DNA identification pathway

Evidence item → (Lab) → Evidence data → (Infer) → Evidence genotype
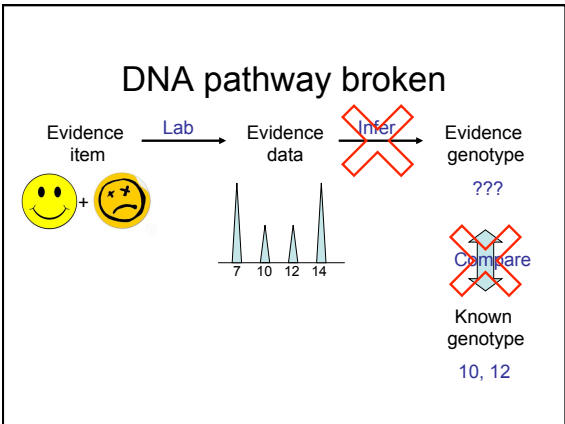
10, 12

Compare

Known genotype

10, 12

Human interpretation issues

• call good data inconclusive
• peaks are too low for them
• too many contributors to handle
• potential examination bias

DNA pathway broken

Evidence item → (Lab) → Evidence data → (Infer ✗) → Evidence genotype

???

7   10   12   14

Compare ✗
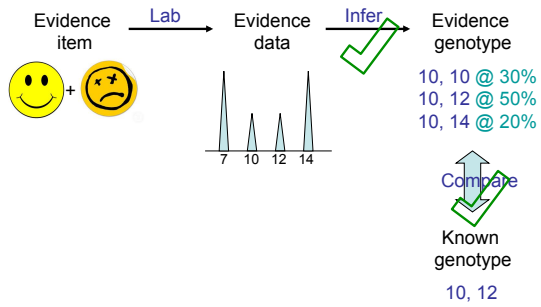
Known genotype

10, 12

TrueAllele® Casework

- preserve data information
- use all peaks, high or low
- any number of contributors
- entirely objective, no bias

- crime lab data, TrueAllele science

DNA pathway restored

Evidence item → **Lab** → Evidence data → **Infer** → Evidence genotype

Evidence genotype:
10, 10 @ 30%
10, 12 @ 50%
10, 14 @ 20%

Compare

Known genotype

10, 12

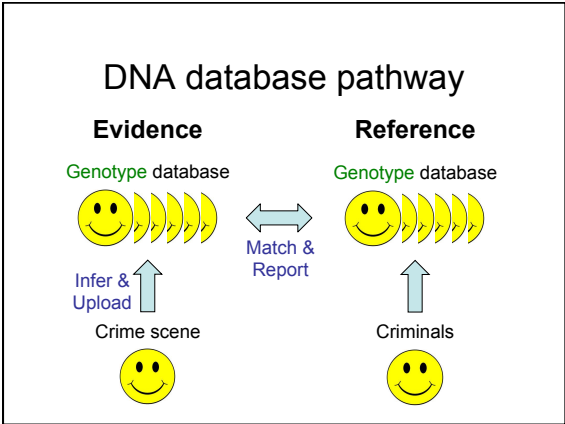7 10 12 14

National DNA Mixture Crisis

375 cases/year x 4 years = 1,500 cases
320 M in US / 8 M in VA = 40 factor
1,500 cases x 40 factor = 60,000 inconclusive

1,000 cases/year x 4 years = 4,000 cases
320 M in US / 8 M in NY = 40 factor
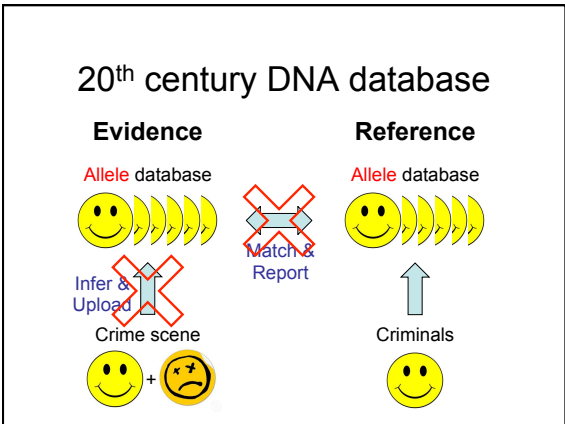4,000 cases x 40 factor = 160,000 inconclusive

+ underreporting of DNA match statistics

DNA evidence data in 100,000 cases
Collected, analyzed & paid for – but unused

DNA database pathway

Evidence

Genotype database

Infer & Upload

Match & Report

Crime scene

Reference

Genotype database

Criminals

Old-style database issues

- upload only 10% of mixtures
- hit by association, not by match
- comparison: make false hits
- restrict upload: lose true hits

20th century DNA database

Evidence

Allele database

Infer & Upload

Match & Report

Crime scene

Reference

Allele database

Criminals

TrueAllele® Database

- upload all mixture evidence
- hit based on LR match statistic
- sensitive: find true hits
- specific: only true hits

- crime lab data, TrueAllele science

21st century DNA database