THE ETHICS OF DNA PREDICTIVE TECHNOLOGY IN LAW ENFORCEMENT

THE AUSTRALIAN FEDERAL POLICE AND MASSIVELY PARALLEL SEQUENCING

Law enforcement officials in Australia recently announced that they would be employing a new technology called Massively Parallel Sequencing (MPS) (Australian Federal Police, 2021). MPS is a type of DNA technology that "can provide predictions for visual traits of criminals from the DNA they leave at a crime scene allowing investigators to predict gender, biogeographical ancestry, eye colour and, in coming months, hair colour" (Australian Federal Police, 2021). The Australian Federal Police (AFP) explained that this technology can have many uses, excluding persons of interest and thereby limiting their pool of suspects. However, there has also been considerable push back to the introduction of this new technology due to concerns of racial biases. The introduction of this technology brings up an important discussion of whether or not predictive technology like this truly aids law enforcement or if it deepens the racial biases already present in law enforcement.

According to the Australian Federal Police, MPS has gone through rigorous testing before being used in real cases to ensure its accuracy, and through this testing law enforcement has found that MPS is significantly more informative than traditional DNA profiling. For example: "Current DNA profiling technologies for human identification examine the length variations on the human genome, but MPS examines the nucleotide sequence of those regions" (Australian Federal Police, 2021). AFP also note that this tool is especially valuable when trying to identify a perpetrator who has no DNA file in law enforcement databases as well as when trying to identify human remains or find missing persons. Dr. Paul Roffey, the lead scientist behind MPS at AFP Forensics and Adjunct Professor at the University of Canberra, believes the capabilities of this technology will only continue to increase, saying "Over the next decade our team will be looking to widen prediction capabilities to include traits such as age, body mass index and height. We will also be seeking opportunities to provide fine detail predictions for facial metrics such as distance between the eyes, eye, nose and ear shape, lip fullness, and cheek structure" (Australian Federal Police, 2021).

While this new technology seems like a huge breakthrough that can assist law enforcement in their duties, many are concerned about how the technology may deepen racial biases in the industry. Indeed, in response to the announcement that Australian police would be employing MPS, Dr. Jenny Davis of Australian National

University and Dr. Jathan Sadowski of Monash University wrote a petition of moratorium arguing that the visual information the technology provides will "act as proxies for race" (Davis & Sadowski, 2021). In other words, using this technology opens up suspicion to an entire group of people instead of just one individual suspect (Davis & Sadowski, 2021). Davis and Sadowski also point out that crime prediction software MSP uses is not itself free of racial bias (Davis & Sadowski, 2021). For example, when similar technology called "PredPol" was used in New Jersey to predict where crimes would occur, the software consistently predicted less crimes in neighborhoods where there was a higher population of white residents (Sankin et al., 2021). In this sense, because technology is created by humans with bias, technology itself is not free of bias either – and pretending it is could have severe consequences for marginalized people who are already disproportionally burdened with over-policing.

While the implementation of MPS technology does not seem to be slowing down, even in the face of backlash, it is clear that forensic scientists and law enforcement will have to work closely together to make sure this technology is used correctly. A study on MPS and its introduction to law enforcement stated that "basic genetics hasn't changed, and nor has the way the vast majority of the DNA results that find their way into courtroom will be presented" (Scudder et al., 2017). While that may be true, it has not calmed the worries of critics who fear that MPS will make racial profiling in law enforcement more prevalent and legitimized under the guise of technological and scientific objectivity. Since there has yet to be any news coverage regarding the first use of MPS by Australian police, perhaps we will just have to wait and see if law enforcement uses this new technology in an ethical, efficient, and effective manner.

Discussion Questions:

1. What ethical values are in conflict in the decision to use MPS technology in law enforcement?
2. Should the Australian police stop the use of this new technology? Why or why not?
3. What ethical guidelines would you suggest law enforcement officials follow when deciding whether or not to implement new technology such as MPS?
4. How could one ethically insure that technologies such as MPS use databases free of bias in their training and refinement processes?

Further Information:

Australian Federal Police. (2021, December 5). "Advanced Technology Allows AFP to Predict Criminal Profiles from DNA." *Australian Federal Police*. Available at: https://www.afp.gov.au/news-media/media-releases/advanced-technology-allows-afp-predict-criminal-profiles-dna

Davis, J., & Sadowski, J. (2021). "Moratorium on AFP's Use of DNA Predictive Profiling Technology." Available at:
https://docs.google.com/forms/d/e/1FAIpQLSfR2ese1242KxVJI7DOkTF0AudP2vU0P2CvkiUhMLY8MBupog/viewform

Sankin, A., Mehrotra, D., Mattu, S., & Gilbertson, A. (2021, December 2). "Crime Prediction Software Promised to be Free of Biases. New Data Shows it Perpetuates Them." *The Markup*. Available at: https://themarkup.org/prediction-bias/2021/12/02/crime-prediction-software-promised-to-be-

free-of-biases-new-data-shows-it-perpetuates-them

Scudder, N., McNevin, D., Kelty, S. F., Walsh, S. J., & Robertson, J. (2017). "Massively Parallel Sequencing and the Emergence of Forensic Genomics: Defining the Policy and Legal Issues for Law Enforcement." *Science & Justice*, *58*(2), 153–158. https://doi.org/10.1016/j.scijus.2017.10.001

Authors:

Claire Coburn, Kat Williams, & Scott R. Stroud, Ph.D.
Media Ethics Initiative
Center for Media Engagement
University of Texas at Austin
December 5, 2022

Image by ANIRUDH on Unsplash