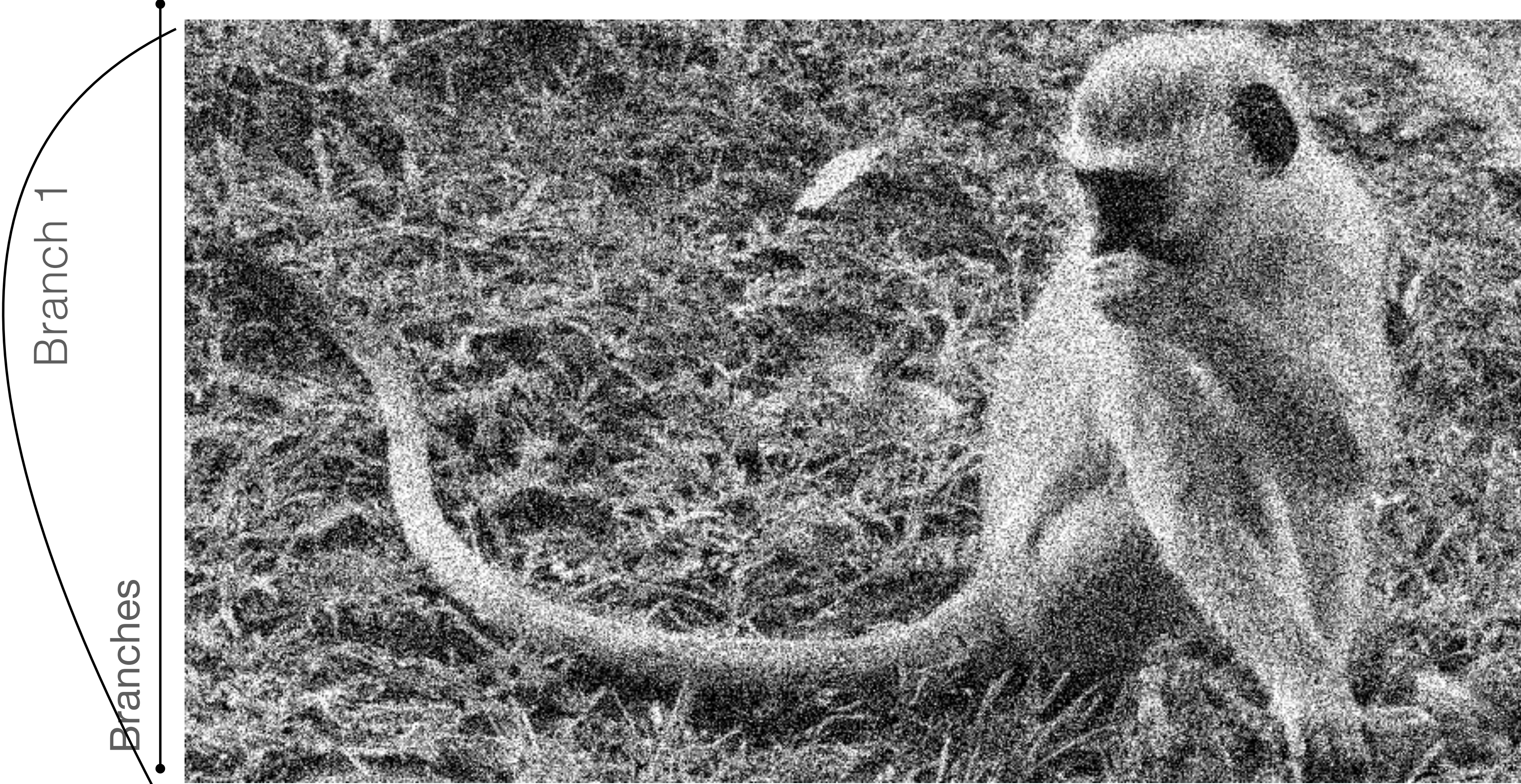


# Which branches are under selection?



Sites

3-rate fit



For each image **row**, is there a significant proportion of bright pixels, once the column has been reduced to **N** colors only?



[aBSREL]: at a given branch, each site is a draw from an N-bin ( $dN/dS$ ) distribution, which is inferred from all data for the branch. Test if there is a proportion of sites with  $dN/dS > 1$  (LRT). **N** is derived adaptively from the data.

# Less Is More: An Adaptive Branch-Site Random Effects Model for Efficient Detection of Episodic Diversifying Selection

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- Best-in-class power
- Able to detect episodes of selection, not just selection on average at a branch
- Does not make unrealistic assumptions for tractability, improves statistical behavior
- Sample size is ~sites, branch level rate estimates could be imprecise
- Cannot reliably estimate which individual sites are subject to selection
- Exploratory testing of all branches leads to loss of power for large data sets (multiple test correction)