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Submission in response to the Office of the High Commissioner for Human Rights' call for inputs regarding the application of digital technologies in the administration of justice

As researchers concerned with policing, forensic genetics, and bioethics, we wish to express our appreciation to the Office of the High Commissioner for your attention to the impact of digital technologies on human rights.

Our submission focuses on the application of biometric identification systems in the administration of justice, specifically forensic DNA techniques and technologies. DNA analysis is a powerful tool. By analyzing DNA samples and comparing them with other genetic profiles, forensic examiners can uncover or exclude matches between individuals or between an individual and a particular location.¹ DNA analysis can play a positive role in the pursuit of justice, including for victims, missing individuals, and the wrongly accused.²

UN Resolution A/RES/77/219 on human rights in the administration of justice encourages “law enforcement, criminal justice and other relevant institutions to effectively and appropriately employ new and advanced technologies as tools against crime with adequate and effective safeguards to prevent the misuse and abuse of these technologies in this regard.”³ Such advanced technologies would include those used by forensic examiners to collect and process DNA samples. Similarly, Article 12 of the *International Declaration on Human Genetic Data* states that “the collection of biological samples, in vivo or post-mortem, should be made only in accordance with domestic law consistent with the international law of human rights.”⁴

However, existing and emerging tools of forensic DNA analysis can pose rights challenges. These challenges are compounded by poor independent oversight of law enforcement agencies and the failure of law enforcement agencies to undertake human rights impact assessments prior to implementing existing or new forensic tools. We are concerned that law enforcement agencies in numerous countries are employing forensic DNA techniques and technologies in ways that demonstrate non-adherence to the spirit of both UN Resolution A/RES/77/219 and the *International Declaration on Human Genetic Data*. In particular, we find three thematic areas of concern: 1) indiscriminate DNA collection by law enforcement; 2) law enforcement use of familial searching and investigative genetic genealogy tools; and 3) lack of transparency mechanisms surrounding existing and new forensic DNA tools.

¹ INTERPOL, “DNA,” <https://www.interpol.int/en/How-we-work/Forensics/DNA>

² Forensic Genetics Policy Institute, “DNA Databases and Human Rights,” <https://dnapolicyinitiative.org/resources/dna-databases-and-human-rights/>

³ UN General Assembly (2022), “Human rights in the administration of justice,” 77th Sess, UN Doc A/RES/77/219, <https://undocs.org/Home/Mobile?FinalSymbol=A%2FRES%2F77%2F219&Language=E&DeviceType=Desktop&LangRequested=False>

⁴ UNESCO General Conference (2003), “International Declaration on Human Genetic Data,” 32nd Sess, 32 C/Res 22, <https://www.unesco.org/en/legal-affairs/international-declaration-human-genetic-data>

We hope that the Office of the High Commissioner can use this submission to explore the consistency of law enforcement practices with member states' human rights obligations and to call for greater transparency regarding the use of existing and emerging forensic DNA tools.

Indiscriminate DNA collection by law enforcement

The first thematic concern we would like to raise is related to the indiscriminate collection of DNA samples by law enforcement. A 2019 survey of INTERPOL member states indicates police use DNA analysis in eighty nine countries and maintain DNA databases in seventy.⁵ However, police in many countries are known to collect and permanently store DNA samples from people not convicted or suspected of specific offenses or from people accused of non-violent offenses. This is despite evidence that adding the DNA profiles of innocent people to forensic DNA databases does little to reduce crime rates.⁶

Previous indiscriminate DNA collection practices have been subject to criticism. In the case of *S. and Marper vs. the United Kingdom*, the European Court of Human Rights determined the DNA of people not convicted of an offense should not be stored in forensic databases for an indeterminate period of time and argued such practices “fail[ed] to strike a fair balance between the competing public and private interests.”⁷ The United Kingdom responded to this judgment by implementing the *Protection of Freedoms Act* in 2012 and deleting millions of DNA profiles stored in forensic databases.⁸ In 2018, the UK Home Office admitted that the use of mandatory DNA testing when assessing UK status claims by Gurkha soldiers and Afghan nationals had been illegal and in contravention of the Home Office's policies.⁹

We are concerned that law enforcement in other UN member states continue to indiscriminately collect DNA. Since 2020, the United States' Department of Homeland Security, Customs and Border Protection, and Immigration and Customs Enforcement have collected DNA samples from migrants and asylees, including minors, held in administrative immigration detention and added these samples to the Federal Bureau of Investigation's Combined DNA Index System (CODIS) database.¹⁰ In defending this policy, the Department of Justice argued “the benefits of

⁵ INTERPOL (2019), “Global DNA Profiling Survey Results 2019,” <https://www.interpol.int/content/download/15469/file/INTERPOL%20Global%20DNA%20Profiling%20Survey%20Results%202019.pdf>

⁶ H.M. Wallace, A.R. Jackson, J. Gruber, A.D. Thibedeau (2014), “Forensic DNA databases—Ethical and legal standards: A global review,” *Egyptian Journal of Forensic Sciences*, 4(3), pp.57-63, <https://www.sciencedirect.com/science/article/pii/S2090536X14000239?via%3Dihub#b0030>

⁷ European Court of Human Rights (2008), “S. and Marper vs. the United Kingdom,” Application nos 30562/04 and 30566/04, <https://rm.coe.int/168067d216>

⁸ A.O. Amankwaa and C. McCartney (2018), “The UK National DNA Database: Implementation of the Protection of Freedoms Act 2012,” *Forensic Science International*, 284, pp. 117-128, <https://www.sciencedirect.com/science/article/pii/S0379073817305571>

⁹ M. Bulman (2018), “Home Office admits people were wrongly denied UK status after refusing to provide DNA evidence,” *The Independent* (25 October 2018), <https://www.independent.co.uk/news/uk/home-news/home-office-immigration-status-dna-evidence-sajid-javid-government-conservative-a8600961.html>

¹⁰ D. Prokop (2023), “U.S. continues to take DNA samples from asylum seekers at the border,” *Missouri Independent* (9 June 2023), <https://missouriindependent.com/2023/06/09/u-s-continues-to-take-dna-samples-from-asylum-seekers-at-the-border>; S. Hussain and M. Guariglia (2023), “The U.S. Government's Database of Immigrant

DNA-sample collection include the creation of a permanent DNA record that may match to DNA evidence from a later crime,” even if there was no evidence migrant detainees had committed a criminal offense.¹¹ These DNA collection practices increase law enforcement suspicion of vulnerable migrants and asylees, despite evidence migrants commit crimes at rates lower than native-born US citizens.¹²

Police have also surreptitiously collected and stored DNA from people not charged or convicted with a criminal offense. The New York Police Department has conducted DNA searches of nearly 32,000 people without court orders or warrants and stored genetic data in local DNA databases subject to little independent oversight.¹³ In some cases, police offered individuals drinks, cigarettes, or chewing gum and then collected DNA samples from the discarded items without the knowledge of targeted individuals.¹⁴ Police in San Francisco have also used a DNA profile drawn from a rape kit to indict the victim in an unrelated crime.¹⁵ Such practices recall the warnings of UN experts that “[n]ew and emerging technologies, including artificial intelligence-based biometric surveillance systems, are increasingly being used in sensitive contexts, without the knowledge or consent of individuals.”¹⁶

In other countries, police have collected DNA from entire communities. Public Security Bureaus in the People’s Republic of China have conducted mass DNA collection campaigns in the Tibet Autonomous Region and the Xinjiang Uyghur Autonomous Region as part of larger programs of state control and repression.¹⁷ In Tibet alone, Citizen Lab researchers estimate police have

DNA Has Hit Scary, Astronomical Proportions,” *Electronic Frontier Foundation* (25 September 2023), <https://www.eff.org/deeplinks/2023/09/us-governments-database-immigrant-dna-has-hit-scary-astronomical-proportions>

¹¹ Office of the Attorney General, Department of Justice (2020), “DNA-Sample Collection From Immigration Detainees,” 85 FR 13483, <https://www.federalregister.gov/documents/2020/03/09/2020-04256/dna-sample-collection-from-immigration-detainees>

¹² K.F. Butcher (2007), “Why Are Immigrants Incarceration Rates So Low?: Evidence on Selective Immigration, Deterrence, and Deportation,” *National Bureau of Economic Research Working Paper Series*, https://www.nber.org/system/files/working_papers/w13229/w13229.pdf; R. Pérez-Peña (2017), “Contrary to Trump’s Claims, Immigrants Are Less Likely to Commit Crimes,” *The New York Times* (26 January 2017), <https://www.nytimes.com/2017/01/26/us/trump-illegal-immigrants-crime.html>

¹³ T. Closson (2022), “This Database Stores the DNA of 31,000 New Yorkers. Is It Illegal?,” *The New York Times* (22 March 2022), <https://www.nytimes.com/2022/03/22/nyregion/nyc-dna-database-nypd.html>

¹⁴ A. Katersky (2022), “NYPD accused of illegally obtaining, storing the DNA samples of nearly 32,000 people,” *ABC News* (22 March 2022), <https://abcnews.go.com/US/nypd-accused-illegally-obtaining-storing-dna-samples-32000/story?id=83598107>

¹⁵ E. Medina (2022), “Woman Sues San Francisco Over Arrest Based on DNA From Her Rape Kit,” *The New York Times* (13 September 2022), <https://www.nytimes.com/2022/09/13/us/rape-kit-dna-san-francisco.html>

¹⁶ Office of the High Commissioner for Human Rights (2023), “New and emerging technologies need urgent oversight and robust transparency: UN experts,” *Office of the High Commissioner for Human Rights* (2 June 2023), <https://www.ohchr.org/en/press-releases/2023/06/new-and-emerging-technologies-need-urgent-oversight-and-robust-transparency>

¹⁷ Human Rights Watch (2017), “China: Minority Region Collects DNA from Millions,” *Human Rights Watch*, <https://www.hrw.org/news/2017/12/13/china-minority-region-collects-dna-millions>; E. Dirks (2022), “Mass DNA Collection in the Tibet Autonomous Region from 2016–2022,” *The Citizen Lab*, <https://citizenlab.ca/2022/09/mass-dna-collection-in-the-tibet-autonomous-region/>; Human Rights Watch (2022), “China: New Evidence of Mass DNA Collection in Tibet,” *Human Rights Watch*, <https://www.hrw.org/news/2022/09/05/china-new-evidence-mass-dna-collection-tibet>

collected DNA samples from between one quarter to one third of the region's population.¹⁸ The targeting of ethnic communities for mass DNA collection recalls the Special Rapporteur on contemporary forms of racism's comment that biometric recognition technologies are "capable of creating and sustaining racial and ethnic exclusion in systemic or structural terms."¹⁹

Law Enforcement Use of Familial Searching and Investigative Genetic Genealogy Tools

The second thematic concern we would like to raise relates to investigative genetic genealogy tools. Through familial searching, law enforcement can compare an unknown DNA sample to existing DNA profiles in order to identify a potential genetic relative.²⁰ A 2018 study found "a genetic database needs to only cover 2% of the target population to provide a third-cousin match to nearly any person," as long as genetic information is combined with accurate genealogical records.²¹ Other researchers suggest genetic databases containing data from 5% of a target population would be sufficient to create a "quasi-universal forensic DNA database."²² Familial searching techniques can be used to establish genetic relationships beyond those of immediate suspects or victims in criminal investigations. For this reason, these techniques have rights implications for both targeted individuals and their genetic relatives.

The rights implications of familial searching are particularly acute in cases where police compel individuals to submit DNA samples. China's Ministry of Public Security has built a national male DNA database system containing DNA profiles of tens of millions of men and boys and genealogical information of their extended male relatives. This database may already contain the genetic data of at least 5% of China's male population and related genealogical records and could provide police with quasi-universal genetic coverage of China's male population.²³ To build this database, police have targeted men and boys who are not suspected or convicted of criminal offenses. Some Chinese police have justified this program by referring to the high representation of male offenders in serious crimes.²⁴ However, limited information is available on the effectiveness of male DNA databases in resolving serious crimes. Furthermore, the scale

¹⁸ E. Dirks (2022), "Mass DNA Collection in the Tibet Autonomous Region from 2016–2022," *The Citizen Lab*, <https://citizenlab.ca/2022/09/mass-dna-collection-in-the-tibet-autonomous-region/>

¹⁹ UN General Assembly (2020), "Contemporary forms of racism, racial discrimination, xenophobia and related intolerance," 75th Sess, UN Doc A/75/590, <https://documents.un.org/doc/undoc/gen/n20/304/54/pdf/n2030454.pdf?token=BS5TMpFIwL1RZRaWGD&fe=true>

²⁰ Bureau of Justice Assistance, U.S. Department of Justice (2012), "An Introduction to Familial Searching for State, Local, and Tribal Justice Agencies," *Global Justice Information Sharing Initiative*, https://bja.ojp.gov/sites/g/files/xyckuh186/files/media/document/an_introduction_to_familial_dna_searching1.pdf

²¹ Y. Erlich, T. Shor, I. Pe'er, and S. Carm (2018), "Identity inference of genomic data using long-range familial searches," *Science* 362(6415), pp. 690-694, <https://www.science.org/doi/10.1126/science.aau4832>

²² S. Miller and M. Smith (2022), "Quasi-Universal Forensic DNA Databases," *Criminal Justice Ethics* 41(3), pp. 238-256, <https://www.tandfonline.com/doi/full/10.1080/0731129X.2022.2141021>

²³ E. Dirks and J. Leibold (2020), "Genomic surveillance: Inside China's DNA dragnet," *Australian Strategic Policy Institute*, <https://www.aspi.org.au/report/genomic-surveillance>; S. Lee (2020), "China Is Collecting DNA From Tens of Millions of Men and Boys, Using U.S. Equipment," *The New York Times* (17 June 2020), <https://www.nytimes.com/2020/06/17/world/asia/China-DNA-surveillance.html>

²⁴ A. Bernotaite (2020), "Building of the world's largest DNA database: The China case," in P. Shrivastava, H. R. Dash, J. A. Lorente, and J. Imam (Eds.) *Forensic DNA typing: Principles, applications and advancements* (pp. 639–658), Springer, https://doi.org/10.1007/978-981-15-6655-4_33

of China's male DNA database raises serious questions around the proportionality of a mass male DNA collection program targeting both adults and minors.

Elsewhere, forensic investigators have accessed commercial genetic genealogy databases. As part of criminal investigations, police in the United States, Canada, and other countries have uploaded unknown DNA samples to direct-to-consumer genetic genealogy databases for the purpose of finding matches with genetic relatives.²⁵ In many cases, users of these services have not consented to police data requests or have been unaware that their genetic profiles are susceptible to police searches. Police use of commercial genetic genealogy databases illustrates the risk that DNA data may be processed for reasons unrelated to the original reason for collection. Even users of commercial genetic genealogy databases who understand and consent to police accessing their data may not fully understand the privacy implications for their genetic kin.²⁶ The sheer number of potential matches produced through familial searching may bring otherwise innocent people under police suspicion or expose sensitive familial relationships such as disputed paternity/maternity cases.²⁷

Lack of transparency mechanisms surrounding new forensic DNA technologies

The third thematic concern we would like to raise is related to the lack of transparency mechanisms surrounding new forensic DNA technologies. One new technology is DNA phenotyping, a process by which the physical appearance characteristics and/or biogeographic ancestry of an unknown individual are modeled via analysis of DNA samples. Police in numerous countries have touted the benefits of DNA phenotyping to produce depictions of unknown perpetrators based on genetic traces.

However, there is a distinct lack of transparency around how proprietary DNA phenotyping technologies work, including what precise genetic and non-genetic data are assessed, what specific methods of analysis are used, and how accurate the resulting models are.²⁸ Without greater transparency, DNA phenotyping techniques cannot be proportionately implemented without risking harm to privacy or contributing to discriminatory policing practices targeting particular ethnic and racial communities.²⁹ In China, forensic researchers are exploring the use of

²⁵ J. Smith (2023), "Police Are Getting DNA Data From People Who Think They Opted Out," *The Intercept* (18 August 2023) <https://theintercept.com/2023/08/18/gedmatch-dna-police-forensic-genetic-genealogy/>; G. Rasmussen (2019), "Vancouver police using same DNA technique that caught suspected Golden State Killer," *CBC News* (30 May 2019), <https://www.cbc.ca/news/canada/british-columbia/golden-state-killer-dna-vancouver-cold-case-leonardo-1.5145144>

²⁶ N.F. de Groot, B.C. van Beers, and G. Meynen (2021), "Commercial DNA tests and police investigations: a broad bioethical perspective," *Journal of Medical Ethics* 47(12), pp. 788-795, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8639940/>

²⁷ P. Kosseim (2015), "A Family Affair: Forensic DNA Databases and Privacy Implications for Biological Relatives," *Office of the Privacy Commissioner of Canada*, https://www.priv.gc.ca/en/opc-news/speeches/2015/sp-d_20150327_pk/

²⁸ C. Arnold (2020), "The controversial company using DNA to sketch the faces of criminals," *Nature* (9 September 2020), <https://www.nature.com/articles/d41586-020-02545-5>

²⁹ P.M. Schneider, B. Prainsack, and M. Kayser (2019), "The Use of Forensic DNA Phenotyping in Predicting Appearance and Biogeographic Ancestry," *Deutsches Arzteblatt International* 116(51-52), pp. 873-880, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6976916/>; Article 19 (2021), "When bodies become data: Biometric

DNA phenotyping to identify members of ethnic minority communities in Xinjiang which state authorities have already subjected to programs of mass DNA collection and state repression.³⁰ Canadian police have been criticized for using DNA phenotyping to develop and release an image of an unknown Black sexual assault subject, a decision which led to criticism that the image was both unhelpful for the purpose of the investigation and contributed to anti-Black racism.³¹

We are also concerned that large sample biobanks and the genetic databases of biomedical and research institutions may become accessible to law enforcement. In the past police access to biomedical genetic samples have been restricted to individual suspects or missing persons.³² However, next-generation sequencing and computerized DNA databases may permit data obtained in biomedical settings to be matched with forensic genetic data. These technological advances may encourage police to attempt to upload forensic DNA profiles to biomedical or research genetic databases in the hopes of finding a match among stored profiles. Such activities would threaten patient-physician confidentiality and could undermine public trust in healthcare providers and researchers.

Recommendations

In light of the concerns raised in our submission, we propose the following recommendations:

Recommendation 1: Request UN member states publicly release current data on the number and use of DNA profiles held in forensic DNA databases, tabulated by sample type (traces, arrestees, convicts, missing persons and relatives, forensic personnel, etc.), DNA profiling technology (autosomal, Y, X, mitochondrial, phenotypic, ancestry, etc.), matching efficiency (number of investigations, matches, etc.), and retention (number of new profiles, profiles purged, etc.).

Recommendation 2: Request that member states establish independent oversight of the development and application of forensic DNA techniques and technologies, including but not limited to forensic DNA databases and emerging practices like familial searching and DNA phenotyping.

Recommendation 3: Request that member states establish protections for commercial, clinical, and research genetic data, including by placing strict limits on law enforcement access to direct-to-consumer genetic genealogy databases and biomedical and research genetic databases.

technologies and freedom of expression,” *Article 19*, <https://www.article19.org/wp-content/uploads/2021/05/Biometric-Report-P3-min.pdf>

³⁰ S. Lee and P. Mozur (2019), “China Uses DNA to Map Faces, With Help From the West,” *The New York Times* (3 December 2019), <https://www.nytimes.com/2019/12/03/business/china-dna-ughurs-xinjiang.html>

³¹ C. Freeze (2022), “Edmonton police retract DNA-derived mugshot,” *The Globe and Mail* (6 October 2022), <https://www.theglobeandmail.com/canada/alberta/article-edmonton-police-retract-dna-derived-mugshot/>

³² M. Poggio (2022), “NJ Suit Shines Light On Police Use Of Infant Blood In Probes,” *Law 360* (27 July 2022), <https://www.law360.com/articles/1512695/nj-suit-shines-light-on-police-use-of-infant-blood-in-probes>