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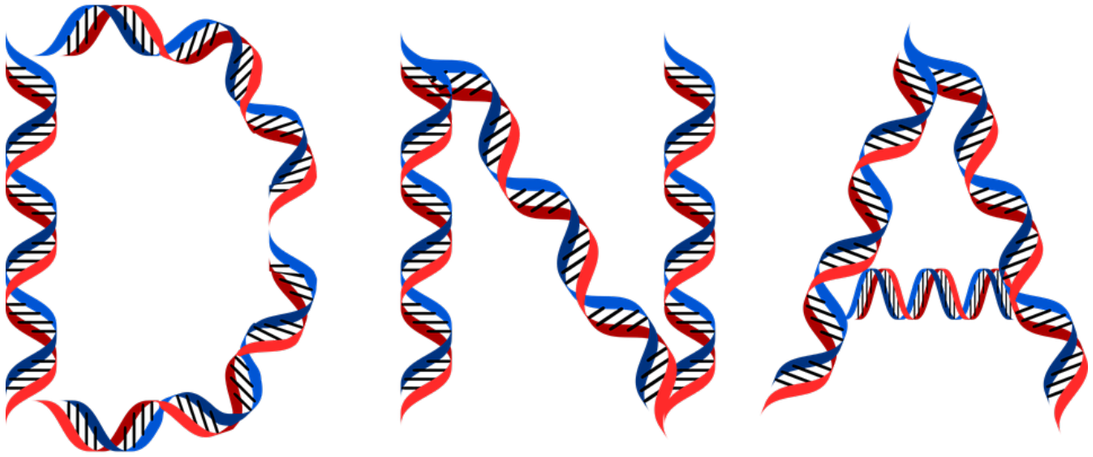

DNA ON TRIAL

Nathan Dinh

On March 4, 1974, a nine-year-old boy was raped in his home in Lake Wales, Florida. When the police arrived, the boy described his assailant as possibly 17 or 18 years old with a mustache and thick sideburns and named "Jim" or "Jimmy." After being identified in a photograph lineup by the victim, Jimmy Bain, who said that he was at home watching television with his sister, was arrested and charged with child sex abuse, kidnapping, and burglary/unlawful entry. During the trial, the prosecutors relied on both the photograph lineup and semen that had been found at the scene. The analyst identified that the semen came from a person with Type B blood, but Bain had Type AB blood. However, because the analyst said that Bain's blood type was a weak A, he could not be excluded from the list of suspects. He was eventually convicted and sentenced to life in prison based on shoddy forensic science. Bain was serving his life sentence when Florida passed a statute in 2001 that allowed for cases to be reopened for DNA testing.[1] After five failed petitions to the courts to reopen his case, he eventually got the help of the Innocence Project, an organization that seeks to exonerate wrongly convicted inmates using new DNA testing. According to the Innocence Project, "364 people in the United States have been exonerated testing, including 20 who served time on death row."[2] The DNA evidence eventually exonerated Bain, who was released in 2009— 35 years after his conviction— and was awarded $1.7 million by Florida. Bain's story is one of many wrongful convictions that have been overturned by new DNA sequencing technology.

In criminal cases where the perpetrator is unknown, detectives look for articles that may contain the perpetrator's DNA including hair, saliva, semen, sweat, blood, or even skin cells. The cells are lysed, the DNA is isolated, then amplified and multiplied using polymerase chain reaction (PCR). The DNA sequence can then be used in short tandem repeat (STR) analysis. An individual has 3-7 base pair repeats, called loci, distributed throughout their DNA. The type and number of loci repeats are unique in each person. In STR analysis, these loci are amplified and sequenced.[3] Variability in a person's STRs is enough to differentiate between individuals, which allows for DNA sequences to be compared between suspects for criminal investigations. In 1994, the FBI established the Combined DNA Index System (CODIS), a national DNA database that allows for DNA comparison to known criminals. However, this is not the only DNA database that law enforcement uses. Third-party DNA sequencing companies that analyze customers' DNA sequences to determine ethnicity or family lineage including 23andMe, AncestryDNA, and LivingDNA have been known to share data with police in investigations. According to 23andMe's website, they "do not share customer data with any public databases" but "may be required by law to comply with a valid court order, subpoena, or search warrant for genetic or personal information."[4] These "voluntary" databases have been used before in investigations. A 1993 murder case was reopened in 2015 due to the new advances in DNA testing and these private companies. Investigators sent samples from the original crime scene to a private DNA sequencing company and ran them through an online genealogy website. The test connected the DNA to Jerry Westrom. Using social media, the detectives followed Westrom, eventually recovering a napkin that he threw out while eating a hot dog at his daughter's hockey game. The DNA on the napkin was found to match the blood found at the crime scene, and in February, Westrom was charged with second-degree murder.[5] Although these companies may be a powerful tool for investigators, their practices call into question an individual's right to privacy with regards to their DNA, whether given voluntarily or not.

DNA testing has also made its way to the Supreme Court. In Maryland v. King (2013), the Supreme Court ruled that DNA swabbing can be considered part of the regular arrest booking procedure alongside mug shots and fingerprints. Thus, when a police officer swabs the inside of an arrestee's mouth to collect DNA without cause, the officer is not in violation of the Fourth Amendment, which protects against "unreasonable searches and seizures" of "persons, houses, papers, and effects." King was arrested for attempted violence, burglary, and attempted burglary. When he was booked, his DNA was run through CODIS and matched DNA from an unsolved rape. King was convicted of first-degree rape and sentenced to life in prison. King appealed his case, arguing that the cheek swab was an unconstitutional search in violation of his Fourth Amendment rights against warrantless searches. The Court ruled against King saying the search was not a violation. Justice Kennedy, writing for the majority, said that a cheek swab "involves but a light touch on the inside of the cheek . . . The fact that an intrusion is negligible is of central relevance to determining reasonableness, although it is still a search as the law defines that term."[6] Essentially, because the swab is unobtrusive, it is not unreasonable for a police officer to undergo a "search" without cause. This allows for police officers to utilize the wide capabilities of DNA testing to solve crimes without needing to obtain a warrant. Although this would bring a host of good in crime solving, it could be readily abused, which the Fourth Amendment is meant to protect against. Justice Scalia, writing a dissenting opinion in which Justices Sotomayor, Ginsburg, and Kagan joined, categorically prevents officers from performing a search without cause. The Court has always held that "no matter the degree of invasiveness, suspicionless searches are never allowed if their principal end is ordinary crime-solving." Scalia continues saying that the Court's ruling "will, to be sure, have the beneficial effect of solving more crimes; then again, so would the taking of DNA samples from anyone who flies on an airplane, applies for a driver's license, or attends a public school." The increasing capabilities of DNA testing should be carefully regulated just as with any new technology that can have implications on the legal system. As powerful as these new technologies are for exoneration and crime solving, individuals' privacy should be given proper weight and protections in the face of the extraordinary capabilities of DNA testing.

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