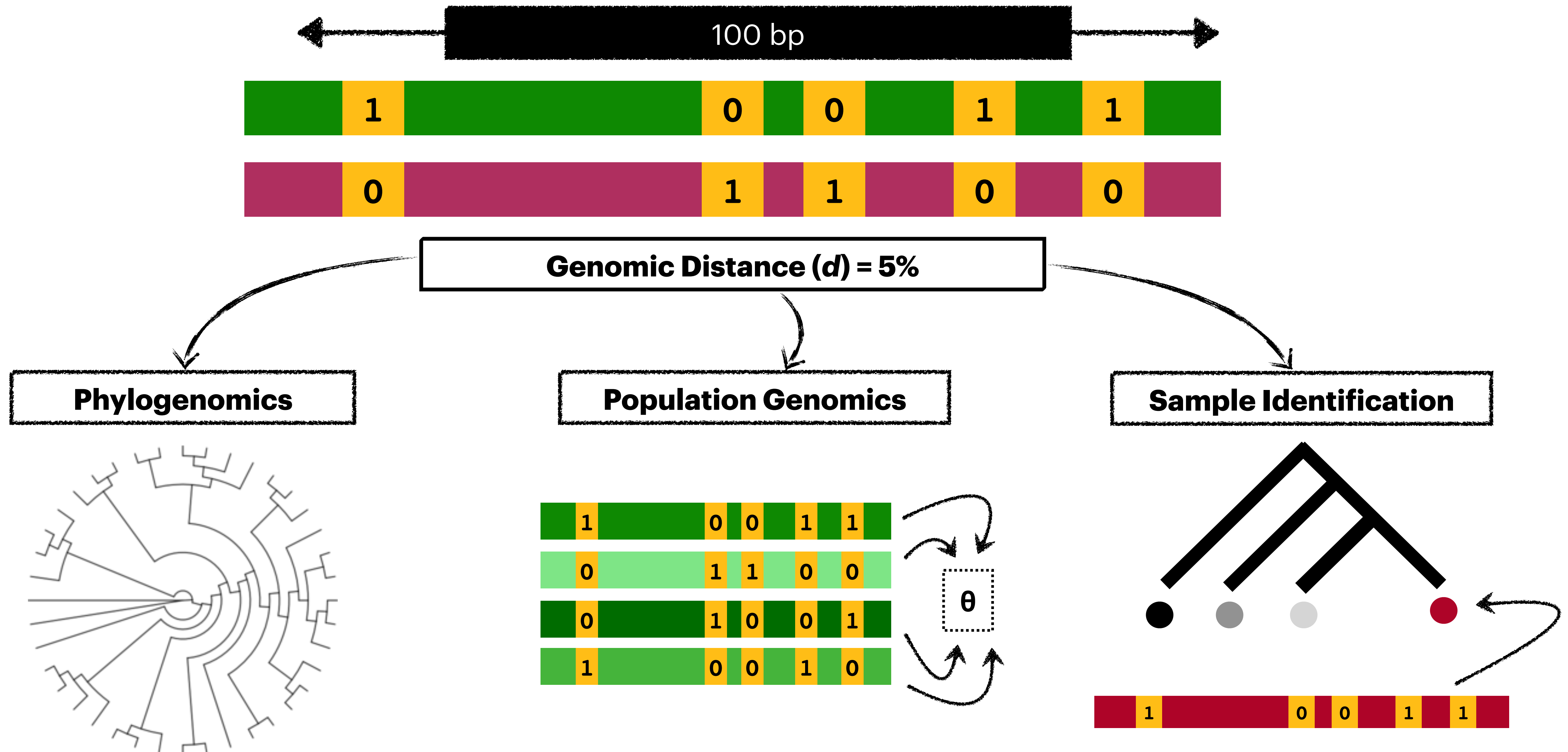


Alignment-Free Population Genomics: Handling *Repeats* and *Diploidy* in Genome Skims

SMBE 2026

Genomic Distance Estimation

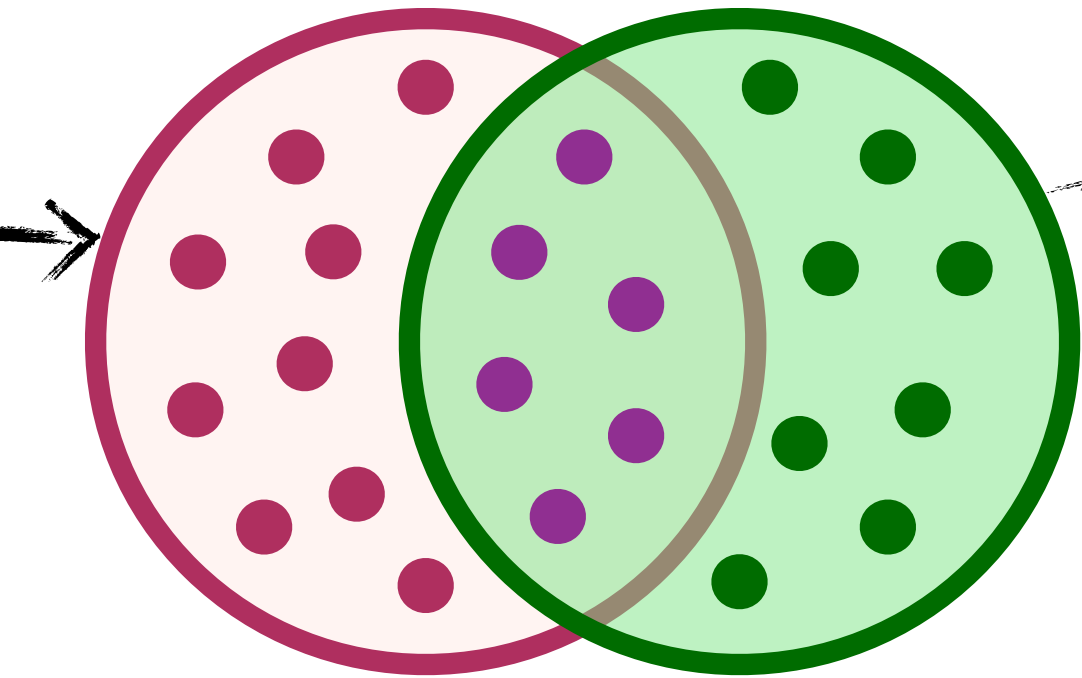


Alignment-Free, Low-Coverage Genomic Distances



Ondov et al., 2016

MASH

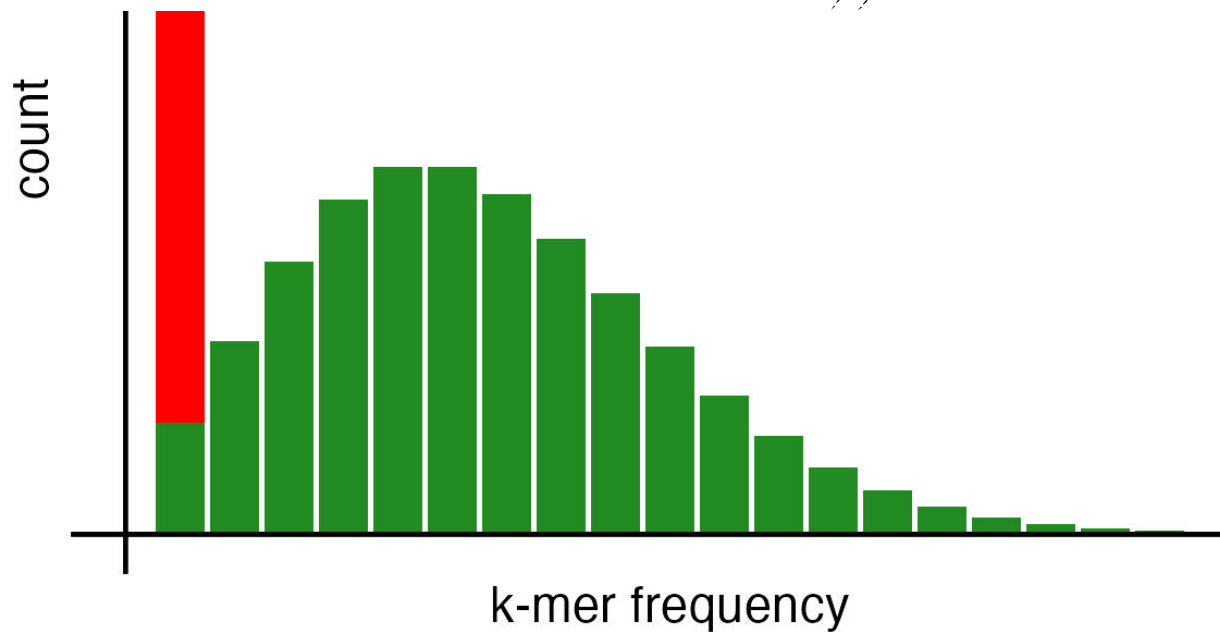


Similarity between *k*-mer sets
estimates genomic distance



Sarmashghi et al., 2019

Skmer



Models coverage and error to extend
method to **low-coverage whole
genome sequencing** (*genome skims*)

Simplifying Assumptions

high sequencing coverage

no sequencing error

all *k*-mers are distinct

samples are haploid

Two New Methods!

RESKMER

Genome Biology, 2026

DIPSKMER

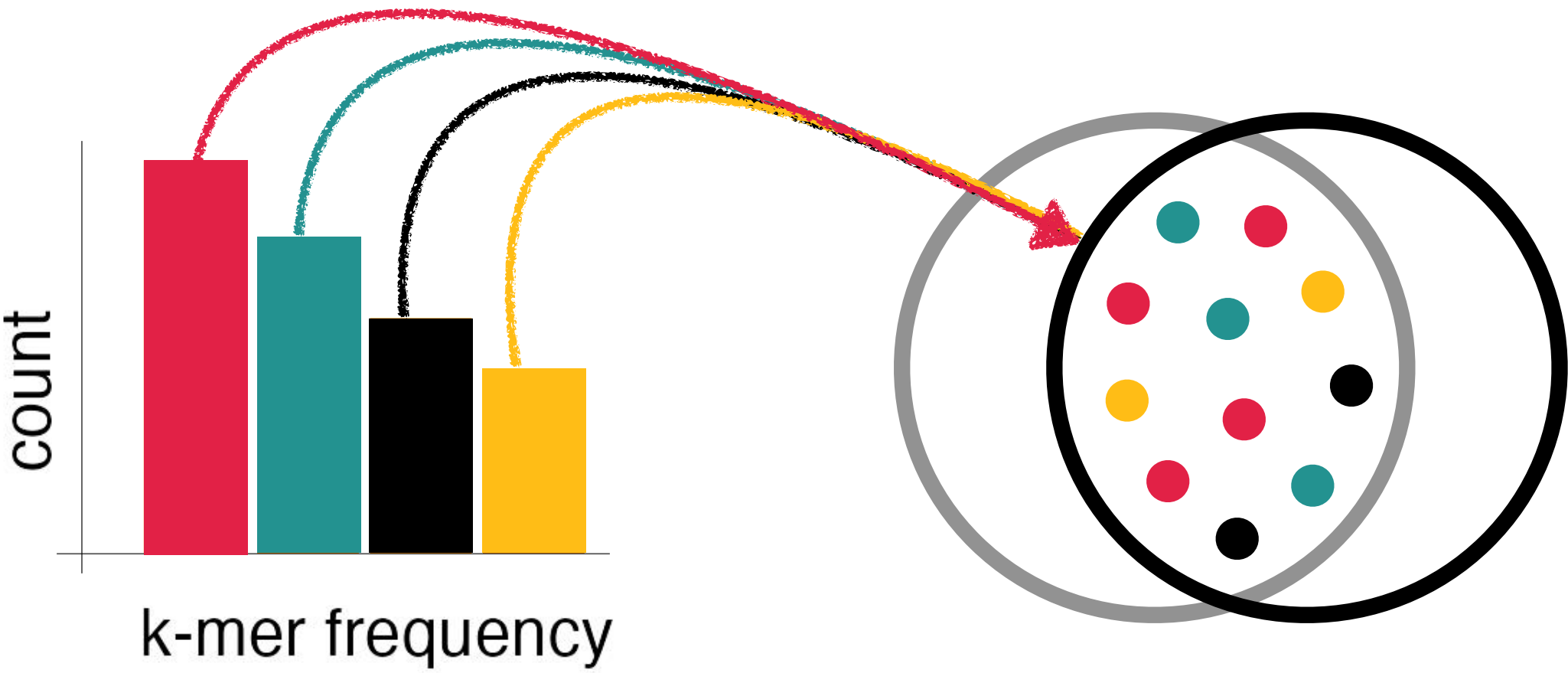
BioRxiv, 2026

ReSkmer and DipSkmer for Population Genomics

RESKMER

Charvel et al., 2026

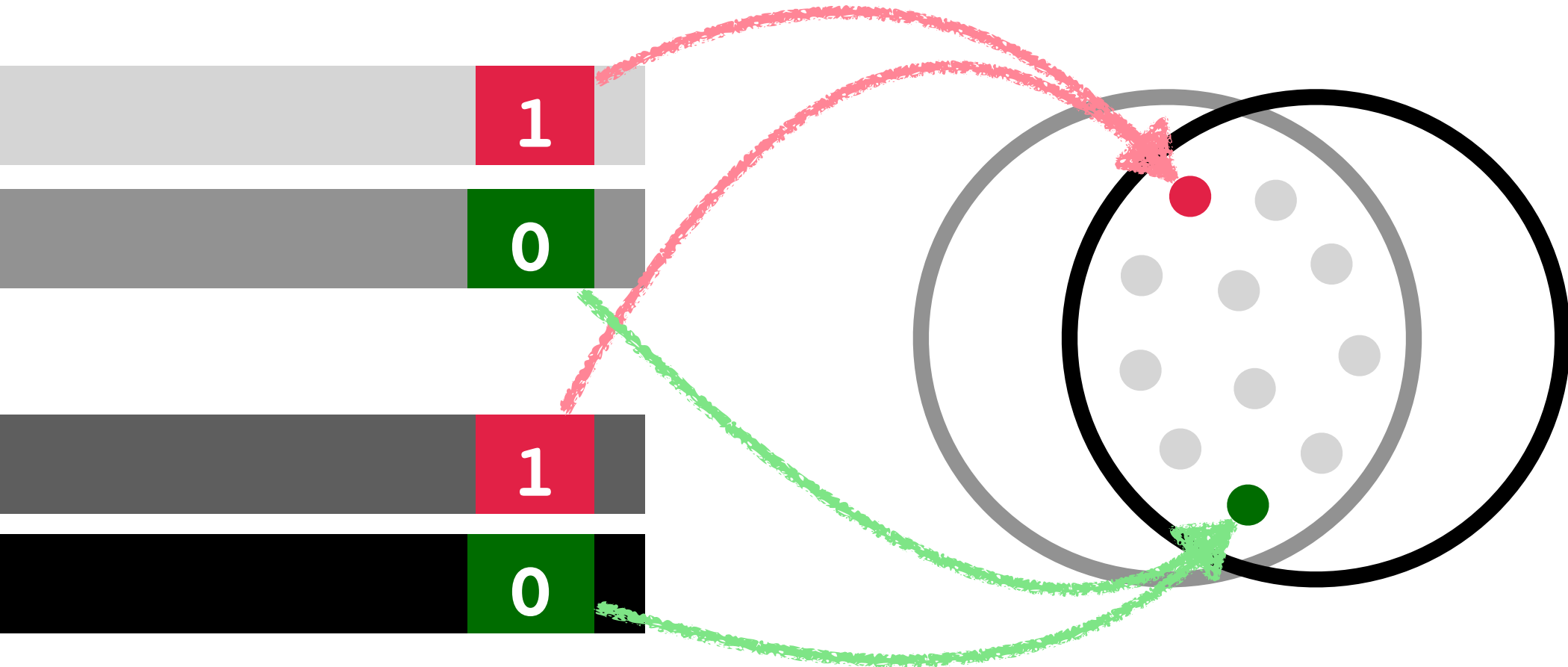
Genome Biology



DIPSKMER

Charvel et al., 2026

BioRxiv



LINK TO WEBSITE

echarvel3.github.io

Thank you!

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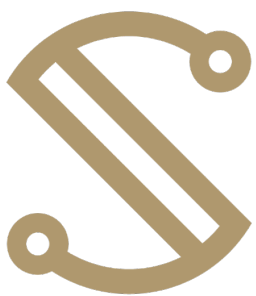
Puoya

Yueyu

Funding



Grainger
Bioinformatics
Center



ALFRED P. SLOAN
FOUNDATION