

# Validating TrueAllele® genotyping on ten contributor DNA mixtures

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Cybergenetics

Cybergenetics © 2003-2017

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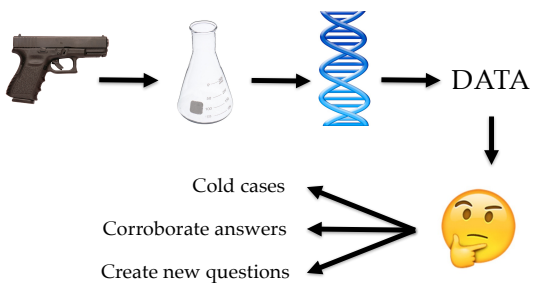
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## DNA evidence



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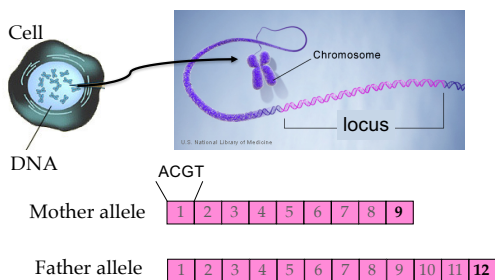
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## What is an STR?



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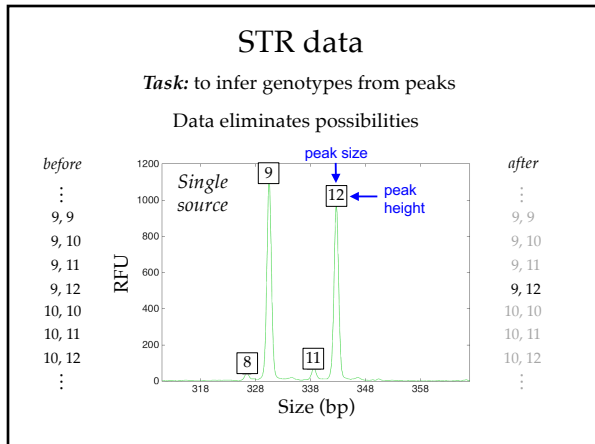
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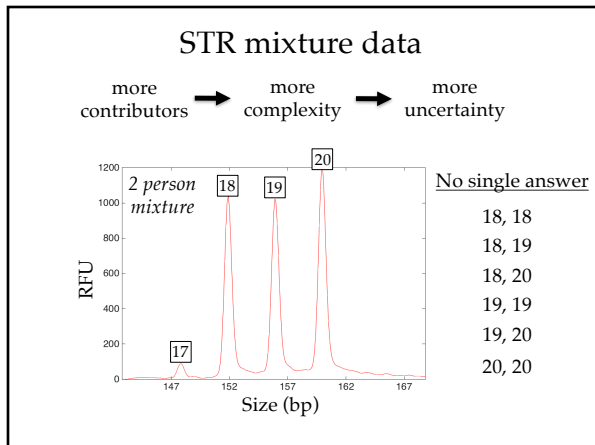
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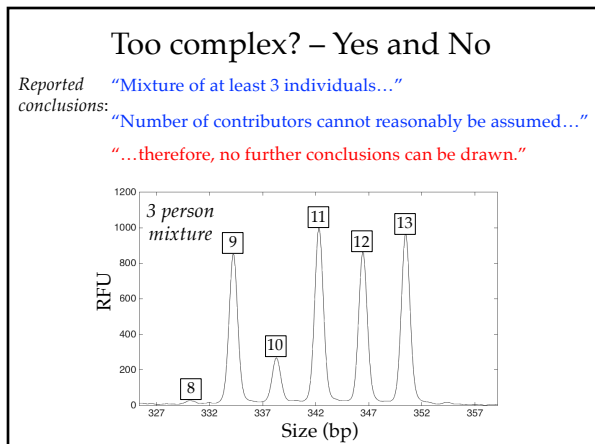
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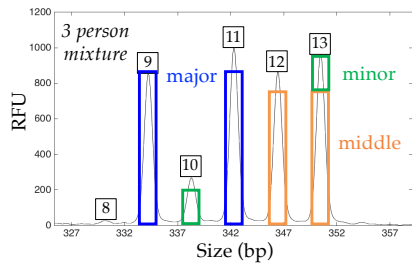
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## How TrueAllele works

- Computer tries thousands of possibilities
- Compares with data to calculate probability
- Good explanations → higher probability




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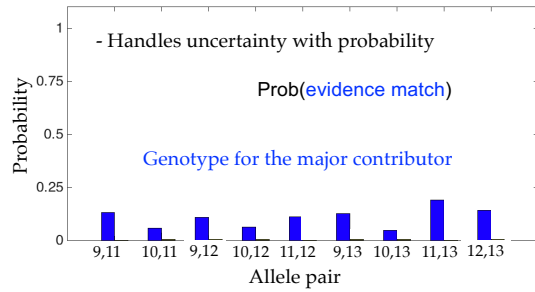
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## How TrueAllele works

- Handles uncertainty with probability




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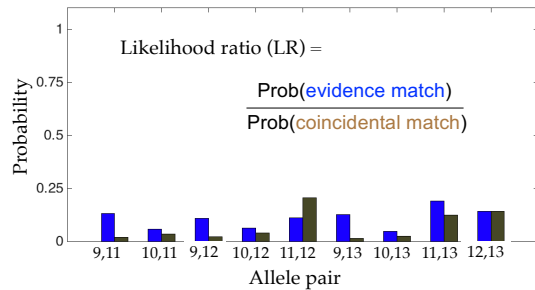
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## Degree of match

Match statistics expressed as the numbers of zeros




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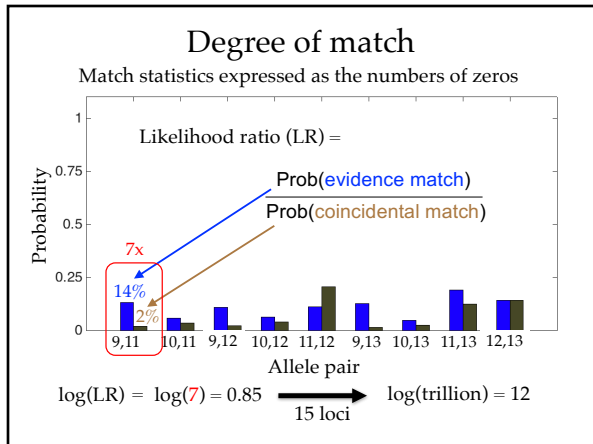
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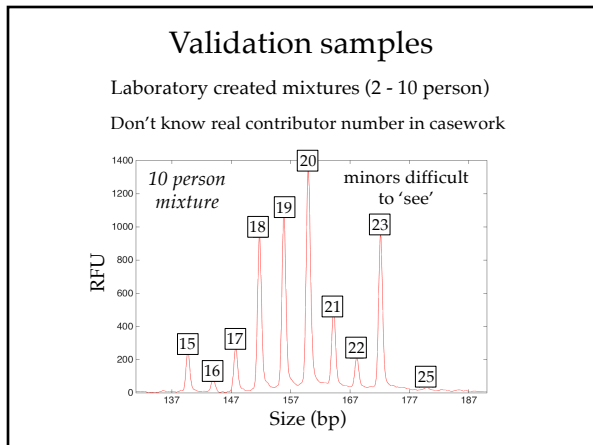
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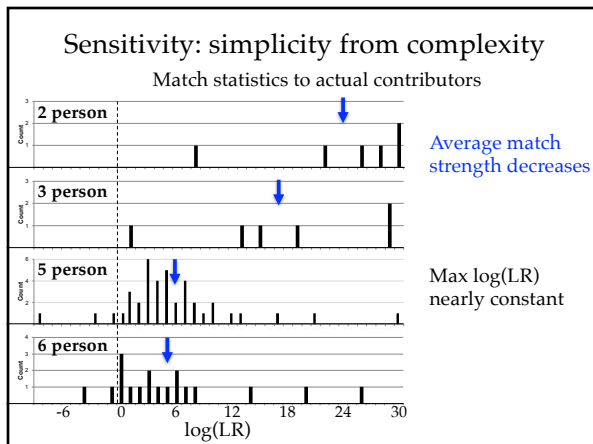
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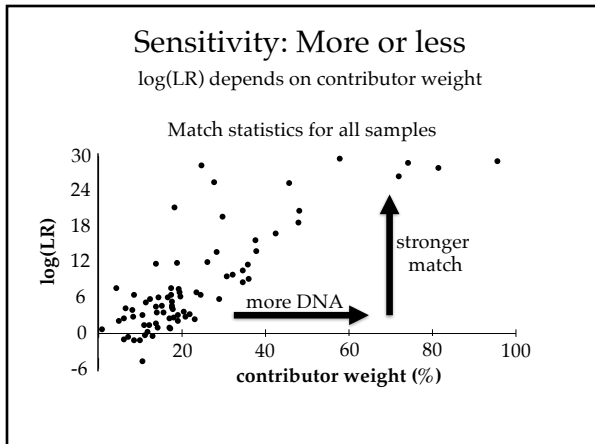
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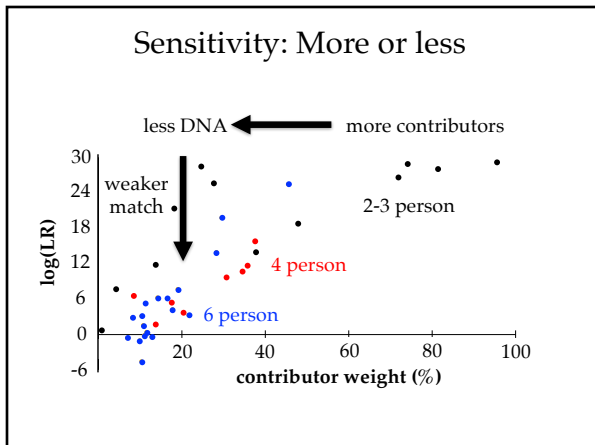
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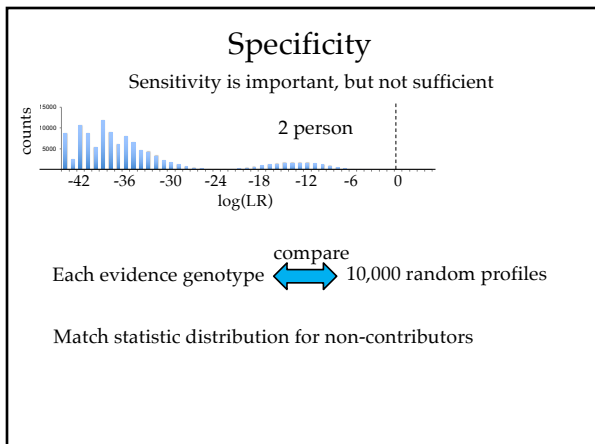
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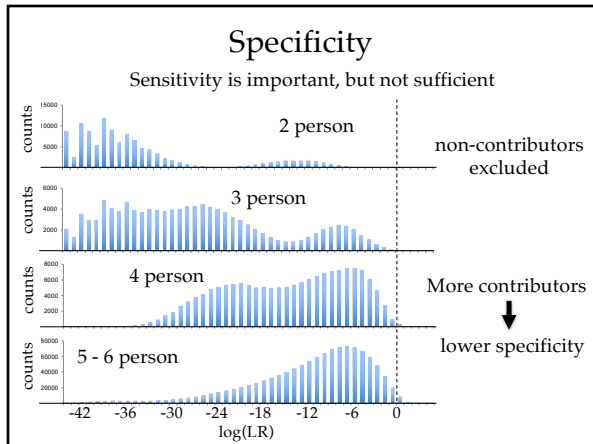
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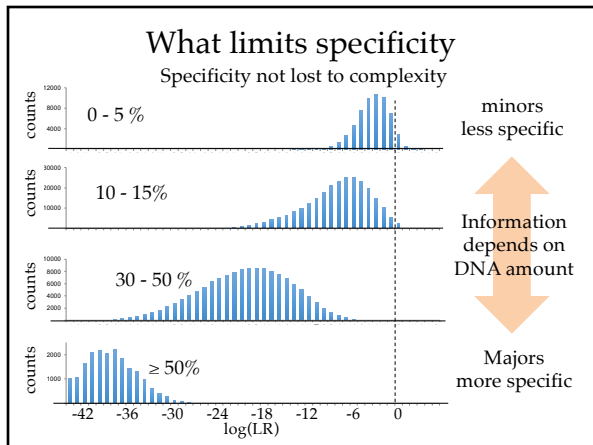
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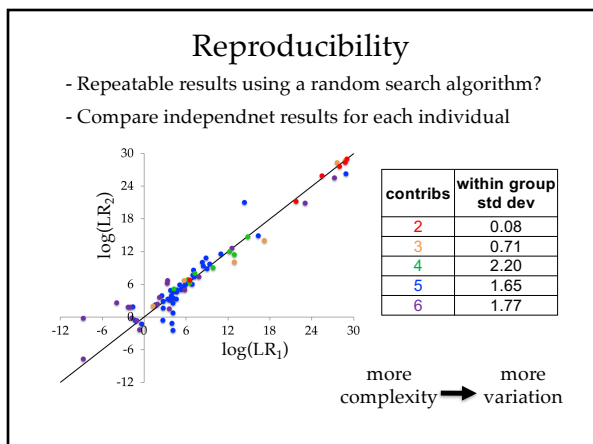
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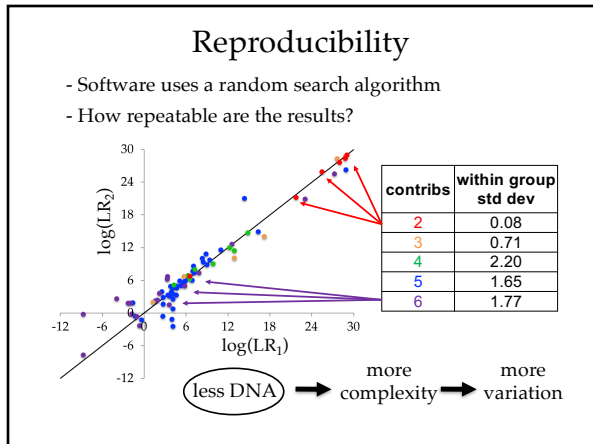
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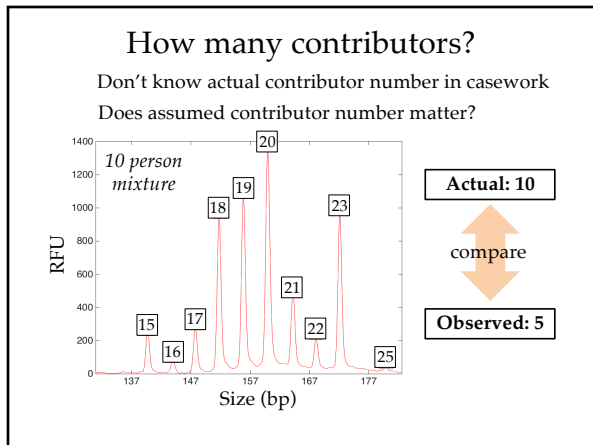
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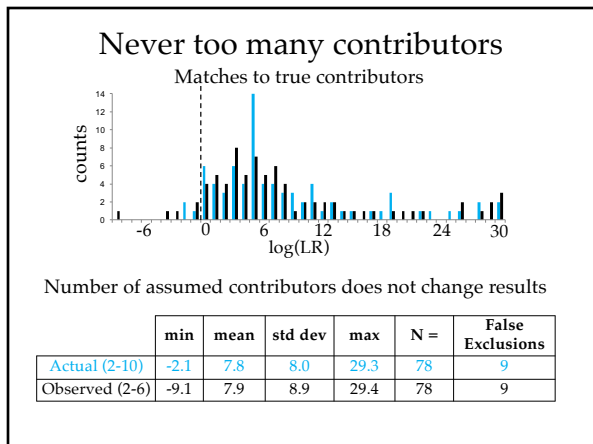
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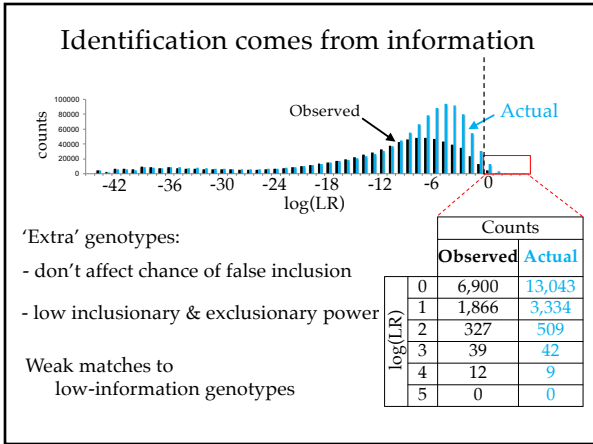
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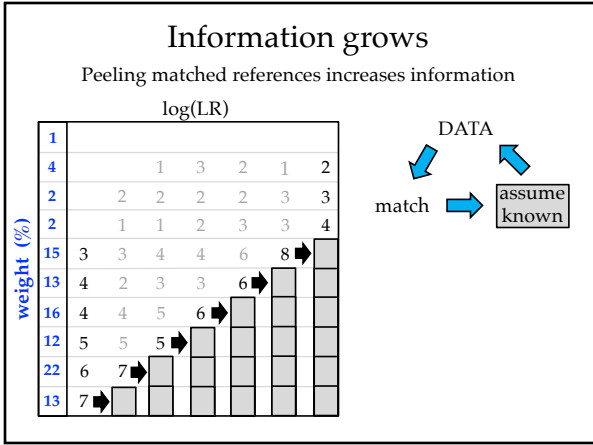
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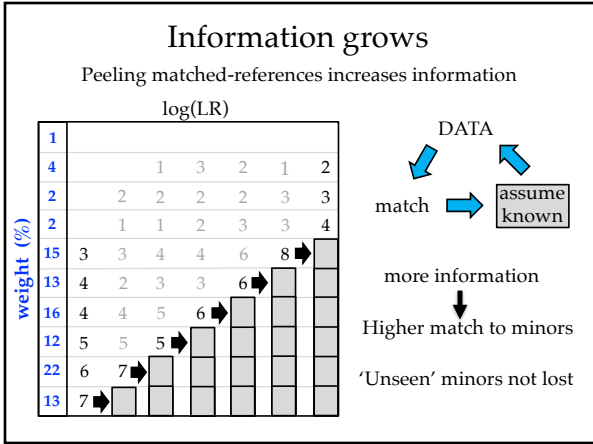
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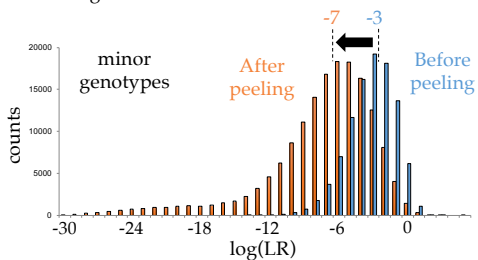
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## Information includes AND excludes

Peeling matched-references increases information



Genotypes for minors more exclusionary

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## Complexity in casework

more probative weight ← more contributors → more complexity



Crime:  
Quintuple homicide in Sydney Australia

Father, mother, 2 sons, aunt

Suspect:  
Brother in-law

Evidence:  
Blood stain in suspect's garage

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## Complexity in casework

Blood mixture of 5 victims (blood-related)



victim	weight	LR
Son	40%	50 quadrillion
Son	30%	2.2 billion
Father	20%	230 thousand
Aunt	7%	29 thousand
Mother	3%	290

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## Conclusions

Tested TrueAllele on ten-contributor mixtures

- DNA amount  
not  
contributor  
number
- *Sensitive*  
Included true contributors
  - *Specific*  
Excluded non-contributors
  - *Reproducible*  
Concordance between runs
  - *Objective*  
Data dictate results, not user assumptions

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## More information

<http://www.cybgen.com/information>



- Courses
- Newsletters
- Newsroom
- Presentations
- Publications
- Webinars

**TrueAllele YouTube channel:**  
<http://www.youtube.com/user/TrueAllele>



Cybergenetics



dave@cybgen.com

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