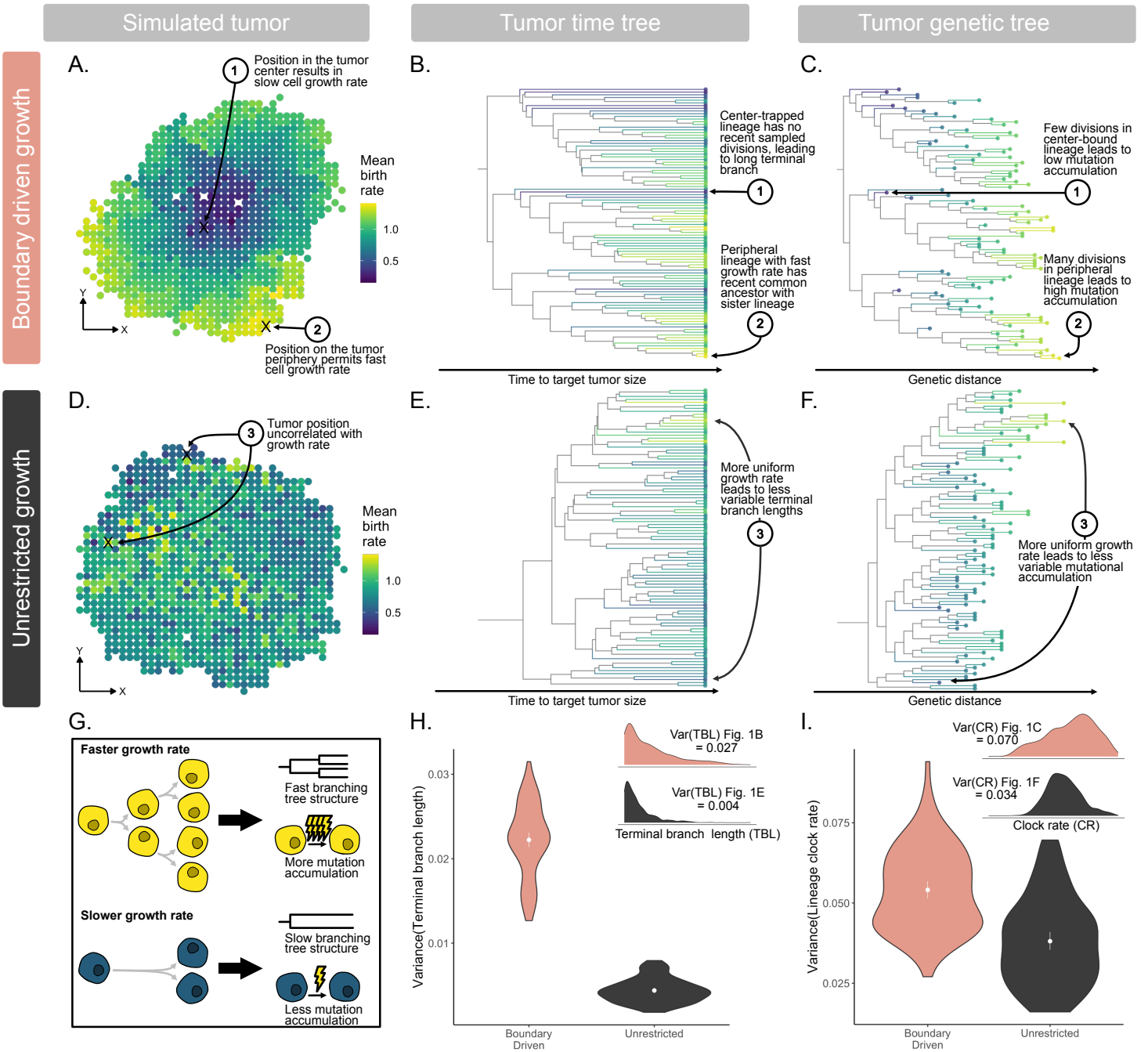
Simulated tumor
Tumor time tree
Tumor genetic tree
Boundary driven growth
Unrestricted growth
A.
Position in the tumor center results in slow cell growth rate
Mean birth rate
1.0
0.5
Y
X
Position on the tumor periphery permits fast cell growth rate
B.
Center-trapped lineage has no recent sampled divisions, leading to long terminal branch
Peripheral lineage with fast growth rate has recent common ancestor with sister lineage
Time to target tumor size
C.
Few divisions in center-bound lineage leads to low mutation accumulation
Many divisions in peripheral lineage leads to high mutation accumulation
Genetic distance
D.
Tumor position uncorrelated with growth rate
E.
More uniform growth rate leads to less variable terminal branch lengths
F.
More uniform growth rate leads to less variable mutational accumulation
G.
Faster growth rate
Fast branching tree structure
More mutation accumulation
Slower growth rate
Slow branching tree structure
Less mutation accumulation
H.
Var(TBL) Fig. 1B = 0.027
Var(TBL) Fig. 1E = 0.004
Terminal branch length (TBL)
Variance(Terminal branch length)
Boundary Driven
Unrestricted
I.
Var(CR) Fig. 1C = 0.070
Var(CR) Fig. 1F = 0.034
Clock rate (CR)
Variance(Lineage clock rate)