

## Disclaimer

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## Use of a Database Feature in the TrueAllele® Casework System to Cross Compare DNA Cases

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## The History

- Spike in auto thefts in multiple westside suburbs of Cleveland, Ohio in the summer and fall of 2015
- Believed to be committed by the same gang of juveniles
- Most vehicles stolen over night from driveways or from the street
- Vehicles were unlocked or windows smashed
- Steering columns "peeled" or keys left inside vehicle



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## The Numbers

- 37 separate incidents/cases submitted for testing
- 6 different jurisdictions
- 161 total evidence samples
  - Swabs from various areas of recovered autos
  - Personal property left behind
- 38 suspect reference samples collected during gang "round up" (72 total references)

THESE ARE BUCCAL SWABS COLLECTED FROM SUSPECTS RELATED TO THE METROPOLIS HUSBAND (IS-5033) AND POLARIS WEST SIDE CRIME RING (LAMB INVEST.



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## The Challenge

- Efficiently cross-compare 38 suspect references to each of the 37 cases/100+ evidence samples
  - Manual interpretation done using in-house protocols with RMP/CPI
    - Many man hours of desk work
    - Ignoring profiles/data
  - Probabilistic Genotyping using TrueAllele® Technology's Databasing Feature done by Cybergenetics



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## Manual Interpretation

- Threshold – 200RFU cutoff
- Profiles reported as single source and major/minor or indistinguishable mixtures up to 3 contributors
  - >3 is inconclusive due to too many contributors
- Statistical calculations
  - RMP for single source and major profiles
  - CPI for indistinguishable mixtures
- General rules
  - >50% data (alleles) needed for inclusions
  - <50% data inconclusive due to insufficient information



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## Manual Interpretation

- ~2 months from initial testing to release of 37 reports
- ~1 additional month for release of 26 supplemental reports for additional suspect submissions
- 11 of the 38 suspects were associated to at least one case (RMP/CPI)
- 4 of the 11 positively associated suspects were connected to more than one case
- 30 evidence samples contained no or insufficient amount of DNA
- 30 profiles were reported as inconclusive due to too many contributors or insufficient information (some minor components also)

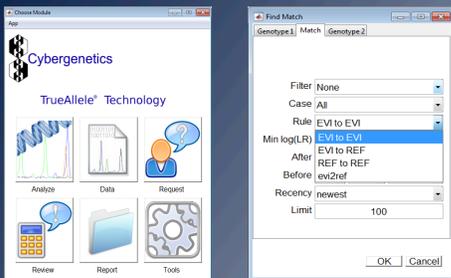


## TrueAllele® Interpretation/Database

- Cuyahoga County Prosecutor's Office made aware of TA Databasing capabilities
- .hid data files sent to Cybergentics for TA analysis
- All profiles run through TA including those manually deemed inconclusive
  - Low data/3+ contributors
- Database Match Rules: *EVI-EVI*, *EVI-REF*, *REF-REF*



## TrueAllele® Interpretation/Database





## TrueAllele® Interpretation/Database

- EVI-REF Match Rule
- Profiles not considered previously provide match information
- Manually interpreted profile was inconclusive due to >3 contributors
- Three linked suspects identified in the TA database

Three linked suspects to above profile		
Suspect	Item	Log(LR)
1	Gear Shift	9.37
2	Gear Shift	8.00
3	Gear Shift	14.46



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## TrueAllele® Interpretation/Database



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## The Summary

### Manual

- ~2 month from testing to report release, additional month to release supplemental reports
- 11 of 38 suspects associated to at least one case
- 4 of the 11 suspects connected to multiple cases
- 30 profiles reported as inconclusive
- 12 samples reported as exclusions

### TrueAllele

- ~1 month from data upload/request to preliminary results
- 16 of 38 suspects associated to at least one case
- 8 of the 16 suspects connected to multiple cases
- All 30 profiles with at least one positive association
- Positive match scores for the 12 manual exclusions



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Matthew Legler



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## Thank You!

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