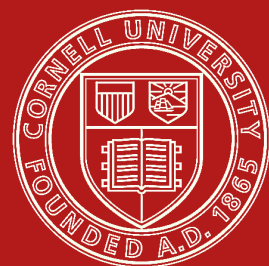


Mutator transposable element behavior across maize genotypes

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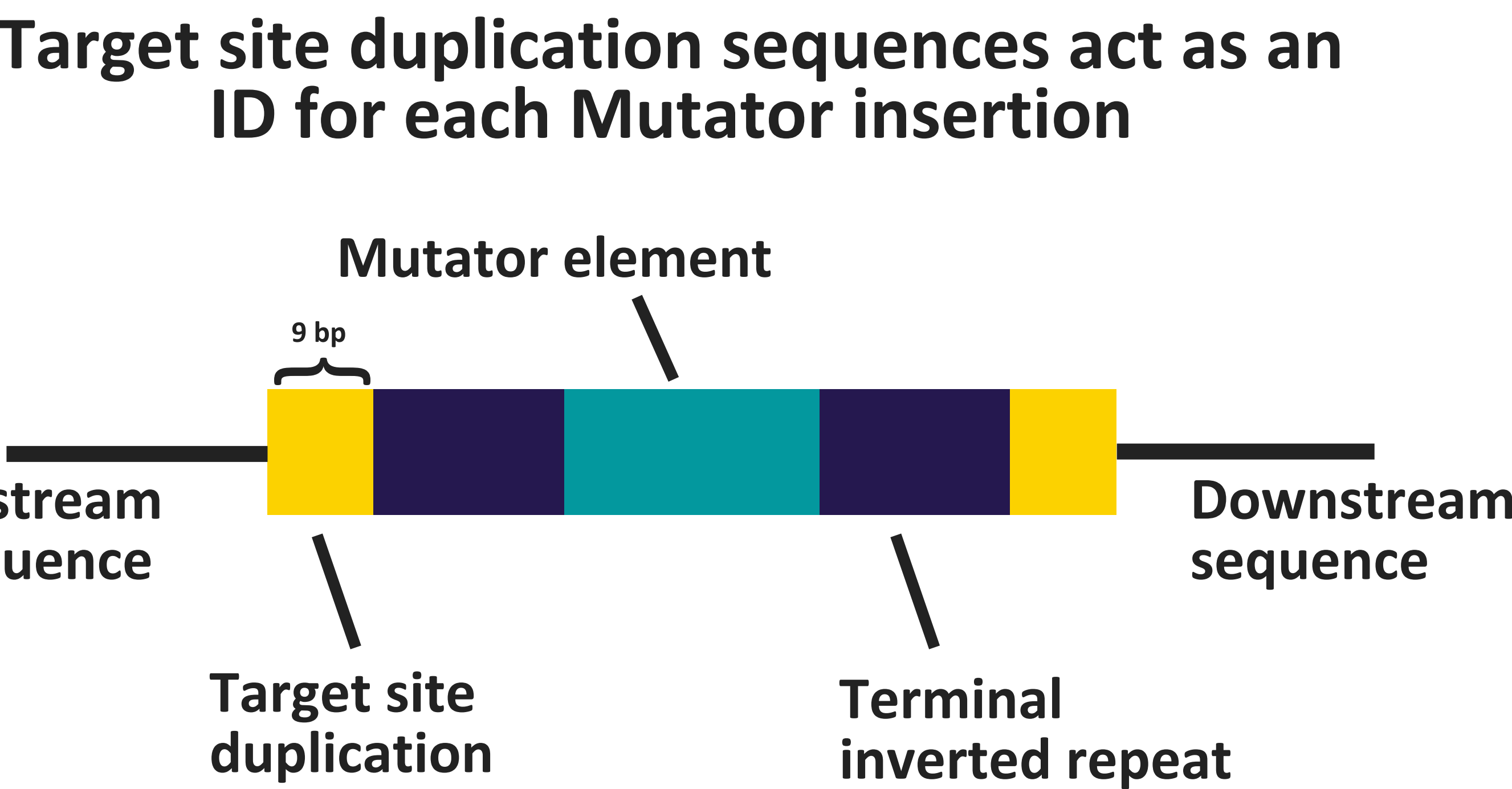
Cornell University
Undergraduate 2023

Mutator TEs accumulate in BonnMu and natural populations

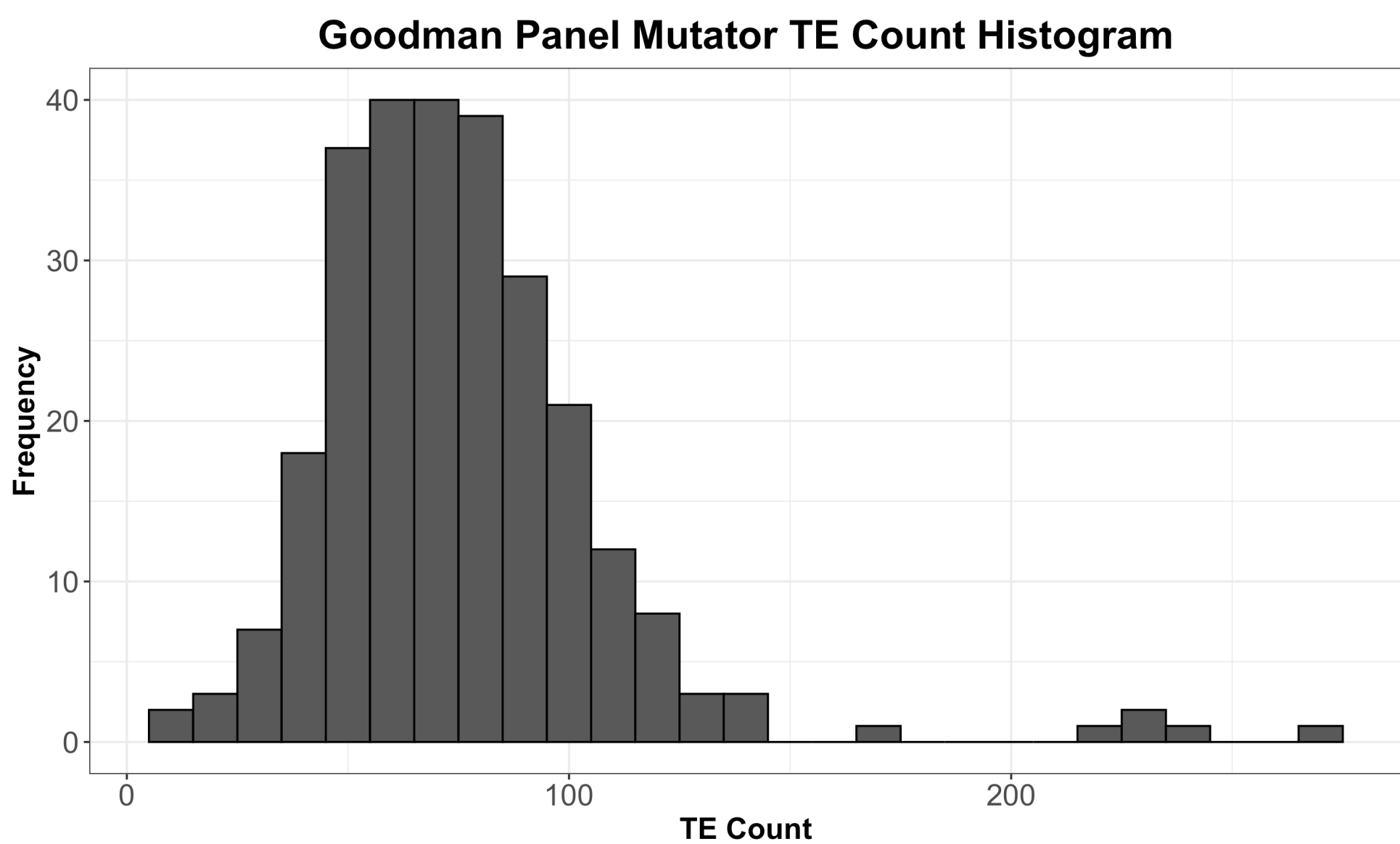
Maize population backgrounds

BonnMu: population with active Mutator and corresponding sequence-indexed insertional library

Goodman Panel: a set of ~300 inbreds selected to exemplify both temperate and tropical maize diversity, sequenced to 6-20x coverage

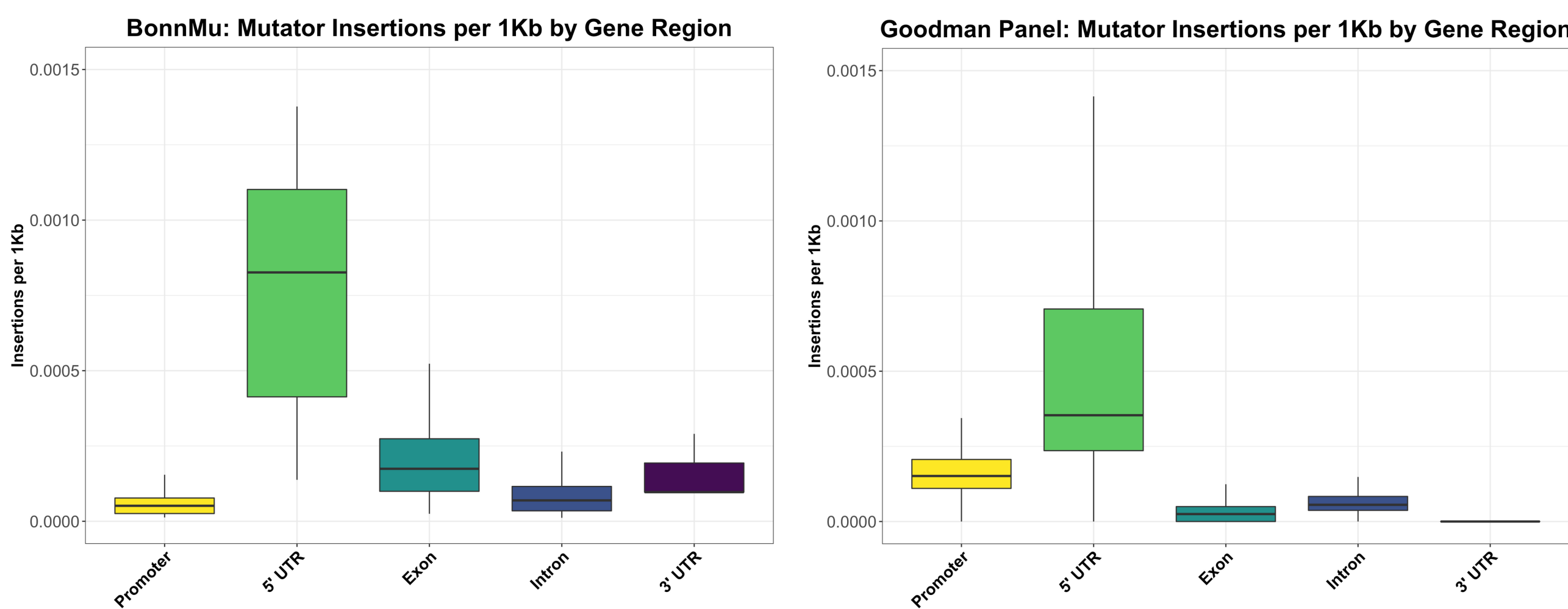


8 to 266 Mutator insertions were identified in Goodman Panel inbreds

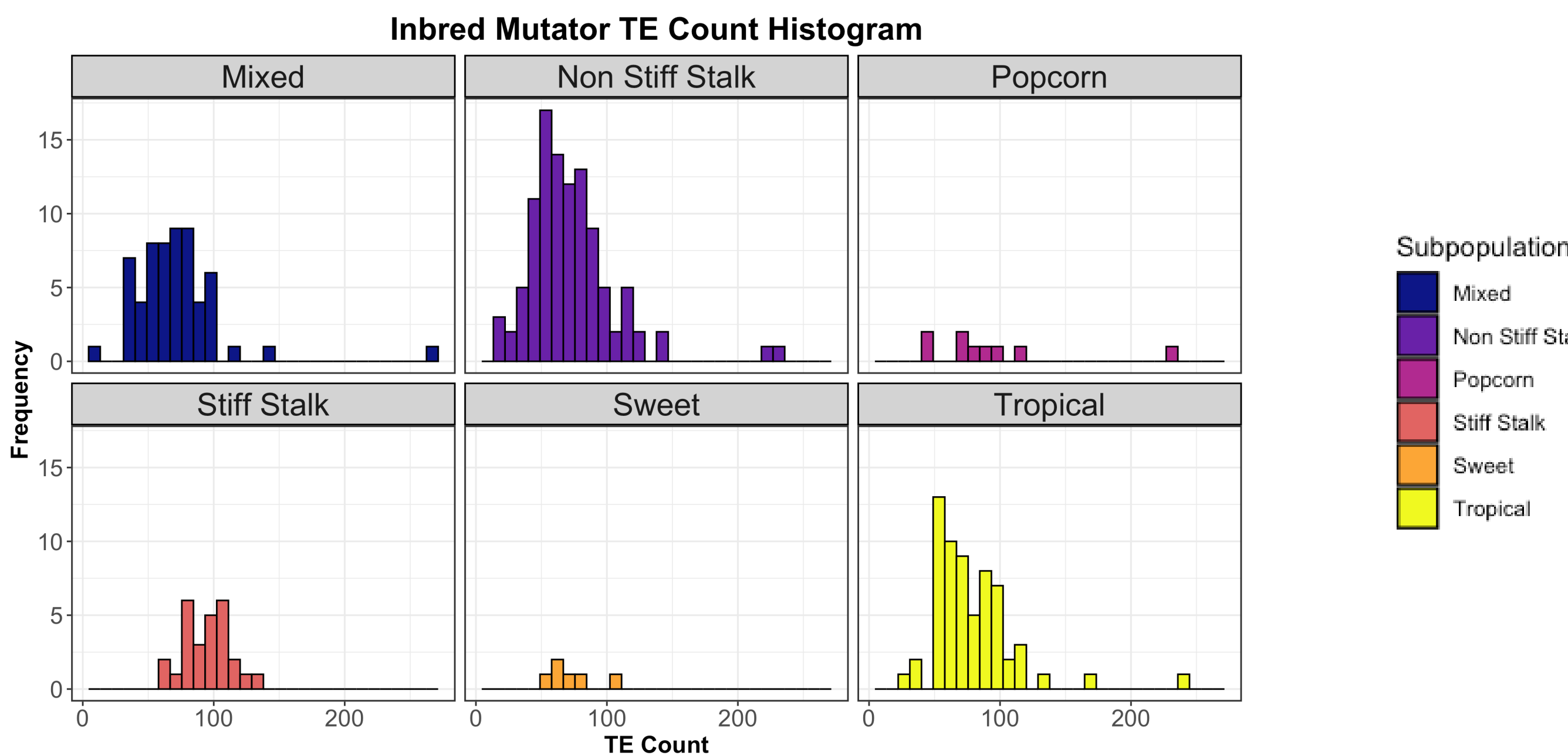


Mutator preferentially inserts in 5' UTR, exhibits population differentiation

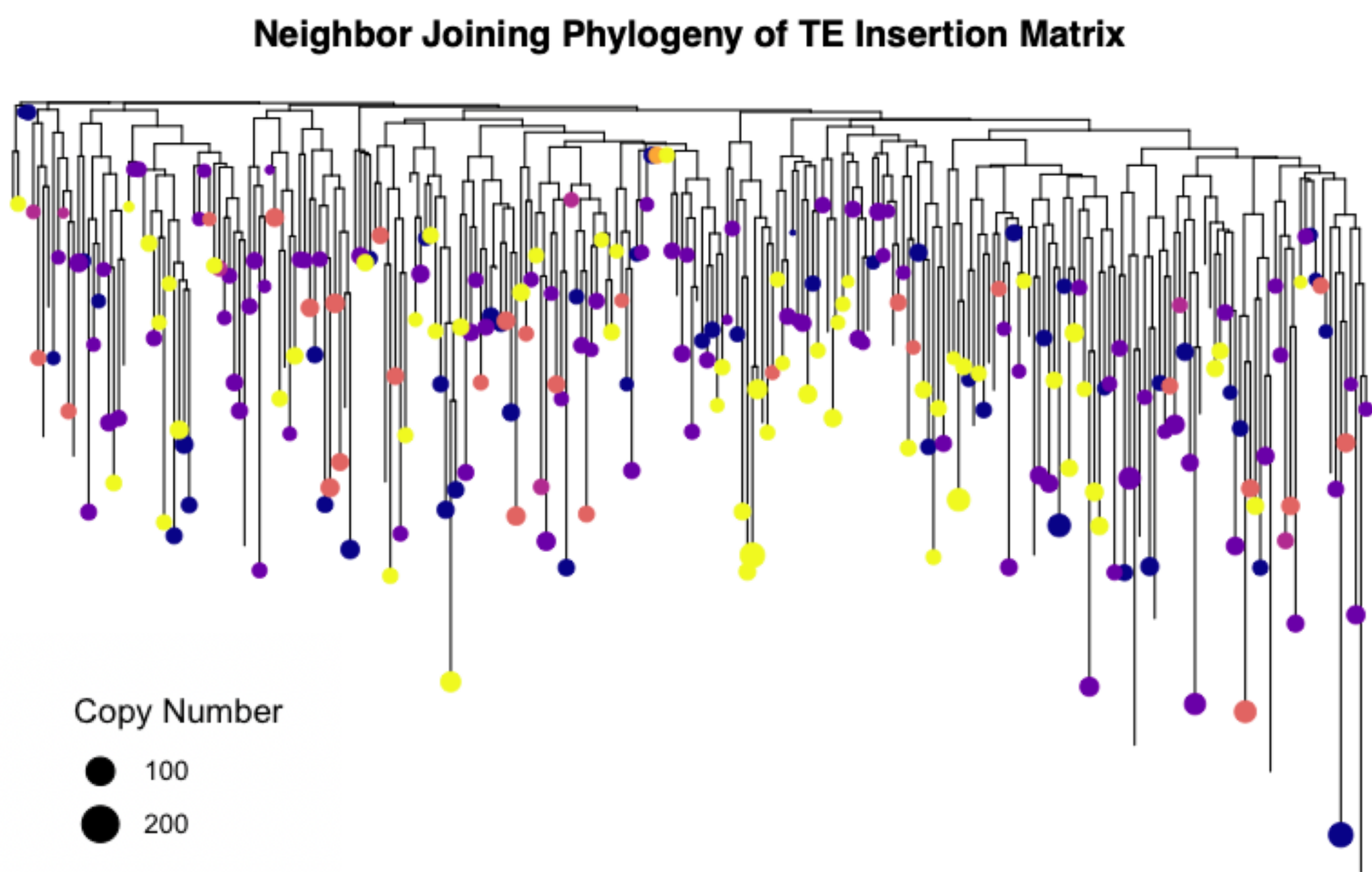
5' UTR has largest amount of insertions/Kb out of all gene regions



Median TE insertion count varies across Goodman panel populations



Mutator TEs lack strong population structure



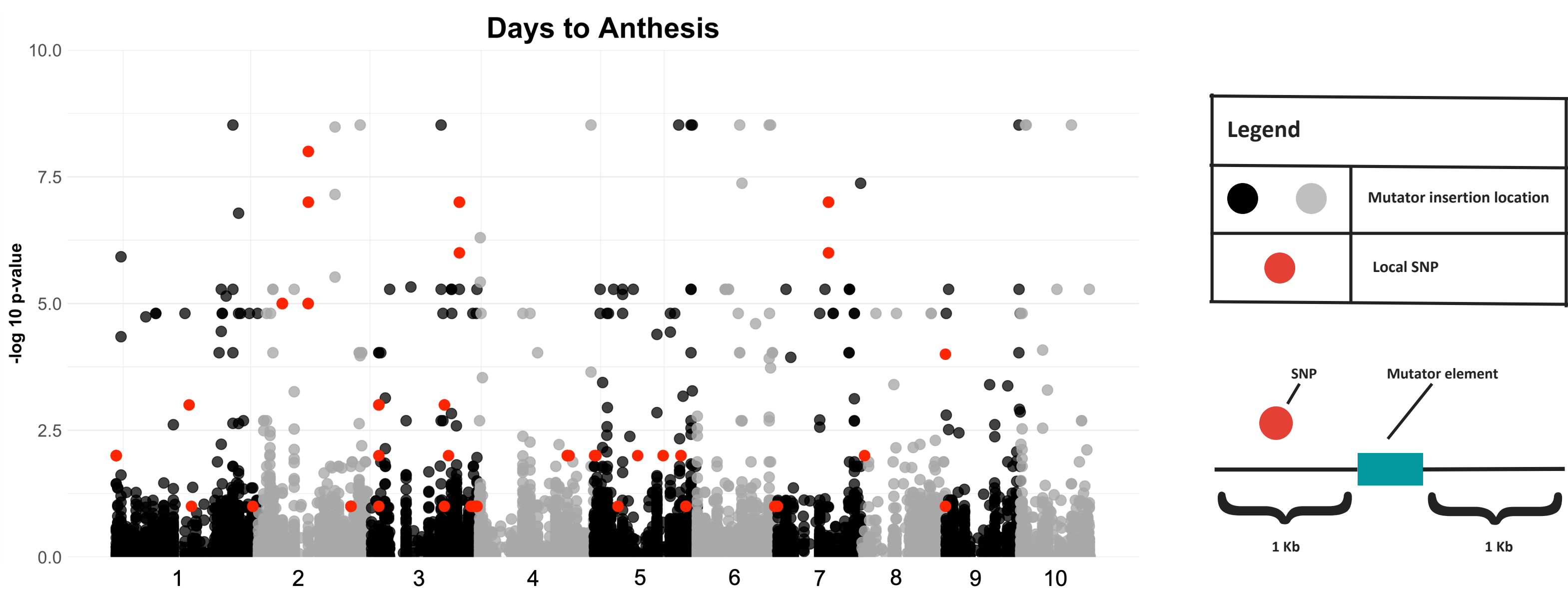
Mutator is associated with days to anthesis (DTA) in the Goodman Panel

Set-up

DTA	~	TE Insertion Matrix
	DTA_BUCKLER2009	
INBRED 1	79.53	
INBRED 2	81.44	
⋮	⋮	
INBRED 270	74.84	

	TE 1	TE 2	TE 3	...	TE n
INBRED 1	0	0	1	...	1
INBRED 2	1	0	1	...	0
⋮	⋮	⋮	⋮	⋮	⋮
INBRED 270	1	1	0	...	1

Mutator TEs provide complementary information to SNPs about DTA



Next steps

- Investigate genes associated with significant loci for DTA
- Extend association analyses to additional phenotype
- Explore linkage disequilibrium of Mutator insertions with SNPs