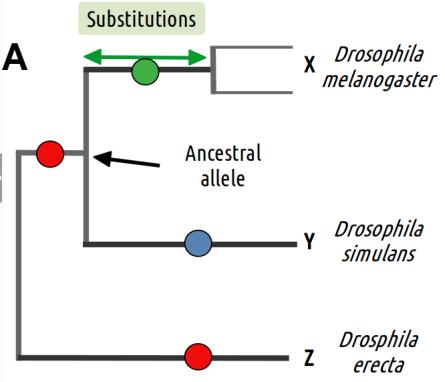


A

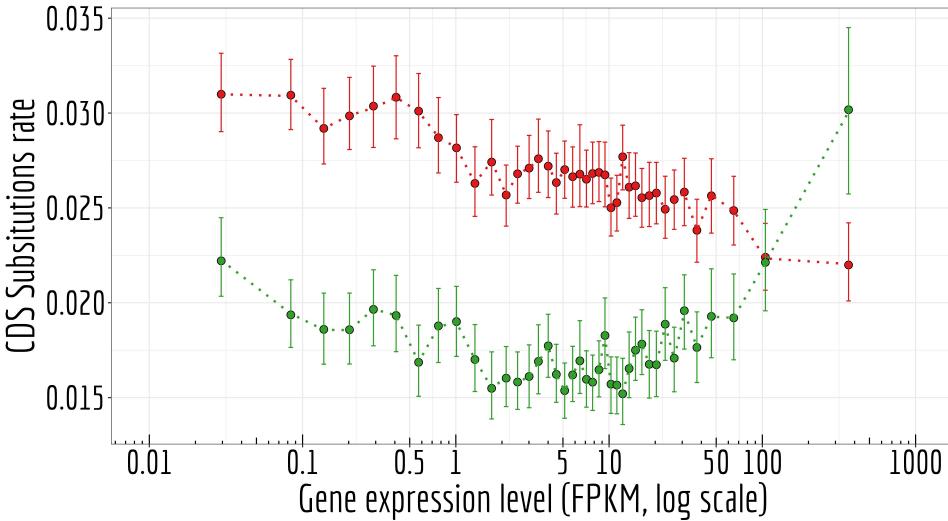
We defined the ancestral allele invoking at most one substitution event to explain the observation on the three species

- If $X = Y$ or $X = Z \rightarrow$ ancestral = X (i.e. no substitution)
- If $Y = Z$ and $Y \neq X \rightarrow$ ancestral = Y (i.e. substitution $Y \rightarrow X$)
- Else \rightarrow ancestral = Undefined

B

POC for non ambiguous amino acid

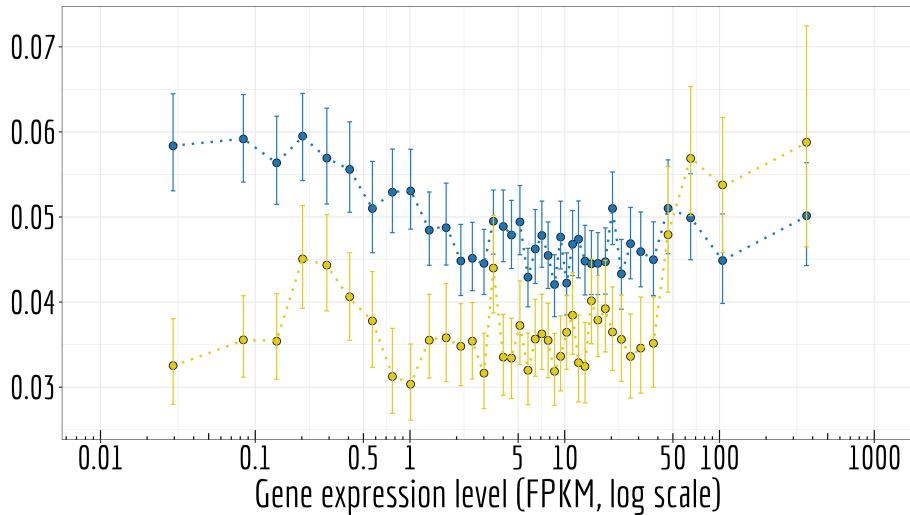
● non-POC → POC ● POC → non-POC

**C**

Wobble G:U for ambiguous duets

● watson-crick (NNC) → wobble (NNT) ○ wobble (NNT) → watson-crick (NNC)

CDS Substitutions rate

**D**

Wobble I:C

● watson-crick (NNT) → wobble (NNC) ○ wobble (NNC) → watson-crick (NNT)

CDS Substitutions rate

