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### REVIEW

## Fundamental rights regarding forensic databases: Review and analysis of Kuwait's law 78/2015<sup>☆</sup>

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**Abstract** The development of forensic genetics and the creation of DNA databases for human identification are highly useful tools in criminal investigations; however, the protection of fundamental rights must establish inalienable limits in the application of these advances.

Law 78/2015 in Kuwait, passed recently, is the first in the world which includes the requirement that all citizens, residents and visitors must provide DNA samples to the authorities to be included in the police database in order to cooperate with the Ministry of Interior.

This paper studies the characteristics of the DNA regions that are included in the databases and the fundamental rights that may be affected in the process, using Spanish Law as a reference framework. Finally, it analyses Kuwait's DNA law and its implications.

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#### PALABRAS CLAVE

Identificación  
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Derechos humanos;  
Ley de Kuwait

**Derechos fundamentales en el contexto de las bases de datos forenses: Revisión y análisis de la Ley 78/2015 de Kuwait**

**Resumen** El desarrollo de la genética forense y la creación de bases de datos de ADN para la identificación humana constituyen herramientas de gran utilidad en la investigación criminal. Sin embargo, la protección de los derechos fundamentales debe establecer límites intraspasables en el ámbito de aplicación de estos avances.

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La Ley 78/2015 de Kuwait, recientemente aprobada, es la primera en el mundo que recoge la obligación de que todos los ciudadanos, residentes y visitantes del país proporcionen muestras de ADN a las autoridades para que sean incluidos en la base de datos policial con el fin de colaborar con el Ministerio de Interior.

En el presente trabajo se analizan las características de las regiones del ADN que se incluyen en las bases de datos y los derechos fundamentales que se pueden ver afectados en el proceso, empleando como marco la legislación española al respecto, para finalizar estudiando la ley de Kuwait y sus implicaciones.

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## Introduction

Scientific and technological advances entail the need for ethical reflection and legal regulation. Advances in forensic genetics, a branch of forensic medicine whose mission is to manage genetic knowledge to assist in solving civil and criminal cases, require a deep reflection of the need to protect the fundamental rights of individuals, as not all available means can be used when studying crimes, even when investigating particularly serious ones.

The motivation for writing this paper came from the recently adopted Kuwaiti Act No 78/2015, the first piece of legislation in the world to incorporate the obligation for all citizens, residents and visitors to the country to provide the authorities with DNA samples to be entered in the police database for the purposes of control and collaboration with the Ministry of Interior.

This article introduces basic concepts of forensic genetics and analyses the fundamental rights violated when a genetic profile is entered into a DNA database. The analysis is set within the context of Spanish legislation and examines Kuwait's new law, providing a deep reflection by comparing it to certain measures, relating to forensic DNA databases, being taken in other European countries.

## Forensic genetics: DNA regions that are of interest to human identification

The DNA of humans is 99.5% identical. Genetic differences, i.e., variable regions ("polymorphic") that distinguish some individuals from others,<sup>1</sup> and whose analysis is a tool for solving civil and criminal cases, are found in the remaining 0.5%. Forensic genetics is based on these regions.

To identify individuals, genetic markers that are found in noncoding DNA regions (areas that do not encode amino acids do not intervene in the formation of proteins) are studied, the genetic inheritance of which can be traced across generations. As noncoding DNA is not subject to intense selective pressure, it allows for high levels of variation. In order for a locus (specific position of the chromosome) to be considered useful in human identification, the most common allele for that locus (called allele for each variant of a given locus) must have a frequency below 99%.

The different alleles of a locus, i.e., polymorphisms, can comprise various types: from the mutation of a single base to the change in the number of tandem repeats of a group of nucleotides in certain regions of the DNA.

Tandem repeat DNA is that most frequently used in forensics, in particular microsatellites, which can be identified as they have a large number of easily distinguishable variants determined by the number of repeats. By analysing microsatellites, it is possible to obtain results from a tiny amount of sample and from very old biological remains. In addition, they are neutral; i.e., they do not present a natural selection that either enhances or hinders their inheritance. DNA microsatellite repeats are small in size (2–6 base pairs) and are called "short tandem repeats" (STR). The total size of the regions containing an STR is usually 50–500 base pairs.<sup>2</sup>

STRs are located on both autosomal and sex chromosomes. However, those located on autosomal chromosomes are mostly used to solve both civil and criminal cases (those located on sex chromosomes are complementary markers in routine cases and fundamental in specific studies. For instance, the study of markers of the Y chromosome is highly useful in sexual assault cases, while X chromosome polymorphisms allow for performing kinship analysis when the father is unavailable and the offspring are female). Autosomal DNA is also the preferred tool in forensic databases.<sup>3</sup>

## Forensic databases

Council of Europe Resolution of 9 June 1997 on the exchange of DNA analysis results (97/C 193/02)<sup>4</sup> invites Member States "to consider establishing national DNA databases ... [built up] in accordance with the same standards and in a compatible manner". It specifies that "the possibility of exchange shall be limited to exchanging data from the non-coding part of the DNA molecule, which can be assumed not to contain information about specific hereditary qualities". It also urges Member States "to build up DNA analysis results preferably using the same DNA markers", "with a view to exchanging DNA analysis results at European level". The Resolution allows each Member State "to decide on the conditions under which, and the offences regarding which, the DNA analysis results may be stored in a national database".

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