

Computer Interpretation of Quantitative DNA Evidence

Commonwealth v. Akaninyene Efiang Akan
 March, 2012
 Pittsburgh, PA

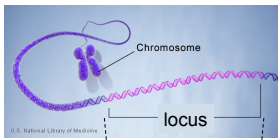
Mark W Perlin, PhD, MD, PhD
 Cybergenetics, Pittsburgh, PA



Cybergenetics

Cybergenetics © 2003-2012

DNA genotype



A genetic locus has two DNA sentences, one from each parent.

An **allele** is the number of repeated words.

A **genotype** at a locus is a pair of alleles.

8, 9

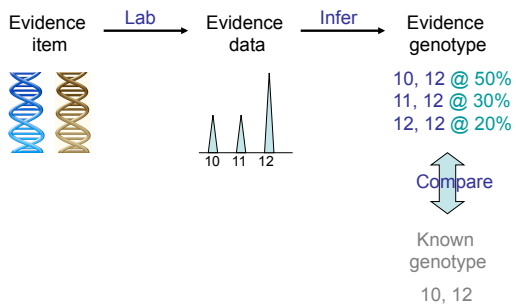
Many alleles allow for many many allele pairs. A person's genotype is relatively unique.

mother allele

ACGT repeated word

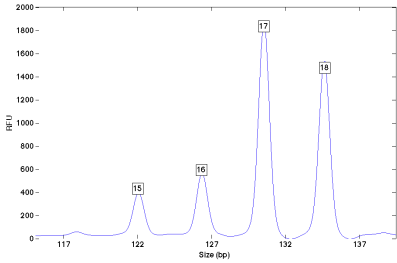
father allele

DNA evidence interpretation



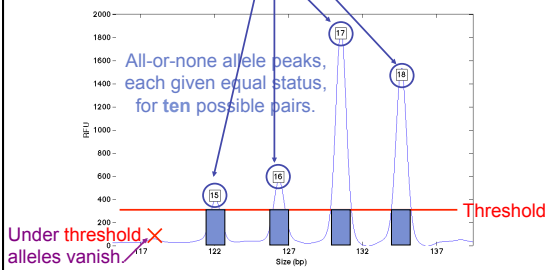
Computers can use all the data

Quantitative peak heights at locus D3S1358



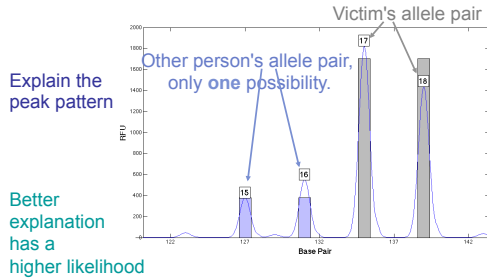
People may use less of the data

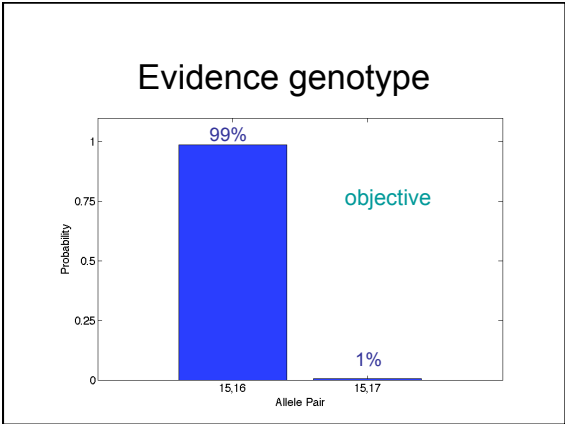
Over threshold, peaks are labeled as allele events.

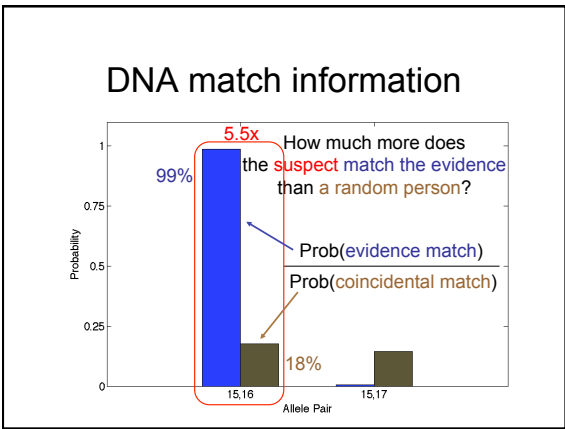


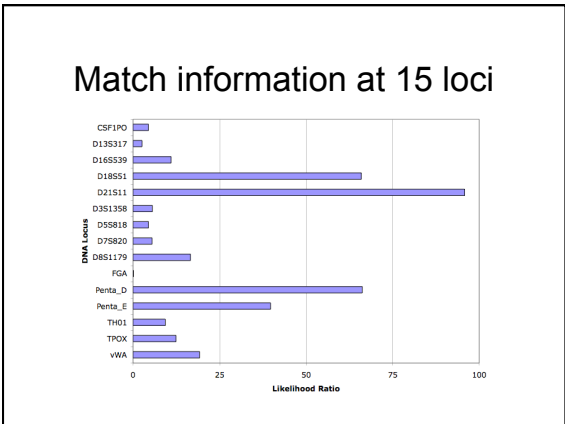
How the computer thinks

Consider every possible genotype solution









Is the suspect in the evidence?

A match between the evidence and the suspect is:

1.35 quadrillion times more probable than
a coincidental match to an unrelated Black person

426 quadrillion times more probable than
a coincidental match to an unrelated Caucasian person

18.8 quadrillion times more probable than
a coincidental match to an unrelated Hispanic person
