

Crossing Paths: Comparing King Rail Populations

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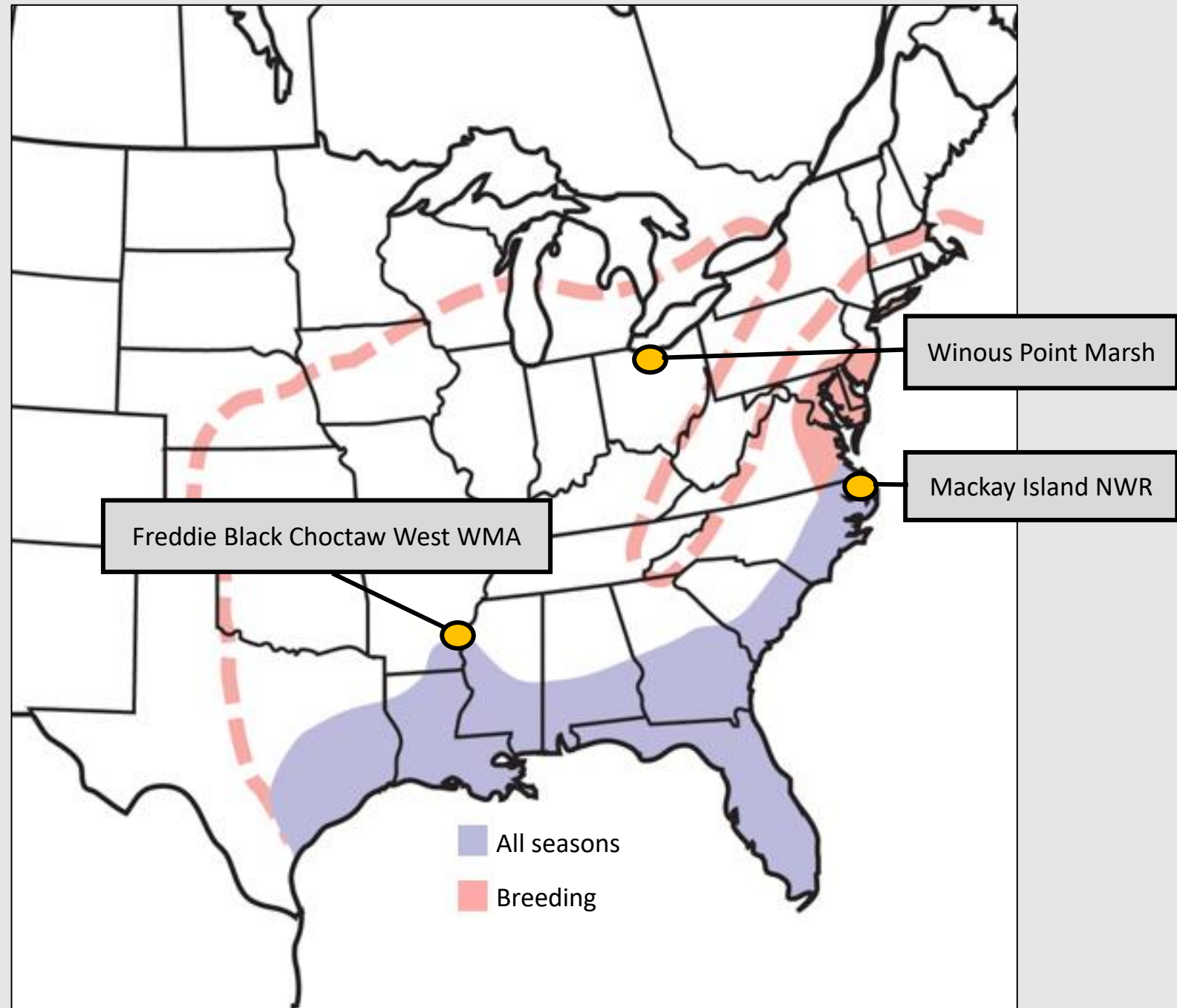
Population Genomics

Final Project



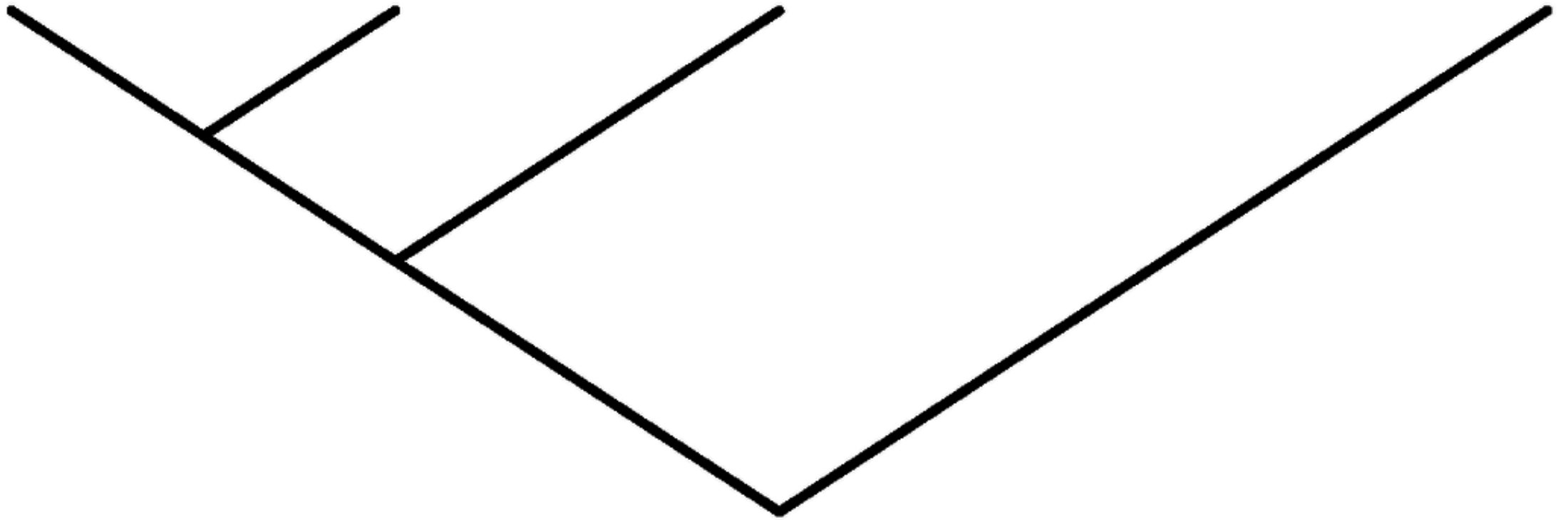
Comparing three geographically separate populations

- Separated by location and migratory status
- Migration = gene flow?
 - Not all rails migrate



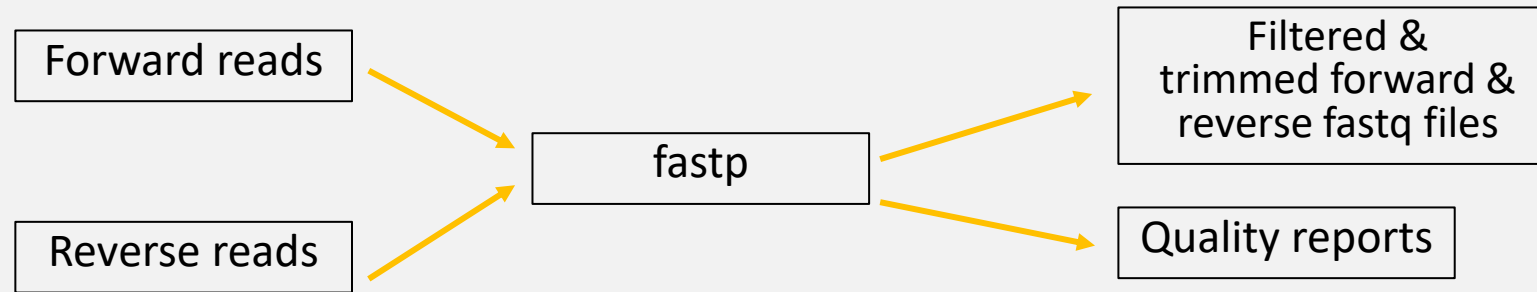
Migration Routes





$$\frac{(n_{ABBA} - n_{BABA})}{(n_{ABBA} + n_{BABA})} = \text{Patterson's D (ABBA-BABA statistic)}$$

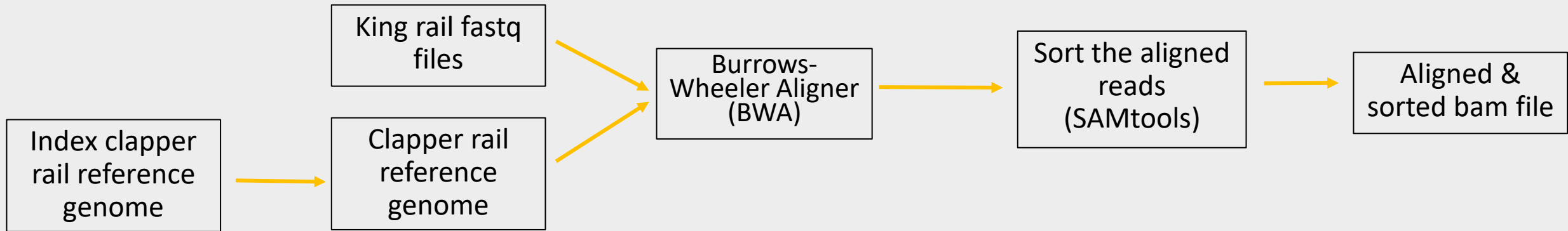
Step 1: Preprocessing using fastp



Filtering result

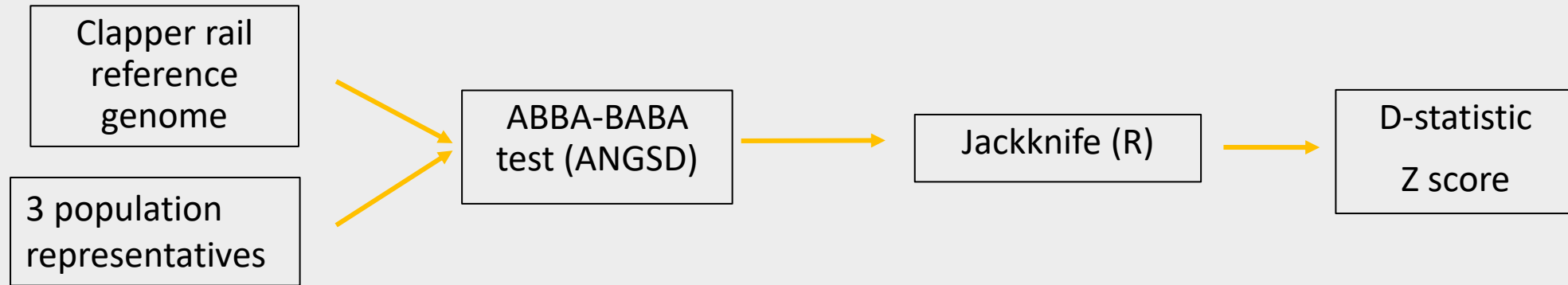
reads passed filters:	103.512868 M (97.867706%)
reads with low quality:	2.206578 M (2.086240%)
reads with too many N:	4.294000 K (0.004060%)
reads too short:	44.416000 K (0.041994%)

Step 2: Mapping



```
-rw-rw-r-- 1 gausec21 gausec21 10G Apr 26 19:02 11105.bam ← AR
-rw-rw-r-- 1 gausec21 gausec21 13G Apr 26 19:03 6026.bam ← OH
-rw-rw-r-- 1 gausec21 gausec21 6.7G Apr 26 19:04 RK02.bam ← NC
```

Step 3: ABBA-BABA test



Individual population representatives were chosen carefully:

- All females
- ~1 year sample window
- Sampled during the breeding season
- Resident population individuals are confirmed residents

OH

Atlantic Flyway

group

Mississippi Flyway

Z

10.60101

-1.53189

-10.73648

H1

OH

AR

AR

NC

OH

NC

548540

578361

-0.02646284

-0.02646284

0.001549325

0.00246476

Questions?

