

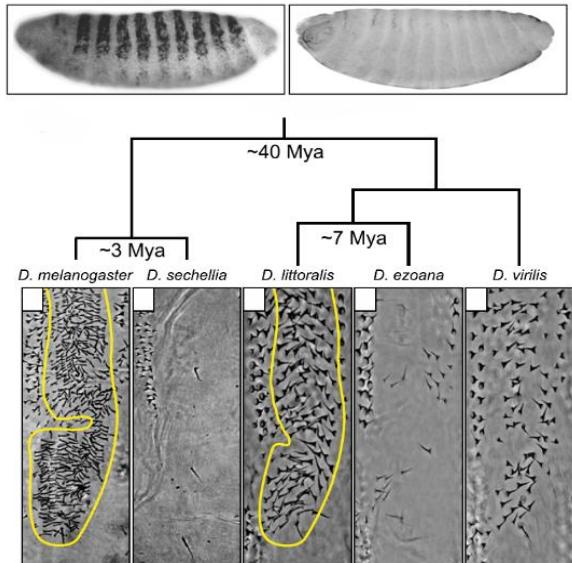
The role of allele sorting in a parallel speciation gradient of *Calosoma* beetles in the Galápagos archipelago

Carl Vangestel, Frederik Hendrickx



Parallel speciation, an intriguing phenomenon

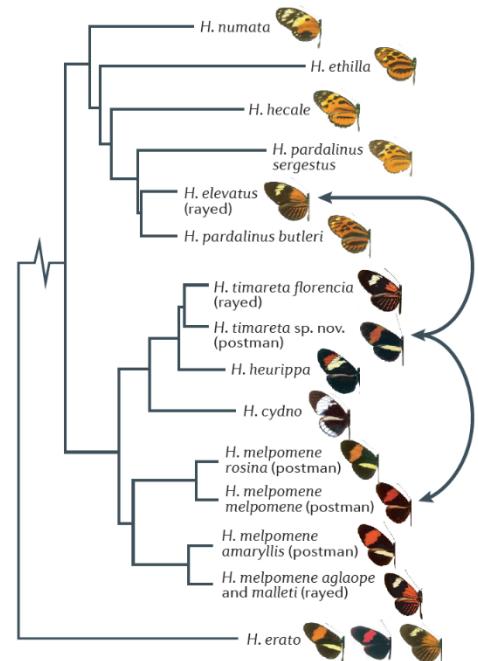
- ▶ Numerous examples parallel speciation
- ▶ Genomic era: unravel underlying molecular mechanisms



Frankel et al. (2012)



Barrett & Schluter (2008)

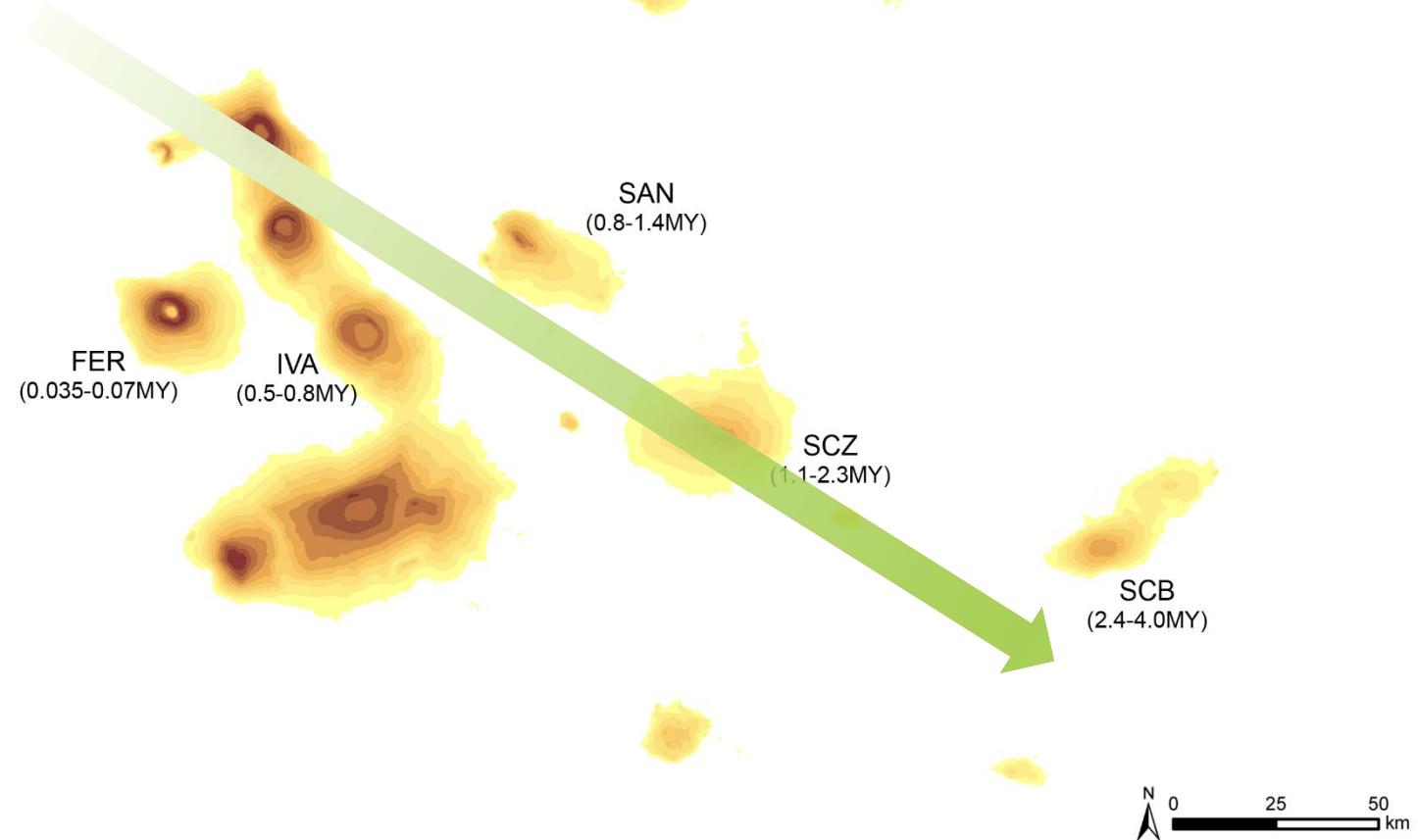


Heliconius Genome consortium (2012)

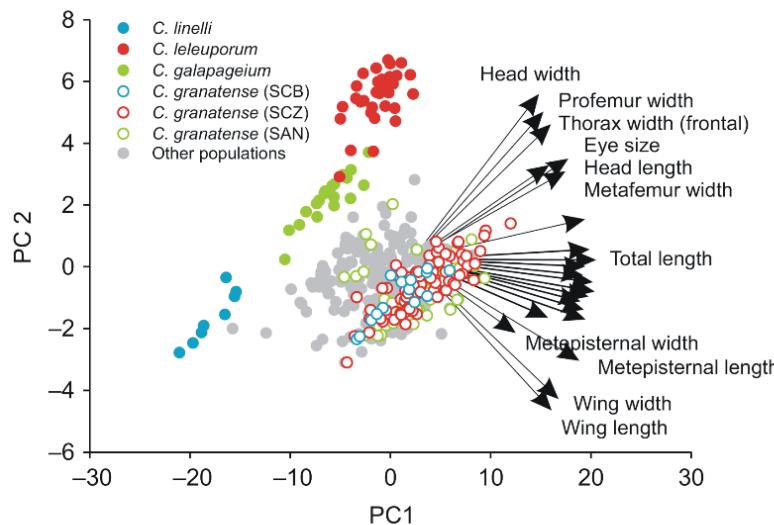
- ▶ De novo mutations ↔ shared source of adaptive alleles

Islands as evolutionary laboratoria

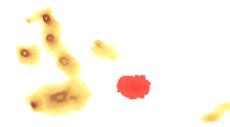
- ▶ Replicated environmental gradient
- ▶ Replicated species assemblages
- ▶ Age gradient: different evolutionary stages



(A) San Cristobal, Santa Cruz and Santiago

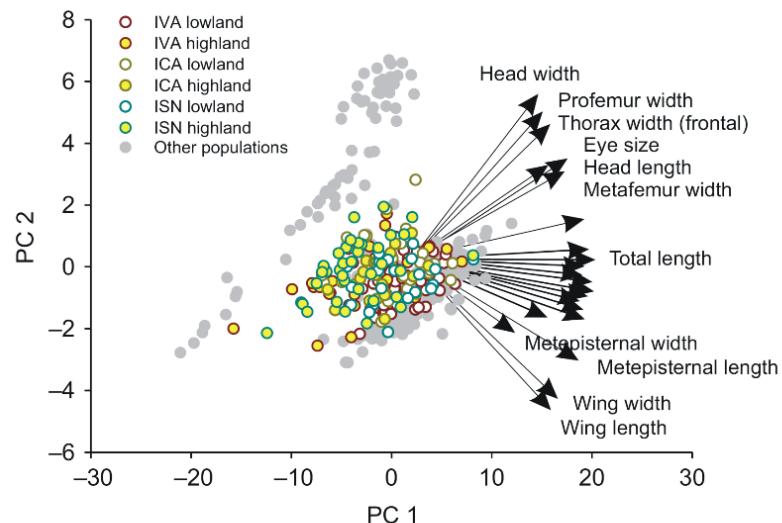


C. linelli

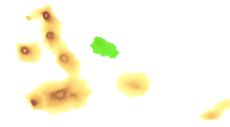


C. leleuporum

(B) *C. granatense*, Isabela



C. galapageium

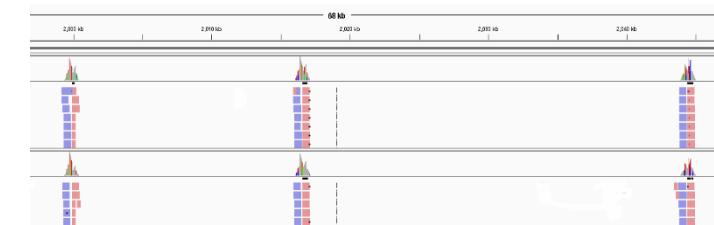
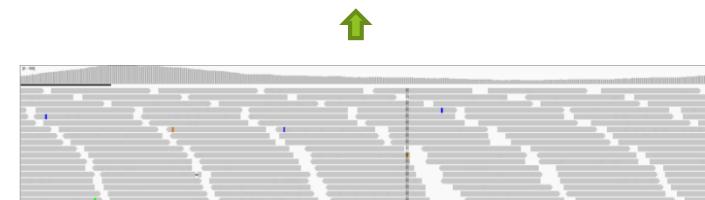


C. granatense

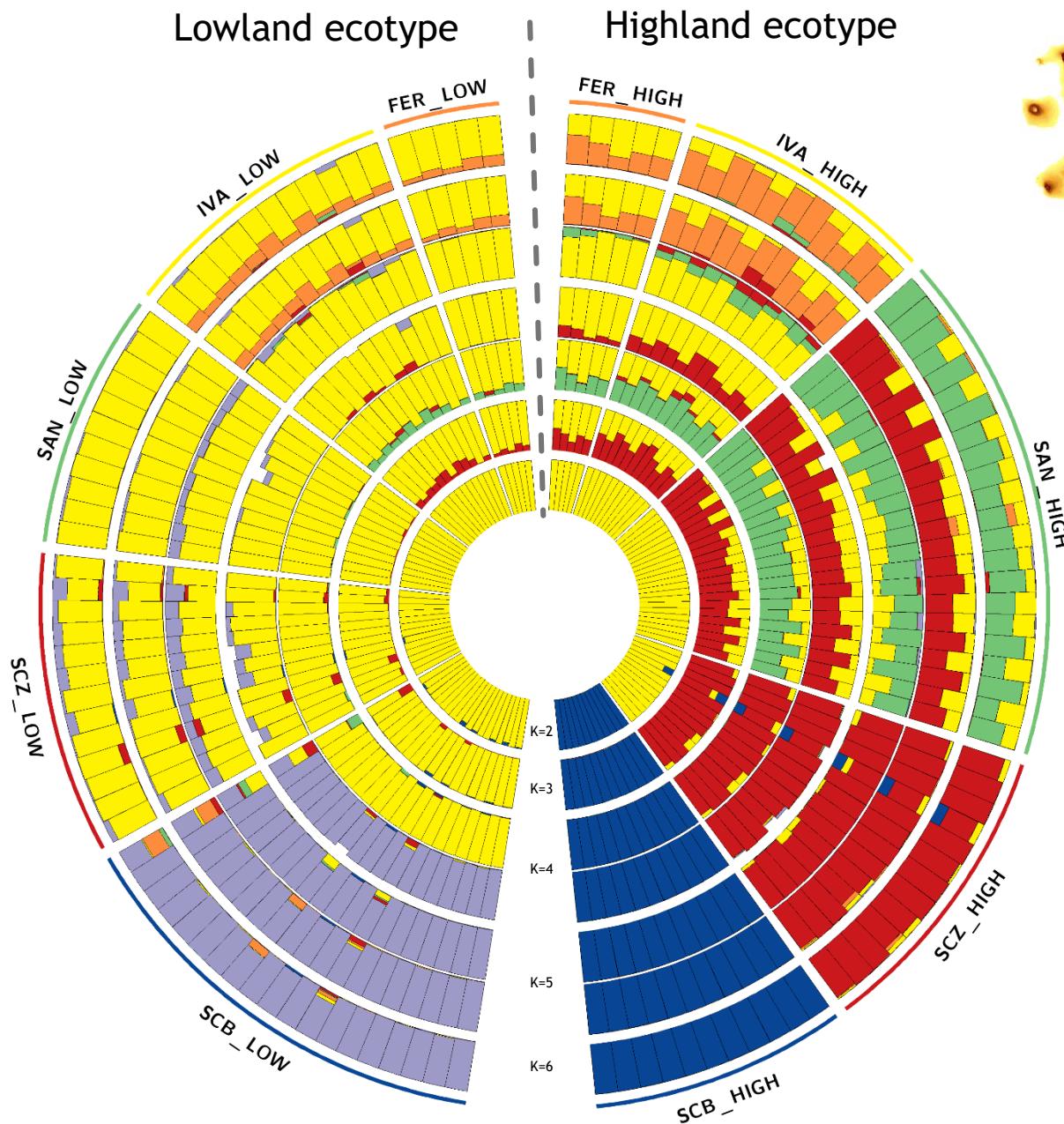


What is the evolutionary history of these replicated ecotype assemblies across islands?

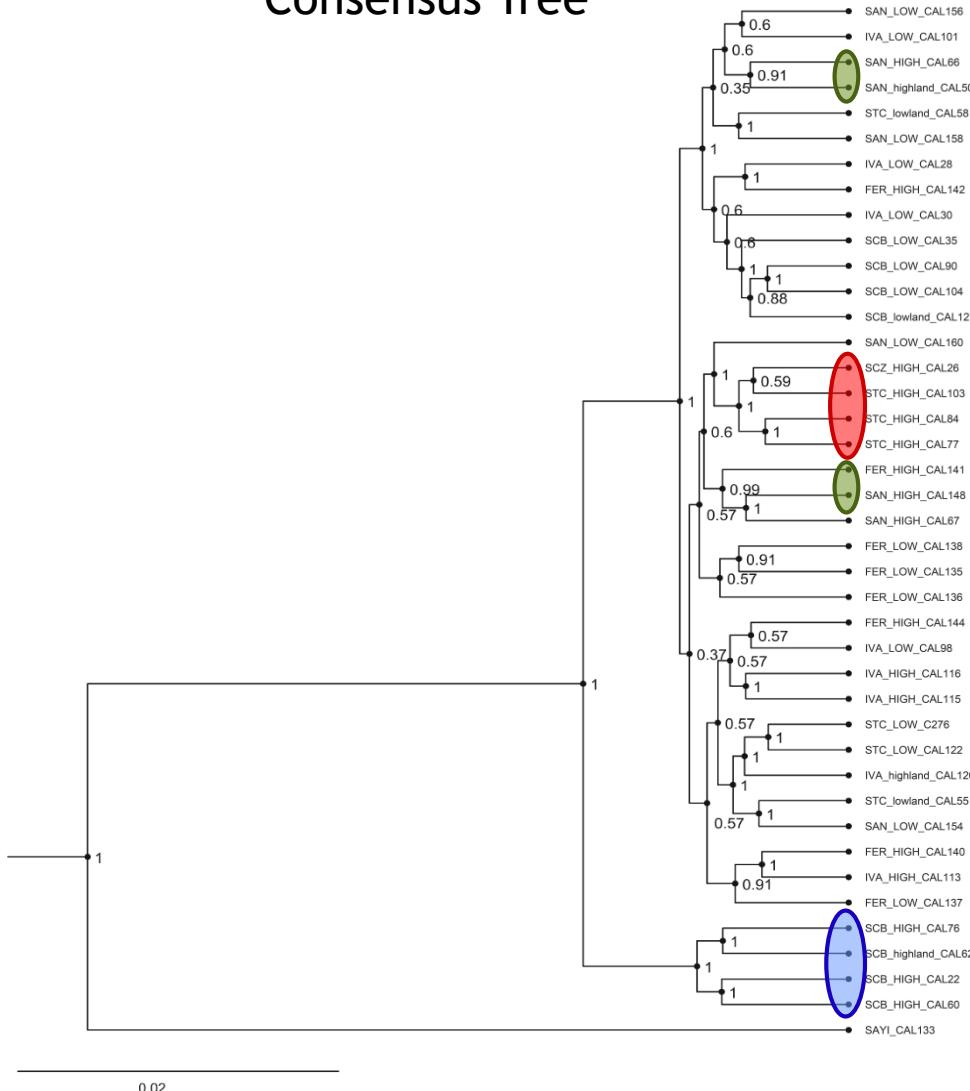
Size (bp)	167874200
#Scaffolds	6045
N50 assembly (bp)	5661974
Largest scaffold (bp)	9054497
#Scaffolds included in N50	12
%Ns	4.67
%GC	32.14



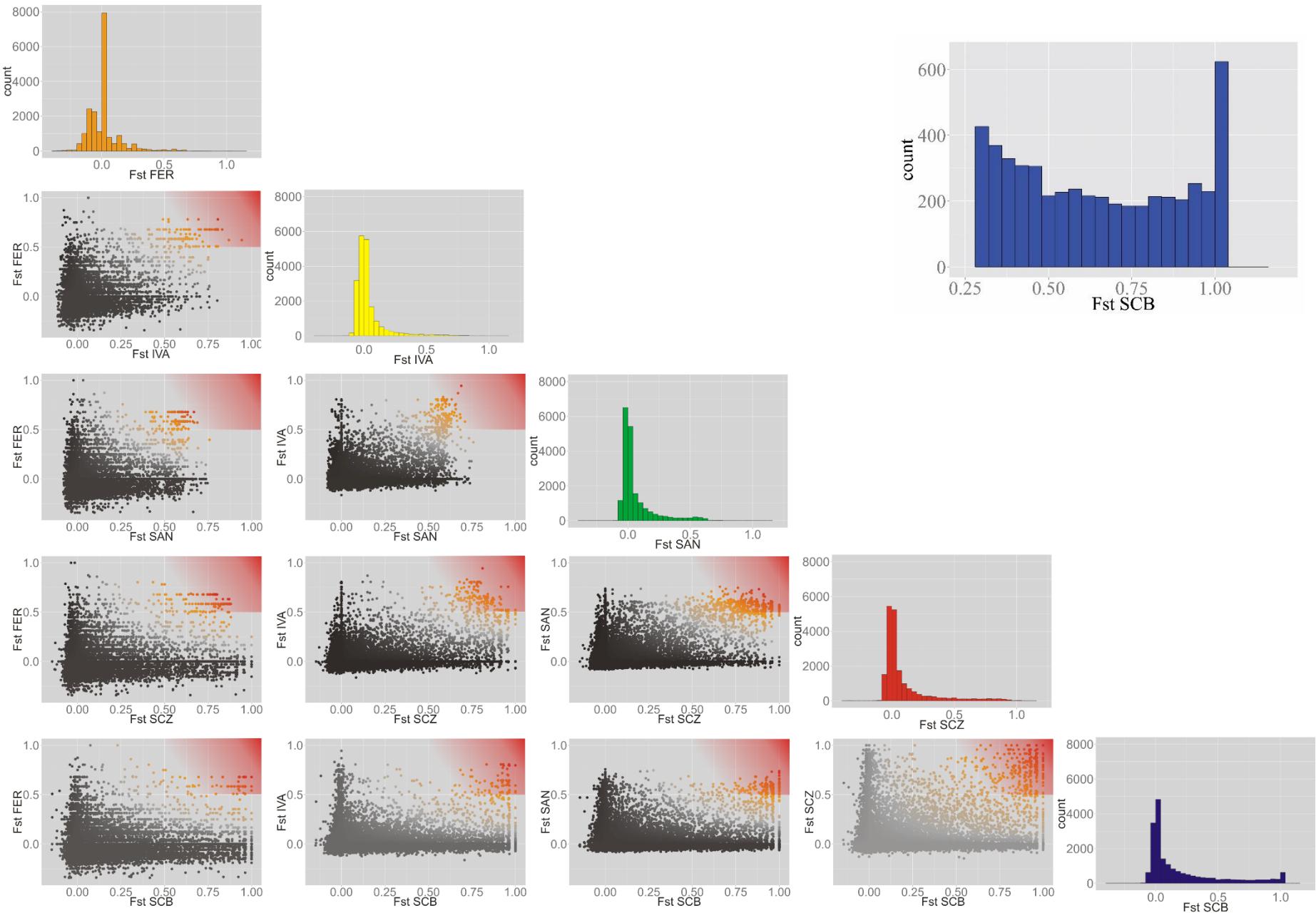
122 individuals
19208 SNPs
1158 paired RADtags

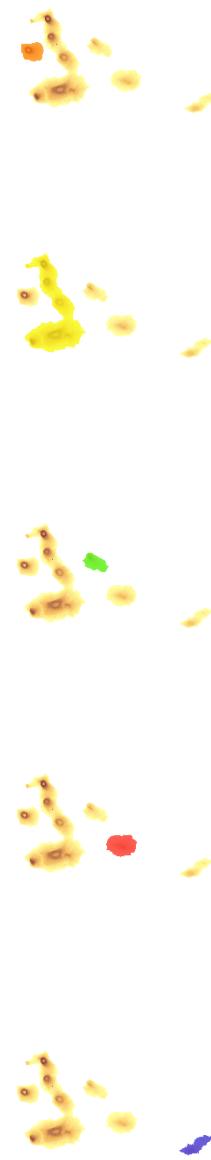
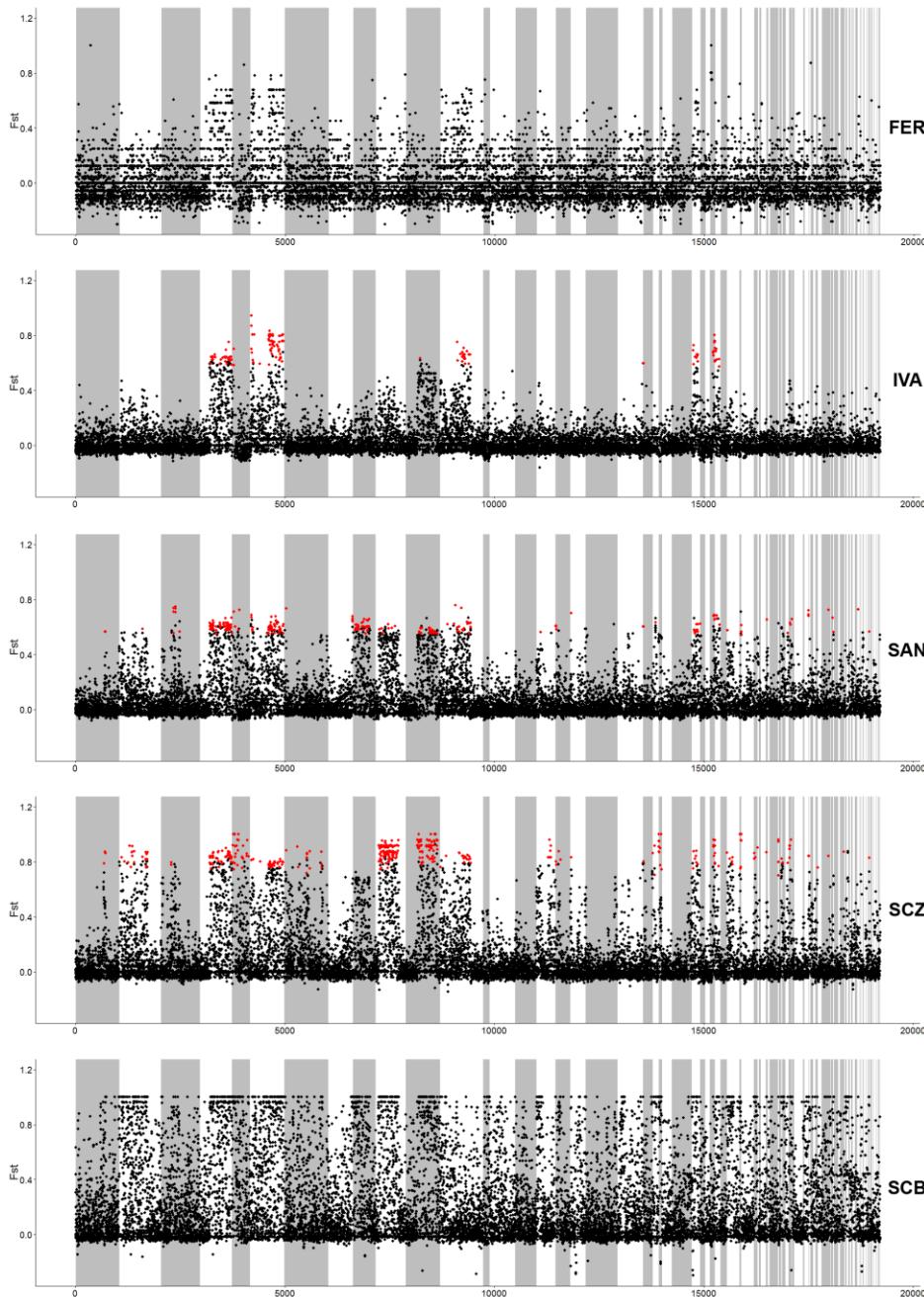


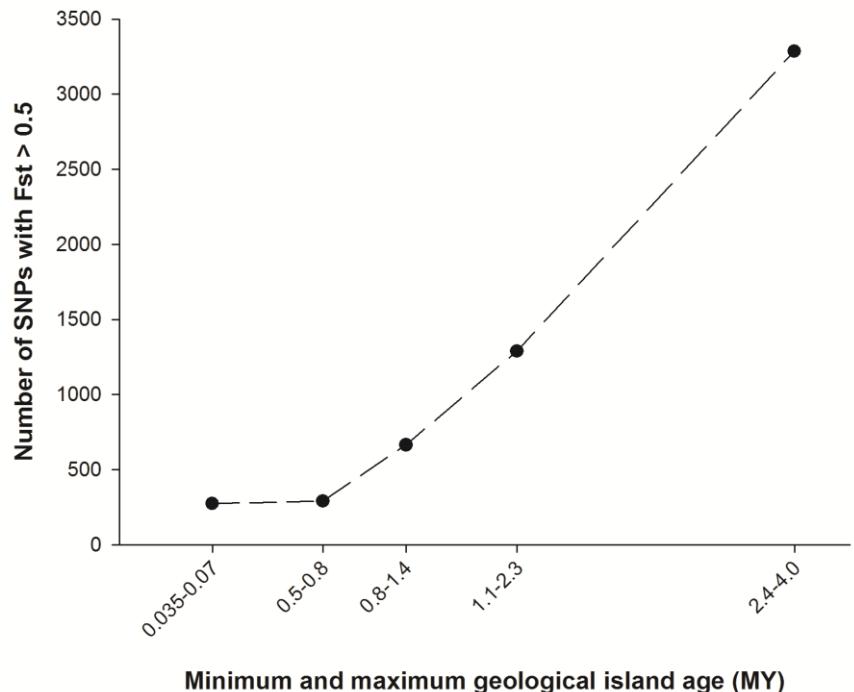
Consensus Tree



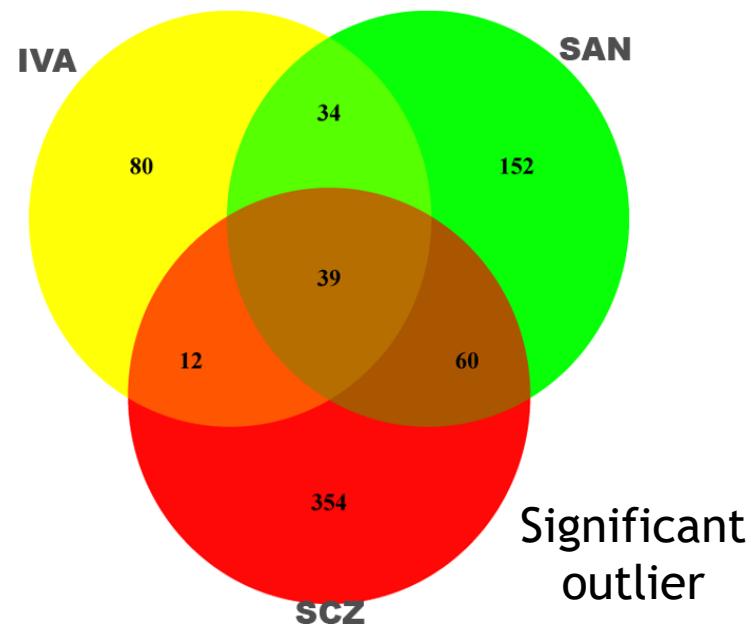
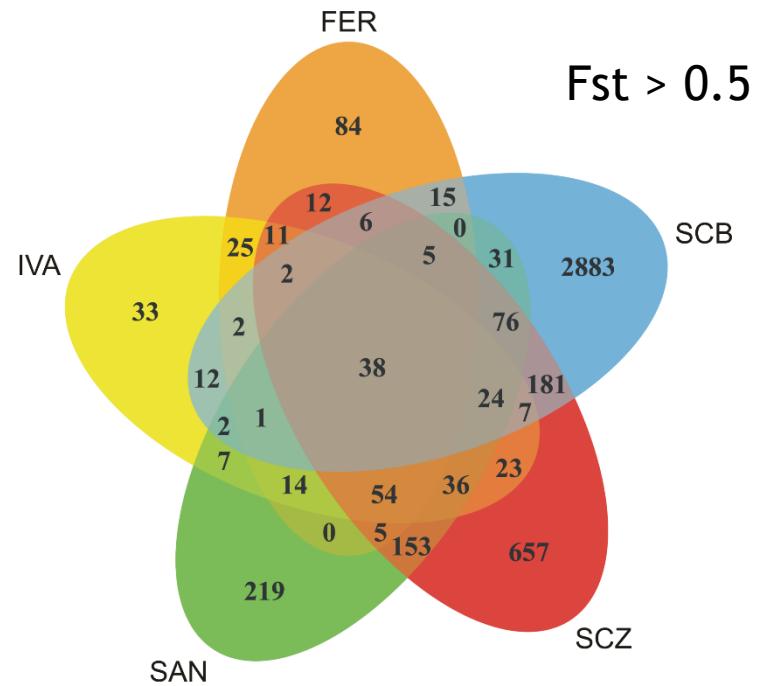
- ▶ Genomes do not reflect a single evolutionary story
- ▶ To reconstruct evolutionary history of wing polymorphism: explore adaptive variation

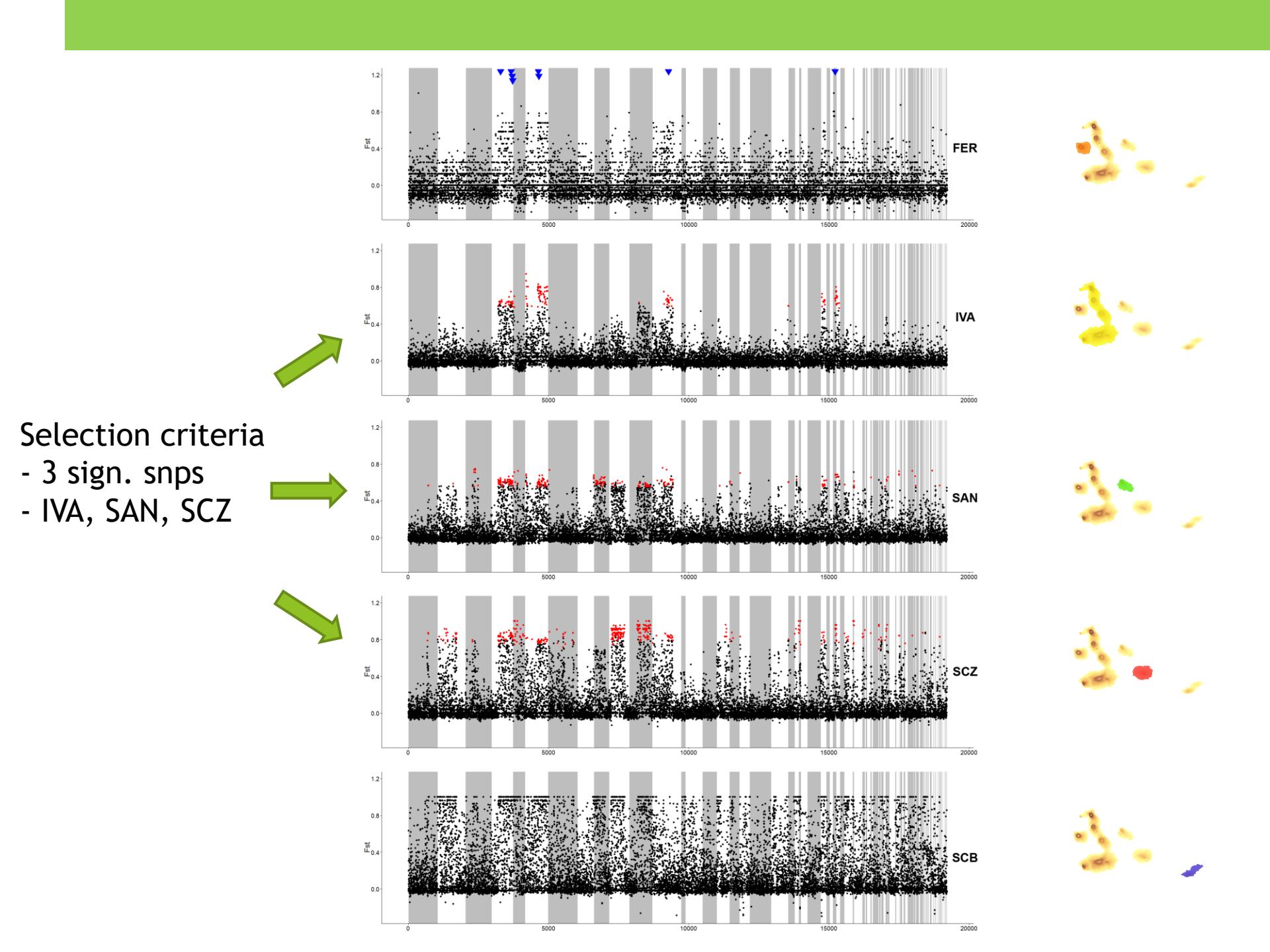




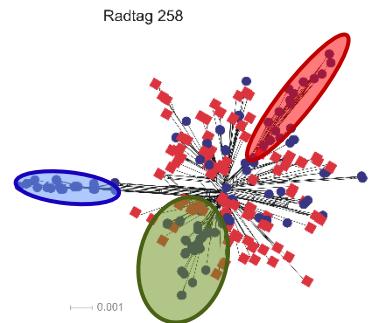


- ▶ Genetic divergence increases with island age
- ▶ Substantial sharing genetic outliers

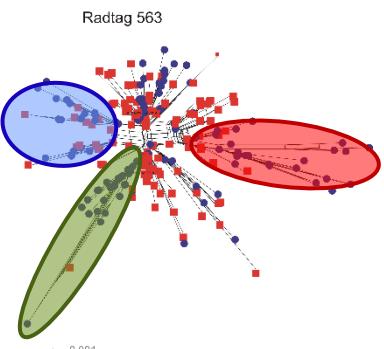
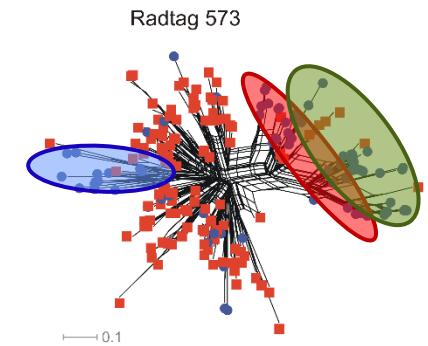
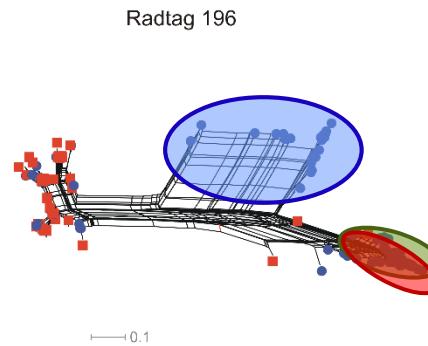




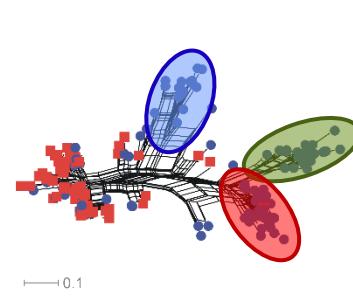
Neutral genomic regions



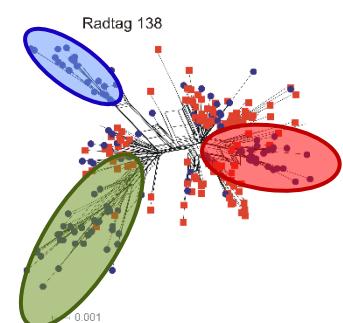
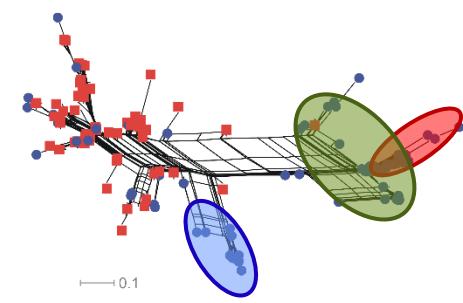
Genomic islands of divergence



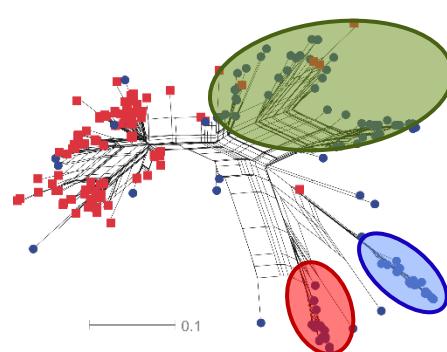
Radtag 931



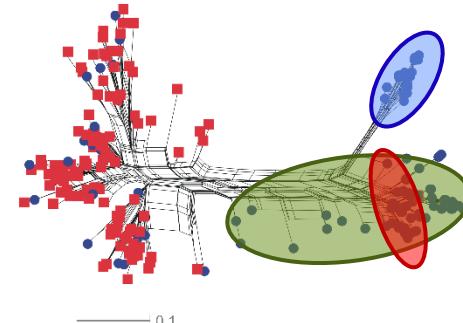
Radtag 218



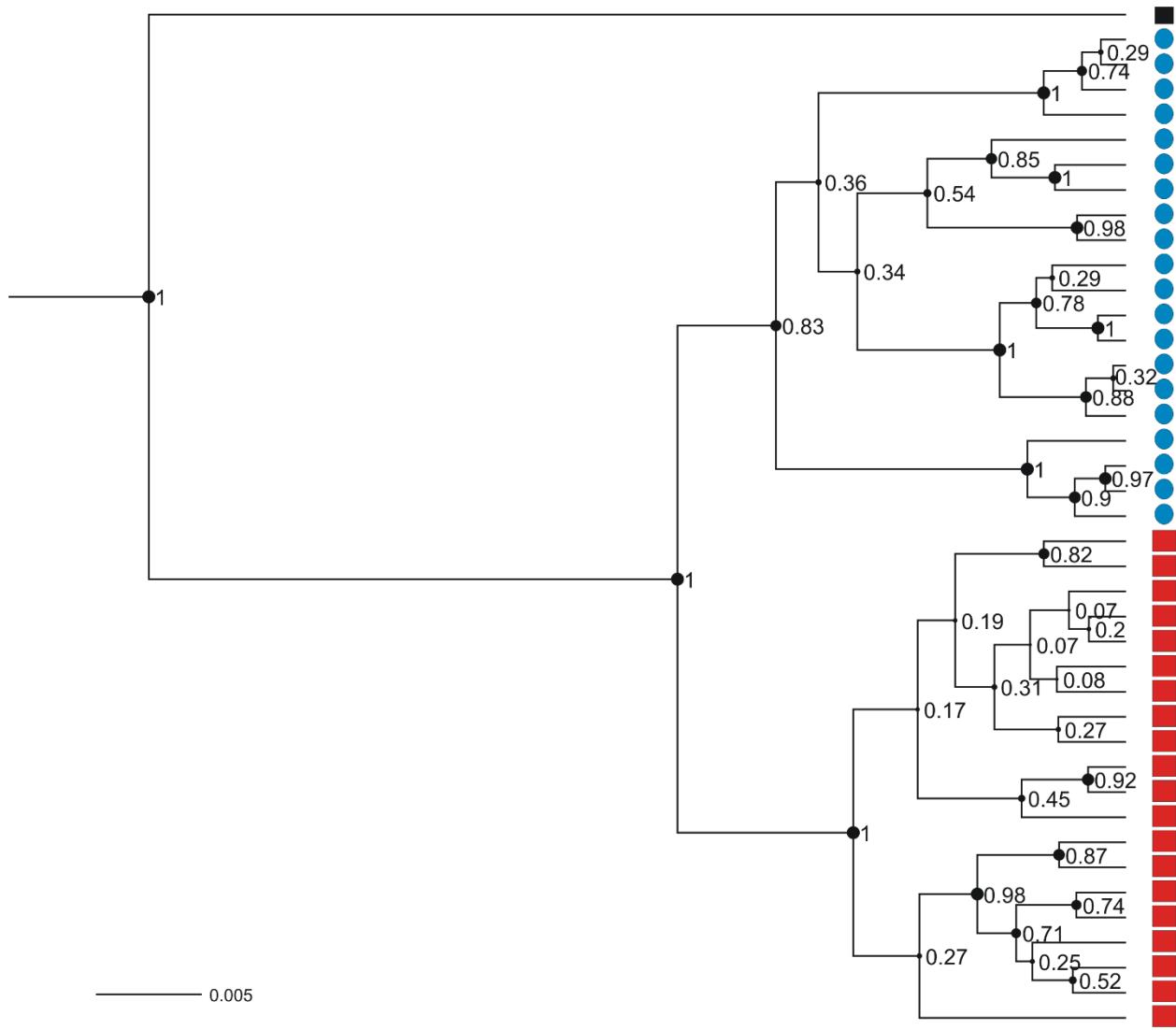
Radtag 221- 222



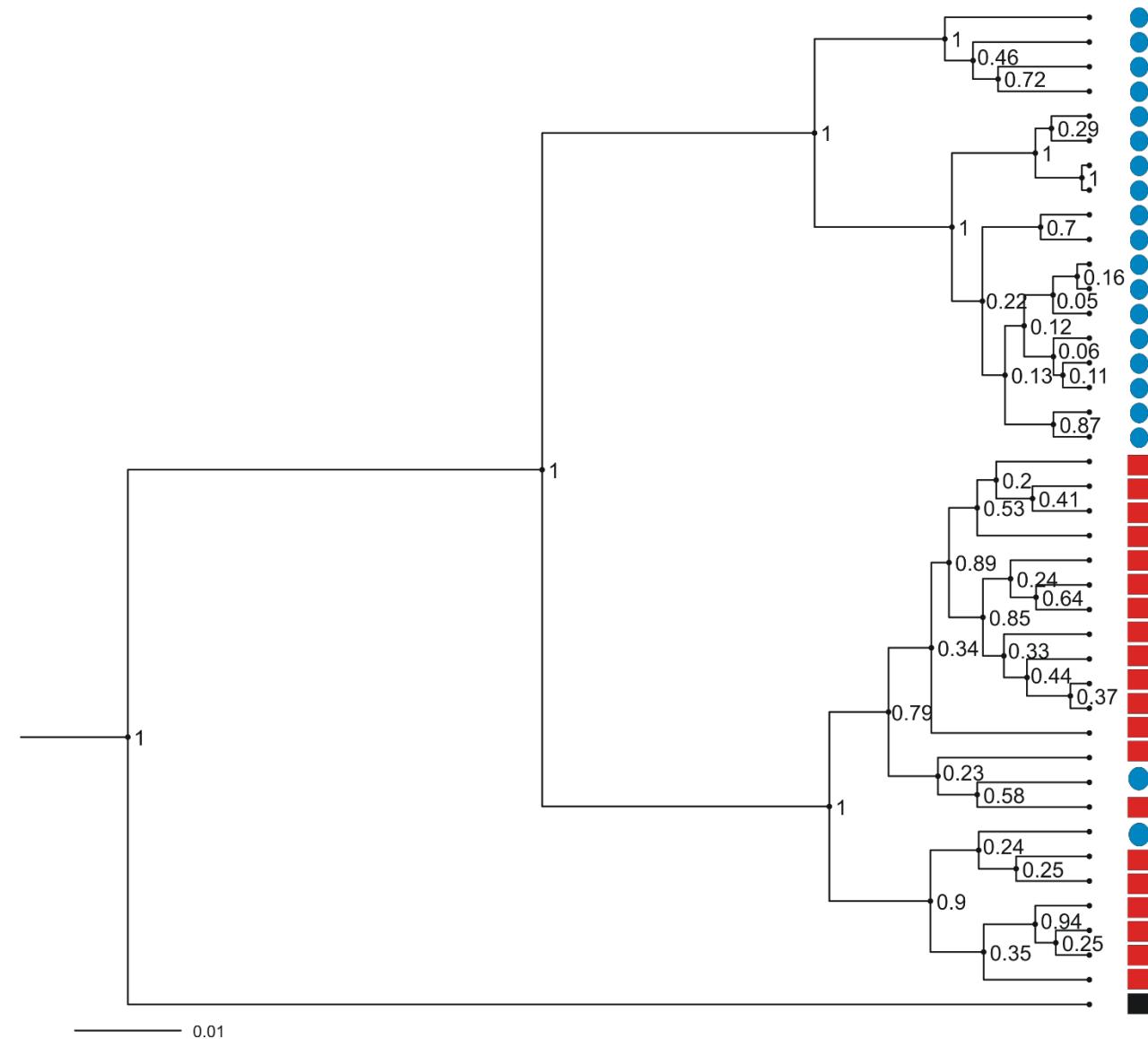
Radtag 294 - 295



Radtag 221-222



Radtag 294-295



CONCLUSION

- ▶ Increased level of speciation with island age: speciation continuum within in a single taxon
- ▶ Genomic islands of divergence are shared across the archipelago
- ▶ Allele sorting appears to be an important factor in the repeated evolution of ecotypes in this *Calosoma* radiation

Acknowledgements

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