

**Familial Searching and Predictive DNA Testing for  
Forensic Purposes**  
**A Review of Laws and Practices**

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## **THE VICTORIA LAW FOUNDATION LEGAL POLICY INTERNSHIP PROGRAM**

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## I. Introduction

Since its earliest employment in criminal casework in the 1980s,<sup>1</sup> DNA analysis has reached a state of quasi-omnipotence within the modern framework of law enforcement.<sup>2</sup> In light of the CSI effect,<sup>3</sup> it is often expected by society that DNA evidence will play a critical role in bringing perpetrators of crime to justice,<sup>4</sup> acting as the ‘gold standard’ for offender identification.<sup>5</sup> In recent years, developments in science and technology have facilitated an expansion of uses of DNA in criminal investigations not envisaged by legislators in their original consideration of DNA and database regulation. The processes of familial searching and predictive DNA testing are examples of two ‘new’ forensic techniques which, if implemented and regulated effectively, have significant potential to add to the fight against crime.

Although direct comparisons of DNA profiles of known individuals and unknown biological evidence are most common, indirect genetic kinship analyses, using the DNA of biological relatives, are often necessary for humanitarian mass disaster and missing person identifications. Such methods could potentially be applied to searches of the National DNA database. This report will consider issues surrounding the implementation of familial searching and predictive DNA testing as investigative tools in the Australian context by evaluating the positive and negative attributes of the two techniques. The report will then survey the use and regulation of the methods in overseas jurisdictions and suggest appropriate models from which it is advisable Australian legislators take guidance in considering implementation of these progressive tools in Commonwealth, State and Territory jurisdictions. A number of case studies are included in this report to demonstrate the capabilities of familial searching and predictive DNA testing to aid in criminal investigations. Overseas success using the techniques indicates the need for their legislative and regulatory consideration in Australia so that domestic law enforcement is able to keep pace with the available technology.

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<sup>1</sup> Michael Seringhaus, ‘The Evolution of DNA Databases: Expansion, Familial Search, and the Need for Reform’ *DePaul University College of Law 9<sup>th</sup> Annual Ciplit Symposium & 12<sup>th</sup> Annual Niro Distinguished Lecture* October 2009, 3.

<sup>2</sup> Jessica D. Gable, ‘Probable Cause from Probable Bonds: A Genetic Tattle Tale Based on Familial DNA’ *Georgia State University College of Law, Legal Studies Research Paper No 2009-23*, 4.

<sup>3</sup> Simon A. Cole and Rachel Dioso-Villa, ‘CSI and its effects: Media, juries and the burden of proof’ (2007) 41(3) *New England Law Review* 435-470.

<sup>4</sup> L.A. Foreman, C. Champod, I.W. Evett, J.A. Lambert and S. Pope, ‘Interpreting DNA Evidence: A Review’ (2003) 71(3) *International Statistical Review* 473-495, 473.

<sup>5</sup> Jules Epstein, “Genetic Surveillance” – The Bogeyman Response to Familial DNA Investigations’ (2009) *Journal of Law, Technology & Policy* 141-173, 163.

## II. Familial searching

### A. DNA in context: databases and law enforcement

In view of the considerable potential contribution of DNA profiling to aid in criminal cases, many countries around the world have established DNA databases at state and national levels.<sup>6</sup> These databases typically house profiles gained from convicted offenders in various jurisdictions for the purposes of promoting deterrence and reducing recidivism.<sup>7</sup> Australia's National Criminal Investigation DNA Database (NCIDD) became fully operational in 2009 and facilitates coordination of information sharing amongst the pre-existing state and territory databases.<sup>8</sup> Given the power of DNA analysis as an investigative and evidential tool, there has been a considerable global trend towards database expansion.<sup>9</sup> Many US jurisdictions now include arrestees on their databases.<sup>10</sup> However the UK is being forced to unwind their practice of indefinite retention of samples following the European Court of Human Rights' decision in the case of *S and Marper*.<sup>11</sup>

Used in a quantitative manner for comparison, DNA analysis has traditionally relied on the determination of a direct match between a DNA profile obtained from crime scene sample with a profile obtained from a suspect.<sup>12</sup> With the advent of databases, stored DNA profiles have gained increasing utility in their application to cracking cold cases with few other investigative leads.<sup>13</sup> A search through the database DNA profiles to find a match for a given crime scene sample can provide a clear indication of a database's capacity to indicate an offender's involvement in past crimes.<sup>14</sup> Whilst the use of DNA database evidence

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<sup>6</sup> *DNA International* (2009) Gordon Thomas Honeywell Government Affairs < <http://international.dnaresource.com/>>.

<sup>7</sup> Seringhaus, above n1, 33.

<sup>8</sup> 'NCIDD Strategic Issues Paper' (*CrimTrac*, 17 November 2009) 12.

<sup>9</sup> Tania Simoncelli, 'Dangerous Excursions: The Case Against Expanding Forensic DNA Databases to Innocent Persons' (2006) *Journal of Law, Medicine and Ethics* 390-397,390.

<sup>10</sup> David H. Kaye, 'Who Needs Special Needs? On the Constitutionality of Collecting DNA and Other Biometric Data from Arrestees' (2006) 34 *Journal of Law, Medicine and Ethics* 192-4.

<sup>11</sup> 'The National DNA Database' (Post note No 258, Parliamentary Office of Science and Technology, February 2006) 3. There was a successful challenge to the UK's indefinite retention of profiles in the case of *S. and Marper v The United Kingdom* (European Court of Human Rights, Grand Chamber, Application No 30562/04 and 30566/04, 4 December 2008). Following this the UK implemented policies to provide for principled destruction of samples along specified timelines.

<sup>12</sup> Frederick R. Bieber, Charles H. Brenner and David Lazer, 'Finding Criminals Through DNA of Their Relatives' (2006) 312 *Science* 1315-1316, 1315; Manfred Kayser and Peter M. Schneider, 'DNA-based prediction of human externally visible characteristics in forensics: Motivations, scientific challenges and ethical considerations' (2009) *Forensic Science International: Genetics* 3 154-161, 154.

<sup>13</sup> *Ibid.*

<sup>14</sup> David H. Kaye, 'Trawling DNA Databases for Partial Matches: What is the FBI Afraid of?' (2009) 19 *Cornell Journal of Law and Public Policy* 145, 147.

has been described as a narrative of ‘trading places’ with acceptance and resistance by prosecution and defence council alike,<sup>15</sup> recourse to such evidence in criminal trials is now a globally accepted practice.

## B. What is familial searching?

In the forensic context, familial searching relates to the comparison of a crime scene profile with suspect and convicted offender profiles on a DNA database. The process essentially looks for kinship (relatives) to the crime scene profile and therefore uses a different search algorithm to straight match searching. Results of the kinship searching produce a list of candidate relatives, in decreasing order of likelihood, who may be the source of the crime scene sample of interest.

As the science has advanced and databases have expanded, profiles on national databases are facing potential uses aside from the direct matching they were constructed to facilitate.<sup>16</sup> One such use is ‘familial searching’ which relies on the special inheritance patterns which link siblings, parents, children and other close relatives;<sup>17</sup> profiles of close relatives bearing significant similarities as a result of shared ancestry.<sup>18</sup> Whilst a direct match on the database would produce concordance at all sites on the generated profiles, a familial search returns a lower stringency level match indicating that a possible relative of a profiled individual is the source of the unknown sample.<sup>19</sup> True familial searching involves a deliberate search for a partial match to a profile already on the database, however similar results may also be obtained more informally where the search for a direct match on the database inadvertently returns a result that is so close to an existing profile as to indicate a blood relationship between that individual and the source of the crime scene sample.<sup>20</sup> Methods relying on kinship depend on the fact that close relatives share many of the alleles (alternatives at a site on the DNA) and that a relative of the perpetrator is on the database,<sup>21</sup> in

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<sup>15</sup> Epstein, above n5, 141.

<sup>16</sup> Mark A. Rothstein and Meghan K. Talbott, ‘The Expanding Use of DNA in Law Enforcement: What Role for Privacy?’ (2006) *Journal of Law, Medicine & Ethics* 153-164,153.

<sup>17</sup> Seringhaus, above n1, 26.

<sup>18</sup> Bieber, Brenner and Lazer, above n12.

<sup>19</sup> Erin Murphy, ‘Relative Doubt: Familial Searches of DNA Databases’ (2009). Available at SSRN: <http://ssrn.com/abstract=1498807>, 6.

<sup>20</sup> Ibid,8. Direct matching is the ability to make a direct comparison of allele values from different interpreted single source DNA profiles and view these potential links in a ranked order. The match criteria is set that is used to determine limits on the number of allowable differences within two DNA profiles in order to be considered the same. In the forensic context, familial searching relates to the comparison of a crime scene profile with suspect and convicted offender profiles on a DNA database. The process produces a list of candidate relatives, in decreasing order of likelihood, who may be related to the source of the crime scene sample of interest. The match criteria is set much lower for this technique; a search will return many possible (Personal Communication – Carmen Eckhoff, CrimTrac). candidates that have similarities to the unknown profile.

<sup>21</sup> Bieber, Brenner and Lazer, above n12.

which case the determination of a close match provides investigators with a likely probability that a relative of the person identified is linked to the crime in question.<sup>22</sup>

### C. What are the benefits?

Familial searching has great potential as a legitimate investigative tool to generate leads and maximise the efficiency of criminal databases.<sup>23</sup> There is evidence that analysis for kinship on a database search could increase the cold-hit rate by 40%;<sup>24</sup> the technique having aided in 18 matches and 13 convictions in the UK since 2004.<sup>25</sup> Successful use of the technique in the US, the UK, New Zealand and Canada has led police to serial rapists and murderers who had long eluded detection and arrest through traditional methods of investigation. Examples such as the conviction of South Yorkshire's serial 'Shoe Rapist'<sup>26</sup> and posthumous identification of deceased Joseph Kappen as the 'Saturday Night Strangler'<sup>27</sup> are among the most cited successes of the method. In July 2010, California's arrest of the 'Grim Sleeper' was championed as that state's first high profile successful use of the technique.<sup>28</sup> In that case, a familial search of the Californian database facilitated the apprehension of Lonnie David Franklin Jr who was charged with 10 counts of murder and one count of attempted murder for his crimes against African-American women over a 22 year period. Franklin Jr was linked to the murders after a partial match was discovered between his convicted son's profile and DNA from the various crime scenes. The familial search was key to sparking the investigation into Franklin Jr who would otherwise not have been identified and apprehended.<sup>29</sup> Colorado District Attorney and familial searching advocate Mitch Morrissey's website lists many more cases where familial searching has been an indispensable tool in identifying and convicting high profile serial offenders; the site serves as a formidable resource on the topic.<sup>30</sup>

Aside from its capacity to generate leads, familial searching may also play a key role in protecting and exonerating the innocent. The case of Daryl Hunt exemplifies this use. Hunt spent 19 years in prison for the

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<sup>22</sup> Ibid.

<sup>23</sup> Henry T. Greely, Daniel P. Riordan, Nanibaa' A. Garrison and Joanna L. Mountain, 'Family Ties: The Use of DNA Offender Databases to Catch Offenders' Kin' (2006) *Journal of Law, Medicine & Ethics* 248-262, 259.

<sup>24</sup> Bieber, Brenner and Lazer, above n12, 1316.

<sup>25</sup> Gable, above n2, 25.

<sup>26</sup> Andrew Norfolk, 'Shoe rapist is trapped by sister's DNA 20 years after serial attacks' *The Times* (UK), 18 July 2006. Available online at: <http://www.timesonline.co.uk/tol/news/uk/crime/article689042.ece>.

<sup>27</sup> Kevin Toolis 'The hunt for the Saturday Night Strangler' *The Guardian* (UK), 18 January 2003. Available online at: <http://www.guardian.co.uk/lifeandstyle/2003/jan/18/weekend.kevintoolis>.

<sup>28</sup> Maura Dolan, 'In Grim Sleeper Case, a new tack in DNA searching: It's the first successful use of controversial 'familial' searching in a high-profile US case', *Los Angeles Times* (Los Angeles) 10 July 2010.

<sup>29</sup> Ibid.

<sup>30</sup> Mitchell R. Morrissey, *Familial DNA Database Searches* (2009) Denver District Attorney <[http://www.denverda.org/DNA/Familial DNA Database Searches.htm](http://www.denverda.org/DNA/Familial%20DNA%20Database%20Searches.htm)> .

brutal rape and murder of a newspaper editor in 1984, but was freed in 2004 after the investigation of a partial match resulted in a confession to the crime by another man.<sup>31</sup> Despite DNA testing 10 years after his conviction indicating that another individual had been involved in raping the woman in question,<sup>32</sup> it was nine years after that initial DNA testing that a familial match was used to track down the real killer. The 1984 crime scene sample was run through North Carolina's state database and revealed a near match to a convicted felon; Anthony Brown.<sup>33</sup> This matching indicated that a relative of Brown's rather than Hunt may have committed the crime, later investigation locating Willard Brown, a brother of Anthony who confessed to both the rape and murder.<sup>34</sup> In the Hunt case, the finding of a partial match had the effect of ending an injustice which had continued for nearly two decades. Without the use of familial searching, the wrongful incarceration of Hunt would most likely never have been corrected.

#### D. What are the concerns?

There can be no dispute that the application of familial searching to DNA databases is a technique aimed at fighting crime.<sup>35</sup> Since databases are already in existence, familial searching would seem to be the next logical step of the application of forensic principles and the available technology to the criminal context. However, there are significant problems with the official implementation of familial searching as an investigative technique which raise practical, technical, rights-based, legal and ethical concerns. Criticisms are broad ranging and are harboured by professionals, legislators, civil libertarians and lay members of society alike. A recent online discussion between Mitch Morrissey and Jeffrey Rosen, a law professor at George Washington University, has highlighted the controversial nature of the debate. The discussion attracted strong opinions from individuals across the US with comments both ardently supporting and denigrating the use of the technique in law enforcement.<sup>36</sup>

In light of and because of the powerful nature of familial searching, the case for familial searching is strongest for crimes in which all other investigative avenues have been exhausted and there remains no fresh information to pursue. It is particularly persuasive where such crimes are of a serious or serial nature and pose a significant threat to society. Minimising the number of cases to which familial searching is applied will reduce the gravitas of many of the relevant concerns. The following section will consider the

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<sup>31</sup> Ibid.

<sup>32</sup> Jeffrey Rosen, 'Genetic Surveillance for all?' *Slate* 17 March 2009. Available online at: <<http://www.slate.com/id/2213958>>.

<sup>33</sup> Ibid.

<sup>34</sup> Ibid.

<sup>35</sup> Gable, above n2, 22.

<sup>36</sup> Mitchell R. Morrissey and Jeffrey Rosen. 'How Far Should the DNA Dragnet Go?' *New York Times* (New York) 14 July 2010. Available online at : <<http://www.nytimes.com/roomfordebate/2010/7/14/how-far-should-the-dna-drag-net-go>>.

criticisms against the use of the technique; however Section F will consider an appropriate framework that might be useful in overcoming the below mentioned concerns.

## 1. Practical and technical concerns

Currently, DNA databases use direct matching to identify a perpetrator of an offence, whereas familial searching looks for possible relatives of the perpetrator in relation to the offence being investigated; that is familial searching looks for someone who has not committed the crime in question. The capacity for database searches to return adventitious links is well noted,<sup>37</sup> and the risk is heightened in the context of familial searching where random matches at a lower than exact-match stringency will certainly generate many false leads.<sup>38</sup> Any one strictly tailored search of CODIS – the US database – has been estimated to be likely to return five to twenty-five persons,<sup>39</sup> a consideration that has significant ramifications. Familial searching is far from an exact science as there is considerable scope for technical, statistical and human error. Reliability, overreliance and cost are the main practical concerns associated with implementation of familial searching and must be adequately addressed if the technique is to be applied in the Australian criminal justice system.

### (a) Reliability

It has been noted that to establish the integrity and reliability of familial searching, it is critical that its scientific basis is prescribed before it is put into widespread practice.<sup>40</sup> A large part of the resistance to the formal implementation of the practice in the US has been that any bungling of the use of familial searching might compromise the use of DNA evidence and databases in law enforcement as a whole.<sup>41</sup> This is relevant in the Australian context in view of the criticisms of routine DNA profiling as a result of the recent *Jama* case in Victoria where confidence in DNA evidence was severely shaken.<sup>42</sup> Scientists contend that this type of argument is demonstrative of the lack of understanding of the use of DNA by law enforcement, myths perpetuated in the community feeding into a fear of a slippery slope scenario which is in practice remedied by both the limited nature of the stored data and the penalties in place for misuse of genetic

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<sup>37</sup> David Kaye, 'Rounding Up the Usual Suspects: A Legal and Logical Analysis of DNA Trawling Cases' (2009) 87(2) *North Carolina Law Review*.

<sup>38</sup> Seringhaus, above n1, 30.

<sup>39</sup> *Ibid.*

<sup>40</sup> Stephen S. Owen and Todd W. Burke, 'DNA Databases and Familial Searching' (2007) *Criminal Law Bulletin* 617, 623.

<sup>41</sup> Maura Dolan and Jason Felch, 'Tracing a crime suspect through a relative' *Los Angeles Times* (Los Angeles) 25 November 2008.

<sup>42</sup> Milanda Rout, 'Freed man Farah Jama angry over rape DNA bungle' *The Australian* 7 December 2009. Available at: <<http://www.theaustralian.com.au/news/nation/freed-man-farah-jama-angry-over-rape-dna-bungle/story-e6frg6nf-1225807837386>> and Milanda Rout, 'Victoria Police Chief Simon Overland orders DNA evidence halt' *The Australian* 9 December 2009. Available at: < <http://www.theaustralian.com.au/news/nation/victoria-police-chief-simon-overland-orders-dna-evidence-halt/story-e6frg6nf-1225808703764>>

information and databases.<sup>43</sup> That debate aside, due to the current ad-hoc and often informal adoption of familial searching techniques around the world, there is no generally agreed standard by which partial matches should be measured and reported<sup>44</sup> so there remains much uncertainty. It is appropriate that this be addressed to legitimise the practice as an official investigative tool.

Australian forensic laboratories currently use a 10 loci<sup>45</sup> DNA profiling system for uploading to NCIDD.<sup>46</sup> The deficiencies of this in comparison to the increased loci used by overseas labs are well noted.<sup>47</sup> A recent study reflecting on the 2009 Victorian Bushfires Disaster highlights the shortcomings of the current system specifically in relation to familial searching,<sup>48</sup> identifying that kinship analysis involving multiple family members is best served through profiling of a minimum of 12 markers.<sup>49</sup> The study suggests that the use of 9 markers was not discriminatory enough for the identification of some Bushfire victims within families, and extrapolated to the criminal context, this finding highlights the need for the development of appropriate systems and guidelines to administer those systems if familial searching is to be formally adopted. There is a current inquiry taking place to determine the feasibility of the adoption of the European set of core DNA marker system by Australian laboratories,<sup>50</sup> a system which would increase the accuracy of familial searching by virtue that it consists of 16 markers. It is generally accepted that the analysis of more loci and the introduction of more sensitive and specific techniques such as Y-STR and mtDNA<sup>51</sup> analysis decreases the potential of familial searches to produce erroneous results. If Y-STR and mtDNA analysis were utilised, this would help to reduce the number of potential leads and therefore investigative costs generated by the familial searching process.<sup>52</sup>

A further technical issue linked to reliability has been noted by US critics; in that Convicted Offender DNA Index System (CODIS) (the USA National DNA database) was not designed to track familial matches and because of this the software is ineffective for that purpose.<sup>53</sup> The CODIS database is said to ignore some of

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<sup>43</sup> See for example s 23YDAF of the *Crimes Act 1914* (Cth) in which ss (2) prescribes a penalty of imprisonment for 2 years if a person's conduct causes matching that is not permitted or the person is reckless as to the matching of profiles.

<sup>44</sup> Owen and Burke, above n 40, 623.

<sup>45</sup> The 10 loci include 9 markers plus Amelogenin – a sex determinant.

<sup>46</sup> NCIDD Strategic Issues Paper, above n8.

<sup>47</sup> *Ibid*, 42.

<sup>48</sup> Personal communication – Dr Dadna Hartman (Victorian Institute of Forensic Medicine). Bushfires study in print.

<sup>49</sup> *Ibid*.

<sup>50</sup> Personal communication – Joy Russell (The Victorian Institute of Forensic Medicine).

<sup>51</sup> Y-STR and mtDNA refers to information inherited uniquely from the father (on the Y chromosome) and the mother (through the mitochondria). This may be useful in familial testing because Y-STR and mtDNA should be identical amongst closely related individuals, i.e. mother to child for mtDNA and father to son for Y-STR. Because of the nature of inheritance, biological siblings should also have identical mtDNA and Y-STR profiles.

<sup>52</sup> Epstein, above n5, 148.

<sup>53</sup> Seringhaus, above n1, 30; Murphy, above n19, 9.

the hallmark inheritance patterns that characterise kinship relationships,<sup>54</sup> inferring that the way CODIS is programmed prevents its sensitivity to rare combinations of allelic frequencies<sup>55</sup> which may hold the key to discovering familial connections amongst individuals. The Australian situation is similar whereby CrimTrac has determined that in order to carry out familial searching, an upgrade of the number of markers included in the DNA profiles<sup>56</sup> and the NCIDD software would be necessary to ensure that the database is sufficiently sensitive to familial searching, increasing the reliability of returned matches.<sup>57</sup>

### **(b) Overreliance and cost**

Practically, there is a fear that the implementation of familial searching will cause investigators to over-rely on genetic leads at the expense of more traditional and perhaps fruitful lines of investigation.<sup>58</sup> If a relative of a source is found via familial searching, it is plausible that the focussed interrogation of leads from genetic evidence will dominate and perhaps shape the course of the subsequent investigation.<sup>59</sup> This would be a concern if the perceived infallibility of DNA evidence<sup>60</sup> is relied on at the cost of the loss of opportunity to locate and interrogate not only the real offender, but also witnesses whose memories are known to degrade rapidly over time.<sup>61</sup> There may also be risks in the possibility of backward investigations, where a database search is used as the starting point of the investigation. This may lead law enforcement officers to erroneous avenues of inquiry, and there is a concern that the ease by which familial searching may turn up suspects could result in a reduction of routine policing methods. A further fear is that a confirmation bias or wrongful accusation has potential to come into play with the location of suspects via familial searching, compromising the objectivity of an investigation by influencing officers' perspectives in a given case.<sup>62</sup>

Time and resources required to follow up on each lead generated by a familial search will necessarily involve considerable expense, not only in terms of wasted time and resources in hunting down false leads, but also the costs associated with the process of the familial searching itself. The 'Grim Sleeper' case was reported to have cost California US\$40 000 (AUD\$44 540).<sup>63</sup> If familial searching was used as a technique of last resort, for only the most serious unsolved crimes, the associated costs may be justified. In a case such

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<sup>54</sup> Ibid.

<sup>55</sup> Murphy, above n19, 9.

<sup>56</sup> NCIDD Strategic Issues Paper, above n8, 64.

<sup>57</sup> Ibid, 65.

<sup>58</sup> Murphy, above n19, 17.

<sup>59</sup> Ibid.

<sup>60</sup> Rosen, above n32.

<sup>61</sup> Chris William Sanchirico, 'Evidence, Procedure, and the Upside of Cognitive Error' (2004-2005) 57 *Stanford Law Review* 291.

<sup>62</sup> Murphy, above n19, 19.

<sup>63</sup> Dolan, above n28.

as that of the 'Grim Sleeper', where there is a high probability the offender will strike again, implications such as public safety and the seriousness of the crime would sensibly necessitate the expenditure. This approach of limiting the application of familial searching would potentially reduce unnecessary commitment of police resources following up on the list of candidate relatives, as well as go some way to addressing other concerns associated with overreliance.

The practical and technical concerns can largely be overcome through appropriate regulation of both the science of the familial searching process in terms of its reliability and the investigative and intelligence processes in terms of overreliance and cost; as suggested in Section G below.

## 2. Rights-based and legal issues

### (a) Privacy

The collection and use of DNA is an inherently sensitive topic. In the context of law enforcement, concerns about 'genetic surveillance'<sup>64</sup> spearhead a general feeling of distaste for the use (and potential misuse)<sup>65</sup> of DNA. It is uncontroversial that the process of examining a person's genetic material necessarily constitutes a generalised intrusion into that person's genetic privacy.<sup>66</sup> In liberal societies such as Australia, privacy, consisting of values of autonomy, anonymity, secrecy, freedom and liberty, is one of the pillars of a democratic way of life.<sup>67</sup> Across Australia, privacy is governed by the relevant specific privacy legislation;<sup>68</sup> however in Victoria and the ACT it is also enshrined in the state and territory human rights charters.<sup>69</sup>

Whilst the concept of privacy is ever-evolving, the use of DNA evidence in the criminal context by way of profiling convicted offenders for inclusion on a database is endorsed on the basis that persons who commit offences should be subject to a lower expectation of privacy with a view to the maintenance of public

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<sup>64</sup> Epstein, above n5, 164; The term 'genetic surveillance' has been described by Jules Epstein as a misnomer in the criminal database context. Epstein's contention is that the nature of a stored profile negates capacity for 'surveillance' in that such a profile has limited use for matching purposes only by virtue of its form which is akin to a barcode. A more relevant concern is 'behavioural surveillance' which is made possible by the access of police to DNA profiles as suggested by Jeremy Gans; 'DNA Identification, Privacy and the Irrelevance of Australian Law' (Legal Studies Research Paper No 318l, Melbourne Law School).

<sup>65</sup> Victorian Parliament Law Reform Committee, *Forensic Sampling and DNA Databases in Criminal Investigations*, Report No 58 (2003-04), 124.

<sup>66</sup> Gable, above n2,64.

<sup>67</sup> Rothstein and Talbot, above n16, 159.

<sup>68</sup> *Privacy Act 1988* (Cth); *Health Records and Information Privacy Act 2002* (NSW); *Information Privacy Act 2000* (Vic); *Health Records (Privacy and Access) Act 1997* (ACT); *Information Act* (NT); *Personal Information Protection Act 2004* (Tas); *Information Privacy Act 2009* (Qld); Western Australia and South Australia do not have specific privacy legislation however South Australia has instituted an administrative system along similar lines to the Commonwealth privacy principles.

<sup>69</sup> *Charter of Human Rights and Responsibilities Act 2006* (Vic) and the *Human Rights Act 2004* (ACT) are substantially similar in content. Privacy is covered in section 13 of the Victorian Charter and section 12 of the ACT charter.

safety.<sup>70</sup> Indeed, the state has an interest in identifying criminals and preventing recidivism through this lowered privacy threshold of offenders, allowing their genetic profiles to be stored and compared.<sup>71</sup> In Australia and indeed around the world, careful safeguards are put in place to ensure that privacy of the information contained in genetic material and DNA profiles gained in the pursuit of law enforcement may only be impinged under defined circumstances. To this end, statutes require police officers to take specific actions and provide warnings during the taking of a sample to legitimise the sample collection and subsequent use, with mandated destruction and de-identification procedures acting as further protections.<sup>72</sup>

Viewed objectively, familial searching has the effect of informally extending databases to search for the involvement of relatives of convicted offenders, thereby lowering the genetic privacy of those relatives by association.<sup>73</sup> The question then must become whether or not it can be justified that relatives of offenders become subject to a lower standard of privacy than other individuals not subject to investigation by virtue of their blood ties? This question necessitates a conversation on principles of discrimination.

### **(b) Discrimination**

Whilst proponents of familial searching emphasise that the technique is only one out of a number of investigatory tools to solve crime, civil libertarians are quick to highlight the indignity of the investigation process and the personal impact of living under a 'cloud of suspicion' which has the potential to disrupt a career, destroy a marriage or have other long-lasting effects.<sup>74</sup> The question of discrimination in terms of familial searching is really a question of who may be targeted as the result of a database search and whether or not there is a justifiable basis to distinguish relatives of convicted criminals from other citizens in their ability to be reached through familial searching. Equality before the law is a foundational standard of the common law; enshrined in the Victorian and ACT human rights charters is the principle that every person is equal before the law and is entitled to equal protection of the law without discrimination.<sup>75</sup>

While there is limited empirical evidence to suggest that criminality may indeed run in families,<sup>76</sup> this type of argument is an affront to the doctrine of innocence before proof of guilt.<sup>77</sup> A pillar of the Westminster

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<sup>70</sup> Gable, above n2, 35.

<sup>71</sup> Natalie Ram and Michael Seringhaus, 'O Brother, Where Art Thou?' *Slate* 22 June 2010. Available at: <<http://www.slate.com/id/2256966>>.

<sup>72</sup> See for example the strict requirements of Part III: Procedure and Punishment of the *Crimes Act 1958* (Vic) which provides for inadmissibility of DNA evidence if the relevant standards are not adhered to (s 464ZE).

<sup>73</sup> Seringhaus, above n2, 27.

<sup>74</sup> Murphy, above n19, 26.

<sup>75</sup> Victorian Charter, above n69, s 8(3).

<sup>76</sup> Gable, above n2, 56.

<sup>77</sup> Victorian Charter, above n69, s 25(1).

system, Blackstone's famous commentary that 'it is better that ten guilty persons escape, than that one innocent suffer' is a founding principle of the Australian criminal law.<sup>78</sup> The concept that one is innocent until proven guilty on the particular facts of a particular case is evidenced in the strict requirements of the Uniform Evidence Legislation rolled out across the country.<sup>79</sup> Familial searching is troubling to some who consider that the technique identifies individuals for investigation not on their own actions but on those of their relatives<sup>80</sup> and this sentiment is echoed strongly in current commentary on the implementation of the method,<sup>81</sup> 'corruption of blood' arguments being prominent in the US literature.<sup>82</sup> This criticism is best addressed by the fact that the familial searching process is primarily for the generation of leads in the investigation of a case, and should never be used as conclusive proof of guilt – a consideration which it is important to keep in mind when considering the overall application of the technique in the law enforcement context. The evidence in terms of the heritability of criminal tendencies is far from conclusive; Berkeley Assistant Professor of Law Erin Murphy suggests that the sources cited in support of the proposition do not make a persuasive case.<sup>83</sup> Much commentary suggests that there is no justifiable ground for a distinction to be drawn between relatives of offenders and ordinary members of the community and that therefore familial searching on the basis of blood relation to a convicted criminal is a somewhat arbitrary practice.<sup>84</sup>

Investigators reason that the process is no less discriminatory than traditional investigative techniques. The logic is that if X was known to the police and someone who looked like X but was not X committed a crime, the police may lawfully conduct inquiries to determine if a relative of X had perpetrated the crime.<sup>85</sup> However, the fact remains that genetic information is very different from photo and other identification evidence; it is viewed as intimately personal, largely unknown and there is great suspicion in the community about its potential to be misused by the state. To way-lay these concerns, proponents of the technique emphasise that profiles stored on databases contain information pertaining only to 'junk' DNA that cannot be used for any other purpose.<sup>86</sup> However, in truth nobody knows what science might discover

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<sup>78</sup> Sir William Blackstone, *Commentaries on the Laws of England* (1765-1769) Book IV, Chapter 27.

<sup>79</sup> Australian Law Reform Commission, *Uniform Evidence Law*, Report No 186 (2006).

<sup>80</sup> Dan Krane, a DNA specialist at Wright State University in Dayton, Ohio in R. Willing, 'Suspects Get Snared by a Relative's DNA', *USA Today* 7 June 2005.

<sup>81</sup> Gable, above n 2, 63.

<sup>82</sup> Rosen, above n32.

<sup>83</sup> Murphy, above n19. 14.

<sup>84</sup> Murphy above n19, 16; Ram and Seringhaus, above n71; Jeremy Gans, 'The end of DNA database expansion' on Jeremy Gans, *Charterblog: Analysis of Victoria's Charter of Human Rights* (6 December 2008) <<http://charterblog.wordpress.com/2008/12/06/the-end-of-dna-database-expansion/>>

<sup>85</sup> Personal communication – Dr Peta Stringer (Victoria Police Forensic Services Department (VPFSD)).

<sup>86</sup> John M. Butler, *Forensic DNA Typing* Elsevier Academic Press, 2<sup>nd</sup> ed, 2005.

about these markers in time<sup>87</sup> so concerns about privacy cannot be entirely invalidated along such a line of reasoning. If familial searching is to be carried out in Australia, the apprehension in regards to the expansion of the database that familial searching poses, seen as function creep, and the reduction of tight controls on the use of information contained on a database will need to be addressed – as will the potential for generalised relative-based discrimination, that is targeting relatives of Persons Of Interest’s.

### **(c) Racial discrimination**

Aside from broader principles of generalised discrimination, critics of familial searching argue that the technique is discriminatory in a more specific sense through its capacity to exacerbate the inequalities of the races in criminal justice systems.<sup>88</sup> In the US context, it is apparent that the use of familial searching could result in the reach of their database expanding to include four to five times more African Americans than Caucasians<sup>89</sup> based on the current over-representation of African Americans in correctional facilities. This dimension has critical salience in the Australian setting given that indigenous prisoners represent 25% of the total current prison population<sup>90</sup> whilst constituting only 2.5% of the overall Australian population.<sup>91</sup> This means that in statistical terms, indigenous people are 13 times more likely to be incarcerated and therefore have a similarly increased probability that their profile will be included on the NCIDD.<sup>92</sup> Given the small aboriginal population and their large representation in the criminal justice system, familial searching may produce a situation where the database becomes near-universal in terms of reach to indigenous peoples via kinship matches, in contrast to the relatively small percentage of other groups of Australians it would reach by the same method. Although there is no racially motivated discriminatory intent behind the implementation of familial searching,<sup>93</sup> its practical effect may be politically explosive<sup>94</sup> with the potential for differential consequences in the application of the technique according to ethnic group.

A commonly mooted suggestion to address the issue of discrimination in both the broad and narrow sense is the creation of a universal database which by definition would have the effect of treating all citizens equally by virtue of inclusion of the whole population on the database.<sup>95</sup> There are obvious policing

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<sup>87</sup> Ibid.

<sup>88</sup> Ram and Seringhaus above n71; Seringhaus, above n2; Murphy, above n19.

<sup>89</sup> Seringhaus, above n2, 4.

<sup>90</sup> Australian Bureau of Statistics, *Indigenous Prisoner Characteristics*, ABS cat no 4517.0 (2009).

<sup>91</sup> Australian Bureau of Statistics, *Population Characteristics, Aboriginal and Torres Strait Islander Peoples 2006*, ABS cat no 4713.0 (2008) 12.

<sup>92</sup> Australian Bureau of Statistics, *Law and justice statistics – Aboriginal and Torres Strait Islander people: a snapshot, 2006*, ABS cat no 4722.0.55.003 (2007).

<sup>93</sup> Greely et al, above n23, 259.

<sup>94</sup> Rosen, above n32.

<sup>95</sup> Gable, above n2, 67; Rosen, above n32; Seth F. Kreimer, ‘Truth Machines and Consequences: The Light and Dark Sides of ‘Accuracy’ in Criminal Justice’, (2005) 60 *New York University Annual Survey of American Law* 655, 658; Murphy above n19; Gans above n84. The United Arab Emirates has recently commenced the process of creating a

advantages in such sweeping expansions of databases; however this is a contentious and complex issue in itself which is beyond the scope of the current paper. Of note, there are a few countries considering whole population DNA databases; to date the United Arab Emirates is the most advanced.

The concerns outlined in this section are serious and strike at the core of the law as it currently stands in Australia and in many analogous jurisdictions. Again, as with the practical issues, it is the seriousness of the unsolved crime and the exhaustion of all other investigative leads that have the potential to form a justification for the compromise of rights that familial searches involve. The interest of law enforcement must be weighed against the infringement of the various personal rights; again, a formal framework to guide the process would be a useful means by which to address these issues.

### 3. Ethical and social concerns: Intrusion into family life

The potential that familial searching has to impact on family bonds must be considered in any implementation of the technique. There is a great social interest in maintaining the healthy family unit<sup>96</sup> and this is reflected in the Victorian and ACT rights charters, which provide that the family is the fundamental group unit of society and is entitled to be protected by society and the state.<sup>97</sup> The effect of individuals labelling particular families as 'crime families' and the possible revelation about the existence or absence of biological relationships are amongst the social and ethical considerations involved in the implementation of familial searching.<sup>98</sup> In this way, the technique poses challenges to the broader fabric of society including the potential loss of control over familial relationships in terms of the ability of science to uncover and expose fundamental biological truths which may be unknown to individuals.

Sociological studies have shown that the establishment of differences from, and the relationship to, others are both highly significant in the context of kinship and family networks.<sup>99</sup> Genetic information is part of the repertoire of facts drawn upon by the individual to constitute the self and is thus important in the management of relationships and identity, having ramifications for individuals, immediate families and wider networks.<sup>100</sup> The stigmatisation of ethnic groups, whole families or individuals within families is just one possible negative social consequence of the use of familial searching in criminal casework. Of course

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population wide database as reported by Marten Youssef, 'DNA database set to start in a year' *The National* (Abu Dhabi), 7 October 2009.

<sup>96</sup> Murphy, above n27.

<sup>97</sup> Victorian and ACT Charters, above n69, s 17(1) and s 11(1).

<sup>98</sup> Gabel, above n2, 60.

<sup>99</sup> Erica Haimes, 'Social and Ethical Issues in the Use of Familial Searching in Forensic Investigations: Insights from Family and Kinship Studies' (2006) 34 *Journal of Law, Medicine and Ethics* 263, 264.

<sup>100</sup> *Ibid.*

careful and sensitive follow up of familial searches may avoid problems associated with disrupting or agitating family bonds. The use of this technique for only the most serious cases, together with the implementation of training and guidelines for officers involved is a feasible strategy to combat the impact of ethical and social concerns raised by familial searching.

## E. Is familial searching currently permissible in Australia?

### (a) The databasing legislation

Commonwealth, state and territory DNA database legislation is currently silent on the permissibility of familial searching.<sup>101</sup> The statutes provide for substantially similar provisions in terms of permissible use of NCIDD and state/territory databases, which do not expressly prohibit nor permit familial searching.<sup>102</sup> Interestingly the Northern Territory and New South Wales give their executive branches of government power to expand the uses of DNA databases through regulations, thus providing for a potential means by which familial searching might be legitimised through delegated legislation in these jurisdictions if desired.<sup>103</sup> At the moment however, there are no regulations in NSW or the NT which expressly provide for the use of Australian DNA databases to conduct familial searching.

A recent Western Australian Review of the WA *Criminal Investigation (Identifying People) Act 2002*<sup>104</sup> determined that no amendment to the legislation was necessary to permit the application of familial searching techniques to criminal investigations. This finding was based on an interpretation that the act is not restricted to searching for full matches and that there is therefore no restraint on the capacity of the database manager to search for and report partial matches.<sup>105</sup> However, there have been a number of alternative past state and Commonwealth reviews suggesting that the implementation of familial searching in Australian jurisdictions is not supported by the current statutory framework and a common theme amongst them is that any such change to the use of DNA profiles stored in databases should be informed

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<sup>101</sup> A review of the state, territory and Commonwealth databasing legislation was conducted in 2006 and there appears to have been no changes in domestic law sufficient to alter the findings of Sajeeva Perera, 'A review of Commonwealth, State and International Legislation and Case Law with Respect to the Use of Relatives' DNA to Generate Familial Matches on a DNA Database' (2006) *Victoria Law Foundation and National Institute of Forensic Science Internship Report*.

<sup>102</sup> Part ID of the *Crimes Act 1914* (Cth); *Crimes (Forensic Procedures) Act 2000* (NSW); Part III of the *Crimes Act 1958* (Vic); *Crimes (Forensic Procedures) Act 2000* (ACT); Part V of the *Police Powers and Responsibilities Act 2000* (Qld); Part VII of the *Police Administration Act* (NT); *Criminal Law (Forensic Procedures) Act 1998* (SA); *Forensic Procedures Act 2000* (Tas); *Criminal Investigations (Identifying People) Act 2001* (WA).

<sup>103</sup> S 92(2)(j) *Crimes (Forensic Procedures) Act 2000* (NSW) and s 147C *Police Administration Act* (NT).

<sup>104</sup> *Criminal Investigation (Identifying People) Act 2002* (WA) *Statutory Review*.

<sup>105</sup> *Ibid*, [345].

by public consultation and debate.<sup>106</sup> Underpinning this is the consideration that it is inappropriate to informally expand the NCIDD and state databases beyond the original intention of parliaments without the requisite legislative consideration.

The use of NCIDD and state databases to conduct familial searching is a use which is quite different from the direct matching that they were conceived to carry out, thus it is possible that a challenge to the use of the technique might meet with success if judicially tested. Familial searching raises entirely new issues that were not considered in the creation of the current framework and thus constitutes exactly the kind of ‘function creep’ of DNA and databases that has been feared.<sup>107</sup> Given the various practical, legal and ethical challenges posed by familial searching, it is recommended that an explicit regime imposing adequate checks and balances is appropriate to ensure that familial searching is used in a manner consistent with the way the law enabling DNA databasing has developed in Australia.

### **(b) Human rights**

An important consideration for the implementation of familial searching in Australia is complicity with human rights as designated by the Victorian and Australian Capital Territory Charters. As it stands, with no policies prescribing guidelines for the process, it is probable that a lack of regulation would produce a situation where unfettered familial searching would breach, rather than limit, a number of rights contained in the charter.<sup>108</sup> As mentioned in the above sections, the rights relevant to familial searching are equality before the law,<sup>109</sup> privacy and reputation,<sup>110</sup> protection of families and children<sup>111</sup> and the presumption of innocence.<sup>112</sup>

Whilst the charters have been implemented to protect rights, they allow limitation of those rights depending on the purpose, nature, necessity and proportionality of the limitation as well as the availability of less restrictive means to achieve the purpose of the limitation.<sup>113</sup> The infringement of rights proposed by the implementation of familial searching must therefore be weighed against the public interest in solving

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<sup>106</sup> Victorian review, above n65; Australian Law Reform Commission, *Essentially Yours: The Protection of Human Genetic Information in Australia*, Report No 96 (2003) [39.60]; Tom Sherman AO, *Report of Independent Review of Part 1D of the Crimes Act 1914 – Forensic Procedures* [7.17].

<sup>107</sup> ALRC Report (ibid) [39.59]; Office of the Privacy Commissioner Submission to the Attorney General’s Department , *Further independent review of Part 1D of the Crimes Act 1914*, February 2010, 11.

<sup>108</sup> S 7 of the Victorian Charter prescribes the process by which Human Rights may be limited under the charter. As mentioned in note 69 above, the substance of the ACT and Victorian Charters are substantially similar so an analysis herein will proceed looking at the Victorian Charter only.

<sup>109</sup> Victorian Charter, s 8.

<sup>110</sup> Victorian Charter, s 13.

<sup>111</sup> Victorian Charter, s 17.

<sup>112</sup> Victorian Charter, s 25.

<sup>113</sup> Victorian Charter, s 7.

serious cases. If only used in cases where traditional means of investigation have been exhausted and the crime or threat to the community is particularly grave, it may be that familial searching will pass an assessment of human rights, although ultimately this will come down to the specific framework adopted. The substance of measures put in place to guide the familial searching process will be determinative of the extent to which limitation of the rights involved is deemed appropriate.

If familial searching is to be formally introduced into legislation, it will be necessary that a compatibility statement be produced to address the human rights issues impacted by the technique.<sup>114</sup>

## F. What is the situation in overseas jurisdictions?

### 1. The UK

Leaders at the forefront of the use of DNA technology in law enforcement,<sup>115</sup> the UK have been performing deliberate familial DNA searches since 2002.<sup>116</sup> As mentioned in Section C above, this has led to 18 matches and 13 convictions at a 10% success rate.<sup>117</sup> Whilst they have precise guidelines developed to address when and how familial searching may be used, these guidelines are not publically available, constituting classified information.<sup>118</sup> The process is said to involve a prioritisation of match results, ranking nominals on a matrix incorporating profile similarity, age and geographic proximity.<sup>119</sup> Once the ranking is completed, police then identify individuals based on familial relationships for further investigation. If the initial search is not productive, investigators are urged to re-run the matching periodically to check for new possibilities with 40,000 new profiles added to the UK database monthly.<sup>120</sup>

Officials in charge of the NDNAD (UK database) have expressed that due to the potential impact of familial searching on human rights, there is a need to exercise caution to minimise its intrusion in people's lives.<sup>121</sup> For this reason, it is restricted to use only in the most serious of crimes.<sup>122</sup> It has been suggested that the

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<sup>114</sup> Victorian Charter, s 28. Subsection 3 demands that the statement must state whether a bill is compatible with human rights and if so, how it is compatible, and if, in the member's opinion, any part of the bill is incompatible with human rights, the nature and extent of the incompatibility.

<sup>115</sup> Bert-Jaap Koops and Maurice Schellekens, 'Forensic DNA Phenotyping: Regulatory Issues' (2007) *Tilberg University Legal Studies Working Paper No 005/2006*, 11.

<sup>116</sup> Haimes, above n99, 264.

<sup>117</sup> Rosen, above n32

<sup>118</sup> R. Williams and P. Johnson, 'Inclusiveness: Issues in the Developing Uses of DNA Profiling in Support of Criminal Investigations,' (2005) 33 *Journal of Law, Medicine and Ethics* 234.

<sup>119</sup> Epstein, above n5 147.

<sup>120</sup> *Ibid.*

<sup>121</sup> Haimes, above n99, 272.

<sup>122</sup> *Ibid.*

use of familial searching in the UK approaches routine when a full profile yields no results in a serious case.<sup>123</sup> The current algorithm used by the NDNAD has been described as cumbersome and the UK anticipates that future revision of software will increase the use and effectiveness of the technique.<sup>124</sup> The UK model incorporates Y-STR testing with the aim of screening out false leads to combat privacy and reduce cost implications by minimising the potential number of suspects.<sup>125</sup>

## 2. The Netherlands

The Dutch Parliament has adopted legislation to endorse familial searching in specific circumstances.<sup>126</sup> The conditions are that an active familial search of the database is only possible as an ‘ultimum remedium’ to solve serious crimes of a violent or sexual nature.<sup>127</sup> There are constraints on the initiation of a familial search in that the search can only be carried out if there is a complete or near complete DNA profile of a lead.<sup>128</sup> Written authorisation is required from the examining magistrate before such matching can occur, acting as a further guarantee ‘in view of the drastic nature of this power with respect to the private life of those involved’.<sup>129</sup> The relevant part of the legislation is attached herein as Appendix 1.

## 3. The US

The situation in the US is less clear and much more nuanced than that of the UK and the Netherlands. Pioneer state Colorado adopted its own specific policies and programs in 2009<sup>130</sup> after District Attorney Mitch Morrissey undertook a campaign to have the practice introduced following his observance of the capabilities and success of familial searching in the UK.<sup>131</sup> These guidelines are aimed at minimising privacy and civil-liberty concerns whilst promoting familial searching as an important device for community protection. The Colorado guidelines are included herein as Appendix 2. Morrissey was instrumental in encouraging the adoption of a similar familial search policy in California (Appendix 3).<sup>132</sup> New York and Massachusetts both endorse partial DNA matching by statute;<sup>133</sup> however neither state uses the technique

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<sup>123</sup> Forensic Science Service, *Fact Sheet (4): Familial Searching*, Available at: <<http://www.forensic.gov.uk/pdf/company/foi/publication-scheme/communications/Familialsearching.pdf>>

<sup>124</sup> NCIDD Strategic Issues Paper, above n8, 38.

<sup>125</sup> Epstein, above n5, 147.

<sup>126</sup> The Dutch Ministry of Justice, ‘Cabinet Plans to Reinforce Measures for Combating Crime by New DNA Testing’ (Press Release, 13 March 2009).

<sup>127</sup> Ibid.

<sup>128</sup> The Dutch Ministry of Justice, ‘DNA familial testing in the combating of crime’ (Press Release, 13 October 2009).

<sup>129</sup> Ibid.

<sup>130</sup> Colorado Bureau of Investigation, ‘DNA Familial Search Policy’ (CBI Policy Statement, 22 October 2009).

<sup>131</sup> Gable, above n2, 25.

<sup>132</sup> Dolan and Felch, above n41.

<sup>133</sup> 515 CMR 2.01 of the Massachusetts Regulations; 9 NYCRR § 6192.3 New York Codes, Rules and Regulations.

with any regularity.<sup>134</sup> Maryland is the only other state that has taken an explicit position on familial searching, legislatively prohibiting the technique.<sup>135</sup> Of the remaining states, there are 14 in which research indicates familial searching and partial match reporting are allowed, most of which either have no written policy or have policies which are not easily accessible or are written only in lab manuals.<sup>136</sup> Indeed there is a lack of clarity and transparency in many US jurisdictions regarding reporting of partial matches and there is uncertainty about the reception the technique would receive in courts given this lack of substantive permission or prohibition.<sup>137</sup>

The implementation of familial searching in the US is yet to gain approval at the federal level with the FBI preferring to avoid the technique in the absence of express congressional authorisation.<sup>138</sup> The issue is being addressed by different states from different perspectives, the drive both against and in support of the technique being largely political. The consequent development of totally divergent practice across states<sup>139</sup> makes harmonisation within the federal structure unlikely in the near future, creating a multiplicity of potential problems for the national coordination of future crime fighting.

#### 4. New Zealand

Like the UK, and most of the US, New Zealand has no legislation dealing with familial searching but instead operates off policy guidelines.<sup>140</sup> The policy is attached as Appendix 4. New Zealand has used familial searching 12 times, only in serious cases.<sup>141</sup> The technique has provided two results which were instrumental in solving a sexual assault and a homicide case.<sup>142</sup> The application of familial searching to the criminal context is police driven and there has been no apparent compatibility assessment undertaken with respect to the nation's Bill of Rights.<sup>143</sup>

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<sup>134</sup> Seringhaus, above n1, 28.

<sup>135</sup> MD PUBLIC SAFETY CODE ANN. § 2-506(d) (2008); Available at <<http://www.goccp.maryland.gov/dna/documents/legislation.pdf>>

<sup>136</sup> Natalie Ram, 'Interactive Map: State Policies for DNA Crime Databases Vary Widely' (2 November 2009) available at: <<http://scienceprogress.org/2009/11/map-state-dna-policies/print/>>.

<sup>137</sup> Seringhaus, above n1, 29.

<sup>138</sup> Ibid, 28.

<sup>139</sup> Murphy, above n19, 11.

<sup>140</sup> NCIDD Strategic Issues Paper, above n8, 39.

<sup>141</sup> Ibid.

<sup>142</sup> Ibid; Mike Houlahan, 'Judas sheep has followers and detractors' *The Press* (New Zealand) 16 December 2008; 'Sibling DNA test led to murderer' *Otago Daily Times* (Otago) 17 December 2009.

<sup>143</sup> Personal Communication – John D S Walker (Inspector, New Zealand Police, Wellington) 24 April 2009.

## 5. Canada

Familial searching of the Canadian DNA database is expressly prohibited by the Canadian *DNA Identification Act*, the national legislation governing the use of the database.<sup>144</sup> Provisions of the act require that an offender's identity can only be revealed from the database if there is an exact match found between a profile and the crime scene sample.<sup>145</sup> Despite this, familial genetic similarities have been used in at least one case in Alberta to identify a suspect without relying on the database.<sup>146</sup> In a murder investigation in 2002, two voluntary samples led investigators to a close relative of the volunteers, the son of one of the men later being apprehended and convicted based on the determination of an exact match between his profile and the original crime scene sample.<sup>147</sup>

The implementation of familial searching is a live issue in Canada, the National DNA Databank Advisory Committee indicating in its most recent report that the technique could be of benefit to the Canadian justice system if implemented through a controlled process with full recognition of the privacy rights of Canadian citizens.<sup>148</sup> The report recommends the technology only be used in unsolved cases falling within the 16 most grave Criminal Code offences for which orders are automatic upon conviction.<sup>149</sup> It has also suggested that familial searching only be carried after authorisation from Provincial Attorneys General for approval or subject to a warrant procedure.<sup>150</sup> Of concern in Canada is that the implementation of familial searching will radically expand the use of DNA in investigations, a consideration which has led to the encouragement of large scale consultation in a public forum where rights of citizens and the state can be discussed in depth.<sup>151</sup>

### G. Suggested guidelines for implementation

This report suggests that if familial searching were to be introduced into Australian jurisdictions, legislative change would need to be considered to clarify the legal position of the Commonwealth, state and territory jurisdictions on familial matching. This change should correct the current legislative silence on the technique to provide certainty on the permissibility of the use of familial searching.

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<sup>144</sup> Amelia Bellamy-Royds and Sonya Norris, 'New Frontiers in Forensic DNA Analysis: International Practices and Implications for Canada' (Library of Parliament, 3 March 2009) 12.

<sup>145</sup> *DNA Identification Act*, S.C. 1998, c. 37, s. 6

<sup>146</sup> Bellamy-Royds and Norris, above n144.

<sup>147</sup> Karen Kleiss, 'Supreme Court won't allow killer to appeal' *The Edmonton Journal* (Edmonton), 28 March 2008.

<sup>148</sup> National DNA Data Bank Advisory Committee Annual Report 2008-2009, available at: <<http://www.rcmp-grc.gc.ca/dnaac-adncc/annurp/annurp-0809-eng.pdf>> 18.

<sup>149</sup> *Ibid*, 18.

<sup>150</sup> *Ibid*, 19.

<sup>151</sup> *Ibid*, 19.

It is submitted that enshrining the technique legislatively would be the preferable way to proceed, such mechanisms providing for codified limitations on the technique to protect privacy and other rights and interests that are important to the community.<sup>152</sup> The legislative process would help offset concerns about the lack of transparency and accountability<sup>153</sup> and the Netherlands provides an example of how this may be achieved. Whilst there may be a role for policy in defining the technical and policing parameters of familial searching, adopting the position of the UK, the US and New Zealand where policy is the only mechanism of implementation is undesirable as it constitutes sanctioning of ad-hoc, informal use of executive power in an area pervaded by contentious and delicate issues.<sup>154</sup> It might be appropriate that familial searching be regulated through a combination of legislative change and policy implementation to allow for the dynamic nature of the science involved in DNA database technology.

## 1. What should be legislated?

The basic parameters of familial searching should be defined by legislation. Considerations such as in what circumstances a familial match should be sought and approval mechanisms for allowing a search will be critical to legitimising the practice. As echoed in many parts of this report, it is commonly accepted and specified in many jurisdictions that familial searching is only appropriate if all other investigative avenues have been exhausted and the crime is of a serious, violent or serial nature. Statute could be drafted to reflect this.

It would also be useful to codify mechanisms for the approval of the use of familial searching in a given case, although an appropriate mechanism for oversight would need to be agreed upon. It is sensible to consider that the decision to use familial searching should not be made on an informal basis<sup>155</sup> and that given the sensitivity and uncharted territory familial searching imposes itself into, formal mechanisms of oversight should be part of its legislative implementation. Formal approval is required by the Dutch, Californian and Coloradan regimes;<sup>156</sup> these could act as a model.

It is recommended that best practice would include an independent body constituted to oversee and manage the implementation of formal familial searching;<sup>157</sup> this is a feasible option to consider if the

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<sup>152</sup> Morrissey and Rosen, above n36.

<sup>153</sup> Murphy, above n19, 45.

<sup>154</sup> Murphy, above n19, 45.

<sup>155</sup> Murphy, above n19, 45.

<sup>156</sup> See appendices.

<sup>157</sup> Personal communication – John Scheffer (VPFSD) and Carmen Eckhoff (ANZPAA-NIFS) 15 July 2010.

technique is going to be officially adopted in all Australian jurisdictions. Regulation by such a body would ensure consistency in application across cases and jurisdictions, avoiding the problems generated by the development of a piecemeal approach as reflected by the currently evolving situation in the US. Given the proposed limited application of the technique, this body may meet only on an as needs basis thus minimising costs, and would benefit from multi-disciplinary constitution to ensure that it receives the diverse expertise it requires to make informed decisions.<sup>158</sup>

Legislative penalties for misuse are crucial and will also need to be considered. However, models for this are already in existence in Australia such as provisions dealing with general DNA database misuse.<sup>159</sup>

## 2. What could be left to policy?

### (a) The science

As mentioned in Section C, technical and scientific parameters of familial searching will need to be fixed before its widespread implementation across Australia is possible.<sup>160</sup> The number of markers analysed, role of Y-STR and mtDNA are important issues, central to the reliability and effectiveness of familial searching. Given the dynamic nature of the field, it may be more appropriate to have determination of these standards by an appropriately informed independent body with expertise. There is a regime of accreditation already in place whereby the National Association of Testing Authorities (NATA) is responsible for the maintenance and enforcement of standards across Australian Forensic Laboratories.<sup>161</sup> NATA reassesses labs every two years and thus the capacity is already in place to monitor the compliance of laboratories with any policy that is created to address technical concerns related to the implementation of familial searching.<sup>162</sup> If policy was to govern the technical aspects of familial searching this would ensure flexibility as the technology develops, rather than the more rigid and time-intensive option of continually changing legislation to keep up with the advances in science.

### (b) Discretion in investigation

An important element of the implementation of familial searching will be defining appropriate follow-up procedures to deal with the complexity of family considerations.<sup>163</sup> This is largely a matter for policing and

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<sup>158</sup> Murphy, above n19, 46.

<sup>159</sup> For example provisions such as s 464ZGI(2) of the *Crimes Act 1958* (Vic) provide that a person may be guilty of a summary offence and liable to level 8 imprisonment or a level 8 fine if impermissible matching is carried out intentionally or recklessly. This kind of sanction is common in the databasing legislation across Australian jurisdictions.

<sup>160</sup> Murphy, above n19, 47.

<sup>161</sup> ALRC report, above n106, [41.121].

<sup>162</sup> *Ibid.*

<sup>163</sup> Murphy, above n19, 49.

the education of officers about the social impacts of their actions will be key. Investigation prior to making contact with the family and the use of discretion appropriate to minimise impact on family life should be prioritised and put into protocol. However, it will be appropriate to consider cases individually as each situation will be different. Guidelines might specify how police follow up familial leads in terms of disclosure of the search, or of a finding of/absence of biological kinship, to eliminate the risk of disrupting familial bonds or of having a suspect abscond. However, as with the technical issues, it would be sensible to have these matters dealt with by a body with expertise; in this case, the investigators themselves. This would ensure practicality and sensitivity of the measures rather than instituting rigid codification in legislation.

### III. Predictive DNA Testing

#### A. What is predictive DNA testing?

Science's ability to predict the physical expression of a person's genetic makeup (phenotype) from a sample of his or her DNA is advancing rapidly.<sup>164</sup> Once relegated to the domain of science fiction, modern technology is rapidly advancing in terms of its ability to successfully predict an individual's traits and characteristics from an unknown DNA sample.<sup>165</sup> Although the technology is a long way from the production of a device capable of producing a facial image of a donor from a blood drop,<sup>166</sup> there is promising evidence that red hair colour, blue iris colour and brown iris colour can be predicted from a DNA sample with varying accuracy.<sup>167</sup> The process of prediction of characteristics from sample DNA is also called phenotyping and whilst there have been breakthroughs in some characteristics, the predictability of complex characteristics such as adult body build and skin colour require a considerable amount of further research.<sup>168</sup> Over 200 genes have been identified in playing a role in skin pigmentation alone,<sup>169</sup> indicating the intricacy involved in the field.

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<sup>164</sup> Pilar N. Ossorio, 'About Face: Forensic Genetic Testing for Race and Visible Traits' (2006) 34 *Journal of Law, Medicine and Ethics* 277, 278.

<sup>165</sup> *Ibid*; Manfred Kayser and Peter M. Schneider, 'DNA-based prediction of human externally visible characteristics in forensics: Motivations, scientific challenges, and ethical considerations' (2009) *Forensic Science International: Genetics* 3 154; Bruce Budowle and Angela Van Daal, 'Extracting evidence from forensic DNA analyses: future molecular biology directions' (2009) 46(5) *Biotechniques* 339; Koops and Schellekens, above n115.

<sup>166</sup> Kayser and Schneider, above n165, 155.

<sup>167</sup> *Ibid*, 156.

<sup>168</sup> *Ibid*.

<sup>169</sup> Ronny Decorte, 'Genetic identification in the 21st century—Current status and future developments', *Forensic Sci. Int.* (2010 – in press), doi:10.1016/j.forsciint.2010.02.029.

Aside from direct phenotyping of body features, indirect phenotyping of geographic ancestral origin is an area in which there has been significant interest.<sup>170</sup> Associated with perceptible characteristics such as skin colour, hair colour and shape of eyes and face, there are already a number of commercially available forensic tests to decipher an individual's geographic ancestry.<sup>171</sup> These tests distinguish between groups by analysing distinctive markers common to some groups but not others.<sup>172</sup> The markers involved do not necessarily link directly with physical characteristics, but are associated with ethnic groups on the basis of probabilities determined from samples.<sup>173</sup> It is noted this is effectively what might be perceived as 'racial typing', however 'race' is a somewhat explosive political term loaded both socially and culturally, so a conversation about 'geographic ancestral origin' is more appropriate in the context of phenotypic prediction.<sup>174</sup> There are various barriers to the prediction of ancestral origin from DNA samples such as the geographical stability of a population over time, the availability of databases housing characteristics of specific populations and the fact that many individuals are the result of significant interracial mixing over generations.<sup>175</sup> However, as Y chromosomal variation is known to be particularly regionally structured due to the patriarchal nature of many societies, analysis of Y-STR inheritance could provide significant insight into genetic and corresponding phenotypic differences between ethnic groups in the future.<sup>176</sup>

## B. Is Predictive DNA testing a useful tool for law enforcement?

If an unidentified strand of hair or other bodily sample is recovered from a crime scene, chances are that the police are going to be very interested in linking it to an individual, further investigation potentially establishing whether or not that individual had anything to do with the commission of the crime in question. If a DNA based prediction of what that person looked like was possible, it might be valuable in assisting investigators to identify and track down that person, or even narrow down a list of suspects.<sup>177</sup>

A few cases in the US have benefited from ancestral phenotypic prediction from crime scene DNA and the unidentified remains of victims. Whilst not being sufficient to apprehend a suspect, the use of the

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<sup>170</sup> Koops and Schelleckens, above n115, 4.

<sup>171</sup> DNA Witness 2.0, which determines the majority population affiliation (Indo-European, Sub-Saharan Africa, East Asia, Native American). See 'Racial identification and future application of SNPs', Koops and Schelleckens, *ibid*.

It is noted that such a process may be coined 'race determination' however it is submitted that as a somewhat explosive political term loaded both socially and culturally. The use of the word 'race' should be avoided in the discussion of phenotypic prediction.

<sup>172</sup> Bellamy-Royds and Norris, above n144, 15.

<sup>173</sup> *Ibid*.

<sup>174</sup> Koops and Schelleckens, above n115, 4.

<sup>175</sup> *Ibid*.

<sup>176</sup> Decorte, above n169, 3.

<sup>177</sup> Kayser and Schneider, above n165, 156.

technology was said to have helped in assessing the significance of witness descriptions and other leads.<sup>178</sup> One of the companies involved in conducting ancestral tests has disclosed that the FBI and the US Army have utilised its services. In 2004 predictive DNA testing assisted in the arrest of serial killer Derek Todd Lee, a man now on death row in Louisiana for the slaying of six women.<sup>179</sup> Eyewitness accounts of a white man driving a white pickup truck, as well as an FBI psychological profile had indicated that the prime suspect in the Lee case was a Caucasian man. A shift in the investigation came when crime scene analysis revealed that the offender was likely 85 per cent sub-Saharan African and 15 per cent Native American; two months after receiving that information, Lee, an African American was apprehended.<sup>180</sup> In another US case, ancestral testing helped to identify a victim and re-focus the investigation.<sup>181</sup> Police in Southern California had been targeting Asian gangs after the discovery of skeletal remains that bone-structure experts felt belonged to an Asian woman. Ancestral testing revealed however that the remains were those of a woman largely of Native American descent. This information prompted park rangers to remember vital information about a woman fitting that description who had complained about her husband's abusive behaviour in the weeks prior.<sup>182</sup>

It is argued that by analysing for externally visible characteristics (EVCs) there could be no challenge to privacy and that the DNA prediction would function similarly to an eye-witness.<sup>183</sup> In theory, the information provided by DNA phenotyping would be a valuable addition to modern investigation. However, there are a number of concerns surrounding the application of phenotypic analysis to criminal casework as outlined in the following sections.

## 1. Reliability and practicality

There are currently only a limited number of DNA analysis methods available to predict a small number of physical traits and these are not guaranteed to be accurate.<sup>184</sup> Even though tests are commercially available to determine geographic ancestry, they are far from infallible as a considerable amount of research still needs to be done into the complexities of inheritance and ethnic differences. If phenotyping is to be used in

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<sup>178</sup> Bellamy-Royds and Norris, above n144, 16; Jessica Sachs, 'DNA and a New Kind of Racial Profiling,' (2003) 263(6) *Popular Science*; and Richard Willing, 'DNA tests offer clues to suspect's race,' *USA Today.com*, 16 August 2005 available at: <[http://www.usatoday.com/news/nation/2005-08-16-dna\\_x.htm](http://www.usatoday.com/news/nation/2005-08-16-dna_x.htm)>.

<sup>179</sup> Carolyn Abraham, 'Molecular eyewitness: DNA gets human face' *The Globe and Mail* (Toronto) 25 June 2005, available at: <<http://www.theglobeandmail.com/life/article888804.ece>>.

<sup>180</sup> *Ibid.*

<sup>181</sup> *Ibid.*

<sup>182</sup> *Ibid.*

<sup>183</sup> Kayser and Schneider, above n165, 158.

<sup>184</sup> Bellamy-Royds and Norris, above n144, 15.

criminal casework, even for investigative/intelligence purposes, it is imperative that the science is dependable, precise and valid.

Practically, whilst phenotyping predicts the physical expression of a person's natural genetic makeup (genotype), the face that a person presents to the world does not always reflect their genetic endowments.<sup>185</sup> Hair dyeing, plastic surgery, contact lenses and false tan are amongst the many means available to individuals to customise their appearance, not to mention the impacts of age and experience which may also alter many aspects of the way an individual looks.<sup>186</sup> In addition, environmental impacts such as an embryo's position in the womb and the substances absorbed by it during pregnancy have been shown to affect phenotypic expression,<sup>187</sup> indicating the vulnerability of a phenotypic prediction from a DNA sample. Phenotypic prediction of a person's appearance is therefore challenging, not only because the science is still developing but also because the uncertainty is compounded by the fact that outward appearance can be manipulated by many factors independent of genotype.

Unlike the eye-witness, a DNA sample cannot reveal the *current* appearance of an individual, or the appearance of the individual at the time the crime took place. Taking reliability concerns into account, the potential for phenotyping to lead an investigation astray is obvious. For example, if a DNA sample were to indicate a perpetrator was someone of aboriginal descent, the path of the investigation to focus on persons with dark skin could mean that an aboriginal person with fair skin might not be followed up.<sup>188</sup> A more extreme example would be someone who might have had sex reassignment surgery, or someone who suffers from any number of conditions such as vitiligo (where the dark pigments of skin are lost making the skin appear whiter), whereby the physical appearance of the person is drastically different from that expressed by the genes coding for their predicted phenotype on a particular characteristic. Of course such an erroneous limitation on the investigation not only has effects on the case in question but would impact other areas of policing in terms of consequent resource requirements.

Additionally, information gleaned from DNA phenotyping will be necessarily unspecific, reducing the potential application of the technique. For example, that a suspect was 'a light skinned male with brown hair and brown eyes' is so general that it might not be of any practical use.<sup>189</sup> Although its value to an investigation is controversial in terms of application to a wide-scale hunt for an unknown suspect,

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<sup>185</sup> Ossorio, above n164, 287.

<sup>186</sup> *Ibid*, 287.

<sup>187</sup> Koops and Schellekens, above n115, 5.

<sup>188</sup> Personal Communication – Carmen Eckhoff (ANZPAA-NIFS).

<sup>189</sup> Ossorio, above n164, 284.

predictive phenotyping may be useful to eliminate known suspects who may not share traits with the unknown sample.<sup>190</sup>

## 2. Privacy

Fears regarding privacy in the context of DNA phenotyping are mostly concerned with the protection of medical and behavioural information from expanded use and misuse of the technology. It has been suggested that if behavioural genetic forensic profiling were ever to become an accepted measure, it could be developed for use at trial as evidence of guilt.<sup>191</sup> The fact is, if phenotypic analysis is restricted to unknown samples and only specific EVCs, it cannot affect informational privacy as the person is by definition, unknown, with the analysed results visibly perceptible.<sup>192</sup> If restricted to investigative purposes only and adequate protections are put in place to control the markers utilised for those investigative purposes, there will be very little impact of the application of DNA phenotyping on personal privacy.

Slippery slope arguments against the technique are common because of the amount of unknown information contained in DNA and its intimately personal nature. Again, effective regulation can be implemented to address these concerns and the investigative purpose of the process needs to be emphasised to avoid such objections.

## 3. Stigmatisation

Whilst it is unlikely that releasing information that a criminal has brown hair or blue eyes will negatively affect the population sharing those characteristics, the release of information that a suspect is of an Asian ethnic origin or is dark skinned does have potential to agitate racial biases and impact other members of that ethnic group. Phenotyping to determine genetic ancestry has many associated dangers including that it might stigmatise certain sections of the community.<sup>193</sup> As with familial searching, there is a danger that the production and publishing of predictive phenotypes may reinforce prejudices; the public potentially interpreting ethnicity and criminality to be intrinsically and unavoidably linked, inflaming racial stereotypes.<sup>194</sup> The impact of this on individuals is of greatest concern in that physical resemblance to a perpetrator may result in a person being unduly suspected, disrespected in the community or interrogated by the police.

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<sup>190</sup> Koops and Schelleckens, above n115, 3.

<sup>191</sup> Rothstein and Talbott, above n16, 158.

<sup>192</sup> Koops and Schelleckens, above n115, 21.

<sup>193</sup> Ossoiro, above n164, 287.

<sup>194</sup> Koops and Schelleckens, above n115, 25.

Whilst stigmatisation of ethnic groups is a risk that comes with the analysis of those groups, predictive DNA testing is not the first investigative tool to distinguish or identify people based on their ethnicity. Forensic psychological profiling and bone structure analysis are examples of two techniques currently in use to determine ethnicity of a suspect or unknown victim.<sup>195</sup> There are measures that can be put in place to reduce any increased stigma<sup>196</sup> as they deal with similar issues generated by the use of traditional forensic techniques. Regulation of the use of DNA phenotyping would address this, for example, release of the results of DNA phenotyping to the public might be limited to serious cases in which it is deemed necessary. Appropriate regulation of the technique will go a long way to easing the social impact of the use of phenotyping, particularly ancestral phenotyping.

### C. Is predictive DNA testing currently permissible in Australia?

The current Australian legislation does not explicitly address predictive DNA testing. It is arguable that section 20B of the Northern Territory Police Regulations may prohibit phenotyping as it specifies that a sample may be analysed *only* to obtain information to compare DNA profiles for identification; to determine the gender of a person; or to link a person with another person, a place or a thing.<sup>197</sup> Since the sample is from an unknown person, under the current framing of the regulations phenotyping seems limited to determining gender.

In the absence of express legislative approval, in the current climate the use of predictive DNA phenotyping in Australian jurisdictions could be inappropriate. Forensic use of DNA in Australian jurisdictions was originally accepted by parliaments and by the people on the basis that the material analysed is of a non-coding nature.<sup>198</sup> The ‘junk’ quality of the loci used to generate profiles for inclusion on databases was essential in side-lining fears of potential genetic surveillance and misuse when the legislation was first developed so analysis of samples for traits and characteristics as required by DNA phenotyping presents a significant departure from the original scope of the current legislation. In evidence of this position, it was proposed by the Sherman Review of Part 1D of the Commonwealth Crimes Act that testing samples for phenotypically expressed information should be prohibited by statute on the basis that this would constitute a reasonable safeguard against misuse and function creep of the technology.<sup>199</sup> However, parliament has not moved to introduce this prohibition because it was mooted to have a detrimental effect on the development of future DNA technologies; the application of phenotyping to criminal casework being

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<sup>195</sup> Abraham, above n179.

<sup>196</sup> Koops and Schelleckens, above n115, 25.

<sup>197</sup> *Police Administration Regulations 2005* (Northern Territory) reg 20B.

<sup>198</sup> ALRC Report, above n106, [41.101].

<sup>199</sup> Sherman Report, above n106, Recommendation 23.

one such example.<sup>200</sup> Arguably the conceived prohibition was not intended to be a blanket preclusion to the acceptance of DNA phenotyping as an investigative method in the future, but was devised to encourage consideration of any potential law enforcement use for DNA by parliament, whose role it would be to devise an appropriate framework for regulation prior to implementation.<sup>201</sup> Therefore, it is suggested that wider debate, consultation and community agreement<sup>202</sup> are necessary with express legislative change required before predictive phenotyping is permissible in Australia.

## D. What is the situation in overseas jurisdictions?

### 1. The Netherlands

An amendment to the Dutch Code of Criminal Procedure in 2003 made it possible to derive phenotypical information from DNA found at a crime scene and belonging to an unknown suspect.<sup>203</sup> Traits to be tested are limited to EVCs and presently only gender and race may be determined, although the concept of 'race' really refers to geographic ancestry.<sup>204</sup> There is a facility for an Order in Council to add other traits in the future.<sup>205</sup> The legislation restricts the traits to be investigated to those that are visible from birth<sup>206</sup> and police are only allowed to register data concerning race if this is indispensable for identification, for correct appraisal of a criminal offence or with a view to assistance by police.<sup>207</sup> If data about race is registered, an indication of the reliability of the data must be included.<sup>208</sup>

### 2. The UK

The UK has been involved in aggressive DNA researching into the possible application of phenotyping since the early 1990s.<sup>209</sup> However, like with their familial searching policy, there is no legislation guiding the use of phenotyping and regulation of the technique is left to the Forensic Science Service (FSS).<sup>210</sup> The FSS provides two services to the police – an ethnic inference test and a red hair test.<sup>211</sup> The ethnic inference

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<sup>200</sup> Victoria Police submission to the Sherman report (ibid).

<sup>201</sup> Personal Communication – Dr Simon Walsh (Australian Federal Police).

<sup>202</sup> Sherman report, above n106, [41.111].

<sup>203</sup> Koops and Schelleckens, above n115, 8.

<sup>204</sup> Ibid.

<sup>205</sup> Ibid.

<sup>206</sup> Ibid, 9.

<sup>207</sup> Ibid, 27.

<sup>208</sup> Ibid, 27; Art 3 Dutch Police Files Act (*Besluit Politiregisters*).

<sup>209</sup> Evett & R. Pinchin, 'An investigation of the feasibility of inferring ethnic origin from DNA profiles', (1992) 34(4) *Journal of the Forensic Science Society* 301.

<sup>210</sup> Koops and Schelleckens, above n115, 11.

<sup>211</sup> Ibid.

service calculates the probability of a person's ethnicity using statistics developed with FSS software on five groups; white skinned Europeans, Afro-Caribbean, Indian Subcontinent, South-East Asian and Middle Eastern<sup>212</sup> and was used successfully in a 2004 rape investigation. The red hair test is said to detect 84% of red heads.<sup>213</sup> Even though the techniques are already used in practice, the Human Genetics Commission recommended in 2002 that an independent research ethics commission should be established to approve research and facilitate full public debate in order to examine the ethical, consent and confidentiality issues surrounding phenotypic prediction.<sup>214</sup> This has not yet occurred.

### 3. The US

Like in Australia, there is no legislation in the US explicitly endorsing DNA phenotyping. Indiana, Rhode Island and Wyoming legislatively prohibit the use of DNA submitted to databases for the determination of phenotypic information and Vermont prohibits analysis for the identification of any medical or genetic disorder.<sup>215</sup> Koops and Schelleckens suggest that as most states do not have explicit provisions on phenotyping, they may implicitly allow the process.<sup>216</sup> Texas is an example of a jurisdiction where information about human physical traits or predispositions for disease are to be excluded from forensic analysis unless it is for the purpose of investigation of an offence; the exclusion or identification of suspects; or for the prosecution of a case.<sup>217</sup> As mentioned above, in spite of the absence of legislative approval, various US police agencies have used ancestral origin technologies in casework.

### 4. Canada

There are no legislative or regulatory requirements that currently limit permissible forensic DNA testing in Canada.<sup>218</sup> There are reports that a number of Canadian police forces have used the services of a company which conducts ancestral analysis of crime scene DNA.<sup>219</sup> A report in Canada's Globe and Mail from 2005

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<sup>212</sup> Ibid.

<sup>213</sup> Koops and Schelleckens, above n115, 11.

<sup>214</sup> Human Genetics Commission (UK), *Inside Information. Balancing interests in the use of personal genetic data*, (Summary Report, May 2002) available at: <[http://www.hgc.gov.uk/UploadDocs/DocPub/Document/insideinformation\\_summary.pdf](http://www.hgc.gov.uk/UploadDocs/DocPub/Document/insideinformation_summary.pdf) > 31.

<sup>215</sup> Koops and Schelleckens, above n115, 10.

<sup>216</sup> Ibid.

<sup>217</sup> Michelle Hibbert, 'DNA Databanks: Law enforcement's greatest surveillance tool?', (1999) 34 *Wake Forest Law Review* 767, 792.

<sup>218</sup> Bellamy-Royds and Norris, above n144, 16.

<sup>219</sup> Ibid.

indicated that Canadian police have been quietly using the technique and are reluctant to discuss their use of the technology.<sup>220</sup>

## 5. Spain

On the 11<sup>th</sup> of March 2004, 191 people were killed and another 1800 were injured in bomb attacks on commuter trains in central Madrid.<sup>221</sup> The bombings were followed by another blast a month later when suspects facing a police raid blew up their apartment killing themselves and a police officer.<sup>222</sup> In 2007, a Spanish judge ordered ancestral testing of DNA recovered from the apartment and other locations, predictive testing determining that the unknown suspects were of North African descent.<sup>223</sup> Some of the suspects later convicted were revealed to be of Moroccan and Algerian background.<sup>224</sup> Ancestral typing was used as a last resort to generate a lead in the Madrid Bombing investigation and it is unclear what practical guidelines were followed in its implementation.<sup>225</sup> Spanish legislation appears to focus on DNA databasing<sup>226</sup> and there is no known legislation dealing directly with predictive DNA testing at the present time.

### E. How could predictive DNA testing be implemented?

Despite its pitfalls, DNA phenotyping is a technology which does have potential to assist law enforcement even if its practical use may be limited. It is already in use in the UK, the US and Canada (as well as Spain) with very little regulation, the Netherlands being the only country with known legislation explicitly allowing the practice. Because of the gravity of the many concerns associated with the technique, it is recommended that the application of predictive phenotyping to law enforcement does not proceed informally in the Australian context. As with familial searching, the legislative process might increase the level of transparency and accountability, ensuring that adequate safeguards are put in place to address accuracy, practicality and ethnic concerns including stigmatisation.<sup>227</sup> Also analogous to the suggested implementation of familial searching, it may be appropriate that legislative changes are enacted to make

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<sup>220</sup> Abraham, above n179.

<sup>221</sup> Ewen Callaway, 'DNA mugshots' narrow search for Madrid bombers' *New Scientist* 18 August 2009.

<sup>222</sup> Ibid.

<sup>223</sup> Christopher Phillips, Lourdes Prieto, Manuel Fondevila, Antonio Salas, Antonio Gomez-Tato, Jose Alvarez-Dios, Antonio Alonso, Alejandro Blanco-Verera, Maria Brion, Marta Montesino, Angel Carracedo and Maria Victoria Lareu, 'Ancestry Analysis in the 11-M Madrid Bomb Attack Investigation' 4(8) *PLoS One*.

<sup>224</sup> Ibid.

<sup>225</sup> Personal Communication – Carmen Eckhoff (CrimTrac).

<sup>226</sup> Tim Schellberg, 'Forensic DNA Databases: A Global Update' (Paper presented at The 4<sup>th</sup> Annual Applied Biosystems Middle East HID User Meeting, Bahrain, March 2010).

<sup>227</sup> Murphy, above n19, 45.

the legal position clear in Australia whilst policy could be used to set required scientific and investigative standards.

In their seminal piece addressing the international application of predictive DNA phenotyping to the criminal context, Koops and Schelleckens underline the importance of taking a trait-by-trait approach to implementing the technique.<sup>228</sup> This is also reflected in the Netherlands' legislative regime. Given the multiplicity of issues to be taken into account in adopting DNA phenotyping as an investigative tool, if Australian jurisdictions are to adopt the technique it could be a valid option to use this approach and consider various factors in appropriate policies such as

- the likelihood that someone with a genotype will develop the requisite phenotype,
- the number of genes or alleles involved in the phenotype,
- the age at which the phenotype manifests,
- the alterability of the phenotype, and
- the usefulness of the phenotype in narrowing down the circle of possible suspects.<sup>229</sup>

Koops and Schelleckens see the adoption of phenotyping as a political decision which may be of considerable benefit to fighting crime if the science and safeguards are properly regulated.

As suggested earlier in this report, to guard against reliability and practicality concerns, use of DNA phenotyping might be restricted to situations where the source of the sample is unknown and the information gained from the analysis be used for investigative and intelligence purposes only. Given the limitations of the technique, perhaps it might be best also if its application was limited to those serious crimes in which there are no other investigative leads as a precaution; particularly whilst the science develops.<sup>230</sup> Legislation could be drafted to make these requirements clear.

Even if the traits to be successfully predicted are currently very limited, considering a legislative framework to implement predictive DNA testing now will ensure that as the science develops, Australian law enforcement will be in a position to best use the available technology.

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<sup>228</sup> Koops and Schelleckens, above n115, 31.

<sup>229</sup> *Ibid*, 32.

<sup>230</sup> *Ibid*.

## IV. Conclusion

The expansion of DNA science and technology has significant potential to aid law enforcement as techniques develop improved sensitivity and new capabilities. This is demonstrated by the successful application of both familial searching and predictive DNA testing to criminal casework internationally. Expanding uses of genetic information continue to challenge and change the relationship between individuals and the state and as such, it is imperative that the techniques respond to criticisms they inspire through sensitive and transparent implementation. Considering legislative and policy frameworks for the adoption of familial searching and predictive DNA testing is vital to the capacity of Australian investigators to police effectively, using the available technology to its utmost capacity. Whilst there are risks and complex rights concerns associated with both familial searching and predictive DNA testing, regulatory frameworks to capitalise on technological capabilities will be essential to facilitating the fight against serious crime as we move forward in the 21<sup>st</sup> Century.

This report recommends that Australian parliaments consider amendments to domestic DNA databasing legislation to formalise endorsement of familial searching and predictive DNA testing. Whilst the UK has led the charge in use of these techniques in criminal casework, their policy framework does little to appease the associated risks and rights concerns involved. It is only by ensuring transparency in the formation of a formal framework that rights and other concerns can be adequately addressed to establish the legitimacy of familial searching and predictive DNA testing as investigative tools. The New Zealand approach whereby the techniques are currently used by police in the absence of any human rights assessment is precisely the situation that needs to be avoided in Australia so that methods of investigation remain fair and just. Inspiration for implementation could be sought from the legislative approach adopted in the Netherlands whereby formal systems have been introduced to regulate the use of these new crime-fighting tools. The US experience highlights difficulties of an incremental approach to the implementation of familial matching and predictive DNA testing in a federal system with various states adopting different stances on the issue, creating individual sets of standards and procedures. Australia could avoid this experience by coordinating a national approach to both familial matching and predictive DNA testing from the outset. Whilst it is important that changes to legislation delineate clear limits to prevent against abuse and 'function creep', there is an important role for policy in ensuring that future developments in technology can be accommodated and that investigative follow up is sensitive to family and other important social relationships.

Familial searching and predictive DNA testing need to be considered in the public arena. The sooner this occurs, the greater the probability that an effective and equitable framework can be agreed upon.

Consideration of these issues now will reduce any temptation of informal implementation, as well as ensure that Australian investigators are able to capitalise on technologies at the cutting edge of modern forensic science.

## V. GLOSSARY

Allele – An alternative form of a gene or a section of DNA at a [particular genetic location (locus); typically multiple alleles are possible for each STR marker<sup>231</sup>

CODIS – Convicted Offender DNA Index System

CSI – Crime Scene Investigation

DNA – Deoxyribonucleic Acid

EVC – Externally Visible Characteristics

FSS – Forensic Science Service

Locus – A unique physical location (site) of a gene (or specific sequence of DNA) on a chromosome<sup>232</sup>

Loci – Plural of locus

mtDNA – Mitochondrial DNA

STR – Short Tandem Repeat

UK – United Kingdom

US – United States

Y-STR – Short Tandem Repeat located on the Y chromosome

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<sup>231</sup> Butler, above n 86.

<sup>232</sup> Ibid.

## VI. Appendices

1. [The Netherlands Legislation amendments re-DNA affinity and DNA research study.doc](#)
2. [Colorado DNA Familial Search Policy 2009.pdf](#)
3. [California DNA Partial Match Policy 2008.pdf](#)
4. [NZ Protocols - Familial Testing.doc](#)

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**Amendment of the Code of Criminal Procedure Law and the DNA study of convicts in connection with the introduction of DNA affinity and DNA research study by observable individual characteristics of the unknown victim and the rules of any other issues**

**Nr. 2**

**PROPOSAL OF LAW**

We Beatrix, by the grace of God, Queen of the Netherlands, Princess of Orange-Nassau, etc. etc. etc.

Allen, who shall see or hear these presents! Be it known:

Whereas We have considered, it is desirable in the Code of Criminal Procedure the basis for the use of DNA affinity and DNA research study by observable individual characteristics of the unknown victim and any other matters that DNA Code and the Law study in convicts to settle;

So it is that we, the Council of State heard, and in consultation with the States-General, have approved and decreed as We hereby approve and decree:

**ARTICLE I**

THE CODE OF CRIMINAL PROCEDURE IS AMENDED AS FOLLOWS

A

Article 138a "or identifying externally visible characteristics of the unknown suspect person" replaced by, identifying externally visible characteristics of the individual or the unknown unknown suspect or victim establish kinship.

B

Article 151a shall be amended as follows:

1. The first paragraph shall read:

1. The prosecutor may of its own motion or on application by the accused or his counsel, the accused or third interest in the investigation of the cell material requests for a DNA test, aimed at comparing DNA profiles, to assist . Cellular material may, except in case of application of Article 151b or lost under the following sentence, only with written consent of the defendant and the third to be taken. If the third is missing because of a crime, DNA testing can be performed on cell material objects, which were seized from him, or cellular material that is otherwise obtained.

2. The second to ninth member shall become fourth to eleventh member.

3. Two paragraphs inserted, which read:

2. The Prosecutor shall appoint an expert, attached to one of the in general administrative designate laboratories, with the mission to conduct the DNA test. The expert shall report to the Public Prosecutor a reasoned report.

3. The powers referred to in the first and second paragraph, are also on the prosecutor added if the DNA test is performed on cellular material from an unknown suspect. The powers are limited by general administrative regulation to designate crimes.

4. In the fourth paragraph (new) is "under the fourth paragraph" replaced by "under the sixth paragraph" and "The fourth paragraph" by "The sixth member".

5. In the fifth paragraph (new) is "under the second paragraph replaced by" under the fourth paragraph "and" the fourth and fifth member "by" the sixth and seventh paragraphs.
6. In the sixth paragraph (new) is "the third paragraph" replaced by the fifth member.
7. In the seventh paragraph (new) is the "fourth member" replaced by the sixth paragraph.
8. In the eighth paragraph (new) is "the prevention, detection, prosecution and adjudication of criminal offenses" by "the prevention, detection, prosecution and trial of criminal offenses and to establish the identity of a corpse" and delete the phrase " , the Board heard personal protection ".
9. In the ninth paragraph (new) is "the first to sixth paragraph replaced by: the first to eighth member.
10. In the tenth paragraph (new) is the "fourth member" replaced by the sixth paragraph.

## C

Article 151b shall be amended as follows:

1. In the first paragraph, "cellular material will be taken for a DNA test." Replaced by cellular material is taken for a DNA test under Article 151a, first paragraph, if he refuses his written consent. Article 151a, second and fourth to tenth paragraph, mutatis mutandis.
2. At the fourth paragraph, added a sentence which reads: In case of important reasons, the DNA testing to be performed on cell material objects, of which the accused have been seized, or cellular material that is otherwise obtained.

## D

Article 151c deleted.

## E

Article 151d shall be amended as follows:

1. In the first paragraph, "The public prosecutor may" by "The public prosecutor may in the interest of the investigation" and "the unknown suspect." Replaced by "unknown unknown suspect or victim. Article 151a, second paragraph, shall apply. ".
2. In the fourth paragraph, "in case of a crime" as follows: in case of suspicion of a crime.

## F

After Article 151d shall be inserted an article, which reads:

### **Article 151da**

1. Notwithstanding Article 21, fourth paragraph, of the Data Protection Act, the Public Prosecutor in the interest of the study recommended that a DNA research is aimed at establishing kinship. If the DNA test is performed using the DNA profiles, in accordance with this Code, the Data Protection Act and the Act to study DNA-convicts are processed, can be ordered only after

written authorization from the judge to application of the Prosecutor. Article 151a, second paragraph, shall apply.

2. Cellular material that under this Code, the Data Protection Act or the Act to study DNA-convicts decreased for identifying and processing a DNA profile may be used to establish kinship. Cellular material from a known person who is not suspected of a crime, can only be purchased with his written consent and used to establish kinship.

3. The DNA test can be performed only in cases of suspicion of a crime for which the legal description of eight years imprisonment or more is made and one of the crimes described in Articles 109, 110, 141, second paragraph, under 1 ° , 181, under 2 ° , 182, 247, 248a, 248b, 249, 281, first paragraph, under 1 ° , 290, 300, second and third paragraph, and 301, second paragraph, of the Criminal Code. If a DNA test under Article 151a, first paragraph, leads to the establishment of kinship, the prosecutor in this result the investigation use.

4. For general administrative arrangements can be made about the arrangements of the DNA testing.

## G

Article 195a shall be amended as follows:

1. The first paragraph shall read:

1. The judge can automatically on application of the prosecutor or at the request of the accused or his counsel, the accused or third interest in the investigation of the cellular material requests for a DNA test, aimed at comparison of DNA profiles, to stand. Cellular material may, except in case of application of Article 195D or lost under the following sentence, only with written consent of the defendant and the third to be taken. If the third is missing because of a crime, DNA testing can be performed on cell material objects, which were seized from him, or cellular material that is otherwise obtained.

2. The second to fifth paragraph shall become third to sixth member.

3. A paragraph is inserted which reads:

2. The judge appoints an expert attached to one of the in general administrative designate laboratories, with the mission to conduct the DNA test. The expert reports to the judge a reasoned report.

4. In the fourth paragraph (new) is "under the second paragraph replaced by: under the third paragraph.

5. In the fifth paragraph (new) is "the prevention, detection, prosecution and adjudication of criminal offenses" by "the prevention, detection, prosecution and trial of criminal offenses and to establish the identity of a corpse" and delete the phrase " the College personal hearing protection, ".

## H

Article 195b, first paragraph, "Article 195a, third paragraph, first sentence, fourth and fifth paragraph is replaced by: Article 195a, fourth paragraph, first sentence, fifth and sixth paragraph.

## I

Article 195D is amended as follows:

1. In the first paragraph, "cellular material will be taken for a DNA test." Replaced by cellular material is taken for a DNA test under Article 195a, first paragraph, if he refuses his written consent. Articles 195a, second to fifth paragraph, 195b and 195c shall apply mutatis mutandis.

2. At the fourth paragraph, added a sentence which reads: In case of important reasons, the DNA testing to be performed on cell material objects, of which the accused have been seized, or cellular material that is otherwise obtained.

J

Article 195th deleted.

K

Article 195f is amended as follows:

1. In the first paragraph, "The judge can" read "The judge may in the interest of the investigation" and "the unknown suspect." Replaced by "unknown unknown suspect or victim. Article 195a, second paragraph, shall apply. "

2. In the fourth paragraph, "in case of a crime" as follows: in case of suspicion of a crime.

L

After an article is added to Article 195f, which reads:

### **Article 195g**

1. Notwithstanding Article 21, fourth paragraph, of the Data Protection Act, the judge in the interest of the study recommended that a DNA research is aimed at establishing kinship. Article 195a, second paragraph, shall apply.

2. Cellular material that under this Code, the Data Protection Act or the Act to study DNA-convicts decreased for identifying and processing a DNA profile may be used to establish kinship. Cellular material from a known person who is not suspected of a crime, can only be purchased with his written consent and used to establish kinship.

3. The DNA test can be performed only in cases of suspicion of a crime for which the legal description of eight years imprisonment or more is made and one of the crimes described in Articles 109, 110, 141, second paragraph, under 1 °, 181, under 2 °, 182, 247, 248a, 248b, 249, 281, first paragraph, under 1 °, 290, 300, second and third paragraph, and 301, second paragraph, of the Criminal Code. If a DNA test under Article 195a, first paragraph, leads to the establishment of kinship, the judge that result in the preliminary research use.

4. For general administrative arrangements can be made about the arrangements of the DNA testing.

## **ARTICLE II**

Article 2 of the Act is condemned by DNA analysis as follows:

1. In the first paragraph, "under Article 151a, first paragraph, second sentence, or 195a, first paragraph, second sentence, of the Code of Criminal Procedure, or under Article 23, first paragraph, a, of the Law personal protection "as follows: under the Criminal Code or the Data Protection Act.

2. The second to sixth member shall become third to seventh member.

3. A paragraph is inserted which reads:

2. If the DNA profile of a person that is processed in accordance with the Code of Criminal Procedure, should be destroyed, it remains nevertheless incorporated under the first paragraph,

introductory words, if the person is convicted of an offense defined in Article 67, first member of that Code and the Public Prosecutor has ruled that it is reasonably likely that the processing of his DNA profile may have significance for the prevention, detection, prosecution and adjudication of criminal offenses by the offender. The order of the Public Prosecutor referred to in the first paragraph, introductory sentence, remains in that case continues.

4. In the sixth paragraph (new) after "the prevention, detection, prosecution and adjudication of criminal offenses" inserted "and determining the identity of a corpse" and delete the phrase "the personal hearing protection College,".

5. In the seventh paragraph (new) is "the second and third paragraph" replaced by the third and fourth paragraph.

### **ARTICLE III**

This Act shall enter into force on a date to be determined by Royal Decree.

And ordain that the Gazette will be posted and that all ministries, authorities, bodies and officials whom it may concern shall diligently implement it will take.

Data

De Minister van Justitie,

**COLORADO BUREAU OF INVESTIGATION****DNA FAMILIAL SEARCH POLICY****OCTOBER 22, 2009****CBI POLICY STATEMENT**

The Colorado Bureau of Investigation (CBI) has developed a DNA Familial Search Policy that may result in investigative information provided to law enforcement officials in unsolved cases where other investigative leads have been exhausted. A familial search is a deliberate search for biologically-related relatives of a contributor of an evidentiary profile conducted with specialized (non-CODIS) software designed for this purpose. Because the information that is ultimately provided will be the name or names of an offender or offenders in Colorado's DNA database who may be related to the actual perpetrator, the process developed requires special DNA testing and review of the offender's non-DNA information. The process specified in the policy was developed keeping privacy concerns in mind, while at the same time providing information that may be useful in solving a violent offense and preventing potential victimization.

**BACKGROUND**

Colorado's DNA Data Bank consists of a database of DNA profiles from persons charged with felony offenses as of September 30, 2010 and persons who are convicted felony offenders ("offender database") and a database of crime scene evidence profiles. The two DNA offender databases form the Colorado CODIS. When a crime scene profile is searched against the offender database, a match is declared if the crime scene profile is the same as the offender's DNA profile. If the profiles are not exact, but there is a scientific connection, the source of the crime scene profile may be a relative of the offender. With the recent advances of DNA technology, DNA testing beyond the standard profiling for individual identification can now be conducted to provide additional information as to whether individuals may be related.

**PROCEDURES**

1. A familial search of the state offender DNA database, using specialized non-CODIS software designed for the application, at the discretion of the Director of the Colorado Bureau of Investigation, may be conducted in any of the following general categories:
  - a. A potential match is obtained from a CODIS search and the case is under investigation and is unsolved, or
  - b. A special request for a familial search of a CODIS profile has been made by the chief law enforcement officer of the investigating law enforcement agency, or by the district attorney of the jurisdiction. The preferred practice is a joint request from the chief law enforcement officer and the district attorney. This special request shall be based upon an active investigation having significant public safety concerns, or
  - c. A routine familial search performed by the CBI.

2. When submitting a special request pursuant to paragraph 1(b), the chief law enforcement officer or district attorney shall provide to CBI written certification of the following:
  - a. That the evidentiary DNA profile is from a case having significant public safety concerns and the familial search result is critical to advancing the investigation;
  - b. That the request from the investigating law enforcement agency includes a case summary and a specimen ID produced in accordance with the "Procedure for Conducting a Familial Search";
  - c. that the investigating law enforcement agency and/or the district attorney agree to follow the CBI's investigative policies and procedures relative to this type of evidence;
  - d. That the lead investigator assigned to the case has received CBI approved training in the use of DNA familial search evidence;
  - e. That standard investigative leads have been exhausted, or a specific exception is articulated; and
  - f. That the agency agrees to further investigate the case after CBI releases the identifying information to the requesting agency.
  
3. In determining whether a DNA familial search can be conducted, CBI will utilize the following procedures:
  - a. The evidentiary DNA profile must be entered as either a single-source profile or a clearly defined major component of a mixture with all 13 loci noted;
  - b. When the request for a search is received, a new case number will be assigned;
  - c. For male candidate results, a sample will be provided for Y-STR analysis to a CODIS eligible DNA laboratory;
  - d. Upon completion of the Y-STR analysis, the local law enforcement agency shall return any remaining sample to the CBI for destruction and certify in writing that all extracts and amplified product have been destroyed;
  - e. For female candidate results, Y-STRs are of no value;
  - f. Prior to CBI's release of identifying information, the laboratory performing the Y-STR comparison will provide to CBI written results of the Y-STR analysis from the sample provided by CBI and the forensic unknown.
  
4. The identifying information in the CBI case report provided to the chief law enforcement officer and/or the district attorney shall include the following:
  - a. Identifying information of any individual having sufficient DNA markers in common with the DNA offender profile, to include the name, date of birth, and ethnicity for each individual;
  - b. The CBI case report will include the following statement: ***"This information is for law enforcement investigatory purposes only. It is not a statement of identify. The release of the DNA profiles to non-laws enforcement agencies/personnel is a violation of both state and federal statutes."***
  - c. The CBI case report will be mailed or hand-delivered to the law enforcement agency but shall not be electronically transmitted.
  
5. After receiving from CBI identifying information on DNA profiles determined by the familial search, the investigating law enforcement agency agrees to abide by the following policies, procedures and requirements:
  - a. The CBI, or its delegate, will conduct an initial review of the familial search results to determine individuals or families of immediate interest to the investigation;
  - b. When an individual is identified through the familial search, the investigating law enforcement agency shall investigate whether the identified individual is related to the DNA

- database offender. As applicable, the investigator may construct a "family tree" of male relatives connected through the DNA and passed through the y-chromosome.
- c. To determine possible familial relationships, the investigating law enforcement agency, with assistance from CBI, as needed, shall conduct a full background check of the identified individual and family members, including use of the following sources, as available and applicable:
- i. CCIC/NCIC criminal history checks;
  - ii. Inmate profiles from DOC;
  - iii. Visitor logs from DOC;
  - iv. Presentence investigative reports;
  - v. Jail records including visitor logs and telephone logs;
  - vi. Court records searches;
  - vii. Public records searches;
  - viii. Rocky Mountain Information Network (RMIN);
  - ix. State vital records;
  - x. Other public resources.
- d. Following a thorough records investigation of the individual or individuals identified through the DNA familial search as related to the CODIS offender, the investigating law enforcement agency shall examine the investigative records of the subject crime and determine whether this individual is or these individuals are possible suspect(s). Investigative steps and resources that could be utilized include:
- i. Surveillance data;
  - ii. DNA samples obtained surreptitiously;
  - iii. Work or employment background;
  - iv. Adult and juvenile criminal histories;
  - v. Motor vehicle records (driver's license, ID card, vehicle registration);
  - vi. Housing records;
  - vii. Financial searches;
  - viii. Additional interviews or re-interviews of informants, witnesses, or victims.
- e. Based upon information obtained through the investigation, the investigating law enforcement agency should prepare an application for a Colorado Rules of Criminal Procedure, Rule 41.1 Court Order for Nontestimonial Identification, to obtain a DNA sample from the identified suspect. Use of familial DNA alone shall not be the sole basis upon which an investigator requests the Rule 41.1 court order. Additional, articulable evidence must be demonstrated to support the petition for a court order:
- i. Individuals from whom DNA samples are taken pursuant to a Rule 41.1 court order may not be interrogated during the procedures required to obtain the sample;
  - ii. The sample obtained from the suspect will be compared with the forensic profile. CBI or another CODIS eligible laboratory will provide the results of this comparison to the investigating law enforcement agency and the district attorney's office.
- f. Absent exigent circumstances, family members and relative should only be contacted after initial investigative steps have been taken during the investigative process, to include first obtaining information from public and law enforcement authorized databases. Care should be taken to insure consideration of potential family issues before contacting family members. Potential issues constituting reasons for delaying contact with family members include:
- i. the possibility that a father is not aware of the existence of an offspring (the "unknown child" issue);

- ii. The possibility that a family might have assumed a child's father is someone else (the "misbelieved paternity");
- iii. The existence of other possible family privacy concerns.

Signed

10/22/09


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DBI Director Ronald C. Sloan

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Date

Edmund G Brown Jr., Attorney General

<p>California Department of Justice                  DIVISION OF LAW ENFORCEMENT                  George B. Anderson, Director</p> 	<h1>INFORMATION BULLETIN</h1>	
<p><i>Subject</i></p> <p><b>DNA Partial Match (Crime Scene DNA Profile to offender) Policy</b></p>	<p><i>No.</i></p> <p>2008-BFS-01</p>	<p><i>Contact for Information:</i></p> <p><i>Bureau of Forensic Services</i>  <i>Gary Sims</i></p>

**TO: All California Law enforcement Agencies and District Attorneys Offices**

The Department of Justice (DOJ) has developed a DNA Partial match Reporting and Modified CODIS (Combined DNA Index System) Search Policy that may result in investigative information provided to law enforcement officials in unsolved cases where all other investigative leads have been exhausted. Because the information that is ultimately provided will be the name or names of an offender or offenders in California's DNA database who may be related to the actual perpetrator, the process developed requires special DNA testing and review of the offender's non-DNA information. The process specified in the Policy was developed keeping privacy concerns in mind while at the same time providing information that may be useful in solving a violent offense.

**Background**

California's DNA Data Bank, formally established in 1990, consists of a database of DNA profiles from offenders and a database of crime scene (evidence) profiles. The two DNA databases form the California CODIS. When a crime scene profile is searched against the offender database, a match is declared if the crime scene profile is "exactly" the same as the offender's DNA profile. Logic suggests that if the profiles are not exact, but close, the source of the crime scene profile may be a relative of the offender. With the recent advances of DNA technology, DNA testing beyond the standard profiling for individual identification can now be conducted to provide additional information as to whether individuals may be related.

**DOJ Partial Match Reporting and Modified CODIS Search Policy**

The name of an offender who is not the source of the biological material from an unsolved case may be released in an investigation under the following two situations.

**I. Partial match Obtained from CODIS Search**

When a crime scene DNA profile (forensic unknown) is routinely searched by the standard method against California's Offender DNA Data Bank and a "partial match" results in which the profile shares at least 15 STR (Short Tandem Repeat) alleles with a different but potentially related offender profile, the name of the offender may be released to the investigating agency if the protocol outlined below has been followed and all of the following conditions are met:

- 1) The crime scene DNA profile is a single-source profile.
- 2) The case is unsolved and all investigative leads have been exhausted.
- 3) A commitment is made by the agency and the prosecutor to further investigate the case if the name of the potentially related offender is eventually released.
- 4) Y-STR typing of the same crime scene evidence that yielded the submitted forensic unknown profile is completed by the submitting agency and is concordant with the offender's Y-STR type obtained by DOJ.
- 5) If the Y-STR profiles have been determined to be consistent, DOJ will review non-forensic information in order to identify additional evidence bearing on relatedness, if available.
- 6) A DOJ committee will discuss the case with the local law enforcement agency, the local laboratory, and the prosecutor's office. After reviewing all of the available information, the offender's name will be released unless there is a reason not to release it.
- 7) If the committee cannot reach consensus, the decision to release the name to the investigating agency will be made by the Attorney General or his designee.

## II. Special Request for a Modified CODIS Search

When a law enforcement agency is investigating an unsolved case that has critical public safety implications, the agency may request that DOJ conduct a modified CODIS search with the objective of identifying any offender(s) in the database who are likely to be related to the unknown perpetrator. In these situations, the name of an offender may be released to the investigating agency if the protocol outlined below has been followed and all of the following conditions are met:

- 1) A written request is sent to the Chief of the Bureau of Forensic Services that describes the case, and attests that all other investigative leads have been exhausted, and that the investigating agency and the prosecutor's office are committed to further investigate the case if the name of an offender is eventually released.
- 2) The crime scene profile is a single-source profile.
- 3) Y-STR typing of the same crime scene evidence that yielded the submitted forensic unknown profile has been completed by the submitting agency prior to the search.
- 4) The modified CODIS search conducted by DOJ must result in a manageable number of candidates.
- 5) The candidate matches resulting from the modified CODIS search will be prioritized by DOJ using appropriate statistical calculations for relatedness.
- 6) Based on this prioritization, DOJ will conduct Y-STR analysis of the offender sample(s).
- 7) If the Y-STR profiles of the evidence and offender sample(s) are consistent, DOJ will review non-forensic information in order to identify additional evidence bearing on relatedness, if available.
- 8) A DOJ committee will discuss the case with the local law enforcement agency, the local laboratory, and the prosecutor's office. After reviewing all of the available information, the offender's name will be released unless there is a reason not to release it.
- 9) If the committee cannot reach consensus, the decision to release the name to the investigating agency will be made by the Attorney General or his designee.

### **Initiating the Partial match Investigation**

When a partial match occurs that has at least 15 shared STR alleles with an offender, DOJ will contact the local laboratory's CODIS administrator to confirm that the case is not yet solved. If the case is still active, the case investigator should be notified of the partial match by the local CODIS laboratory and the process defined in the policy will be followed upon request.

Partial matches that occurred prior to the date of this bulletin will be addressed on a case-by-case basis by DOJ.

### **Initiating A Modified CODIS Search**

If an investigator has a case where no search of the crime scene DNA profile has produced an offender hit or a partial match as described above, and the case otherwise meets the criteria specified, a modified CODIS search request can be made to DOJ. These special requests should be on agency letterhead and sent to:

Chief  
Bureau of Forensic Services  
1102 Q Street, 6<sup>th</sup> Floor  
Sacramento, CA 95811

In either of the two instances described above, a memorandum of understanding will be formally established between the investigative agency and DOJ, as any costs associated with the special DNA testing of the crime scene evidence must be paid for by the investigative agency, unless the crime scene evidence testing was performed by DOJ.

Sincerely,

LANCE GIMA, Chief  
Bureau of Forensic Services

For EDMUND G. BRONW JR.  
Attorney General

## Protocols - Familial Testing

The Criminal Investigations (Bodily Samples) Act 1995 (CI (BS) Act), provides the legislative framework for the collection of samples from individuals for the purpose of storing DNA profiling information onto a NZ DNA Profile Databank (DPD).

The legislation does not extend to providing a framework for forensic utilisation of the DPD. In its absence, ESR and NZ Police have developed agreed procedures for operational activities involving the NZ DPD.

### ***Familial searching:***

1. A familial search of the DPD may be considered for a serious offence where there is no DNA link resulting from a specific crime profile search.
2. Familial searching does not contravene the CI (BS) Act however, it is recognised by both ESR and the NZ Police that this type of search has important ethical implications and should only be considered on a case-by-case basis.
3. As this type of search explores familial relatedness it shall only be undertaken where it is considered necessary and proportionate in a particular case.
4. NZ Police shall have an authorisation process for familial search requests to ESR which considers the seriousness of the offence and whether a familial search is appropriate for the investigation.
5. NZ Police shall provide ESR with the necessary documentation which demonstrates the search has been authorised and should proceed. Authorisation shall be via completion of the proforma "NZ Police Request for a Familial Search of the NZ DNA Profile Databank".
6. A familial search will result in a list of potential close relatives to the offender and will contain sensitive personal information.
7. The list is ranked statistically on the basis of how likely a person will be a relative of the offender. ESR shall assist NZ Police in the scientific interpretation of these results.
8. Access to this list shall be restricted to Police and ESR staff involved in the investigation.
9. ESR shall keep a record of familial search requests made by NZ Police and shall provide a summary of these in an annual NZ DNA Profile Databank Report.

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