CityBeat

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Shaking the Faith in Science

Fake DNA prompts change in criminal forensics

By Polly Cambron

America's fascination with the use of forensi explosion of TV shows dealing with the topic shows like *Forensic Files* and *The Bureau*.

During the past two decades, advances in fo investigate and establish facts in courts of la police work is conducted and what jurors ex

Although forensic evidence is available only public places great weight on its inclusion, a defense attorneys. Perhaps the main reasor analysis of human material like blood, seme precisely identify an individual.

The best-known example of DNA profiling's non-profit group that uses testing to determi Since the group began in 1992, more than 240 people in the United States have been exonerated, including 17 Row.

Just last month, the longest-incarcerated victim of a wrongful conviction was freed due to the Innocence Projec imprisoned for 35 years for kidnapping, rape and burglary — was exonerated by DNA testing. Before the projec times by the courts.

But forensics came under fire last summer when scientists in Israel were able to create DNA evidence capable profiling's supposed infallibility to become suspect. The same bio-tech firm that did the research, however, has between natural and manufactured DNA, based on the lack of methylation — a chemical reaction — in the artif

Local DNA experts say the techniques should be scrutinized to make sure the procedures used are valid and ri testing under which a trial judge has a duty to dissect evidence rigorously to determine whether it has been est

Some of the procedures that judges must consider include whether valid testing protocols were used, if the evi scientific community, error rates and acceptability in the general forensic science community.

The Daubert Standard came about from the 1993 case of *Daubert v. Merrell Dow Pharmaceuticals*, which exar testing techniques.

Elizabeth Murray, a Cincinnati-based biological and forensic anthropologist, has been at the forefront of forensi written about the importance of conducting research that allows forensic techniques to satisfy current Daubert s

“Essentially some of us were already seeing that the field needs to test its methods and certify its practitioners, witnesses by virtue of years in the field anymore. Our methods need validity and hopefully these mandates will direction.”

One example of tightening standards involves how to properly retrieve and identify bullets from crime scenes. J ballistics and tool mark analysis for the Hamilton County Coroner’s Office, explains the different aspects of evic

Heile says, “(T)here are standards we use in order to reinforce our identification which include statistical data, s colleagues, (and) we reinforce our examination using sufficient objective analysis.”

In another case, Heile was called upon to analyze “hatchet marks in the paint on the siding of a house involved the lab where test marks and comparisons were made on marks left by the blade until I could begin to identify i was used.”

Heile was able to identify the hatchet used to cut the siding away in order to start the fire by examining individu rough edges and atypical markings.

Forensics isn’t only changing how criminal cases are conducted. Advances in technology also are being used t mundane occurrences like fender benders.

Dan Aerni, owner of MV Engineering in Oakley and a vehicular accident analyst, credits General Electric for lea known as black boxes, which were originally installed for anti-lock braking systems. (They) are now a key featu puzzle for us.”

The data collected from the black boxes is evaluated with tools including electronic distance measuring equipm measurement analysis and mathematical validation. The question of who broke the law or who is at fault in an computer precision, Aerni says.

Digital evidence retrieved from computers is another aspect of forensics undergoing change as it becomes relie

Jim Swauger, of Binary Intelligence in Lebanon, just north of Cincinnati, specializes in computer forensics, elec court-recognized expert with more than a decade of experience, Swauger has served as senior computer forer Investigation.

Nowadays, criminal suspects shouldn’t rely on simply deleting incriminating information from their computers.

“Deleted or damaged evidence can be retrieved from flash memory modules, digital cameras, mobile phones, i data protected by very strong cryptographic algorithms,” Swauger adds.

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