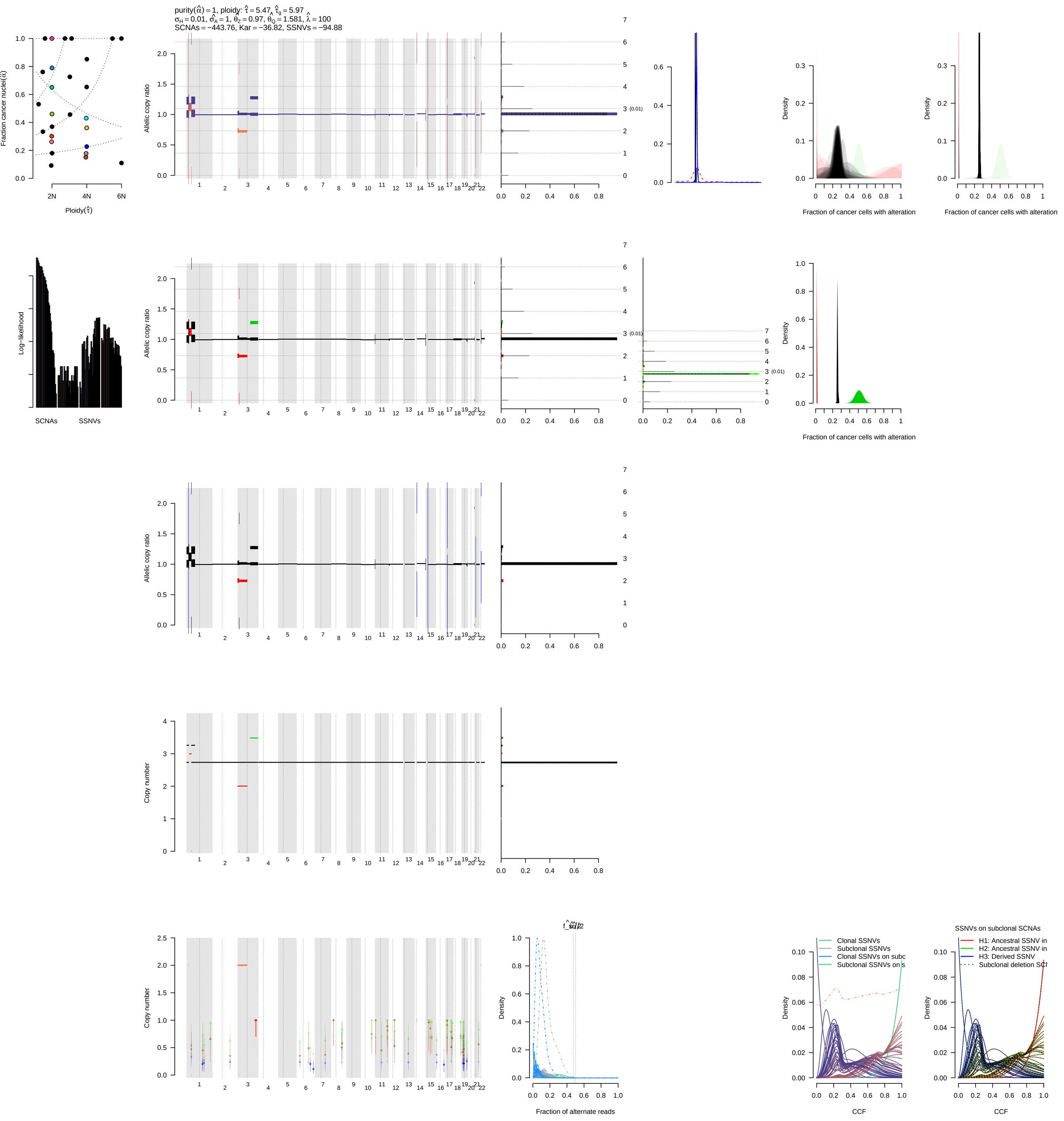

purity($\hat{\alpha}$) = 1, ploidy: $\hat{\tau}$ = 2.75, $\hat{\tau}_g$ = 2.06
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.98, θ_Q = 1.063, $\hat{\lambda}$ = 100
SCNAs = −377.89, Kar = −19.35, SSNVs = −124.44
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI
CCF


purity($\hat{\alpha}$) = 0.73, ploidy: $\hat{\tau}$ = 3.02, $\hat{\tau}_g$ = 3.96
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.96, θ_Q = 1.15, $\hat{\lambda}$ = 100
SCNAs = −378.12, Kar = −5.85, SSNVs = −95.59
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI


purity($\hat{\alpha}$) = 1, ploidy: $\hat{\tau}$ = 3.13, $\hat{\tau}_g$ = 3.97
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.98, θ_Q = 1.026, $\hat{\lambda}$ = 100
SCNAs = −382.39, Kar = −5.85, SSNVs = −97.07
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI
CCF


purity($\hat{\alpha}$) = 0.33, ploidy: $\hat{\tau}$ = 1.48, $\hat{\tau}_g$ = 1.97
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.98, θ_Q = 1.624, $\hat{\lambda}$ = 100
SCNAs = −404.13, Kar = −27.78, SSNVs = −95.49
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI


purity($\hat{\alpha}$) = 0.46, ploidy: $\hat{\tau}$ = 3.03, $\hat{\tau}_g$ = 3.96
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.99, θ_Q = 1.586, $\hat{\lambda}$ = 100
SCNAs = −429.49, Kar = −5.85, SSNVs = −95.4
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
2N
4N
6N
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
SSNV multiplicity
CCF
SSNVs on subclonal SCNAs
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI


purity($\hat{\alpha}$) = 1, ploidy: $\hat{\tau}$ = 5.47, $\hat{\tau}_g$ = 5.97
σ_H = 0.01, $\hat{\sigma}_A$ = 1, θ_Z = 0.97, θ_Q = 1.581, $\hat{\lambda}$ = 100
SCNAs = −443.76, Kar = −36.82, SSNVs = −94.88
Fraction cancer nuclei($\hat{\alpha}$)
Ploidy($\hat{\tau}$)
Allelic copy ratio
Density
Fraction of cancer cells with alteration
Log−likelihood
SCNAs
SSNVs
Copy number
Fraction of alternate reads
Clonal SSNVs
Subclonal SSNVs
Clonal SSNVs on subc
Subclonal SSNVs on s
SSNVs on subclonal SCNAs
H1: Ancestral SSNV in
H2: Ancestral SSNV in
H3: Derived SSNV
Subclonal deletion SCI
CCF