

EVOLUTIONARY THINKING

1 NOVEMBER



AARHUS
UNIVERSITY
DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS

EVOLUTIONARY_THINKING_TA01112023
30 OCTOBER 2023

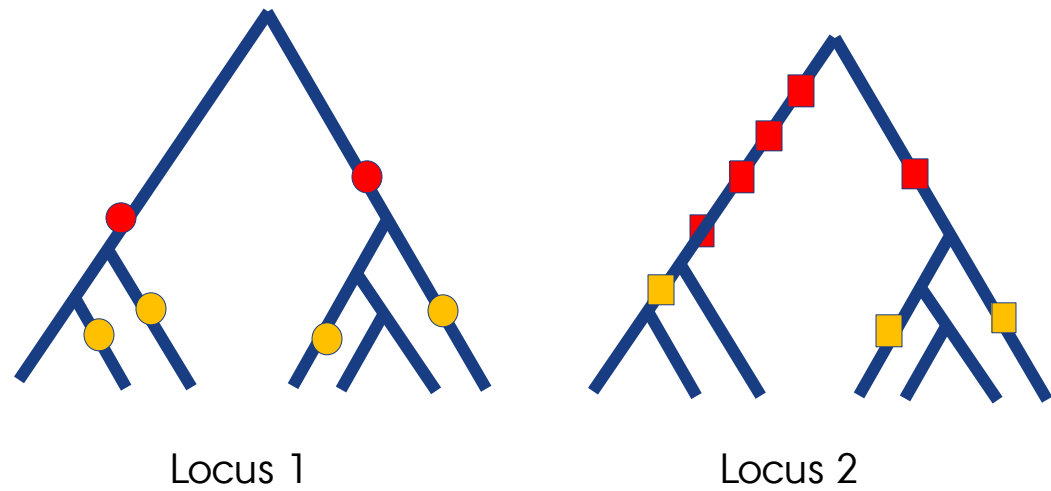
BJARKE MEYER PEDERSEN
PH.D STUDENT







PLAN

- Quick talk about the tests for neutrality/selection
- Discussion
- BREAK
- Discussion
- Class wrap up

THE HKA TEST



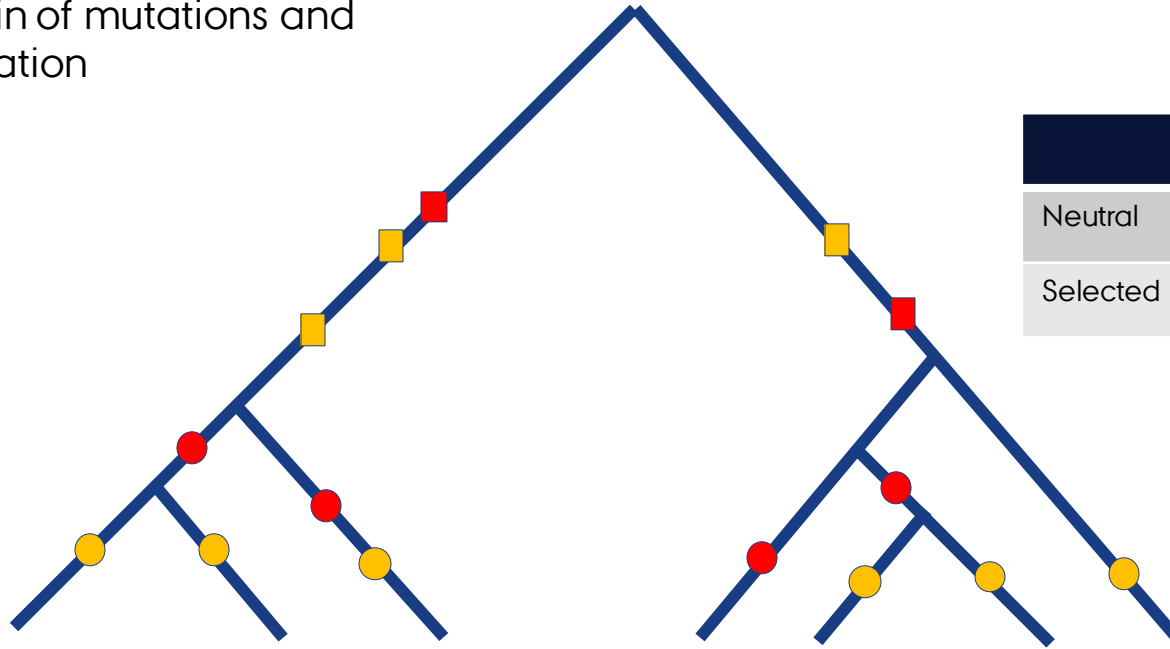
	Locus 1	Locus 2
Polymorphism within	4 S1 	3 S2 
Fixed differences between	2 F1 	5 F2 





$$\frac{S1}{F1} < \frac{S2}{F2} \text{ sweep in } L1$$
$$\frac{S1}{F1} > \frac{S2}{F2} \text{ sweep in } L2$$



MCDONALD-KREITMAN TEST

The random position rain of mutations and subsequent random fixation



	Segregating	Fixed
Neutral	6 Ss 	3 Fs 
Selected	4 Sn 	2 Fn 

$$\frac{F_n}{F_s} = \frac{2}{3}$$

$$\frac{S_n}{S_s} = \frac{4}{6}$$

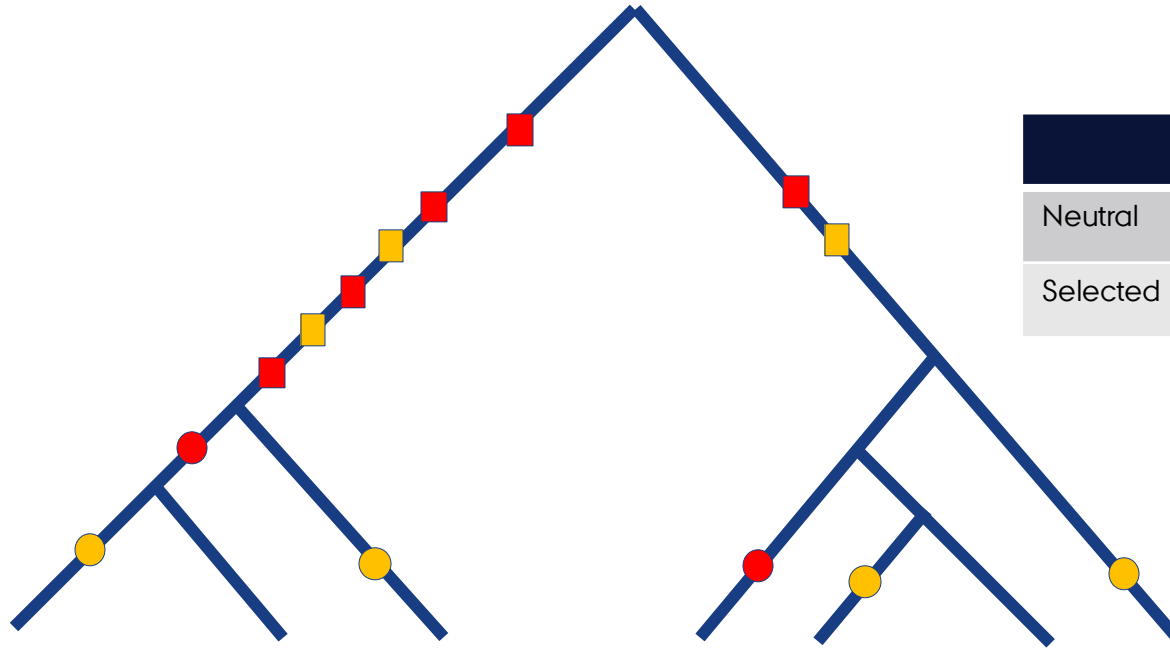
$$\frac{F_n}{F_s} < \frac{S_n}{S_s} \text{ Negative/balancing}$$





$$\frac{F_n}{F_s} > \frac{S_n}{S_s} \text{ positive}$$



MCDONALD-KREITMAN TEST

Selection



	Segregating	Fixed
Neutral	4 Ss 	3 Fs 
Selected	2 Sn 	5 Fn 

$$\frac{F_n}{F_s} = \frac{5}{3}$$

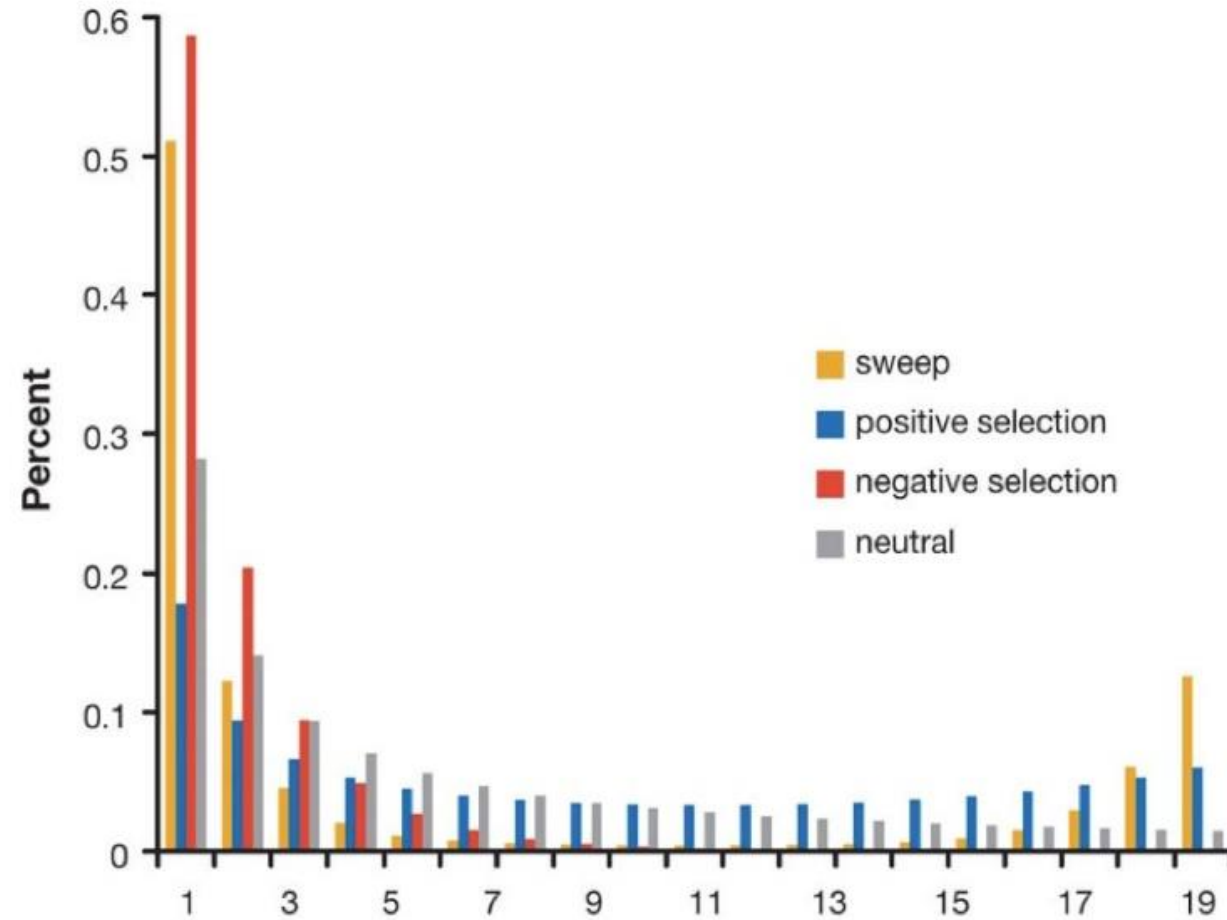
$$\frac{S_n}{S_s} = \frac{2}{4}$$

$$\frac{F_n}{F_s} < \frac{S_n}{S_s} \text{ Negative/balancing}$$

$$\frac{F_n}{F_s} > \frac{S_n}{S_s} \text{ positive}$$



SITE FREQUENCY SPECTRUM



WORK



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BREAK



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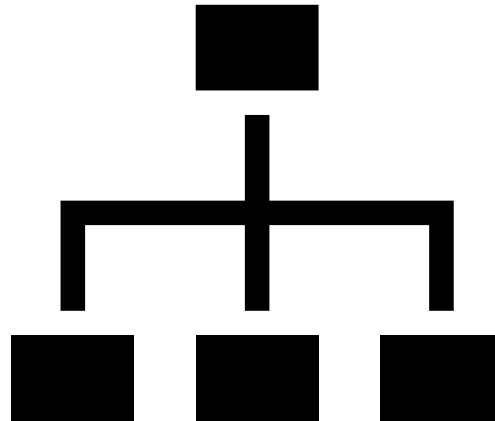
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COURSES NEXT SEMESTER

REMEMBER THAT YOU CAN SIGN UP FOR COURSES TODAY

If you want to learn more about the course Population Genomics, go to Kasper Munchs Github and read about the exercises





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